THE DATASHEET OF

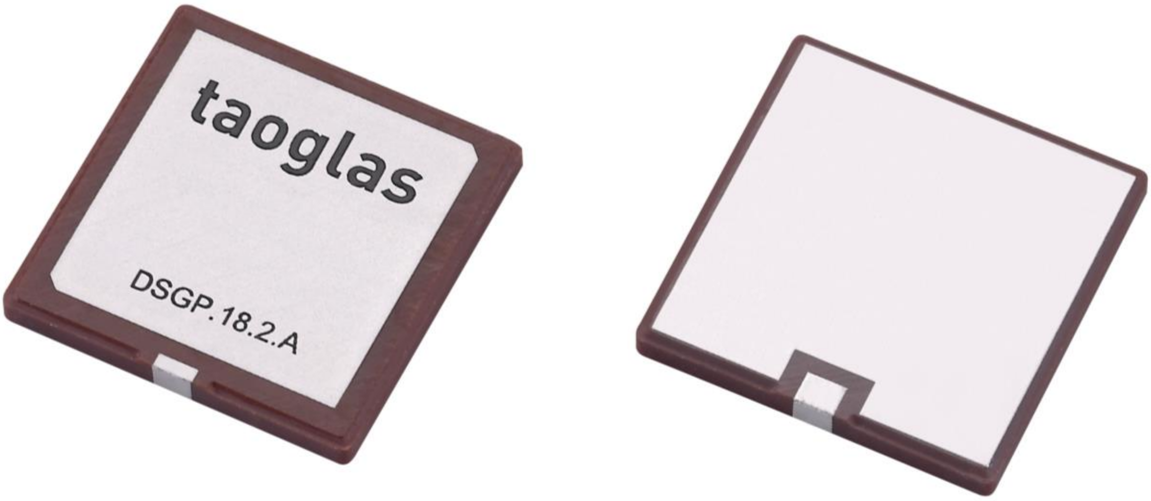
SGP.1575.18.2.A.02

SPECIFICATION

Part No. : **DSGP.1575.18.2.A.02**

Description : GPS L1 / GALILEO E1 1575MHz 18*18*2mm
Ceramic Patch SMT Antenna

Features : 2.4 dBi Peak Gain for GPS/GALILEO Band
Dimensions: 18 x 18 x 2mm
SMT Direct Mount Ceramic Patch Antenna
TS16949 Approved
RoHS Compliant



1. Introduction

The DSGP.1575.18.2.A.02 is a ceramic GPS L1 / GALILEO E1 passive patch antenna, 18mm square, with a low profile of 2mm thickness. It is designed for applications in space constrained navigation devices, vehicle tracking/fleet management systems, as well as telematics devices.

The antenna has been tuned on a 50 x 50 mm ground plane, working at 1575.42MHz with a 2.4 dBi gain. The ceramic patch is mounted via SMT process, ideal for high volume low cost assembly. It is manufactured and tested in a TS16949 first tier automotive approved facility.

For further optimization to customer specific device environments where ground-plane size is different, custom tuned patch antennas can be supplied. For more details please contact your regional Taoglas sales office.

2. Specification

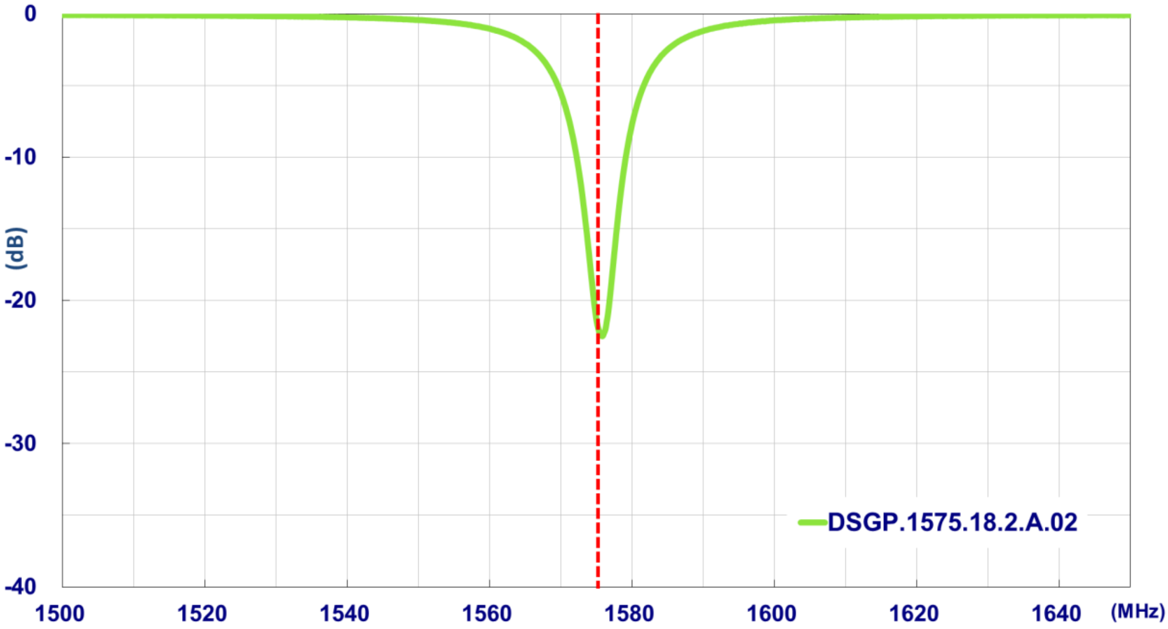
ELECTRICAL	
Application Bands	GPS/GALILEO
Operation Frequency (MHz)	1575.42 ±1.023
Return Loss (dB)	< -10
Gain at Zenith (dBi)	2.4
Efficiency (%)	55.94
Impedance	50 ohms
MECHANICAL	
Ceramic Dimension (mm)	18 x 18 x 2
Weight (g)	2.9
ENVIRONMENTAL	
Operation Temperature	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

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

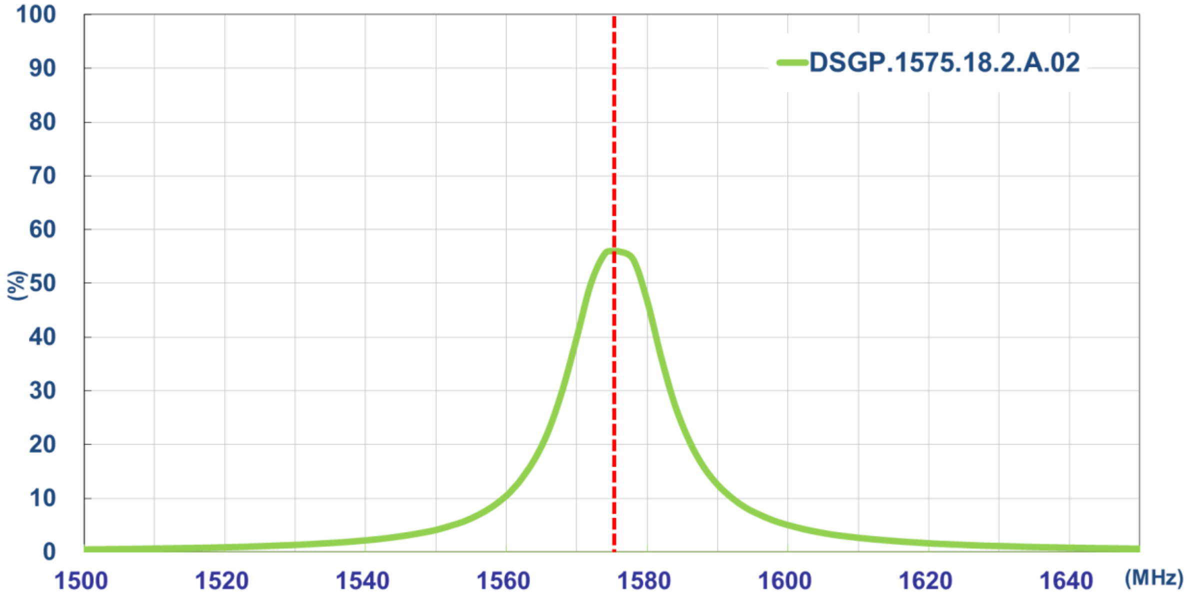
Taoglas Part # DSGPD.18B

3. Antenna Characteristics

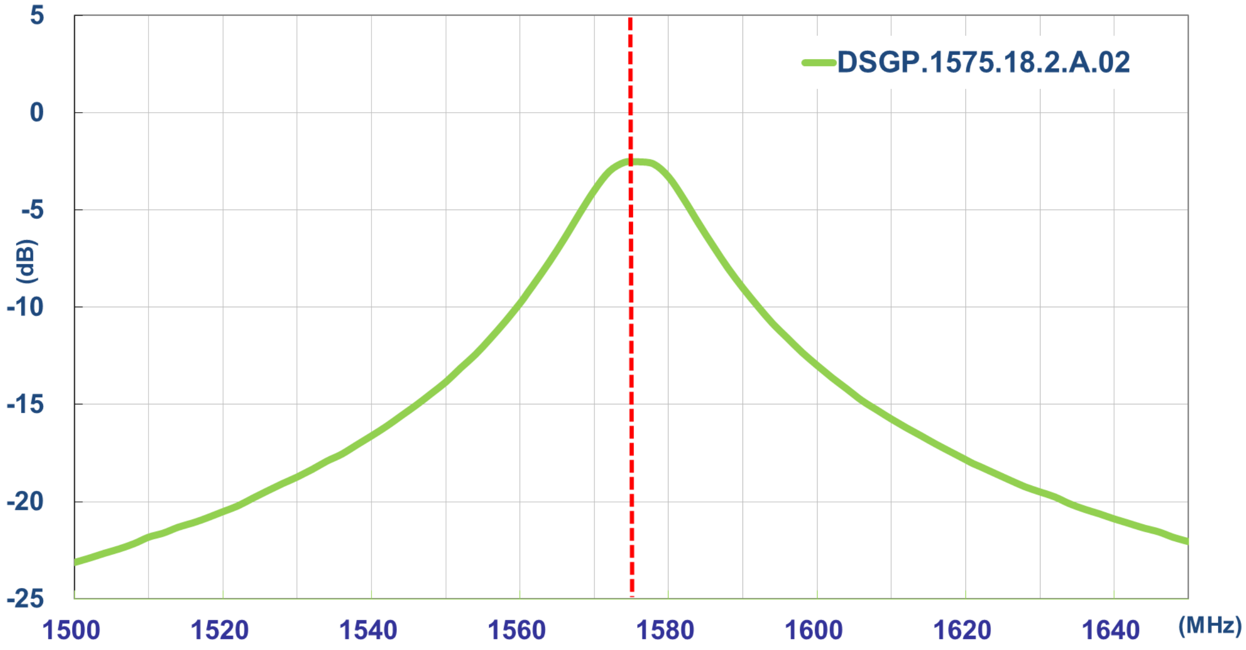
3.1. Return Loss



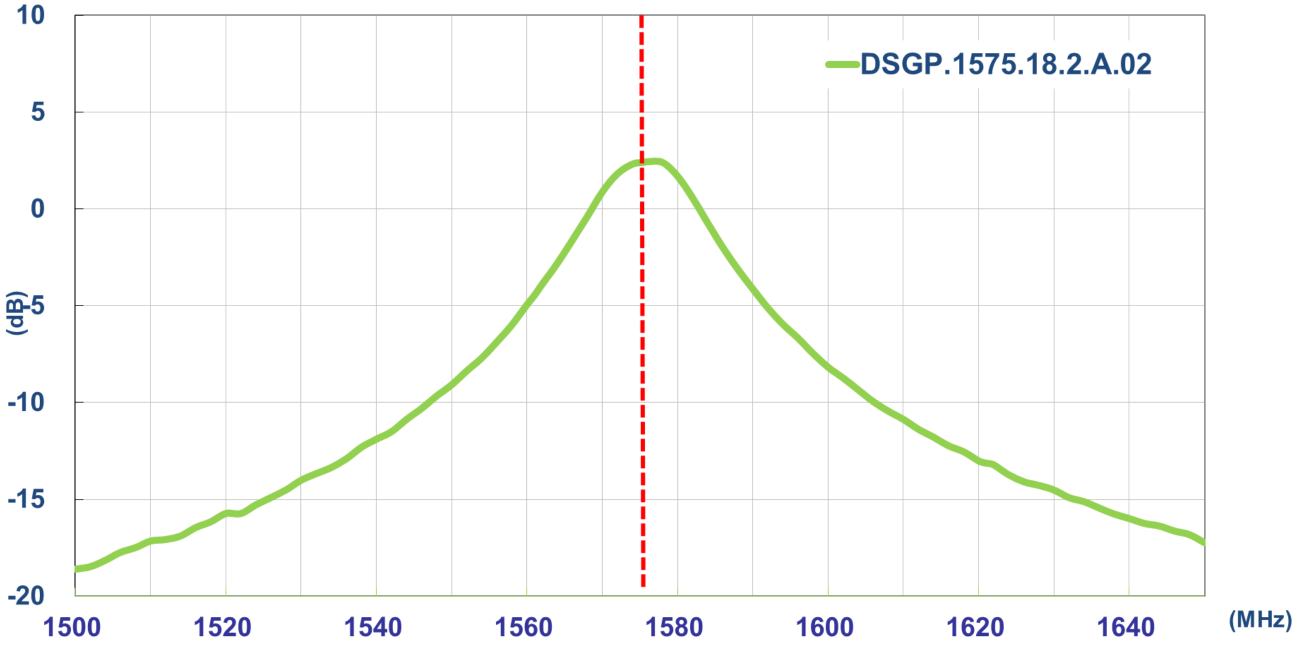
3.2. Efficiency



3.3. Average Gain



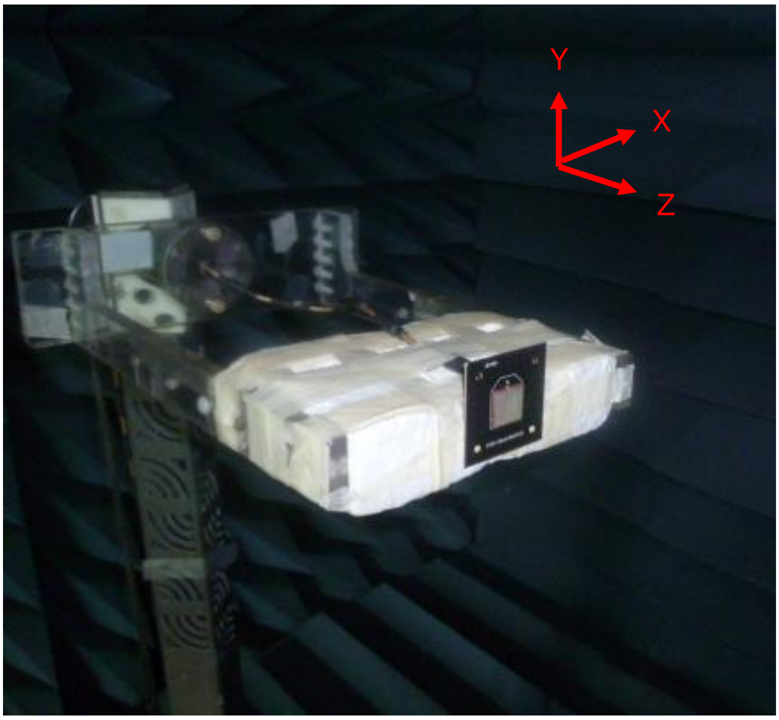
3.4. Peak Gain



4. Antenna Radiation Pattern

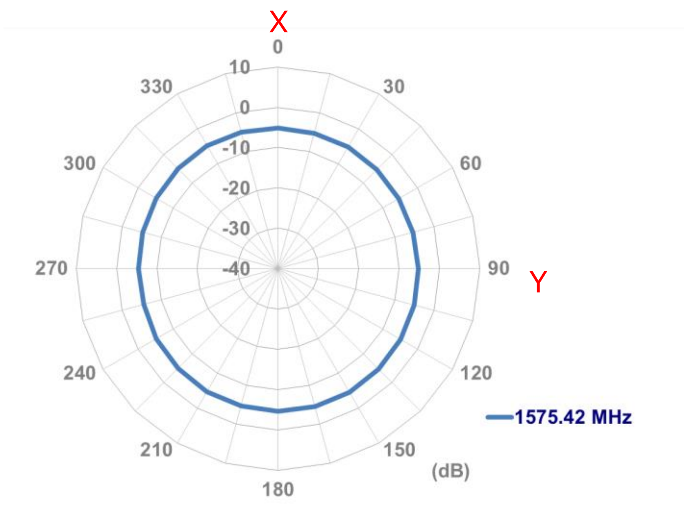
4.1. Measurement Setup

The DSGP.1575.18.2 antenna is tested with 50mm*50mm ground plane in a CTIA certified ETS-Lindgren Anechoic Chamber. The test setup is shown below.

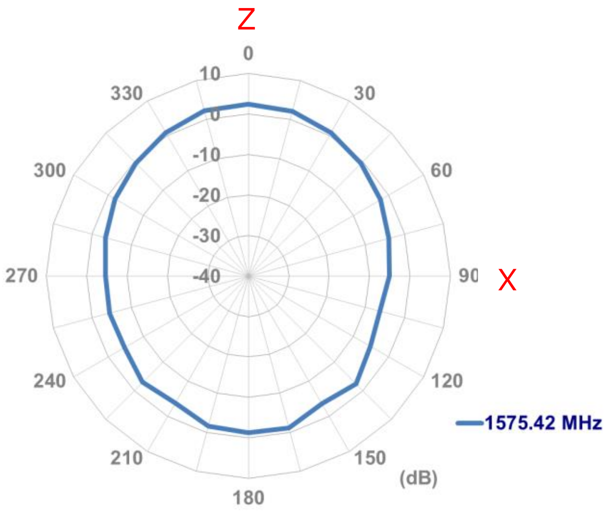


4.2. 2D Radiation Pattern

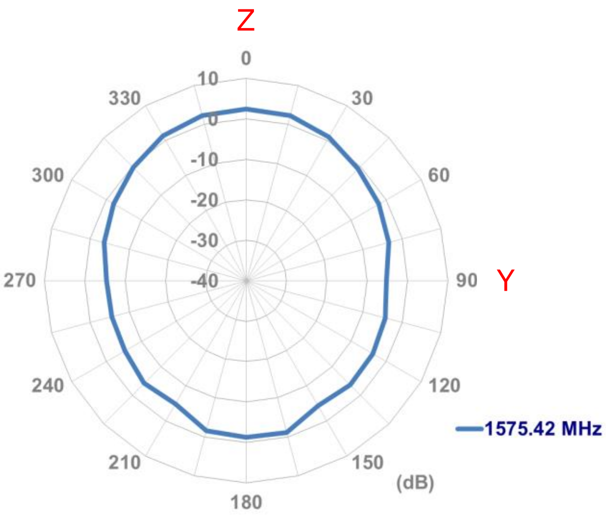
XY Plane



XZ Plane

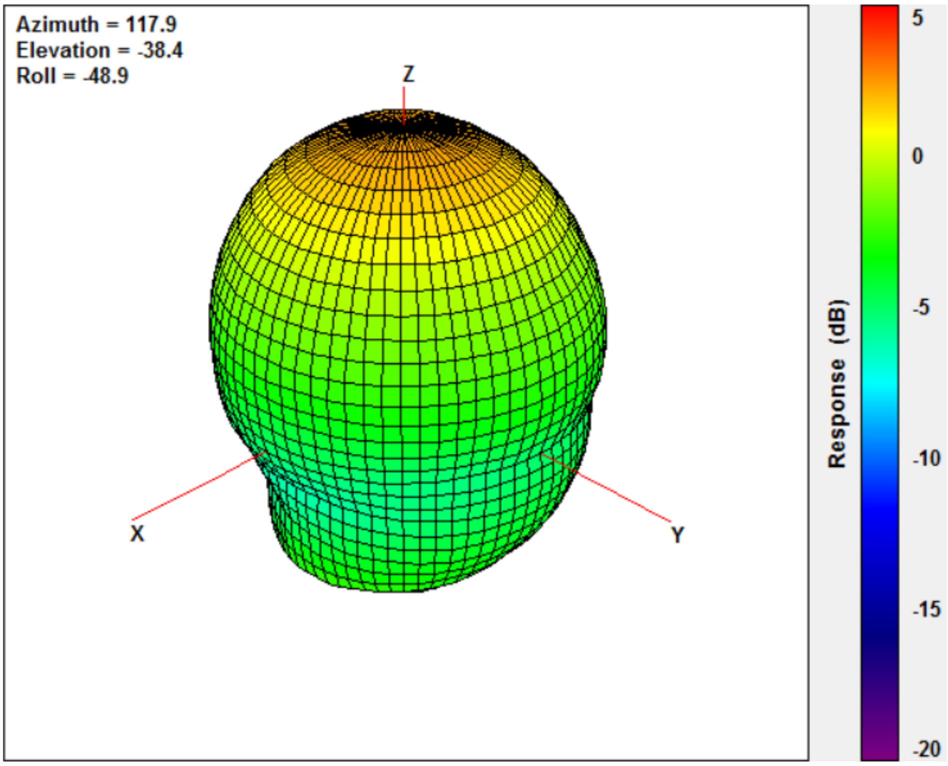


YZ Plane

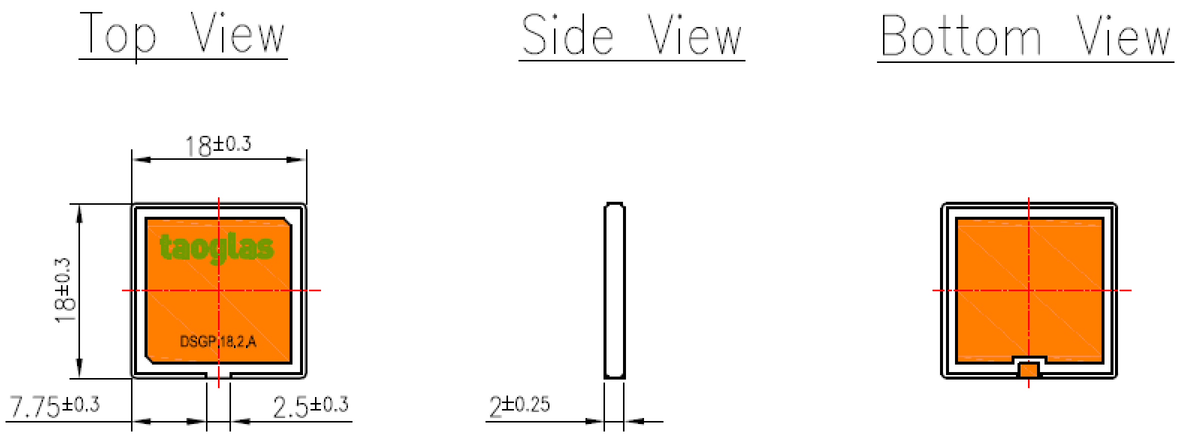


4.3. 3D Radiation Pattern

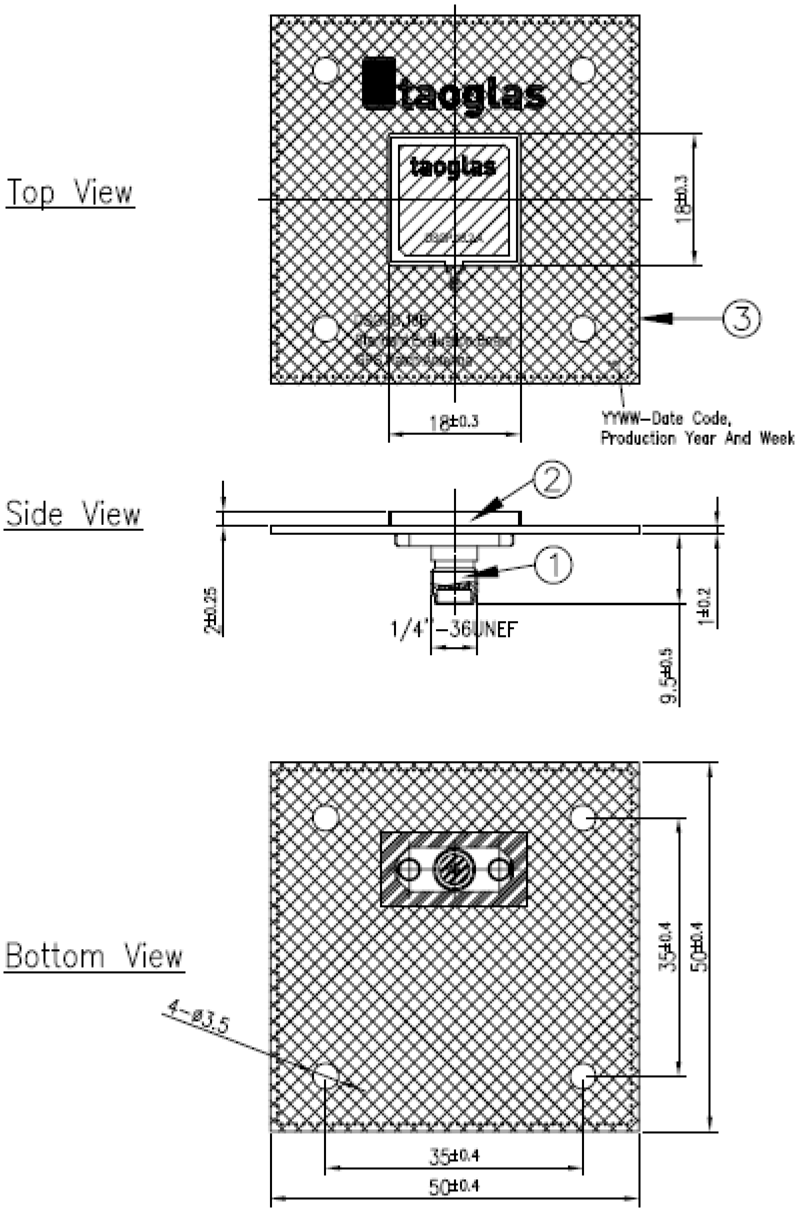
1575.42MHz



5. Mechanical Drawing (Unit: mm)



6. Evaluation Board (DSGPD.18B) (Unit: mm)

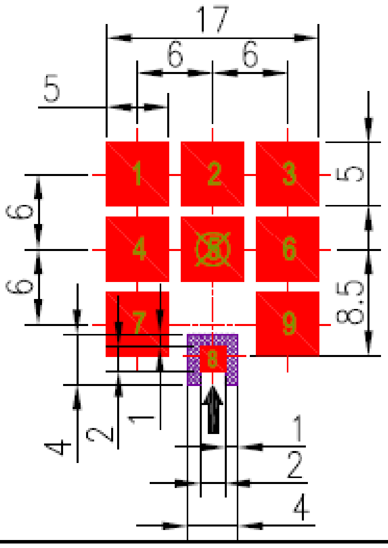


	Name	Material	Finish	QTY
1	PCB SMA(F) ST	Brass	Gold	1
2	DSGP.1575.18.2.A.02 Antenna	Ceramic	Clear	1
3	PCB (50x50x1mm)	Composite	Black	1

7. PCB Footprint Recommendation

Top Copper

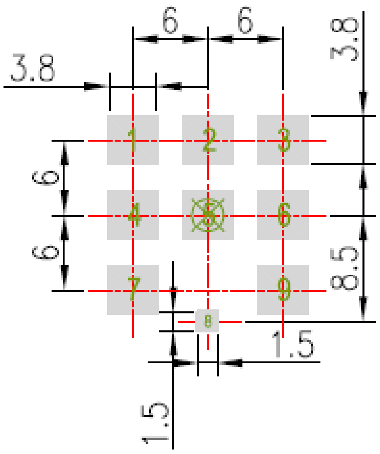
Pads 1, 2, 3, 4, 5, 6, 7 and 9 are the same size.
They should be connected to GND.



➡ : Connected to 50 ohm transmission line.

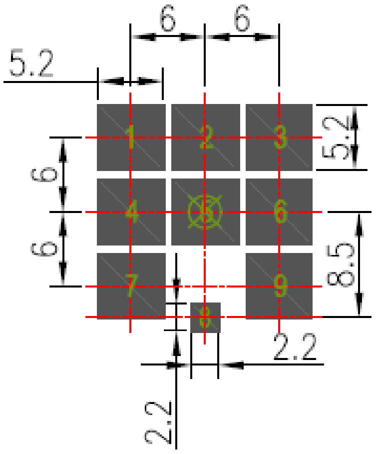
Top Solder Paste

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

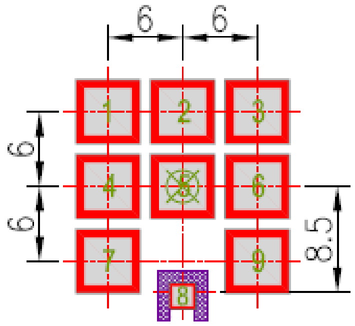


Top Solder Mask

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.



Composite Diagram



unit :mm

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.

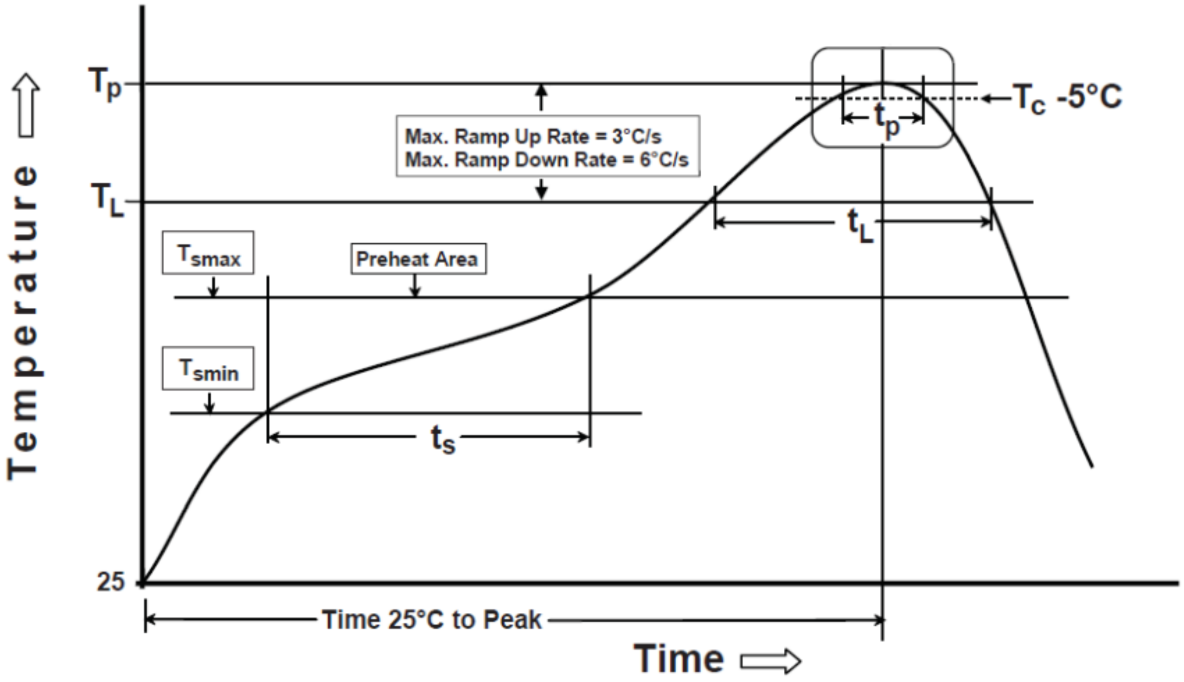
8. The dimension tolerances should follow standard PCB manufacturing guidelines

8. Recommended Reflow Soldering Profile

DSGP.1575.18 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) Temperature Max(Tsmax) Time(ts) from (Tsmin to Tsmax)	150°C 200°C 60-120 seconds
RAMP-UP	Avg. Ramp-up Rate (Tsmax to TP)	3°C/second(max)
REFLOW	Temperature(TL) Total Time above TL (tL)	217°C 30-100 seconds
PEAK	Temperature(TP) Time(tp)	260°C 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

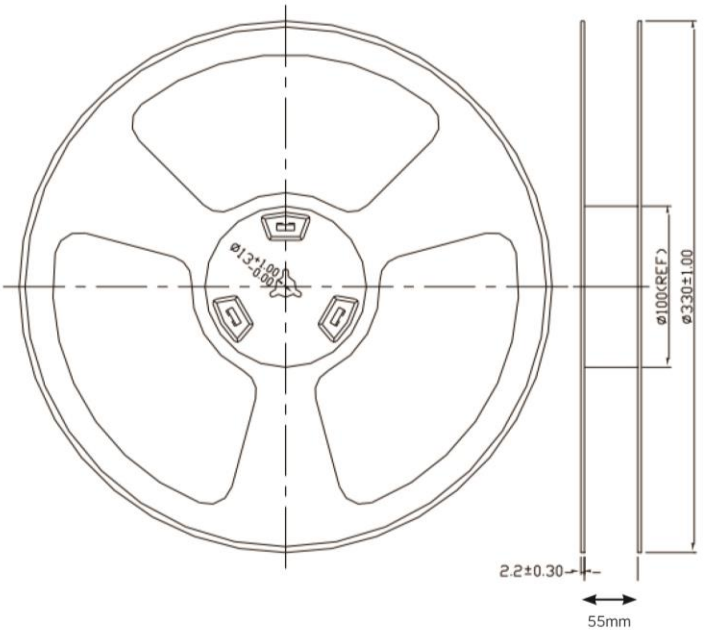


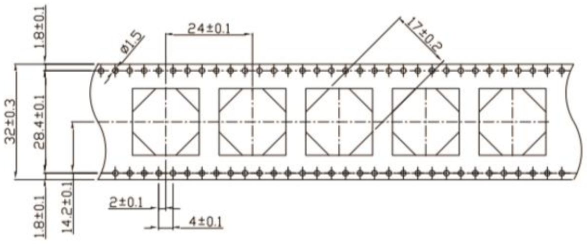
Soldering Iron condition : Soldering iron temperature 270°C±10°C.

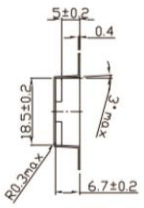
Apply preheating at 120°C for 2-3 minutes. Finish soldering for each terminal within 3 seconds, if soldering iron

9. Packaging

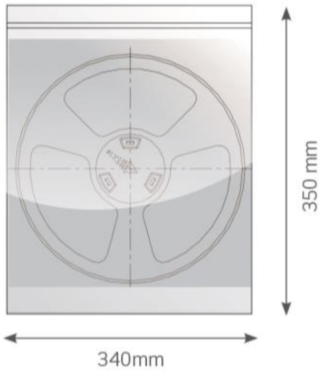
200 pc DSGP.1575.18.2.A.02 per reel
Dimensions - Ø330*55mm
Weight - 800g



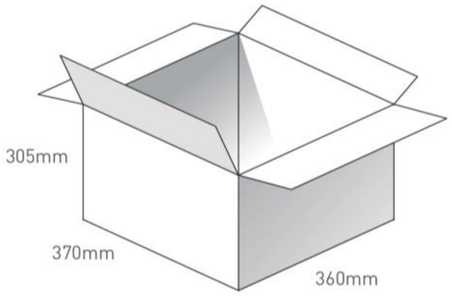




1 pc reel in small in Anti-static Bag
Dimensions - 340*350*70mm
Weight - 1.2Kg



4 Reels in Anti-static Bags
800 pcs in one carton
Carton Dimensions - 370*360*305mm
Weight - 5.6Kg



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