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

Wi-Fi / BT / Zigbee Dual Band Ceramic Antenna

2.4 GHz; 5 GHz

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.

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	Download Application Note and Simulation Files	

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	Download DXF, Gerber and 3D FIT Files

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

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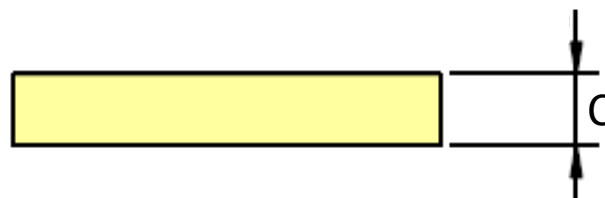**KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.**

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
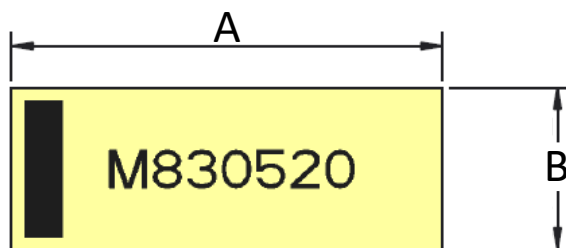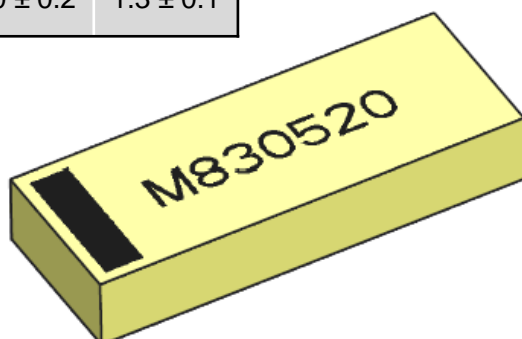
Top View

Height

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

Pin #6   Pin #5

1.0 2.4 1.0 2.4 1.0   0.8

Pin #1

1.2

Pin #2

Pin #3   Pin #4   0.8
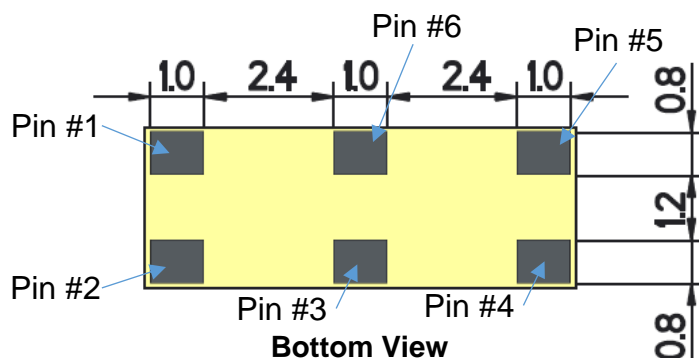
Bottom View

2.4 / 5 GHz KYOCERA AVX Embedded Antenna Specifications
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.
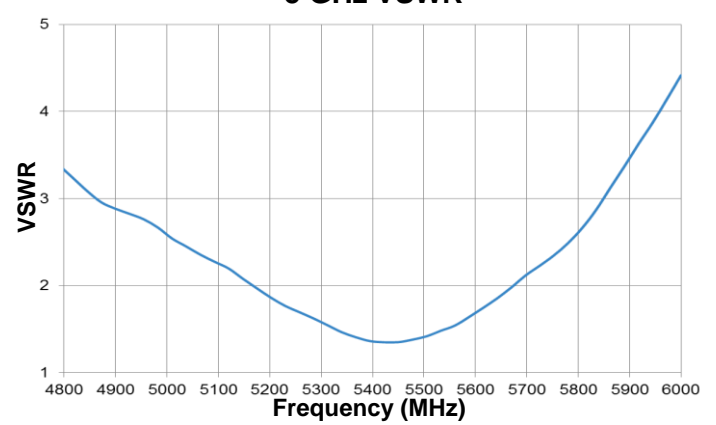
VSWR and Efficiency Plots (Off-Ground)
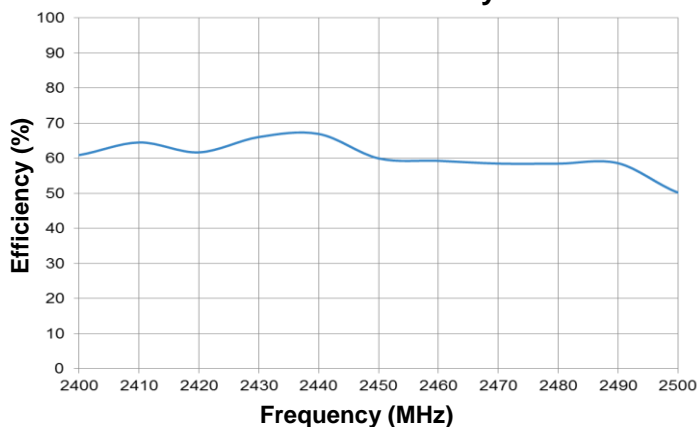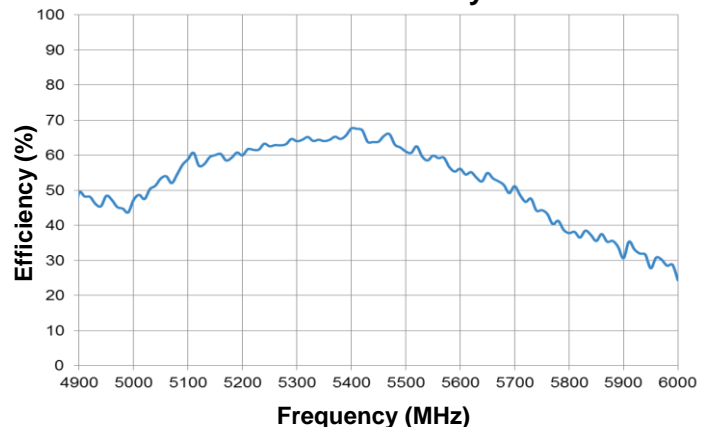Typical performance on 40 x 80 mm PCB

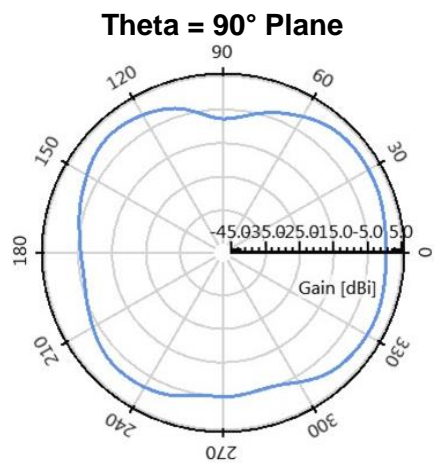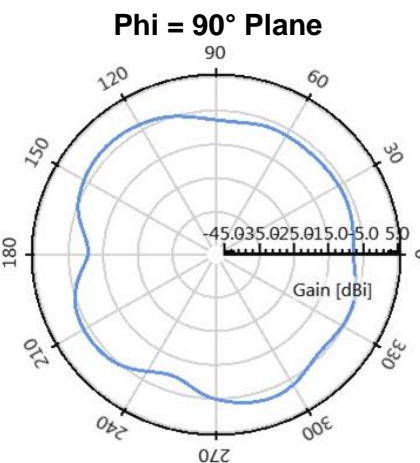### 2.4 GHz VSWR
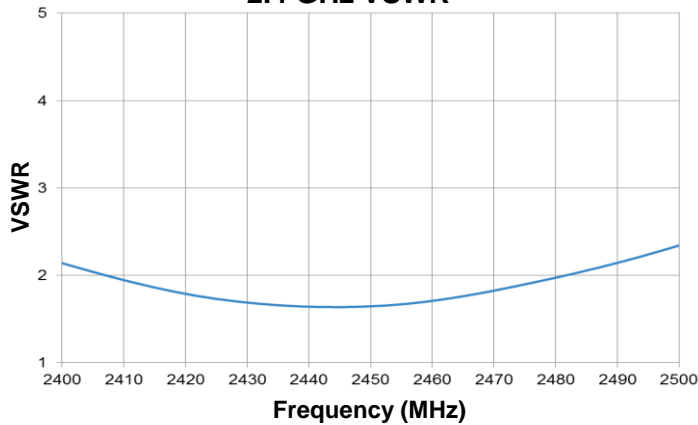
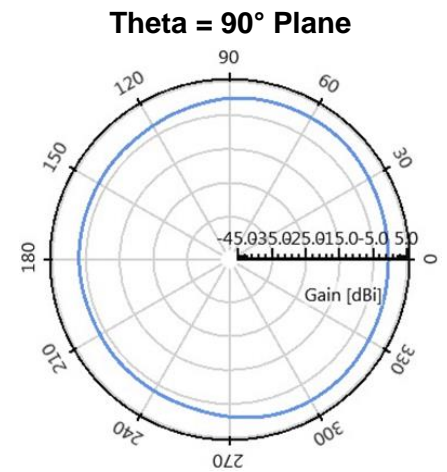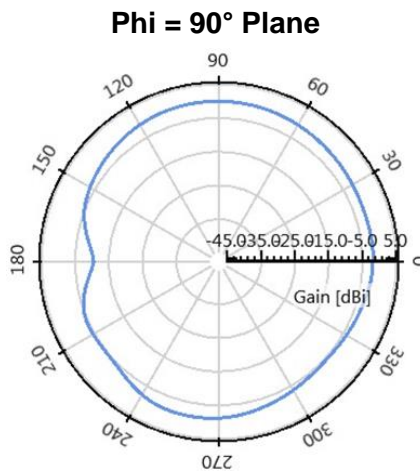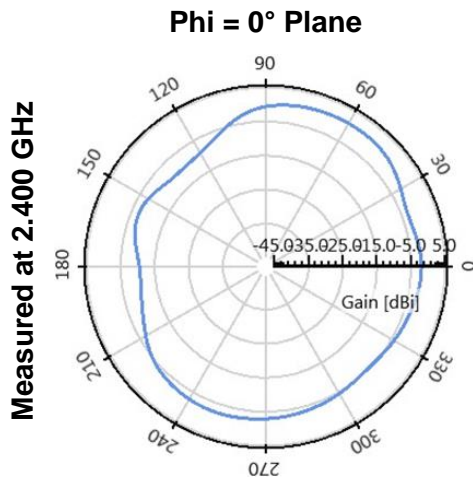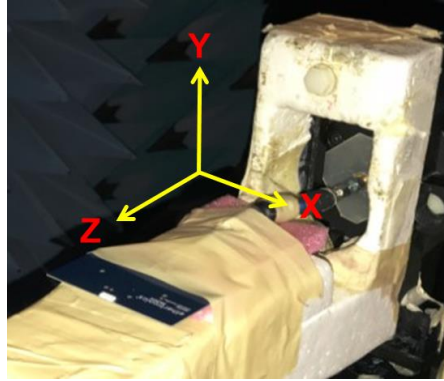### 5 GHz VSWR

2.4 GHz Efficiency

5 GHz Efficiency

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 Radiation Patterns
Typical performance on 40 x 80 mm PCB
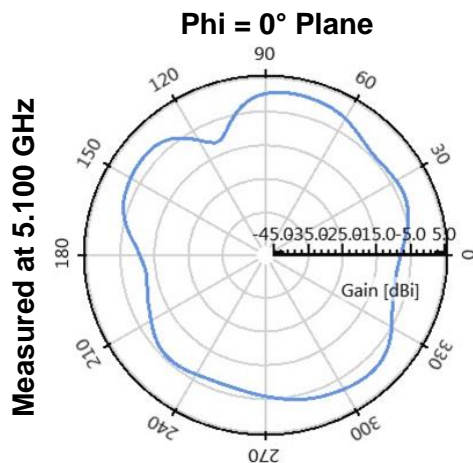
Measured at 2.400 GHz

Phi = 0° Plane	Phi = 90° Plane	Theta = 90° Plane

Measured at 5.100 GHz

Phi = 0° Plane	Phi = 90° Plane	Theta = 90° Plane

2.4 / 5 GHz KYOCERA AVX Embedded Antenna Specifications
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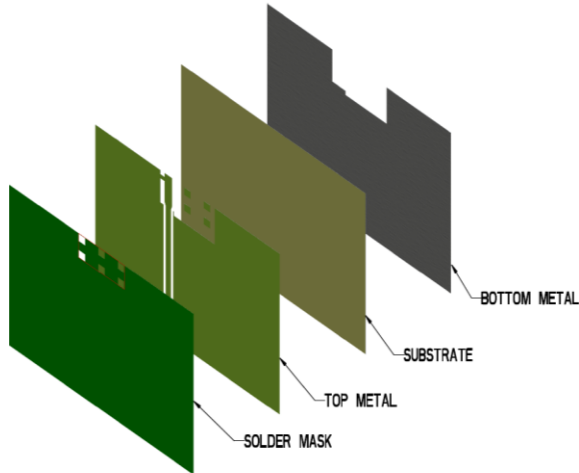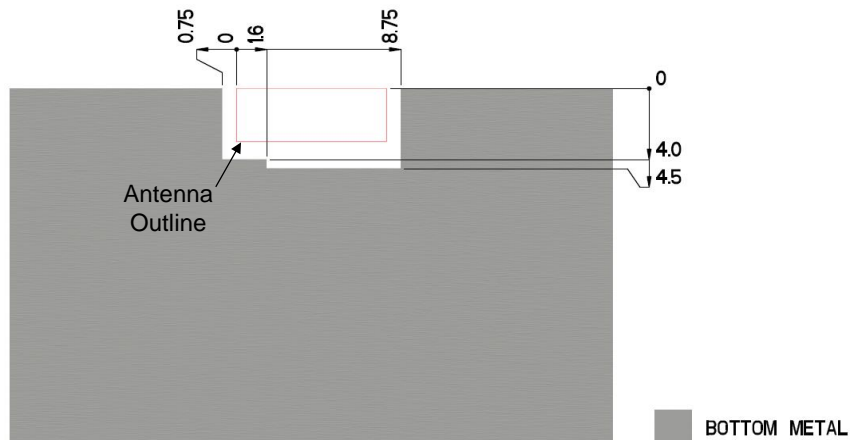
Antenna Layout (Off-Ground)
Typical layout dimensions (mm)

Antenna Outline

SOLDER MASK

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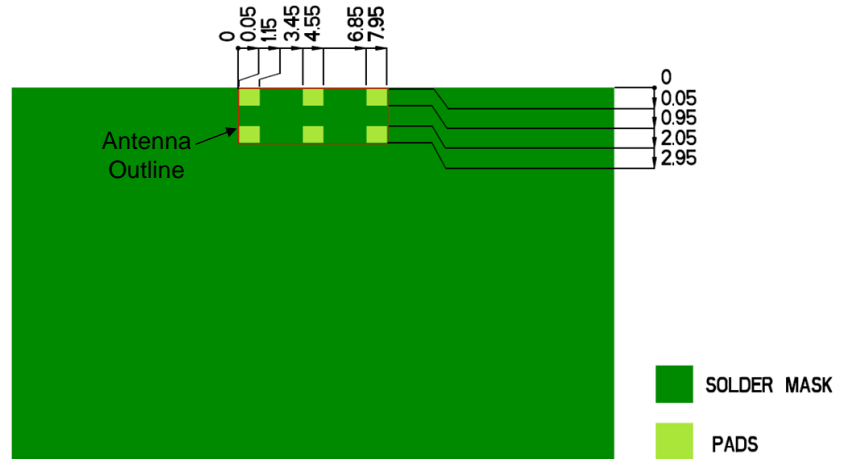
- Additional VIAS: Diam. 0.2mm to be placed around antenna, (no vias on transmission lines).
- Via holes must be covered by solder mask

Pin Descriptions

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

Pin #1
Pin #2
Pin #3
Pin #4
Pin #5
Pin #6

50Ω Transmission line

TOP METAL

SUBSTRATE

Antenna Outline

BOTTOM METAL

2.4 / 5 GHz KYOCERA AVX Embedded Antenna Specifications
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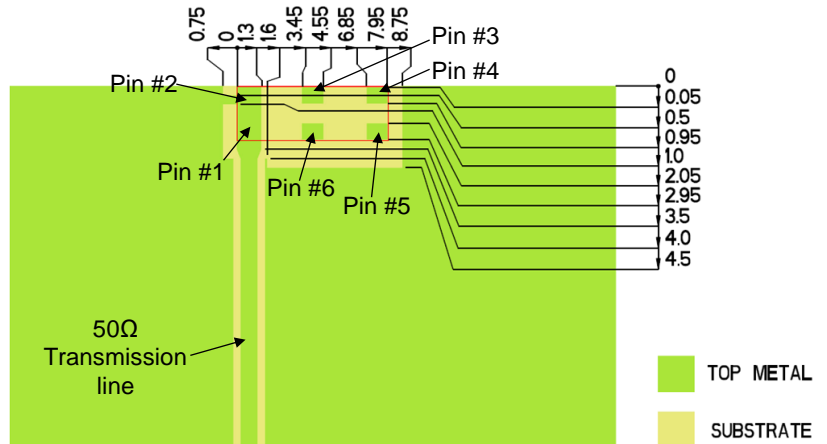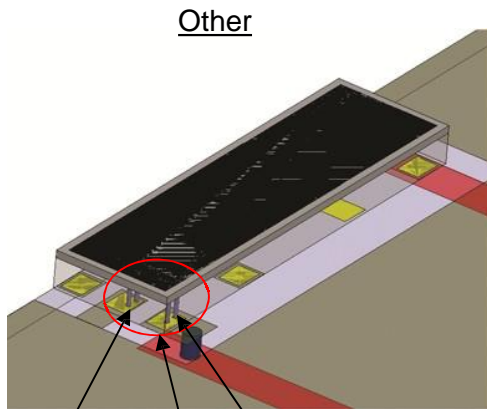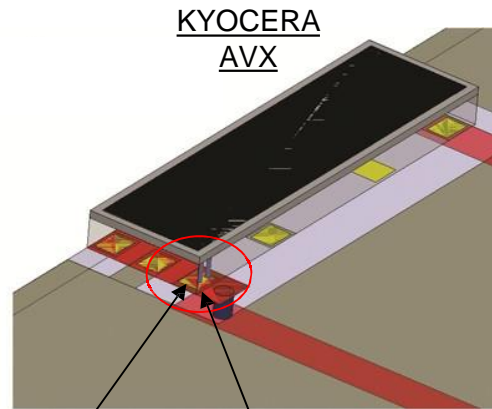
Antenna Layout Tips (General reference)

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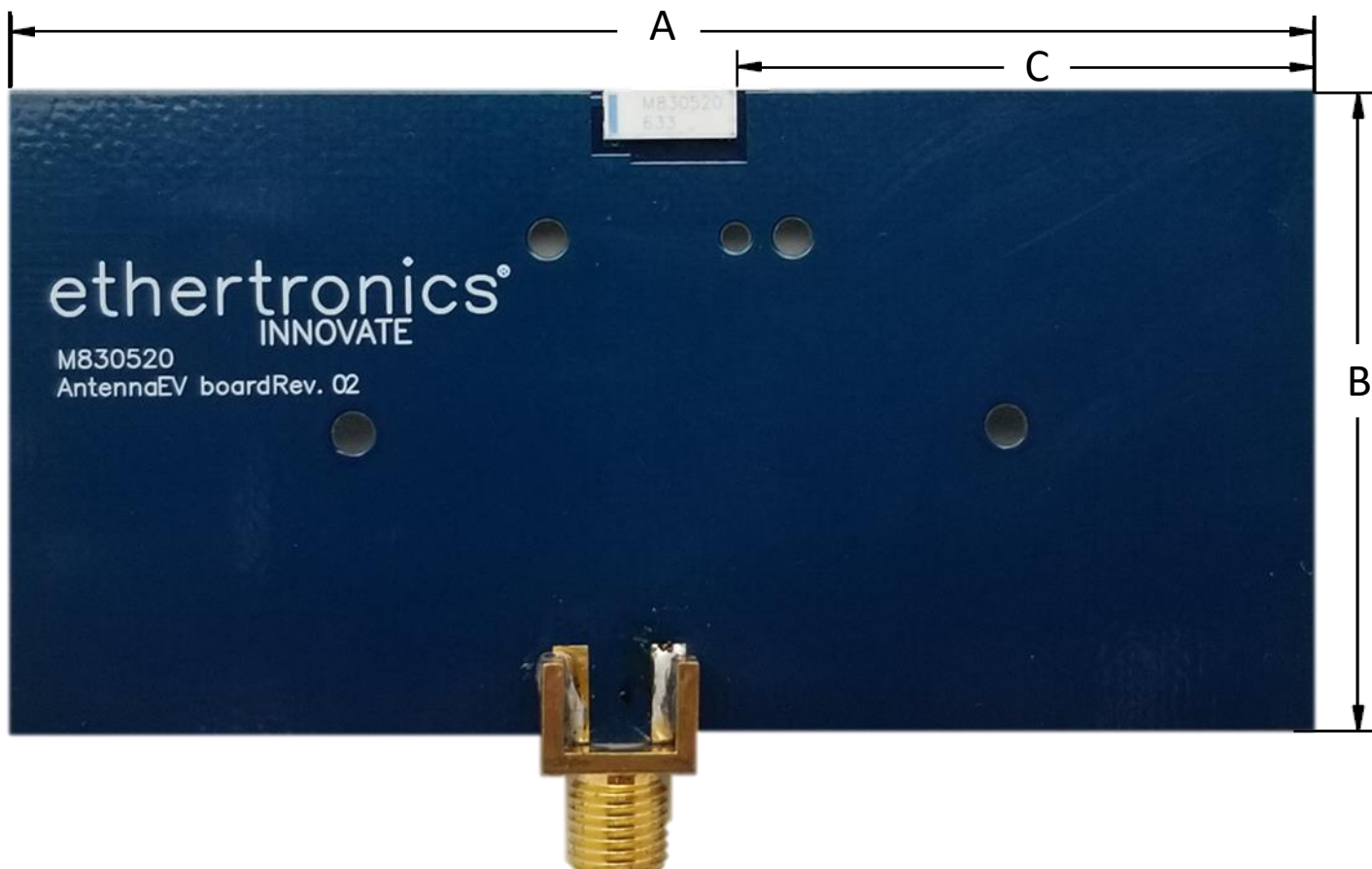
2.4 / 5 GHz KYOCERA AVX Embedded Antenna Specifications
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

Antenna Demo Board

Typical layout dimensions (mm)

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

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

Additional Resources – M830520

Simulation Files:
HFSS (23 R1): 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
CST : 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

3D FIT File:
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

Gerber File:
https://www.kyocera-avx.com/download/antennas/GERBER/M830520_GERBERS.zip

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