

8730e Box Antenna Performance Test Report

2.4G & 5G frequency bands



Test Date: January 26, 2026



Tester: litiantai

catalogue

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Test Overview



test purpose

Evaluate the performance metrics of the 8730e boxs 2.4G and 5G antennas.



testing environment

A specialized microwave anechoic chamber ensures the accuracy of test results.



test item

Gain, efficiency, directivity, beamwidth, etc.



testing standard

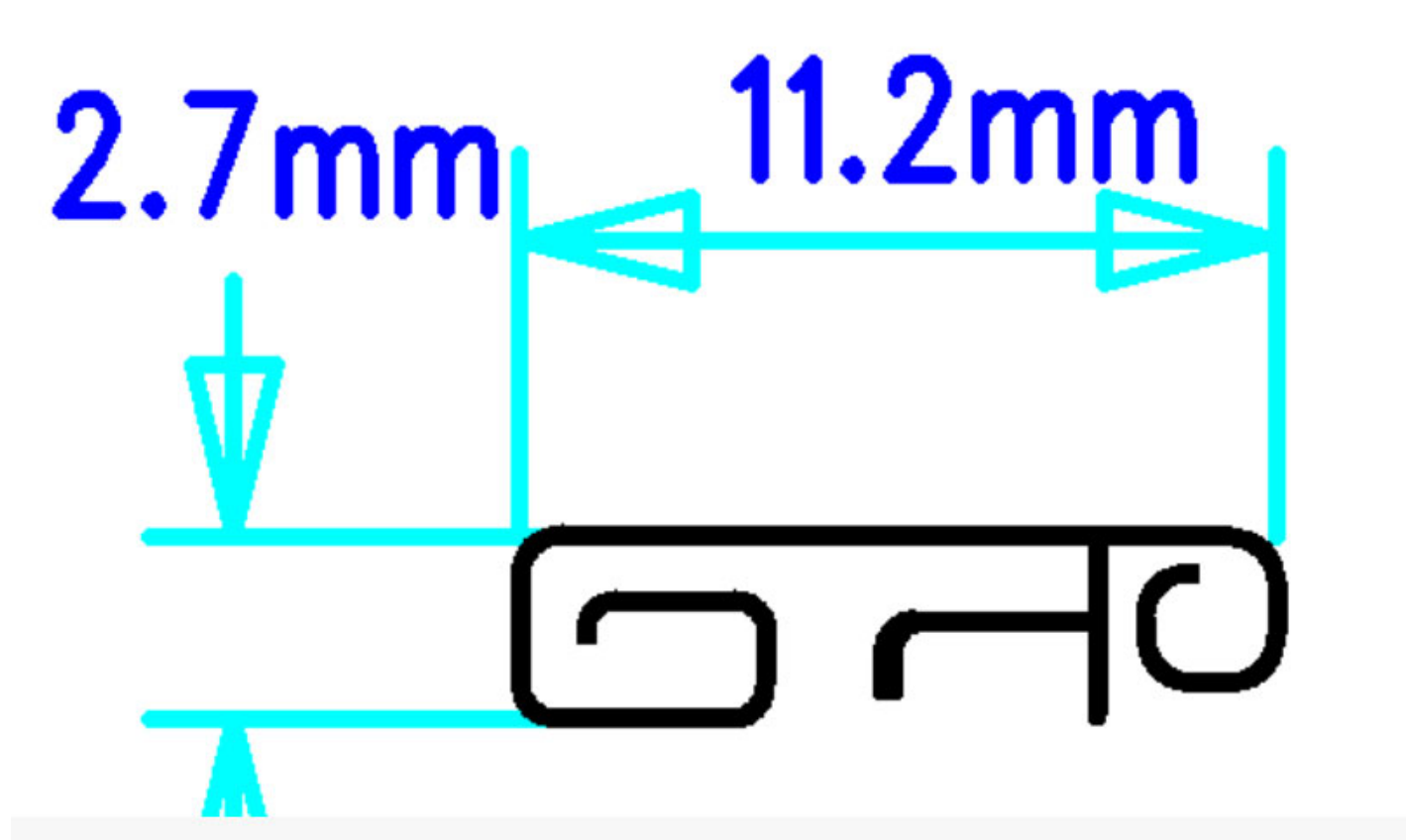
Adhere to relevant industry standards to ensure the standardization of the testing process.



This test aims to comprehensively and objectively evaluate the products antenna performance, providing reliable data support for product optimization and quality control.

Manufacturer: Shenzhen Litian Tai Technology Co., Ltd.
Address: No. 609, 2nd Floor, Comprehensive Building,
Baoyunda Logistics Center, Fu Hua Community, Xixiang
Street, Bao'an District, Shenzhen City

Antenna size:



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2.4G frequency band-Test data overview

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

The following are detailed test data for the 2.4 GHz frequency band at various frequency points.

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

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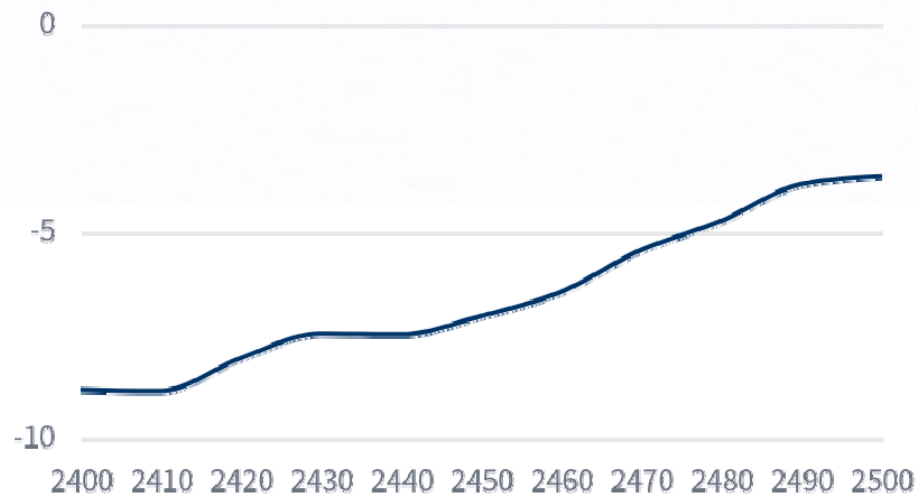
Passive Test For WiFi2.4

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	irectivity (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

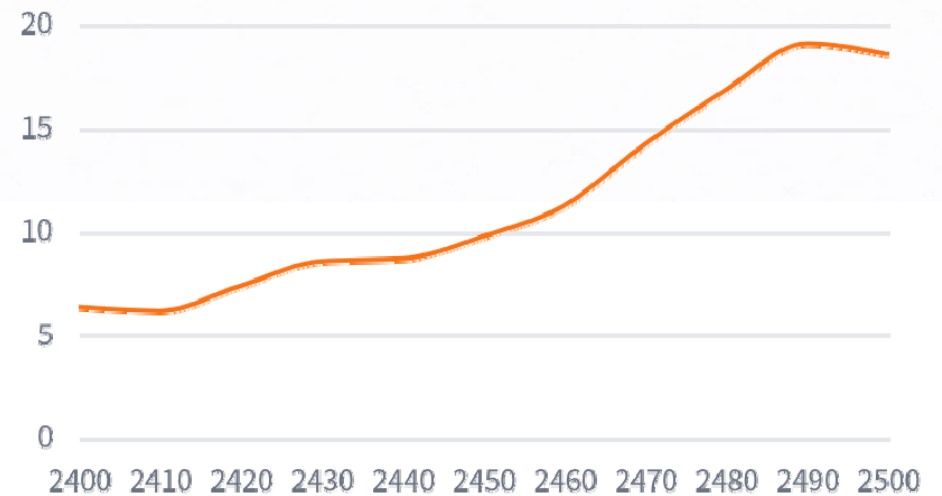
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2.4G frequency band-Gain and efficiency

增益曲线 (dBi)



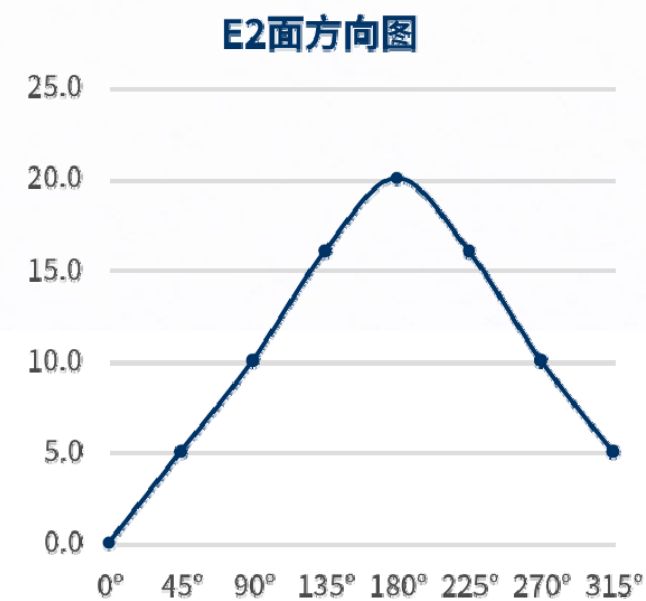
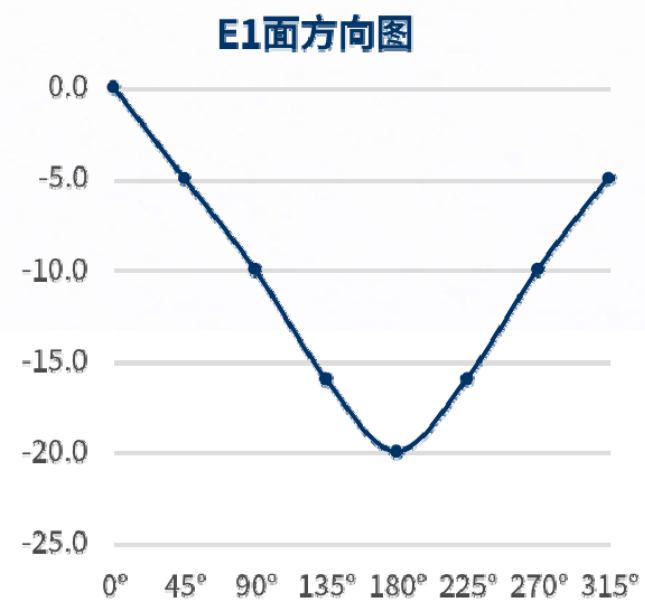
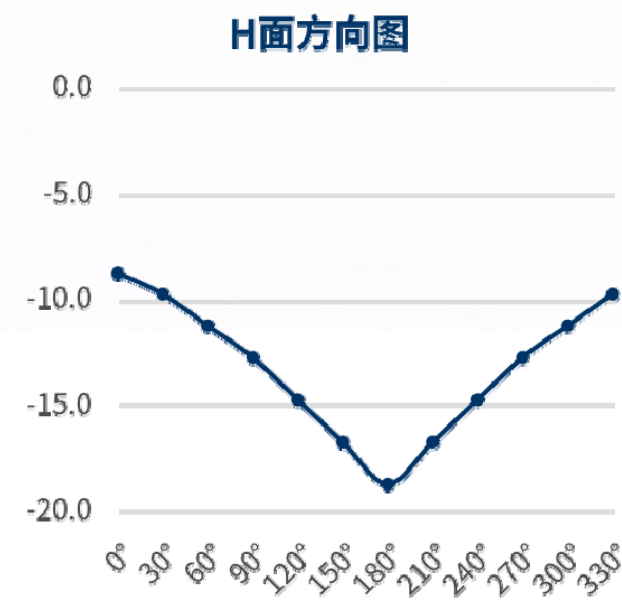
效率曲线 (%)



Summary: The antenna demonstrates superior performance in the high-frequency portion of the 2.4 GHz band, with both gain and efficiency increasing as frequency rises, reaching peaks at 2500 MHz (-3.68 dBi) and 2490 MHz (19.06%, respectively).

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2.4G frequency band-Antenna pattern (2400 MHz)

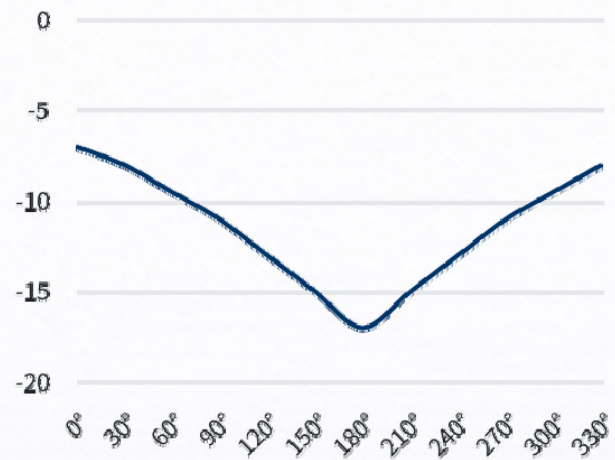


The antenna exhibits specific radiation directivity at the 2400 MHz frequency, which is crucial for precisely optimizing the wireless signal coverage and strength.

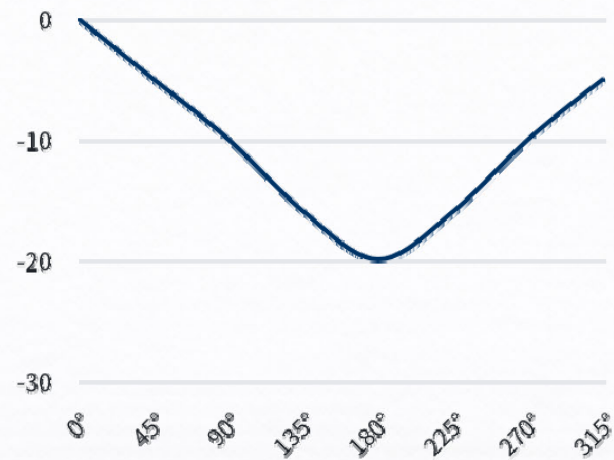
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2. 4G frequency band-Antenna pattern (2450 MHz)

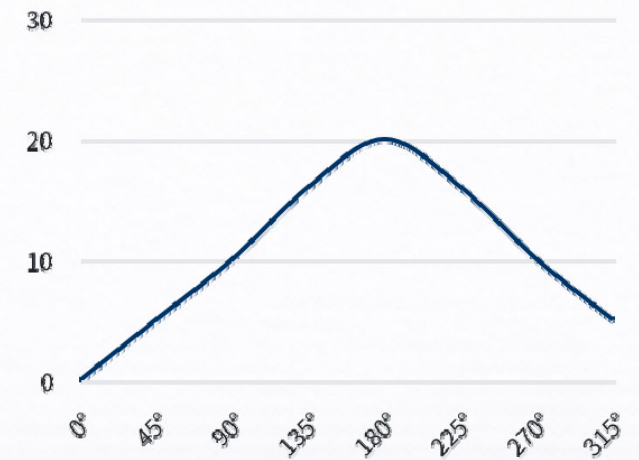
H面方向图



E1面方向图



E2面方向图

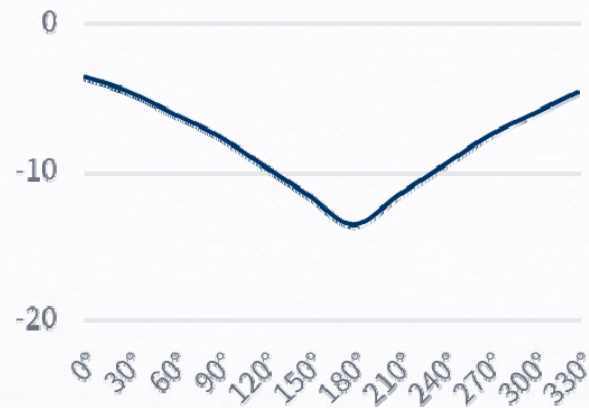


This is the antenna pattern at 2450 MHz. Compared to 2400 MHz, we observe slight differences in the pattern shape and gain distribution, reflecting how antenna performance varies with frequency.

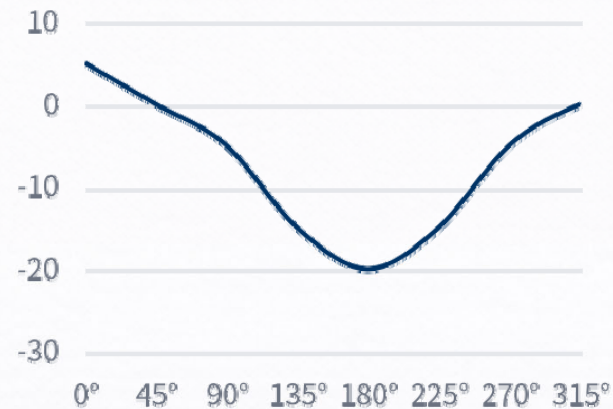
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2.4G frequency band-Antenna pattern (2500 MHz)

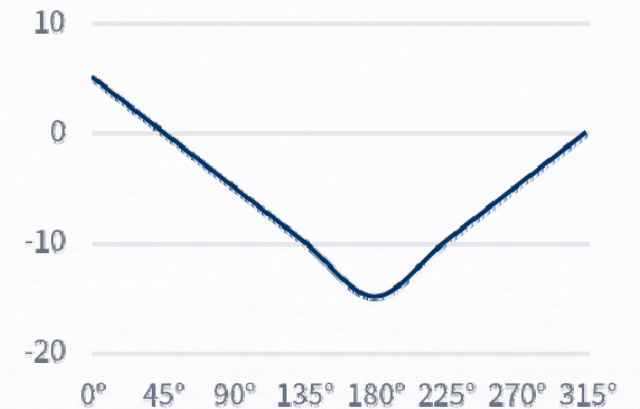
H-plane direction diagram



E1 plane direction diagram



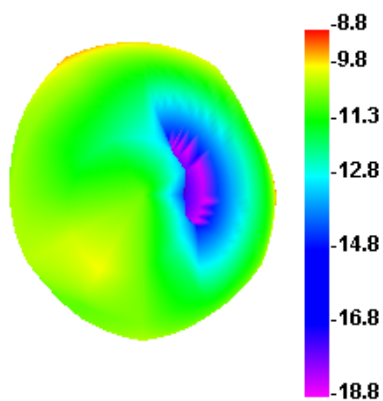
E2 plane direction diagram



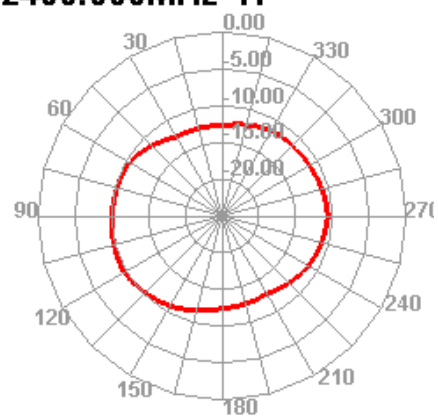
As the highest test frequency point in the 2.4 GHz band, the antennas radiation characteristics also demonstrate excellent consistency at this frequency.

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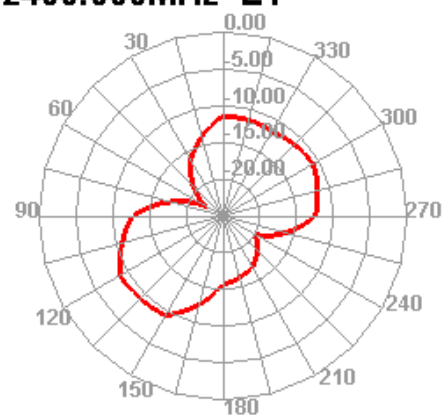
2400.000MHz



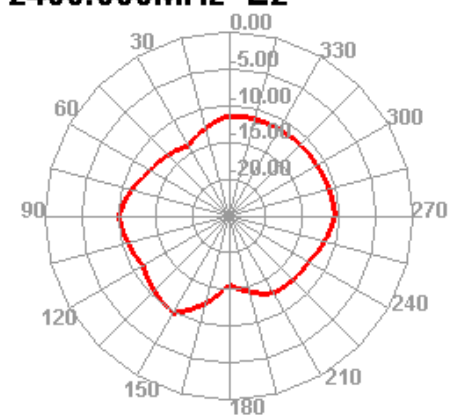
2400.000MHz H



2400.000MHz E1

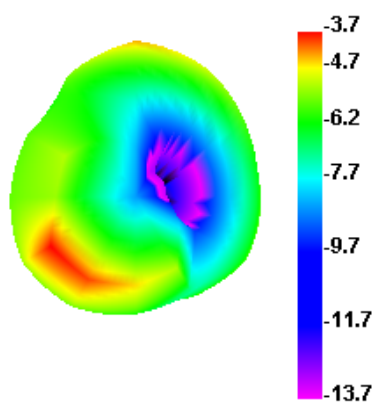


2400.000MHz E2

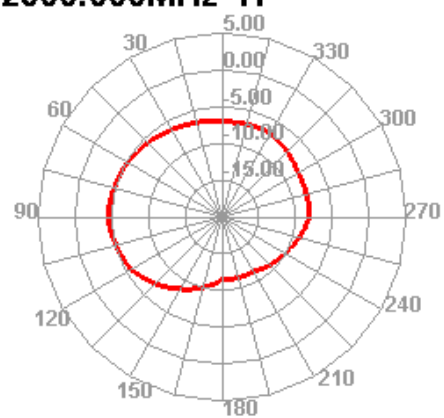


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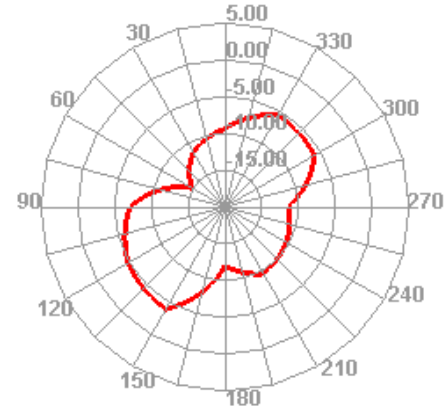
2500.000MHz



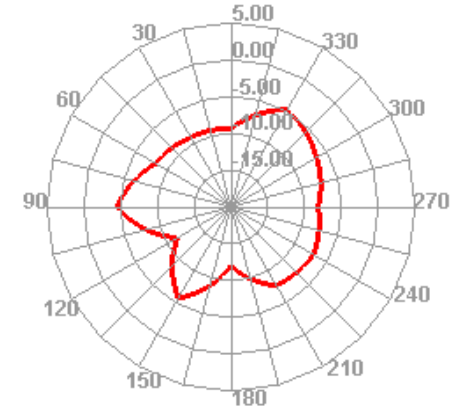
2500.000MHz H



2500.000MHz E1



2500.000MHz E2



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5G Frequency Band-Test Data Overview

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

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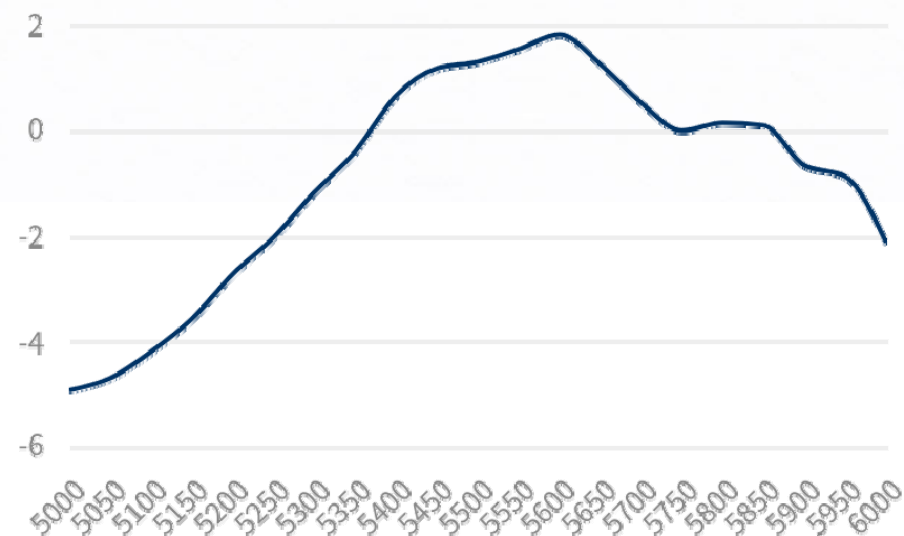


Passive Test For wifi6G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5000	11.59	-9.36	-4.95	-7.1	4.865	6.73	-4.95	-22.93	4.4	90	61.06	61.08
5050	13.25	-8.78	-4.72	-6.87	5.633	7.615	-4.72	-22.3	4.06	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

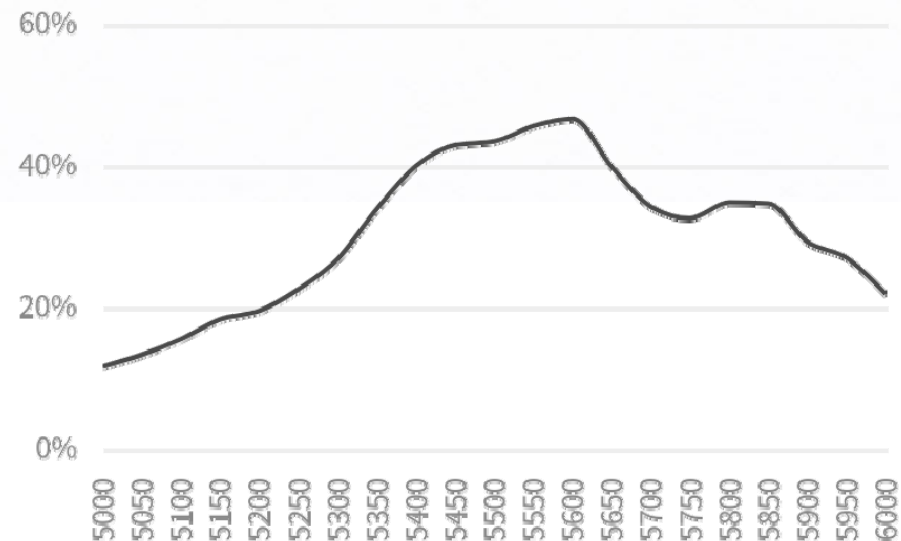
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5G Frequency Bands-Gain and Efficiency

增益曲线 (dBi)



效率曲线 (%)

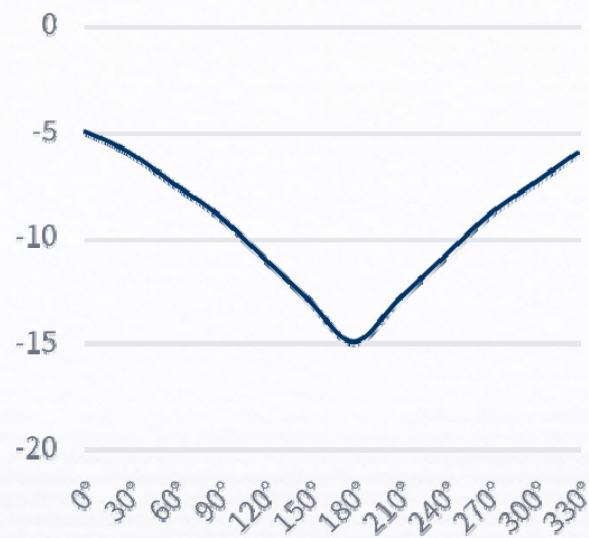


Key conclusion: The 5G antenna delivers optimal performance in the 5600 MHz frequency band, achieving a gain of 1.79 dBi and an efficiency of 46.54%.

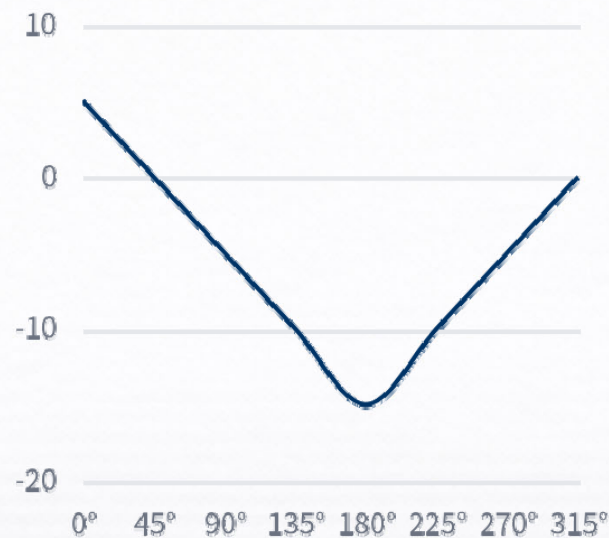
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5G frequency band-Antenna pattern (5000 MHz)

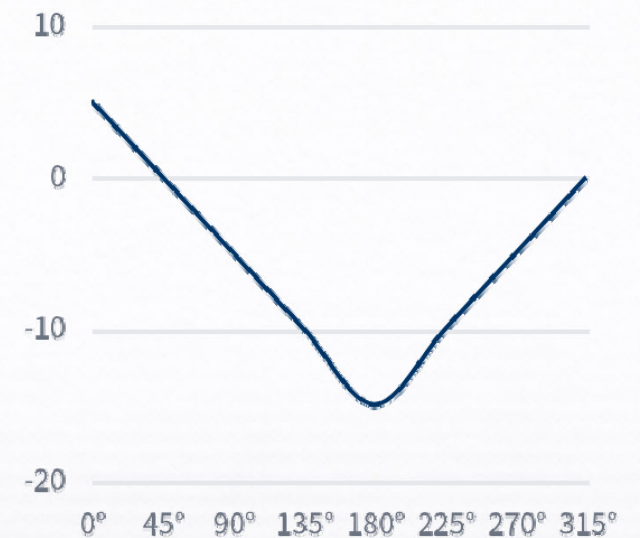
H面方向图



E1面方向图



E2面方向图



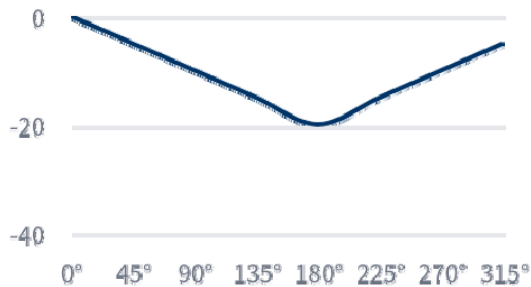
Conclusion: The 5 GHz band antenna exhibits omnidirectional radiation on the H-plane and directional radiation on the E-plane, with superior overall gain and directivity compared to the 2.4 GHz band.

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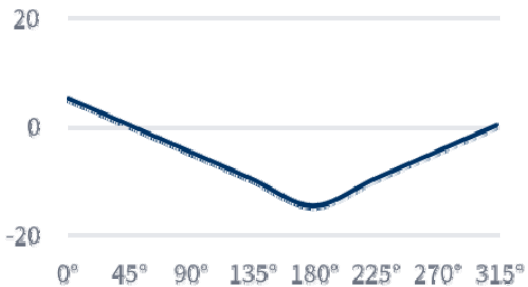
5G frequency band-Antenna pattern (5500 MHz)



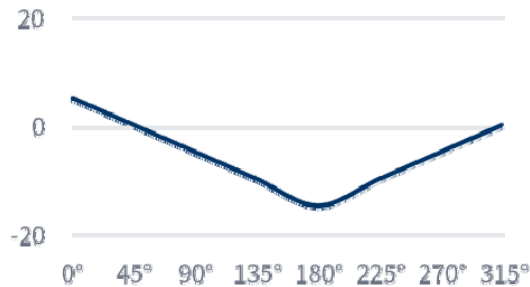
H-plane direction diagram



E1 plane direction diagram



E2 plane direction diagram

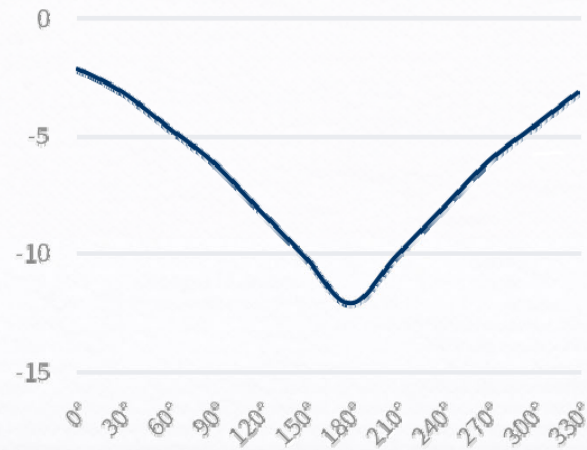


At the 5500 MHz frequency, the antenna exhibits high gain and efficiency, with its pattern diagram demonstrating excellent symmetry and directivity, ensuring robust support for efficient 5G signal transmission.

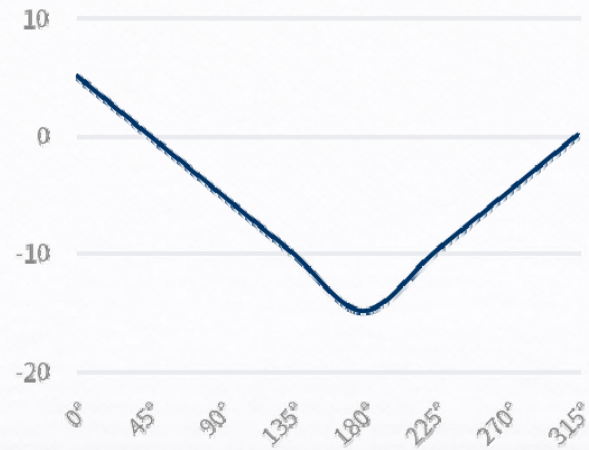
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5G frequency band-Antenna pattern (6000 MHz)

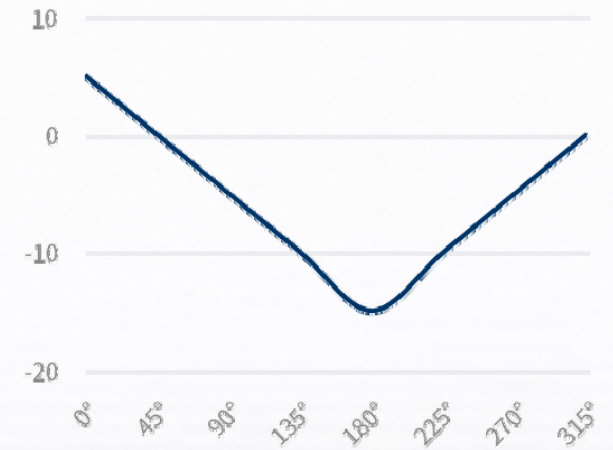
H-plane direction diagram



E1 plane direction diagram



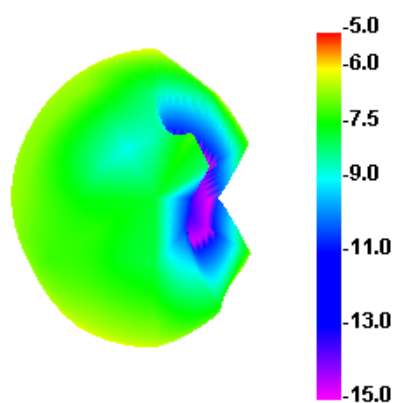
E2 plane direction diagram



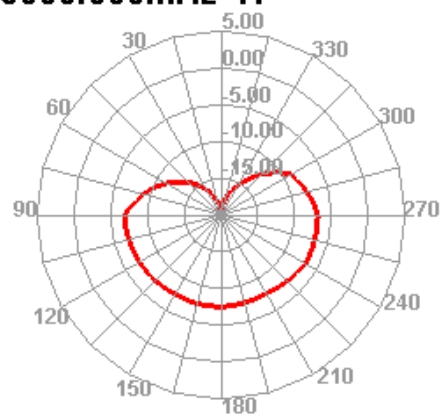
Conclusion: At the 6000 MHz frequency, the antenna exhibits stable radiation characteristics, with all directional patterns demonstrating excellent directivity and gain performance.

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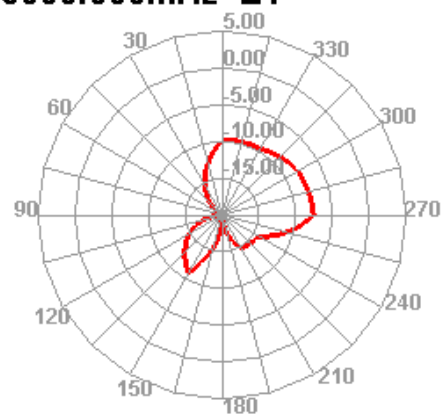
5000.000MHz



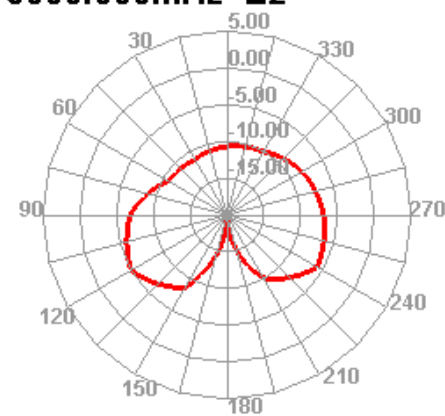
5000.000MHz H



5000.000MHz E1

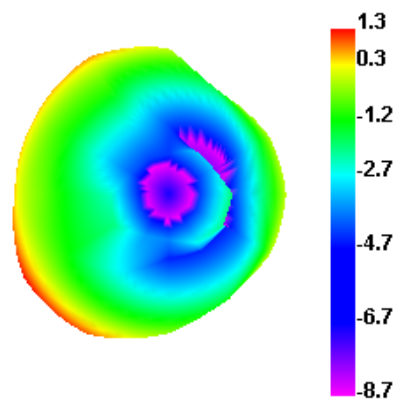


5000.000MHz E2

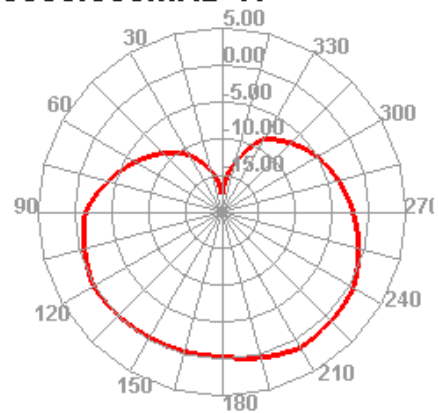


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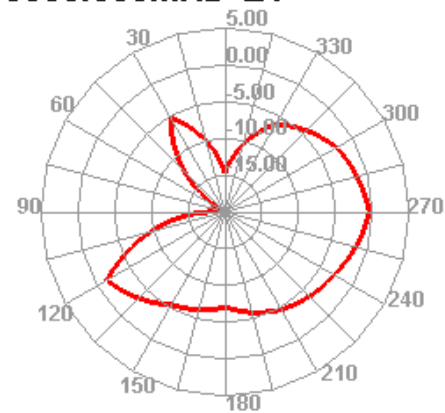
5500.000MHz



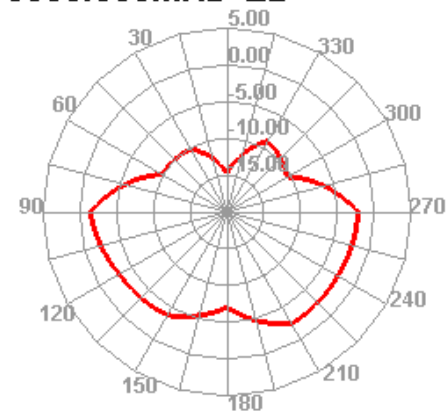
5500.000MHz H



5500.000MHz E1

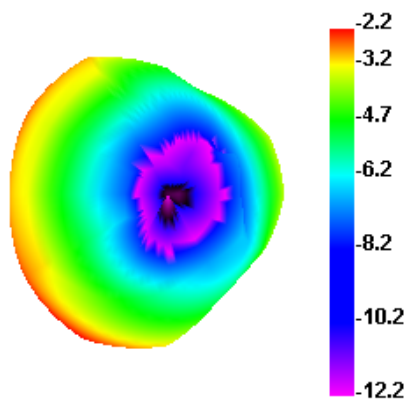


5500.000MHz E2

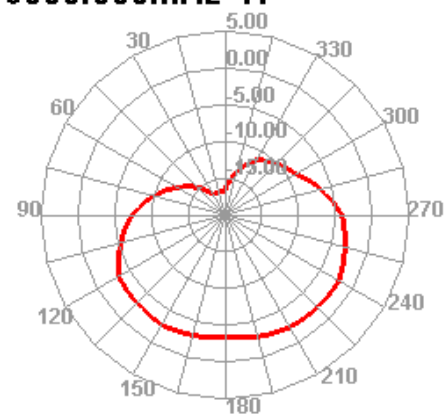


Litiantai

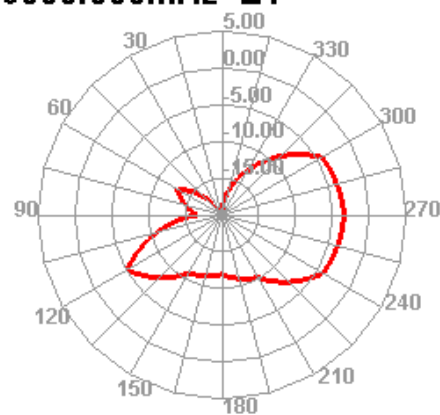
6000.000MHz



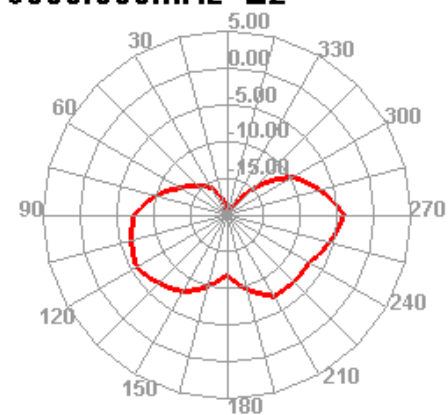
6000.000MHz H



6000.000MHz E1



6000.000MHz E2



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Conclusion and Analysis



2.4G frequency band performance

At 2490 MHz, the efficiency and gain reach their maximum values of 19.06% and -3.88 dBi, respectively. The directional pattern remains stable, with a beam width ranging from 30 to 60 degrees.



5G frequency band performance

At 5600 MHz, the efficiency and gain reach their maximum values of 46.54% and 1.79 dBi, respectively. The overall performance surpasses that of the 2.4 GHz frequency band.



Overall Conclusion

The 8730e boxs 5G antenna outperforms its 2.4G counterpart, delivering exceptional performance particularly in high-frequency bands.



Thank you for watching.

THANKS FOR YOUR ATTENTION