

ATR250 Series **【Preliminary】**

Multilayer Chip Antenna

Features

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

Applications

- ❖ TPMS (Tire Pressure Monitor System), etc.



Specifications

* With using version1 matching circuits

Part Number	Frequency Range (MHz)	Peak Gain (XZ-total)	Average Gain (XZ-total)	VSWR	Impedance
ATR250-TR43HAA_	423 ~ 443	-4.0 dBi typ.	-4.0 dBi typ.	2 max.	50 Ω

* With using version2 matching circuits

Part Number	Frequency Range (MHz)	Peak Gain (XZ-total)	Average Gain (XZ-total)	VSWR	Impedance
ATR250-TR43HAA_	402 ~ 405	0.0 dBi typ.	-5.0 dBi typ.	2 max.	50 Ω

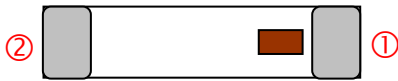
Q'ty/Reel (pcs) : 500 pcs
 Operating Temperature Range : -40 ~ +85 °C
 Storage Temperature Range : -40 ~ +85 °C
 Storage Period : 12 months max.
 Power Capacity : 3W max.

Part Number

AT R250 - T R43 HAA □ /LF
 ① ② ③ ④ ⑤ ⑥ ⑦

① Type	AT : Antenna	② Dimensions (L x W)	25.0× 5.0 mm
③ Material Code	T	④ Frequency Range	R43=433MHz
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

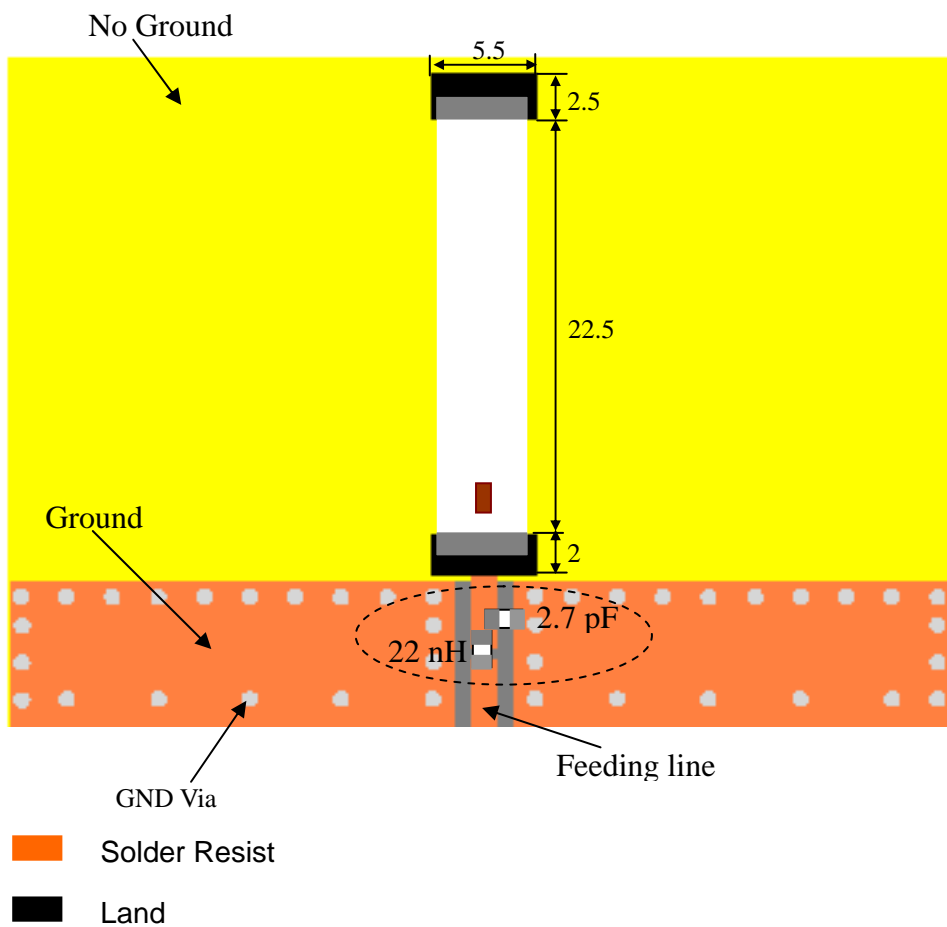
Dimensions and Recommended PC Board Pattern

Unit : mm

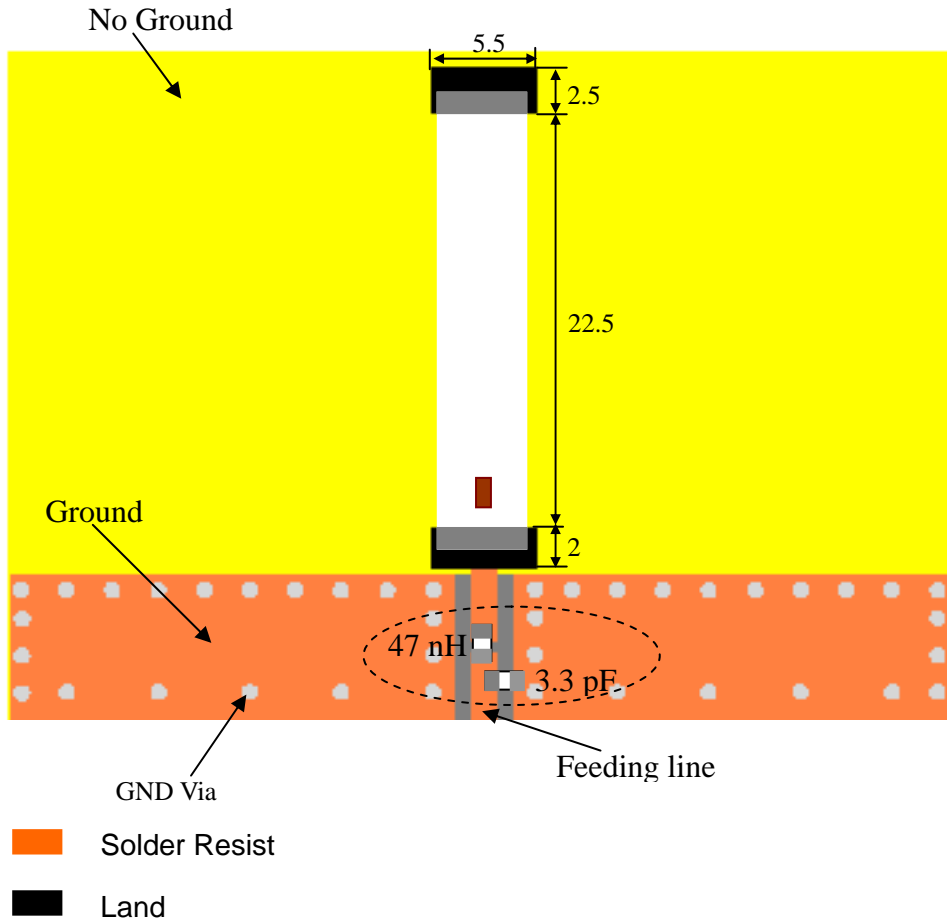


Mark	L	W	T	a1	a2
Dimensions	25.0±0.2	5.0±0.2	1.2±0.1	0.5±0.2	1.0±0.2

❖ With using version1 matching circuits (Unit in mm)



❖ With using version2 matching circuits (Unit in mm)

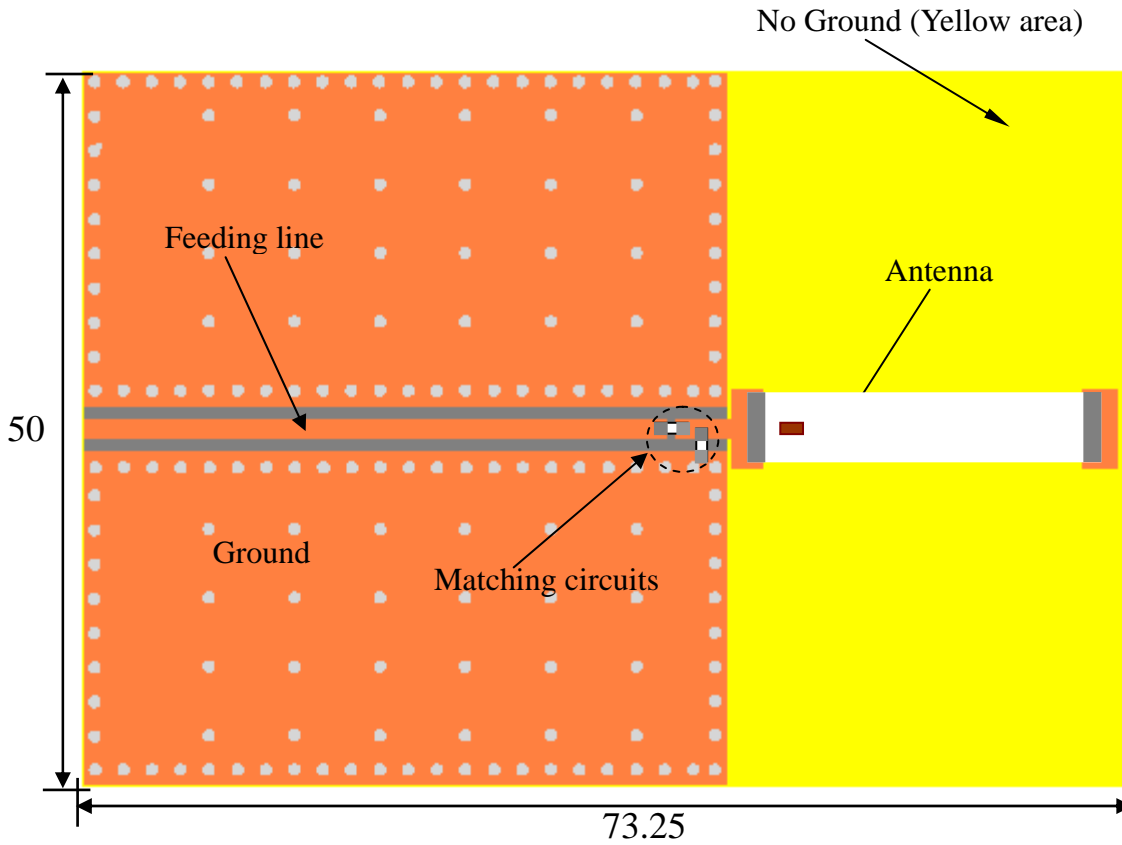


(Matching circuit and component values will be different, depending on PCB layout)

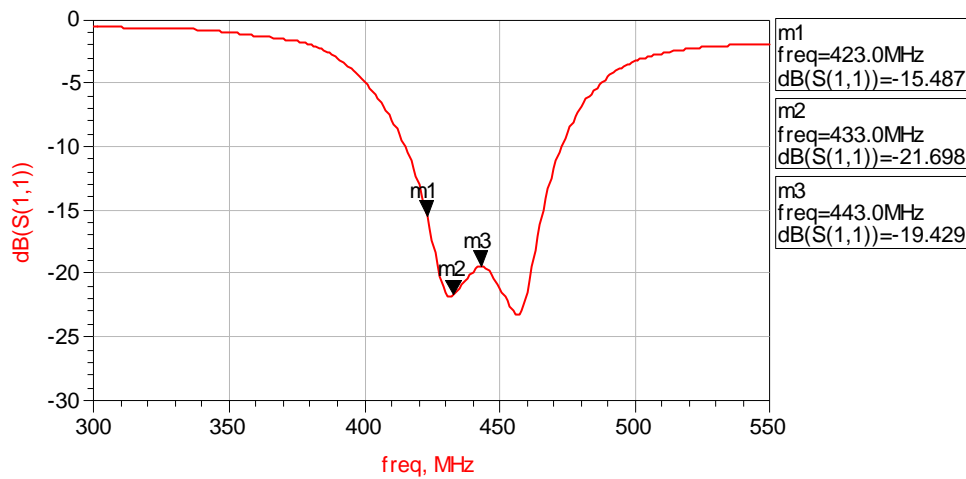
*Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

Typical Electrical Characteristics (T=25°C)

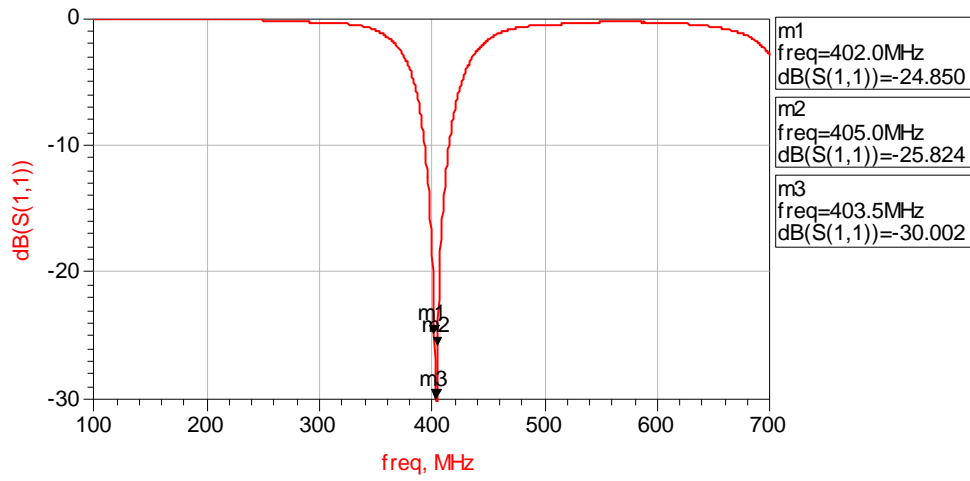
❖ Test Board (Unit in mm)



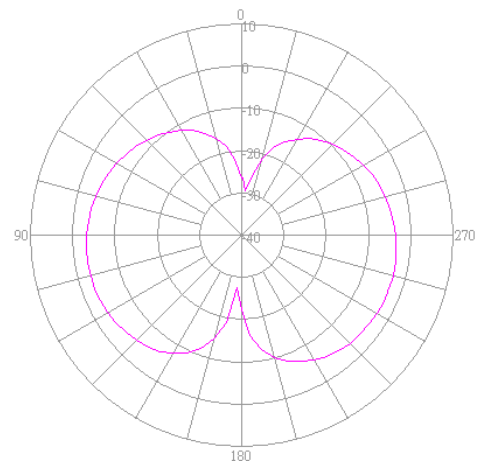
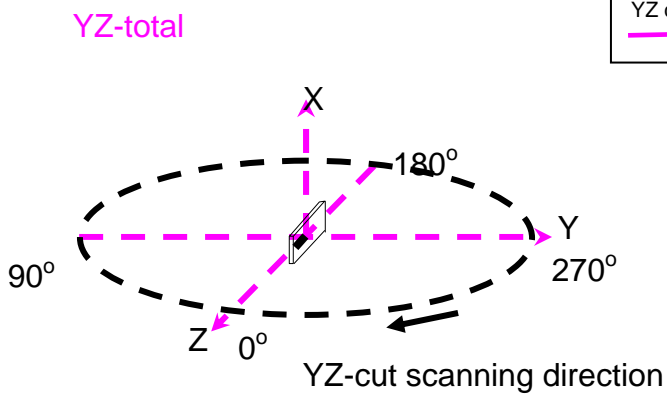
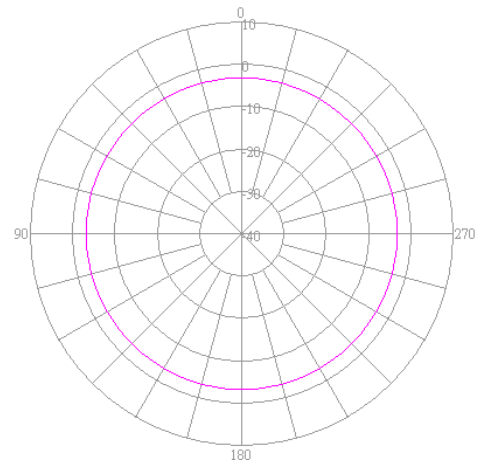
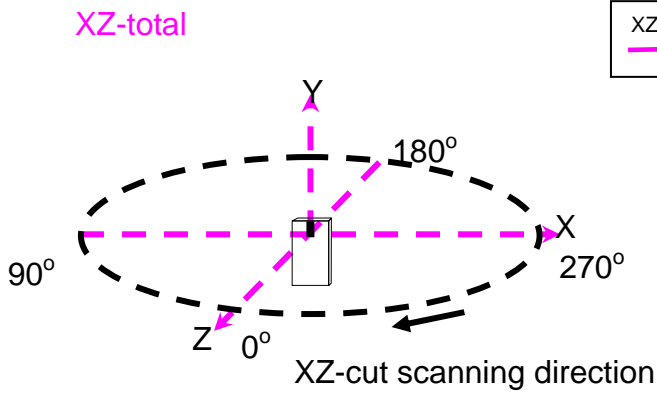
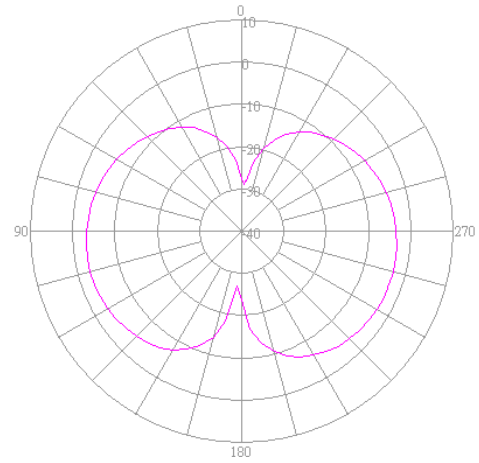
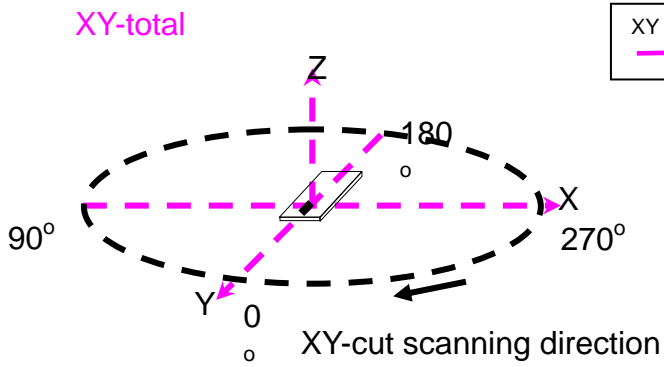
❖ Return Loss / With Matching Circuits with using version1 matching circuits



❖ Return Loss / With Matching Circuits with using version2 matching circuits

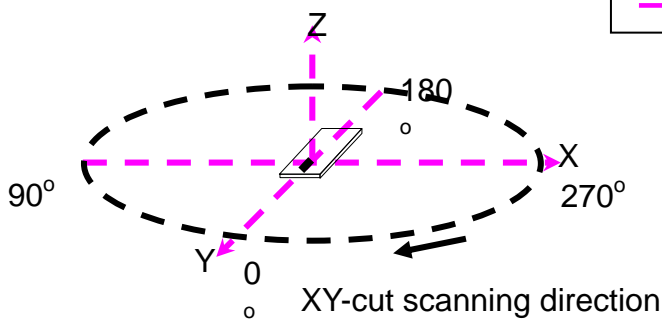


❖ Radiation Patterns with using version1 matching circuits

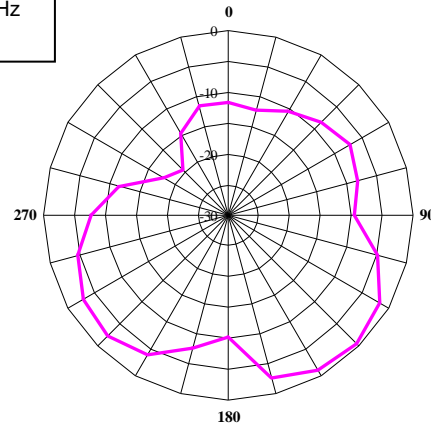


❖ Radiation Patterns with using version2 matching circuits

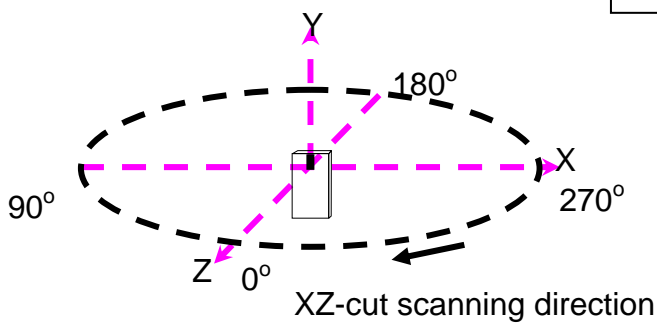
XY-total



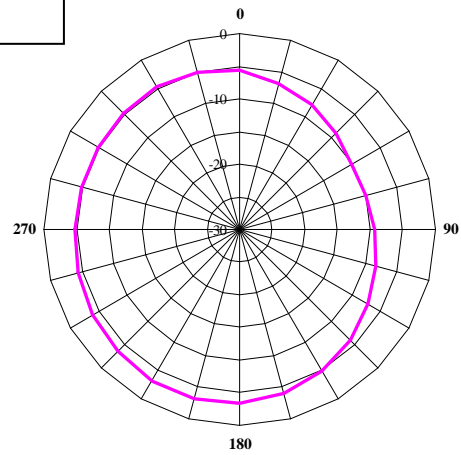
XY cut @403.5MHz
— Total



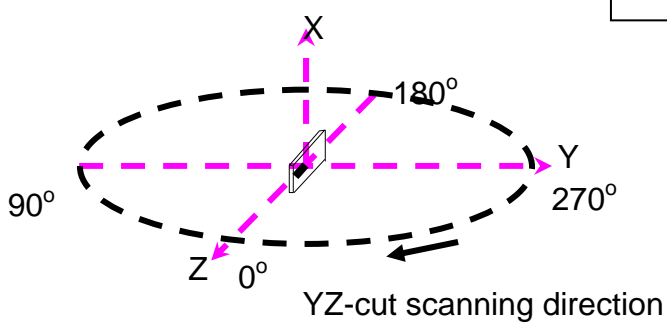
XZ-total



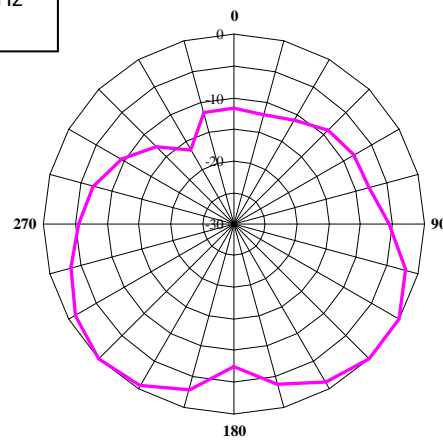
XZ cut @403.5MHz
— Total



YZ-total



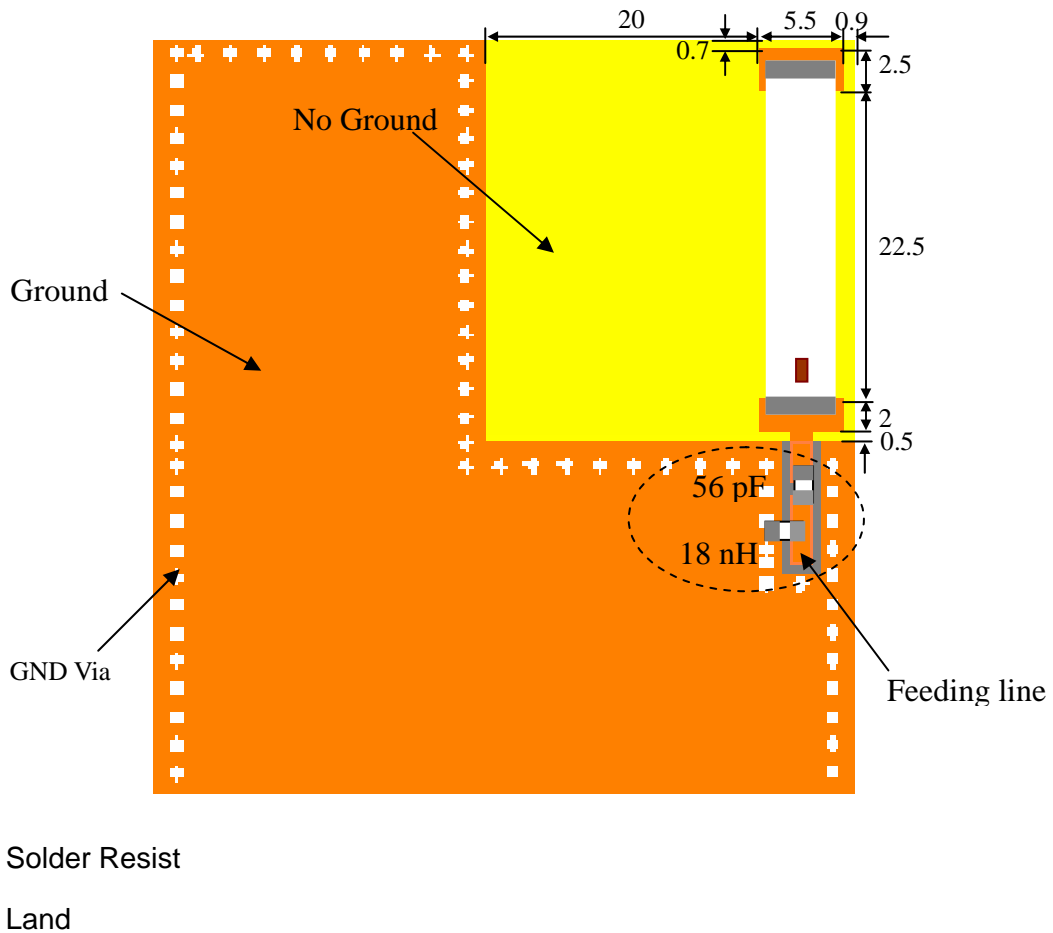
YZ cut @403.5MHz
— Total



Application for the large ground size

Part Number	Frequency Range (MHz)	Peak Gain (XZ-total)	Average Gain (XZ-total)	VSWR	Impedance
ATR250-TR43HAA_	423 ~ 443	-6.8 dBi typ.	-7.2 dBi typ.	3.5 max.	50 Ω

❖ With Matching Circuits (Unit in mm)

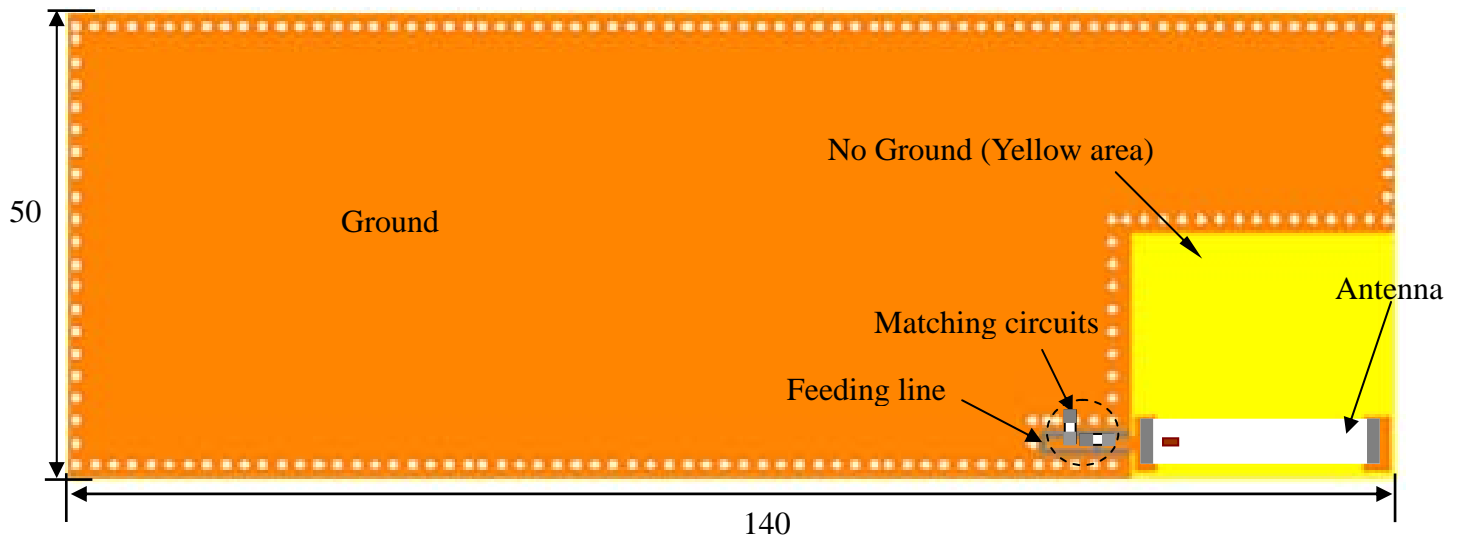


(Matching circuit and component values will be different, depending on PCB layout)

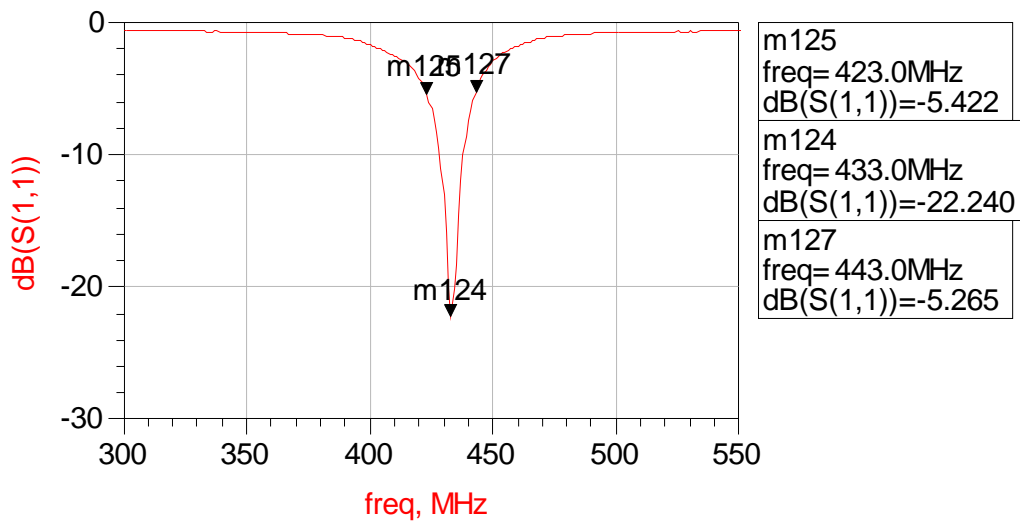
*Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

Typical Electrical Characteristics (T=25°C)

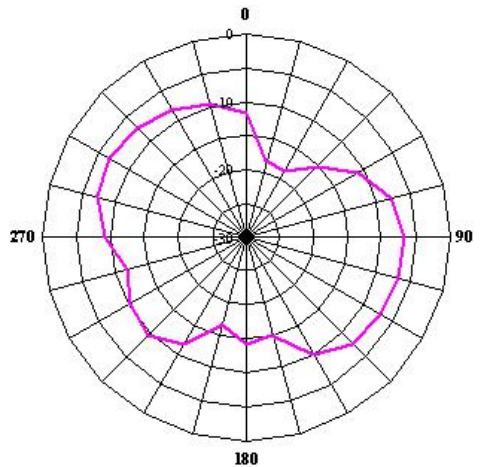
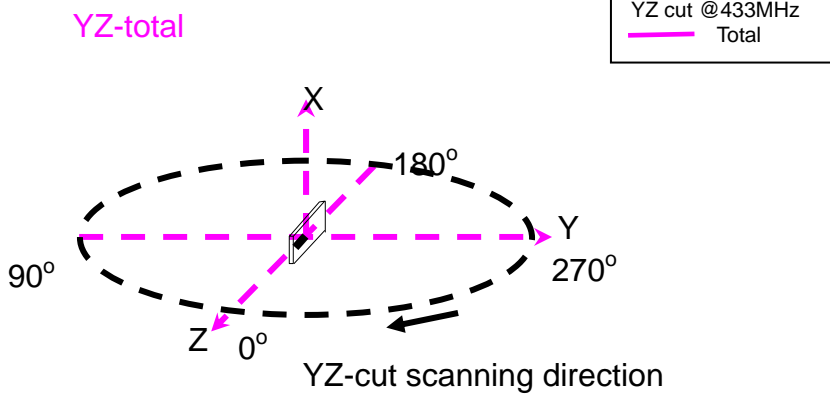
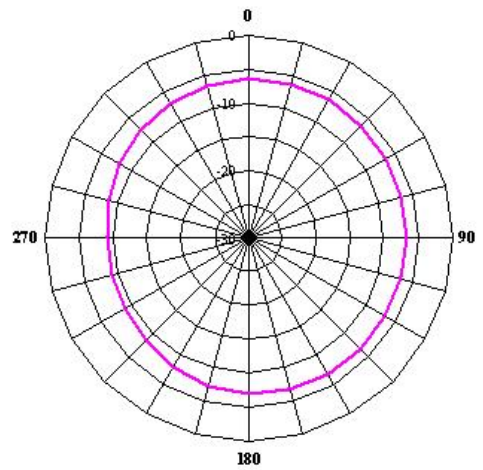
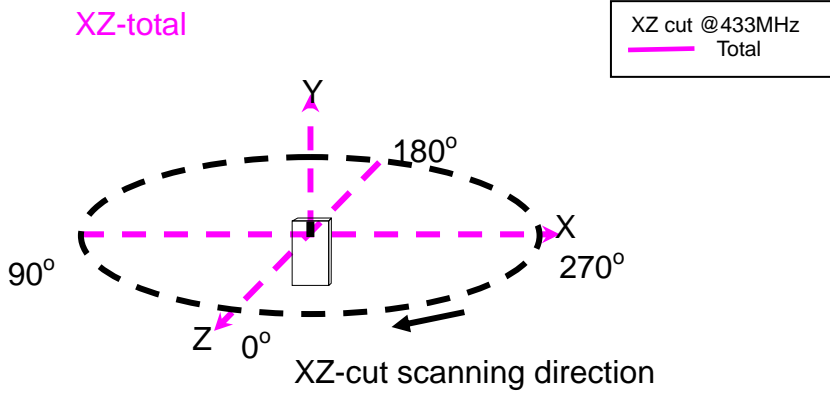
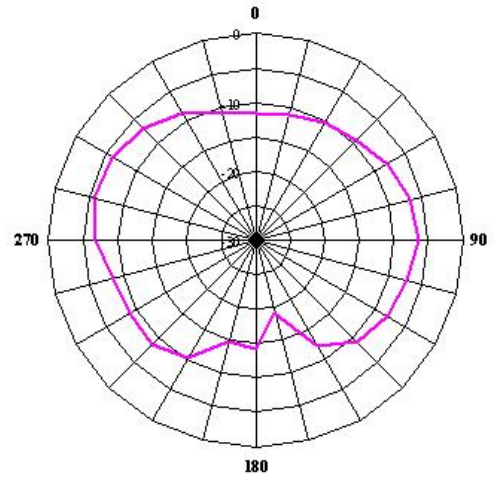
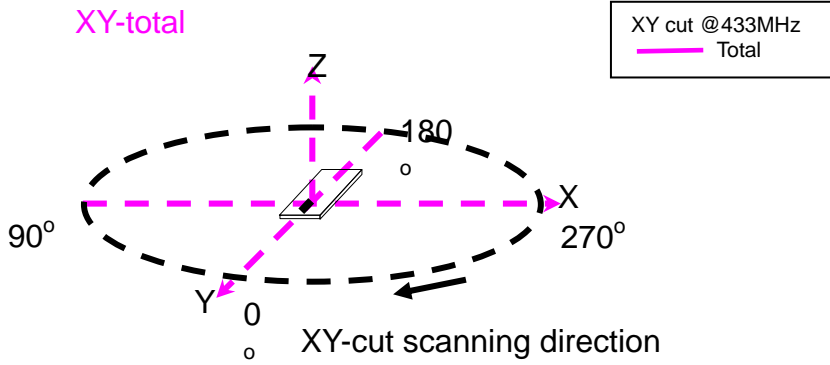
❖ Test Board (Unit in mm)



❖ Return Loss / With Matching Circuits

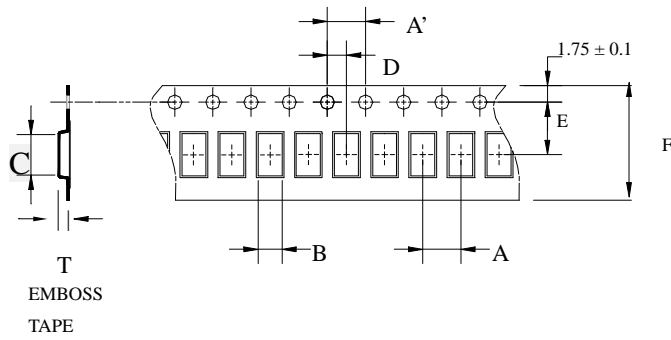


❖ Radiation Patterns



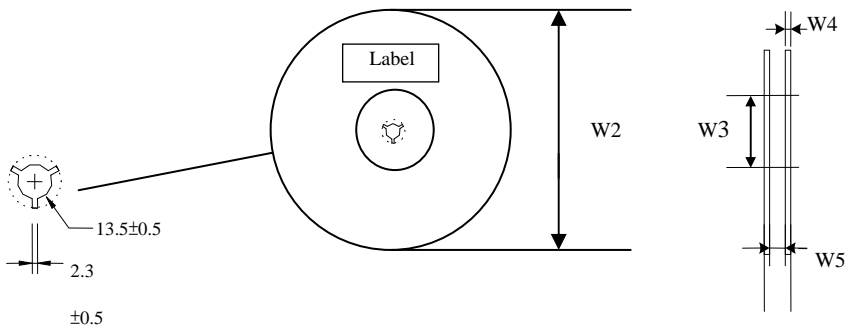
Taping Specifications

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



Type	A	A'	B	C	D	E	F	T	Quantity/per reel	Tape material
ATR250	12.0±	4.0±	5.35±	25.4±	2.0±	20.2±	44.0±	1.40±	500pcs	Plastic (Embossed)
	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1		

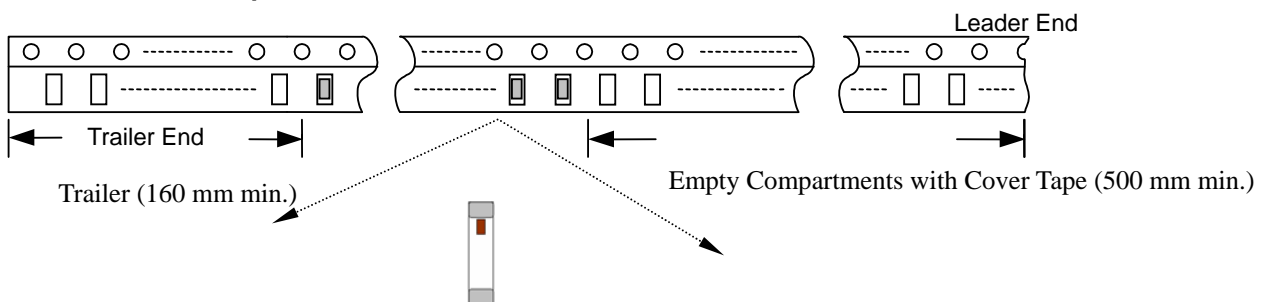
❖Reel Dimensions (Unit: mm)



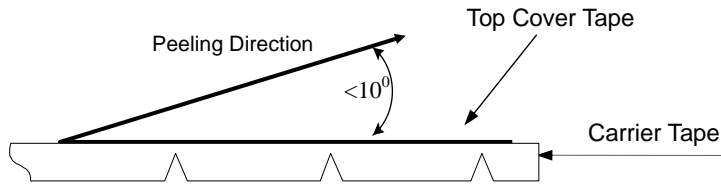
Label: Customer's Name,
ACX P/N, Q'ty, Date,
ACX Corp.

Type	W2	W3	W4	W5
ATR250	330±2	178±2	2.0±0.2	45±0.5

❖Leader and Trailer Tape



❖ **Peel-off Force**



Peel-off force should be in the range of 0.2 – 1.20 N at a peel-off speed of 300 ± 10 mm/min .

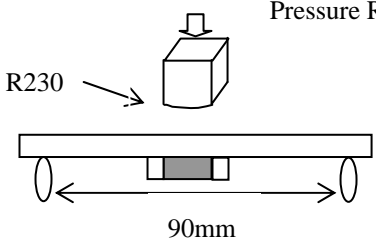
❖ **Storage Conditions**

- (1) Temperature: $+5 \sim +35^\circ\text{C}$, 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.

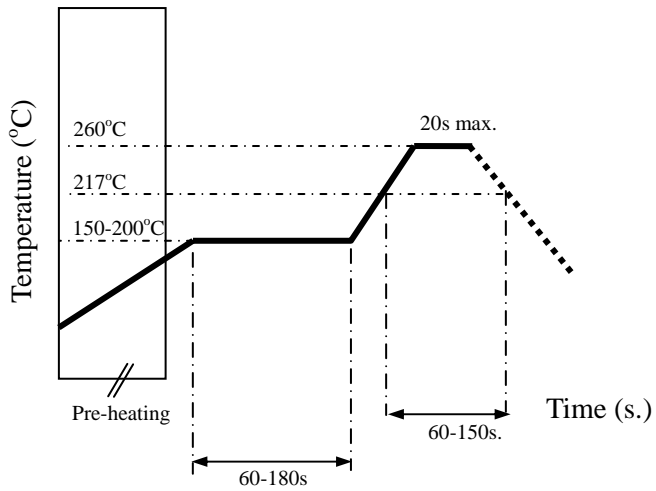
Mechanical & Environmental Characteristics

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

Soldering Conditions

❖ Typical Soldering Profile for Lead-free Process

Reflow Soldering :



Notes

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

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

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