

SGP.25c

Specification

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

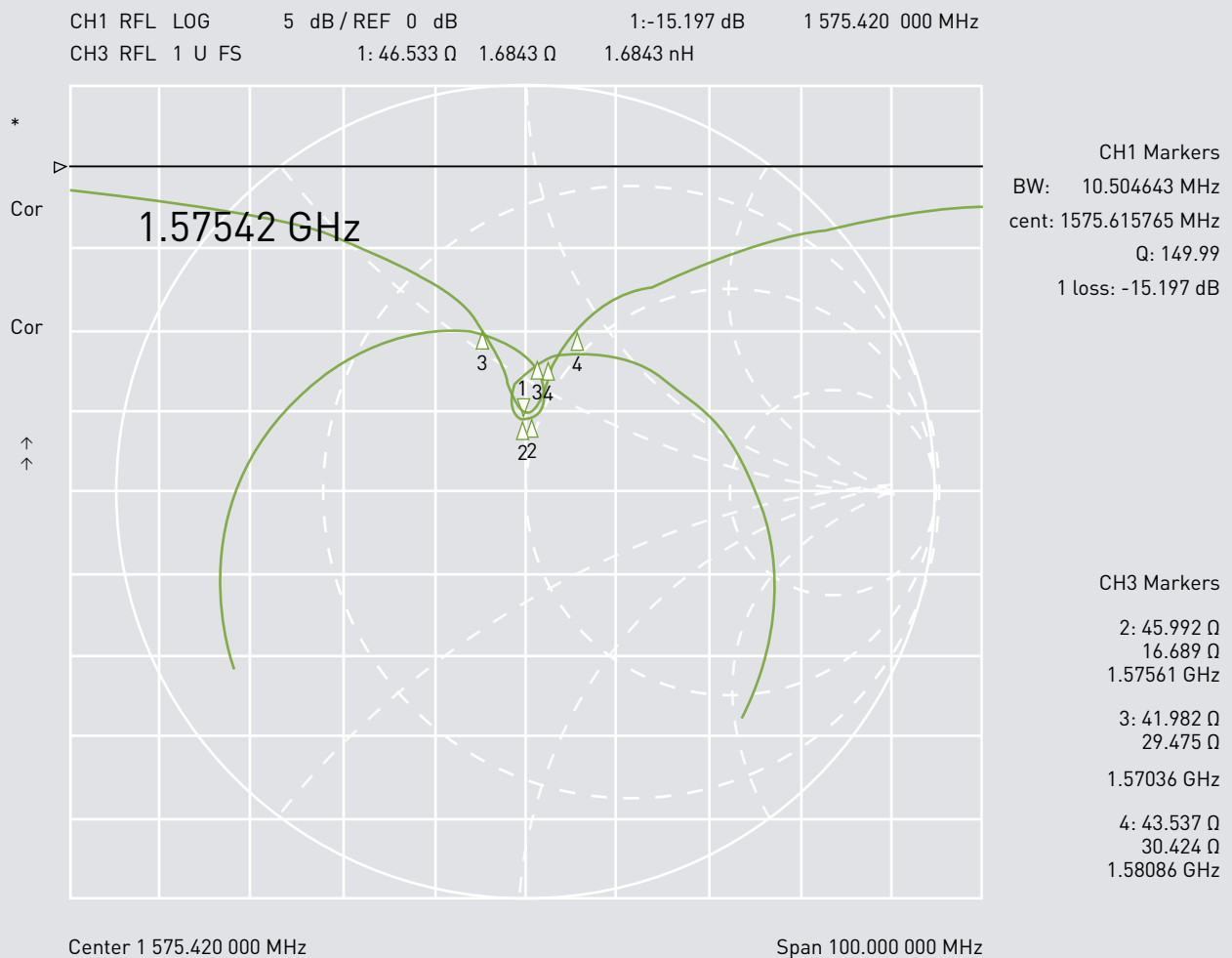
Original Patch Specification tested on 45mm ground plane

| NO | PARAMETER | SPECIFICATION | NOTES |
|----|--|-----------------------------|---------------------------|
| 1 | Range of Receiving Frequency | 1575.42 MHz \pm 1.023 MHz | |
| 2 | Center Frequency | 1575.42 \pm 3MHz | With 45*45mm Ground Plane |
| 3 | Bandwidth | 8MHz min | Return Loss \leq -10 dB |
| 4 | Return Loss | \leq -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 (τ_f) | 0 \pm 20ppm / °C | -40°C to +85°C |
| 12 | Operating Temperature | -40°C to +85°C | |

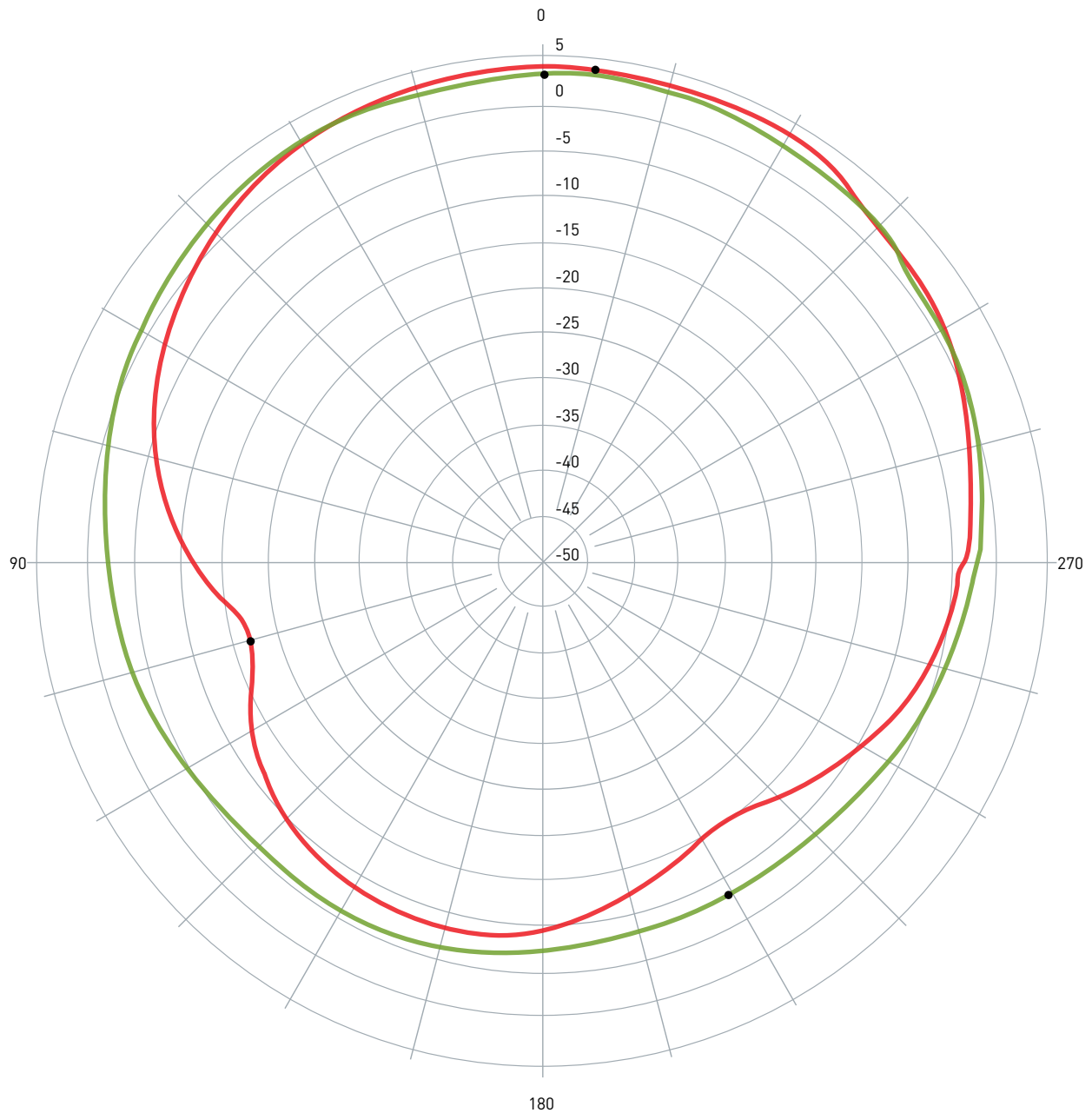
****Changes in user groundplane and environment will offset centre frequency**

3. Electrical Specifications

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



3.2 2D Radiation Pattern

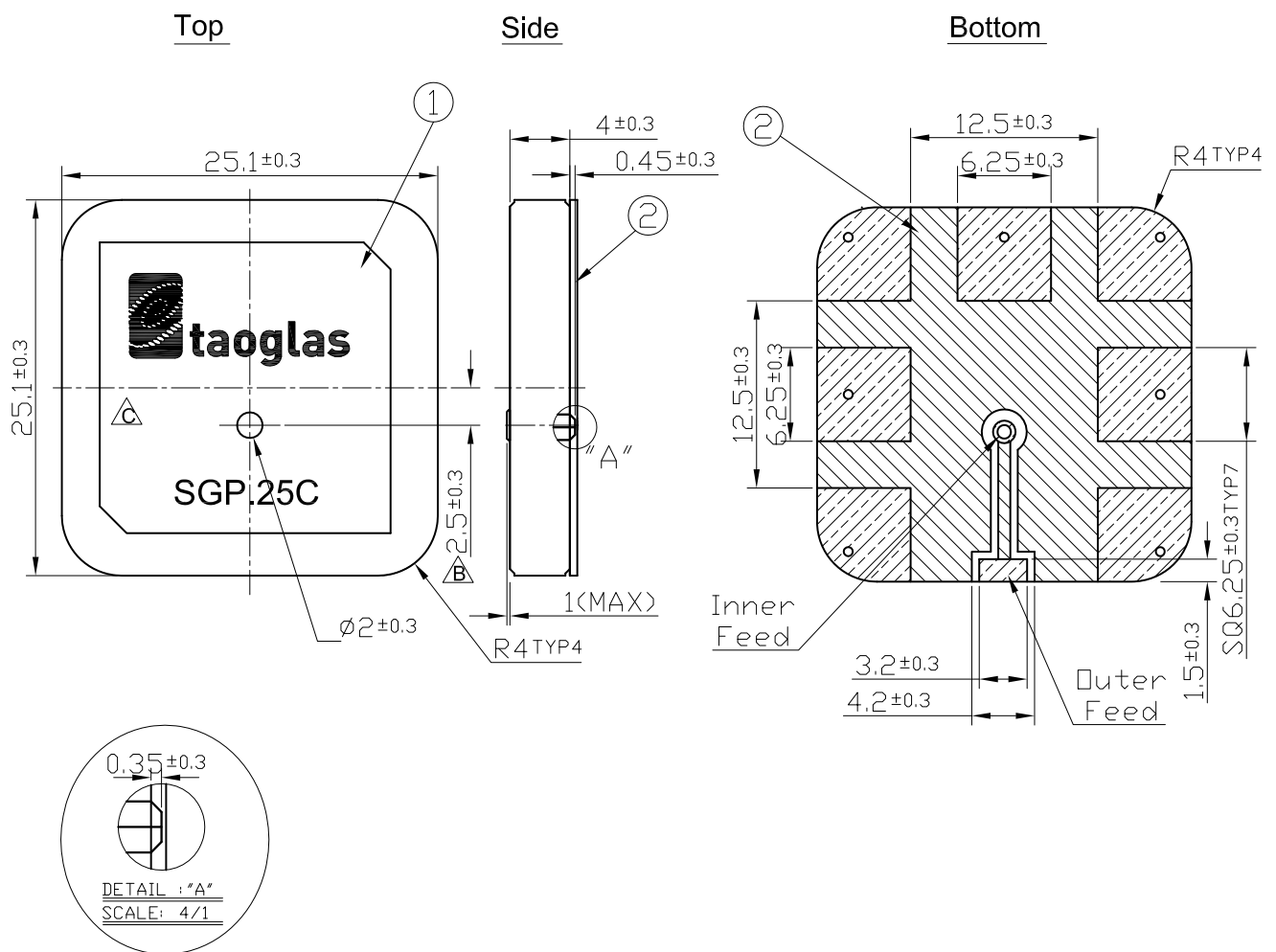


| Pattern | Model No. | Test Mode | Freq (MHz) | Max Gain(dBi) | Min Gain(dBi) | Avg. Gain(dBi) | Source Polar. |
|---------|-----------|-----------|------------|---------------|-----------------|----------------|---------------|
| 1 | SGP.25.C | XZ | 1575.42 | 3.70 / 354.00 | -17.00 / 105.00 | -1.61 | 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



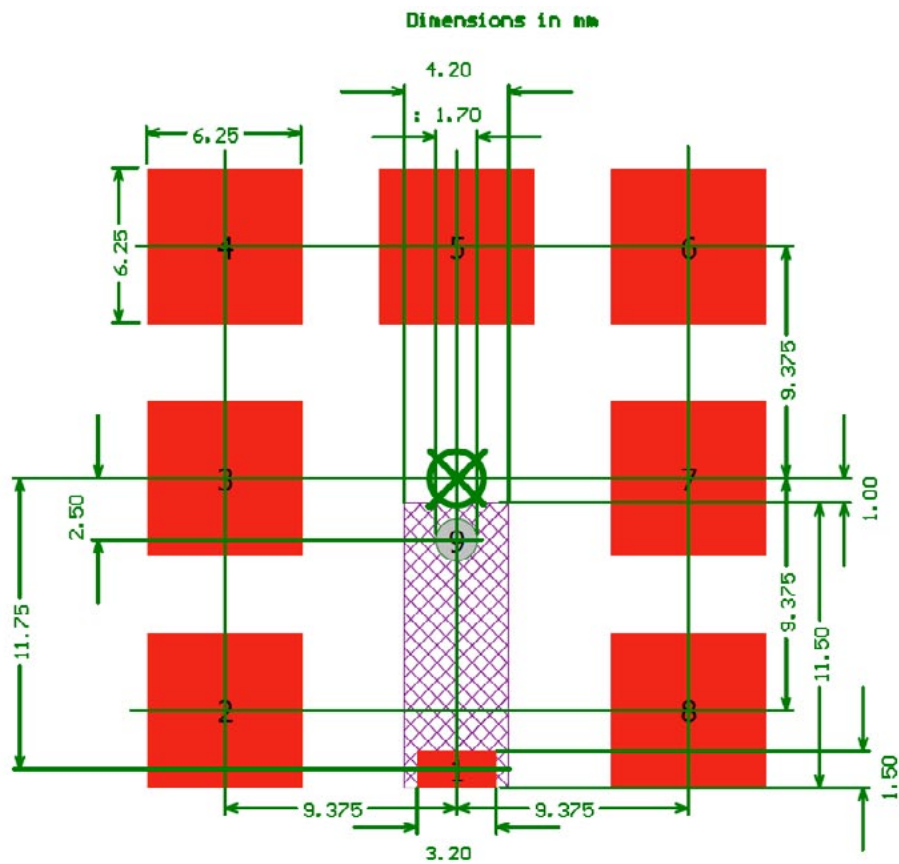
NOTE:

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

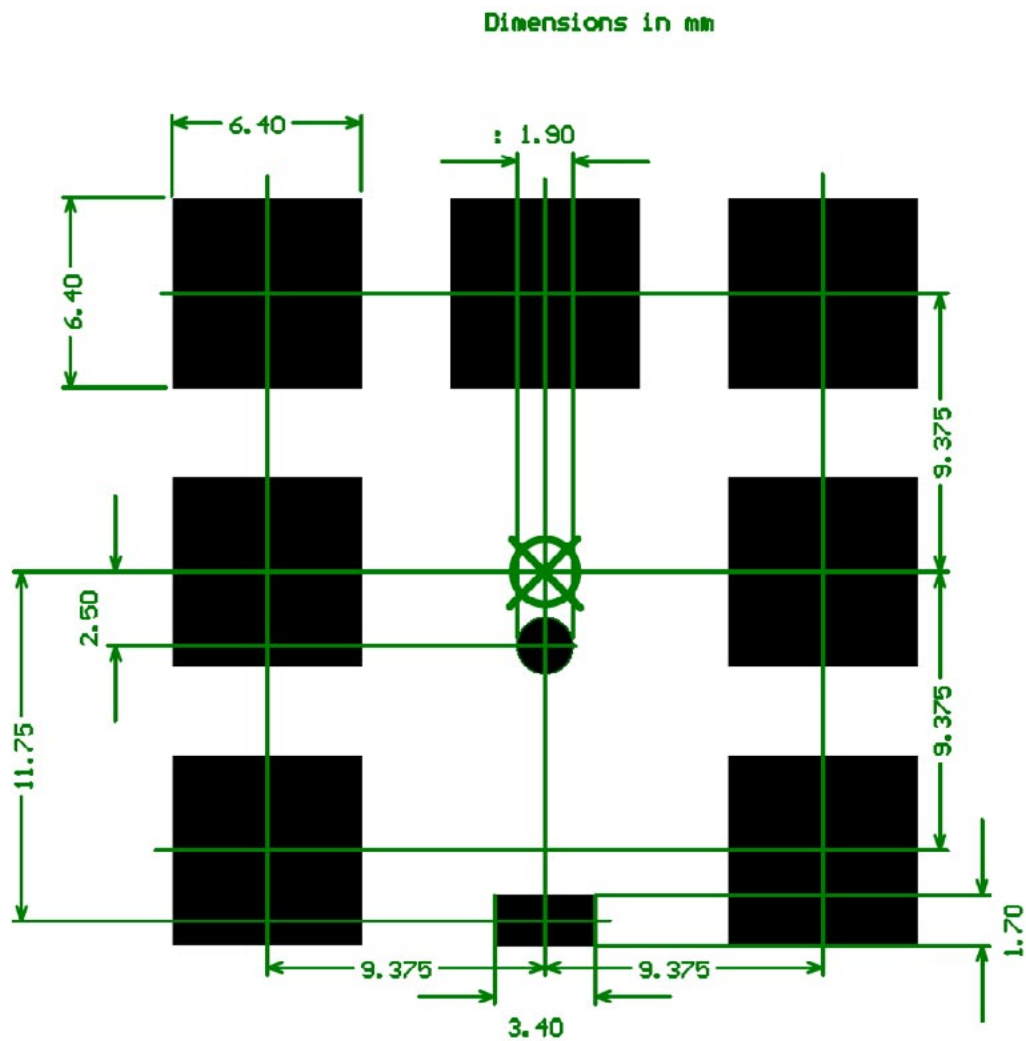


Copper Keepout Region

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 2mm down into PCB.

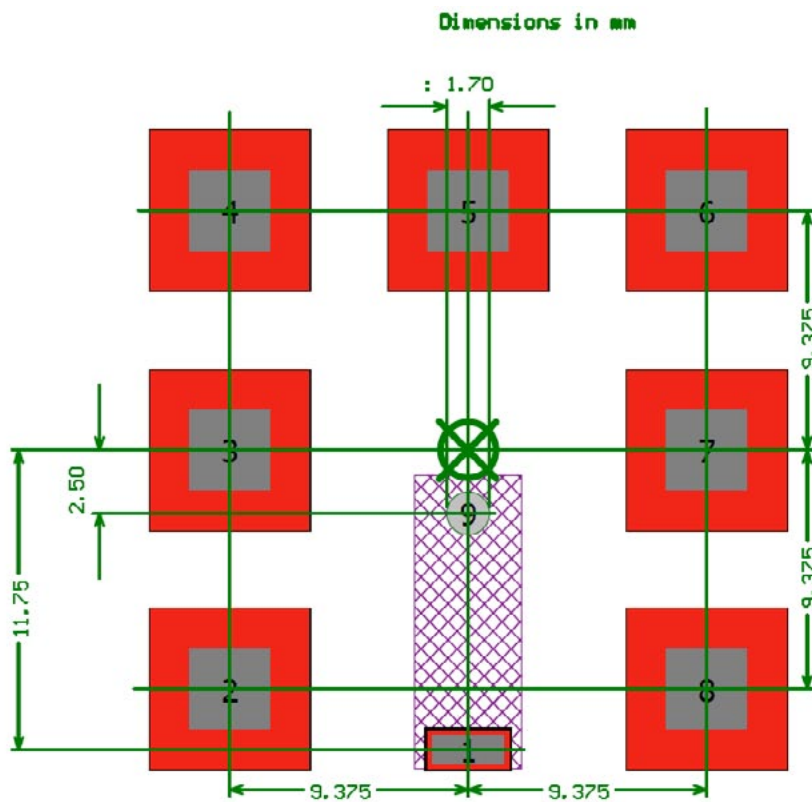
4.2 Antenna Footprint

4.2.3 Top Mask



4.2 Antenna Footprint

4.2.4 Composite



Copper Keepout Region

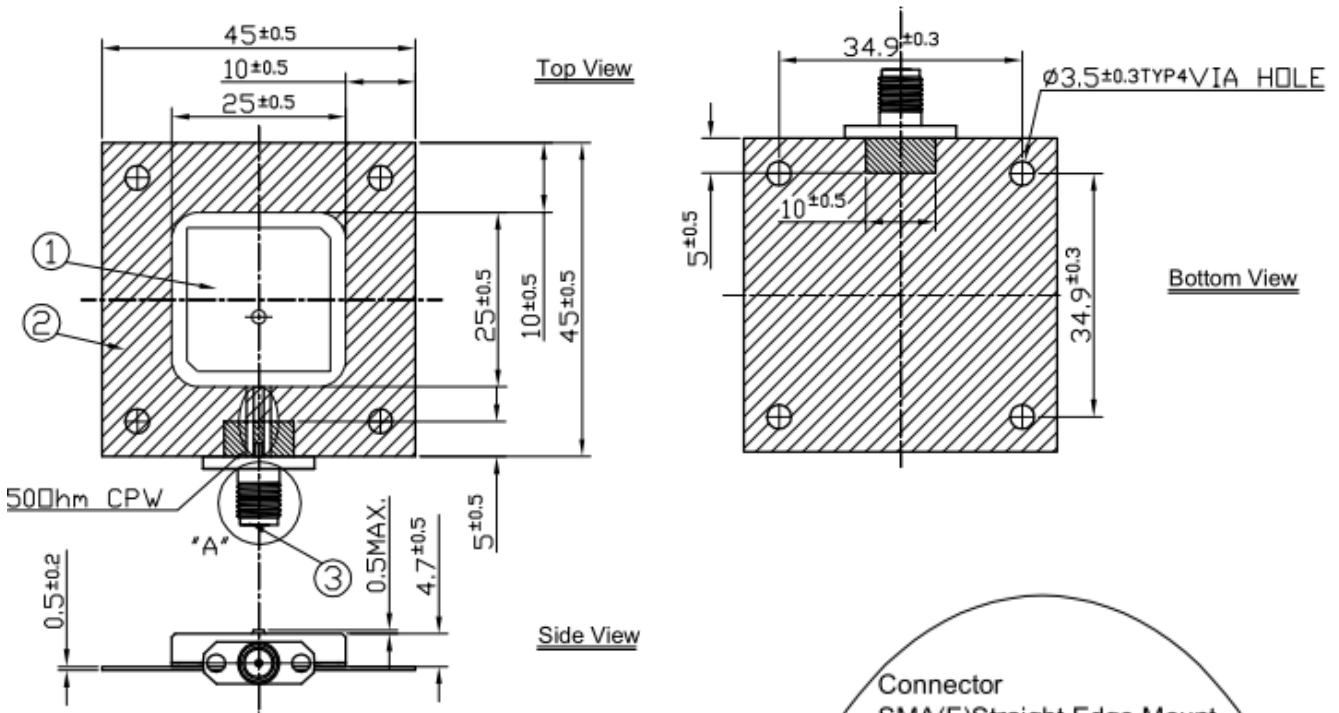
Pads 2, 3, 4, 5, 6, 7, 8 are the same size and should be connected to GND.

Pad 9 is a 1.70mm dia. non-plated thru-hole.



Connect 50 ohm transmission line to Pad 1.

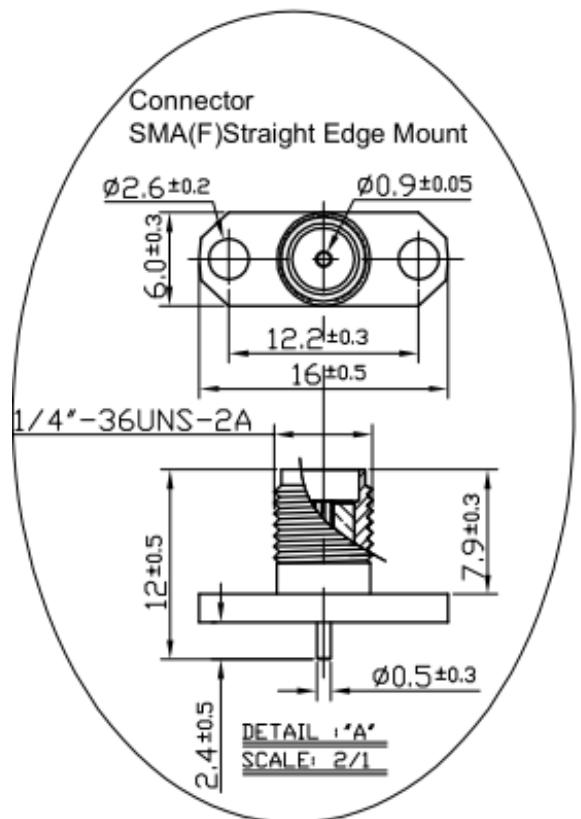
Copper Keepout Region should extend at least 2 mm down into PCB.

4.3 Test Jig and Dimension

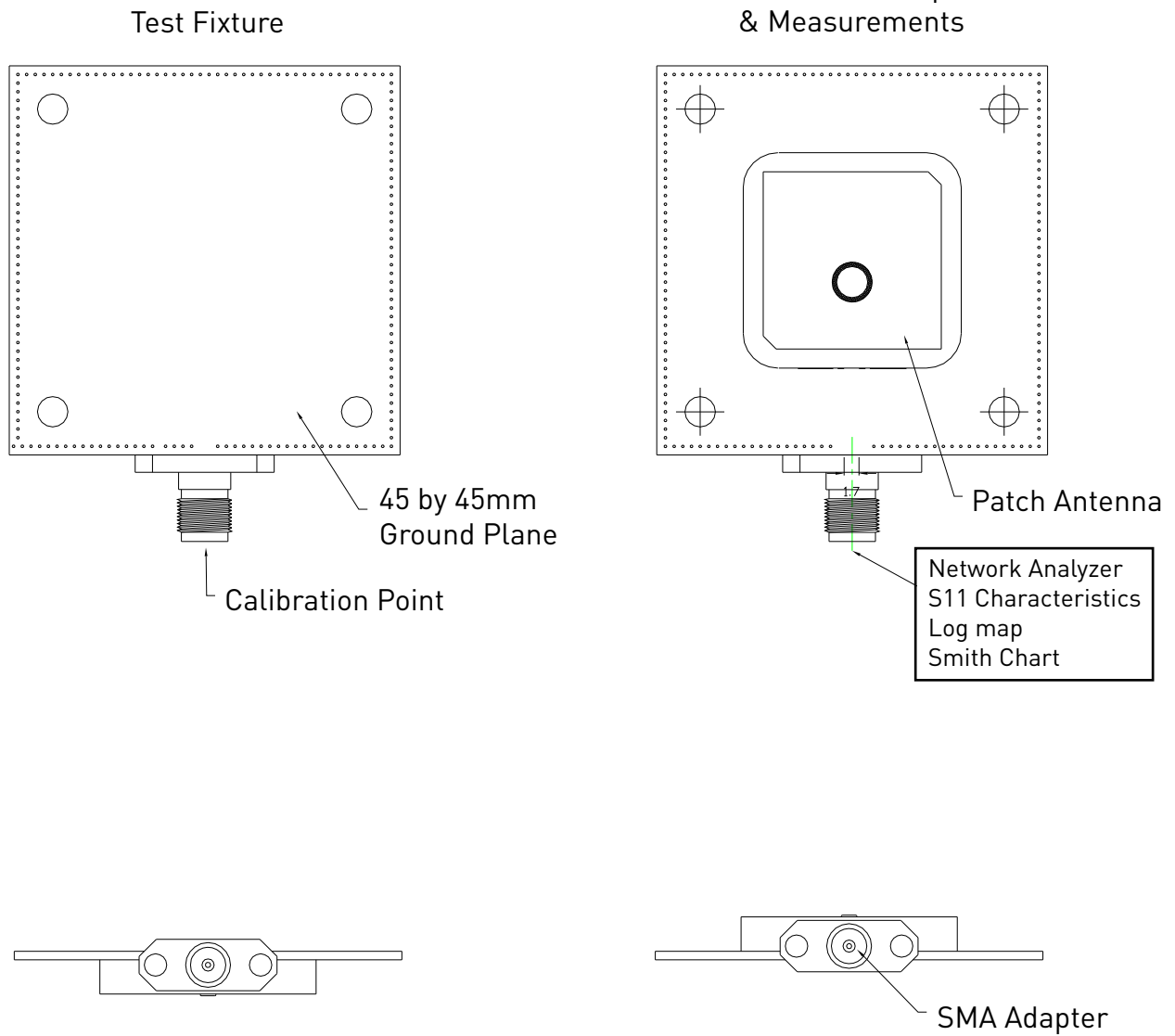


NOTE:

1. Solder Mask (Black) 
2. Solder Area 



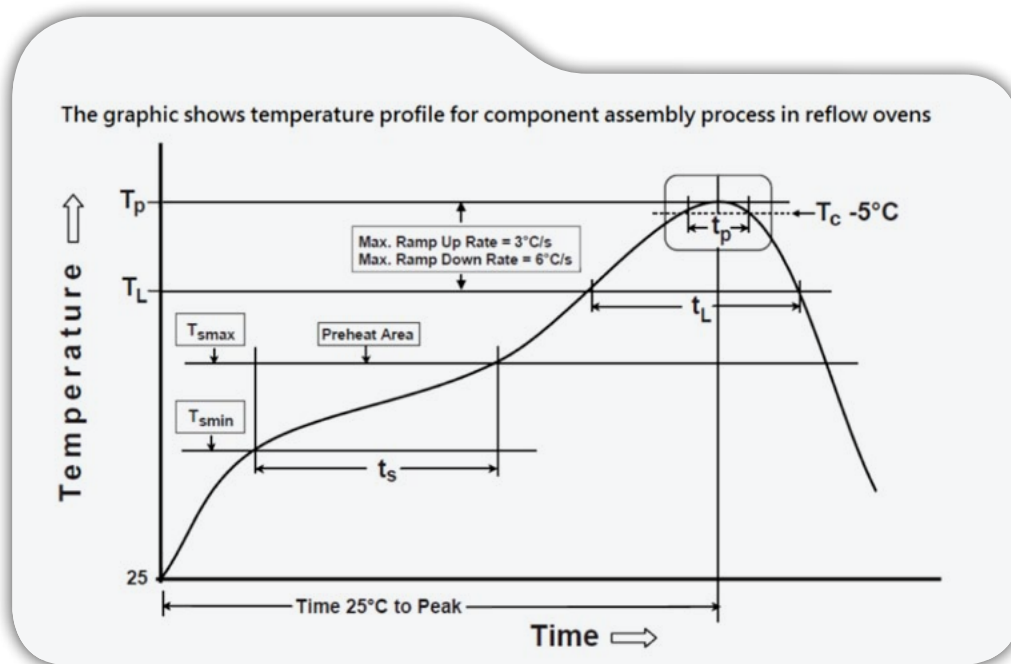
4.4 Test Fixture set up and measurements



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(T_{smin}) | 150°C |
| | Temperature Max(T_{smax}) | 200°C |
| | Time(t_s) from (T_{smin} to T_{smax}) | 60-120 seconds |
| RAMP-UP | Avg. Ramp-up Rate (T_{smax} to TP) | 3°C/second(max) |
| REFLOW | Temperature(T_L) | 217°C |
| | Total Time above T_L (t_L) | 30-100 seconds |
| PEAK | Temperature(T_P) | 260°C |
| | Time(t_p) | 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 |

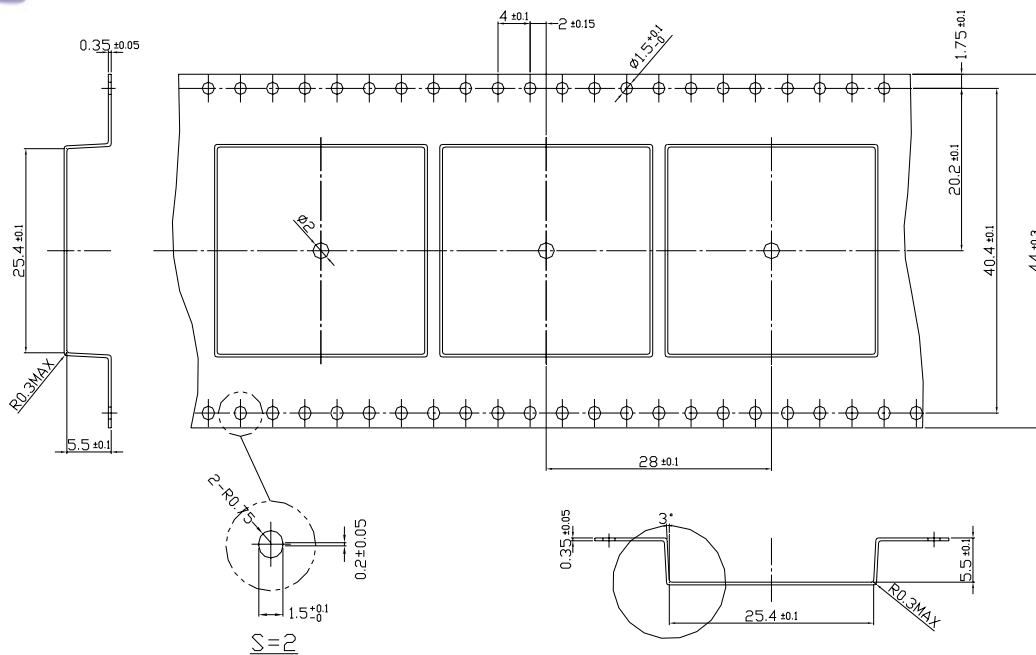
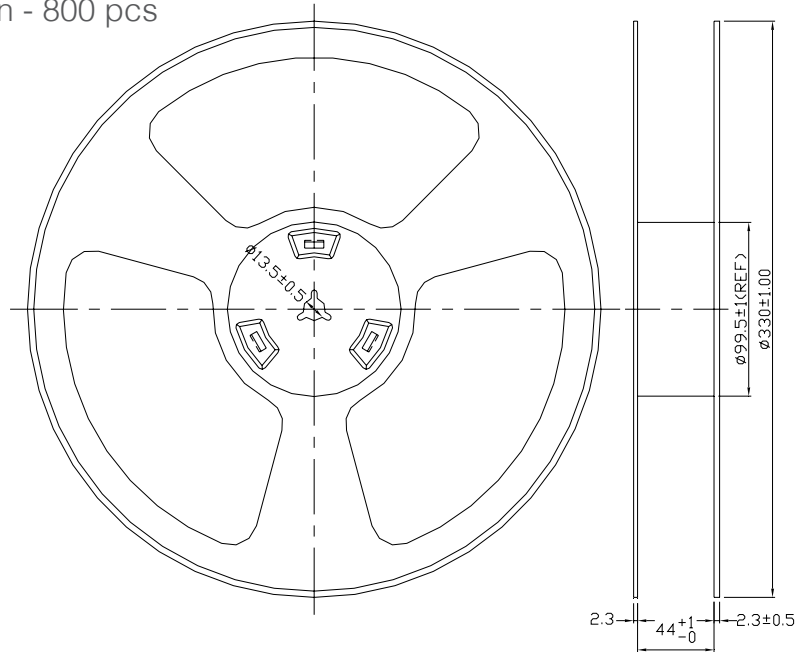


Soldering Iron condition: Soldering iron temperature $270^\circ\text{C} \pm 10^\circ\text{C}$.

Apply preheating at 120°C for 2-3 minutes. Finish soldering for each terminal within 3 seconds, if soldering iron temperature over $270^\circ\text{C} \pm 10^\circ\text{C}$ 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

Taoglas makes no warranties based on the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without

notice. Taoglas reserves all rights to this document and the information contained herein.

Reproduction, use or disclosure to third parties without express permission is strictly prohibited.

Copyright © Taoglas Ltd.