



TAOGLAS®



Datasheet

GPS/GLONASS/Galileo SMD Patch Antenna

Part No:
SGGP.25.2.A.02

Description:
25*25*2mm GPS/GLONASS/Galileo SMD Patch Antenna

Features:
SMD Direct Mount Ceramic Patch Antenna
GPS/Galileo/GLONASS Antenna
GPS L1/Galileo E1 (1575.42 MHz)
GLONASS L1 (1602 MHz)
Dimensions: 25*25*2mm
RoHS & Reach Compliant

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1. Introduction



The SGGP.25.2.A.02 is a ceramic GPS/GLONASS/Galileo passive patch antenna designed for optimal performance on GPS L1/Galileo E1 band (1575.42 MHz) and GLONASS L1 band (1602 MHz). With a low-profile thickness of just 2mm and convenient mounting via standard SMD process, it is ideal for high-volume, low-cost assembly applications. SGGP.25.2.A.02 is designed for applications in navigation devices, vehicle tracking/fleet management systems, and telematics devices. It is an excellent choice for applications in transportation, defense, marine, agriculture, and navigation industries.

This antenna has been tuned for use on a 50mm*50mm ground plane, working at 1575.42MHz and 1602MHz, with a 3.34 dBi gain and 3.32 dBi gain, respectively. 70% efficiency is best in class. The ceramic patch is mounted via reflow process from a pick and place machine. The antenna itself is manufactured and tested in a TS16949 first tier automotive approved facility.

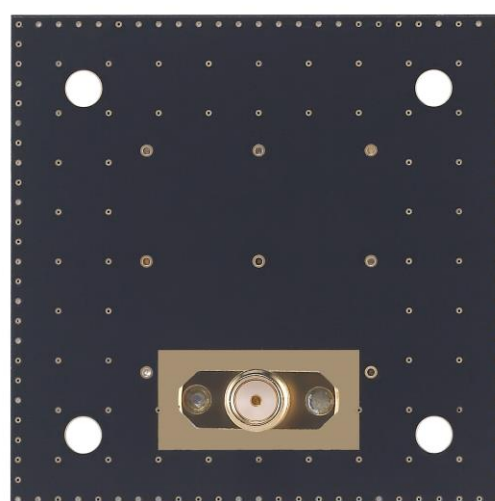
For further information or support with integrating this antenna into your device, please contact your regional Taoglas customer support team.

2. Specifications

GNSS Electrical		
Application Bands	GPS/Galileo	GLONASS
Operation Frequency (MHz)	1575.42 ±1.023	1602±5
Return Loss (dB)	< -10	< -10
Efficiency (%)	78	80
Average Gain (dB)	-1.07	-0.98
Peak Gain (dBi)	3.34	3.32
Impedance	50 ohms	
Mechanical		
Ceramic Dimension	25*25*2mm	
Weight	5.8g	
Enviorinmental		
Operation Temperature	-40°C to 85°C	
Humidity	Non-condensing 65°C 95% RH	
Moisture Sensitivity Level (MSL)	3 (168 Hours)	

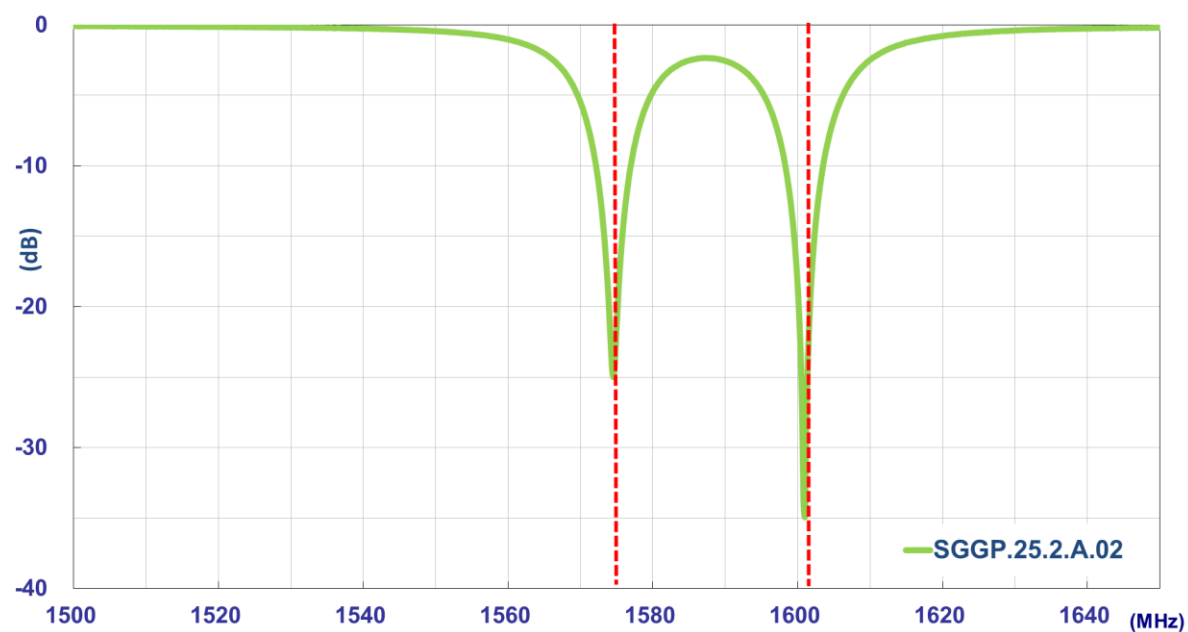
* Antenna properties were measured with the antenna mounted on 50*50mm Ground Plane

Taoglas Part # SGGPD.25B

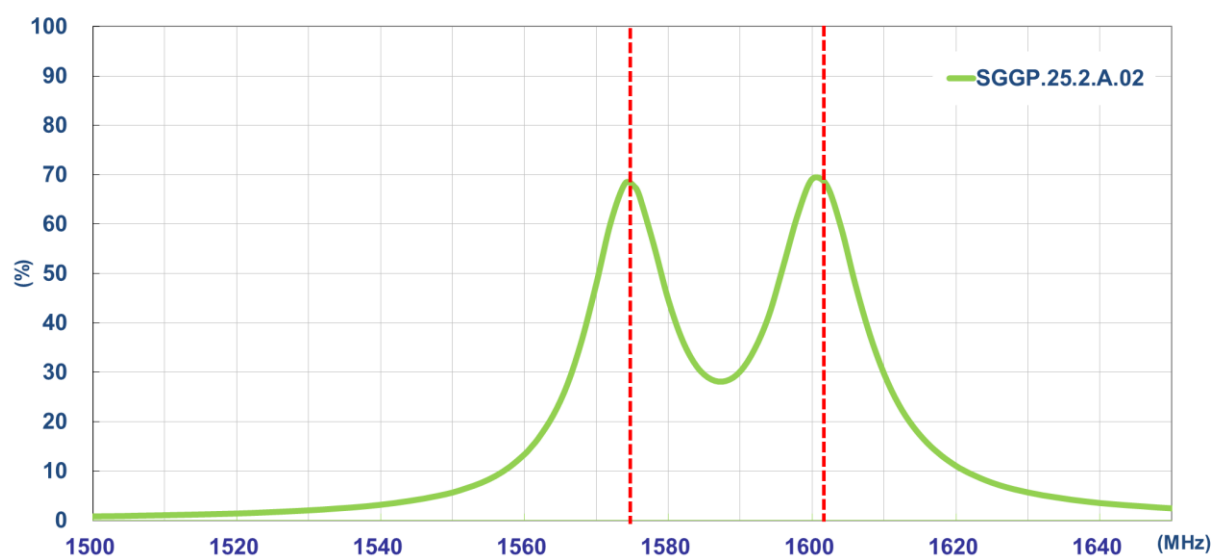


3. Antenna Characteristics

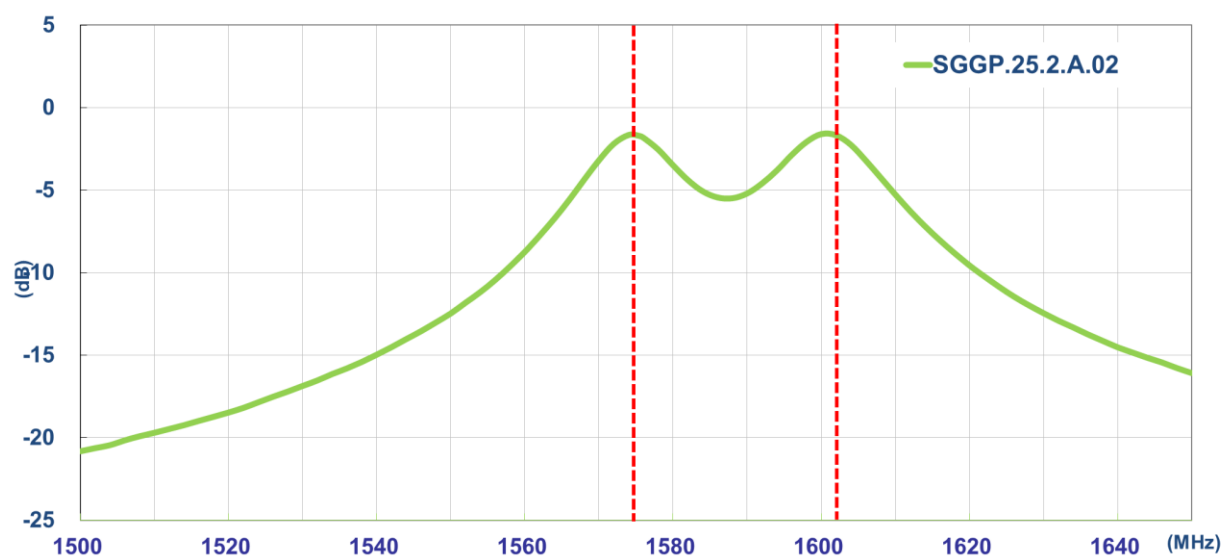
3.1 Return Loss



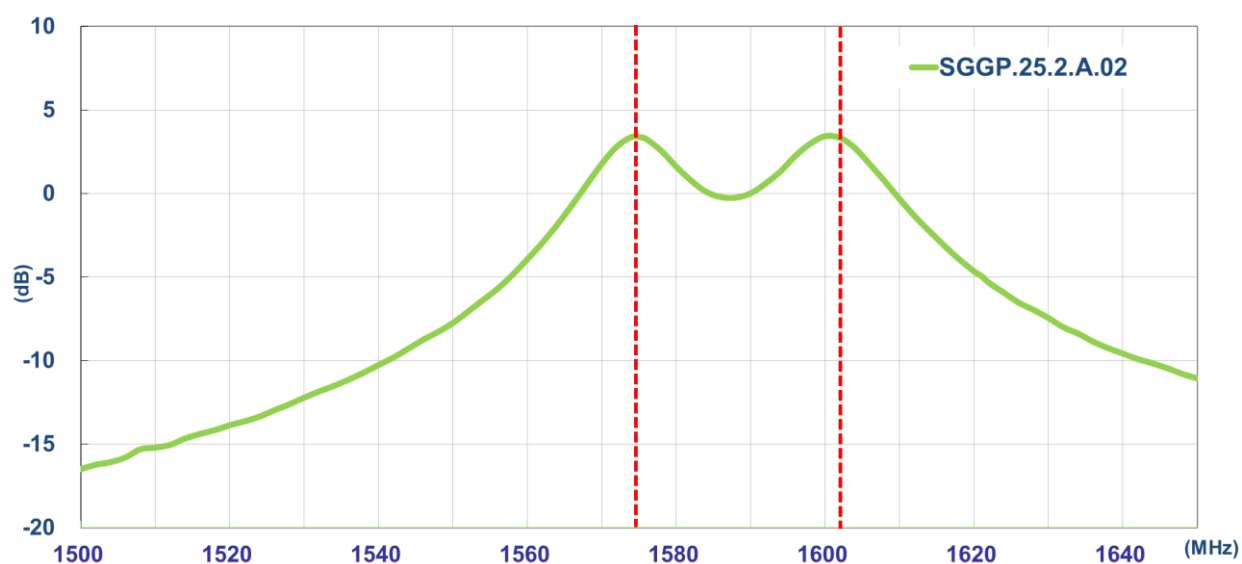
3.2 Efficiency



3.3 Average Gain

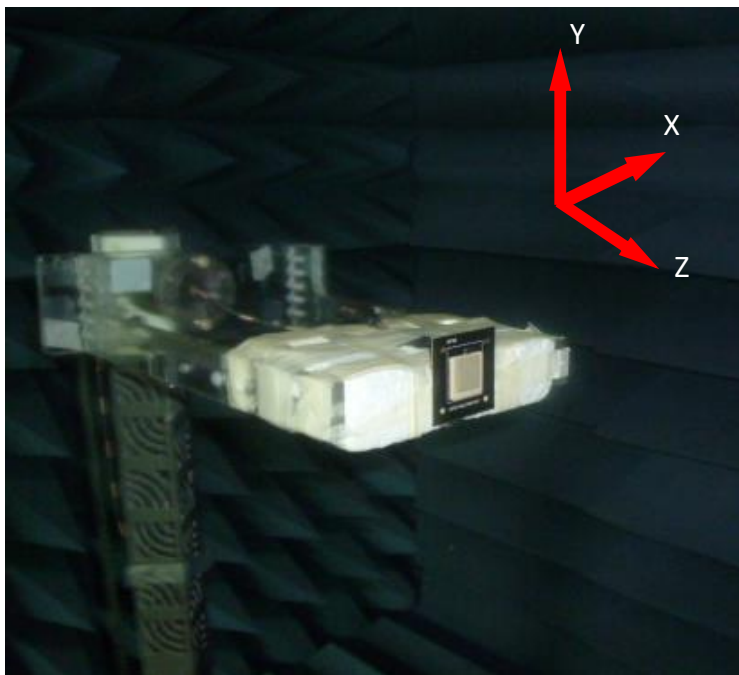


3.4 Peak Gain



4. Radiation Patterns

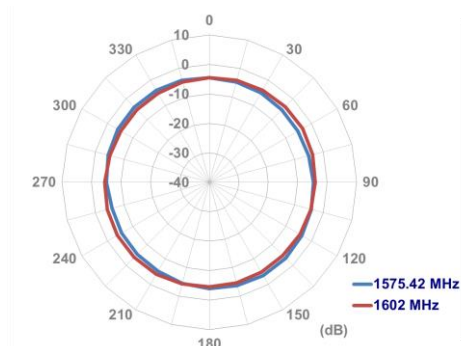
4.1 Test Setup



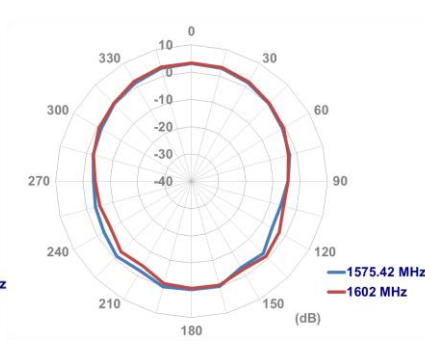
The SGGP.25.2.A.02 antenna is tested with 50mm*50mm ground plane in a CTIA certified ETS-Lindgren Anechoic Chamber. The test setup is shown below.

4.2 2D Radiation Patterns

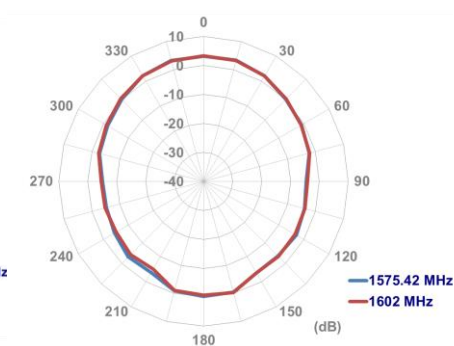
XY Plane



XZ Plane

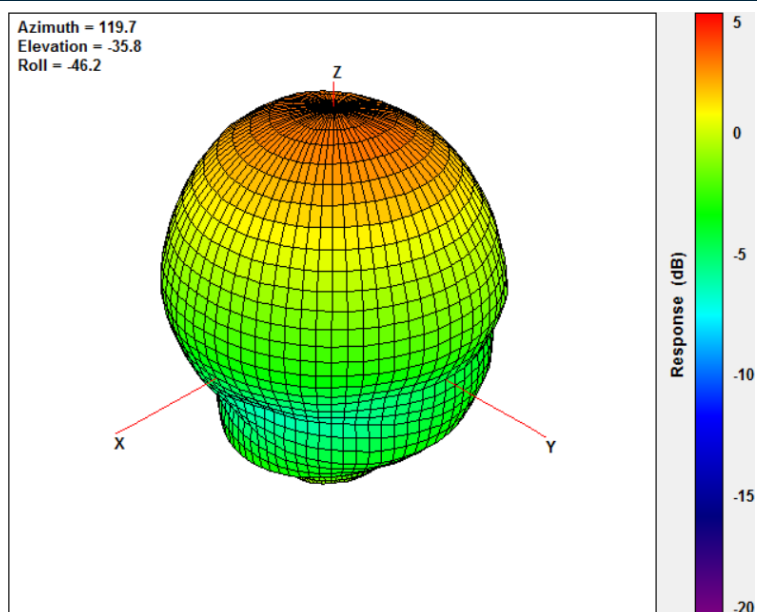


YZ Plane

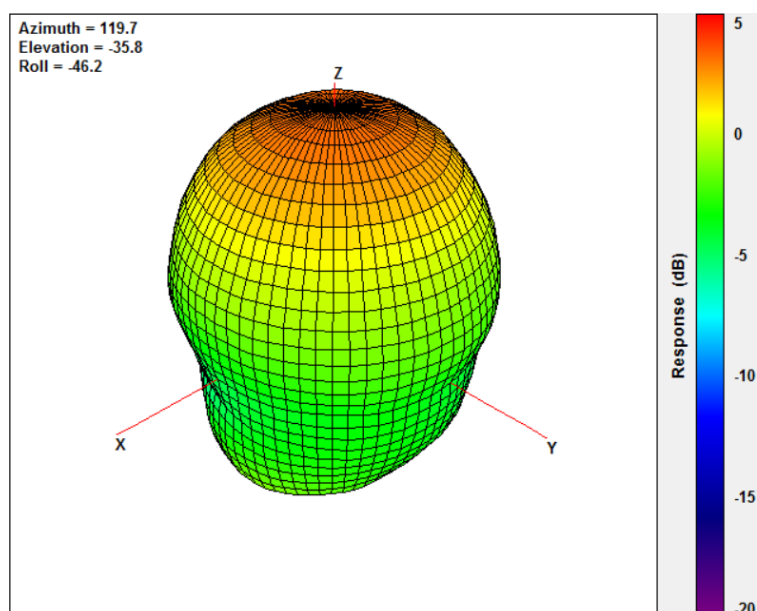


4.3 3D Radiation Patterns

1575.42MHz

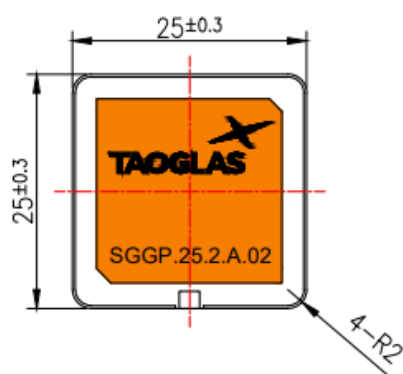


1602MHz

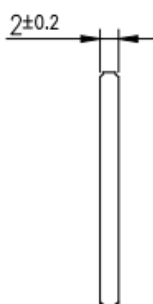


5. Mechanical Drawing (Units: mm)

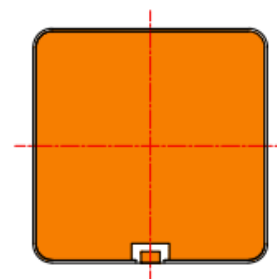
Top View



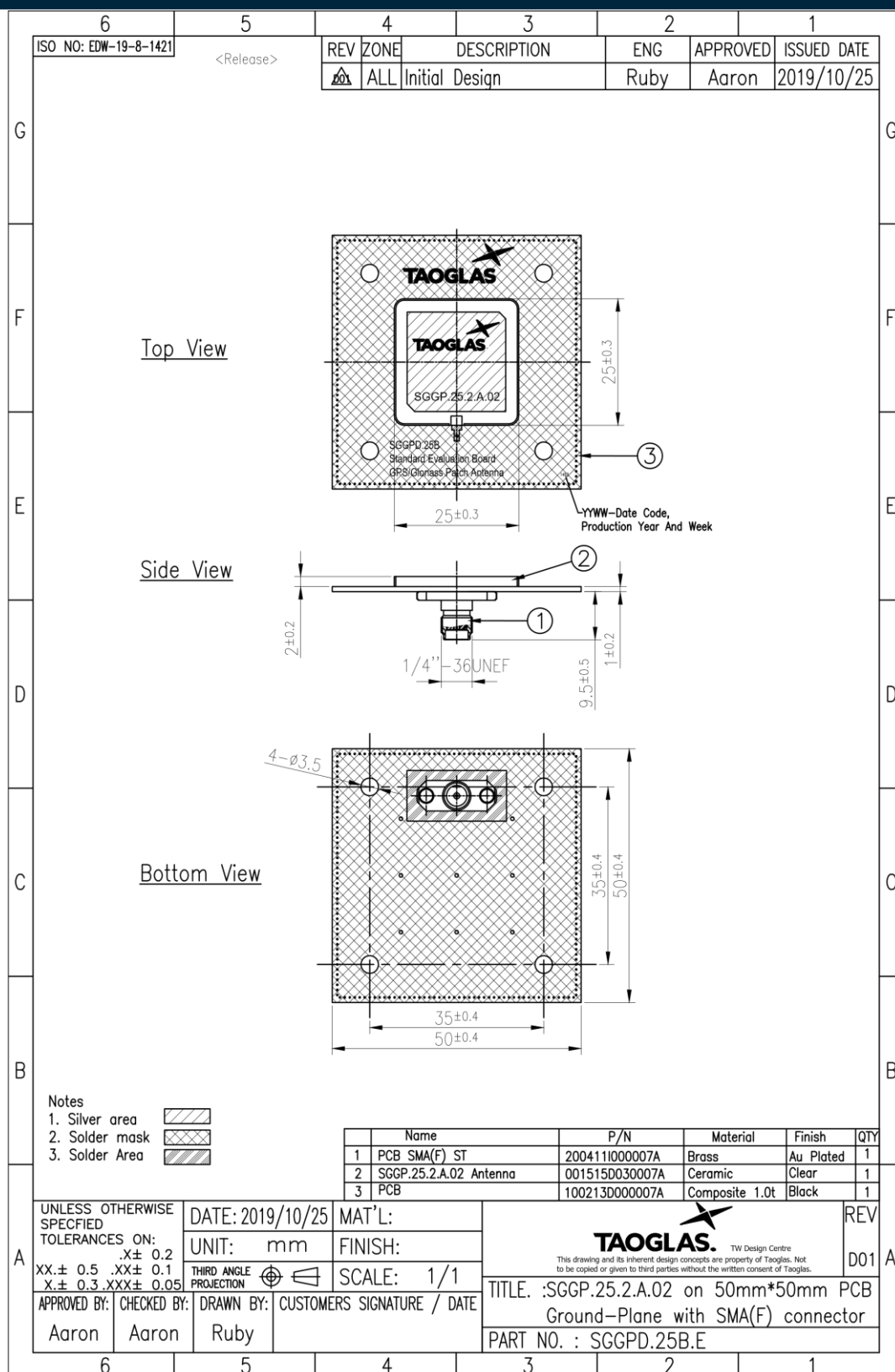
Side View



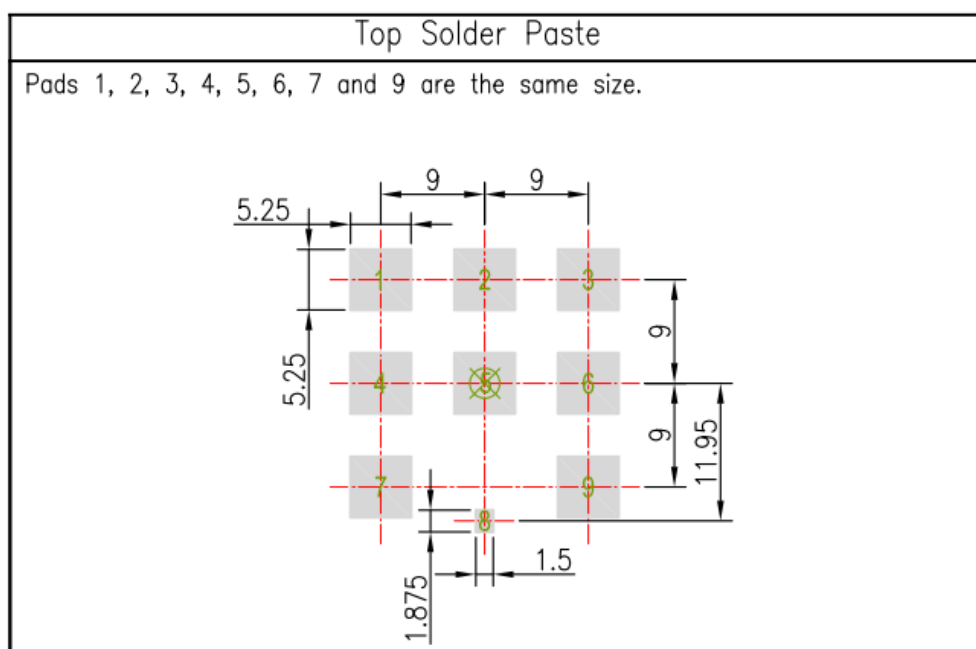
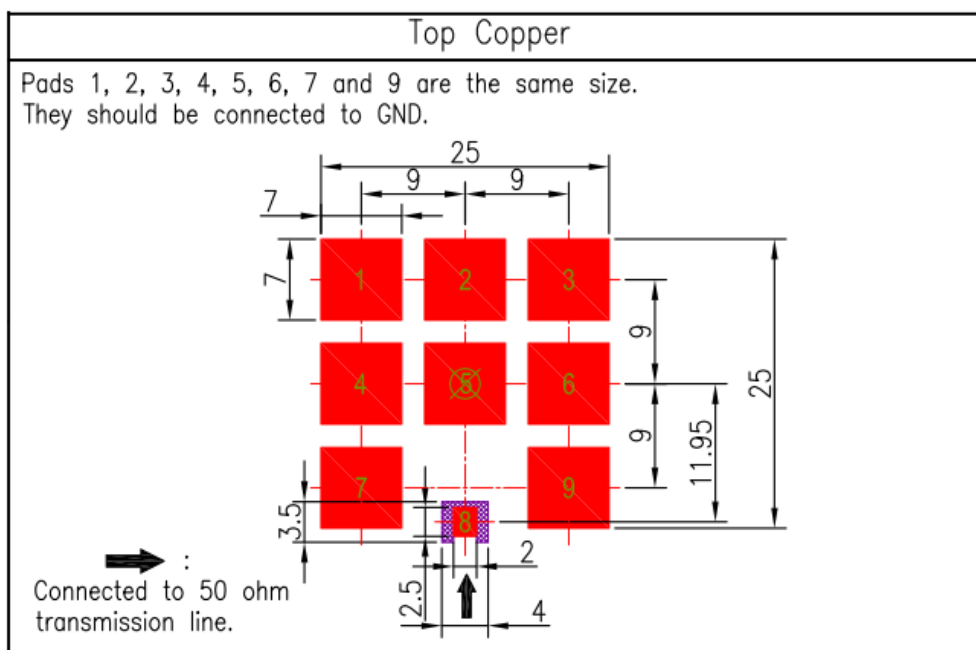
Bottom View

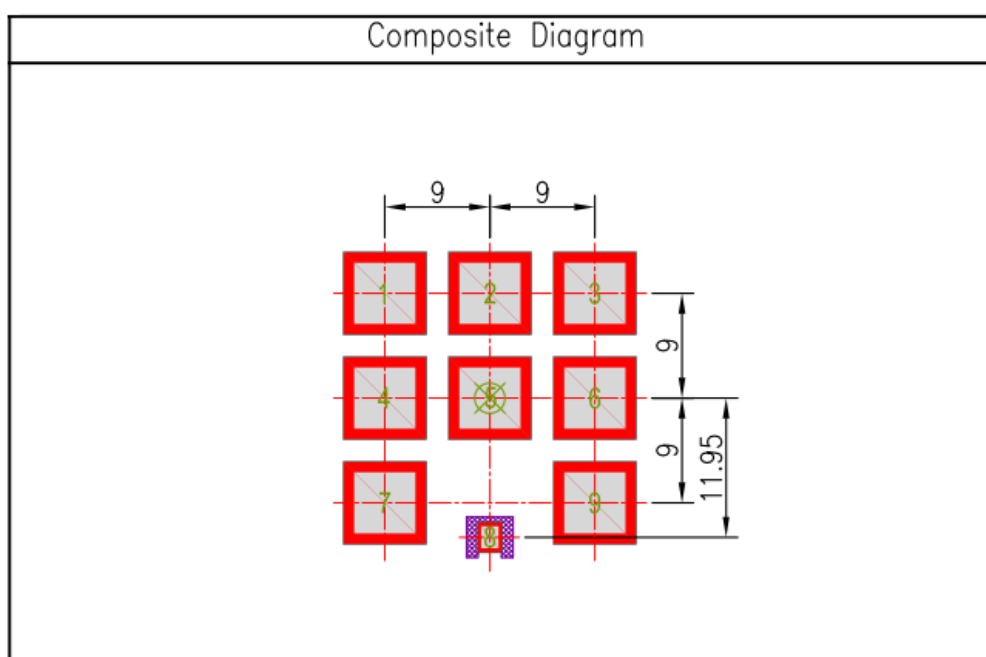
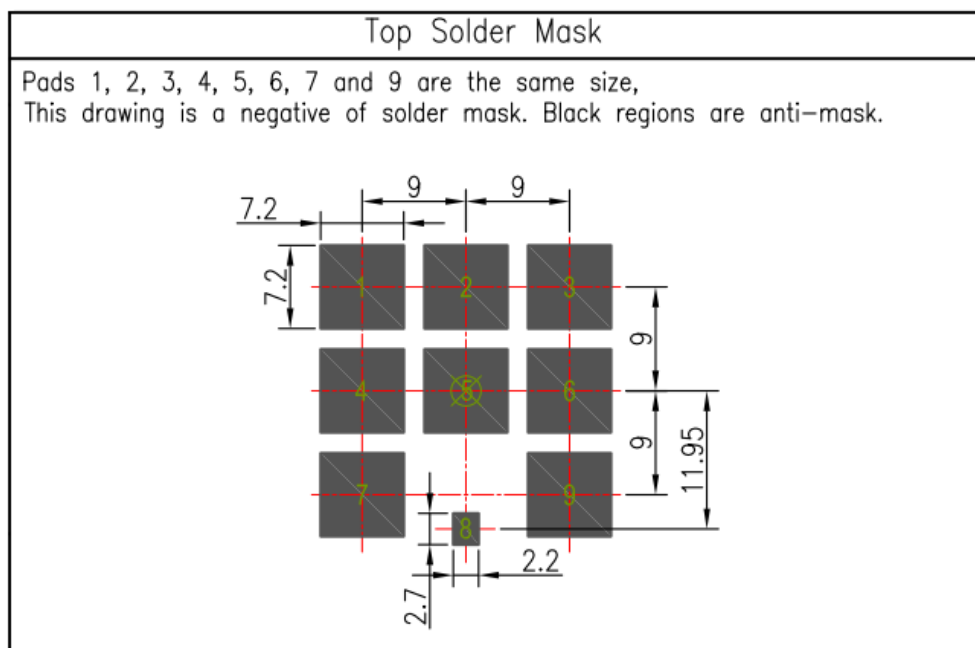


6. Evaluation Board (SGGPD.25B)



7. PCB Footprint Recommendation





NOTE:

1. Ag Plated area
2. Solder Mask area
3. Copper area
4. Paste area
5. Copper Keepout Area



6. Copper keepout should extend through all PCB layers.

7. Any vias in pads should be either filled or tented to prevent solder from wicking away from the pad during reflow.

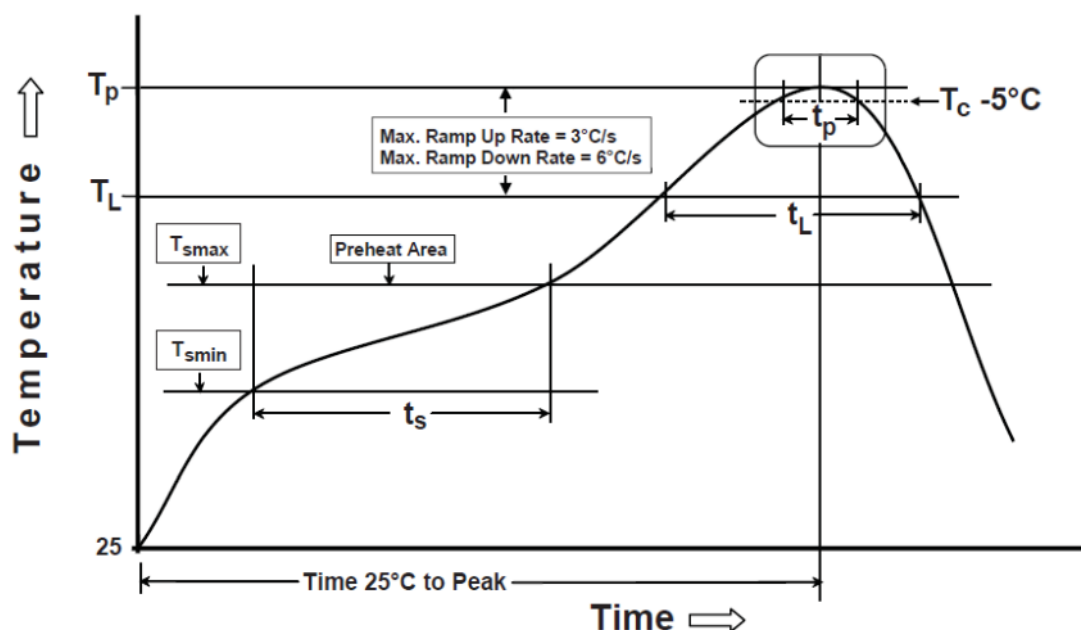
8. The dimension tolerances should follow standard PCB manufacturing guidelines

8. Recommended Reflow Soldering Profile

SGGP.12 can be assembled following Pb-free assembly. According to the Standard IPC/JEDEC J-STD-020C, the temperature profile suggested is as follows:

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 T_P)	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

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

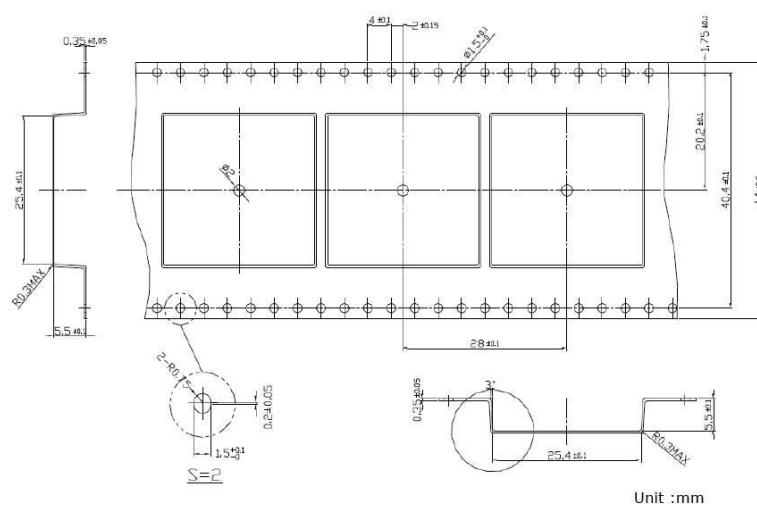


Soldering Iron condition: Soldering iron temperature $270^\circ\text{C} \pm 10^\circ\text{C}$.

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

Packaging Specifications (1/2)

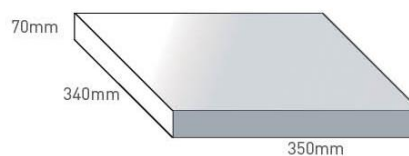
Technical drawing of a wheel rim. The front view (left) shows a five-spoke design with a central hub. Dimensions include a spoke width of 13.5 ± 0.5 and a central hub diameter of $\phi 95.5 \pm 1$ (REF.). The side view (right) shows the rim profile with a total width of 230 ± 1.00 and a central hub diameter of $\phi 95.5 \pm 1$ (REF.). The rim thickness is 2.3 and the central hub thickness is 44 ± 1 .



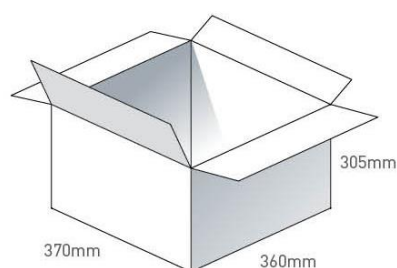
SGGP.25.2.A.02

Packaging Specifications [2/2]

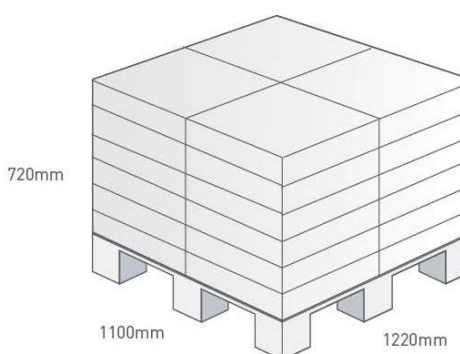
1 pc reel in small inner box
Dimensions - 350*340*70mm
Weight - 1.8Kg



4 Reels / 800 pcs in one carton
Carton Dimensions - 370*360*305mm
Weight - 8Kg



Pallet Dimensions 1100*1220*720mm
24 Cartons per Pallet
4 Cartons per layer
6 Layers



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Changelog for the datasheet

SPE-16-8-001 - SGGP.25.2.A.02

Revision: B (Current Version)	
Date:	2022-06-30
Changes:	Updated specification
Changes Made by:	Cesar Sousa

Previous Revisions

Revision: A (Original First Release)	
Date:	2016-05-01
Notes:	First Release
Author:	MC

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