# GNSS

ST0543-00-N12-U

Amphenol

**Datasheet**

## GNSS Patch Antenna

Embedded

18 × 18 × 4 mm

**GNSS Antenna**

## Features:

The patch antenna has much higher efficiency and small form factor, easy mounting with SMT, suitable for mounting inside device.

## Applications:

- GNSS enabled devices
- Portable Handsets
- Automotive Navigation
- Marine buoys
- Tracking and Positioning

RoHS

## Electrical Specifications

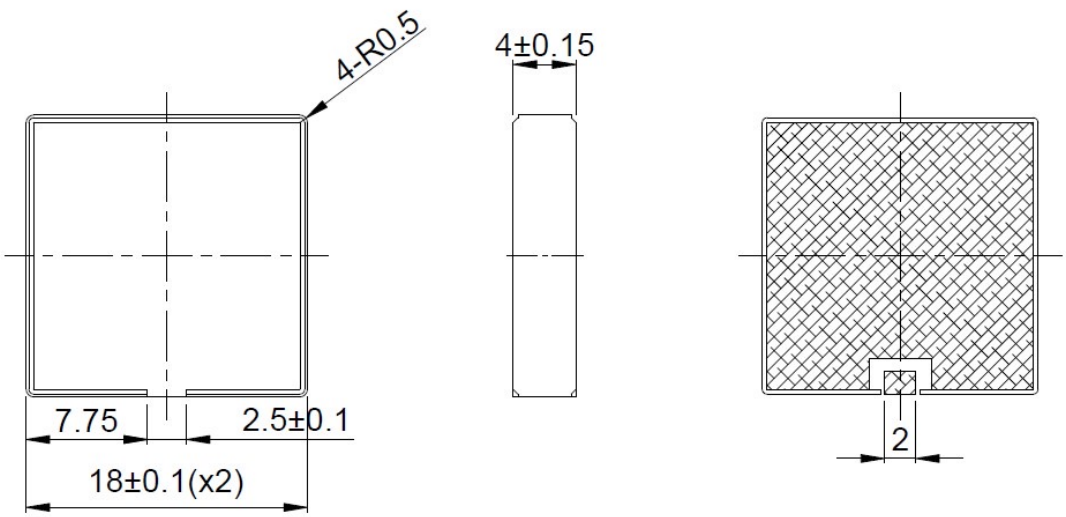
| Antenna Characteristics By Range Of Receiving Frequency | | |
|---|---|---|
| **Frequency (MHz) @Center Frequency** | 1575.42 ± 1 | 1602 ± 5 |
| **Return Loss (dB)** | < -10.9 | < -10.9 |
| **Gain (dBi) @Zenith at 50mm × 50mm ground** | 3.1 | 4.5 |
| **Bandwidth (MHz) @Return Loss : -10dB** | 4 | 4 |
| **Efficiency (%)** | 67 | 62 |
| **Impedance (Ω)** | 50 | 50 |

| Mechanical Specifications | |
|---|---|
| **Mechanical** | |
| **Dimension (mm)** | 18.0 x 18.0 x 4.0 |
| **Material** | Ceramic |
| **Weight (g)** | 6.0 |

| Environmental | |
|---|---|
| **Temperature Range (˚C)** | -40 to 105 |
| **Humidity** | Non-condensing 40˚C 95% RH |
| RoHS Compliant | |

## Mechanical Drawing

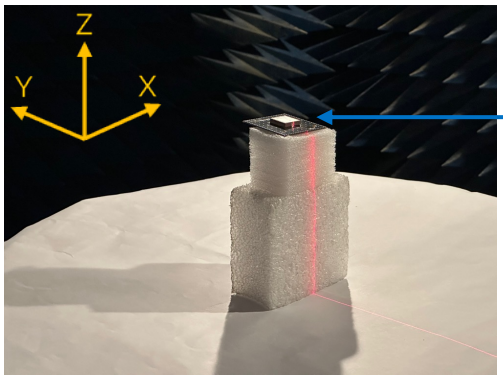
Unit : mm



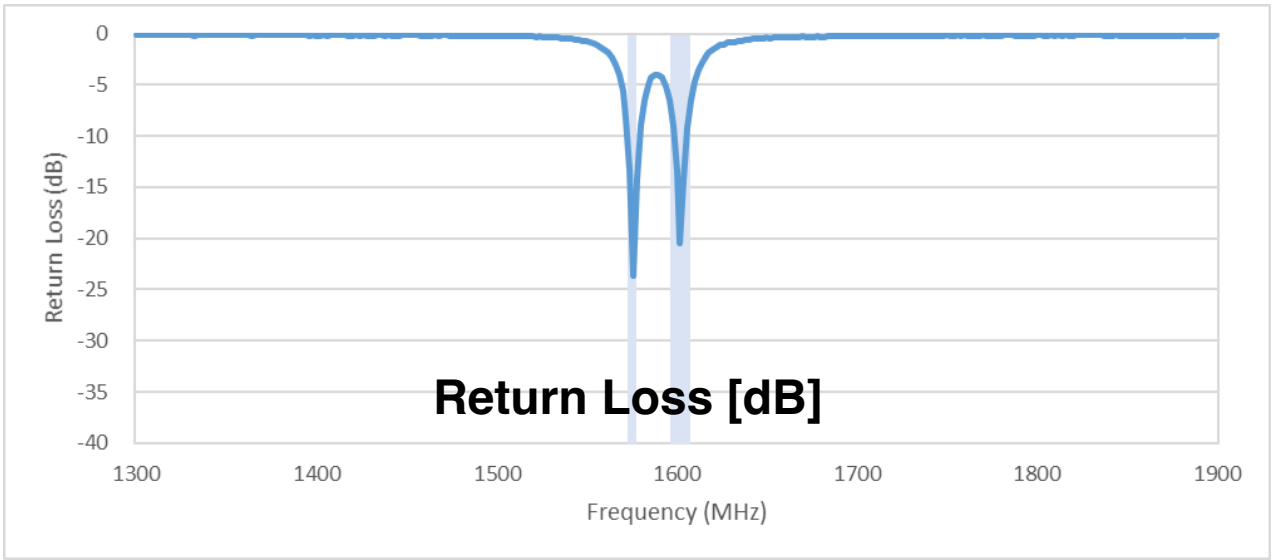

TOP Side

BOTTOM Side

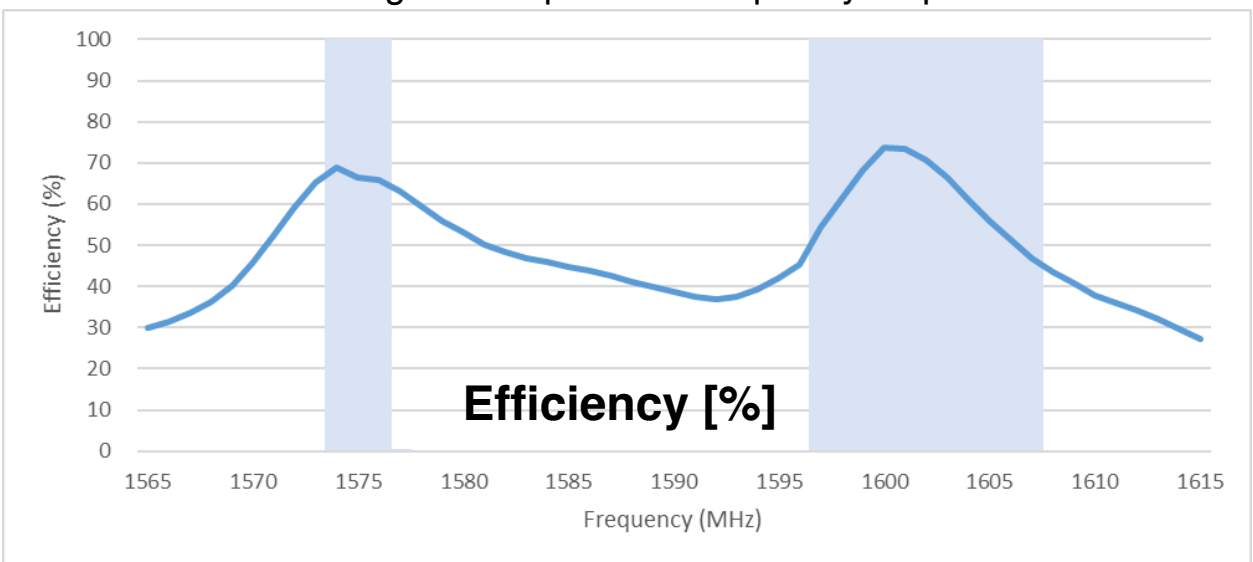
# Antenna Testing Includes Evaluation Board




Test setup, measurement performed in 3D anechoic chamber.

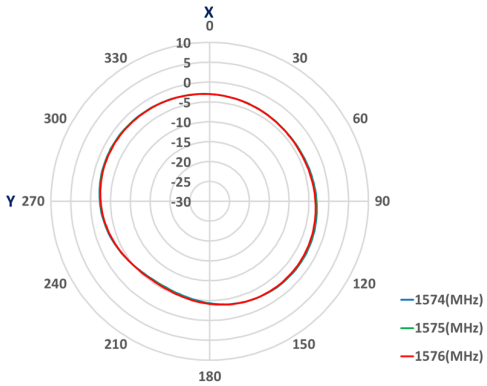


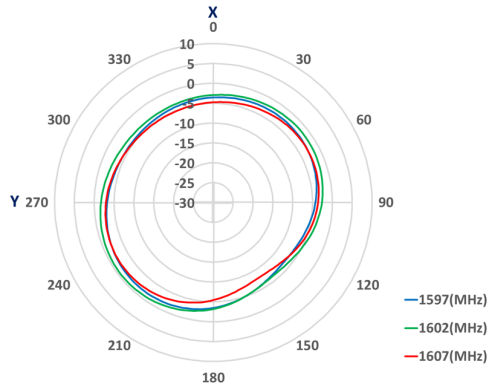

Blue background represents frequency response.



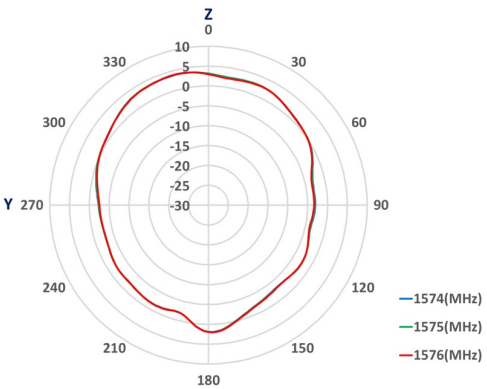
# Radiation Pattern - Free Space

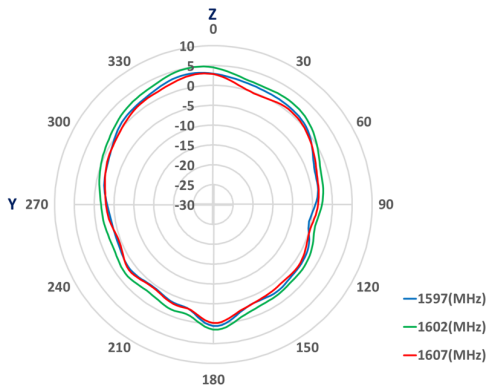
## XY - Plane



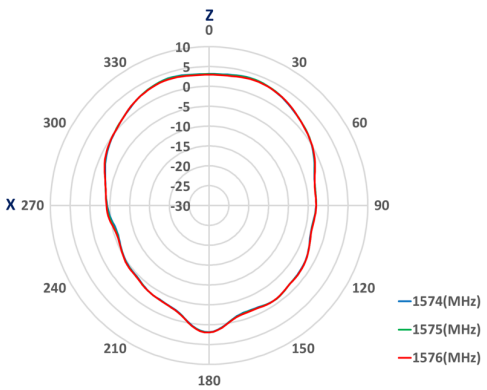



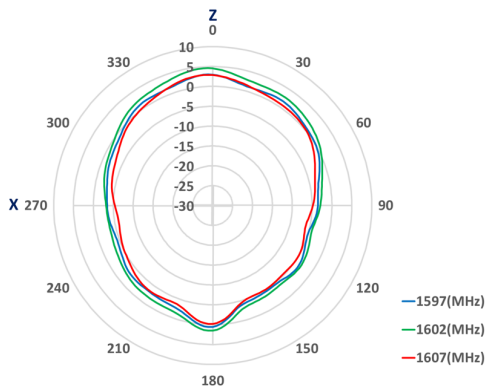

## YZ - Plane



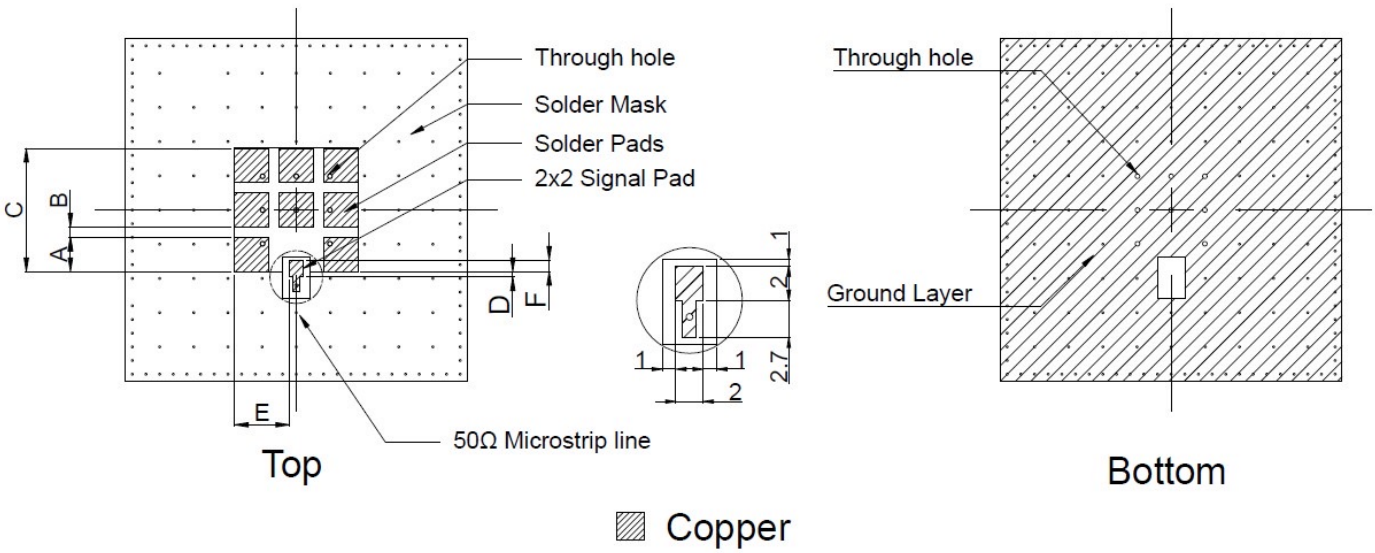

## XZ - Plane



# Layout Dimension

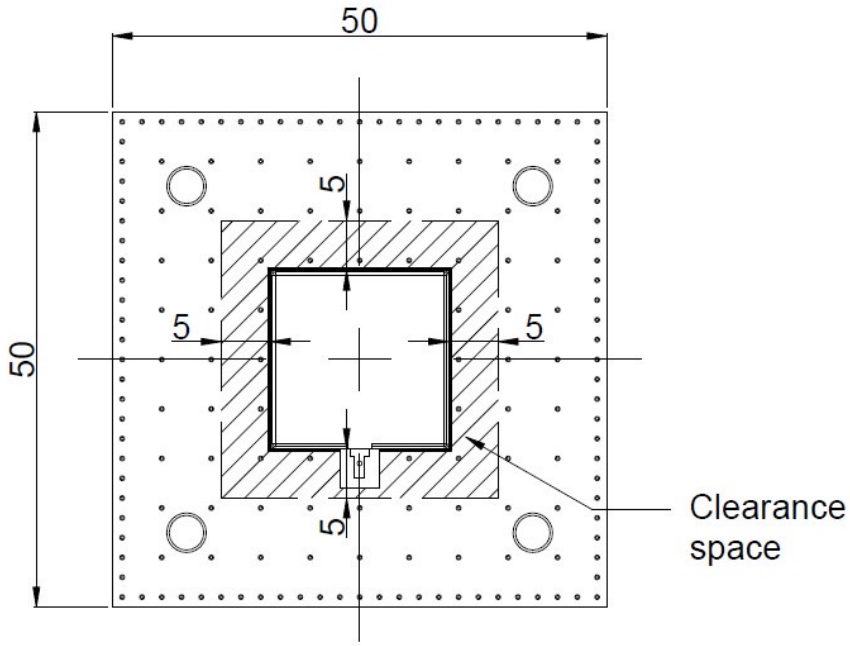
Unit : mm



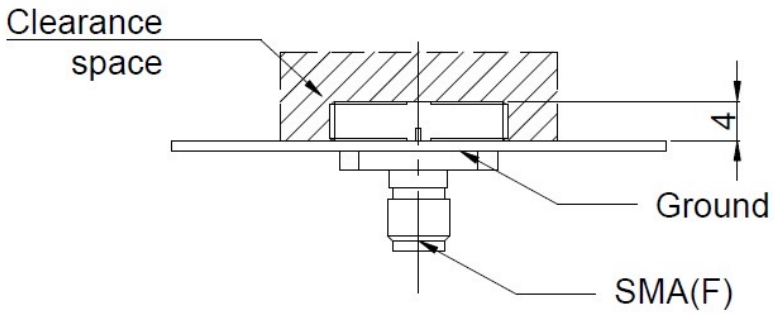

| Size | | | | | | |
|---|---|---|---|---|---|---|
| Type | A | B | C | D | E | F |
| 18x18x4 | 5±0.2 | 1.5±0.2 | 18±0.2 | 0.4±0.2 | 8±0.2 | 1.6±0.2 |

# Evaluation Board

Unit : mm




It's can't be obscured metal
in top of antenna space.



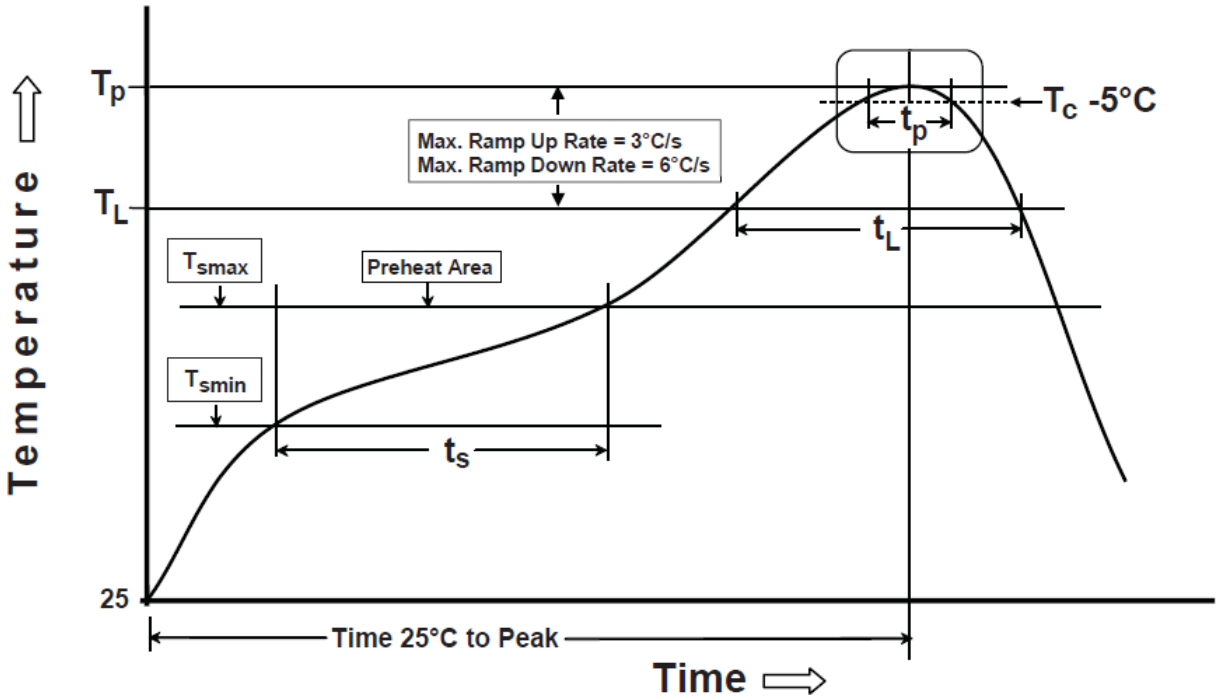

Base Material : FR-4, T=1.0

# Recommended Reflow Temperature Profile

This products can be assembled following Pb-free assembly. According to the Standard **IPC/JEDEC J-STD-020C**, the temperature profile suggested is as follow :

| Reflow Setting | | |
|---|---|---|
| **Phase** | **Profile Features** | **Pb-Free Assembly (Sn Ag Cu)** |
| **PREHEAT** | -Temperature min (Ts min.)<br>-Temperature max (Ts max.)<br>-Time (ts) form (Ts min. to Ts max.) | 150°C<br>200°C<br>60~120 seconds |
| **RAMP-UP** | Avg. ramp-up rate (Ts max. to TP) | 3°C / second (max) |
| **REFLOW** | -Temperature (TL)<br>-Total time above TL (t L) | 217°C<br>30~100 seconds |
| **PEAK** | -Temperature (TP)<br>-Time (tp) | 260°C<br>10~20 second |
| **RAMP-DOWN** | Rate | 6°C / second max. |
| Time from 25°C to peak temperature | | 8 minutes max. |
| Composition of solder paste | | 96.5Sn / 3Ag / 0.5Cu |
| Solder paste model | | SHENMAO PF606-P26 |

*Note：All the temperature measure point is on top surface of the component, if temperature over recommend, it will make component surface peeling or damage.




The graphic shows temperature profile component assembly process in reflow ovens.

## Soldering With Iron

**Soldering condition :**

Soldering iron temperature 270± 10˚C. Apply preheating at 120˚C for 2~3 minutes. Finish soldering for each terminal within 3 seconds, if soldering iron over temperature 270± 10˚C or 3 seconds, it will make component surface peeling or damage. Soldering iron can not leakage of electricity.

| Revisions | | | | |
|---|---|---|---|---|
| Rev. | Description | Date | ECN | Approval |
| A | Initial Release | 2023-06-17 | ST0543-00-N12-U-RA00 | ATC |