



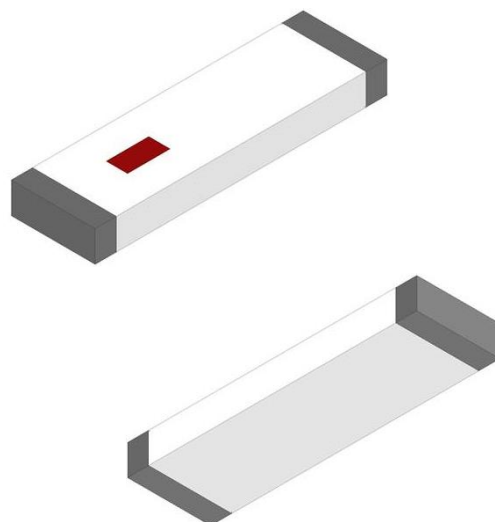
## 902 – 928 MHz ISM Chip Antenna

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 high detuning resilience and stability over extreme temperatures (~2ppm).

Recommended mounting locations for this antenna

PCB End

PCB Corner



### General Specifications<sup>1 2</sup>

| Passband Frequency (MHz)                            | 902 - 928 |
|-----------------------------------------------------|-----------|
| Impedance ( $\Omega$ )                              | 50        |
| Return Loss (dB)                                    | 8.5 Min.  |
| Peak Gain (dBi)                                     | -1.0 Typ. |
| Average Gain (dBi)                                  | -4.0 Typ. |
| Average Radiated Efficiency (%) – EVB1              | 25        |
| Average Radiated Efficiency (%) – EVB2 <sup>3</sup> | 22        |

### Maximum Ratings

|                                                                         |                                                                |
|-------------------------------------------------------------------------|----------------------------------------------------------------|
| Power Capacity (W)                                                      | 2 Max. (CW)                                                    |
| Operating Temperature ( $^{\circ}\text{C}$ )                            | -40 to +85                                                     |
| Recommended Storage Conditions post-installation ( $^{\circ}\text{C}$ ) | -40 to +85                                                     |
| Recommended Storage Conditions and Period for Unused T&R Product        | 45% - 75% RH<br>+5 to +35 $^{\circ}\text{C}$<br>18 Months Max. |

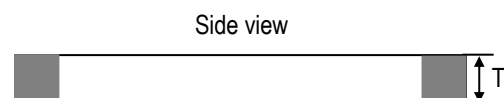
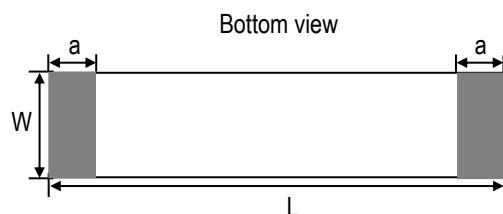
<sup>1</sup> Typical value represents average measurement at 25 $^{\circ}\text{C}$ . Min./Max. values represent measurements over specified operating temperature.

<sup>2</sup> General specifications measured on Johanson's evaluation board P/N 0915AT43A0026001CE1. See pages 3-4.

<sup>3</sup> Measured Radiated Efficiency on Johanson's evaluation board P/N 0915AT43A0026001CE2. See pages 5-6.

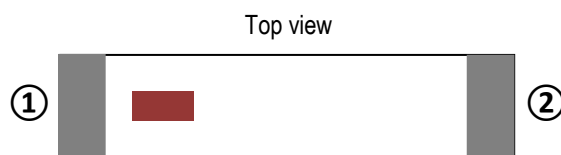
## Mechanical Dimensions

|          | Inches |               |       | Millimeters |             |      |
|----------|--------|---------------|-------|-------------|-------------|------|
| <b>L</b> | 0.276  | ±             | 0.008 | 7.00        | ±           | 0.20 |
| <b>W</b> | 0.079  | ±             | 0.008 | 2.00        | ±           | 0.20 |
| <b>T</b> | 0.031  | +0.004/-0.008 |       | 0.80        | +0.10/-0.20 |      |
| <b>a</b> | 0.020  | ±             | 0.012 | 0.50        | ±           | 0.30 |



## Terminal Configuration<sup>4</sup>

| Pin Number | Function |
|------------|----------|
| 1          | Feed     |
| 2          | NC*      |

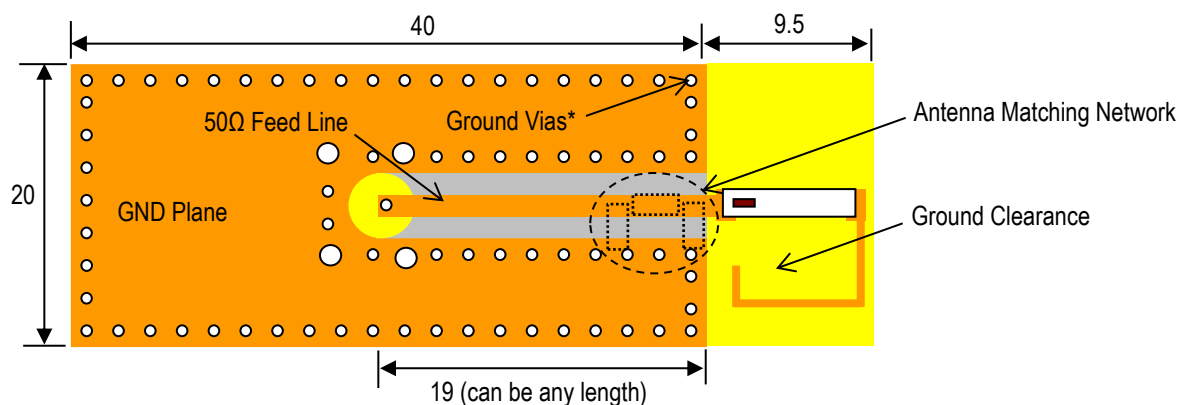


<sup>4</sup> The termination type is Nickel Tin. Go to: <https://www.johansontechnology.com/ipcsoldering-profile> for Typical Soldering Profile.

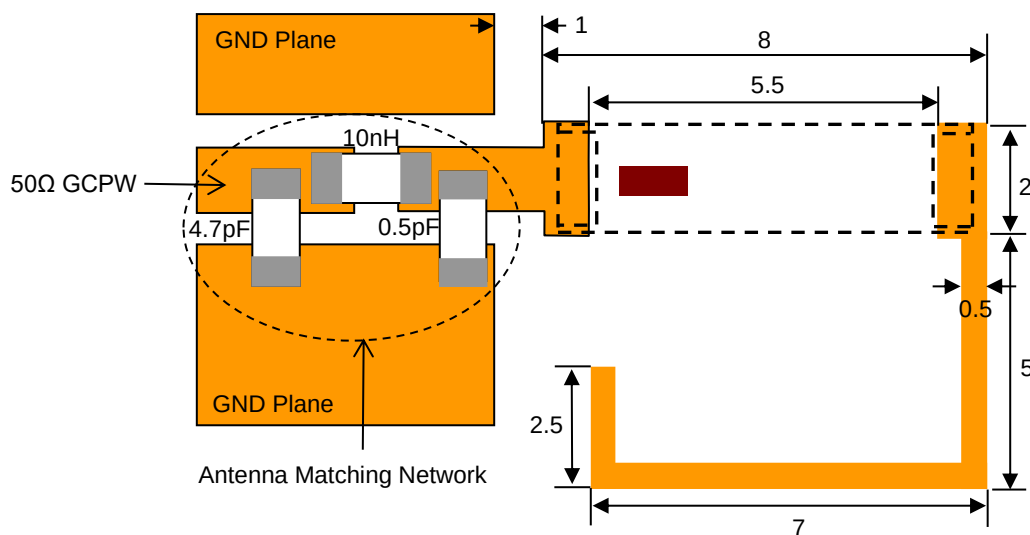
\* This terminal must be soldered for anchoring and mechanical stability.

**Evaluation Board and Recommended Mounting Configuration 1 (P/N 0915AT43A0026001CE1)**

All units in mm



\*Note: Ground Vias are highly recommended to have better antenna efficiency.



JTI P/Ns for Matching Network<sup>5</sup>

Capacitor (4.7pF): QSCF500Q4R7B1GV001T

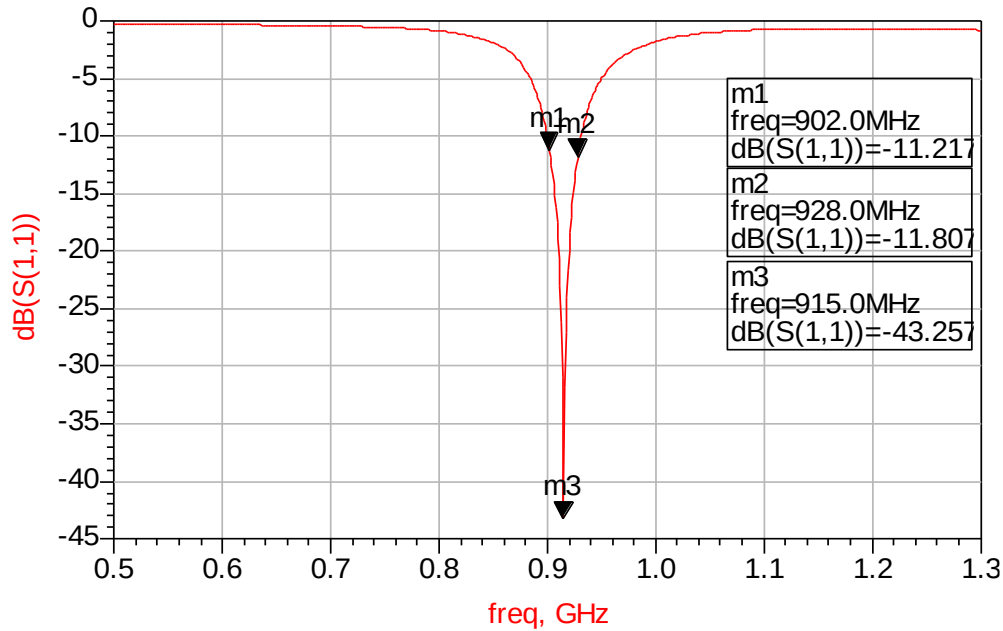
Inductor (10nH): LRC0402CJ10NGV001T

Capacitor (0.5pF): QSCF500Q0R5B1GV001T

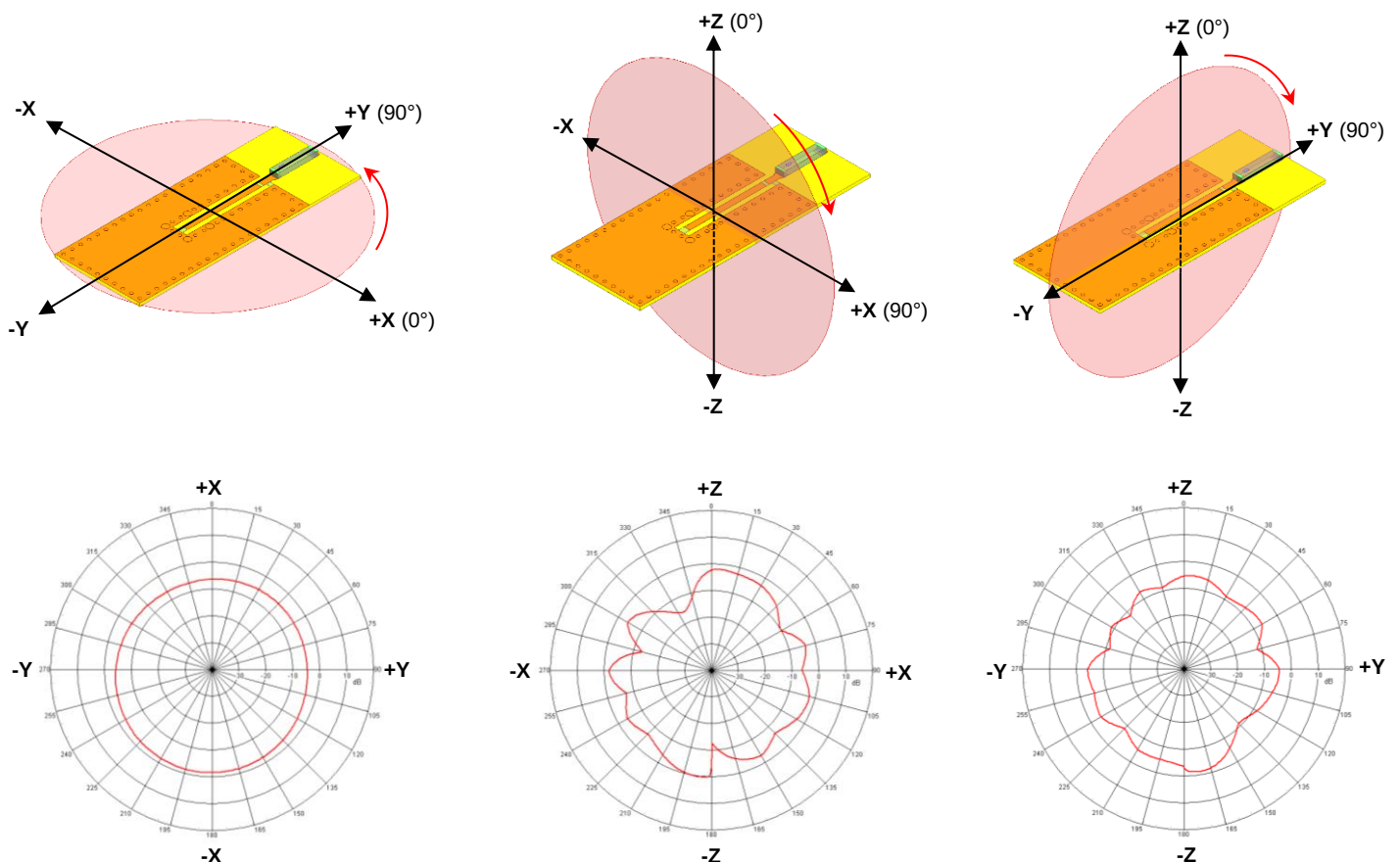
If you'd like the CAD PCB layout or have any questions,  
contact our application engineers at <https://www.johansontechnology.com/ask-a-question>

<sup>5</sup> It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values above are used when the antenna is mounted on Johanson's evaluation board. The optimal matching values will vary depending on the layout, thickness, material, etc. Go to: <https://www.johansontechnology.com/tuning> for more information.

**Evaluation Board Typical Return Loss Measurement (P/N 0915AT43A0026001CE1)**

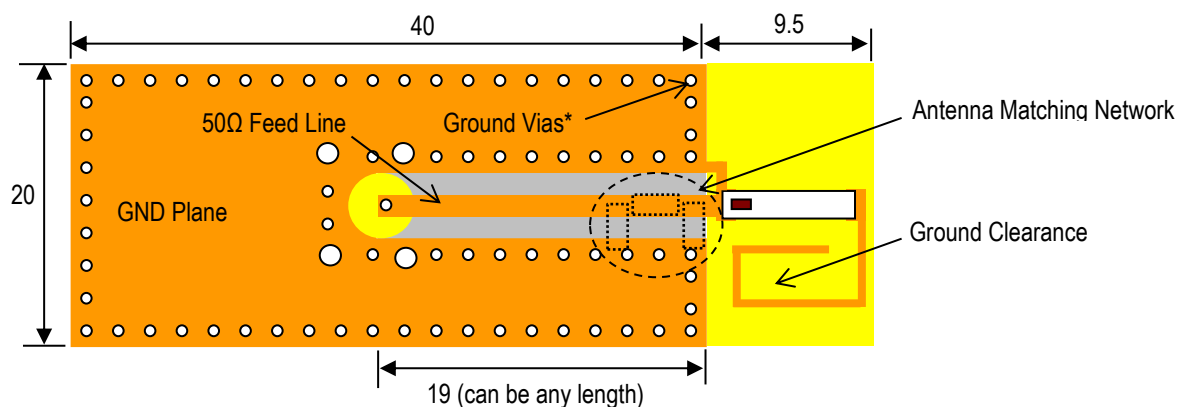


**Evaluation Board Typical 2D Radiation Patterns @915MHz (P/N 0915AT43A0026001CE1)**

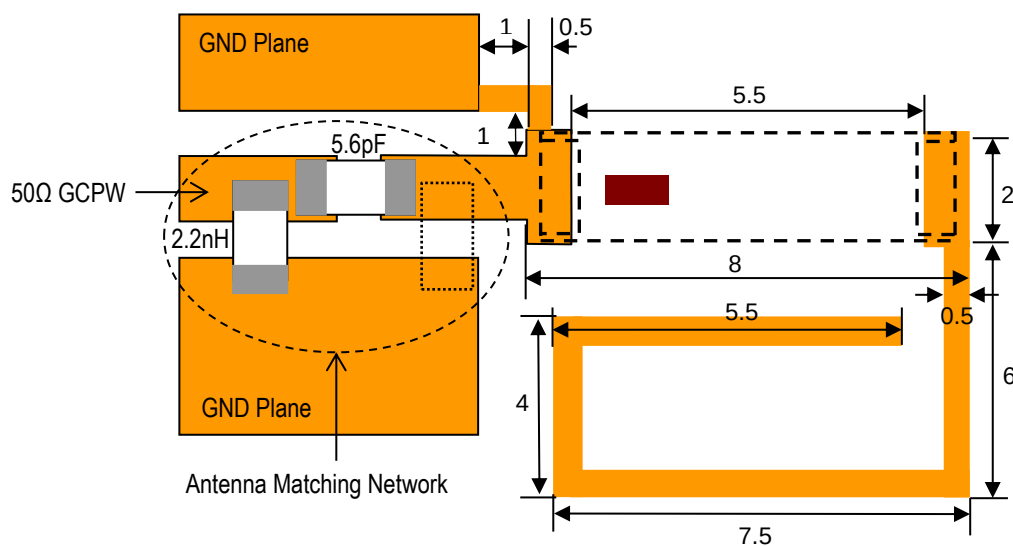


**Evaluation Board and Recommended Mounting Configuration 2 (P/N 0915AT43A0026001CE2)**

All units in mm



\*Note: Ground Vias are highly recommended to have better antenna efficiency.



JTI P/Ns for Matching Network<sup>6</sup>

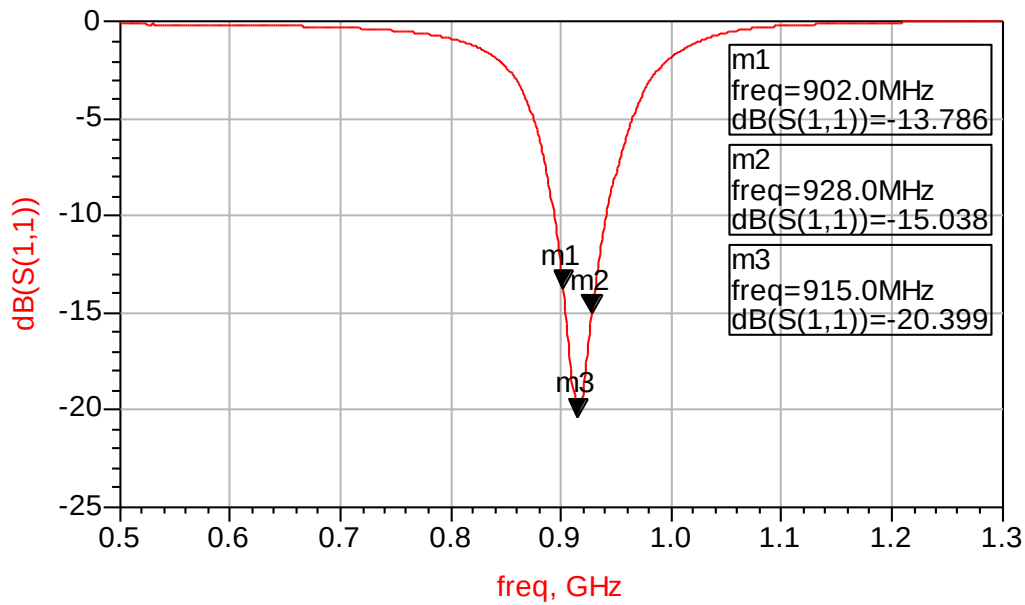
Inductor (2.2nH): LRC0402CS2N2GV001T

Cap (5.6pF): QSCF500Q5R6B1GV001T

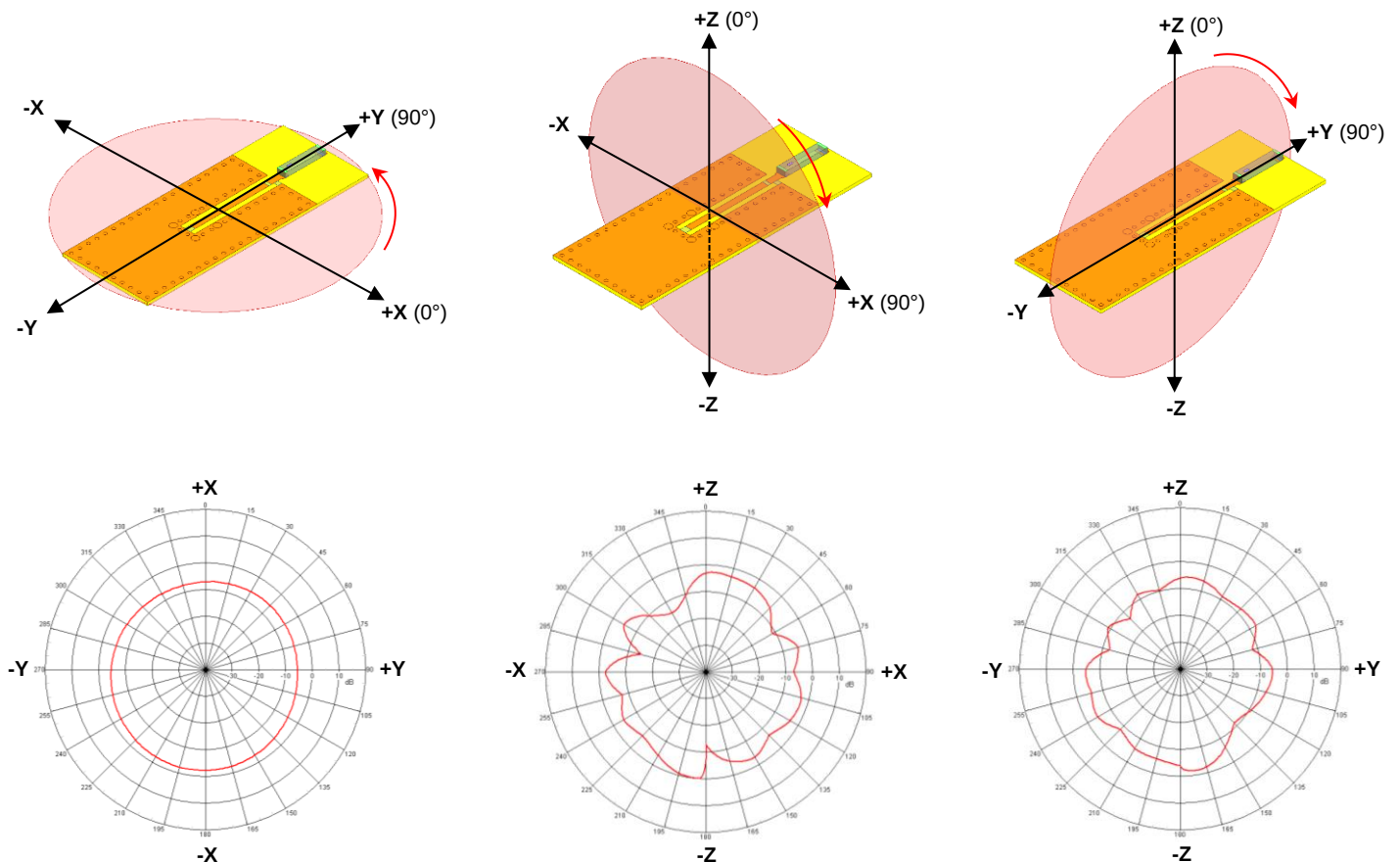
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<sup>6</sup> It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values above are used when the antenna is mounted on Johanson's evaluation board. The optimal matching values will vary depending on the layout, thickness, material, etc. Go to: <https://www.johansontechnology.com/tuning> for more information.

**Evaluation Board Typical Return Loss Measurement (P/N 0915AT43A0026001CE2)**



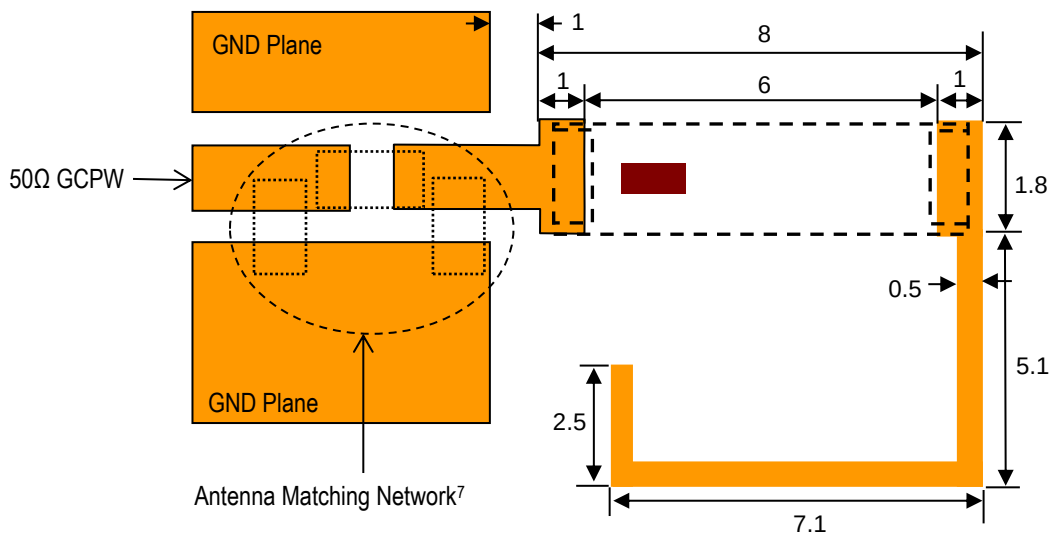
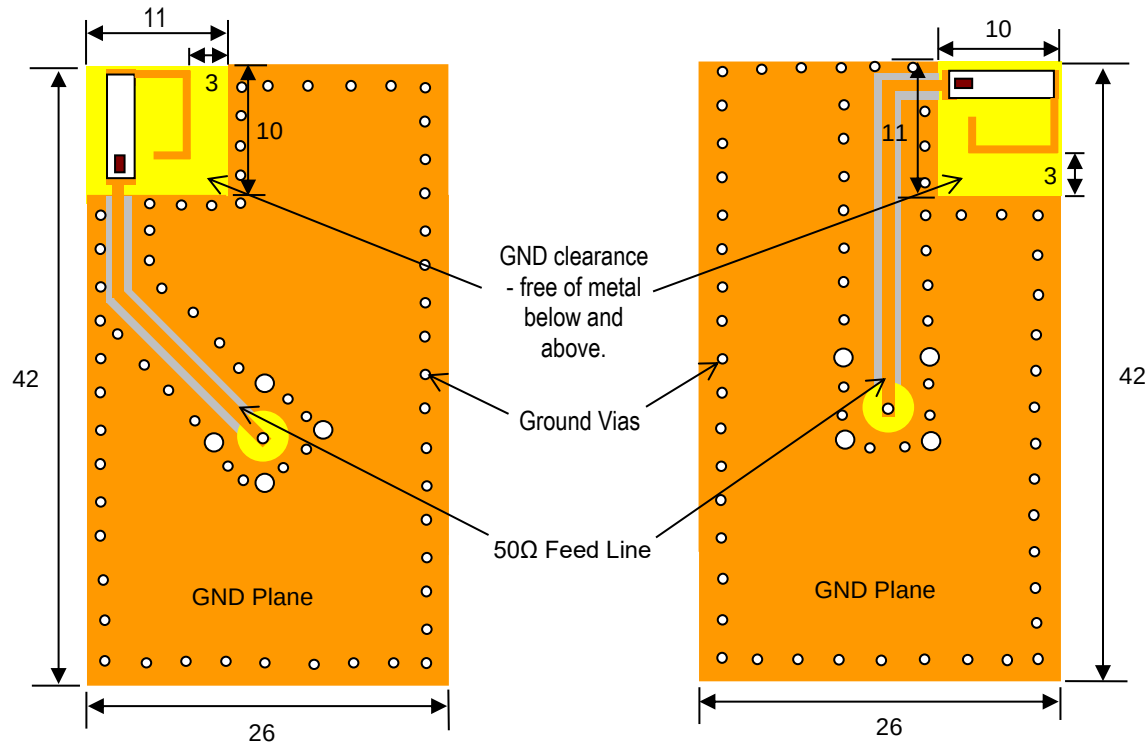
**Evaluation Board Typical 2D Radiation Patterns @915MHz (P/N 0915AT43A0026001CE2)**



### Recommended Mounting Configuration 3 (Evaluation Board Unavailable)

We have conducted internal studies to show that the following corner placements provide antenna efficiency results with minimal detrimental effects.

All units in mm

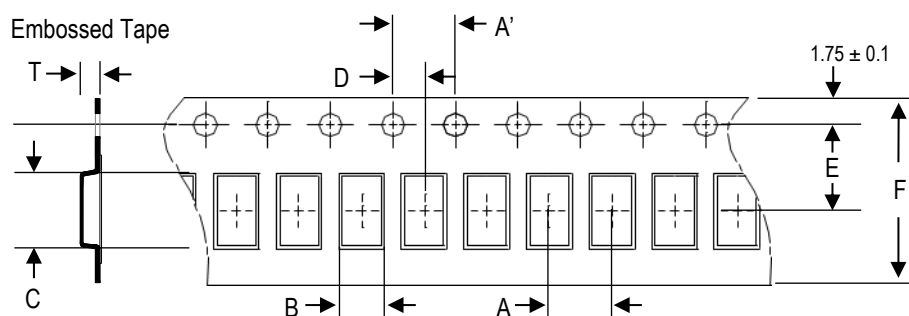


If you have any questions on this layout,  
contact our application engineers at <https://www.johansontechnology.com/ask-a-question>

<sup>7</sup> It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The optimal matching values will vary depending on the layout, thickness, material, etc. Go to: <https://www.johansontechnology.com/tuning> for more information.

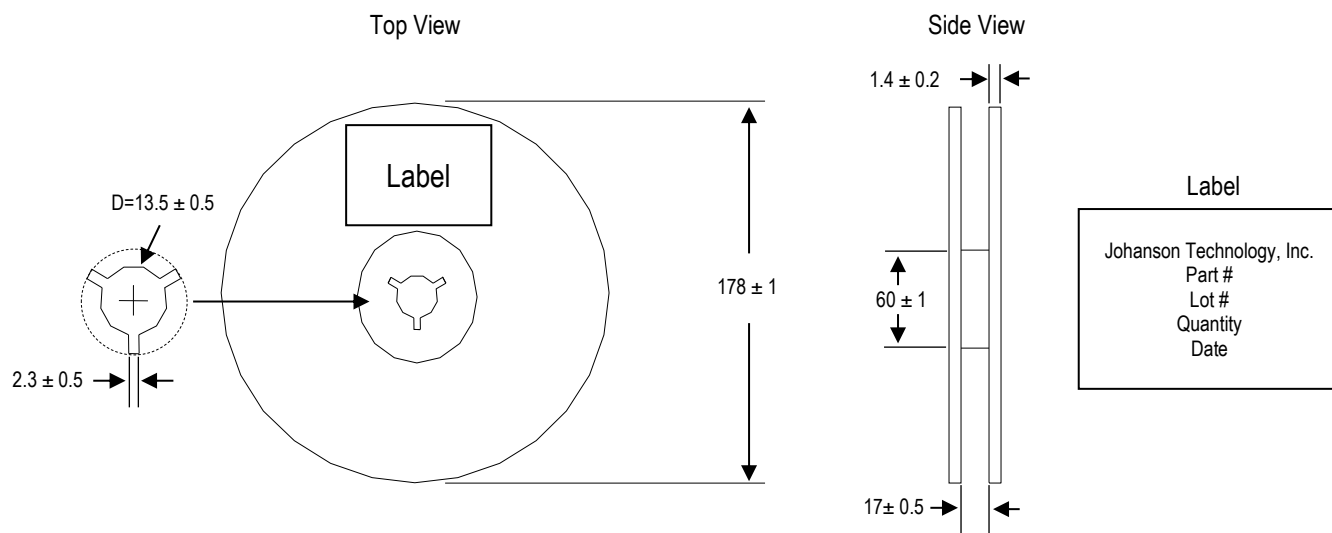
## Tape and Reel Specification (Units in mm)

### Tape Dimensions

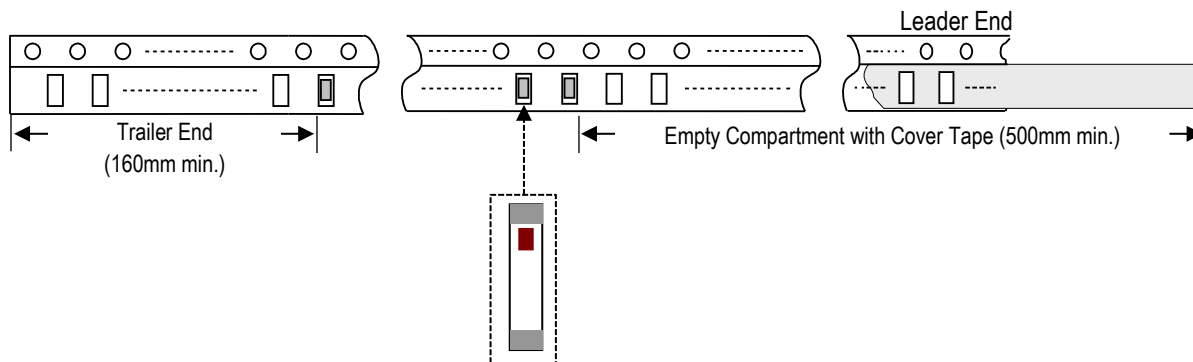


| A       | A'      | B       | C       | D        | E       | F        | T        | Quantity/reel | Tape material      |
|---------|---------|---------|---------|----------|---------|----------|----------|---------------|--------------------|
| 4.0±0.1 | 4.0±0.1 | 2.4±0.1 | 7.3±0.1 | 2.0±0.05 | 5.5±0.1 | 12.0±0.1 | 1.45±0.1 | 1,000pcs.     | Plastic (Embossed) |

### Reel Dimensions



### Leader and Trailer Dimensions



## Orderable Part Number

| Packaging Style                       | Part Number                              | Termination |
|---------------------------------------|------------------------------------------|-------------|
| Bulk (loose pcs.)                     | 0915AT43A0026001B                        | Nickel Tin  |
| T & R (7" Reel Embossed Tape)         | 0915AT43A0026001E (Qty: 1,000 pcs./reel) |             |
| Evaluation Board with 1 SMA Connector | 0915AT43A0026001CE1 (Page 3)             |             |
|                                       | 0915AT43A0026001CE2 (Page 5)             |             |

## Important Links

[0915AT43A0026001E Product Page](#)

[More 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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