



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.

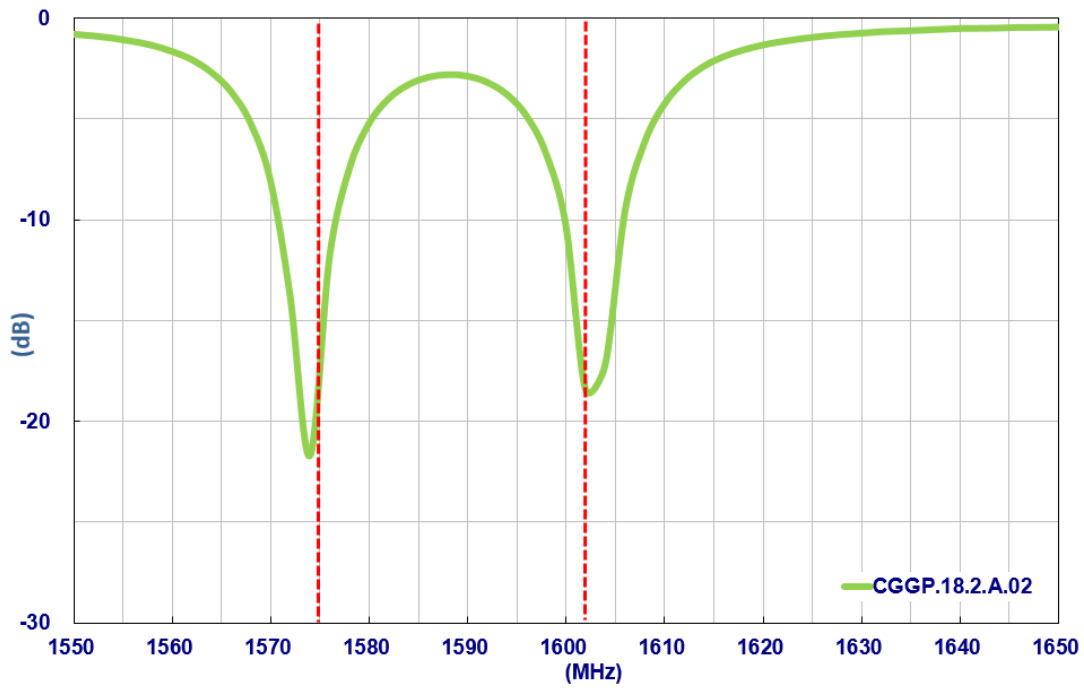
2. Specifications

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	

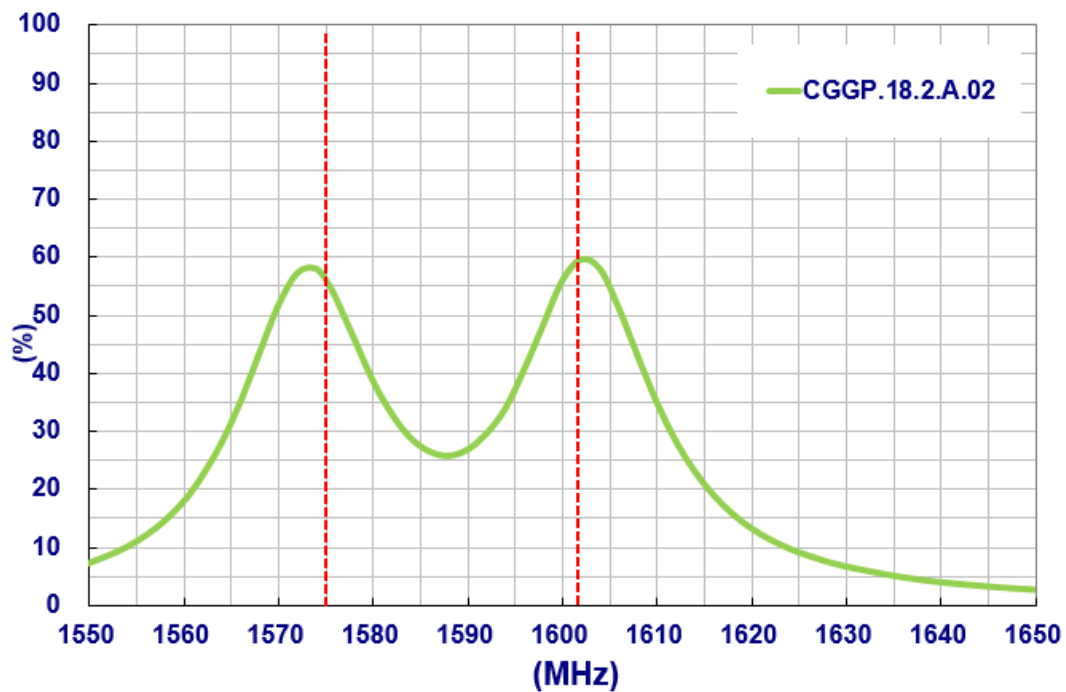
* Antenna properties were measured with the antenna mounted on 70*70mm Ground Plane

3. Antenna Characteristics

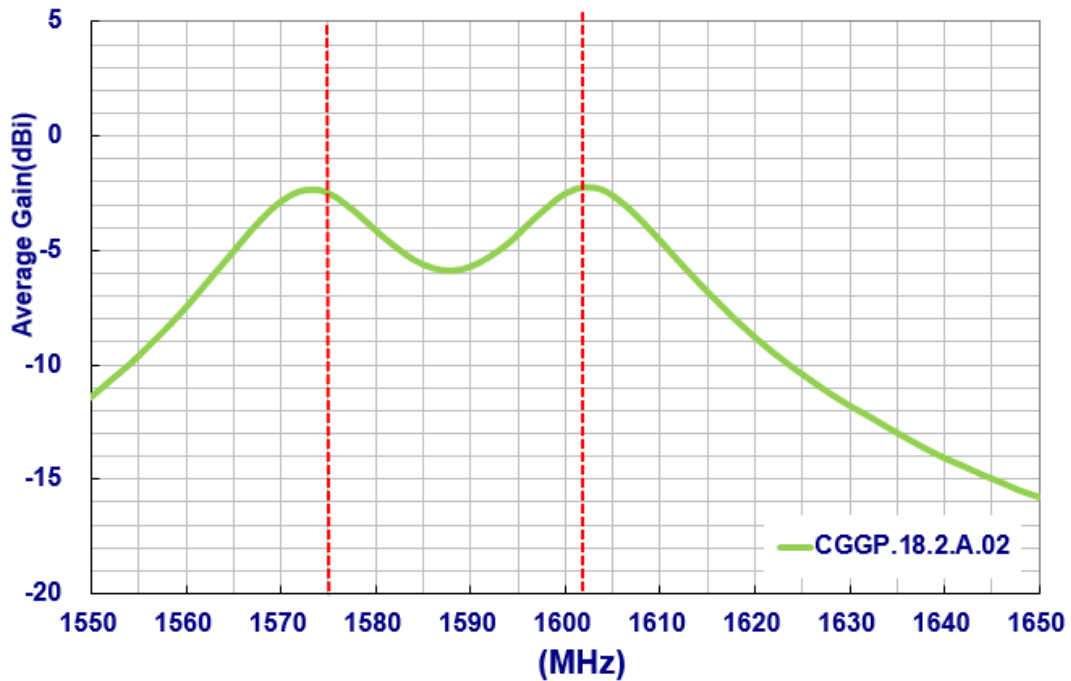
3.1 Return Loss



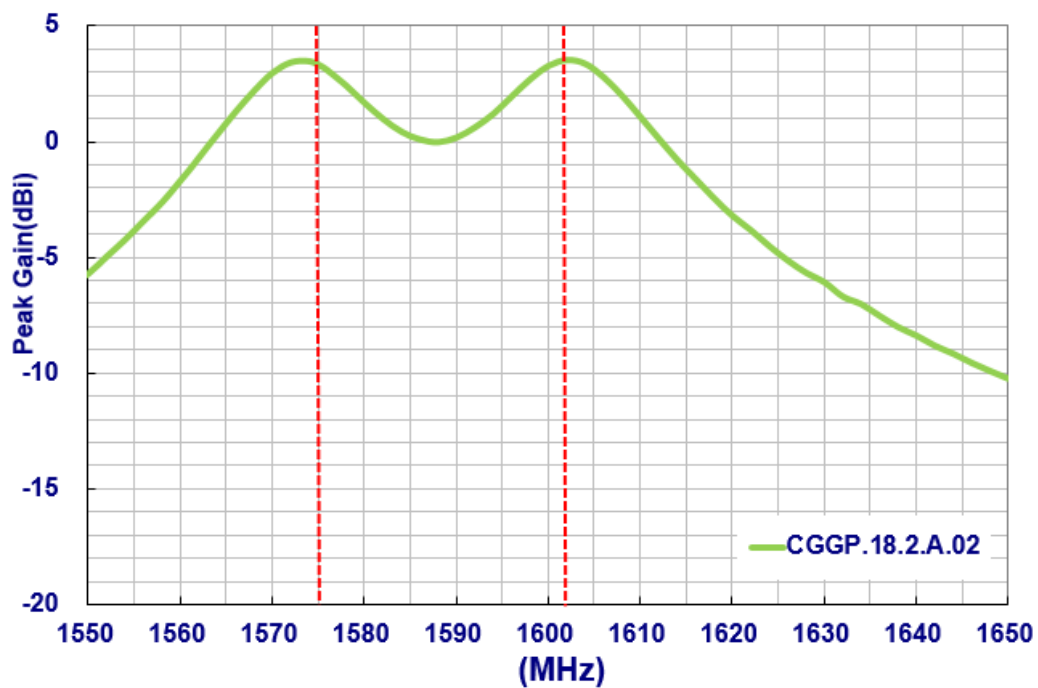
3.2 Efficiency



3.3 Average Gain



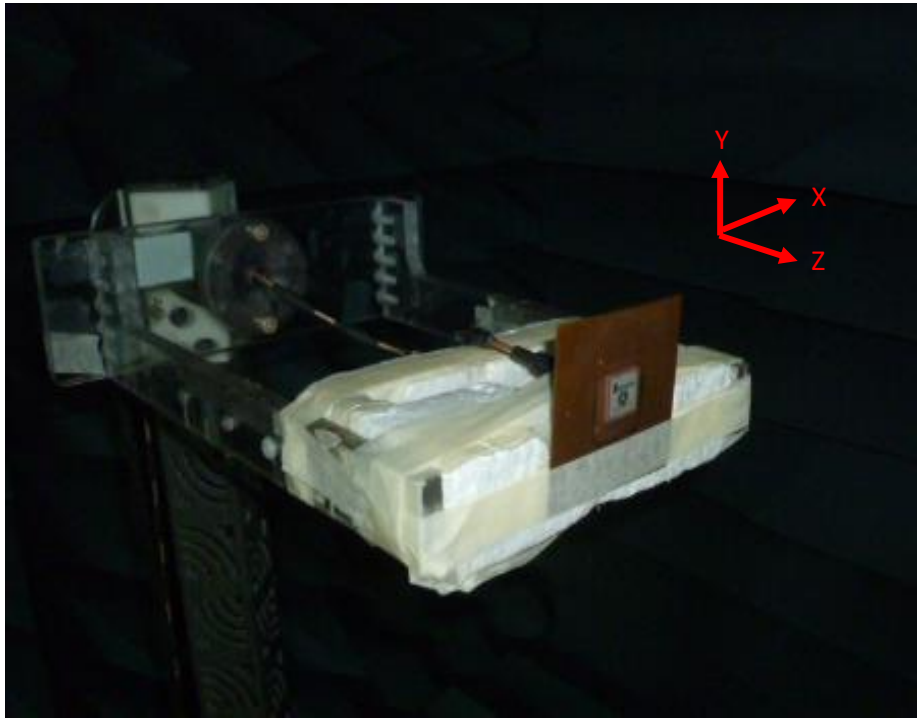
3.4 Peak Gain



4. Antenna Radiation Pattern

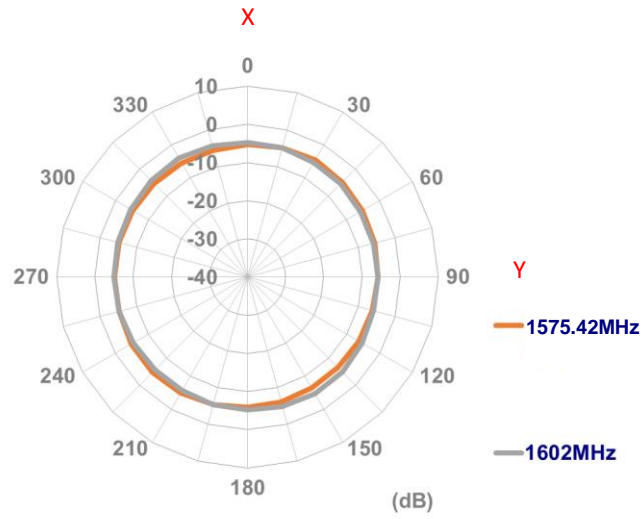
4.1 Measurement Setup

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.

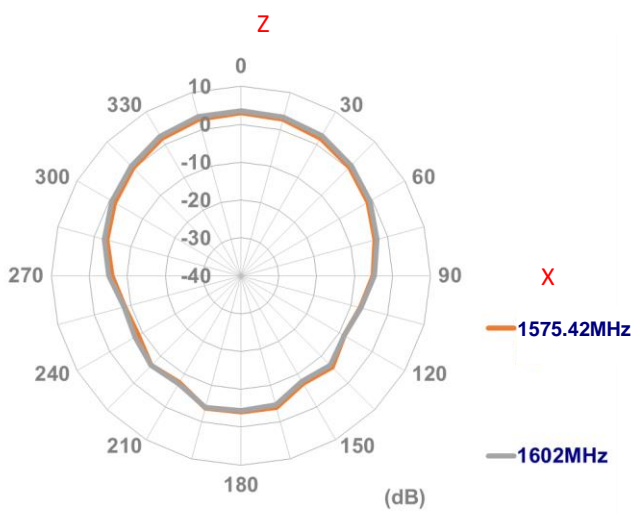


4.2 2D Radiation Pattern

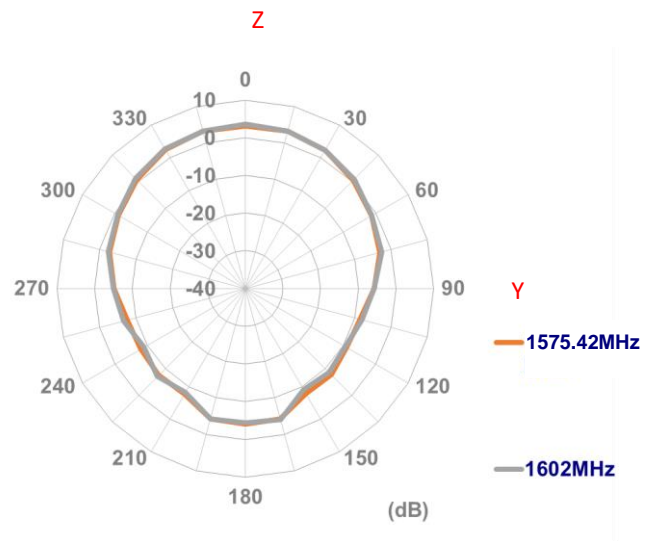
XY Plane



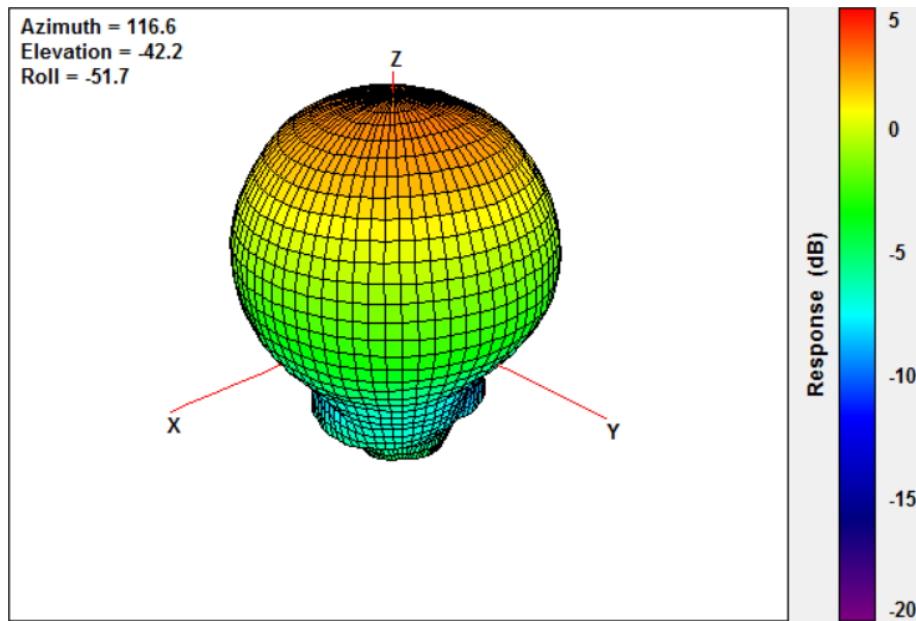
XZ Plane



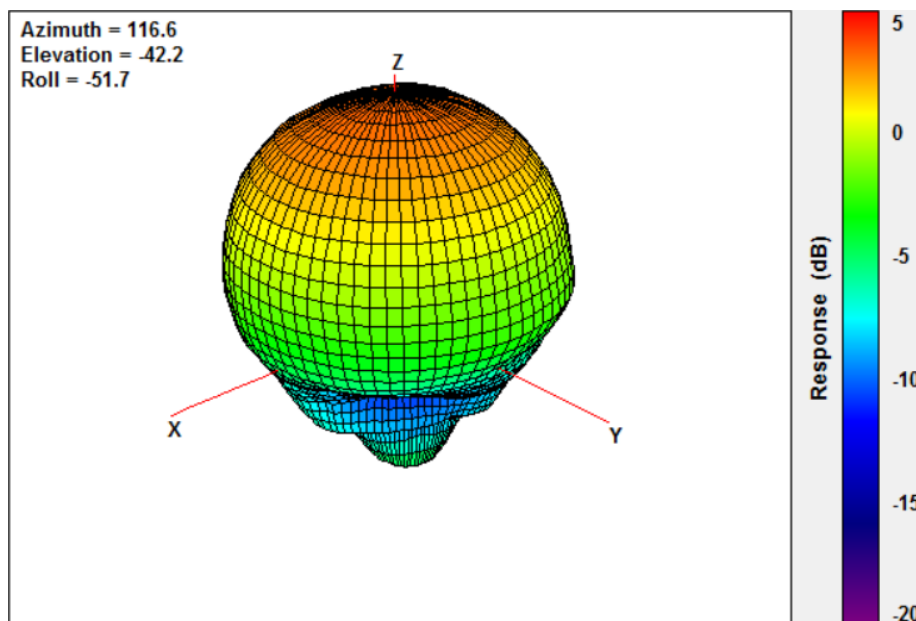
YZ Plane



4.3 3D Radiation Pattern



1575.42MHz



1602MHz

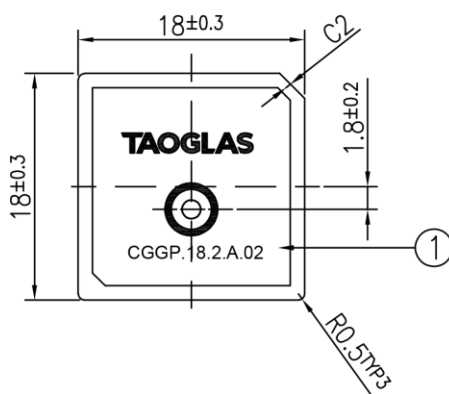
5. Mechanical Drawing (Unit: mm)

ISO NO.: EDW-18-8-0700

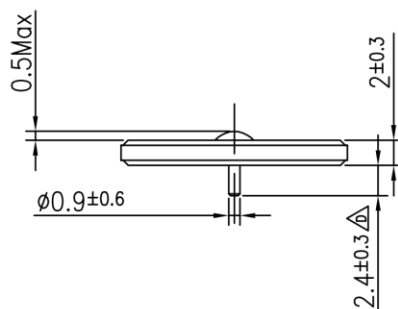
STATE: Release

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

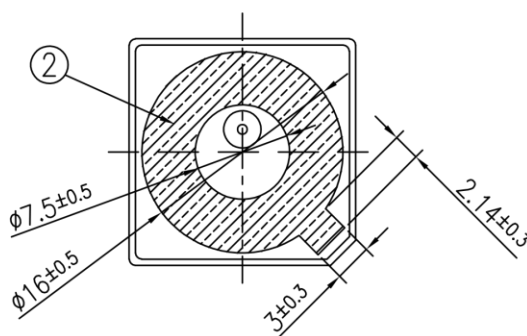
REV.	DESCRIPTION	ENG.	APPROVED	DATE
△	Initial Design	Eva	Paul	2018/09/06
△	Replace the new LOGO <EDR-18-8-258>	Aron	Aaron	2019/11/27
△	Modify LOGO Type	Aron	Aaron	2019/12/02
△	EC-21-08-010	Mickey	Buluto	2021/03/02



△△ Top View



Side View

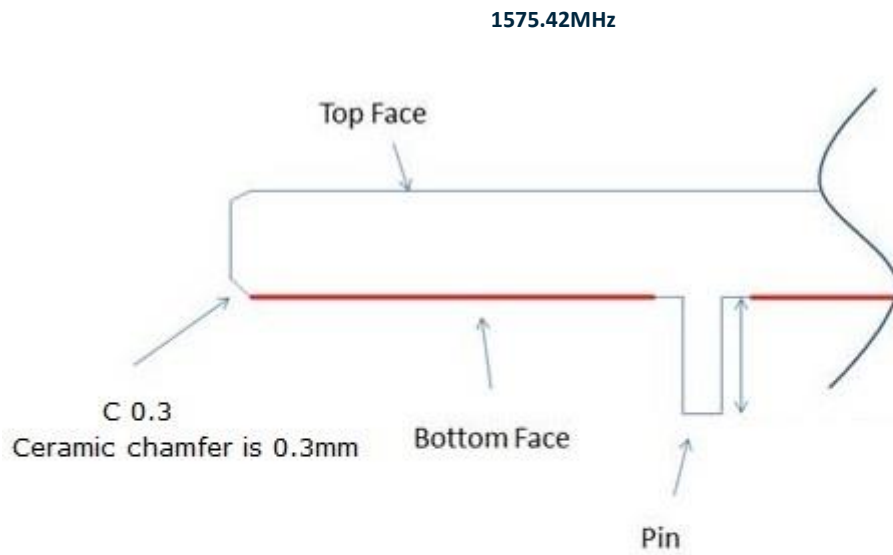


Bottom View

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

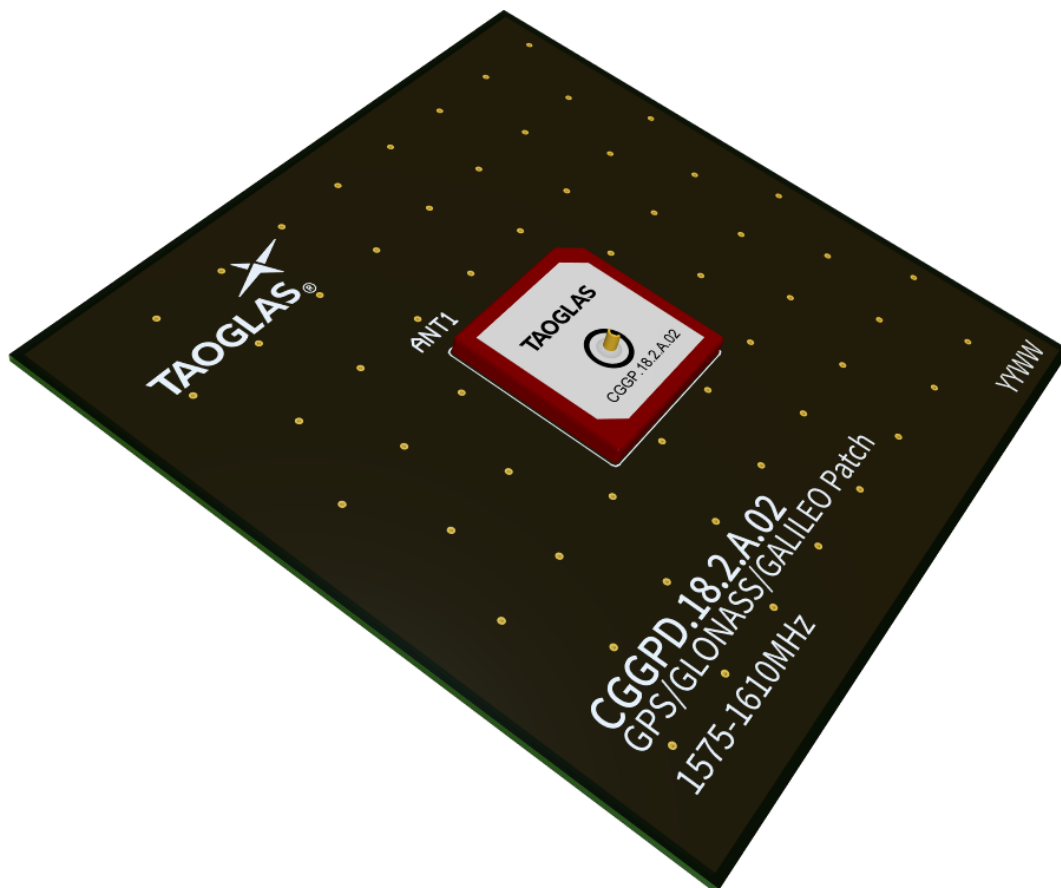
APPROVED BY: Wayne	TW Design Centre This drawing and its inherent design concepts are property of Taoglas. Not to be copied or given to third parties without the written consent of Taoglas.
CHECK BY: Aine	
DRAWN BY: Kim	
DATE: 2014/09/22	
UNLESS OTHERWISE SPECIFIED TOLERANCES ON:	XL:±0.5 X:±0.3 X±0.2 XX±0.1 XXX±0.05
THIRD ANGLE PROJECTION	TITLE : GPS/GLONASS Dual-Band Patch Antenna 18*18*2mm PART NO. : CGGP.18.2.A.02 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



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



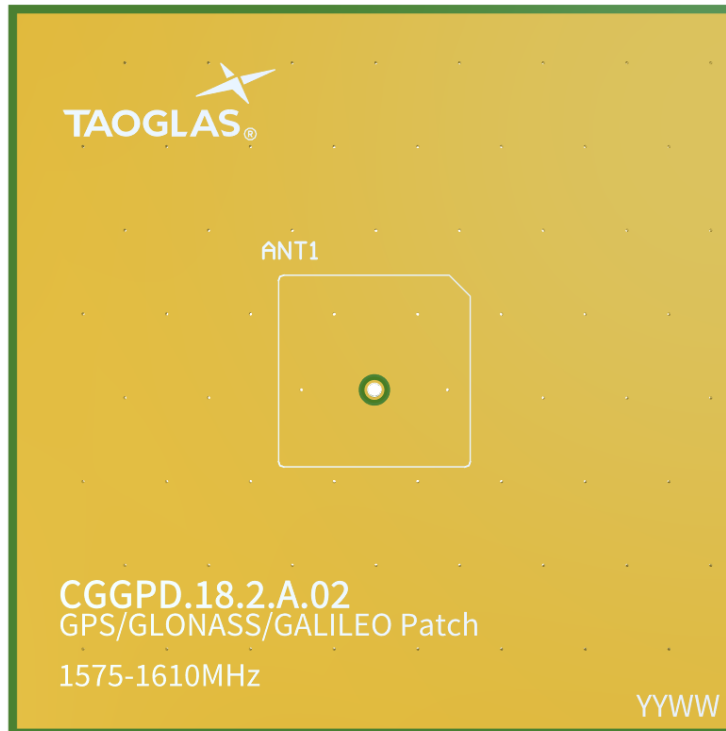
Top Side w/ Solder Mask



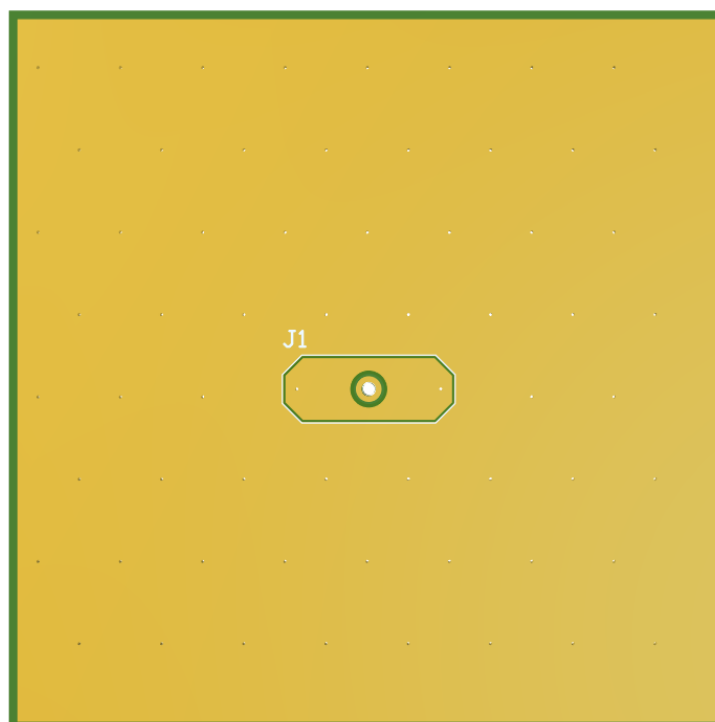
Top Side w/o Solder Mask

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

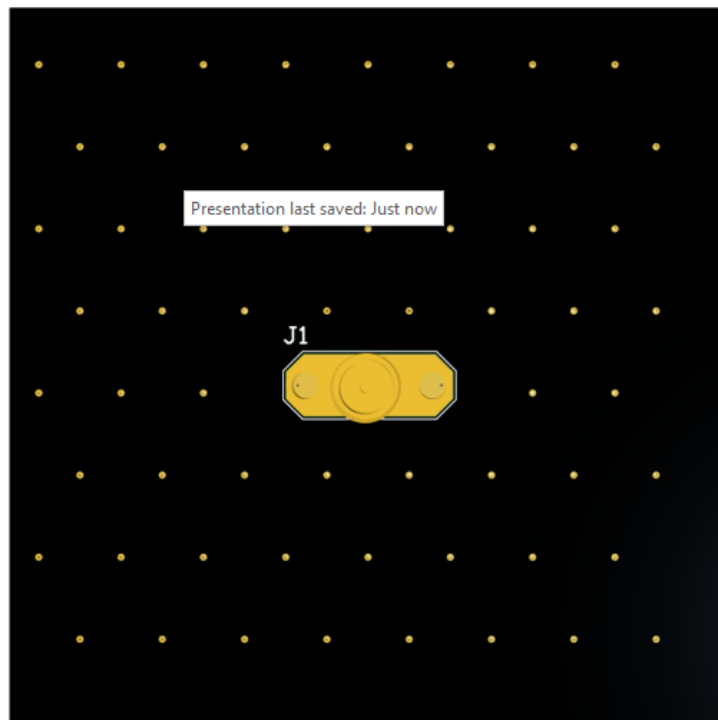


Bottom Side

6.5 Evaluation Board



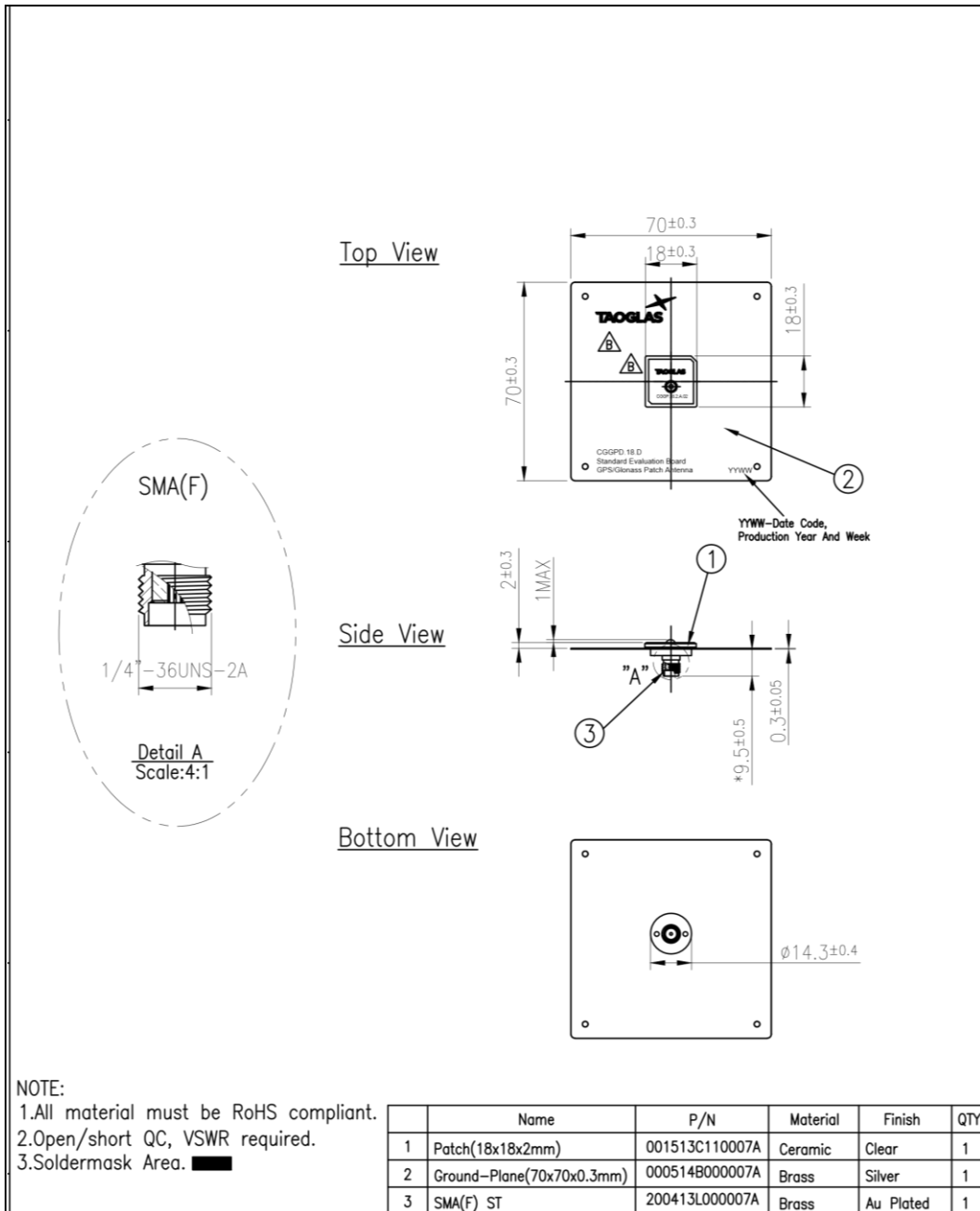
Topside



Bottom Side

7. Evaluation Board Mechanical Drawing (unit: mm)

7.1 Evaluation Board Drawing

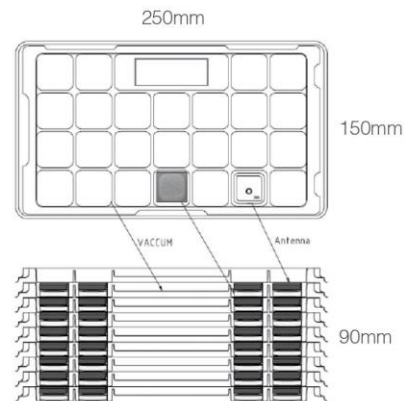


8. Packaging

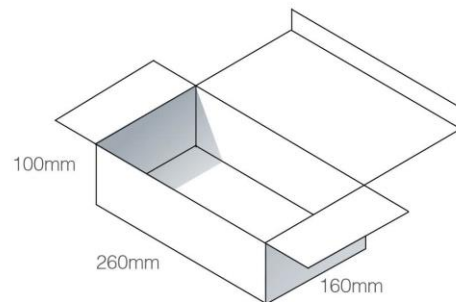
CGGP.18.2.A.02

Packaging Specifications

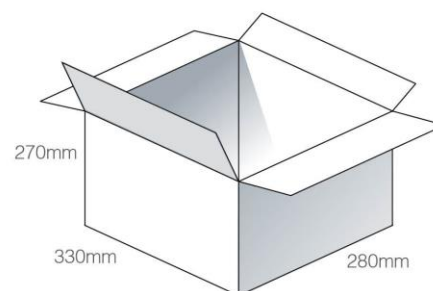
25 pcs per tray
Tray Dimensions - 250*150*11mm



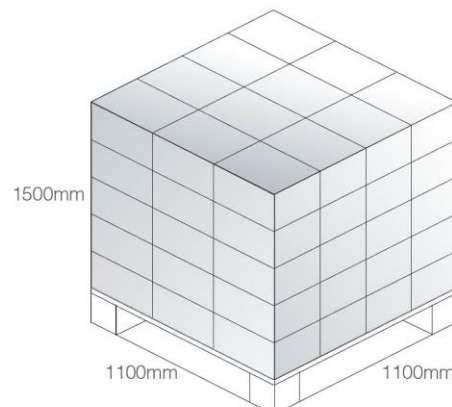
8 Trays per inner box
200 pcs CGGP.18.2.A.02
Dimensions - 260*160*100mm



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