



Datasheet

Part No.:	DSGP.1575.12.4.A.02
Description:	GPS L1 / GALILEO E1 1575MHz Ceramic SMD Patch Antenna
Features:	2.73 dBi Peak Gain for GPS/GALILEO Band SMD Mount Ceramic Patch Antenna Dimension: 15 x 15 x 2mm Automotive IATF16949 Production and Quality Approved RoHS Compliant 

1. Introduction	3
2. Specifications	4
3. Antenna Characteristics	5
4. Radiation Patterns	8
5. 3D Radiation Patterns	10
6. Antenna Integration Guide	11
7. Evaluation Board Mechanical Drawing	16
8. PCB Footprint Recommendation	17
9. Packaging	19
Changelog	20

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.



1. Introduction



The DSGP.1575.12.4.A.02 is a ceramic GPS L1 / GALILEO E1 passive patch antenna. 12mm square and with a height of just 4mm, this antenna is perfect for applications in compact telematics devices, vehicle tracking/fleet management systems, wearables and navigation devices.

The antenna has been tuned on a 50*50mm ground plane, working at 1575.42MHz with a 2.73dBi gain. The ceramic patch is mounted via SMT process, suitable for high-volume low-cost assembly.

The antenna is manufactured and tested in a TS16949 first tier automotive approved facility.

Small antennas should ideally be custom tuned for the device environment, Taoglas offers this service subject to NRE and MOQ. For more details please contact your regional Taoglas sales office.

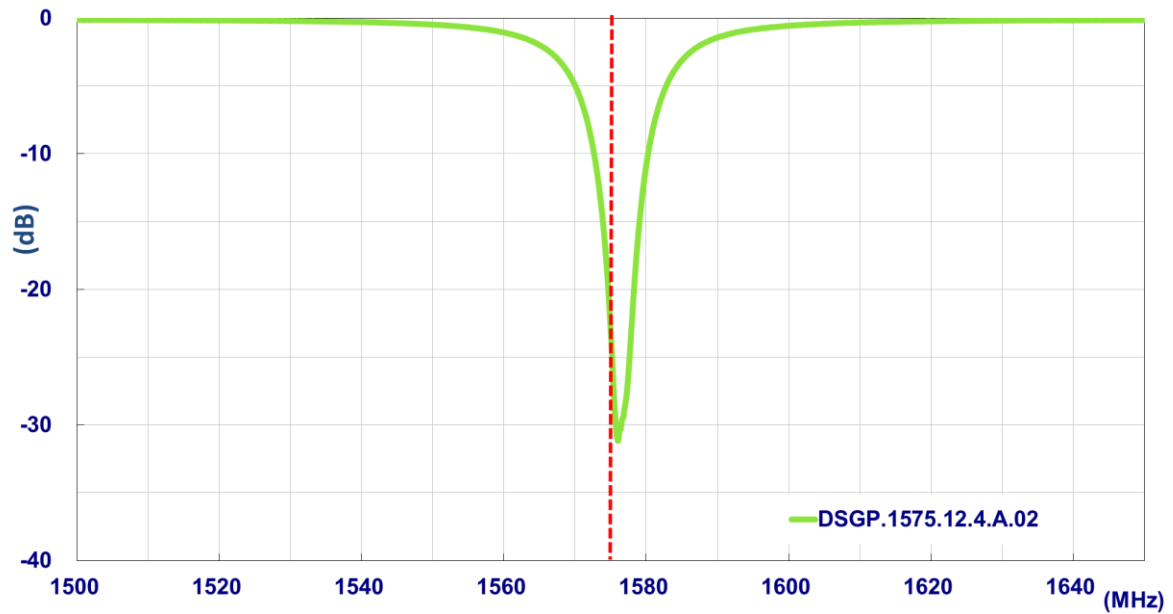
2. Specifications

ELECTRICAL	
Application Bands	GPS L1/GALILEO E1
Frequency	1575.42 ±1.023 MHz
Return Loss	<-10
Efficiency	62.36%
Peak Gain	2.73 dBi
Polarization	RHCP
Impedance	50 Ω
MECHANICAL	
Dimensions	15 x 15 x 2 mm
Material	Ceramic
Weight	3.3g
ENVIRONMENTAL	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 105°C
Humidity	Non-condensing 65°C 95% RH
Moisture Sensitivity Level (MSL)	3 (168 Hours)

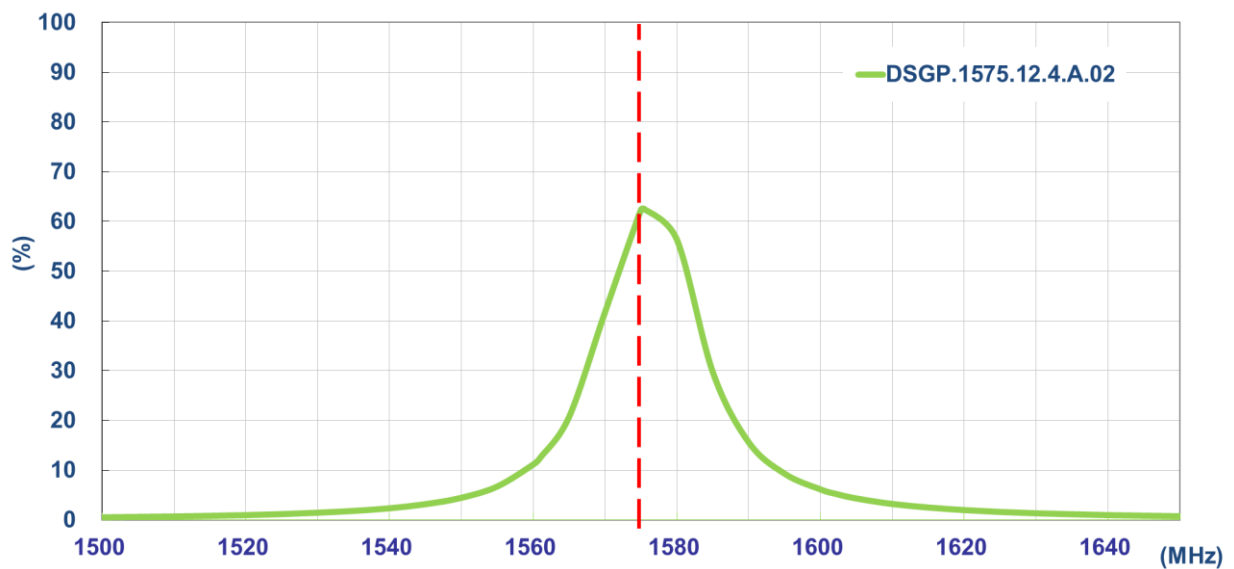
* Antenna properties were measured with the antenna mounted on 50*50mm Ground Plane

3. Antenna Characteristics

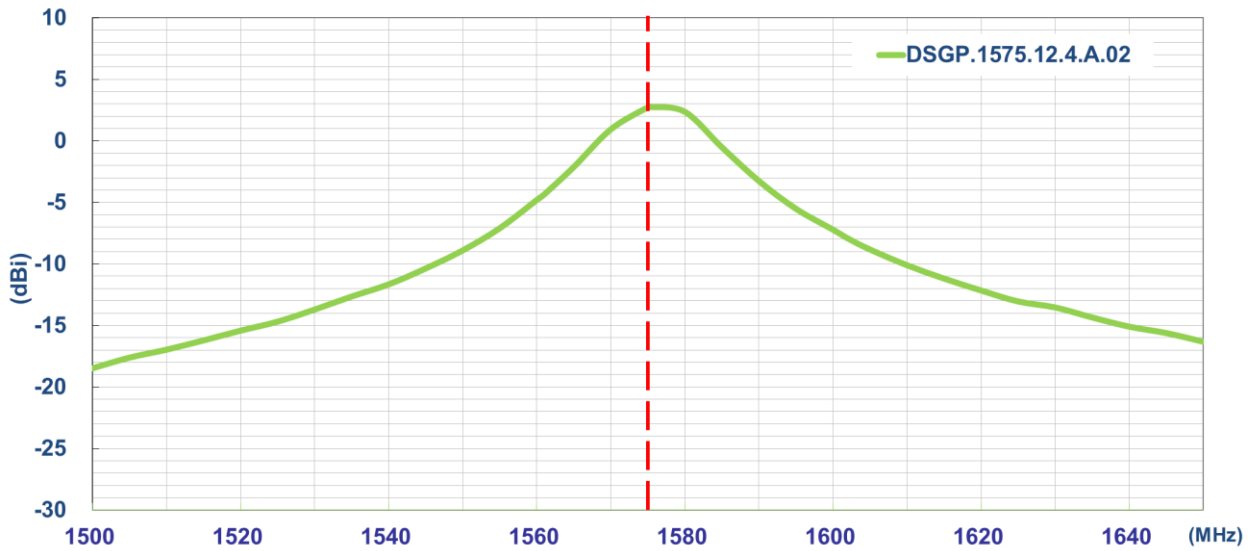
3.1 Return Loss S11



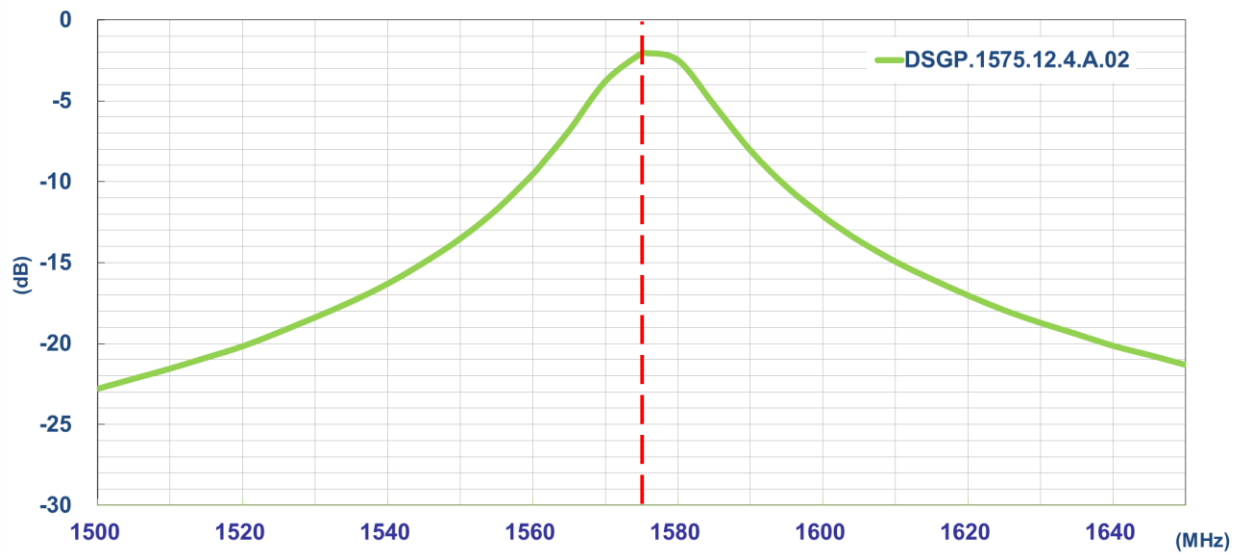
3.2 Efficiency



3.3 Peak Gain

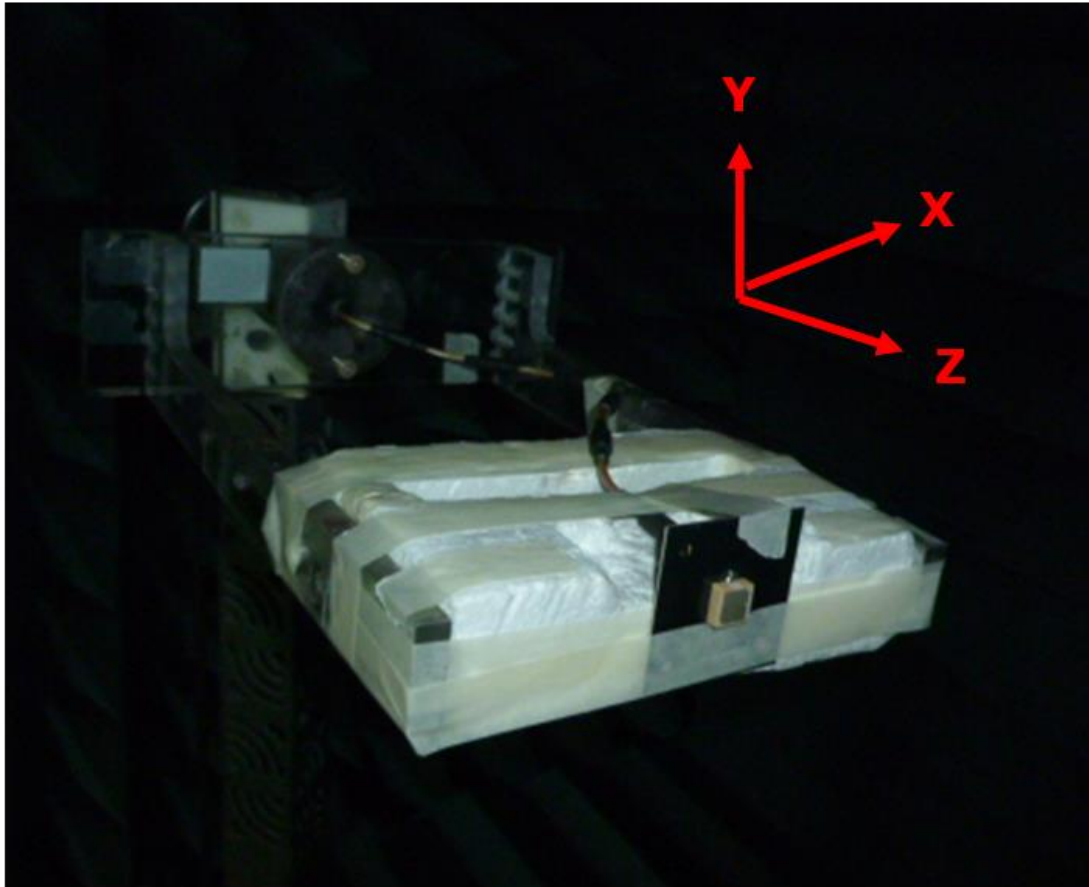


3.4 Average Gain



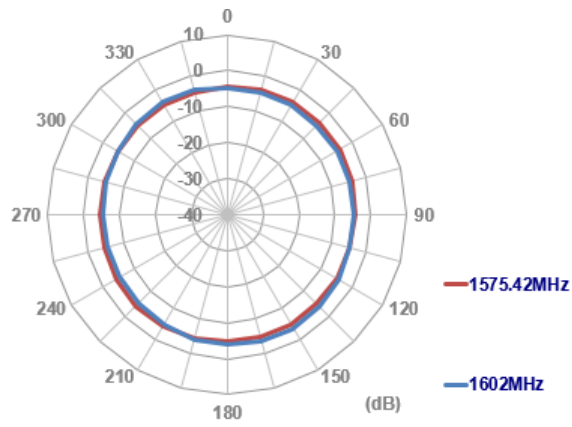
4. Radiation Patterns

4.1 Test Setup

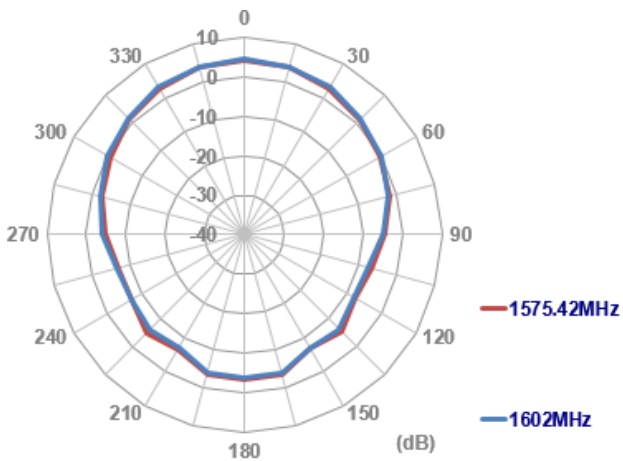


4.2 2D Radiation Pattern

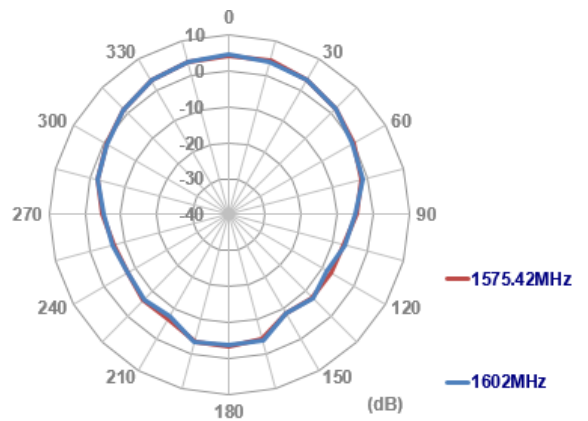
XY Plane



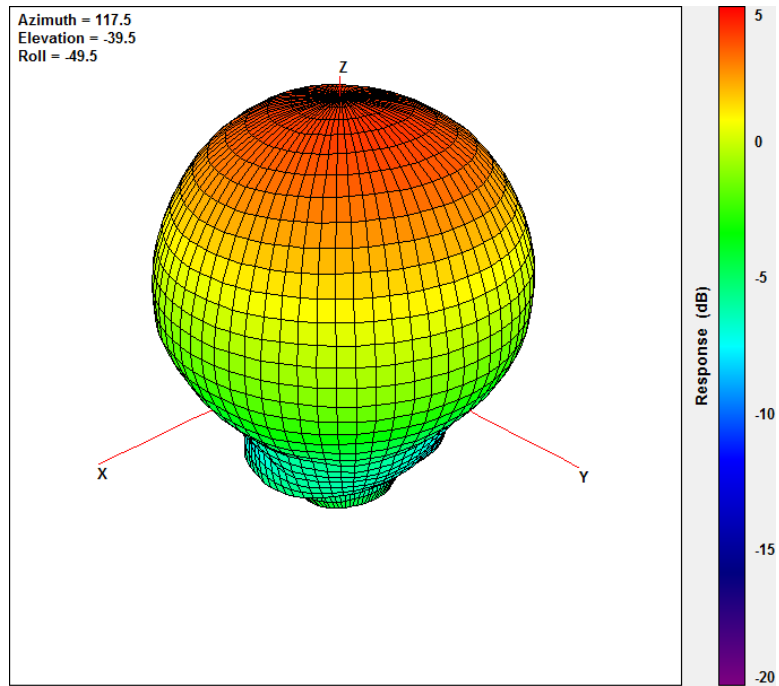
XZ Plane



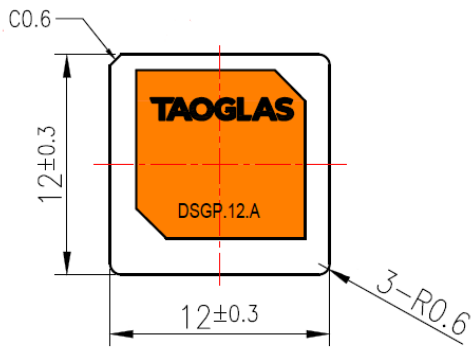
YZ Plane



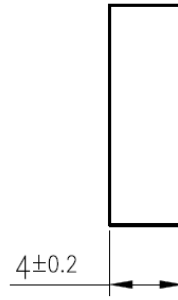
4.3 3D Radiation Patter



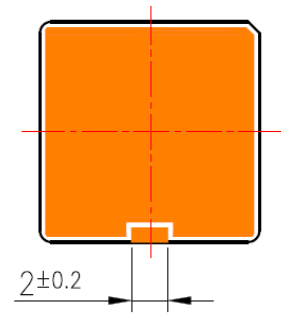
5. Mechanical Drawing (Units: mm)



Top View

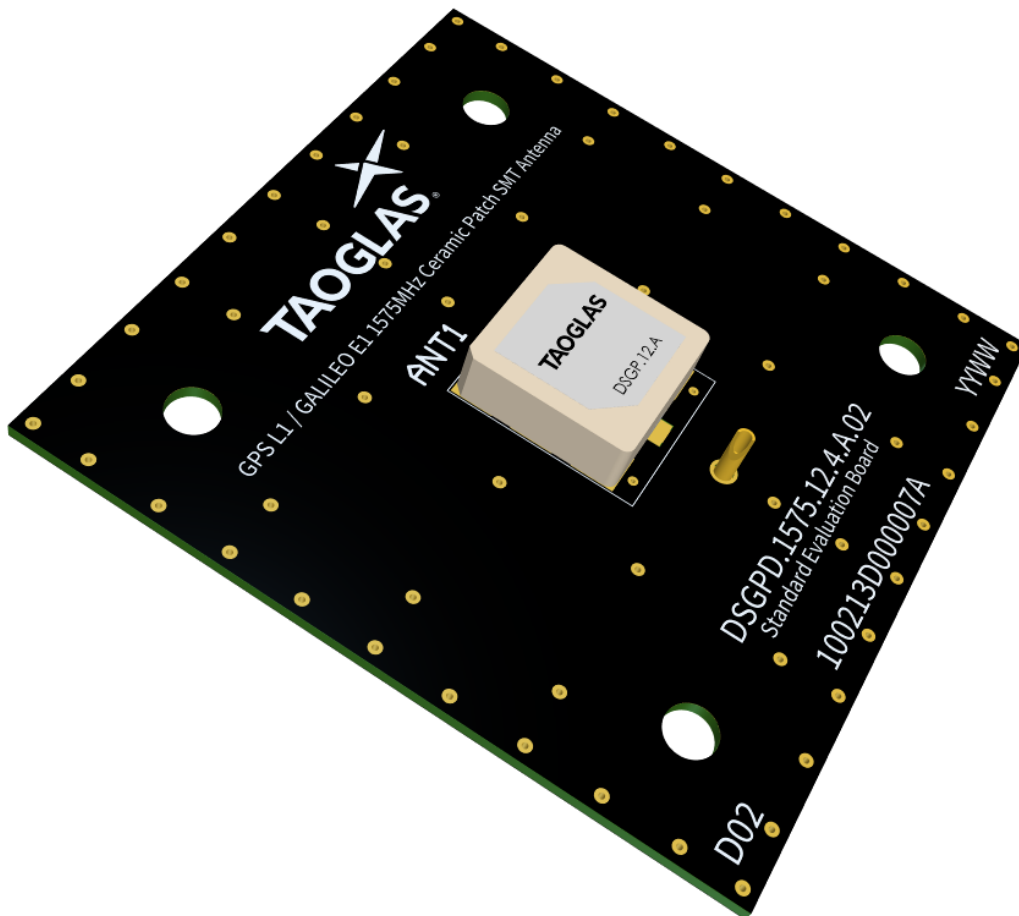


Side View



Bottom View

6. Antenna Integration Guide

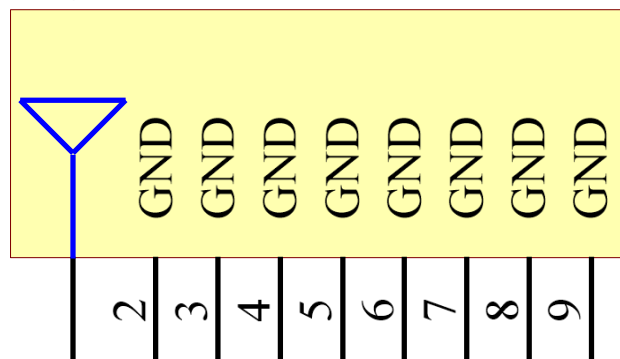


6.1 Schematic Symbol and Pin Definition

The circuit symbol for the antenna is shown below. The antenna has 9 pins as indicated below.

Pin	Description
1	RF Feed
2, 3, 4, 5, 6, 7, 8, 9	Ground

DSGP.1575.12.4.A.02
ANT1



6.2 Antenna Integration

The antenna should be placed at the center of the ground plane with a length and width of 50mm. Maintaining a square symmetric ground plane shape and symmetric environment around the antenna is critical to maintaining the excellent axial ratio and phase center performance shown in this datasheet.



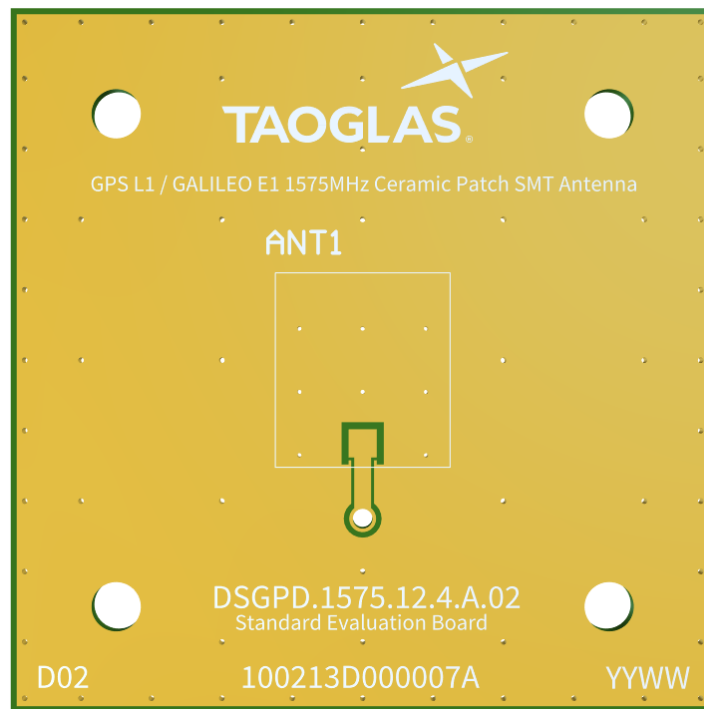
Top Side w/ Solder Mask



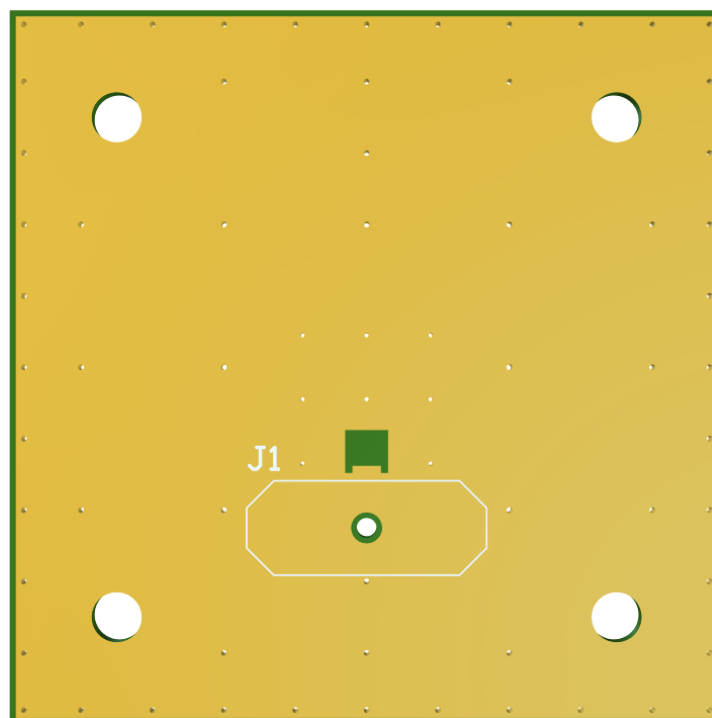
Top Side w/o Solder Mask

6.3 PCB Layout

The footprint and clearance on the PCB must comply with the antenna specification. The PCB layout shown in the diagram below demonstrates the antenna footprint.

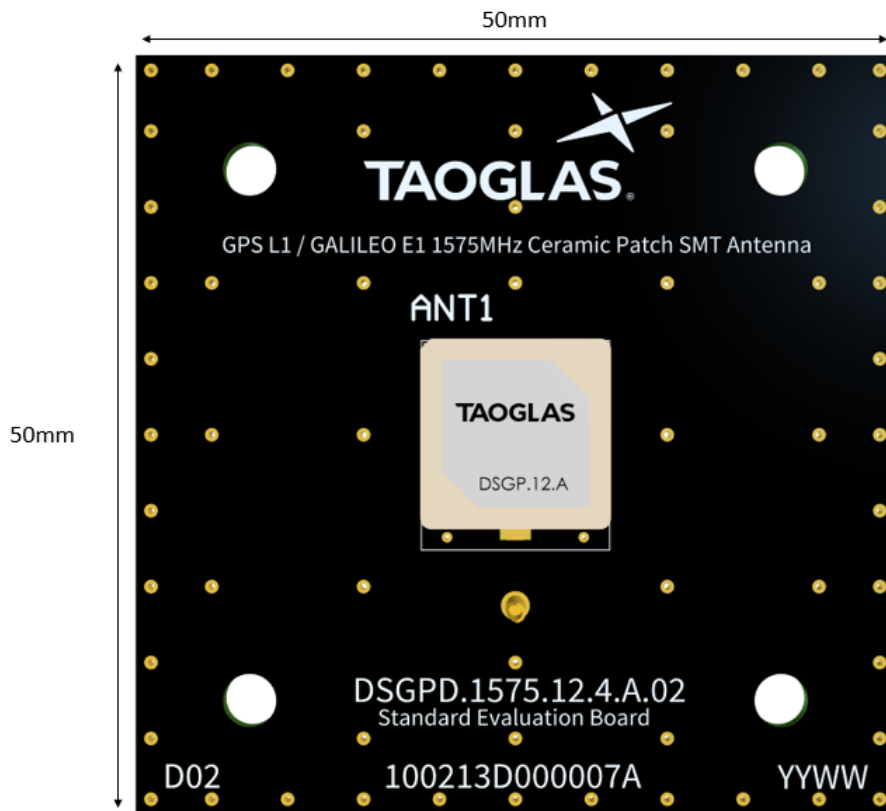


Topside

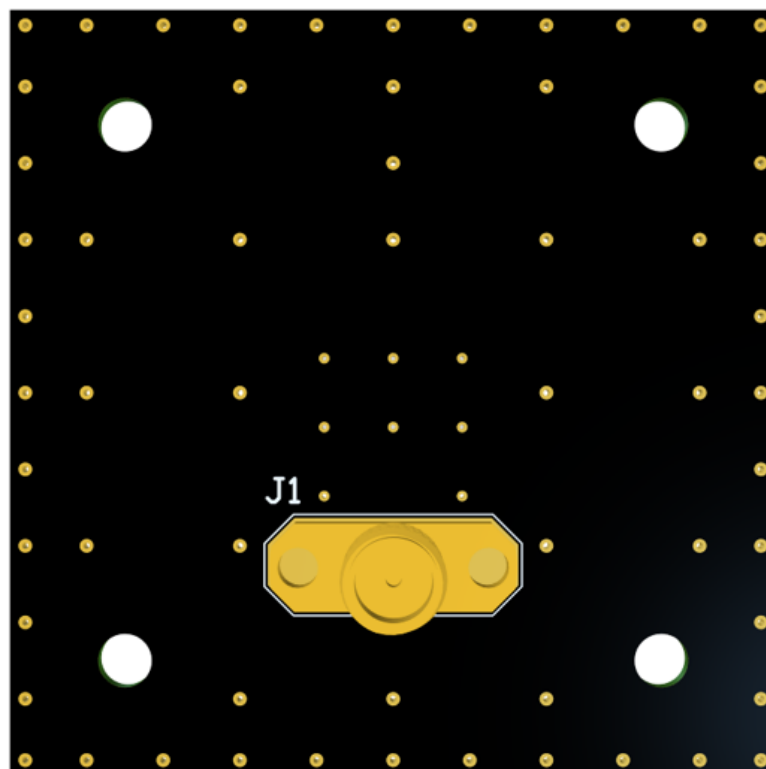


Bottom Side

6.4 Evaluation Board

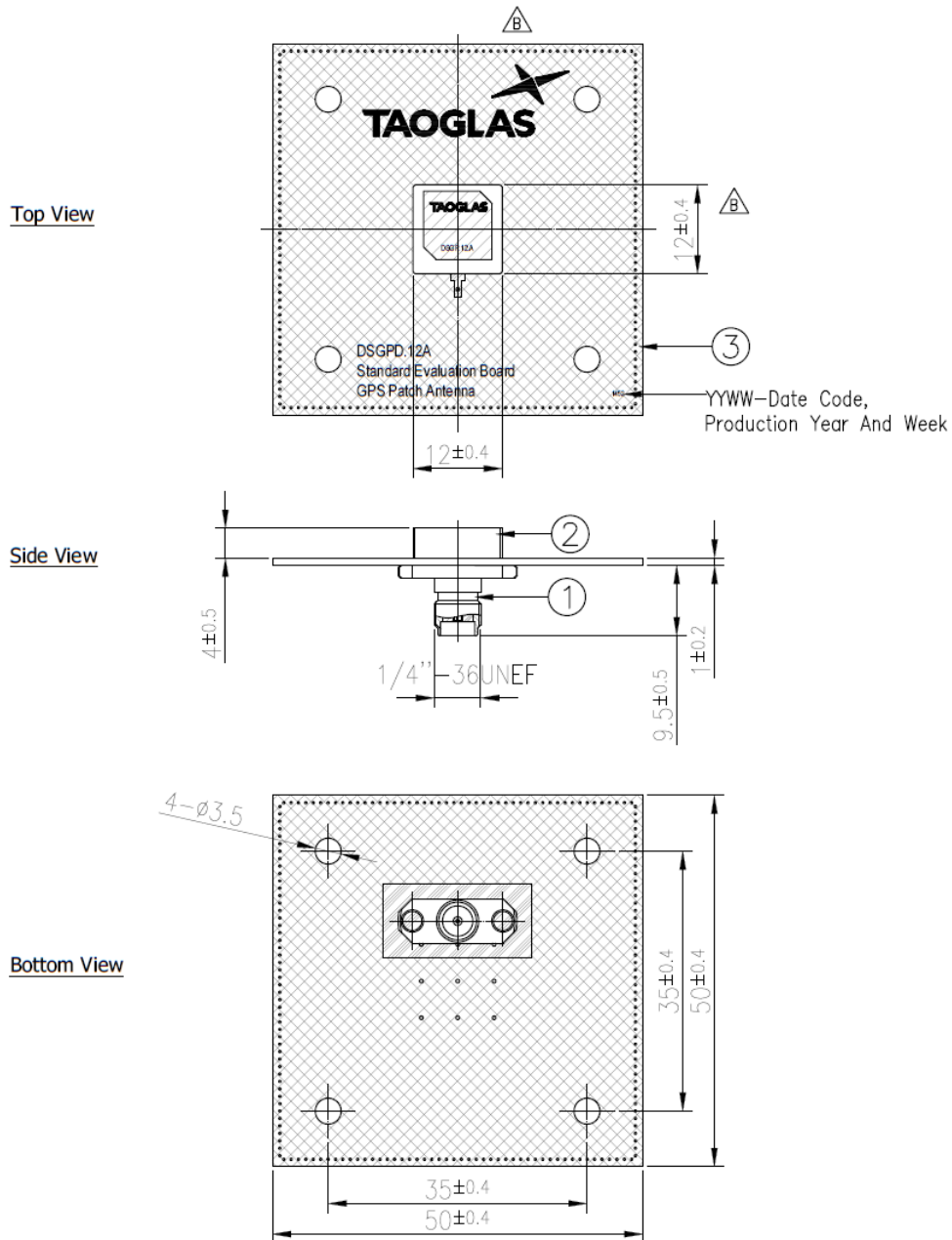


Topside






Bottom Side

7. Evaluation Board Mechanical Drawing



Notes

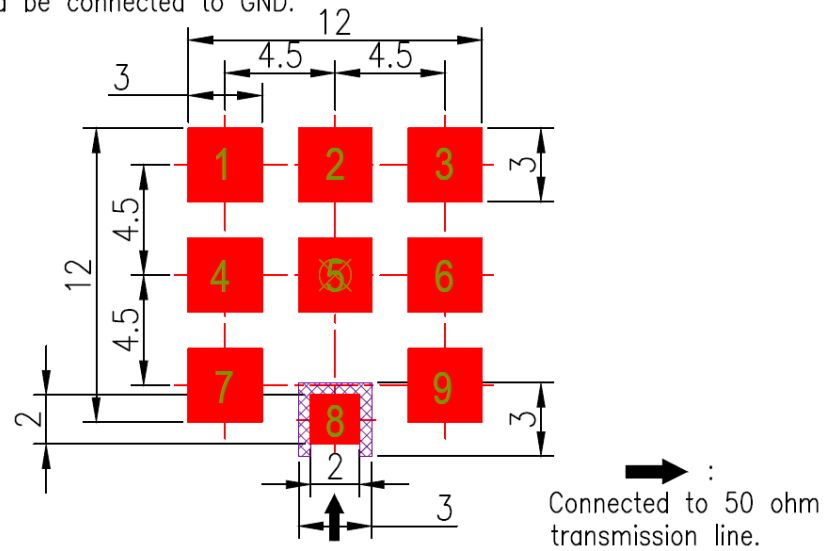
- 1. Silver area 
- 2. Solder mask 
- 3. Solder Area 

	Name	P/N	Material	Finish	QTY
1	PCB SMA(F) ST	2004111000007A	Brass	Au Plated	1
2	DSGP.1575.12.4.A.02 Antenna	001514L040007A	Ceramic	Clear	1
3	PCB (50x50x1mm)	100213D000007A	FR4 1.0t	Black	1

8. PCB Footprint Recommendation

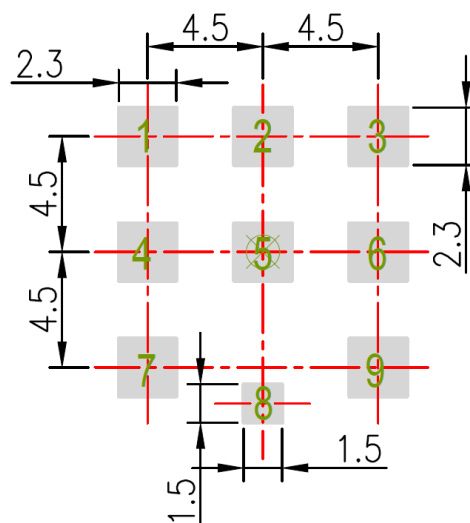
8.1 Footprint Copper Keepout Area (Unit: mm)

Pads 1, 2, 3, 4, 5, 6, 7 and 9 are the same size.
They should be connected to GND.



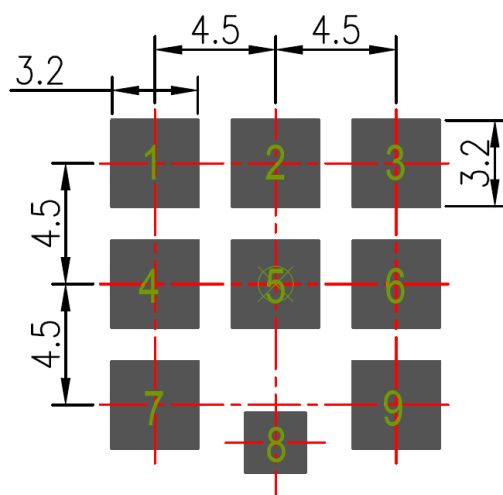
8.2 Paste Area (Unit: mm)

Pads 1, 2, 3, 4, 5, 6, 7 and 9 are the same size.

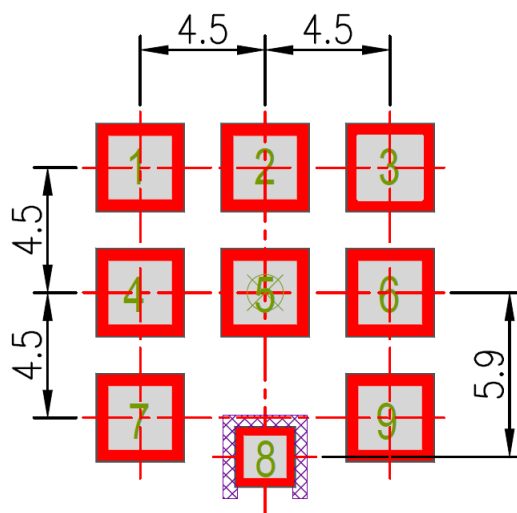


8.3 Top Solder Mask (Unit: mm)






Pads 1, 2, 3, 4, 5, 6, 7 and 9 are the same size,
This drawing is a negative of solder mask. Black regions are anti-mask.



8.4 Composite Diagram (Unit: mm)

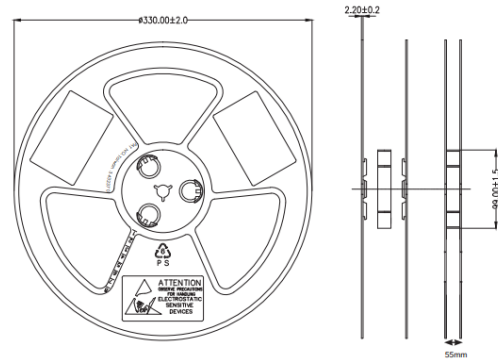


NOTE:

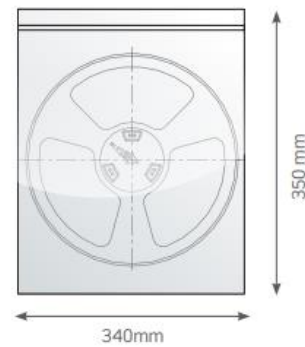
- | | | |
|------------------------|---|---|
| 1. Ag Plated area |  | 6. Copper keepout should extend through all PCB layers. |
| 2. Solder Mask area |  | 7. Any vias in pads should be either filled or tented to prevent solder from wicking away from the pad during reflow. |
| 3. Copper area |  | 8. The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

9. Packaging

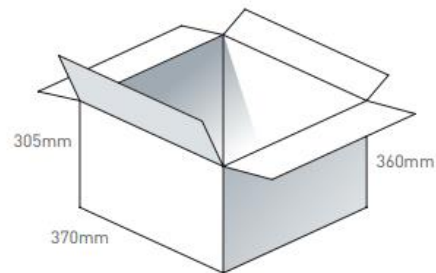
500 pc DSGP.1575.12.4.A.02 per reel
 Dimensions - Ø330*55mm
 Weight - 2300Kg



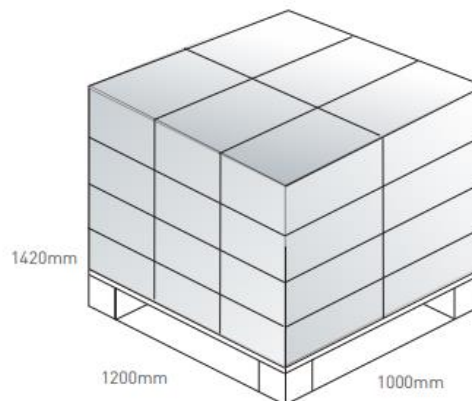
1 pc reel in small in Anti-static Bag
 Dimensions - 340*350*55mm
 Weight - 2400Kg



4 Reels / 2000 pcs in one carton
 Carton Dimensions - 370*360*305mm
 Weight - 10.5Kg



Pallet Dimensions 1200*1000*1420mm
 24 Cartons per Pallet
 6 Cartons per layer
 4 Layers





TAOGLAS®

www.taoglas.com

