

AT1608 Series

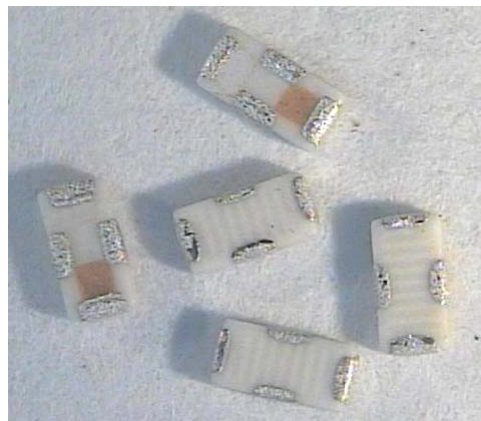
Multilayer Chip Antenna

Features

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

Applications

- ❖ 2400~2500MHz ISM Band Systems



Specifications

Part Number	Frequency Range (MHz)	Peak Gain (dBi typ.)	Average Gain (dBi typ.)	VSWR	Impedance
AT1608-A2R4ZM31	2400~2480	0.4 (XZ-total)	-2.1 (XZ-total)	3 max.	50 Ω

Q'ty/Reel (pcs) : 4,000 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 1608 - A 2R4 ZM31 □ □
 ① ② ③ ④ ⑤ ⑥ ⑦

① Type	AT : Antenna	② Dimensions (L × W)	1.6× 0.8 mm
③ Material Code	A	④ Frequency Range	2R4=2400MHz
⑤ Specification Code	ZM31	⑥ Packaging	T: Tape & Reel B: Bulk
⑦ Soldering	/LF=lead-free		

Advanced Ceramic X Corp.

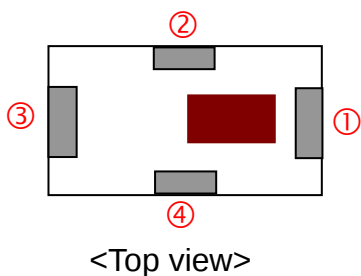
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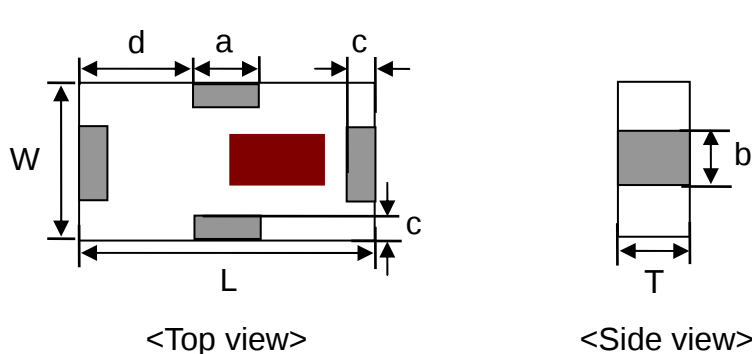
Terminal Configuration



Scenario#1: Antenna on the edge side of PCBA			
No.	Terminal Name	No.	Terminal Name
①	Feeding Point	③	NC
②	GND	④	GND

Scenario#2: Antenna on the corner of PCBA			
No.	Terminal Name	No.	Terminal Name
①	Feeding Point	③	NC
②	NC	④	NC

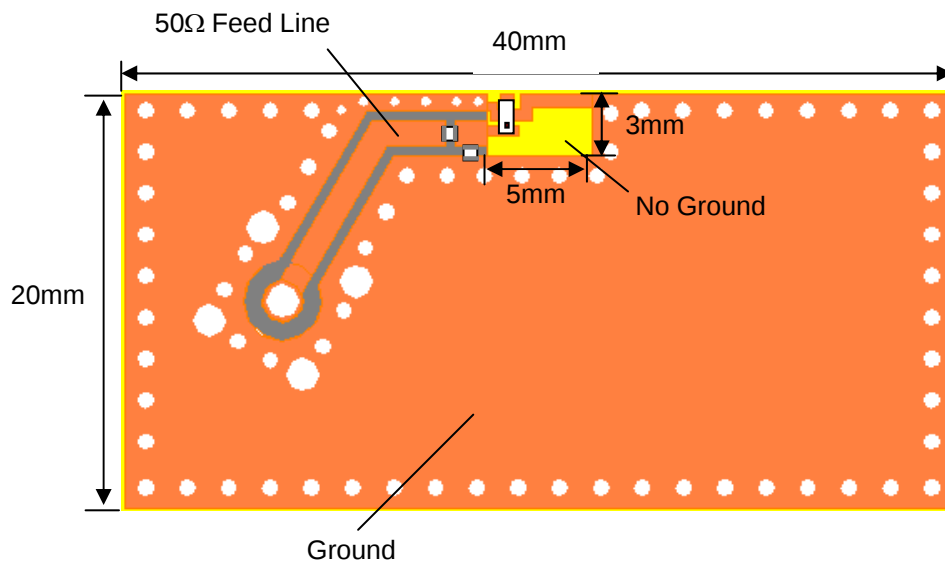
Dimensions and Recommended PC Board Pattern



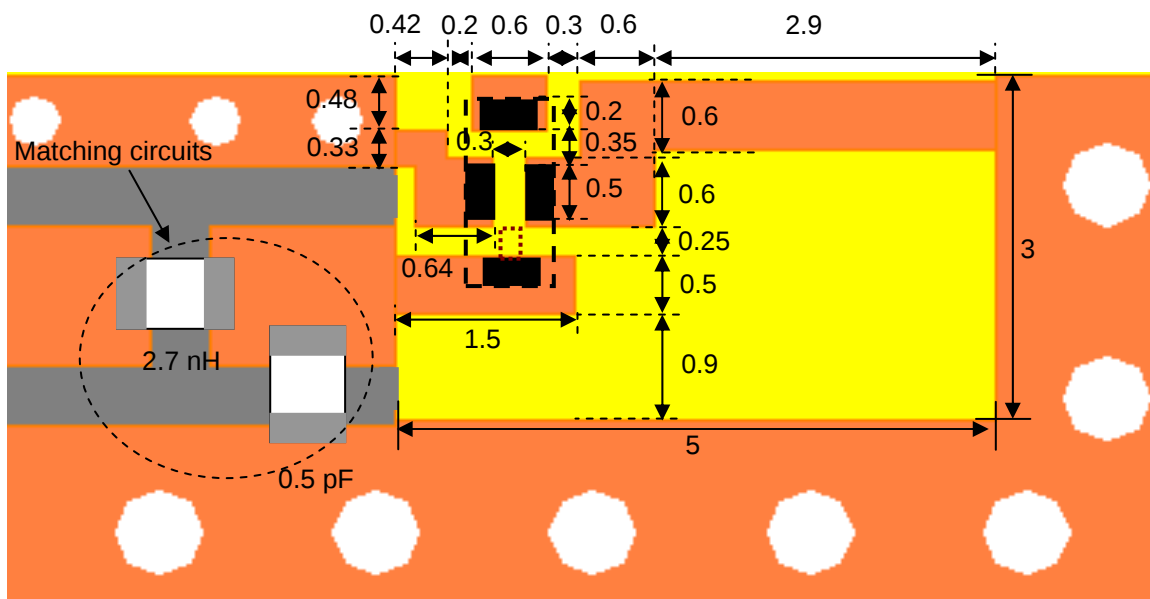
Mark	L	W	T	a	b	c	d
Dimensions	1.6 ± 0.1	0.8 ± 0.1	0.4 ± 0.1	0.5± 0.1	0.5± 0.1	0.2 ± 0.05	0.55 ± 0.1

Typical Electrical Characteristics (T=25°C)

❖ Test Board-Scenario#1



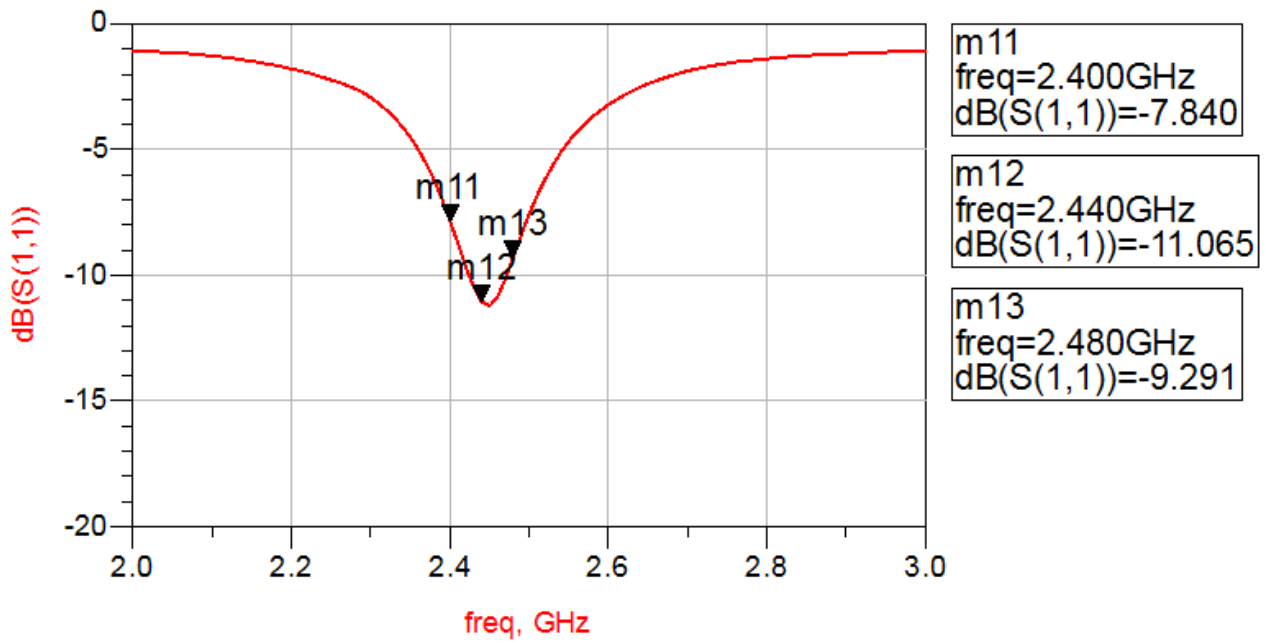
❖ Antenna Footprint With matching- Scenario#1 (Unit in mm)



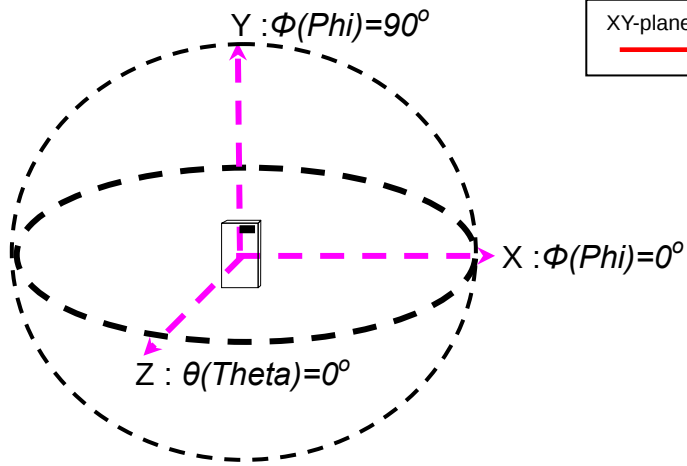
(Matching circuit and component values will be different, depending on PCB layout)

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

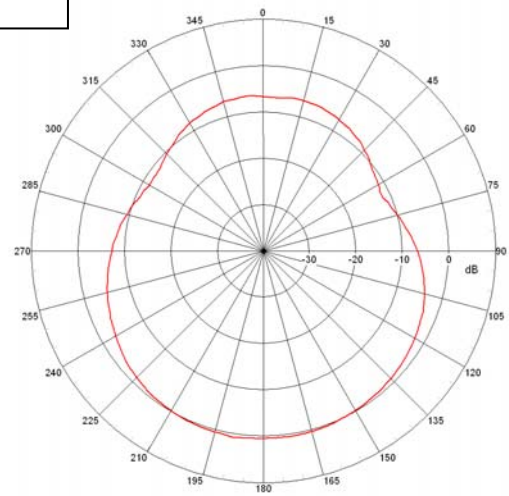
❖ Return Loss (with matching)



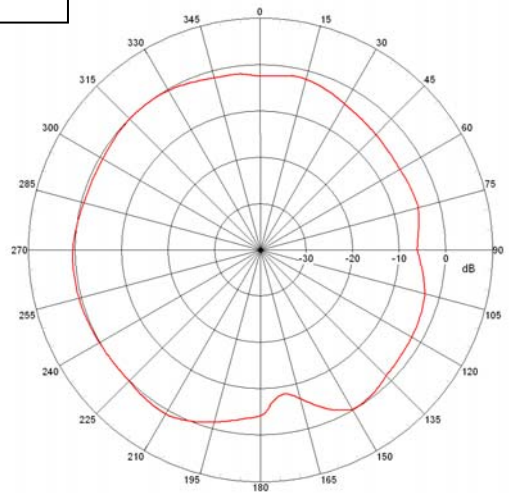
❖ Radiation Patterns- (Antenna Efficiency: 49 %)



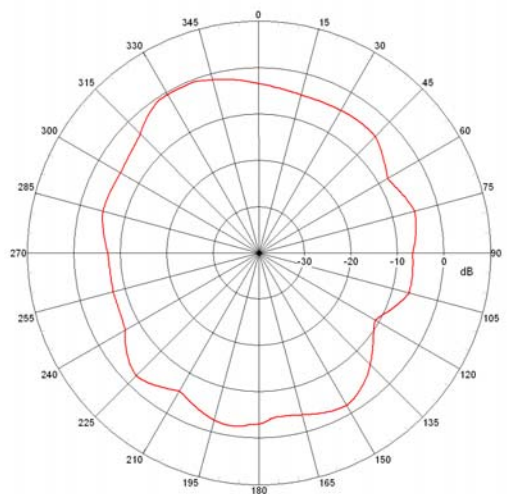
XY-plane @2440MHz
— Total



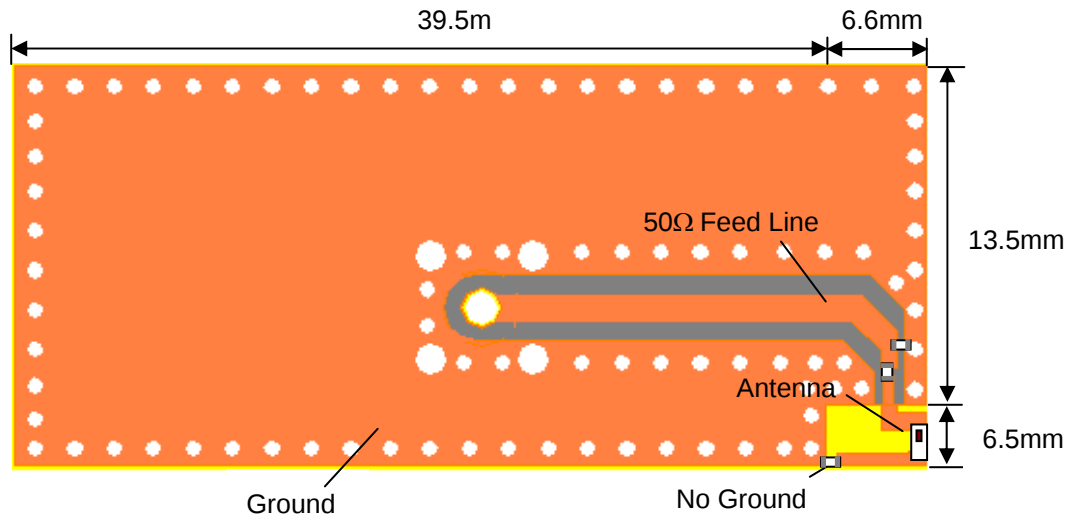
XZ-plane @2440MHz
— Total



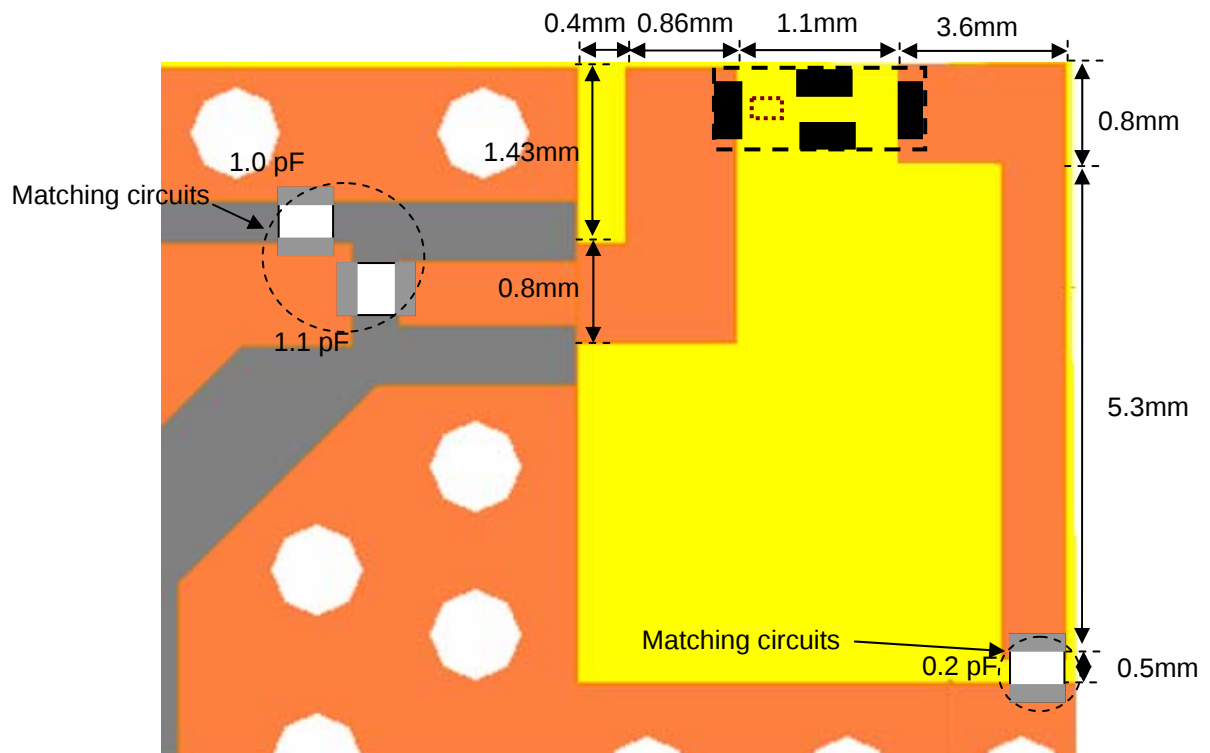
YZ-plane @2440MHz
— Total



❖ Test Board- Scenario#2



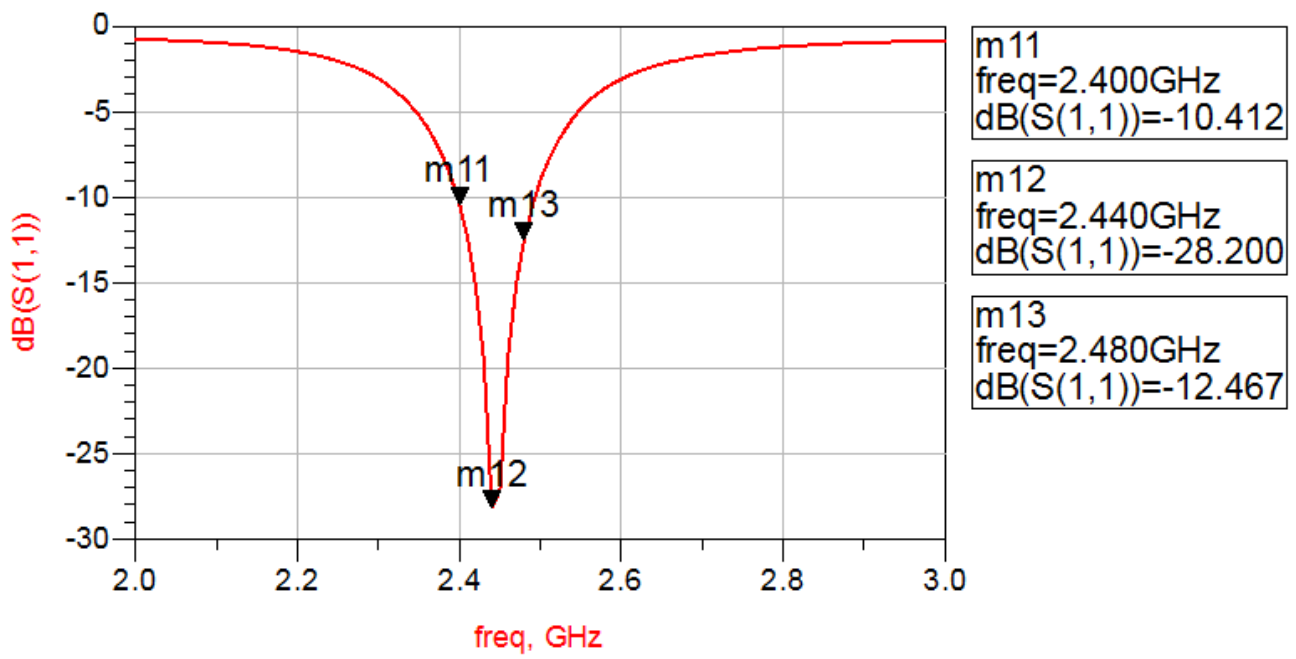
❖ Antenna Footprint With matching- Scenario#2



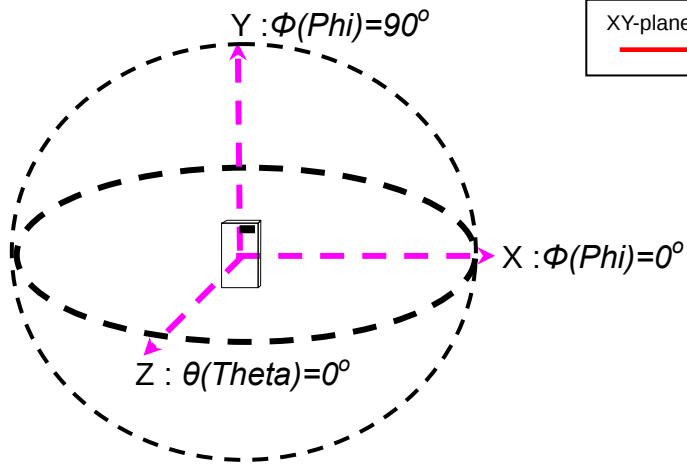
(Matching circuit and component values will be different, depending on PCB layout)

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

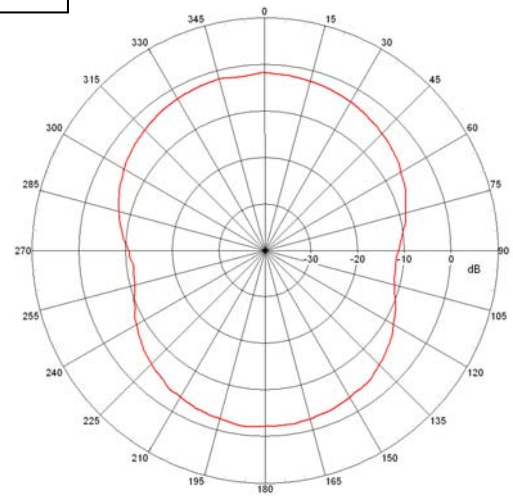
❖ Return Loss (with matching)



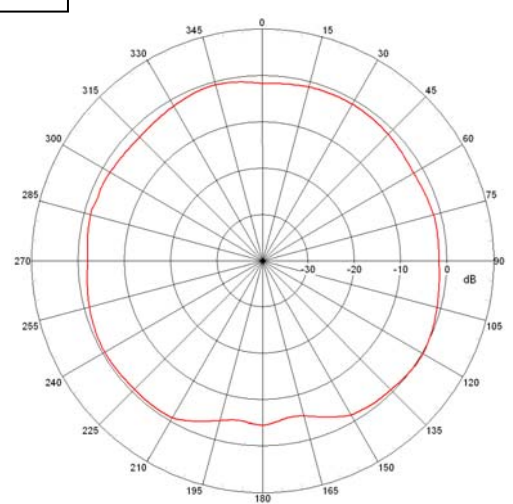
❖ Radiation Patterns- (Antenna Efficiency: 49 %)



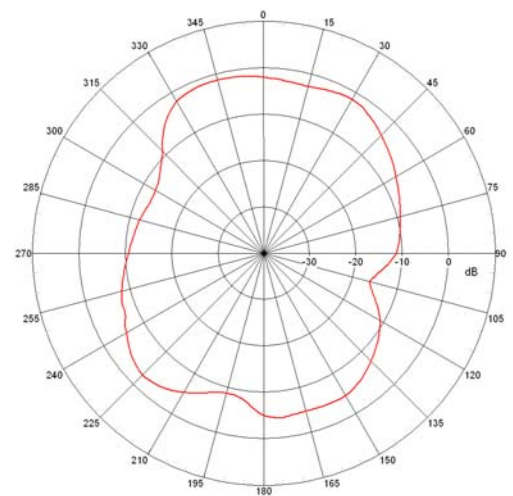
XY-plane @2440MHz
— Total



XZ-plane @2440MHz
— Total

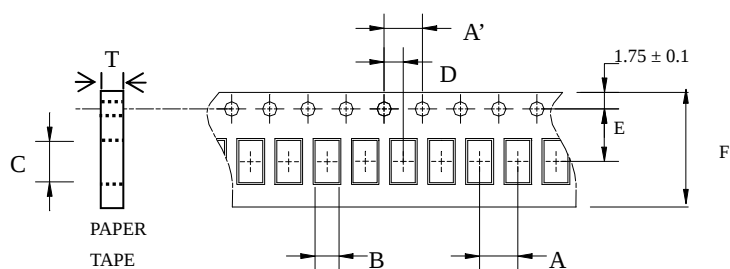


YZ-plane @2440MHz
— Total



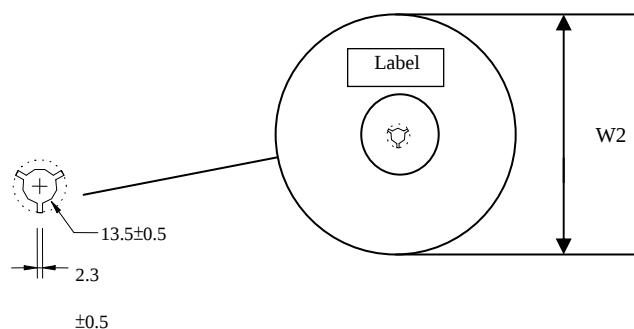
Taping Specifications

❖Tape & Reel Dimensions (Unit: mm)



Type	A	A'	B	C	D	E	F	T	Quantity/per reel	Tape material
1608	4.0±0.1	4.0±0.1	0.95±0.1	1.80±0.1	2.0±0.1	3.5±0.1	8.0±0.1	0.60±0.03	4,000pcs	Paper

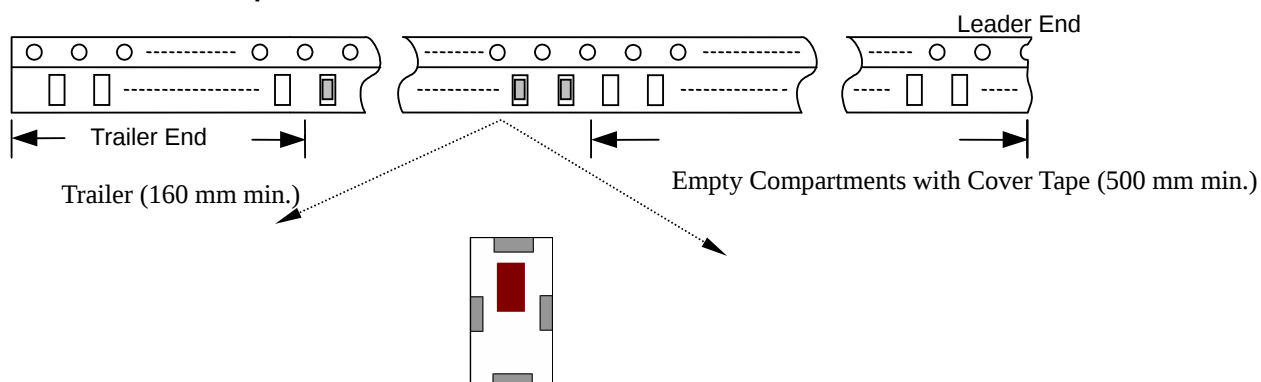
❖Reel Dimensions (Unit: mm)



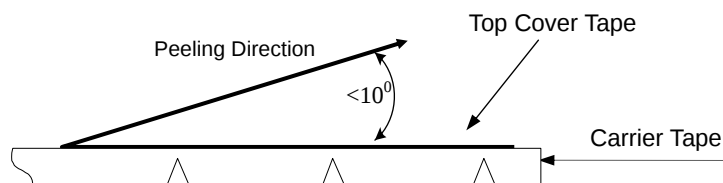
Label: Customer's Name,
ACX P/N, Q'ty, Date,
ACX Corp.

Type	W2	W3	W4	W5
1608	178±1	60±1	1.4±0.2	9.0±0.3

❖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 .

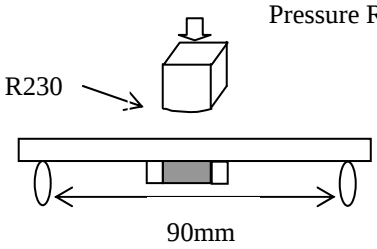
❖ **Storage Conditions**

- (1) Temperature: 5 ~35°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.

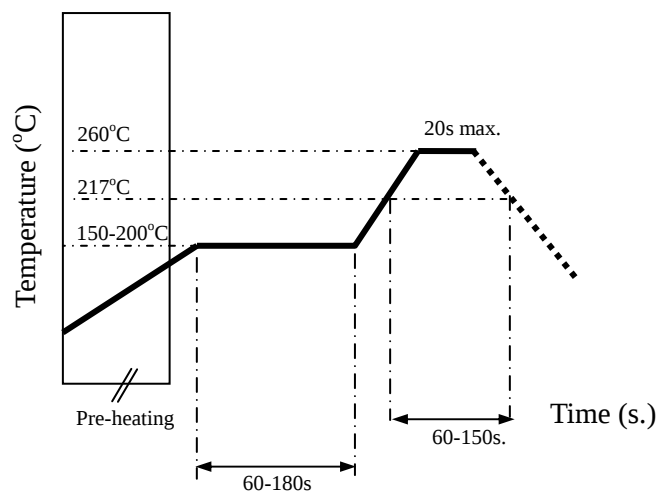
Mechanical & Environmental Characteristics

Item	Requirements	Procedure
Solderability	- No apparent damage - More than 95% of the terminal electrode shall be covered with new solder	- Preheat: $120 \pm 5^{\circ}\text{C}$ - Solder: $245 \pm 5^{\circ}\text{C}$ for 5 ± 1 sec
Soldering strength (Termination Adhesion)	10N minimum	- 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)	No apparent damage	- Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile. - Apply a bending force of 2mm deflection. 
Heat/Humidity Resistance	- No apparent damage - Fulfill the electrical specification after test	- Temperature: $85 \pm 2^{\circ}\text{C}$ - Humidity: 90% ~ 95% RH - Duration: 1000 ± 48hrs - Recovery: 1-2hrs
Thermal shock (Temperature Cycle)	- No apparent damage - Fulfill the electrical specification after test	- 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	- No apparent damage - Fulfill the electrical specification after test	- Temperature: $-40 \pm 5^{\circ}\text{C}$ - Duration: 500 ± 24hrs - Recovery: 1-2hrs

Soldering Conditions

❖ Typical Soldering Profile for Lead-free Process

Reflow Soldering :



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