

Project Antenn天线N2301项目天线测试报告

Antenna N2301 Project Antenna Test Reporta Test Report

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项目名：N2301

射频：Devin

手机MOBILE：

报告版次NO.：V1.0

Antenna N2301 Project Antenna Test Report



# 目录catalogue

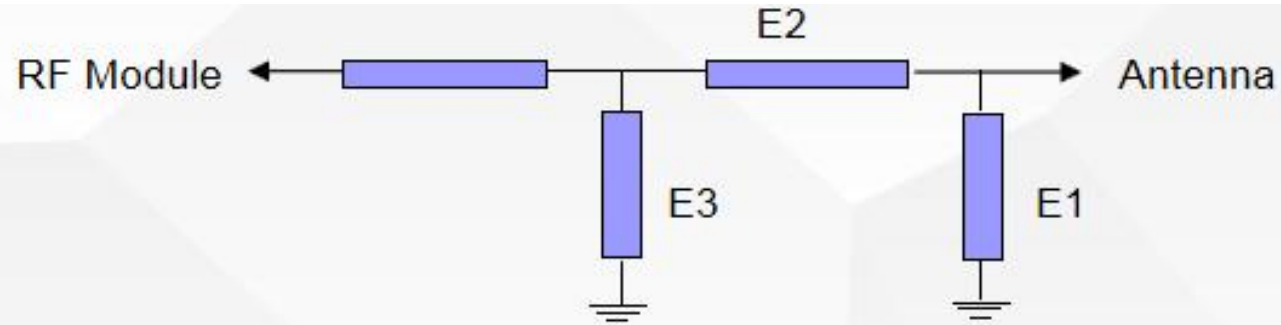
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 项目调试简介 Introduction to project commissioning

板型	整机mobile phone						
天线概况 Antenna overview	主天线 Main antenna	频段band		天线状态 Antenna status	天线形式 Antenna form	设计区域 Design area	匹配改动 Match Changes
		2G	GSM2/3/5/8/W1/2/4/5 /8/BC0	FPC	PIFA	sample bottom 手机底部	有yes
		3G					
		4G	FDD1/2/3/4/5/7/8/12 /17/18/19/20/25/26/ 28AB/TDD38/40/41/66				
	5G	N/A					
	其他天线 other antenna	BT/WIFI	2.4G/5.0	FPC	PIFA	sample top 手机顶部	无no
		GPS	1575.42MHz				
分集LTE		LTE1/3	FPC	PIFA	sample top 手机顶部	无no	
样机状态 sample status	N2301-DVT2试产机 Trial production sample	环境处理 Environmental treatment	有yes				

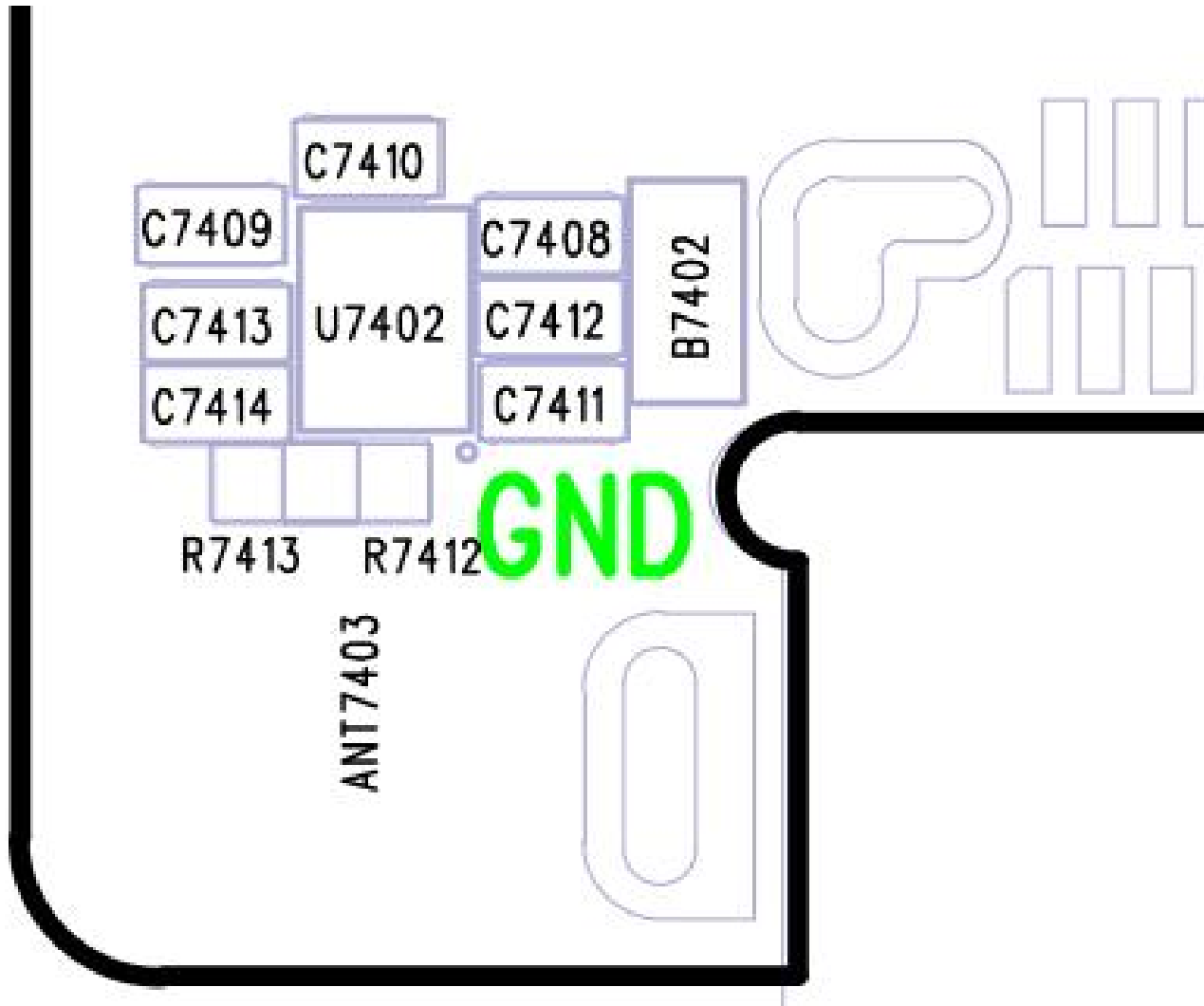


# 主天线匹配电路Main antenna matching circuit



	Element	Value	附图说明
主天线	E1(0402)	15NH	
	E2(0402)	0R	
	E3(0402)	NC	

# 开关匹配电路Main antenna matching circuit



R7412-0R

R7413-NC

C7411-0R

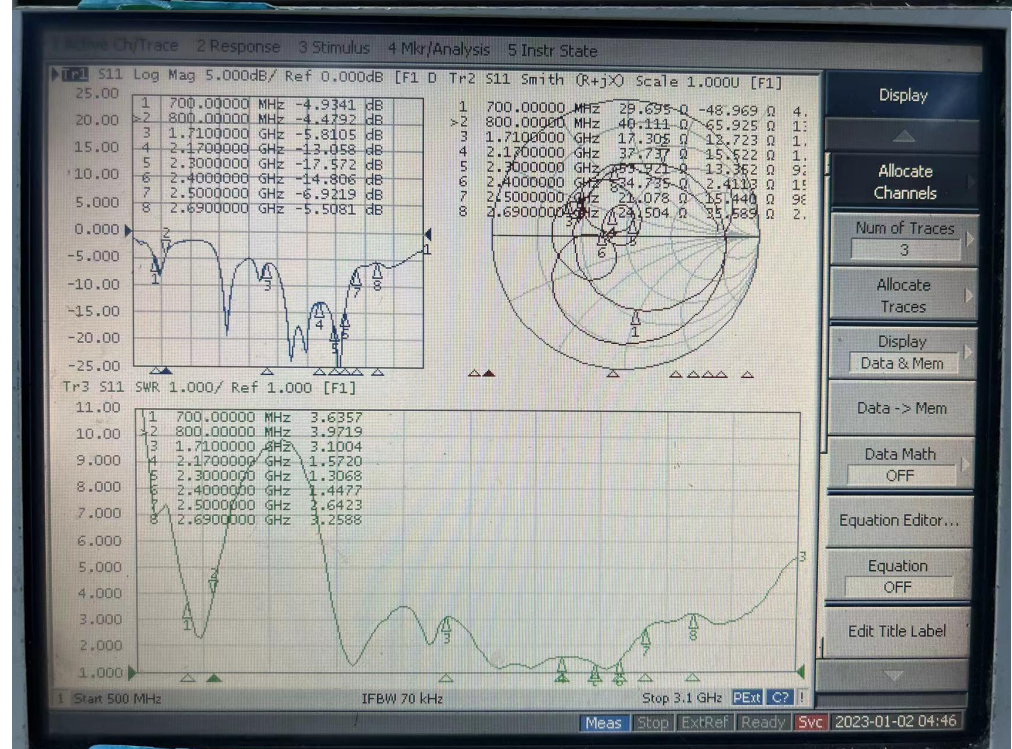
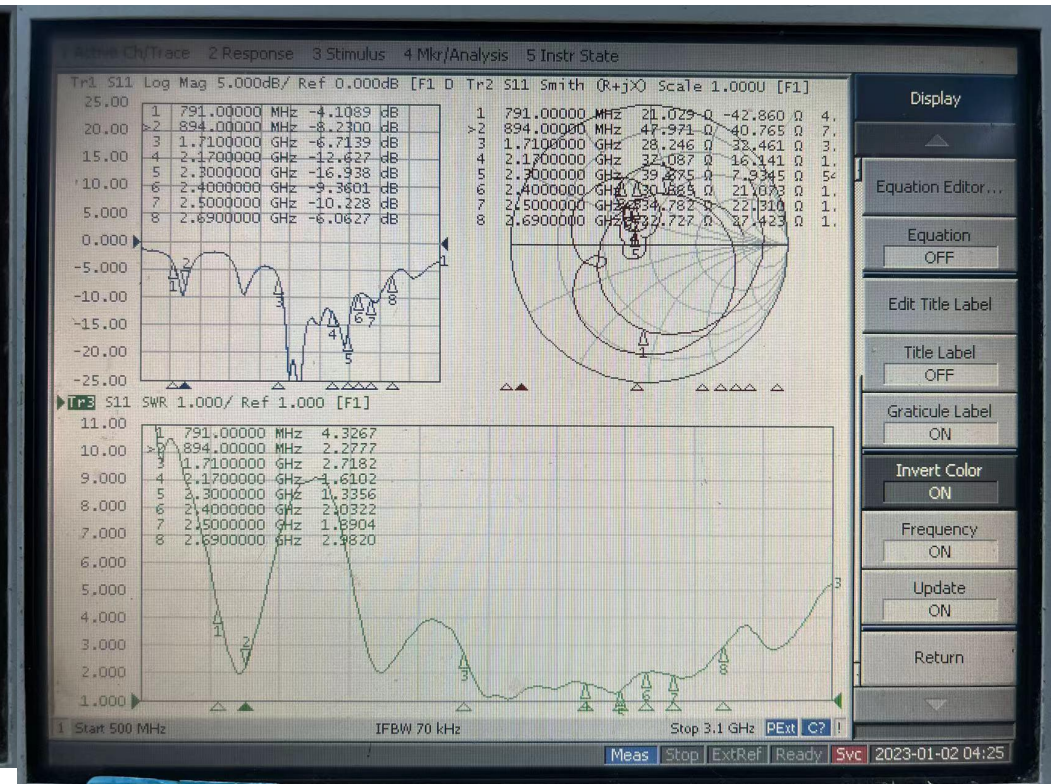
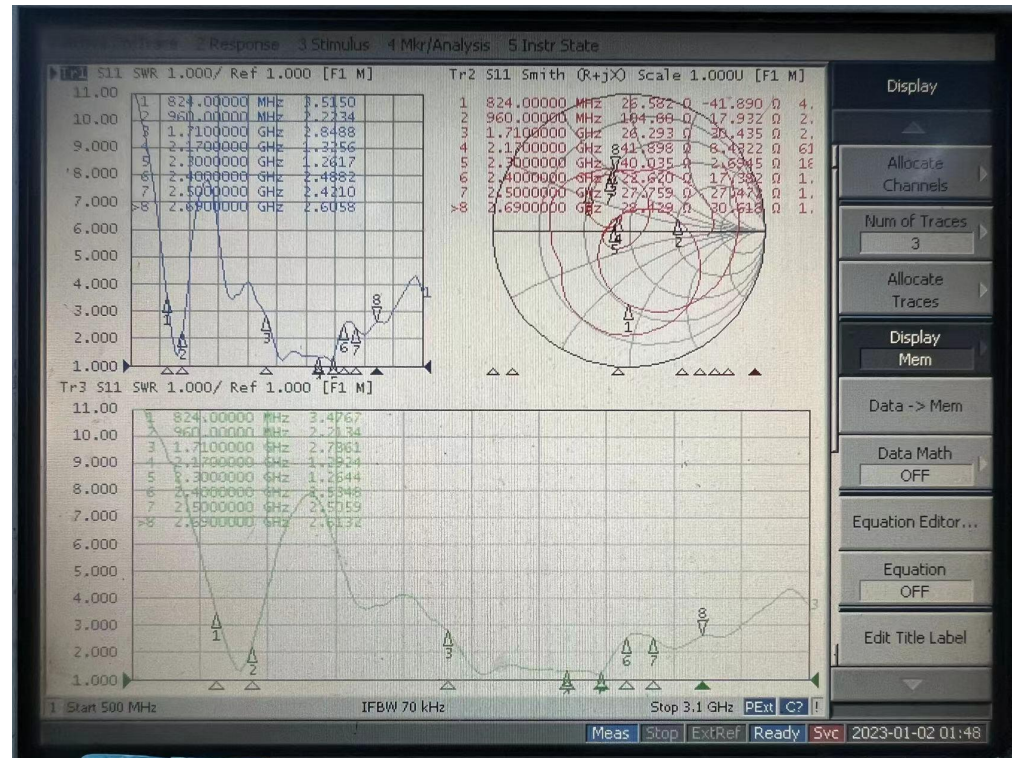
C7412-4.7NH

C7414-15NH

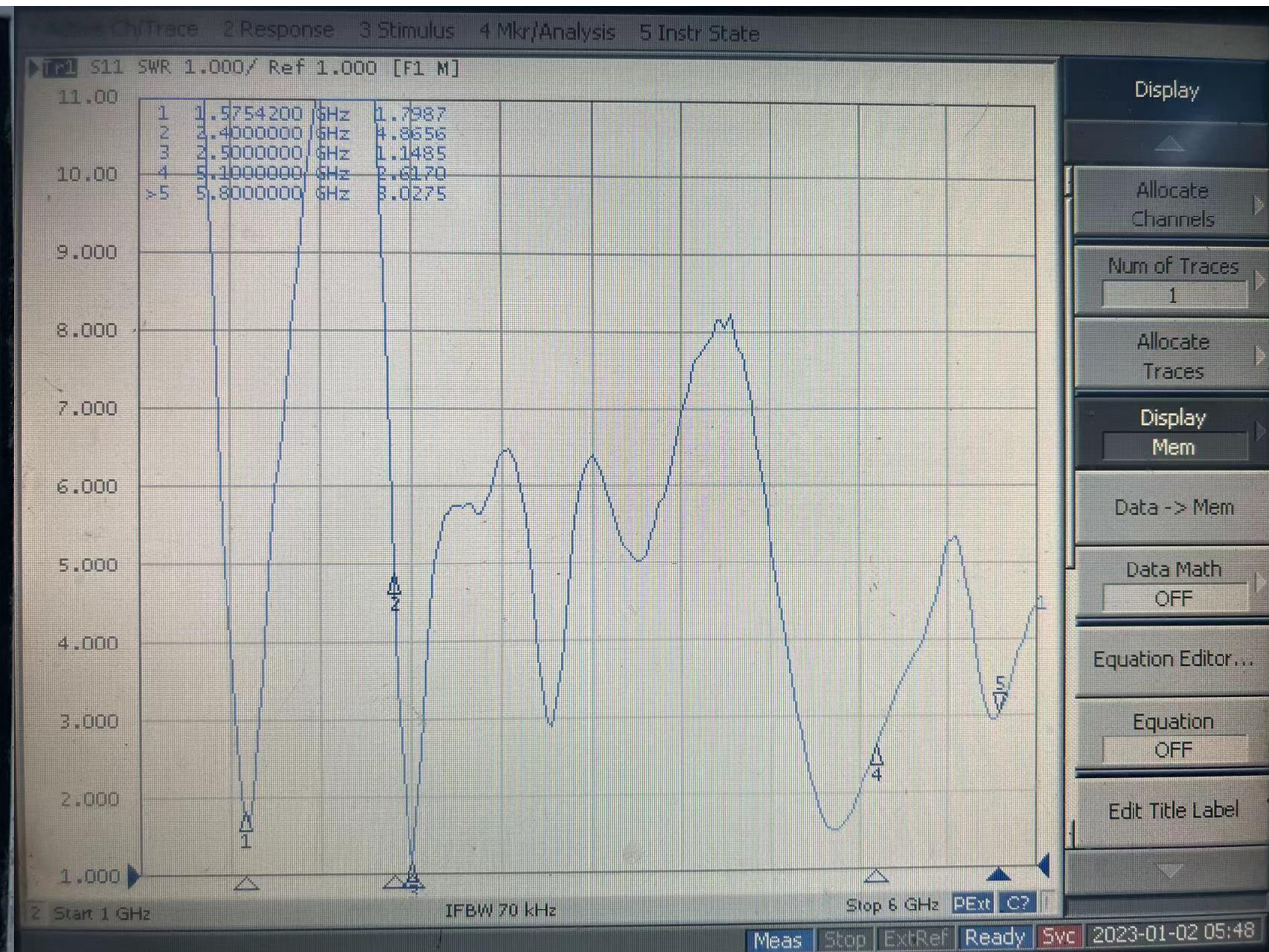
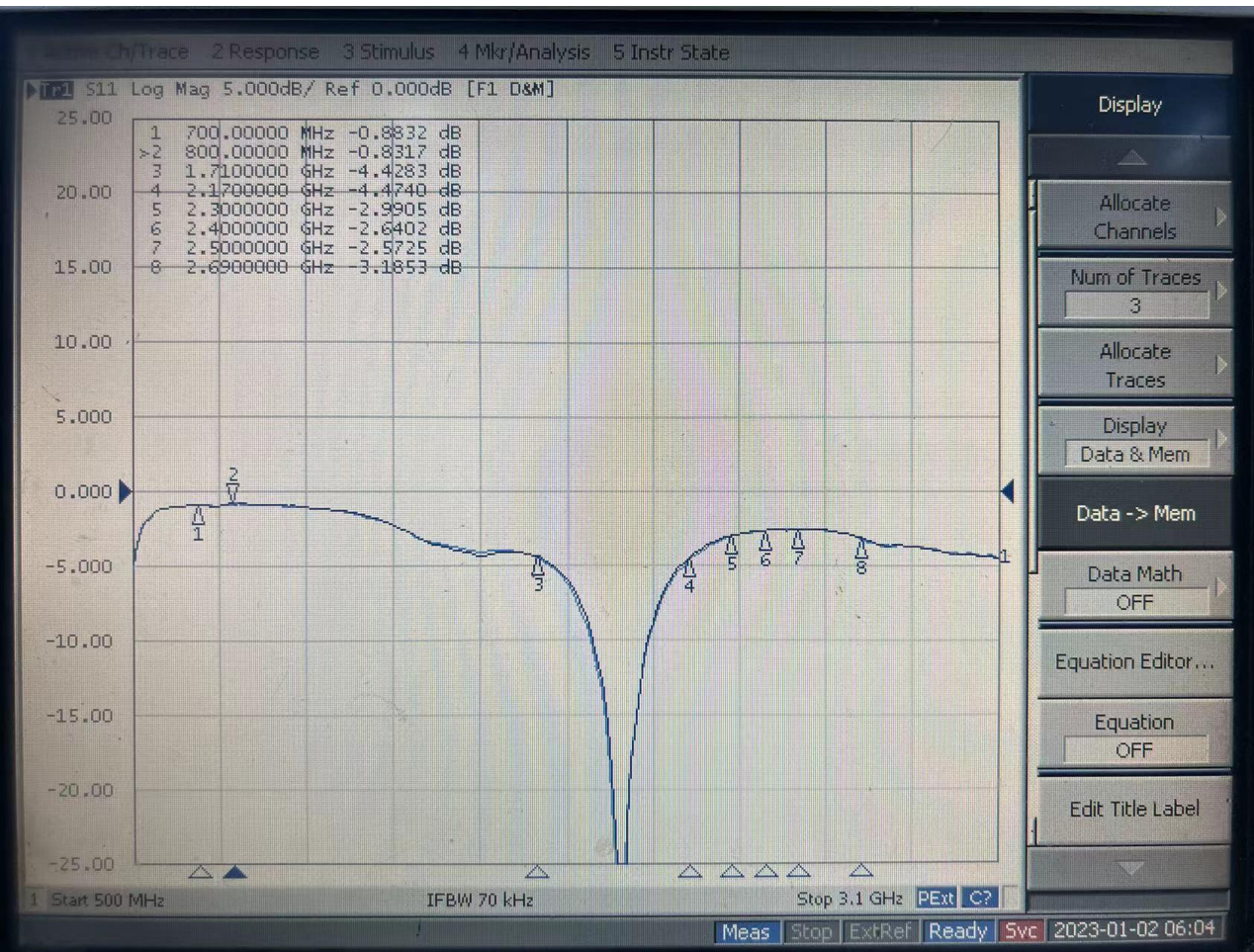
C7413-NC

其他不变

# 主天线无源驻波图



# 分集 三合一天线无源驻波图





## 主天线自由空间效率 Main antenna free space efficiency

Passive Test For 低频												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
690	5.29	-12.76	-10.93	-13.08	1.105	0.392	-10.93	-37.52	7.31	0	40.04	39.74
700	10.56	-9.76	-9.06	-11.21	1.552	0.712	-9.06	-40.98	7.39	0	42.08	41.55
710	16.73	-7.77	-7.42	-9.57	2.66	1.044	-7.42	-33.72	6.89	0	43.19	42.56
720	9.75	-10.11	-11.23	-13.38	1.325	0.722	-11.23	-34.85	5.66	30	40.81	40.14
730	11.3	-9.47	-11.29	-13.44	1.45	0.884	-11.29	-35.55	5.03	30	40.89	40.25
740	9.11	-10.4	-11.05	-13.2	1.559	0.834	-11.05	-37.18	5.16	0	40.45	39.74
750	13.07	-8.84	-7.51	-9.66	2.575	1.258	-7.51	-37.16	6.65	0	41.68	40.82
760	11.72	-9.31	-8.77	-10.92	2.431	1.205	-8.77	-39.84	5.62	0	42	41.06
770	9.04	-10.44	-9.94	-12.09	1.96	0.887	-9.94	-43.45	5.52	30	40.24	39.27
780	8.04	-10.95	-11.3	-13.45	1.538	0.665	-11.3	-42.34	5.27	0	39.57	38.69
790	10.75	-9.69	-10.68	-12.83	1.747	0.829	-10.68	-40.3	5.21	30	39.96	39.27
800	12.86	-8.91	-7.18	-9.33	3.368	1.733	-7.18	-35.14	5.74	30	43.52	42.93
810	14.03	-8.53	-6.79	-8.94	3.451	1.882	-6.79	-35.14	5.94	0	43.67	43.2
820	14.9	-8.27	-7.63	-9.78	3.387	1.779	-7.63	-38.15	5.24	0	43.79	43.33
830	13.13	-8.82	-8.83	-10.98	2.819	1.452	-8.83	-30.31	4.87	0	43.33	42.92
840	14.14	-8.49	-8.73	-10.88	2.869	1.367	-8.73	-29.63	5	60	43.4	43
850	14.87	-8.28	-7.76	-9.91	2.988	1.377	-7.76	-29.46	5.84	60	43.93	43.6
860	16.84	-7.74	-6.75	-8.9	3.354	1.466	-6.75	-29.02	6.42	30	44.49	44.14
870	18.5	-7.33	-6.13	-8.28	4.006	1.714	-6.13	-30.04	6.29	30	44.41	44.16
880	21.76	-6.62	-5.75	-7.9	4.598	1.934	-5.75	-27.22	6.1	30	44.54	44.28
890	25.03	-6.02	-5.43	-7.58	5.354	2.017	-5.43	-30.3	5.89	30	44.64	44.34
900	26.77	-5.72	-5.5	-7.65	5.87	1.907	-5.5	-27.4	5.59	30	44.26	44.01
910	28.36	-5.47	-4.8	-6.95	6.099	1.829	-4.8	-28.92	6.21	30	44.72	44.32
920	30.04	-5.22	-4.63	-6.78	6.726	1.503	-4.63	-27.9	6.22	30	44.39	44.05
930	27.34	-5.63	-4.79	-6.94	5.865	1.304	-4.79	-35.92	6.65	30	44.11	43.8
940	26.8	-5.72	-4.46	-6.61	6.204	1.254	-4.46	-32.12	6.82	30	44.19	43.83
950	24.11	-6.18	-4.52	-6.67	5.705	1.22	-4.52	-29.89	7.08	30	43.86	43.7
960	19.49	-7.1	-5.09	-7.24	5.116	0.974	-5.09	-31.87	7.06	30	43.35	43.26

## 主天线自由空间效率 Main antenna free space efficiency

Passive Test For 中高频												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
1690	6.35	-11.97	-6.76	-8.91	3.993	2.357	-6.76	-22.32	5.21	0	46.42	46.51
1700	11.81	-9.28	-4.02	-6.17	7.382	4.431	-4.02	-19.77	5.26	0	49.12	49.21
1710	11.71	-9.31	-4.03	-6.18	7.334	4.376	-4.03	-20.65	5.28	0	48.95	49.08
1720	12.44	-9.05	-3.5	-5.65	7.965	4.478	-3.5	-24.41	5.55	0	49.28	49.27
1730	12.63	-8.98	-3.47	-5.62	8.048	4.587	-3.47	-25.71	5.51	0	49.29	49.42
1740	12.53	-9.02	-3.29	-5.44	8.12	4.414	-3.29	-23.56	5.72	0	49.54	49.45
1750	11.95	-9.23	-3.57	-5.72	7.744	4.209	-3.57	-19.89	5.66	0	49.06	49.02
1760	11.86	-9.26	-3.4	-5.55	7.829	4.031	-3.4	-21.21	5.86	0	49.21	49.16
1770	11.91	-9.24	-3.66	-5.81	7.739	4.175	-3.66	-20	5.58	0	49.02	48.79
1780	12.86	-8.91	-3.06	-5.21	8.453	4.406	-3.06	-19.52	5.84	0	49.33	49.25
1790	14	-8.54	-2.9	-5.05	9.054	4.946	-2.9	-19.74	5.64	0	49.31	49.22
1800	14.55	-8.37	-2.37	-4.52	9.57	4.979	-2.37	-18.55	6	0	49.56	49.53
1810	16.93	-7.71	-1.92	-4.07	10.901	6.029	-1.92	-17.49	5.79	0	49.66	49.73
1820	17.99	-7.45	-1.42	-3.57	11.803	6.184	-1.42	-18.87	6.03	0	49.91	49.96
1830	21.87	-6.6	-0.97	-3.12	14.086	7.783	-0.97	-17.27	5.63	0	50.31	50.31
1840	21.49	-6.68	-0.72	-2.87	14.151	7.338	-0.72	-17.6	5.95	0	50.22	50.37
1850	23.61	-6.27	-0.58	-2.73	15.254	8.352	-0.58	-17.56	5.69	0	50.15	50.17
1860	22.01	-6.57	-0.42	-2.57	14.514	7.495	-0.42	-18.54	6.15	0	50.02	50.04
1870	23.96	-6.2	-0.32	-2.47	15.291	8.67	-0.32	-18.44	5.89	0	50.16	50.33
1880	23.36	-6.32	0.05	-2.1	15.022	8.337	0.05	-19.74	6.37	0	50.46	50.32
1890	25.68	-5.9	-0.01	-2.16	15.848	9.829	-0.01	-20.78	5.9	0	50.61	50.67
1900	22.43	-6.49	-0.4	-2.55	13.835	8.596	-0.4	-22.79	6.1	0	50.85	50.62
1910	23.24	-6.34	-0.66	-2.81	13.737	9.499	-0.66	-21.68	5.68	0	50.6	50.5
1920	20.35	-6.91	-1.05	-3.2	11.99	8.362	-1.05	-22.8	5.86	0	50.58	50.48
1930	20.49	-6.89	-1.35	-3.5	11.542	8.943	-1.35	-20.67	5.54	0	50.68	50.53
1940	18.24	-7.39	-1.63	-3.78	10.156	8.081	-1.63	-21.03	5.76	0	50.67	50.65
1950	20.25	-6.93	-1.66	-3.81	10.924	9.331	-1.66	-19.78	5.28	0	51.13	51.07
1960	18.11	-7.42	-2.02	-4.17	9.776	8.329	-2.02	-20.57	5.4	0	51.14	51.11
1970	19.57	-7.08	-1.98	-4.13	10.461	9.107	-1.98	-19.77	5.1	0	51.34	51.28
1980	17.83	-7.49	-2.48	-4.63	9.596	8.238	-2.48	-20.7	5	0	51.33	51.27
1990	18.17	-7.41	-2.48	-4.63	9.761	8.406	-2.48	-20.8	4.92	30	51.46	51.39
2000	18.64	-7.3	-2.56	-4.71	9.995	8.64	-2.56	-20	4.73	30	51.74	51.83

## 主天线自由空间效率Main antenna free space efficiency

2010	19.9	-7.01	-2.44	-4.59	10.695	9.206	-2.44	-18.16	4.57	30	52.17	52.05
2020	21.06	-6.77	-2.22	-4.37	11.369	9.687	-2.22	-20.76	4.54	30	52.37	52.54
2030	21.45	-6.69	-1.99	-4.14	11.889	9.56	-1.99	-24.47	4.69	30	52.6	52.58
2040	22.24	-6.53	-1.96	-4.11	12.578	9.66	-1.96	-23.37	4.57	30	52.47	52.58
2050	21.3	-6.72	-2.05	-4.2	12.397	8.9	-2.05	-21.27	4.66	30	52.33	52.38
2060	23.85	-6.22	-2.06	-4.21	14.063	9.788	-2.06	-18.01	4.17	30	52.48	52.63
2070	22.02	-6.57	-2.31	-4.46	13.158	8.863	-2.31	-16.96	4.26	30	52.36	52.46
2080	24.16	-6.17	-2.15	-4.3	14.538	9.625	-2.15	-17.8	4.02	0	52.54	52.78
2090	22.2	-6.54	-2.54	-4.69	13.589	8.611	-2.54	-16.55	4	0	52.54	52.71
2100	23.18	-6.35	-2.43	-4.58	14.33	8.853	-2.43	-17.73	3.91	0	52.4	52.65
2110	21.51	-6.67	-2.44	-4.59	13.464	8.05	-2.44	-17.31	4.23	0	52.29	52.43
2120	21.35	-6.71	-2.17	-4.32	13.201	8.149	-2.17	-15.84	4.53	0	51.79	52.04
2130	19.65	-7.07	-2.21	-4.36	12.154	7.496	-2.21	-15.56	4.85	0	51.69	51.86
2140	20.78	-6.82	-1.83	-3.98	12.772	8.003	-1.83	-16.07	5	0	51.72	51.89
2150	19.19	-7.17	-1.83	-3.98	11.93	7.26	-1.83	-17.94	5.34	0	51.63	51.83
2160	18.35	-7.36	-1.86	-4.01	11.353	6.998	-1.86	-18.68	5.5	0	51.28	51.41
2170	18.56	-7.31	-1.55	-3.7	11.6	6.963	-1.55	-21.31	5.76	30	51.55	51.67
2180	20.91	-6.8	-0.96	-3.11	12.967	7.946	-0.96	-19.91	5.84	30	51.94	52.07
2190	20.86	-6.81	-0.85	-3	13.002	7.859	-0.85	-22.08	5.95	30	52.14	52.24
2200	20.34	-6.92	-1.05	-3.2	12.597	7.744	-1.05	-23.2	5.87	30	51.87	51.86
2210	19.44	-7.11	-1.12	-3.27	12.088	7.354	-1.12	-22.73	5.99	30	51.98	51.96
2220	19.55	-7.09	-1.02	-3.17	12.11	7.444	-1.02	-20.29	6.06	0	52.16	52
2230	20.15	-6.96	-0.8	-2.95	12.597	7.55	-0.8	-19.65	6.16	0	52.63	52.57
2240	22.22	-6.53	-0.31	-2.46	13.824	8.398	-0.31	-18.67	6.23	30	53.15	52.95
2250	19.48	-7.1	-0.91	-3.06	12.147	7.33	-0.91	-17.29	6.19	30	52.58	52.38
2260	20.5	-6.88	-0.8	-2.95	12.672	7.827	-0.8	-16.32	6.09	30	52.7	52.56
2270	18.45	-7.34	-1.44	-3.59	11.246	7.203	-1.44	-16.51	5.9	30	52.36	52.24
2280	18.83	-7.25	-1.4	-3.55	11.483	7.345	-1.4	-15.62	5.86	30	52.7	52.58
2290	17.29	-7.62	-1.84	-3.99	10.577	6.712	-1.84	-15.97	5.79	30	52.63	52.5
2300	16.69	-7.78	-1.92	-4.07	10.242	6.444	-1.92	-16.61	5.86	30	52.85	52.66
2310	14.91	-8.27	-2.5	-4.65	9.025	5.885	-2.5	-17.91	5.76	30	52.74	52.54
2320	14.9	-8.27	-2.5	-4.65	8.988	5.916	-2.5	-19.01	5.77	30	53.04	52.94
2330	15.39	-8.13	-2.66	-4.81	9.098	6.289	-2.66	-19.16	5.47	30	53.05	53
2340	15.2	-8.18	-2.89	-5.04	8.921	6.282	-2.89	-18.72	5.3	30	53.08	53.08
2350	14.65	-8.34	-3.11	-5.26	8.629	6.017	-3.11	-18.43	5.23	30	53.28	53.38

## 主天线自由空间效率 Main antenna free space efficiency

2360	14.52	-8.38	-3.07	-5.22	8.572	5.945	-3.07	-18.71	5.31	30	53.59	53.7
2370	12.13	-9.16	-3.66	-5.81	7.108	5.021	-3.66	-20.04	5.5	30	53.42	53.66
2380	12.94	-8.88	-3.45	-5.6	7.552	5.386	-3.45	-21.18	5.43	30	54.05	54.25
2390	11.96	-9.22	-3.92	-6.07	6.77	5.195	-3.92	-22.73	5.3	30	53.84	54.02
2400	12.41	-9.06	-4.19	-6.34	6.785	5.624	-4.19	-23.1	4.87	30	53.86	54.21
2410	10.59	-9.75	-4.65	-6.8	5.653	4.939	-4.65	-21.68	5.1	30	53.56	53.78
2420	10.95	-9.61	-4.46	-6.61	5.736	5.21	-4.46	-20.99	5.15	30	53.64	53.98
2430	9.81	-10.08	-4.3	-6.45	5.014	4.796	-4.3	-20.66	5.78	30	53.9	54.18
2440	11.16	-9.52	-4.48	-6.63	5.685	5.475	-4.48	-18.78	5.05	30	54.41	54.66
2450	10.29	-9.88	-5.75	-7.9	5.118	5.167	-5.75	-18.94	4.12	30	54.54	54.66
2460	11.43	-9.42	-4.03	-6.18	5.688	5.738	-4.03	-18.01	5.39	30	54.26	54.52
2470	9.96	-10.02	-4.51	-6.66	4.991	4.967	-4.51	-18.56	5.51	30	54	54.09
2480	12.07	-9.18	-4.49	-6.64	6.148	5.921	-4.49	-17.3	4.7	30	53.96	54.17
2490	11.98	-9.22	-4.48	-6.63	6.037	5.942	-4.48	-18.39	4.74	30	54.21	54.4
2500	13.73	-8.62	-3.58	-5.73	7.064	6.668	-3.58	-16.79	5.04	30	54.51	54.67
2510	11.76	-9.3	-4.32	-6.47	5.927	5.832	-4.32	-18.18	4.98	30	54.24	54.47
2520	12.83	-8.92	-3.82	-5.97	6.506	6.32	-3.82	-18.1	5.09	30	54.2	54.33
2530	12.07	-9.18	-4.24	-6.39	6.113	5.953	-4.24	-17.98	4.95	30	54.31	54.31
2540	13.77	-8.61	-3.18	-5.33	7.167	6.604	-3.18	-17.23	5.43	30	54.1	54.29
2550	14.54	-8.37	-3.07	-5.22	7.436	7.104	-3.07	-16.7	5.3	30	54.36	54.38
2560	17.08	-7.67	-2.24	-4.39	8.899	8.185	-2.24	-16.05	5.43	30	54.6	54.71
2570	16.06	-7.94	-2.56	-4.71	8.114	7.949	-2.56	-16.88	5.38	30	54.65	54.72
2580	18.24	-7.39	-2	-4.15	9.449	8.789	-2	-18.01	5.39	30	54.95	54.88
2590	17.37	-7.6	-1.76	-3.91	8.753	8.621	-1.76	-19.62	5.84	30	55	54.96
2600	20.63	-6.85	-1.21	-3.36	10.635	9.999	-1.21	-20.03	5.65	30	55.3	55.28
2610	18.75	-7.27	-1.42	-3.57	9.618	9.131	-1.42	-19.93	5.85	30	55.43	55.19
2620	19.92	-7.01	-1.59	-3.74	10.509	9.407	-1.59	-20.22	5.42	30	55.31	55.25
2630	17.85	-7.48	-2.06	-4.21	9.317	8.529	-2.06	-19.63	5.43	30	55.36	55.26
2640	20.35	-6.91	-1.61	-3.76	10.885	9.466	-1.61	-18.21	5.31	30	55.82	55.62
2650	19.22	-7.16	-1.58	-3.73	10.197	9.023	-1.58	-17.58	5.58	30	56.15	56.14
2660	18.07	-7.43	-1.72	-3.87	9.567	8.503	-1.72	-17.13	5.72	30	56.31	56.14
2670	18.57	-7.31	-1.31	-3.46	9.732	8.84	-1.31	-16.1	6	30	56.56	56.48
2680	16.64	-7.79	-1.76	-3.91	8.641	8.003	-1.76	-16.73	6.02	30	56.34	56.09
2690	16.64	-7.79	-1.71	-3.86	8.551	8.087	-1.71	-15.74	6.08	0	56.21	56.16
2700	16.74	-7.76	-1.81	-3.96	8.482	8.257	-1.81	-15.86	5.95	0	56.36	56.23
2710	16.42	-7.85	-1.79	-3.94	8.326	8.09	-1.79	-15.91	6.05	0	56.72	56.74

# 三合一天线自由空间效率

2400	30.65	-5.14	-0.94	1575	34.93	-4.57	-1.81
2410	25.39	-5.95	-1.57	5150	38.92	-4.1	0.49
2420	24.69	-6.07	-1.41	5200	49.2	-3.08	1.47
2430	23.8	-6.23	-1.97	5250	43.09	-3.66	1.08
2440	25.43	-5.95	-1.4	5300	42.41	-3.72	1.02
2450	24.7	-6.07	-1.77	5350	47.78	-3.21	1.45
2460	25.15	-5.99	-1.81	5400	47.83	-3.2	1.37
2470	23.75	-6.24	-2.37	5450	42.85	-3.68	0.77
2480	24.64	-6.08	-2.1	5500	48.08	-3.18	1.35
				5550	48.04	-3.18	1.55
				5600	43.78	-3.59	1.79
				5650	48.51	-3.14	2.28
				5700	50.47	-2.97	2.42
				5750	46.77	-3.3	1.45
				5800	47.21	-3.26	1.63
				5850	46.08	-3.36	1.5

## 主天线开关频段分路Main antenna switching frequency band shunt

N2301射频匹配和开关频段分路如下： RF matching and switching frequency band branching are as follows			
频段band	位号/开关通道 Tag No./switch channel	匹配 matching	备注 remark
GSM2/3/8/W1/2/4/8/FDD1/2/3/4/7/8/25/66/ TDD38/40/41	RF1 (C7411)	0 R	
GSM5/W5/FDD5/18/19/20/26	RF2 (C7412)	4.7 NH	
B12/17/B28A/B28B (700MHZ)	RF3 (C7414)	15 NH	
	RF (C7413)	NC	
	R7412 (进开关)	0 R	
	R7413	NC	

## 主天线暗室数据 Main antenna anechoic chamber data

ANWEI ANT TRP&TIS parameter Summary of P2201-717						
BAND	GSM900			DCS1800		
CHANNEL	1	62	124	512	698	885
TRP (dBm)	25.7	26.3	26.1	26.06	25	25.09
TIS (dBm)			-100.5			-103.4
BAND	GSM850			PCS1900		
CHANNEL	128	190	251	512	661	810
TRP (dBm)	23.95	24.1	24.9	26.5	26.24	26
TIS (dBm)			-101.38			-103.12
BAND	WCDMA 1			WCDMA 2		
CHANNEL	10562	10700	10838	9262	9400	9538
TRP (dBm)	18.24	18.19	18.7	18.98	18.39	17.96
TIS (dBm)			-106			-105.5
BAND	WCDMA 4			WCDMA 5		
CHANNEL	1312	1413	1513	4132	4183	4233
TRP (dBm)	15.35	15.71	16.4	15.77	15.5	16.12
TIS (dBm)			-106.3			-105.2



# 主天线暗室数据 Main antenna anechoic chamber data

ANWEI ANT TRP&TIS parameter Summary of P2201-717

BAND	WCDMA 8			FDD-1		
CHANNEL	2937	3013	3088	18100	18300	18500
TRP (dBm)	16.46	16.75	16.44	18.2	17.6	17.6
TIS (dBm)			-105.2			-91.2
BAND	FDD-2			FDD-3		
CHANNEL	18650	18900	19150	19250	19575	19900
TRP (dBm)	19.4	19.1	18.9	17.3	17.43	18.4
TIS (dBm)			-91.61			-91.72
BAND	FDD-4			FDD-5		
CHANNEL	20000	20175	20350	20450	20525	20600
TRP (dBm)	17.51	17.5	18.1	16	16.5	16.1
TIS (dBm)			-91.04			-89.7
BAND	FDD-7			FDD-8		
CHANNEL	20800	21100	21400	21500	21625	21750
TRP (dBm)	15.8	16.4	17.1	18.1	18.6	17
TIS (dBm)			-90			-89.95



## 主天线暗室数据 Main antenna anechoic chamber data

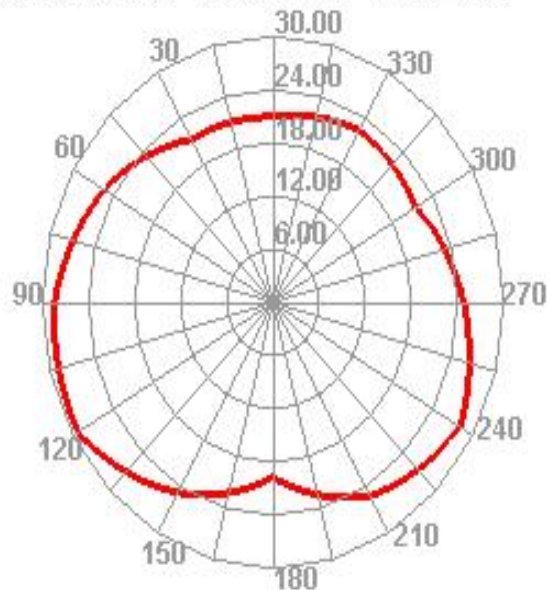
ANWEI ANT TRP&TIS parameter Summary of P2201-717						
BAND	FDD-12			FDD-17		
CHANNEL	23060	23095	23130	23780	23790	23800
TRP (dBm)	17.6	17.9	17.4	17.7	17.4	17.3
TIS (dBm)			-88.4			-88.3
BAND	FDD-18			FDD-19		
CHANNEL	23900	23925	23950	24050	24075	24100
TRP (dBm)	16.1	16	16.3	16.59	16.5	16.8
TIS (dBm)			-88.5			-88.2
BAND	FDD-20			FDD-25		
CHANNEL	24200	24300	24400	26090	26365	26640
TRP (dBm)	16.5	16	15.7	16.9	18.47	15.76
TIS (dBm)			-88.7			-92.37
BAND	FDD-26			FDD-28A		
CHANNEL	26740	26865	26990	27260	27370	27469
TRP (dBm)	16.1	16.4	15.9	17.7	18	17.3
TIS (dBm)			-88.56			-88.5

## 主天线暗室数据 Main antenna anechoic chamber data

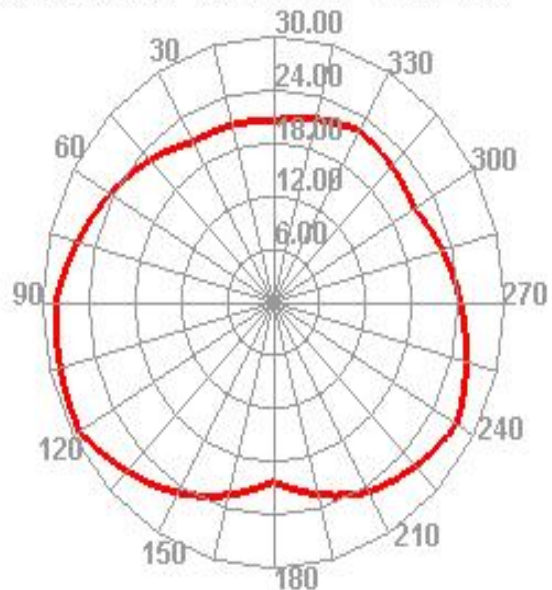
ANWEI ANT TRP&TIS parameter Summary of P2201-717						
BAND	FDD-28B			FDD-66		
CHANNEL	27410	27510	27600	132022	132322	132622
TRP (dBm)	18	17.1	16.7	17.4	17.8	18.1
TIS (dBm)			-86.4			-91.46
BAND	TDD-38			TDD-40		
CHANNEL	37850	38000	38150	38750	39150	39550
TRP (dBm)	17.97	17.92	18.3	19.6	19.4	18.6
TIS (dBm)			-89.17			-91.8
BAND	TDD-41					
CHANNEL		40620				
TRP (dBm)		18.7				
TIS (dBm)		-90.9				
BAND						
CHANNEL						
TRP (dBm)						
TIS (dBm)						

## 有源数据暗室方向图

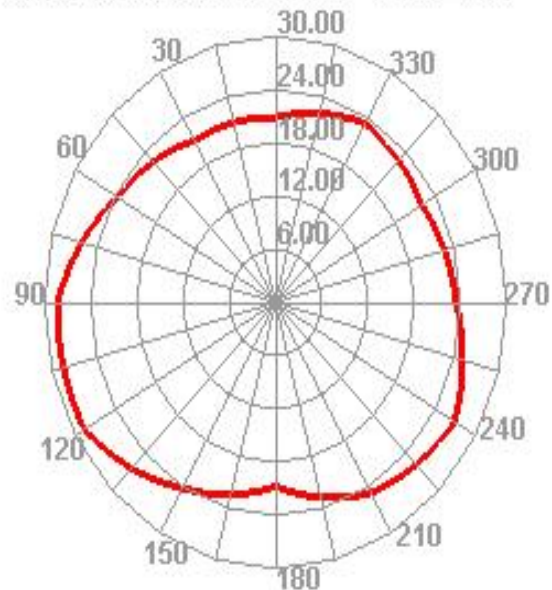
GSM850 128 TRP Phi=45



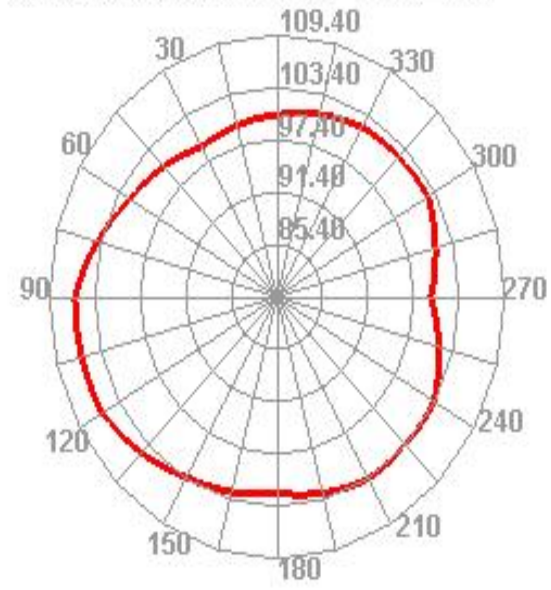
GSM850 190 TRP Phi=45



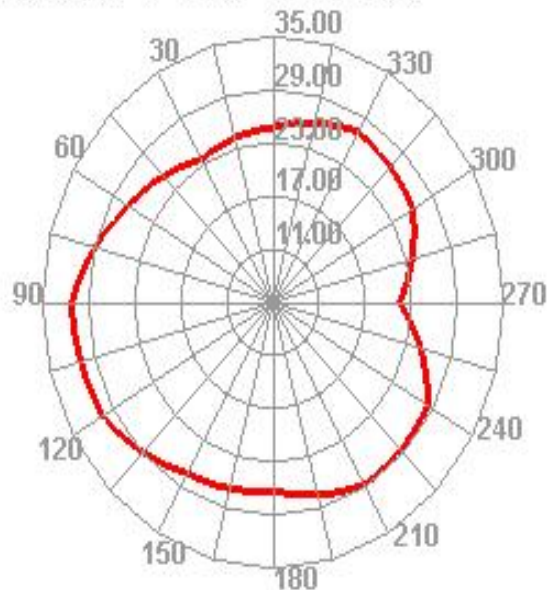
GSM850 251 TRP Phi=45



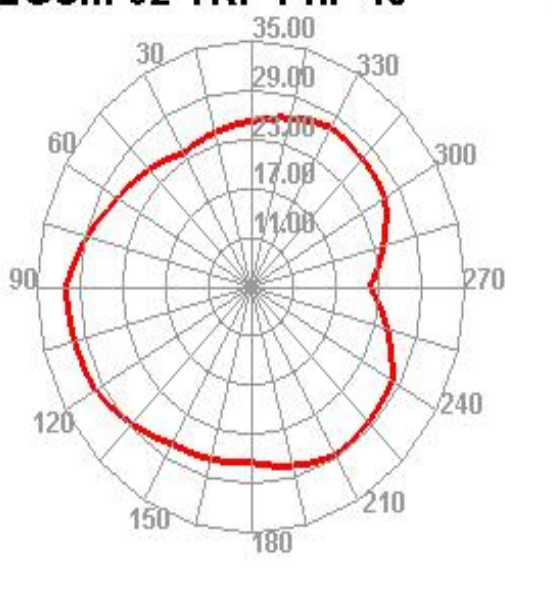
GSM850 251 TIS Phi=45



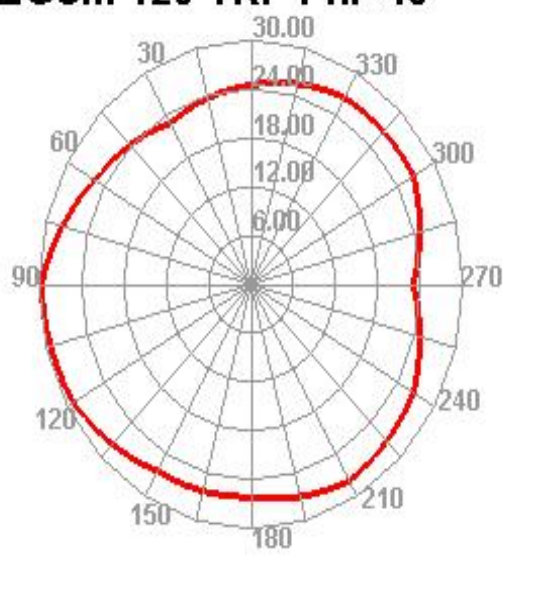
EGSM 1 TRP Phi=45



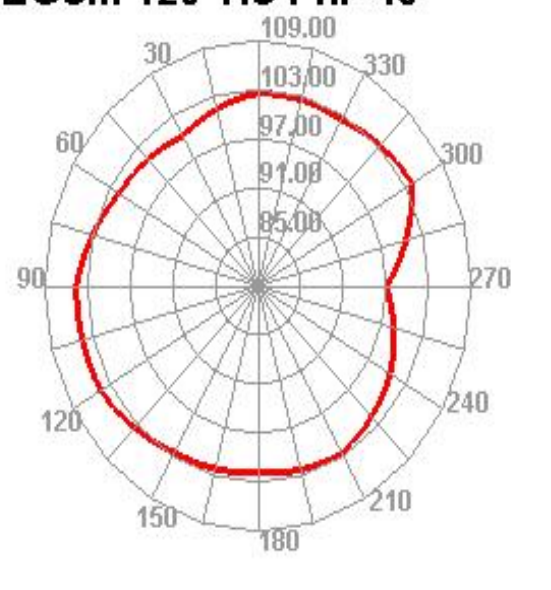
EGSM 62 TRP Phi=45



EGSM 120 TRP Phi=45

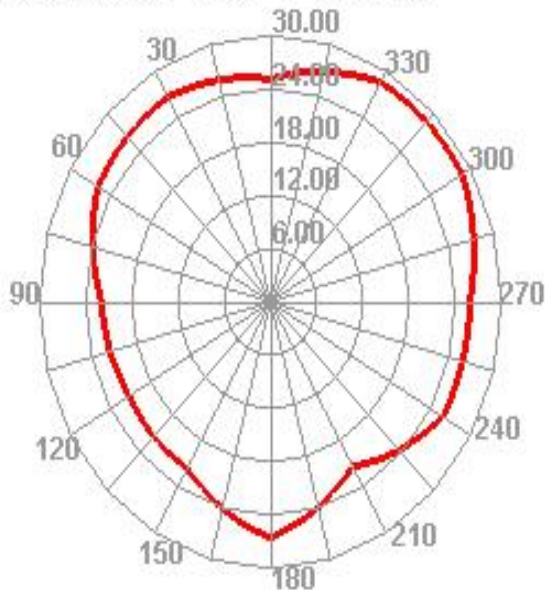


EGSM 120 TIS Phi=45

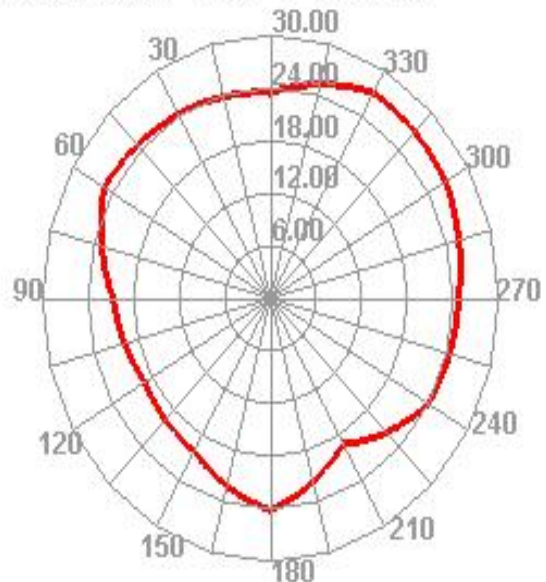


## 有源数据暗室方向图

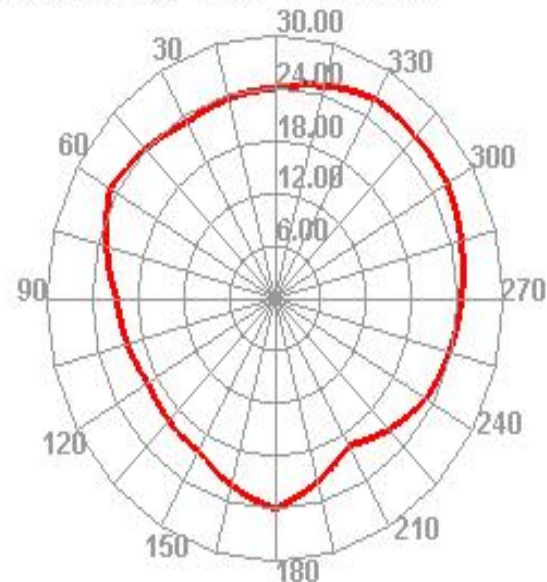
DCS 512 TRP Phi=45



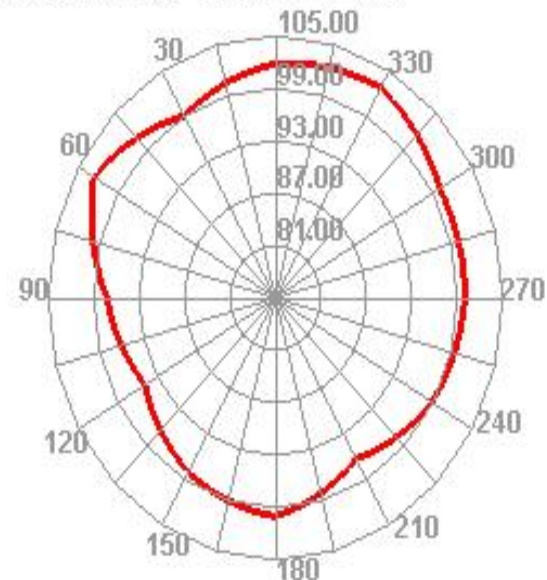
DCS 698 TRP Phi=45



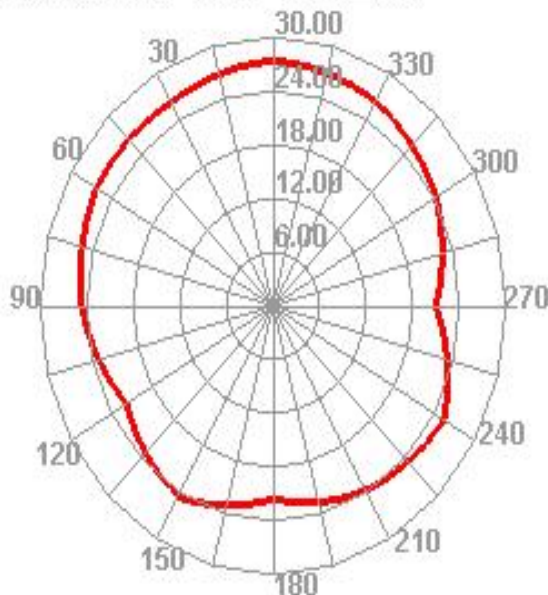
DCS 885 TRP Phi=45



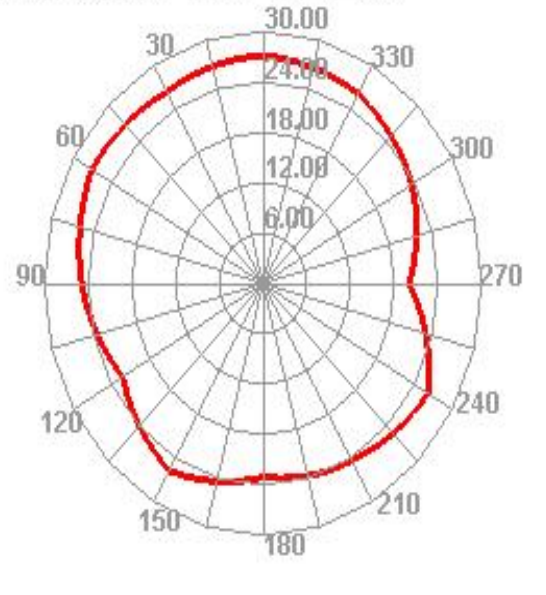
DCS 885 TIS Phi=45



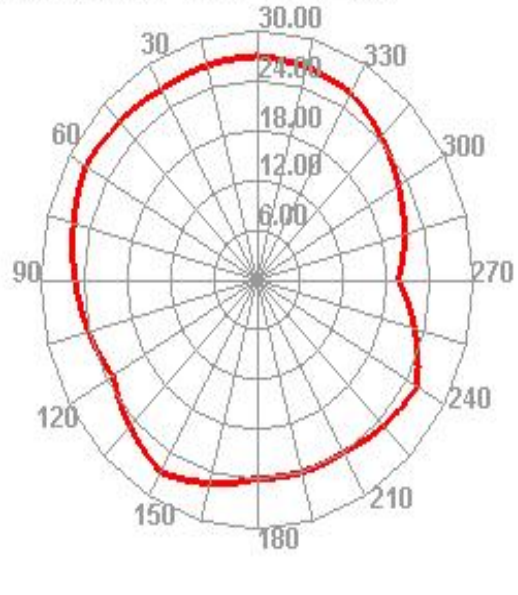
PCS 512 TRP Phi=45



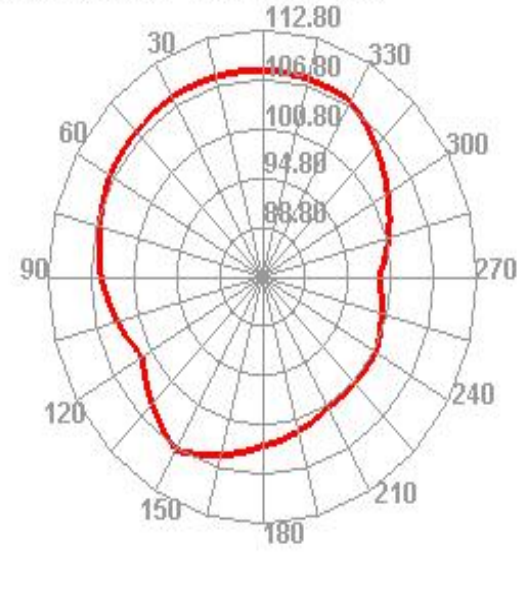
PCS 661 TRP Phi=45



PCS 810 TRP Phi=45

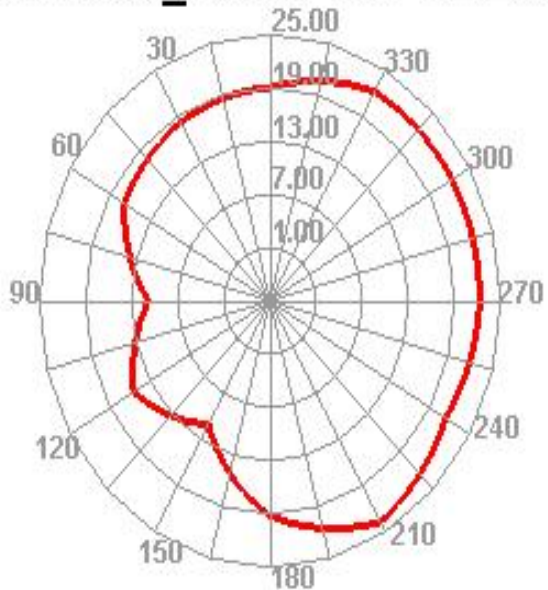


PCS 810 TIS Phi=45

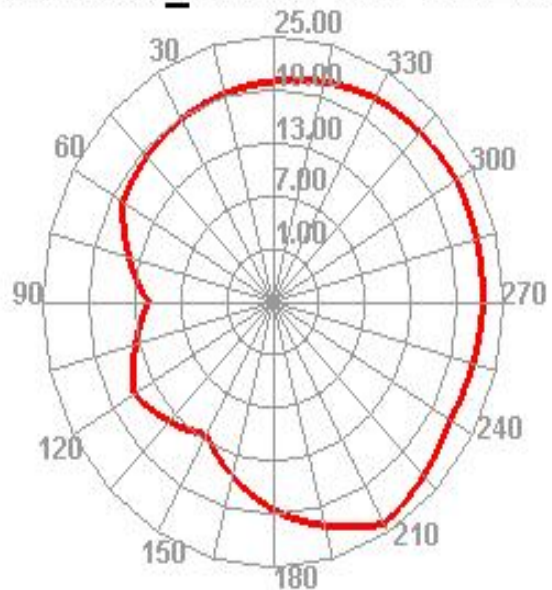


## 有源数据暗室方向图

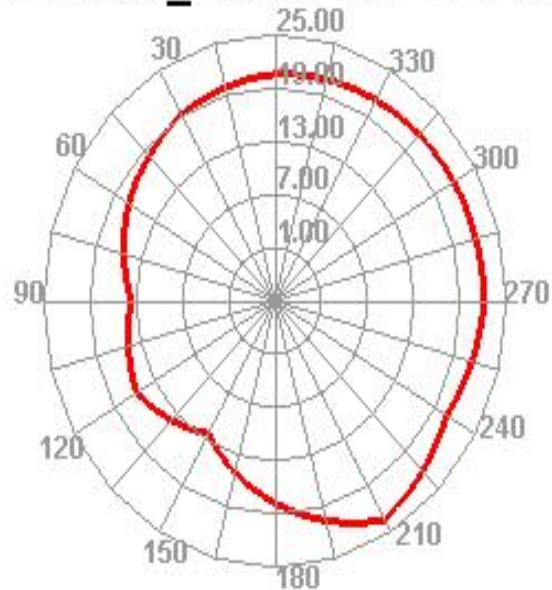
WCDMA\_I 9612 TRP Phi=45



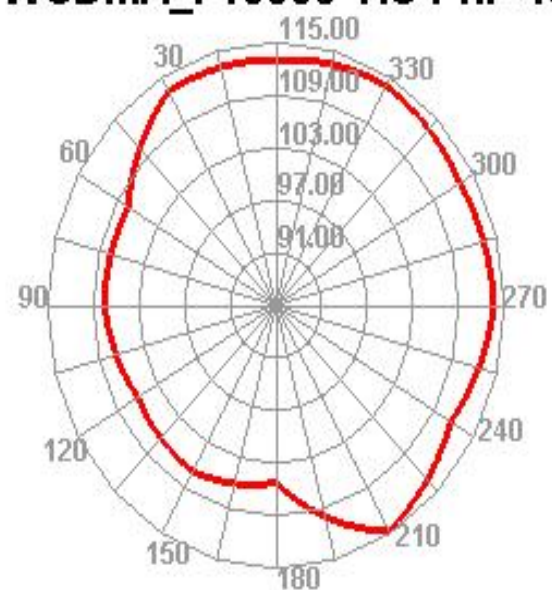
WCDMA\_I 9750 TRP Phi=45



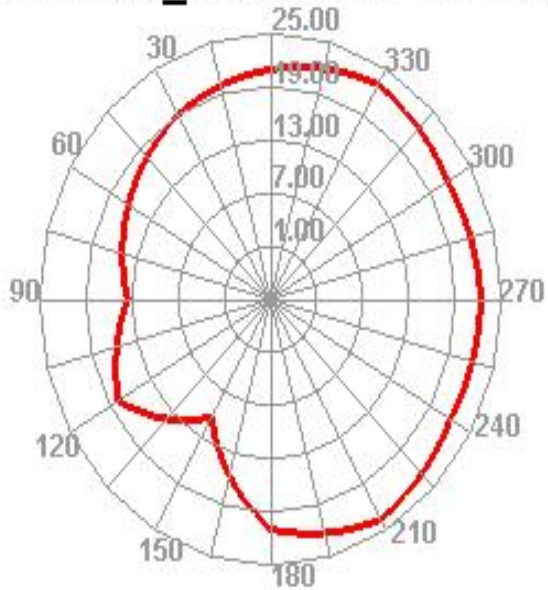
WCDMA\_I 9888 TRP Phi=45



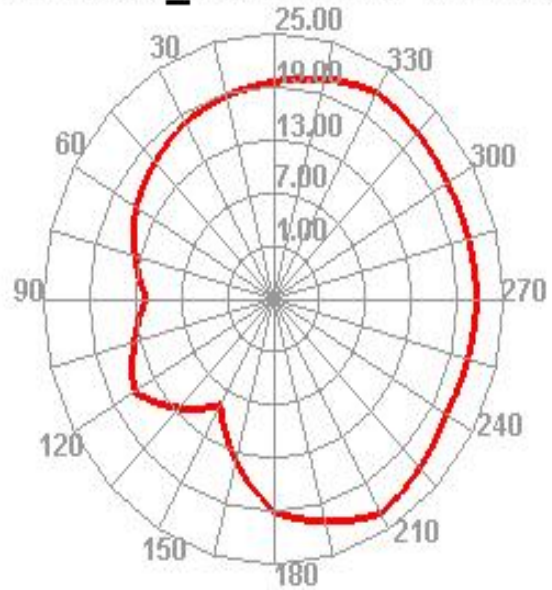
WCDMA\_I 10838 TIS Phi=45



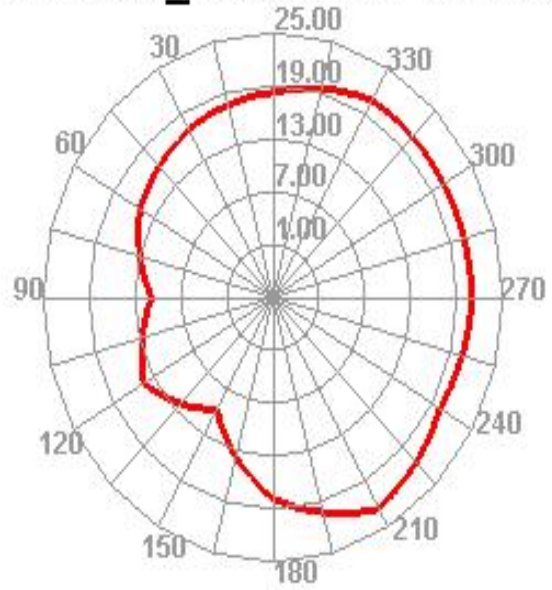
WCDMA\_II 9262 TRP Phi=45



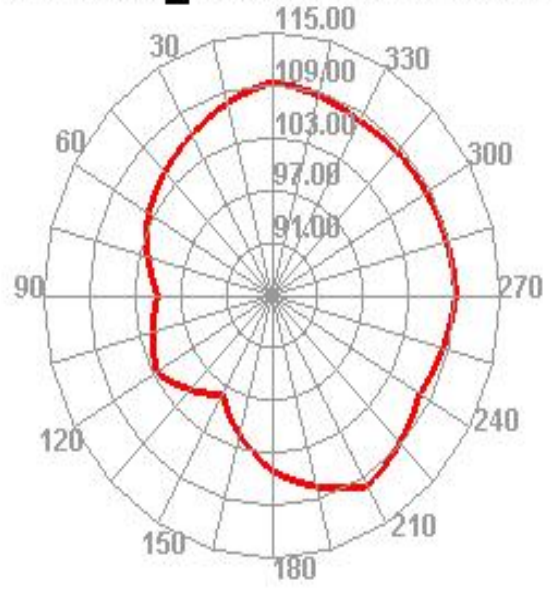
WCDMA\_II 9400 TRP Phi=45



WCDMA\_II 9538 TRP Phi=45

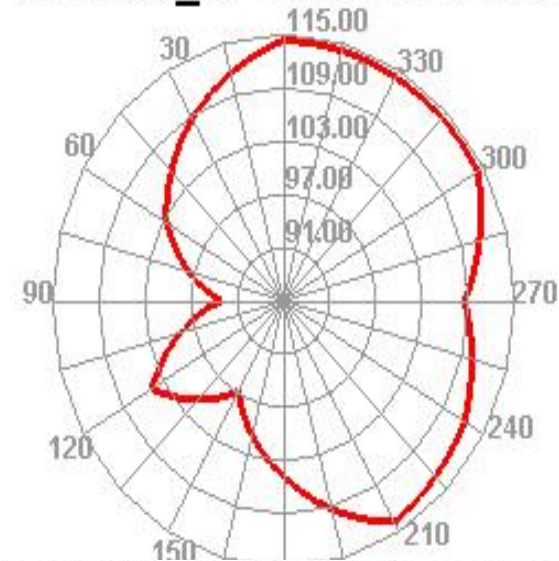
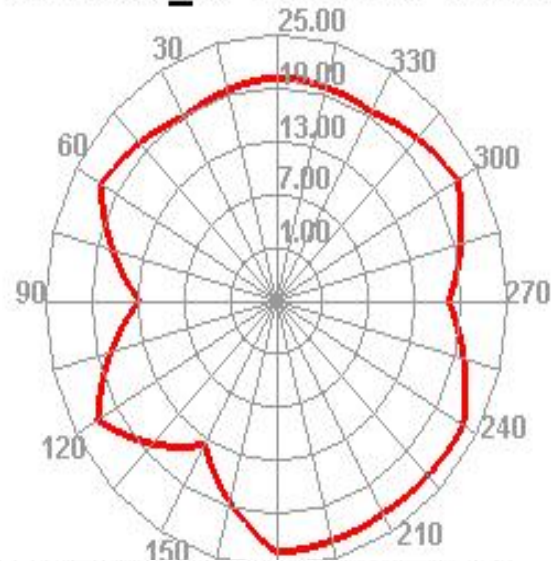
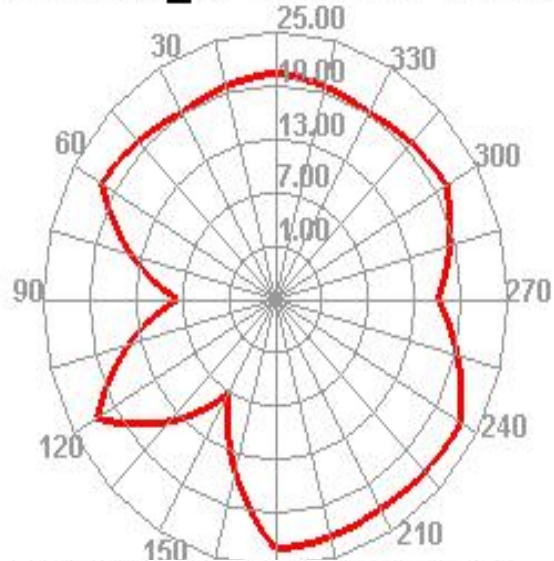
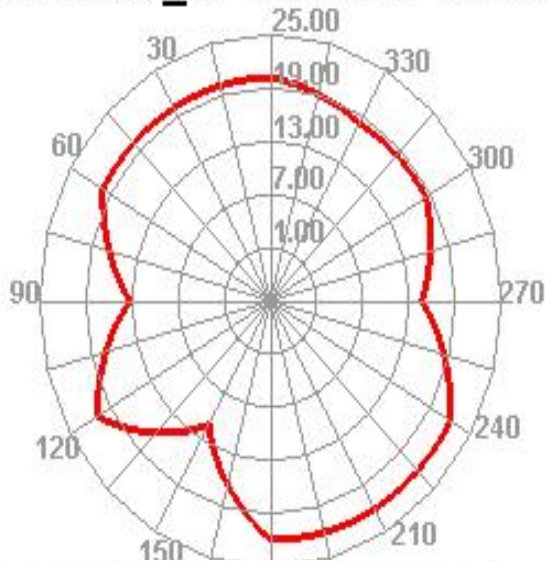


WCDMA\_II 9938 TIS Phi=45

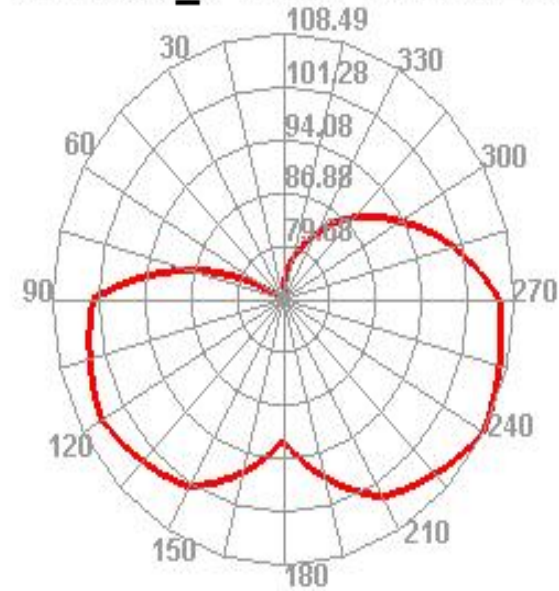
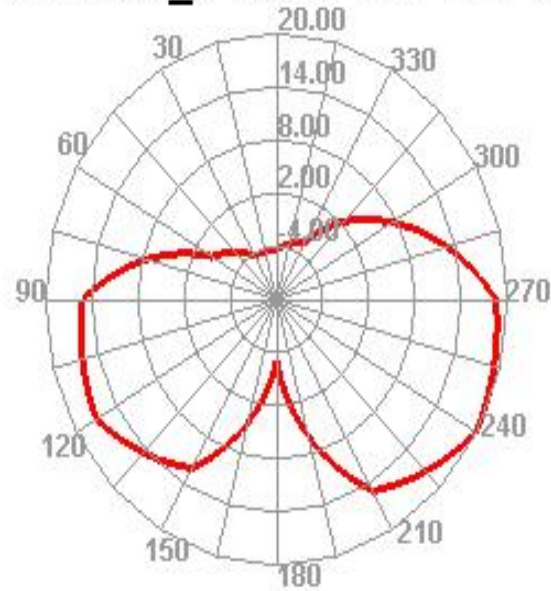
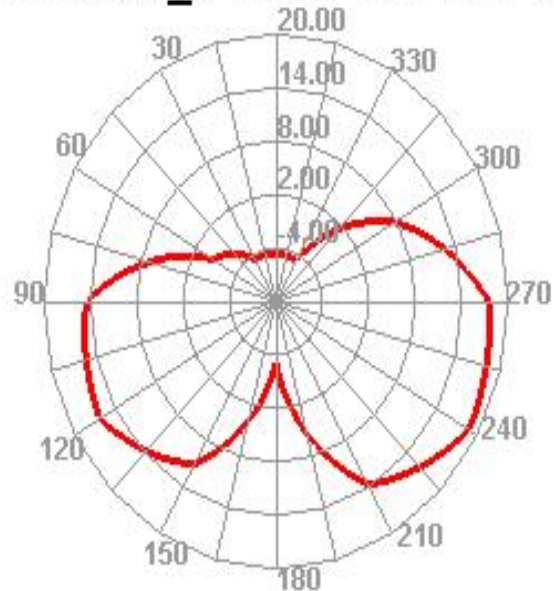
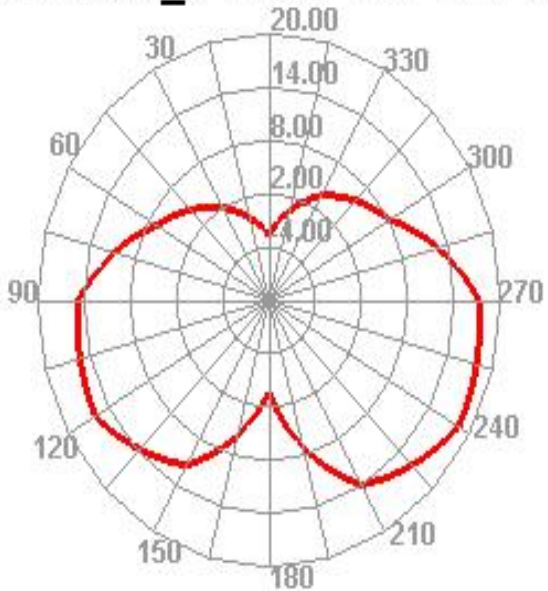


## 有源数据暗室方向图

WCDMA\_IV 1312 TRP Phi=45° WCDMA\_IV 1413 TRP Phi=45° WCDMA\_IV 1513 TRP Phi=45° WCDMA\_IV 1738 TIS Phi=45°

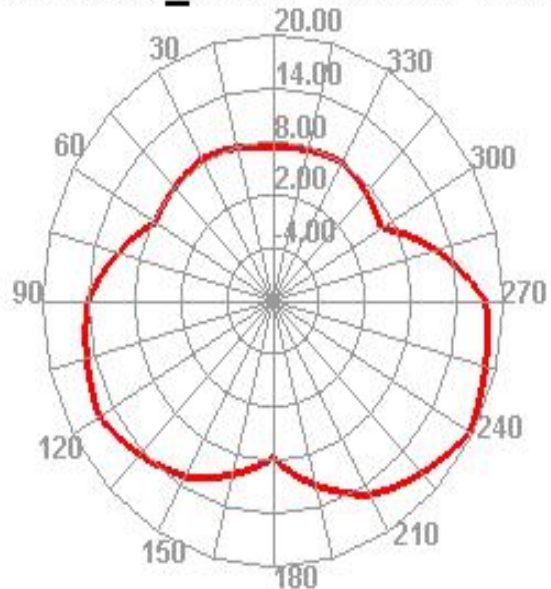


WCDMA\_V 4132 TRP Phi=45° WCDMA\_V 4185 TRP Phi=45° WCDMA\_V 4233 TRP Phi=45° WCDMA\_V 4458 TIS Phi=45°

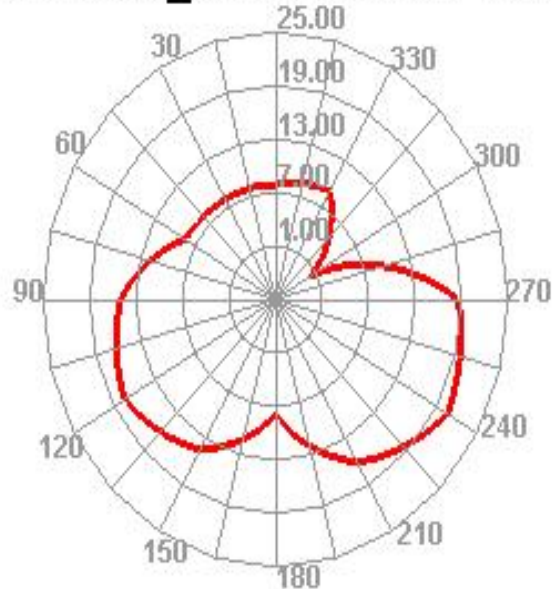


## 有源数据暗室方向图

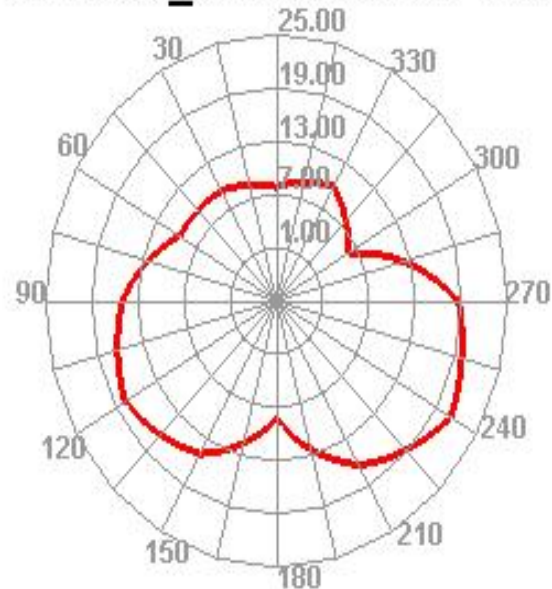
WCDMA\_VIII 2712 TRP Phi=45



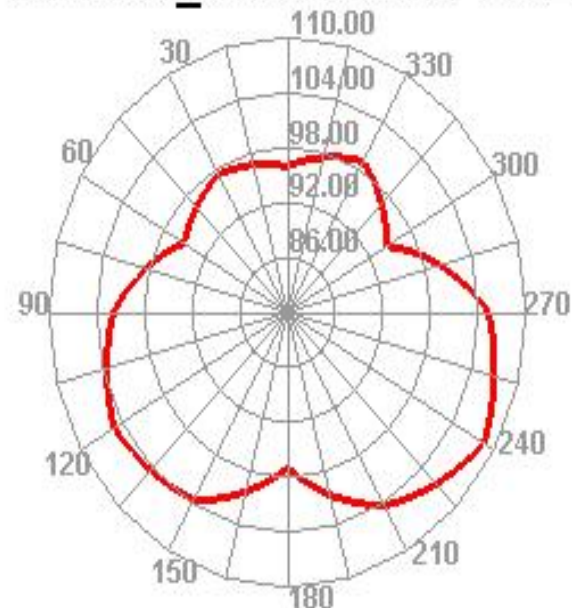
WCDMA\_VIII 2788 TRP Phi=45



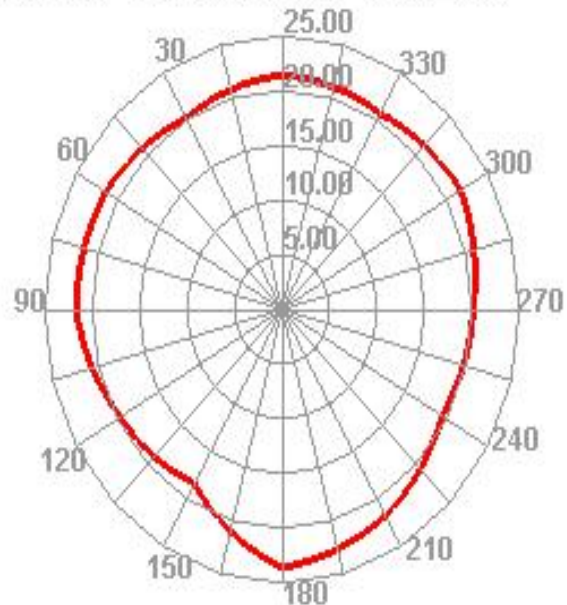
WCDMA\_VIII 2863 TRP Phi=45



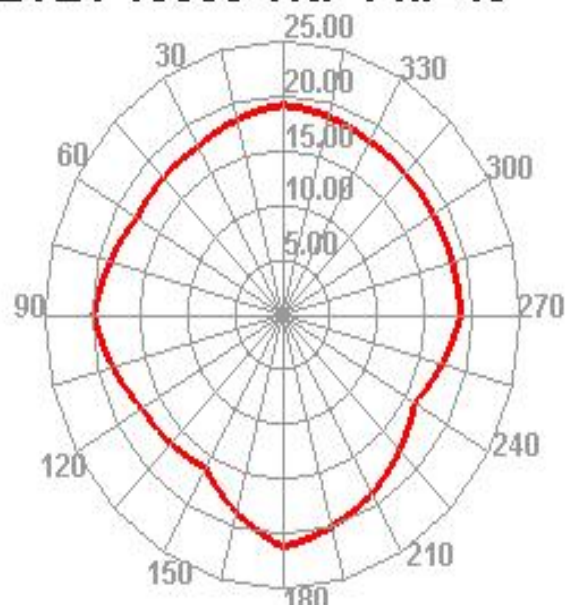
WCDMA\_VIII 3088 TIS Phi=45



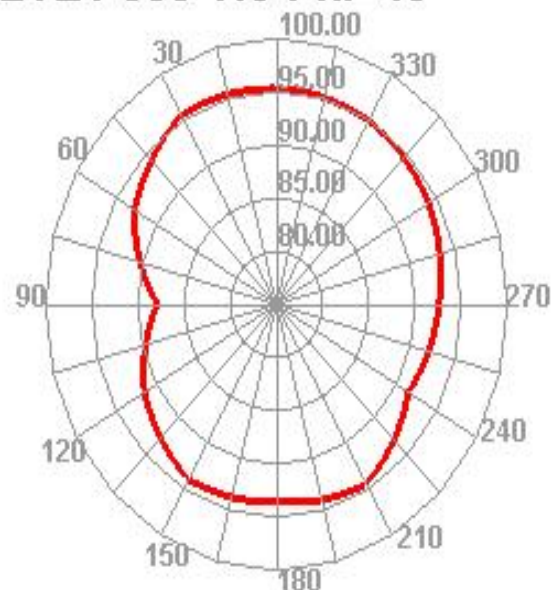
LTE1 18050 TRP Phi=45



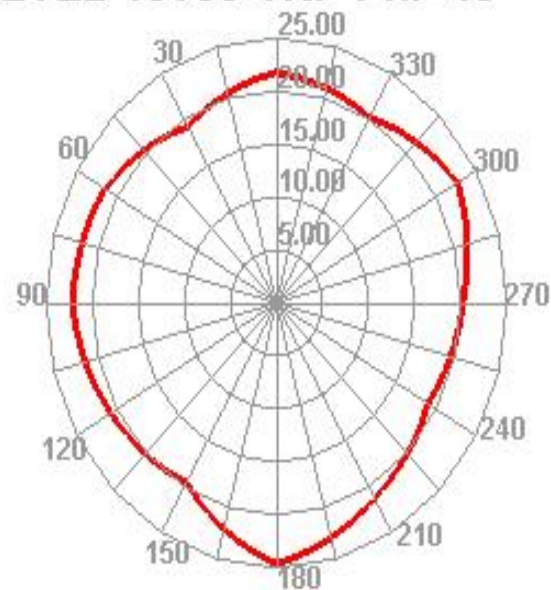
LTE1 18550 TRP Phi=45



LTE1 550 TIS Phi=45

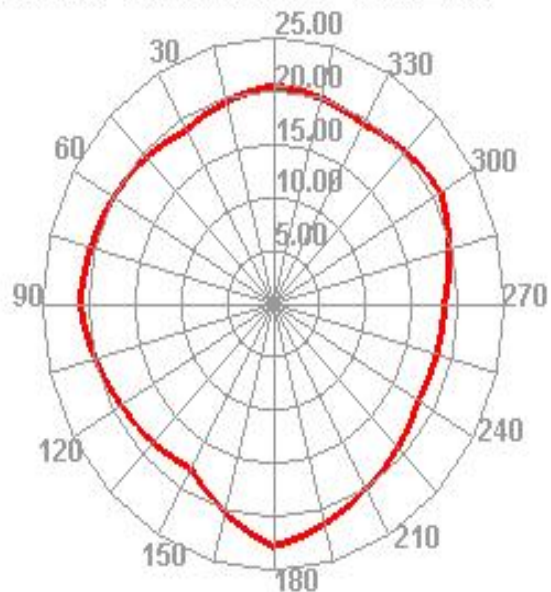


LTE2 18650 TRP Phi=45

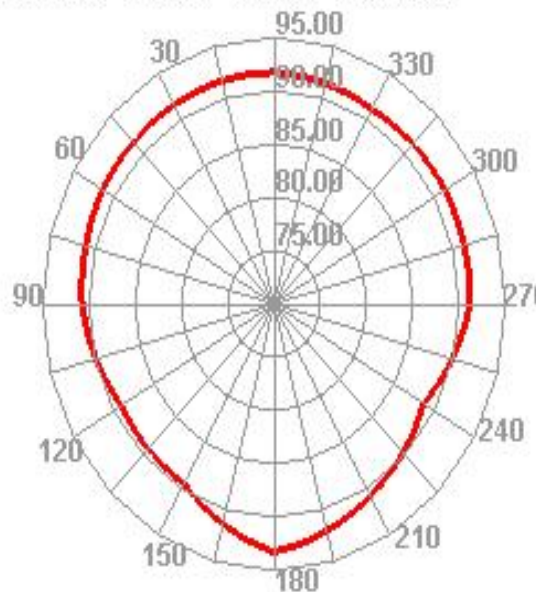


## 有源数据暗室方向图

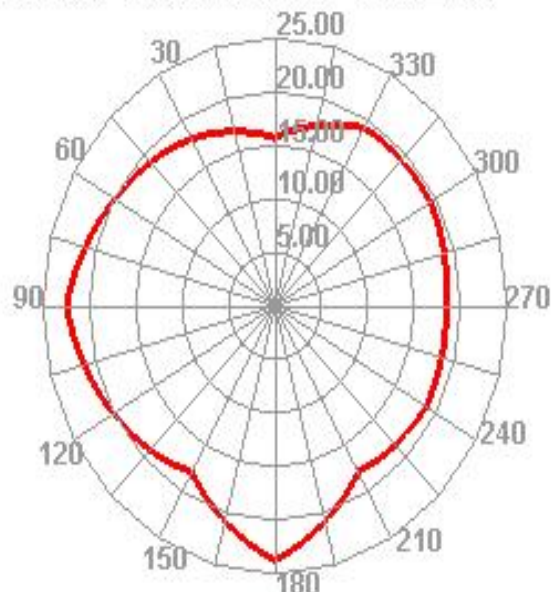
LTE2 19150 TRP Phi=45



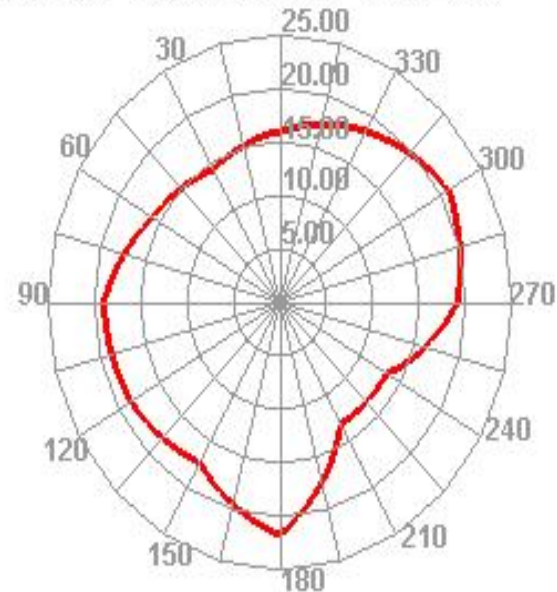
LTE2 11150 TIS Phi=45



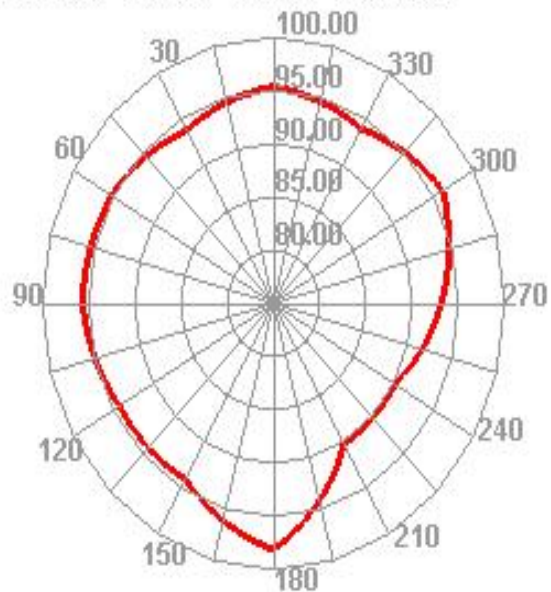
LTE3 19250 TRP Phi=45



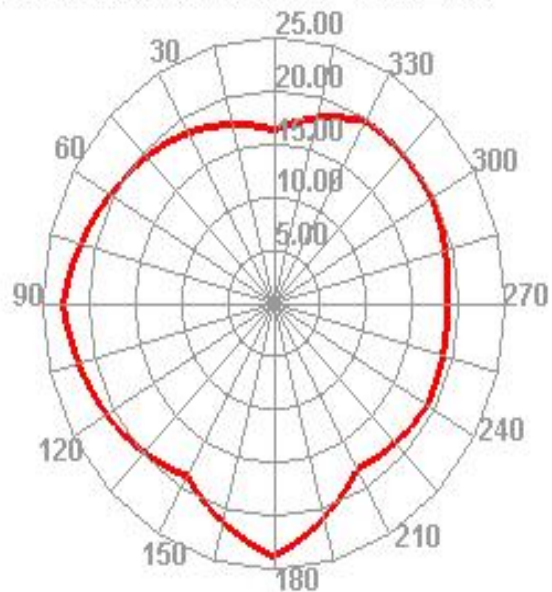
LTE3 19900 TRP Phi=45



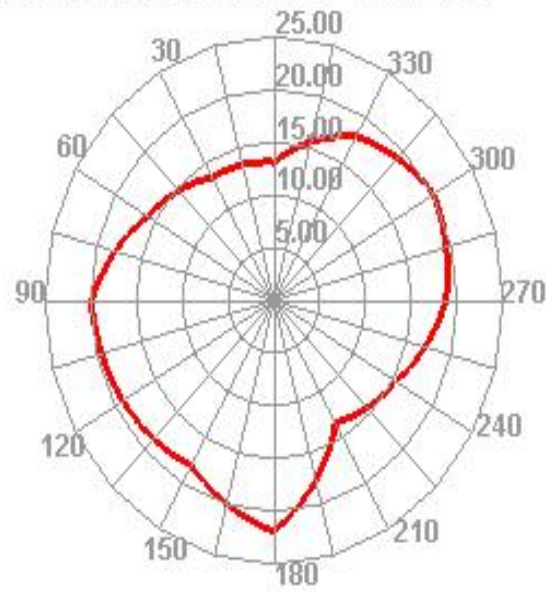
LTE3 1900 TIS Phi=45



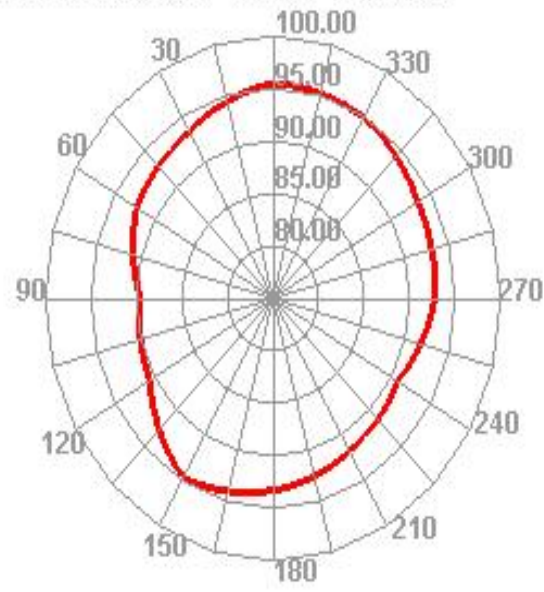
LTE4 20000 TRP Phi=45



LTE4 20350 TRP Phi=45



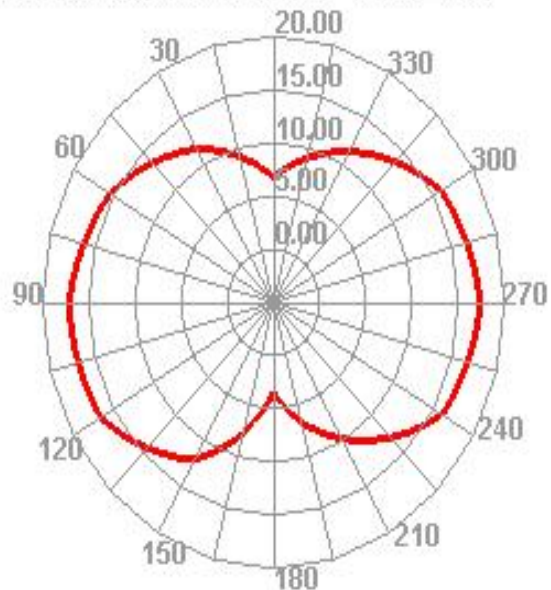
LTE4 2350 TIS Phi=45



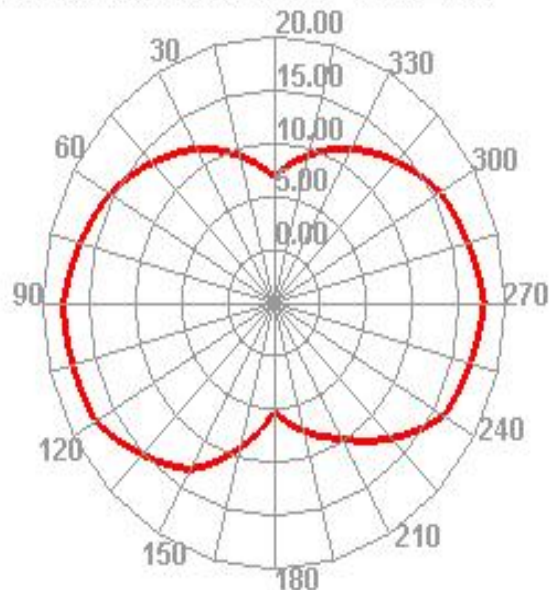


## 有源数据暗室方向图

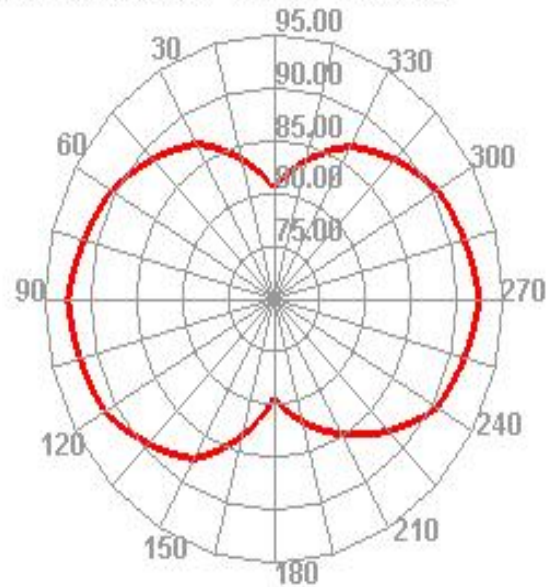
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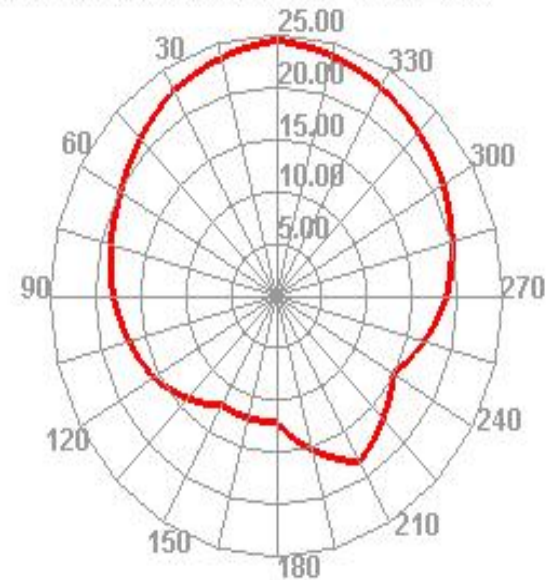
LTE5 20525 TRP Phi=45



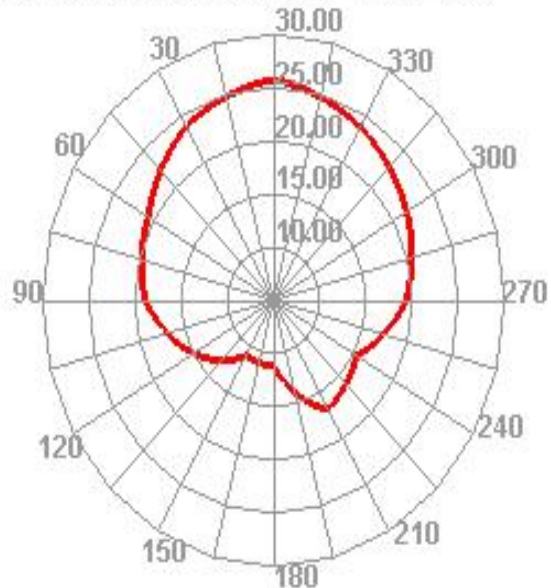
LTE5 2600 TIS Phi=45



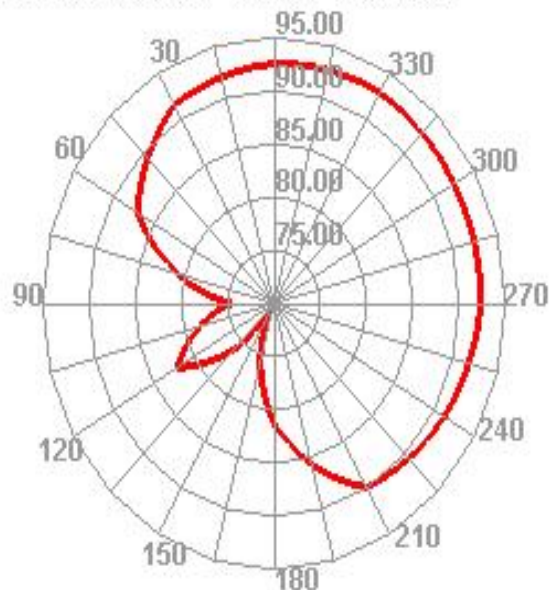
LTE7 20800 TRP Phi=45



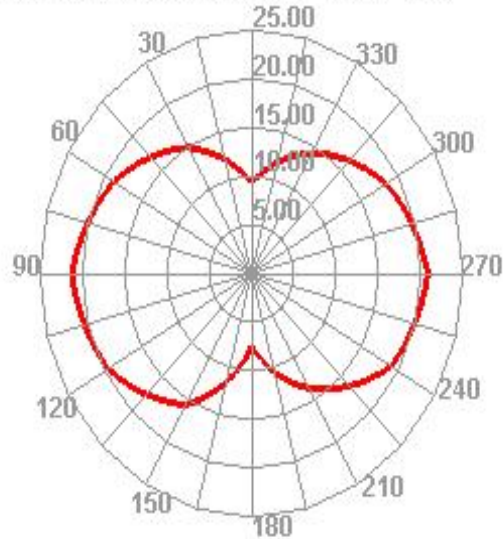
LTE7 21400 TRP Phi=45



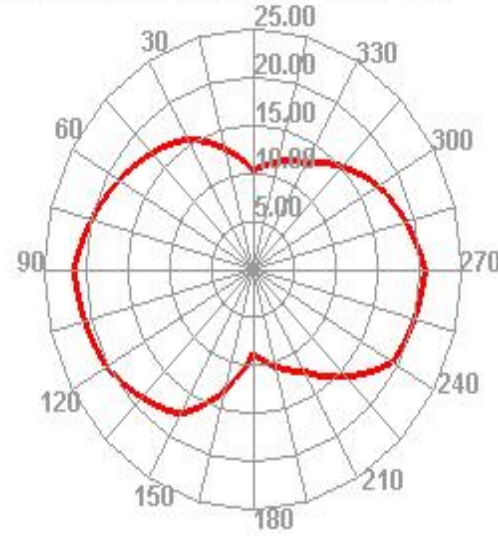
LTE7 3400 TIS Phi=45



LTE8 21500 TRP Phi=45

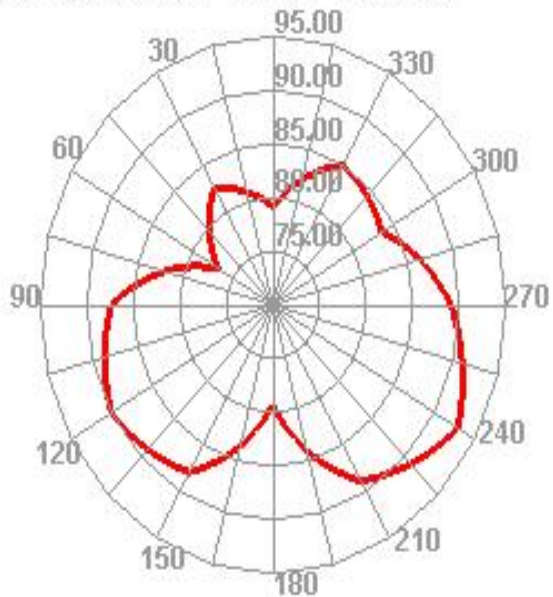


LTE8 21750 TRP Phi=45

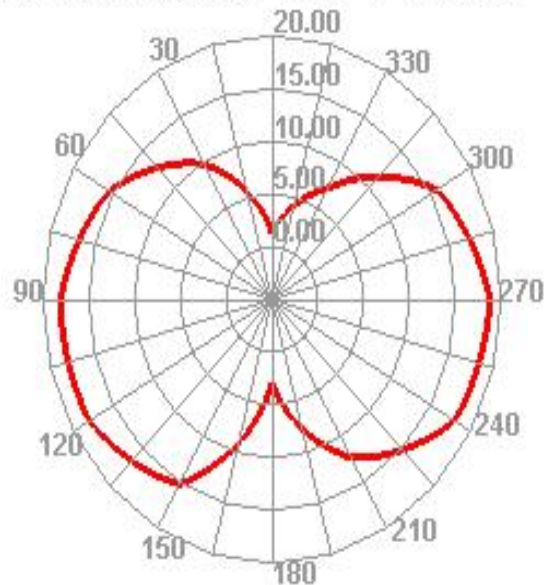


## 有源数据暗室方向图

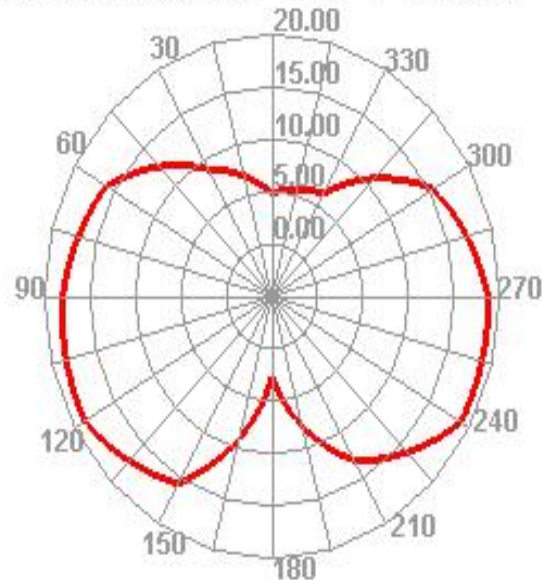
LTE8 3750 TIS Phi=45



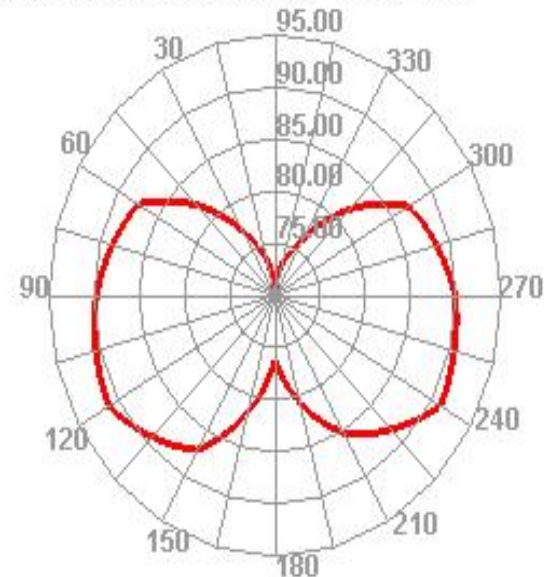
LTE12 23060 TRP Phi=45



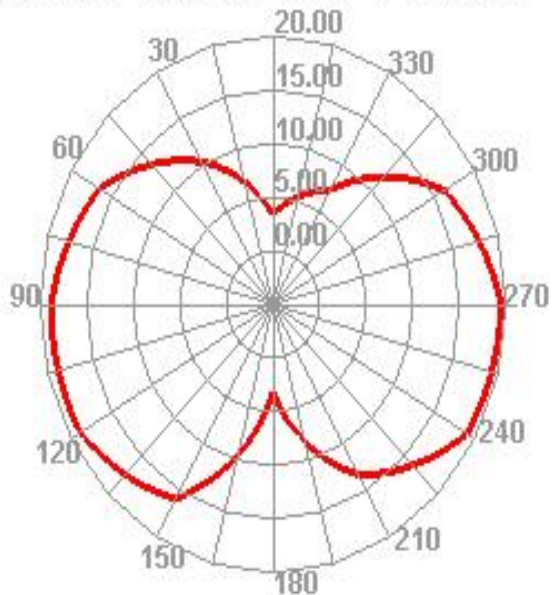
LTE12 23130 TRP Phi=45



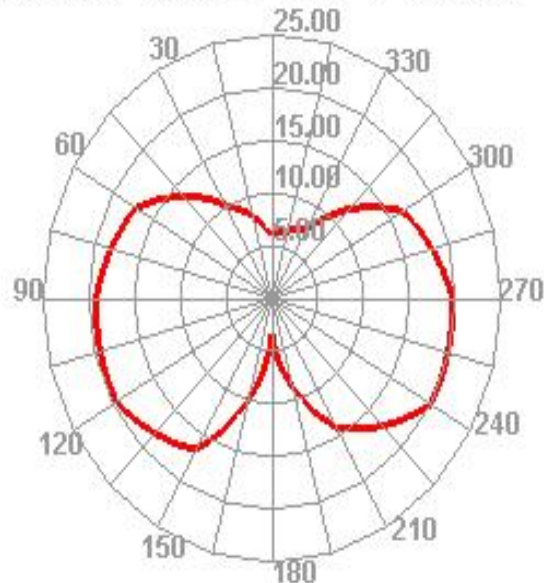
LTE12 5130 TIS Phi=45



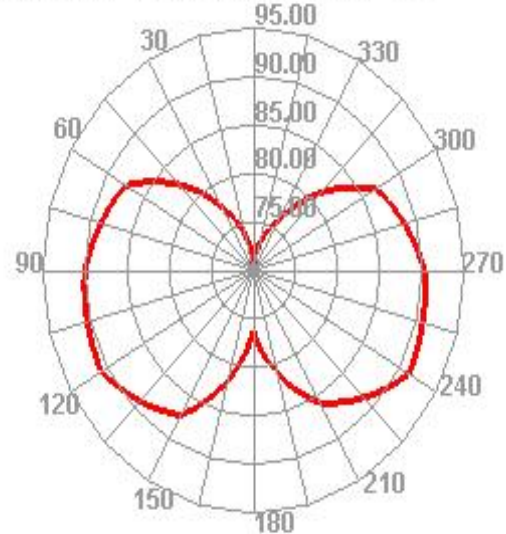
LTE17 23780 TRP Phi=45



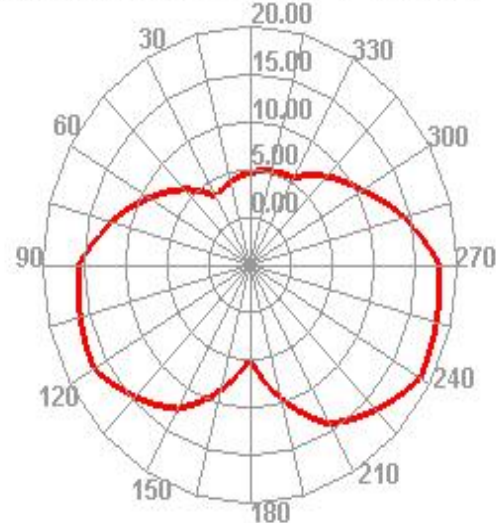
LTE17 23800 TRP Phi=45



LTE17 5800 TIS Phi=45

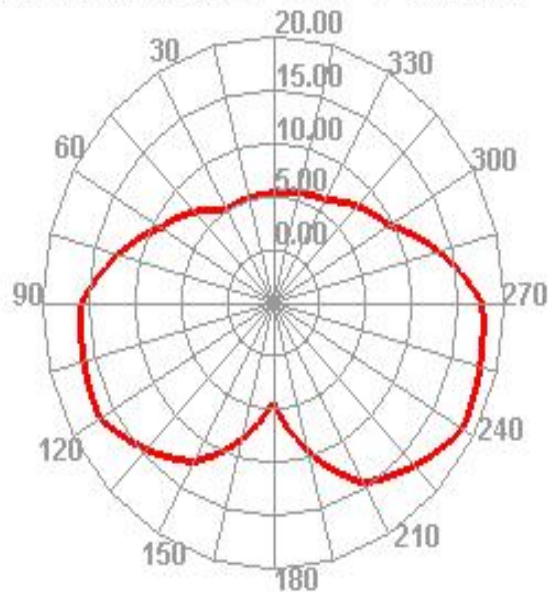


LTE18 23900 TRP Phi=45

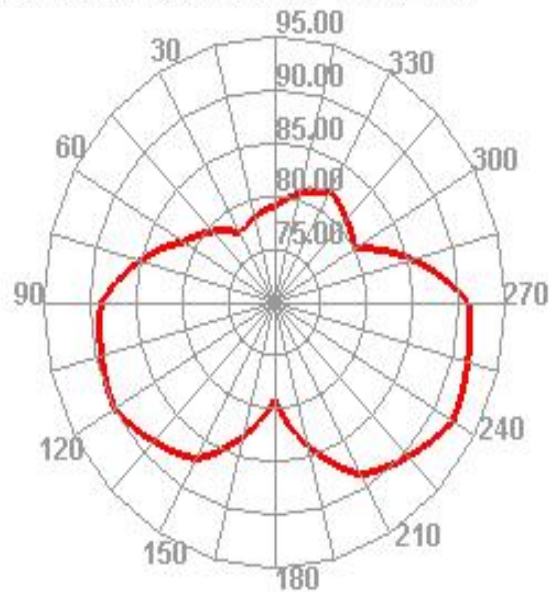


## 有源数据暗室方向图

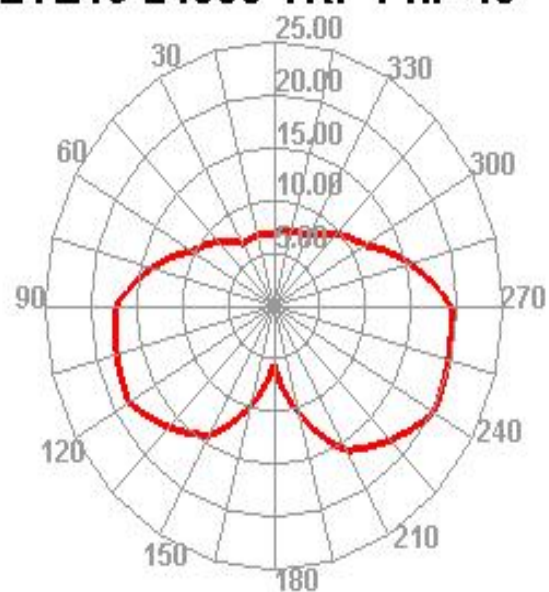
LTE18 23950 TRP Phi=45



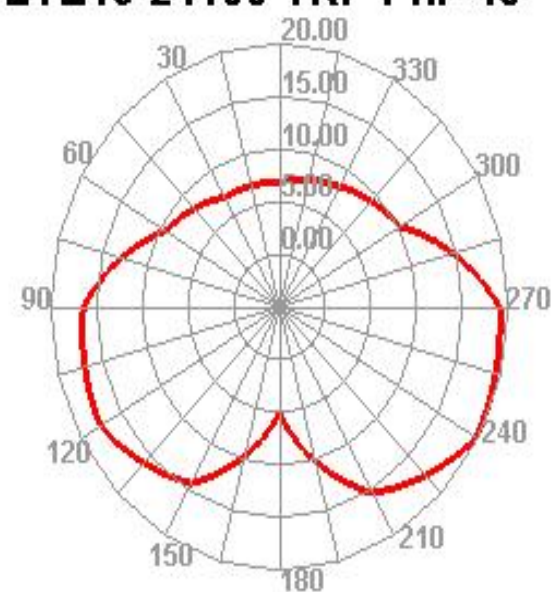
LTE18 5950 TIS Phi=45



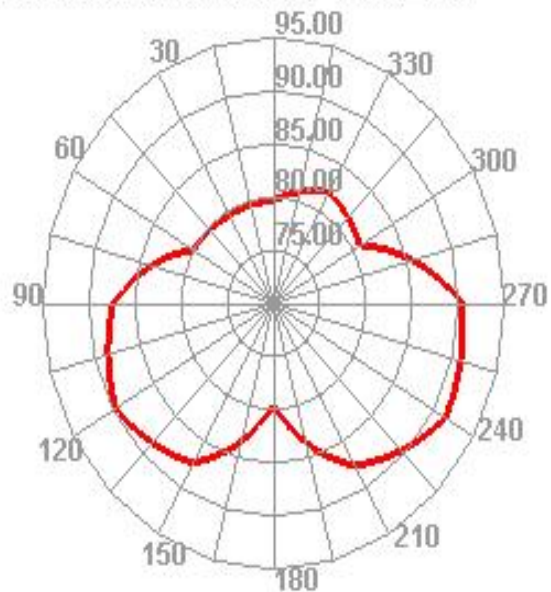
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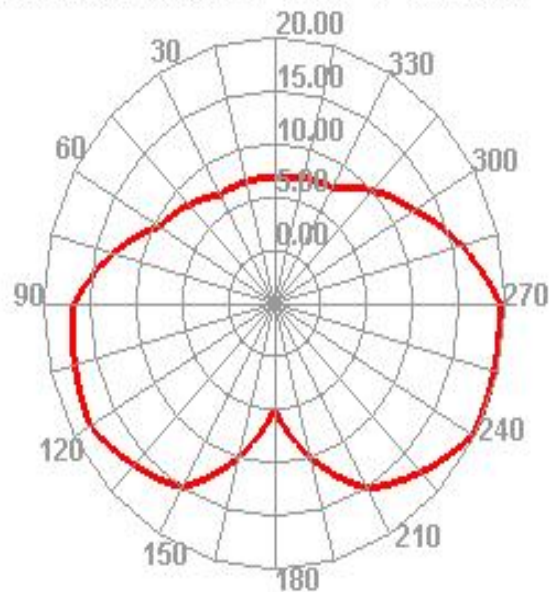
LTE19 24100 TRP Phi=45



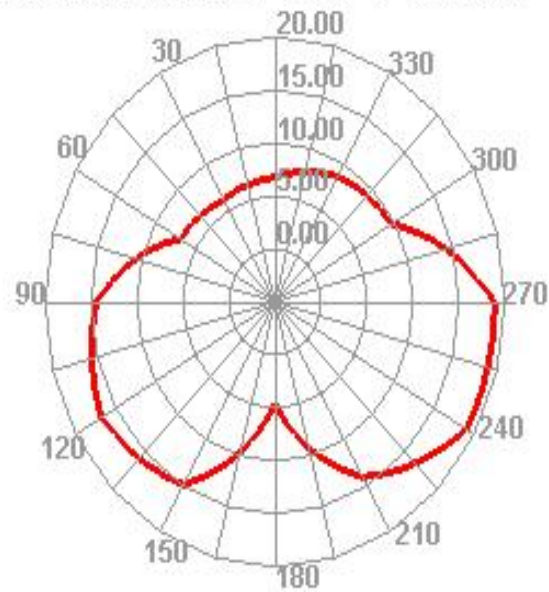
LTE19 6100 TIS Phi=45



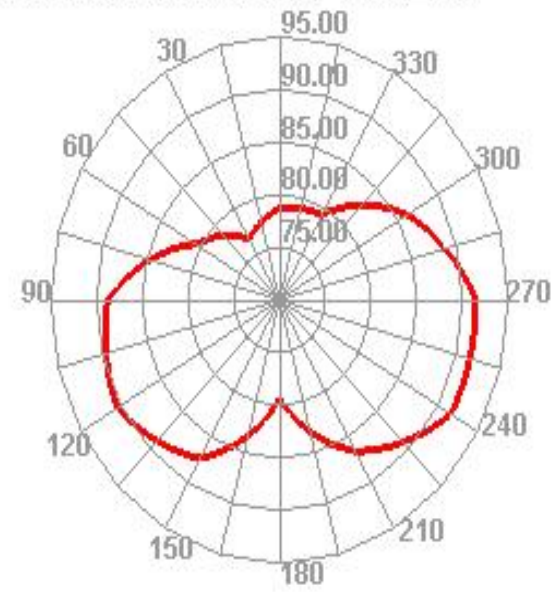
LTE20 24200 TRP Phi=45



LTE20 24400 TRP Phi=45

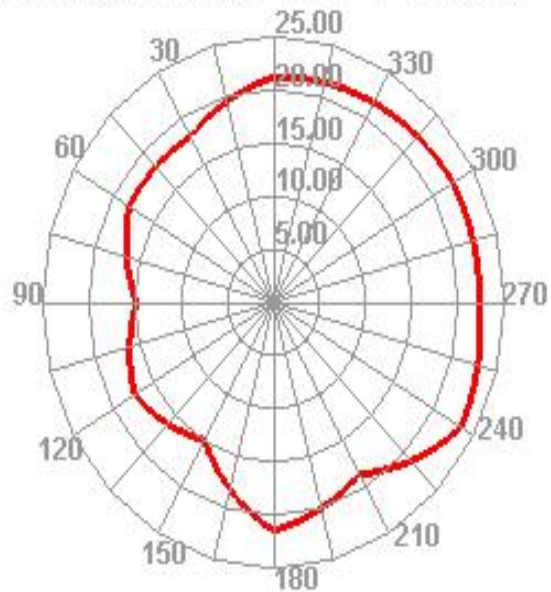


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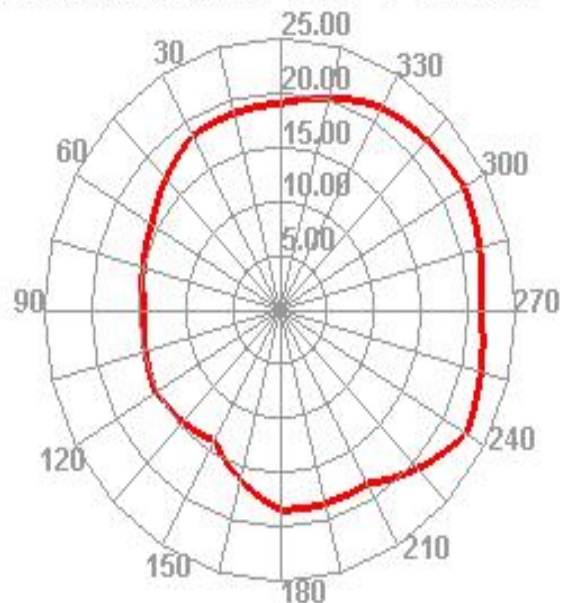


## 有源数据暗室方向图

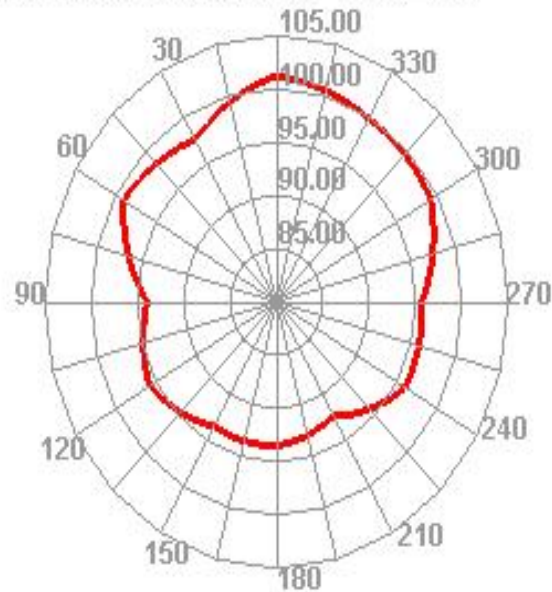
LTE25 26090 TRP Phi=45



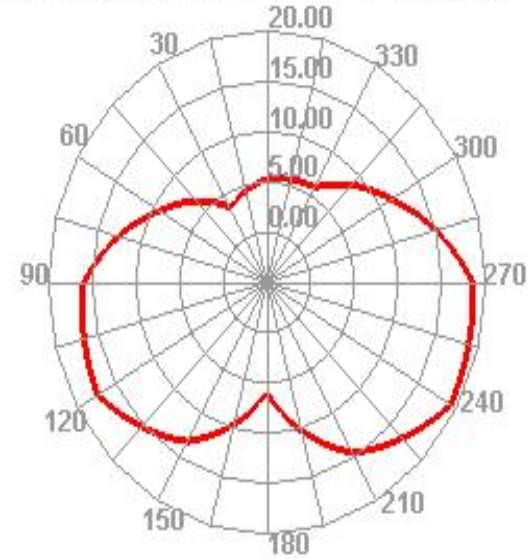
LTE25 26640 TRP Phi=45



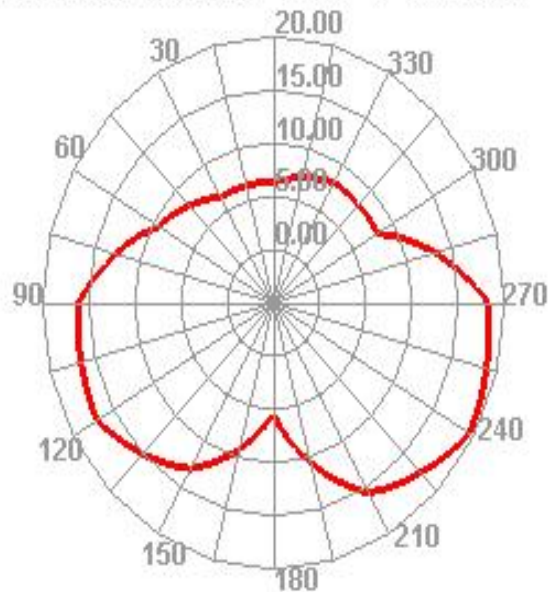
LTE25 8640 TIS Phi=45



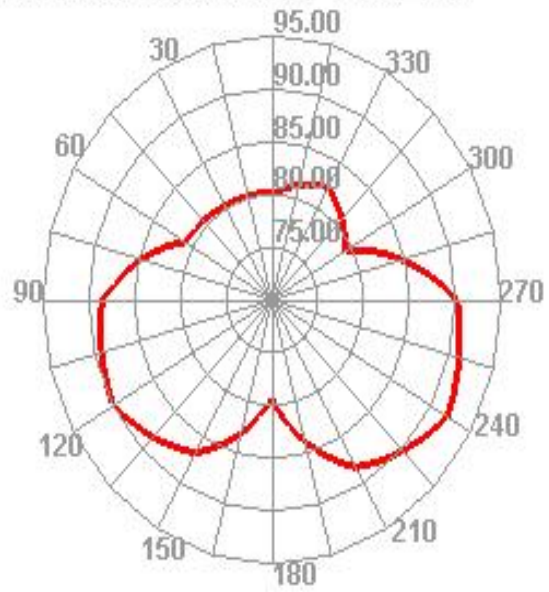
LTE26 26740 TRP Phi=45



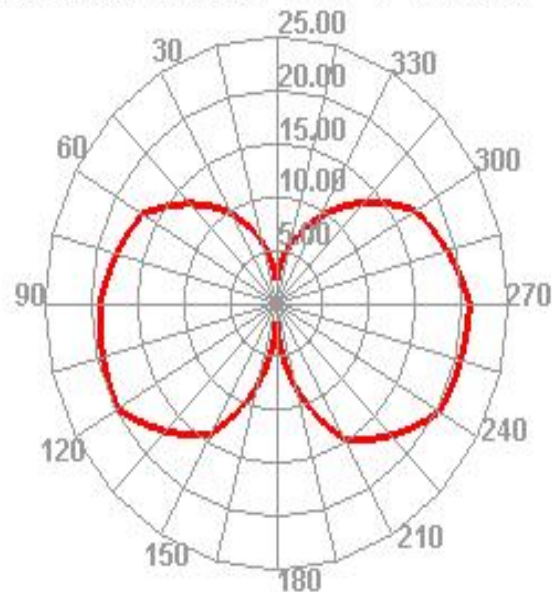
LTE26 26990 TRP Phi=45



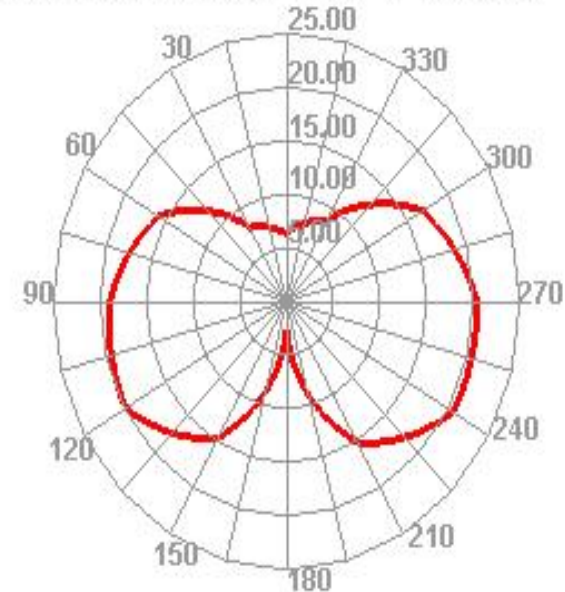
LTE26 8990 TIS Phi=45



LTE28 27260 TRP Phi=45

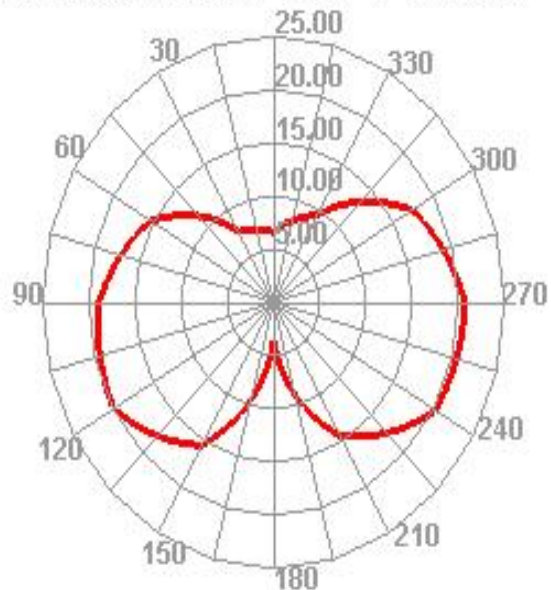


LTE28 27460 TRP Phi=45

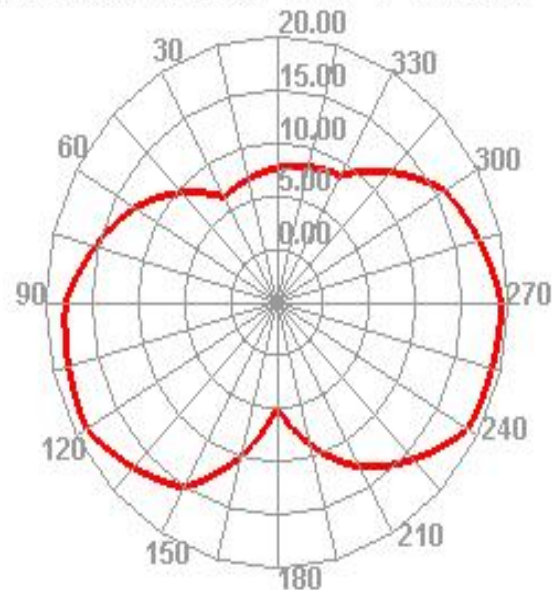


## 有源数据暗室方向图

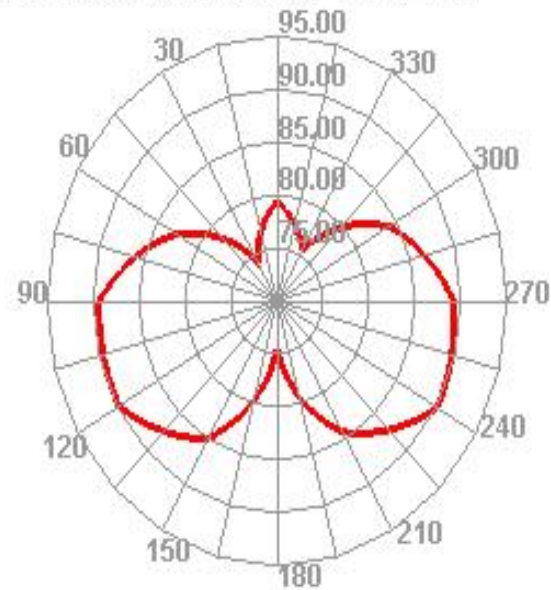
LTE28 27435 TRP Phi=45



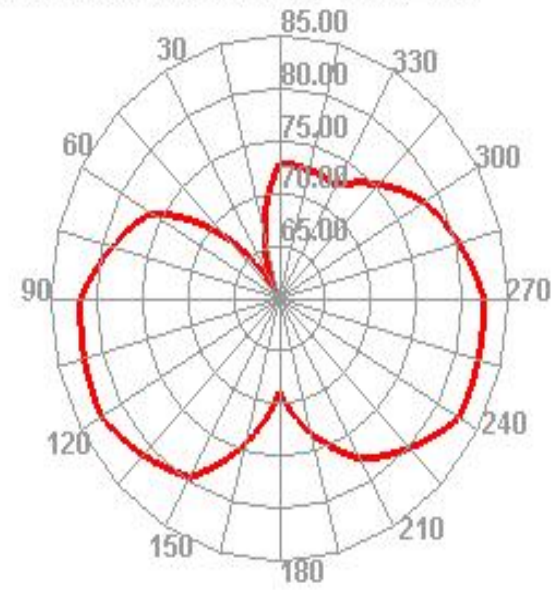
LTE28 27610 TRP Phi=45



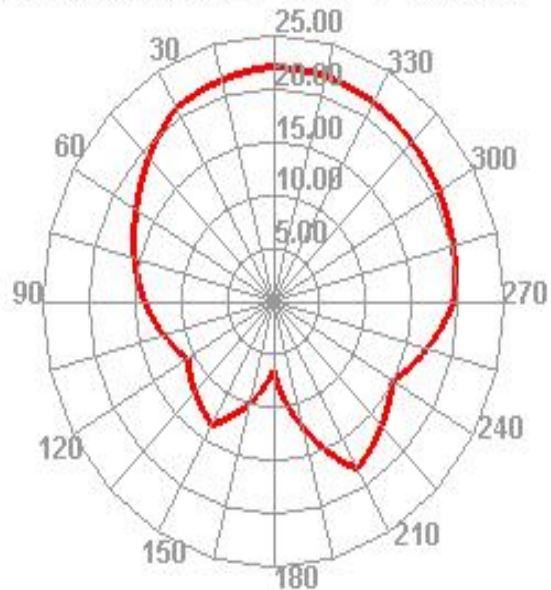
LTE28 9460 TIS Phi=45



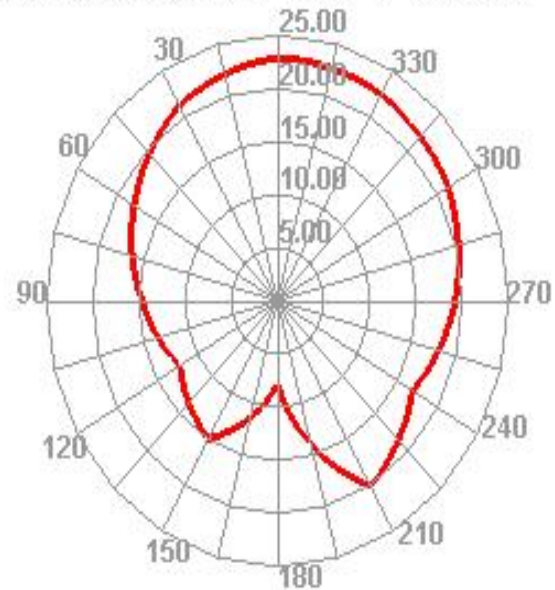
LTE28 9610 TIS Phi=45



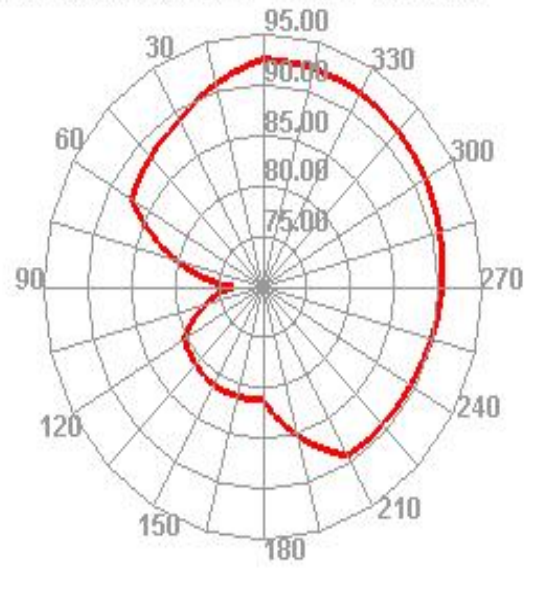
LTE38 37850 TRP Phi=45



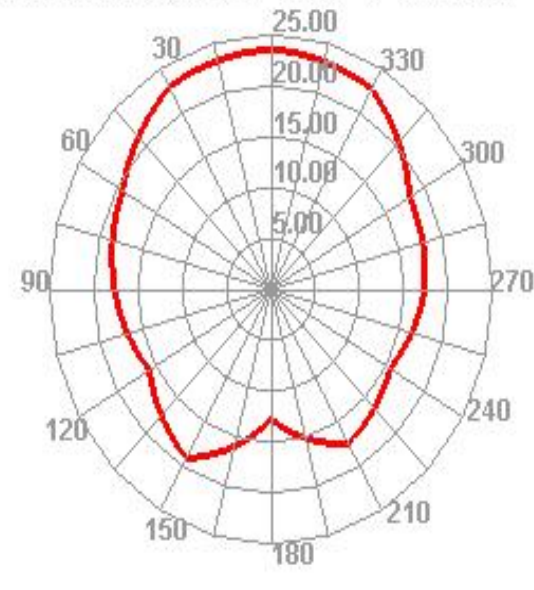
LTE38 38150 TRP Phi=45



LTE38 38150 TIS Phi=45

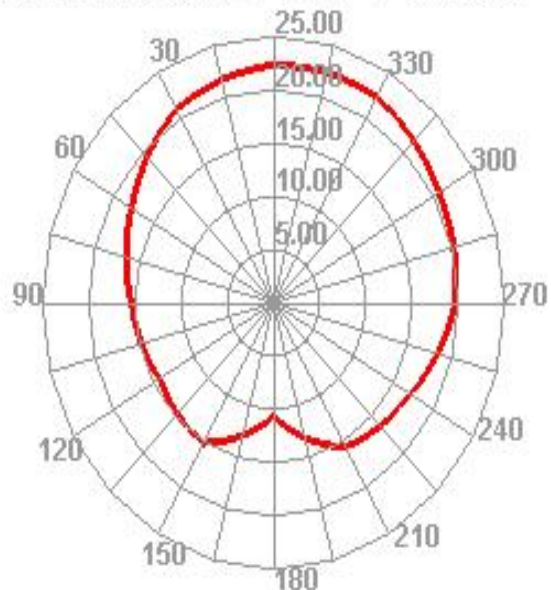


LTE40 38750 TRP Phi=45

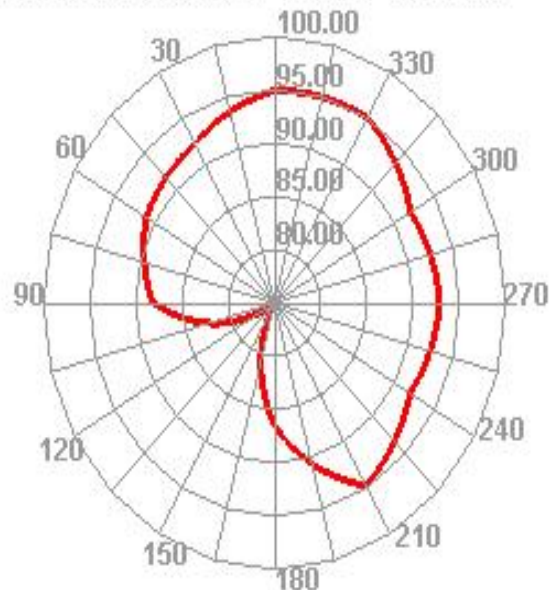


## 有源数据暗室方向图

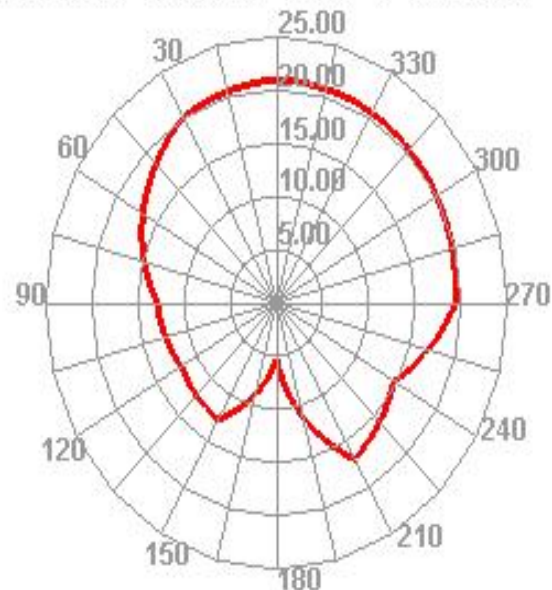
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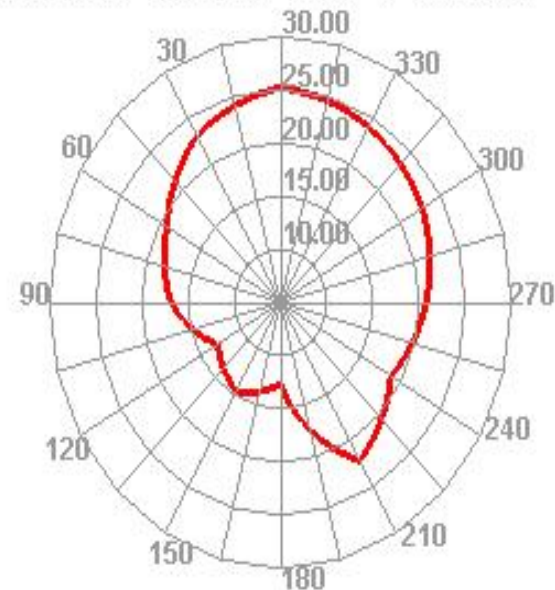
LTE40 39550 TIS Phi=45



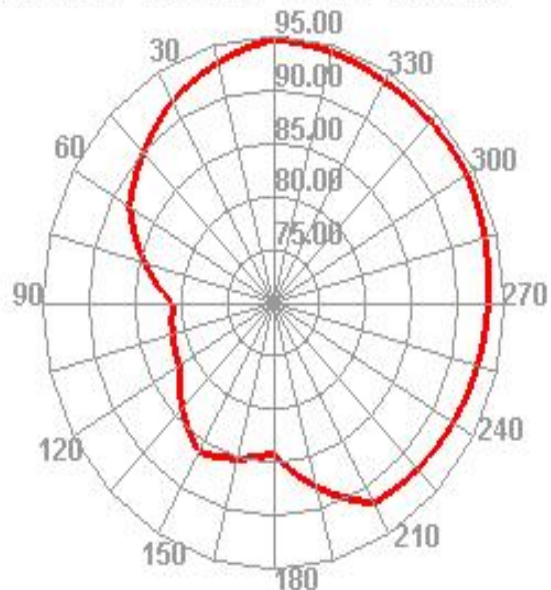
LTE41 40240 TRP Phi=45



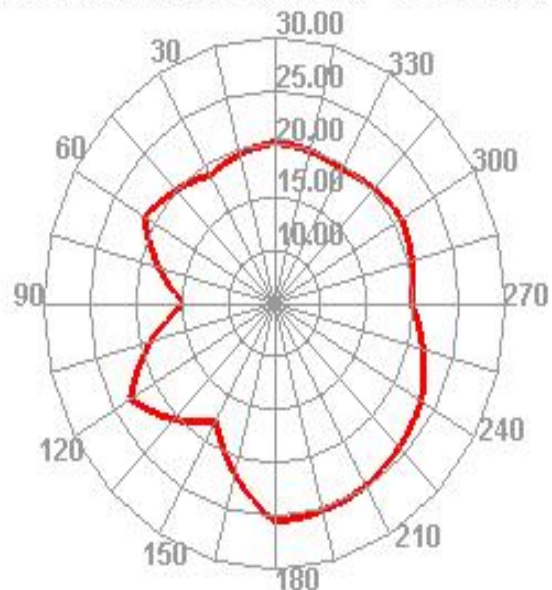
LTE41 41140 TRP Phi=45



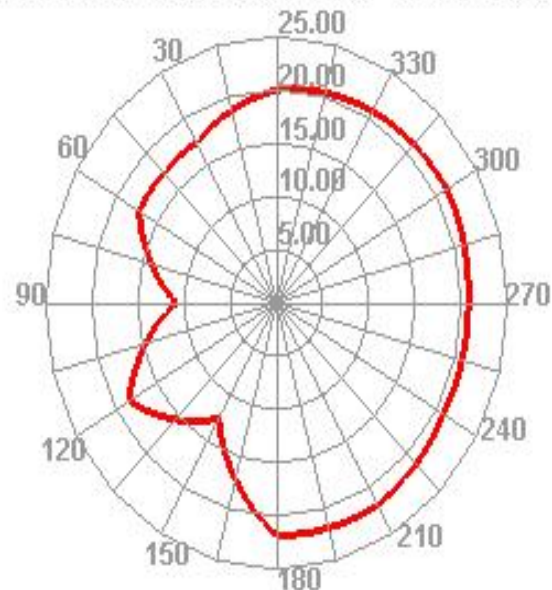
LTE41 41140 TIS Phi=45



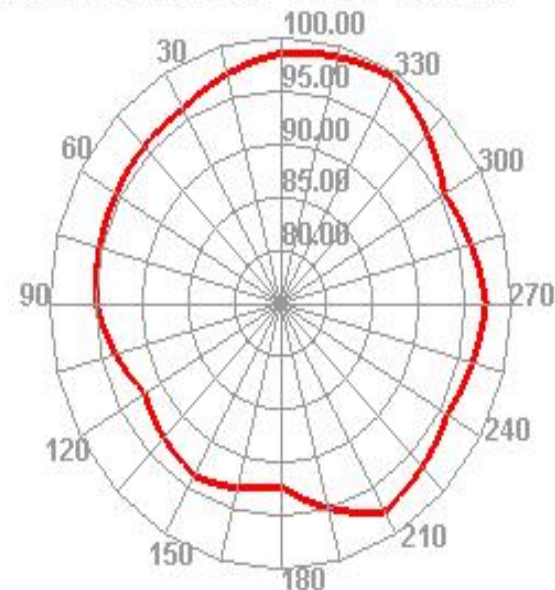
LTE66 132022 TRP Phi=45



LTE66 132622 TRP Phi=45



LTE66 67086 TIS Phi=45

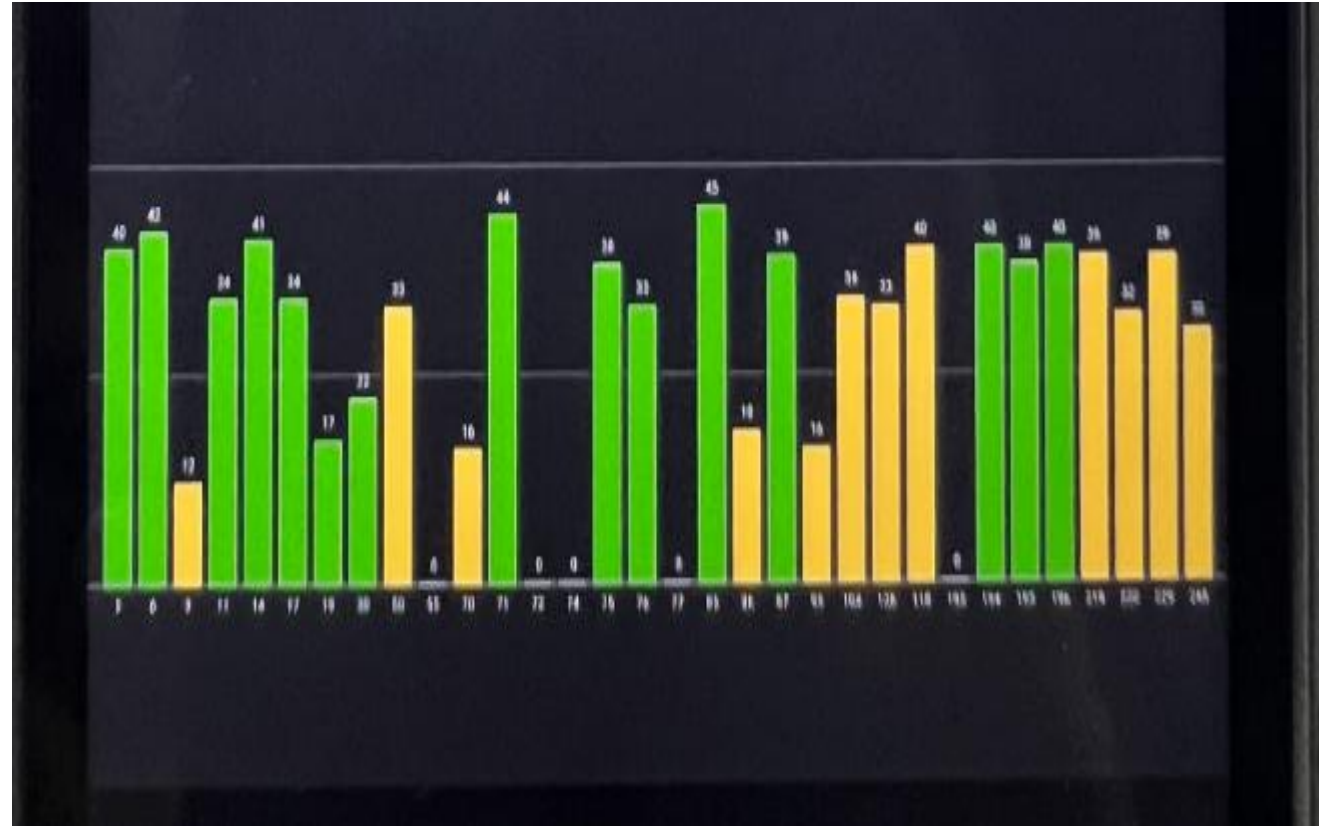


GPS实际测试结果 (GPS独立方案)  
GPS actual test results (GPS independent scheme)

GPS天线实际测试效果

GPS antenna test result:

测试项Test items	测试结果Test result
搜星总数total	27
In use卫星数	15
最大SNR值max	45
SNR ≥ 40星数	7
冷启动定位时间 time	45S



测试结论: 性能OK。  
Test conclusion: OK.

# WIFI实际测试结果Actual test results

Standard	Band	Channel	Frequency	TRP	TIS
WIFI_B	B_11M	1	2412	<b>15.46</b>	-81.26
WIFI_B	B_11M	6	2437	<b>18.48</b>	-81.12
WIFI_B	B_11M	11	2462	<b>14.51</b>	<b>-80.61</b>
WIFI_A	A_54M	36	5180	<b>8.95</b>	-69.77
WIFI_A	A_54M	64	5320	<b>10.9</b>	-70.68
WIFI_A	A_54M	165	5745	<b>8.61</b>	<b>-70.47</b>

<b>WIFI测试</b>	<b>距离路由器6M处接收</b>	<b>正常上网距离</b>
	-50dbm	28m



## 整机天线增益Gain of the whole antenna

LTE Antenna Type: (pifa) 增益/Gain:

B1: -1.7dBi; B2: -0.3dBi; B3: -3.4dBi; B4: -3.5dBi; B5: -5.3dBi;  
B7: -3.3dBi; B8: -5.1dBi; B12: -5.3dBi; B17: -5.3dBi; B18: -5.4dBi;  
B19: -5.3dBi; B20: -5.1dBi; B25: -0.4dBi; B26: -5.2dBi; B28: -5.4dBi;  
B38: -1.7dBi; B40: -3dBi; B41: -2.3dBi; B66: -3.5dBi

GSM WCDMA Antenna Type: ( pifa ) 增益/Gain :

GSM850: -5.3dBi; GSM900: -5.1dBi;  
GSM1800: -3.4dBi; GSM1900: -1.7dBi;

W1: -1.7dBi; W2: -0.3dBi; W4: -3.5dBi; W5: -5.3dBi; W8: -5.1dBi;

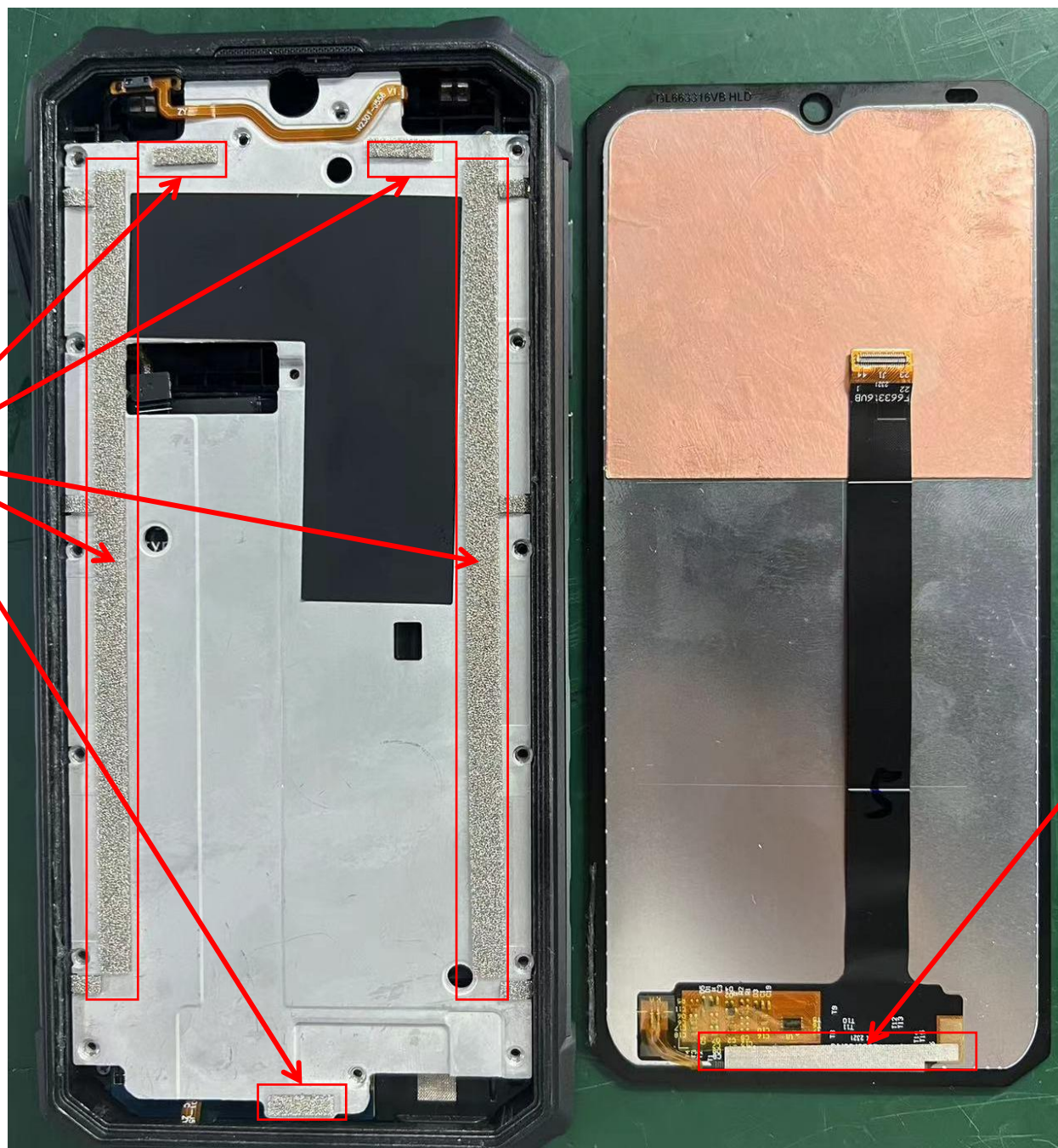
Bluetooth/WIFI Antenna Type: ( pifa ) 增益/Gain: ( -0.94 ) dBi;

WIFI Antenna Type: ( pifa ) 增益/Gain: 5.2G ( 1.47)dBi ; 5.8G(1.63) dBi

GPS Antenna Type: ( pifa ) 增益/Gain: ( -1.5 ) dBi

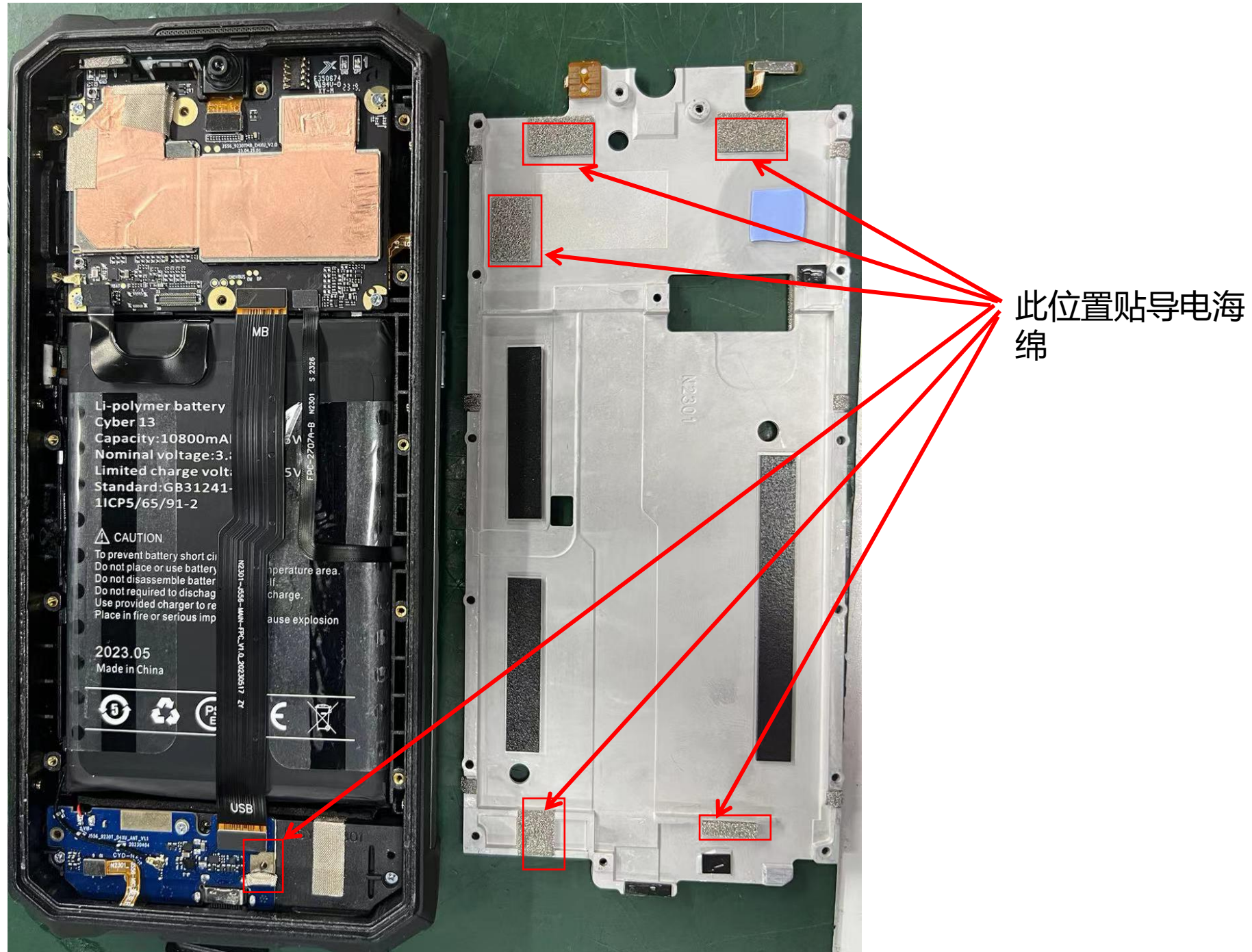
# 环境处理方式 Environmental treatment method

此位置贴导电海绵







此位置贴导电布

# 环境处理方式 Environmental treatment method



# 附加说明 Additional instructions

-  请仔细确认报告中提到的匹配电路是否修改、以及环境处理是否导入，这将直接影响天线性能。  
Please carefully confirm whether the matching circuit mentioned in the report is modified and whether the environmental treatment is imported, which will directly affect the antenna performance.
-  本报告所提供的参数仅为客户给到我司调测样机的参数，不代表贵司最终项目的最终量产状态。  
The parameters provided in this report are only those provided by the customer to our company for testing the prototype, and do not represent the final mass production status of your company's final project.
-  倘若贵司有最新试产、或者更新状态（更换物料、更新软件、更换环境处理等）的样机，请尽快交由我司进行验证，以确认天线性能是否受到影响。  
If your company has a prototype with the latest trial production or updated status (changing materials, updating software, changing environmental treatment, etc.), please submit it to our company for verification as soon as possible to confirm whether the antenna performance is affected
-  倘若贵司需要送往第三方复测或者送往客户测试，请务必将需要测试的机器交由我司进行测试确认，因为主板的一致性、装配的一致性，以及天线组装差异等因素，均可能导致天线参数的偏差。  
If your company needs to send the machine to a third party for retest or to a customer for testing, please be sure to submit the machine to be tested to our company for testing and confirmation, because the consistency of the motherboard, the consistency of the assembly, and the difference in the antenna assembly and other factors may lead to the deviation of the antenna parameters.