

# 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, Agriculture, Automotive, Bluetooth, Zigbee, WLAN, Smart Home, Healthcare, Digital Signage



KYOCERA AVX's 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's 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

### Greater Flexibility

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

### 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
- OBD-II

### 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        |                 |

### Mechanical Specifications & Ordering Part Number

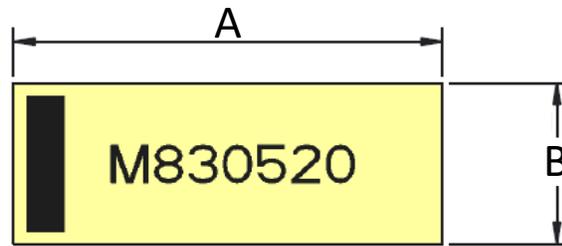
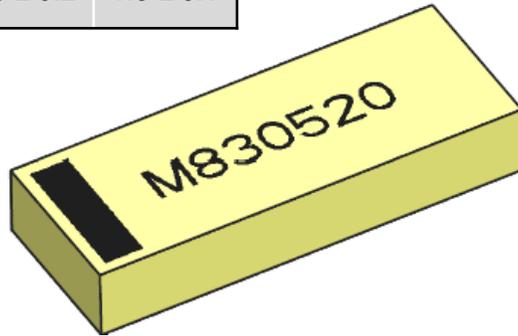
| Ordering Part Number | M830520   |
|----------------------|---|
| Size (mm)            | 8.0 x 3.0 x 1.3                                 |
| Mounting             | SMT   |
| Weight (grams)       | 0.2   |
| Packaging            | Tape & Reel,<br>M830520 – 1,000 pieces per reel |
| Demo Board           | M830520-01                                      |

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

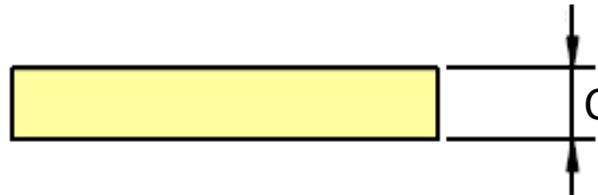
**Antenna Dimensions**

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 |

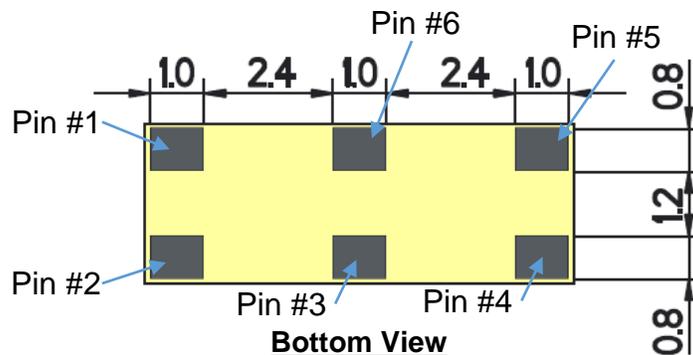


**Top View**



**Height**

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



**Bottom View**

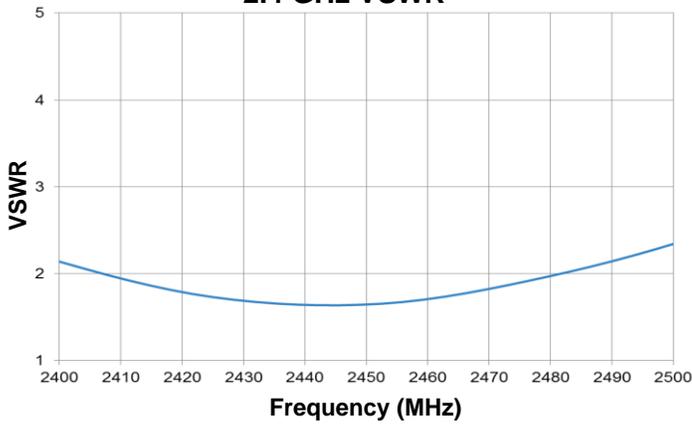
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**VSWR and Efficiency Plots (Off-Ground)**

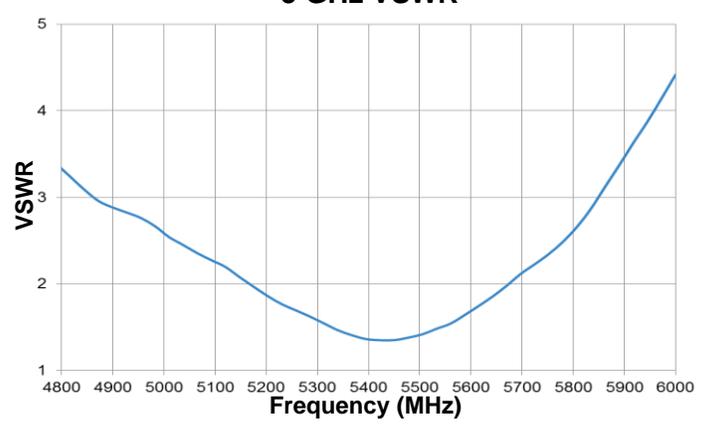
Typical performance on 40 x 80 mm PCB



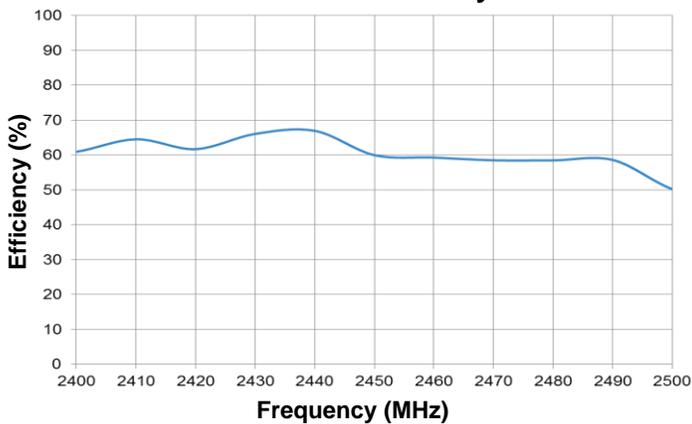
**2.4 GHz VSWR**



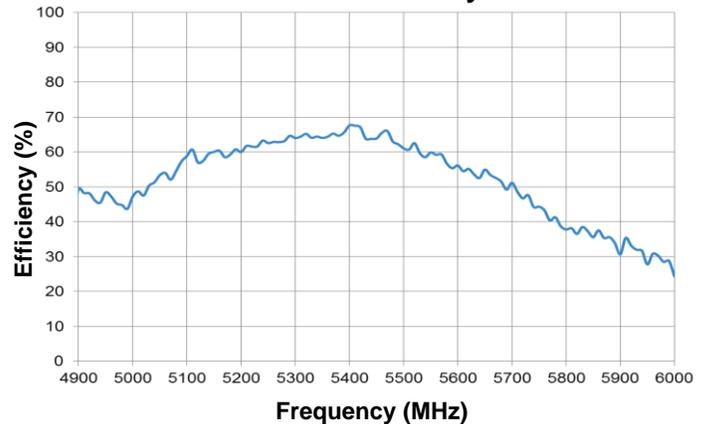
**5 GHz VSWR**



**2.4 GHz Efficiency**



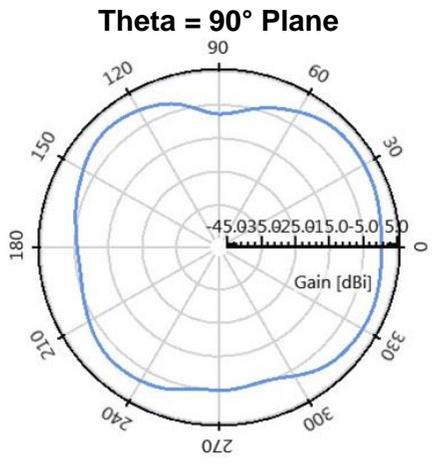
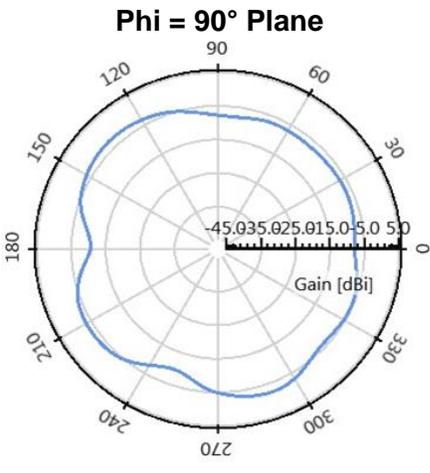
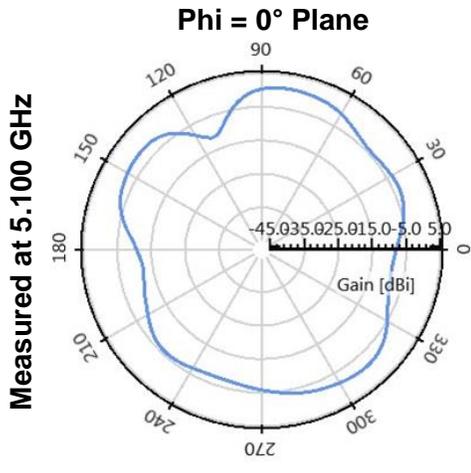
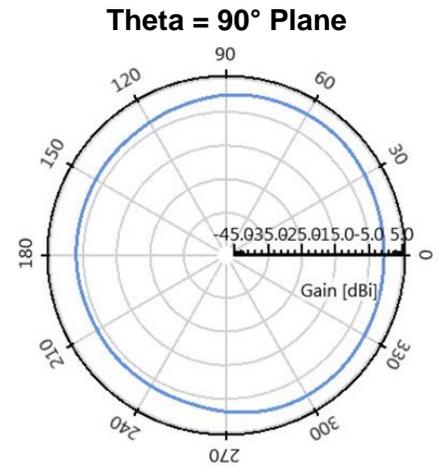
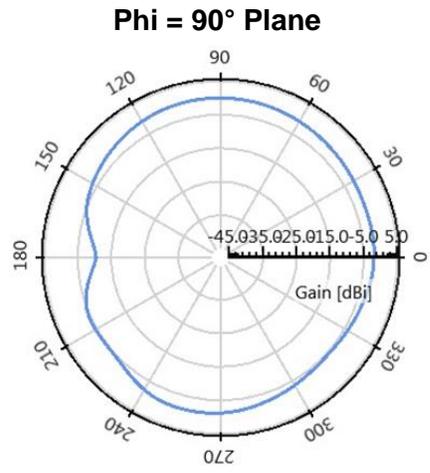
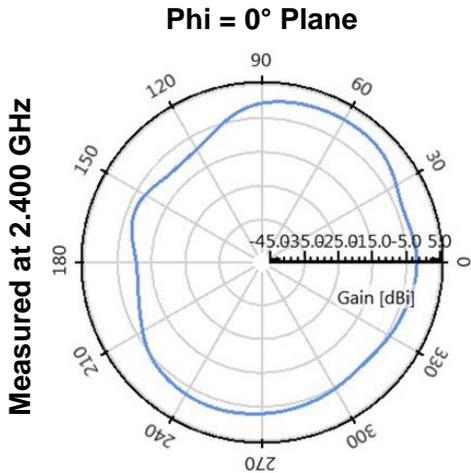
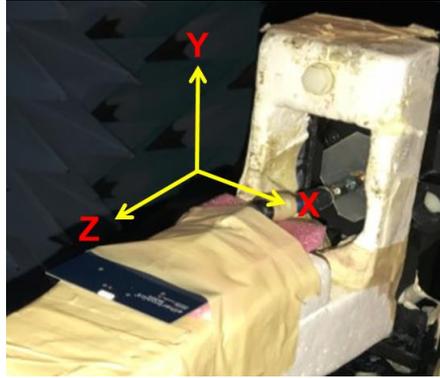
**5 GHz Efficiency**



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**Antenna Radiation Patterns**

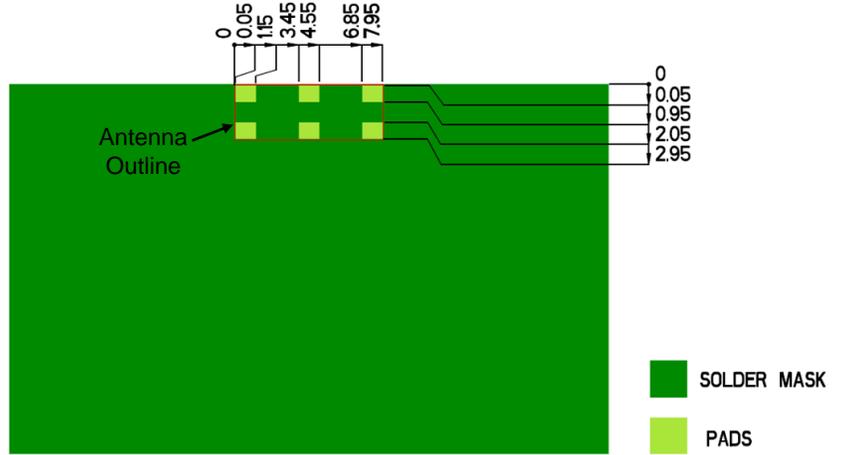
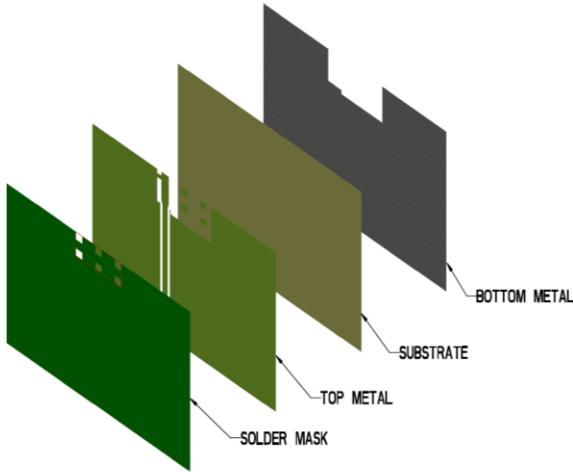
Typical performance on 40 x 80 mm PCB



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**Antenna Layout (Off-Ground)**

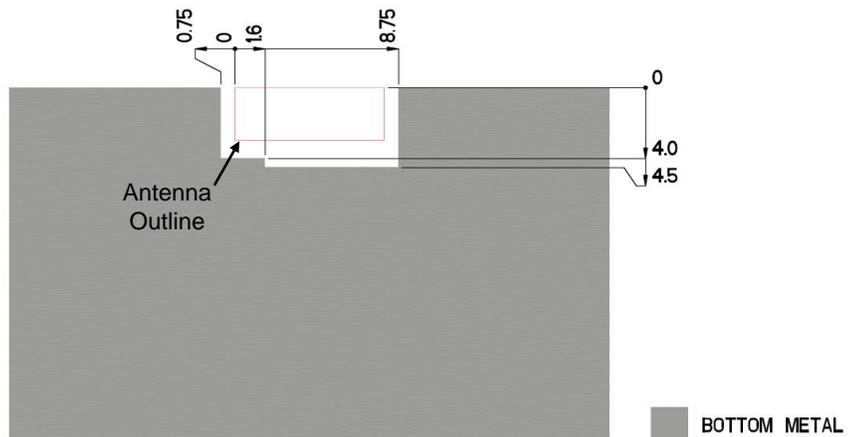
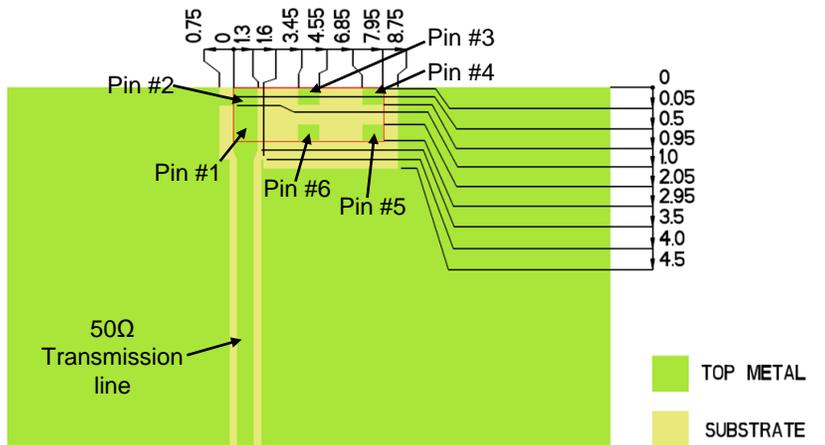
Typical layout dimensions (mm)



- 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**

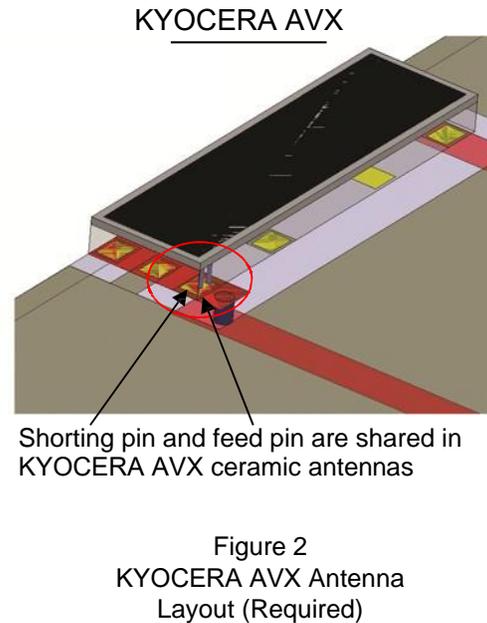
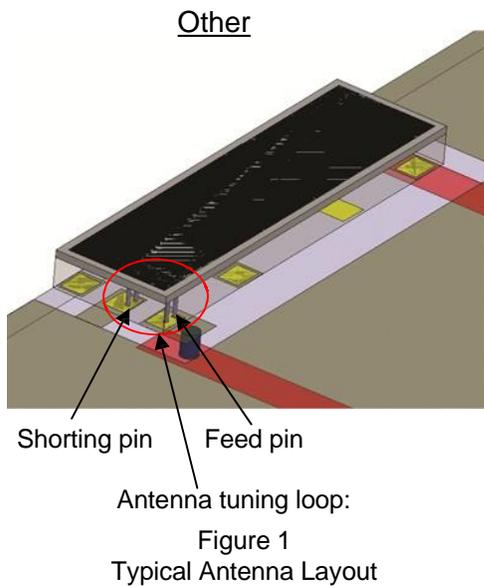
| Pin# | Description |
|------|-------------|
| 1    | Feed        |
| 2    | Ground      |
| 3    | Dummy Pad   |
| 4    | Dummy Pad   |
| 5    | Dummy Pad   |
| 6    | Dummy Pad   |



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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's antenna layout.



- 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   |

