

# AT3216 Series

## Multilayer Chip Antenna

### Features

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



### Applications

- ❖ Bluetooth/Wireless LAN/Home RF
- ❖ ISM band 2.4GHz applications

### Specifications

| Part Number           | Operating Frequency (MHz) | Peak Gain (XZ-V) | Average Gain (XZ-V) | VSWR   | Impedance |
|-----------------------|---------------------------|------------------|---------------------|--------|-----------|
| <b>AT3216-B2R7HAA</b> | 2400 ~ 2500               | 0.5 dBi typ.     | -0.5 dBi typ.       | 2 max. | 50 Ω      |

Q'ty/Reel (pcs) : 3,000pcs  
 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    3216    -    B    2R7    HAA    □    □  
 ①       ②       ③       ④       ⑤       ⑥       ⑦

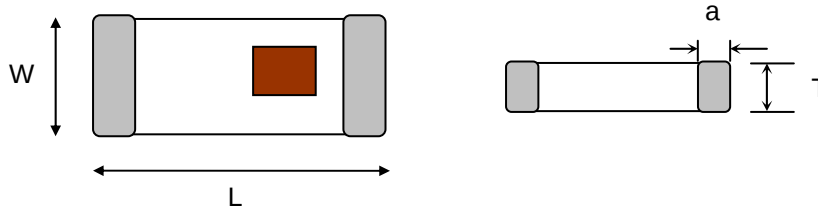
|                      |               |                            |                           |
|----------------------|---------------|----------------------------|---------------------------|
| ① Type               | AT : Antenna  | ② Dimensions ( L × W )     | 3.2× 1.6 mm               |
| ③ Material Code      | B             | ④ Initial center frequency | 2R7=2700MHz               |
| ⑤ Specification Code | HAA           | ⑥ Packaging                | T: Tape & Reel<br>B: Bulk |
| ⑦ Soldering          | /LF=lead-free |                            |                           |

## Terminal Configuration

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

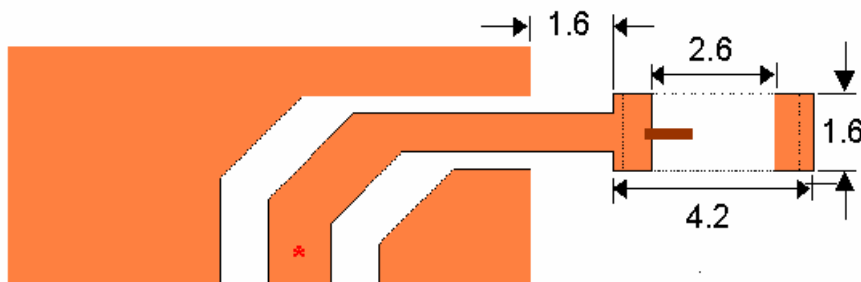
## Dimensions and Recommended PC Board Pattern

Unit : mm

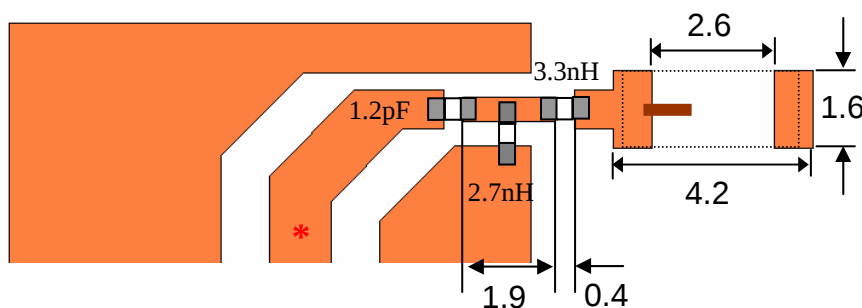


| Mark       | L       | W       | T                | a       |
|------------|---------|---------|------------------|---------|
| Dimensions | 3.2±0.2 | 1.6±0.2 | 1.3+<br>0.1/-0.2 | 0.5±0.3 |

### (a) Without Matching Circuits



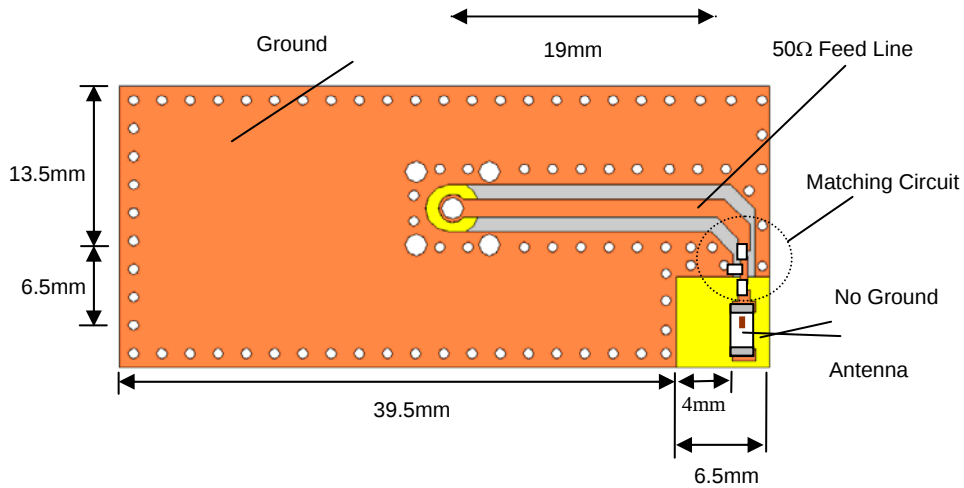
### (b) With Matching Circuits



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

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

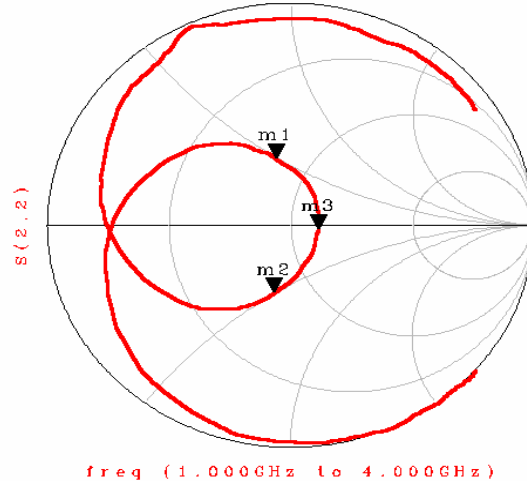
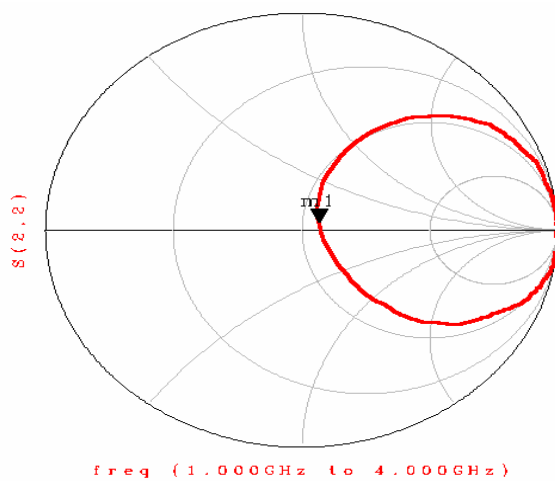
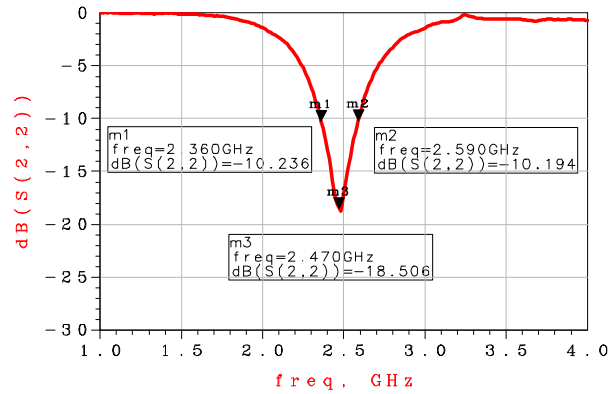
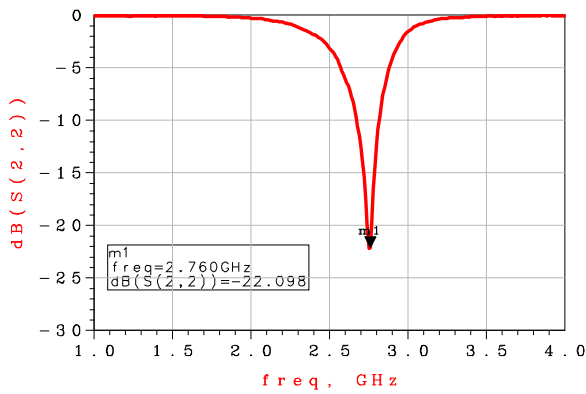
### ❖ Test Board



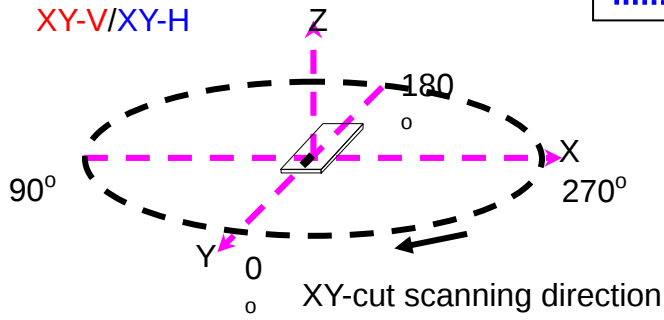
### ❖ Return Loss

(a) Without Matching Circuits

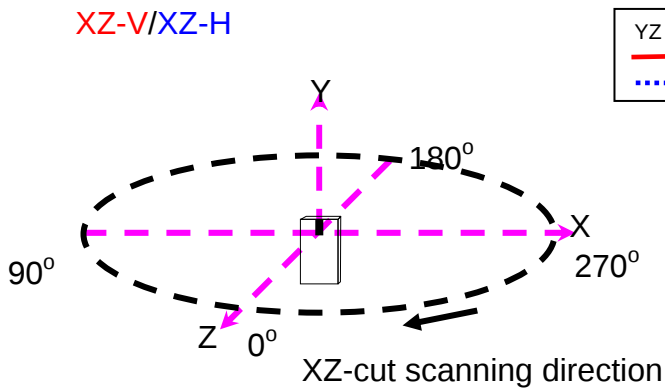
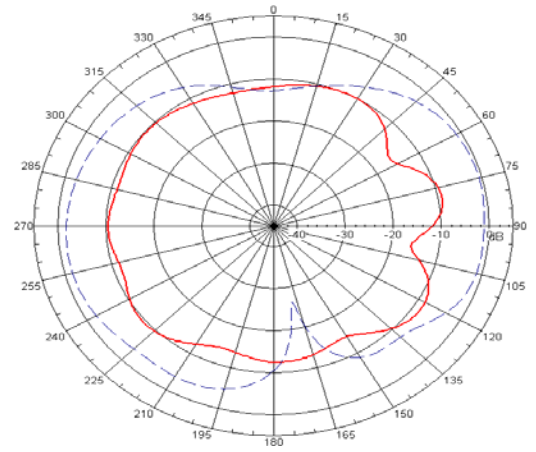
(b) With Matching Circuits



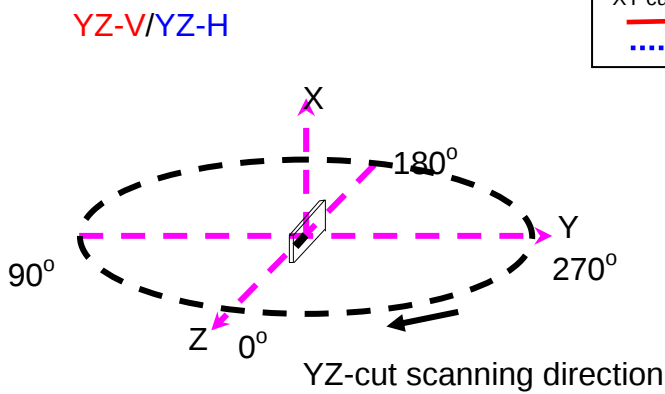
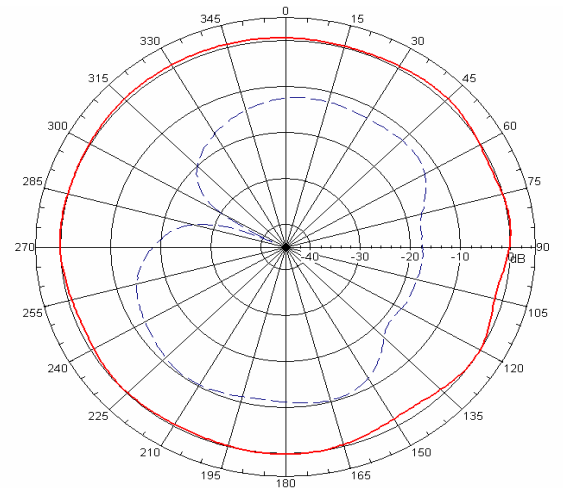
### Radiation Patterns



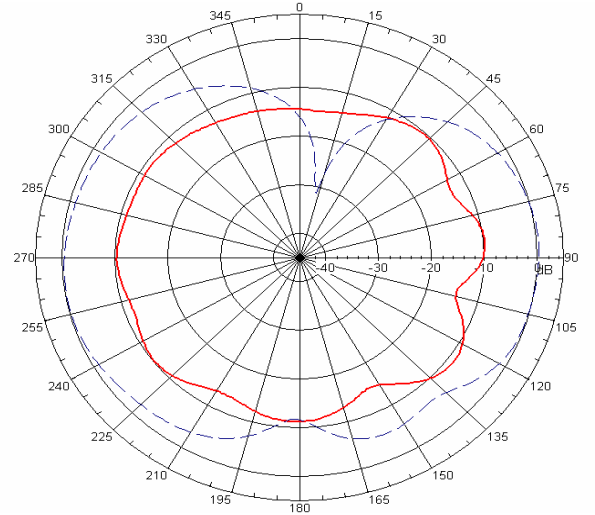
XZ cut @2.45GHz  
— Vertical  
- - - Horizontal



YZ cut @2.45GHz  
— Vertical  
- - - Horizontal

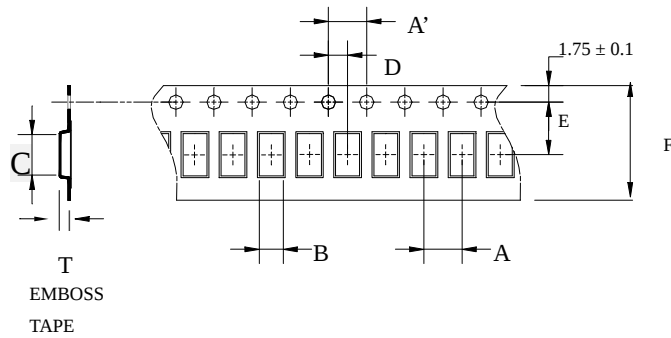


XY cut @2.45GHz  
— Vertical  
- - - Horizontal



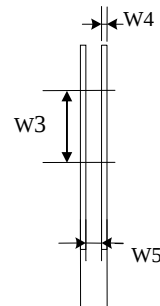
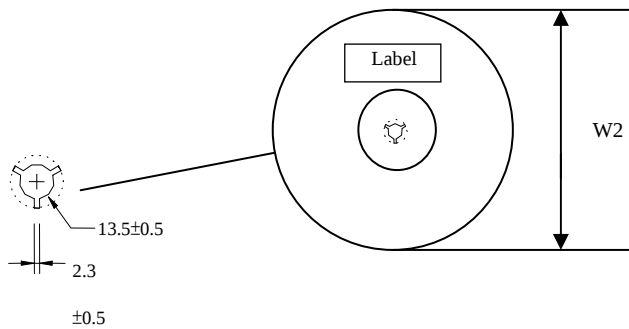
## Taping Specifications

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



| Type   | A           | A'           | B            | C           | D            | E            | F            | T            | Quantity/per reel | Tape material         |
|--------|-------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|-------------------|-----------------------|
| AT3216 | 4.0±<br>0.1 | 4.0±<br>0.05 | 1.95±<br>0.1 | 3.5±<br>0.1 | 2.0±<br>0.05 | 3.5±<br>0.05 | 8.00±<br>0.2 | 1.50±<br>0.1 | 3,000pcs          | Plastic<br>(Embossed) |

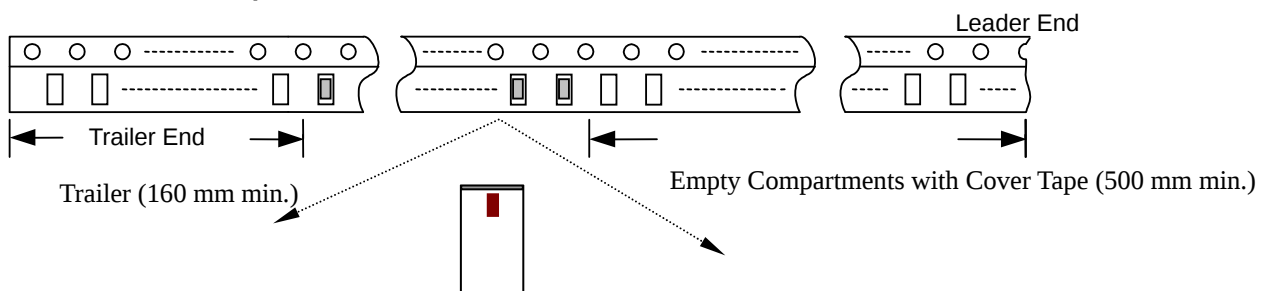
### ❖Reel Dimensions (Unit: mm)



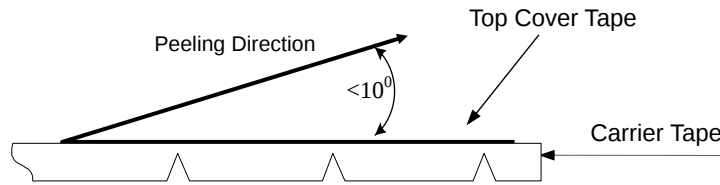
Label: Customer's Name,  
ACX P/N, Q'ty, Date,  
ACX Corp.

| Type   | W2    | W3   | W4      | W5     |
|--------|-------|------|---------|--------|
| AT3216 | 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±10 mm/min .

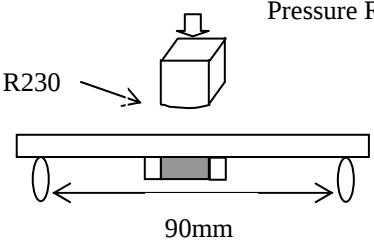
❖ **Storage Conditions**

- (1) Temperature: 15 ~35℃ , 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.

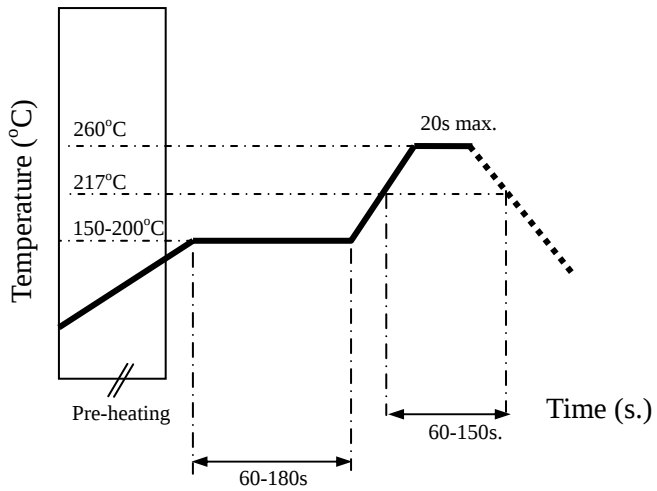
Mechanical & Environmental Characteristics

| Item                                         | Requirements                                                                                                                                           | Procedure                                                                                                                                                                                                                                                                |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solderability                                | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>More than 95% of the terminal electrode shall be covered with new solder</li> </ol> | <ol style="list-style-type: none"> <li>Preheat: 120± 5 °C</li> <li>Solder: 245± 5°C for 5± 1 sec</li> </ol>                                                                                                                                                              |
| Soldering strength<br>(Termination Adhesion) | <ol style="list-style-type: none"> <li>1kg minimum</li> </ol>                                                                                          | <ol style="list-style-type: none"> <li>Solder specimen onto test jig.</li> <li>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<br>(Substrate Bending)            | <ol style="list-style-type: none"> <li>No apparent damage</li> </ol>                                                                                   | <ol style="list-style-type: none"> <li>Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile.</li> <li>Apply a bending force of 2mm deflection</li> </ol>  |
| Heat/Humidity Resistance                     | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                          | <ol style="list-style-type: none"> <li>Temperature: 85± 2°C</li> <li>Humidity: 90% ~ 95% RH</li> <li>Duration: 1000±48hrs</li> <li>Recovery: 1-2hrs</li> </ol>                                                                                                           |
| Thermal shock<br>(Temperature Cycle)         | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                          | <ol style="list-style-type: none"> <li>One cycle/step 1 : 125 ± 5°C for 30 min<br/>step 2 : - 40 ± 5°C for 30 min</li> <li>No of cycles : 100</li> <li>Recovery:1-2 hrs</li> </ol>                                                                                       |
| Low Temperature Resistance                   | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                          | <ol style="list-style-type: none"> <li>Temperature: -40°± 5 °C</li> <li>Duration: 500 ±24hrs</li> <li>Recovery: 1-2hrs</li> </ol>                                                                                                                                        |

## Soldering Conditions

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

Reflow Soldering :



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