

2.4 GHz-2.48 GHz PCB Antenna

SPECIFICATION

1. Antenna Identification

Antenna Manufacturer /	YU HAI DI DA TECHNOLOGY LIMITED
Manufacturer Address /	Rm 701, Unit 108B, 7/F, Twr B New Mandarin Plaza,14 Science Museum Rd, Tsim Sha Tsui, Hong Kong]
Antenna Model /	2.4G PCB ANT]
Antenna Type /	PCB Antenna - Planar Inverted-F Antenna (PIFA)
Frequency Range /	2400-2480 MHz
Polarization /	Linear
Impedance /	50 Ω
Peak Gain /	2.499 dBi
Average Gain /	> -4 dBi
VSWR /	< 3.2

2. Specification Summary /

Parameter / 參數	Specification / 規格
Frequency	2400-2480 MHz
Peak Gain	2.499 dBi
Average Gain	> -4 dBi
VSWR	< 3.2
Impedance	50 Ω
Antenna Type	PCB Antenna - PIFA
Polarization	Linear

Measurement Information

3. Measurement Procedure

- 1) Visual inspection and identification: verify the antenna sample, model, physical configuration and test connection before measurement.
- 2) S-parameter measurement: connect the antenna to a calibrated 50 Ω measurement system and measure S11 over 2400–2480 MHz. Derive VSWR and Return Loss from the measured S11 data.
- 3) Radiation characteristics: place the antenna in the calibrated anechoic/darkroom antenna measurement system and measure radiation patterns over the specified frequency range.
- 4) Gain and efficiency: determine antenna gain and radiation efficiency using the laboratory's calibrated antenna measurement method and applicable reference antenna/system calibration.
- 5) Data processing: record the frequency-by-frequency results and determine the reported Average and Peak values from the measured dataset.

Note: The above wording is a proposed formalized procedure based on the supplied document. The laboratory shall confirm the exact instrument settings, calibration method, measurement distance, scan method, reference antenna and uncertainty treatment against its actual records before release.

4. Test Setup

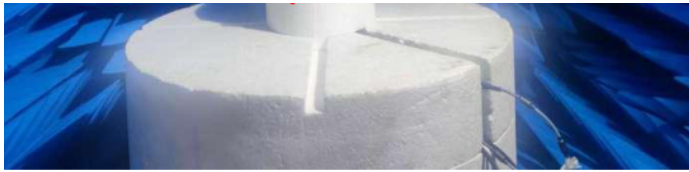


Figure 1. Antenna measurement setup

Physical Dimensions

天线实物及物理尺寸

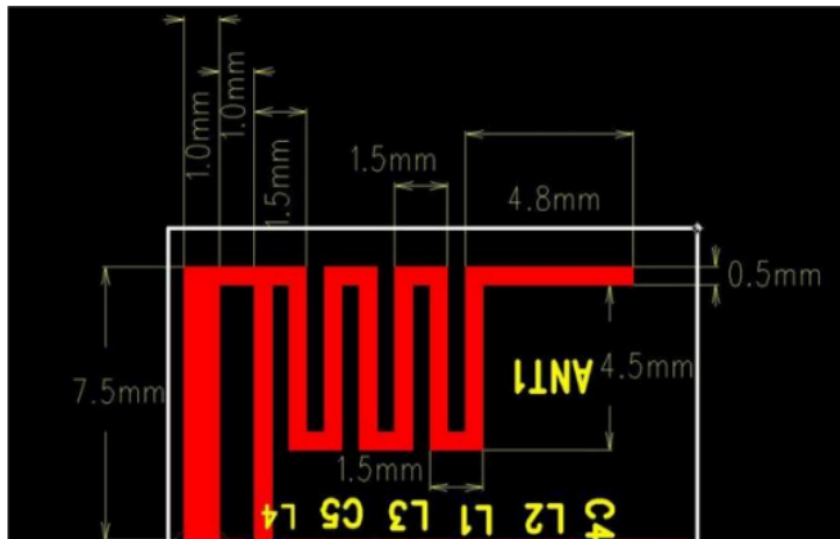
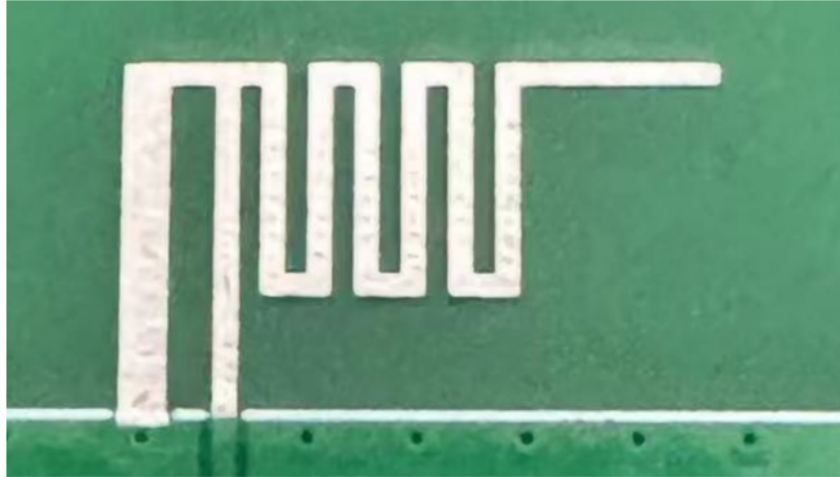


Figure 2. Antenna physical dimensions

S-Parameters, VSWR and Antenna Performance

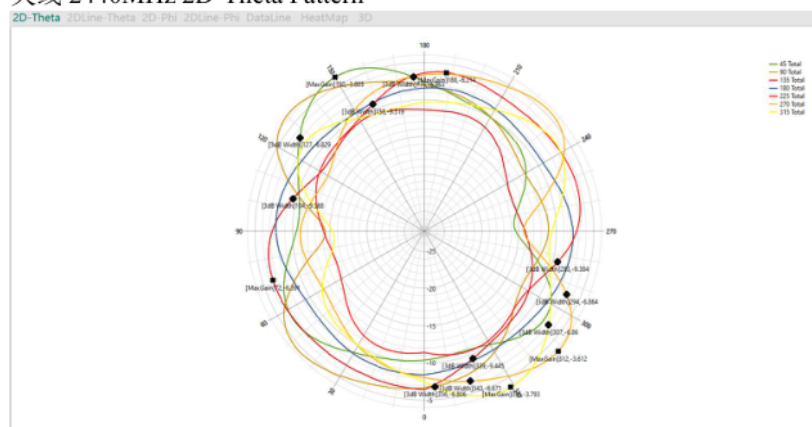
S-parameter measurement: VSWR, Return Loss and Smith Chart

Frequency (MHz)	Gain (dBi)	Efficiency (%)	Average Gain (dBi)	Efficiency (dB)
2400	1.433	59.329%	-2.717	-2.267
2410	0.927	51.861%	-3.416	-2.852
2420	0.829	52.112%	-3.166	-2.831
2430	0.881	49.299%	-3.258	-3.072
2440	1.192	50.672%	-3.144	-2.952
2450	1.688	53.067%	-2.735	-2.752
2460	2.194	59.423%	-2.276	-2.260
2470	2.118	56.680%	-2.438	-2.466
2480	2.499	61.727%	-2.112	-2.095
Average	1.529	54.908%	-2.806	-2.616
Peak	2.499	61.727%	-2.112	-2.095

Note: "Average Gain" and "Efficiency (dB)" are retained using the terminology in the supplied source.

Radiation Patterns

天线 2440MHz 2D-Theta Pattern



天线 2440MHz 2D-Phi Pattern

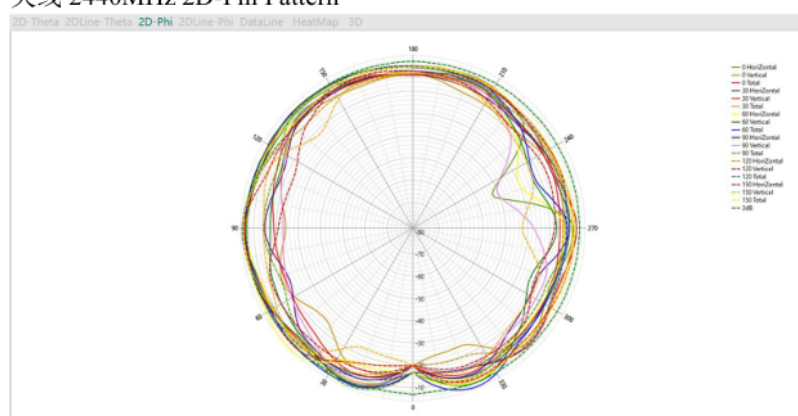
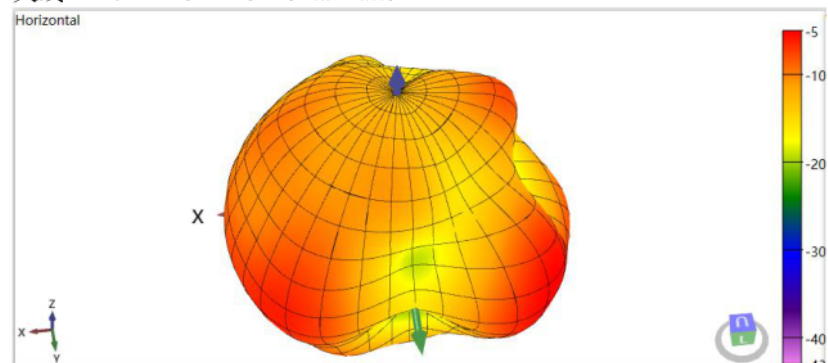


Figure 3. 2440 MHz 2D-Theta and 2D-Phi patterns / 3 2440 MHz

3D Radiation Patterns

天线 2440MHz 3D-Horizontal Pattern



天线 2440MHz 3D-Vertical Pattern

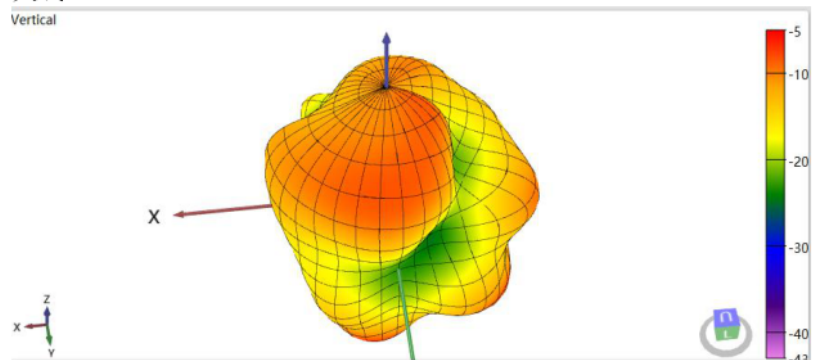


Figure 4. 2440 MHz 3D-Horizontal and 3D-Vertical patterns / 4 2440 MHz

3D Total Pattern

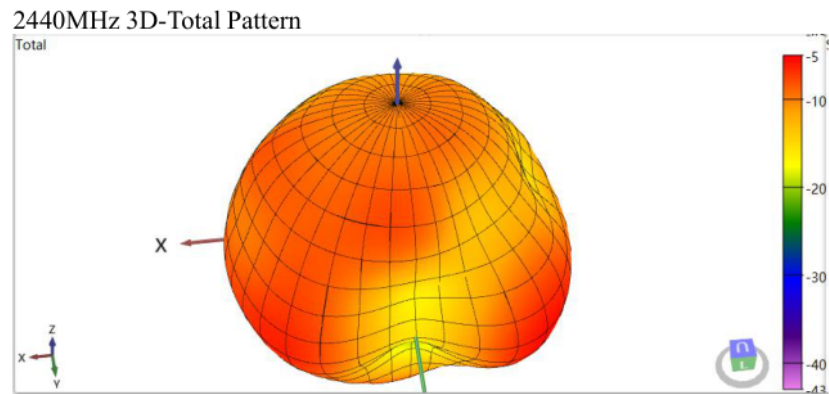


Figure 5. 2440 MHz 3D-Total pattern / □5 2440 MHz

Document control note: Manufacturer information, equipment identification, calibration records, laboratory identity/address, personnel signature and exact measurement settings are intentionally left as controlled fields because they are not present in the supplied source document.