

Performance Test Report of 8730e Box Antenna

2.4G & 5G frequency bands



Test date: January 26, 2026



Tester: litiantai

Antenna manufacturer: Shenzhen Ningtengda Technology Co., Ltd.

Address: 1001Room, Office Premises, Fuji Zhidi Building, Longgang Road 6018th, Longgang Street, Longgang District, Shenzhen, China

Contents

01 assessment overview

02 Test results of 2.4G frequency band

03 5G frequency band test results

04 Conclusion and Analysis

assessment overview



测试目的

评估8730e盒子2.4G和5G天线的性能指标。



测试环境

专业微波暗室，确保测试结果的精确性。



测试项目

增益 (Gain)、效率 (Efficiency)、方向性 (Directivity)、波束宽度 (Beamwidth) 等。



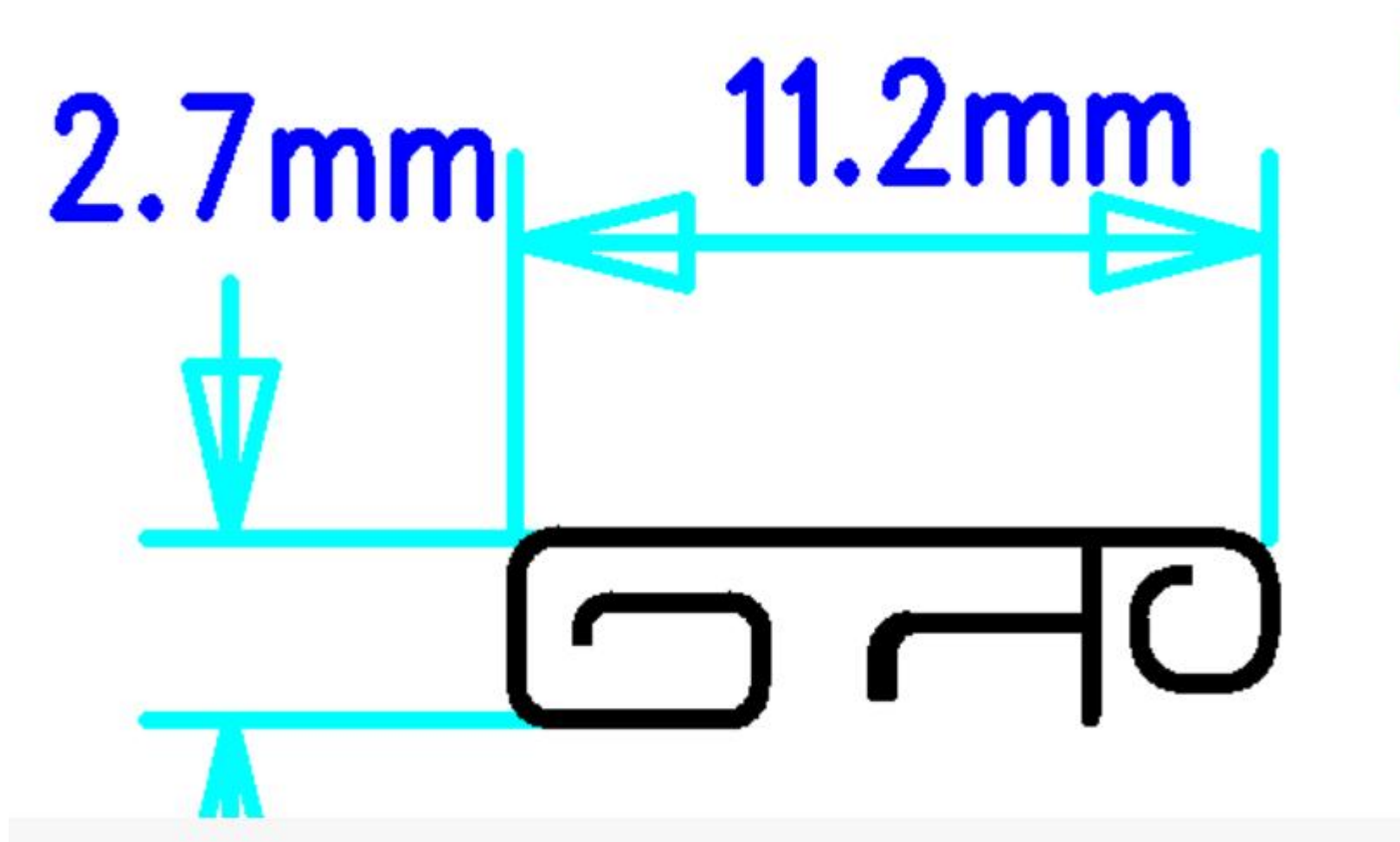
测试标准

遵循相关行业标准，保证测试过程的规范性。



本次测试旨在全面、客观地评估产品天线性能，为产品优化和质量控制提供可靠的数据支持。

Antenna size:



2. 4G Frequency Band – Overview of Test Data

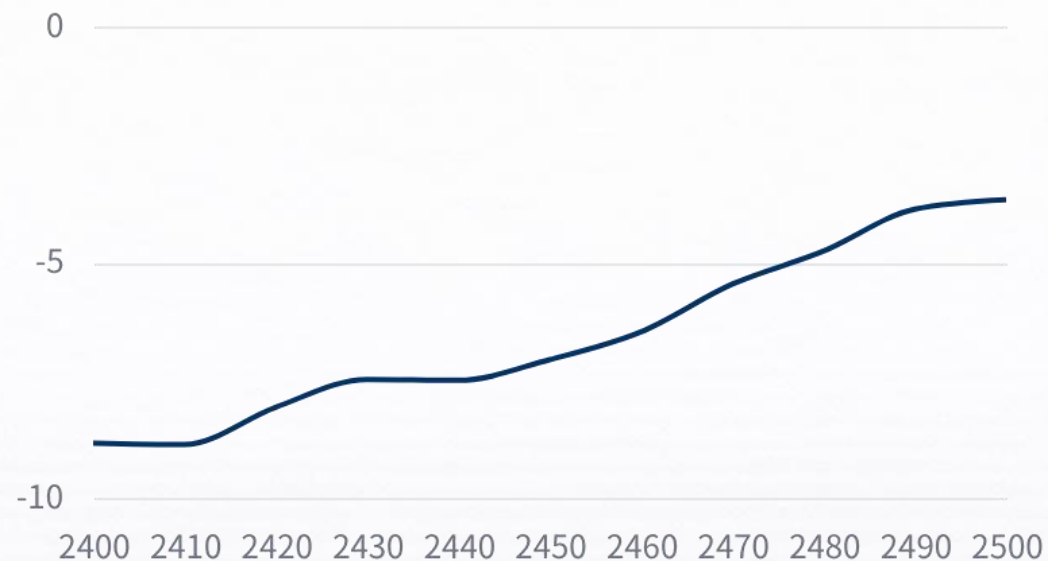
Application Information	
O4Version	5.271.371
TotalTime	6m 43s 466ms
AdditionalInfor	NULL

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	Directivity (dBi)	Beamwidth (3dB)
2400	6.31	-12	-8.84	-10.99	3.16	30
2410	6.12	-12.13	-8.87	-11.02	3.26	30
2420	7.33	-11.35	-8.08	-10.23	3.27	30
2430	8.52	-10.7	-7.49	-9.64	3.21	30
2440	8.64	-10.63	-7.51	-9.66	3.12	30
2450	9.72	-10.12	-7.07	-9.22	3.05	60
2460	11.2	-9.51	-6.48	-8.63	3.02	60
2470	14.18	-8.48	-5.47	-7.62	3.01	60
2480	16.81	-7.74	-4.77	-6.92	2.97	60
2490	19.06	-7.2	-3.88	-6.03	3.32	60
2500	18.52	-7.32	-3.68	-5.83	3.64	30

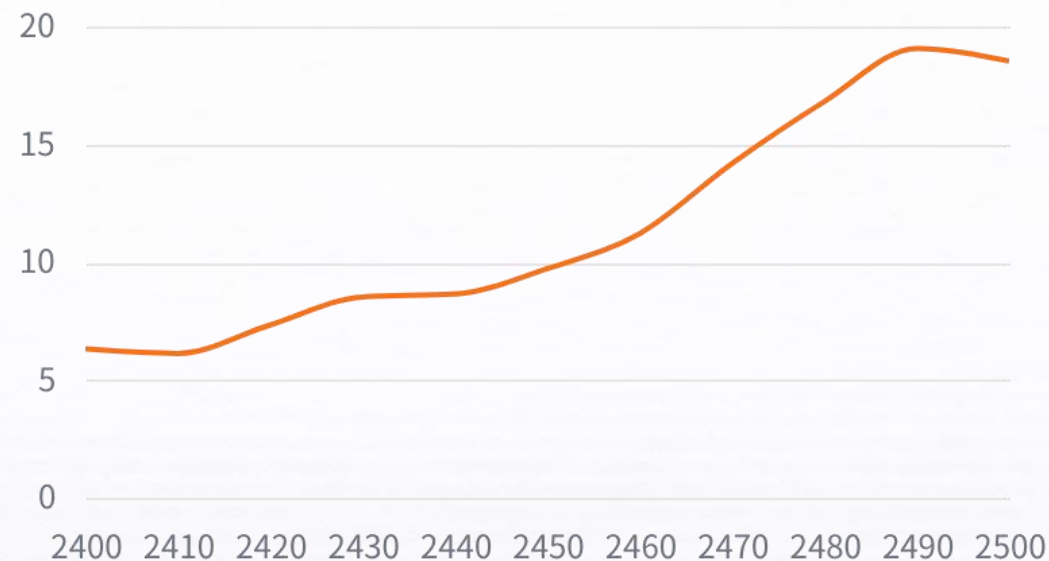
Passive Test For WiFi2.4

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	6.31	-12	-8.84	-10.99	2.853	3.457	-8.84	-22.4	3.16	30	50.93	51.08
2410	6.12	-12.13	-8.87	-11.02	2.765	3.359	-8.87	-23.03	3.26	30	50.96	51.13
2420	7.33	-11.35	-8.08	-10.23	3.342	3.993	-8.08	-23.05	3.27	30	50.93	51.12
2430	8.52	-10.7	-7.49	-9.64	3.92	4.597	-7.49	-22.93	3.21	30	51.04	51.23
2440	8.64	-10.63	-7.51	-9.66	4.025	4.616	-7.51	-22.75	3.12	30	51.26	51.4
2450	9.72	-10.12	-7.07	-9.22	4.586	5.134	-7.07	-21.18	3.05	60	51.55	51.71
2460	11.2	-9.51	-6.48	-8.63	5.349	5.855	-6.48	-19.4	3.02	60	51.45	51.6
2470	14.18	-8.48	-5.47	-7.62	6.832	7.35	-5.47	-17.43	3.01	60	51.73	51.88
2480	16.81	-7.74	-4.77	-6.92	8.163	8.649	-4.77	-16.11	2.97	60	51.85	52.01
2490	19.06	-7.2	-3.88	-6.03	9.338	9.723	-3.88	-15.38	3.32	60	52.01	52.05
2500	18.52	-7.32	-3.68	-5.83	9.199	9.316	-3.68	-15.64	3.64	30	52.04	52.07

增益曲线 (dBi)



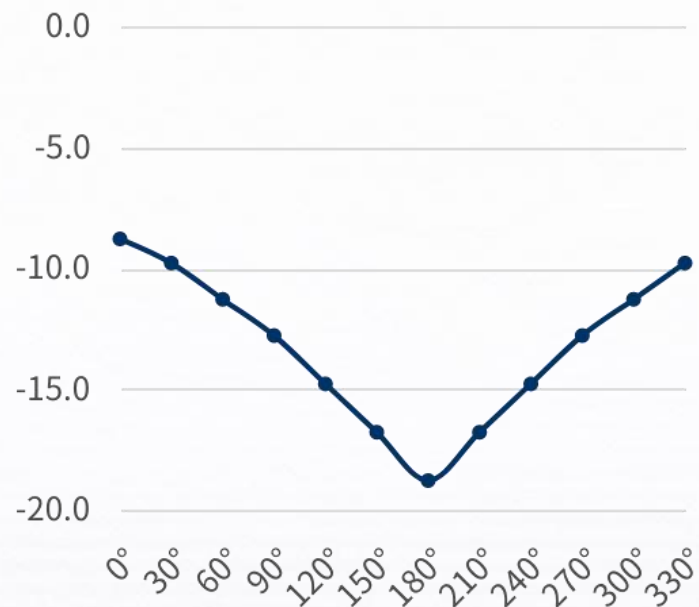
效率曲线 (%)



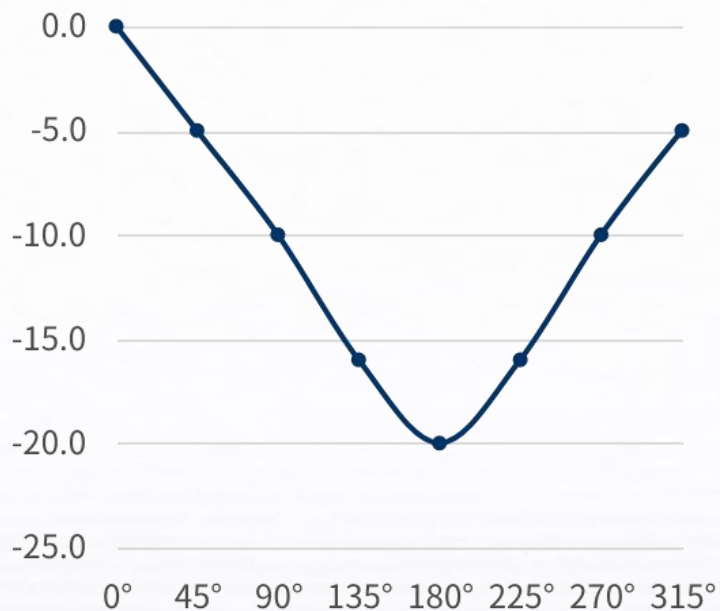
总结：天线在2.4G频段高频部分表现更佳，增益与效率均随频率升高而提升，峰值分别出现在2500MHz (-3.68 dBi) 和 2490MHz (19.06%)。

2. 4G频段 - 天线方向图 (2400MHz)

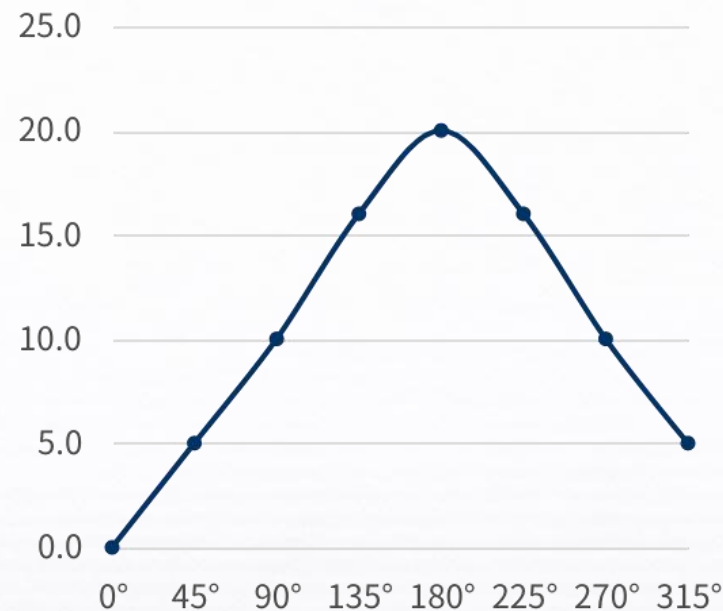
H面方向图



E1面方向图



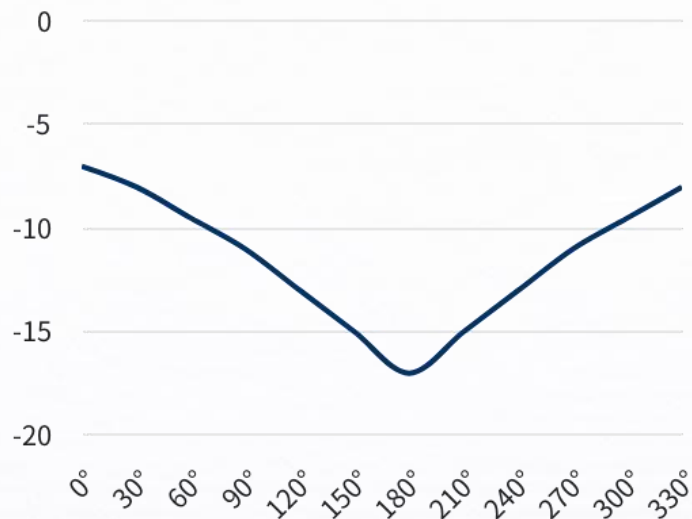
E2面方向图



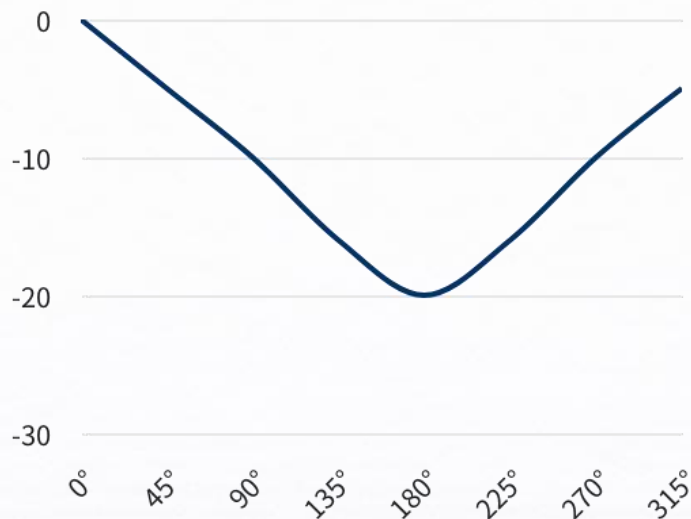
天线在2400MHz频率下表现出特定的辐射指向性，这对于精确优化无线信号覆盖范围和强度至关重要。

2. 4G频段 - 天线方向图 (2450MHz)

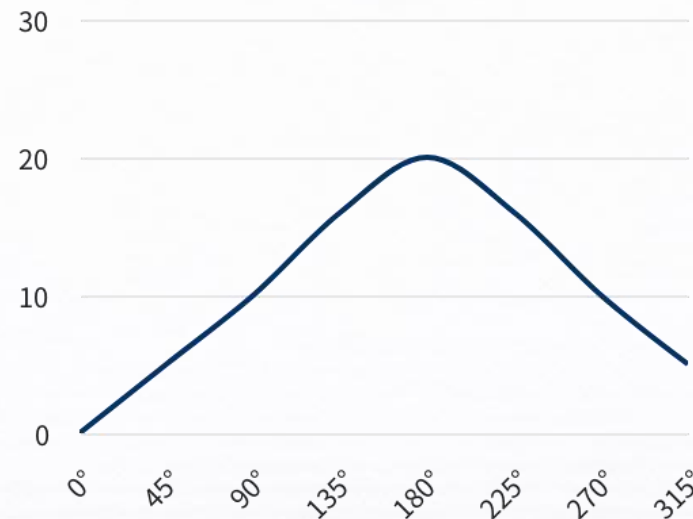
H面方向图



E1面方向图



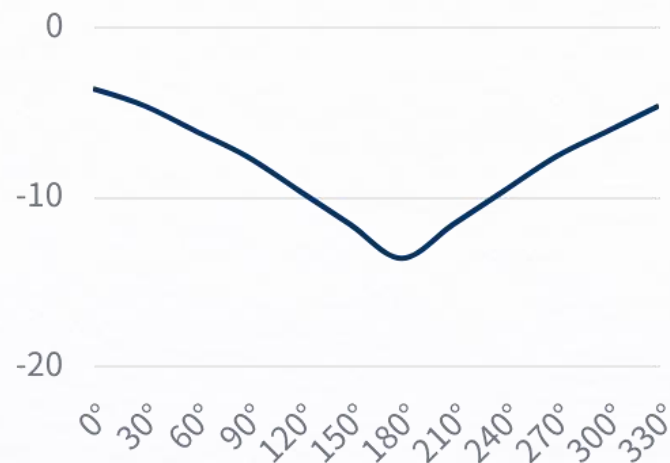
E2面方向图



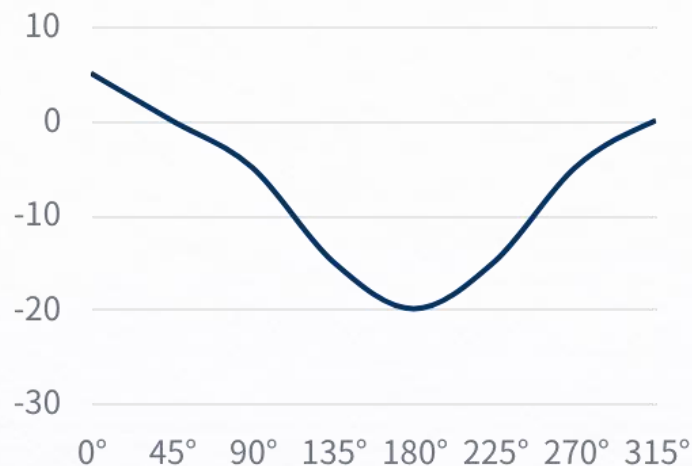
这是2450MHz频率下的天线方向图。与2400MHz相比，我们可以观察到方向图的形状和增益分布略有不同，这反映了天线性能随频率的变化。

2. 4G频段 - 天线方向图 (2500MHz)

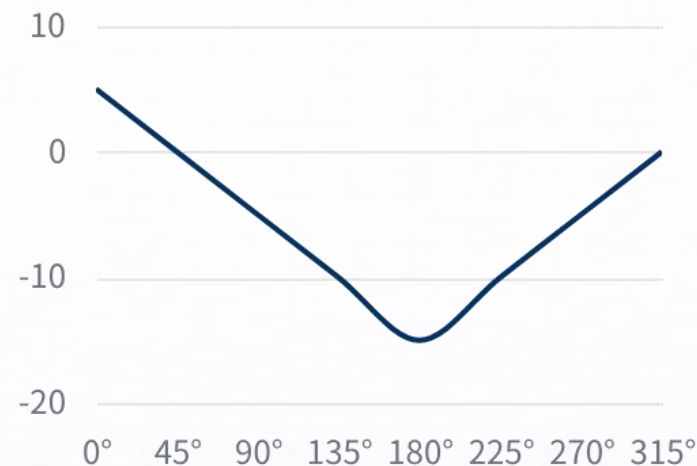
H面方向图



E1面方向图

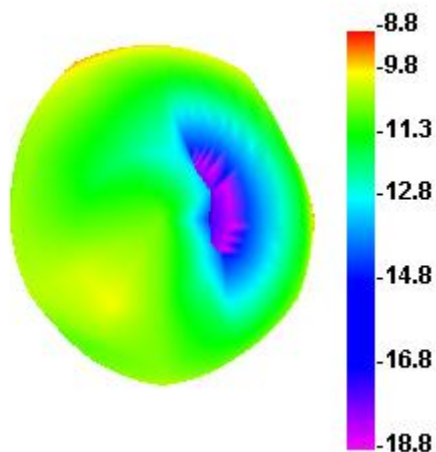


E2面方向图

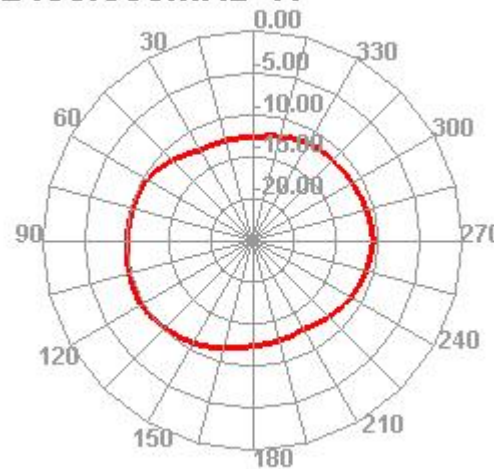


作为2.4G频段的最高测试频率点，天线在此处的辐射特性同样表现出良好的一致性。

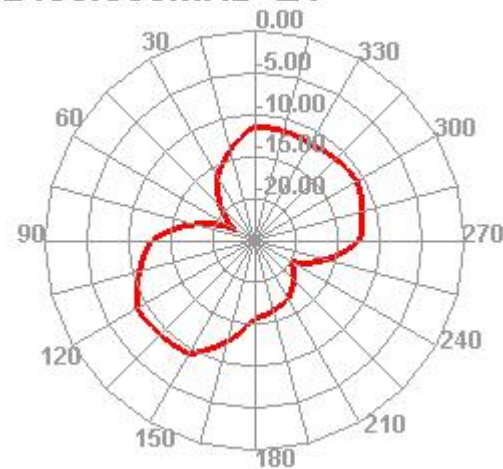
2400.000MHz



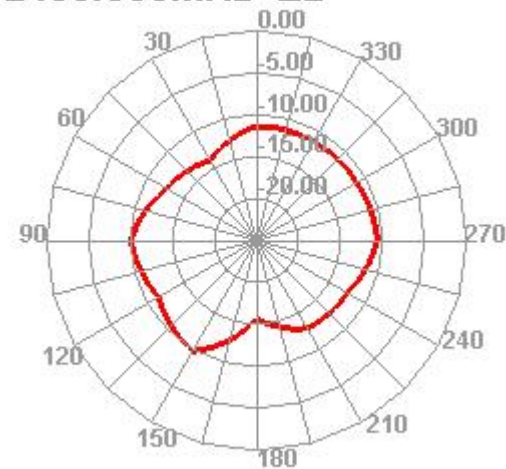
2400.000MHz H



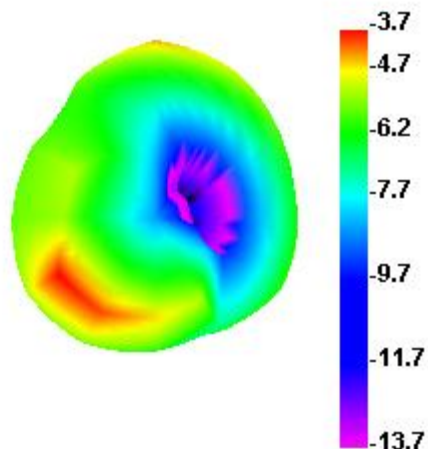
2400.000MHz E1



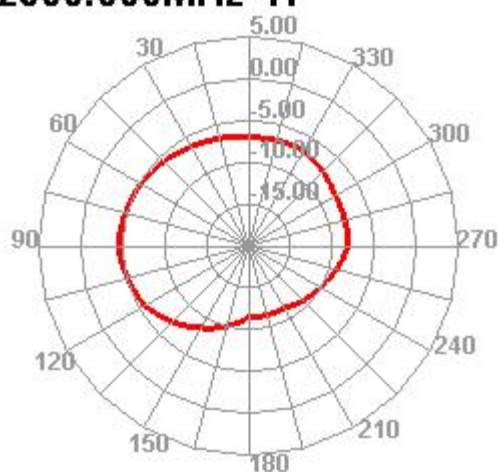
2400.000MHz E2



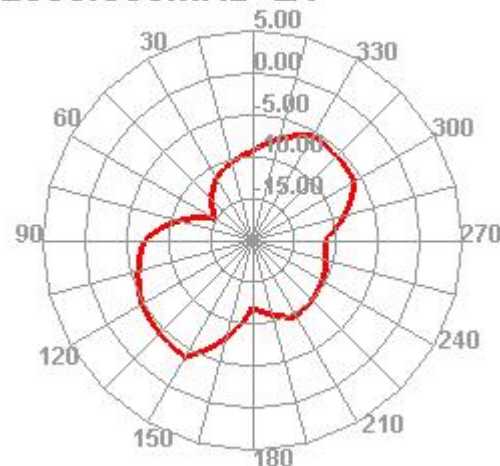
2500.000MHz



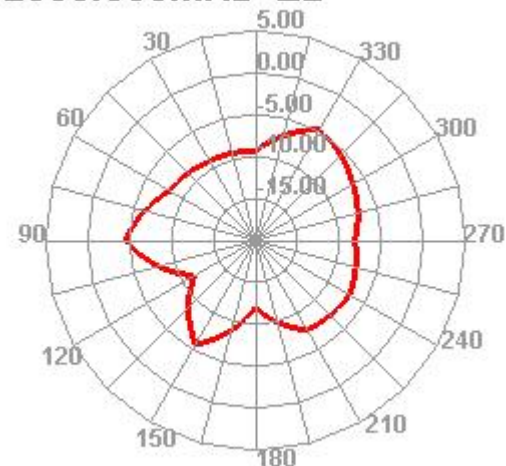
2500.000MHz H



2500.000MHz E1



2500.000MHz E2



Litiantai

5G频段 – 测试数据总览

Application Information	
O4Version	5.271.371
TotalTime	6m 43s 514ms
AdditionalInfor	NULL

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	Directivity (dBi)	Beamwidth (3dB)
5000	11.59	-9.36	-4.95	-7.10	4.40	90
5100	15.46	-8.11	-4.22	-6.37	3.89	30
5200	19.43	-7.12	-2.75	-4.90	4.37	0
5300	26.73	-5.73	-1.20	-3.35	4.53	0
5400	39.88	-3.99	0.63	-1.52	4.62	30
5500	43.37	-3.63	1.27	-0.88	4.90	60
5600	46.54	-3.32	1.79	-0.36	5.11	60
5700	34.14	-4.67	0.50	-1.65	5.16	60
5800	34.73	-4.59	0.12	-2.03	4.71	60
5900	29.13	-5.36	-0.69	-2.84	4.67	60
6000	21.81	-6.61	-2.15	-4.30	4.46	60

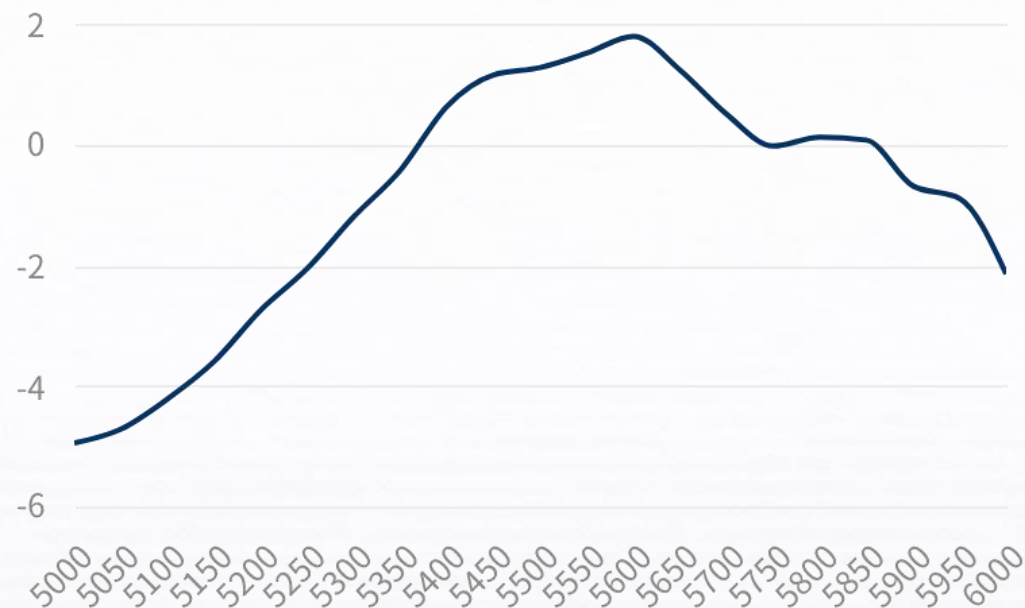
Passive Test For wifi6G

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5000	11.59	-9.36	-4.95	-7.1	4.865	6.73	-4.95	-22.93	4.4	90	61.06	61.08
5050	13.25	-8.78	-4.72	-6.87	5.633	7.615	-4.72	-22.3	4.06	60	61.28	61.33
5100	15.46	-8.11	-4.22	-6.37	6.249	9.208	-4.22	-23.88	3.89	30	61.41	61.54
5150	18.24	-7.39	-3.6	-5.75	7.098	11.145	-3.6	-28.13	3.79	30	61.69	61.71
5200	19.43	-7.12	-2.75	-4.9	7.252	12.178	-2.75	-22.57	4.37	0	61.51	61.62
5250	22.5	-6.48	-2.06	-4.21	8.011	14.485	-2.06	-21.5	4.42	0	61.75	61.78
5300	26.73	-5.73	-1.2	-3.35	9.126	17.608	-1.2	-25.48	4.53	0	61.84	61.92
5350	33.84	-4.71	-0.43	-2.58	11.703	22.139	-0.43	-20.2	4.28	0	61.7	61.72
5400	39.88	-3.99	0.63	-1.52	14.116	25.768	0.63	-21.91	4.62	30	62.01	62.11
5450	42.83	-3.68	1.15	-1	15.13	27.703	1.15	-21.7	4.83	60	62.44	62.49
5500	43.37	-3.63	1.27	-0.88	15.391	27.982	1.27	-19.22	4.9	60	62.55	62.51
5550	45.51	-3.42	1.51	-0.64	16.396	29.117	1.51	-21.53	4.92	60	62.77	62.67
5600	46.54	-3.32	1.79	-0.36	17.1	29.439	1.79	-19.17	5.11	60	62.61	62.59
5650	39.75	-4.01	1.23	-0.92	14.834	24.915	1.23	-23.73	5.24	60	62.49	62.56
5700	34.14	-4.67	0.5	-1.65	12.515	21.625	0.5	-20.02	5.16	60	62.91	62.98
5750	32.51	-4.88	-0.03	-2.18	12.138	20.376	-0.03	-26.69	4.85	60	63.27	63.4
5800	34.73	-4.59	0.12	-2.03	12.902	21.831	0.12	-27.56	4.71	60	63.61	63.62
5850	34.57	-4.61	0.07	-2.08	12.944	21.631	0.07	-20.87	4.68	60	63.69	63.7
5900	29.13	-5.36	-0.69	-2.84	10.834	18.295	-0.69	-26.13	4.67	60	63.57	63.59
5950	26.9	-5.7	-0.9	-3.05	10.061	16.839	-0.9	-28.07	4.8	60	64.32	64.32
6000	21.81	-6.61	-2.15	-4.3	8.13	13.684	-2.15	-22.94	4.46	60	64.26	64.37

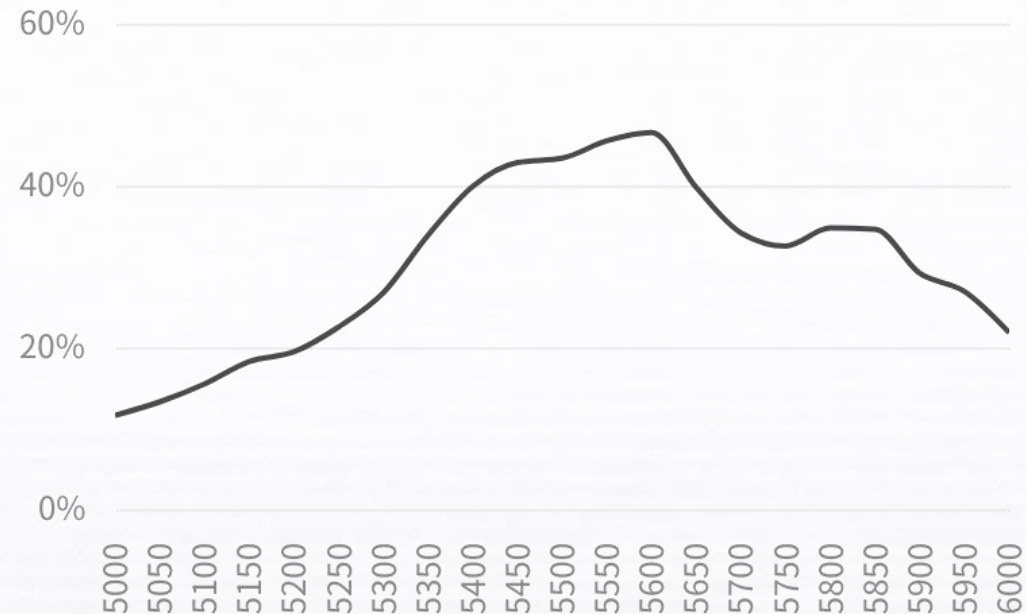
Litiantai

5G频段 - 增益与效率

增益曲线 (dBi)

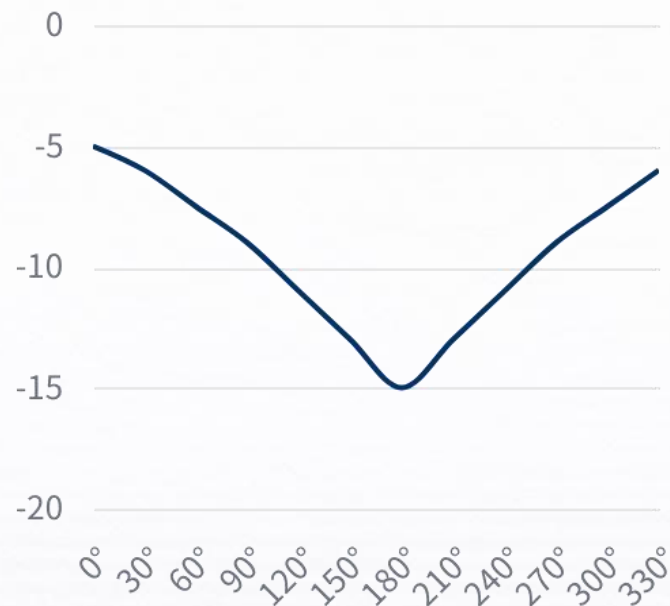


效率曲线 (%)

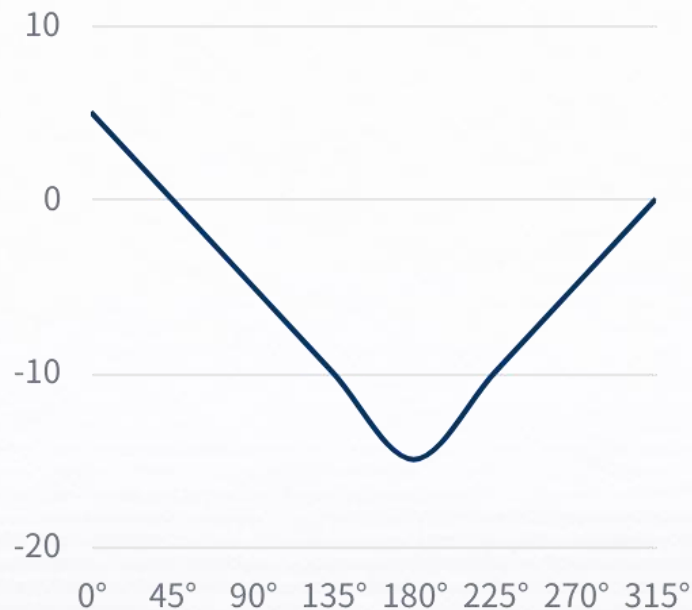


关键结论：5G天线在**5600MHz**频段表现最佳，增益达**1.79 dBi**，效率高达**46.54%**。

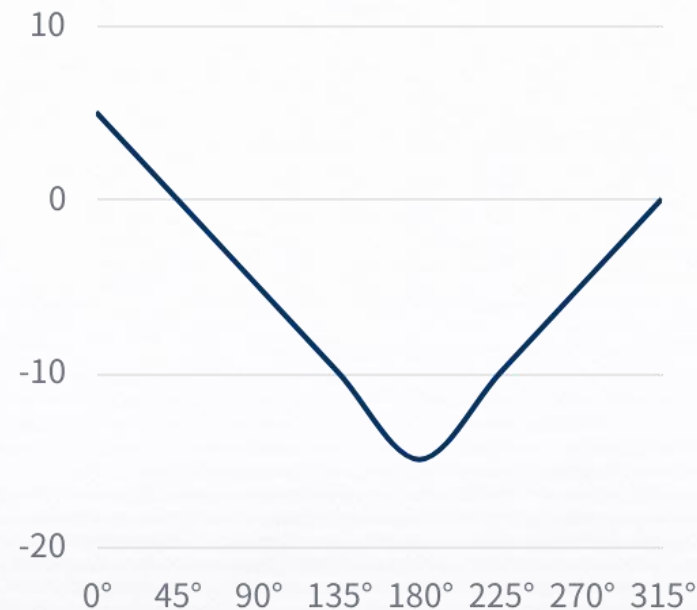
H面方向图



E1面方向图



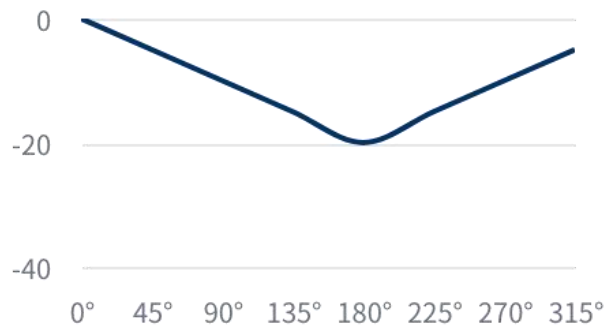
E2面方向图



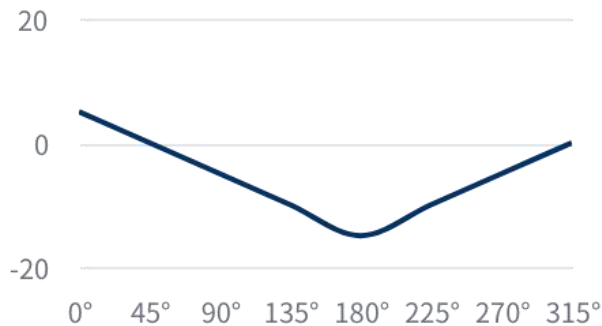
结论：5GHz频段天线在H面呈全向辐射，E面呈定向辐射，整体增益和方向性优于2.4GHz频段。

5G频段 - 天线方向图 (5500MHz)

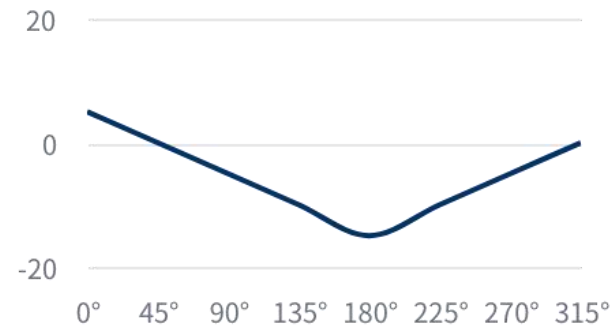
 H面方向图



 E1面方向图

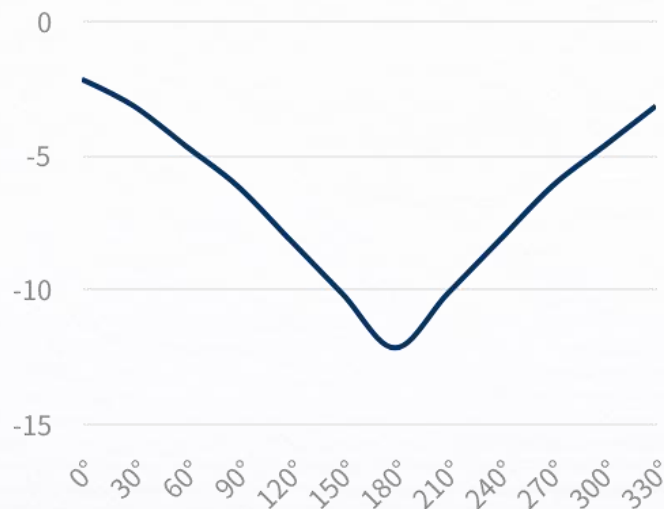


 E2面方向图

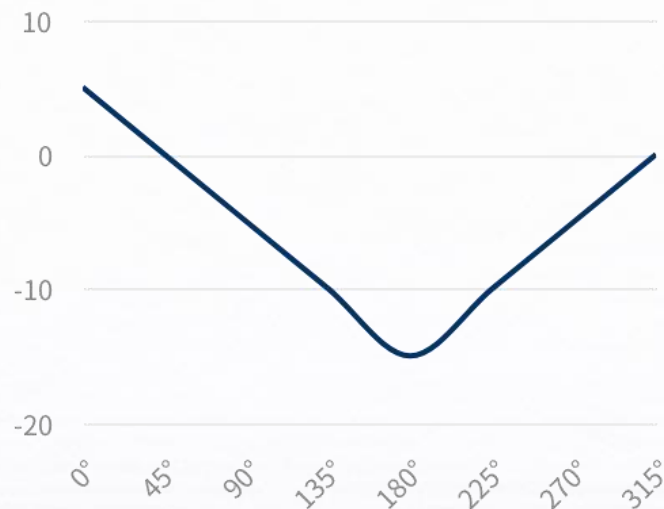


在 5500MHz 频率下，天线的增益和效率均处于较高水平，方向图表现出良好的对称性和指向性，为5G信号的高效传输提供了有力保障。

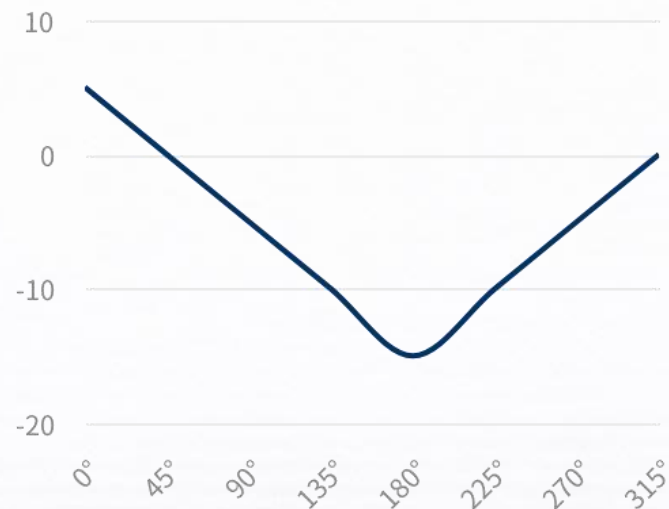
H面方向图



E1面方向图

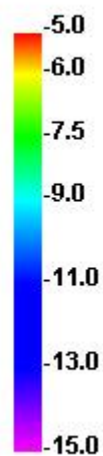
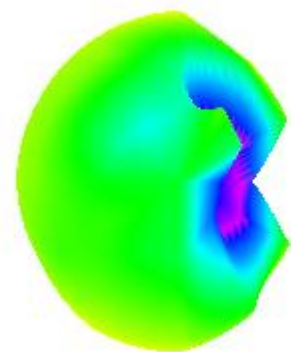


E2面方向图

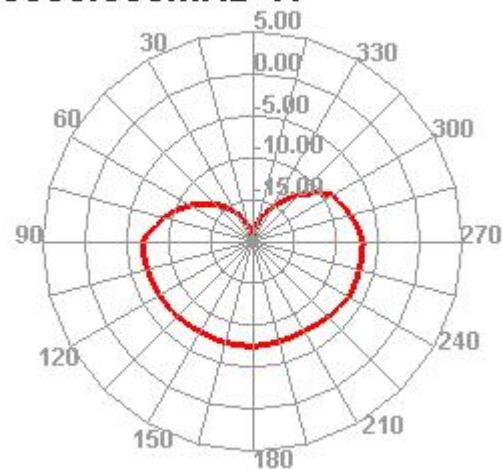


结论：6000MHz频率下，天线辐射特性稳定，各面方向图均展现出良好的指向性和增益表现。

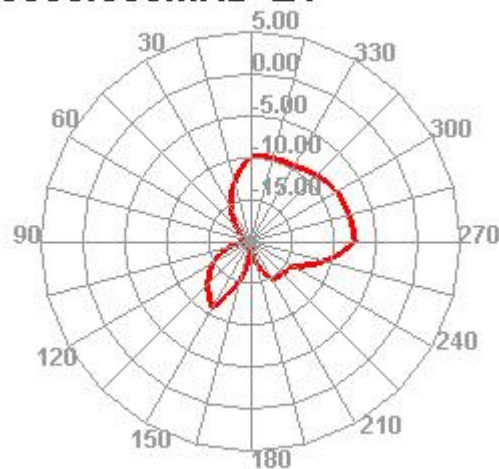
5000.000MHz



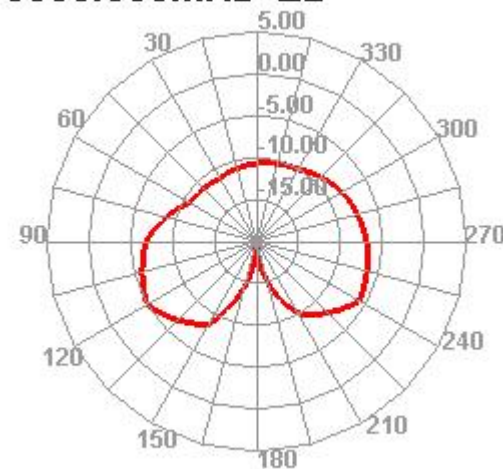
5000.000MHz H



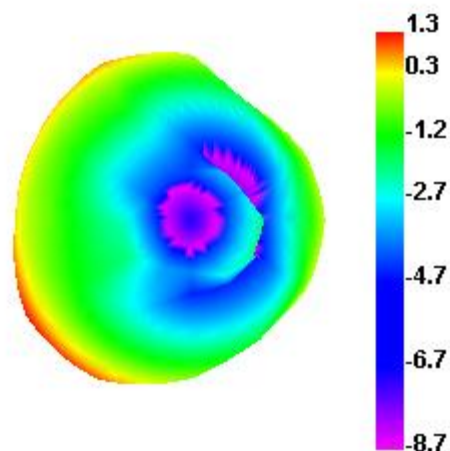
5000.000MHz E1



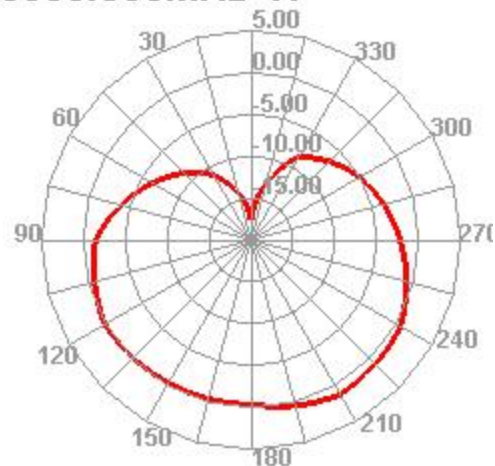
5000.000MHz E2



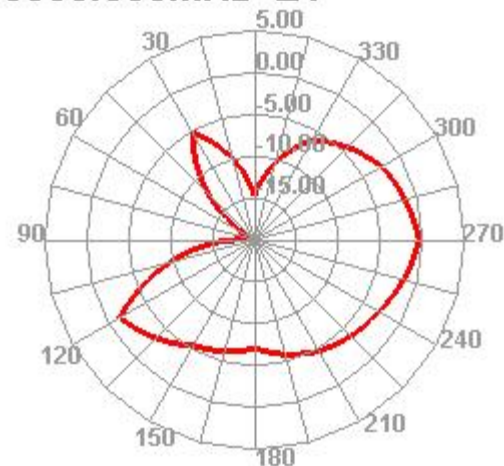
5500.000MHz



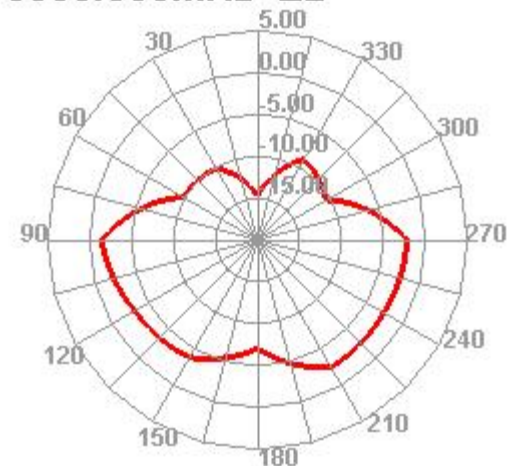
5500.000MHz H



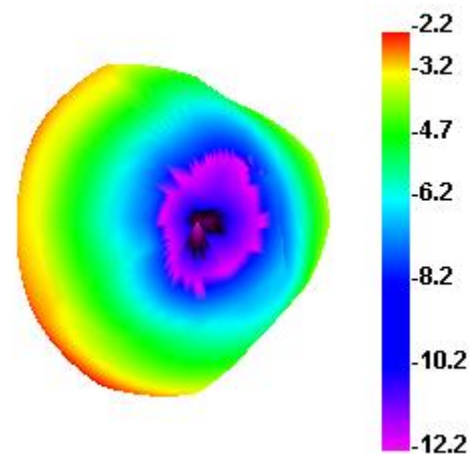
5500.000MHz E1



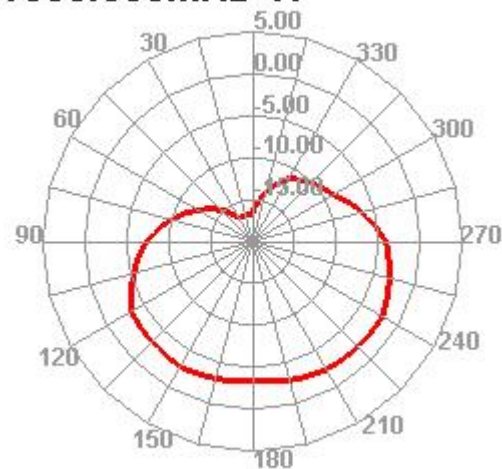
5500.000MHz E2



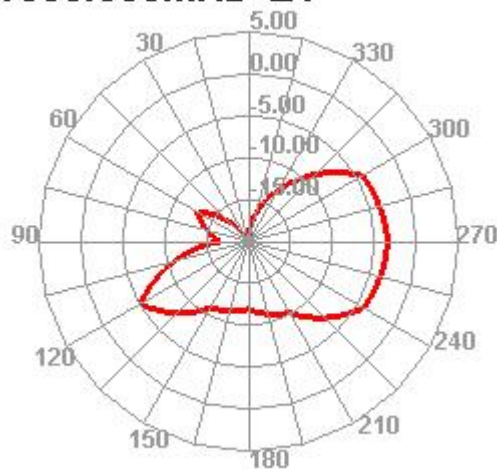
6000.000MHz



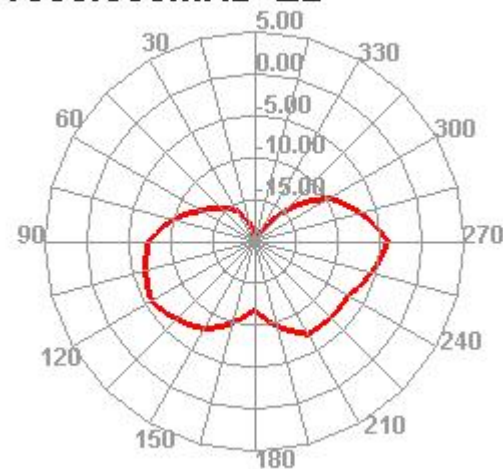
6000.000MHz H



6000.000MHz E1



6000.000MHz E2





2.4G频段性能

在2490MHz时效率和增益达到最高，分别为**19.06%**和**-3.88dBi**。方向性稳定，波束宽度在30-60度之间。



5G频段性能

在5600MHz时效率和增益达到最高，分别为**46.54%**和**1.79dBi**。整体性能优于2.4G频段。



总体结论

8730e盒子的5G天线性能优于2.4G天线，尤其在高频段表现出色。



感谢观看

THANKS FOR YOUR ATTENTION