1.575 GHz Ethertronics' Embedded Antenna Specifications.
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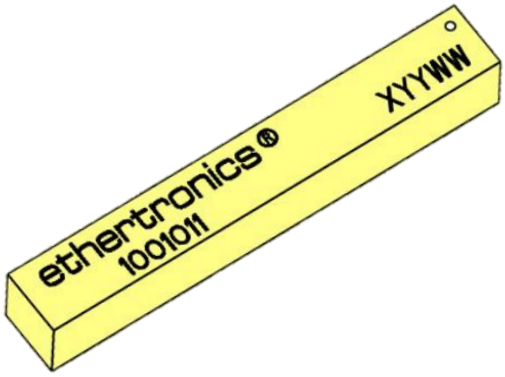
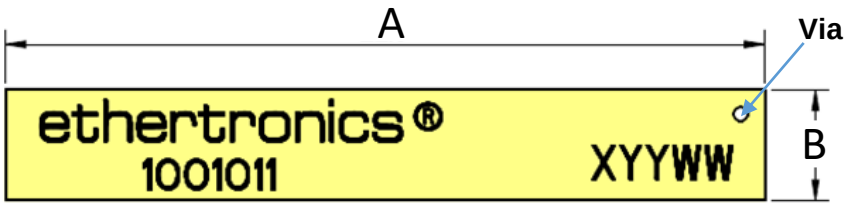
Antenna Dimensions

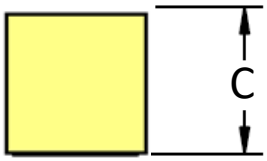
Typical antenna dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
1001011	22.0 ± 0.3	3.2 ± 0.2	3.3 ± 0.3





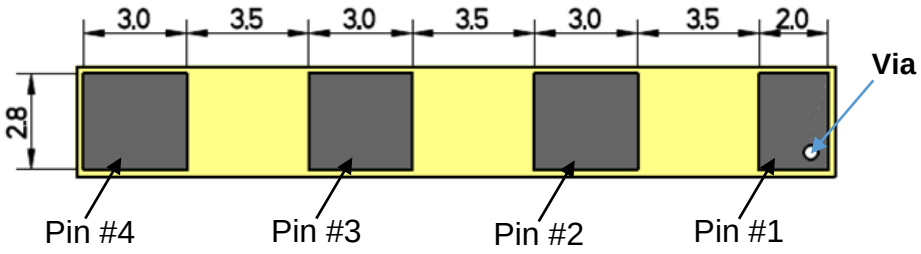
Top View



Height

Pin Descriptions

Pin#	Description
1	Feed
2	Dummy Pad
3	Dummy Pad
4	Dummy Pad



Bottom View

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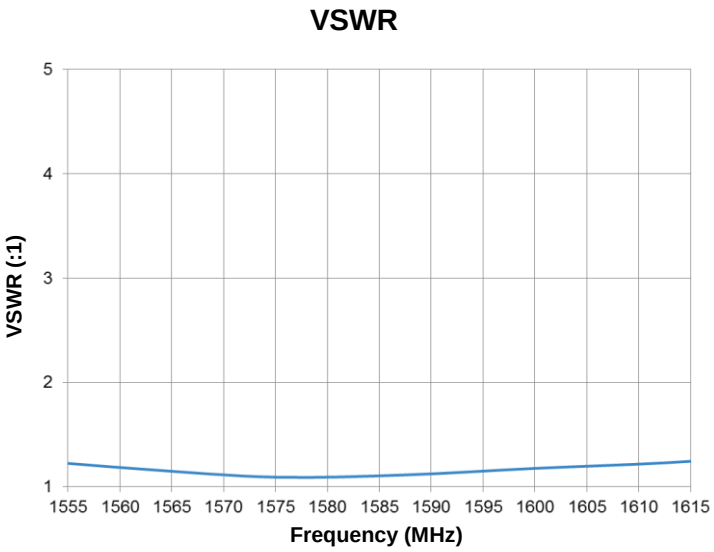
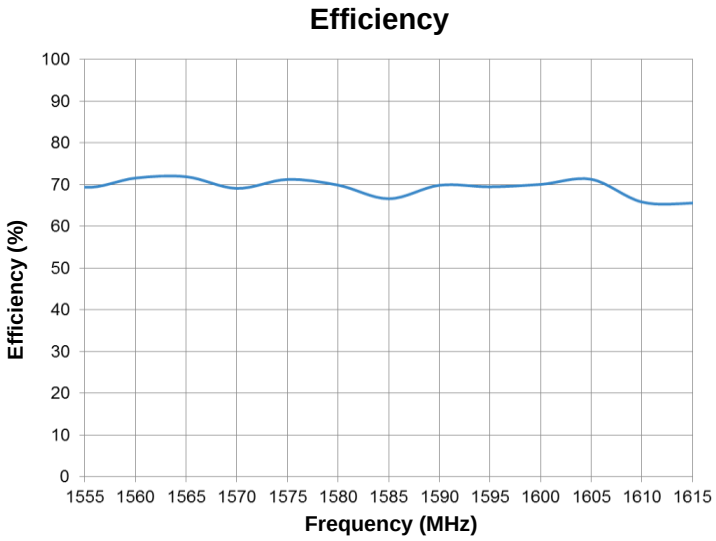
VSWR and Efficiency Plots (Off-Ground)

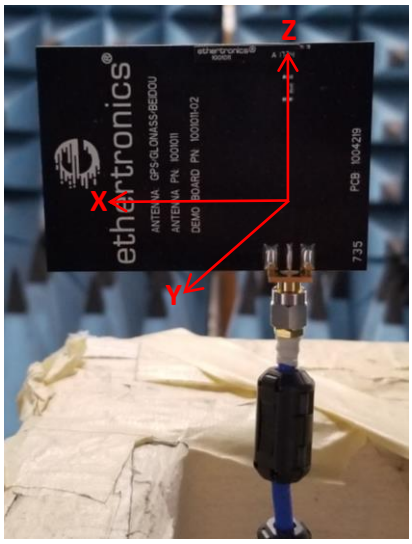
Typical Performances on 72 x 50 mm PCB

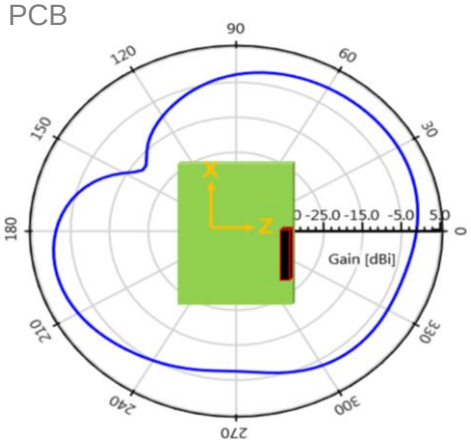


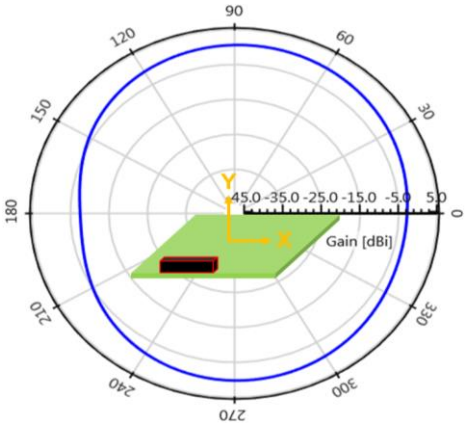


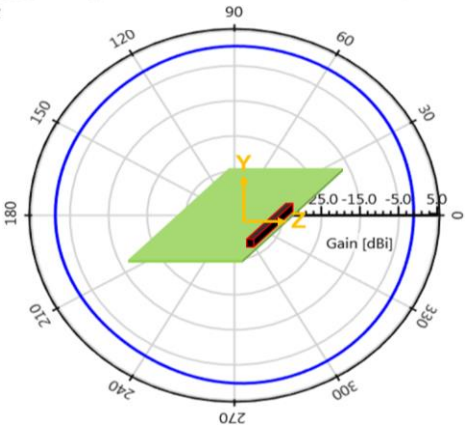
Antenna Radiation Patterns (Off-Ground)

Typical Performances on 72 x 50 mm PCB
measured @ 1.575 GHz









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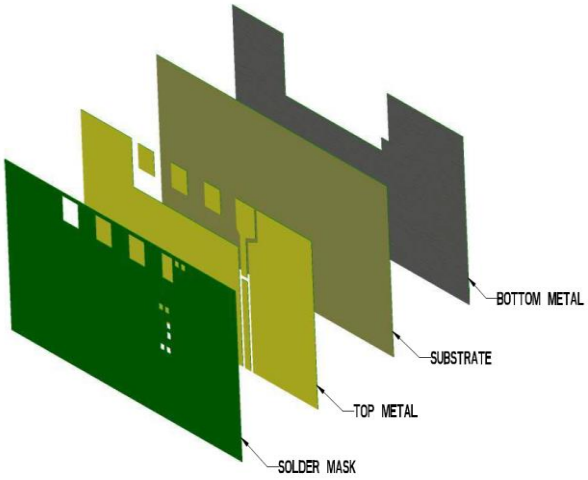
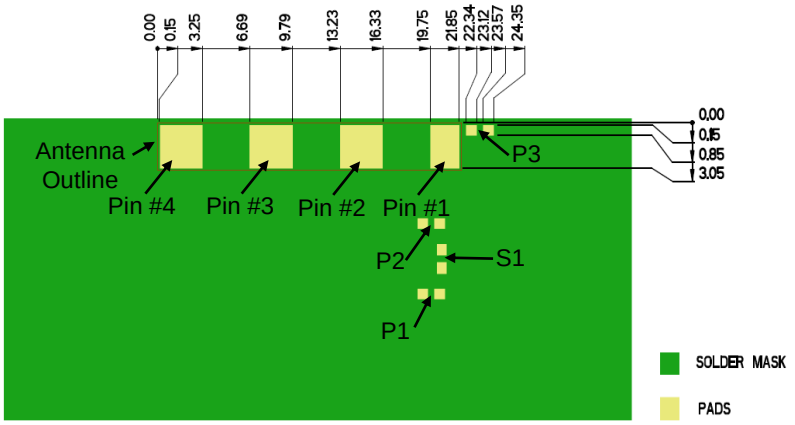
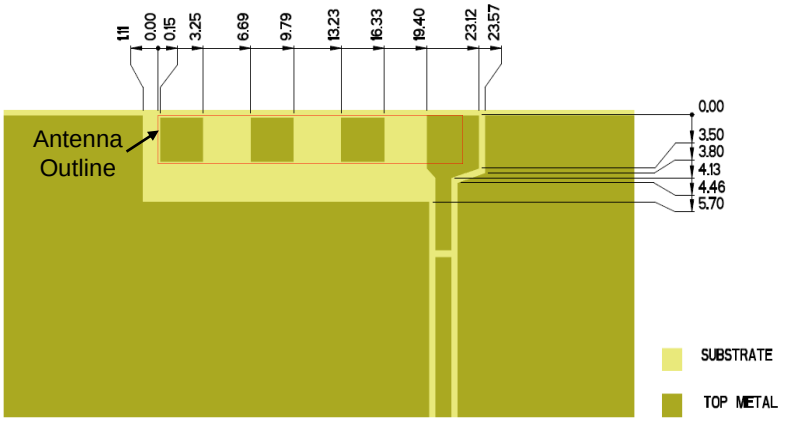
Antenna Layout (Off-Ground)

Typical layout dimensions (mm)





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



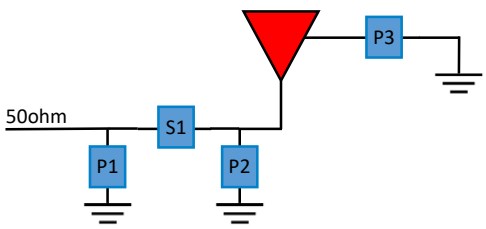
Pin Descriptions

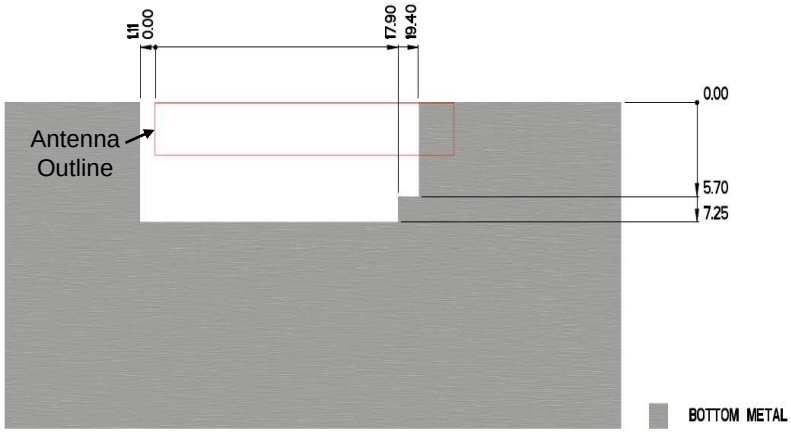
Pin#	Description
1	Feed
2	Dummy Pad
3	Dummy Pad
4	Dummy Pad

Matching Pi Network (Demo Board)

Component	Value	Tolerance
P1	DNI	N/A
S1	4.3pF	±0.25pF
P2	1pF	±0.5pF
P3	0Ω	N/A

*Actual matching values depend on customer design





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1.575 GHz Ethertronics' Embedded Antenna Specifications.
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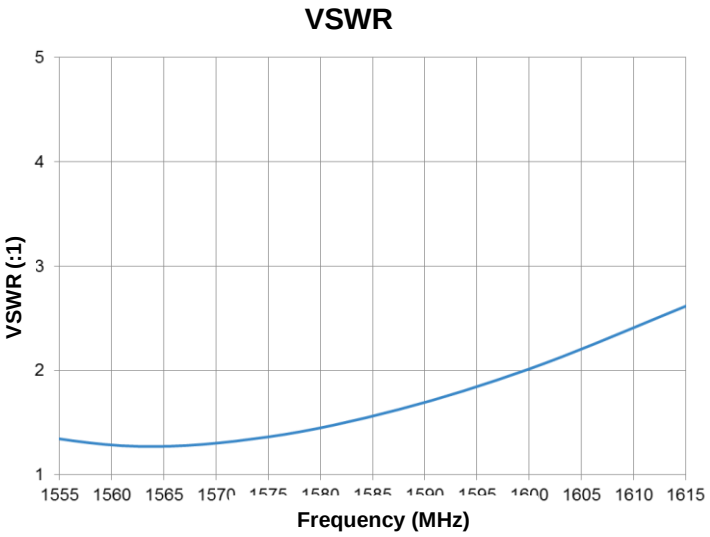
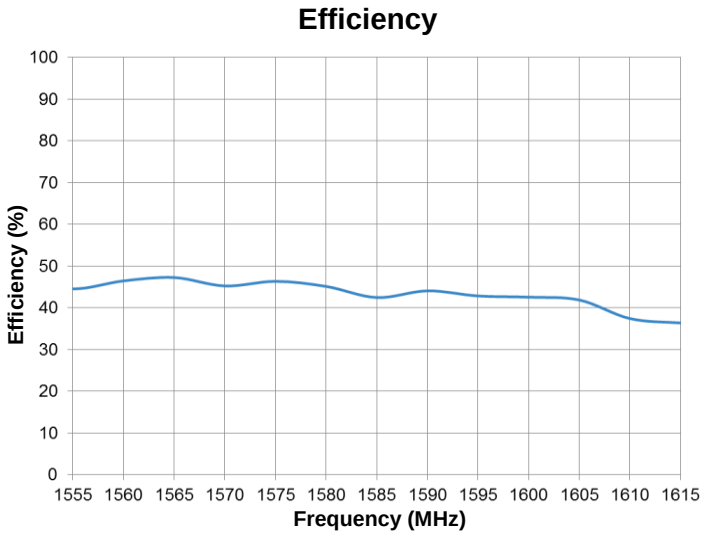
VSWR and Efficiency Plots (On-Ground)

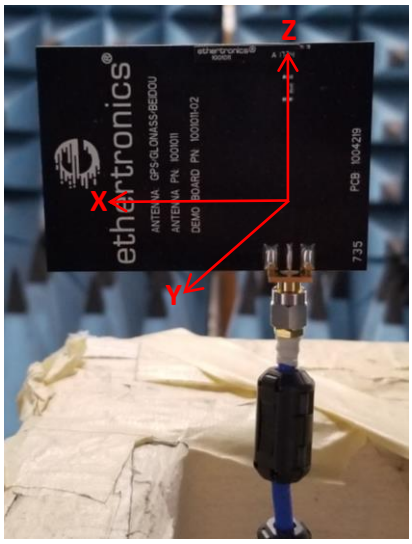
Typical Performances on 72 x 50 mm PCB

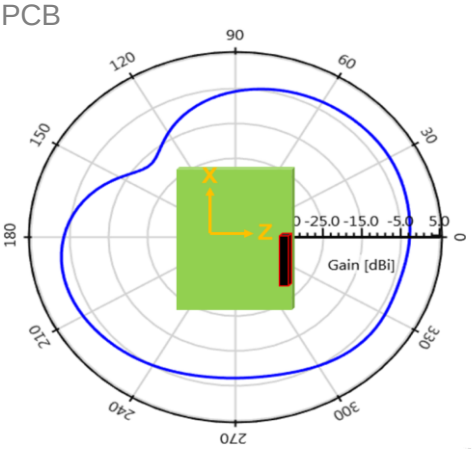


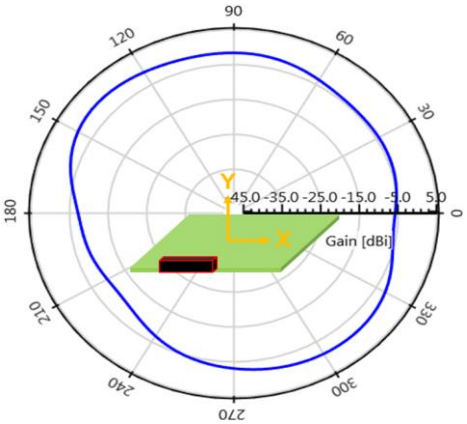


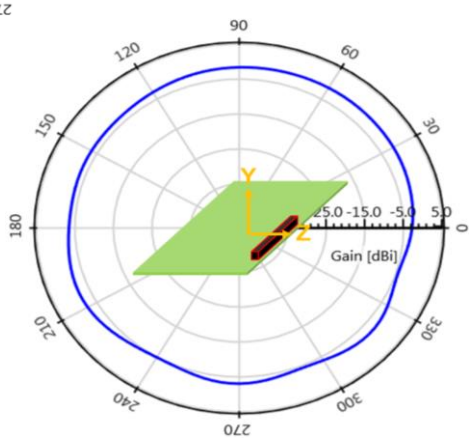
Antenna Radiation Patterns (On-Ground)

Typical Performances on 50 x 72 mm PCB
measured @ 1.575 GHz









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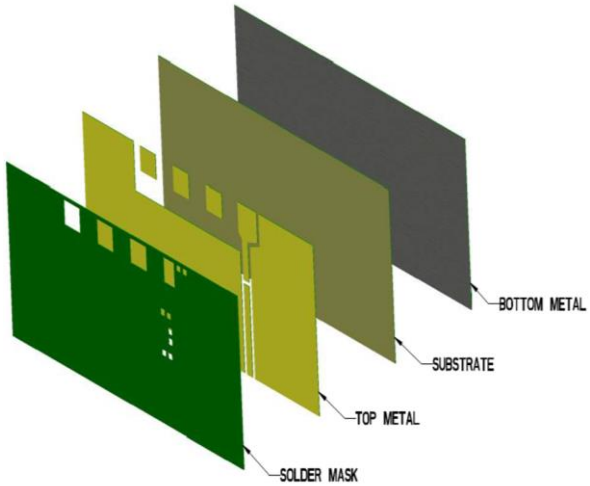
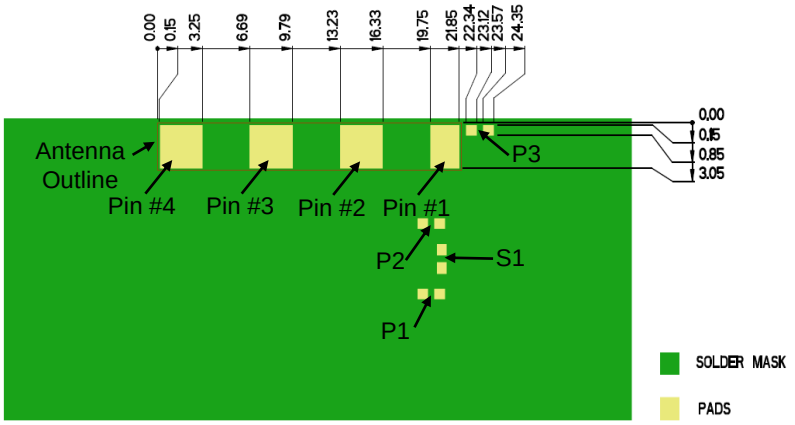
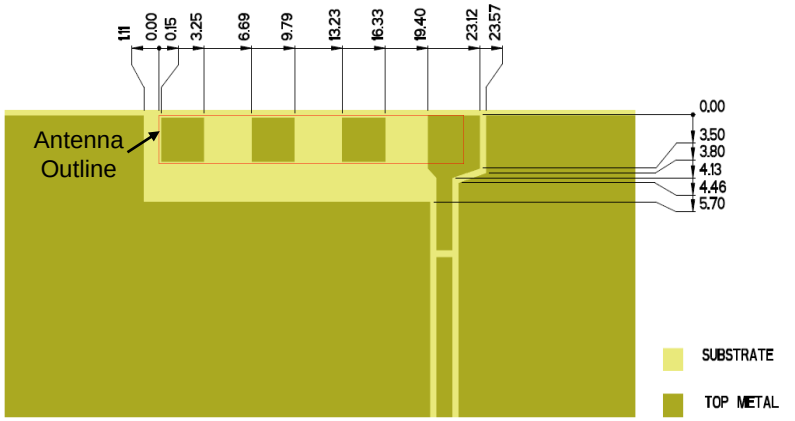
Antenna Layout (On-Ground)

Typical layout dimensions (mm)





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



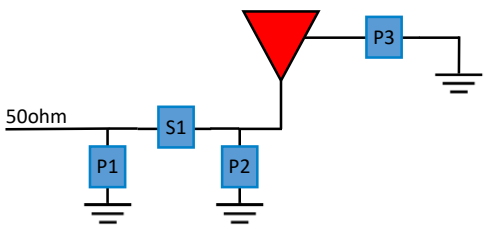
Pin Descriptions

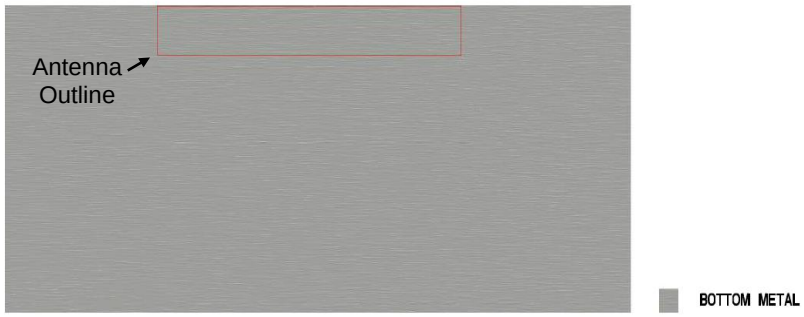
Pin#	Description
1	Feed
2	Dummy Pad
3	Dummy Pad
4	Dummy Pad

Matching Pi Network (Demo Board)

Component	Value	Tolerance
P1	2.4pF	±0.1pF
S1	0Ω	N/A
P2	DNI	N/A
P3	0Ω	N/A

*Actual matching values depend on customer design





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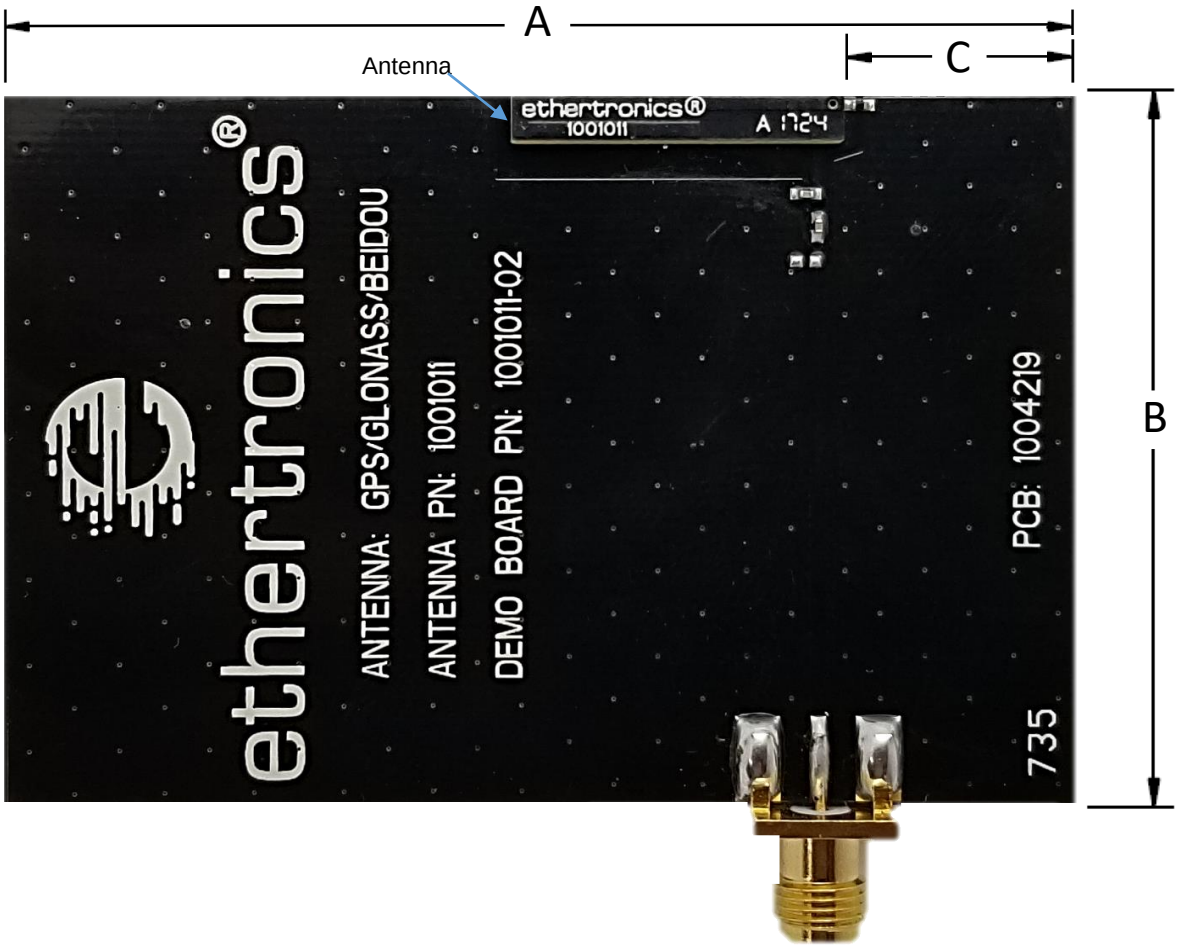
Antenna Demo Board

1001011-02 Off-Ground

Part Number	A (mm)	B (mm)	C (mm)
1001011-02	72.0	50.0	15.0



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Appendix 1 ISM Ethertronics' Embedded Antenna Specifications.
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Appendix 1

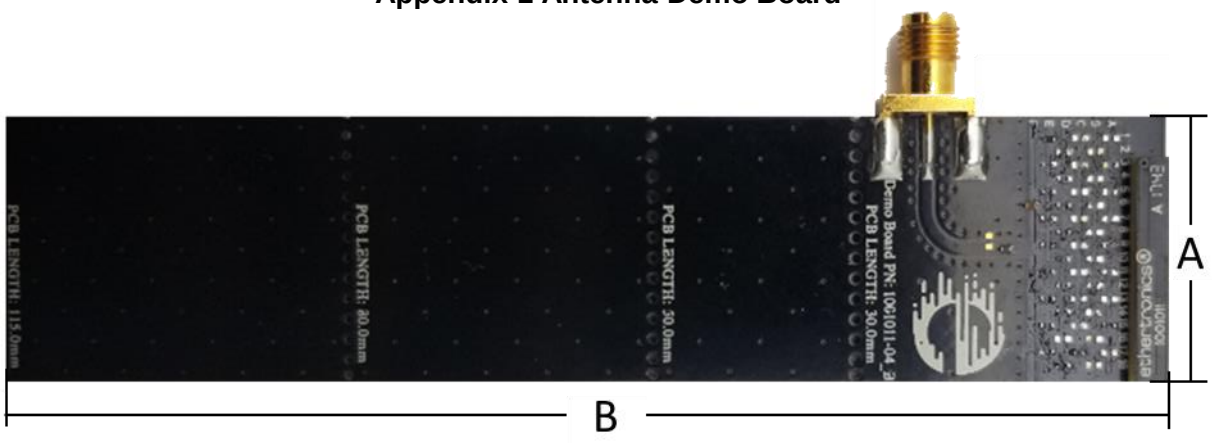
Appendix 1 gives instructions on how to match antenna through impedance matching network for ISM (868-928 MHz) only.

Frequency (MHz)	868 - 928
Mounting	Off Ground
Peak Gain (dBi)	1.0
Efficiency (%)	64
VSWR	<2.5:1
Feed Point Impedance	50 Ω unbalanced

*Data shown above has Appendix 1 matching applied on 115 x 26.5 mm pcb.

Part Number	A (mm)	B (mm)
1001011-04	26.5	115.0

***Appendix 1 Antenna Demo Board**



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Appendix 1 ISM Ethertronics' Embedded Antenna Specifications.
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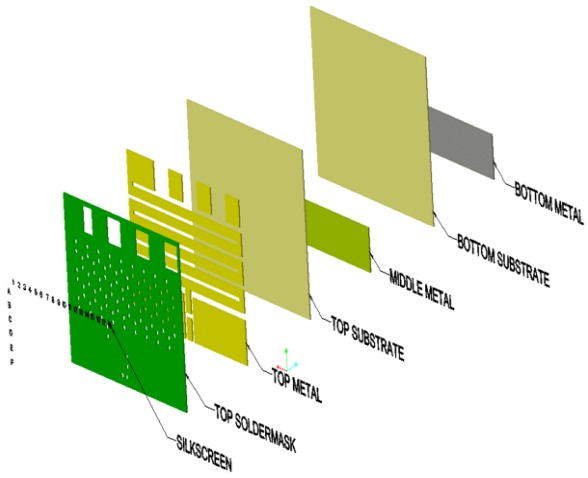
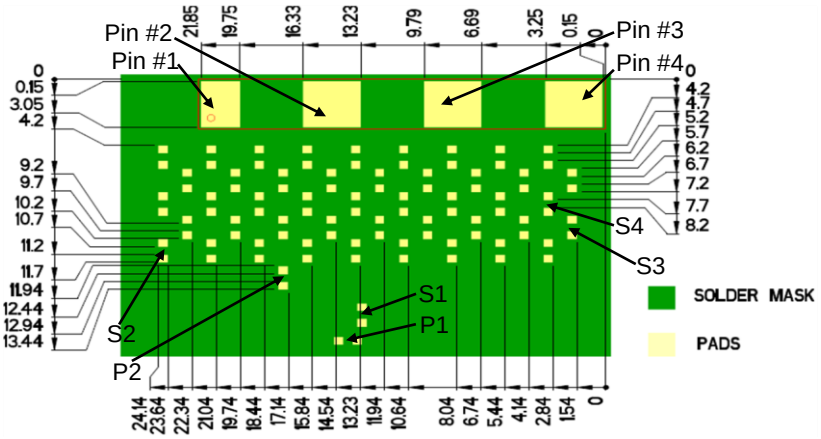
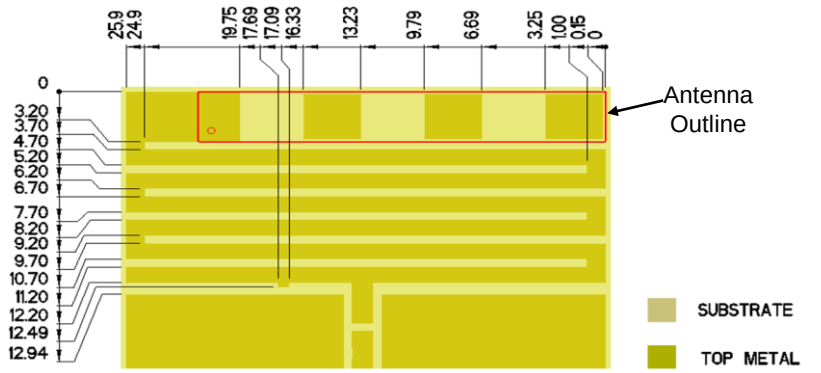
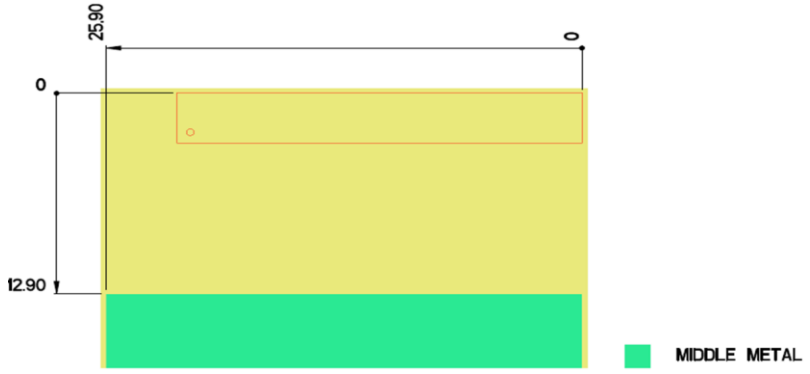
Appendix 1 ISM Antenna Layout (Off-Ground)

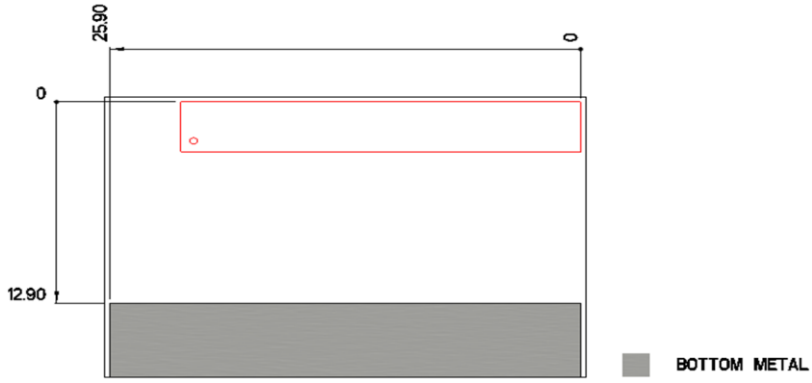
Typical layout dimensions (mm)











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

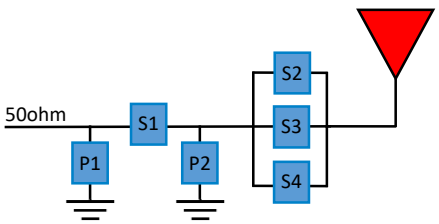
Pin Descriptions

Pin#	Description
1	Feed
2	Dummy Pad
3	Dummy Pad
4	Dummy Pad

Matching Pi Network (Demo Board)

Component	Value	Tolerance	Board Label
P1	DNI	N/A	
S1	0Ω	N/A	
P2	18nH	±2%	F6
S2	0Ω	N/A	E1
S3	0Ω	N/A	D18
S4	DNI	N/A	C17

*Actual matching values depend on customer design



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Appendix 1 ISM Ethertronics' Embedded Antenna Specifications.
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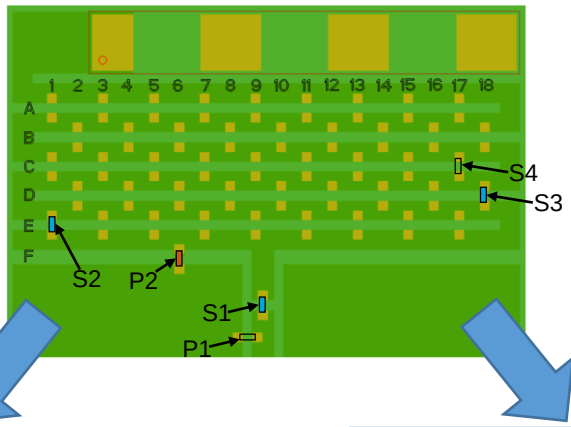
Appendix 1 ISM Tuning Structure (Off-Ground)

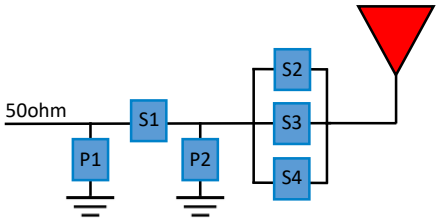
Typical layout dimensions (mm)

Baseline Configuration

Component	Value	Tolerance	Board Label
P1	DNI	N/A	
S1	0Ω	N/A	
P2	18nH	±2%	F6
S2	0Ω	N/A	E1
S3	0Ω	N/A	D18
S4	DNI	N/A	C17

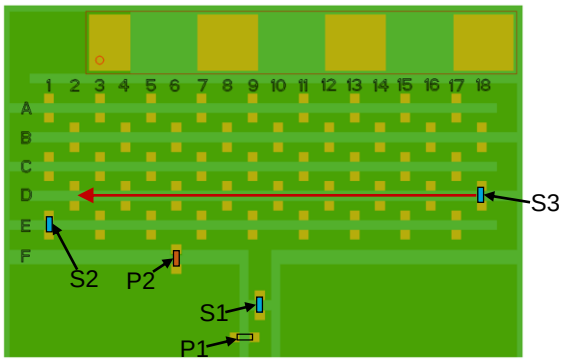
*Matching Pi Network (Baseline)

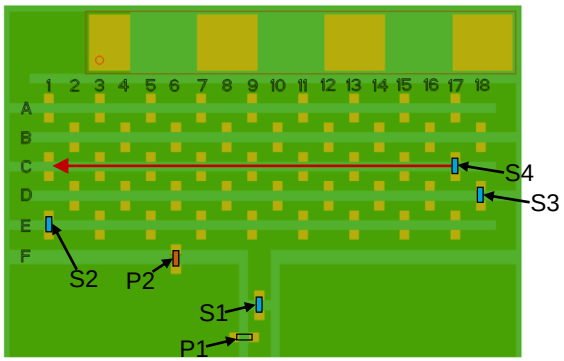




Tune Frequency Lower?	Outcome:
Move (S3) 0 Ohm from D18 towards D2 depending on requested antenna tuning. D18, D16, and D14 through D2 allows for on board tuning to shift frequency lower.	Antenna frequency will shift lower up to D2 tuning location

Tune Frequency Higher?	Outcome:
Keep (S3) 0 Ohm on D18. Add (S4) 0 Ohm on C17 to shift resonant frequency slightly higher. Continue to move C17 component towards C1 for more drastic tuning.	Antenna frequency will shift higher up to C1 tuning location





Component	Value	Tolerance	Board Label
P1	DNI	N/A	
S1	0Ω	N/A	
P2	18nH	±2%	F6
S2	0Ω	N/A	E1
S3	0Ω	N/A	D18-D2
S4	DNI	N/A	C17

Component	Value	Tolerance	Board Label
P1	DNI	N/A	
S1	0Ω	N/A	
P2	18nH	±2%	F6
S2	0Ω	N/A	E1
S3	0Ω	N/A	D18
S4	0Ω	N/A	C17- C1

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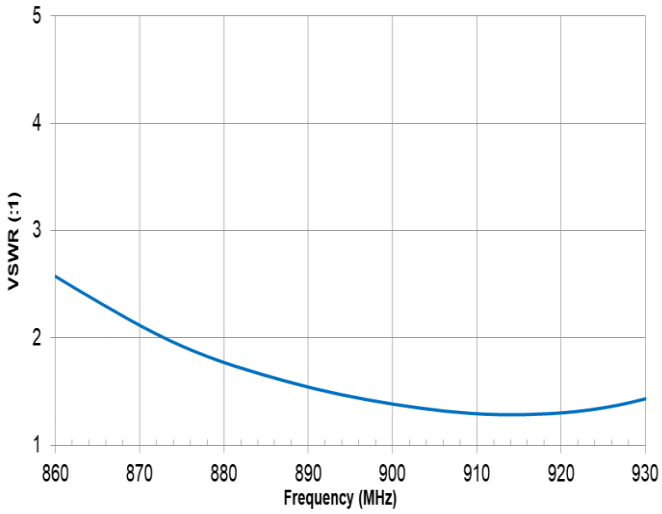
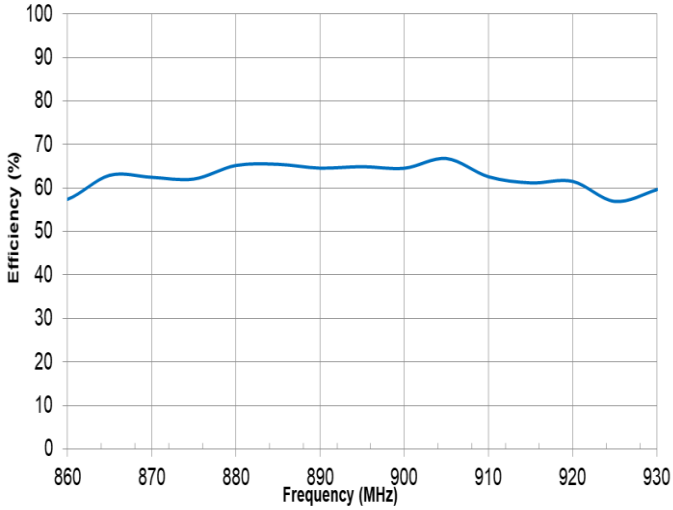
Appendix 1 VSWR and Efficiency Plots (Off-Ground)

Typical Performances on 115 x 26.5 mm PCB

VSWR

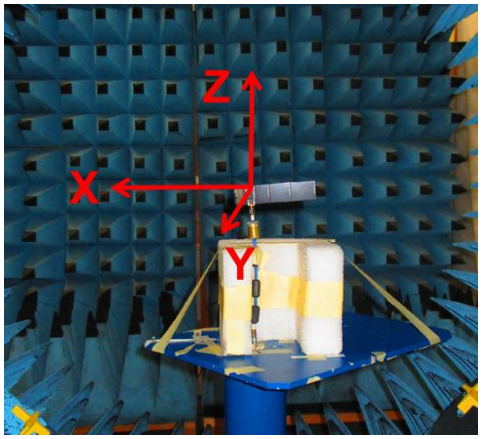


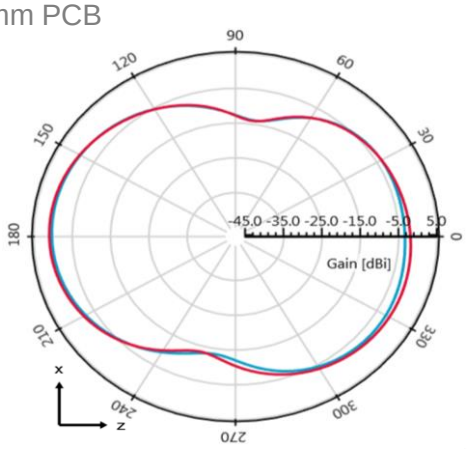
Efficiency

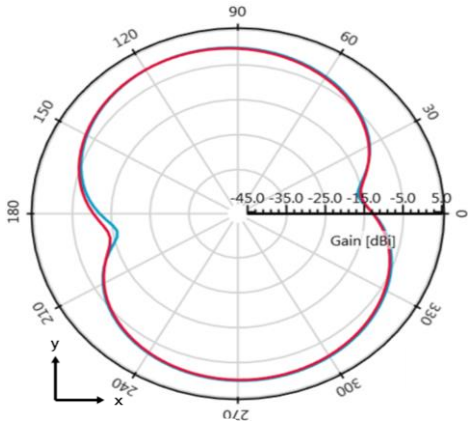


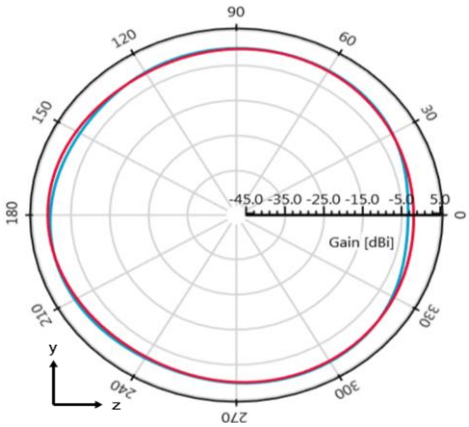
Antenna Radiation Patterns (Off-Ground)

Typical Performances on 115 x 26.5 mm PCB
measured @ 870, 910 MHZ









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