

2.4G–2.48G Band PCB Antenna Test Report

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1. Specifications

Frequency (MHz)	2400–2480
Peak Gain (dBi)	2.92
Average Gain (dBi)	> -3
VSWR	< 1.6
Impedance (Ω)	50
Antenna Type	Planar Inverted-F on board
Polarization	Linear

2. Test Environment

Test environment: Zhongke Guoji anechoic chamber test system



Figure 1. Test setup inside the anechoic chamber (coordinate fixture X/Y/Z).

3. Antenna Sample and Physical Dimensions



Figure 2. Antenna sample (on-board PCB antenna) and physical dimensions.

4. Antenna Passive S-Parameters

Antenna passive S-parameters: VSWR (Voltage Standing Wave Ratio), Return Loss, and Smith Chart.

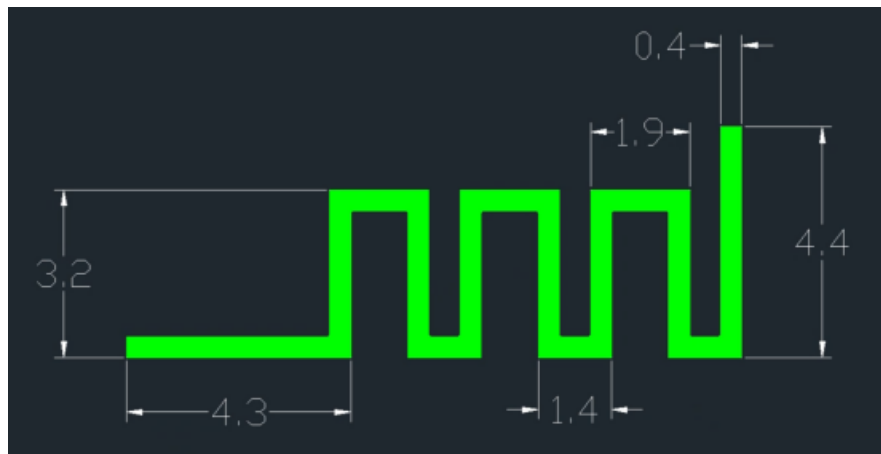


Figure 3. Antenna outline drawing with physical dimensions (unit: mm).

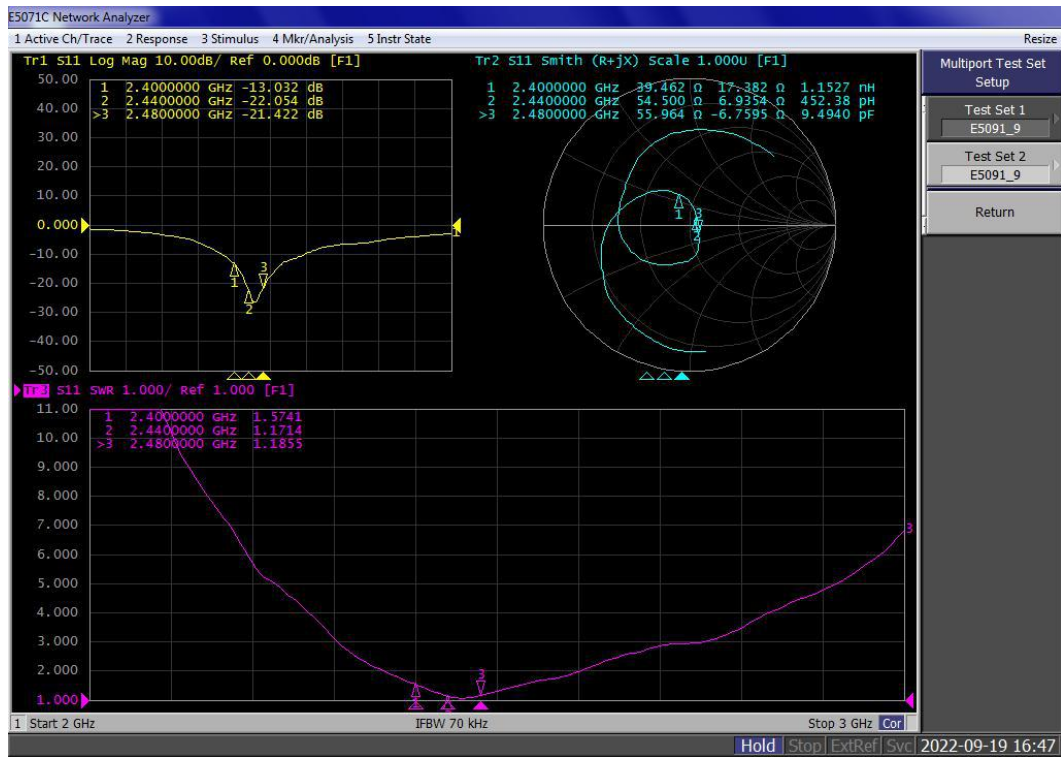


Figure 4. Measured VSWR, Return Loss (S11) and Smith Chart (network analyzer screenshot).

5. Antenna Efficiency and Gain

Frequency (MHz)	Gain (dBi)	Efficiency (%)	Average Gain (dBi)	Efficiency (dB)
2400	2.92	72.20%	-1.14	-1.41
2410	1.95	61.36%	-2.05	-2.12
2420	2.00	61.00%	-1.98	-2.15
2430	0.80	47.29%	-3.09	-3.25
2440	0.12	40.82%	-3.87	-3.89
2450	0.97	48.41%	-3.08	-3.15
2460	1.28	53.80%	-2.81	-2.69
2470	1.29	51.75%	-2.98	-2.86
2480	1.79	58.79%	-2.45	-2.31
Average	1.46	55.05%	-2.61	-2.65
Peak	2.92	72.20%	-1.14	-1.41

6. Radiation Patterns

6.1 2D Theta Patterns

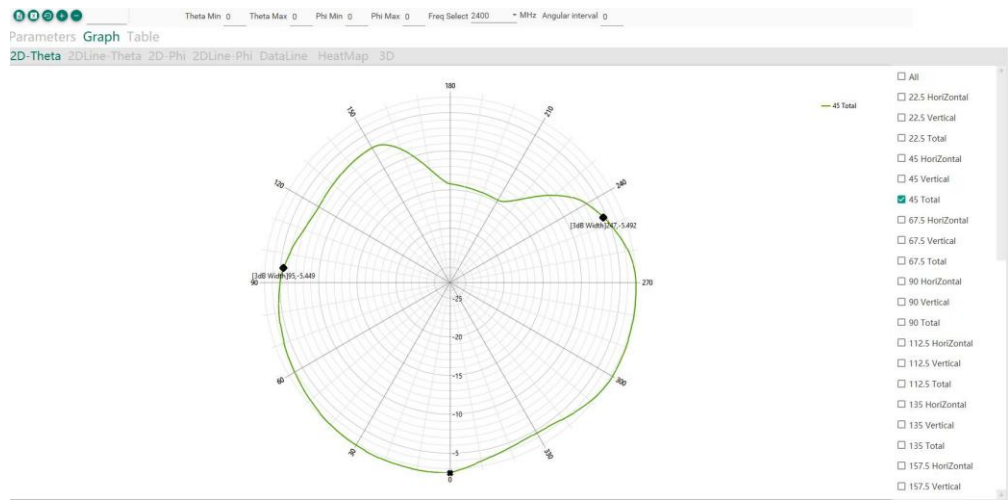


Figure 5. Antenna 2400 MHz 2D Theta Pattern.

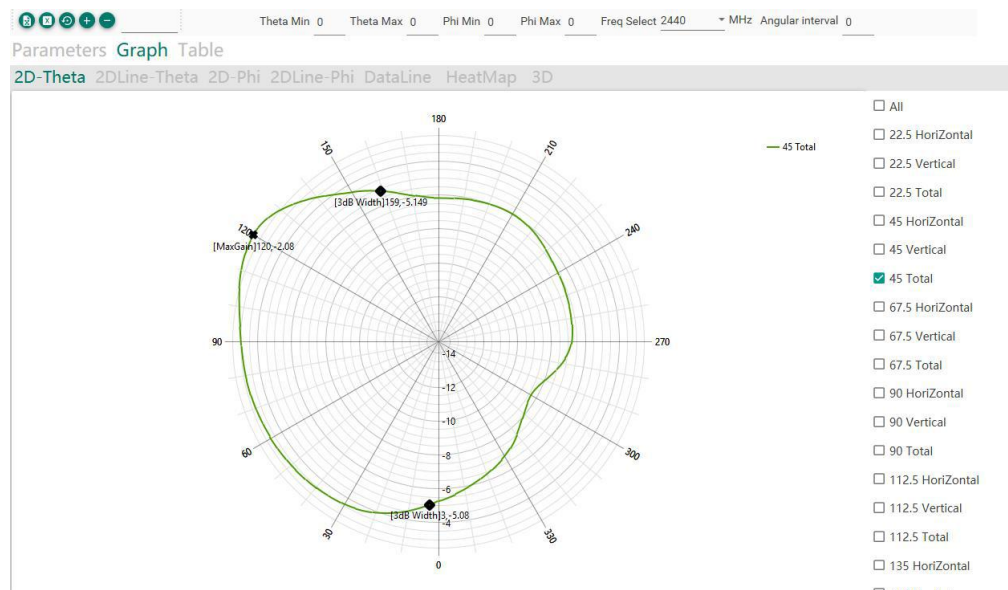


Figure 6. Antenna 2440 MHz 2D Theta Pattern.

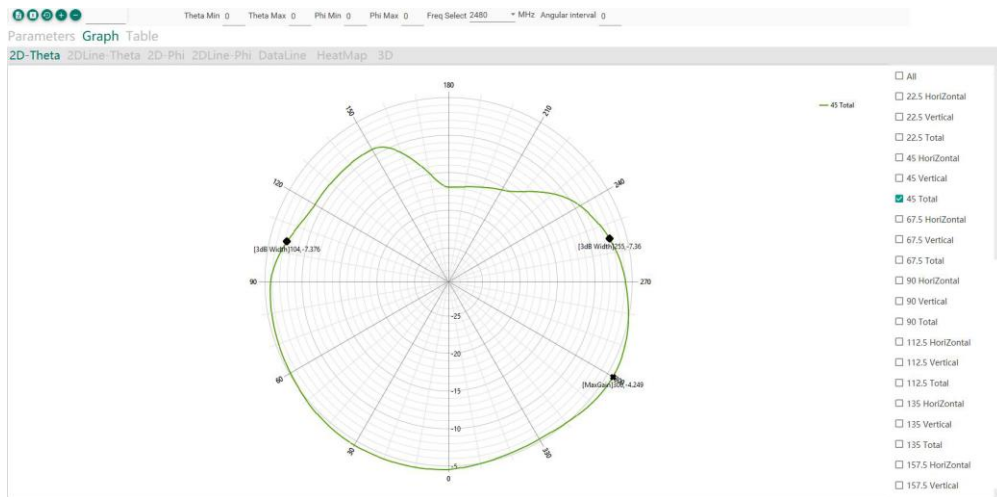


Figure 7. Antenna 2480 MHz 2D Theta Pattern.

6.2 2D Phi Patterns

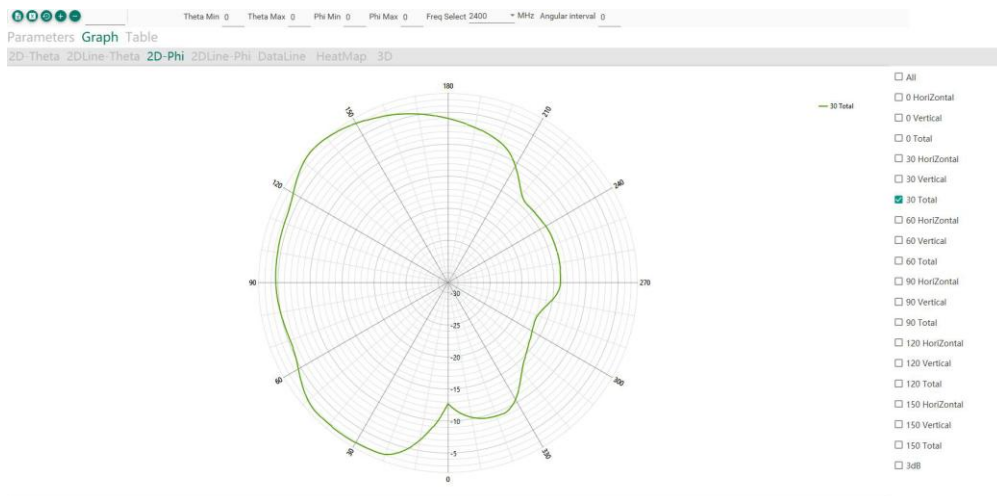


Figure 8. Antenna 2400 MHz 2D Phi Pattern.

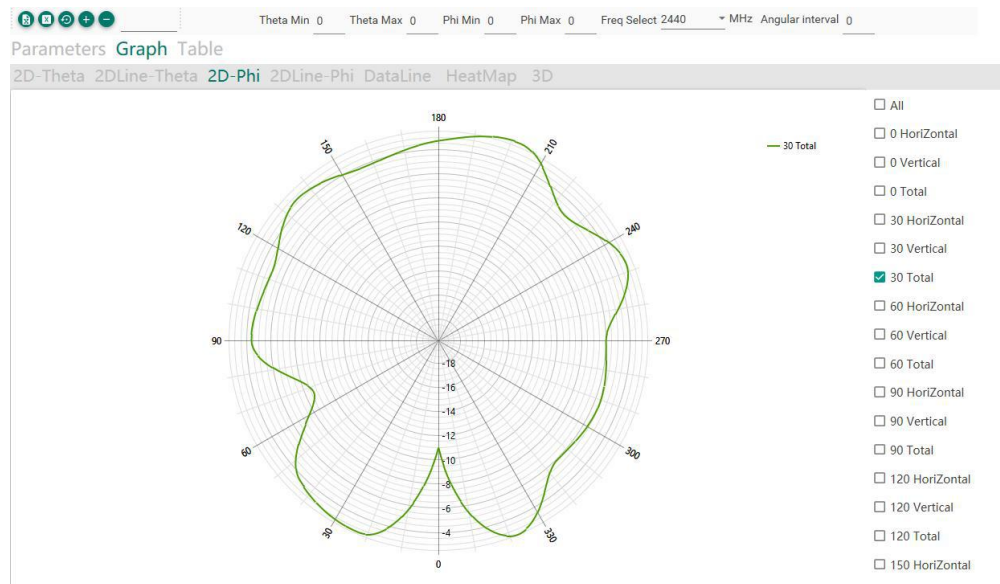


Figure 9. Antenna 2440 MHz 2D Phi Pattern.

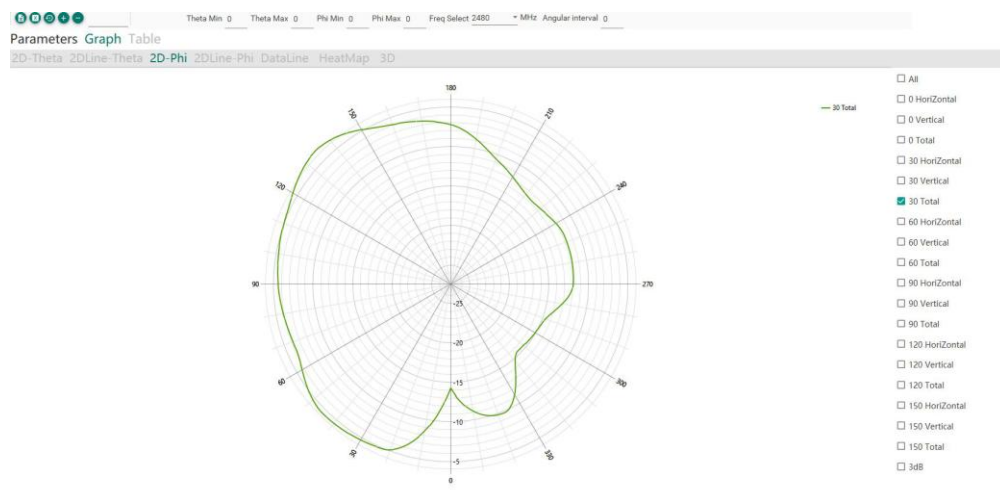


Figure 10. Antenna 2480 MHz 2D Phi Pattern.

6.3 3D Total Patterns

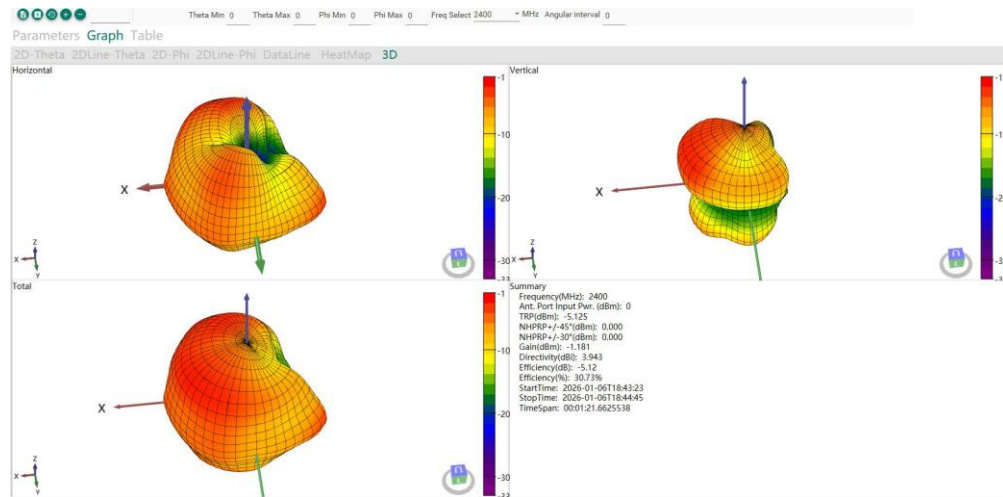


Figure 11. Antenna 2400 MHz 3D Total Pattern.

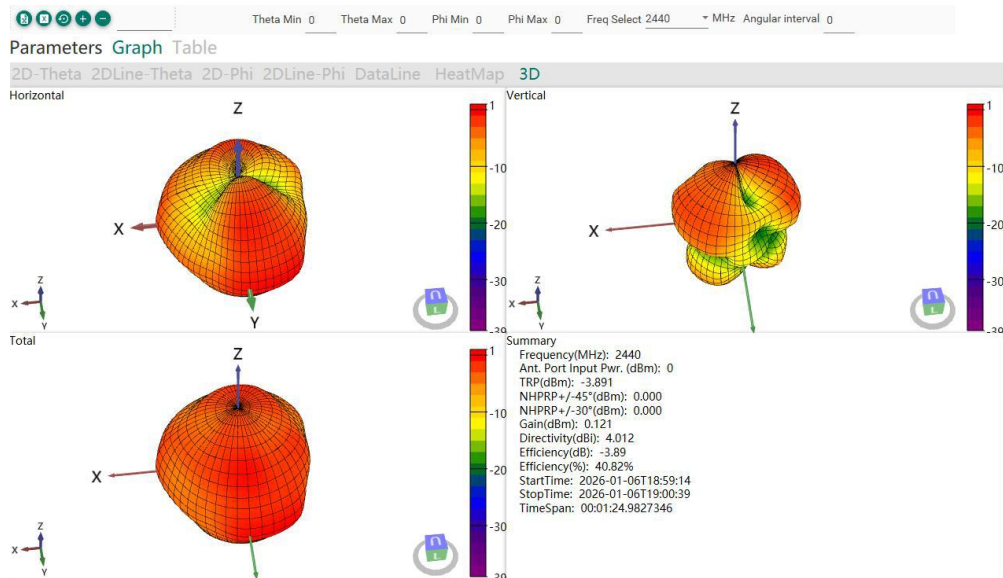


Figure 12. Antenna 2440 MHz 3D Total Pattern.

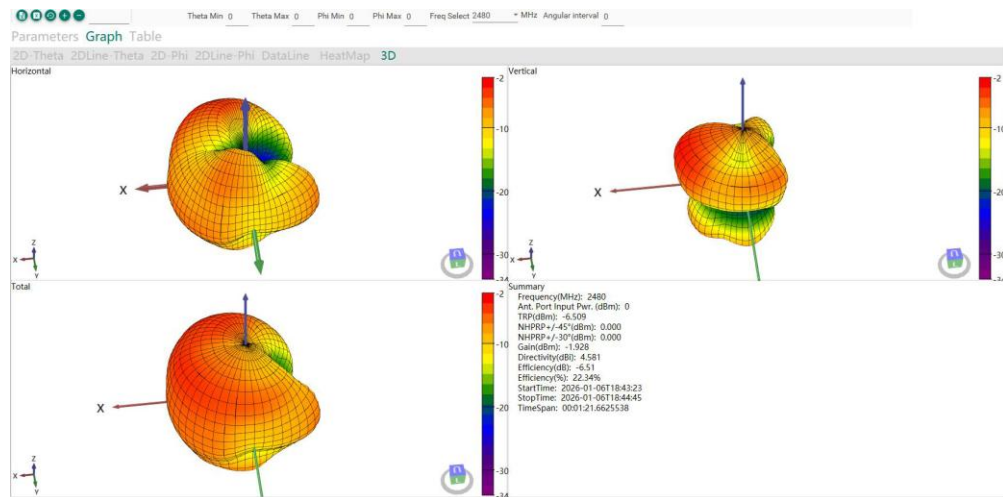


Figure 13. Antenna 2480 MHz 3D Total Pattern.

Note: This document is an English translation of the original Chinese test report “2.4G–2.48G Band PCB Antenna Test Report”. All measured data, tables and figures are reproduced faithfully from the original report without modification.