

8730e Box Antenna Performance Test Report

2.4G & 5G Frequency Bands

Test Date: January 26,2026

Shenzhen Litian Technology Co .Ltd



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Baolong – Specialized, Precise; Test Personnel: Litiantai
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catalogue

01 **Test Overview**

02 **2. 4 G-band Test Results**

03 5G Frequency Band Test Results

04 **Conclusion and Analysis**

Test Overview



test purpose

Evaluate the performance metrics of the 8730e Box's 2.4G and 5G antennas.



testing environment

Professional microwave darkroom ensures the accuracy of test results.



test item

Gain, Efficiency, Directivity Beam width, etc.

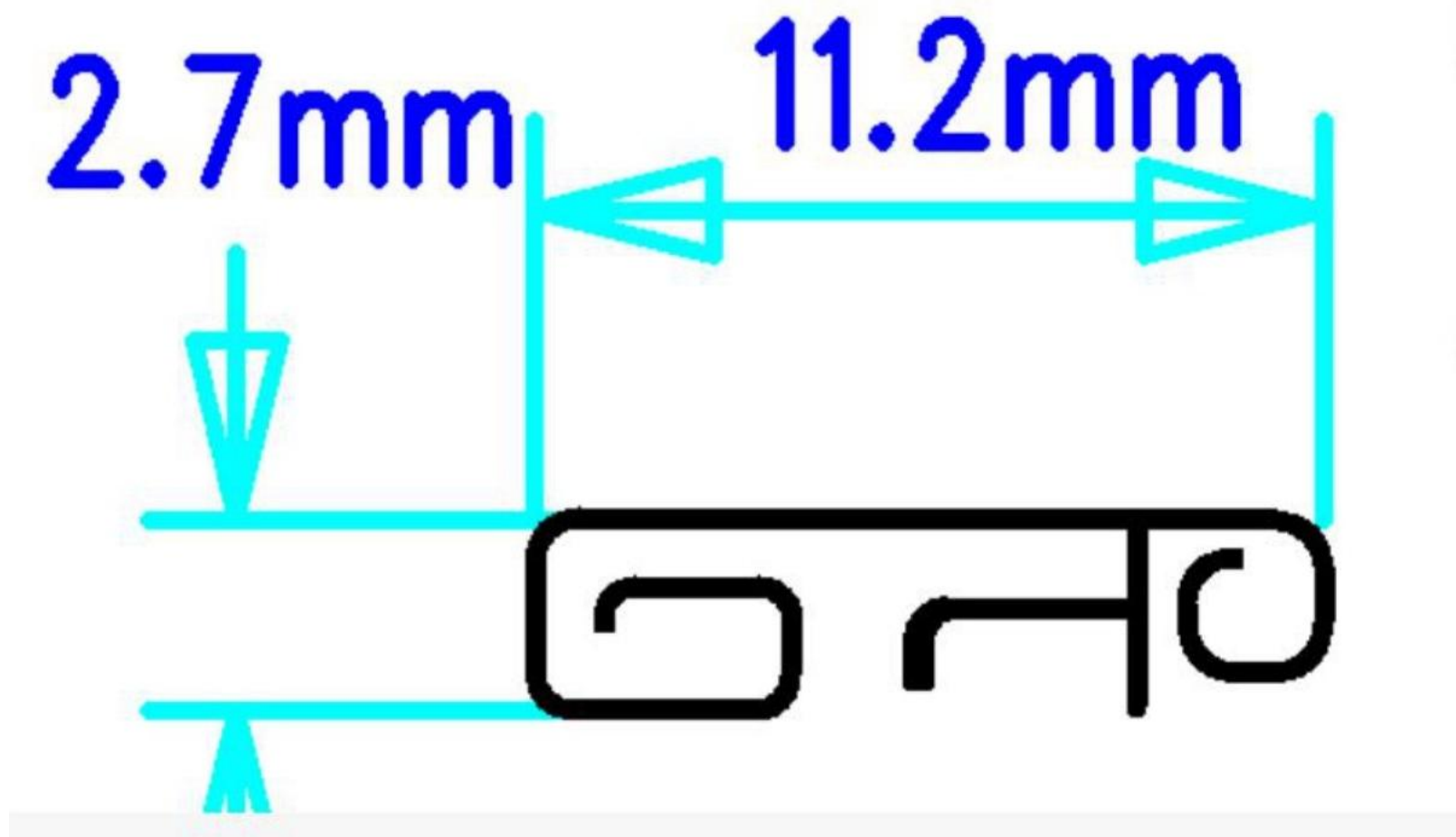


testing standard

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



Antenna Size:



Application Information	
04Version	5.271.371
TotalTime	6m 43s 466ms
AdditionalInfor	NULL

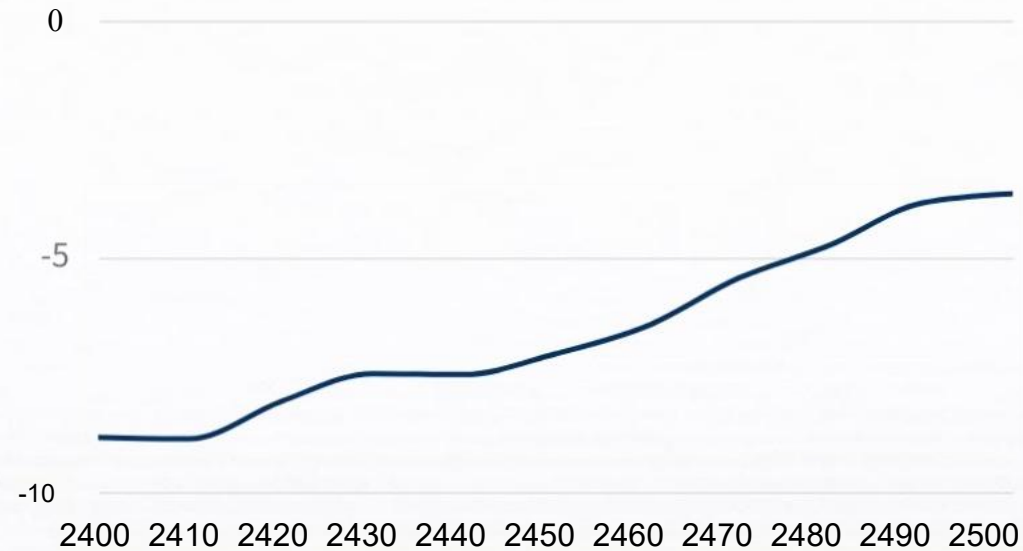
The following are detailed test results for the 2.4 GHz frequency band at various frequency points.

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

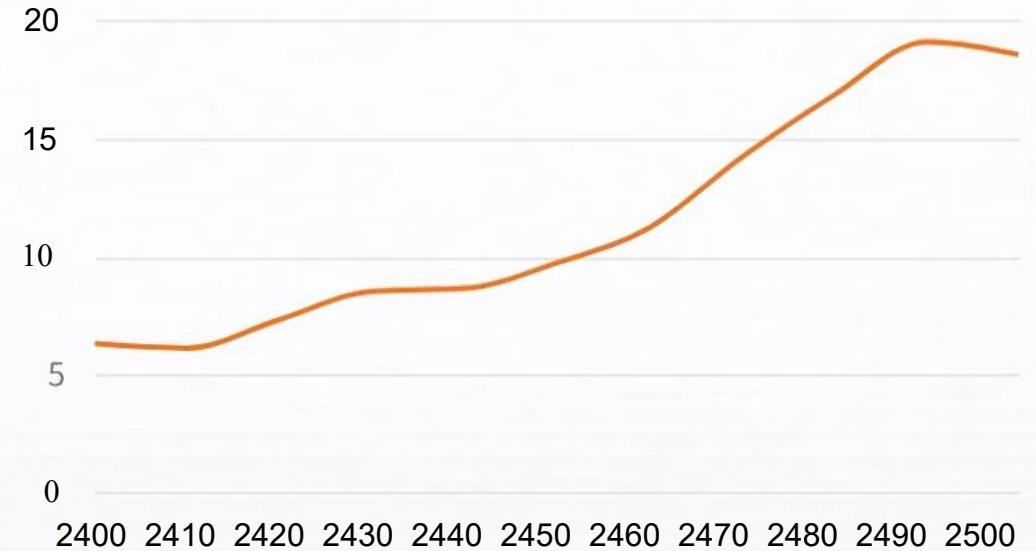
Passive Test For WiFi2.4												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Bandwidth (3dB)	AttH (dB)	AttV (dB)
2400	6.31	-12	-8.84	-10.99	2.853	3.457	-8.84	-22.4	3.16	30	50.93	51.08
2410	6.12	-12.13	-8.87	-11.02	2.765	3.359	-8.87	-23.03	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	3.920	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	51.7
2460	11.2	-9.5	-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	52.0
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

2. 4G Frequency Band I: Gain and Efficiency

Gain Curve (dBi)



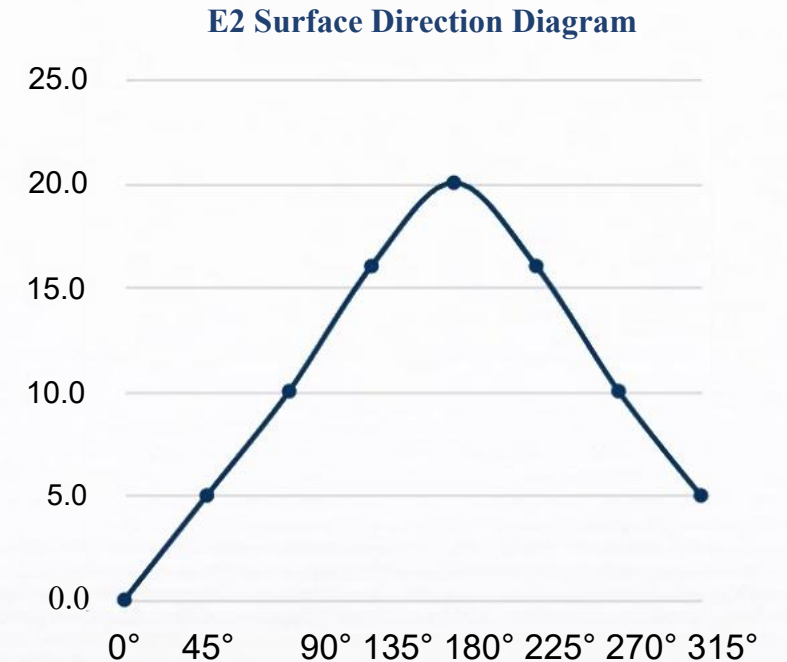
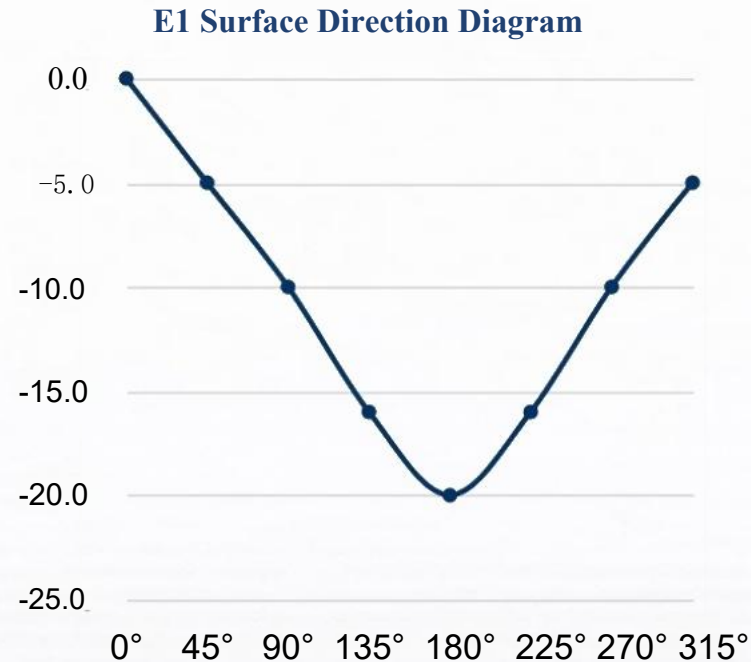
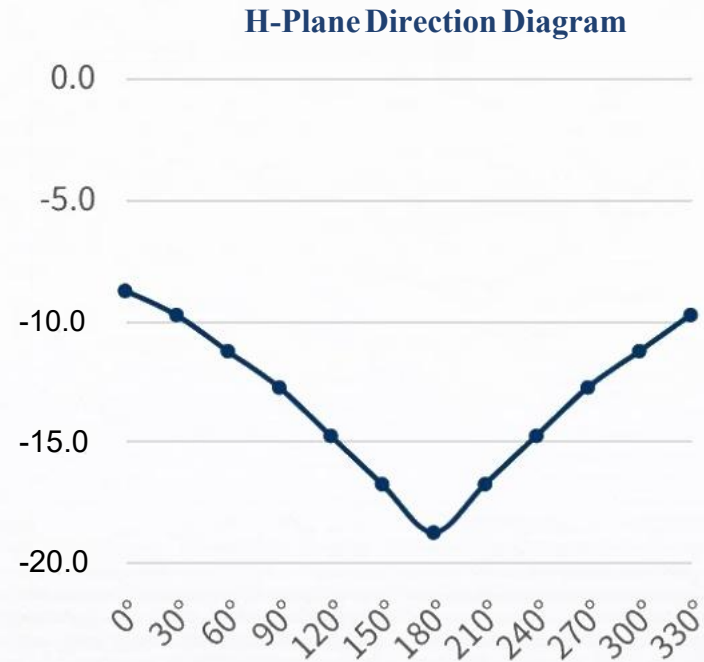
Efficiency Curve (%)



Summary: The antenna exhibits 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%).

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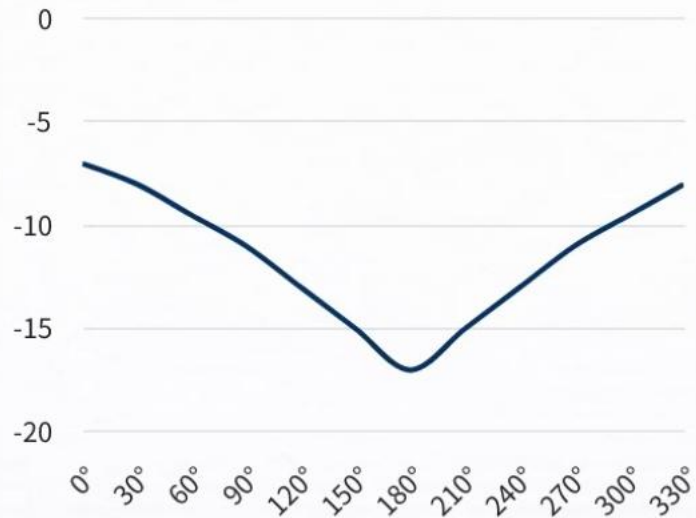
2.4 GHz Band – Antenna Direction Pattern (2400 MHz)



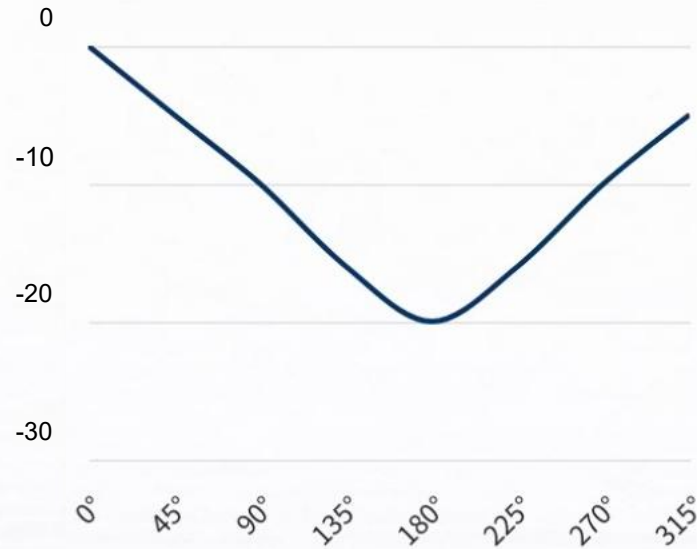
The antenna exhibits specific radiation directivity at the 2400 MHz frequency, which is essential for precisely optimizing wireless signal coverage and strength.

2.4 GHz Band – Antenna Direction Pattern (2450 MHz)

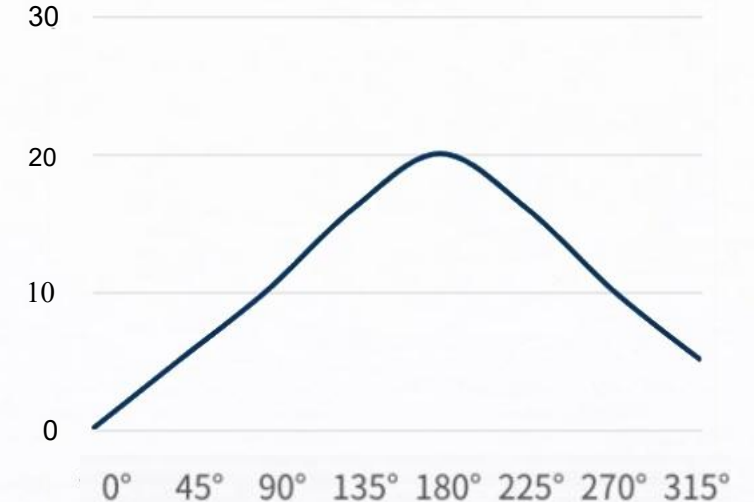
H-plane Direction Diagram



E1 Surface Direction Diagram



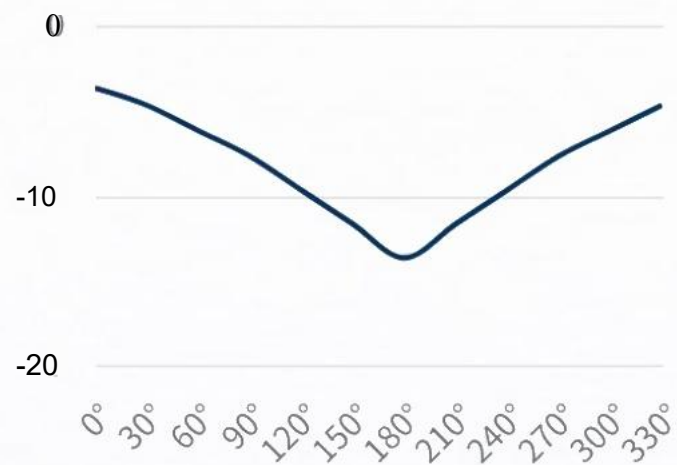
E2 Surface Direction Diagram



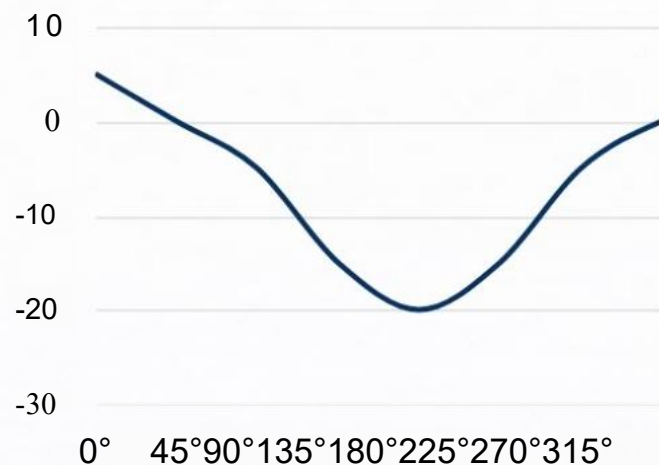
This is the antenna pattern at 2450 MHz. Compared to 2400 MHz, we observe slight differences in the pattern shape and gain distribution, reflecting how antenna performance varies with frequency.

2.4 GHz Band – Antenna Pattern (2500 MHz)

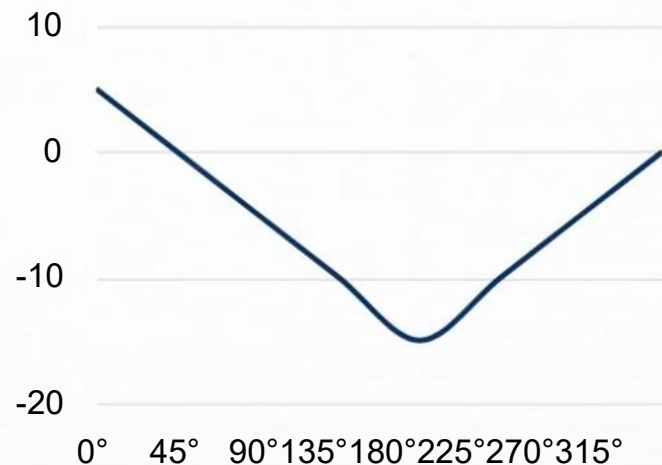
H-plane Direction Diagram



E1 Surface Direction Diagram

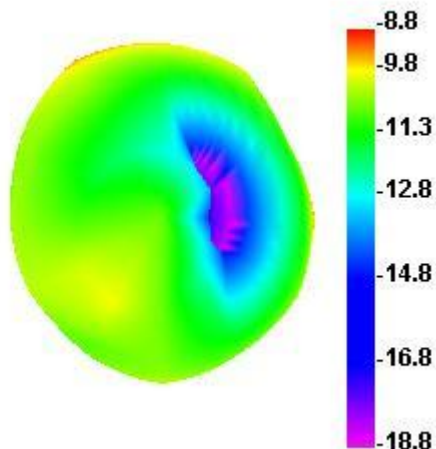


E2 Surface Direction Diagram

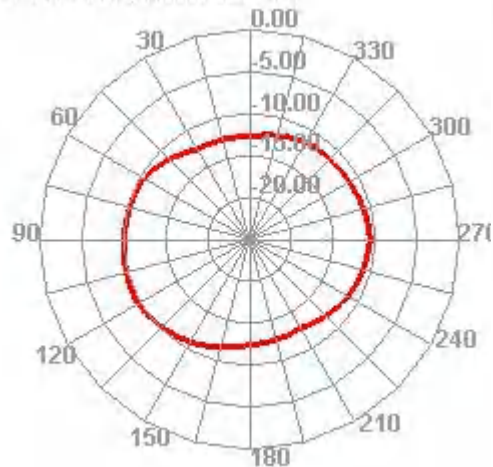


As the highest test frequency point within the 2.4 GHz band, the antenna exhibits excellent consistency in its radiation characteristics at this frequency.

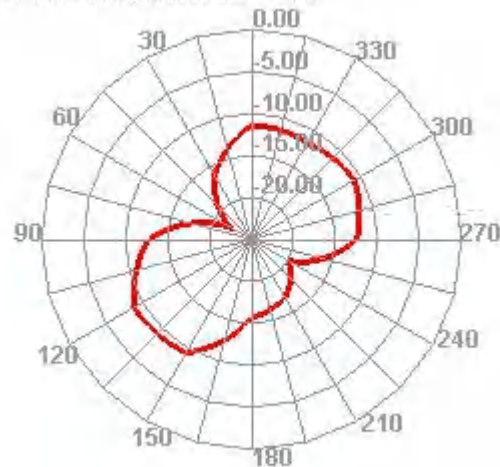
2400.000MHz



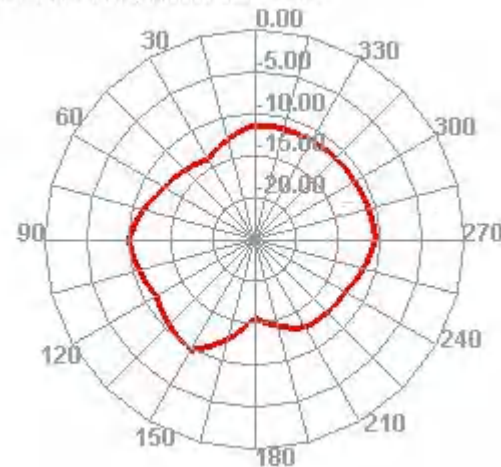
2400.000MHz H



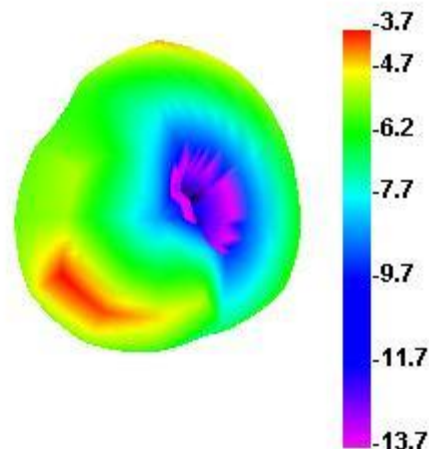
2400.000MHz E1



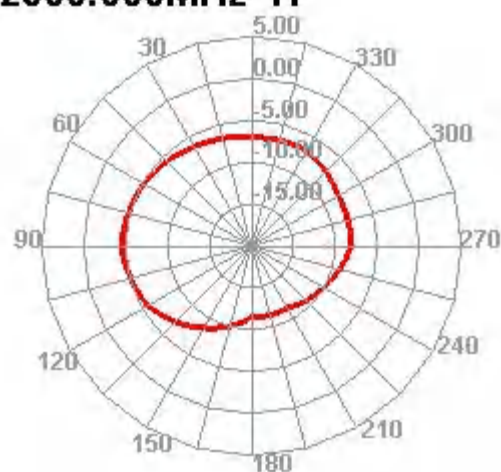
2400.000MHz E2



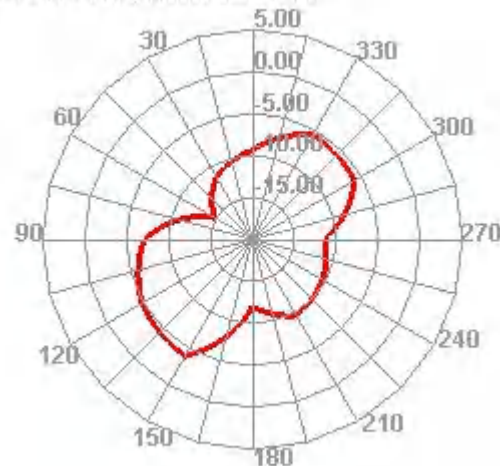
2500.000MHz



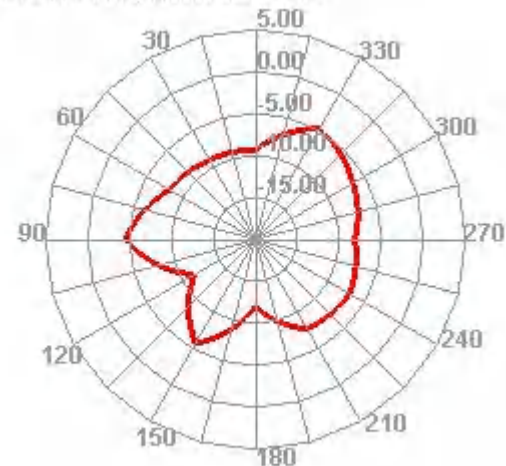
2500.000MHz H



2500.000MHz E1



2500.000MHz E2



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

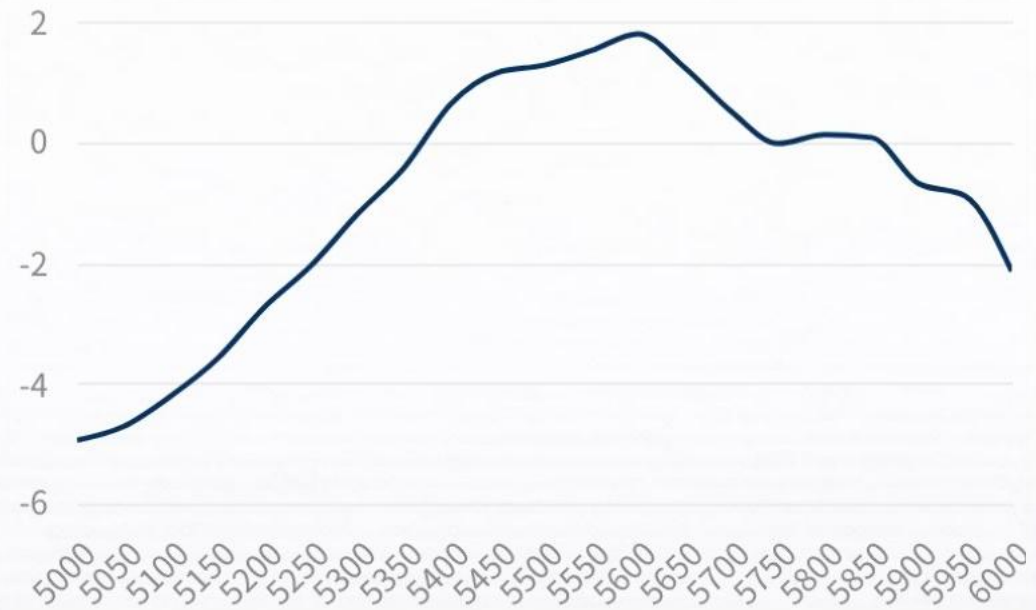
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Passive Test For wifi6G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5000	11.59	-9.36	-4.95	-7.1	4.865	6.73	-4.95	-22.93	4.4	90	61.06	61.08
5050	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	61.7
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	62.1
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

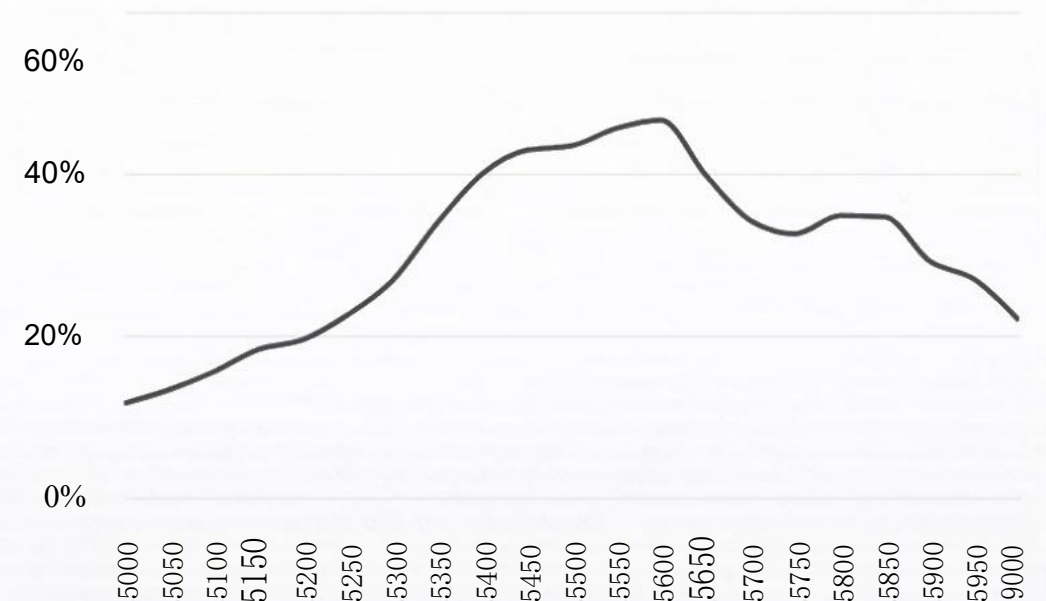
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5G Frequency Bands – Gain and Efficiency

Gain Curve (dBi)



Efficiency Curve (%)

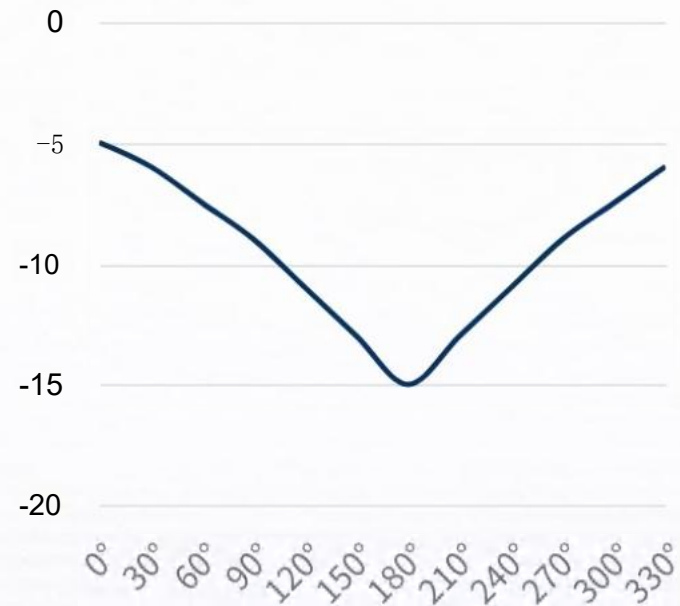


Key conclusions: The 5G antenna performs best in the 5600 MHz band, with a gain of 1.79 dBi and an efficiency of 46.54%.

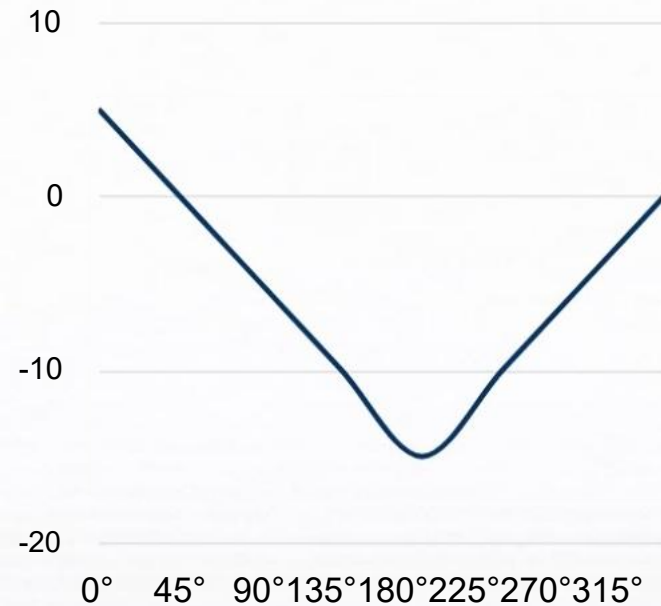
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5G Frequency Band – Antenna Direction Pattern (5000 MHz)

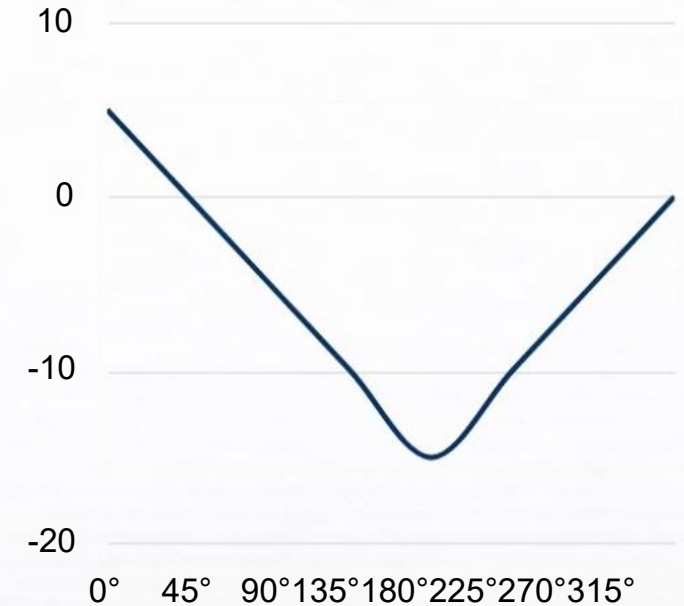
H-Plane Direction Di-agram



E1 Surface Direction Di-agram



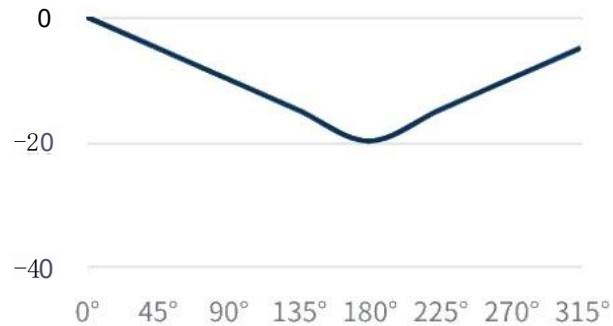
E2 Surface Direction Diagram



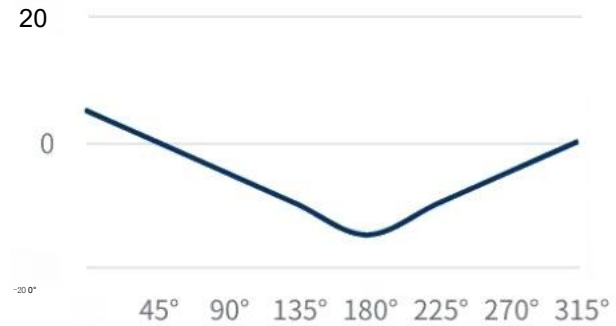
Conclusion: The 5 GHz band antenna exhibits omnidirectional radiation on the H-plane and directional radiation on the E-plane, with overall gain and directivity superior to those of the 2.4 GHz band.

5G Frequency Band – Antenna Direction Pattern (5500 MHz)

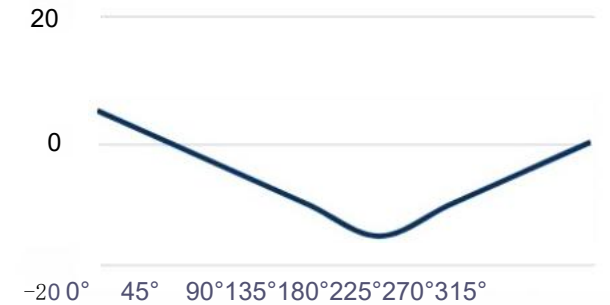
 **H-plane Direction Diagram**



 **E1 Surface Direction Diagram**



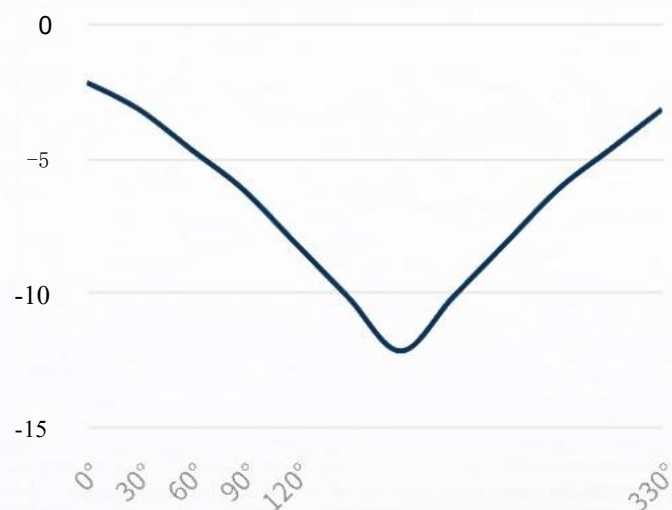
 **E2 Surface Direction Diagram**



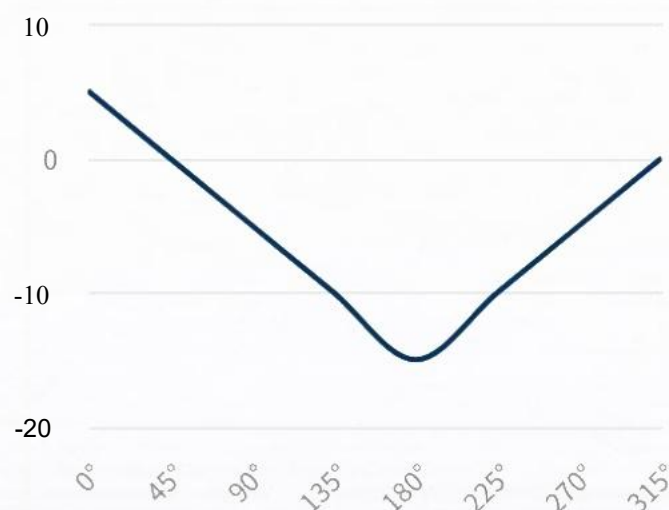
At 5500 MHz frequency, the antenna exhibits high gain and efficiency, with a directional pattern demonstrating excellent symmetry and directivity, providing robust support for efficient 5G signal transmission.

5G Frequency Band – Antenna Direction Pattern (6000 MHz)

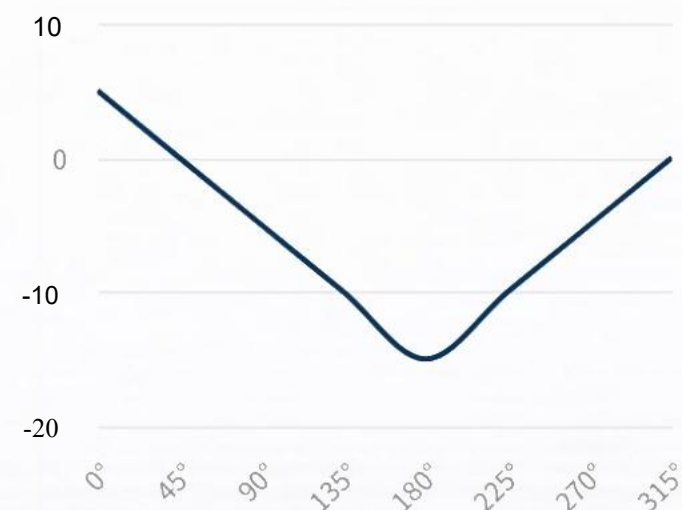
H-plane Direction Diagram



E1 Surface Direction Diagram

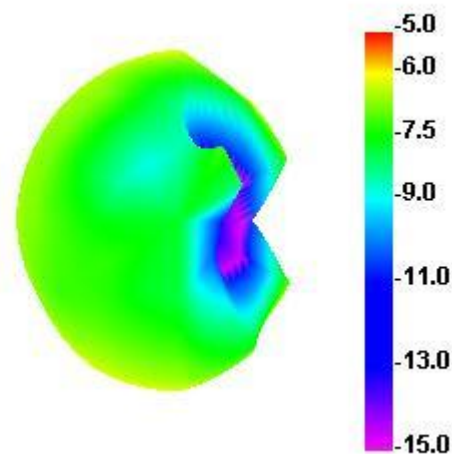


E2 Surface Direction Diagram

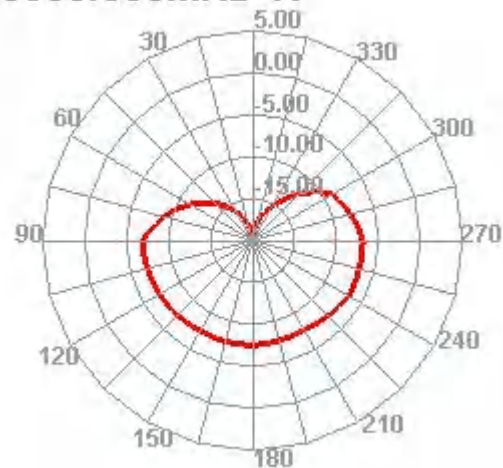


Conclusion: At 6000 MHz frequency, the antenna exhibits stable radiation characteristics, with all aspect patterns demonstrating excellent directivity and gain performance.

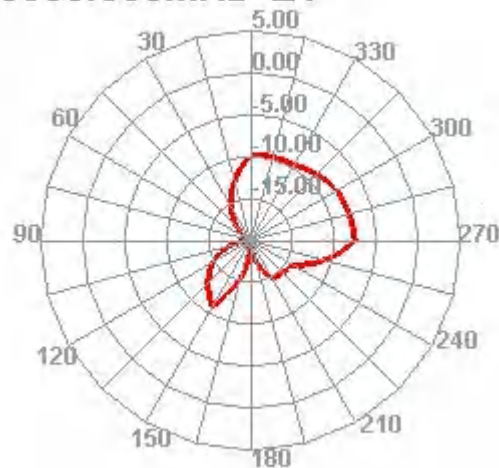
5000.000MHz



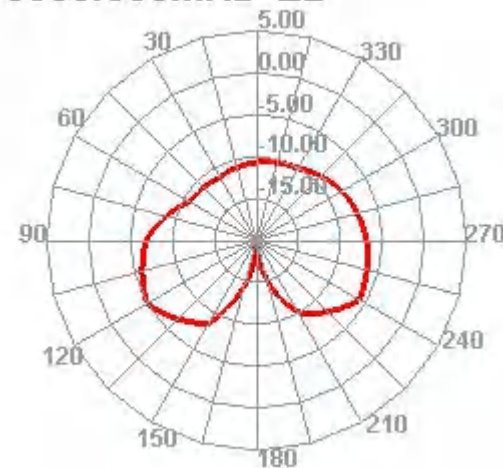
5000.000MHz H



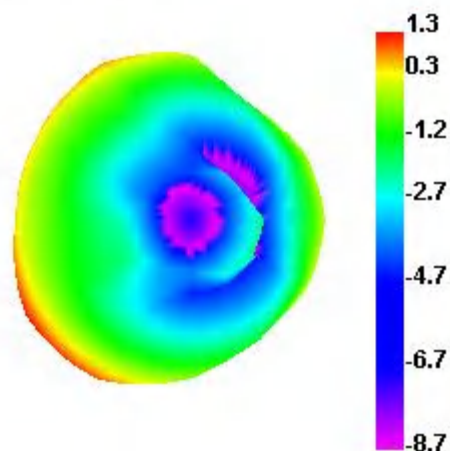
5000.000MHz E1



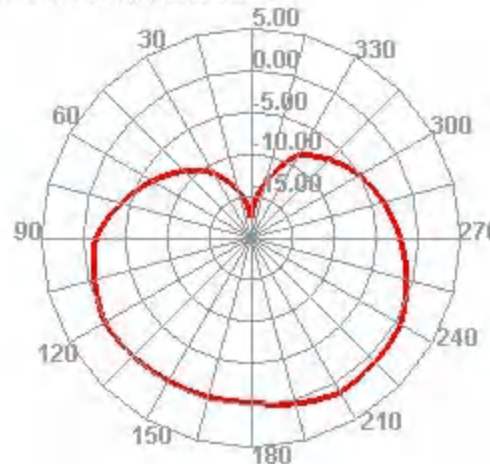
5000.000MHz E2



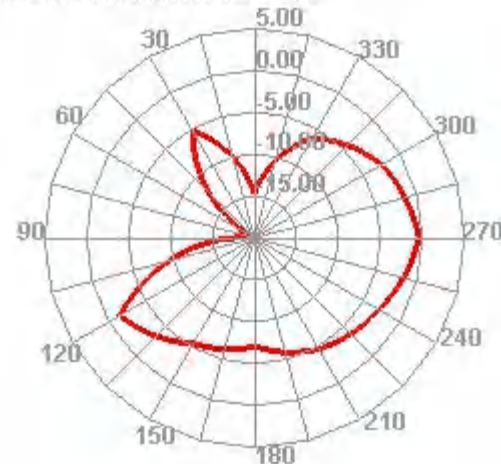
5500.000MHz



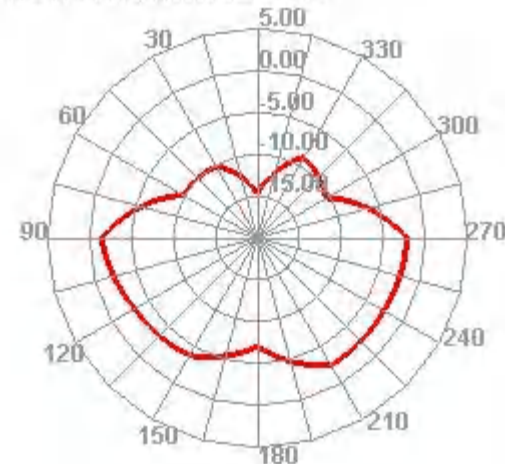
5500.000MHz H



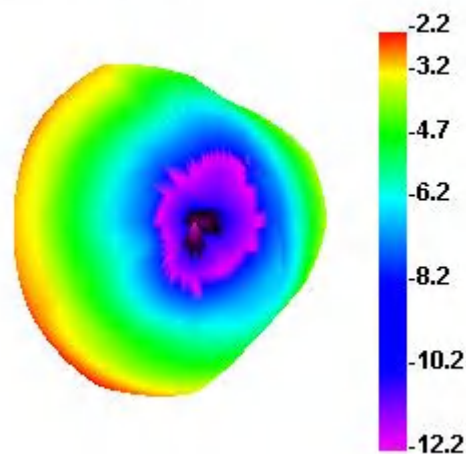
5500.000MHz E1



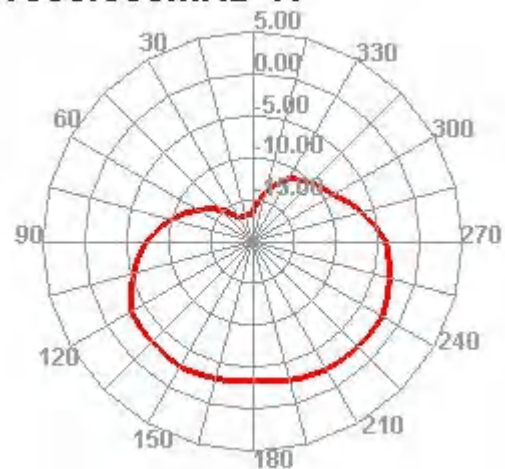
5500.000MHz E2



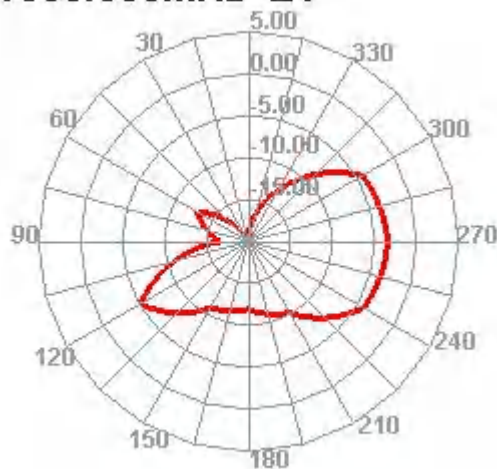
6000.000MHz



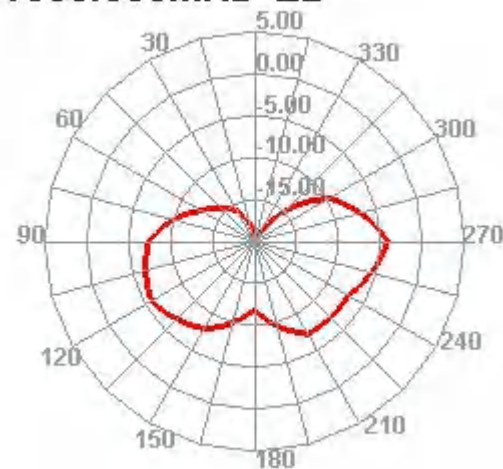
6000.000MHz H



6000.000MHz E1



6000.000MHz E2



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Conclusion and Analysis



2.4G Frequency Band Performance

At 2490 MHz, efficiency and gain reach their maximum values of 19.06% and -3.88 dBi, respectively. The directivity is stable, with a beam width ranging from 30° to 60°.



5G Frequency Band Performance

At 5600 MHz, 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 band.



Overall Conclusion

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



Thank You for Wa-tching.

THANKS FOR YOUR ATTENTION