

# Part No. M830520

## WLAN / BT / Zigbee Embedded Ceramic Antenna

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

Supports: Wi-Fi applications, Bluetooth, Zigbee, WLAN



KYOCERA AVX series of Ceramic 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 a full WIFI dual band enabled handheld devices, media players and other mobile devices.

### Real-World Performance and Implementation

Ceramic antennas may look alike on the outside, but the important difference is inside. Other antennas may contain simple PIFA or monopole designs that interact with their surroundings, complicating layout or changing performance with use position. KYOCERA AVX antennas utilize patented IMD technology to deliver a unique size and performance combination.

### Wi-Fi / BT / Zigbee Dual Band Ceramic 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.

##### Environmental Compliance

Products are the latest RoHS version compliant

#### APPLICATIONS

- Embedded design
- Cellular, Headsets, Tablets
- Gateway, Access Point
- Handheld
- Telematics
- Tracking
- Healthcare (FDA Class I)
- M2M, Industrial devices
- Smart Grid
- OBD-II

### Greater Flexibility

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

### Electrical Specifications

Typical Characteristics, on 40 x 80 mm PCB

Frequency	2400 – 2485 MHz	5150 – 5825 MHz
Peak Gain	1.0 dBi	2.6 dBi
Average Efficiency	62%	56%
VSWR Match	2.1:1 max	2.8:1 max
Feed Point Impedance	50 ohms unbalanced	
Polarization	Linear	
Power Handling	0.5 Watt CW	
Additional Resources	<a href="#">Download Application Note and Simulation Files</a>	

### Mechanical Specifications & Ordering Part Number

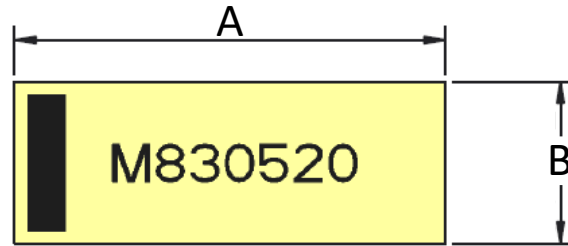
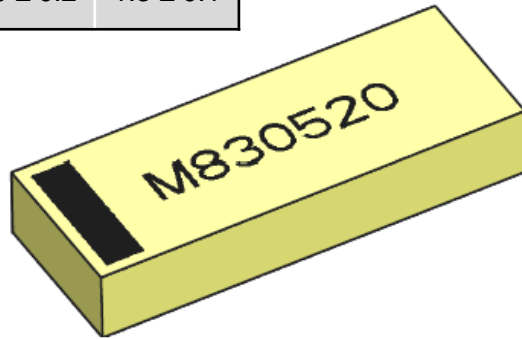
Ordering Part Number	M830520
Size (mm)	8.0 x 3.0 x 1.3
Mounting	SMT
Weight (grams)	0.2
Packaging	Tape & Reel, M830520 – 1,000 pieces per reel
Demo Board	M830520-01
Additional Resources	<a href="#">Download DXF, Gerber and 3D FIT Files</a>

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

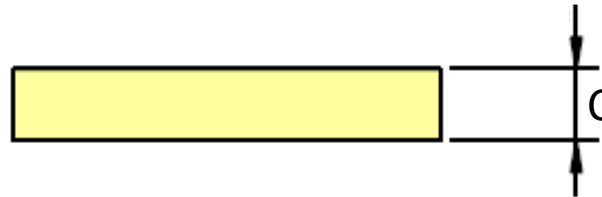
**Antenna Dimensions**

Typical antenna dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
M830520	8.0 ± 0.2	3.0 ± 0.2	1.3 ± 0.1

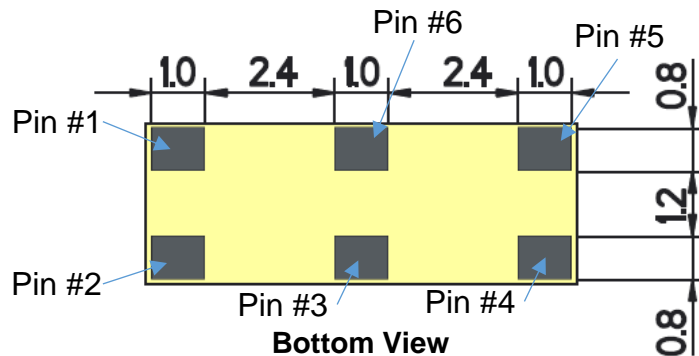


**Top View**



**Height**

Pin	Description
1	Feed
2	Ground
3	Dummy Pad
4	Dummy Pad
5	Dummy Pad
6	Dummy Pad

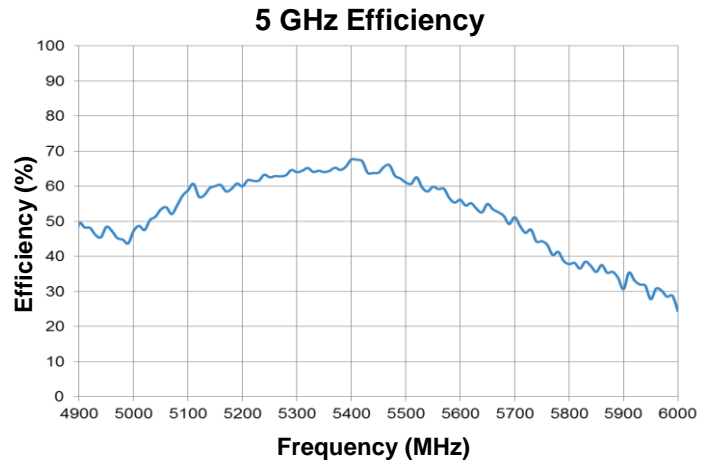
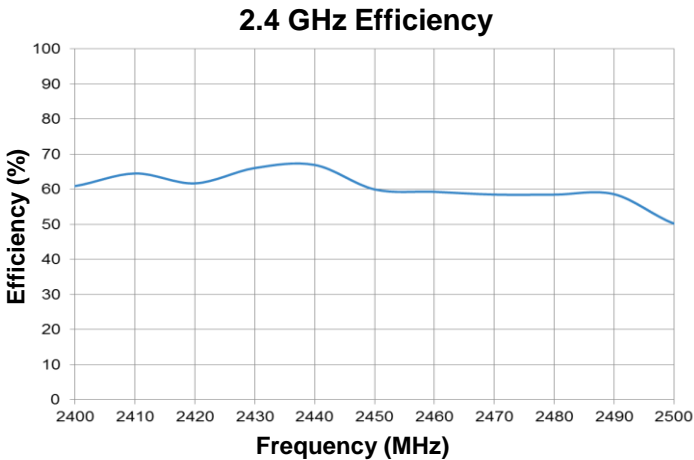
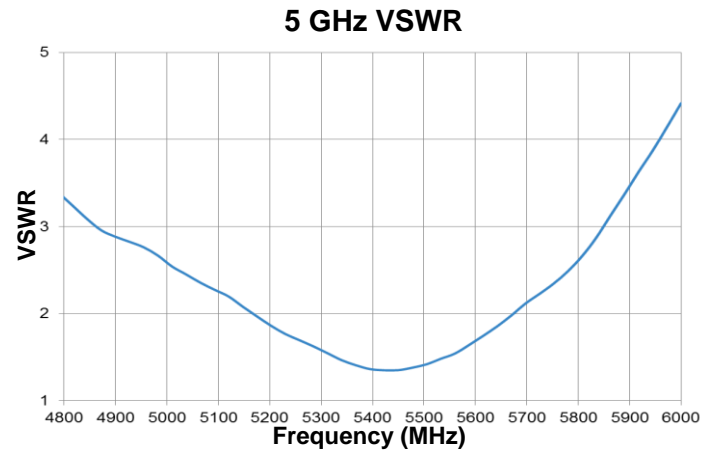
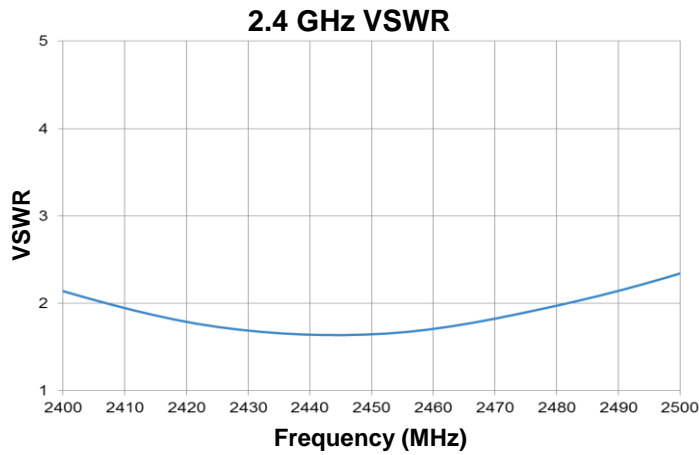


**Bottom View**

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**VSWR and Efficiency Plots (Off-Ground)**

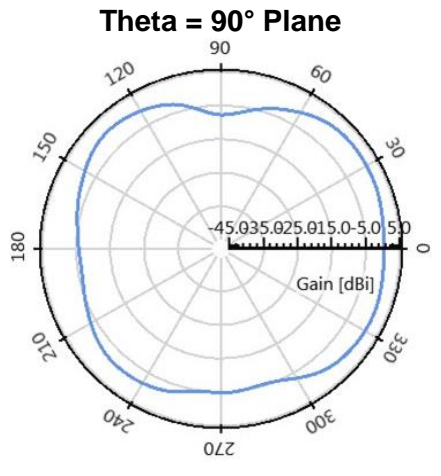
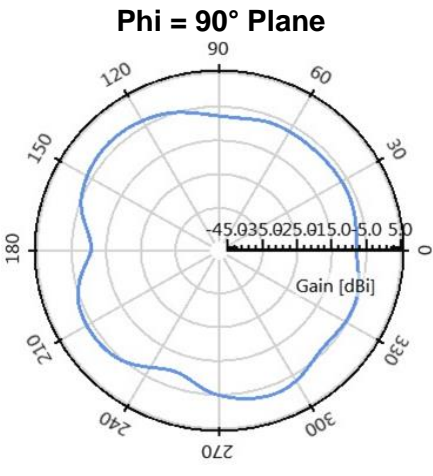
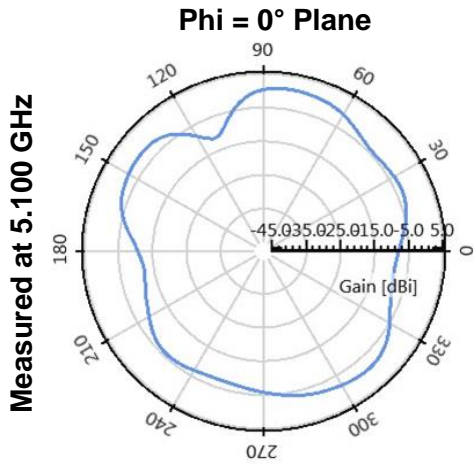
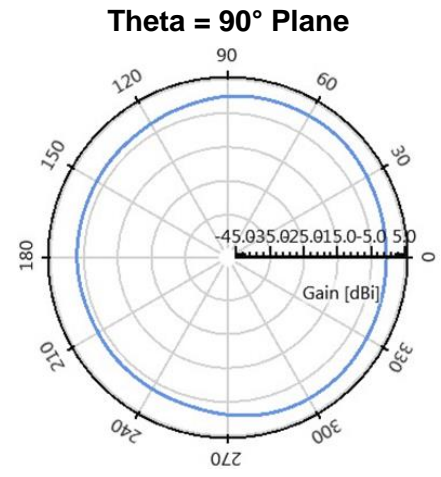
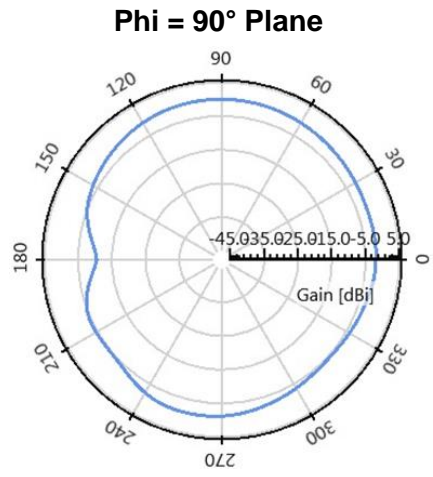
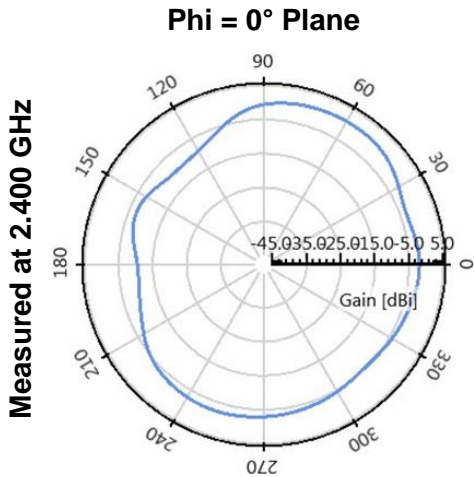
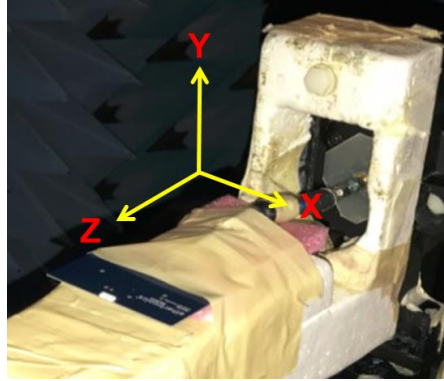
Typical performance on 40 x 80 mm PCB



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**Antenna Radiation Patterns**

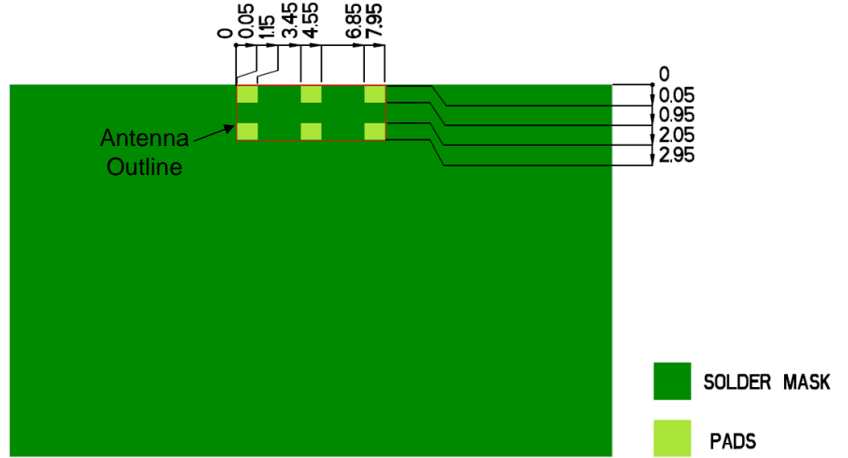
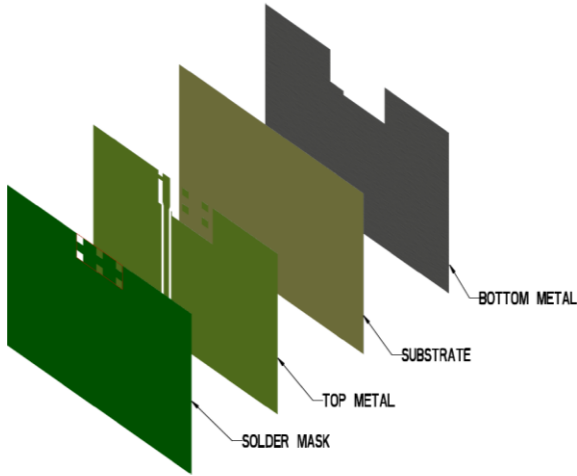
Typical performance on 40 x 80 mm PCB



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**Antenna Layout (Off-Ground)**

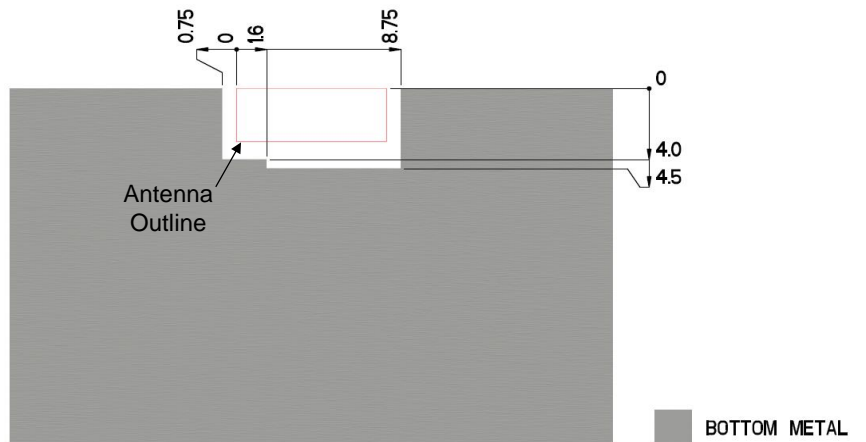
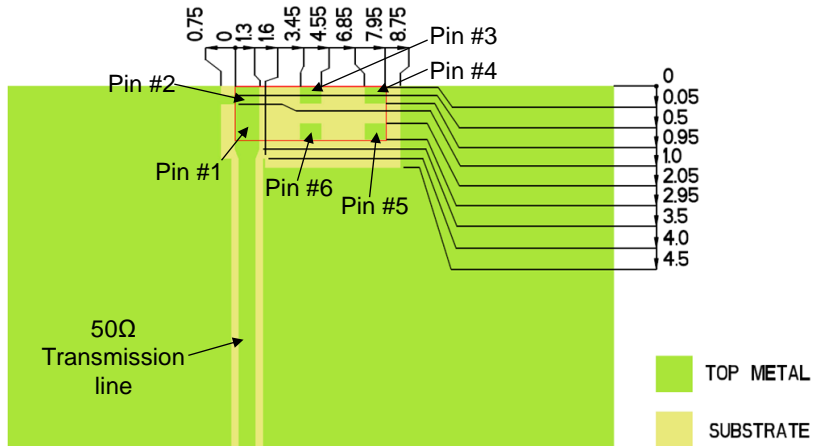
Typical layout dimensions (mm)



- Additional VIAS: Diam. 0.2mm to be placed around antenna, (no vias on transmission lines).
- Via holes must be covered by solder mask

**Pin Descriptions**

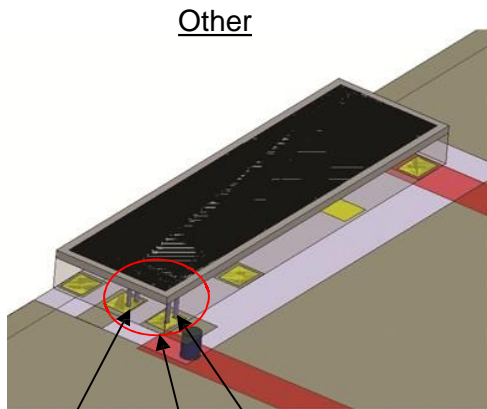
Pin#	Description
1	Feed
2	Ground
3	Dummy Pad
4	Dummy Pad
5	Dummy Pad
6	Dummy Pad



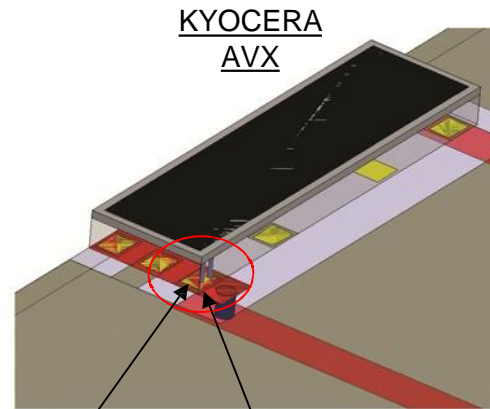
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**Antenna Layout Tips (General reference)**

Important, layout guidelines for correct operation of KYOCERA AVX Ceramic Antennas. Please read guidelines below before laying out the antenna in a device. Figure 1 shows the typical antenna layout. Figure 2 shows KYOCERA AVX antenna layout.



Other  
 Shorting pin    Feed pin  
 Antenna tuning loop:  
 Figure 1  
 Typical Antenna Layout



KYOCERA  
 AVX  
 Shorting pin and feed pin are shared in  
 KYOCERA AVX ceramic antennas  
 Figure 2  
 KYOCERA AVX Antenna Layout  
 (Required)

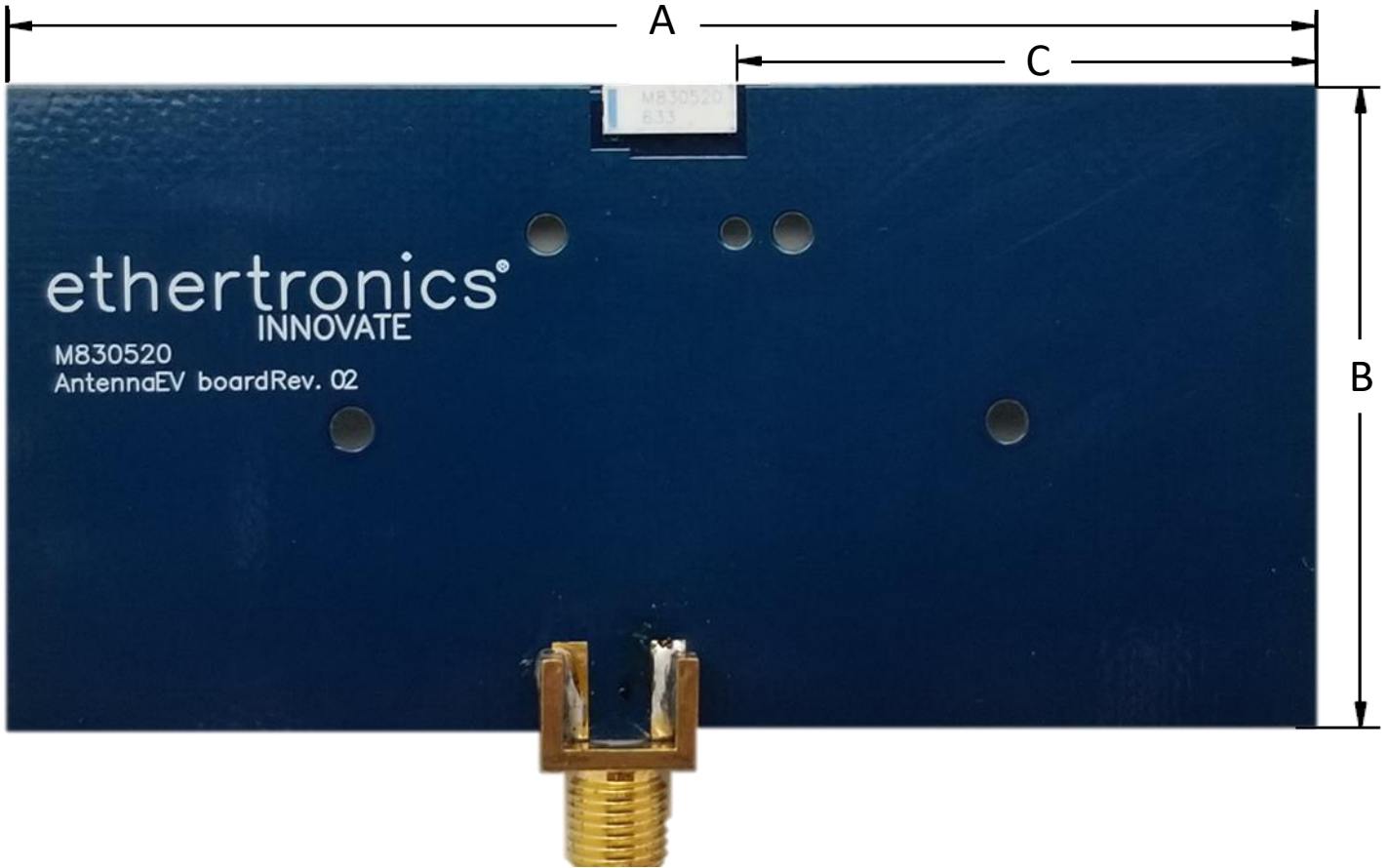
- The antenna tuning loop is formed by the PCB layout.
- The feed pin and shorting pin are combined because it requires very close proximity to achieve more band- width.

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**Antenna Demo Board**

Typical layout dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
M830520-01	80.0	40.0	36.0



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### Additional Resources – M830520

**Simulation Files:**

HFSS (23 R1): [https://www.kyocera-avx.com/download/antennas/ansys-hfss/23r1/M830520\\_08232022\\_23r1.zip](https://www.kyocera-avx.com/download/antennas/ansys-hfss/23r1/M830520_08232022_23r1.zip)

HFSS (19R3-22R2): [https://www.kyocera-avx.com/download/antennas/ansys-hfss/19r3/M830520\\_08232022\\_19r3.zip](https://www.kyocera-avx.com/download/antennas/ansys-hfss/19r3/M830520_08232022_19r3.zip)

CST : [https://www.kyocera-avx.com/download/antennas/CST/M830520\\_CST\\_071024\\_23r1.zip](https://www.kyocera-avx.com/download/antennas/CST/M830520_CST_071024_23r1.zip)

**Application Note:**

[https://www.kyocera-avx.com/docs/techinfo/ApplicationNotes/Antenna-AppNotes/AVX-E\\_AppNote-M-Series.pdf](https://www.kyocera-avx.com/docs/techinfo/ApplicationNotes/Antenna-AppNotes/AVX-E_AppNote-M-Series.pdf)

**3D FIT File:**

[https://www.kyocera-avx.com/download/antennas/ME-FIT/M830520\\_ME\\_fit.zip](https://www.kyocera-avx.com/download/antennas/ME-FIT/M830520_ME_fit.zip)

**DXF File:**

[https://www.kyocera-avx.com/download/antennas/3D-DXF/M830520\\_3D-DXF.zip](https://www.kyocera-avx.com/download/antennas/3D-DXF/M830520_3D-DXF.zip)

**Gerber File:**

[https://www.kyocera-avx.com/download/antennas/GERBER/M830520\\_GERBERS.zip](https://www.kyocera-avx.com/download/antennas/GERBER/M830520_GERBERS.zip)