

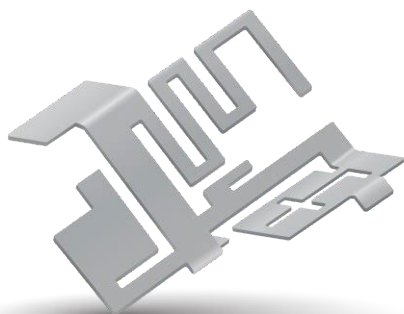


# Part No. 1002298

## Wi-Fi / BT Dual Band or V2X Stamped Metal Embedded Antenna

2.4 / 5 GHz or 5.850-5.925 GHz

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



\*V2X tuning offered in Appendix 1

### Stamped Metal Wi-Fi / BT / V2X Embedded Antenna

2.4 GHz; 5 GHz

#### KEY BENEFITS

##### Stay-in-Tune

KYOCERA AVX 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
- V2X
- OBD-II

KYOCERA AVX Stamped Metal 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 WLAN/V2X enabled devices, media players, routers, and other wireless devices.

#### Greater Flexibility

KYOCERA AVX first-in-class technology enables you to develop concept designs that are more advanced and that deliver superior performance in reception critical applications. The 1002298 can also achieve V2X performance with proper tuning shown on Appendix 1.

#### Electrical Specifications

Typical performance on 75 x 75 mm PCB

Frequency (GHz)	2.400 – 2.485	5.150 – 5.825	5.850– 5.925
Peak Gain	3.6 dBi	5.1 dBi	Refer to Appendix 1
Average Efficiency	78%	70%	
VSWR Match	2.0:1 max		
Feed Point Impedance	50 ohms unbalanced		
Polarization	Linear		
Power Handling	0.5 Watt CW		

#### Mechanical Specifications & Ordering Part Number

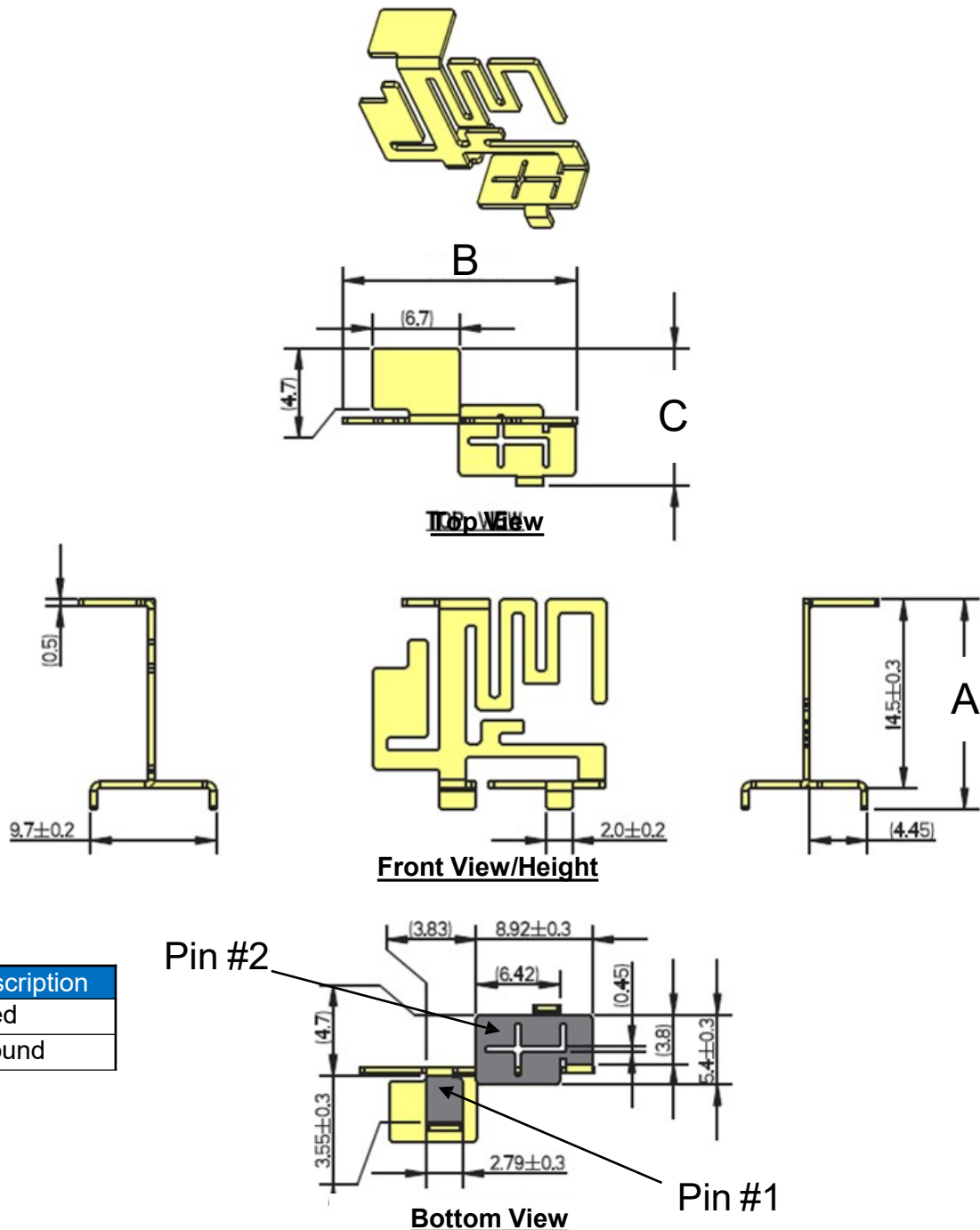
Ordering Part #	1002298
Dimensions (mm)	16.1 x 17.95 x 10.55
Mounting Type	SMT (P&P)
Weight (grams)	0.85
Packaging	Tape & Reel, 150 pcs/Reel
Demo Board	1003666-02

2.4 GHz / 5 GHz Stamped Metal KYOCERA AVX Embedded Antenna Specifications  
 KYOCERA AVX 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)
1002298	16.1 ± 0.4	17.95 ± 0.3	10.55 ± 0.4

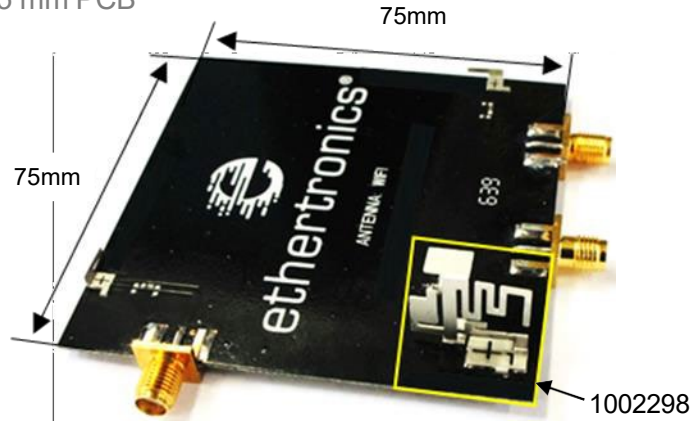


Pin#	Description
1	Feed
2	Ground

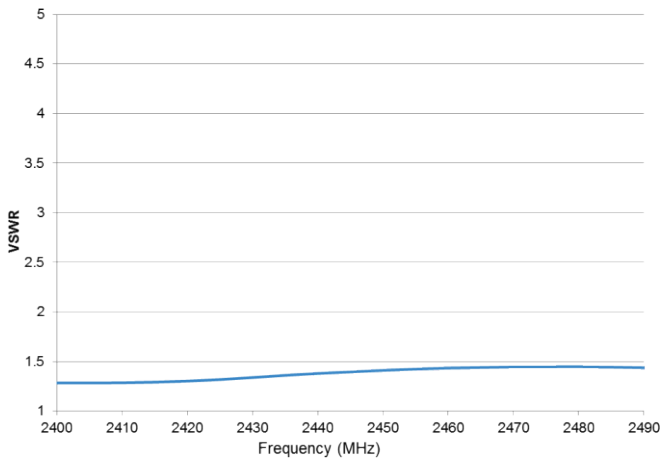
2.4 GHz / 5 GHz Stamped Metal KYOCERA AVX Embedded Antenna Specifications  
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**VSWR and Efficiency Plots**

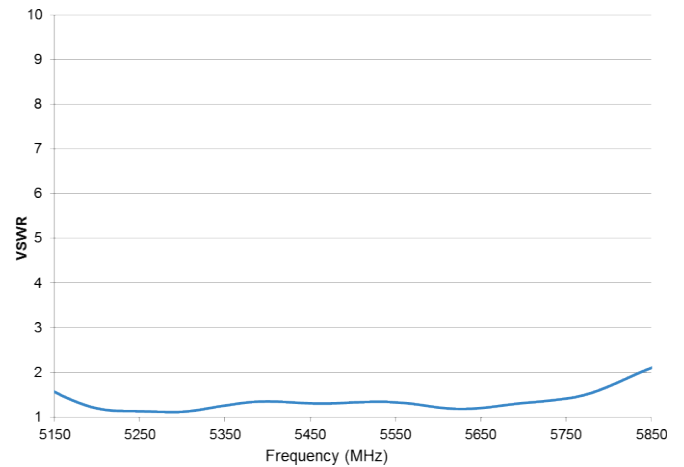
Typical performance on 75 x 75 mm PCB



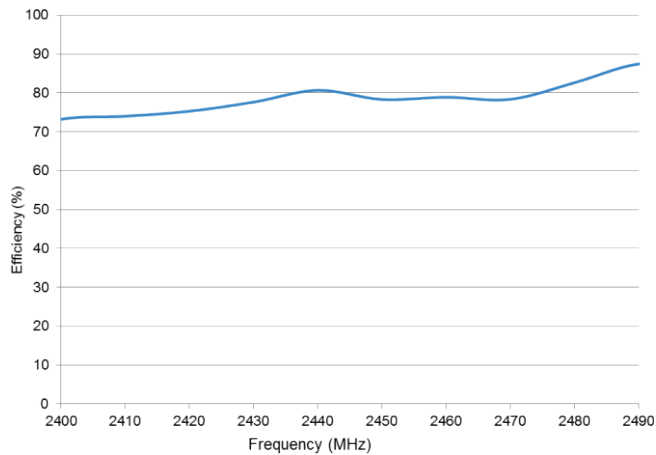
**2.4 GHz VSWR**



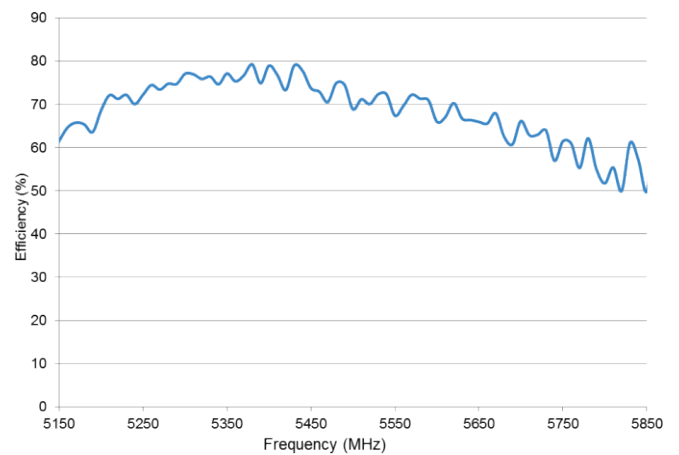
**5 GHz VSWR**



**2.4 GHz Efficiency**



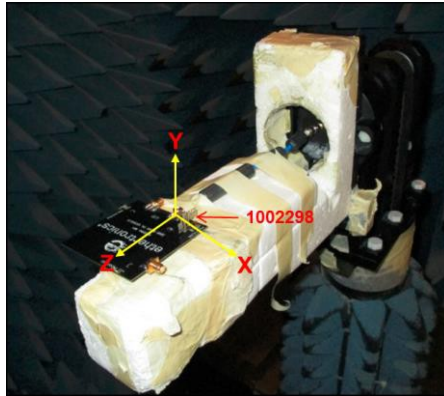
**5 GHz Efficiency**



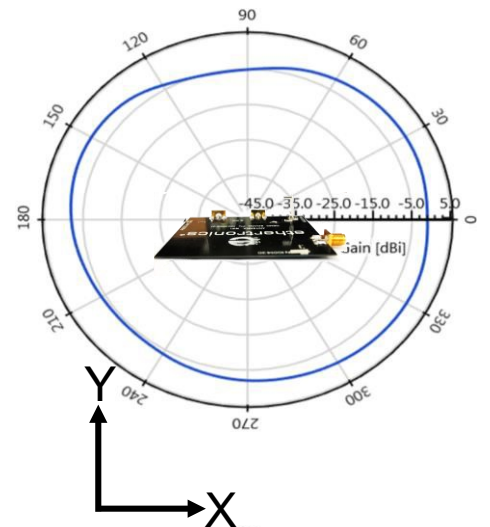
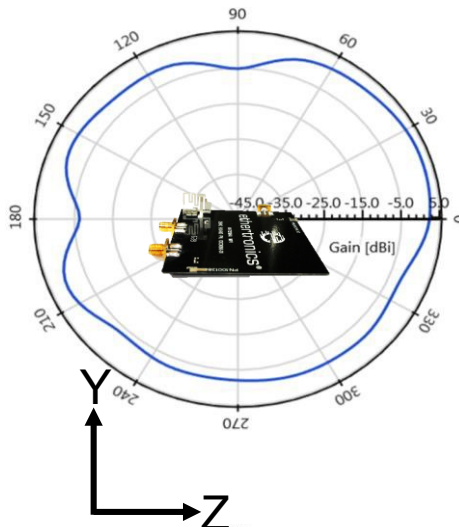
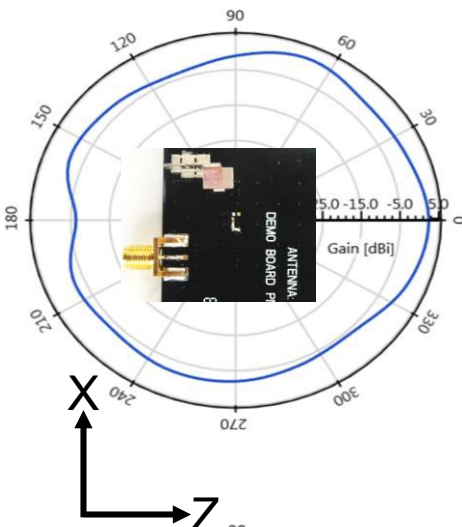
2.4 GHz / 5 GHz Stamped Metal KYOCERA AVX Embedded Antenna Specifications  
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**Antenna Radiation Patterns**

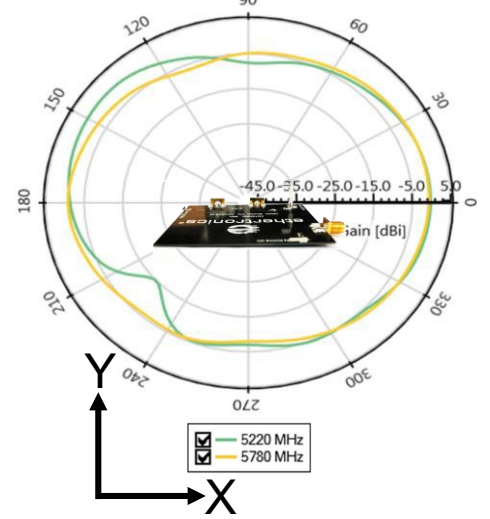
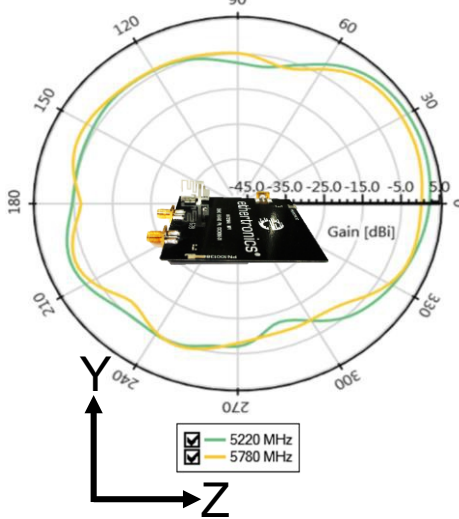
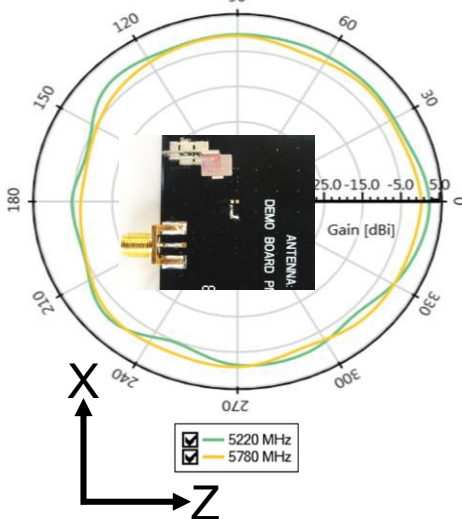
Typical performance on 75 x 75 mm PCB  
 Measured @ 2.450, 5.220, 5.780 GHz



Measured at 2.45 GHz



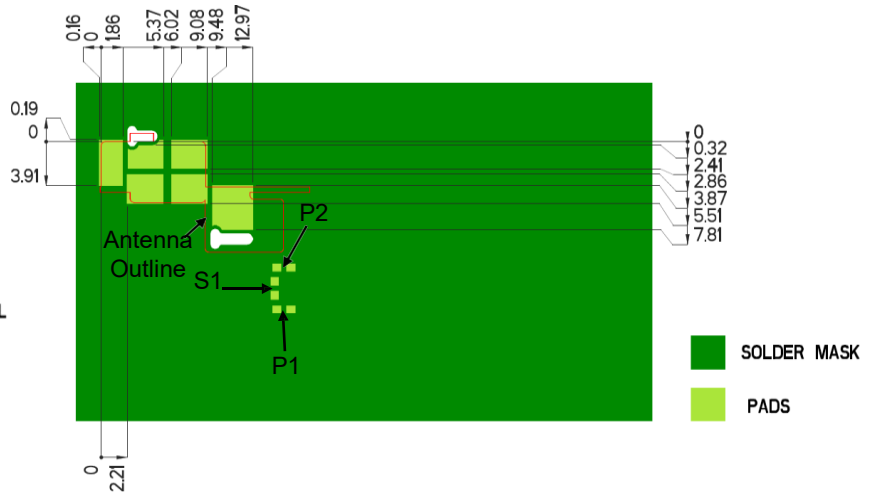
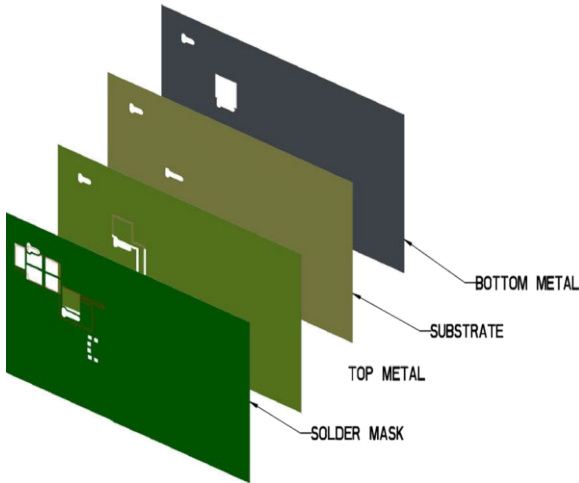
Measured at 5.220 GHz & 5.780 GHz



2.4 GHz / 5 GHz Stamped Metal KYOCERA AVX Embedded Antenna Specifications  
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Antenna Layout

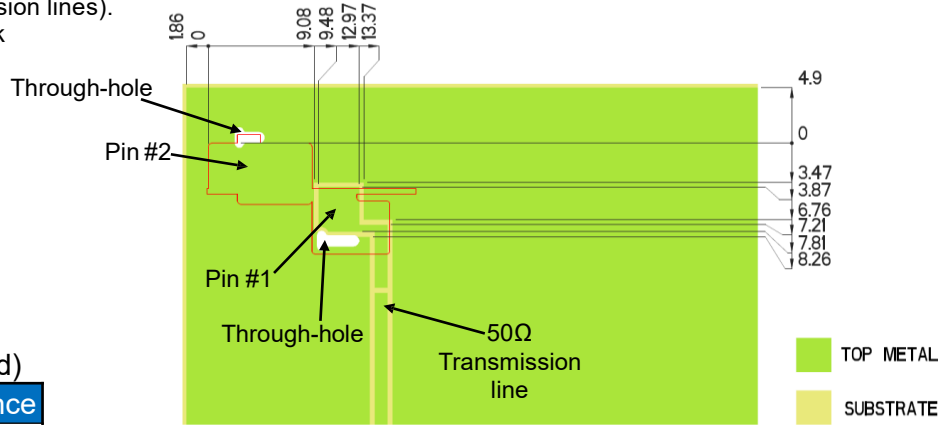
Typical layout dimensions (mm)



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

Pin Descriptions

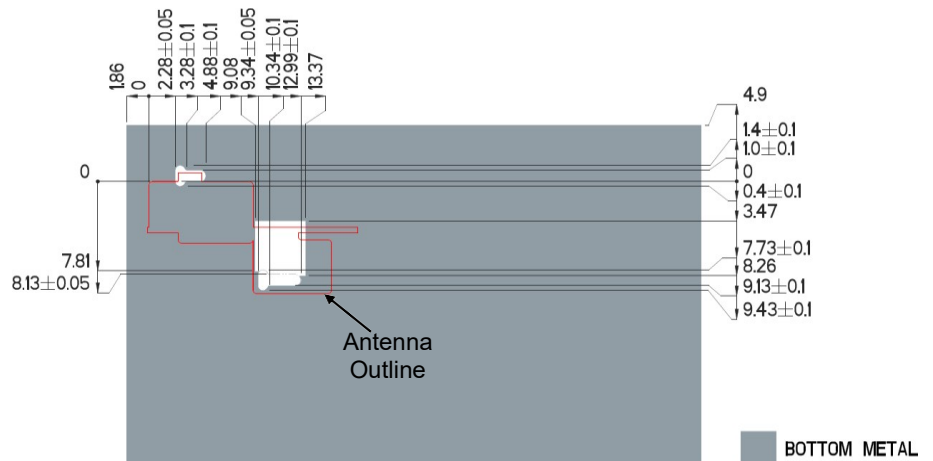
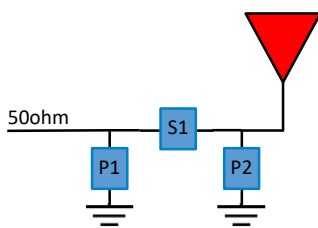
Pin#	Description
1	Feed
2	Ground



Matching Pi Network (Demo Board)

Component	Value	Tolerance
P1	DNI	N/A
S1	0.8nH	±0.1nH
P2	0.2pF	±0.05pF

\*Actual matching values depend on customer design

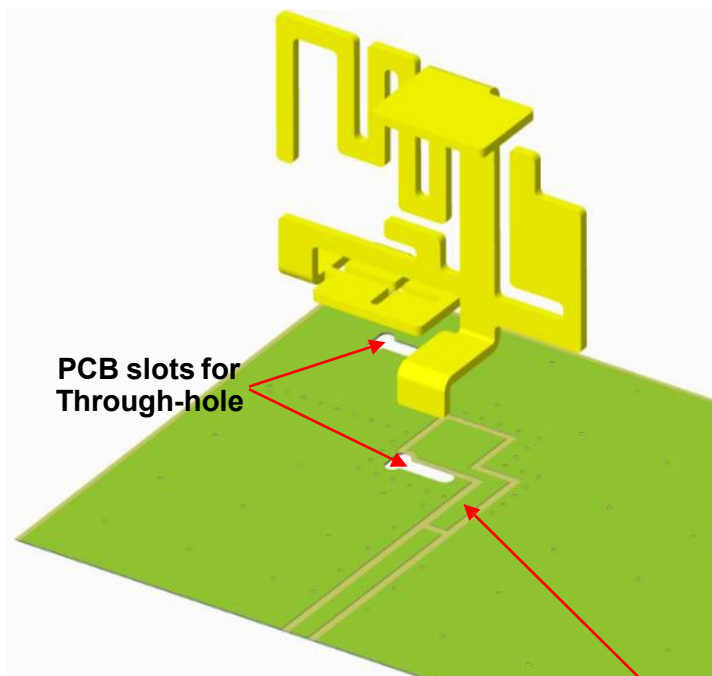


2.4 GHz / 5 GHz Stamped Metal KYOCERA AVX Embedded Antenna Specifications  
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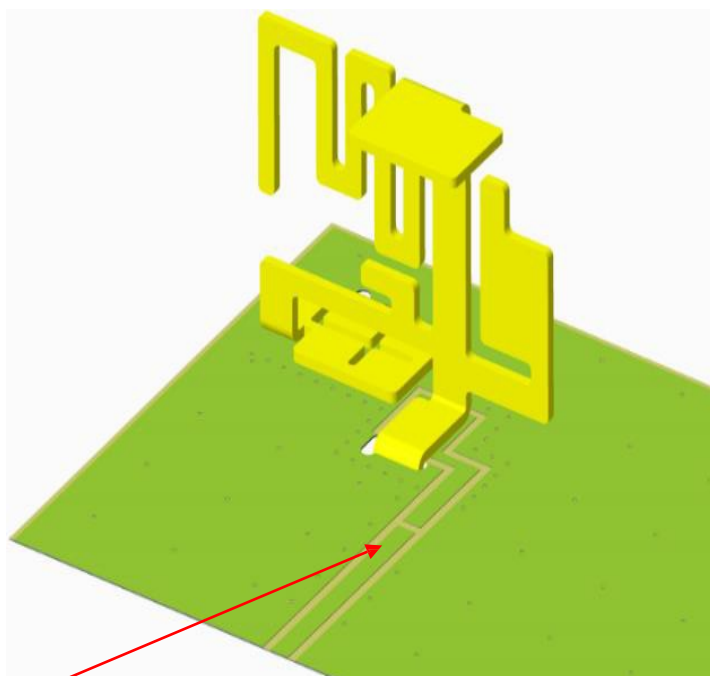
**Antenna Layout cont. (SMT Mounting, Through-hole for Stabilization)**

Typical layout dimensions (mm)

**Exploded View**



**Assembled View**



**A 50 ohm transmission line needs to be designed and connected at this location**

**Bottom View**

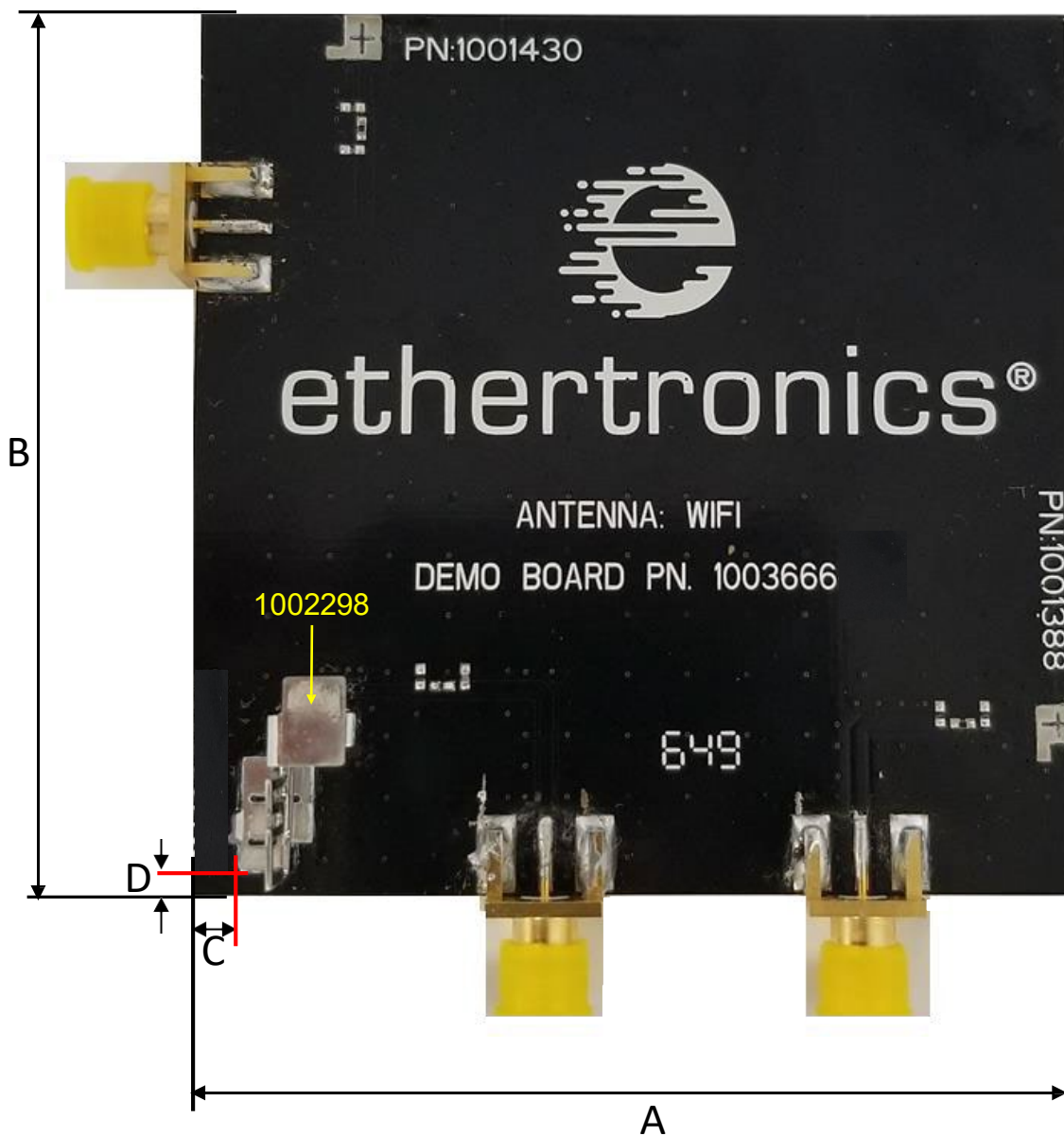


2.4 GHz / 5 GHz Stamped Metal KYOCERA AVX Embedded Antenna Specifications  
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### Antenna Demo Board

Typical layout dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)	D (mm)
1003666-02	75.0	75.0	4.9	1.86



Appendix 1 V2X 5 GHz Stamped Metal KYOCERA AVX Embedded Antenna Specifications  
 KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

# Appendix 1

Appendix 1 gives instructions on how to achieve V2X performances through impedance matching network.

**(5.850 – 5.925 GHz)**

Frequency (GHz)	5.850– 5.925
Peak Gain	3.8 dBi
Average Efficiency	64%
VSWR Match	2.0:1 max
Feed Point Impedance	50 ohms unbalanced
Polarization	Linear
Power Handling	0.5 Watt CW

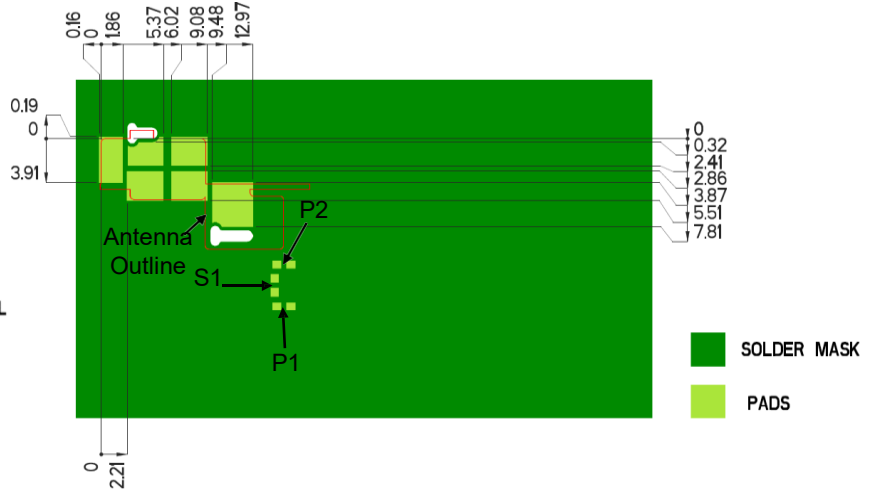
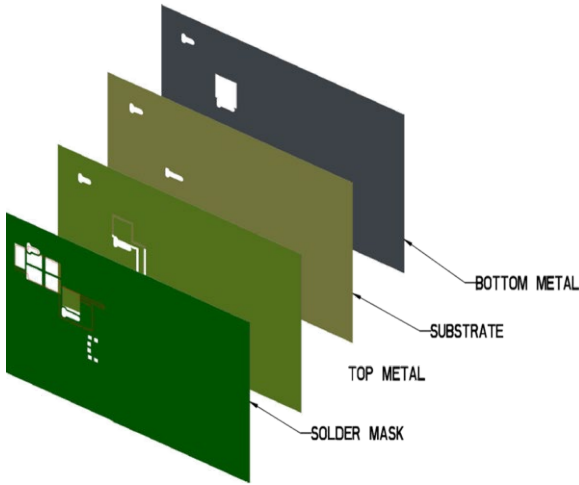
\*Data shown above has Appendix 1 matching applied on 75 x 75 mm pcb.



**Appendix 1 V2X 5 GHz Stamped Metal KYOCERA AVX Embedded Antenna Specifications**  
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**Appendix 1 Antenna Layout**

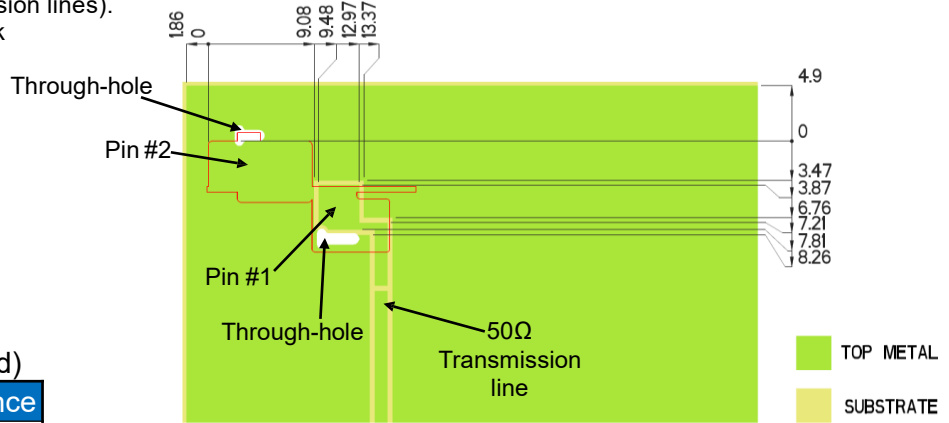
Typical layout dimensions (mm)



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

**Pin Descriptions**

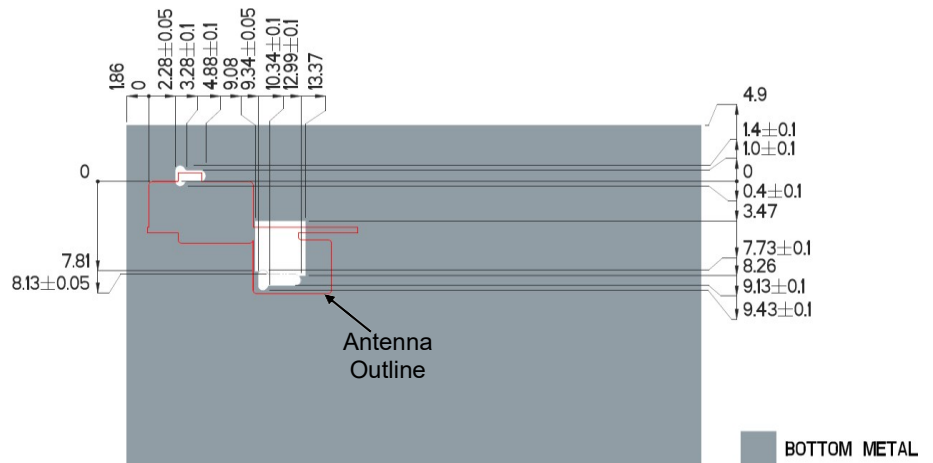
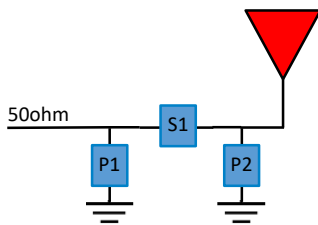
Pin#	Description
1	Feed
2	Ground



**Matching Pi Network (Demo Board)**

Component	Value	Tolerance
P1	DNI	N/A
S1	1.0nH	±0.1nH
P2	0.1pF	±0.02pF

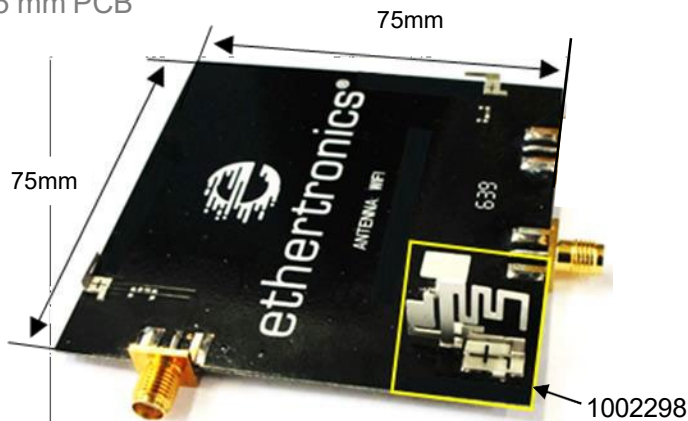
\*Actual matching values depend on customer design



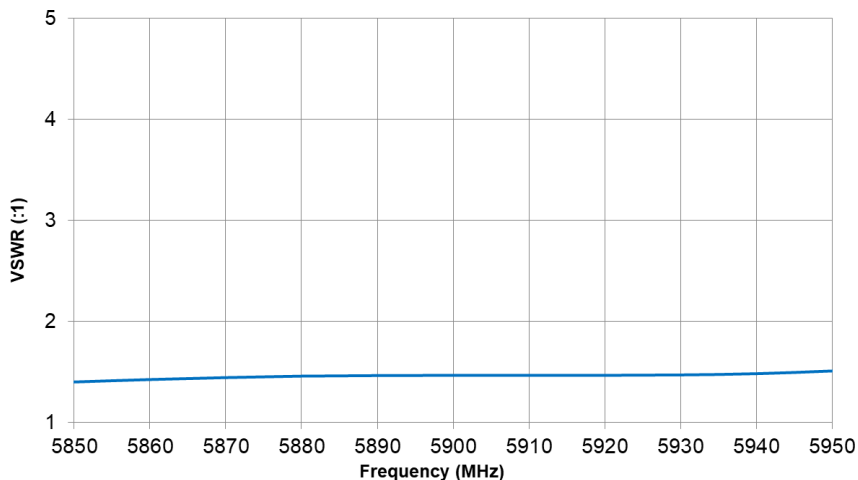
Appendix 1 V2X 5 GHz Stamped Metal KYOCERA AVX Embedded Antenna Specifications  
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Appendix 1 VSWR and Efficiency Plots

Typical performance on 75 x 75 mm PCB



V2X VSWR



V2X Efficiency

