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# Part No. 1000146

## WLAN / BT / Zigbee Embedded Stamped Metal Antenna

2.4 / 4.9 / 5.2 / 5.8 GHz (802.11 a/b/g/n/c + Japan)

Supports: Wi-Fi applications, Agriculture, Automotive, Bluetooth, Zigbee, WLAN, Smart Home, Healthcare, Digital Signage



### Wi-Fi Dual Band Stamped Metal Embedded Antenna

2.4 GHz; 5 GHz

#### KEY BENEFITS

##### Stay-in-Tune

Ethertronics antenna technology provides superior RF field containment, resulting in less interaction with surrounding components.

##### 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
- Handheld
- Telematics
- Tracking
- Healthcare
- M2M, Industrial devices
- Smart Grid
- OBD-II

Ethertronics' Stamped Metal series of Isolated Magnetic Dipole™ (IMD) antennas deliver on the key needs of device designers for higher functionality and performance in smaller/thinner designs. These innovative antennas provide compelling advantages for full WIFI dual-band enabled handheld devices, media players and other mobile devices.

#### Greater Flexibility

Ethertronics' first-in-class IMD technology enables you to develop concept designs that are more advanced and that deliver superior performance in reception critical applications.

#### Electrical Specifications

Typical Characteristics, on 120 x 180 mm PCB

Frequency	2400 – 2485 MHz	4900 – 5825 MHz
Peak Gain	1.5 dBi	2.6 dBi
Average Efficiency	80%	72%
VSWR Match	1.5:1 max	1.6:1 max
Feed Point Impedance	50 ohms unbalanced	
Polarization	Linear	
Power Handling	0.5 Watt CW	

#### Mechanical Specifications & Ordering Part Number

Ordering Part Number	1000146
Size (mm)	17.85 x 6.9 x 4.3
Mounting	SMT
Weight (grams)	0.35
Packaging	Tape & Reel, 1000146 – 1,200 pieces per reel
Demo Board	1000418

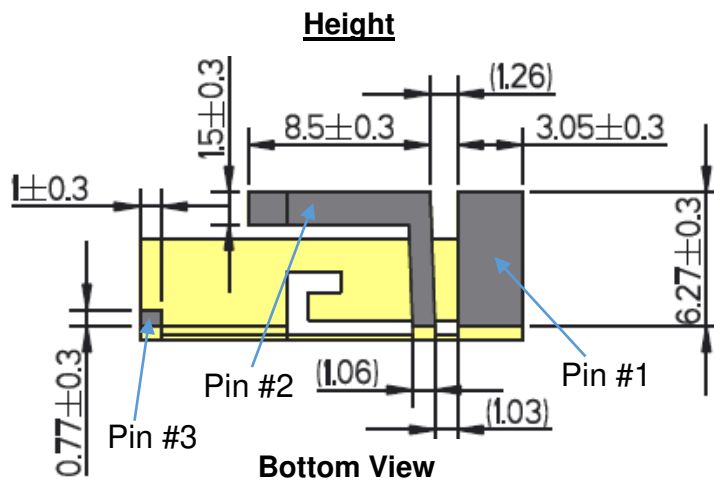
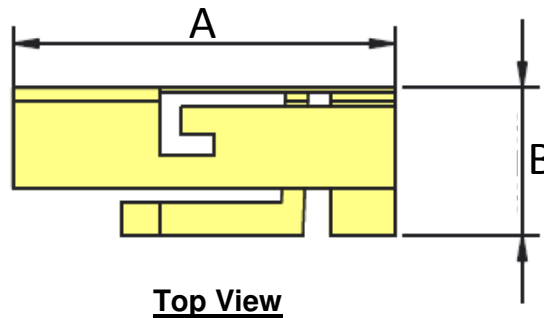
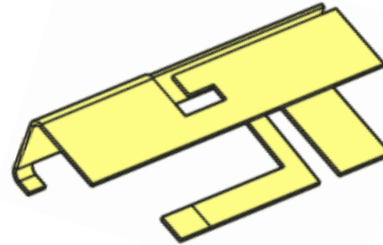


2.4 / 5 GHz Ethertronics' Embedded Antenna Specifications  
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

### Antenna Dimensions

Typical antenna dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
1000146	17.85 ± 0.3	6.9 ± 0.3	4.3 ± 0.4



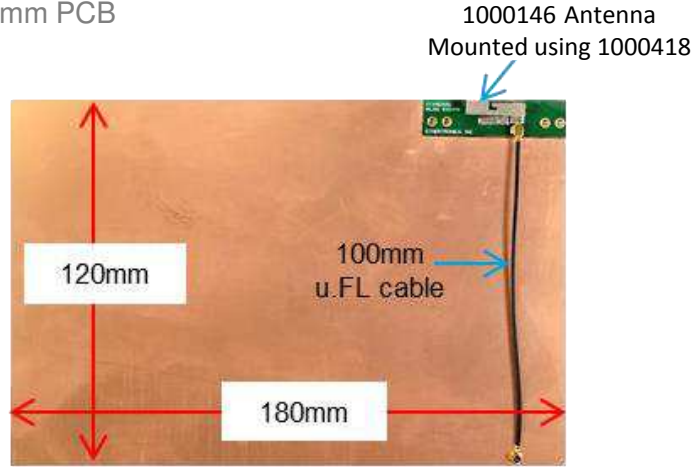
Pin	Description
1	Feed
2	Ground
3	Dummy Pad



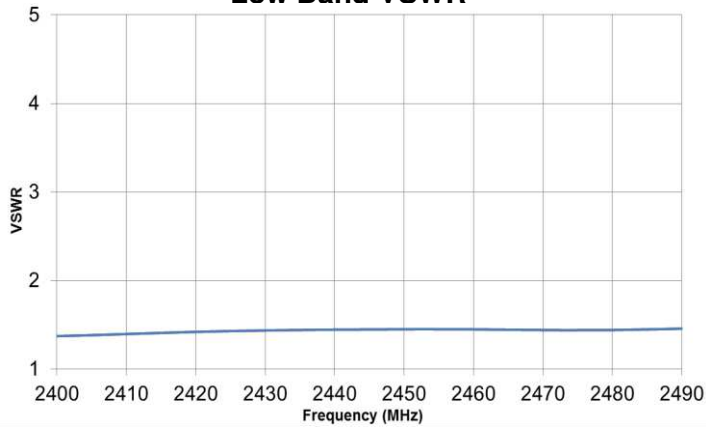
**2.4 / 5 GHz Ethertronics' Embedded Antenna Specifications**  
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**VSWR and Efficiency Plots (Off-Ground)**

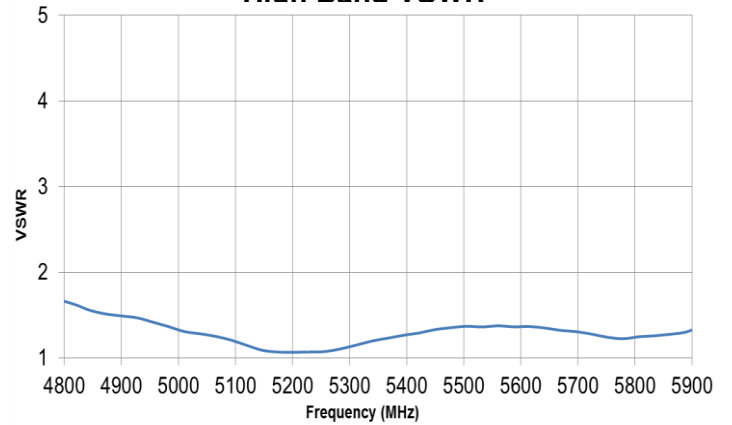
Typical Performance on 120 x 180 mm PCB



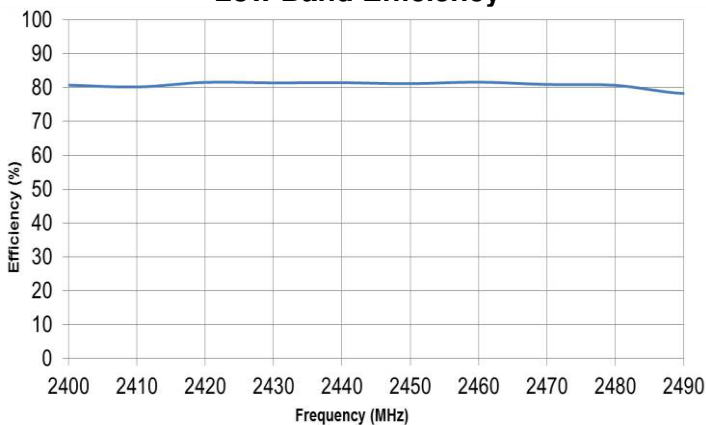
**Low Band VSWR**



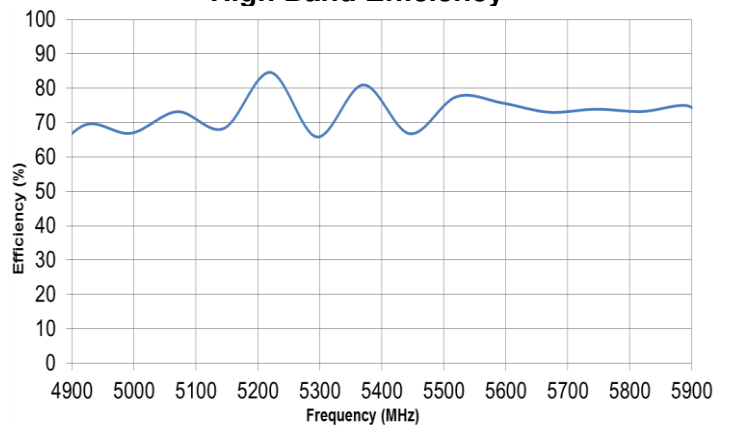
**High Band VSWR**



**Low Band Efficiency**



**High Band Efficiency**

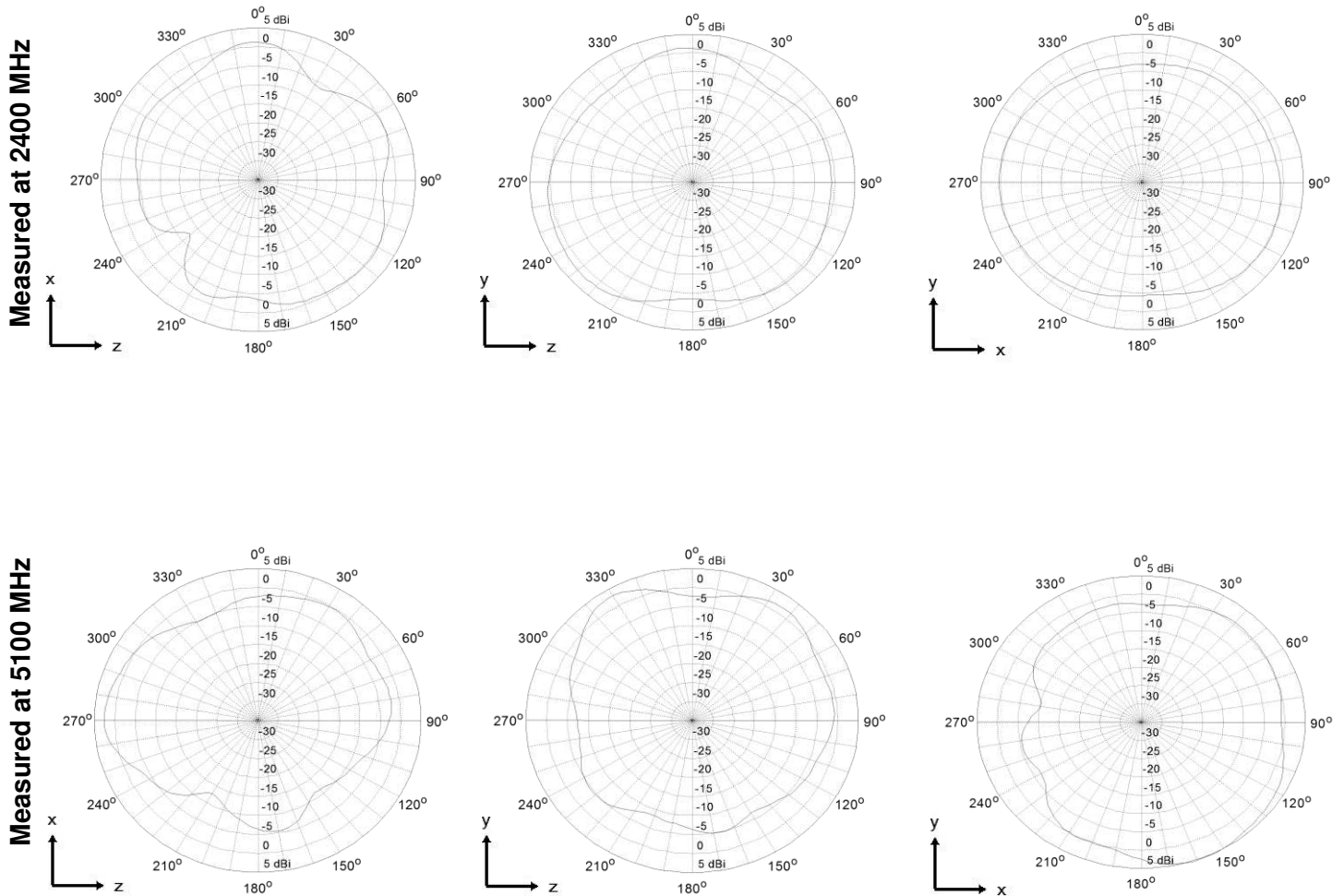
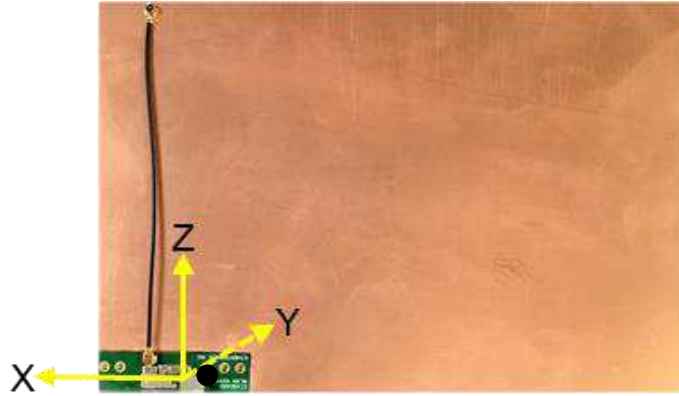




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Antenna Radiation Patterns

Typical Performance on 120 x 180 mm PCB  
Measured @ 2400, 5100 MHz

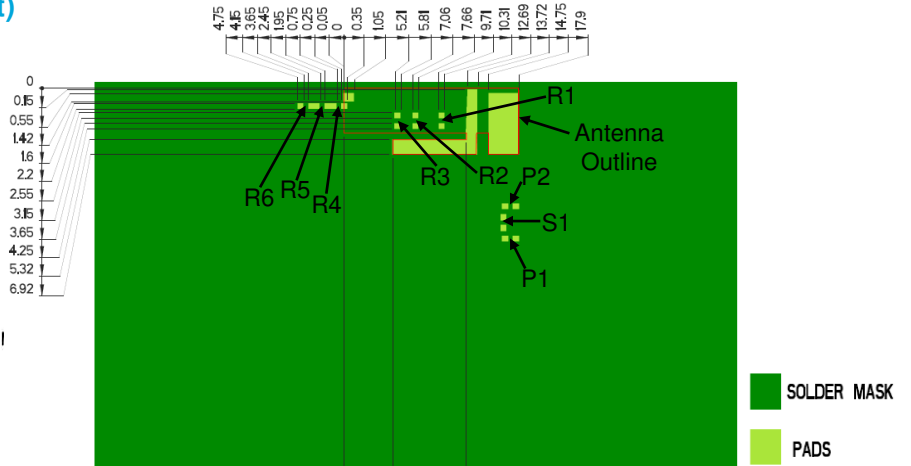
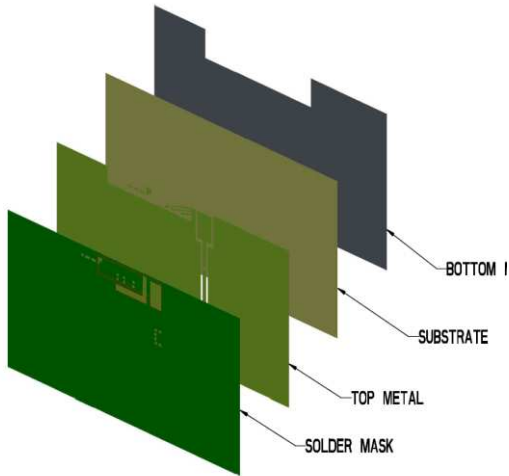




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Antenna Layout (Minor Tuning Layout)

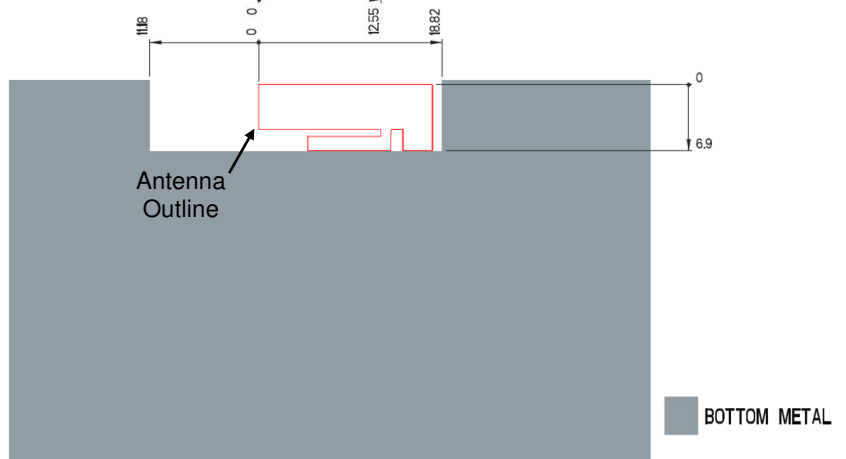
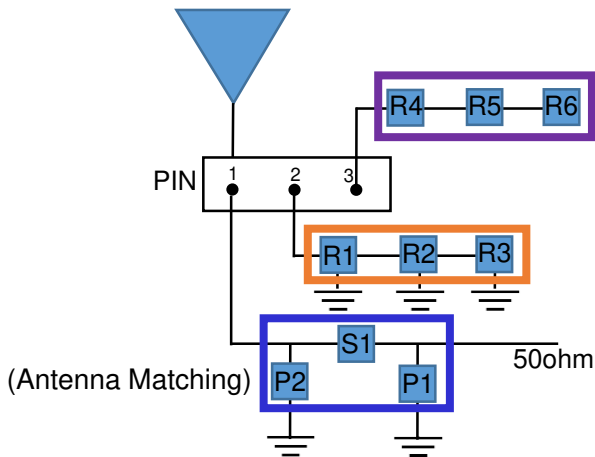
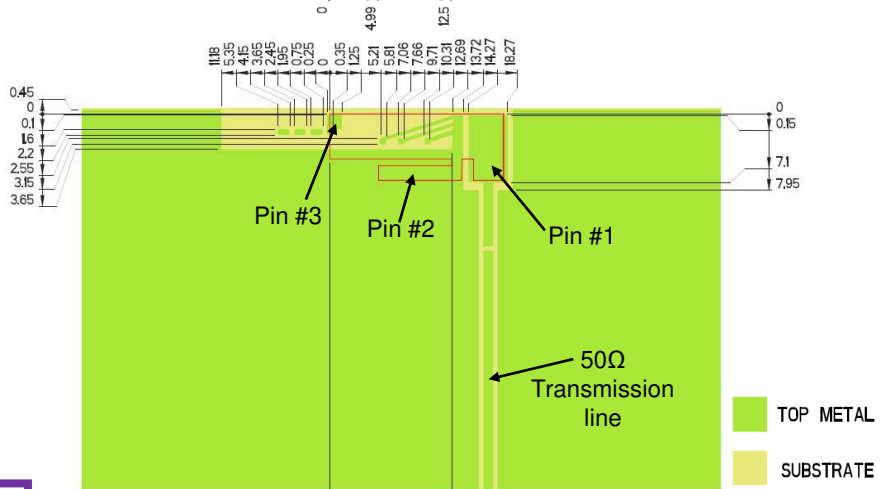
Typical layout dimensions (mm)



Note:  
Layout has minor tuning capabilities to allow for small antenna footprint.

Pin Descriptions

Pin#	Description
1	Feed
2	Ground
3	Dummy Pad



Antenna Matching & Tuning Component Values

	P1	S1	P2	R1 – R3	R4 – R6
Default Values	DNI	0Ω	DNI	DNI	DNI
Component Tolerance	N/A	N/A	N/A	N/A	N/A

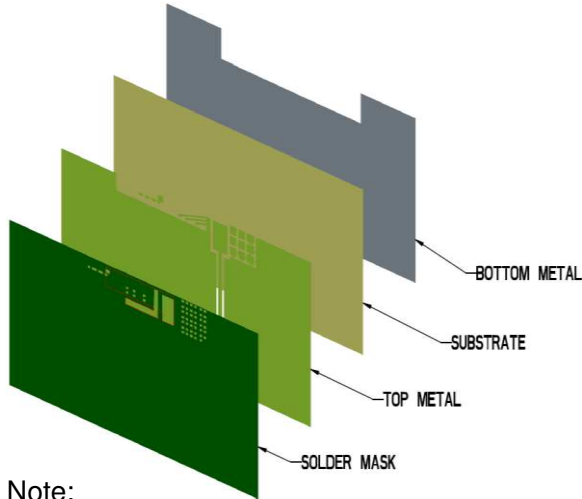


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Antenna Layout (Major Tuning Layout)

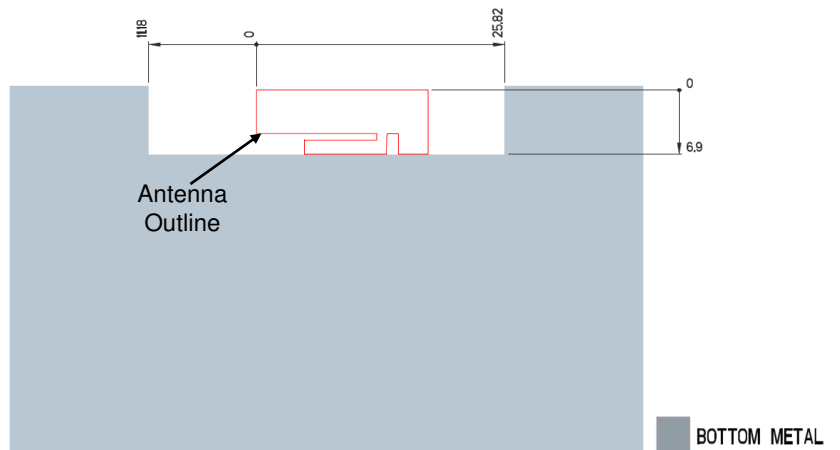
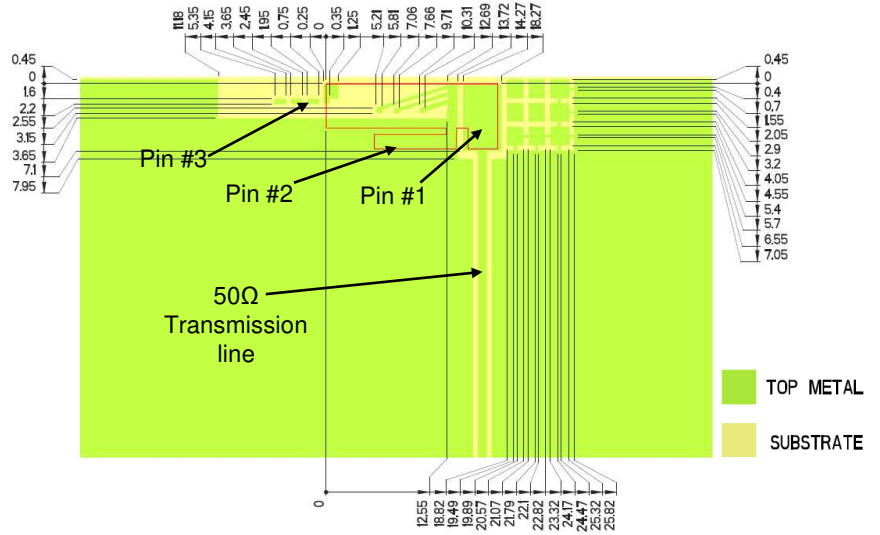
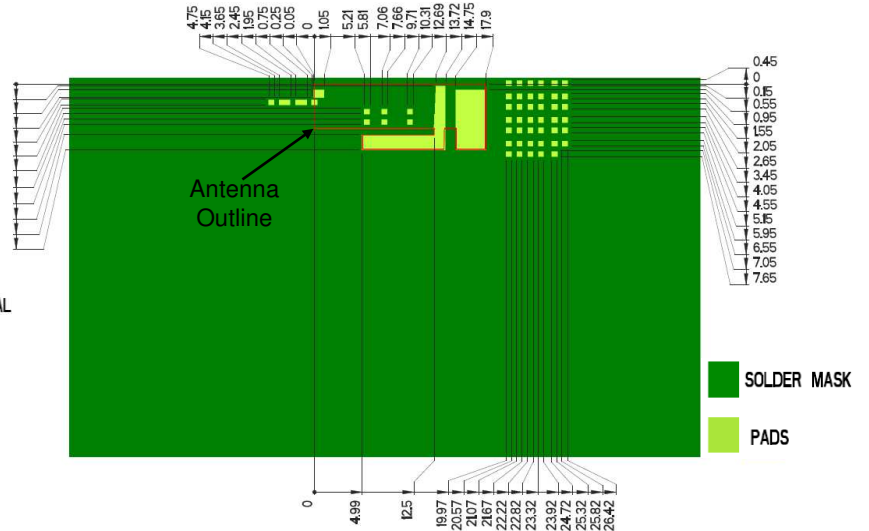
Typical layout dimensions (mm)



Note:  
Layout has Major tuning capabilities to allow for robust tuning after board spin, instructions on [Antenna Matching Structure](#) page.

Pin Descriptions

Pin#	Description
1	Feed
2	Ground
3	Dummy Pad

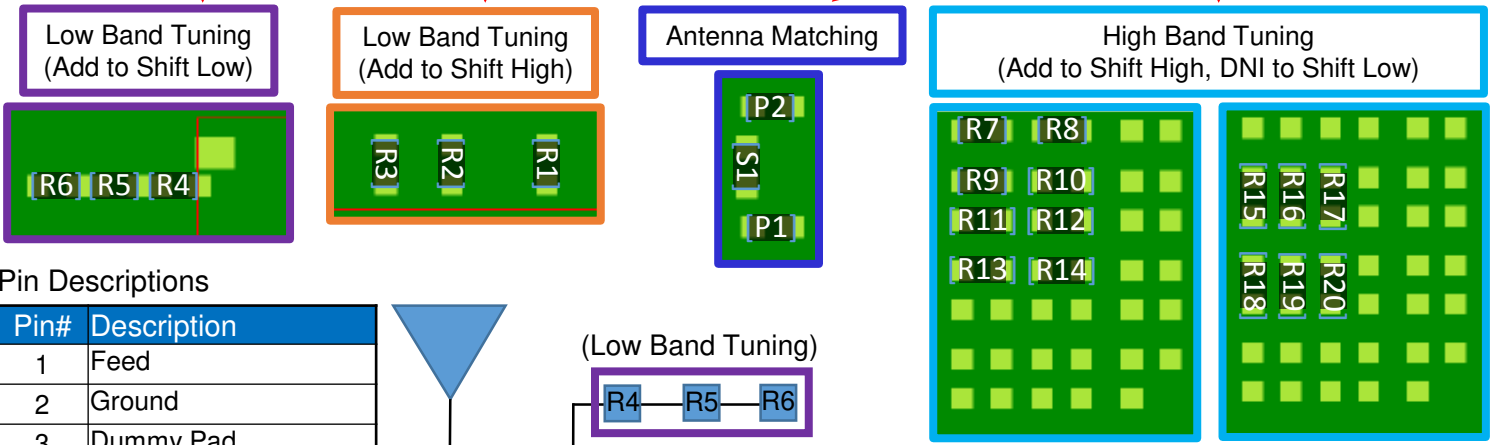
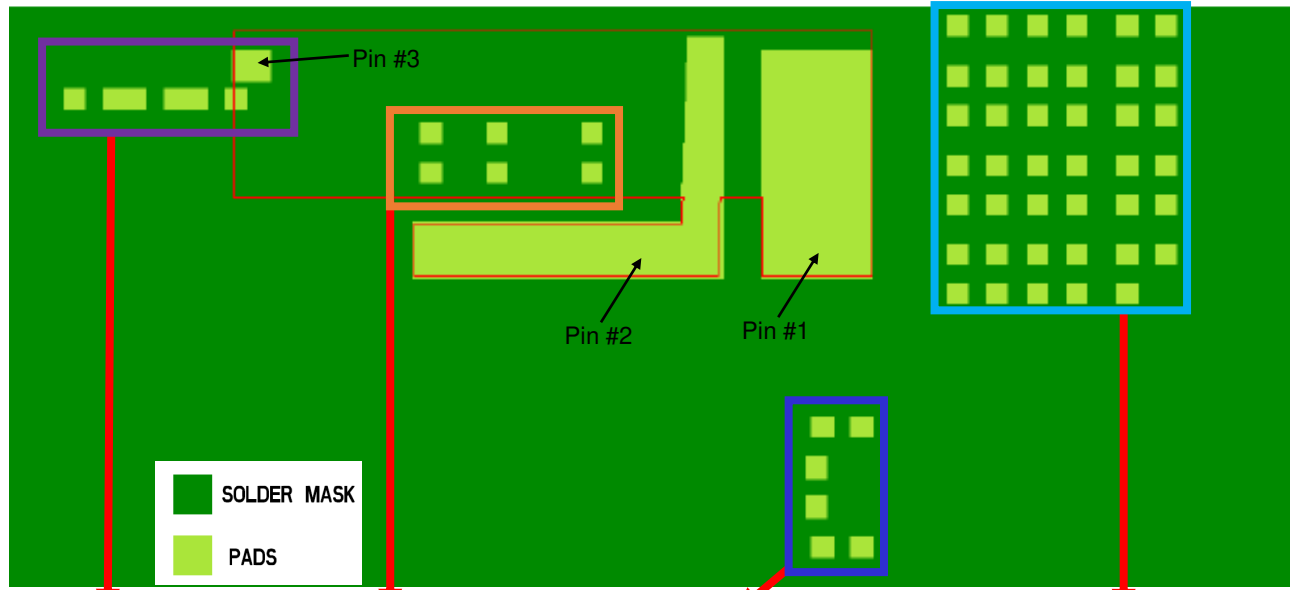




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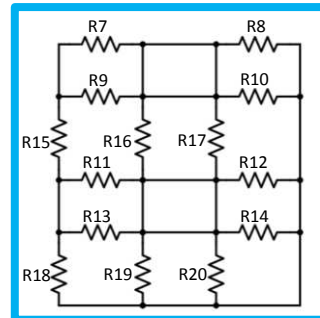
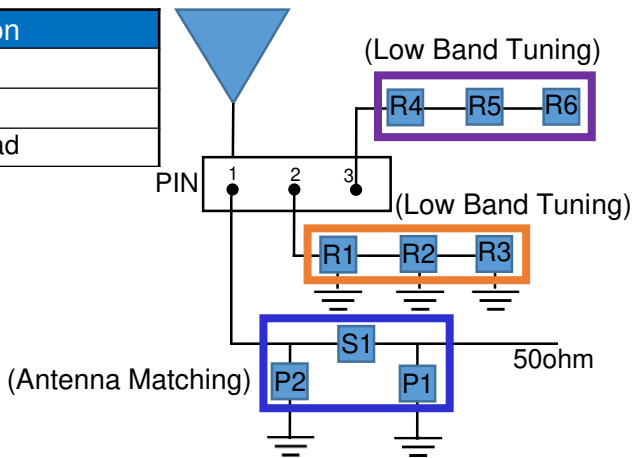
### Antenna Matching Structure (Major Tuning Structure)

Typical matching values on 140 x 50 mm PCB



#### Pin Descriptions

Pin#	Description
1	Feed
2	Ground
3	Dummy Pad



\*Extend ground towards antenna feed with 0Ω component(s). R7- R20 can improve high band bandwidth/ performance with ground coupling.

	P1	S1	P2	R1 - R3	R4 - R6	R7 - R14	R15 - R20
Default Values	DNI	0Ω	DNI	DNI	DNI	DNI	DNI
Tolerance	N/A	N/A	N/A	N/A	N/A	N/A	N/A