



# Datasheet

## GPS/GLONASS/BeiDou Patch

**Part No:**  
**CGGBP.35.6.A.02**

### Description

GPS/GLONASS/Galileo/BeiDou Embedded Patch Antenna

### Features:

Dielectric Ceramic  
BeiDou 1561MHz / GPS-Galileo 1575MHz / GLONASS 1602MHz  
Pin Mount  
Dimensions: 35mm\*35mm\*6.5mm  
RoHS & Reach Compliant

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## Changelog

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ISO 9001:  
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046

QUALITY MANAGEMENT SYSTEM  
IATF16949



## 1. Introduction



The Taoglas CGGBP.35.6.A.02 is a Circularly Polarized embedded GNSS patch designed for use across the full single band GNSS spectrum.

This 35mm square ceramic GPS/GLONASS/Galileo/BeiDou patch antenna's wide band of operation leads to excellent gain and radiation pattern stability on all GNSS system bands.

Typical applications include:

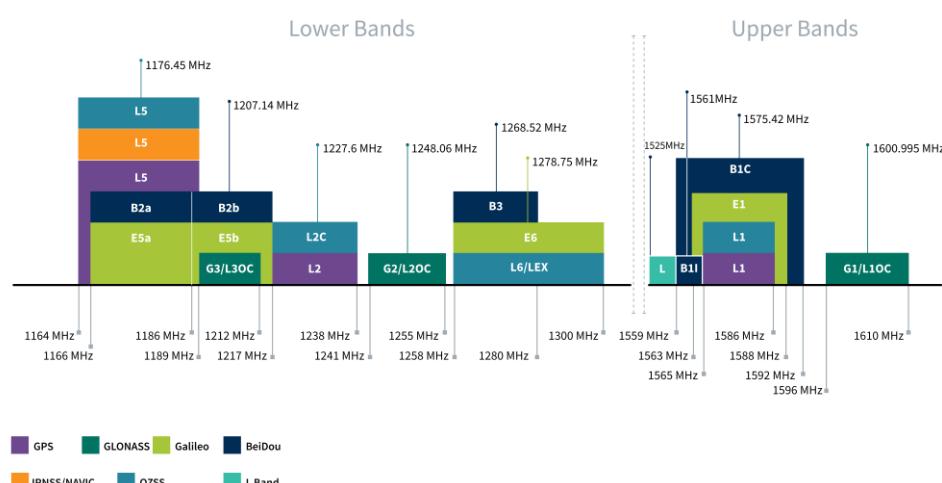
- Agriculture
- Asset tracking systems
- Navigation

Compared to using a smaller antenna, this will translate into the GNSS system having much higher location accuracy, improved reliability of lock in urban areas, better signal reception, with more satellites acquired and a quicker time to first fix.

The patch is mounted via pin and double-sided adhesive and can be custom tuned to a device subject to NRE, for further information please contact your regional Taoglas customer support team.

## 2. Specification

GNSS Frequency Bands					
System	L1	L2	L5	L6	L7
GPS	1575.42 MHz	1227.6 MHz	1176.45 MHz		
	■	□	□		
GLONASS	G1 1602 MHz	G2 1248 MHz	G3 1207 MHz		
	■	□	□		
Galileo	E1 1575.24 MHz	E5a 1176.45 MHz	E5b 1201.5 MHz	E6 1278.75 MHz	
	■	□	□	□	
BeiDou	B1C 1575.42 MHz	B1I 1561 MHz	B2a 1176.45 MHz	B2b 1207.14 MHz	B3 1268.52 MHz
	■	■	□	□	□
L-Band	L-Band 1542 MHz				
	□				
QZSS (Regional)	L1 1575.42 MHz	L2C 1227.6 MHz	L5 1176.45 MHz	L6 1278.75e6	
	■	□	□	□	
IRNSS (Regional)	L5 1176.45 MHz				
	□				
SBAS	L1/E1/B1 1575.42 MHz	L5/B2a/E5a 1176.45 MHz	G1 1602 MHz	G2 1248 MHz	G3 1207 MHz
	■	□	■	□	□



## GNSS Bands and Constellations

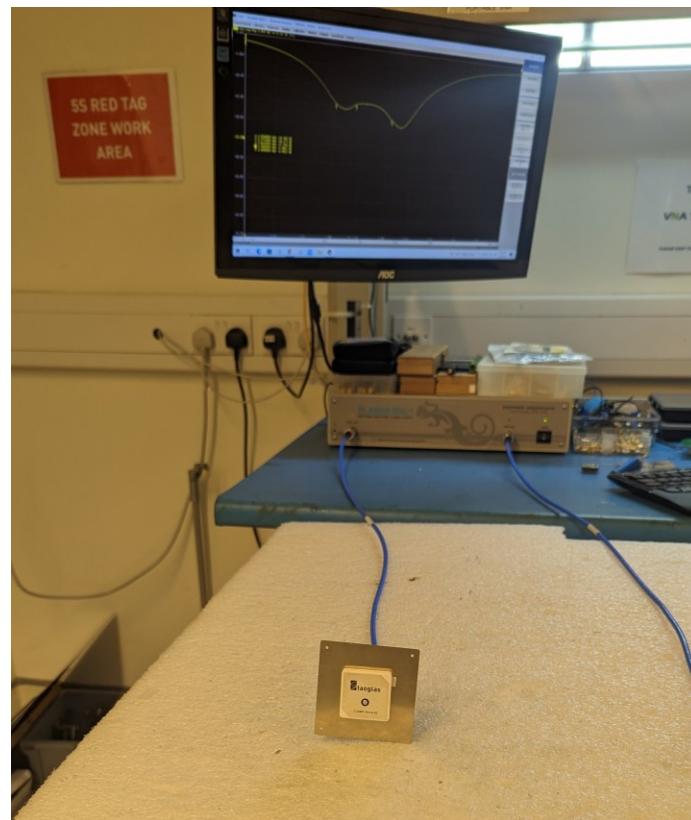
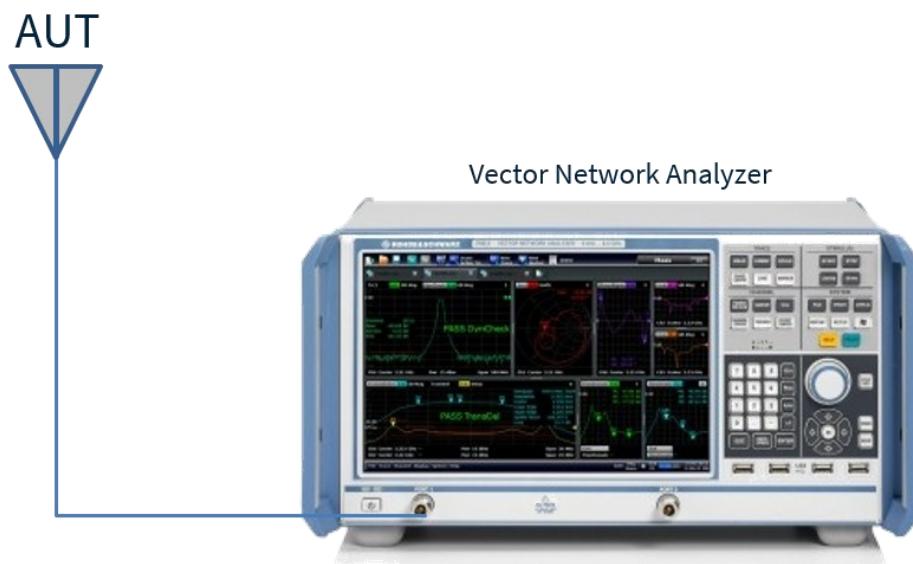
GNSS Electrical			
Frequency (MHz)	1561	1575.42	1603
VSWR (max.)	1:1	1:1	1:1
Passive Antenna Efficiency (%) (Without cable loss)	93.24	94.24	94.22
Passive Antenna Gain at Zenith (dBic) (Without cable loss)	5.13	5.18	5.24
Axial Ratio (dB)	8.6	4.5	4.0
PCO_x (cm)	0.17	0.19	0.19
PCO_y (cm)	0.33	0.29	0.29
PCV (cm)	0.07	0.06	0.06
Polarization	RHCP		
Impedance	50 Ω		

Mechanical	
Dimensions	35 x 35 x 6.5mm
Weight	29g
Material	Ceramic

Environmental	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C

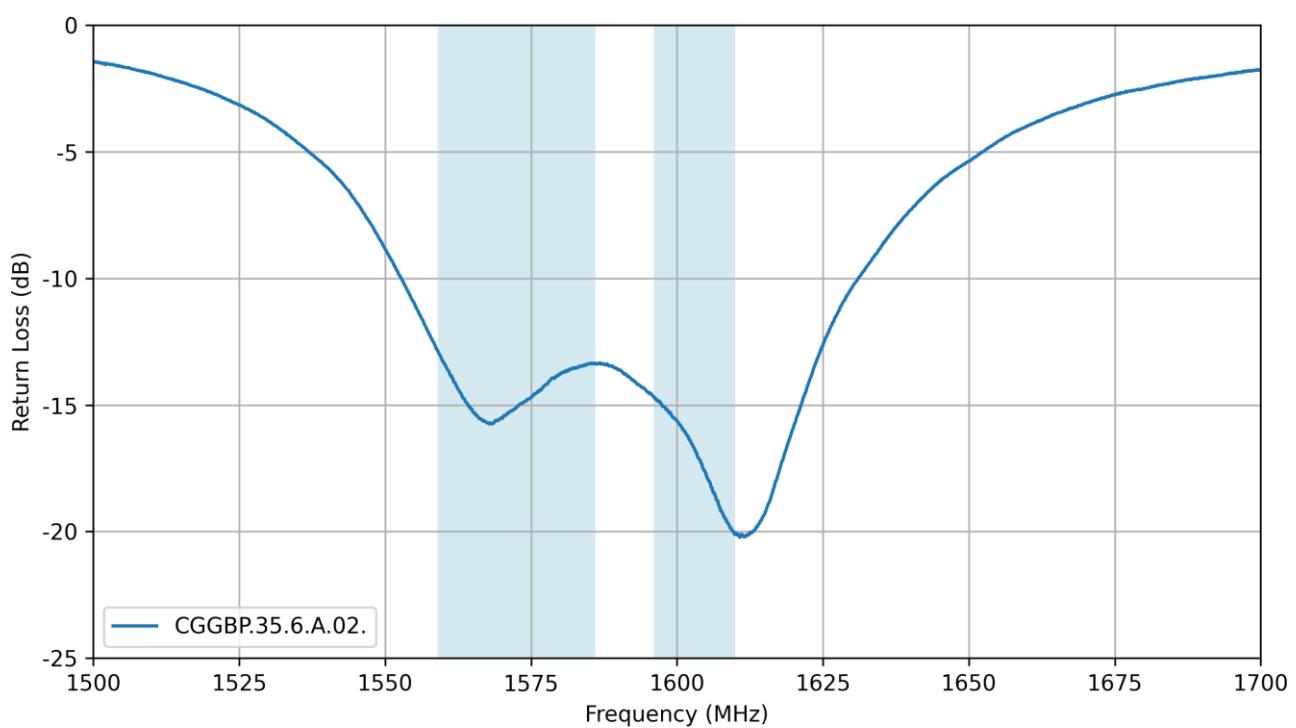
### 3. Antenna Characteristics

#### 3.1 Test Setup

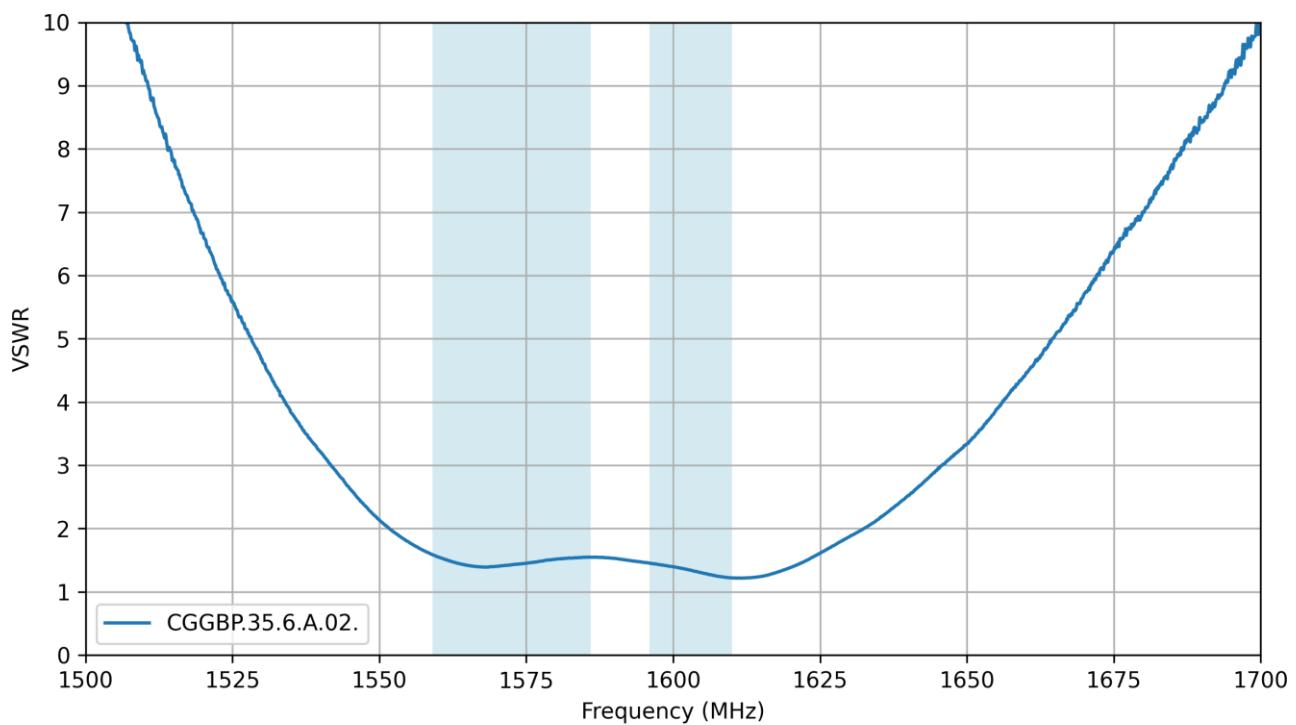


On 70mmx70mm Ground Plane

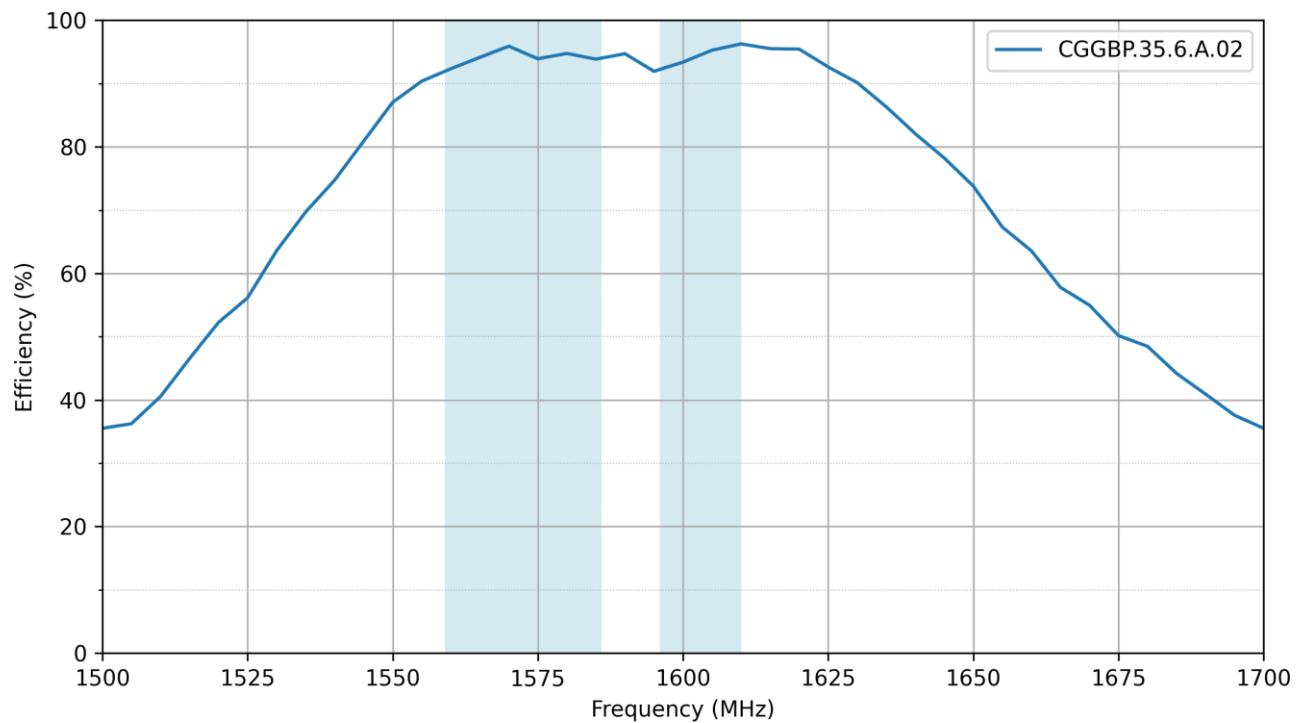
### 3.2 Return Loss



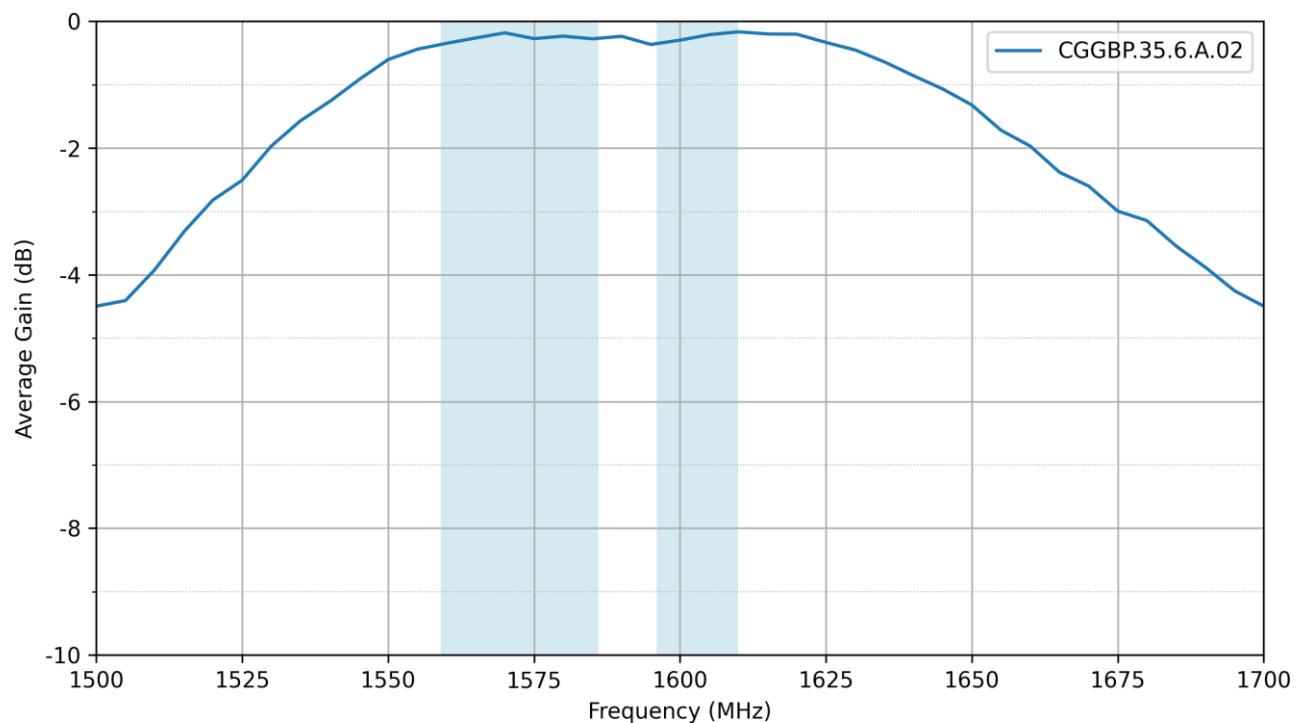
### 3.3 VSWR



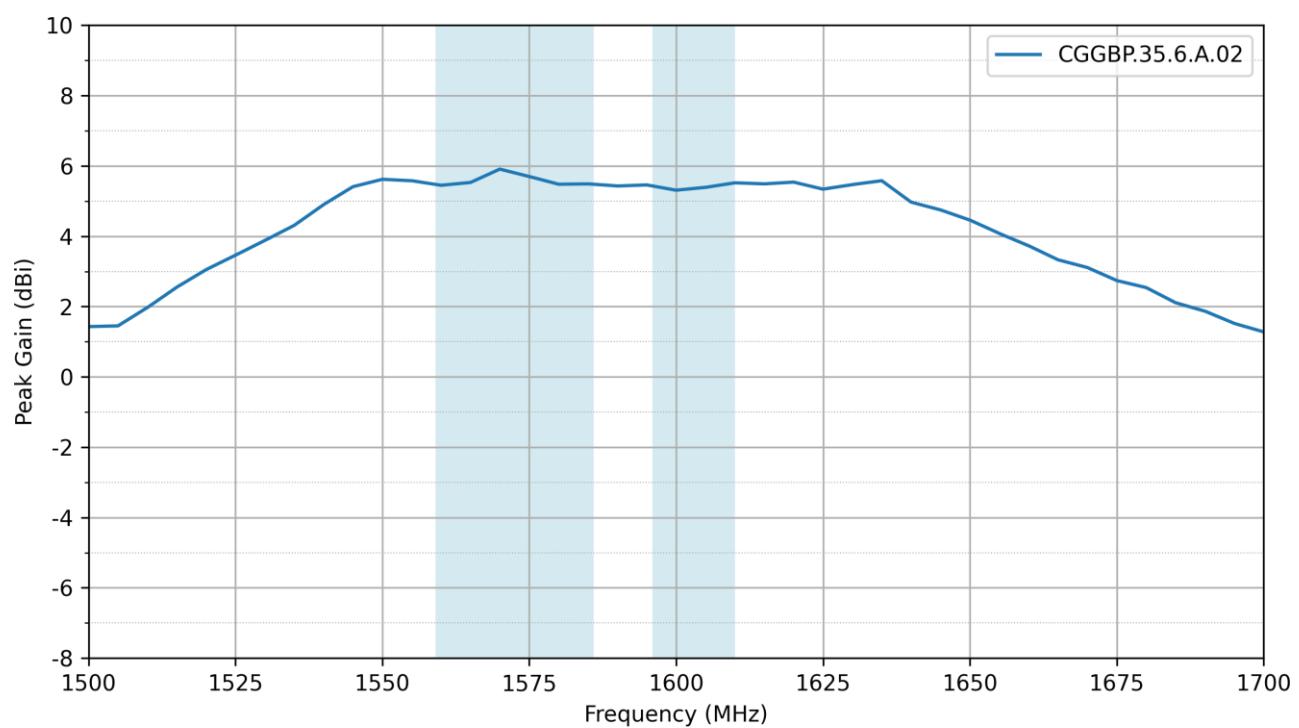
### 3.4 Efficiency



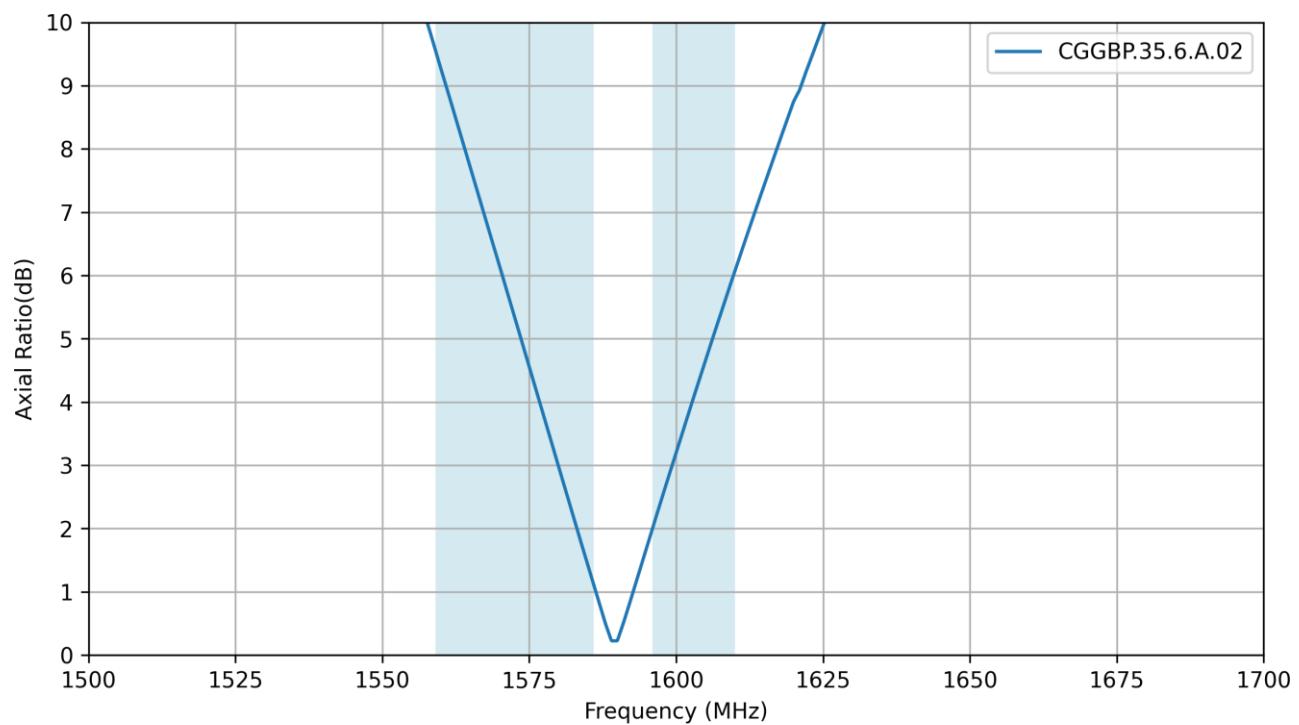
### 3.5 Average Gain



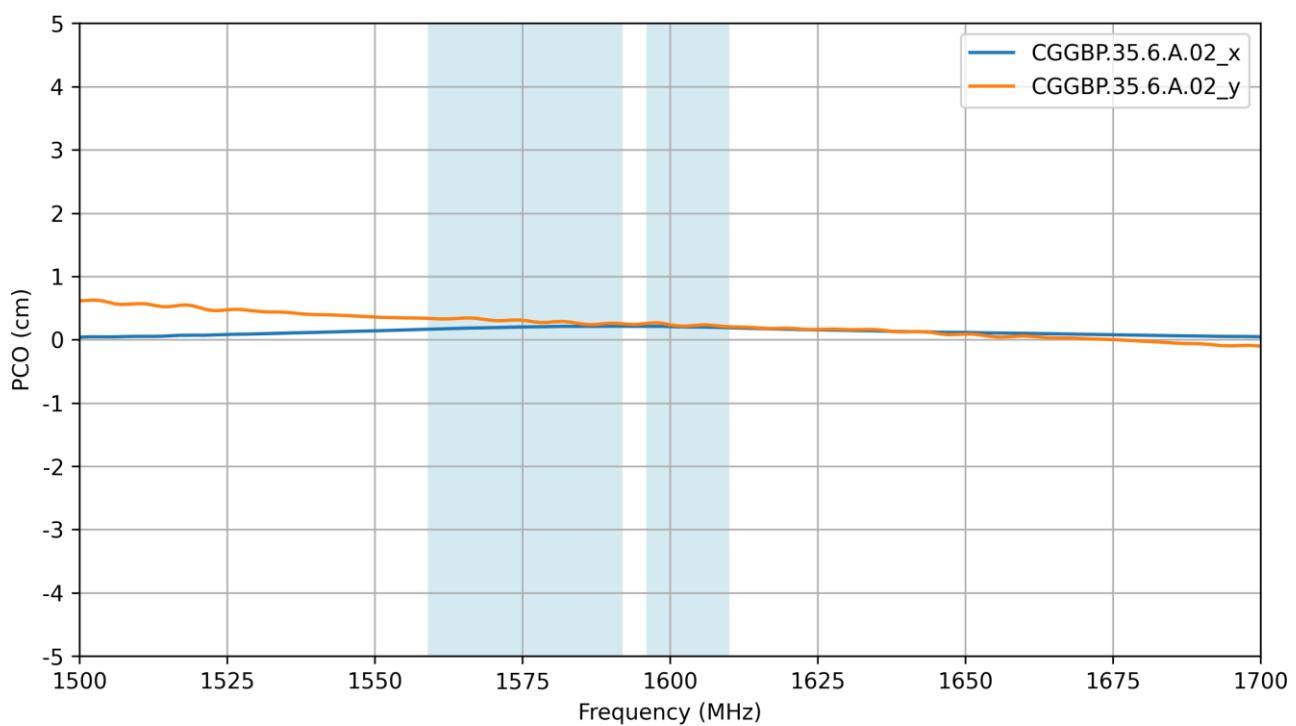
### 3.6 Peak Gain



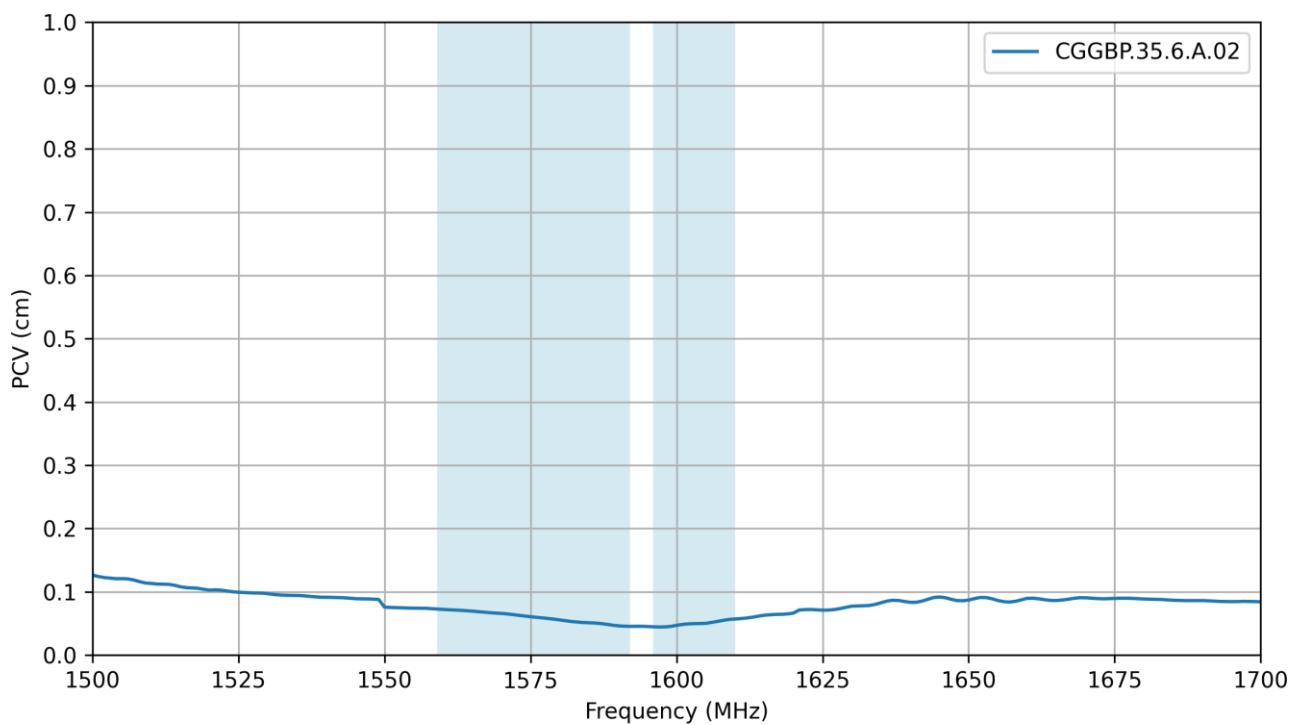
### 3.7 Axial Ratio



### 3.8 PCO

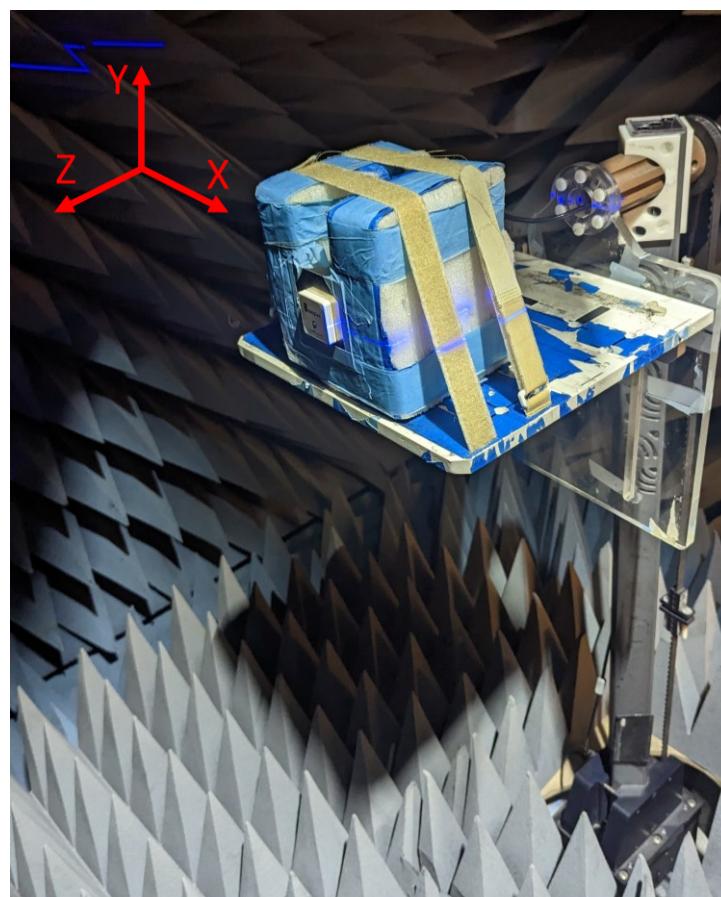
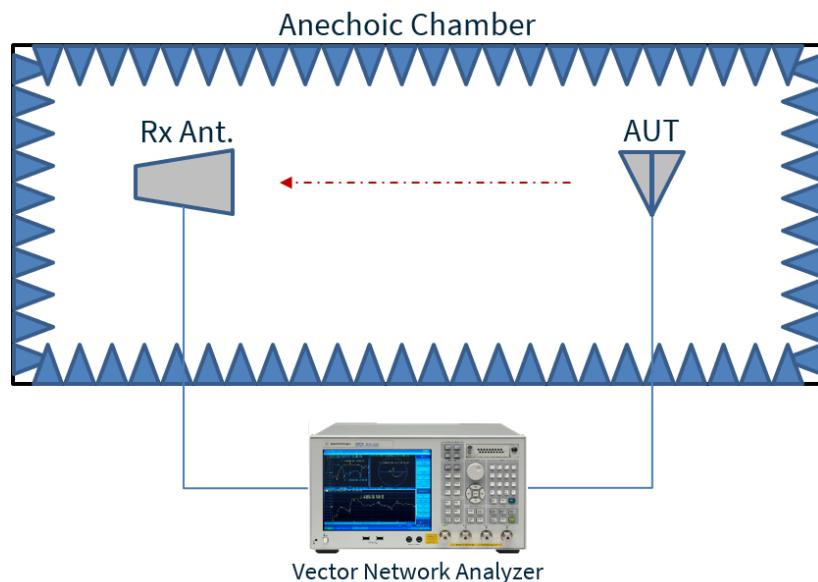


### 3.9 PCV



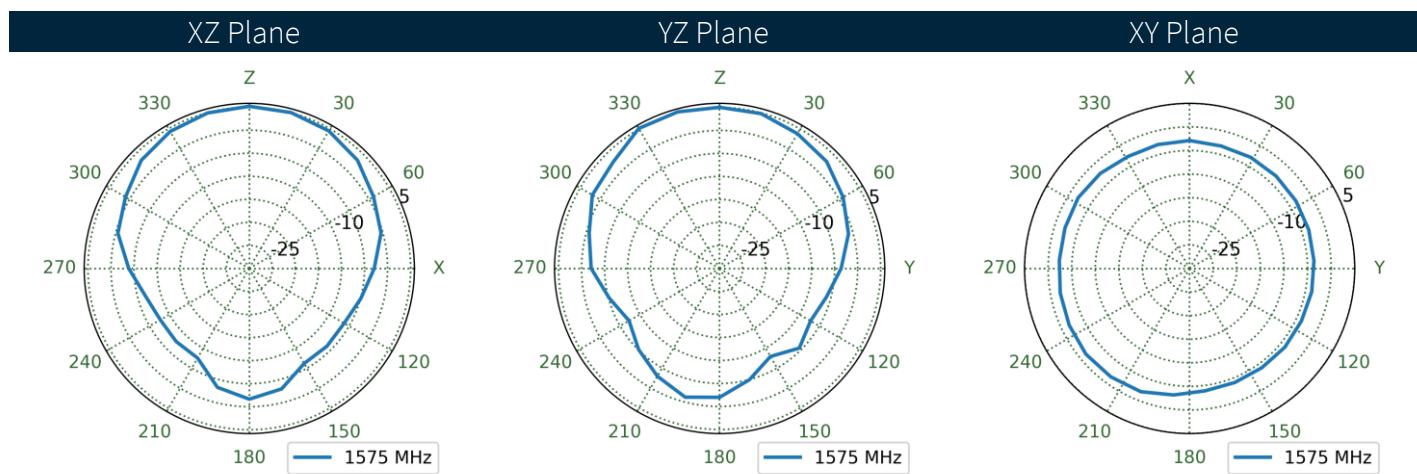
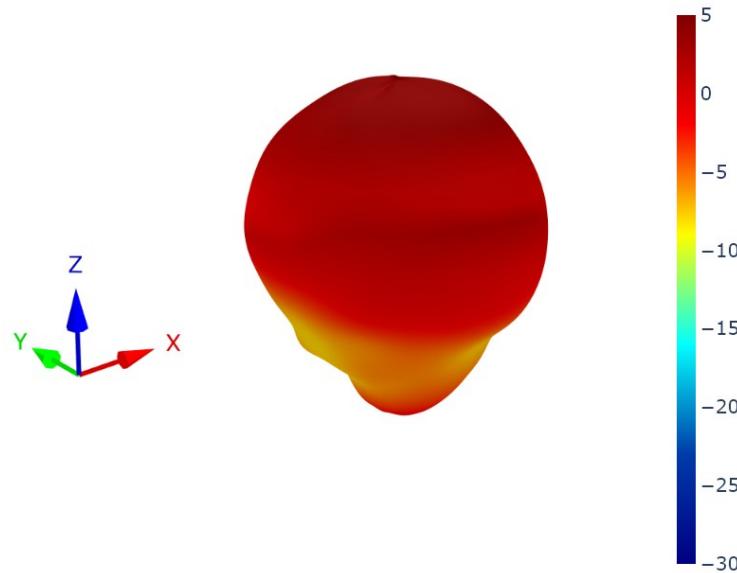
## 4. Radiation Patterns

### 4.1 Test Setup

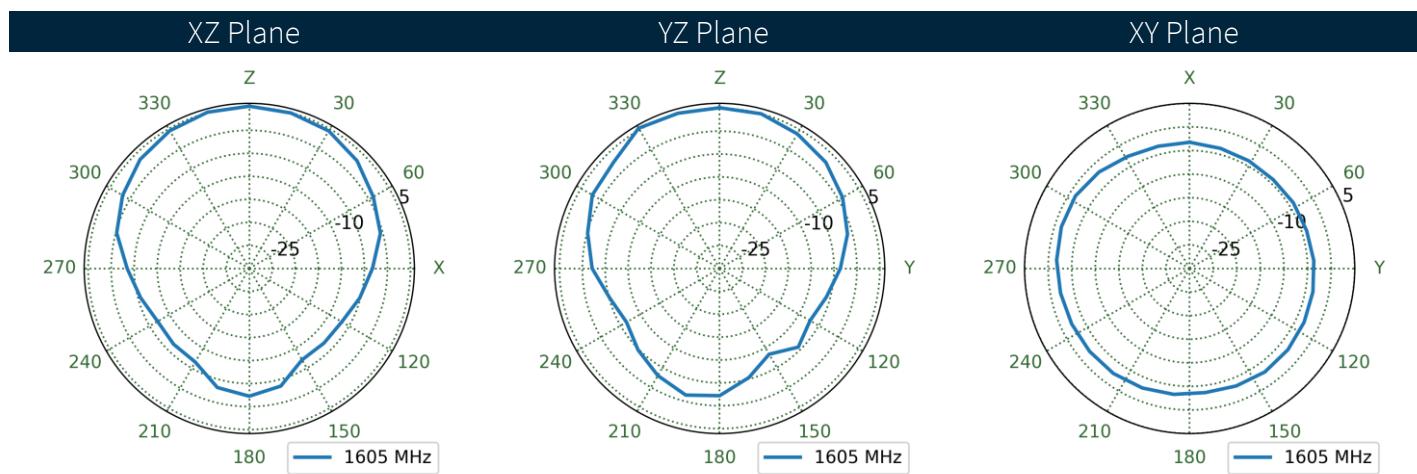
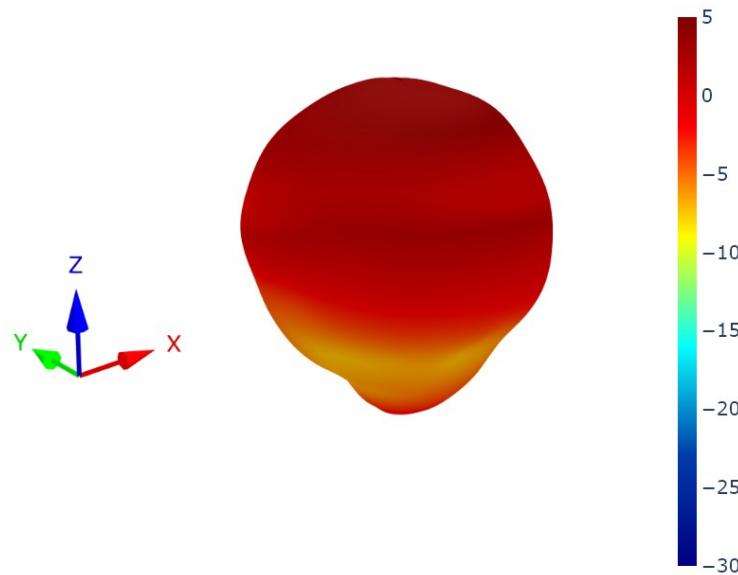


On 70mmx70mm Ground Plane

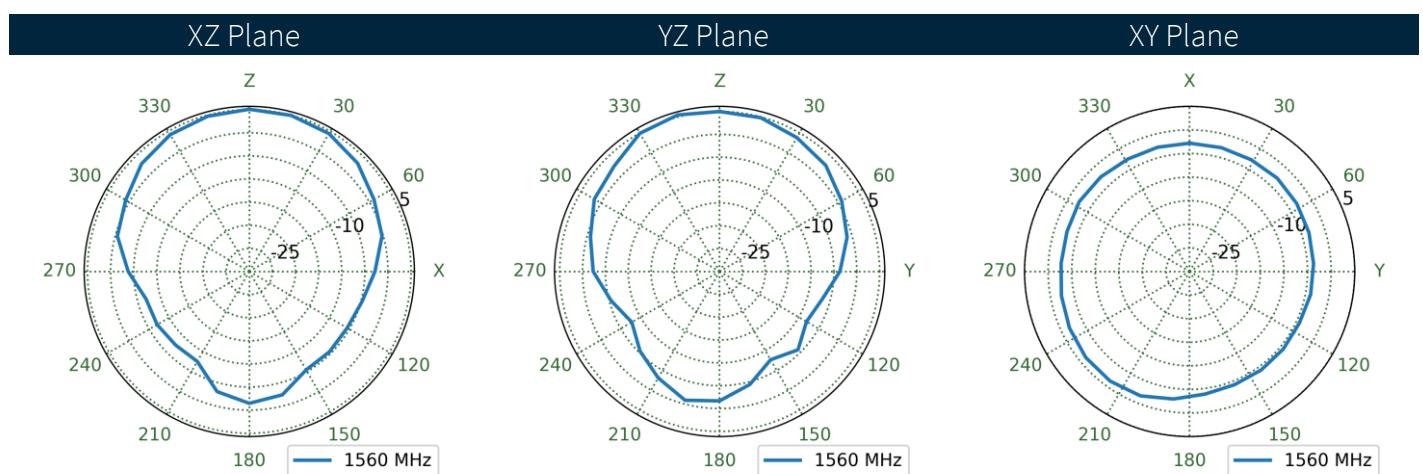
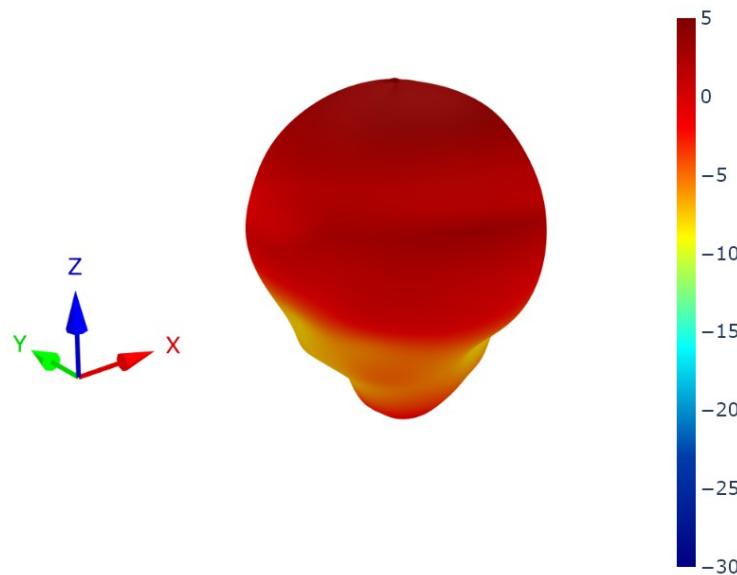
## 4.2 Patterns at 1575 MHz



### 4.3 Patterns at 1605 MHz



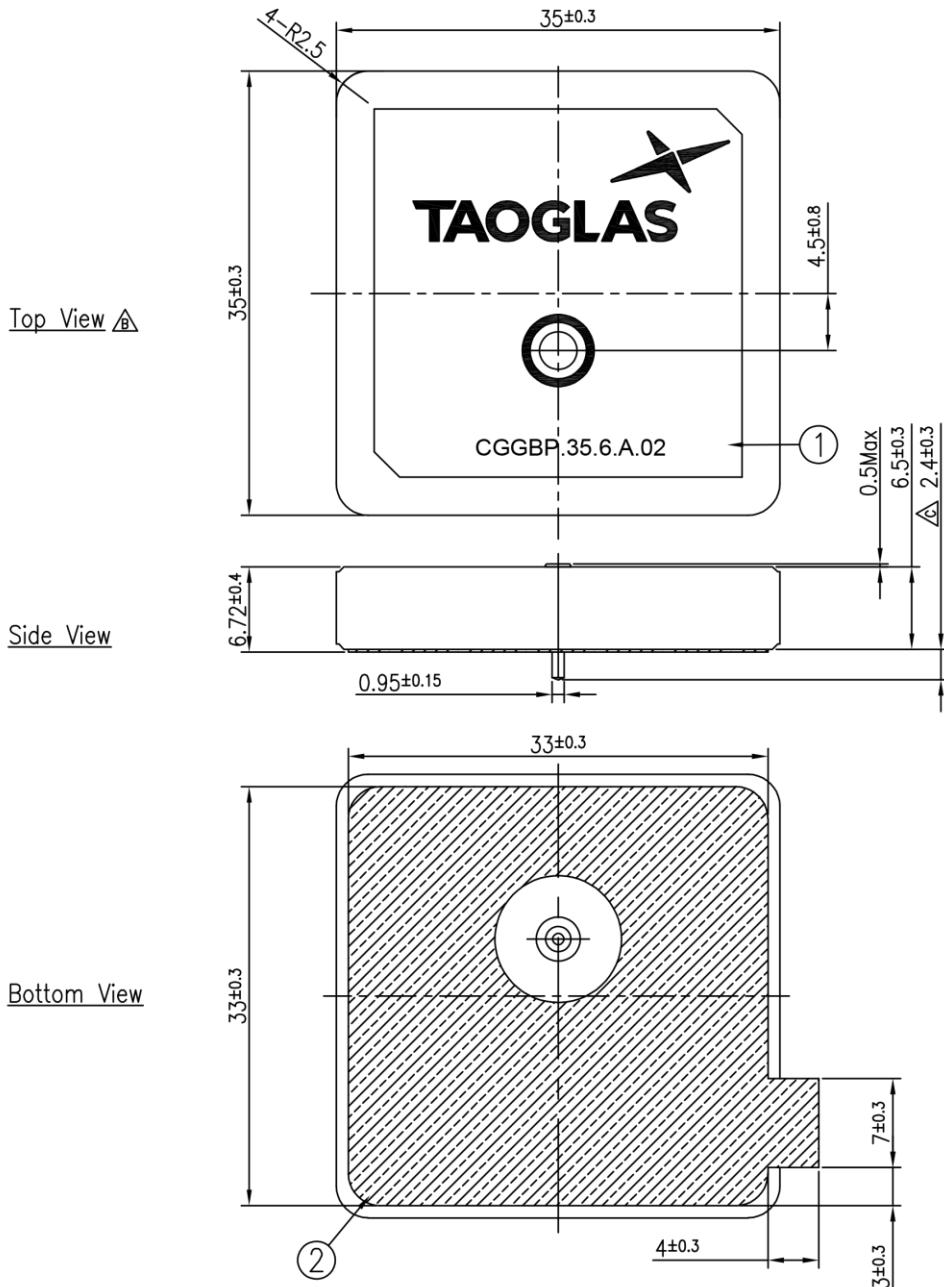
## 4.4 Patterns at 1560 MHz



## 5. Mechanical Drawing

ISO NO.: EDW-18-8-0694  
 STATE: Release  
 NOTES: 1. Double sided adhesive area 

REV.	DESCRIPTION	ENG.	APPROVED	DATE
▲ A	Initial Design	Eva	Paul	2018/09/06
▲ B	Replace the new LOGO <ECR-18-8-259>	Rachel	Aaron	2019/09/24
▲ C	EC-21-08-010	Mickey	Buluto	2021/03/02

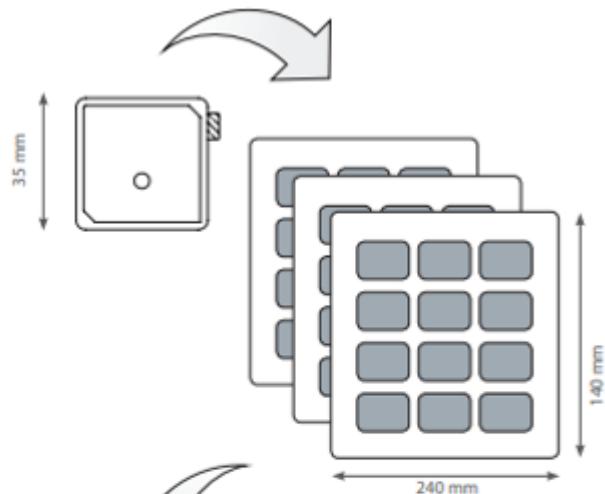


Name	P/N	Material	Finish	QTY
1 Patch	0015166040007A	Ceramic	Clear	1
2 Double sided Adhesive	0015166040007A	NITTO 5015	White Under	1

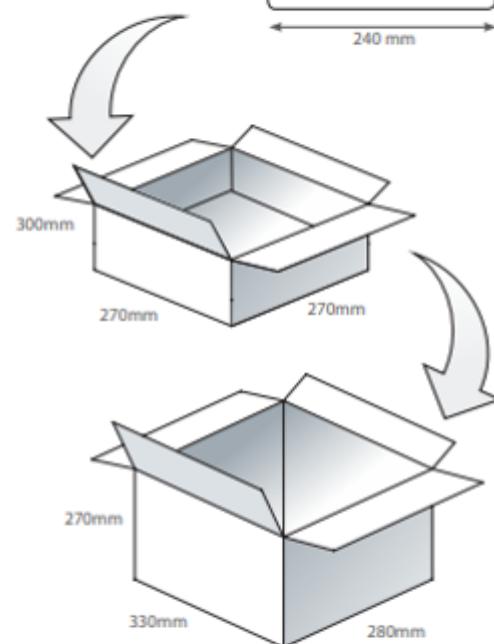
APPROVED BY: Joanna	 <b>TAOGLAS</b> <small>TW Design Centre</small> <small>This drawing and its inherent design concepts are property of TAOGLAS. Not to be copied or given to third parties without the written consent of TAOGLAS.</small>		
CHECK BY: Martin			
DRAWN BY: Sandy			
DATE: 2013/10/31			
UNLESS OTHERWISE SPECIFIED TOLERANCES ON:	XX±0.5 X±0.3 X±0.2 XX±0.1 XX±0.05		
THIRD ANGLE PROJECTION			
UNIT: mm	SCALE: 2:1	PAGES: 1/1	REV. C
PART NO.: CGGBP.35.6.A.02			

## 6. Packaging

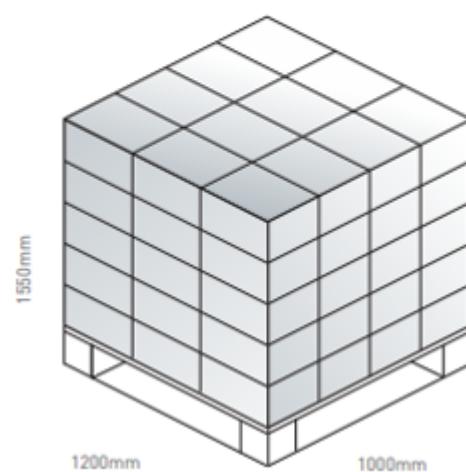
12 pcs CGGP.35.6.A.02  
 Tray Dimensions – 240\*140\*20mm  
 Weight – 280g



72 pcs CGGP.35.6.A.02 per inner carton  
 Inner carton dimensions – 261\*152\*118mm  
 Weight – 1.675Kg



288 pcs CGGP.35.6.A.02 per carton  
 Carton dimensions – 330\*280\*270mm  
 Weight – 6.7Kg



Pallet dimensions – 1200\*1000\*1550mm  
 60 Cartons per pallet  
 12 Cartons per layer  
 5 Layers

## 7. Antenna Integration Guide

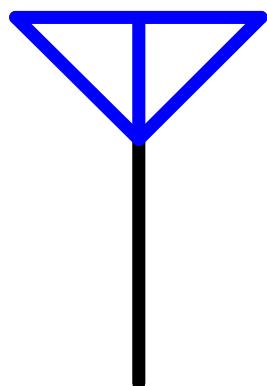


## 7.1 Schematic and Symbol Definition

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

Pin	Description
1	RF Feed

CGGBP.35.6.A.02  
ANT1



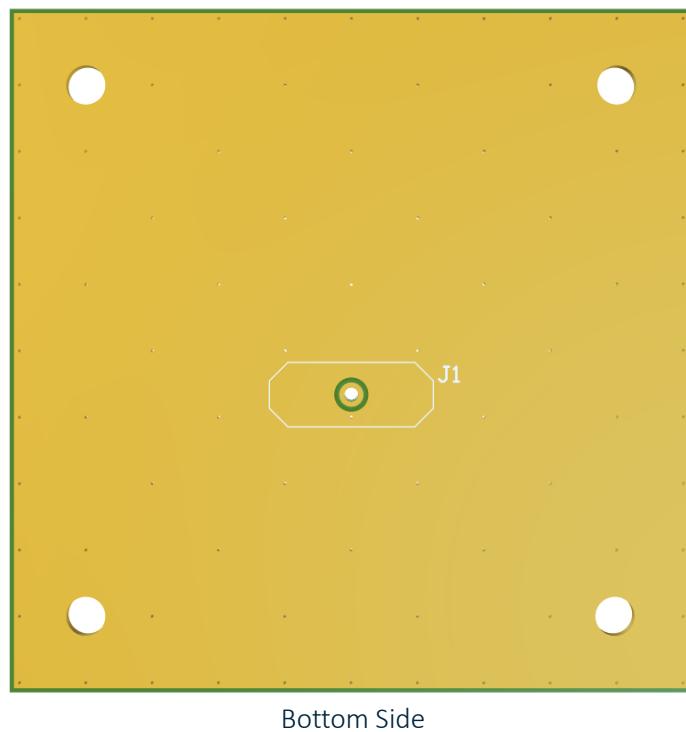
## 7.2 Antenna Integration

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.

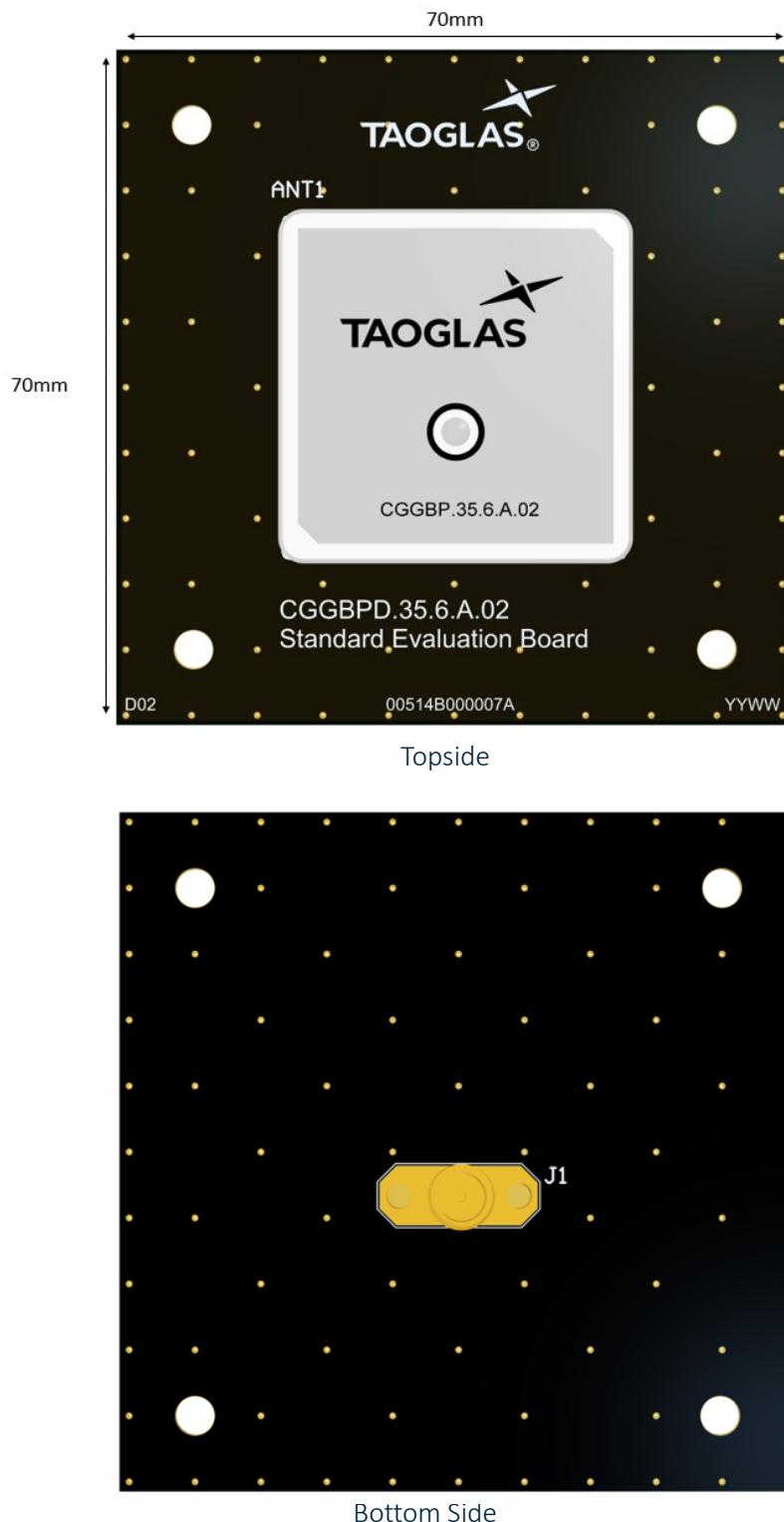


## 7.3 PCB Layout

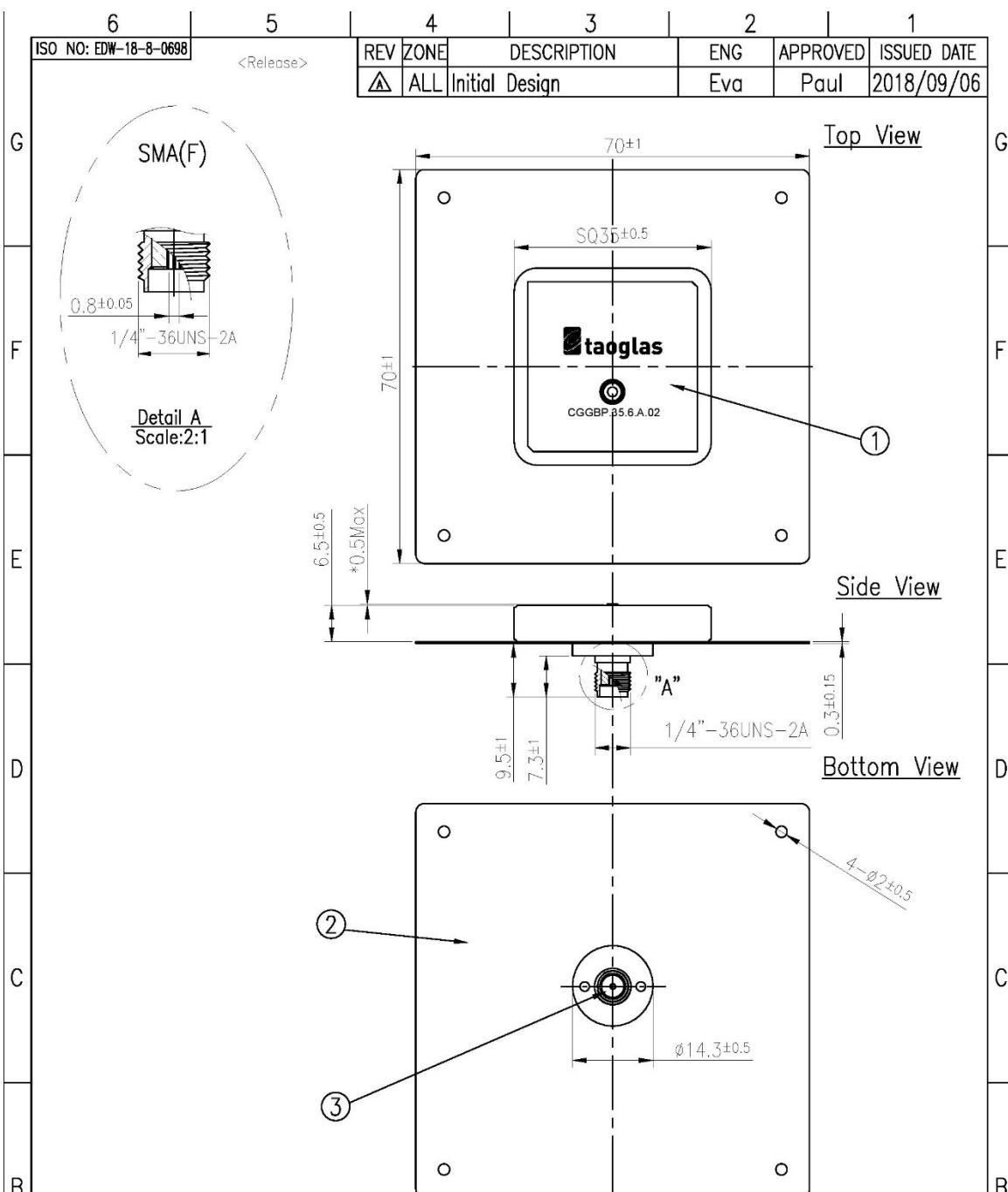
The footprint and clearance on the PCB must comply with the antenna specification. The PCB layout shown in the diagram below demonstrates the antenna footprint.



## 7.4 Evaluation Board

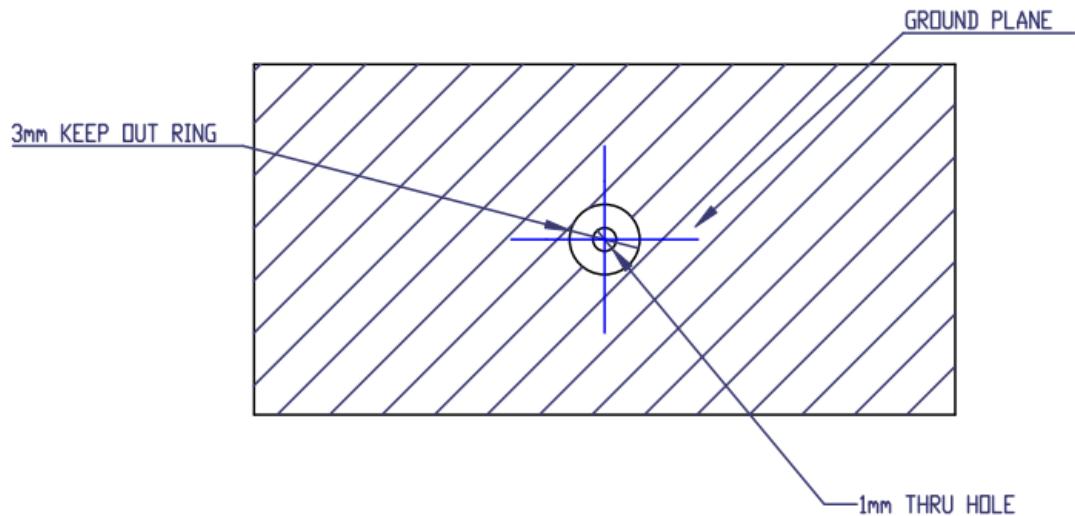


## 7.5 Evaluation Board Drawing

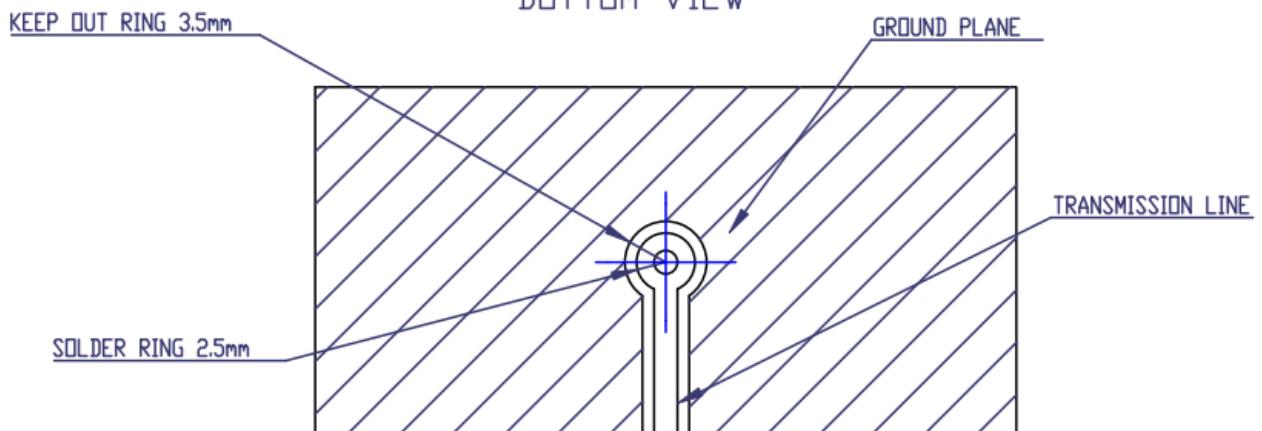
6	5	4	3	2	1																												
ISO NO: EDW-18-8-0698		<Release>		REV	ZONE	DESCRIPTION	ENG	APPROVED	ISSUED DATE																								
				<b>▲</b>	ALL	Initial Design	Eva	Paul	2018/09/06																								
G	F	E	D	C	B	G	F	E	D																								
																																	
<p><b>NOTE:</b> 1. All material must be RoHS compliant.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Name</th> <th>P/N</th> <th>Material</th> <th>Finish</th> <th>QTY</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Patch</td> <td>001513K000007A</td> <td>Ceramic</td> <td>Clear</td> <td>1</td> </tr> <tr> <td>2</td> <td>Ground-Plane</td> <td>000514B000007A</td> <td>Brass</td> <td>Silver</td> <td>1</td> </tr> <tr> <td>3</td> <td>SMA(F) ST</td> <td>200413L000007A</td> <td>Brass</td> <td>Au Plated</td> <td>1</td> </tr> </tbody> </table>											Name	P/N	Material	Finish	QTY	1	Patch	001513K000007A	Ceramic	Clear	1	2	Ground-Plane	000514B000007A	Brass	Silver	1	3	SMA(F) ST	200413L000007A	Brass	Au Plated	1
	Name	P/N	Material	Finish	QTY																												
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3	SMA(F) ST	200413L000007A	Brass	Au Plated	1																												
A	UNLESS OTHERWISE SPECIFIED		DATE: 2013/11/27	MAT'L:	 <small>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.</small>	REV A A																											
	TOLERANCES ON: $.XX \pm 0.2$ $.XX \pm 0.1$ $X \pm 0.3$ $XXX \pm 0.05$		UNIT: mm	FINISH:																													
APPROVED BY: Wayne		CHECKED BY: Aine	DRAWN BY: Raisa	CUSTOMERS SIGNATURE / DATE																													
TITLE: CGGBP.35.6.A.02 35mm Patch Antenna on 70*70mm Ground Plane with SMA(F)																																	
PART NO. : CGGPBD.35.A																																	
6	5	4	3	2	1																												

## 7.6 Footprint

TOP VIEW



BOTTOM VIEW



## Changelog for the datasheet

### SPE-14-8-018 – CGGBP.35.6.A.02

#### Revision: L (Current Version)

Date:	2025-04-29
Changes:	Added PCO/PCV data and graphs.
Changes Made by:	Gary West

#### Previous Revisions

##### Revision: K

Date:	2025-04-14
Changes:	Added axial ratio graph
Changes Made by:	Gary West

##### Revision: F

Date:	2020-01-27
Changes:	Installation Guide Amended
Changes Made by:	Jack Conroy

##### Revision: J

Date:	2023-06-08
Changes:	Updated Graphs Updated PCB Footprint
Changes Made by:	Aswin Biju

##### Revision: E

Date:	2018-03-27
Changes:	Installation Guide Amended
Changes Made by:	Jack Conroy

##### Revision: I

Date:	2023-05-12
Changes:	Updated Axial Ratio Graph.
Changes Made by:	Gary West

##### Revision: D

Date:	2017-06-27
Changes:	
Changes Made by:	David Connolly

##### Revision: H

Date:	2022-02-24
Changes:	Integration guide added
Changes Made by:	Cesar Sousa

##### Revision: C

Date:	2015-01-06
Changes:	PCB Footprint
Changes Made by:	Made by Andy Mahoney

##### Revision: G

Date:	2021-06-08
Changes:	Pin Length changed to 2.4mm Drawing updated
Changes Made by:	Dan Cantwell

##### Revision: B

Date:	2014-11-17
Changes:	Evaluation Board Added
Changes Made by:	Aine Doyle

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**Previous Revisions**

<b>Revision: A (Original First Release)</b>	
Date:	2014-03-04
Notes:	
Author:	Aine Doyle



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