Part No. 9003276
GNSS SMD Patch Antenna

1575 MHz
Supports: GNSS E1, L1, B1, G1

KYOCERA AVX series of SMD Patch Antennas deliver on the key needs of device designers for higher functionality and performance in M2M designs. These innovative antennas provide compelling advantages for GPS enabled M2M applications such as vehicle tracking.

9003276 is an SMT patch that covers GNSS bands E1, L1, B1, G1. It provides high performance thanks to its 70% efficiency.

GNSS SMD Patch Antenna

1560 – 1610 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 & REACH version compliant.

APPLICATIONS

- Embedded design
- Gateway, Access Point
- Handheld
- Telematics
- Tracking
- Healthcare Applications (FDA Class I)
- IoT, Industrial devices
- Smart Grid
- OBD-II

Electrical Specifications

Typical Characteristics, on 70 x 70 x 0.8 mm ground plane

Frequency (MHz)	1560 - 1610
Peak Gain	5 dBi
Average Efficiency	70 %
Return Loss Match	< -7.4 dB
Gain @ Zenith	3.3 dBic
Axial Ratio @ Zenith	9.6 dB
Polarization	RHCP
Feed Point Impedance	50 Ω unbalanced
Radiation Pattern	Directional

Mechanical Specifications & Ordering Part Number

Ordering Part Number	9003276
Size (mm)	25.0 x 25.0 x 4.0
Mounting (mm)	SMT
Weight (grams)	9.0
Evaluation Board	9003276-01
Operating & Storage Temperature (°C)	-40 to +85
Packaging	Plastic Tray
Additional Resources	Download DXF and 3D Fit file

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

Reliability Testing Summary

High Temperature and High Humidity (HTHH) Test	Conditions: Temperature: +85°C, Humidity: 85% RH, Test Duration: 96 Hours Acceptance Criteria: No visible Corrosion.
Salt Spray Test	Conditions: Expose to a +35 ±3 °C spray of a 5% (by volume) resolution of NaCl in water for 48 hours. Acceptance Criteria: No visible Corrosion / Discoloration acceptable.

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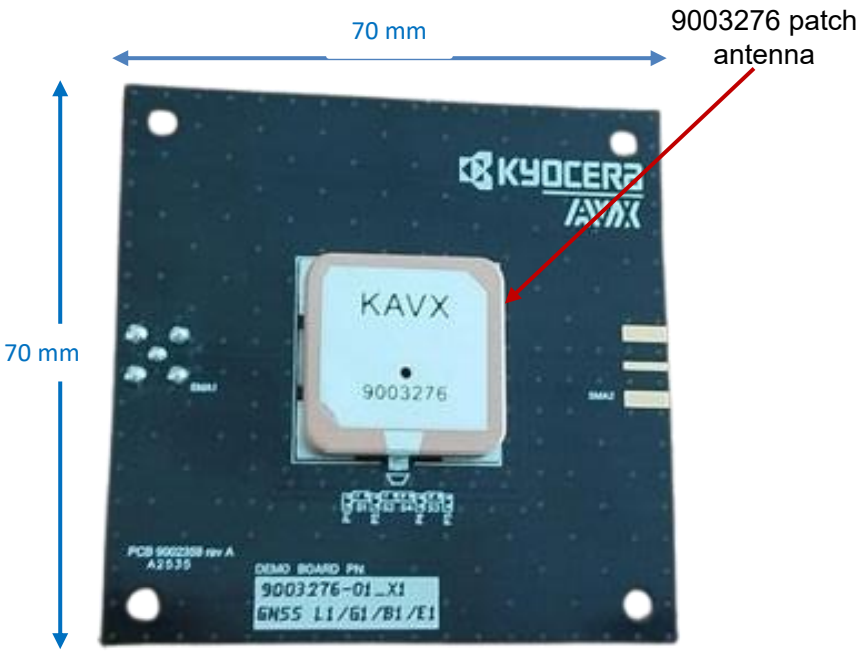
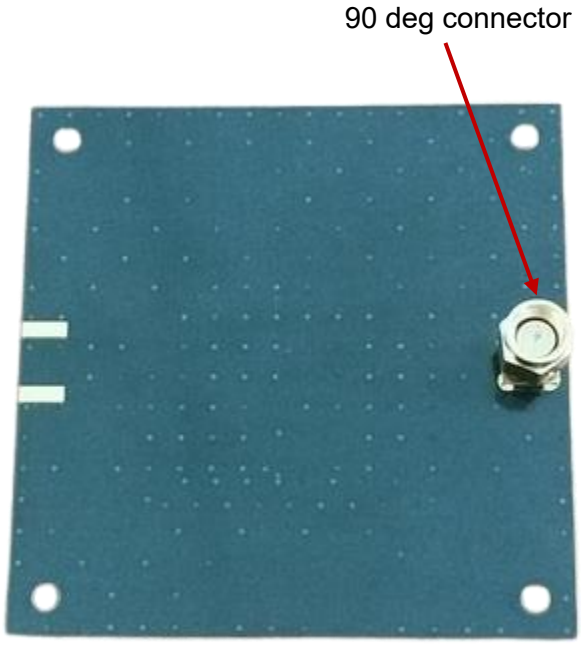
Antenna Demo Board (9003276-01)

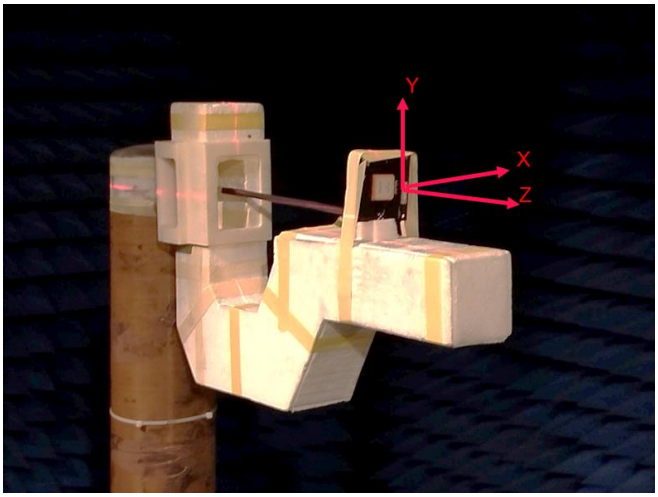


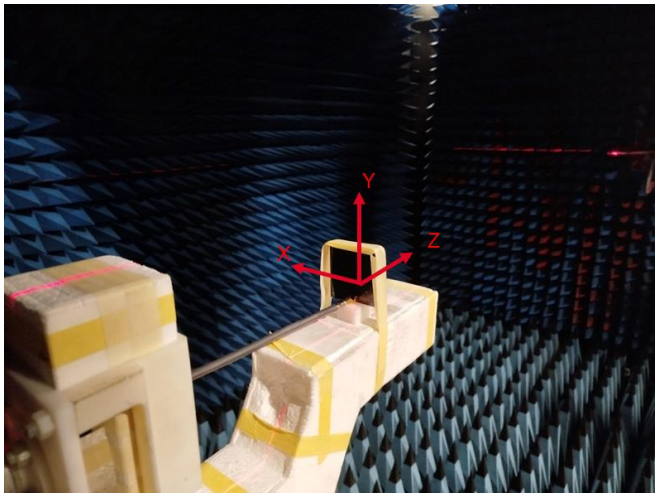
TOP PCB



BOTTOM PCB

Test Setup





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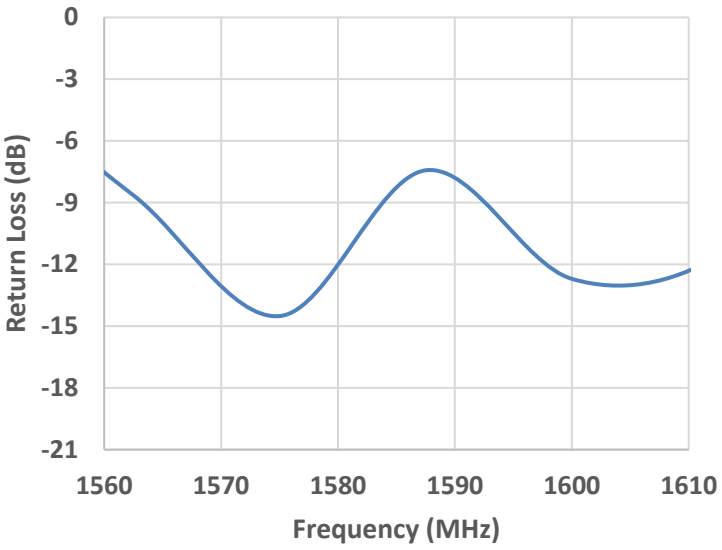
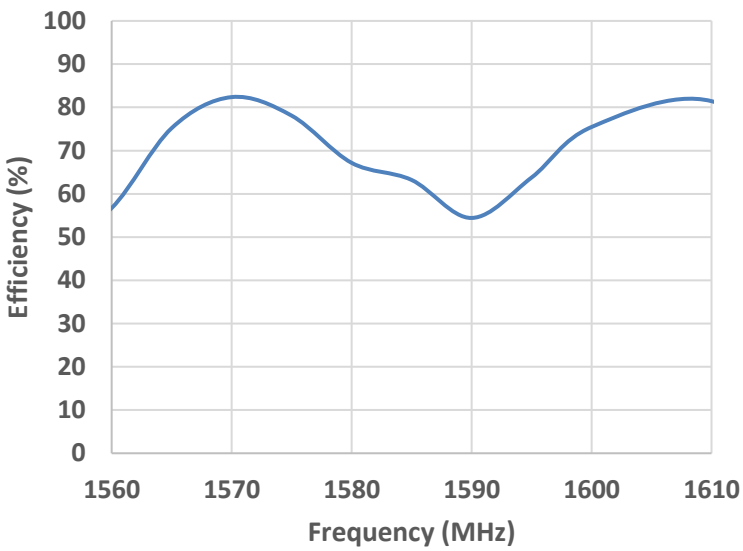
Return Loss, Efficiency and Peak Gain

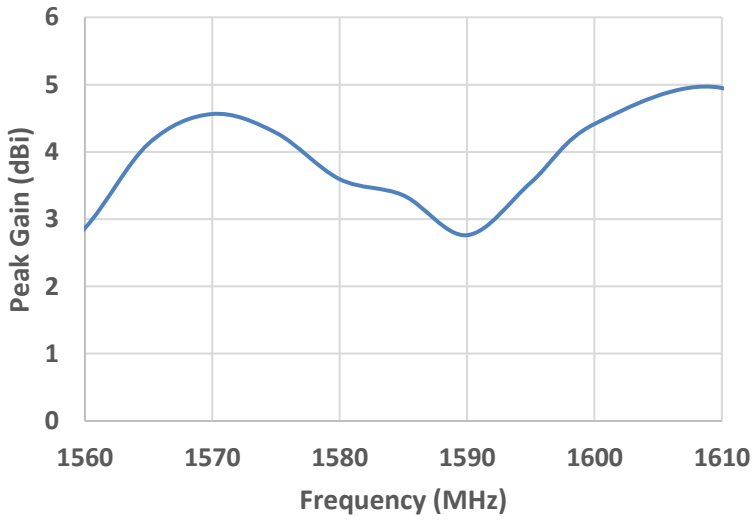
Return Loss (1560 – 1610 MHz)



Efficiency (1560 – 1610 MHz)



Peak Gain (1560 – 1610 MHz)



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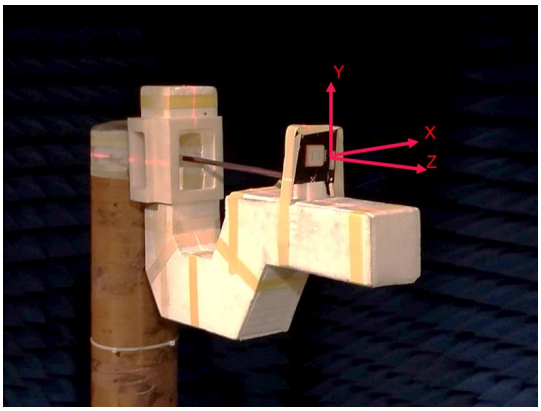
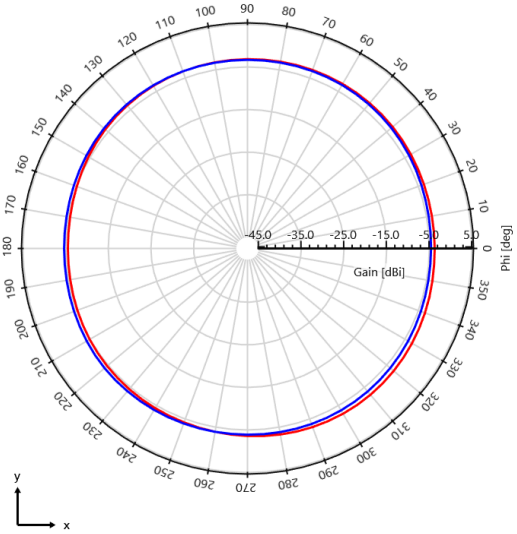
Antenna Radiation Patterns

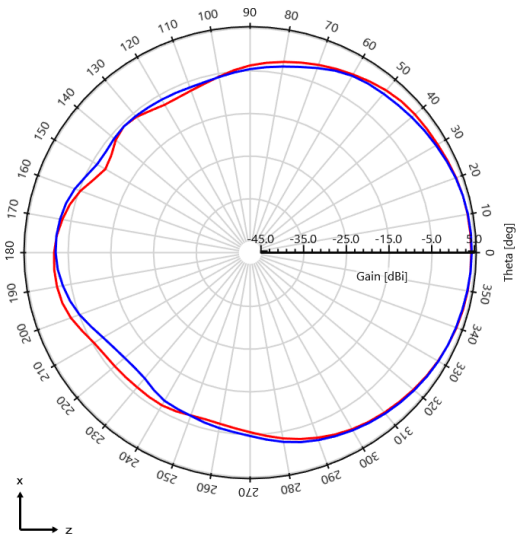
Measured at 1575 MHz & 1600 MHz



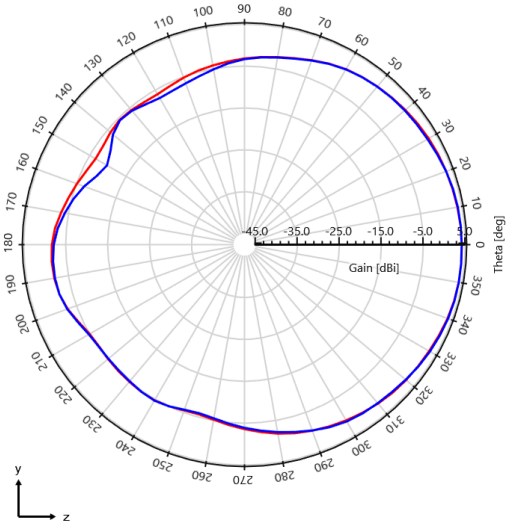
Gain (Total) - Θ = 90 deg – [Plane XY]



Gain (Total) - φ = 0 deg – [Plane XZ]



Gain (Total) - φ = 90 deg – [Plane YZ]



1575 MHz
1600 MHz

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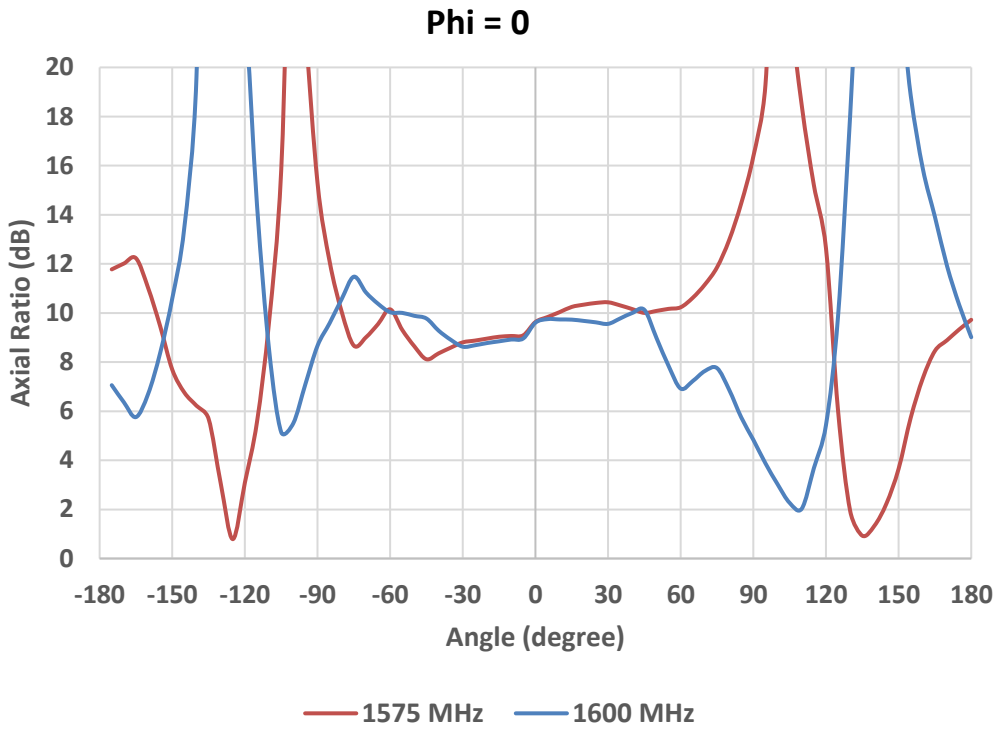
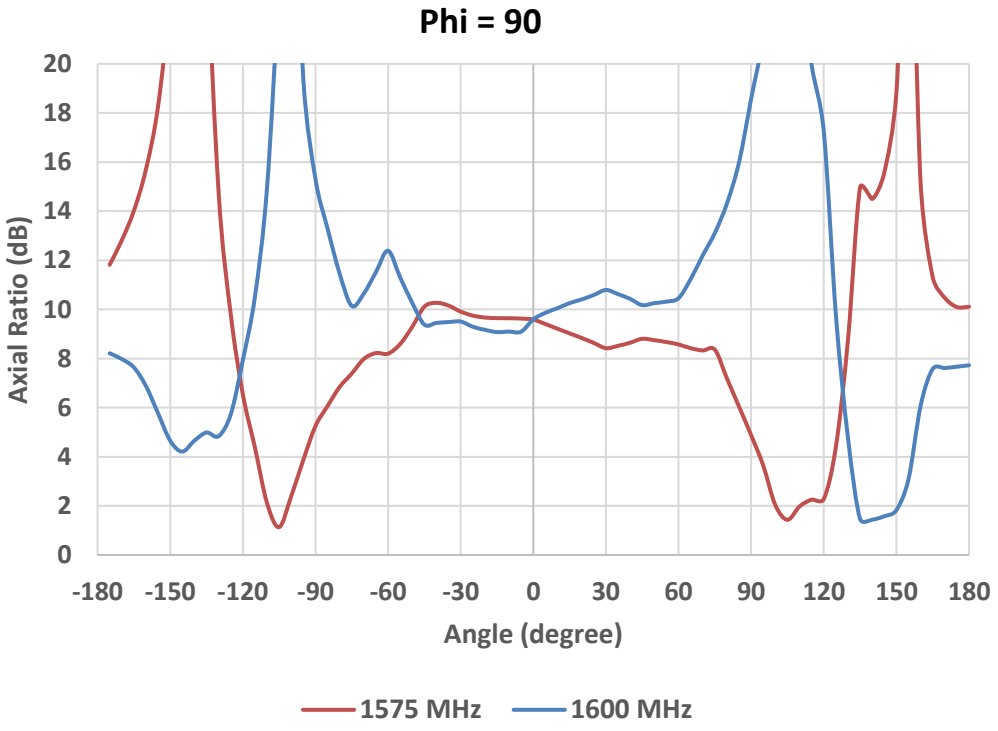
Axial Radio Plots

Measured at 1575 MHz & 1600 MHz





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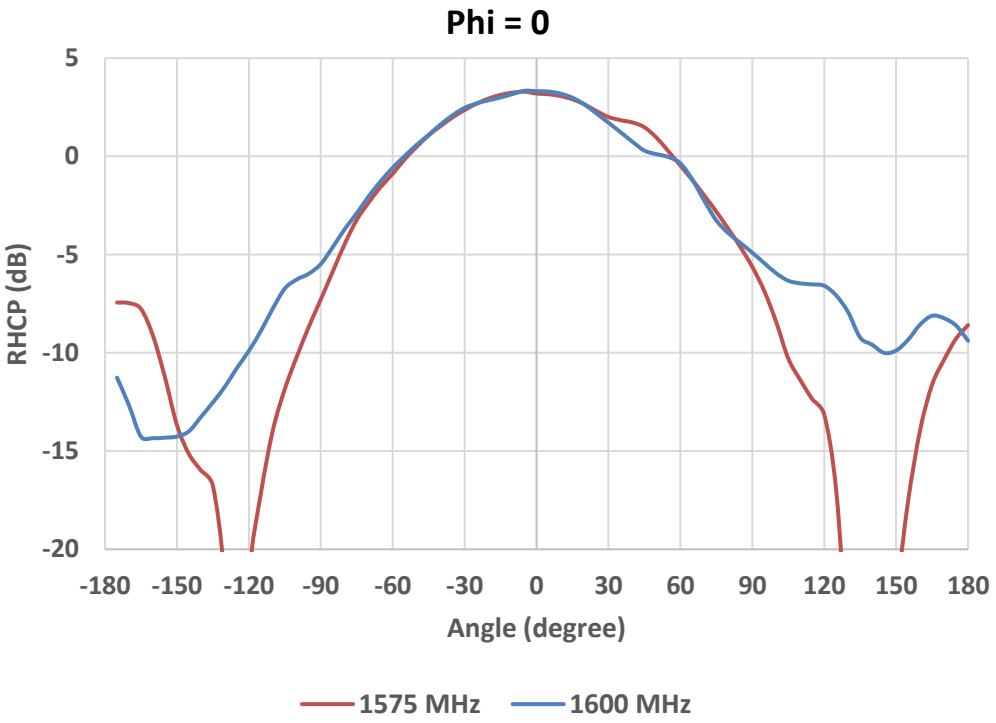
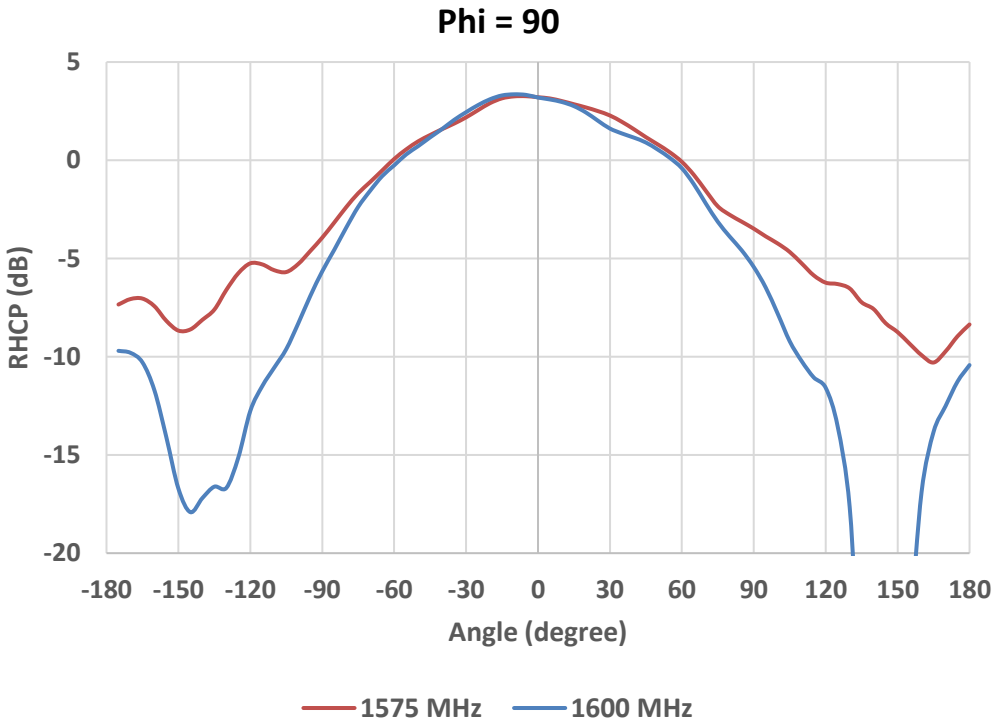
RHCP Plots

Measured at 1575 MHz & 1600 MHz





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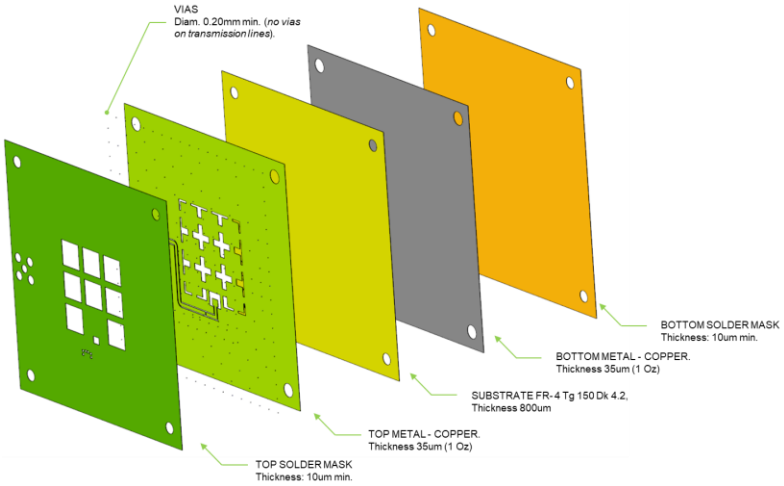
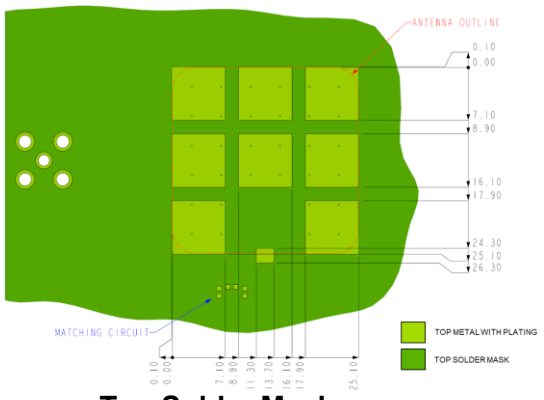
Antenna Layout (9003276-01)

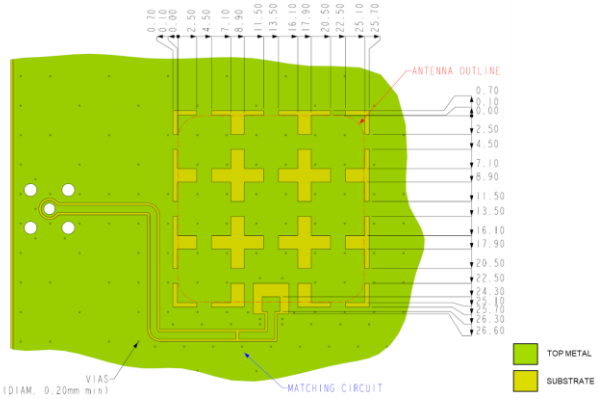
Typical Layout Dimensions (mm)
PCB 2 Layers Thickness 0.8 mm



- Additional VIAS: Diam. 0.20 mm to be placed around antenna, (no vias on transmission lines).
- Via holes must be covered by solder mask

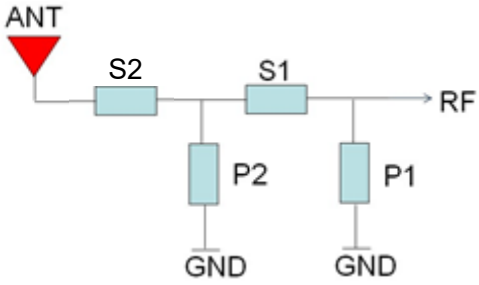


Top Solder Mask



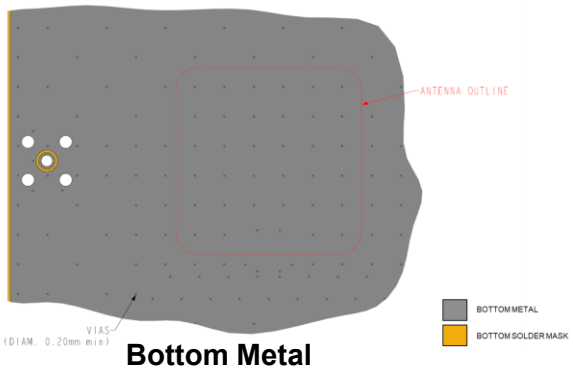
Top Metal

90 degrees SMA connector MC:

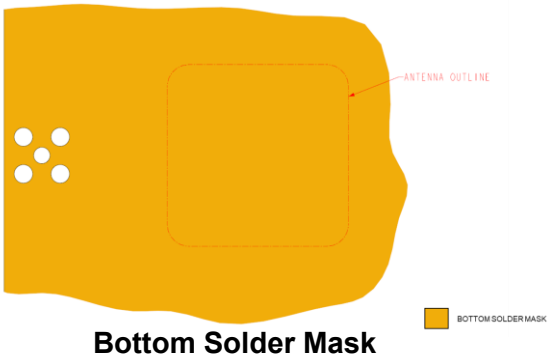


Matching Pi Network

Matching	Value
P1	NA
S1	0 Ohm
P2	NA
S2	0 Ohm



Bottom Metal



Bottom Solder Mask

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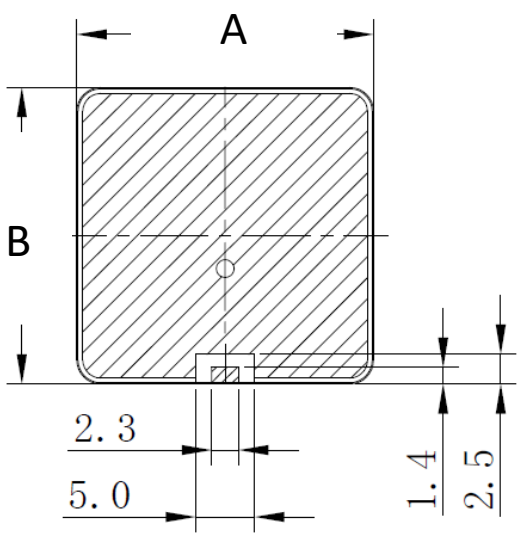
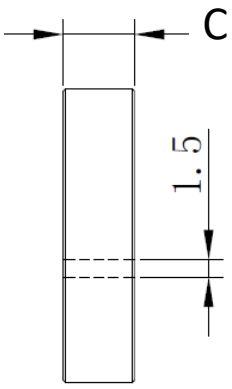
Mechanical Dimensions

Typical antenna dimensions, in mm.

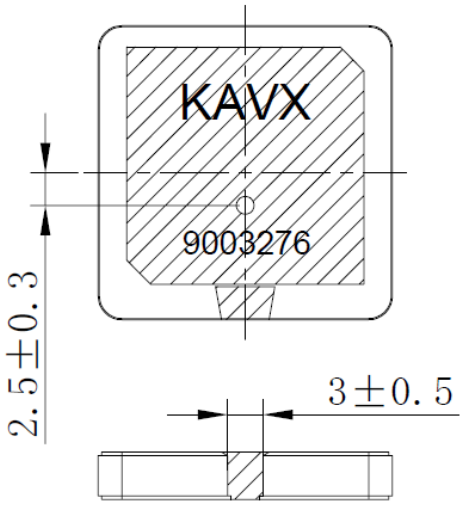
Part Number	A	B	C
9003276	25.0 ± 0.3	25.0 ± 0.3	4.00 ± 0.2



Bottom View



Side View



Top View

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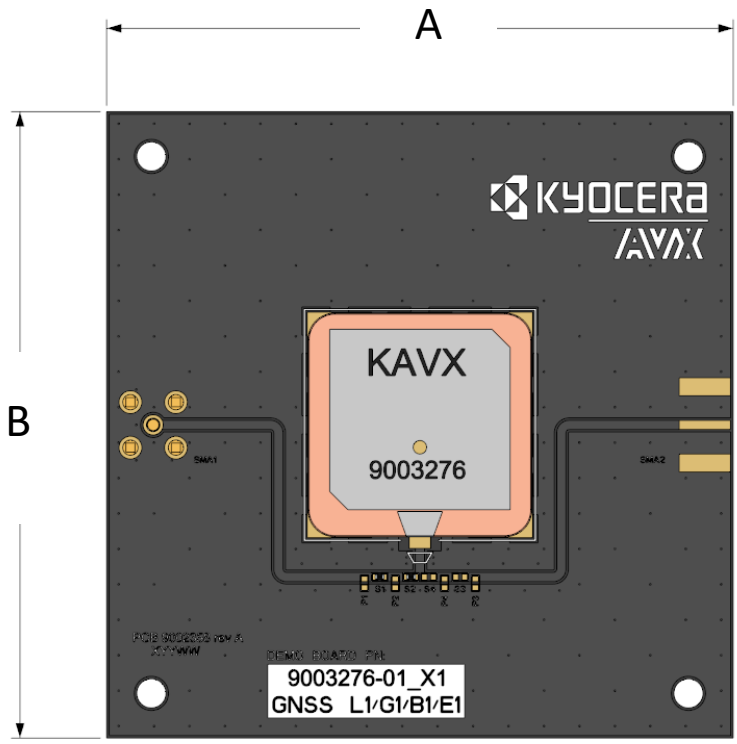
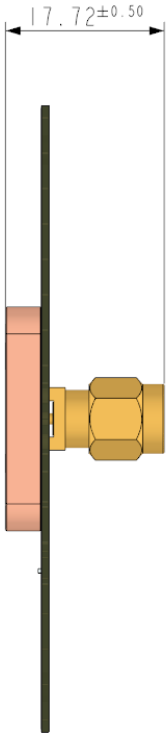
Antenna Demo Board

Typical dimensions, in mm.

Part Number	A	B
9003276-01	70.0 ± 0.15	70.0 ± 0.15



Top View



Side View

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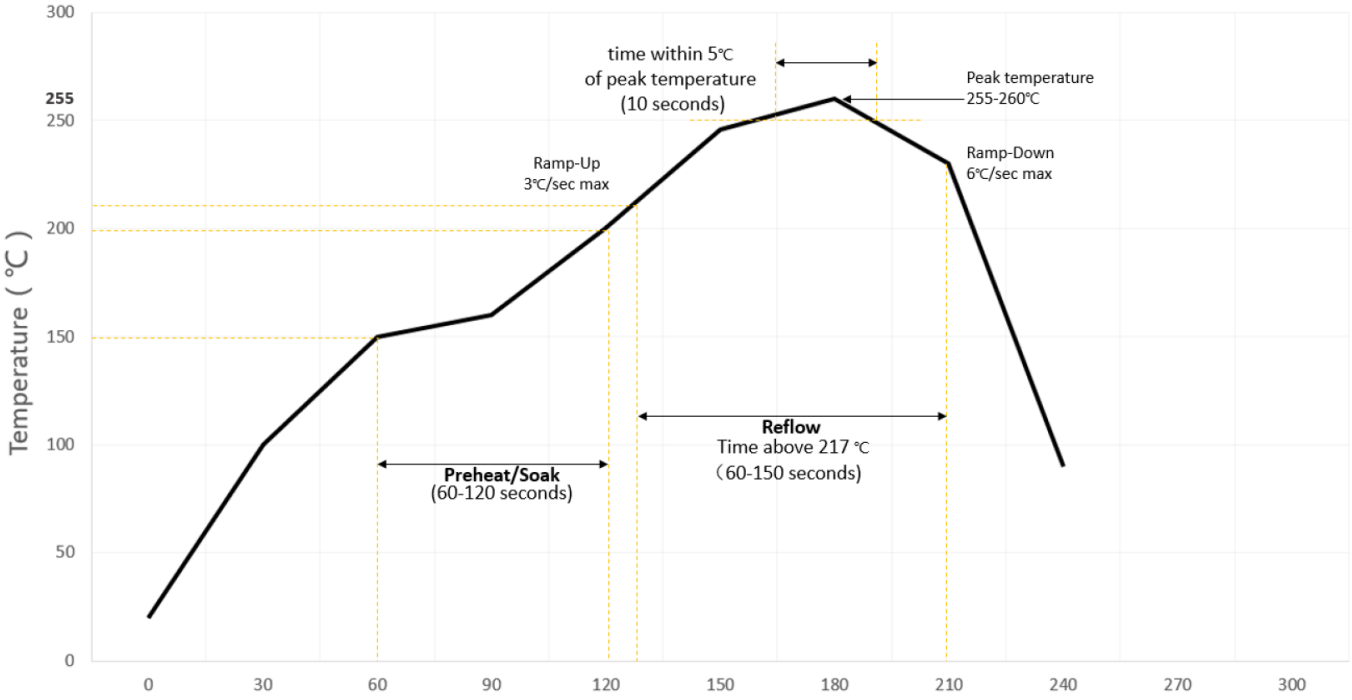
Recommended Reflow Soldering Profile

The recommended method for soldering the antenna to the board is forced convection reflow soldering. The following suggestions provide information on how to optimize the reflow process:



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Dual-Feed GPS L1/L5 Stacked Patch Antenna Specifications.
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Additional Resources - 9003276

3D FIT File:
https://www.kyocera-avx.com/download/antennas/ME-FIT/9003276_ME_fit.zip

DXF File:
https://www.kyocera-avx.com/download/antennas/3D-DXF/9003276_3D-DXF.zip

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