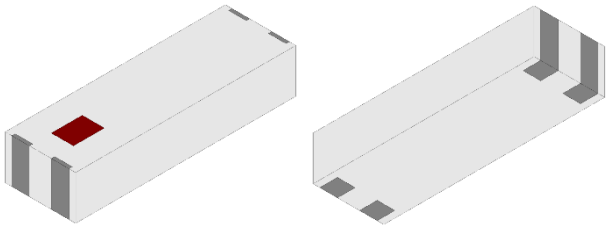
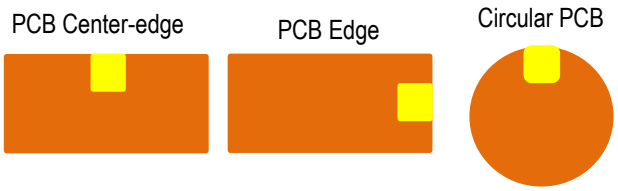
868 or 915 MHz Chip Antenna, High Gain

- Optimized for either 868 MHz or 902-928 MHz operational frequency
- Best for: Sub-GHz ISM IoT, LoRaWAN, Zigbee, Sensors, Smart Meters, Tracking, Agriculture, Remote Monitoring, etc.
- SMD, 10 x 3.2 x 2mm (LxWxT)
- RoHS compliant

Johanson Technology, Inc. (JTI) miniature RF ceramic chip antennas are made using Low Temperature Co-fired Ceramic (LTCC) technology which has the ability to embed low and high dielectric constants inside our antenna. This enables our components to have detuning resilience and stability over extreme temperatures (~2ppm).



Recommended mounting locations for this antenna



General Specifications[1] [2]

Operational Frequency (MHz)	Tuning Version 1 865 - 870	Tuning Version 2 902 - 928
Impedance (Ω)	50	50
Return Loss (dB)	9.5 Min.	9.5 Min.
Peak Gain (dBi)	0.4 Typ.	1.6 Typ.
Average Gain (dBi)	-1.4 Typ.	-0.45 Typ.
Average Radiated Efficiency (%)[2]	54	68

Maximum Ratings

Power Capacity (W)	2 Max. (CW)
Operating Temperature (°C)	-40 to +85
Recommended Storage Conditions post-installation (°C)	-40 to +85
Recommended Storage Conditions and Period for Unused T&R Product	45% - 75% RH +5 to +35 °C 18 Months Max.

[1] Typical value represents average measurement at 25°C. Min./Max. values represent measurements over specified operating temperature.
[2] General specifications measured on Johanson's evaluation board P/N 0900AT47A0063001CE1 and/or 0900AT47A0063001CE2.

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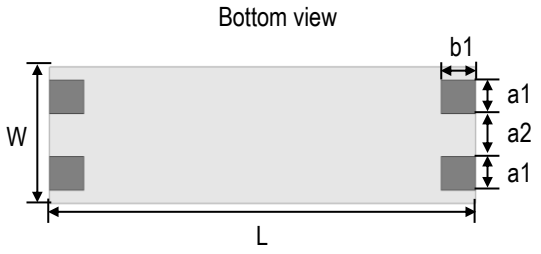
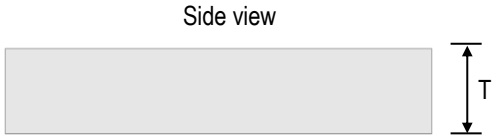
Mechanical Dimensions

	Inches			Millimeters		
L	0.394	±	0.008	10.00	±	0.20
W	0.126	±	0.008	3.20	±	0.20
T	0.079	±	0.008	2.00	±	0.20
a1	0.031	±	0.008	0.80	±	0.20
a2	0.039	±	0.008	1.00	±	0.20
b1	0.031	±	0.008	0.80	±	0.20





Terminal Configuration[3]

Pin Number	Function
1	Feed
2	GND
3	GND
4	GND

[3] The termination type is Nickel Tin. Go to: https://www.johansontechnology.com/ipcsoldering-profile for Typical Soldering Profile.

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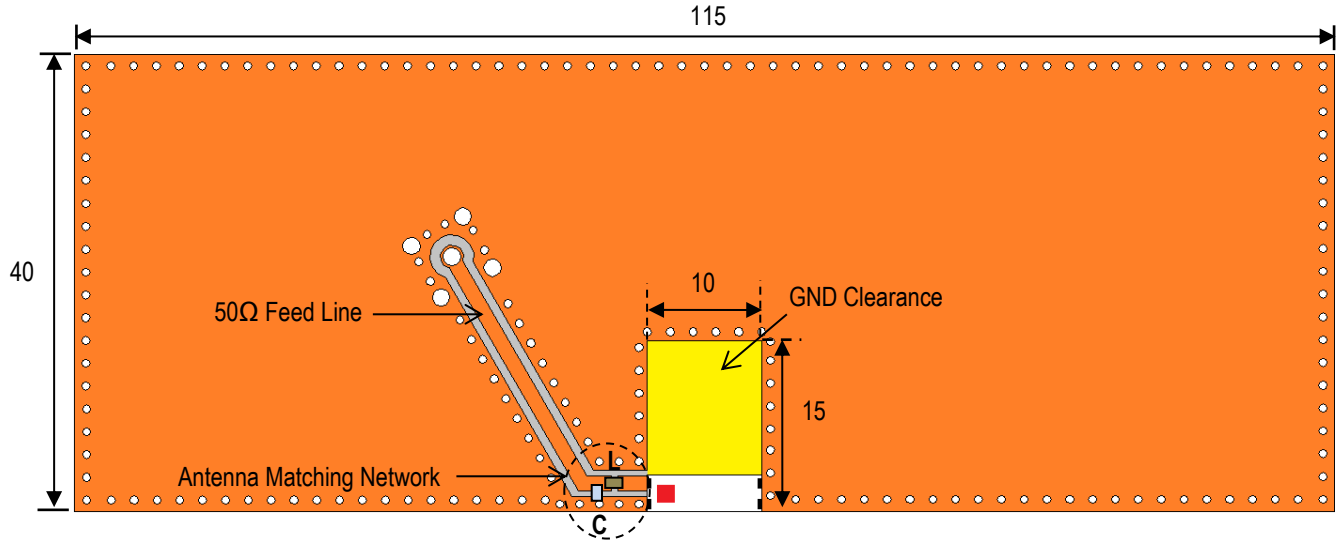
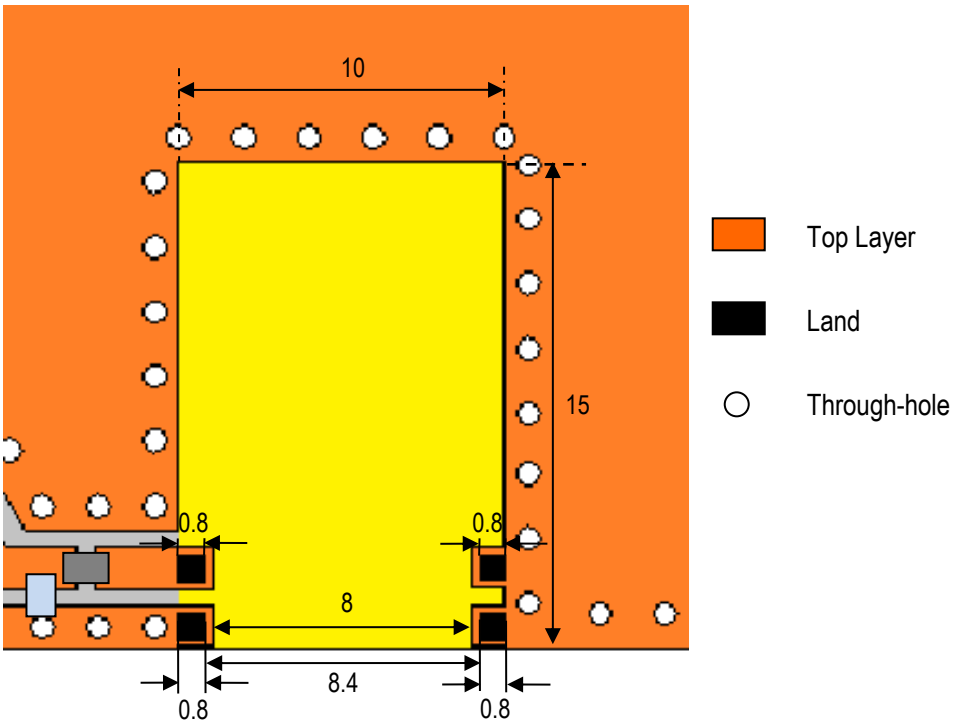
868MHz: Evaluation Board and Recommended Mounting Configuration (EVB P/N: 0900AT47A0063001CE1, orderable)

All units in mm



*Note: Ground Vias (highly recommended) and matching network are necessary for optimal antenna efficiency on customer's PCB[4].



If you'd like the CAD PCB layout or have any questions,
contact our application engineers at https://www.johansontechnology.com/ask-a-question

[4] L/C matching values will be different on customer's PCB. To get help how to get these for your design, go to: Antenna Tuning, Optimization, and Validation Services
For reference only, our Johanson EVB 868MHz matching values are: series L(10nH): LRC0402CJ10NGV001T and shunt C(4.7pF): QSCF500Q4R7B1GV001T

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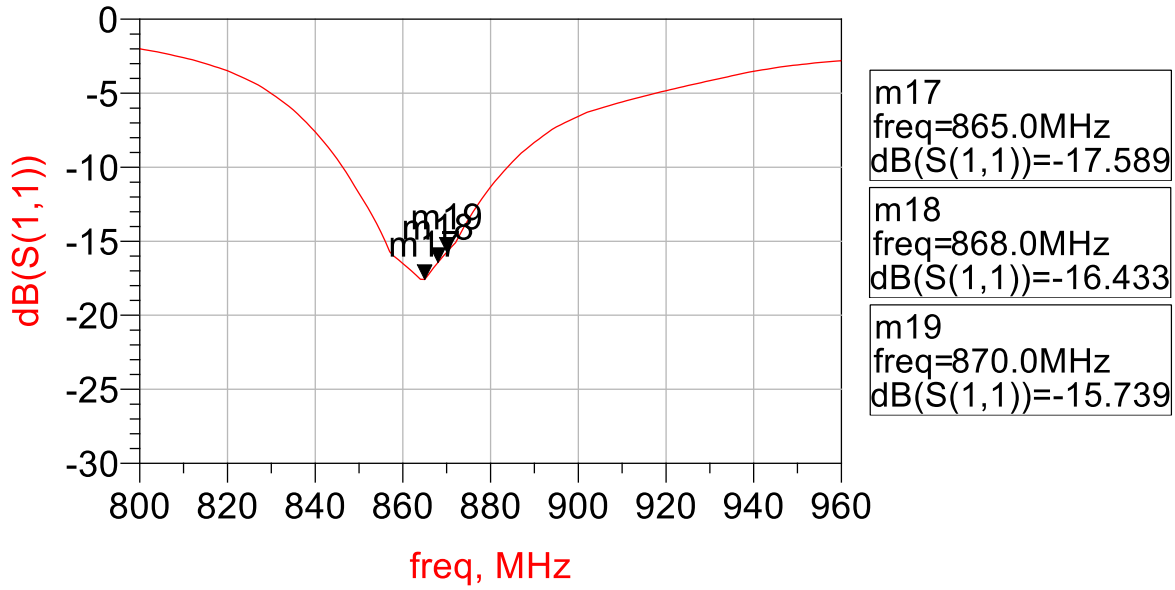
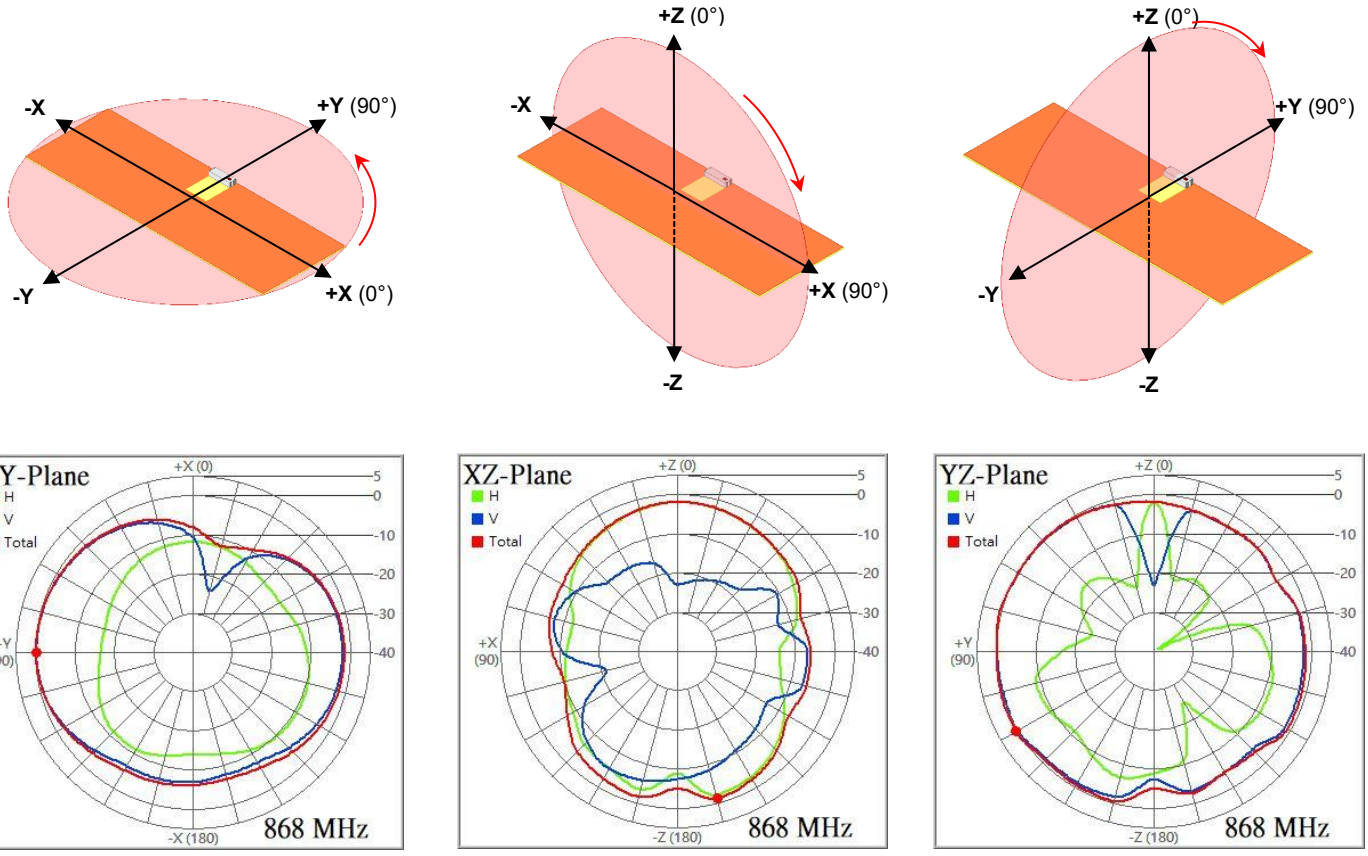
868MHz: Evaluation Board Typical Return Loss Measurement (EVB P/N 0900AT47A0063001CE1, orderable)



868MHz: Evaluation Board Typical 2D Radiation Patterns (P/N 0900AT47A0063001CE1)



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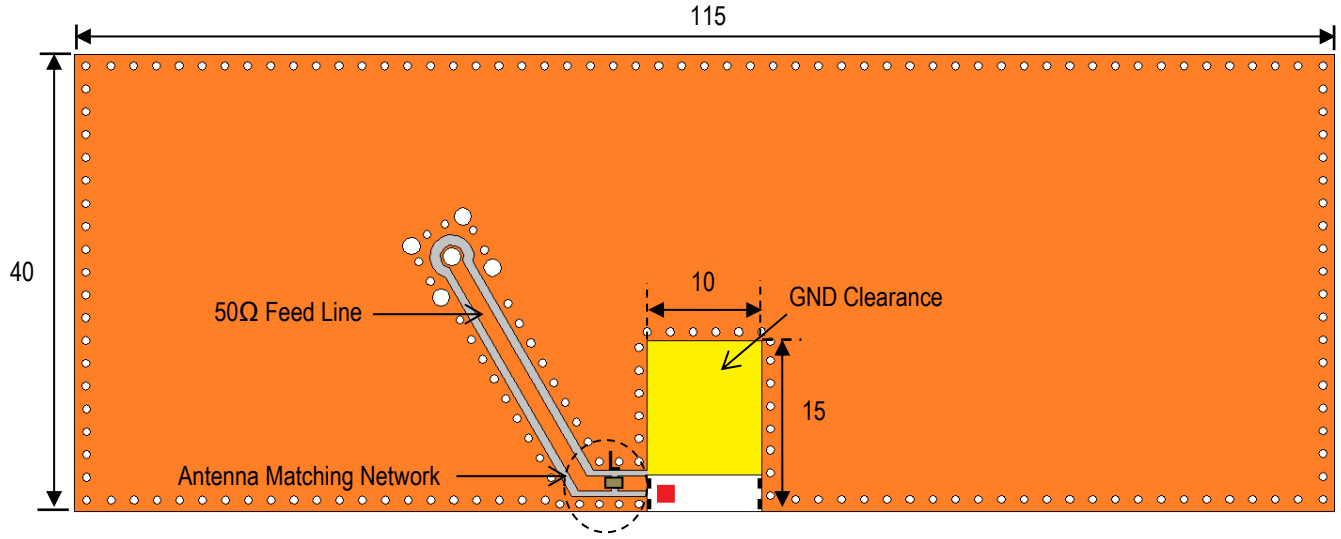
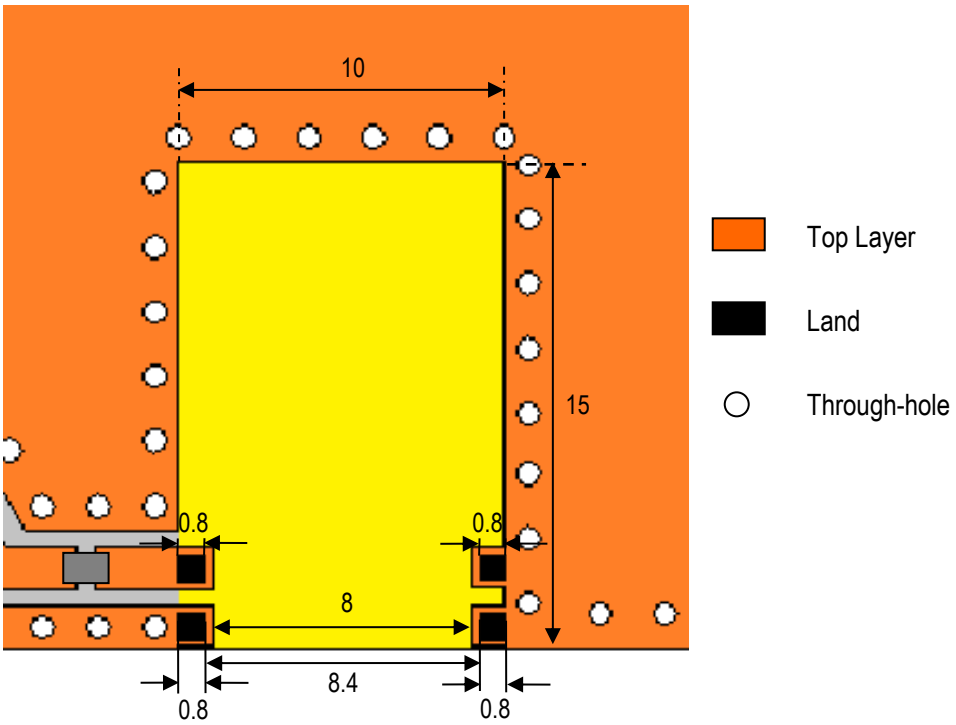
915MHz: Evaluation Board and Recommended Mounting Configuration (EVB P/N 0900AT47A0063001CE2, orderable))

All units in mm



*Note: Ground Vias (highly recommended) and matching network are necessary for optimal antenna efficiency on customer's PCB[5].



If you'd like the CAD PCB layout or have any questions,
contact our application engineers at https://www.johansontechnology.com/ask-a-question

[5] L/C matching values will be different on customer's PCB. To get help how to get these for your design, go to: Antenna Tuning, Optimization, and Validation Services
For reference only, our Johanson EVB 915MHz matching value is: series L (4.7nH): LRC0402CS4N7GV001T

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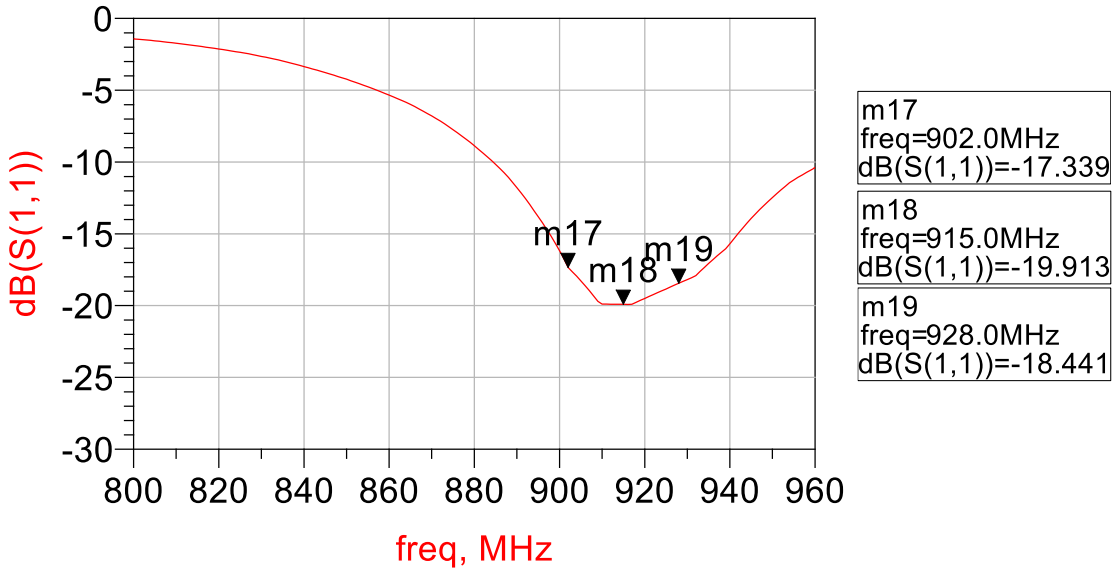
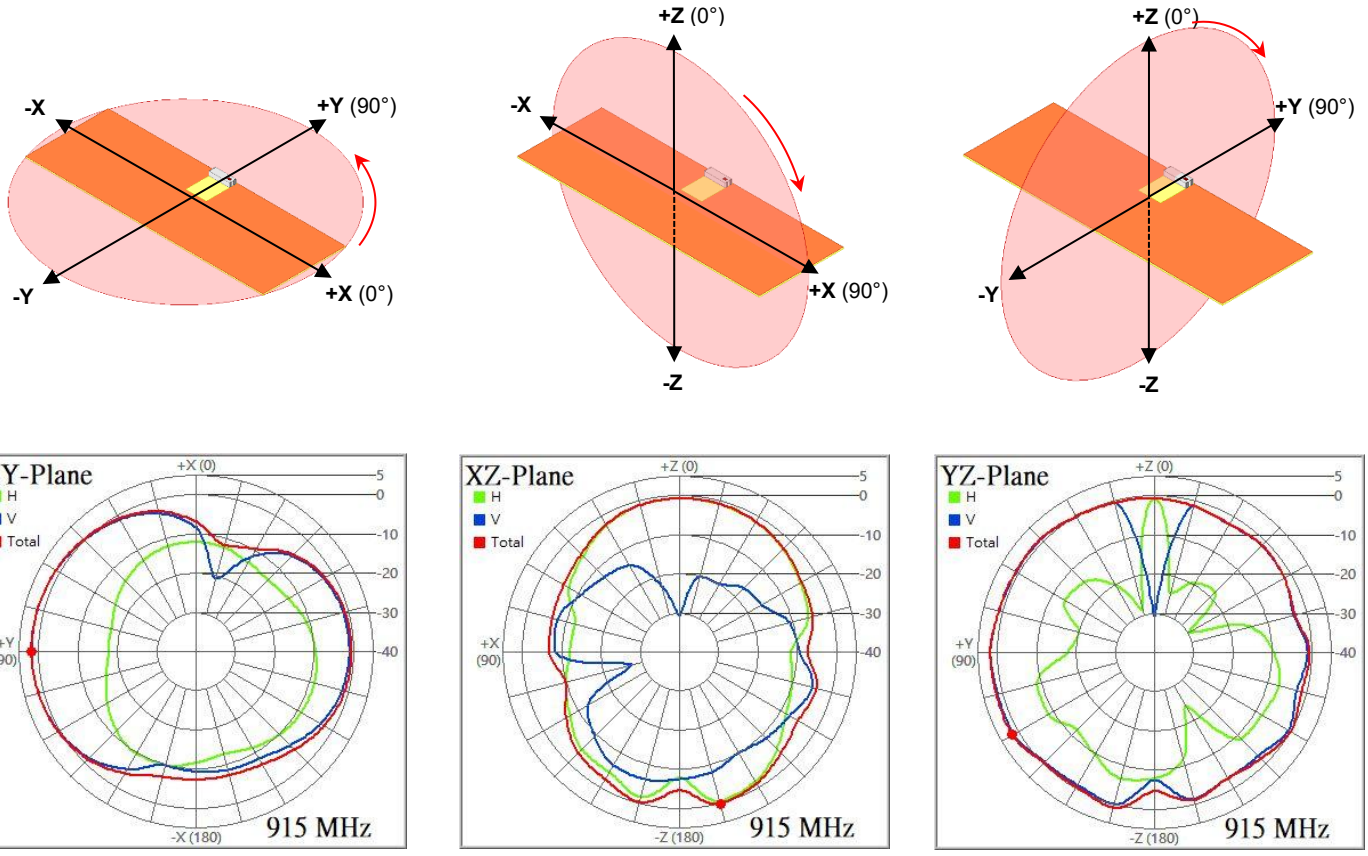
915MHz: Evaluation Board Typical Return Loss Measurement (EVB P/N 0900AT47A0063001CE2, orderable)



915MHz: Evaluation Board Typical 2D Radiation Patterns (P/N 0900AT47A0063001CE2)



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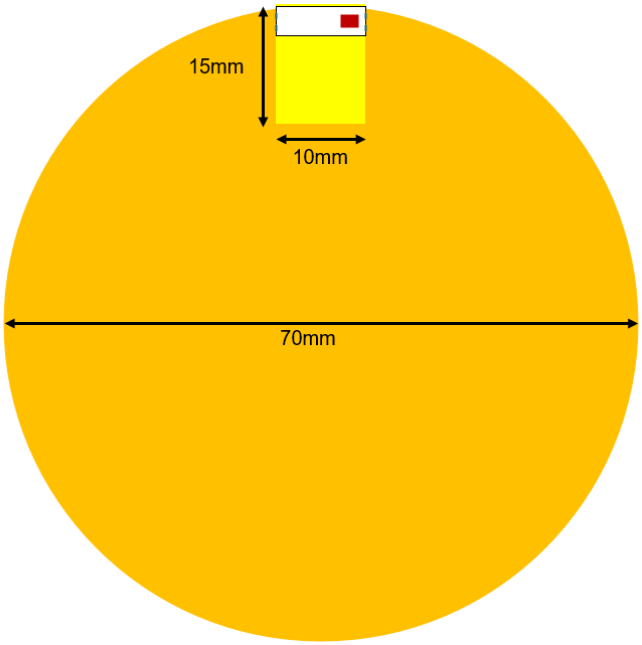
Circular PCB Reference Design (No evaluation board available)

The following study was created for reference. No evaluation board is available.



Unit in dBi	Efficiency
862MHz*	34.70%
866MHz*	35.68%
870MHz*	35.92%
902MHz**	36.31%
915MHz**	50.21%
928MHz**	38.80%

*Tuning version 1 (868MHz)
**Tuning version 2 (915MHz)

Circular PCB Antenna Chamber Measurement Report Available Upon Request:
https://www.johansontechnology.com/contact/ask-a-question/

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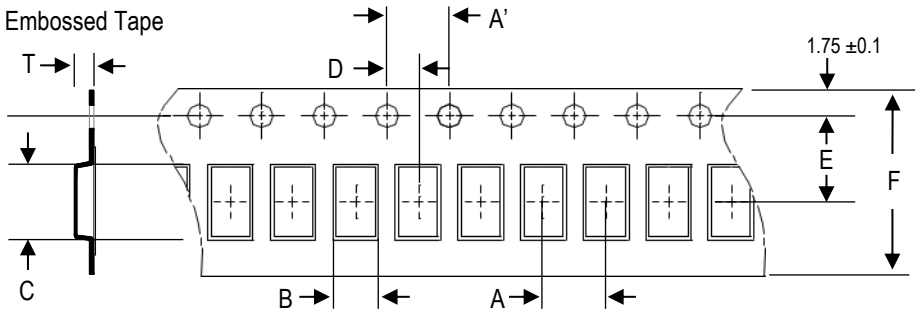
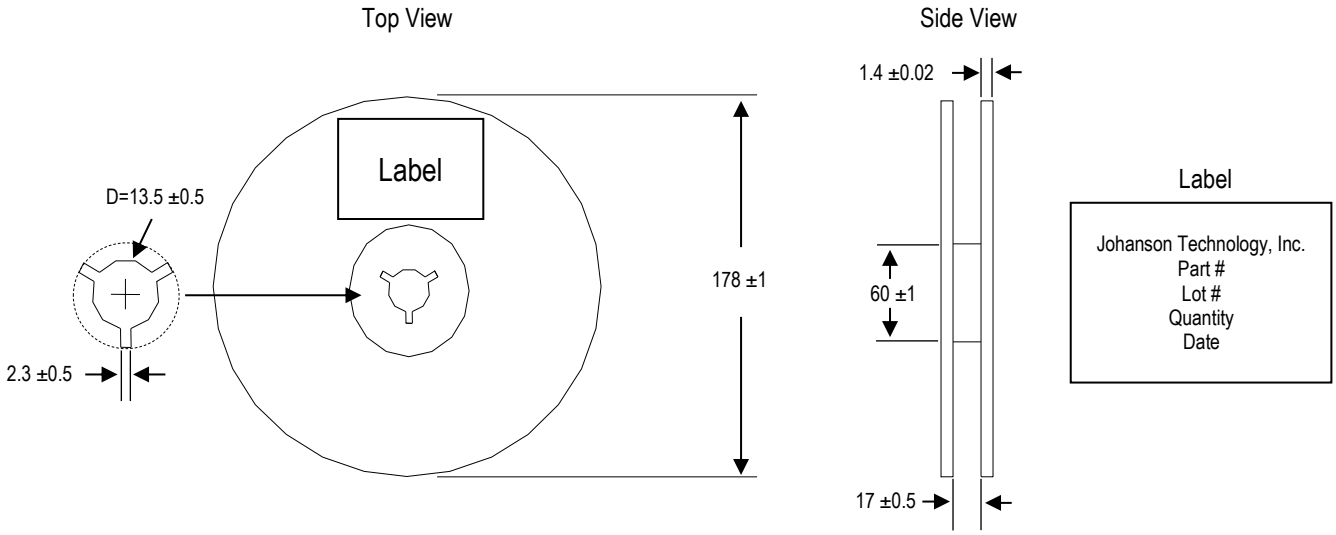
Tape and Reel Specification (Units in mm)

Tape Dimensions

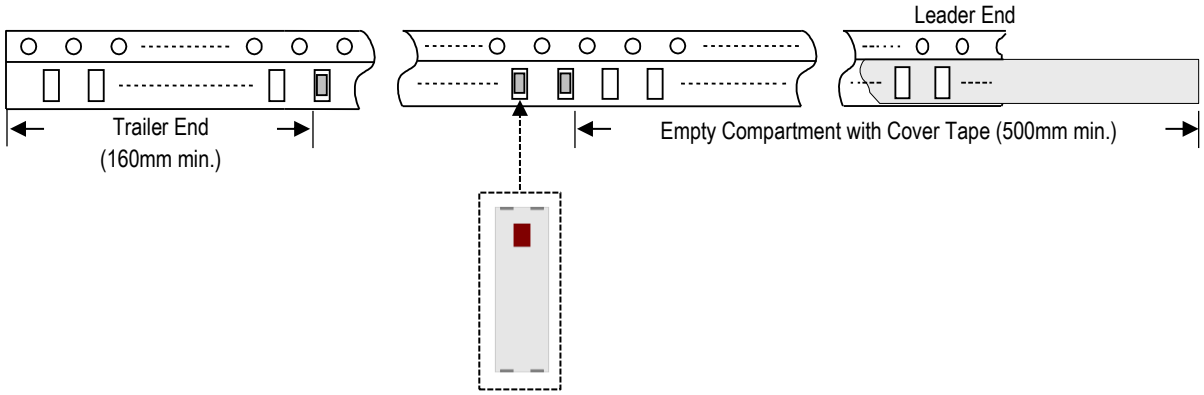


A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
4.0 ±0.1	4.0 ±0.1	2.35 ±0.1	9.7 ±0.1	2.0 ±0.05	7.5 ±0.1	16.0 ±0.1	1.4 ±0.1	1,000 pcs.	Plastic (Embossed)

Reel Dimensions



Leader and Trailer Dimensions



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Orderable Part Number

Packaging Style	Part Number	Termination
Bulk (loose pcs.)	0900AT47A0063001B	Nickel Tin
T & R (7" Reel Embossed Tape)	0900AT47A0063001E (Qty: 1,000 pcs./reel)	
Evaluation Board with 1 SMA Connector	0900AT47A0063001CE1 (Tuned to 868MHz)	
	0900AT47A0063001CE2 (Tuned to 915MHz)	

Important Links

0900AT47A0063001E Product Page

More RF Chip Antennas

Antenna Tuning, Optimization, and Validation Services

Soldering Information

MSL Information

Packaging Information

Recommended Storage Condition and Max Shelf Life

RoHS Compliance

Contact our application engineers for a PCB layout review.

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