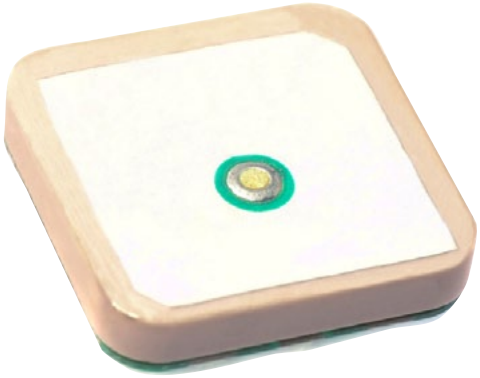
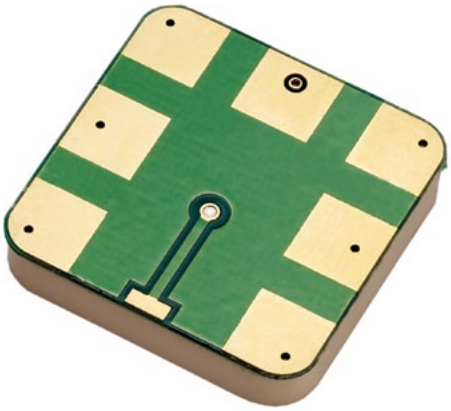




# SGP.25c

## Specification

| | |
|---|---|
| **Part No.** | **SGP.1575.25.4.C.02** |
| **Product Name** | GPS SMT Patch Antenna |
| **Features** | 25mm*25mm*4.5mm<br>1575MHz Centre Frequency<br>Patent pending<br><br>RoHS Compliant |

# 1. Introduction

This ceramic GPS patch antenna is based on smart **XtremeGain™** technology. It is mounted via SMT process and has been selected as optimal solution for the 45x45mm ground plane.

# 2. Specification

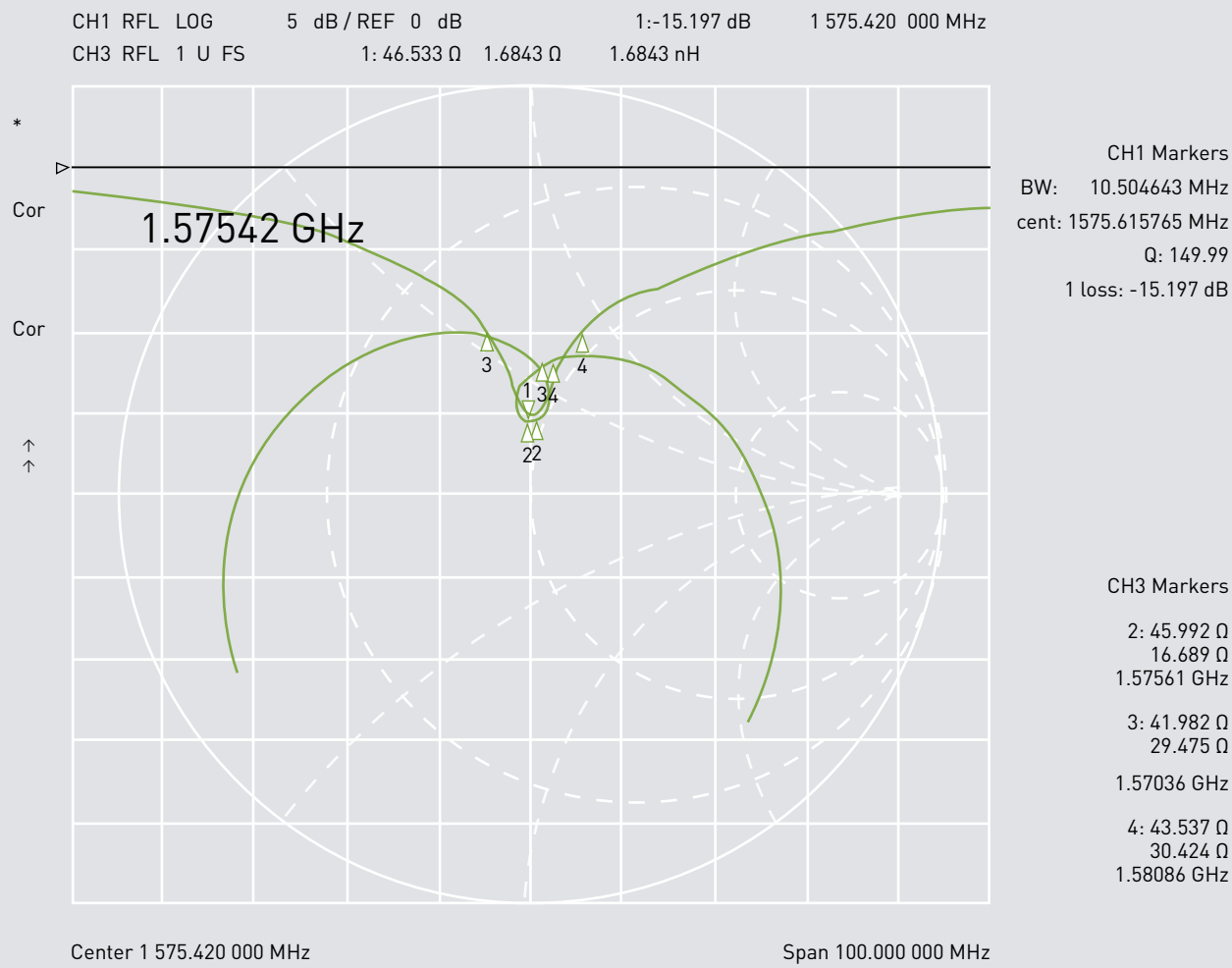
### Original Patch Specification tested on 45mm ground plane

| NO | PARAMETER | SPECIFICATION | NOTES |
|---|---|---|---|
| 1 | **Range of Receiving Frequency** | 1575.42 MHz ± 1.023 MHZ | |
| 2 | **Center Frequency** | 1575.42 ± 3MHz | With 45*45mm Ground Plane |
| 3 | **Bandwidth** | 8MHz min | Return Loss ≤-10 dB |
| 4 | **Return Loss** | ≤ -10 dB | |
| 5 | **VSWR** | 1.5 max | Centre Frequency |
| 6 | **Gain at Zenith** | +2.0 dBic typ. | Centre Frequency |
| 7 | **Gain at 10°elevation** | -1.0 dBic typ. | Centre Frequency |
| 8 | **Axial Ratio** | 3.0 dB max | Centre Frequency |
| 9 | **Polarization** | RHCP | Centre Frequency |
| 10 | **Impedance** | 50 Ohms | Centre Frequency |
| 11 | **Frequency Temperature Coefficient (τf)** | 0 ± 20ppm / °C | -40°C to +85°C |
| 12 | **Operating Temperature** | -40°C to +85°C | |

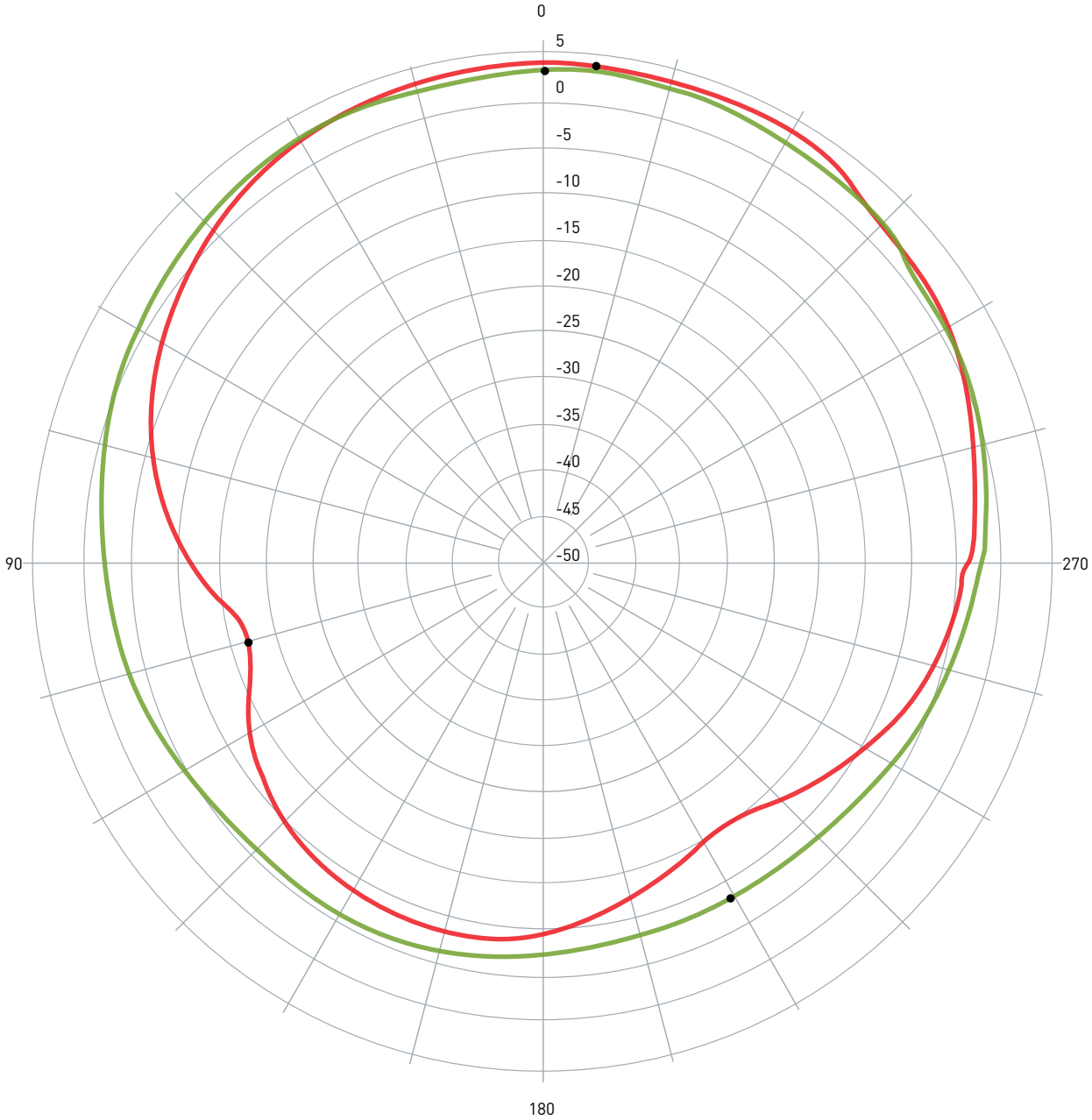
****Changes in user groundplane and environment will offset centre frequency**

# 3. Electrical Specifications

## 3.1 Return Loss, SWR, Impedance, measured on the test fixture



## 3.2 2D Radiation Pattern

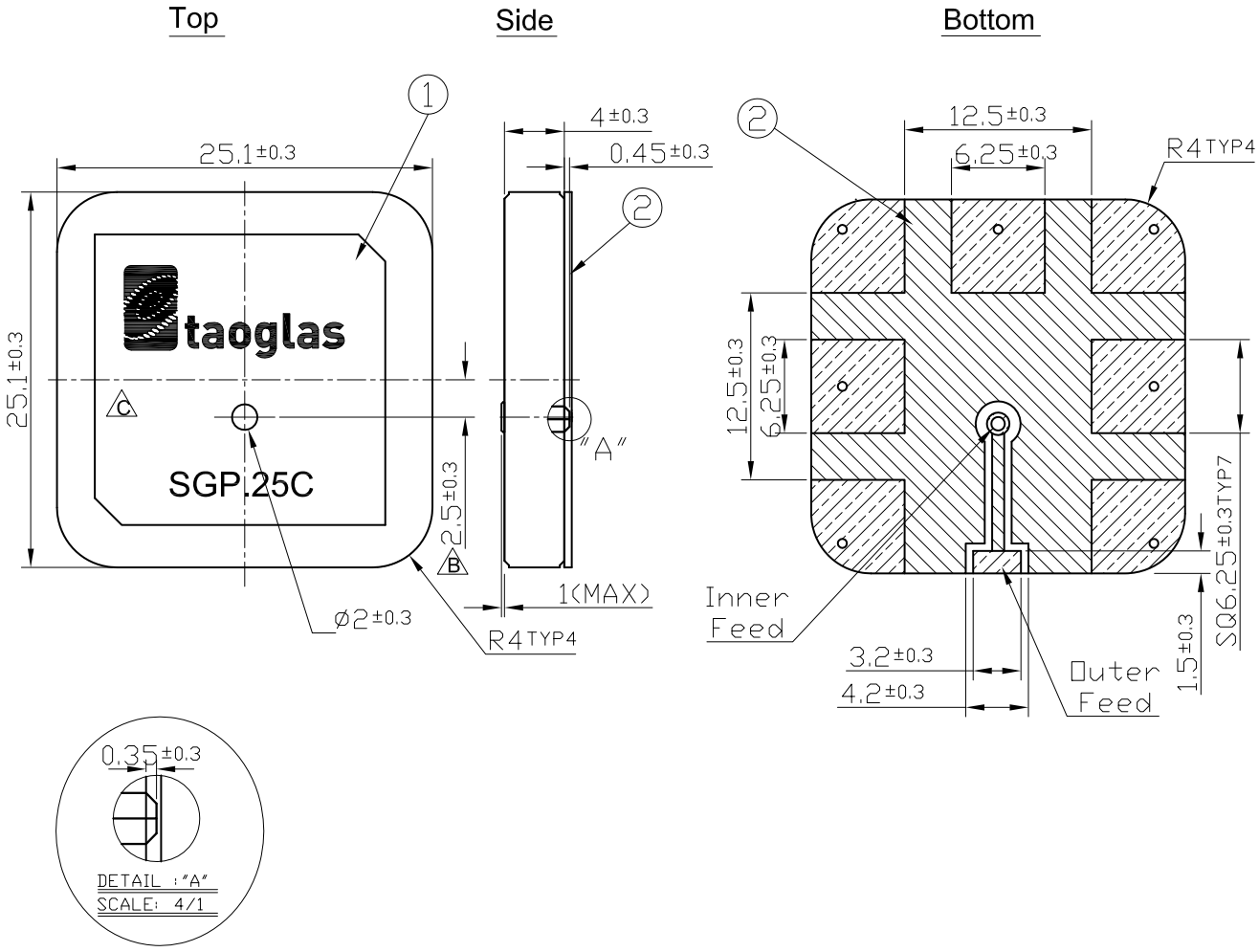



| Pattern | Model No. | Test Mode | Freq (MHz) | Max Gain(dBi) | Min Gain(dBi) | Avg. Gain(dBi) | Source Polar. |
|---|---|---|---|---|---|---|---|
| 1 | SGP.25.C | XZ | 1575.42 | 3.70 / 354.00 | -17.00 / 105.00 | -1.61 | RHCP |
| 2 | SGP.25.C | YZ | 1575.42 | 2.92 / 0.00 | -8.76 / 2099.00 | -0.96 | RHCP |

Date: 2009 / 9 / 4

# 4. Mechanical Specifications

## 4.1 Antenna Dimensions and Drawing



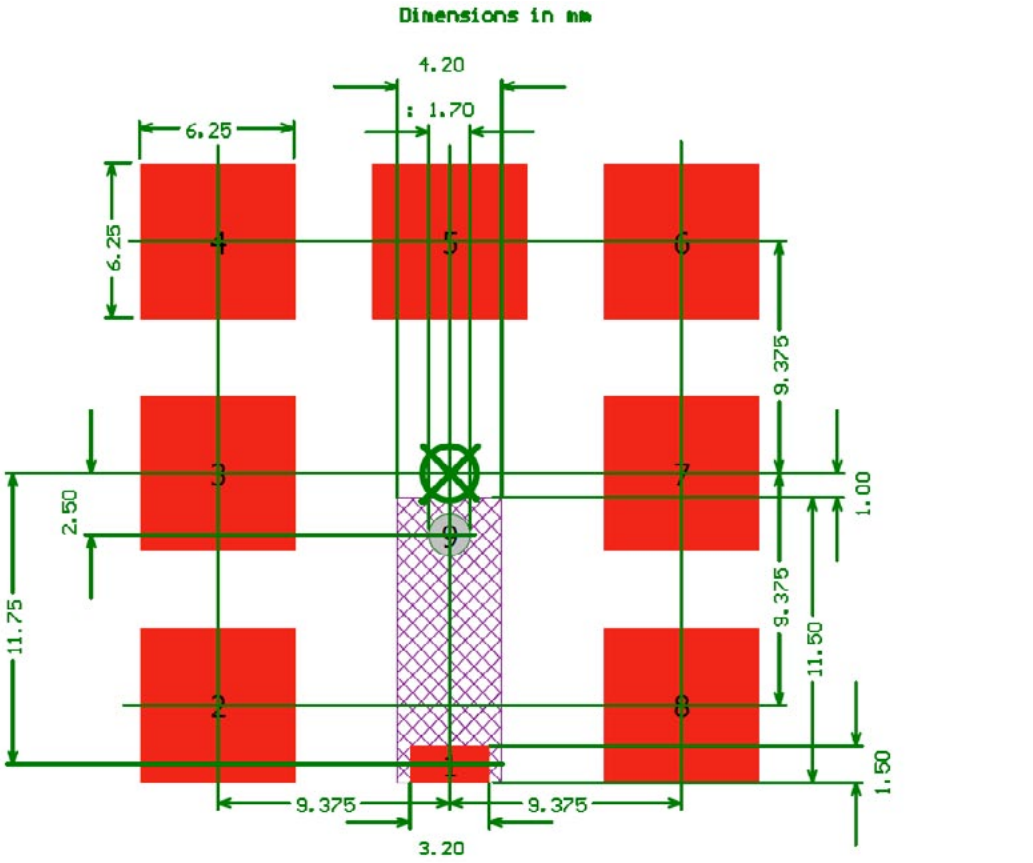

**NOTE:**

1. Solder mask.
2. Area to be soldered.
3. Dimension of 50 Ohm CPW dependent on individual board.
4. Matching circuit-capacitor and inductor values dependent on individual environment
5. Must be soldered to complete antenna feed connection

| | Name | Part No. | Material | Finish | Quantity |
|---|---|---|---|---|---|
| 1 | SGP.25 Patch 25x25x4 | SGP.25C | Ceramic | Clear | 1 |
| 2 | SGP.25 PCB | | FR 0.5t | Green | 1 |

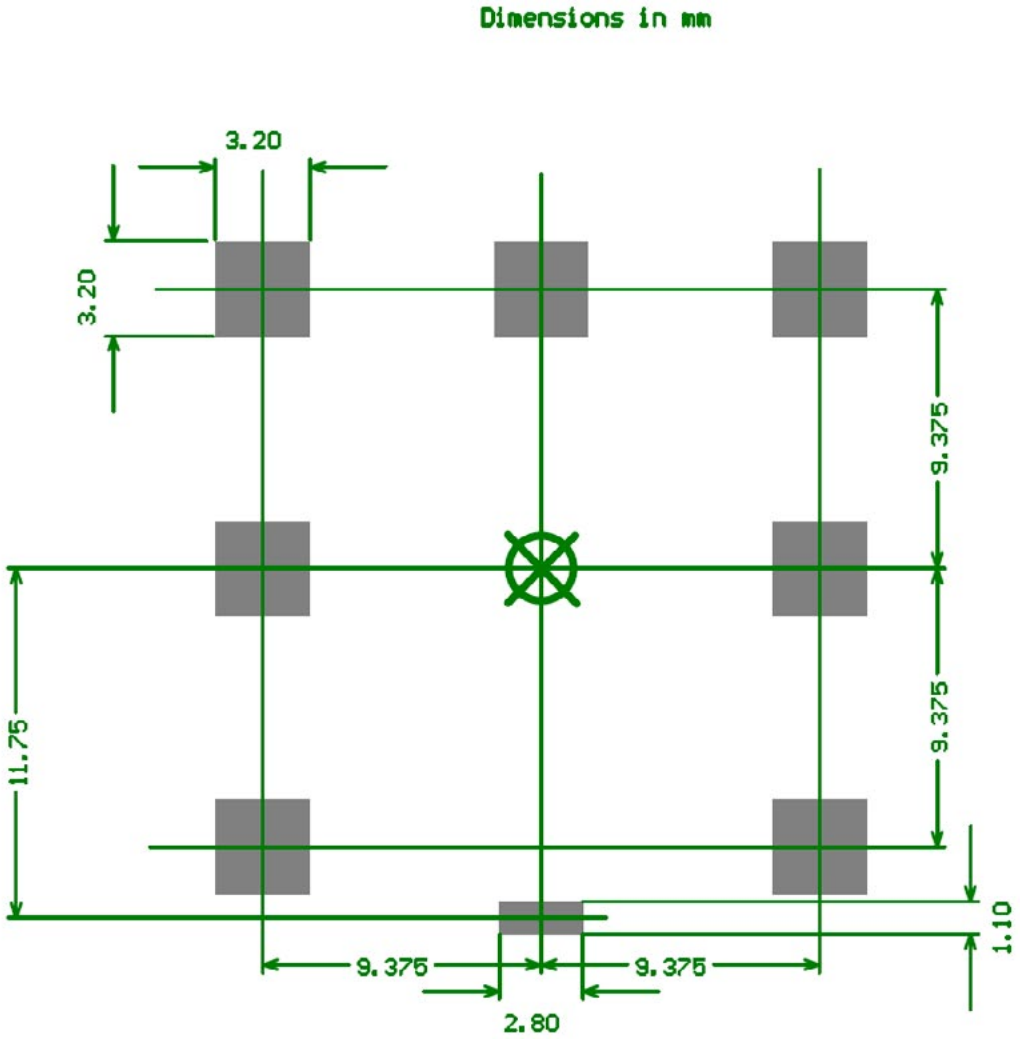
## 4.2 Antenna Footprint

### 4.2.1 Top Copper



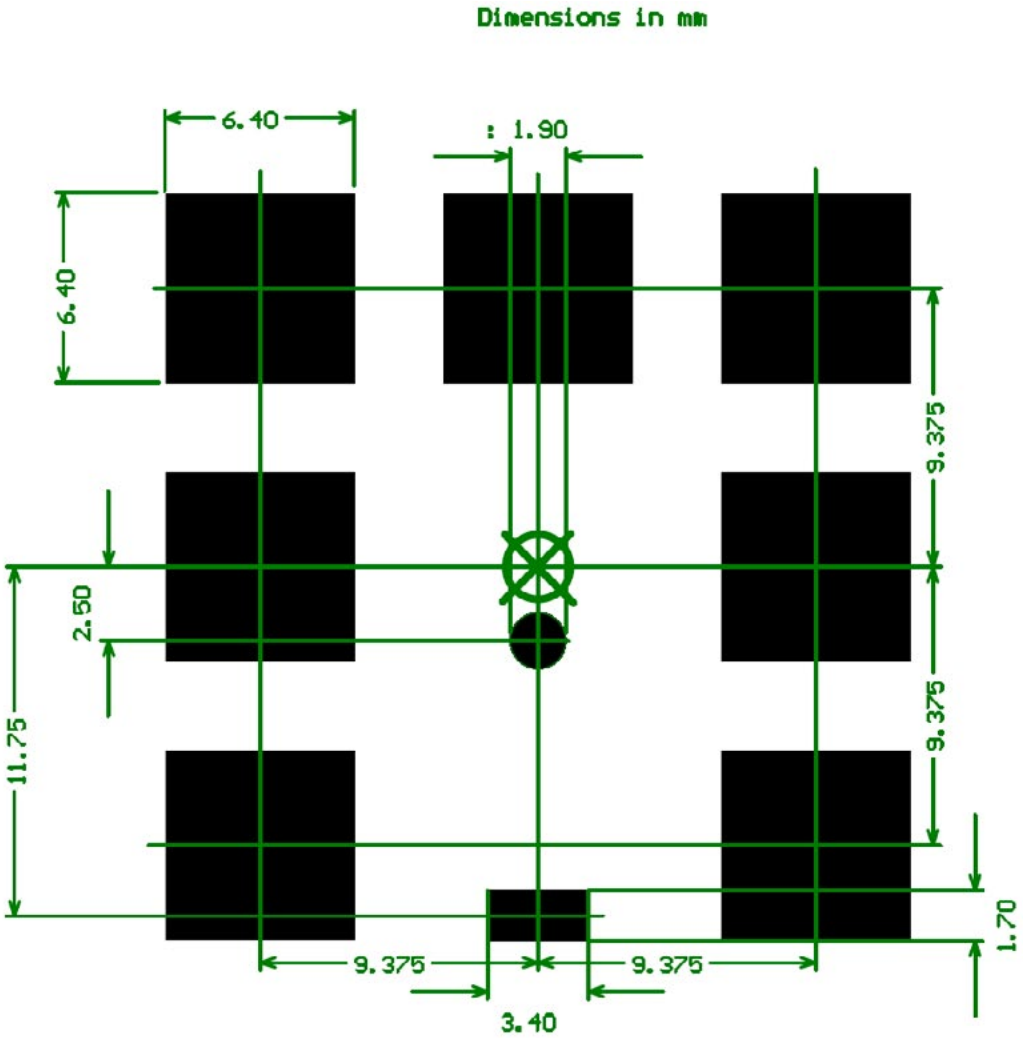
## 4.2 Antenna Footprint

### 4.2.2 Top Paste



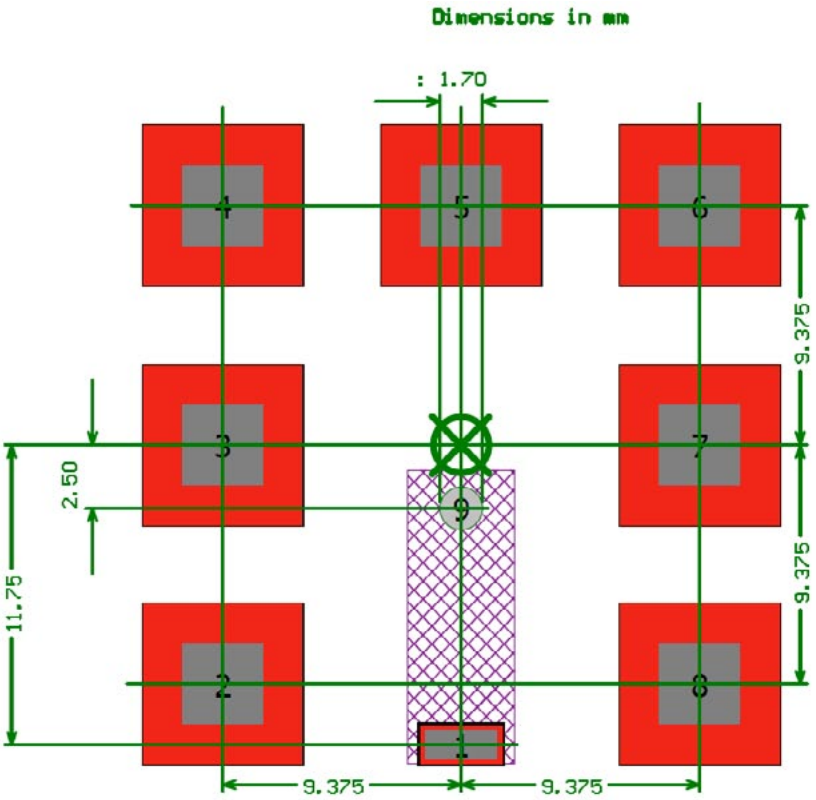
## 4.2 Antenna Footprint

### 4.2.3 Top Mask



## 4.2 Antenna Footprint

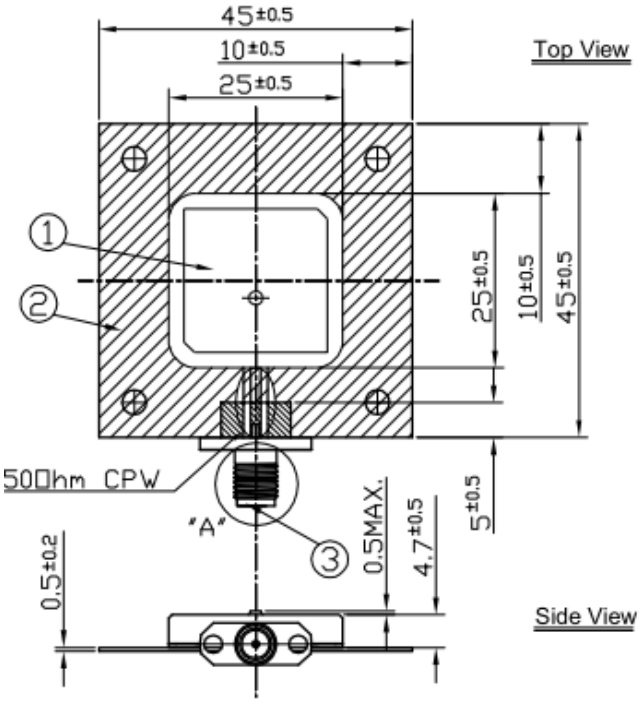
### 4.2.4 Composite

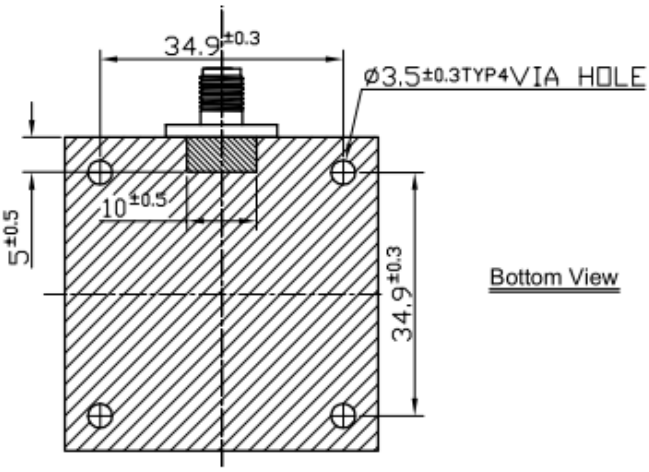



Copper Keepout Region

Pads 2, 3, 4, 5, 6, 7, 8 are the same size and should be connected to GND.
Pad 9 is a 1.70mm dia. non-plated thru-hole.
Connect 50 ohm transmission line to Pad 1.
Copper Keepout Region should extend at least 2 mm down into PCB.

## 4.3 Test Jig and Dimension

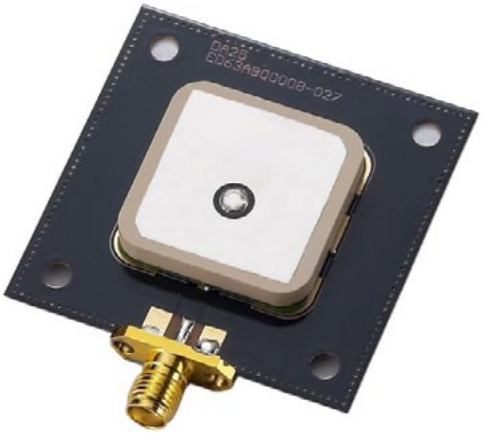


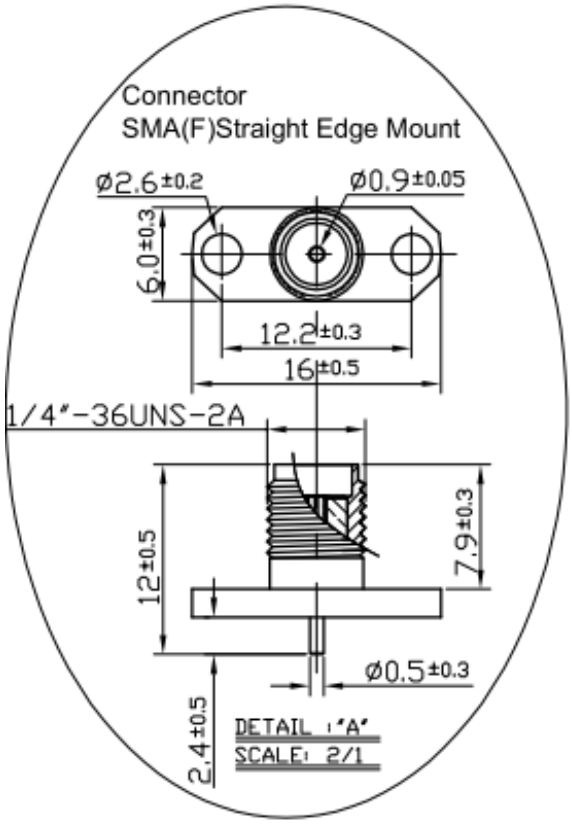




**NOTE:**

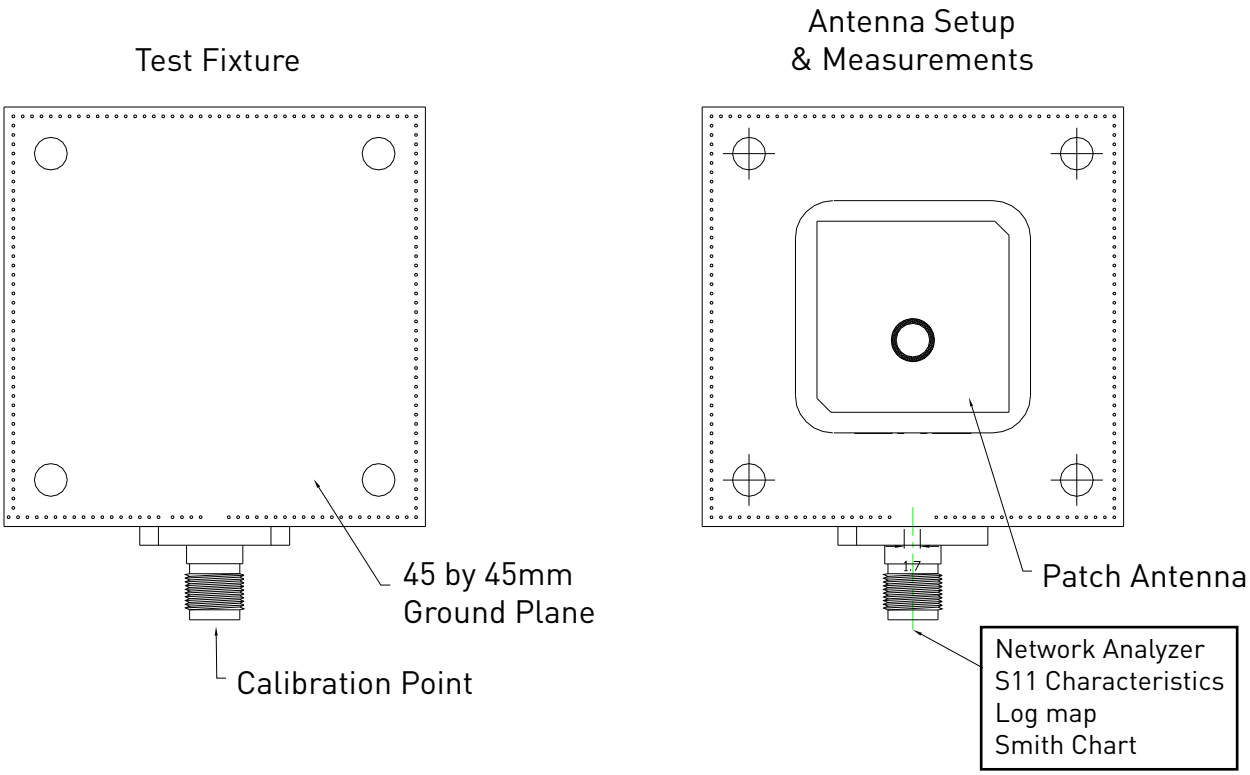
**1.** Solder Mask (Black)

**2.** Solder Area





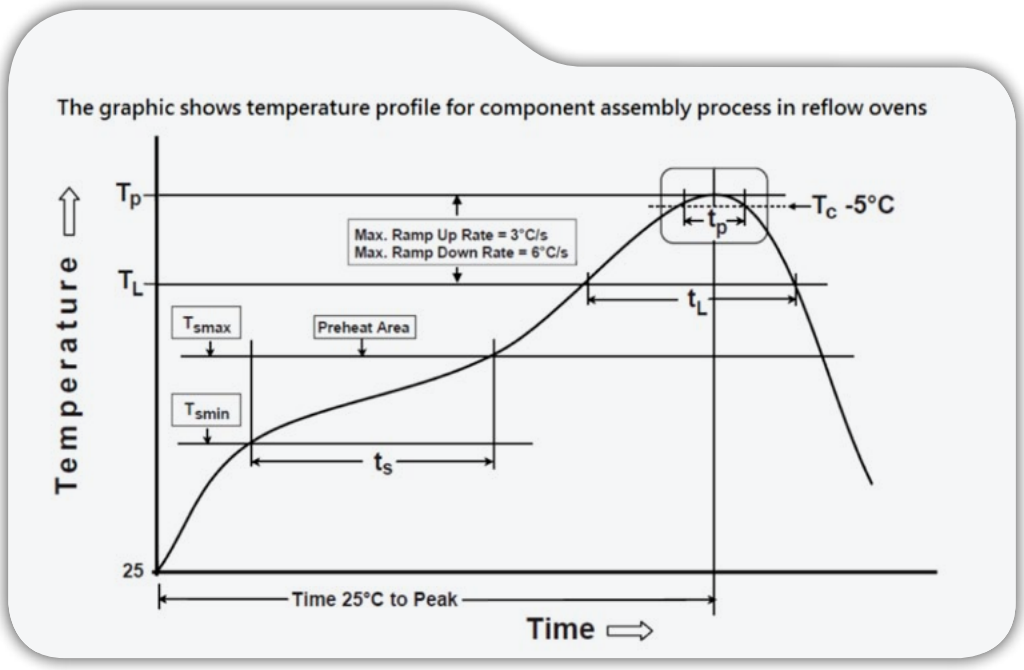
## 4.4 Test Fixture set up and measurements




# 5. Recommended Reflow Soldering Profile

SGP.25.C can be assembled following Pb-free assembly. According to the Standard IPC/JEDEC J-STD-020C, the temperature profile suggested is as follow:

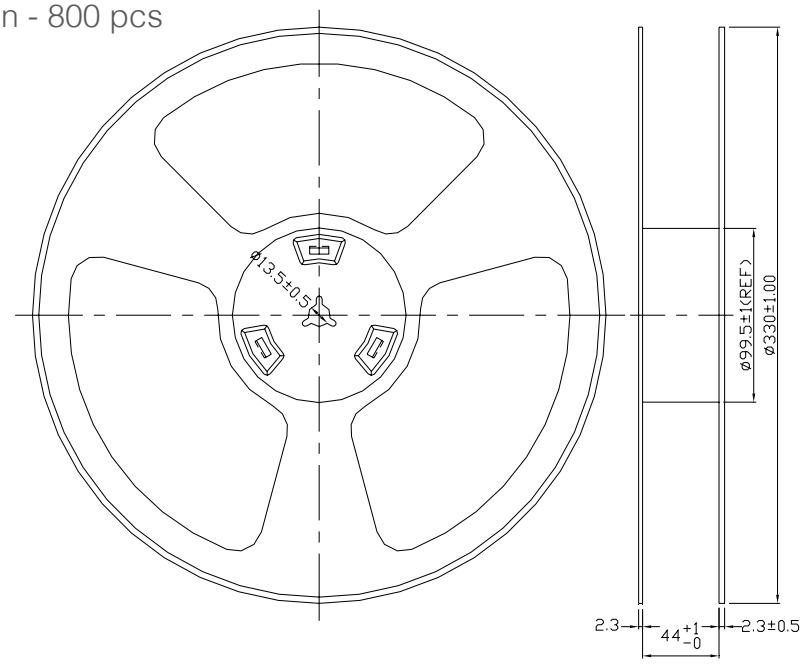
| PHASE | PROFILE FEATURES | Pb-Free Assembly (SnAgCu) |
|---|---|---|
| **PREHEAT** | Temperature Min(Tsmin) | 150°C |
| | Temperature Max(Tsmax) | 200°C |
| | Time(ts) from (Tsmin to Tsmax) | 60-120 seconds |
| **RAMP-UP** | Avg. Ramp-up Rate (Tsmax to TP) | 3°C/second(max) |
| **REFLOW** | Temperature(TL) | 217°C |
| | Total Time above TL (tL) | 30-100 seconds |
| **PEAK** | Temperature(TP) | 260°C |
| | Time(tp) | 2-5 seconds |
| **RAMP-DOWN** | Rate | 3°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 |

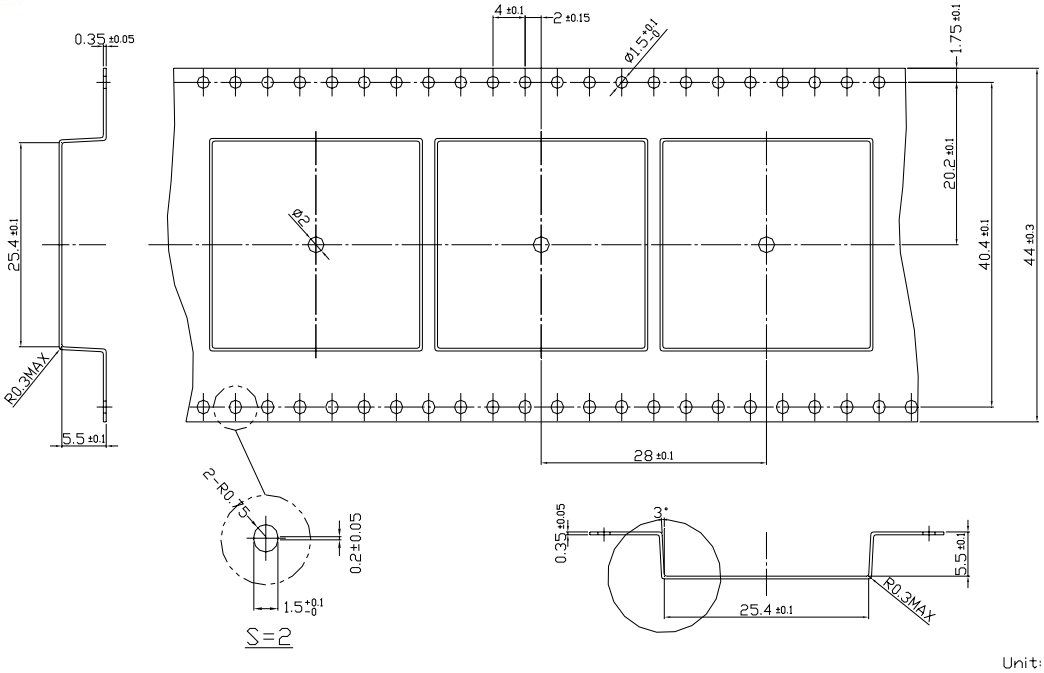



Soldering Iron condition: Soldering iron temperature 270°C±10°C.
Apply preheating at 120°C for 2-3 minutes. Finish soldering for each terminal within 3 seconds, if soldering iron temperature over 270°C±10°C or 3 seconds, it will make cause component surface peeling or damage.

## 6. Packaging

200 pcs per reel / inner carton
4 reels per outer carton - 800 pcs




Unit: mm

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