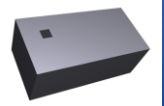


# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



**ACAG0301-24505500-T**

Request Samples



Check Inventory



3.2 x 1.6 x 1.2 mm  
**RoHS/RoHS II Compliant**  
MSL Level = 1

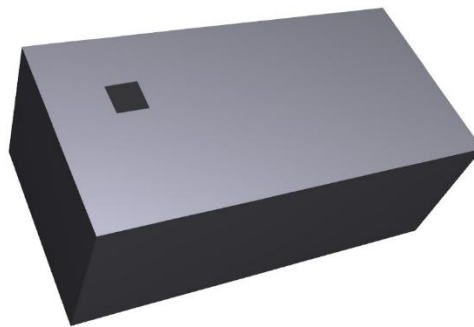
## Features

- Miniaturized in Size: 3.2 x 1.6 x 1.2 mm
- Dual band: 2400~2500 + 5150~5850 MHz
- Return Loss of: < -5.5 dB
- Peak Gain: 2.8 dBi
- Average Total Efficiency:
  - 2400~2500 MHz: -3.5 dB (45%)
  - 5150~5850 MHz: -2.0 dB (64%)
- Surface Mount (SMD)
- Integration: PCB Edge Mounting

## Applications

- Bluetooth®/ ZigBee® / Thread/ Matter/Wi-Fi®
- Bluetooth®/ Wi-Fi® Modules
- Consumer Hearables & Wearables
- Medical Wearables & Tele-Medicine
- Smart Home & Smart Building
- Asset Tracking & Telematics
- Smart Metering
- Intelligent Lighting
- Wireless Remote Control

## Product Image



# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



ACAG0301-24505500-T

Request Samples



Check Inventory



3.2 x 1.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = 1

## Electrical Specification

Parameter	Specification		Unit
Operating Frequency Range	2400 – 2500	5150 – 5850	MHz
Return Loss	< -5.5	< -7.0	dB
VSWR	< 3.3	< 2.6	:1
Polarization	Linear		-
Peak Gain	-0.2	2.8	dBi
Minimum Total Efficiency	-5.1 (31)	-3.4 (45)	dB (%)
Average Total Efficiency	-3.5 (45)	-2.0 (64)	dB (%)
Maximum Total Efficiency	-3.1 (49)	-1.3 (74)	dB (%)
Impedance	50		$\Omega$
Radiation Pattern	Omni-directional		-

*Note: All measurements were performed using the evaluation board in a free-space environment. Actual performance may vary depending on factors such as the ground plane, specific application, and surrounding environment.*

## Mechanical Specification

Parameter	Specification
Antenna Dimension	3.2 x 1.6 x 1.2 mm
Evaluation board Dimension	50 x 90 mm
Recommended Ground Clearance for Antenna	6.0 x 5.0 mm
Mounting Type	Surface Mount
Mounting Location	PCB Edge Mounting
Material(s)	Ceramic

## Environmental Specification

Parameter	Specification
Operating and Storage Temperature	-40°C ~ +85°C
Relative Humidity range	55 ~ 75%



5101 Hidden Creek Ln Spicewood TX 78669  
Phone: 512-371-6159 | Fax: 512-351-8858  
For terms and conditions of sales, please visit:  
[www.abracon.com](http://www.abracon.com)

REVISION B: 03-11-25

ABRACON IS  
ISO9001-2015  
CERTIFIED

# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



ACAG0301-24505500-T

Request Samples

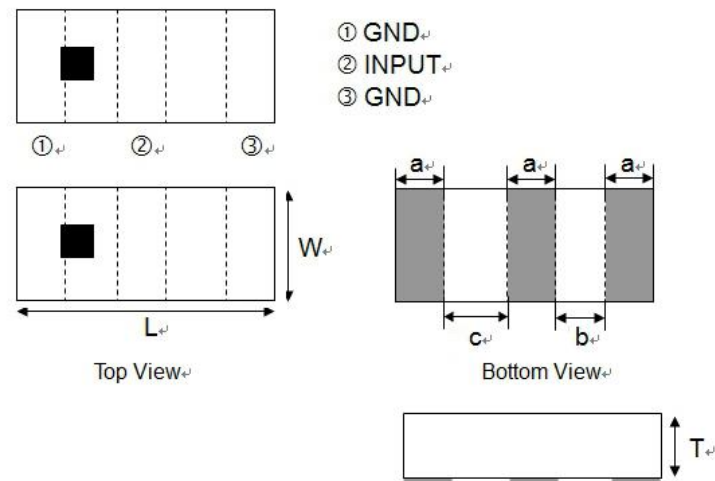


Check Inventory



3.2 x 1.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = 1

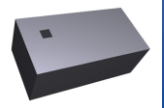
## Product Dimensions and Terminal Configuration



Symbol	L	W	T	a	b	c
Dimensions	3.2±0.2	1.6±0.2	1.2±0.1	0.5±0.1	0.7±0.1	1.0±0.1

Unit: mm

# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



ACAG0301-24505500-T

Request Samples



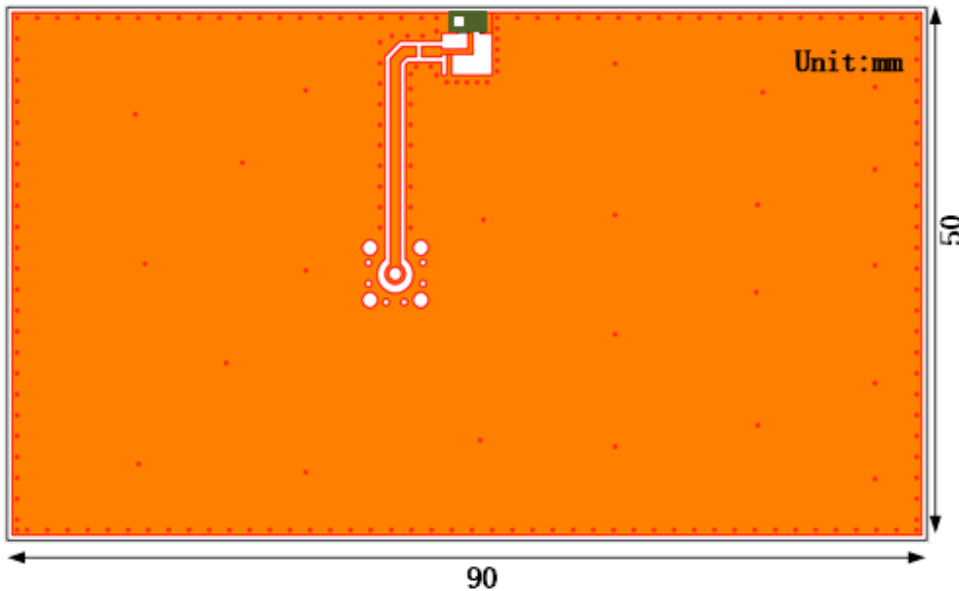
Check Inventory



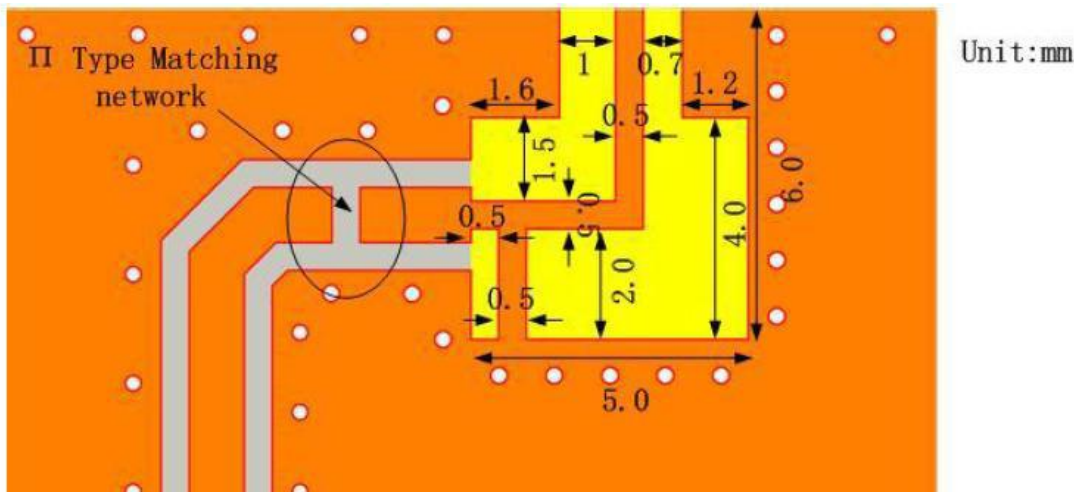
3.2 x 1.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = 1

## Recommended PCB layout

If there are several layers in the PCB, there is an advantage to add vias for smooth interconnection of the ground areas to avoid splits in the ground plane. It is also important that the ground clearance is respected through **all layers** of the PCB. It is recommended to implement a matching network to optimize the antenna impedance in your application.



Detailed view of antenna pads and copper clearance:



## Transmission Line

The transmission line should be kept as short as possible and be designed to have a characteristic impedance of 50Ω. Abracon recommends using a Co-Planar Waveguide with Ground (CPWG), which dimensions can be derived by any trusted calculator, using the correct input for PCB materials and layer stack-up.

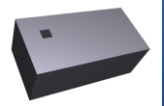


5101 Hidden Creek Ln Spicewood TX 78669  
Phone: 512-371-6159 | Fax: 512-351-8858  
For terms and conditions of sales, please visit:  
[www.abracon.com](http://www.abracon.com)

REVISION B: 03-11-25

ABRACON IS  
ISO9001-2015  
CERTIFIED

# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



ACAG0301-24505500-T

Request Samples



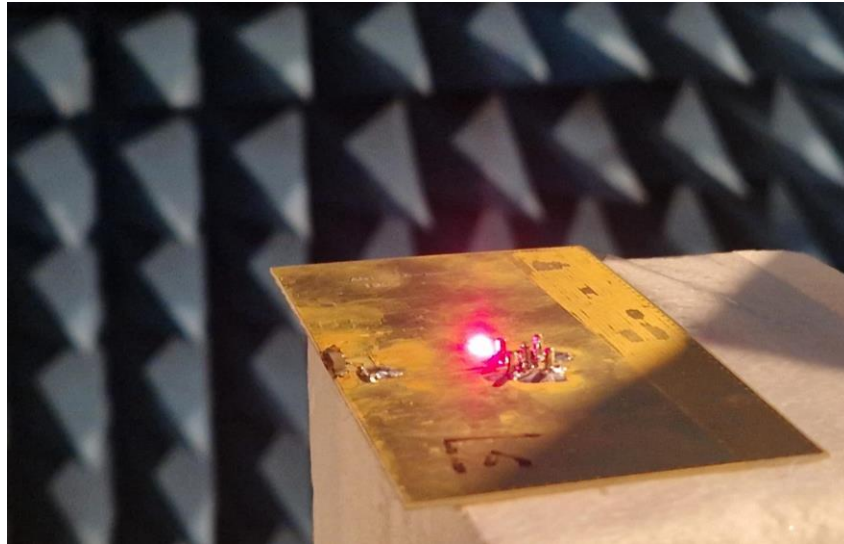
Check Inventory



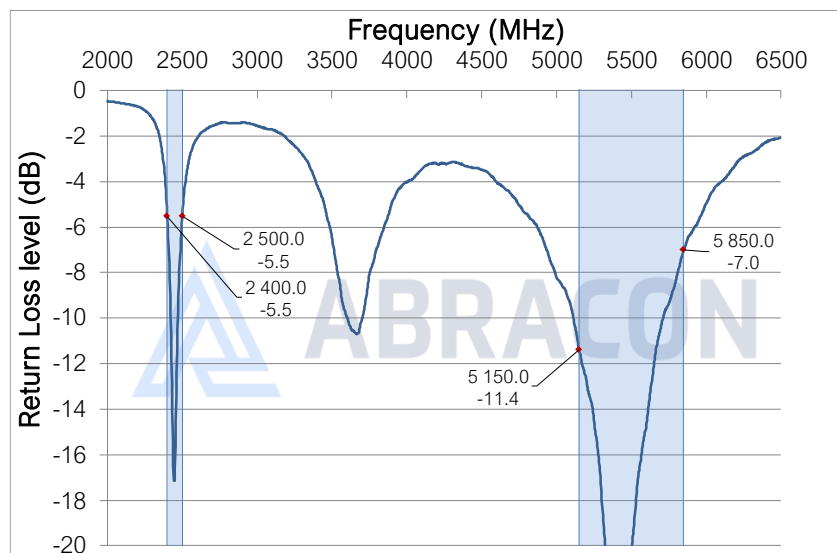
3.2 x 1.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = 1

## Measurement Setup

The radiation measurements were all done in an anechoic chamber with the antenna implemented on its evaluation board (Abracon ACAG0301-24505500-EVB) that has a PCB size of 90 x 50 mm:



## Reflection Characteristics – Return Loss

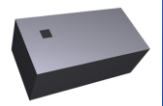


5101 Hidden Creek Ln Spicewood TX 78669  
Phone: 512-371-6159 | Fax: 512-351-8858  
For terms and conditions of sales, please visit:  
[www.abracon.com](http://www.abracon.com)

REVISION B: 03-11-25

ABRACON IS  
ISO9001-2015  
CERTIFIED

# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



ACAG0301-24505500-T

Request Samples

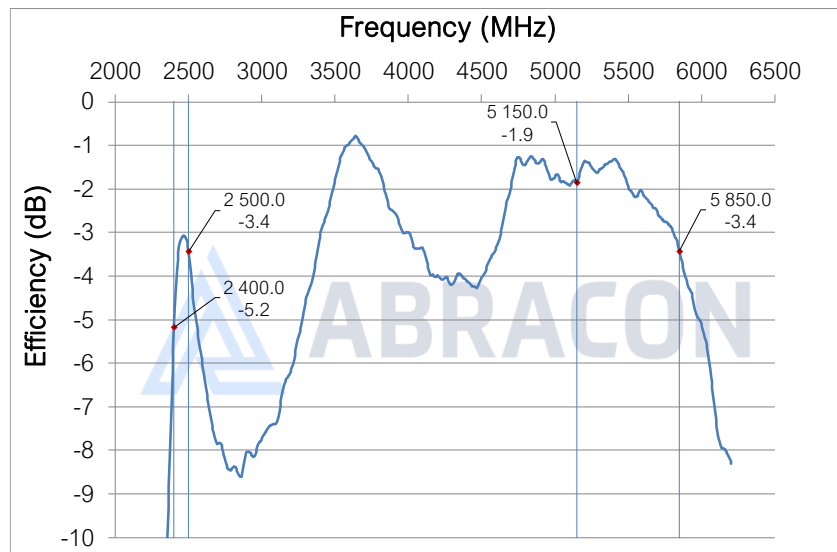


Check Inventory

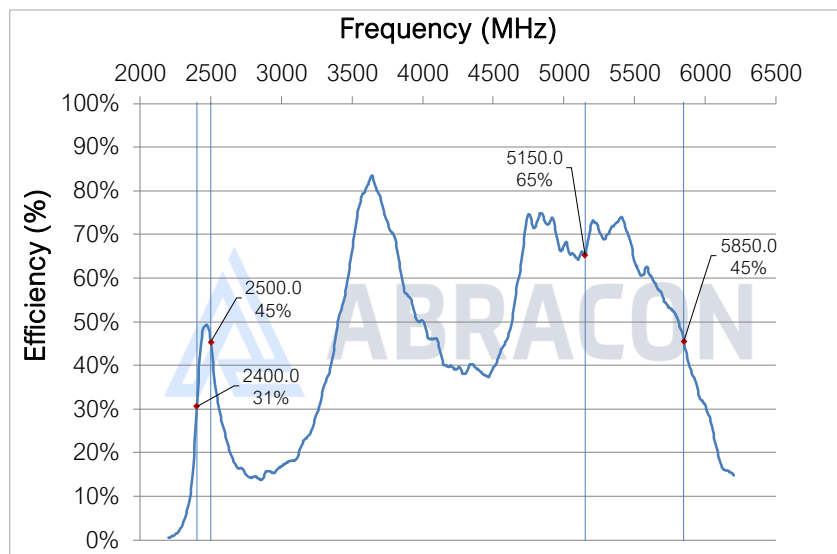


3.2 x 1.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = 1

## Radiation Characteristics – Total Efficiency (dB)



## Radiation Characteristics – Total Efficiency (%)



5101 Hidden Creek Ln Spicewood TX 78669  
Phone: 512-371-6159 | Fax: 512-351-8858  
For terms and conditions of sales, please visit:  
[www.abracon.com](http://www.abracon.com)

REVISION B: 03-11-25

ABRACON IS  
ISO9001-2015  
CERTIFIED

# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



ACAG0301-24505500-T

Request Samples

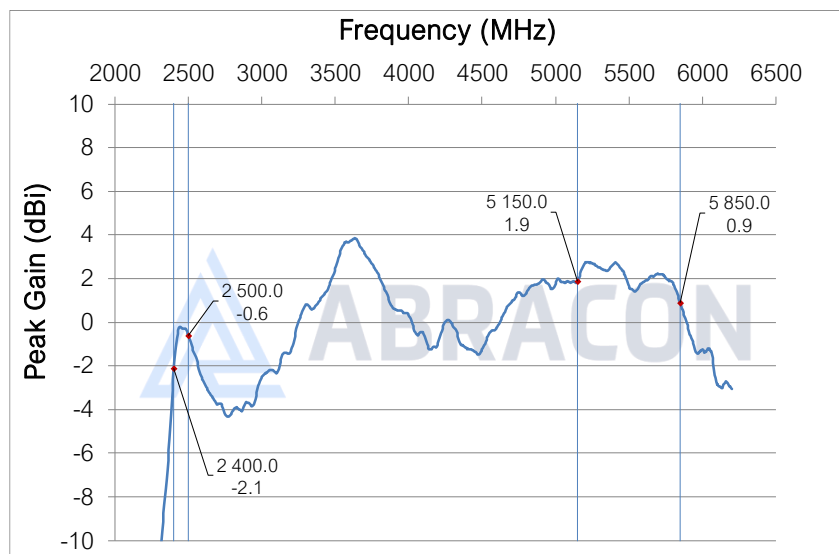


Check Inventory



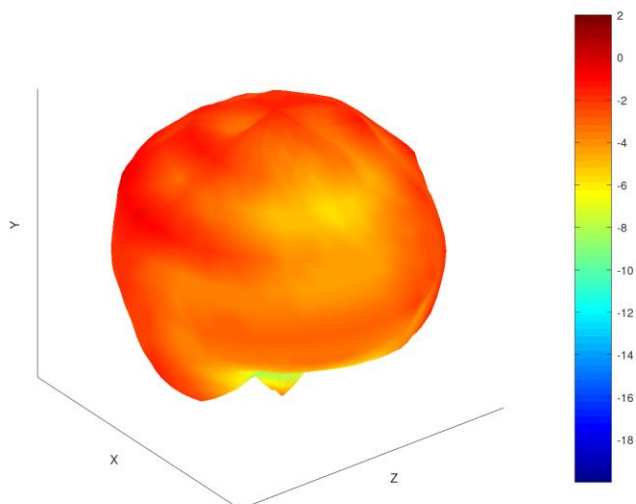
3.2 x 1.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = 1

## Radiation Characteristics – Maximum Gain

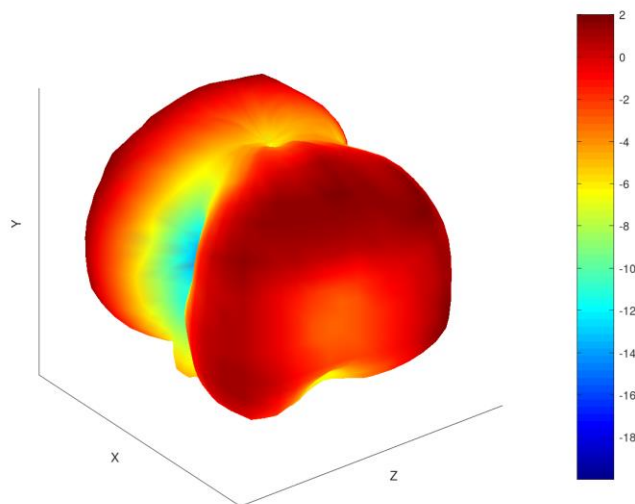


## Radiation Characteristics – 3D Pattern

2450 MHz



5500 MHz



Unit: dBi



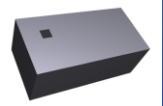
5101 Hidden Creek Ln Spicewood TX 78669  
Phone: 512-371-6159 | Fax: 512-351-8858  
For terms and conditions of sales, please visit:  
[www.abracon.com](http://www.abracon.com)

REVISION B: 03-11-25

ABRACON IS  
ISO9001-2015  
CERTIFIED



# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



ACAG0301-24505500-T

Request Samples



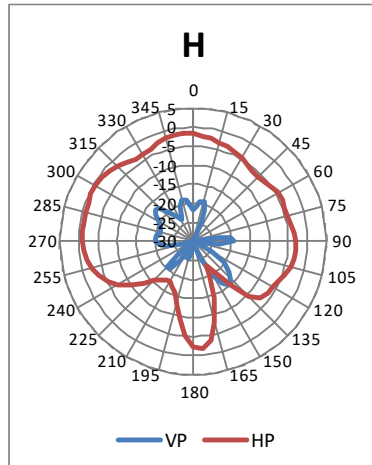
Check Inventory



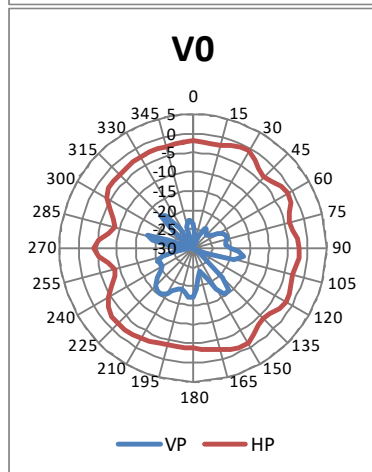
3.2 x 1.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = 1

## Radiation Characteristics – 2D Pattern @ 2450 MHz

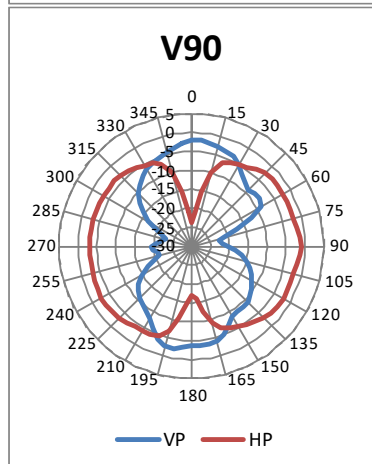
XY-plane:



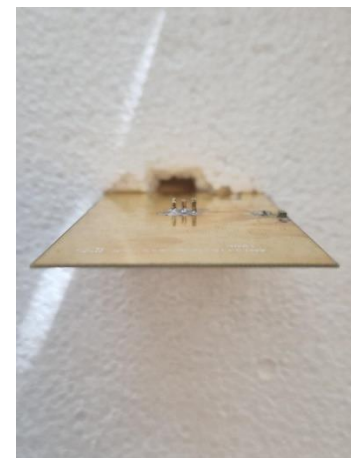
YZ-plane:



XZ-plane:



VP: Vertical Polarization  
HP: Horizontal Polarization



Unit: dBi



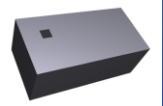
5101 Hidden Creek Ln Spicewood TX 78669  
Phone: 512-371-6159 | Fax: 512-351-8858  
For terms and conditions of sales, please visit:  
[www.abracon.com](http://www.abracon.com)

REVISION B: 03-11-25

ABRACON IS  
ISO9001-2015  
CERTIFIED



# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



ACAG0301-24505500-T

Request Samples



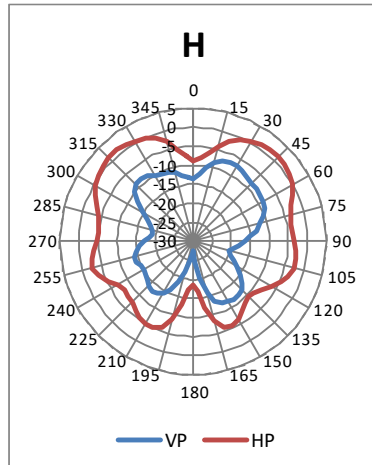
Check Inventory



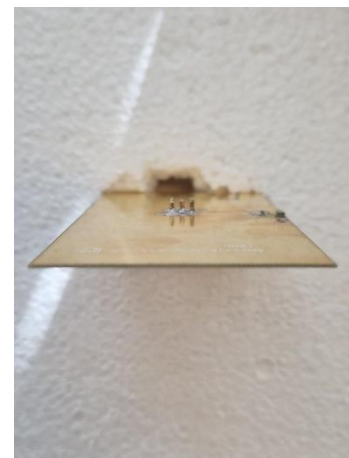
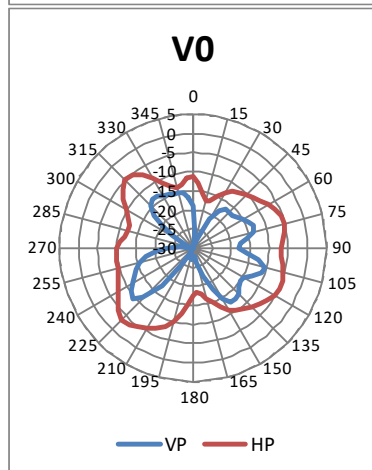
3.2 x 1.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = 1

## Radiation Characteristics – 2D Pattern @ 5500 MHz

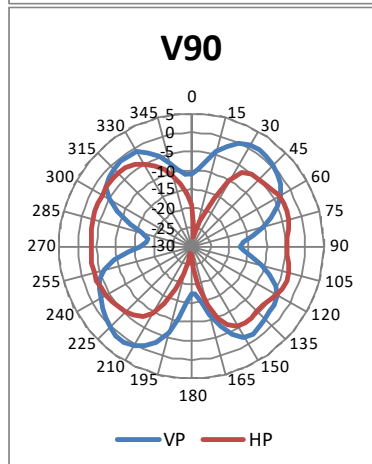
XY-plane:



YZ-plane:



XZ-plane:



VP: Vertical Polarization  
HP: Horizontal Polarization

Unit: dBi

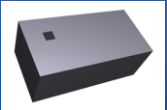


5101 Hidden Creek Ln Spicewood TX 78669  
Phone: 512-371-6159 | Fax: 512-351-8858  
For terms and conditions of sales, please visit:  
[www.abracon.com](http://www.abracon.com)

REVISION B: 03-11-25

ABRACON IS  
ISO9001-2015  
CERTIFIED

# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



**ACAG0301-24505500-T**

Request Samples



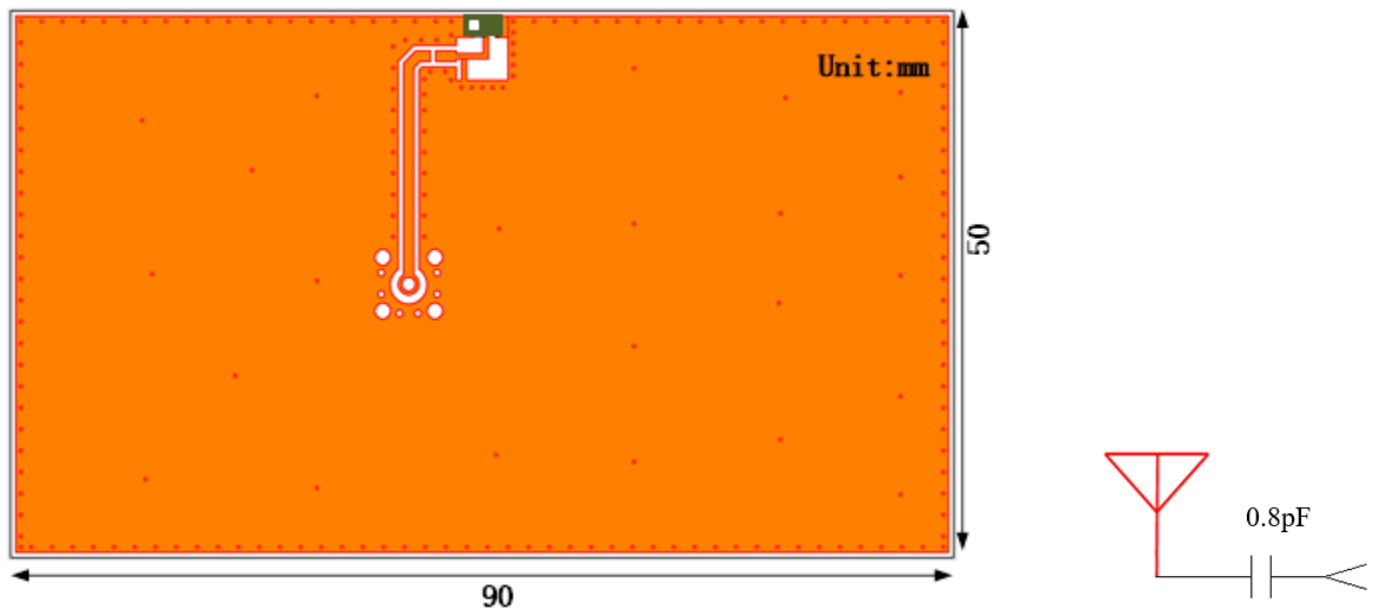
Check Inventory



3.2 x 1.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = 1

## Evaluation Board Outline & Matching Circuit

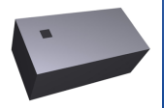
The evaluation board (Abracon ACAG0301-24505500-EVB) is developed to simplify antenna testing and evaluation. It has an arbitrary size of 90 x 50 mm and includes an SMA connector. The purpose is to give a reference design for an optimal antenna implementation. The evaluation board can also be used to test other implementations by cutting and soldering the PCB into any device.



The evaluation board has a matching circuit implemented next to the antenna. This is aimed to enable optimization possibilities for the user.

It is common that the resonant frequency will shift during implementation in an arbitrary device. Therefore, the matching may be changed with other values/components/brands for compensation of such effects. This is further described in the General Implementation Guidelines section below.

# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



ACAG0301-24505500-T

Request Samples



Check Inventory

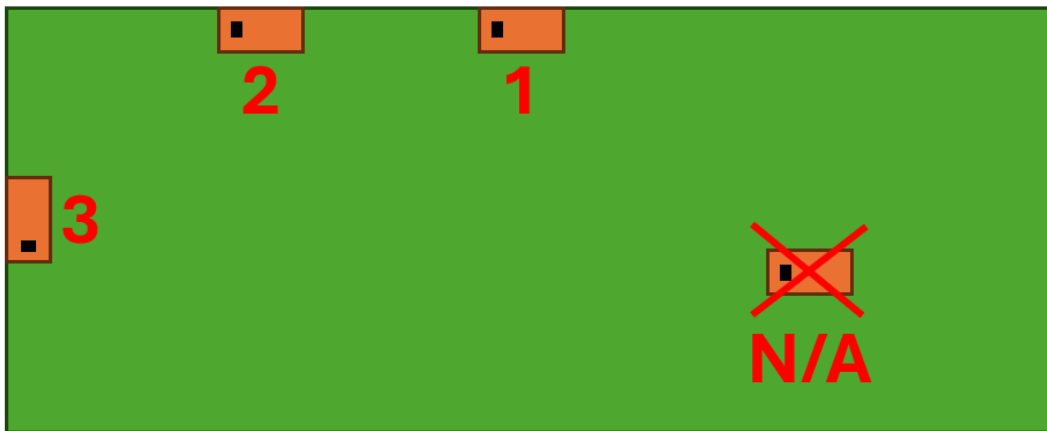


3.2 x 1.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = 1

## General Implementation Guidelines

The antenna can be positioned in different ways, although there are some positions which are more beneficial. The below illustration shows a typical PCB with examples on different antenna positions (the GND cutout is not visualized):

- The optimal position is usually option 1. Options 2 and 3 are also possible.
- The antenna must be placed along the PCB edge, i.e., it cannot be placed in the middle (see "N/A").
- Option 2 or 3 may be the best option for PCB's much larger than the evaluation board.



The rectangular copper cutout in the footprint must extend through all layers of the PCB stack-up, ensuring there is **no copper on any layer in this area**. Additionally, a robust via structure around the cutout and along the edge of the ground plane is highly recommended for optimal performance.

It is important to note that plastic and metal parts in close proximity to antennas may significantly affect antenna tuning and performance. For instance, a plastic housing above the antenna often causes the resonant frequency to shift downward. Since such effects are challenging to predict without detailed design information, it is recommended to measure the antenna performance in the final device after implementation. To compensate for potential frequency shifts, implementing a matching network on the antenna feed is advisable.

Another general consideration for surface-mounted antennas relates to PCB population. Electrical components placed near the antenna may impact its tuning and radiation performance. To mitigate this, components in the surrounding area should be positioned below a topographical slope. This slope should begin at the PCB level near the antenna's designated keep-out zone and gradually increase in height as distance from the antenna grows.

For technical assistance, please contact [Abracon online support](#) through our online support platform.



5101 Hidden Creek Ln Spicewood TX 78669  
Phone: 512-371-6159 | Fax: 512-351-8858  
For terms and conditions of sales, please visit:  
[www.abracon.com](http://www.abracon.com)

REVISION B: 03-11-25

ABRACON IS  
ISO9001-2015  
CERTIFIED

# WLAN Ceramic Chip Antenna 2450MHz, 5500 MHz



ACAG0301-24505500-T

Request Samples

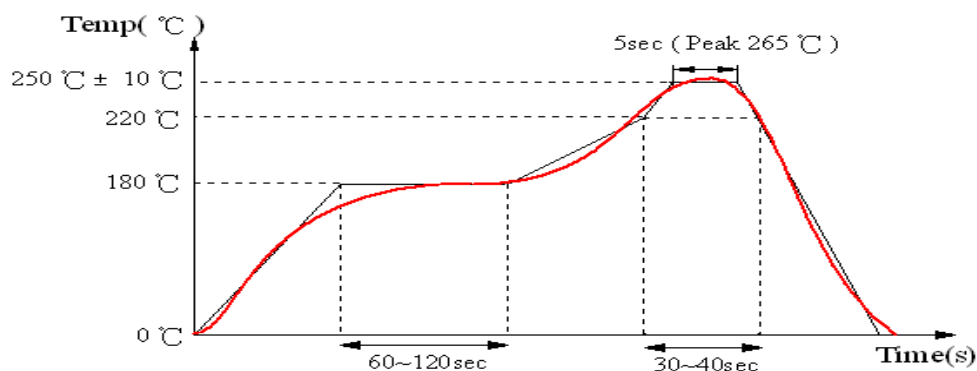


Check Inventory

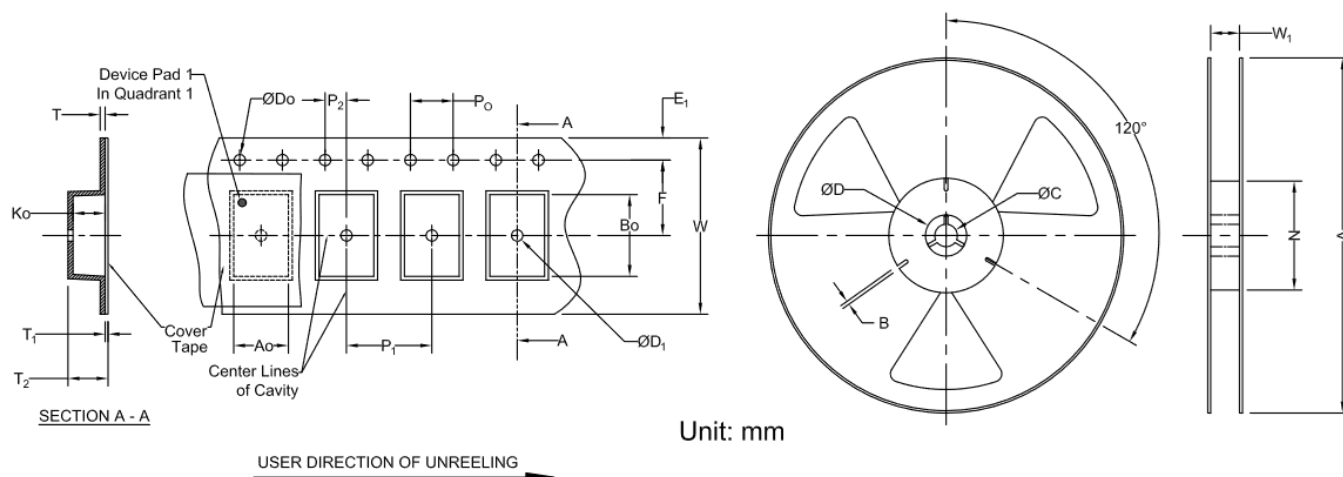


3.2 x 1.6 x 1.2 mm  
RoHS/RoHS II Compliant  
MSL Level = 1

## Reflow Profile



## Packaging



Carrier Tape Specifications (mm)

Do	K <sub>0</sub>	E <sub>1</sub>	P <sub>0</sub>	T	F	P <sub>1</sub>	W	A <sub>0</sub>	B <sub>0</sub>	Reel Qty
1.50	1.3	1.75	4.0	0.22	3.5	4.0	8.0	2	3.3	3,000

Reel Specifications (mm)

A	W <sub>1</sub>	N	C
178 ± 2.0	8.5 ± 1.0	60 (min.)	13 ± 0.5

Product should be used within six months of receipt.Storage

Temperature Range Packaging: <30 degree C, Humidity : <85%RH

**ATTENTION:** Abracon LLC's products are Commercial-Off-The-Shelf ('COTS'), which are designed, intended, and validated for use in commercial, industrial, and automotive applications. The customer is responsible for testing and verifying the performance of an Abracon solution to meet their system-level requirements.



5101 Hidden Creek Ln Spicewood TX 78669  
Phone: 512-371-6159 | Fax: 512-351-8858  
For terms and conditions of sales, please visit:  
www.abracon.com

REVISION B: 03-11-25

ABRACON IS  
ISO9001-2015  
CERTIFIED