

SMD Antenna Specification Document

**The OverAir[®] SMD antenna series
complies with RoHS standards.**

PN: OA-C07

2.4 GHz ISM Band Antenna

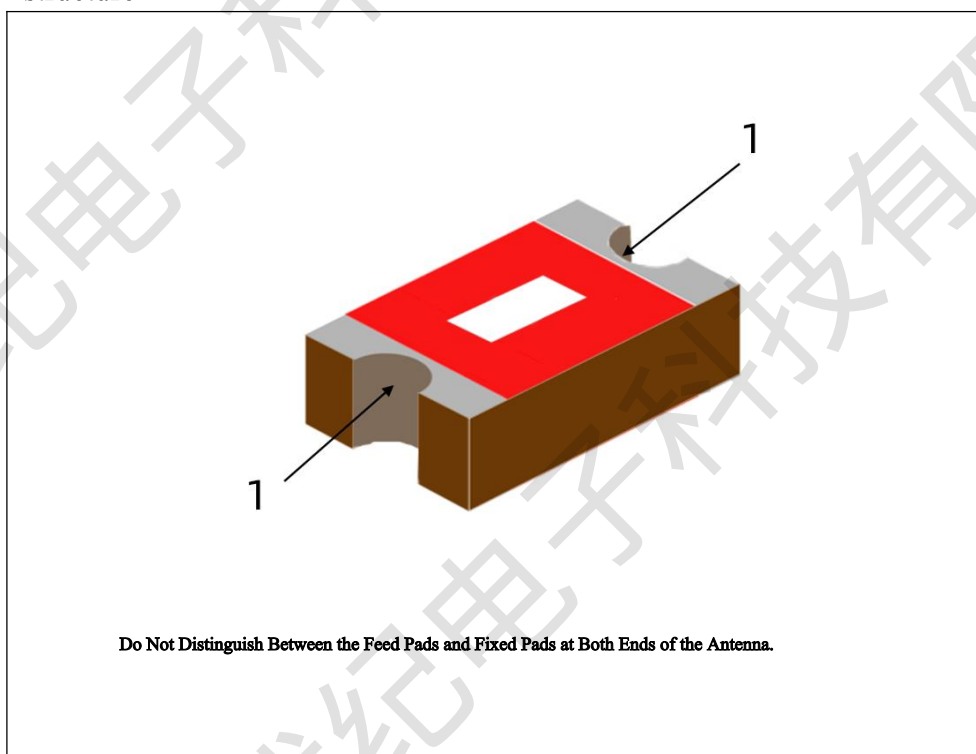
Characteristic

1. A compact SMD surface-mount antenna measuring only 3.5 X 1.7 X 1.2 mm³.
2. Low energy loss and high antenna efficiency.
3. It exhibits high stability under variations in temperature and humidity.

Apply

1. 2.4 GHz ISM Band Antenna Application
2. Bluetooth, ZigBee, wireless applications, smart home applications, etc.
3. WIFI (only 2.4 GHz)

structure



Size

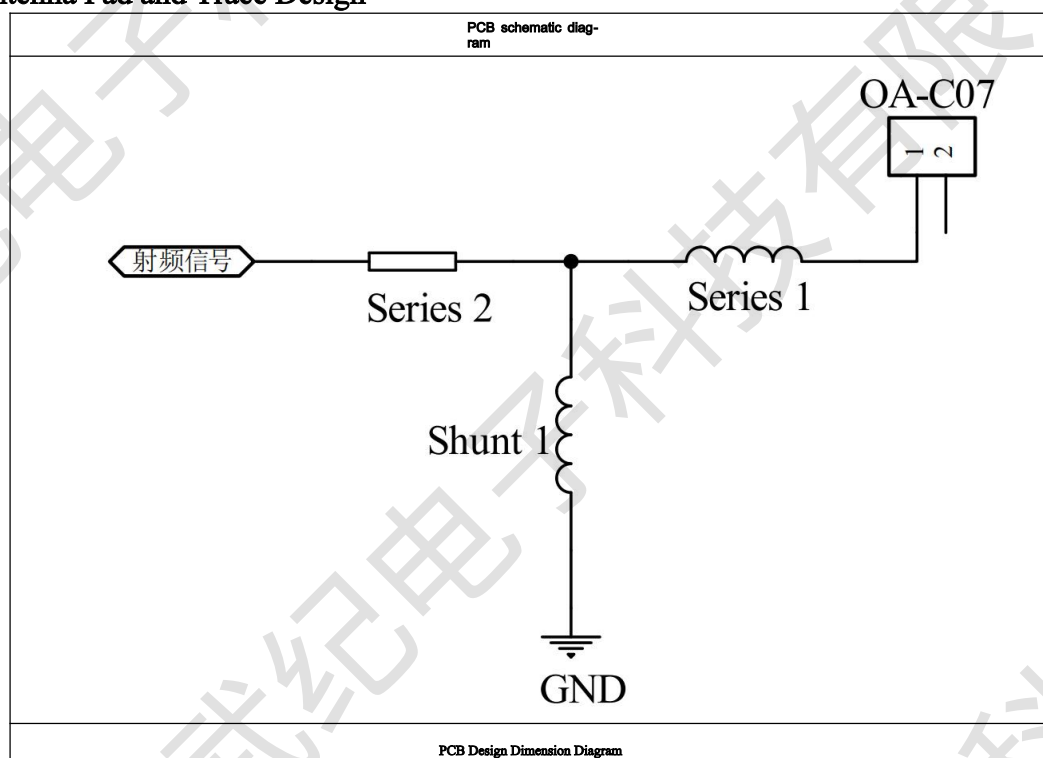
Three views	Symbol	Size (mm)
	L	3.5 ± 0.2
	w	1.7 ± 0.1
	T	1.2 ± 0.1
	a	0.4 ± 0.1

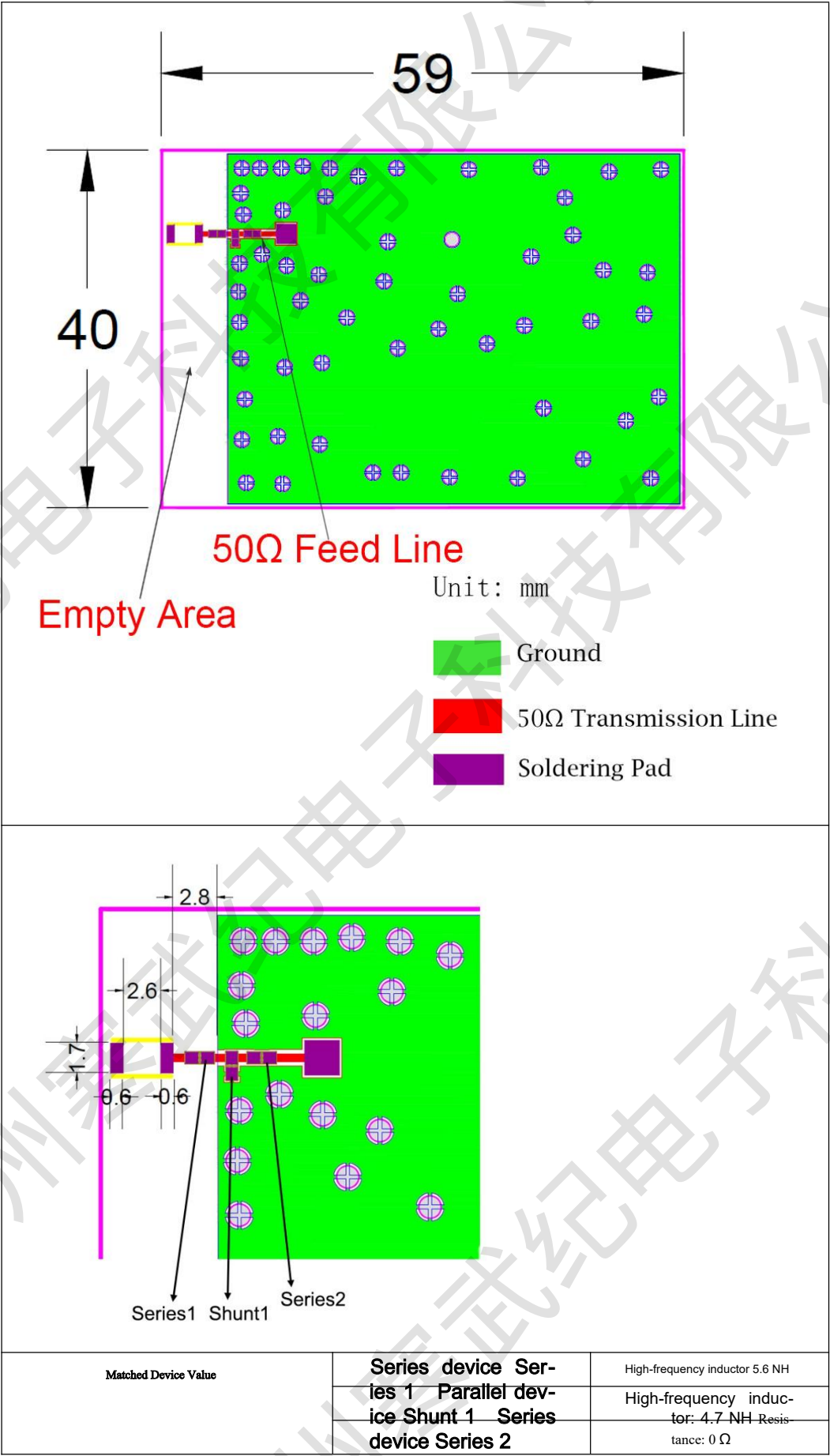
Electrical Character

OA-C07	Specification
Working Frequency Range Working Frequency	$2450 \pm 50\text{MHz}$
Bandwidth	$>100\text{MHz}$
Impedance	$50\ \Omega$
Gain (dBi)	3.74 (peak)
Standing wave ratio (VSWR)	<2
Operating temperature	$-40^{\circ}\text{C} \sim +95^{\circ}\text{C}$
Power Capacity	3W

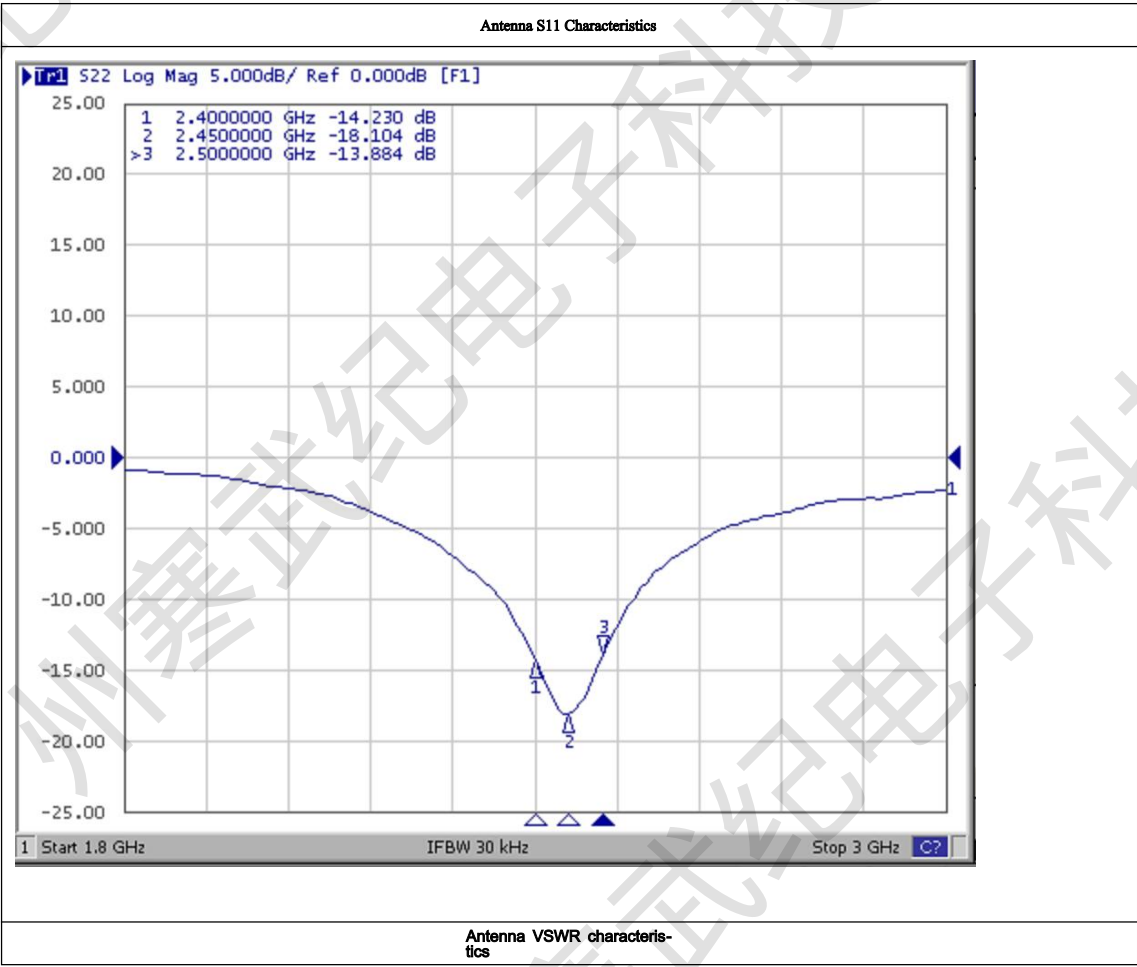
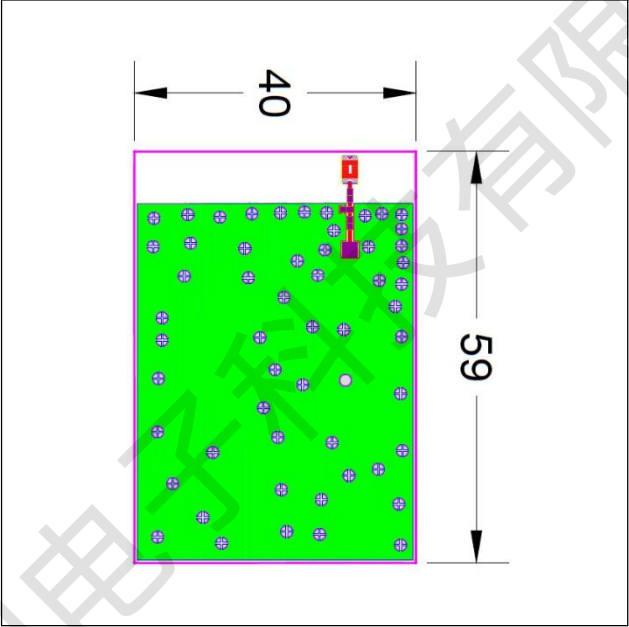
The operating frequency of the 2.4G antenna must be calibrated using impedance matching components.

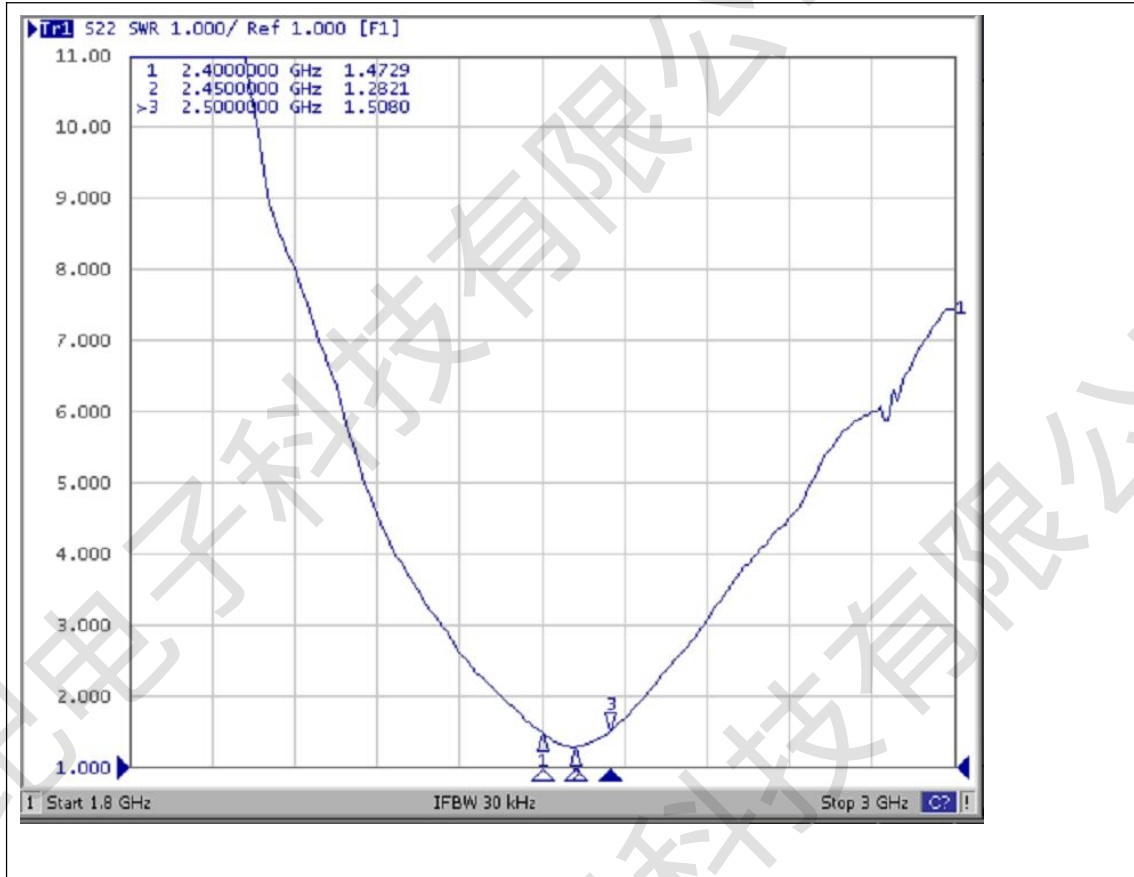
Antenna Pad and Trace Design





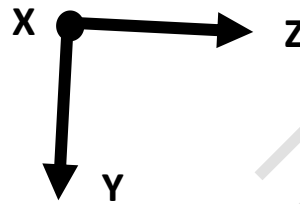
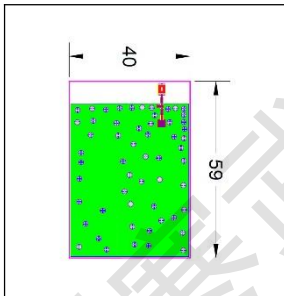
Antenna testing on the test board (board thickness: 1.0 mm)





Efficiency and Radiation Chart

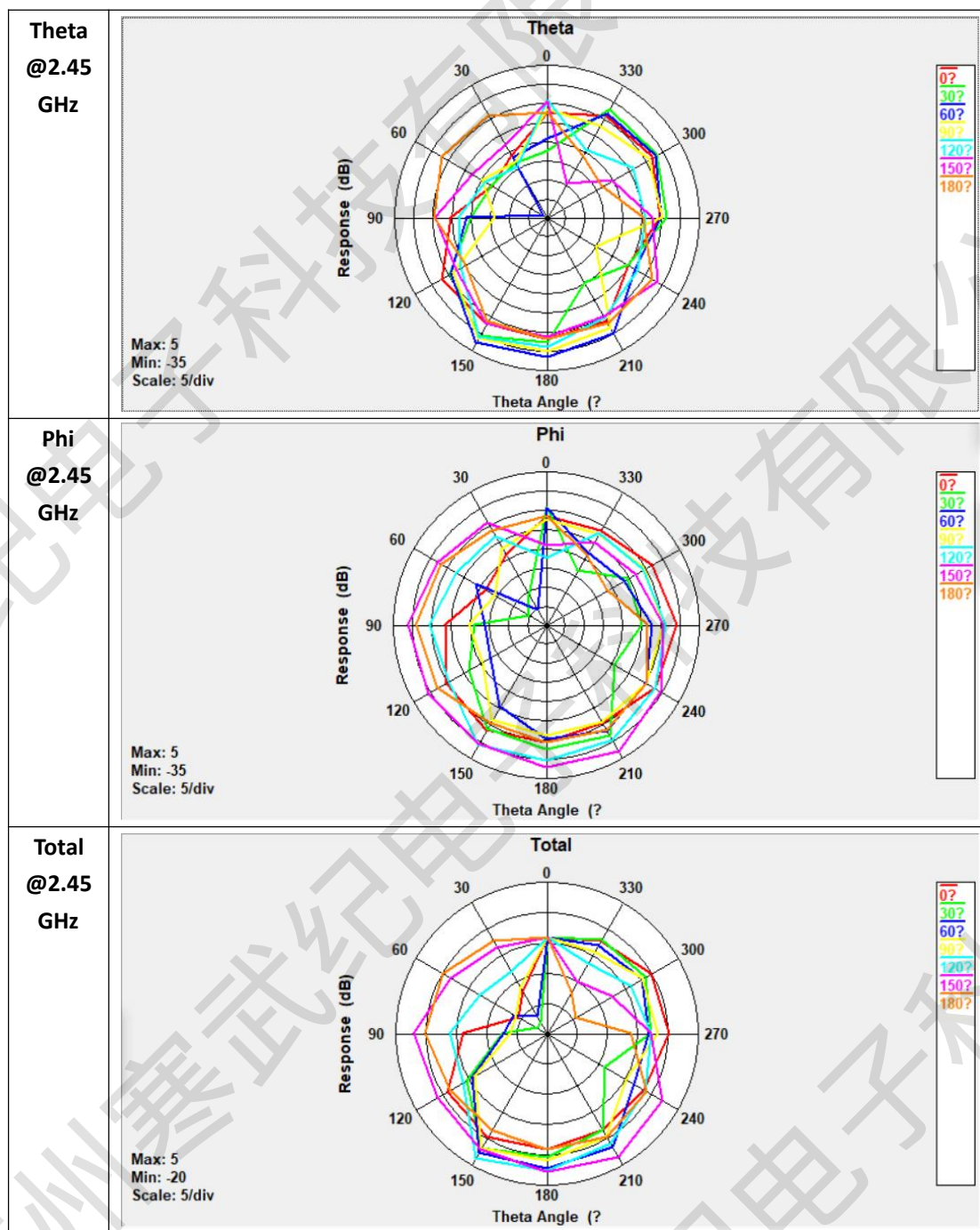
Performance metrics such as efficiency, radiation pattern, and gain were derived from the test board design. The specification and characteristic test data for the OA-C07 antenna were obtained based on the dimensions of the test PCB board and the testing orientation illustrated below. The following data were acquired through ETS 3D microwave anechoic chamber testing.



Gain and Efficiency	Bandwidth: 2.4 GHz~2.5 GHz
Peak Gain	3.74dBi
Average gain within the band	3.66dBi
Average Gain across the band	
Band gain range	3.42dBi~3.74dBi
Gain Range across the band	
Peak Efficiency	58.9%
Average efficiency within the band	55.9%
Average Efficiency across the band	

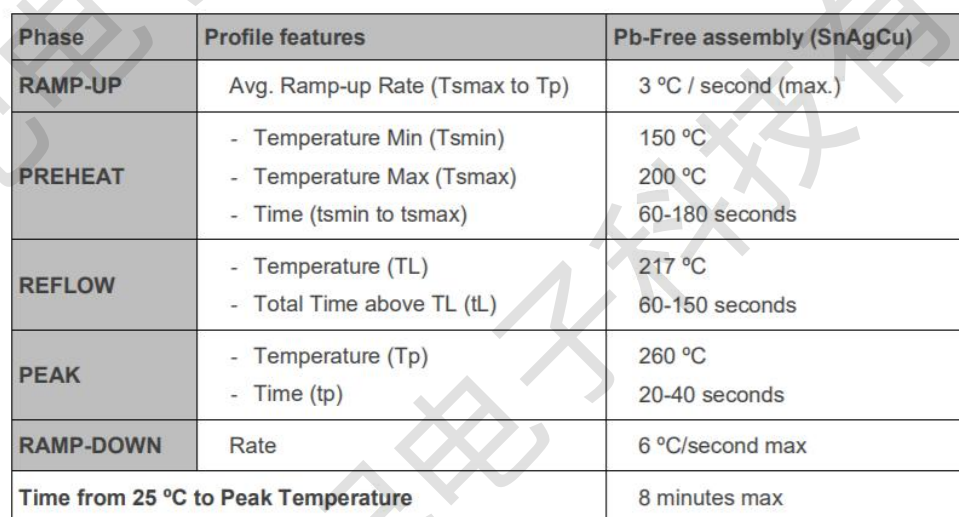
Band efficiency range
Efficiency Range across the band

53.0%~58.9%



Welding Condition

The typical reliable and non-destructive welding specification is shown below:

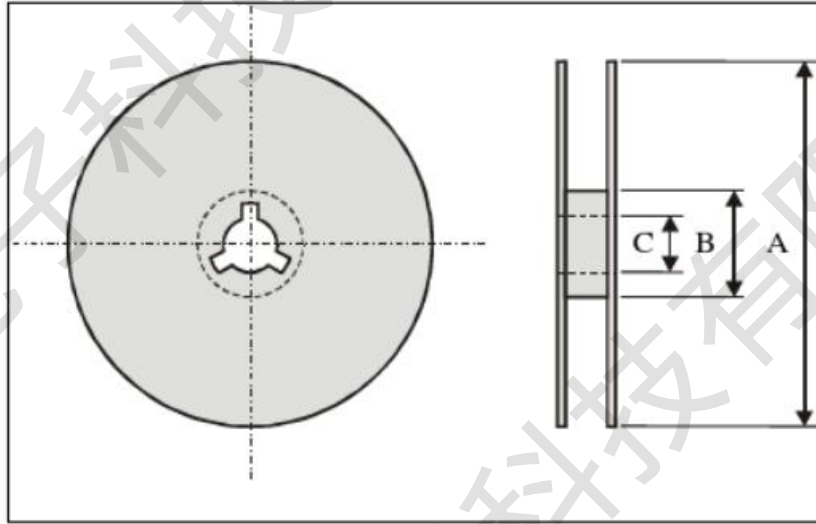


Technical drawing of a multi-hole plate. The main view shows a rectangular plate with five circular holes. Dimensions include P_1 , P_2 , P_0 , eD , E , F , and W . A side view shows the plate thickness T and a dimension B_0 . A detail view shows a cross-section of the plate with a dimension A_0 .

OA-C07_V01

Index	Ao	Bo	ΦD	T	W
Dimension (mm)	2.0 ± 0.1	4.0 ± 0.1	1.55 ± 0.05	1.8 ± 0.1	12 ± 0.1
Index	E	F	Po	P1	P2
Dimension (mm)	1.5 ± 0.1	5.4 ± 0.1	4.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.1

Spool Size



Index	A	B	C
Dimension(mm)	330	100	13.5

Standard quantity: 2500 PCS per disc.

Storage Environment

Products must meet the following conditions during storage:

temperature : $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$

Humidity: 30% to 70% relative humidity

The product should be stored away from corrosive gases such as sulfur. Chlorine or acids may cause oxidation of the product electrodes, leading to reduced weldability.

The product should be stored in a toolbox and protected from moisture and dust.

The product shall be stored in a warehouse and protected from heat, vibration, and direct sunlight.

The product should be stored under sealed conditions.

Business Cooperation and Technical Support

- Business Cooperation: He Zhiling | Mobile: 13611498429 | WeChat: gzhwjelec
Email: hezhiling@hwjelec.com

Liang Qijun | Mobile: 18122043436 | WeChat: hwjelec
Email: liangqijun@hwjelec.com

- Technical Consultation: Engineer Chen | Mobile: 18028016875 | WeChat: gzhanwuji
Email: chenpengfei@hwjelec.com

Corporate Information

- Guangzhou Cambrian Electronic Technology Co., Ltd.
 - Address: 1101, 11th Floor, Building 1, Hongda Creative Park, Yuanxiang Road, Yunpu Street, Huangpu District, Guangzhou City
 - Official website: <http://www.gzhwjdz.com/>
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