

# AT8010 Series

## Multilayer Chip Antenna

### Features

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

### Applications

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



### Specifications

Part Number	Operating Frequency (MHz)	Peak Gain (dBi typ.)	Average Gain (dBi typ.)	VSWR	Impedance
<b>AT8010-E2R9HAA_</b>	2400~2500	2.5 (XZ-V)	0.5 (XZ-V)	2 max.	50 Ω

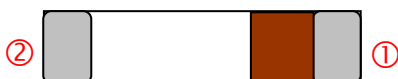
Q'ty/Reel (pcs)	: 1,000 pcs
Operating Temperature Range	: -40 ~ +85 °C
Storage Temperature Range	: +5 ~ +35 °C, Humidity 45~75%RH
Storage Period	: 12 months max.
Power Capacity	: 2W max.

### Part Number

AT    8010    -    E    2R9    HAA    □    /LF  
 ①       ②       ③       ④       ⑤       ⑥       ⑦

① Type	AT : Antenna	② Dimensions ( L × W )	8.0 × 1.0 mm
③ Material Code	E	④ Initial center frequency	2R9=2900MHz
⑤ Specification Code	HAA	⑥ Packaging	T: Tape & Reel B: Bulk
⑦ Soldering	/LF=lead-free		

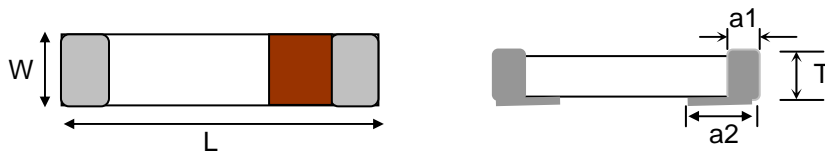
### Terminal Configuration



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

## Dimensions and Recommended PC Board Pattern

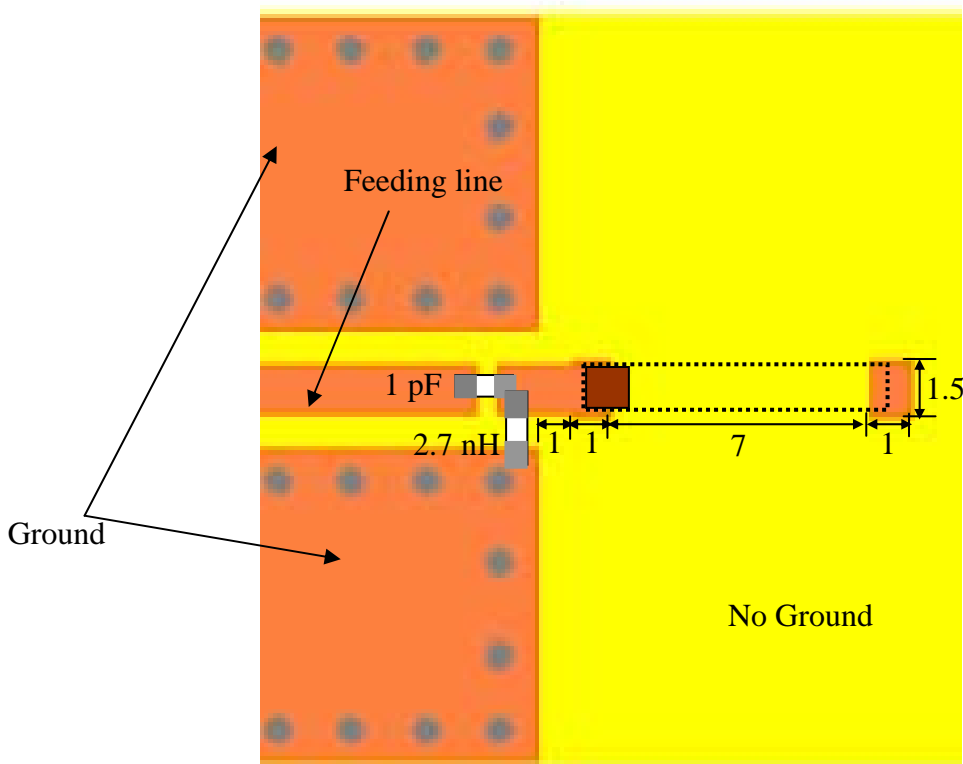
Unit : mm



Mark	L	W	T	a1	a2
Dimensions	$8.0 \pm 0.2$	$1.0 \pm 0.2$	$1.0 \pm 0.2$	$0.5 \pm 0.2$	$1.0 \pm 0.2$

### The Recommended PC Board layout – Type A

❖ With Matching Circuits (Unit in mm)

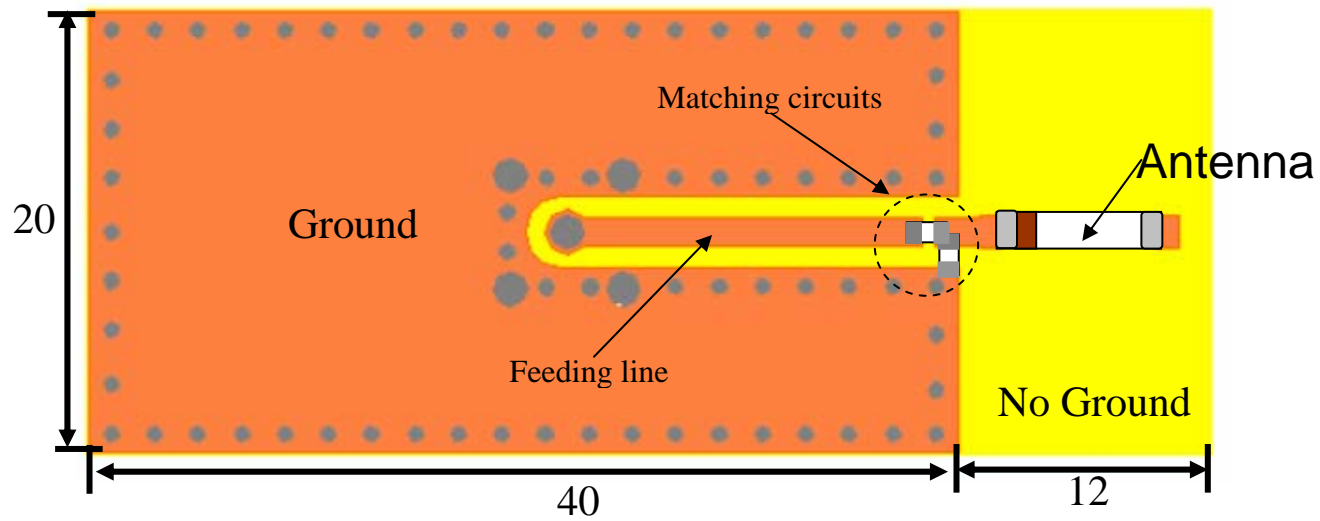


(Matching circuit and component values will be different, depending on PCB layout)

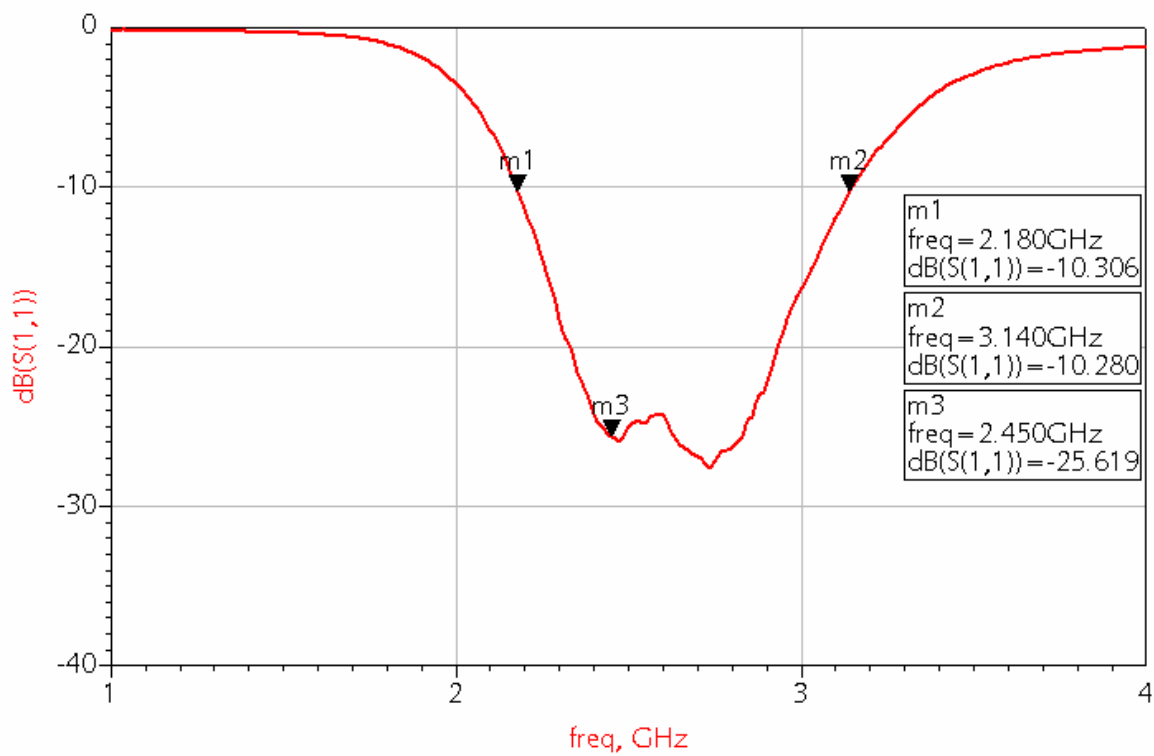
\*Line width should be designed to match  $50\Omega$  characteristic impedance, depending on PCB material and thickness.

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

❖ Test Board – Type A (Unit in mm)

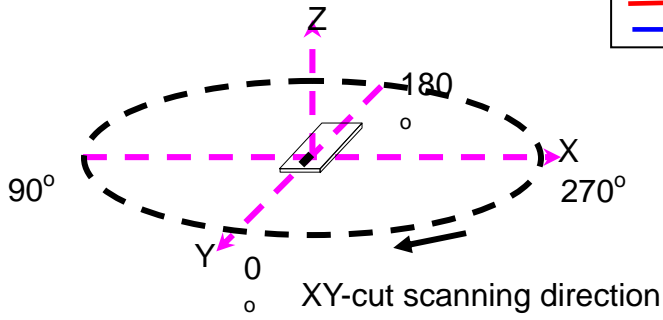


❖ Return Loss / With Matching Circuits

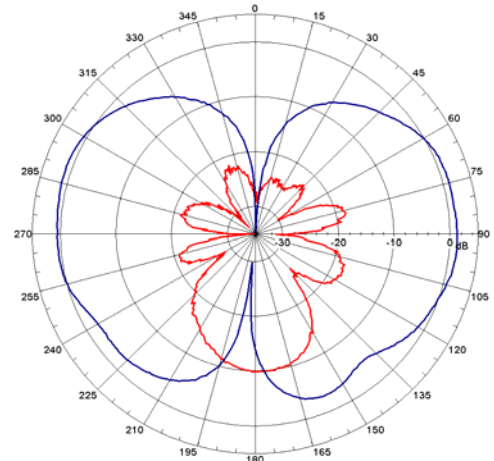


❖ Radiation Patterns

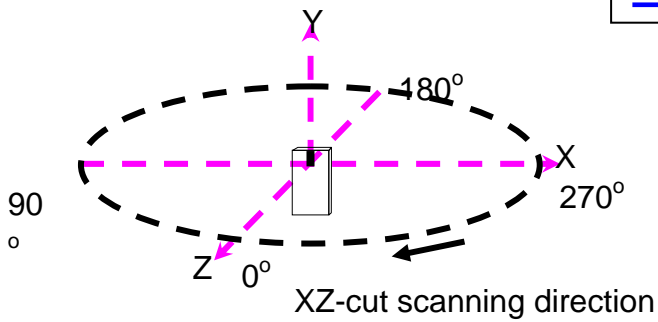
XY-V/XY-H



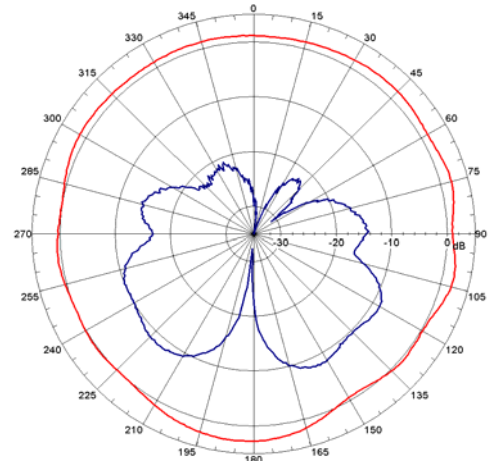
XY cut @2.45GHz  
— Vertical  
— Horizontal



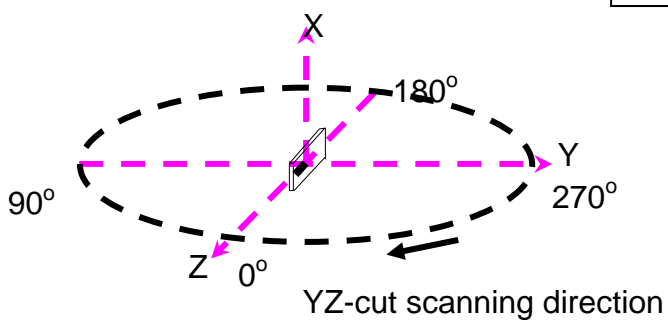
XZ-V/XZ-H



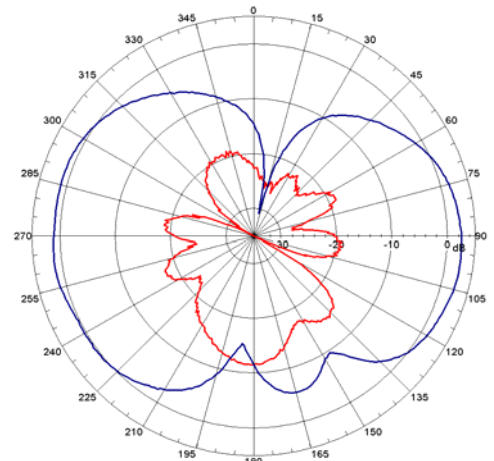
XZ cut @2.45GHz  
— Vertical  
— Horizontal



YZ-V/YZ-H

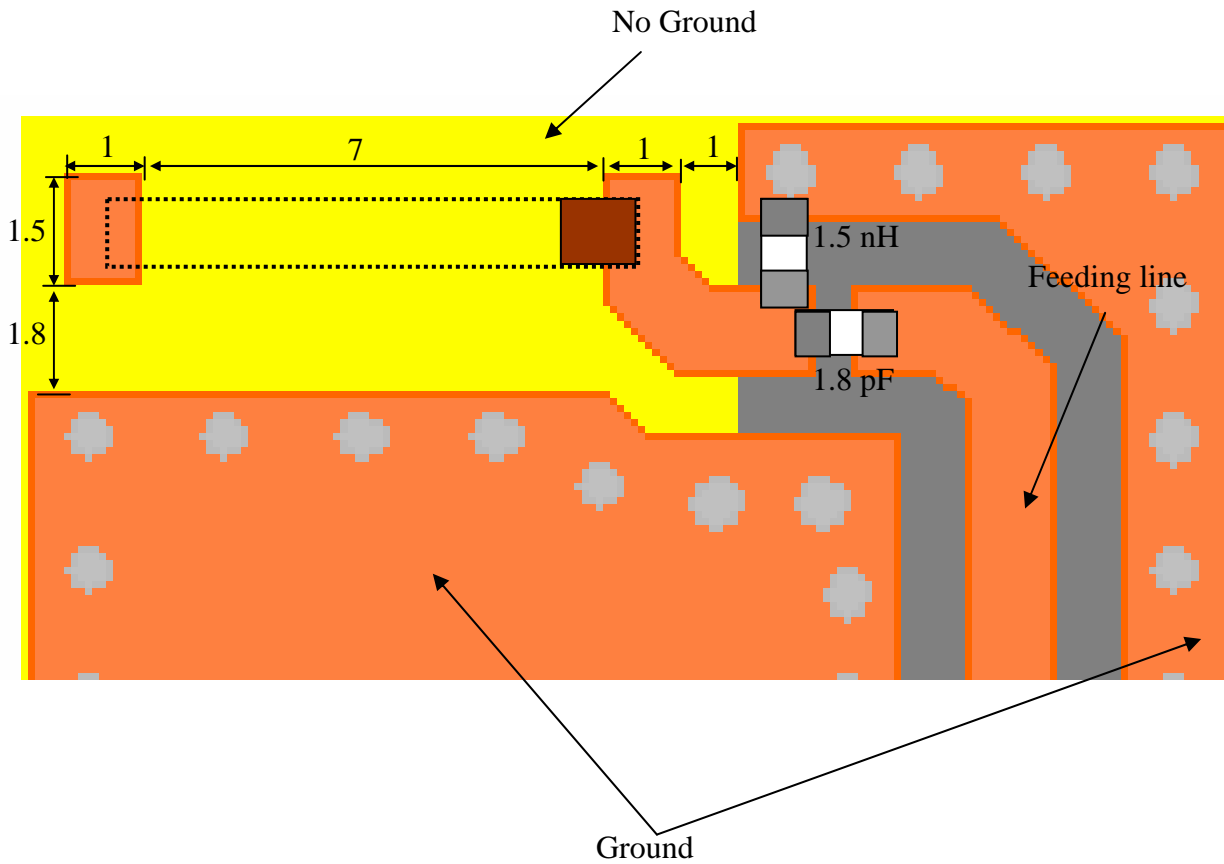


YZ cut @2.45GHz  
— Vertical  
— Horizontal



## The Recommended PC Board layout – Type B

❖ With Matching Circuits (Unit in mm)

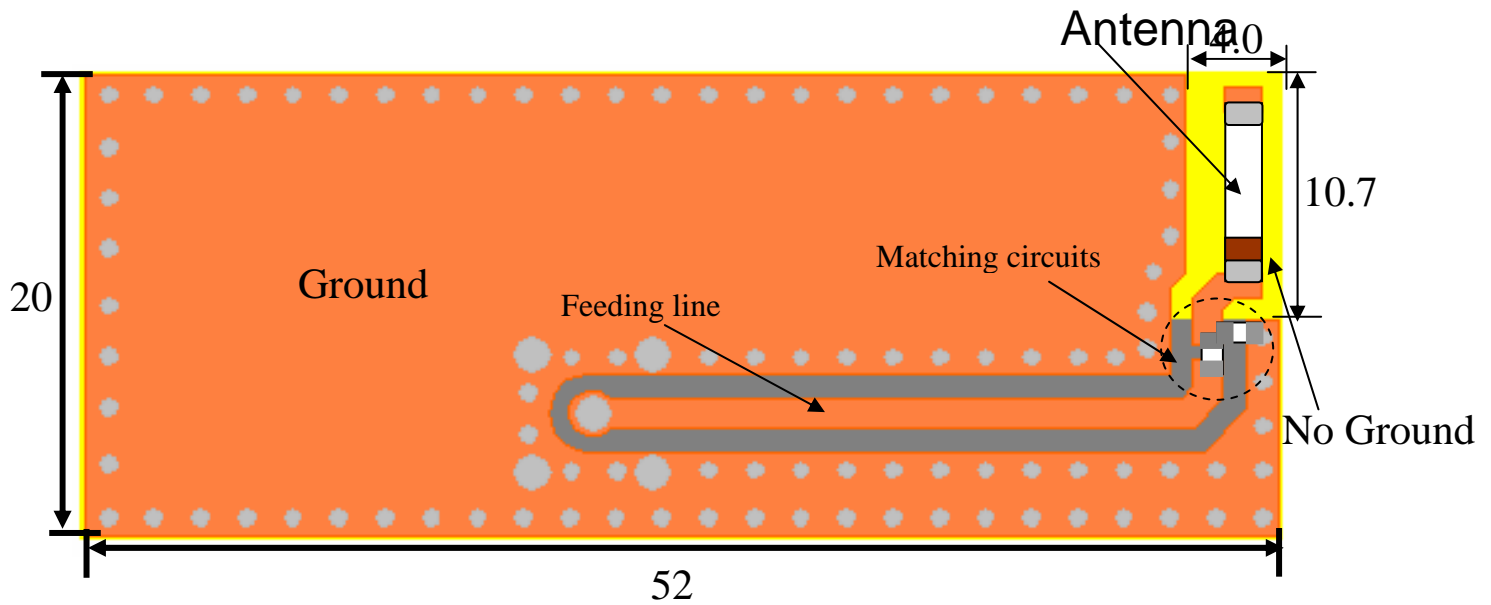


(Matching circuit and component values will be different, depending on PCB layout)

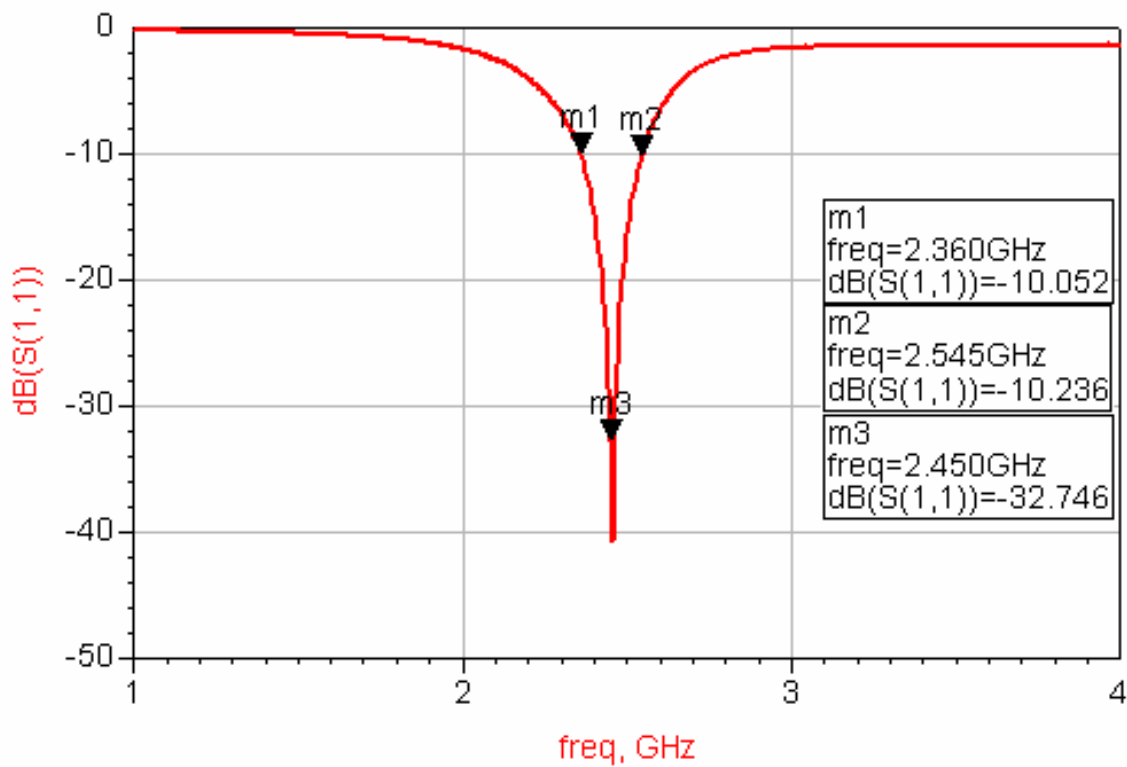
\*Line width should be designed to match  $50\Omega$  characteristic impedance, depending on PCB material and thickness.

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

❖ Test Board – Type B (Unit in mm)

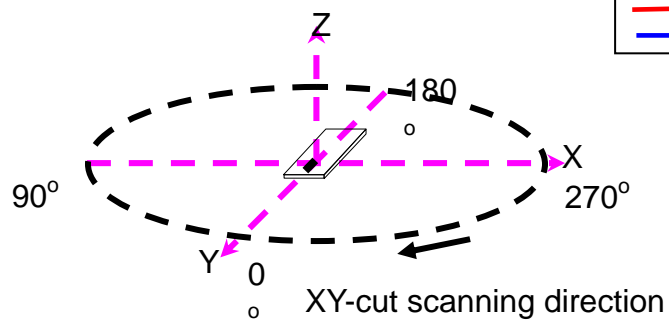


❖ Return Loss / With Matching Circuits

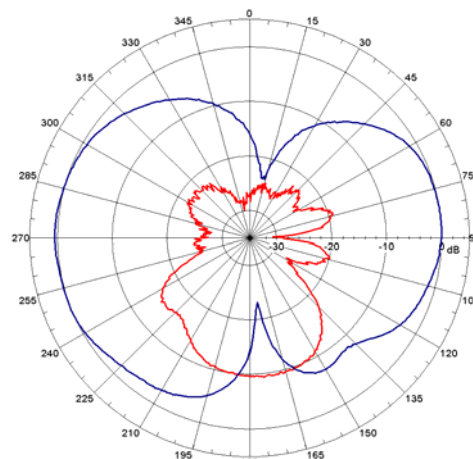


❖ Radiation Patterns

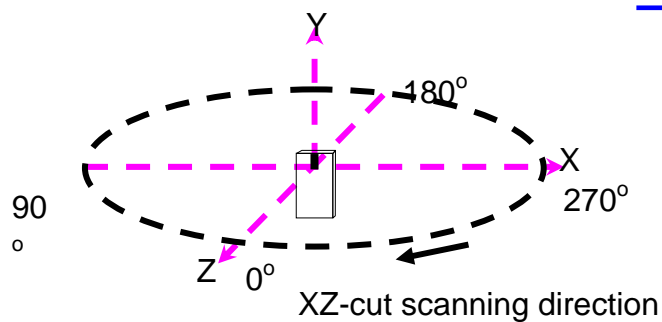
XY-V/XY-H



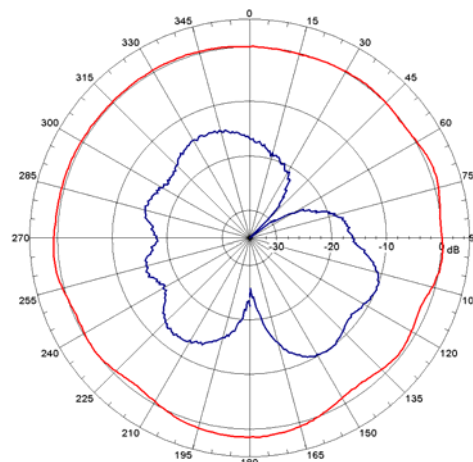
XY cut @2.45GHz  
— Vertical  
— Horizontal



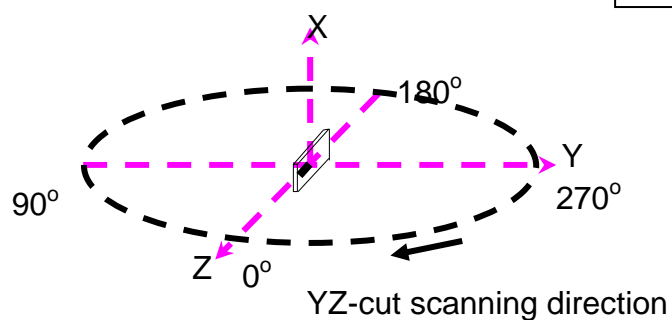
XZ-V/XZ-H



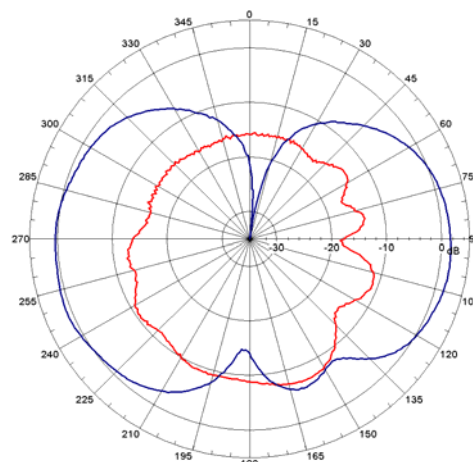
XZ cut @2.45GHz  
— Vertical  
— Horizontal



YZ-V/YZ-H



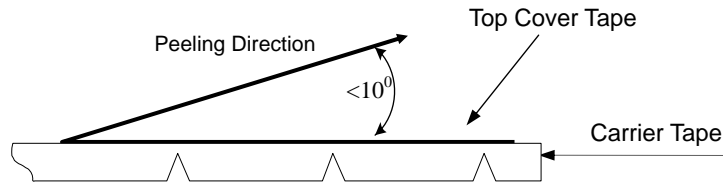
YZ cut @2.45GHz  
— Vertical  
— Horizontal







❖ **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 .

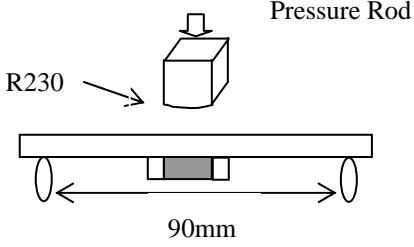
❖ **Storage Conditions**

- (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.

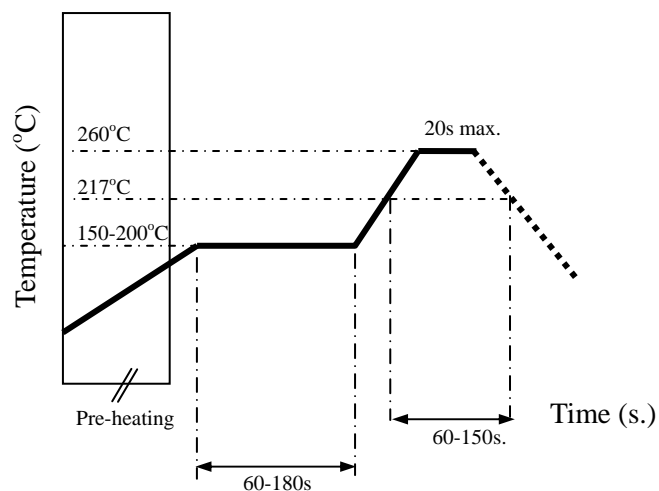
## Mechanical & Environmental Characteristics

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 1 mm 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^{\circ} \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 :



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