

## SPECIFICATION

- Part No. : **SGGP.25.2.A.02**
- Description : GPS/GLONASS/GALILEO SMD Mount  
Embedded Ceramic Patch Antenna  
25\*25\*2mm
- Features : 3.34 dBi Peak Gain for GPS/GALILEO Band  
3.32 dBi Peak Gain for GLONASS Band  
25mm\*25mm\*2mm dimension  
SMD direct mount ceramic patch antenna  
Automotive TS16949 Production and  
Quality Approved  
**RoHS compliant**



Front



Back

## 1. Introduction

The SGGP.25.2.A.02 is an embedded SMD ceramic GPS/GLONASS/GALILEO passive patch antenna with a low profile of 2mm thickness. It is designed for applications such as

- navigation
- infotainment
- vehicle tracking/fleet management systems
- UAV
- telematics devices

where a high performance solution is needed in a low profile form factor

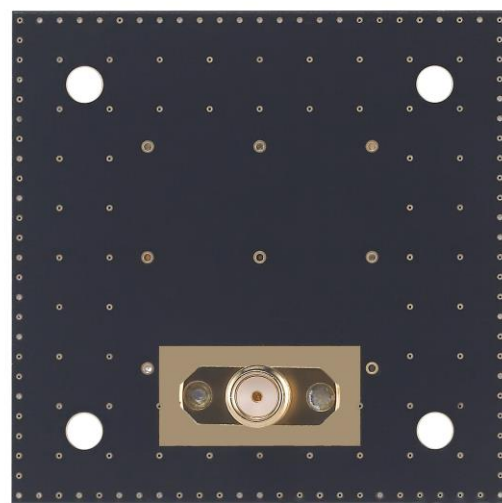
The antenna has been tuned to mount centrally a 50\*50 mm ground plane, working at 1575.42MHz and 1602MHz, with a 3.34 dBi gain and 3.32 dBi gain, respectively. 70% efficiency is best in class. The ceramic patch is mounted via reflow process from a pick and place machine. The antenna itself is manufactured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

For further optimization to customer specific device environments where ground-plane size or mounting location is different, which can lead to detuning, a custom tuned patch antennas can be supplied, subject to NRE and MOQ. For more details please contact your regional Taoglas facility.

## 2. Specification

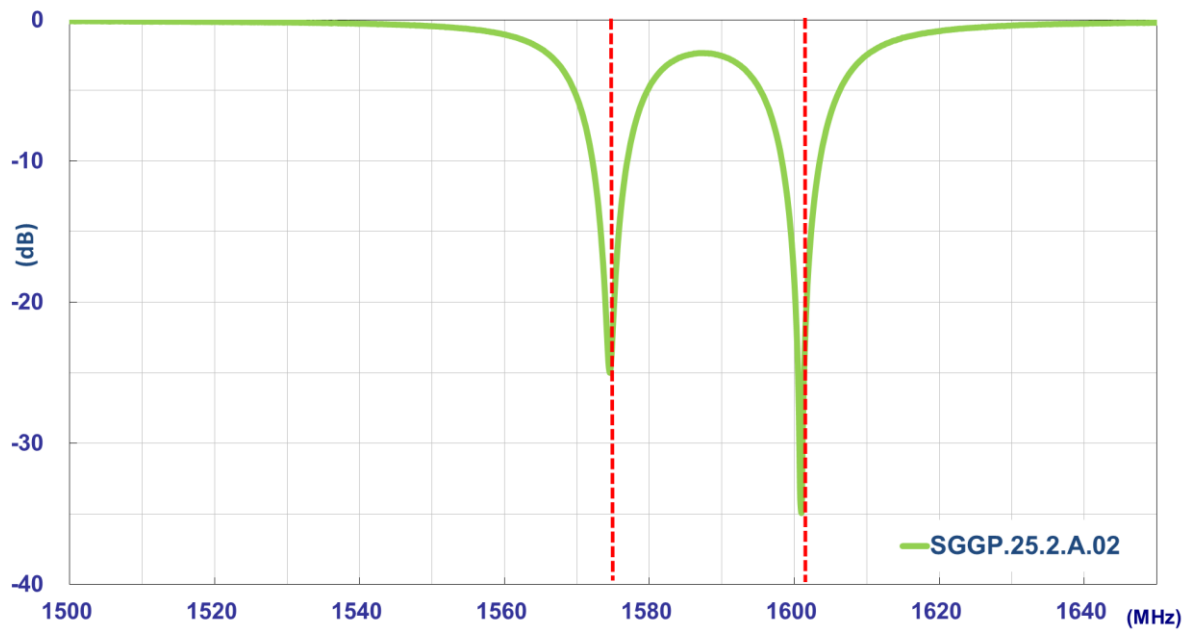
ELECTRICAL		
Application Bands	GPS/GALILEO	GLONASS
Operation Frequency (MHz)	1575.42 ±1.023	1602±5
Return Loss (dB)	< -10	
Gain at Zenith (dBi)	3.34	3.32
Efficiency (%)	67.41	67.94
Impedance	50 ohms	
MECHANICAL		
Ceramic Dimension (mm)	25*25*2	
Weight (g)	5.74	
ENVIRONMENTAL		
Operation Temperature	-40°C to 85°C	
Humidity	Non-condensing 65°C 95% RH	

\* Antenna properties were measured with the antenna mounted on 50\*50mm Ground Plane  
Taoglas Part # SGGPD.25B

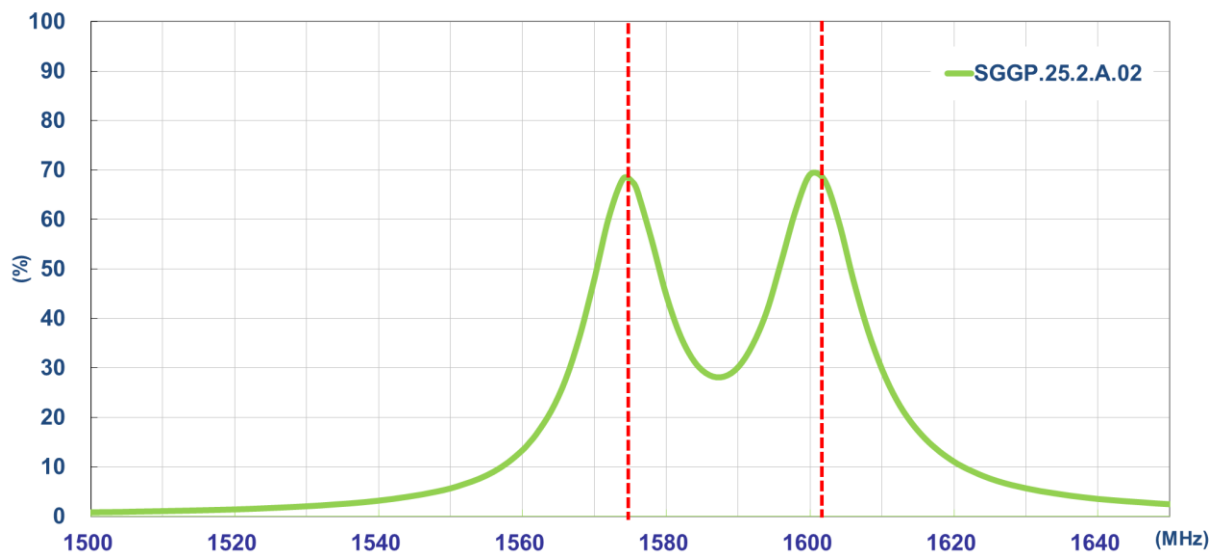


### 3. Antenna Characteristics

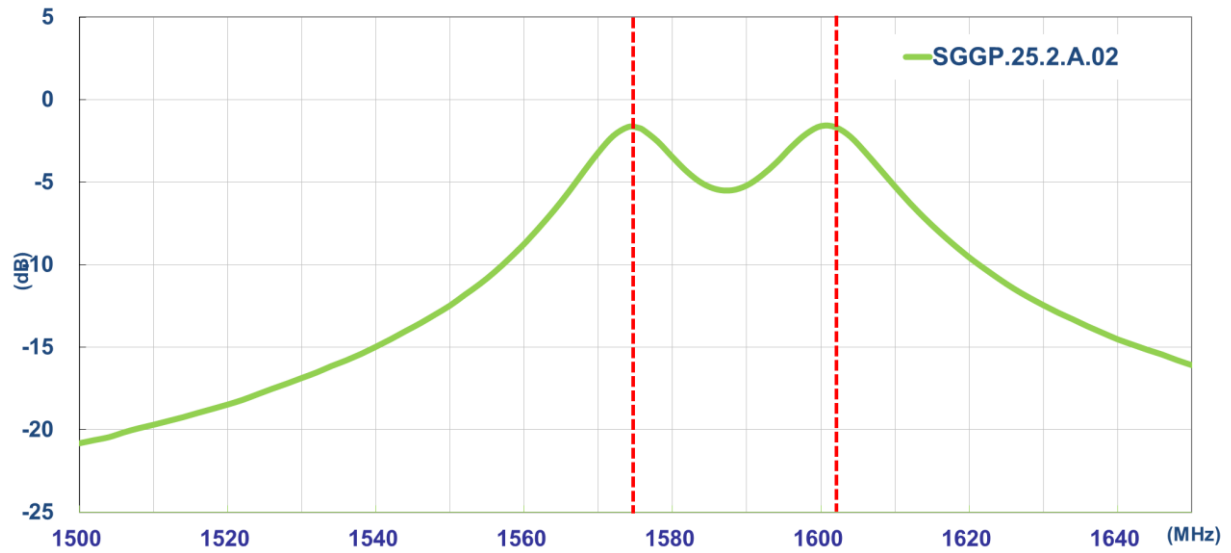
#### 3.1. Return Loss



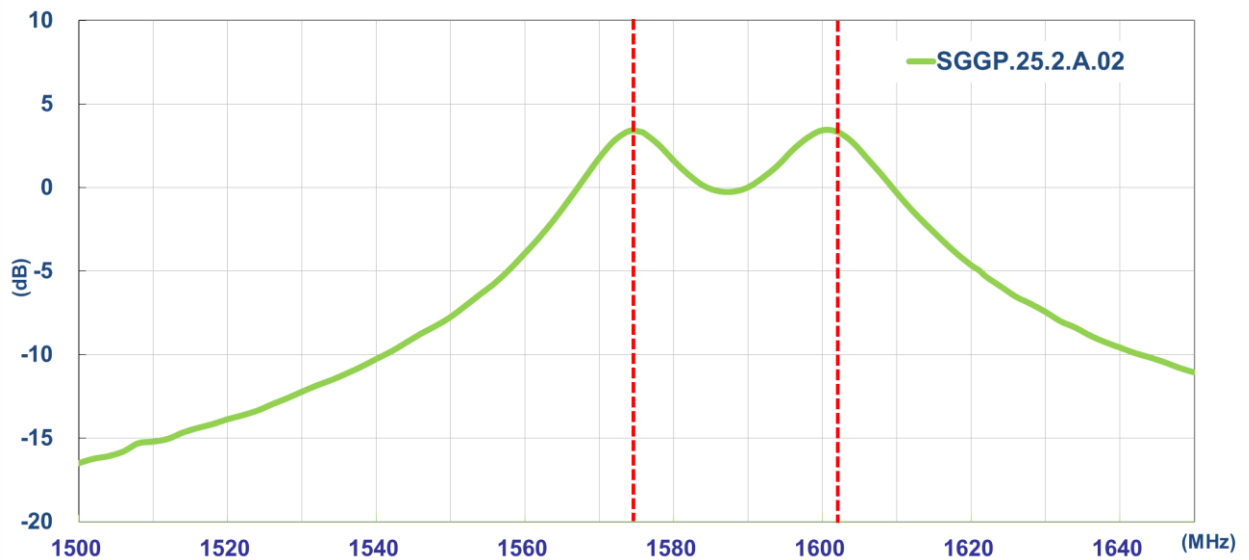
#### 3.2. Efficiency



### 3.3. Average Gain



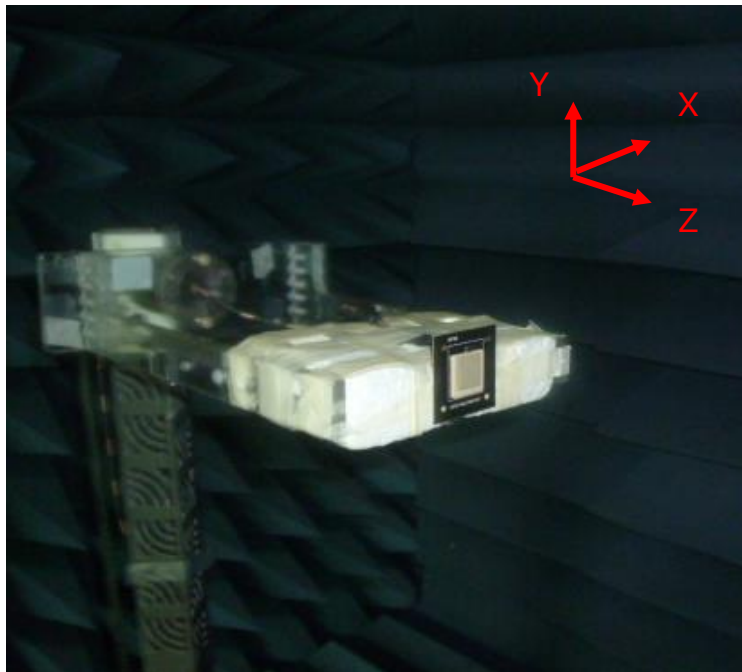
### 3.4. Peak Gain



## 4. Antenna Radiation Pattern

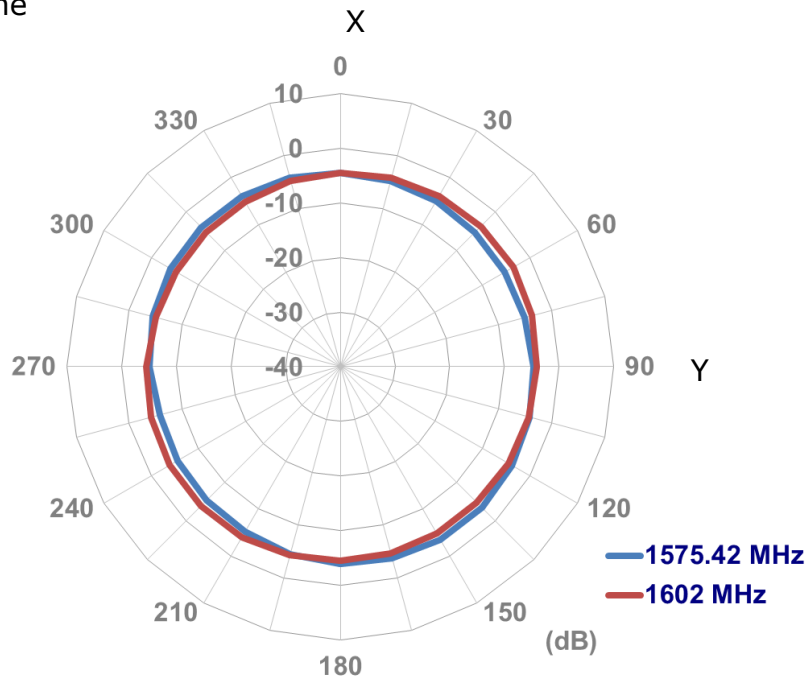
### 4.1. Measurement Setup

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.

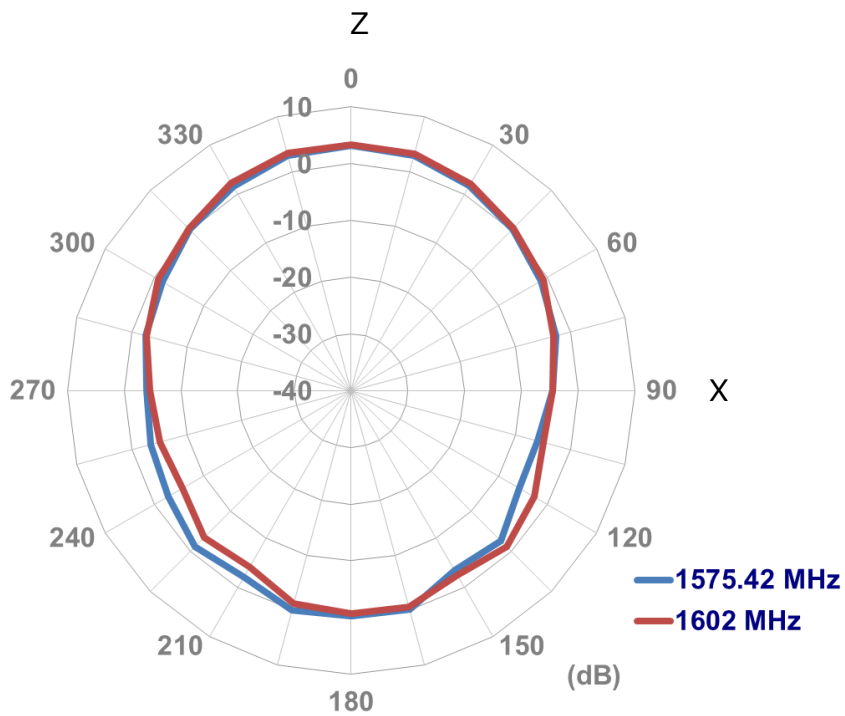


## 4.2. 2D Radiation Pattern

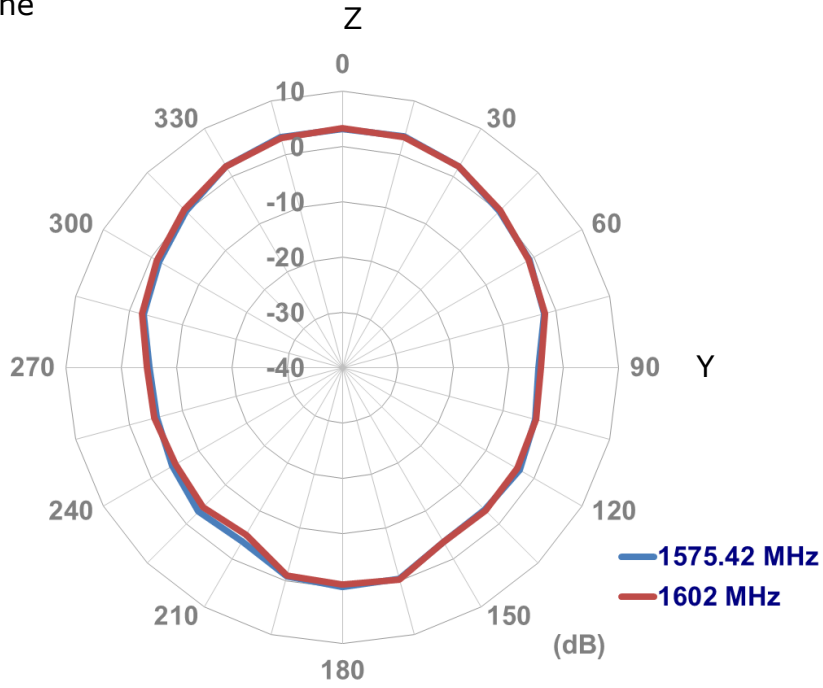
XY Plane



XZ Plane



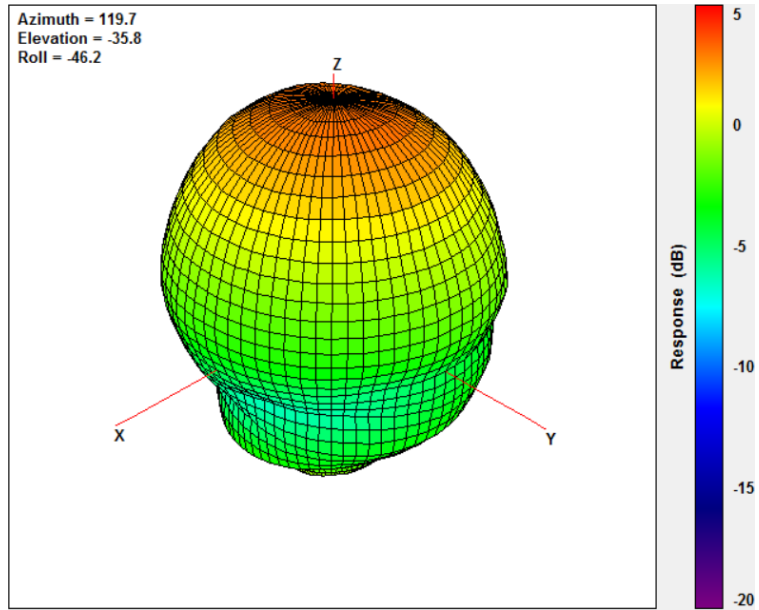
YZ Plane



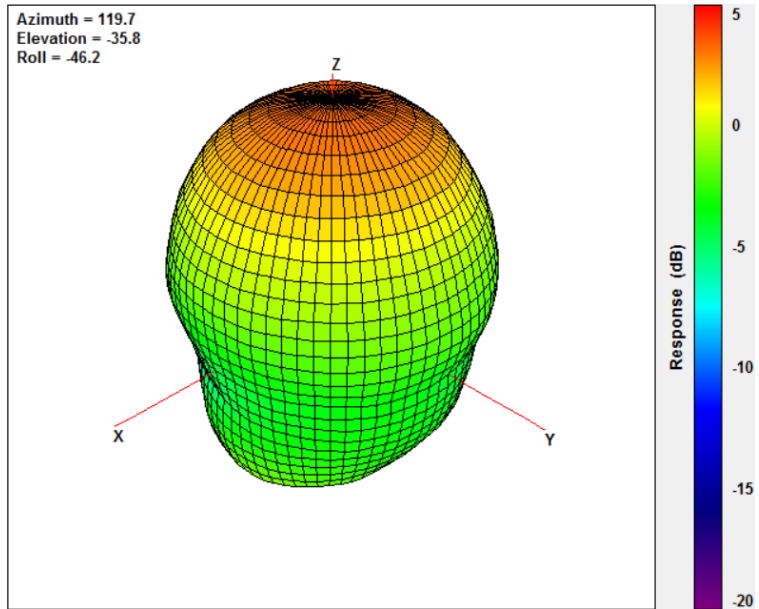


### 4.3. 3D Radiation Pattern

1575.42MHz

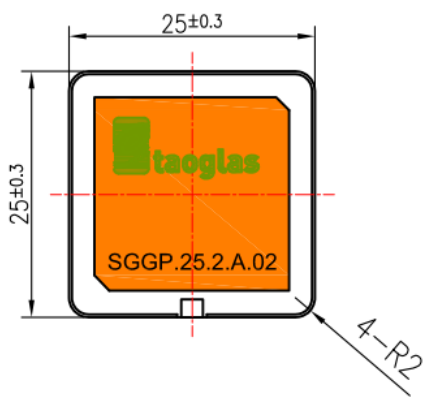


1602MHz

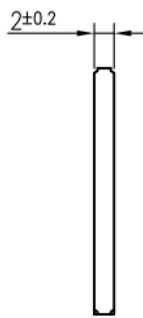


## 5. Mechanical Drawing

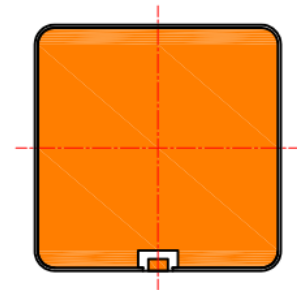
Top View



Side View

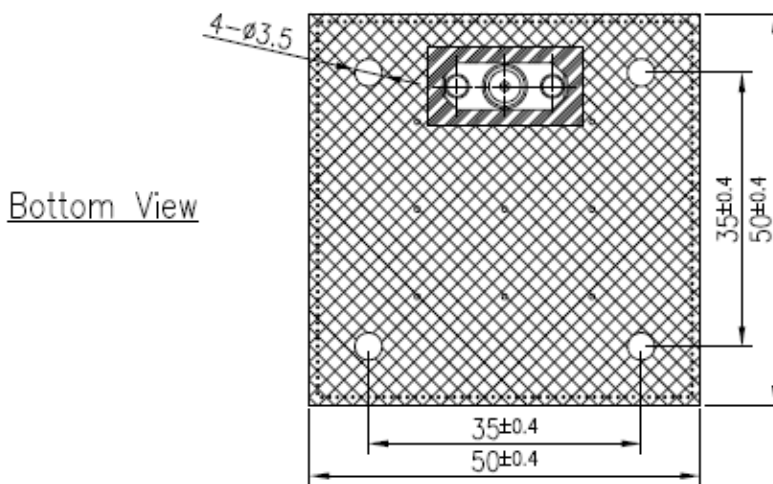
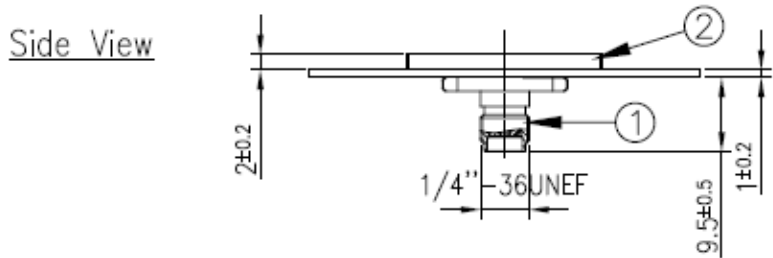
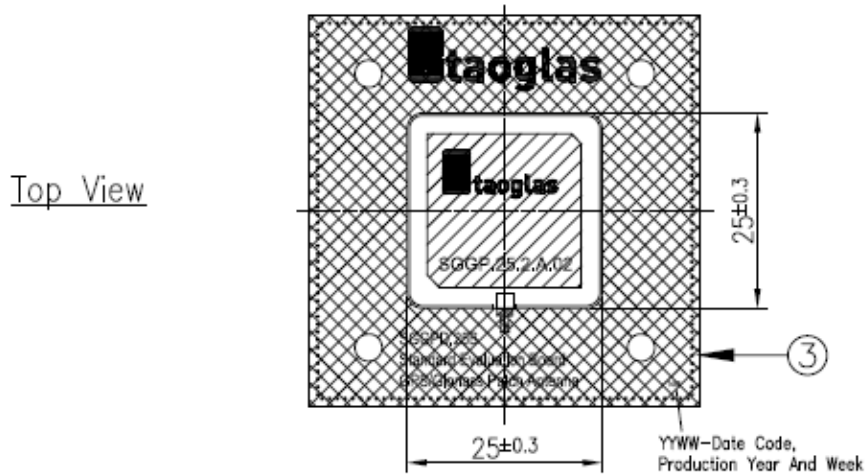


Bottom View



Unit:mm

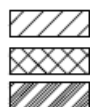
## 6. Evaluation Board (SGGPD.25B)



Unit:mm

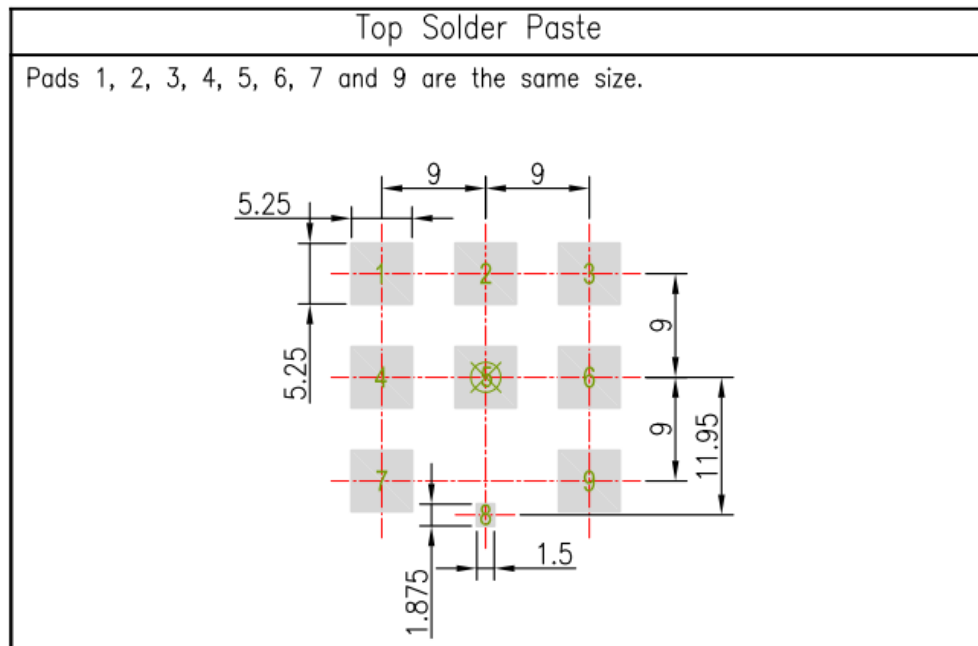
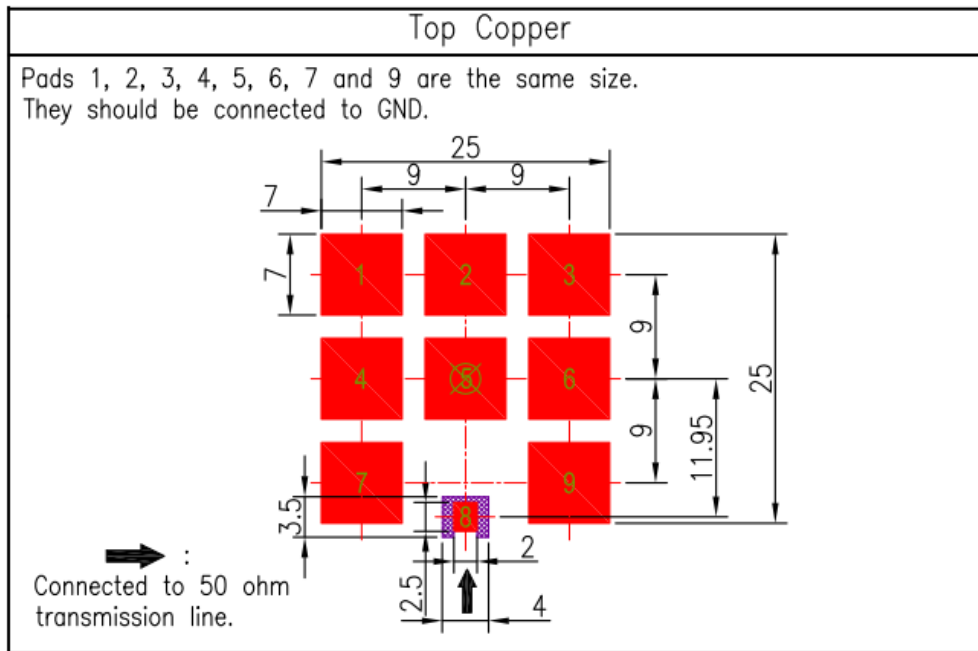
Notes

1. Silver area
2. Solder mask
3. Solder Area

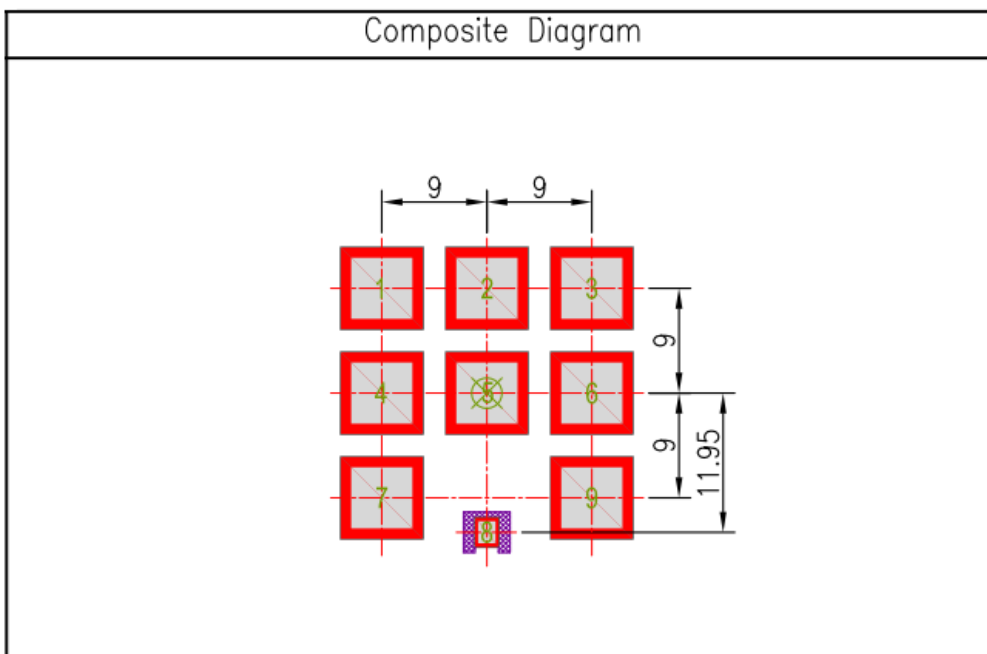
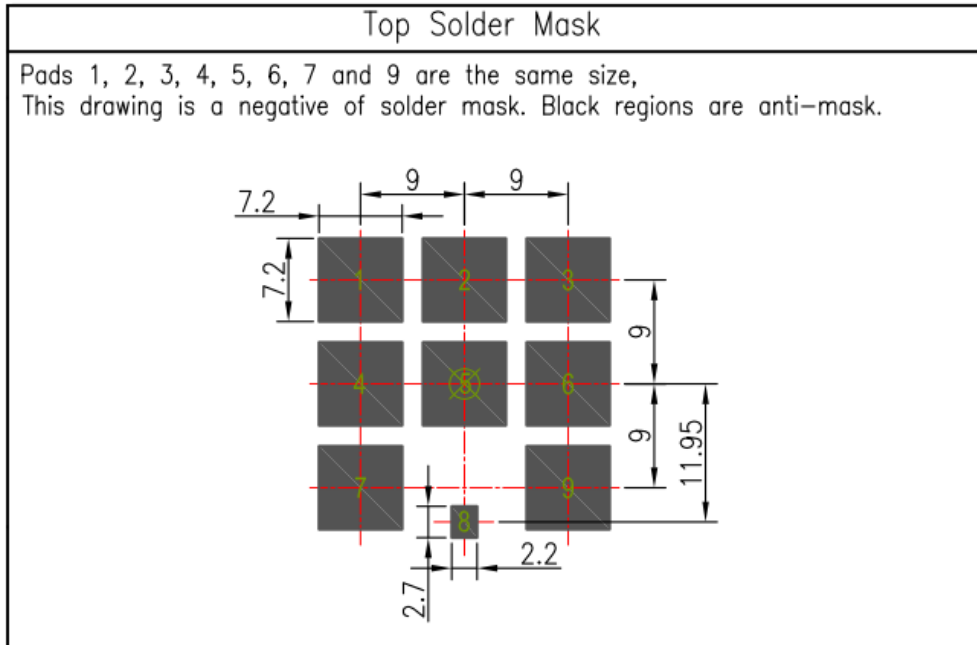


	Name	Material	Finish	QTY
1	PCB SMA(F) ST	Brass	Gold	1
2	SGGP.25.2.A.02 Antenna	Ceramic	Clear	1
3	PCB (50x50x1mm)	Composite	Black	1

## 7. PCB Footprint Recommendation



Unit:mm



Unit:mm

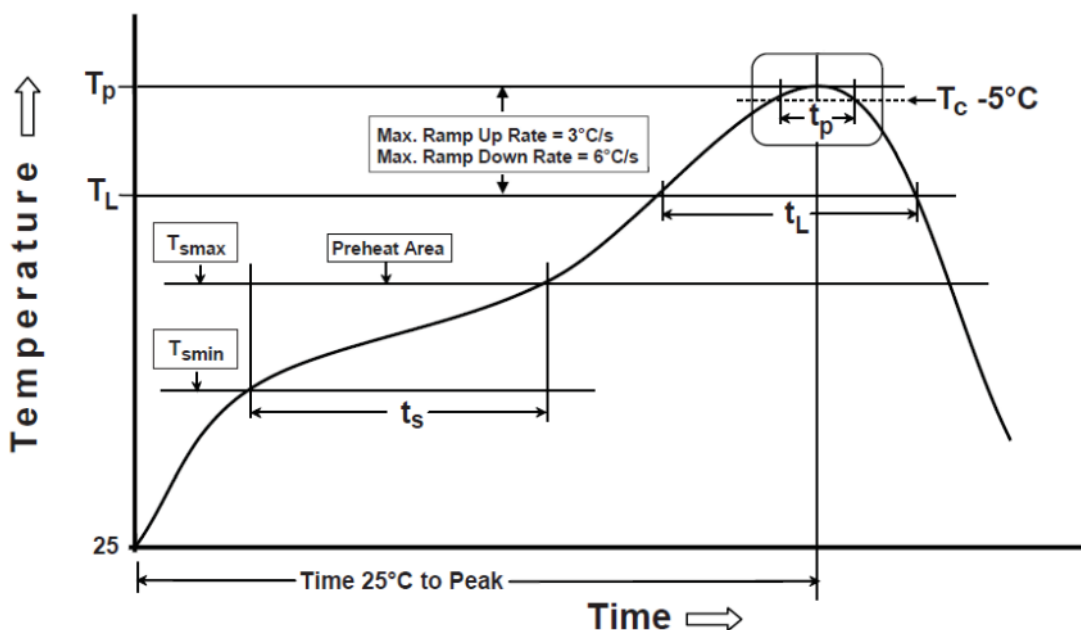
NOTE:		
1. Ag Plated area		6. Copper keepout should extend through all PCB layers.
2. Solder Mask area		7. Any vias in pads should be either filled or tented to prevent solder from wicking away from the pad during reflow.
3. Copper area		8. The dimension tolerances should follow standard PCB manufacturing guidelines
4. Paste area		
5. Copper Keepout Area		

## 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°C±10°C.

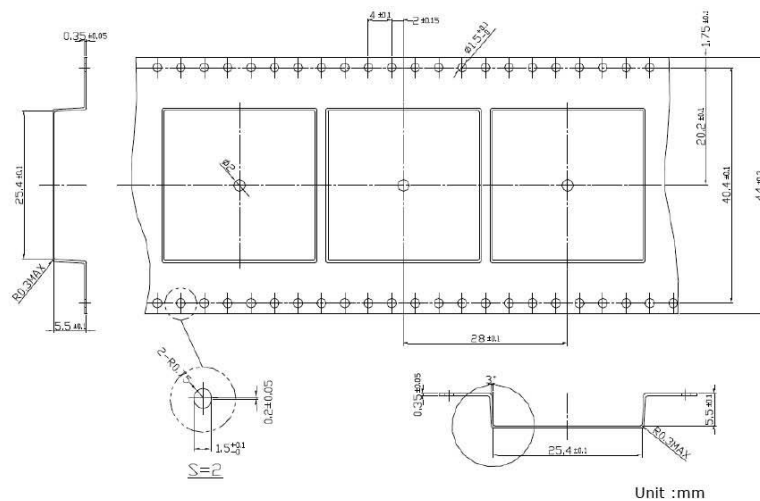
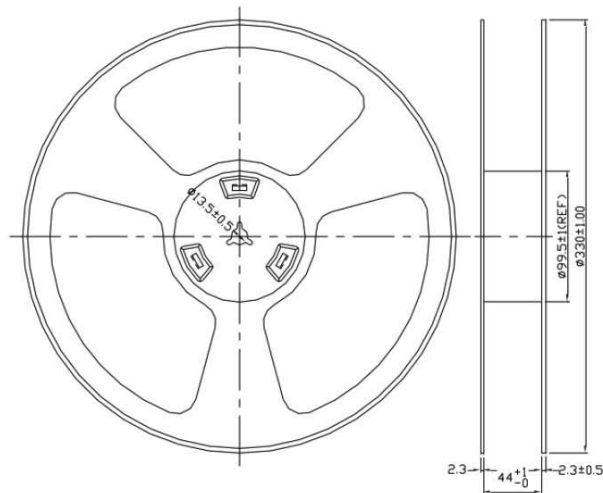
Apply preheating at 120°C for 2-3 minutes. Finish soldering for each terminal within 3 seconds, if soldering iron temperature over 270°C±10°C for 3 seconds, it may cause component surface peeling or damage.

# 9. Packaging

## SGGP.25.2.A.02

### Packaging Specifications (1/2)

200 pc SGGP.25.2.A.02 per reel  
 Dimensions - Ø330\*44mm  
 Weight - 1.4Kg

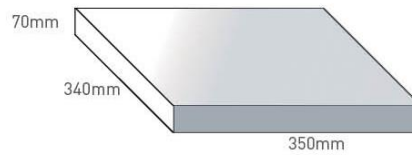


Unit : mm

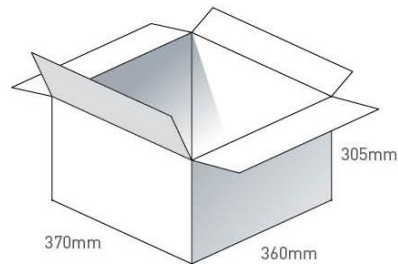
**SGGP.25.2.A.02**

**Packaging Specifications (2/2)**

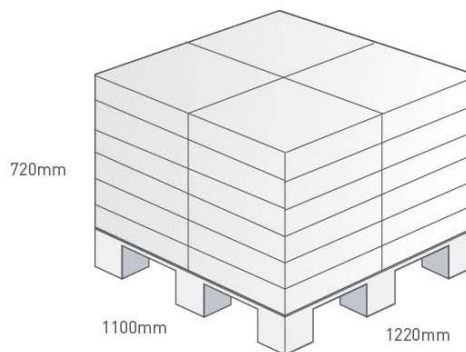
1 pc reel in small inner box  
 Dimensions - 350\*340\*70mm  
 Weight - 1.8Kg



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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