"High Frequency Ceramic Solutions"

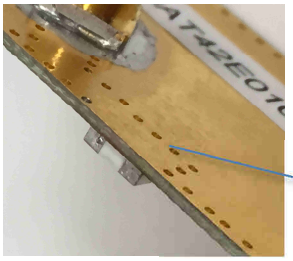
2.4 GHz Surface Mount, Above Metal, Low Profile Mini Chip Antenna **P/N 2450AT42E0100**

This antenna must have metal directly underneath on bottom layer in order to function properly

Detail Specification: 10/17/2016

This is the Web version of this datasheet, for the full datasheet, please contact us at: www.johansontechnology.com/ask-a-question

General Specifications	
Part Number	2450AT42E0100
Frequency (MHz)	2400 - 2480
Peak Gain	-2.0 dBi typ. (YZ-V)
Impedance	50Ω
Power Capacity	2W max. (CW)
Q'ty/Reel (pcs)	2,000 pcs
Operating Temp	-40 to +85°C
Storage Temp	-40 to +85°C
Storage Period	18 months max.



Zero Clearance!

Antenna mounts directly above or below the metal layer of PCB. No antenna clearance required

Total average radiated efficiency on PCB feature on "Mounting Considerations 1" (orderable EVB p/n: 2450AT42E0100-EB1SMA) is ~30%

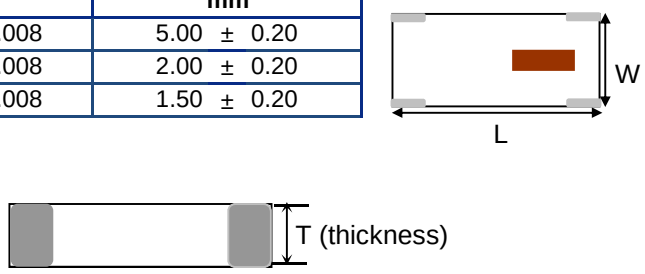
This antenna was designed in mind for small coin cell, wearable, IoT, 2.4 BLE, 802.11, ISM, Zigbee, etc. applications in close-range networks where metal or a battery/display covers the entire length or side of the PCB or encasement must be present directly under the antenna and there's no room for usual/typical antenna metal clearance.

This antenna is specifically designed for PCBs that have 0.5-1mm of total thickness

Part Number Explanation				
P/N Suffix	**Packing Style**	Bulk	Suffix = S	e.g.. 2450AT42E0100S
		T & R	Suffix = E	e.g.. 2450AT42E0100E
	EVB p/n	2450AT42E0100-EB1SMA (comes with 1 female SMA connector)		

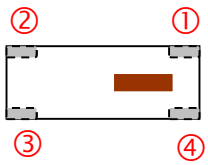
Mechanical Specifications[1]

	In	mm
L	0.197 ± 0.008	5.00 ± 0.20
W	0.079 ± 0.008	2.00 ± 0.20
T	0.059 ± 0.008	1.50 ± 0.20



Terminal Configuration

1	Feeding Point
2	NC[2]
3	GND
4	GND



[1]Total Top layer area occupied by antenna is 6.3x3.0mm

[2]Make sure to have Pin 2 soldered to its PCB land pad but **not** connected to GND or input, it must be NC (or floating).

If you'd like the complete datasheet which includes detailed layout specs, tuning techniques, and application notes for IoT/wearables, send us as message at: www.johansontechnology.com/ask-a-question

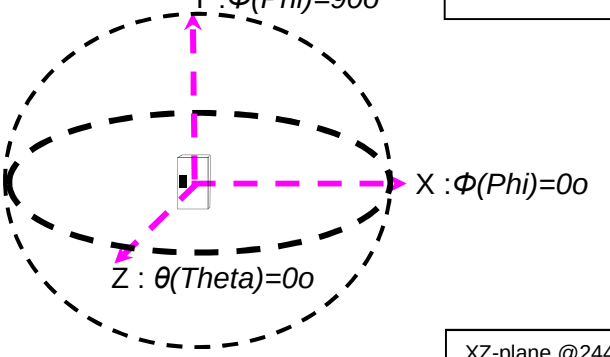
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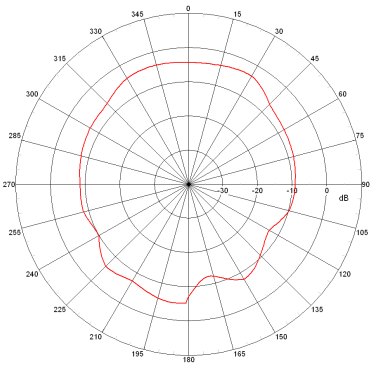
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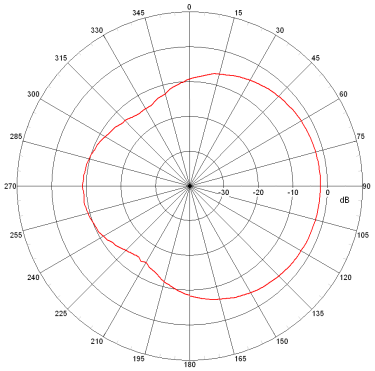
Typical Electrical Characteristics (T=25 °C) Radiation Patterns@2.44GHz



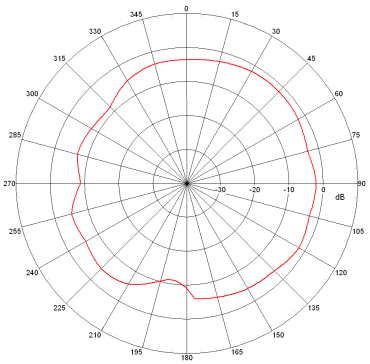
XY-plane @2440MHz
Total



XZ-plane @2440MHz
Total



YZ-plane @2440MHz
Total



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How To Choose The Correct Antenna Variant

Refer to the table below for substrate thickness and the corresponding antenna variation.

PCB Substrate Thickness	Recommended JTI PN
≤ 1.0mm	2450AT42E0100
1.0mm - 2.0mm	2450AT42E010**B**
≥ 2.0mm	2450AT42E010**C**

Typical Efficiency Values @ 2.44GHz for various scenarios for a 30x50mm PCB

The following efficiency values represent performance on a 30x50mm EVB like on page 2. Please note that antenna efficiency varies widely with board layout, size and surroundings.

PCB Substrate Thickness (H)	Simulated Antenna Efficiency(%) @ 2.44GHz		
	2450AT42E0100	2450AT42E010B	2450AT42E010C
H = 0.12 mm	1.95%	1.02%	0.93%
H = 0.7 mm	29.20%	9.30%	2.30%
H = 1.5 mm	23.30%	41.90%	13.80%
H = 2.5 mm	21.60%	34.20%	38.40%

We encourage you to use a relatively thick dielectric layer below antenna, as we have seen a direct correlation between substrate thickness and antenna performance.

Note: "H" substrate thickness of <0.25mm (10mil) is not recommended. The component will still work and radiate, just not optimally.

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Antenna layout review, tuning, and characterization services
www.johansontechnology.com/ipc-antenna-services

More SMD Chip Antennas at:
www.johansontechnology.com/antennas

Soldering Information
www.johansontechnology.com/ipcsoldering-profile

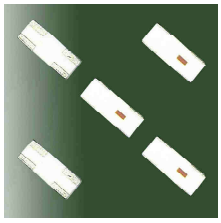
Antenna layout and tuning techniques (How to obtain the new antenna matching values)
www.johansontechnology.com/tuning

Packaging information
http://www.johansontechnology.com/tape-reel-packaging

RoHS Compliance
www.johansontechnology.com/rohs-compliance

MSL Info
www.johansontechnology.com/msl-rating

P/N Explanation and Breakdown
www.johansontechnology.com/ipc-pn-explained



Recommended Storage Conditions of <u>uninstalled</u> product still on T&R	-40 ~ +85 °C, Humidity 45~75%RH, 18 mos. Max

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Technical Author: Manuel Carmona

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