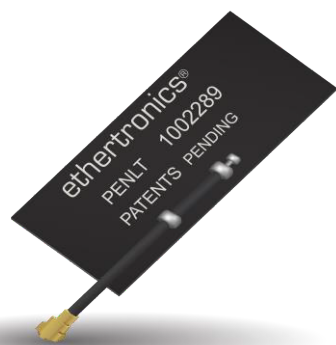


## Part No.1002289

### LTE / Cellular Wide Band FPC Embedded Antenna

700 / 750 / 850 / 900 / 1800 / 1900 / 2100 / 2700 MHz

Supports: Broadband LTE (OCTA-BAND), LTE CAT-M, NB-IoT, SigFox, LoRa, Cellular LPWA, RPMA, Firstnet



KYOCERA AVX LTE cellular embedded antenna 1002289 address the challenges facing today's product designers. Based on a flexible substrate for easier integration, high performance and isolation characteristics, this antenna offers better connectivity. In addition, 1002289 supports all the worldwide cellular bands for LTE with backward compatibility.

The 1002289 is offered in many standard cable lengths ranging up to 200mm. Ordering part number guide is located at end of document for selection ease.

#### Electrical Specifications

Typical Characteristics, using 75 x 140 mm ground plane with 7.6 mm cable. Antenna is mounted directly on plastic material.

| Frequency (MHz)                   | 698 - 960 MHz      | 1710 - 2690 MHz |
|-----------------------------------|--------------------|-----------------|
| Average Efficiency (Longer Edge)  | 74%                | 58%             |
| Average Efficiency (Shorter Edge) | 67%                | 63%             |
| Peak Gain (Longer Edge)           | 2.9 dBi            | 4.3 dBi         |
| Peak Gain (Shorter Edge)          | 1.8 dBi            | 4.2 dBi         |
| VSWR Match                        | 2.5:1 max          |                 |
| Feed Point Impedance              | 50 ohms unbalanced |                 |
| Polarization                      | Linear             |                 |
| Power Handling                    | 2 Watts CW         |                 |
| Radiation Pattern                 | Omni-directional   |                 |

#### LTE / Cellular FPC Embedded Antenna

Low Band : 698 - 960 MHz

High Band: 1710 - 2690 MHz

#### KEY BENEFITS

##### Reduced Costs and Time-to-Market

Standard antenna eliminates design fees and cycle time associated with a custom solution; getting products to market faster.

##### Greater Flexibility with Unique Form Factors

KYOCERA AVX technology helps you deliver more advanced ergonomic designs without adverse impact on product performance.

##### RoHS Compliant

Products are the latest RoHS version compliant.

#### APPLICATIONS

- Medical applications
- Home automation
- Smart metering
- M2M, Industrial devices
- IoT
- Firstnet
- Automotive
- Healthcare
- Point of Sale
- Tracking
- NB-IoT
- Sigfox
- LoRa
- Cellular LPWA
- RPMA
- LTE CAT-M

#### Mechanical Specifications & Ordering Part Number

| Ordering Part #        | 1002289                                                                      |
|------------------------|------------------------------------------------------------------------------|
| Dimensions (mm)        | 53.6 x 25.1 x 0.2<br>(1.6 high at cable solder connection)                   |
| Weight (grams)         | 0.86                                                                         |
| Connector / Cable (mm) | U.FL compatible connector<br>Length: 7.6, Cable diameter: 1.13, Color: Black |
| Mounting               | using 3M468 Adhesive                                                         |

\*Additional variations with different cable lengths, colors and connectors are available.

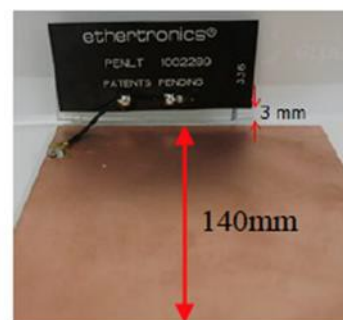
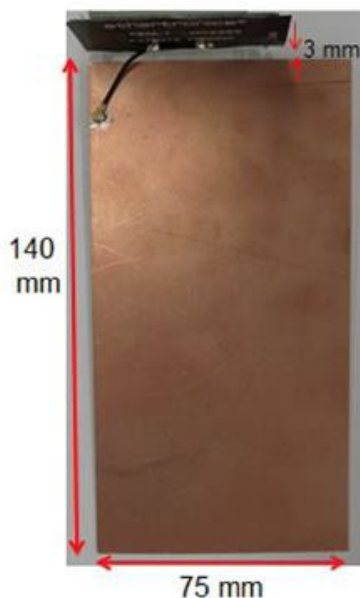
LTE / Cellular Band KYOCERA AVX Embedded Antenna Specifications.  
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

## Test Setup

Typical performance with 7.6 mm cable

### Antenna Location 1

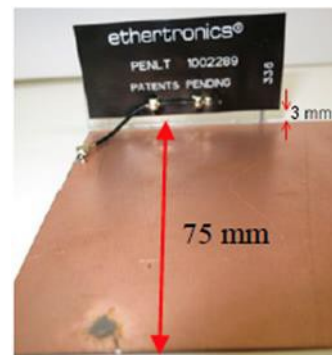
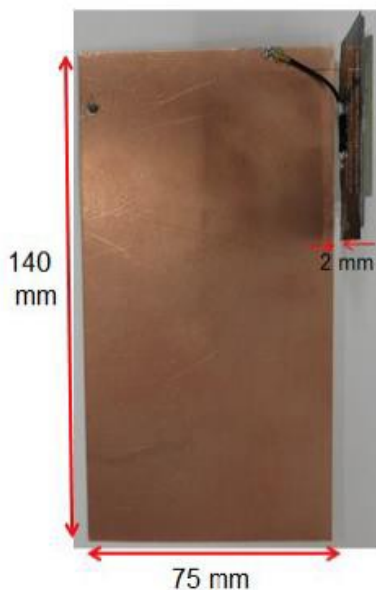
Antenna located at the end of the long edge of the PCB



In this position, the antenna is located 3 mm away from the PCB and 3 mm above the PCB

### Antenna Location 2

Antenna located at the end of the short edge of the PCB.



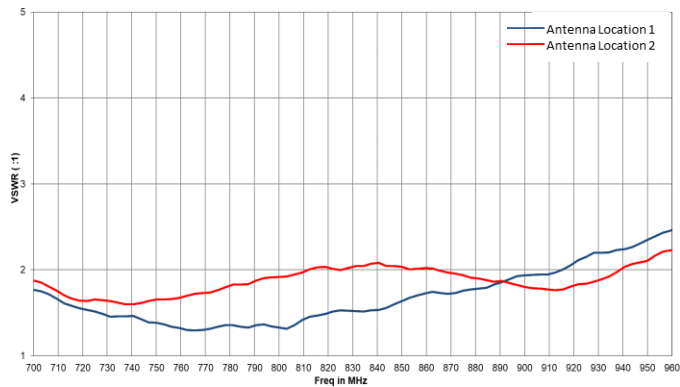
In this position, the antenna is located 2 mm away from the PCB and 3 mm above the PCB

LTE / Cellular Band KYOCERA AVX Embedded Antenna Specifications.  
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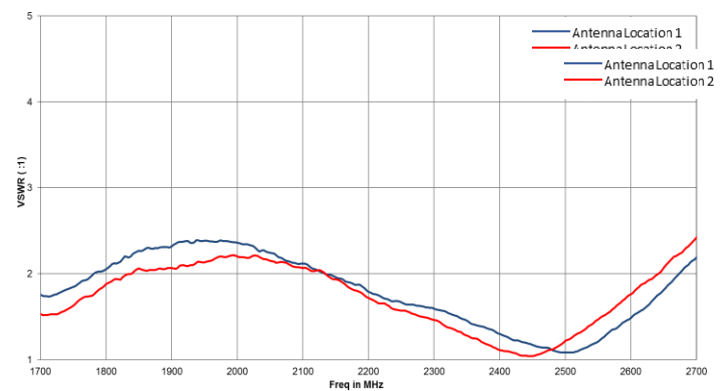
## VSWR, Efficiency and Peak Gain Plots

Typical performance with 7.6 mm (Location 1 & Location 2)

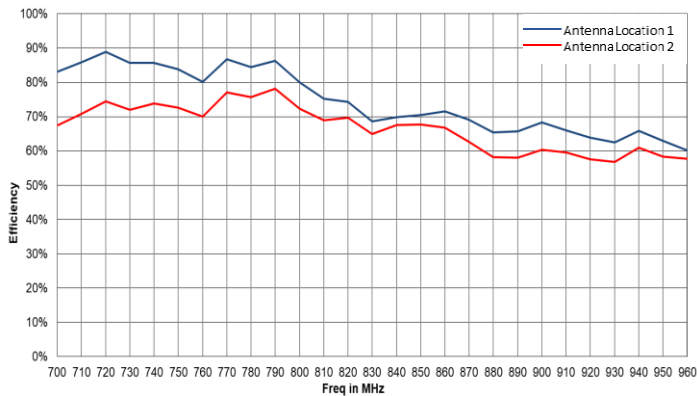
### Low Band VSWR



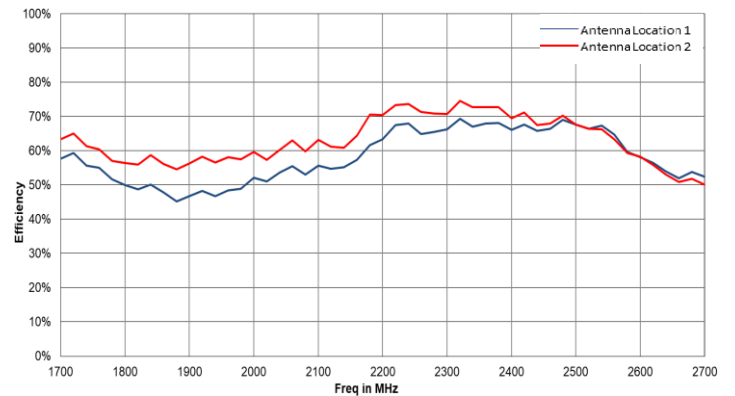
### High Band VSWR



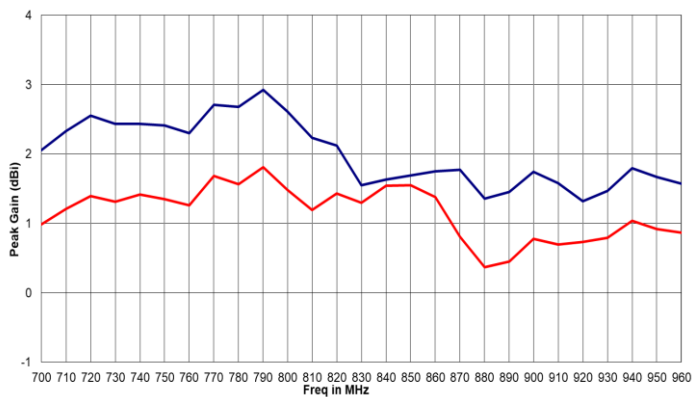
### Low Band Efficiency



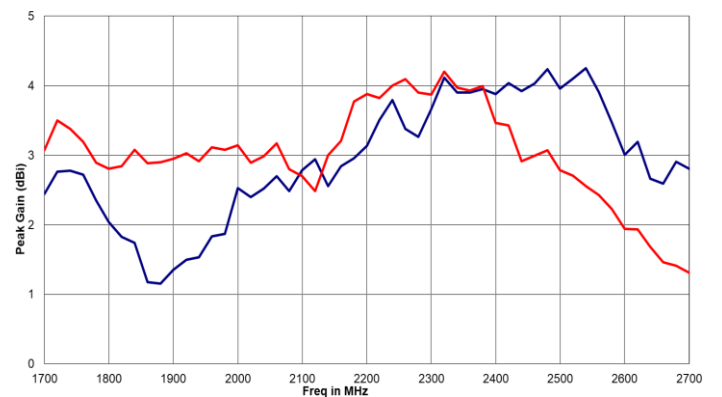
### High Band Efficiency



### Low Band Peak Gain



### High Band Peak Gain

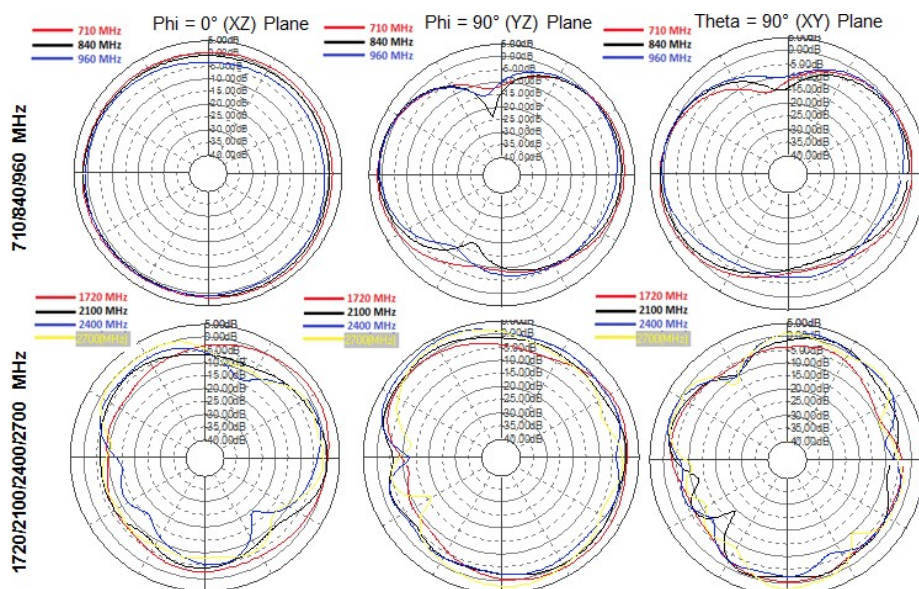
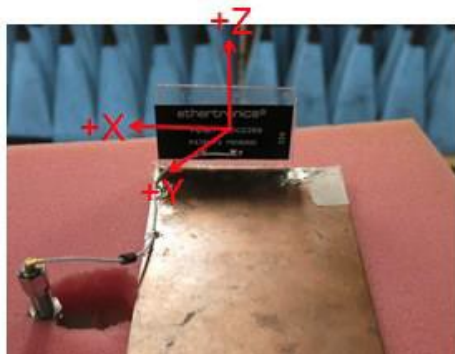


LTE / Cellular Band KYOCERA AVX Embedded Antenna Specifications.  
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

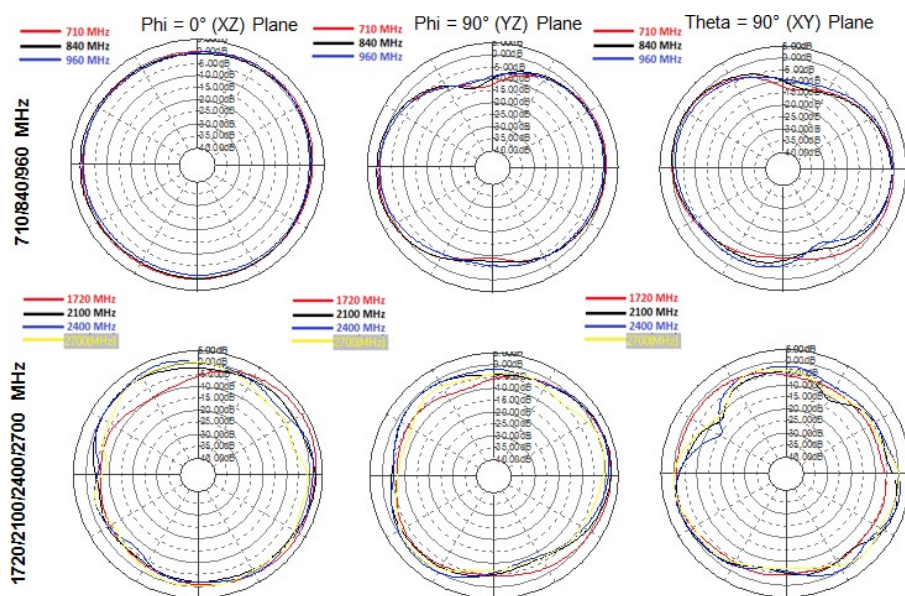
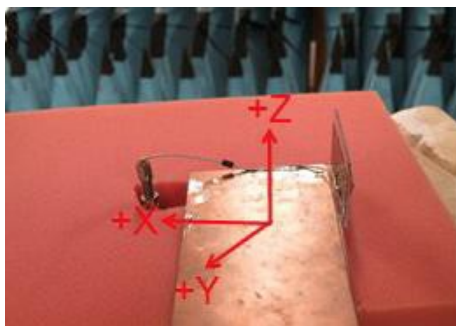
## Radiation Patterns

Typical performance with 7.6 mm cable

### Antenna Location 1



### Antenna Location 2



LTE / Cellular Band KYOCERA AVX Embedded Antenna Specifications.  
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

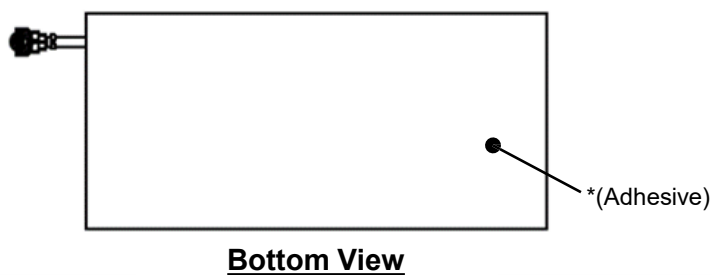
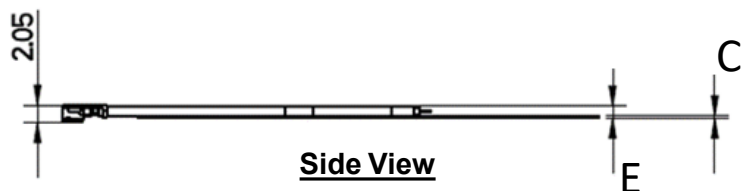
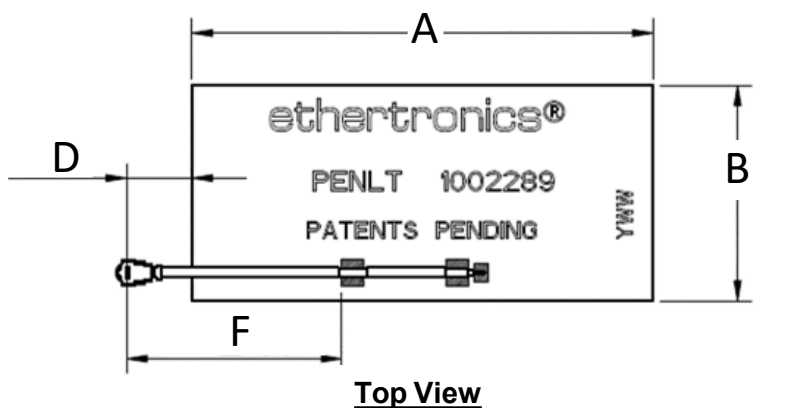
## Mechanical Dimensions

Typical antenna dimensions (mm)

| Part Number | A (mm)         | B (mm)         | C (mm)         | D (mm)        | E (mm)    | F (mm)       |
|-------------|----------------|----------------|----------------|---------------|-----------|--------------|
| 1002289     | $53.6 \pm 0.3$ | $25.1 \pm 0.3$ | $0.2 \pm 10\%$ | $7.6 \pm 3.0$ | 1.6 (max) | $25 \pm 3.0$ |

\*Total Height of 1.6 mm includes the cable solder connection

\*Height "C" of 0.2 mm includes FPC + adhesive thicknesses



LTE / Cellular Band KYOCERA AVX Embedded Antenna Specifications.  
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

## Ordering Part Numbers

Typical antenna dimensions (mm)

| Part Number         | A (mm)     | B (mm)     | C (mm)    | D (mm)<br>Cable Length | E (mm)       | F (mm)      |
|---------------------|------------|------------|-----------|------------------------|--------------|-------------|
| 1002289             | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 7.6 ± 3.0              | 1.6<br>(max) | 25 ± 3.0    |
| 1002289F0-AA10L0025 | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 25.0 ± 3.0             | 1.6<br>(max) | 42.4 ± 3.0  |
| 1002289F0-AA10L0050 | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 50.0 ± 3.0             | 1.6<br>(max) | 67.4 ± 3.0  |
| 1002289F0-AA10L0065 | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 65.0 ± 3.0             | 1.6<br>(max) | 82.4 ± 3.0  |
| 1002289F0-AA10L0075 | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 75.0 ± 3.0             | 1.6<br>(max) | 92.4 ± 3.0  |
| 1002289F0-AA10L0080 | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 80.0 ± 3.0             | 1.6<br>(max) | 97.4 ± 3.0  |
| 1002289F0-AA10L0100 | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 100.0 ± 3.0            | 1.6<br>(max) | 117.4 ± 3.0 |
| 1002289F0-AA10L0110 | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 110.0 ± 3.0            | 1.6<br>(max) | 127.4 ± 3.0 |
| 1002289F0-AA10L0120 | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 120.0 ± 3.5            | 1.6<br>(max) | 137.4 ± 3.0 |
| 1002289F0-AA10L0150 | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 150.0 ± 4.0            | 1.6<br>(max) | 167.4 ± 3.0 |
| 1002289F0-AA10L0160 | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 160.0 ± 4.0            | 1.6<br>(max) | 177.4 ± 3.0 |
| 1002289F0-AA10L0200 | 53.6 ± 0.3 | 25.1 ± 0.3 | 0.2 ± 10% | 200.0 ± 4.0            | 1.6<br>(max) | 217.4 ± 3.0 |

\*Total Height of 1.6 mm includes the cable solder connection

\*Height "C" of 0.2 mm includes FPC + adhesive thicknesses