

# Part No. 9003384 GNSS L1/L2/L5 Patch Antenna

1164 - 1240 MHz, 1560 - 1590 MHz

Supports: GNSS E1, L1, B1, B1C, B1I, G1/L10C, L2, L2C, G2, L5, E5a, E5b, B2a, B2b, G3/L30C



KYOCERA AVX series of Patch Antennas deliver on the key needs of device designers for higher functionality and performance.

These innovative antennas provide compelling advantages for GNSS L1/L2/L5.

9003384 is a patch that covers GNSS L1/L2/L5. It is a Dual-feed Stacked Patch Antenna generating RHCP.

## GNSS L1/L2/L5 Patch Antenna

1164 – 1240 MHz

1560 – 1590 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.

#### 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

- Telematics
- Tracking
- Agriculture
- Navigation
- IoT, Industrial devices
- Smart Grid
- RTK
- Drones

### Electrical Specifications

Typical Characteristics, on round ground plane of 150 mm of diameter

| Frequency (MHz)      | 1164 – 1240 (L2 / L5)  | 1560 – 1590 (L1) |
|----------------------|------------------------|------------------|
| Peak Gain            | 5 dBi                  | 4.6 dBi          |
| Average Efficiency   | 47 %                   | 56%              |
| Return Loss          | < -3 dB                | < -14.5 dB       |
| Axial Ratio          | < 4 dB                 | < 4 dB           |
| Polarization         | RHCP                   |                  |
| Feed Point Impedance | 50 $\Omega$ unbalanced |                  |
| Radiation Pattern    | Directional            |                  |

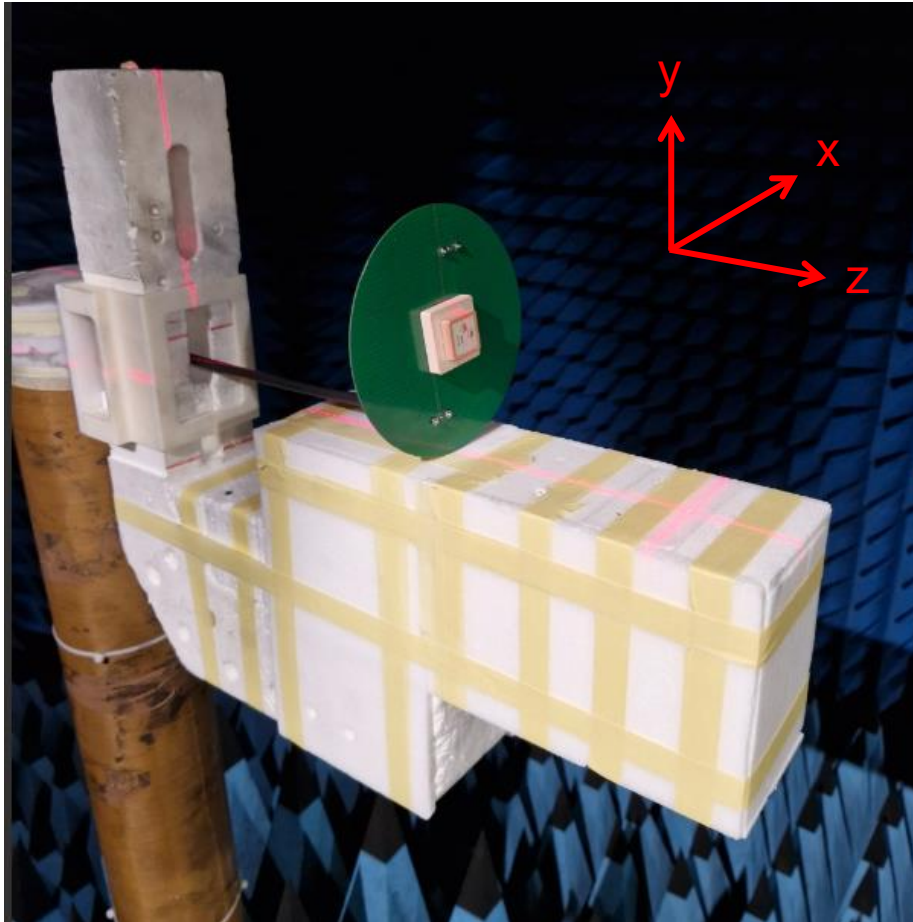
### Mechanical Specifications & Ordering Part Number

| Ordering Part Number | 9003384            |
|----------------------|--------------------|
| Size (mm)            | 38.0 x 38.0 x 14.8 |
| Mounting (mm)        | Adhesive + Pins    |
| Weight (grams)       | 54.5               |
| Packaging            | Tray               |

GNSS L1/L2/L5 Patch Antenna KYOCERA AVX Embedded Antenna Specifications.  
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

### Test Setup

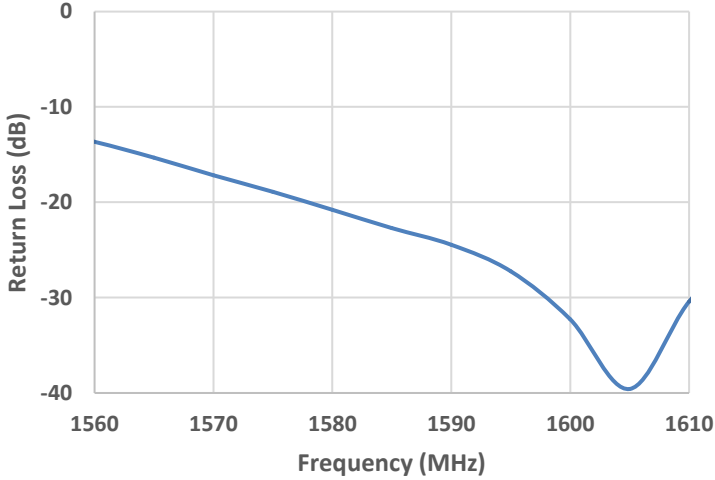
Two 90° 3dB Hybrid Couplers were integrated in this EVB, for more info, please contact us.



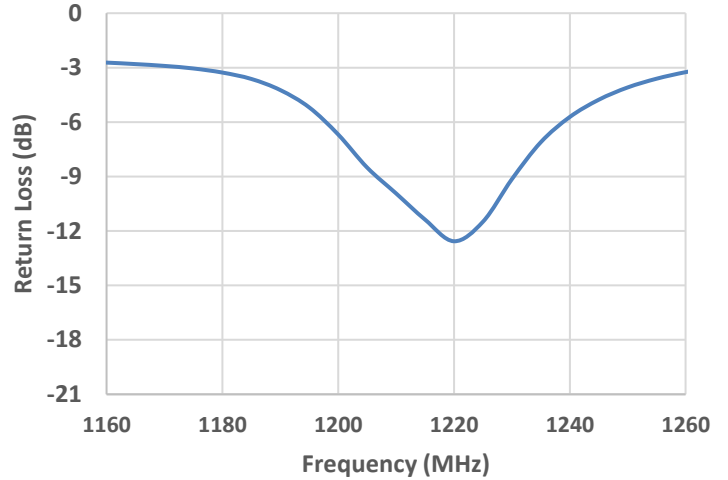
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Return Loss, Efficiency and Peak Gain

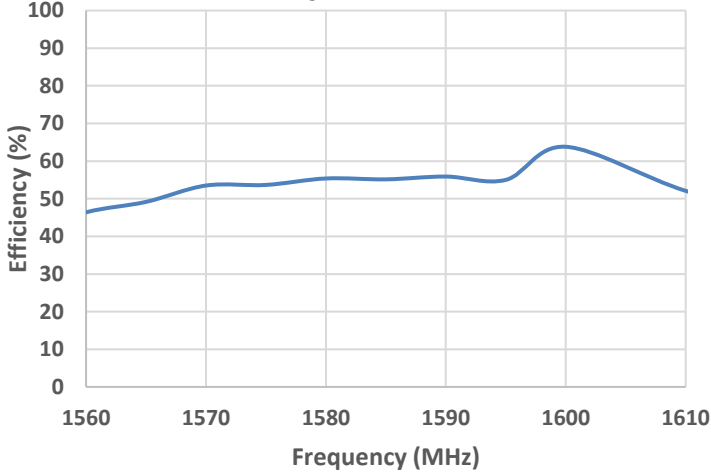
Return Loss L1 (1560 – 1610 MHz)



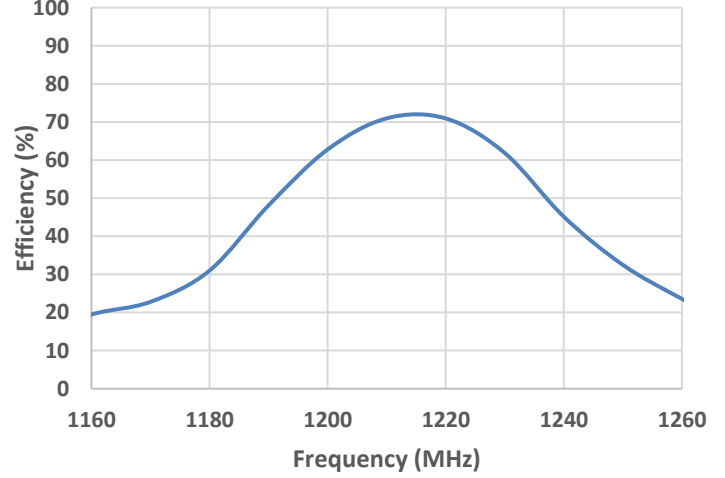
Return Loss L2/L5 (1160 – 1260 MHz)



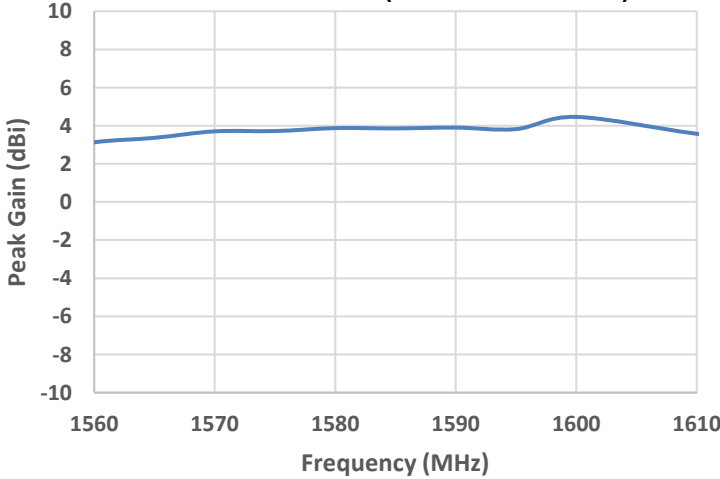
Efficiency L1 (1560 – 1610 MHz)



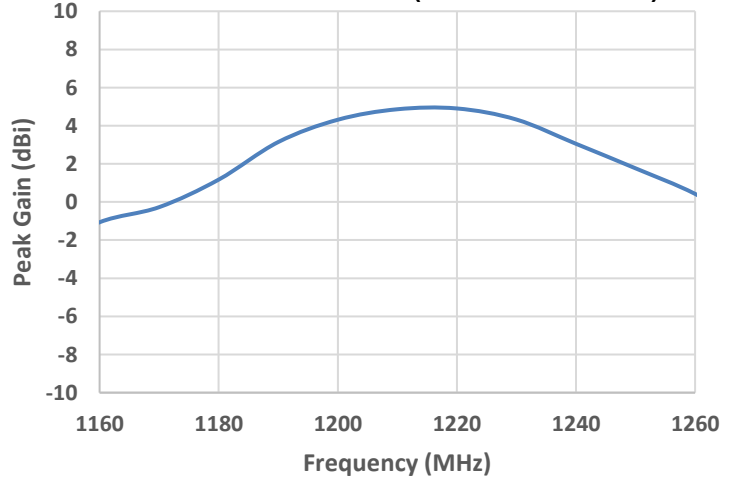
Efficiency L2/L5 (1160 – 1260 MHz)



Peak Gain L1 (1560 – 1610 MHz)

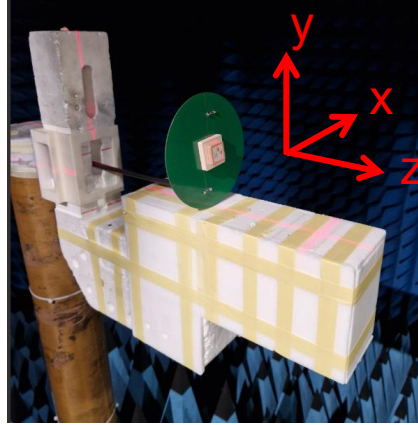


Peak Gain L2/L5 (1160 – 1260 MHz)

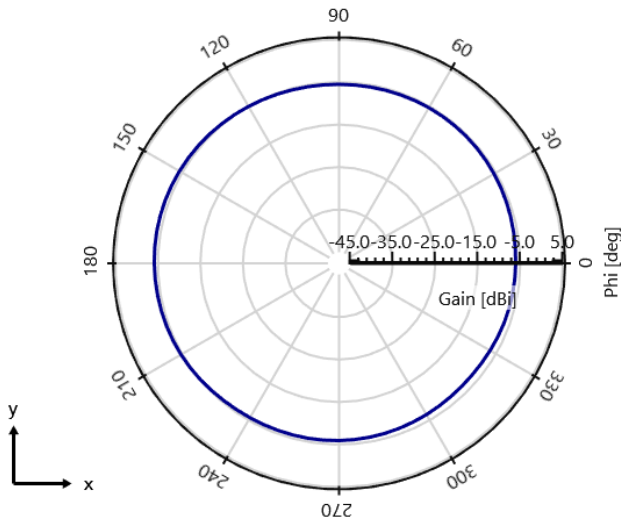


GNSS L1/L2/L5 Patch Antenna KYOCERA AVX Embedded Antenna Specifications.  
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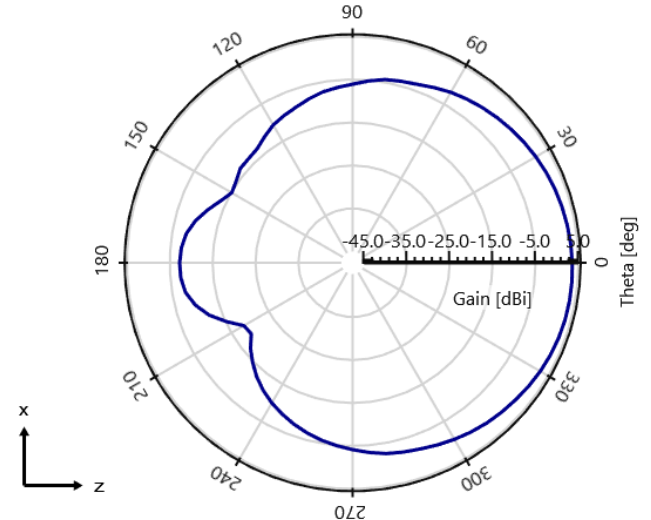
**Antenna Radiation Patterns**  
 Measured at 1575 MHz



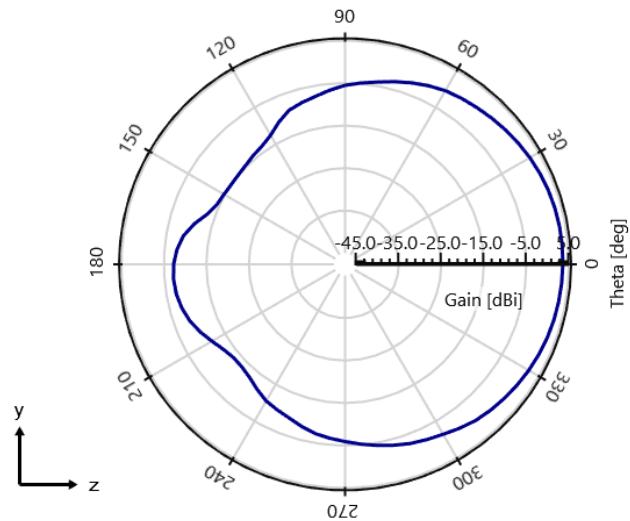
**Gain (Total) -  $\Theta = 90$  deg - [Plane XY]**



**Gain (Total) -  $\phi = 0$  deg - [Plane XZ]**



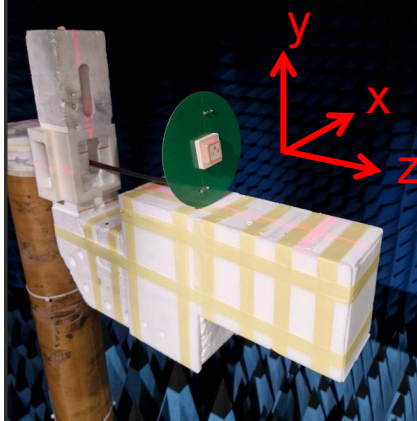
**Gain (Total) -  $\phi = 90$  deg - [Plane YZ]**



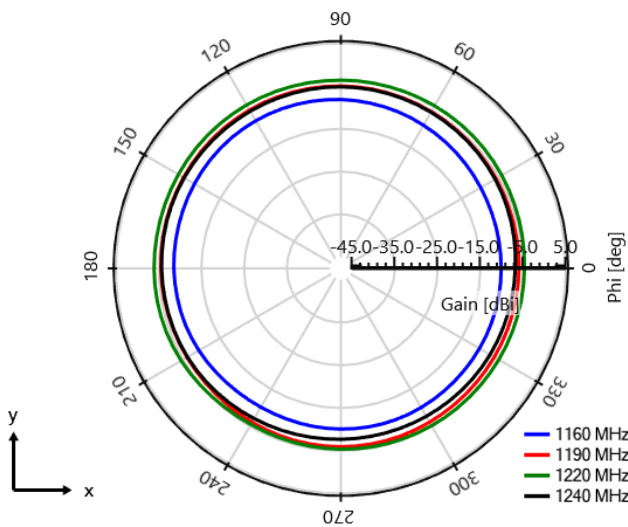
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**Antenna Radiation Patterns**

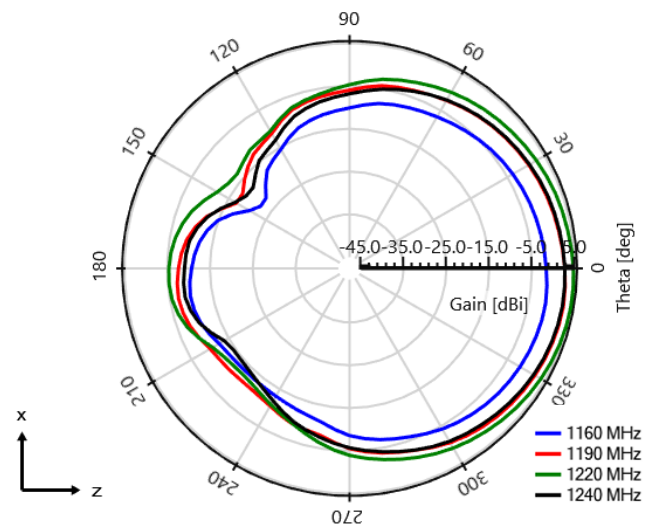
Measured at 1160, 1190, 1220, 1240 MHz



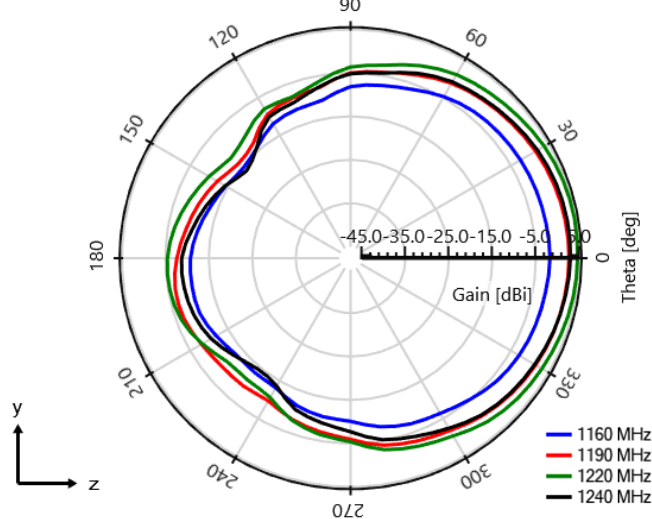
**Gain (Total) -  $\Theta = 90$  deg - [Plane XY]**



**Gain (Total) -  $\phi = 0$  deg - [Plane XZ]**



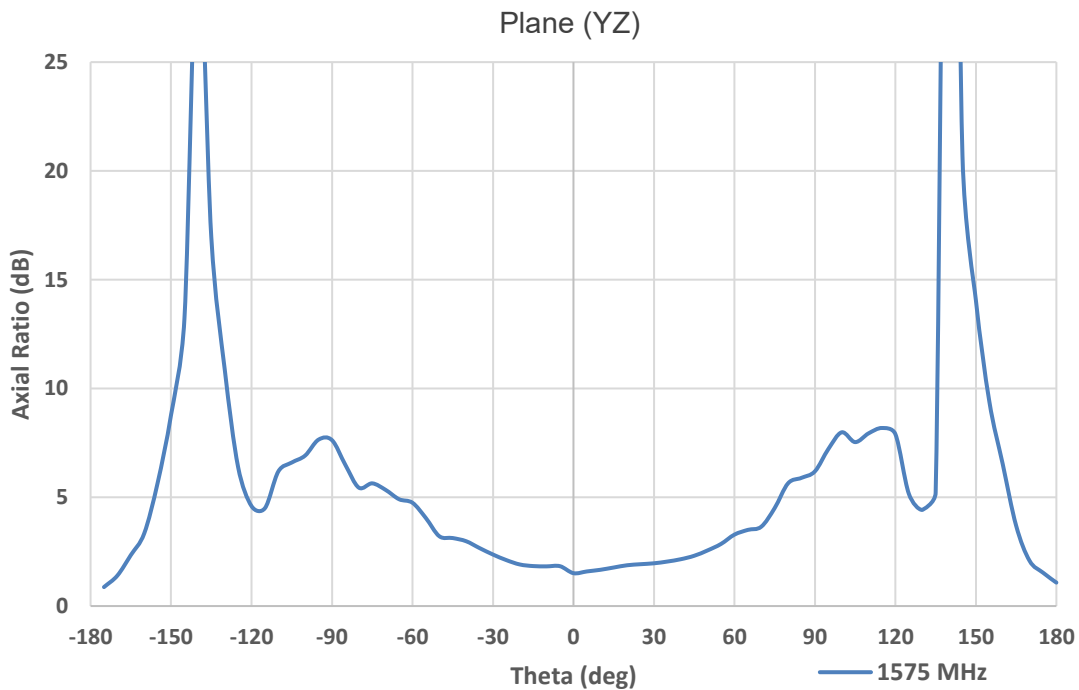
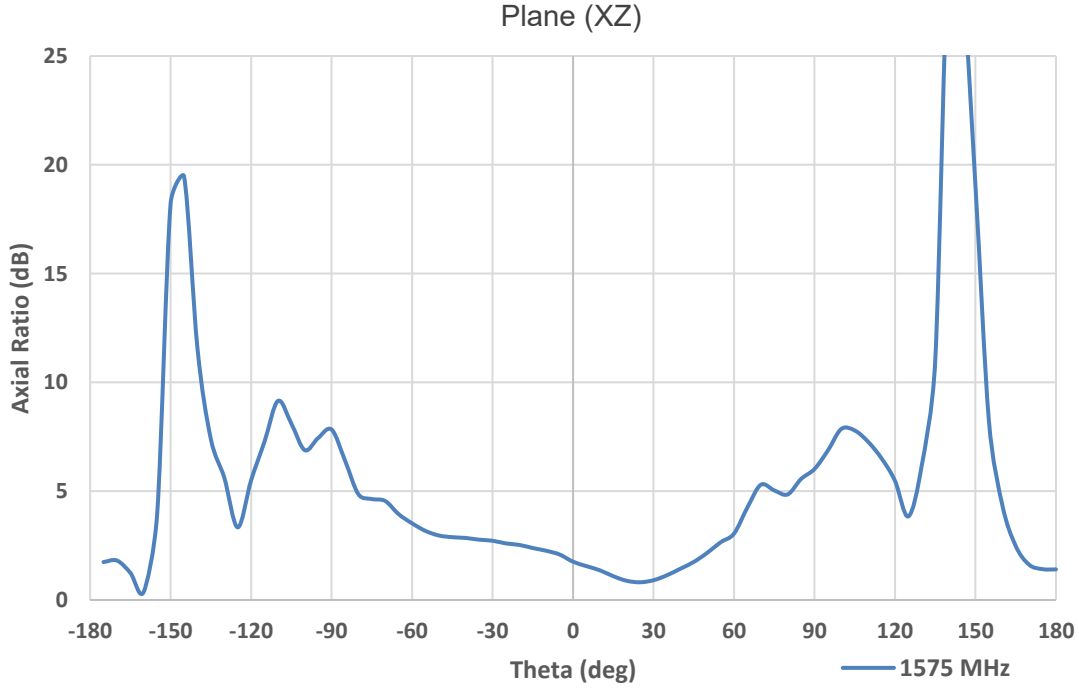
**Gain (Total) -  $\phi = 90$  deg - [Plane YZ]**



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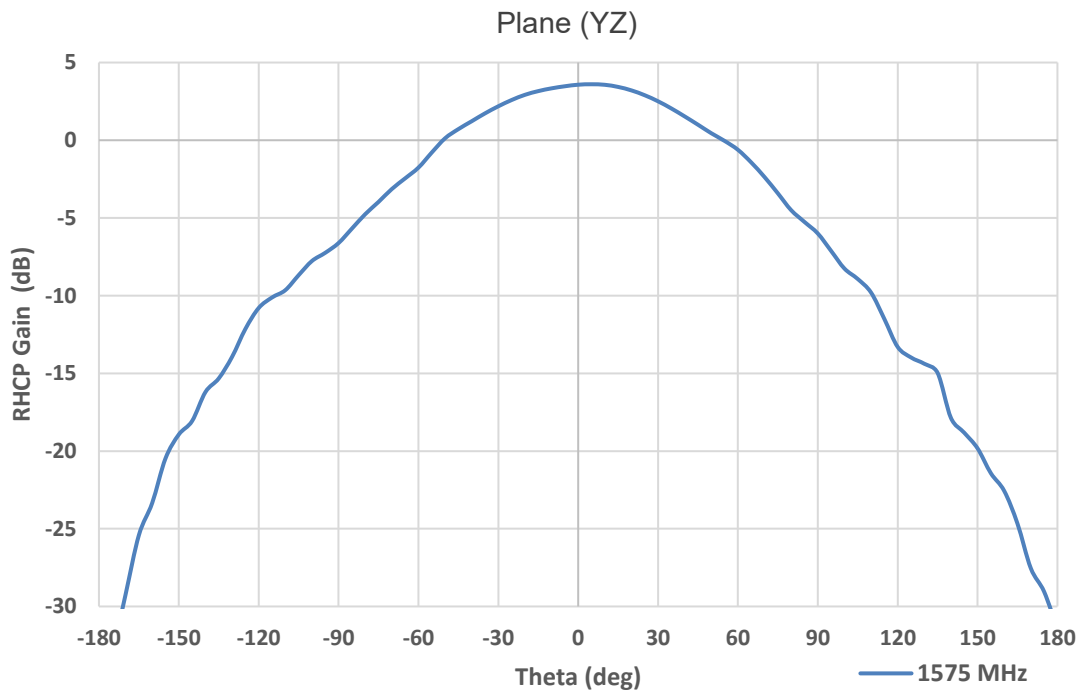
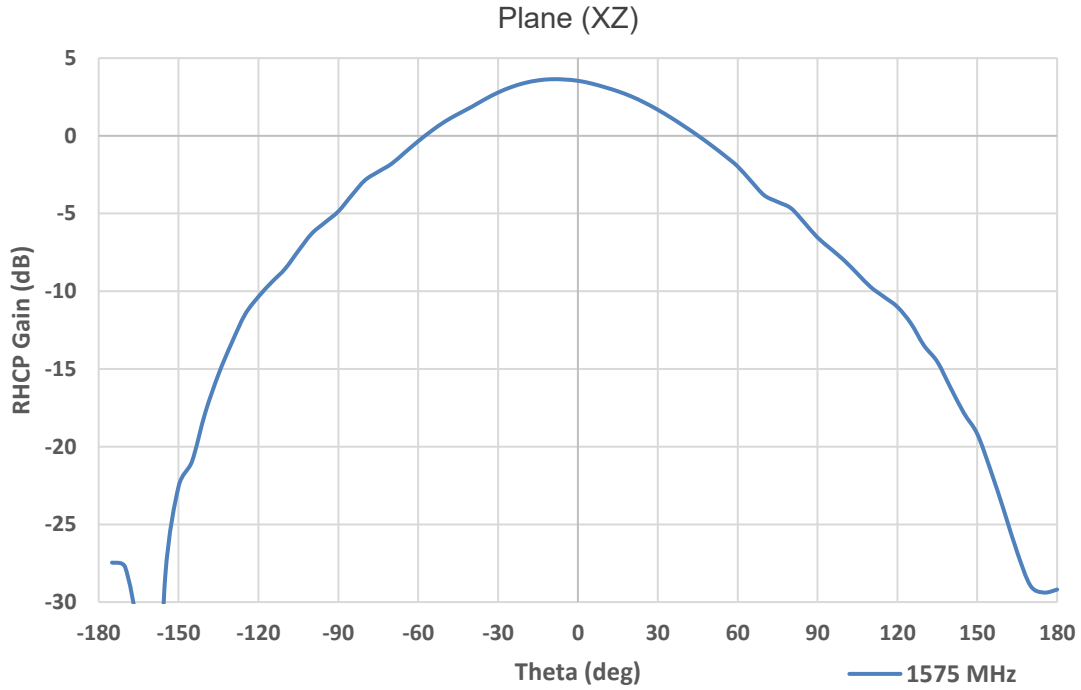
**Axial Ratio Plots**

Measured at 1575 MHz (L1)



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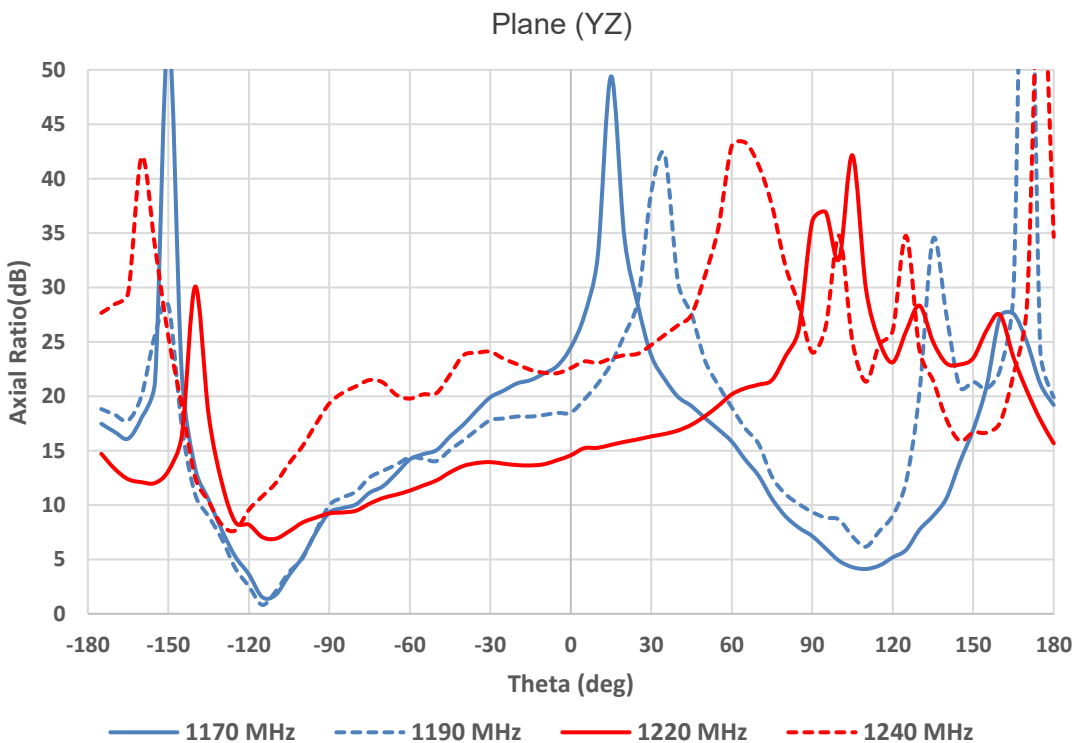
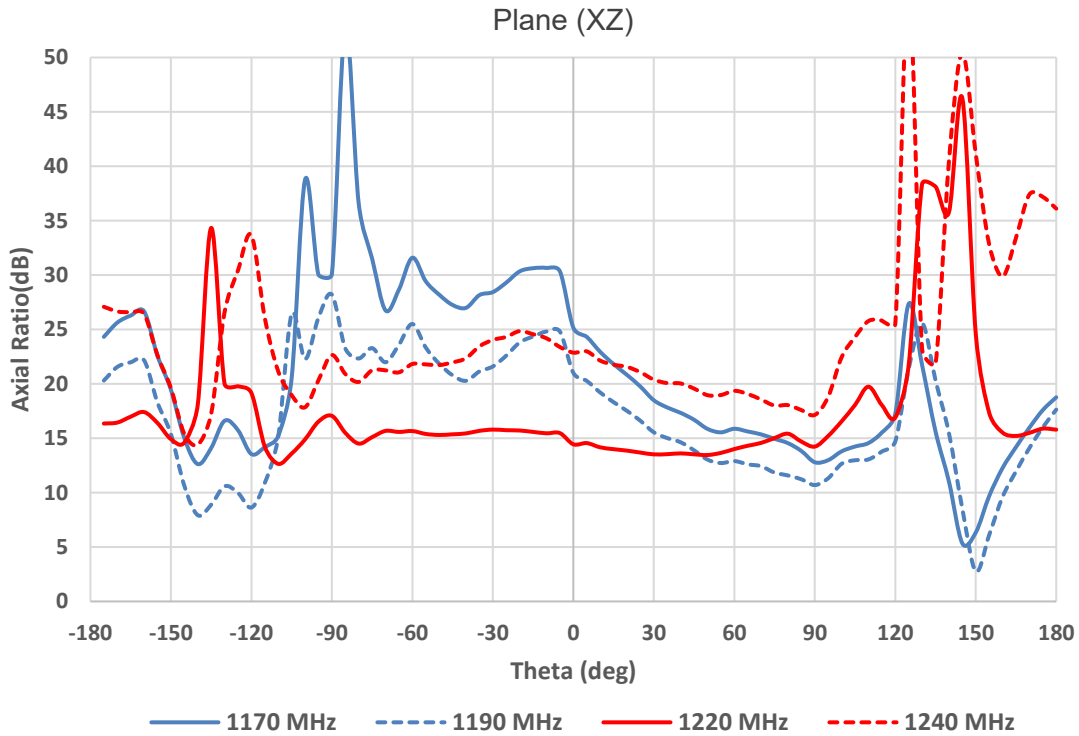
**Gain RHCP Plots**  
Measured at 1575 MHz (L1)



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**Axial Radio Plots**

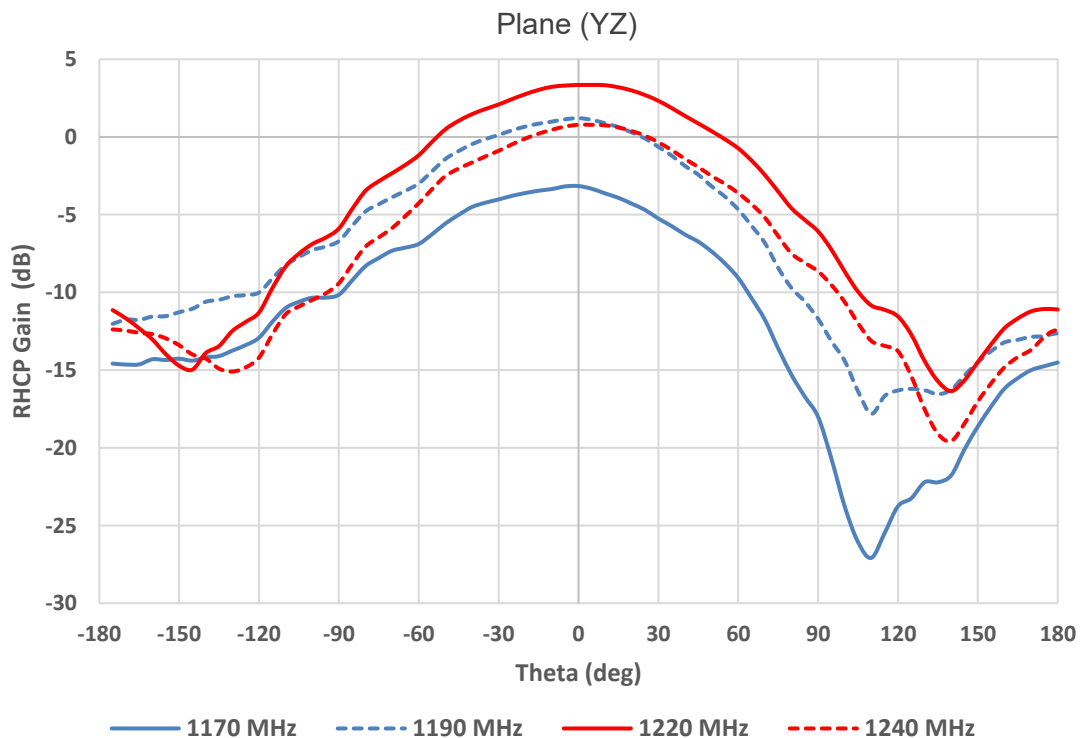
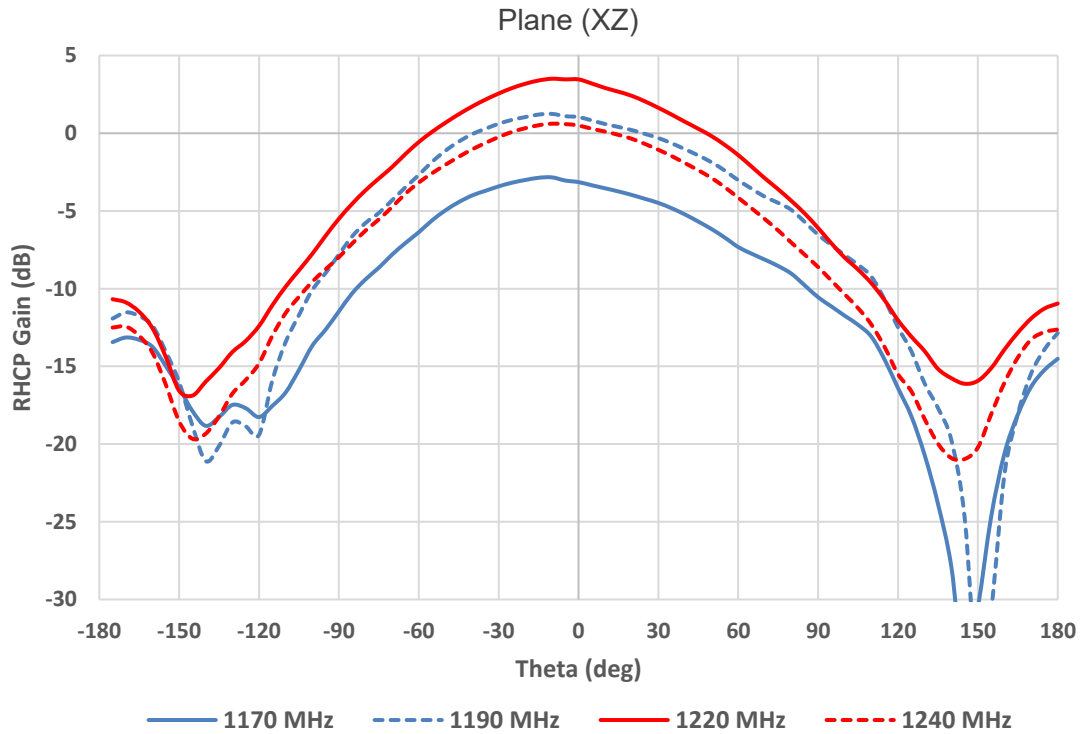
Measured at 1170, 1190, 1220 and 1240 MHz (L2 / L5)



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**Gain RHCP Plots**

Measured at 1170, 1190, 1220 and 1240 MHz (L2 / L5)

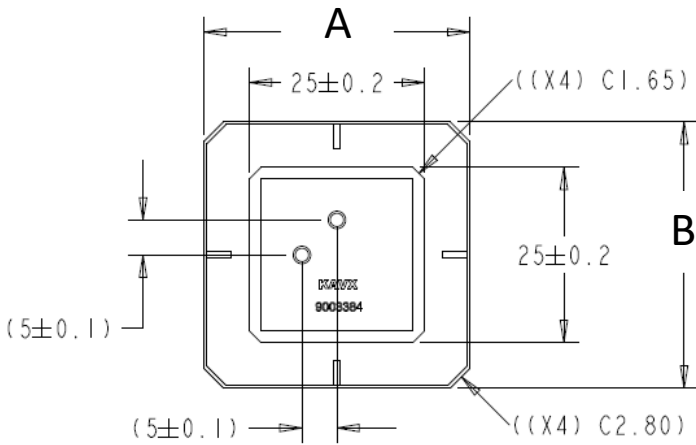
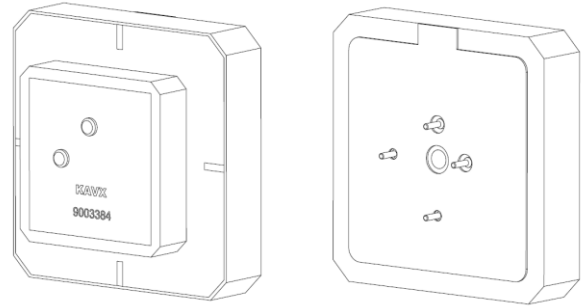


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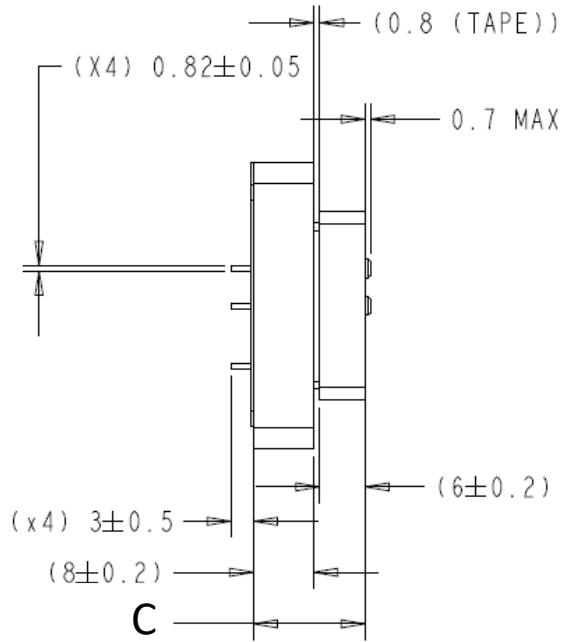
**Mechanical Dimensions**

Typical antenna dimensions, in mm.

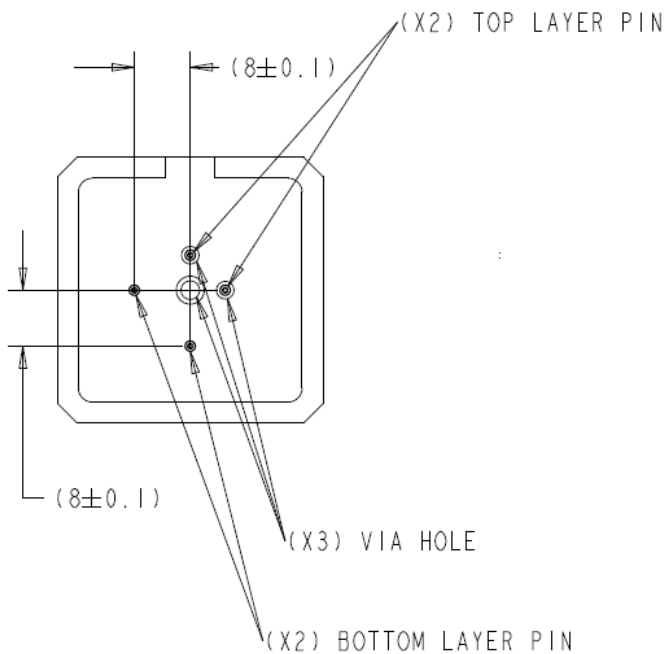
| Part Number | A              | B              | C              |
|-------------|----------------|----------------|----------------|
| 9003384     | $38.0 \pm 0.4$ | $38.0 \pm 0.4$ | $14.8 \pm 0.5$ |



**Top View**



**Side View**



**Bottom View**