

21.5 x 3.5 x 2.5 (mm) WiFi Dual Band Antenna

Engineering Specification

1. Product Number



2. Features

- *Stable and reliable performances in both 2.4 and 5 GHz bands
- *Low profile and compact size
- *RoHS compliance
- *SMT processes compatible

3. Applications

- *IEEE802.11 (a/b/g/n/ac/ax).
- *Wireless communication devices when IEEE802.11 (a/b/g/n/ac/ax) functions are needed.

4. Description

XC chip antenna series are specially designed for IEEE802.11 (a/b/g/n/ac/ax)dual-bandWiFiapplications.Basedon X C proprietary design and processes, this chip antenna has excellent stability and sensitivity to consistently provide high signal transmitting and receiving efficiency.

Dongguan XinChao Electronic Technology Co., Ltd

Prepared by : [Xenia](#) Designed by : [George](#) Checked by : [Mike](#) Approved by : [Herbert](#)

TITLE : [3.2 x 1.6 x 1.0 \(mm\) WiFi Dual Band Chip Antenna Engineering Specificatio](#)

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5. Electrical Specifications (@ 80 x 40 mm² ground plane)

5-1. 2400~2500 MHz Band

Characteristics		Specifications	Unit
Outline Dimensions		21.5 x 3.5 x 2.5	mm
Ground Plane		80 x 40	mm
Working Frequency		2400~2484/	MHz
Bandwidth (return loss < -10dB)		90 (typical)	MHz
VSWR(@Center Frequency)		2 (typical)	
Impedance(typical after matching)		50	Ω
Polarization		Linear Polarization	
Gain	Peak	2.1(typical)	dBi
	Efficiency	79 (typical)	%

5-2. 5150~5850 MHz Band

Characteristics		Specifications	Unit
Outline Dimensions		21.5 x 3.5 x 2.5	mm
Ground Plane		80 x 40	mm
Working Frequency		5150~5850	MHz
Bandwidth(return loss < -10dB)		700 (typical)	MHz
VSWR (@Center Frequency)*		2 (typical)	
Impedance(typical after matching)		50	Ω
Polarization		Linear Polarization	
Gain	Peak	2.5(typical)	dBi
	Efficiency	71 (typical)	%

Note:

*All electrical properties shown in this spec. are obtained on XC standard demo board with 80x40 mm ground plane.

*Center frequency may be shifted to another frequency according to the conditions of user's circuit board and surrounding environment.

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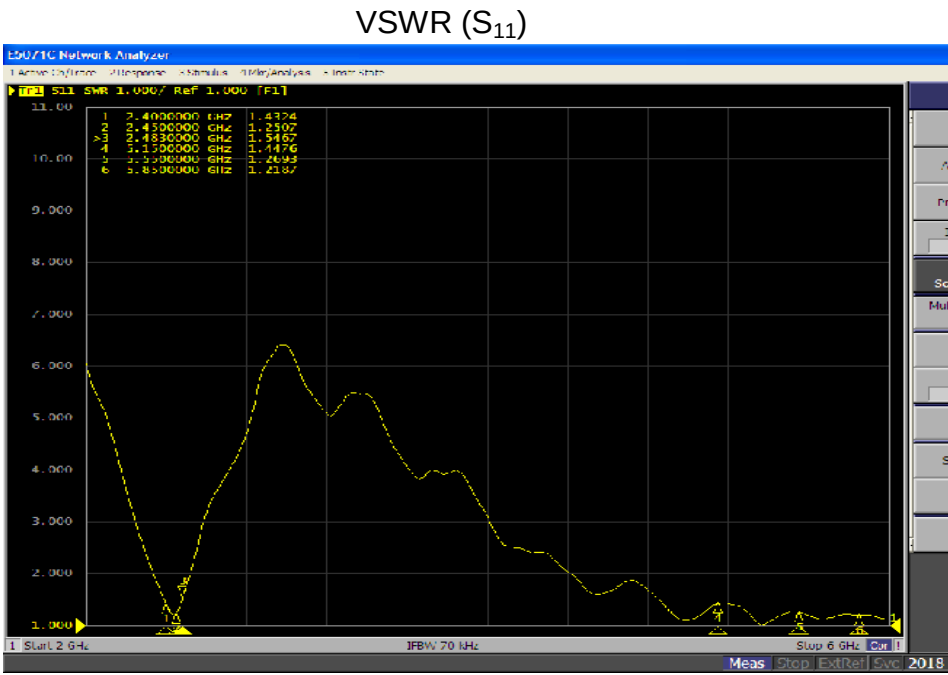
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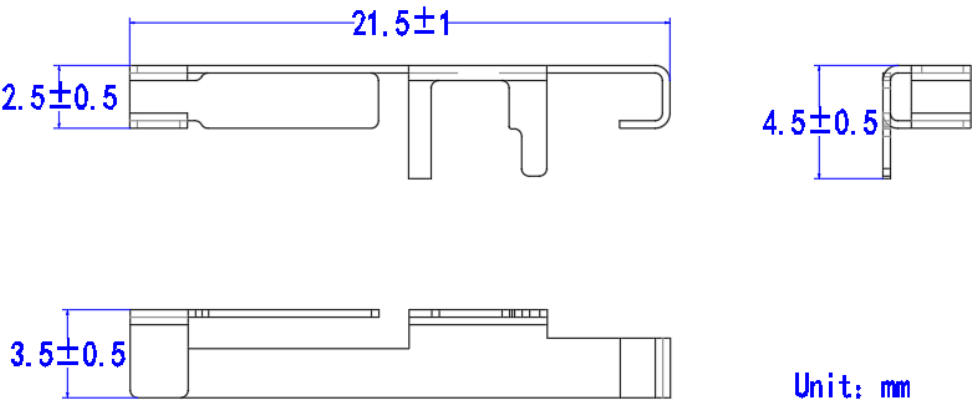
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5-3. Return Loss & VSWR



6. Antenna Dimensions & Test Board (unit: mm)
a. Antenna Dimensions

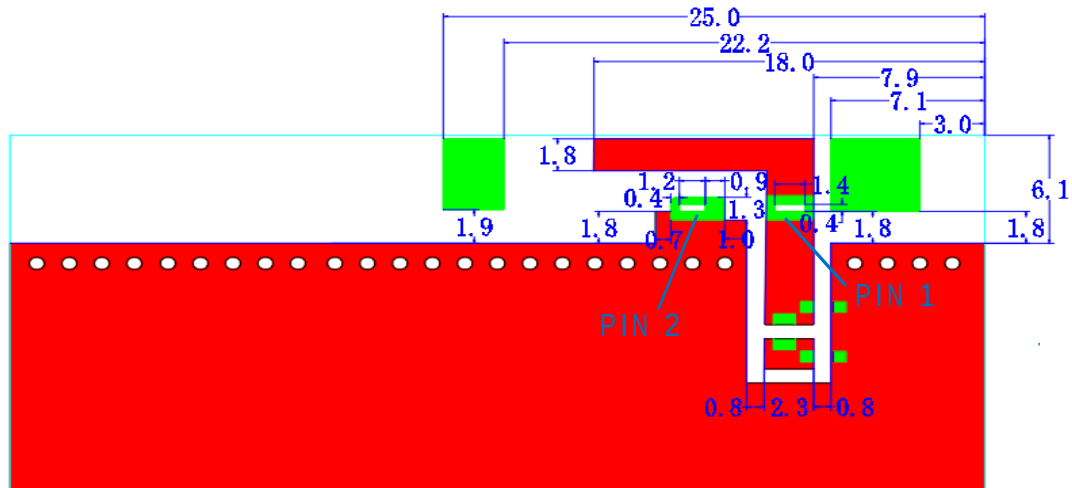


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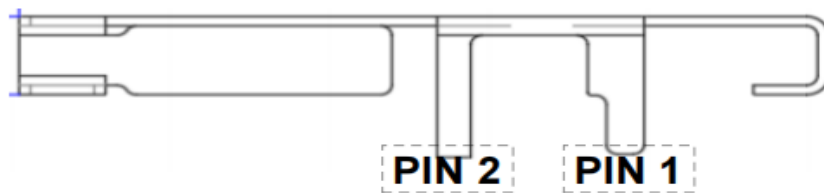
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PIN Definitions

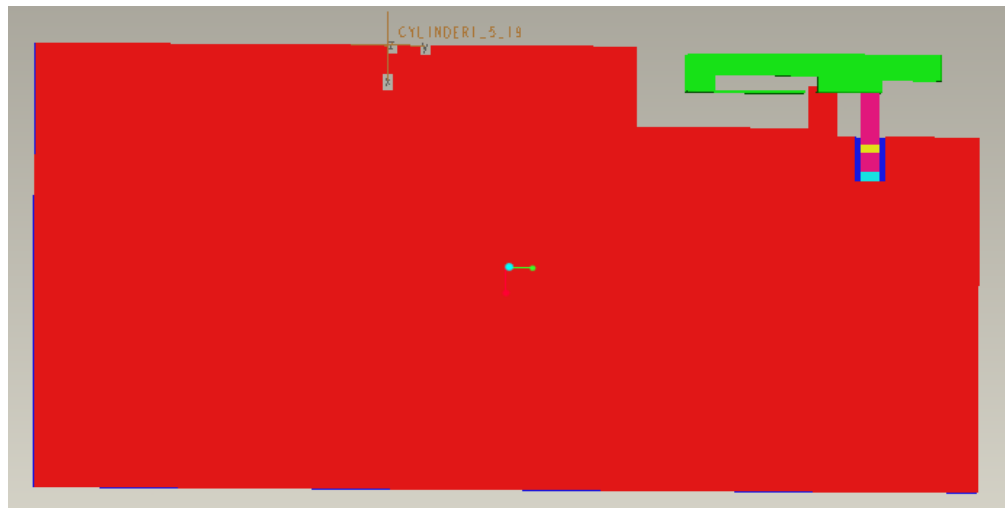


Unit : mm



PIN 1	PIN 2
Signal Input	GND

b. Test Board with Antenna(80*40mm)



Unit:mm

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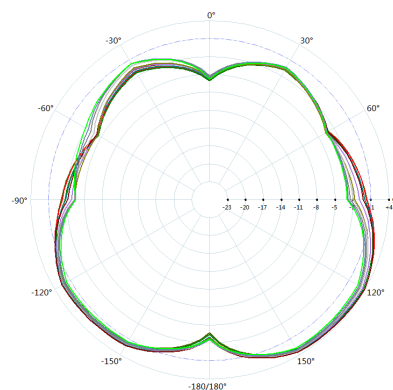
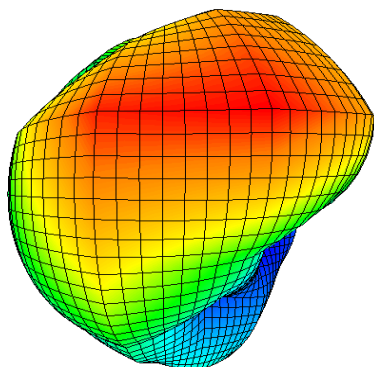
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7. 3D Radiation Pattern (@ 80 x 40 mm² ground plane)

7-1. 2400~2500 MHz Band

7-1.1.3D Gain Pattern @ 2442 MHz



7-1-2. 3D Efficiency Table

Frequency(MHz)	2400	2412	2417	2422	2427	2432	2437	2442	2447	2452	2457	2462	2467	2472	2484	2500
Efficiency(%)	71.2	72.3	73.8	74.6	76.5	77.1	78.3	76.8	77.5	78.6	79.3	79.8	78.2	77.1	75.3	72.5
Gain(dBi)	1.8	2.2	2.3	2.4	2.42	2.38	2.3	2.4	2.34	2.42	2.4	2.46	2.4	2.3	2.2	2.1

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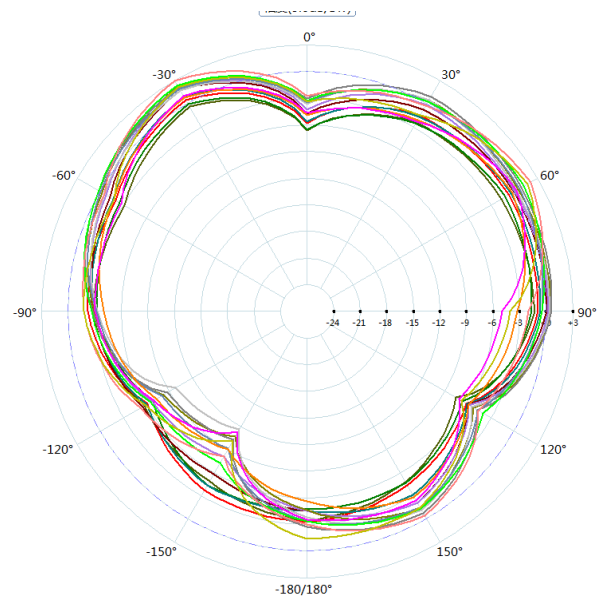
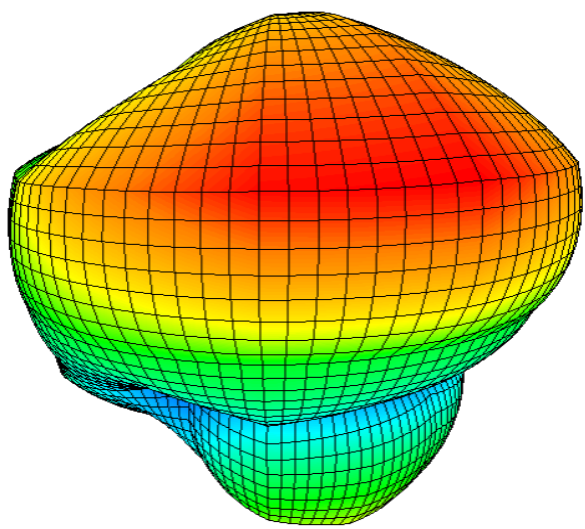
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7-2. 5150~5850 MHz Band

7-2-1. 3D Gain Pattern @ 5550 MHz



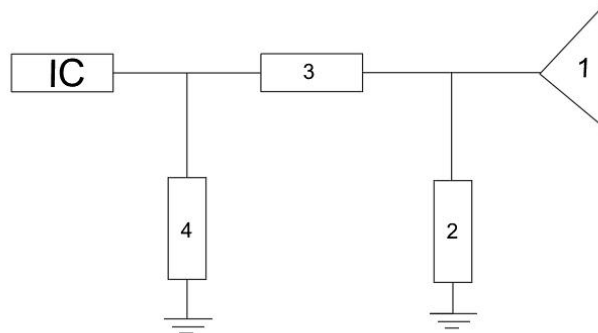
7-2-2. 3D Efficiency Table

Frequency(MHz)	5150	5250	5350	5450	5550	5650	5750	5850	5950
Efficiency(%)	68.3	70.5	70.8	73.6	75.5	76.8	77.3	75.8	74.5
Gain(dBi)	2.1	2.18	2.32	2.38	2.45	2.56	2.62	2.51	2.24

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c. Matching circuit : (Working frequencies are about 2400~2500 & 5150~5850 MHz
@ 80 x 40 mm² ground plane)



Typical Matching Circuit Components			
Location	Description	Vendor	Tolerance
1	ANT	XC-TC2458SMT-L01	-
2	N/A*		
3	22pF*	DARFON(0402)	±0.1 pF
4	N/A*		

*Typical reference values which may need to be changed when circuit boards or part vendors are different.

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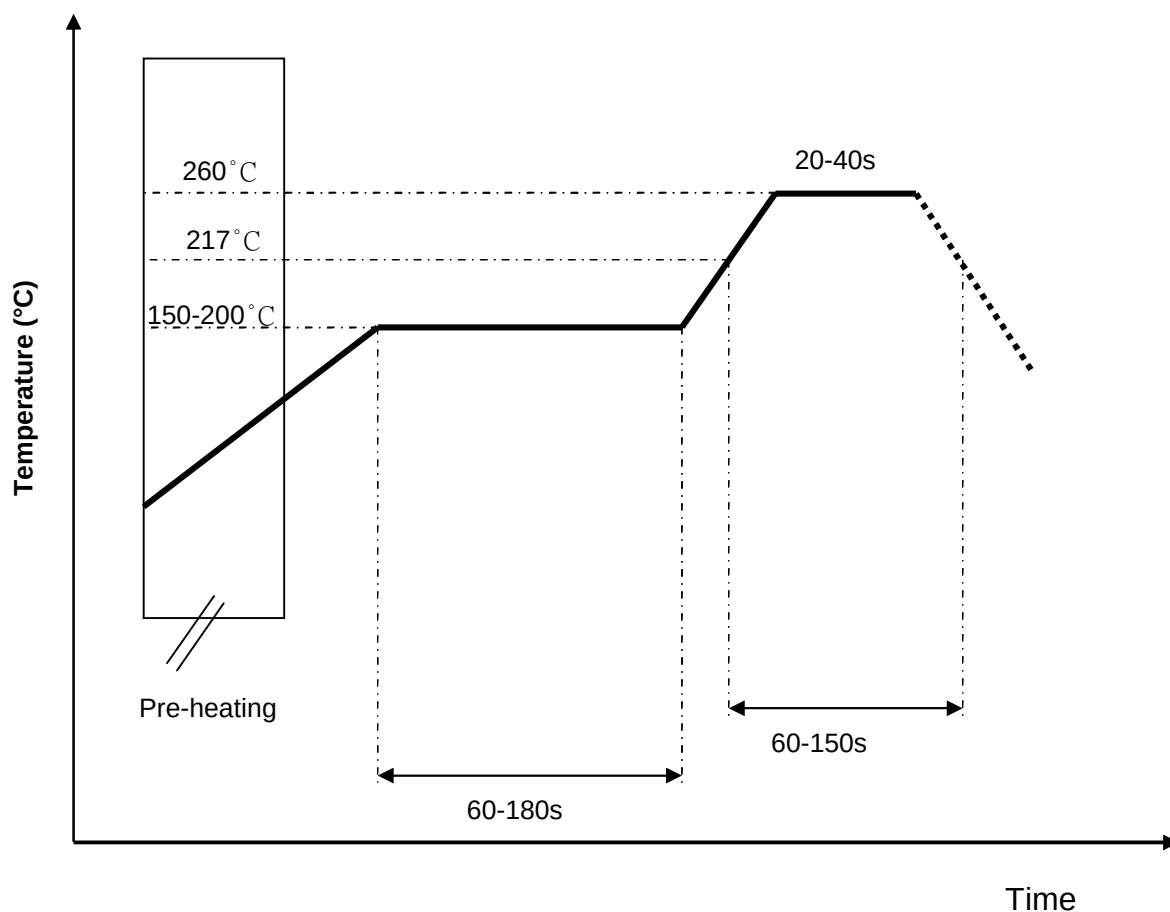
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10. Soldering Conditions

a. Typical Soldering Profile for Lead-free Process



11. Reminders for users of Unictron's chip antennas

- Since Unictron's chip antennas are made of ceramic materials which show different rigidity than circuit board materials, bending of circuit board at the locations where chip antennas are mounted may cause the cracking of solder joints or antenna itself.
- Any connecting strip which will be cut off at PCB assembly process shall be located away from the installation site of chip antenna. Punching of the connecting strip may cause severe bending of the circuit board and cracking of solder joint or chip antenna itself may occur.
- Be cautious when ultrasonic welding process needs to be used near the locations where chip antennas are installed. Strong ultrasonic vibration may cause the cracking of chip antenna solder joints.

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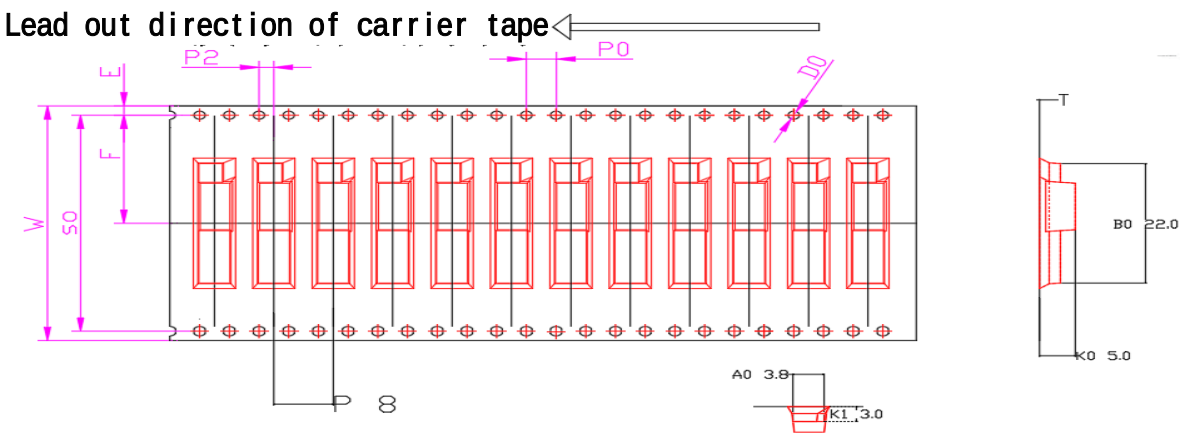
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12. Packing

(1) Quantity/Reel: 1500pcs

Packaging Inform

◆ Tape Specification:



D	44.00	3.80	22.00	5.00	3.00	1.75	20.2	40.4	8.00	4.00	2.00	1.50	2.00	0.40
A	+0.30	+0.10	+0.10	+0.10	+0.10	+0.10	+0.10	+0.10	+0.10	+0.10	+0.10	+0.10	+0.10	+0.05
T	-0.30	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.00	-0.00	-0.05
A	W	A ₀	B ₀	K ₀	K ₁	E	F	S ₀	P	P ₀	P ₂	D ₀	D ₁	T

- 1: The cumulative error range of the center to center distance of 10 chain holes is within 0.22mm
- 2: The curvature is 1mm/250mm
- 3: The material is black PS material, which complies with ROHS environmental management substances
- 4: All dimensions comply with EIA-481-B requirements
- 5: Thickness: 0.40 ± 0.05mm.
- 6: Using 330mm, packaging parts quantity: 1500pcs/tray
- 7: Protective tape: made of black PS material

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