



# TAOGLAS®



# Datasheet

## DSGP.1575.18.2.A.02

### Description:

GPS L1 / GALILEO E1 1575.42MHz 18\*18\*2mm Ceramic Patch SMD Antenna

### Features:

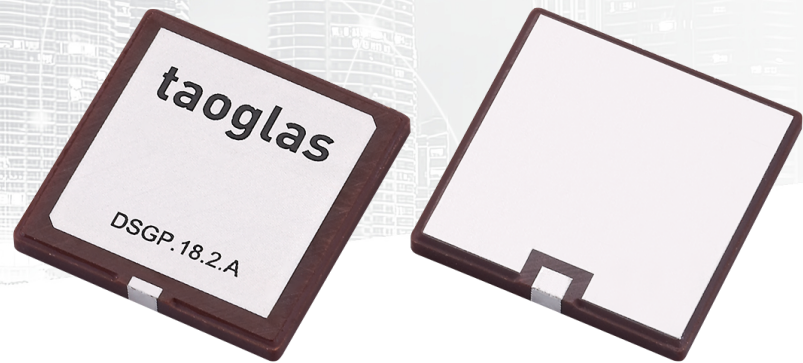
2.4 dBi Peak Gain for GPS/GALILEO Band  
Dimensions: 18 x 18 x 2mm  
SMD Direct Mount Ceramic Patch Antenna  
TS16949 Approved  
RoHS & Reach Compliant

1. Introduction	3
2. Specifications	4
3. Antenna Characteristics	6
4. Radiation Patterns	8
5. Mechanical Drawing	10
6. Footprint	11
7. Recommended Solder Reflow	13
8. Packaging	14
Changelog	16

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## 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.

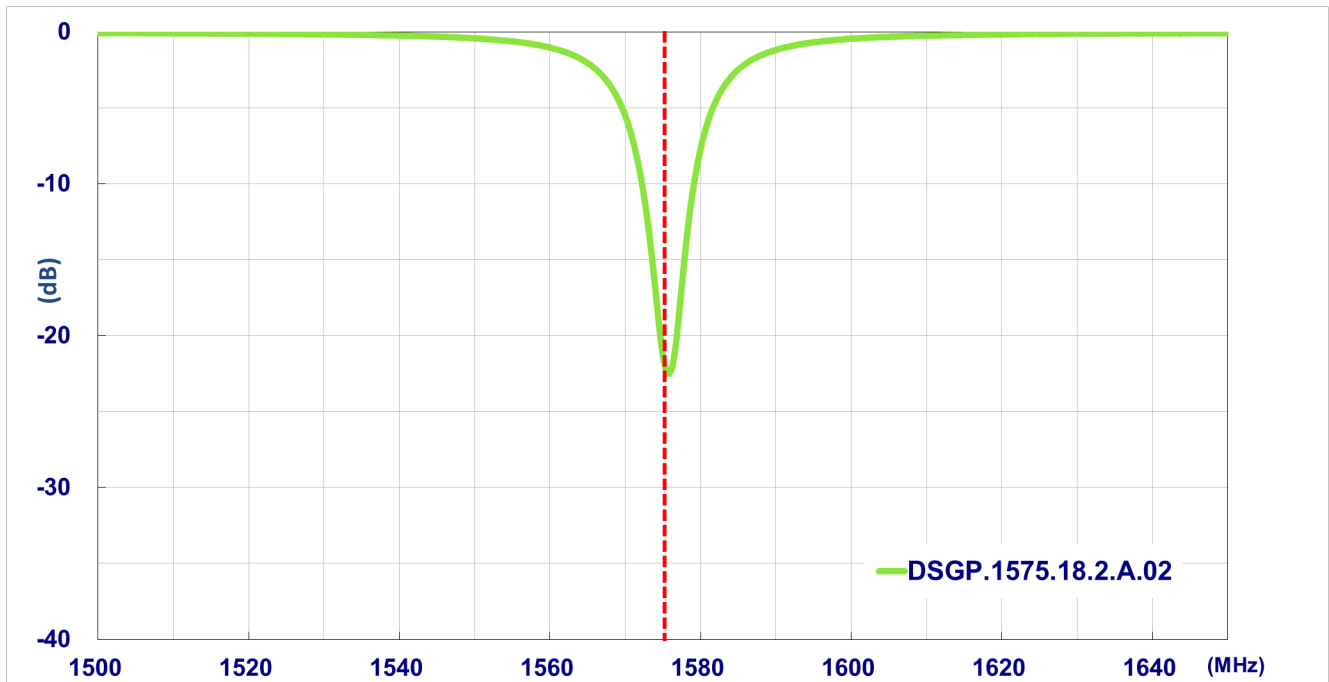
## 2. Specifications

GNSS Frequency Bands Covered							
<b>GPS/QZSS</b>	L1 1575.42MHz	L2 1227.6MHz	L5 1176.45MHz	L6 1278.75MHz			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<b>GLONASS</b>	L5R 1176.45MHz	L3PT 1201.5MHz	L2PT 1246MHz	L1CR 1575.42MHz	L1PT 1602MHz		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
<b>Galileo</b>	E5a 1176.45MHz	E5b 1201.5MHz	E4 1215MHz	E3 1256MHz	E6 1278.75MHz	E2 1561MHz	L1 1575.42MHz
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>BeiDou</b>	B1 1561MHz	B2 1207.14MHz	B3 1268.52MHz				
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<b>Compass</b>	E5B(B2)/ E6(B3) 1268.56MHz	E2(B1) 1561MHz					
	<input type="checkbox"/>	<input type="checkbox"/>					
<b>SBAS</b>	Omnistar 1542.5MHz	WAAS/EGN OS 1575.42MHz					
	<input type="checkbox"/>	<input checked="" type="checkbox"/>					

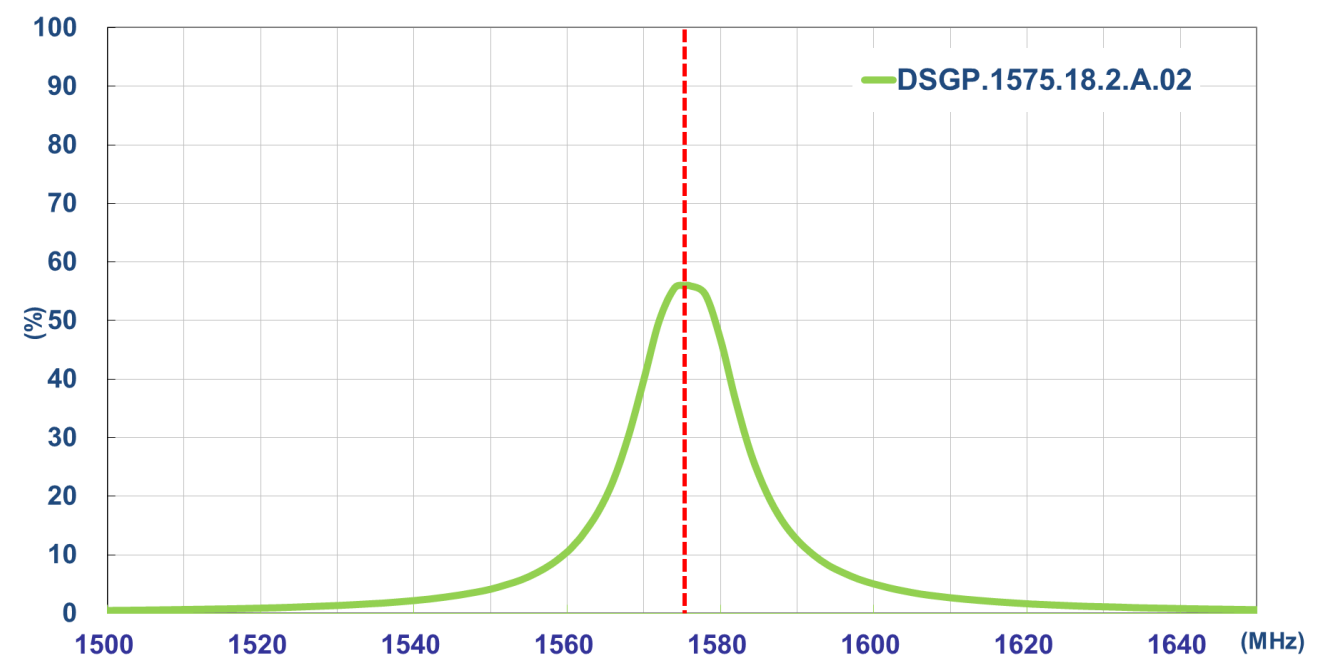
Electrical	
Frequency (MHz)	1575.42
VSWR (max.)	2.0:1
Passive Antenna Efficiency (%)	55.94
Passive Antenna Gain at Zenith (dBi)	2.4
Return Loss (dB)	<-10
Impedance	50Ω
Mechanical	
Height	255 ± 5 mm
Base Diameter	16.05 ± 0.2 mm
Whip Diameter	4 ± 0.2 mm
Casing	ABS
Connector	TNC Male
Environmental	
Temperature Range	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH
Moisture Sensitivity Level (MSL)	3 (168 Hours)

### 3. Antenna Characteristics

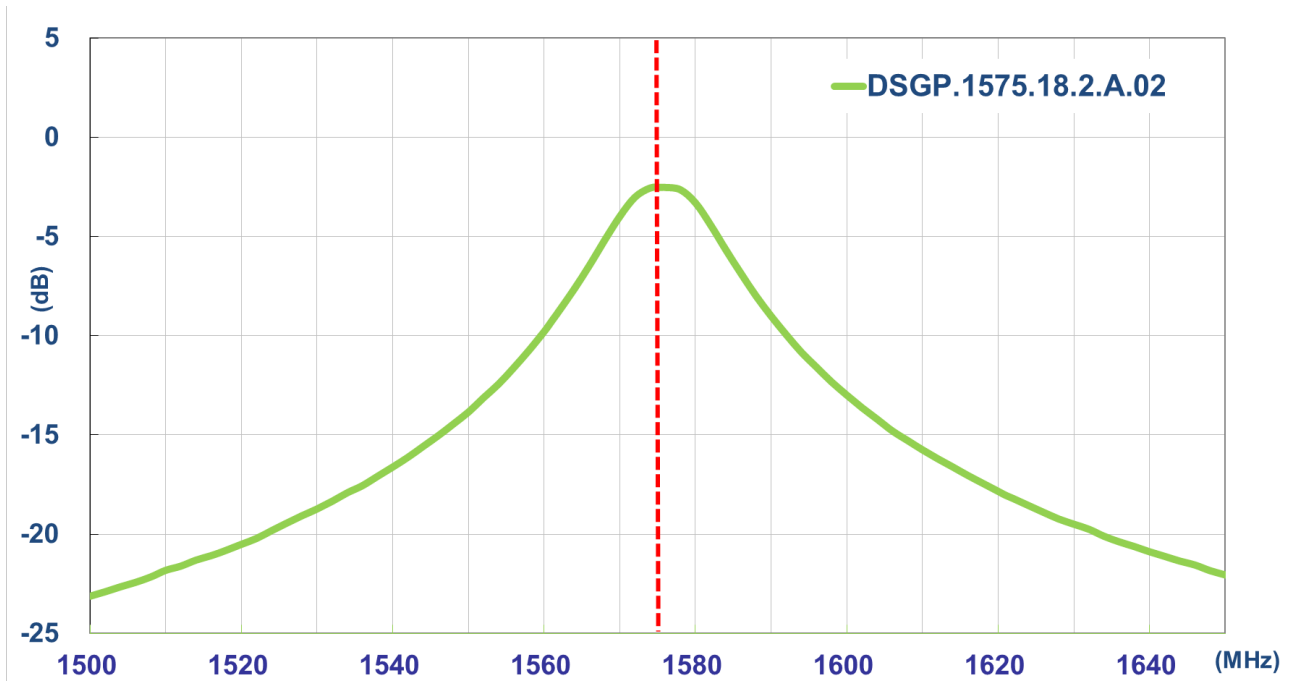
#### 3.1 Return Loss



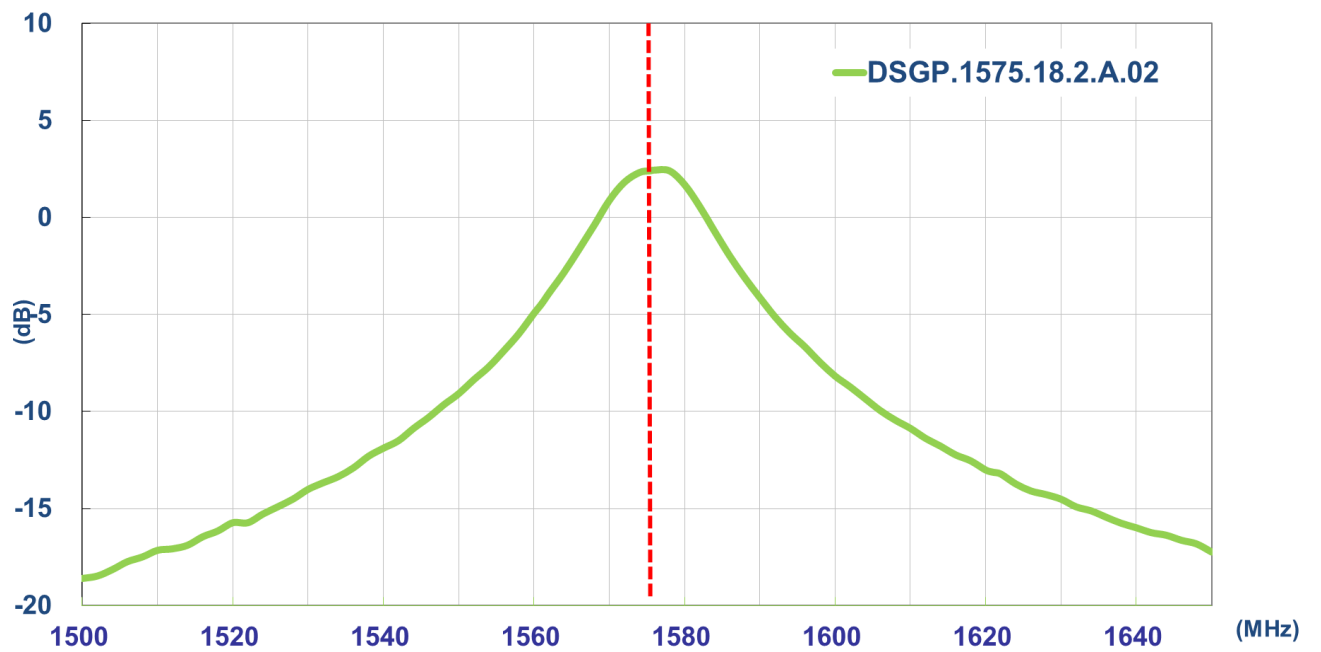
#### 3.2 Efficiency



### 3.3 Average Gain

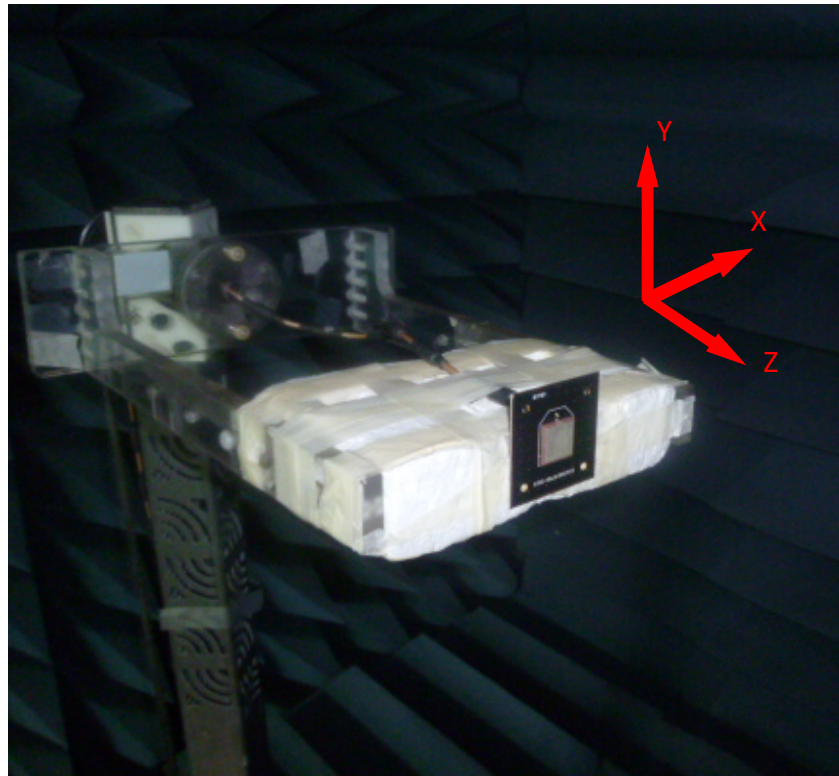


### 3.4 Peak Gain



## 4. Radiation Patterns

### 4.1 Test Setup

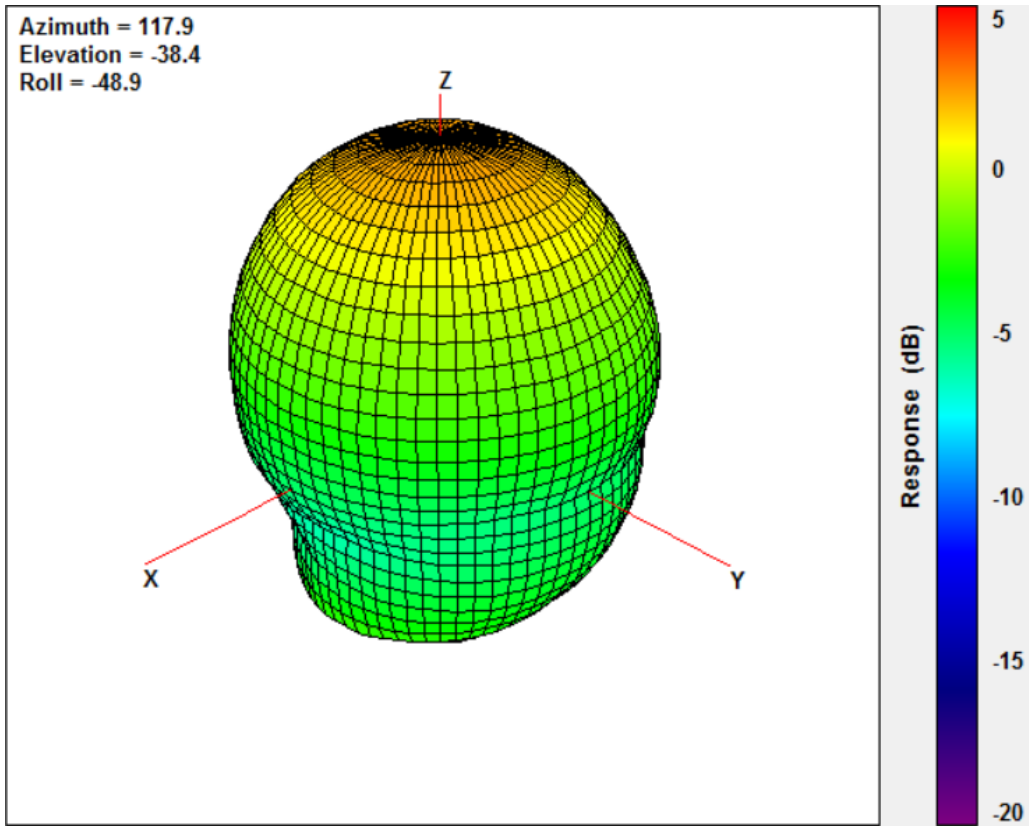


On Evaluation Board

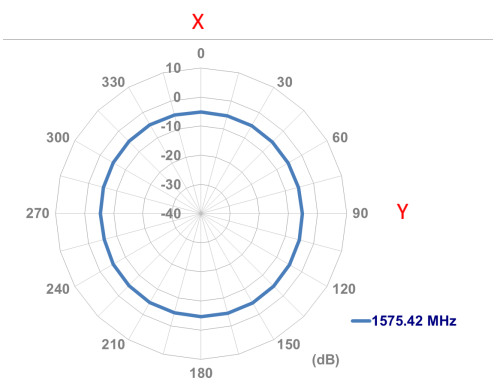
Taoglas Part number: DSGPD.18B



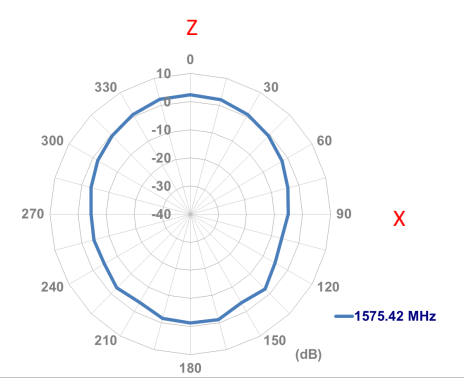
4.2 1575.42MHz 3D and 2D Radiation Patterns



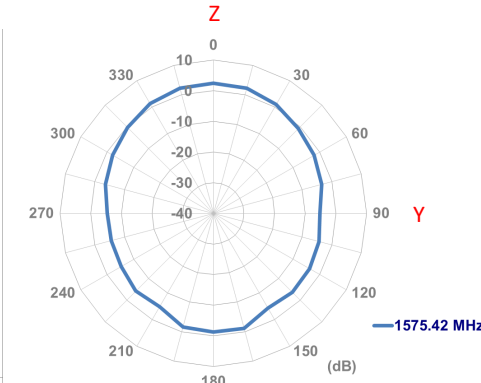
XY Plane



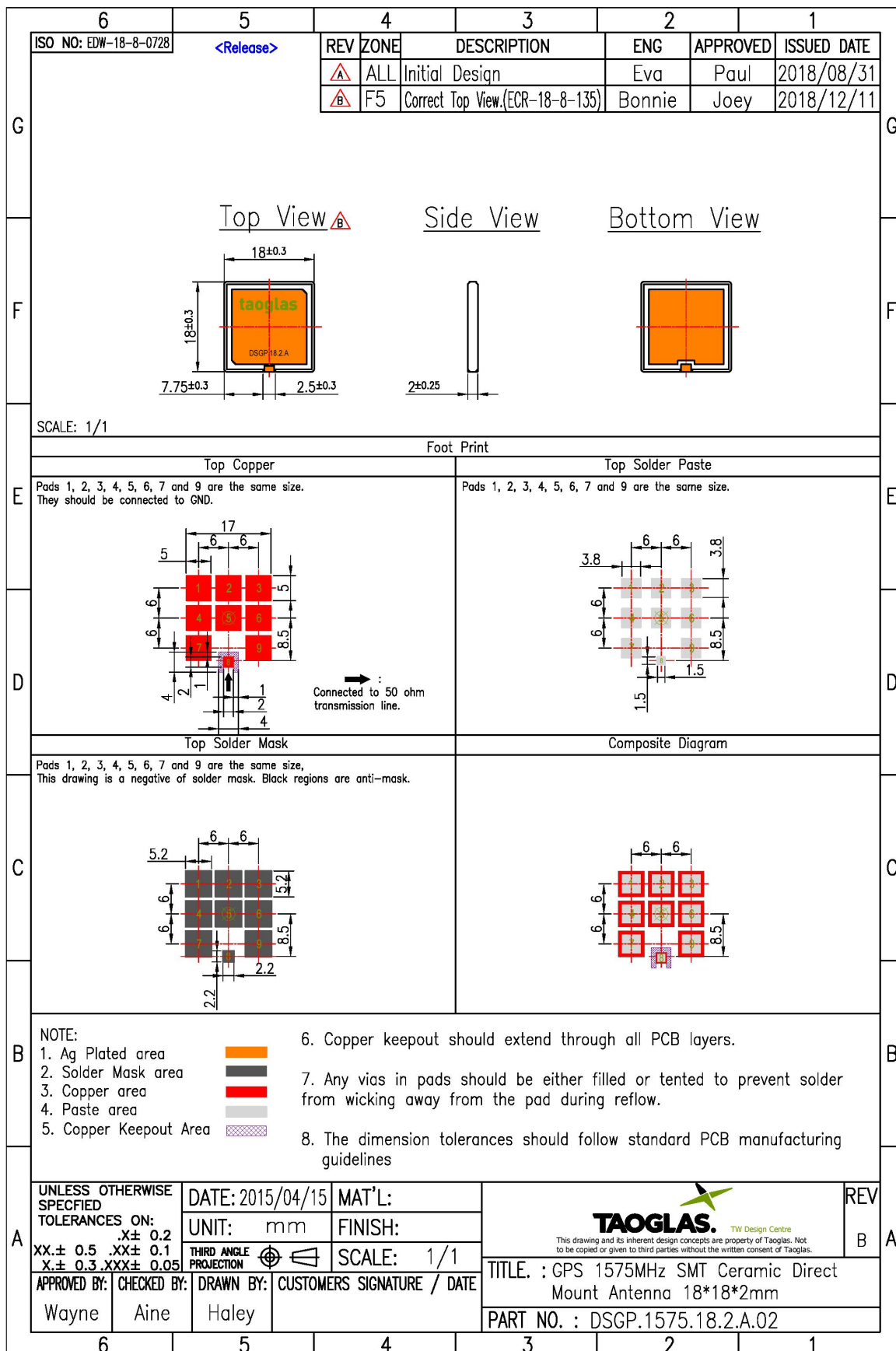
XZ Plane



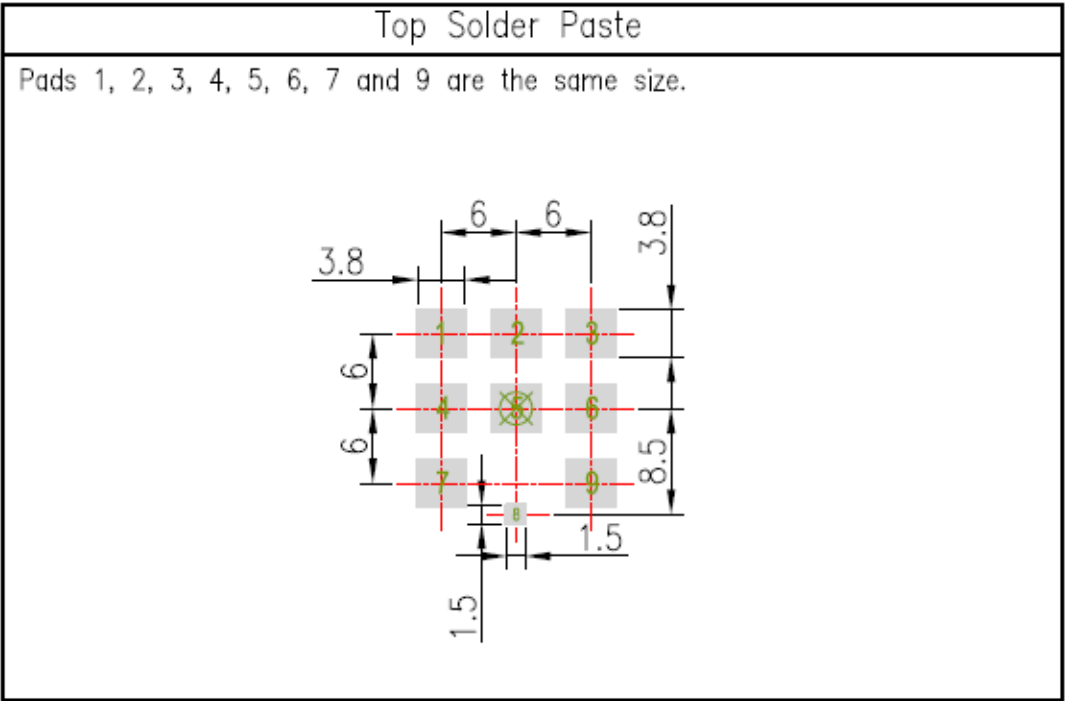
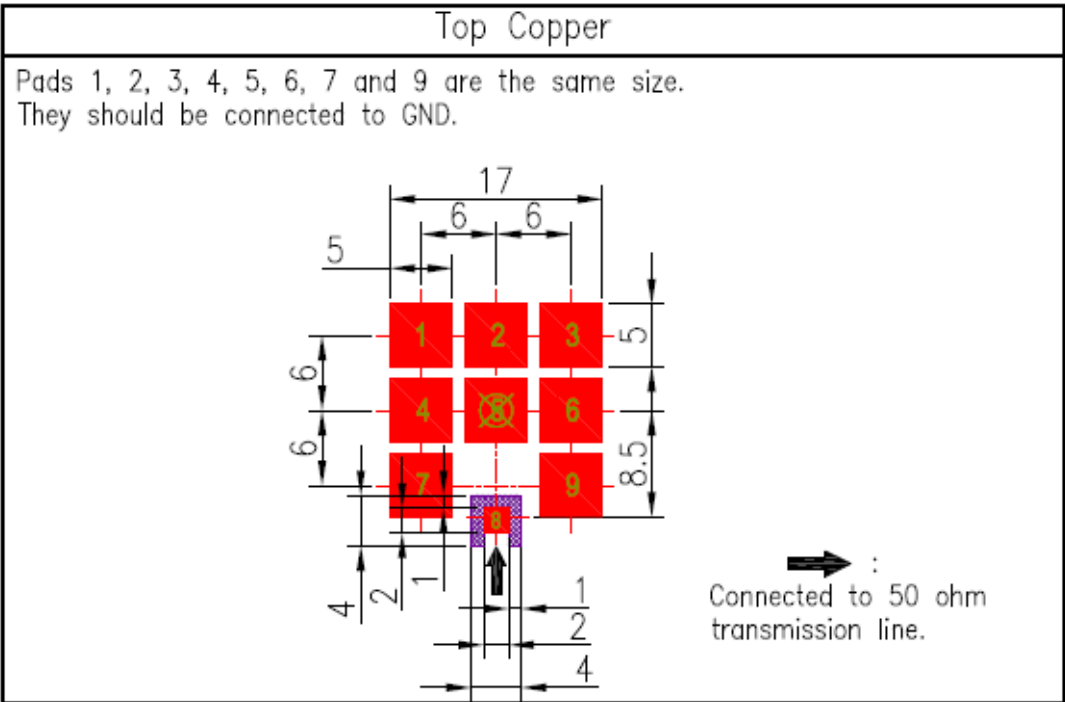
YZ Plane

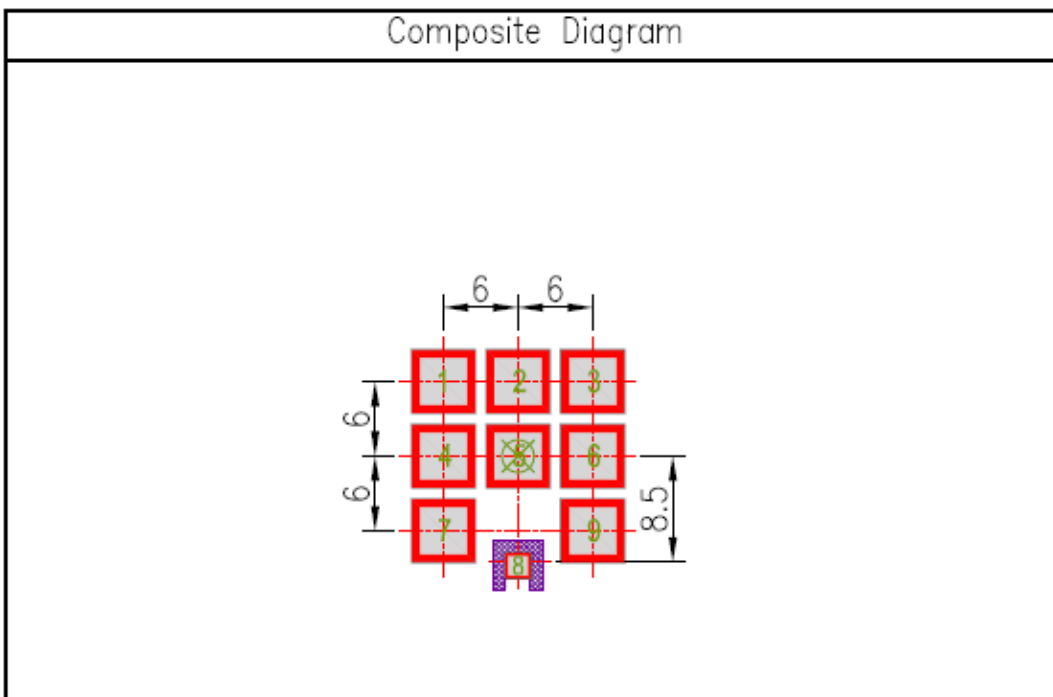
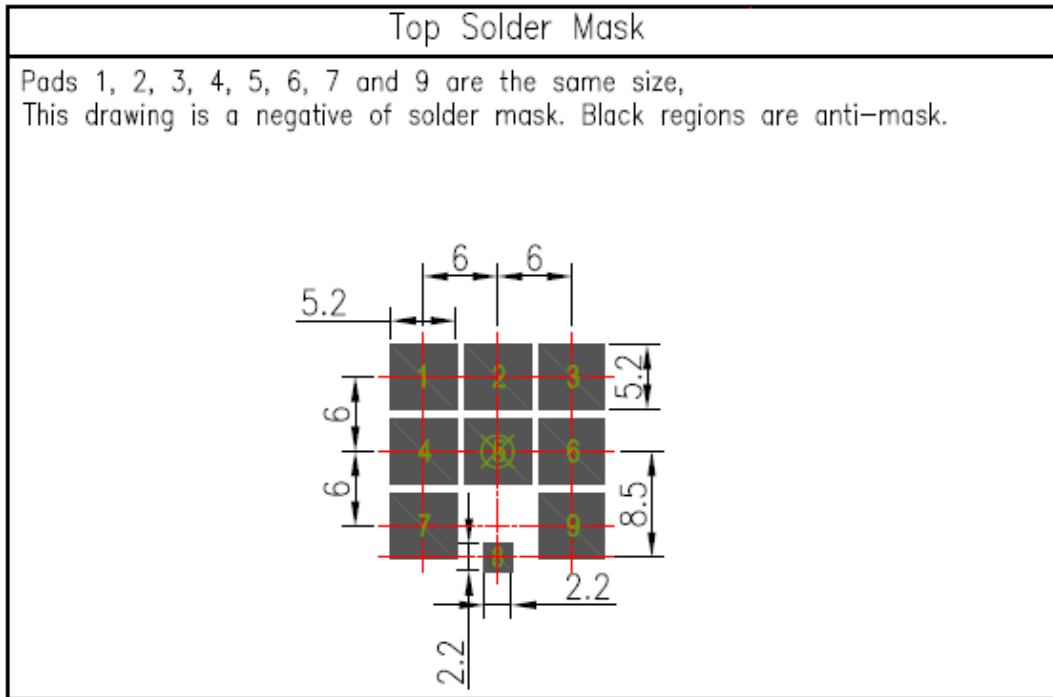







# 5. Mechanical Drawing (Units: mm)



6. Footprint





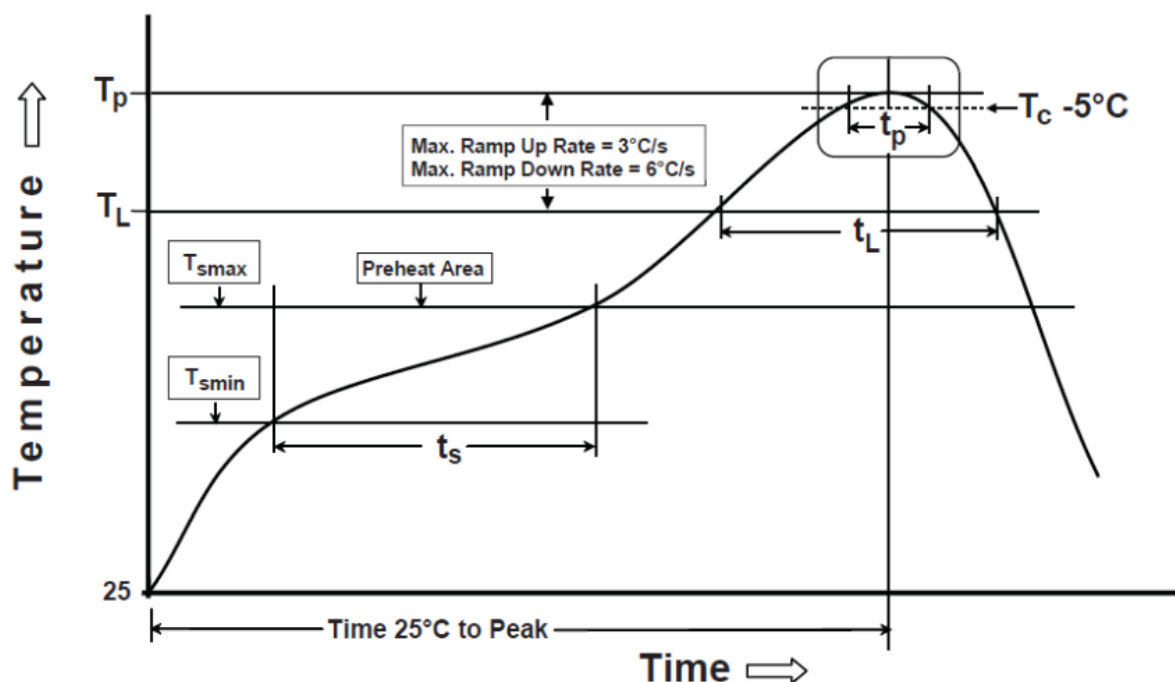
- NOTE:
- |                        |   |   |
|------------------------|---|---|
| 1. Ag Plated area      |  | 6. Copper keepout should extend through all PCB layers.   |
| 2. Solder Mask area    |  | 7. Any vias in pads should be either filled or tented to prevent solder from wicking away from the pad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

## 7. 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 follows:

Phase	Profile Features	Pb-Free Assembly (SnAgCu)
PREHEAT	Temperature Min (T <sub>smin</sub> )	150°C
	Temperature Max (T <sub>smax</sub> )	200°C
	Time(t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</sub> )	60-120 seconds
RAMP-UP	Avg. Ramp-up Rate (T <sub>smax</sub> to TP)	3°C/second(max)
REFLOW	Temperature (T <sub>L</sub> )	217°C
	Total Time above T <sub>L</sub> (t <sub>L</sub> )	30-100 seconds
PEAK	Temperature (T <sub>p</sub> )	260°C
	Time(t <sub>p</sub> )	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

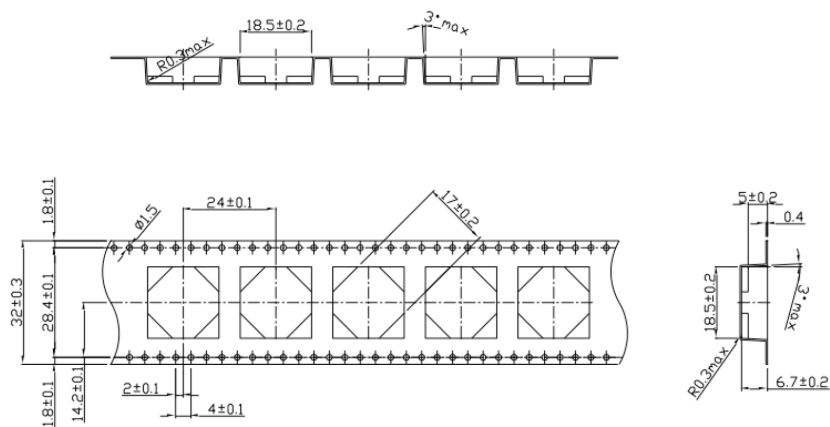
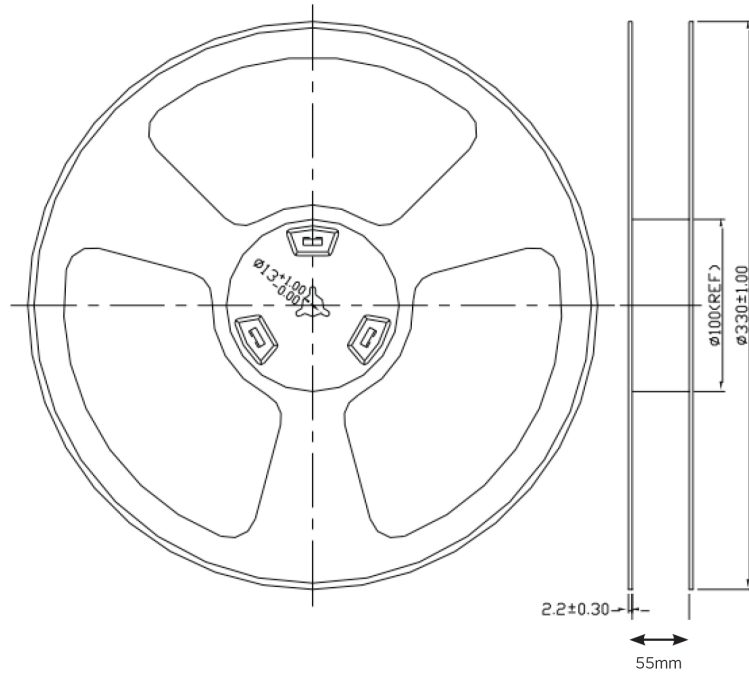


Soldering Iron condition : Soldering iron temperature 270°C±10°C.

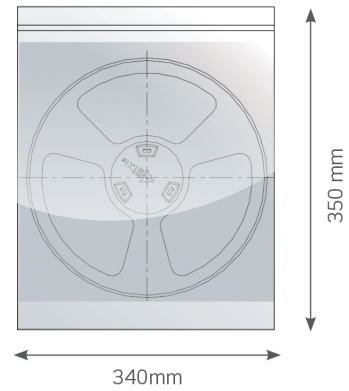
Apply preheating at 120°C for 2-3 minutes. Finish soldering for each terminal within 3 seconds, if soldering iron temperature over 270°C±10°C or 3 seconds, it will make cause component surface peeling or damage.

## 8. Packaging

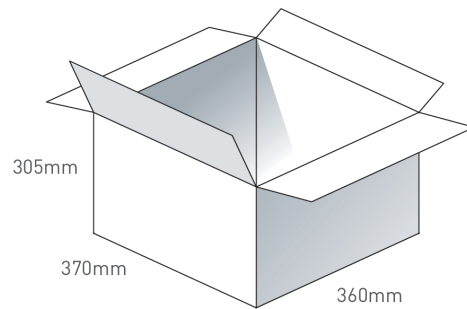
200 pc DSGP.1575.18.2.A.02 per reel  
 Dimensions -  $\varnothing 330 \times 55 \text{mm}$   
 Weight - 800g



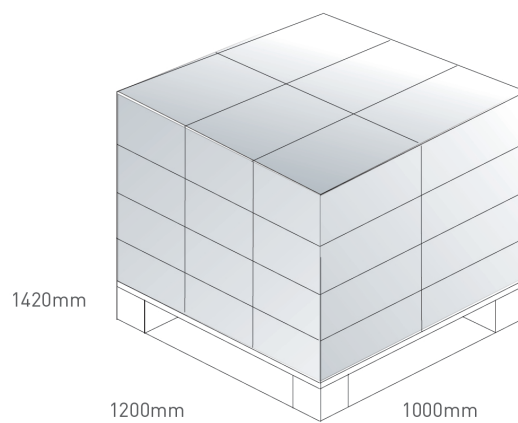
1 pc reel in small in Anti-static Bag  
 Dimensions - 340\*350\*70mm  
 Weight - 1.2Kg



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



Changelog for the datasheet

**SPE-17-8-029 – DSGP.1575.18.2.A.02**

Revision: C (Current Version)	
Date:	2021-09-07
Changes:	Fixed Alignment of radiation patterns section. Added MSL rating. Fixed Font in tables.
Changes Made by:	Erik Landi

**Previous Revisions**

Revision: B	
Date:	2019-09-17
Changes:	Updated Drawing
Changes Made by:	Jack Conroy

Revision: A (Original First Release)	
Date:	2017-05-22
Notes:	
Author:	Jack Conroy






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