

# GainForce Technology Co.,Ltd

## 嘉光科技股份有限公司

### 承認書

### APPROVAL SHEET

品 名： Chip Antennas  
MODEL NAME \_\_\_\_\_

料 號： **60-0480003-10LF**  
PART NUMBER **AT9520-B2R4HAAT/LF** \_\_\_\_\_

客戶名稱： 鼎翰科技股份有限公司  
CUSTOMER \_\_\_\_\_

供 應 商： 嘉光科技股份有限公司  
VENDOR \_\_\_\_\_

使用機種：  
MODEL \_\_\_\_\_

聯 絡 人： 高妍希 Joanna

聯絡電話： +886-960-119-101

附 件：

ACCESSORIES  規格書

SPECIFICATION

樣品

SAMPLE

圖樣

DRAWING

檢驗報告

TEST REPORT

認可狀況：  
(APPROVED STATUS)



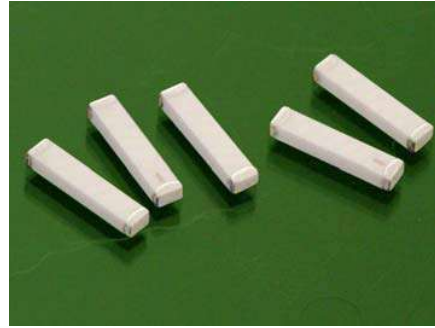
樣品版次: **A**

# AT9520 Series

## Multilayer Chip Antenna

### Features

- ❖ Monolithic SMD with small, low-profile and light-weight type.
- ❖ Wide bandwidth



### Applications

- ❖ 2.4GHz WLAN, Home RF, Bluetooth Modules, etc.

### Specifications

Part Number	Operating Frequency (MHz)	Peak Gain (XZ-V)	Average Gain (XZ-V)	VSWR	Impedance
<b>AT9520-B2R4HAA_</b>	2400~2500	3.0 dBi typ.	1.0 dBi typ.	2 max.	50 Ω

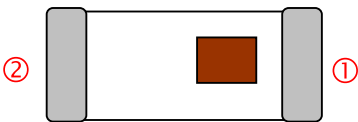
Q'ty/Reel (pcs) : 1000pcs  
 Operating Temperature Range : -40 ~ +85 °C  
 Storage Temperature Range : +5 ~ +35 °C, Humidity 45~75%RH  
 Storage Period : 12 months max.  
 Power Capacity : 2W max.

### Part Number

AT   9520   -   B   2R4   HAA   □  
 ①   ②   ③   ④   ⑤   ⑥

① Type	AT : Antenna	② Dimensions ( L × W )	9.5× 2.0 mm
③ Material Code	B	④ Initial center frequency	2R4=2400MHz
⑤ Specification Code	HAA	⑥ Packaging	T: Tape & Reel B: Bulk

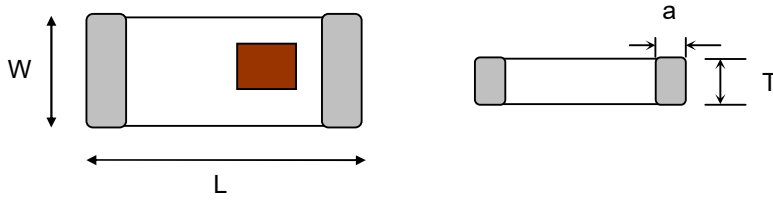
### Terminal Configuration



No.	Terminal Name	No.	Terminal Name
①	Feeding Point	②	NC

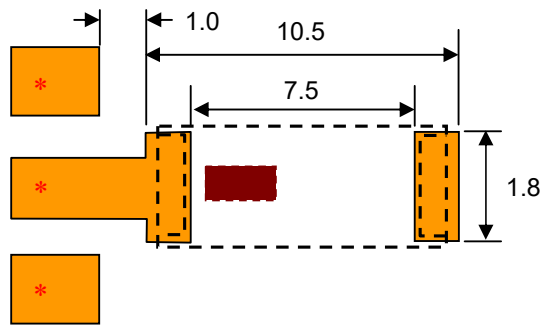
## Dimensions and Recommended PC Board Pattern

Unit : mm

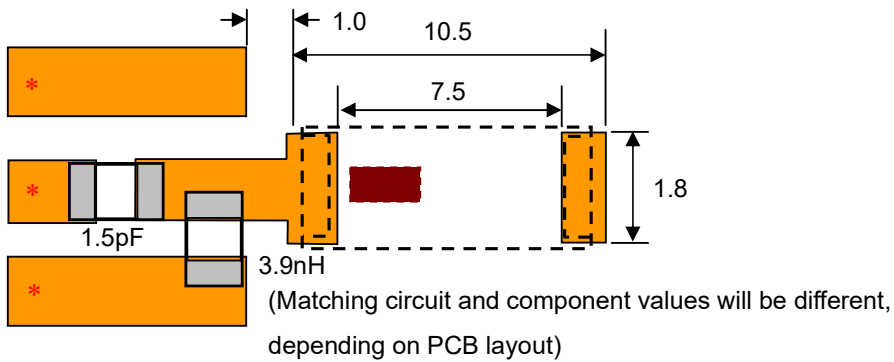


Mark	L	W	T	a
Dimensions	9.5±0.2	2.0±0.2	1.2+ 0.1/-0.2	0.5±0.3

### (a) Without Matching Circuits (Moderate Bandwidth)



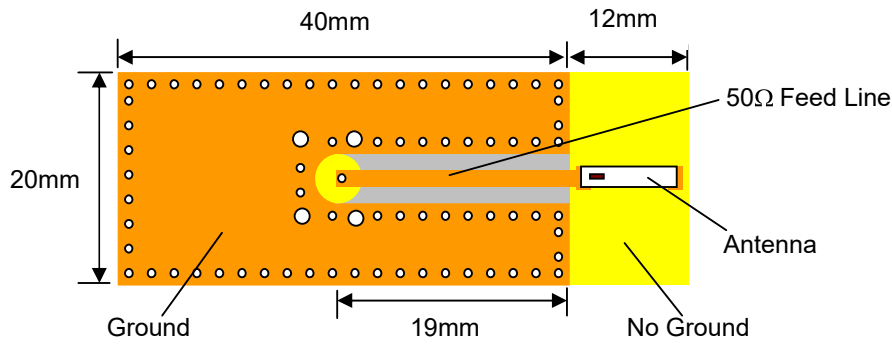
### (b) With Matching Circuits (Wide Bandwidth)



\*Line width should be designed to match  $50\Omega$  characteristic impedance, depending on PCB material and thickness.

**Typical Electrical Characteristics (T=25°C)**

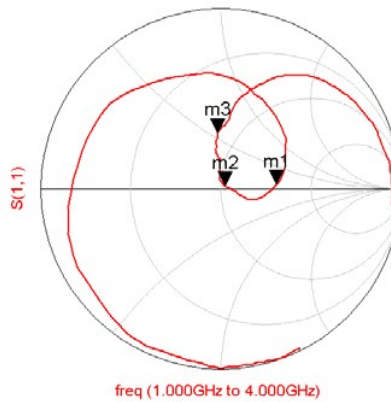
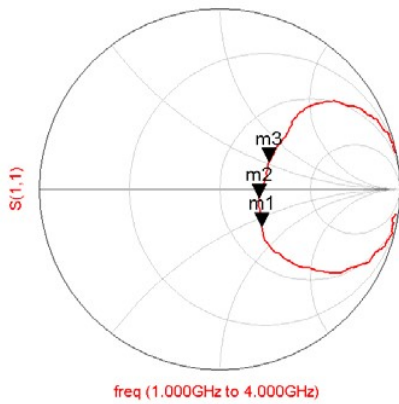
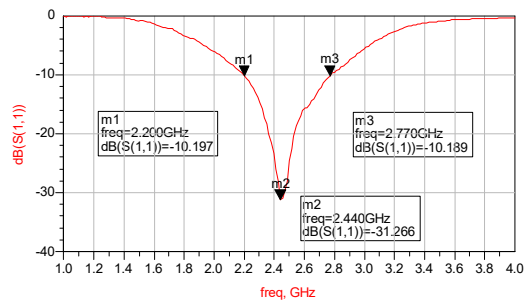
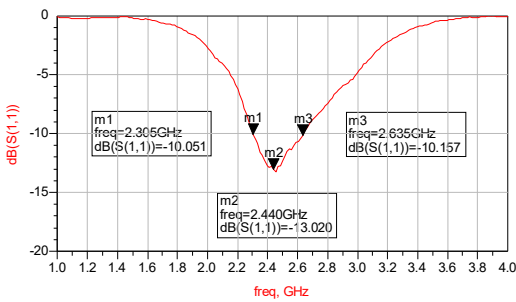
❖ Test Board



❖ Return Loss

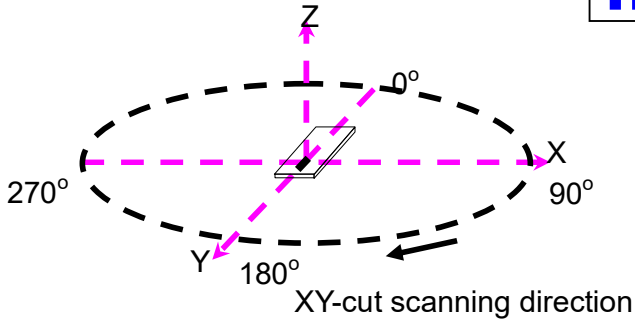
(a) Without Matching Circuits

(b) With Matching Circuits

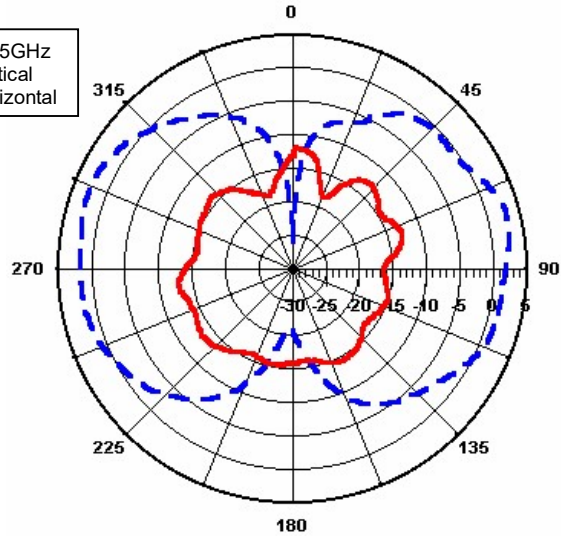


❖ Radiation Patterns

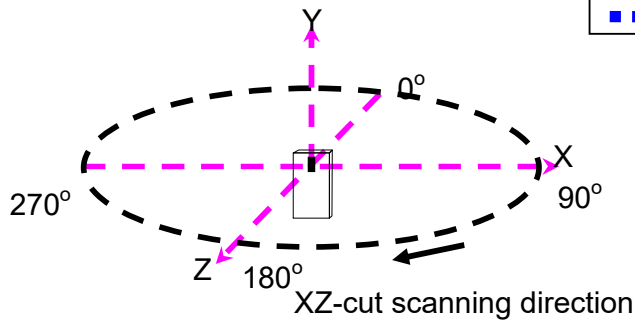
XY-V/XY-H



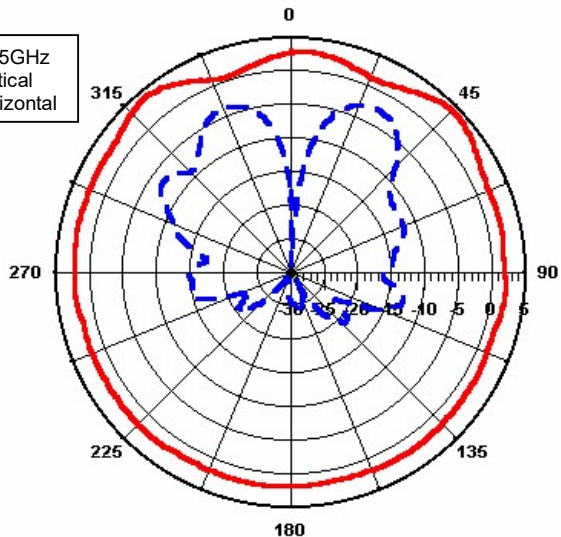
XY cut @2.45GHz  
— Vertical  
- - - Horizontal



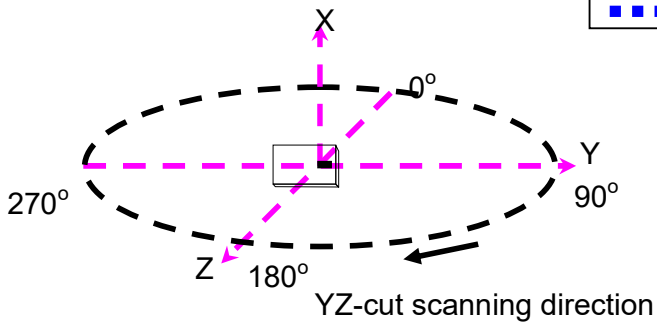
XZ-V/XZ-H



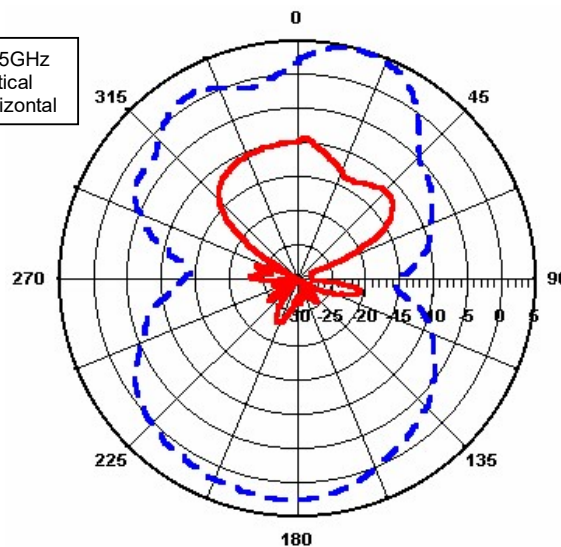
XZ cut @2.45GHz  
— Vertical  
- - - Horizontal



YZ-V/YZ-H

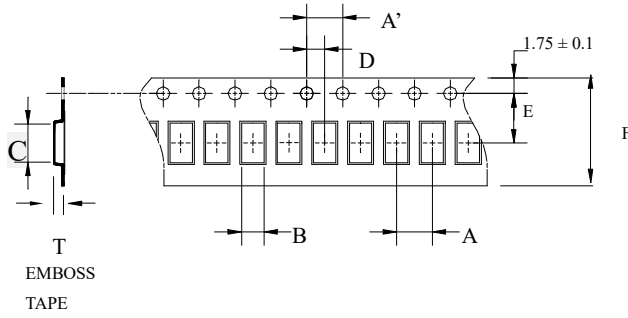


YZ cut @2.45GHz  
— Vertical  
- - - Horizontal



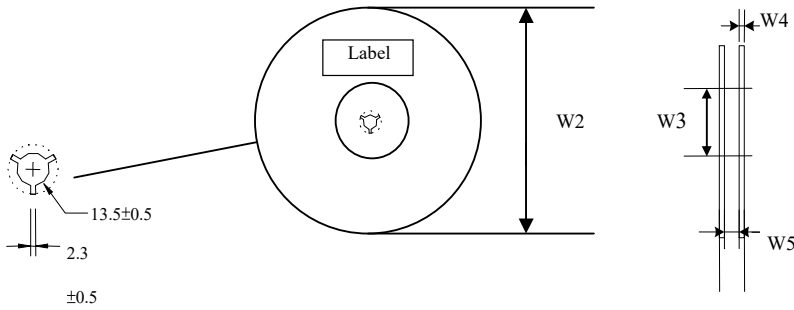
## Taping Specifications

### ❖Tape & Reel Dimensions (Unit: mm) vs. Quantity (pcs)



Type	A	A'	B	C	D	E	F	T	Quantity/per reel	Tape material
AT9520	4.0±	4.0±	2.35±	9.7±	2.0±	7.5±	16.0±	1.40±	1,000pcs	Plastic (Embossed)
	0.1	0.1	0.1	0.1	0.05	0.1	0.1	0.1		

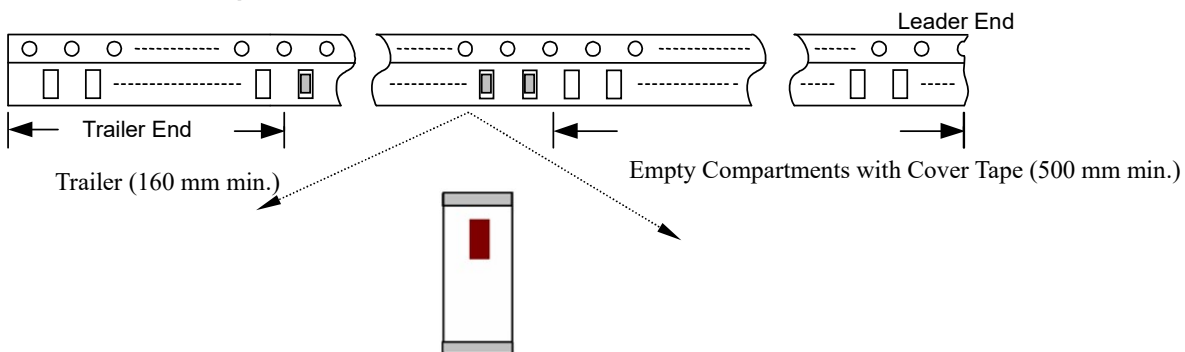
### ❖Reel Dimensions (Unit: mm)



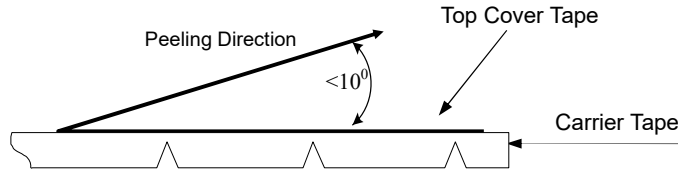
Label: Customer's Name,  
ACX P/N, Q'ty, Date,  
ACX Corp.

Type	W2	W3	W4	W5
AT9520	178±1	60±1	1.4±0.2	17±0.5

### ❖Leader and Trailer Tape



❖ **Peel-off Force**



Peel-off force should be in the range of 0.1 – 0.6 N at a peel-off speed of  $300 \pm 10$  mm/min .

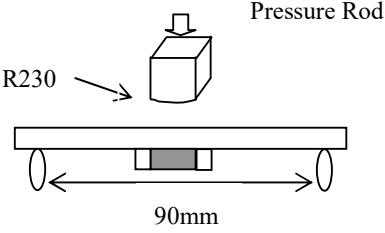
❖ **Storage Conditions**

- (1) Temperature:  $15 \sim 35^{\circ}\text{C}$  , relative humidity (RH): 45~75%.
- (2) Non-corrosive environment

**Notes**

❖ The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

## Mechanical & Environmental Characteristics

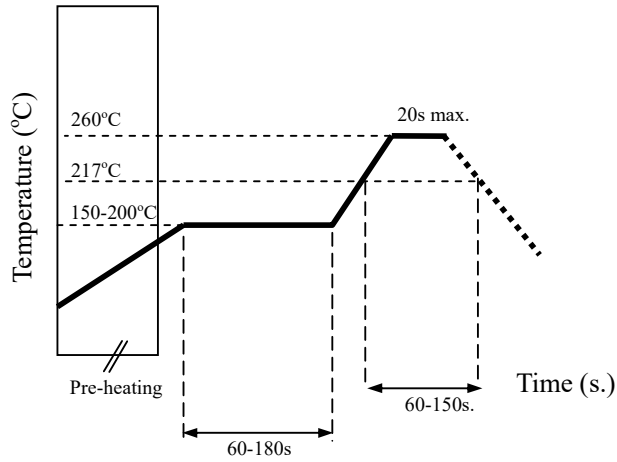
Item	Requirements	Procedure
Solderability	<ol style="list-style-type: none"> <li>1. No apparent damage</li> <li>2. More than 95% of the terminal electrode shall be covered with new solder</li> </ol>	<ol style="list-style-type: none"> <li>1. Preheat: <math>120 \pm 5^\circ\text{C}</math></li> <li>2. Solder: <math>245 \pm 5^\circ\text{C}</math> for <math>5 \pm 1</math> sec</li> </ol>
Soldering strength (Termination Adhesion)	<ol style="list-style-type: none"> <li>1. 1kg minimum</li> </ol>	<ol style="list-style-type: none"> <li>1. Solder specimen onto test jig.</li> <li>2. Apply push force at 0.5mm/s until electrode pads are peeled off or ceramic are broken. Pushing force is applied to longitude direction</li> </ol>
Deflection (Substrate Bending)	<ol style="list-style-type: none"> <li>1. No apparent damage</li> </ol>	<ol style="list-style-type: none"> <li>1. Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile.</li> <li>2. Apply a bending force of 1mm deflection</li> </ol> 
Heat/Humidity Resistance	<ol style="list-style-type: none"> <li>1. No apparent damage</li> <li>2. Fulfill the electrical specification after test</li> </ol>	<ol style="list-style-type: none"> <li>1. Temperature: <math>85 \pm 2^\circ\text{C}</math></li> <li>2. Humidity: 90% ~ 95% RH</li> <li>3. Duration: <math>1000 \pm 48</math>hrs</li> <li>4. Recovery: 1-2hrs</li> </ol>
Thermal shock (Temperature Cycle)	<ol style="list-style-type: none"> <li>1. No apparent damage</li> <li>2. Fulfill the electrical specification after test</li> </ol>	<ol style="list-style-type: none"> <li>1. One cycle/step 1 : <math>125 \pm 5^\circ\text{C}</math> for 30 min step 2 : <math>-40 \pm 5^\circ\text{C}</math> for 30 min</li> <li>2. No of cycles : 100</li> <li>3. Recovery: 1-2 hrs</li> </ol>
Low Temperature Resistance	<ol style="list-style-type: none"> <li>1. No apparent damage</li> <li>2. Fulfill the electrical specification after test</li> </ol>	<ol style="list-style-type: none"> <li>1. Temperature: <math>-40 \pm 5^\circ\text{C}</math></li> <li>2. Duration: <math>500 \pm 24</math>hrs</li> <li>3. Recovery: 1-2hrs</li> </ol>



## Soldering Conditions

### ❖ Typical Soldering Profile for Lead-free Process

Reflow Soldering :



## Notes

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### **Advanced Ceramic X Corp.**

16 Tzu Chiang Road, Hsinchu Industrial District Hsinchu Hsien 303, Taiwan

TEL:886-3-5987008 FAX:886-3-5987001

E-mail: [acx@acxc.com.tw](mailto:acx@acxc.com.tw)

<http://www.acxc.com.tw>