

Antenna Specification Document

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OverAir™ SMD Antenna Series
Compliant with RoHS regulations

Antenna type: Ceramic Antenna

2.4GHz frequency band antenna

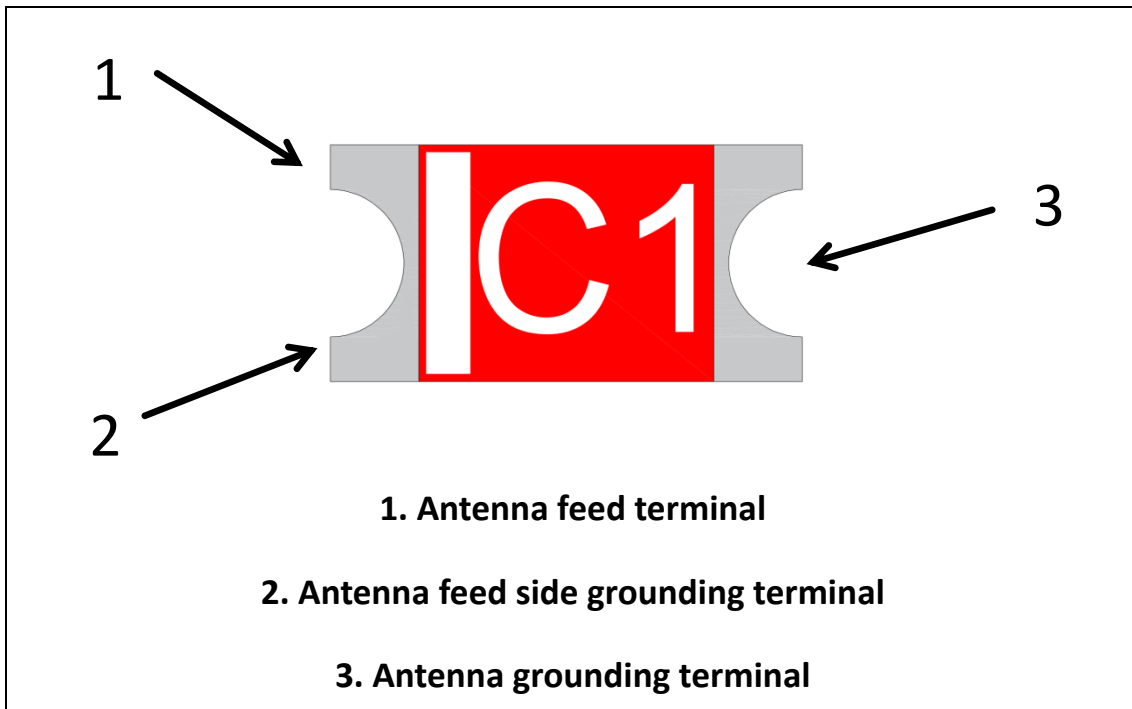
1. Characteristics

2. 1. A small-sized SMD patch antenna with dimensions of $3.20 \times 1.60 \times 0.40 \text{ mm}^3$.
3. 2. Low energy loss and high antenna efficiency.
4. 3. High stability under temperature and humidity variations.

1. Application

2. 1. Antenna application for 2.4GHz ISM frequency band.
3. 2. Bluetooth, wireless, smart home applications。

construction



size

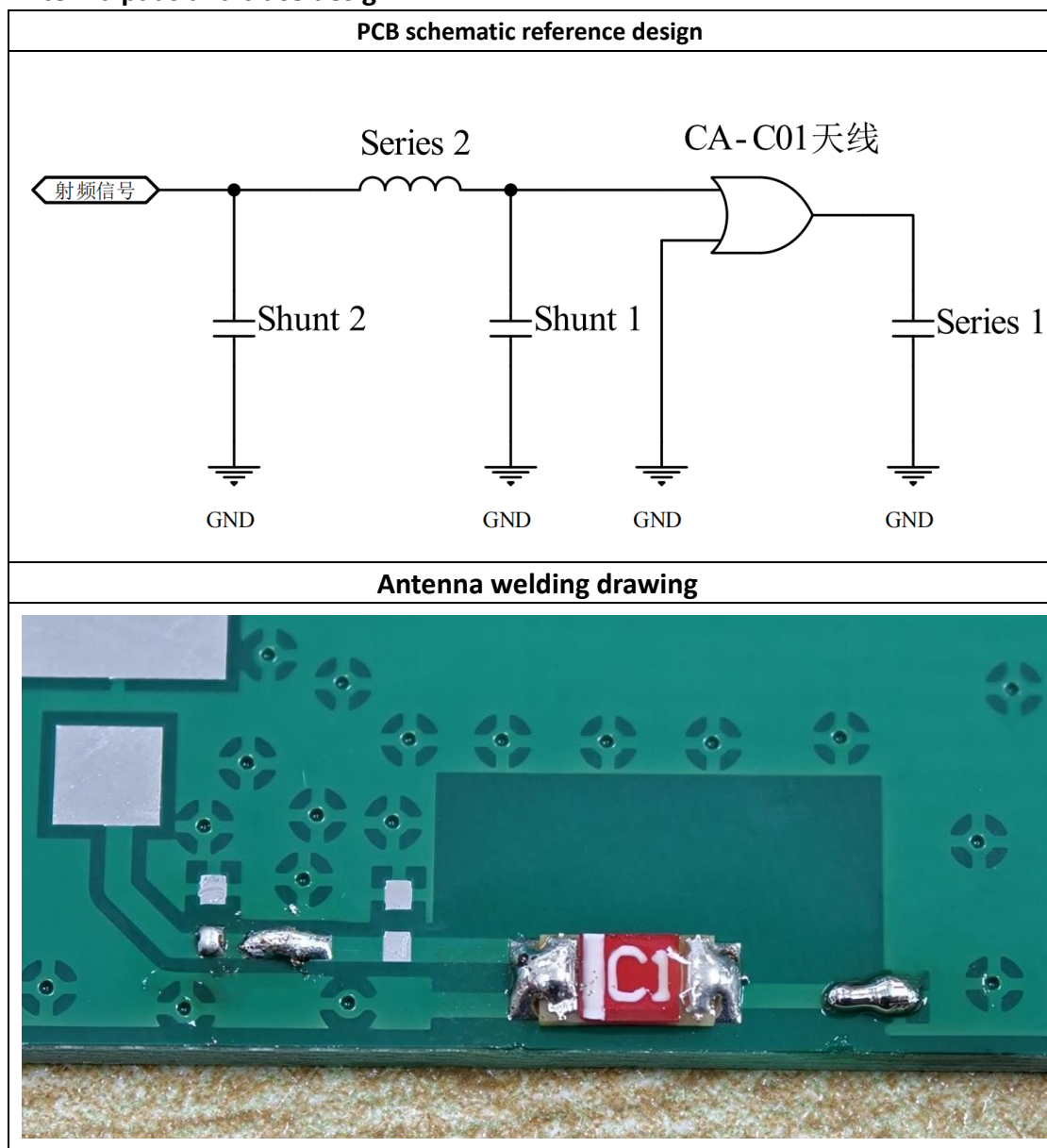
three views	symbol	size (mm)
	L	3.20 ± 0.10
	W	1.60 ± 0.10
	T	0.40 ± 0.05
	a	0.60 ± 0.10

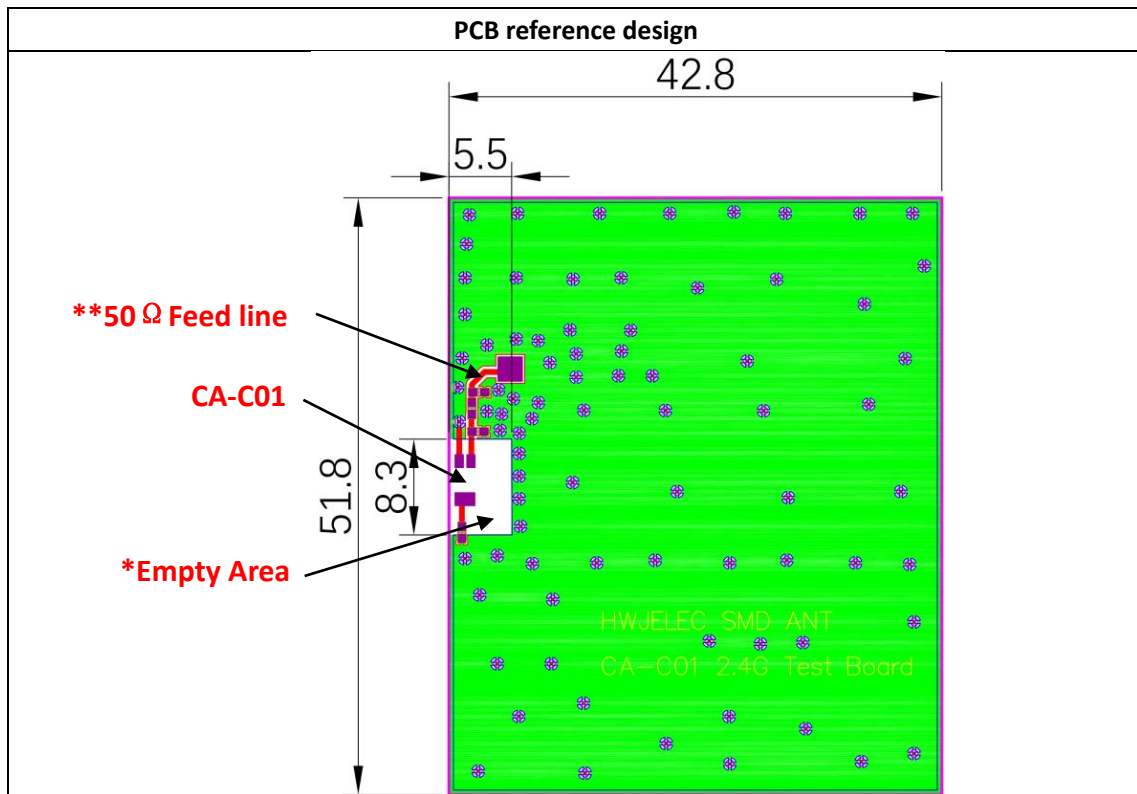
electrical specification

CA-C01	Specification
工作频率范围 Working Frequency	2450±50MHz
带宽 Band Width	>100MHz
阻抗 Impedance	50 Ω
增益 Gain(dBi)	2.96
驻波比 VSWR	<2
工作温度 Operation Temperature	-40℃~+85℃
可承受功率 Power Capacity	3W

The working frequency needs to be 2.45GHz, which can be achieved through impedance matching devices.

Antenna pads and trace design





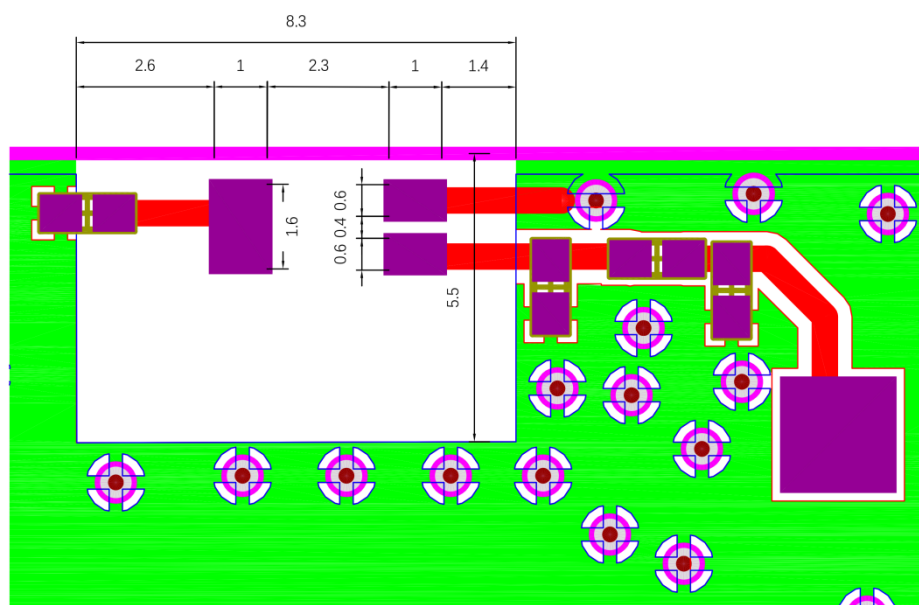
Unit : mm

- Ground
- 50Ω Transmission line
- Soldering Pad

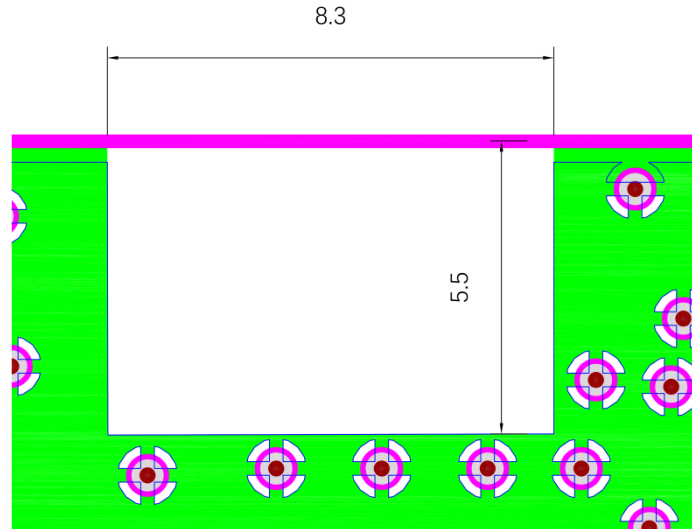
Empty Area: 8.3mm x 5.5mm All layers in this area have sufficient clearance and no ground or wiring is required.

****50Ω Feed line:** The wiring impedance in the laid-out area should be 50Ω.

Surface PCB drawing (dimensions in mm):

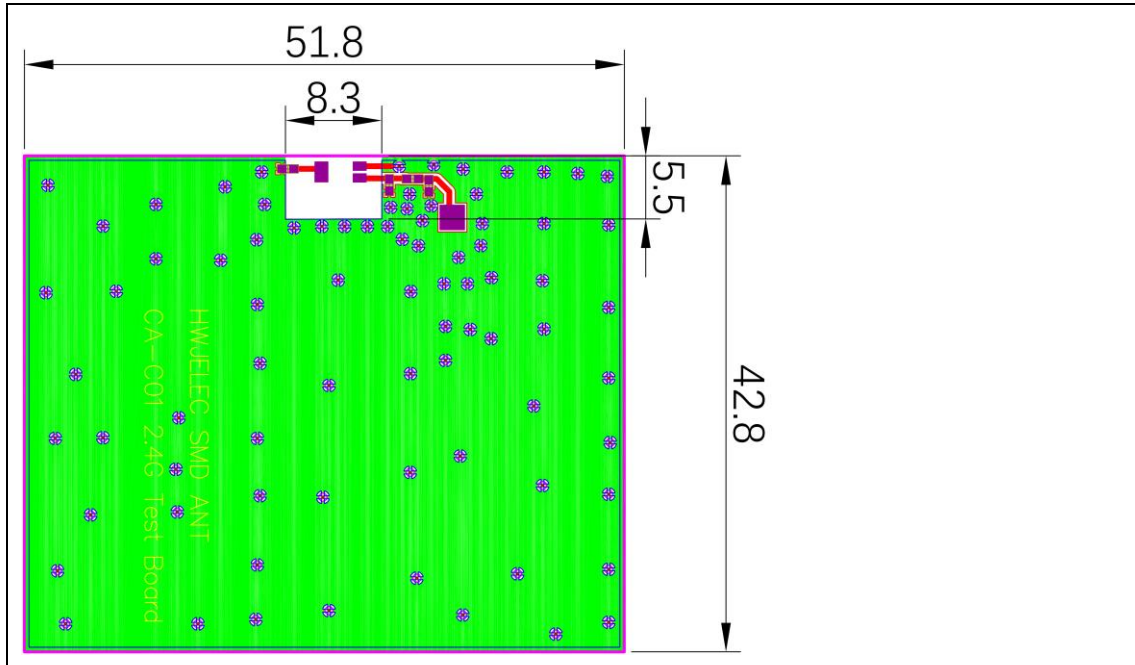


Lower layer PCB drawing (dimensions in mm):



Match the device values	Series-connected device Series 1	0.75pF
	Parallel devices Shunt 1	1pF
	Series-connected device Series 2	1.8nH
	Parallel devices Shunt 2	NC

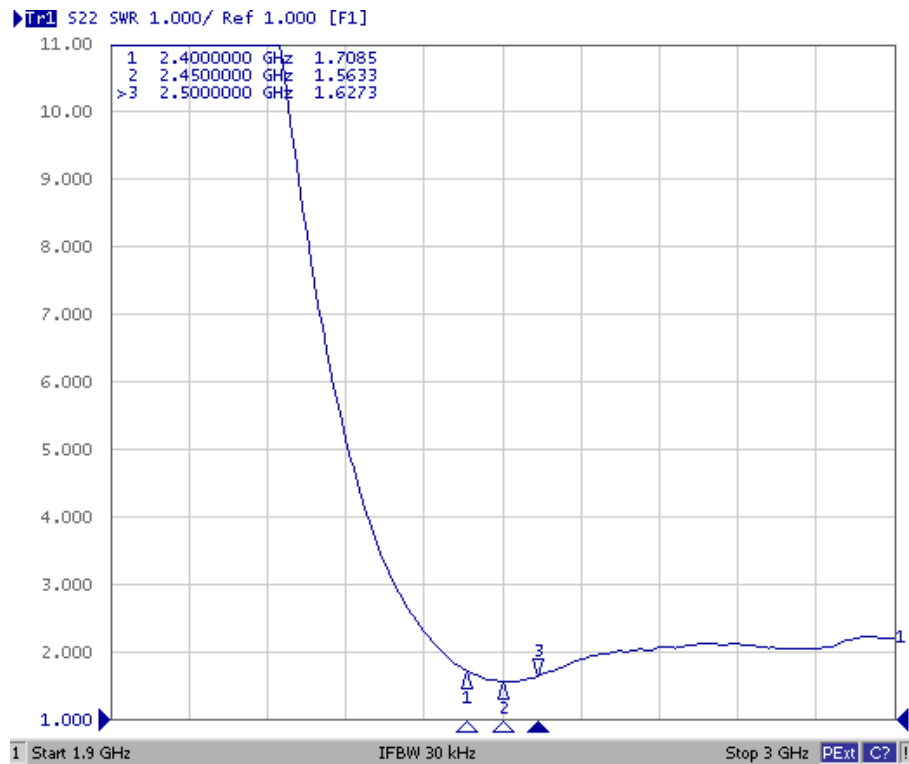
Antenna test on the test board (board thickness 1.0mm)



Antenna S11 characteristics

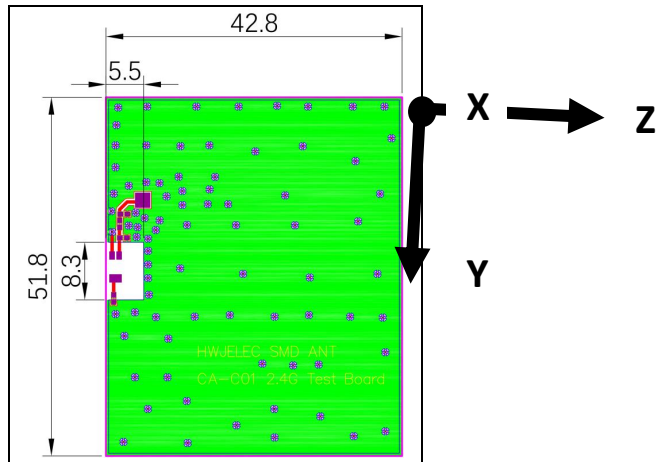


Antenna VSWR characteristics



Efficiency and radiation diagram

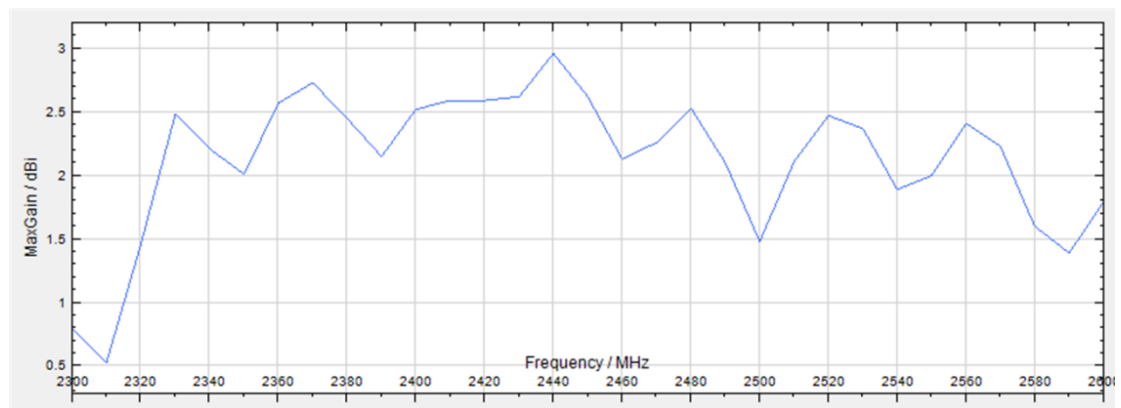
The efficiency, radiation diagram, gain and other performance parameters are based on the test of the PCB board design. The test data of CA-C01 antenna specification and characteristics are based on the size of the tested PCB board and the test direction shown in the figure below. The following data are based on the test results of the ETS 3D microwave anechoic chamber.



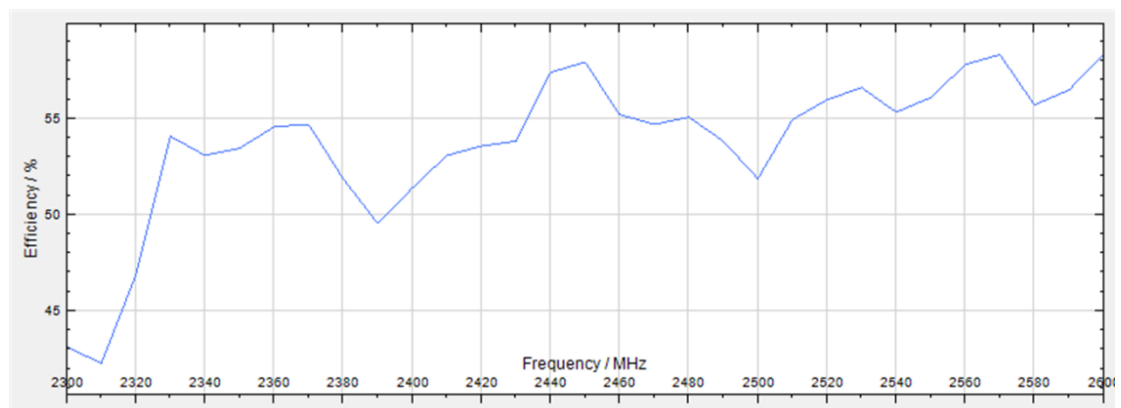
Antenna Gain Efficiency Test Table

Frequency/MHz	MaxGain/dBi	Efficiency / %
2400	2.52	51.4
2410	2.59	53.09
2420	2.59	53.58
2430	2.62	53.83
2440	2.96	57.41
2450	2.62	57.94
2460	2.13	55.21
2470	2.26	54.7
2480	2.53	55.08
2490	2.1	53.83
2500	1.48	51.88

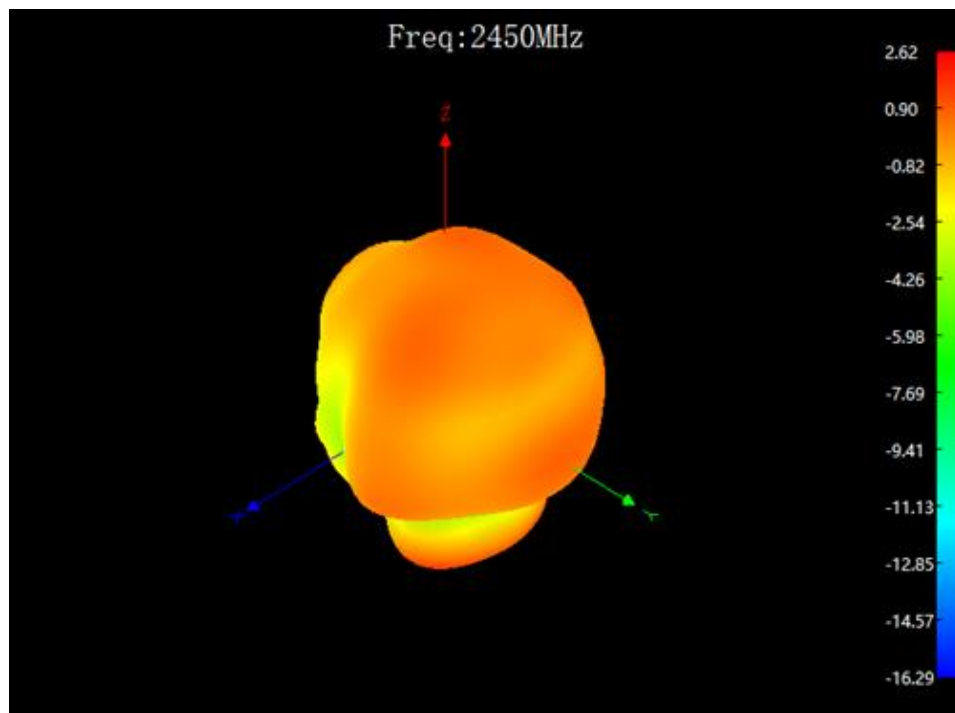
Antenna gain curve graph



Antenna efficiency curve graph



3D Directional Chart



Maximum antenna gain 2D diagram



Maximum antenna gain 3D pattern

