



Part No. 1002232

ISM & WLAN FR4 Embedded Antenna

868 MHz, 915 MHz, 2.4 GHz

Supports: WLAN applications, Agriculture, Automotive, Bluetooth, Tracking, Smart Home, Healthcare, Digital Signage, LoRa, Sigfox



ISM & WLAN FR4 Embedded Antenna

863-928 MHz, 2.400 - 2500 GHz

KEY BENEFITS

Versatile Antenna

1002232 can be used to support ISM and WLAN combined, allowing reduced BOM complexity while maintaining great performances.

Quicker Time-to-Market

By optimizing antenna size, performance and emissions, customer and regulatory specifications are more easily met.

Reliability

Products are the latest RoHS version compliant.

APPLICATIONS

- Embedded design
- Cellular, Headsets, Tablets
- Gateway, Access Point
- SRD868
- Telematics
- Tracking
- Healthcare
- M2M, Industrial devices
- Smart Grid
- OBD-II

Ethertronics' 1002232 FR4 antenna delivers the device designers' key needs for higher functionality and performance in smaller/thinner designs. This innovative antenna provides compelling advantages for all ISM and WLAN enabled devices.

Unique Form Factors Support Advanced Industrial Designs

Smaller, more efficient on-board embedded antennas break through restrictive design rules and provide new freedom in component placement.

Electrical Specifications

Typical performance on 110 x 50 mm PCB in free space.

| Frequency | ISM EU 863 - 870 MHz | ISM US 902 - 928 MHz | WLAN 2400 - 2500 MHz |
|----------------------|-------------------------|-------------------------|-------------------------|
| Peak Gain | 0.51 dBi | 0.21 dBi | 1.5 dBi |
| Average Efficiency | 63% | 60% | 59% |
| VSWR Match | 2.0:1 max | | |
| Feed Point Impedance | 50 ohms unbalanced | | |
| Polarization | Linear | | |
| Power Handling | 2 Watt CW | | |

Mechanical Specifications & Ordering Part Number

| Ordering Part Number | 1002232 |
|----------------------|--|
| Size (mm) | 35.0 x 9.0 x 3.2 |
| Weight (grams) | 2.0 |
| Mounting | SMT (P&P) |
| Packaging | Tape & Reel, 5,600 pieces per box, 1,120 per reel |
| Demo Board | 1002232-01 |

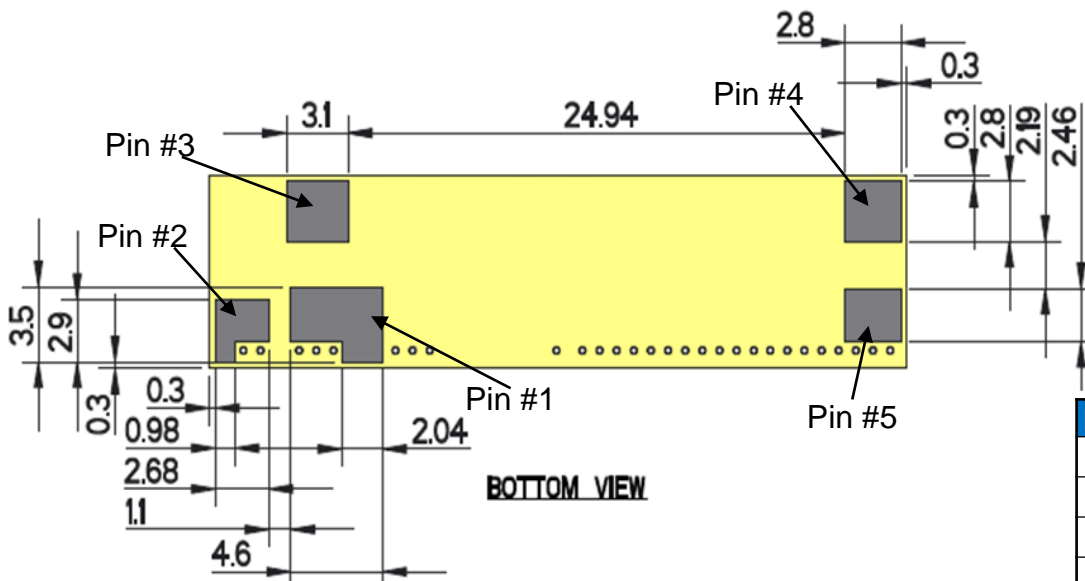
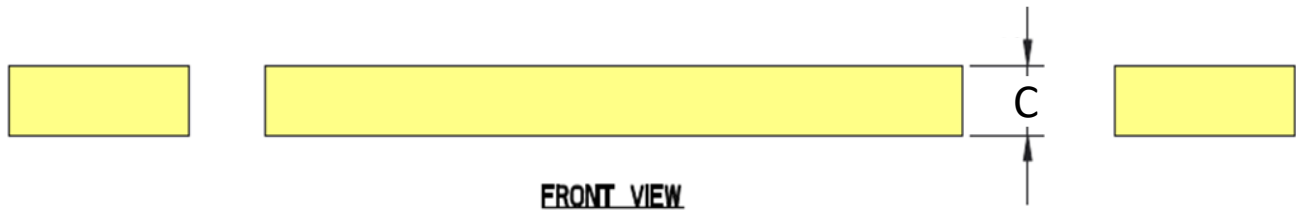
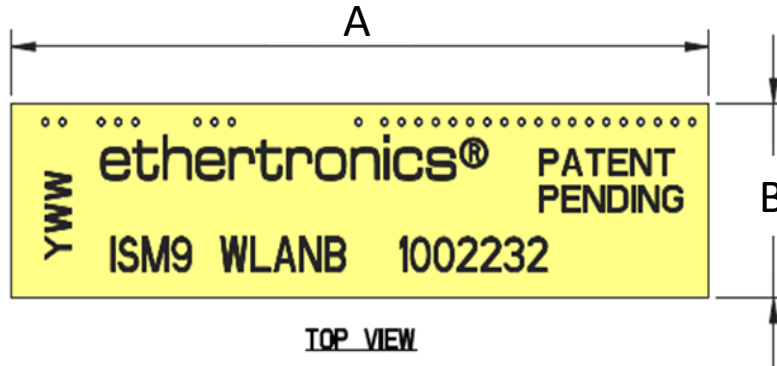


ISM / WLAN FR4 Ethertronics' Antenna Specifications
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

Antenna Dimensions (1002232)

Typical antenna dimensions (mm)

| Part Number | A (mm) | B (mm) | C (mm) |
|-------------|------------|-----------|-----------|
| 1002232 | 35.0 ± 0.3 | 9.0 ± 0.2 | 3.2 ± 0.3 |



| Pin# | Description |
|------|-------------|
| 1 | Feed |
| 2 | Ground |
| 3 | Dummy Pad |
| 4 | Dummy Pad |
| 5 | Dummy Pad |



ISM / WLAN FR4 Ethertronics' Antenna Specifications

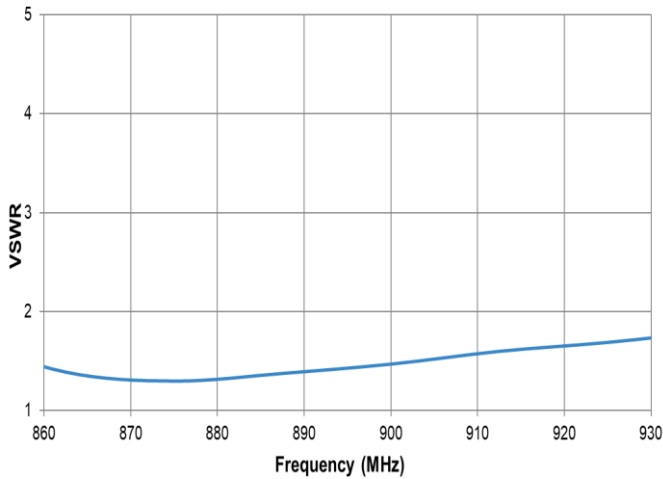
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

VSWR and Efficiency Plots

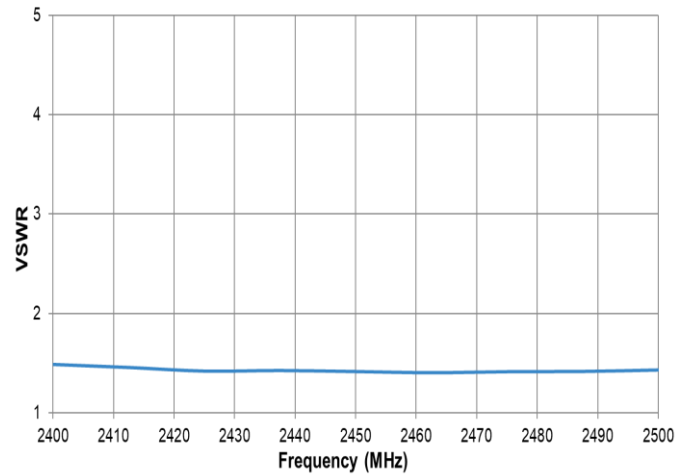
Typical performance on 110 x 50 mm PCB



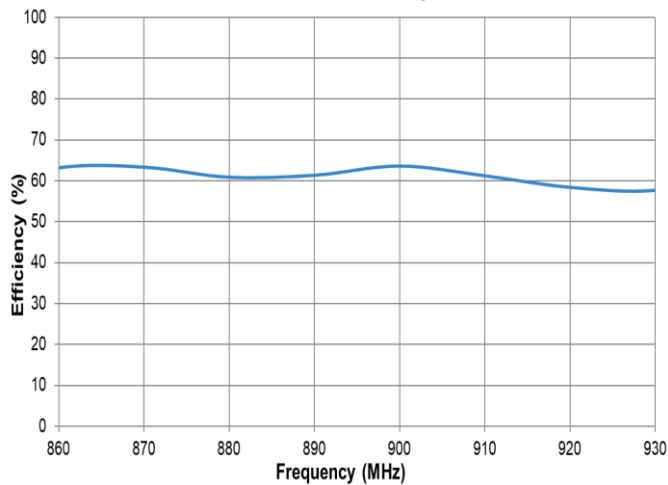
ISM VSWR



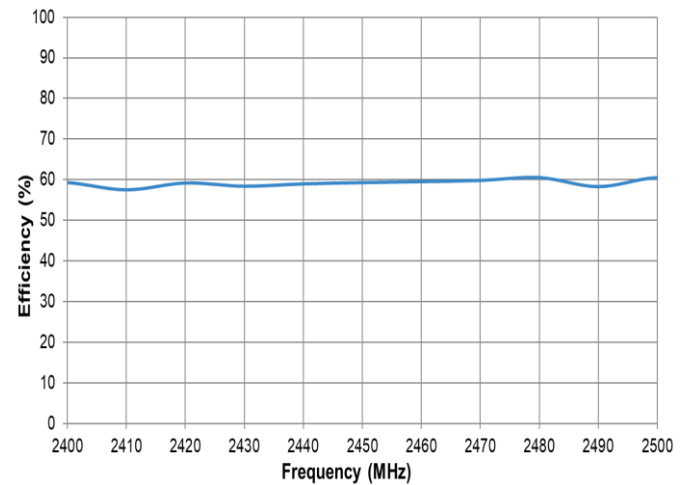
WLAN VSWR



ISM Efficiency



WLAN Efficiency



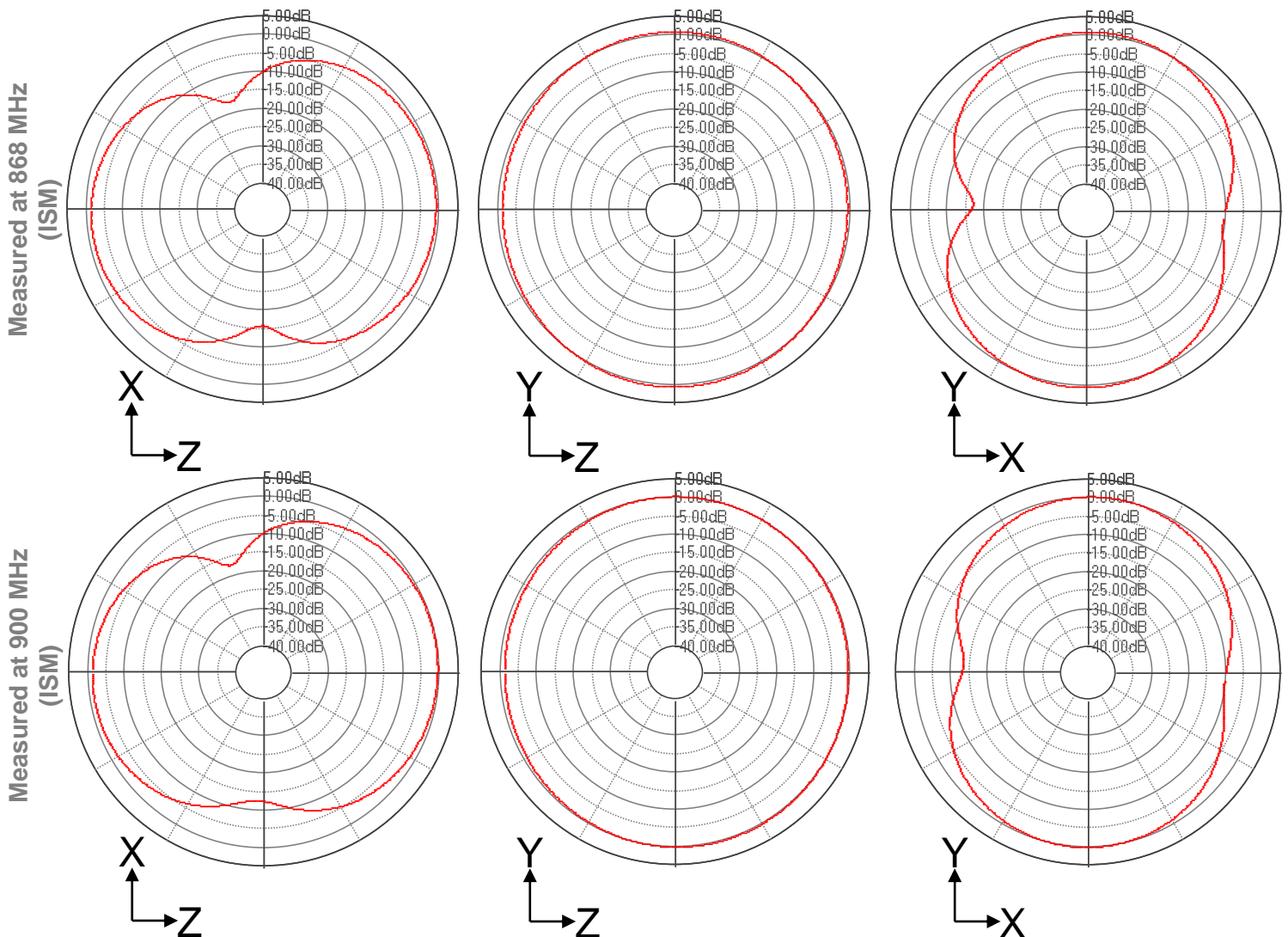
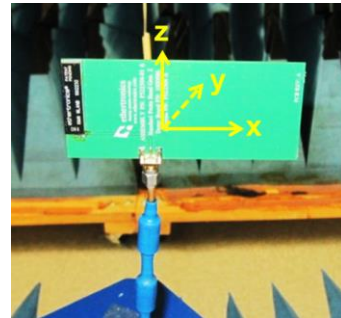
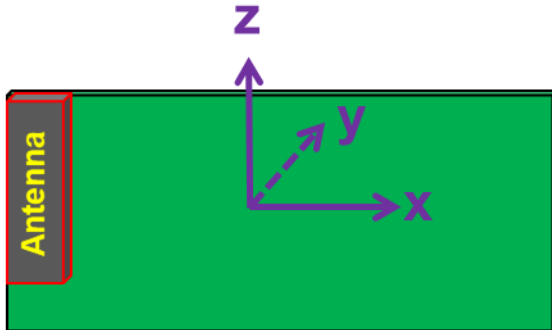


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Antenna Radiation Patterns

Typical performance on 110 x 50 mm PCB
Measured @ 868, 900, 2400 MHz



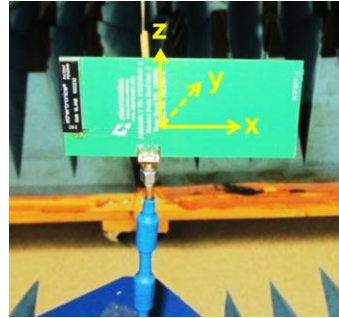
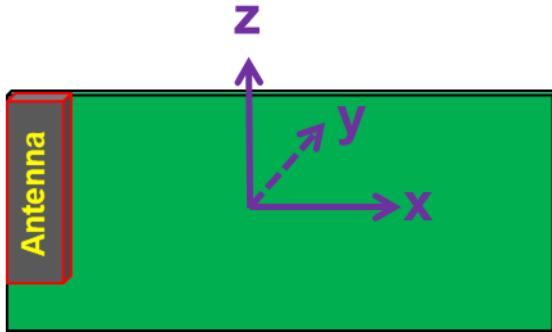


ISM / WLAN FR4 Ethertronics' Antenna Specifications

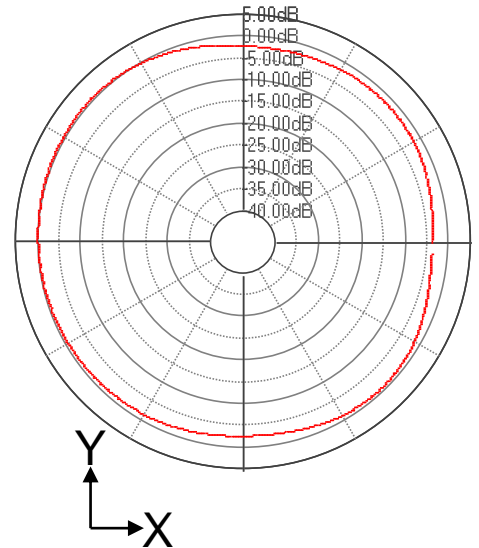
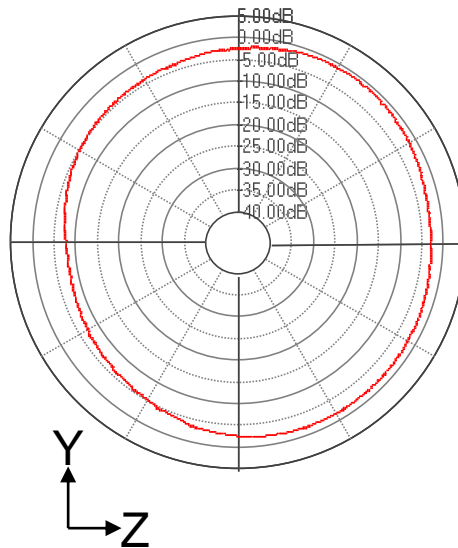
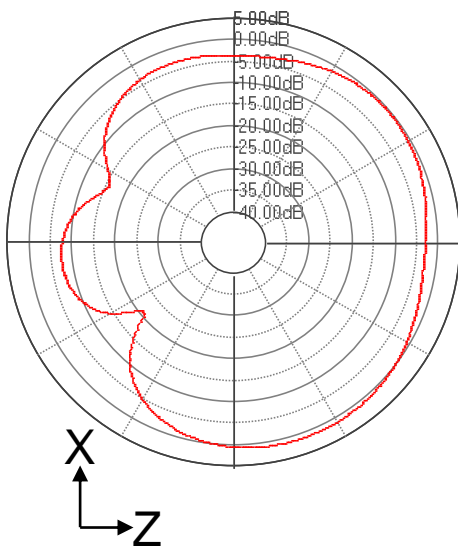
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

Antenna Radiation Patterns

Typical performance on 110 x 50 mm PCB
Measured @ 868, 900, 2400 MHz



Measured at 2400 MHz
(WLAN)



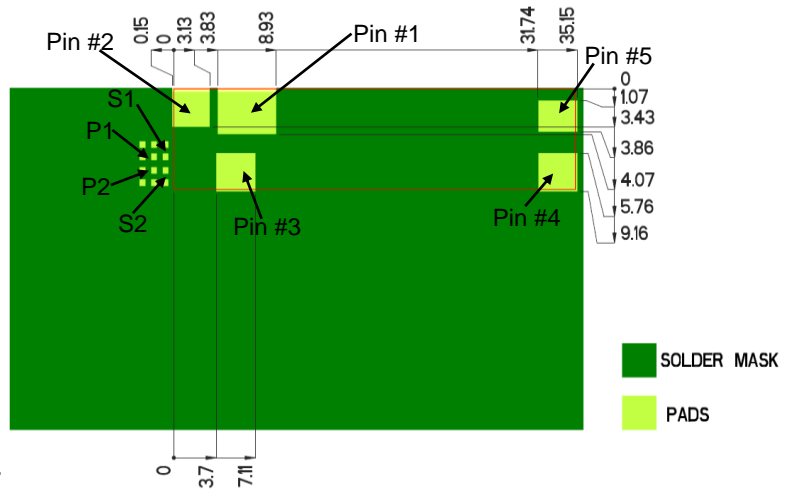
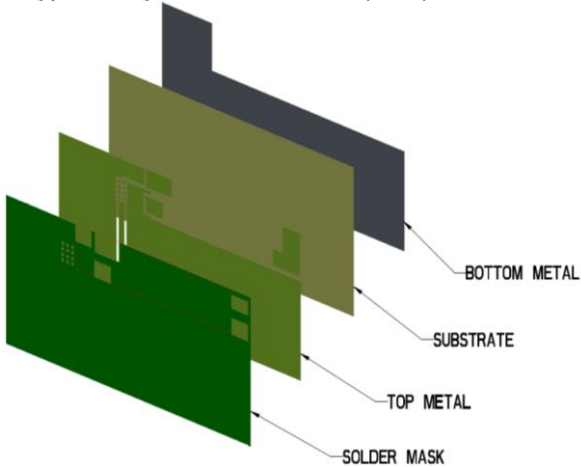


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Antenna Layout

Typical layout dimensions (mm)



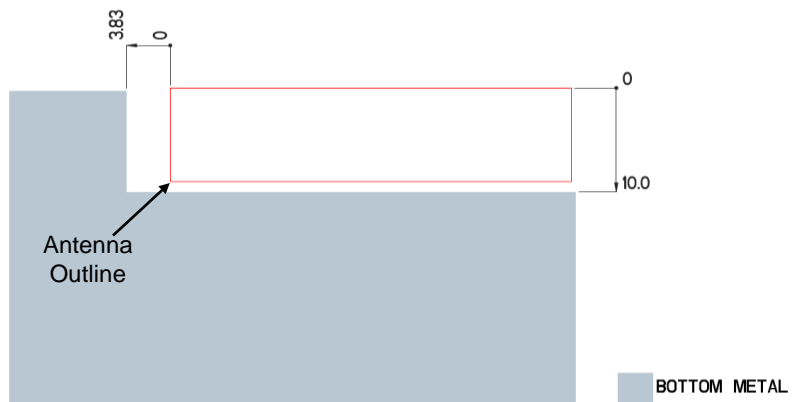
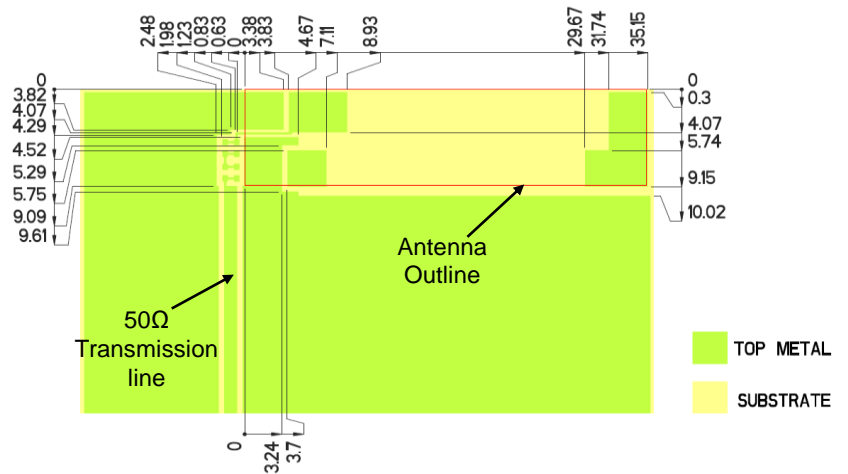
* VIAS: Diam. 0.2mm, (no vias on transmission lines).
Via holes must be covered by solder mask

Pin Descriptions

| Pin# | Description |
|------|-------------|
| 1 | Feed |
| 2 | Ground |
| 3 | Dummy Pad |
| 4 | Dummy Pad |
| 5 | Dummy Pad |

Matching & Tuning Component Values

| Component | Value | Tolerance |
|-----------|-------|-----------|
| S1 | 2.0pF | ±0.05pF |
| P1 | N/A | N/A |
| P2 | 0.5pF | ±0.05pF |
| S2 | 3.3nH | ±0.1nH |



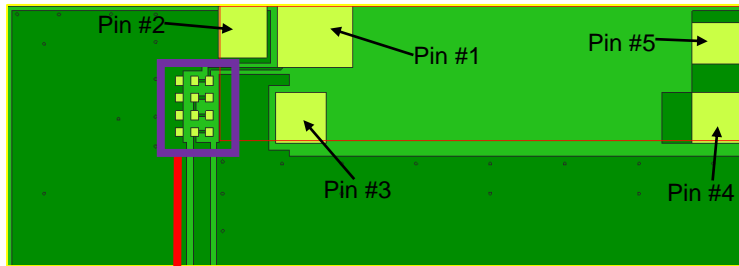


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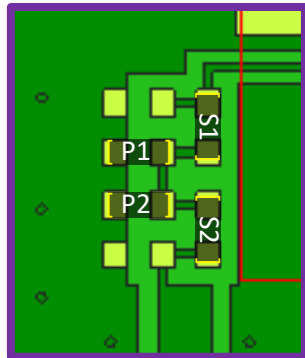
Antenna Matching Structure

Typical matching values on 50 x 110 mm PCB

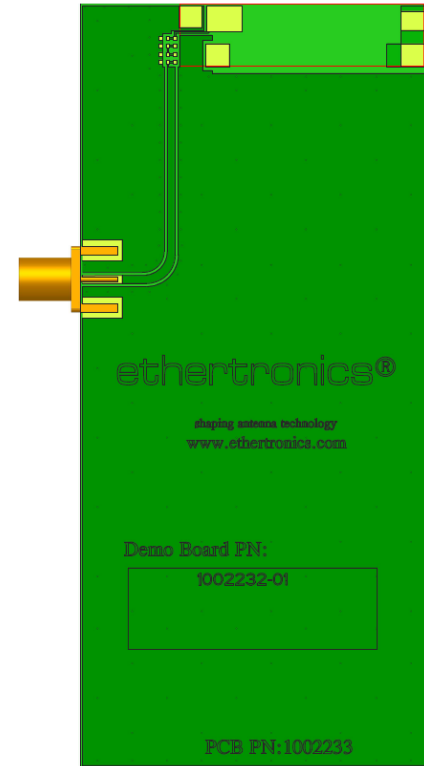
Demo Board Front View



Antenna Matching

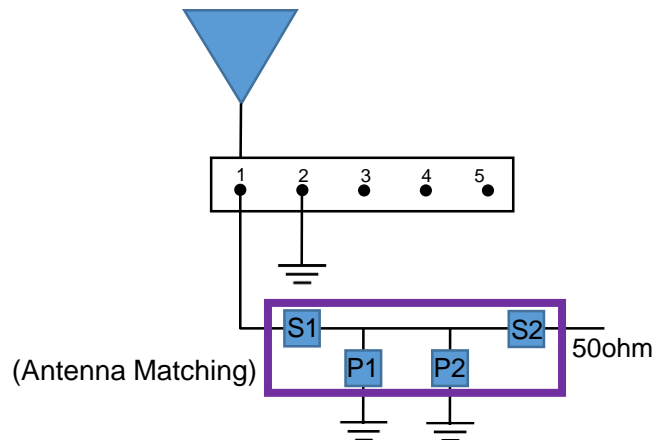


(Antenna Matching):
pads are directly inline with
the antenna feed trace.



Pin Descriptions

| Pin# | Description |
|------|-------------|
| 1 | Feed |
| 2 | Ground |
| 3 | Dummy Pad |
| 4 | Dummy Pad |
| 5 | Dummy Pad |



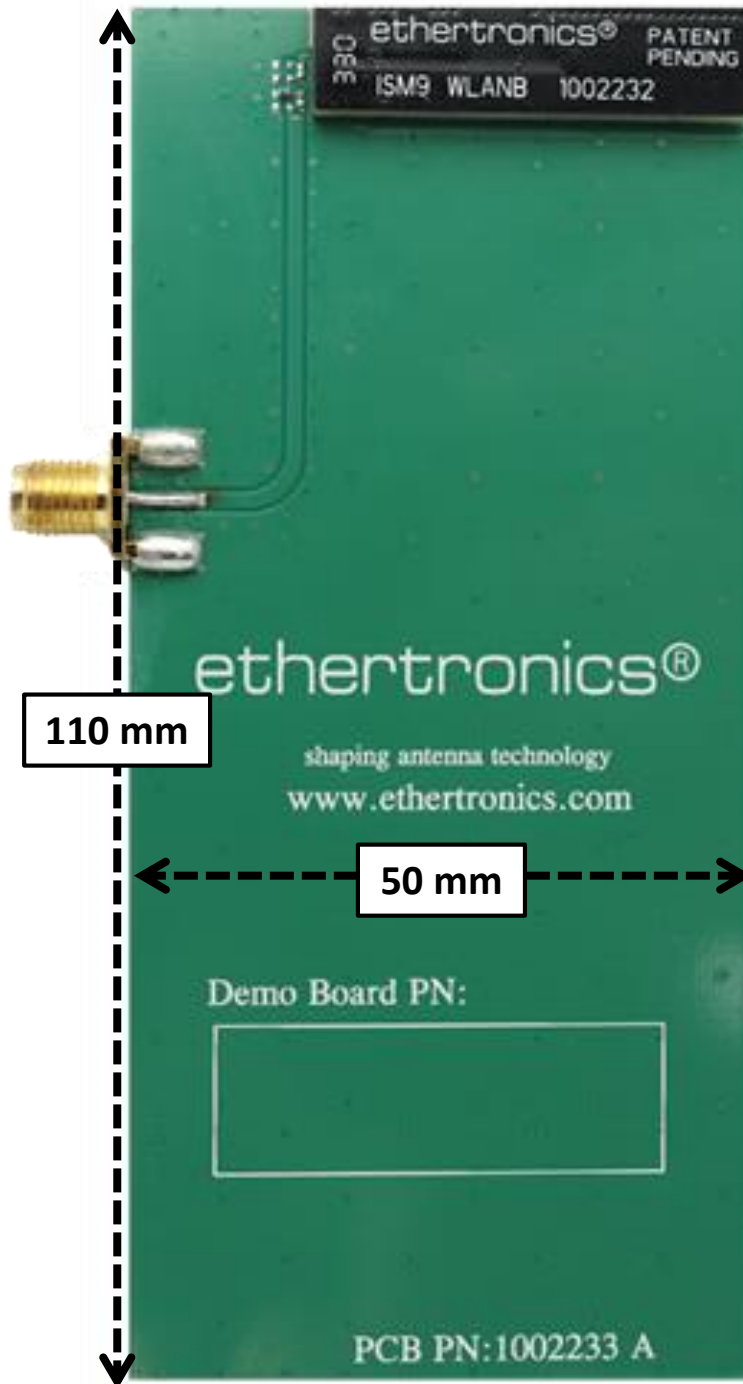
| | S1 | P1 | P2 | S2 |
|-------------------------|---------|-----|---------|---------|
| Default Matching | 2.0pF | N/A | 0.5pF | 3.3nH |
| Tolerance | ±0.05pF | N/A | ±0.05pF | ± 0.1nH |



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Antenna Demo Board (1002232)

Demo Board Front view (mm)



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