



Datasheet

Part No:
CGGP.18.2.A.02

Description:
GPS/GLONASS/Galileo Dual-Band Ceramic Patch Embedded Antenna

Features:

- Wide-band Operation 1575-1610MHz
- 3.23dBi Peak Gain for GPS/GALILEO Band
- 3.53dBi Peak Gain for GLONASS Band
- Low profile – 2mm Height
- Size: 18x18x2mm
- Through-hole Mounting Pin type
- Automotive TS16949 Production and Quality Approved
- RoHS & REACH Compliant

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1. Introduction



The CGGP.18.2.A.02 is a 18mm ceramic GPS/GLONASS/Galileo embedded passive patch antenna, with a 2mm low-profile. It is designed for vehicle telematic applications as well as other M2M/IoT devices. Typical applicable industries are transportation, defense, marine, agriculture, and navigation.

The antenna has been tuned and tested on a 70 x 70 mm ground plane, working at GPS 1575.42MHz and GLONASS 1602MHz, with 3.23dBi gain and 3.53dBi gain, respectively. The low profile design makes this antenna perfect for applications where space is limited. It can be easily through-hole mounted on PCB via pin. Double sided adhesive on the bottom of the patch helps to keep it in place while undergoing mounting. The CGGP.18.2.A.02 is manufactured and tested in a TS16949 first tier automotive approved facility. Like all antennas, at least some detuning will occur when placed in a different device environment or on a different ground-plane.

For large volume GPS/GLONASS/Galileo projects where performance is paramount, tuning for customer specific device environment and ground-plane size is needed, so custom tuned patch antennas should always be used. Taoglas can also provide different pin length for these antennas, all subject to potential NRE and MOQ. For more details please contact your regional Taoglas customer support team.

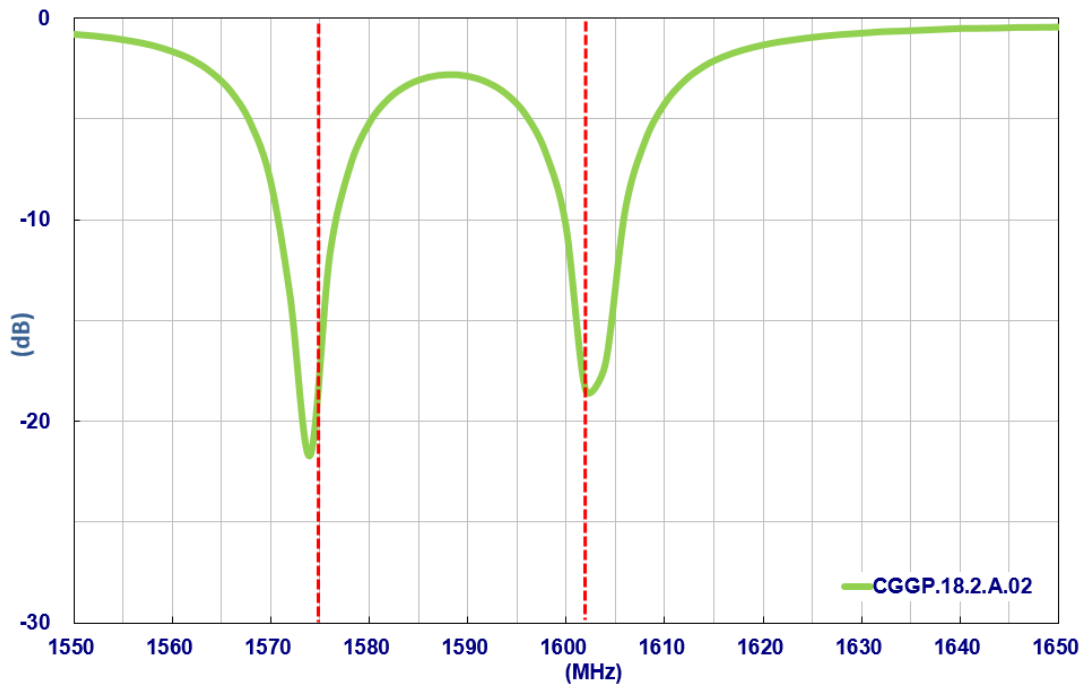
2. Specifications

| Electrical | | |
|---------------------------|----------------|---------|
| Application Bands | GPS/Galileo | GLONASS |
| Operation Frequency (MHz) | 1575.42 ±1.023 | 1602±5 |
| Return Loss (dB) | -10 max. | |
| Gain at Zenith (dBi) | 3.23 | 3.53 |
| Efficiency (%) | 54.88 | 59.52 |
| Impedance | 50 ohms | |
| Mechanical | | |
| Ceramic Dimension (mm) | 18x18x2 | |
| Pin Diameter (mm) | 0.9 | |
| Pin Length (mm) | 2.4 | |
| Weight (g) | 2.5 | |
| Environmental | | |
| Operation Temperature | -40°C to 85°C | |
| Moisture Sensitivity | Level 3 | |

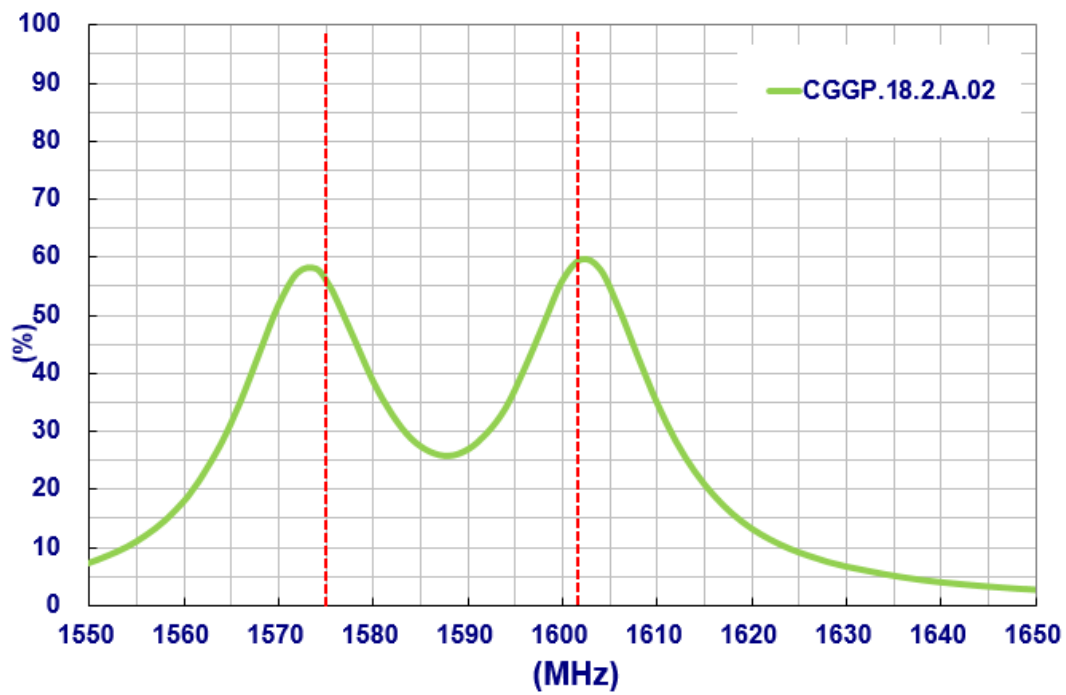
* Antenna properties were measured with the antenna mounted on 70*70mm Ground Plane

3. Antenna Characteristics

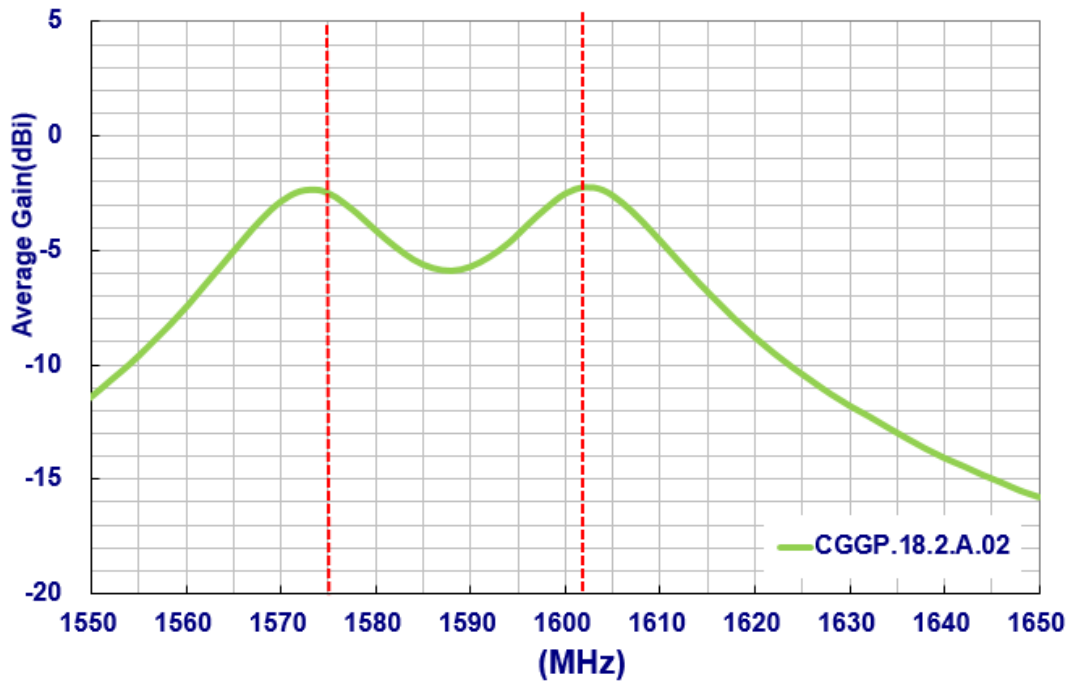
3.1 Return Loss



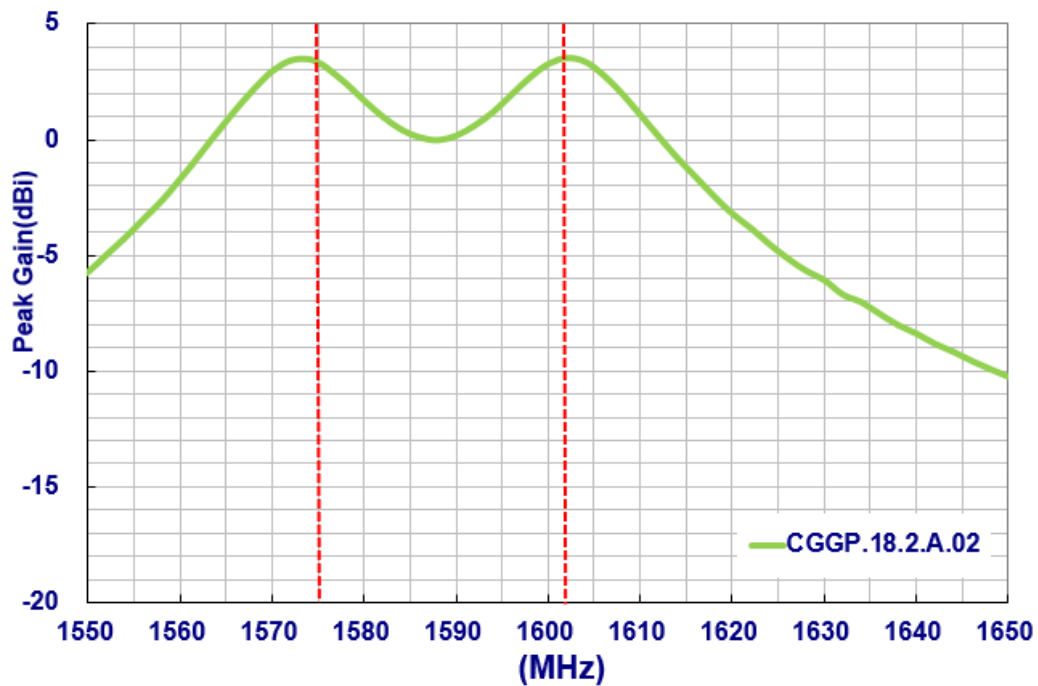
3.2 Efficiency



3.3 Average Gain



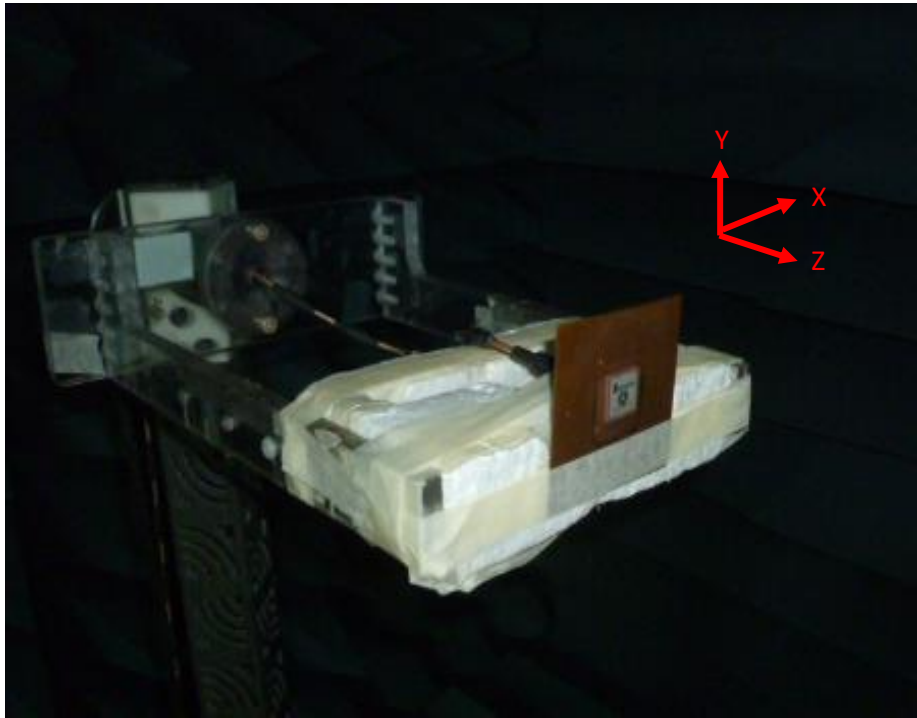
3.4 Peak Gain



4. Antenna Radiation Pattern

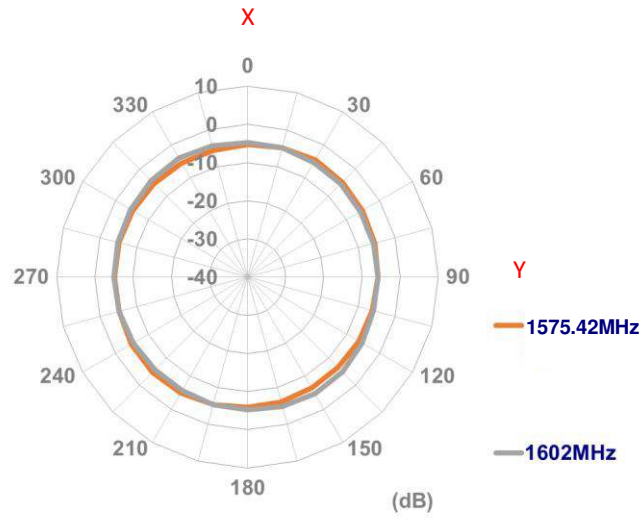
4.1 Measurement Setup

The CGGP.18.2.A.02 antenna is tested in free-space on a 70mm*70mm ground plane in a CTIA certified ETS-Lindgren Anechoic Chamber. The test setup is shown below.

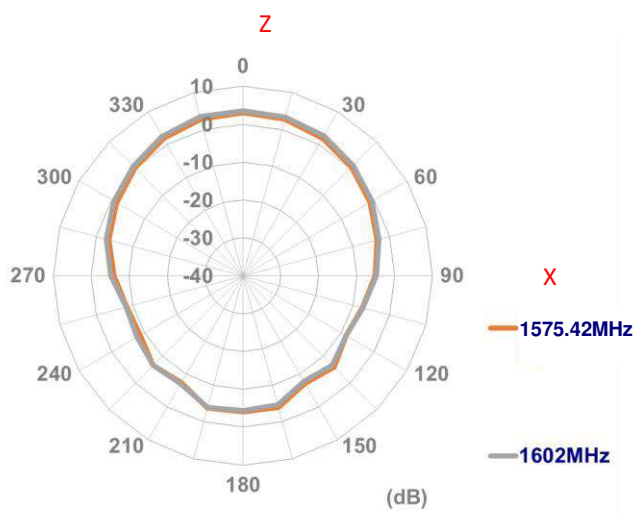


4.2 2D Radiation Pattern

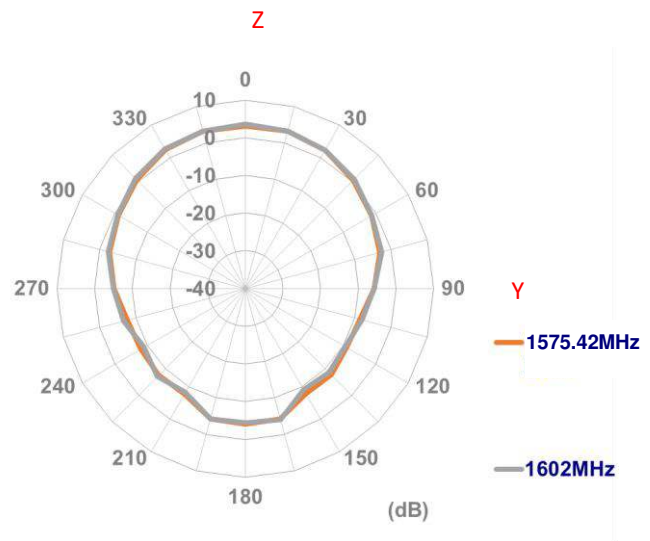
XY Plane



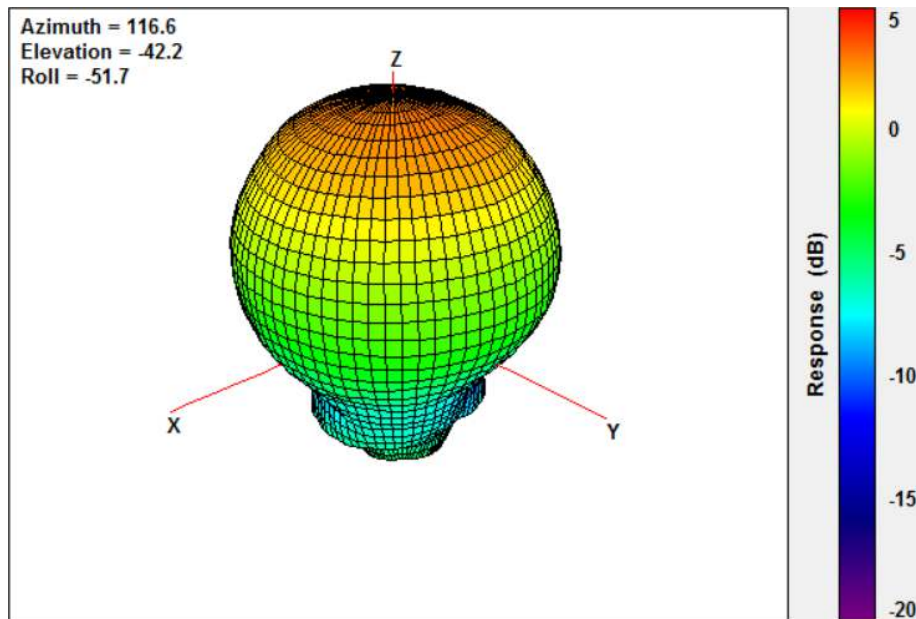
XZ Plane



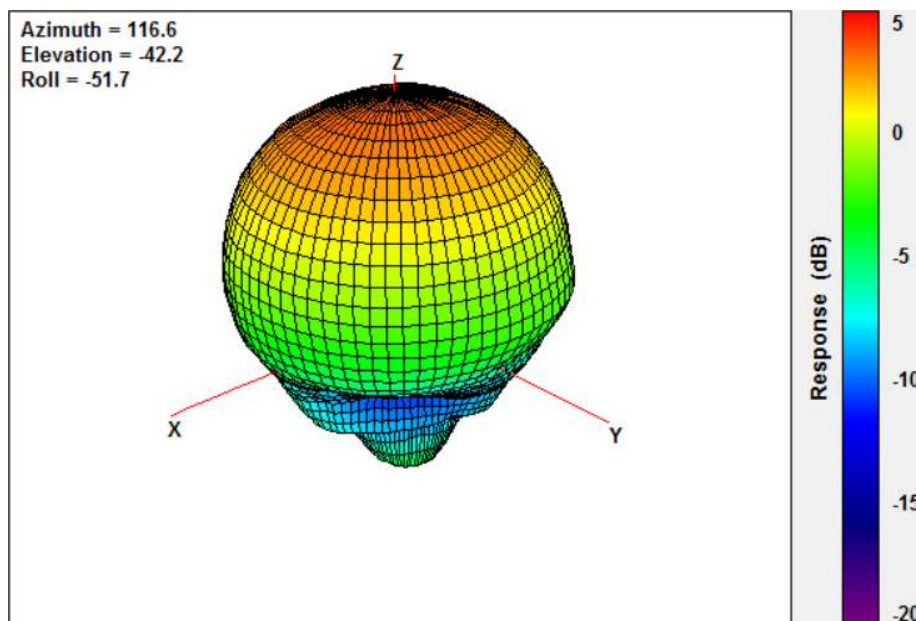
YZ Plane



4.3 3D Radiation Pattern



1575.42MHz



1602MHz

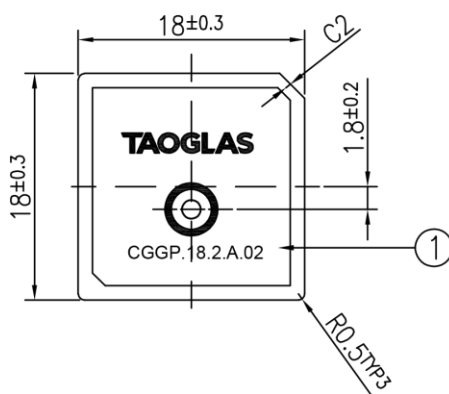
5. Mechanical Drawing (Unit: mm)

ISO NO.: EDW-18-8-0700

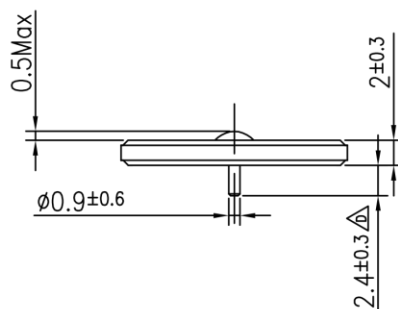
STATE: Release

NOTES: 1. Double sided adhesive area. 2. Soldermask area

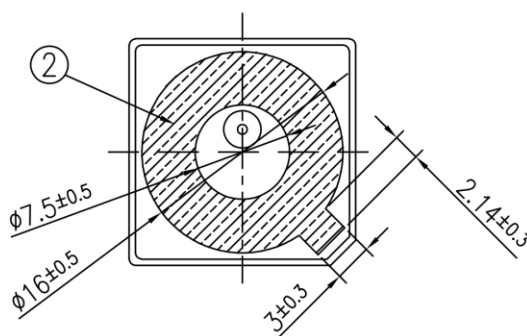
| REV. | DESCRIPTION | ENG. | APPROVED | DATE |
|------|-------------------------------------|--------|----------|------------|
| △ | Initial Design | Eva | Paul | 2018/09/06 |
| △ | Replace the new LOGO <EDR-18-8-258> | Aron | Aaron | 2019/11/27 |
| △ | Modify LOGO Type | Aron | Aaron | 2019/12/02 |
| △ | EC-21-08-010 | Mickey | Buluto | 2021/03/02 |



△△ Top View



Side View

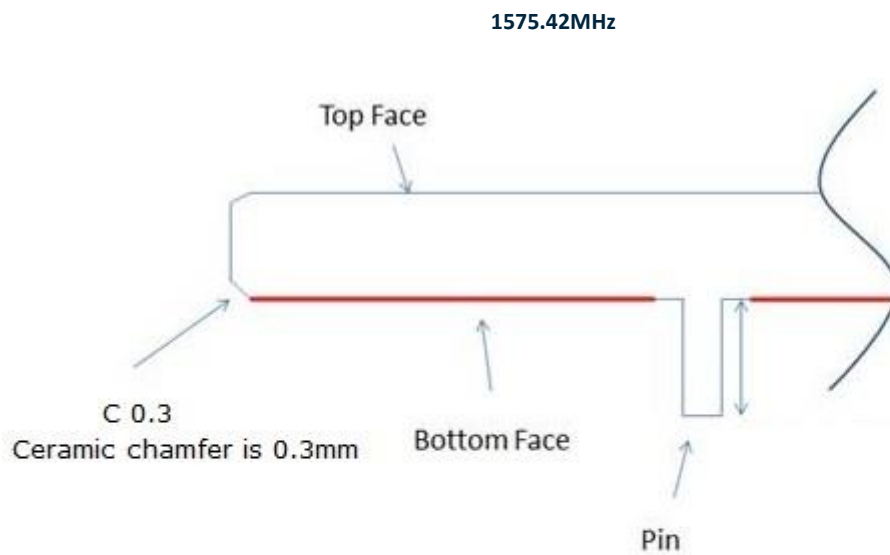


Bottom View

| | Name | P/N | Material | Finish | QTY |
|---|-----------------------|----------------|-----------|-------------|-----|
| 1 | Patch | 001513C110007A | Ceramic | Clear | 1 |
| 2 | Double sided Adhesive | 001013C050007A | NI70 5015 | White Liner | 1 |

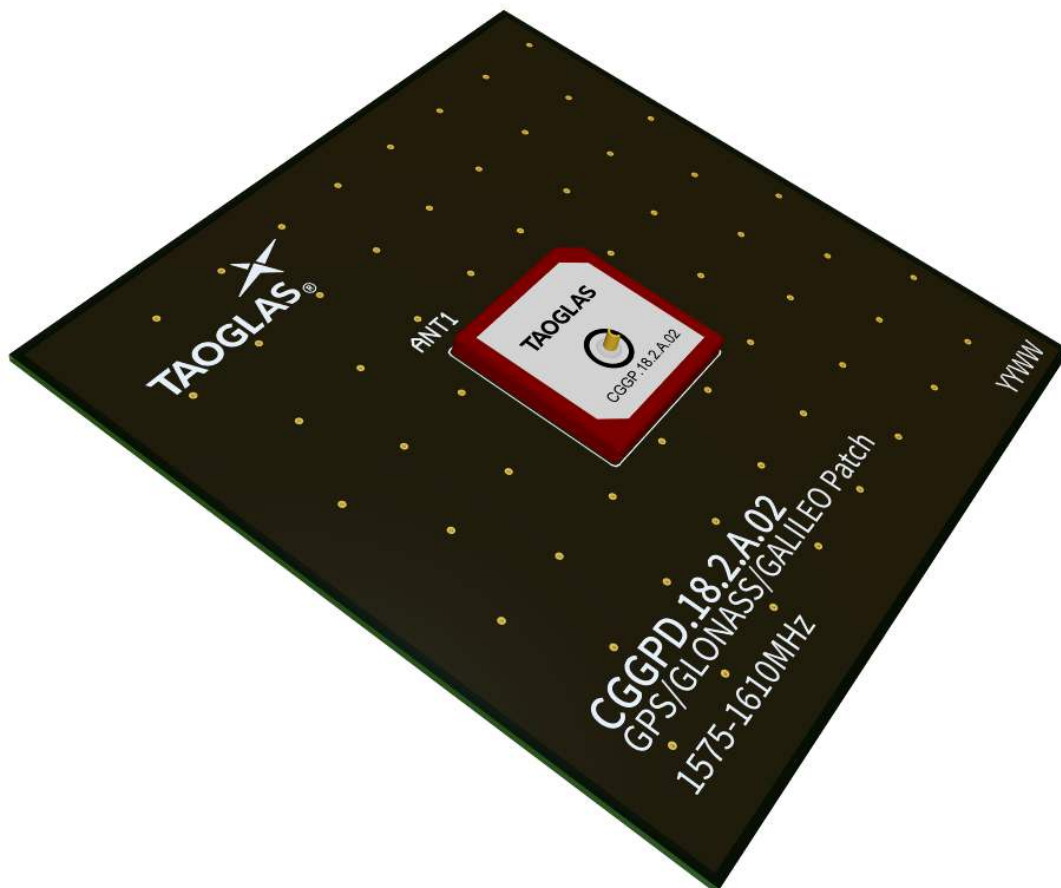
| | |
|---|---|
| APPROVED BY: Wayne | TW Design Centre This drawing and its inherent design concepts are property of Taoglas. Not to be copied or given to third parties without the written consent of Taoglas. |
| CHECK BY: Aine | |
| DRAWN BY: Kim | |
| DATE: 2014/09/22 | |
| UNLESS OTHERWISE SPECIFIED TOLERANCES ON: | TITLE : GPS/GLONASS Dual-Band Patch Antenna 18*18*2mm PART NO. : CGGP.18.2.A.02 |
| THIRD ANGLE PROJECTION | UNIT: mm SCALE: 2:1 PAGES: 1/1 REV. D |

5.1 Adhesive Thickness



Red Line shows the adhesive without Liner - thickness 0.08~0.1mm

6. Antenna Integration Guide

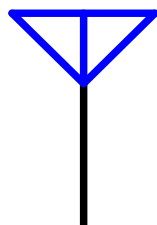


6.1 Schematic Symbol and Pin Definition

The circuit symbol for the antenna is shown below. The antenna has 1 pin as indicated below.

| Pin | Description |
|-----|-------------|
| 1 | RF Feed |

TAOGLAS_CG GP.182.A.02
ANTI



6.2 Antenna Integration

The antenna should be placed at the center of the ground plane with a length and width of 70mm. 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



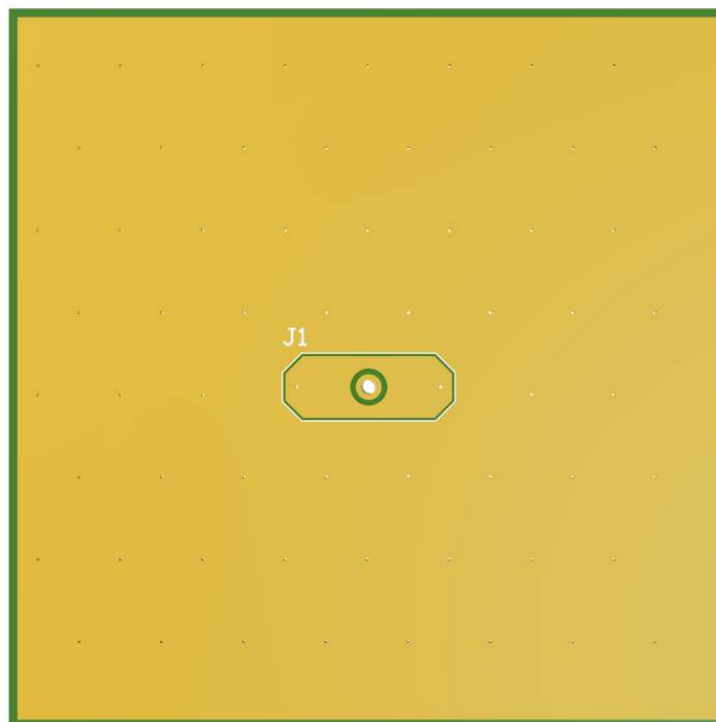
Top Side w/o Solder Mask

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

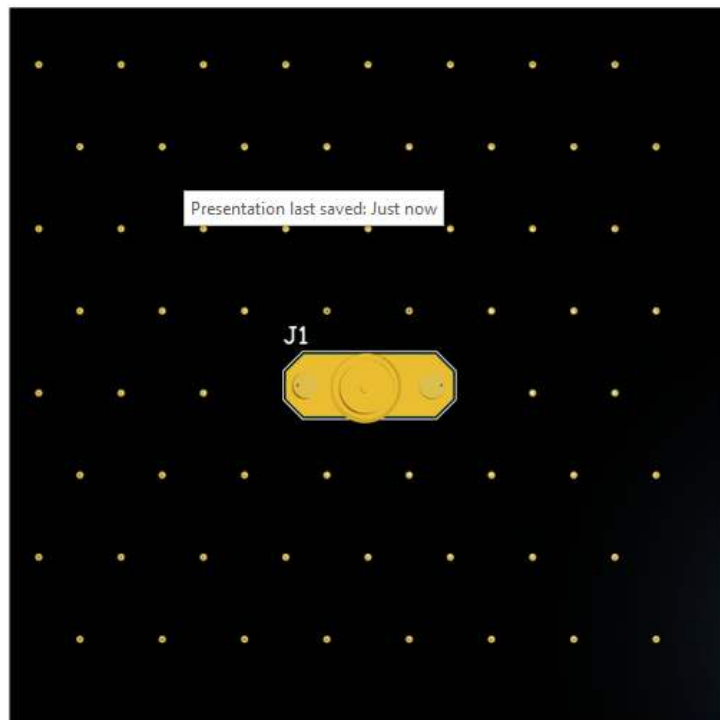


Bottom Side

6.5 Evaluation Board



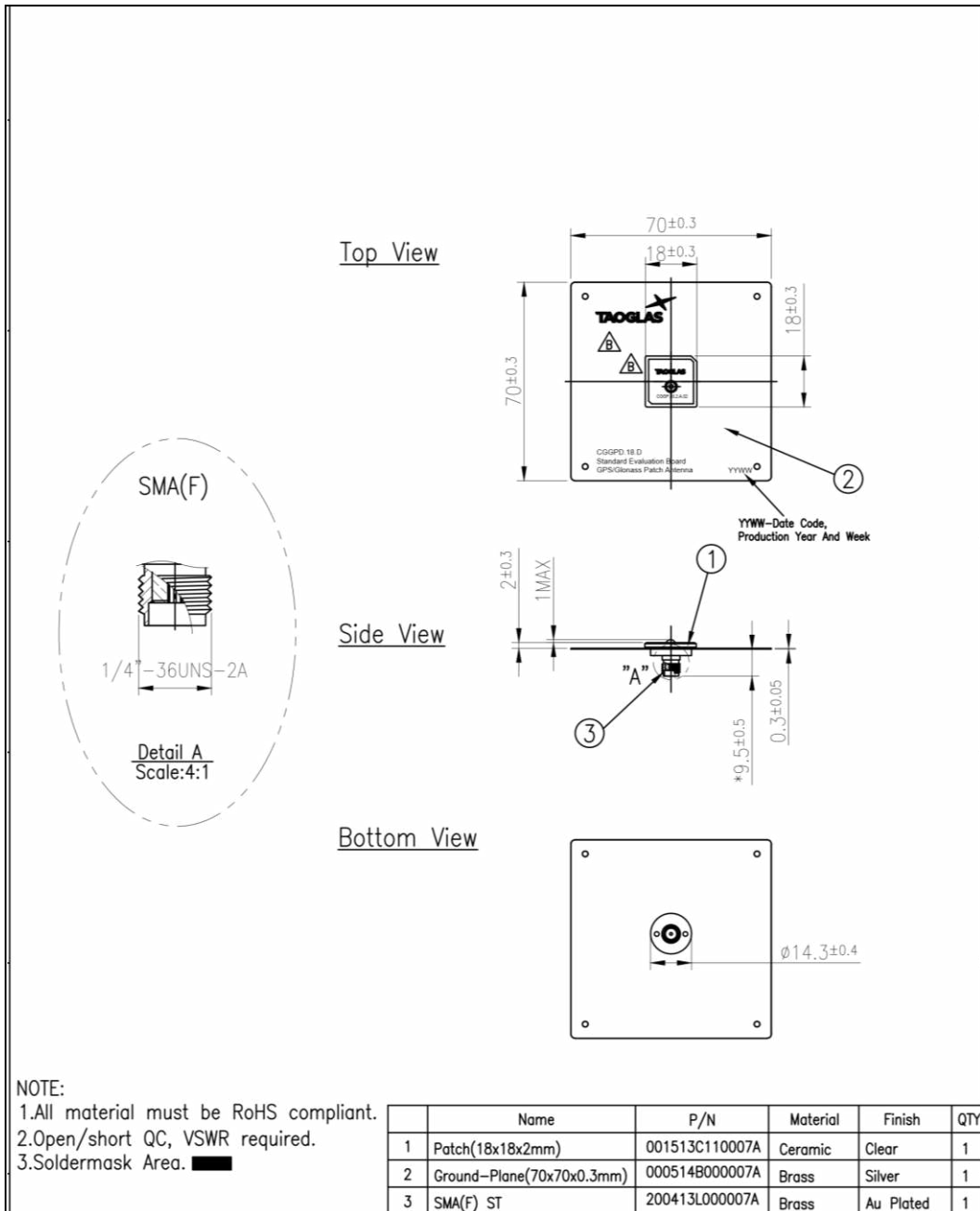
Topside



Bottom Side

7. Evaluation Board Mechanical Drawing (unit: mm)

7.1 Evaluation Board Drawing

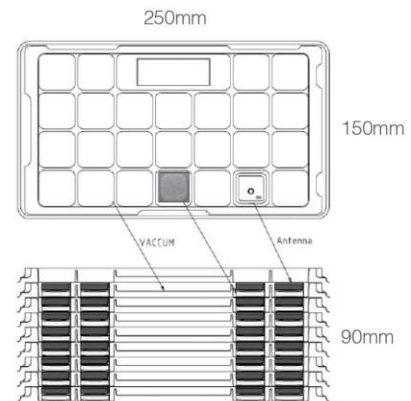


8. Packaging

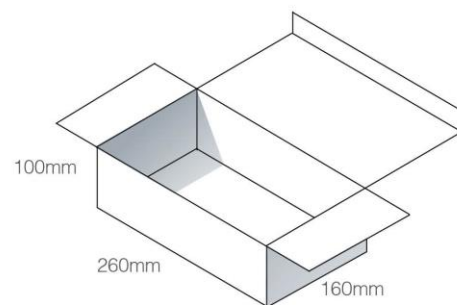
CGGP.18.2.A.02

Packaging Specifications

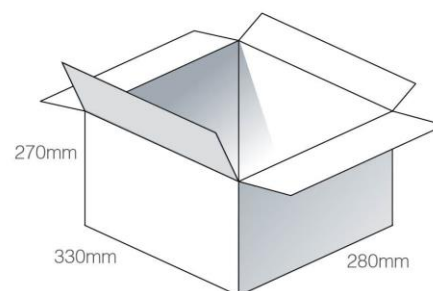
25 pcs per tray
Tray Dimensions - 250*150*11mm



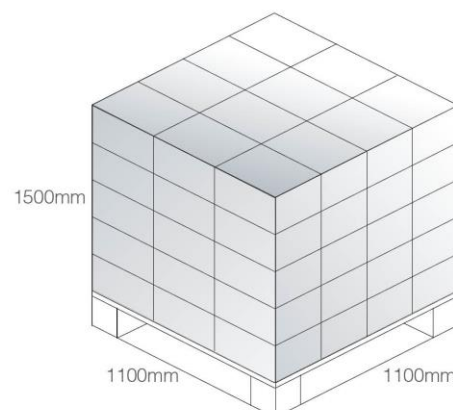
8 Trays per inner box
200 pcs CGGP.18.2.A.02
Dimensions - 260*160*100mm



4 inner boxes per outer carton
800 Pieces CGGP.18.2.A.02 per carton
Carton Dimensions - 330*280*270mm



Pallet Dimensions 1100*1100*1500mm
60 Cartons per Pallet
12 Cartons per layer
5 Layers



Changelog for the datasheet

SPE-15-8-017– CGGP.18.A.02

| Revision: D (Current Version) | |
|--------------------------------------|-------------------------|
| Date: | 2023-02-27 |
| Changes: | Integration Guide Added |
| Changes Made by: | Cesar Sousa |

Previous Revisions

| Revision: C | |
|--------------------|--|
| Date: | 2021-06-19 |
| Changes: | Updated Drawing Changed pin length to 2.4mm |
| Changes Made by: | Dan Cantwell |

| Revision: B | |
|--------------------|--|
| Date: | 2020-11-19 |
| Changes: | Updated to new format Added Moisture Sensitivity Level 3 to Environmental Specifications |
| Changes Made by: | Dan Cantwell |

| Revision: A (Original First Release) | |
|---|------------------|
| Date: | 2015-04-11 |
| Notes: | |
| Author: | Technical Writer |



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