



TAOGLAS®



Datasheet

GPDF357A

Part No:
GPDF357A

Description:

Embedded GPS L1/ L2 Dual Pin Stacked Patch Antenna
Covering 1227.6/ 1575.42 MHz

Features:

Dual-Pin Stacked Patch, Dual Feed

Covering Bands:

- GPS L1
- GPS L2
- Galileo E1

Low Axial Ratio

Dimensions: 35*35*7.15(mm)

Ground Plane size: 70x70(mm)

RoHS & Reach Compliant

1. Introduction	3
2. Specifications	5
3. Passive Antenna Characteristics	7
4. Radiation Patterns	12
5. Mechanical Drawing	15
6. Packaging	16
Changelog	17

Taoglas makes no warranties based on the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Taoglas reserves all rights to this document and the information contained herein. Reproduction, use or disclosure to third parties without express permission is strictly prohibited.

Ireland & USA
ISO 9001:2015
Certified



Taiwan
ISO 9001:2015
Certified



1. Introduction



The Taoglas GPDF357A is a precision-engineered embedded GPS stacked passive patch antenna supporting both GPS L1/Galileo E1 and GPS L2 bands. The stacked, two-pin feed design, consists of two patches, the bottom patch measuring 35*35*4mm and the top patch at 25*25*3mm, each patch with one pin feed, resulting in compact dimensions of just 35*35*7.15mm. The antenna has been tuned and tested on a 70*70mm ground plane, specifically for GPS L1/Galileo E1 at 1575.42MHz and GPS L2 at 1227.6MHz.

Utilizing two patches ensures that a low axial ratio can be achieved. The antenna exhibits excellent gain and good radiation pattern stability leading to a reliable GNSS fix, even in areas of weaker signal strength. All these elements combined can ensure the best possible positional accuracy for your device. The GPDF357A is manufactured and tested in a TS16949 first tier automotive approved facility.

Features:

- Multi-GNSS, high-performance passive antenna
- Excellent signal to noise ratio (C/N0)
- Good 2DRMS and fast TTFF
- Axial ratio < 2dB typ. across all bands

Benefits:

- Excellent positional accuracy
- Great for use in difficult environments
- Multiband improves the receiver's position estimation in terms of accuracy and reliability
- Ideal antenna solution for multiband RTK systems.

Typical applications include:

- High accuracy positioning and navigation systems
- UAVs, Robotics & Autonomous Vehicles
- Mapping & GIS
- Transportation & Telematics
- Precision Agriculture
- Public Safety, Search & Rescue
- RTK Systems

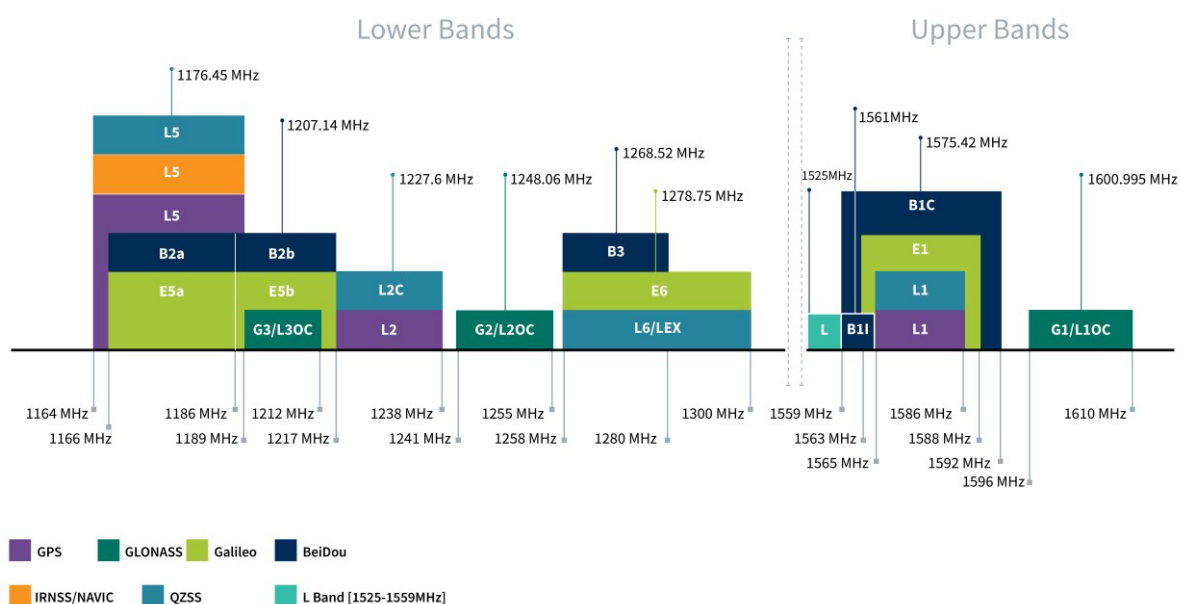
This patch can also be purchased in a version tuned specifically for a smaller 35*35mm ground plane, the GPDF357B. Patch antennas can also be tuned to customer-specific device environments, subject to NRE and MOQ. Contact your regional Taoglas customer support team to request these services or additional support to integrate and test this antenna's performance in your device.



2. Specifications

GNSS Frequency Bands					
GPS	L1 1575.42 MHz	L2 1227.6 MHz	L5 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
	■	□	□	□	□

*SBAS systems: WASS(L1/L5), EGNOS(E1/E5a), SDCM(G1/G2/G3), SNAS(B1,B2a), GAGAN(L1/L5), QZSS(L1/L5), KAZZ(L1/L5).



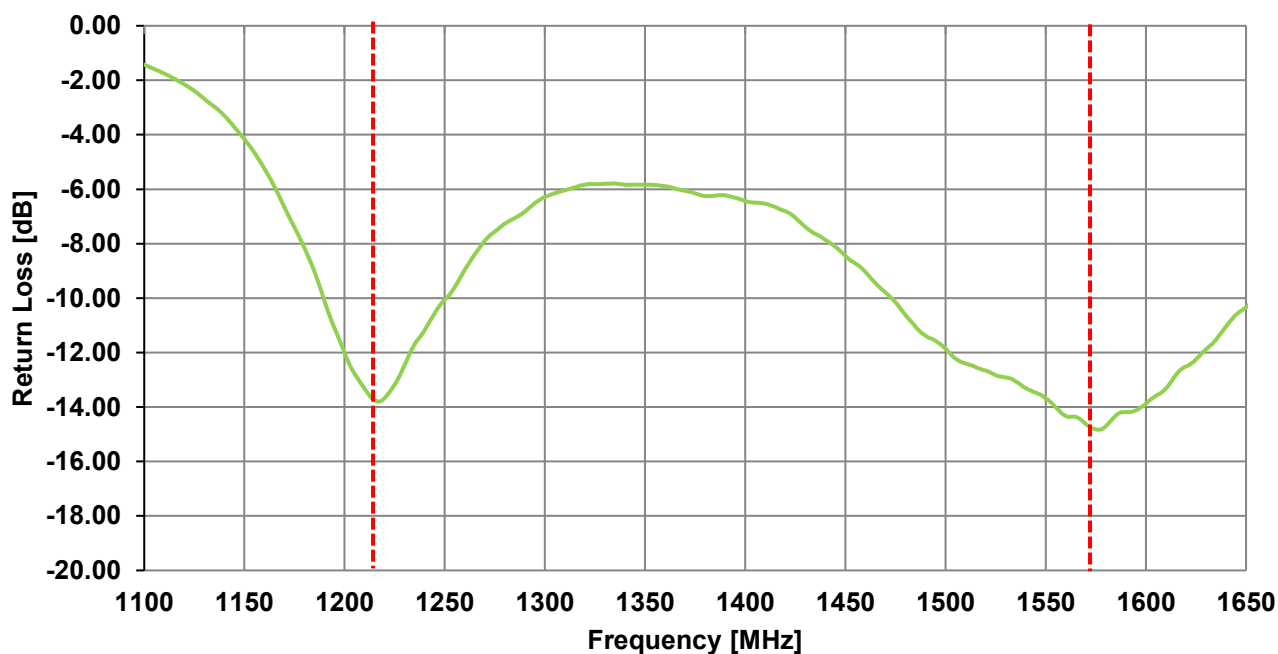
GNSS Electrical		
Frequency (MHz)	1227.6	1575.42
Return Loss (dB)	< -13	< -14
Efficiency (%)	55	33
Peak Gain at Zenith (dBi)	2.1	1
Average Gain (dB)	-2.6	-4.6
Axial Ratio (dB)	< 0.5	< 0.8
Group Delay Ripple (ns)	18	10
Polarization	R.H.C.P.	
Impedance	50Ω	

Note. Tuned on 70x70(mm) ground plane.

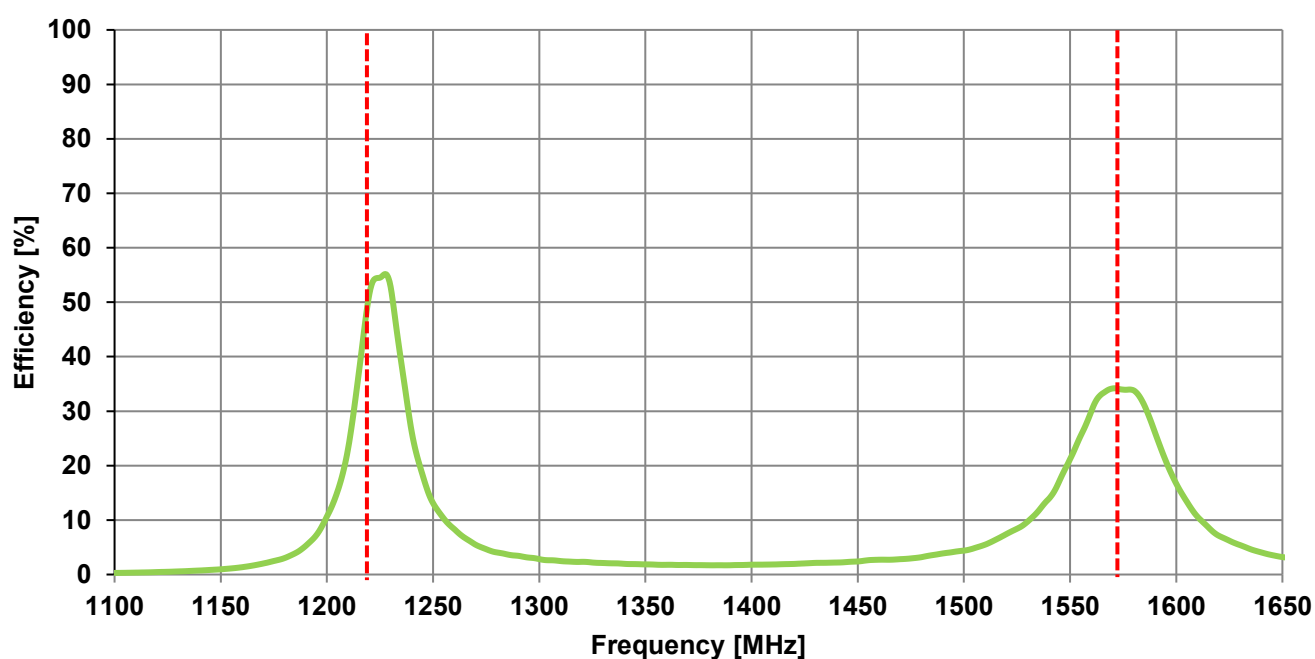
Mechanical	
Ceramic Dimension	35 x 35 x 7.15mm
Standard Ground Plane Size	70*70mm
Pin Length	2.4mm
Weight	25.2g
Environmental	
Operation Temperature	-30°C to 80°C
Storage Temperature	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

3. Passive Antenna Characteristics

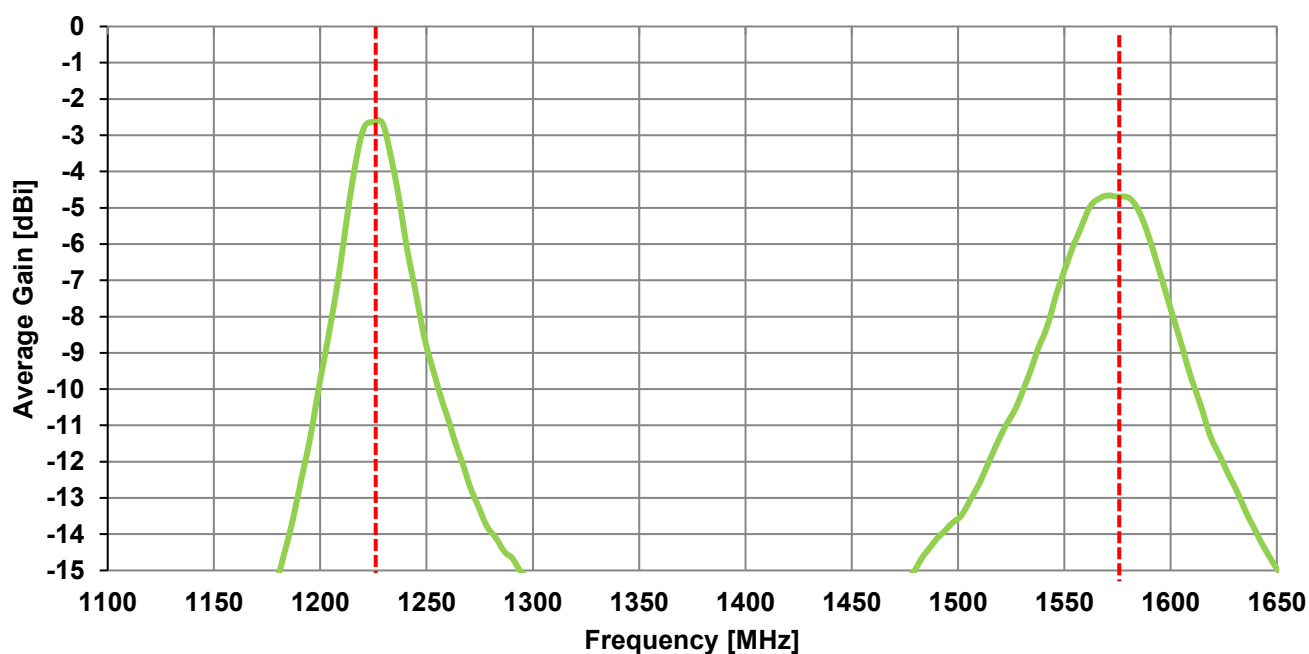
3.1 Return Loss



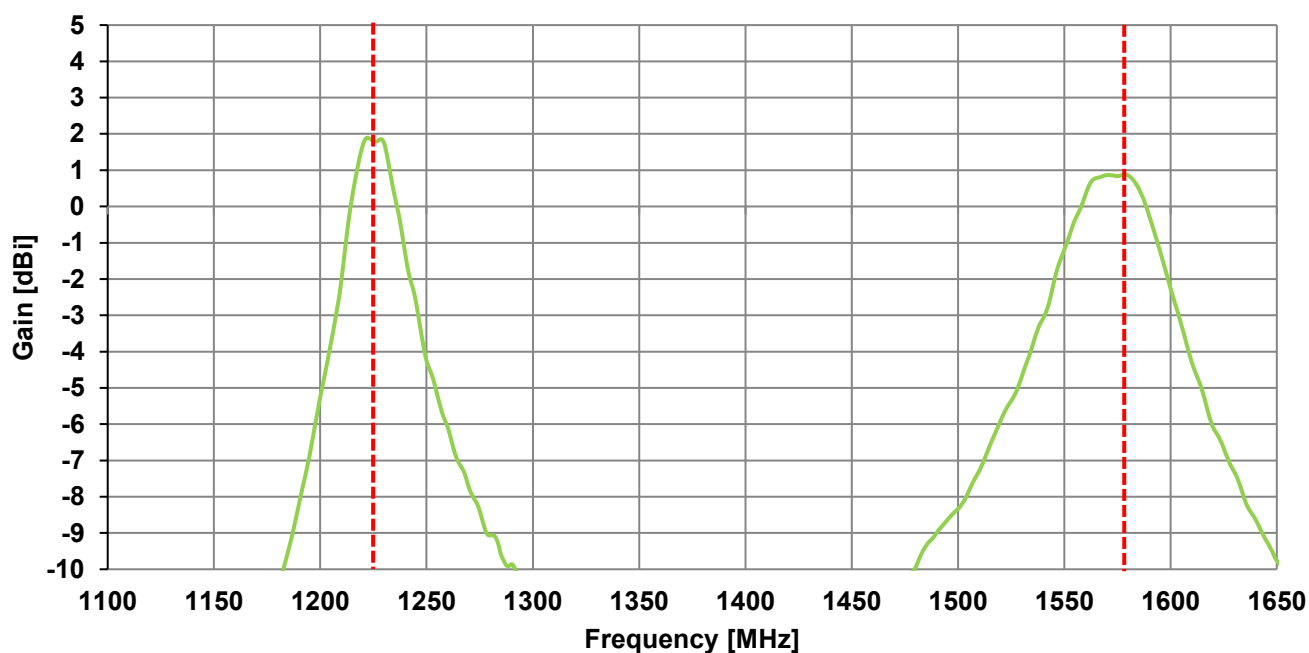
3.2 Efficiency



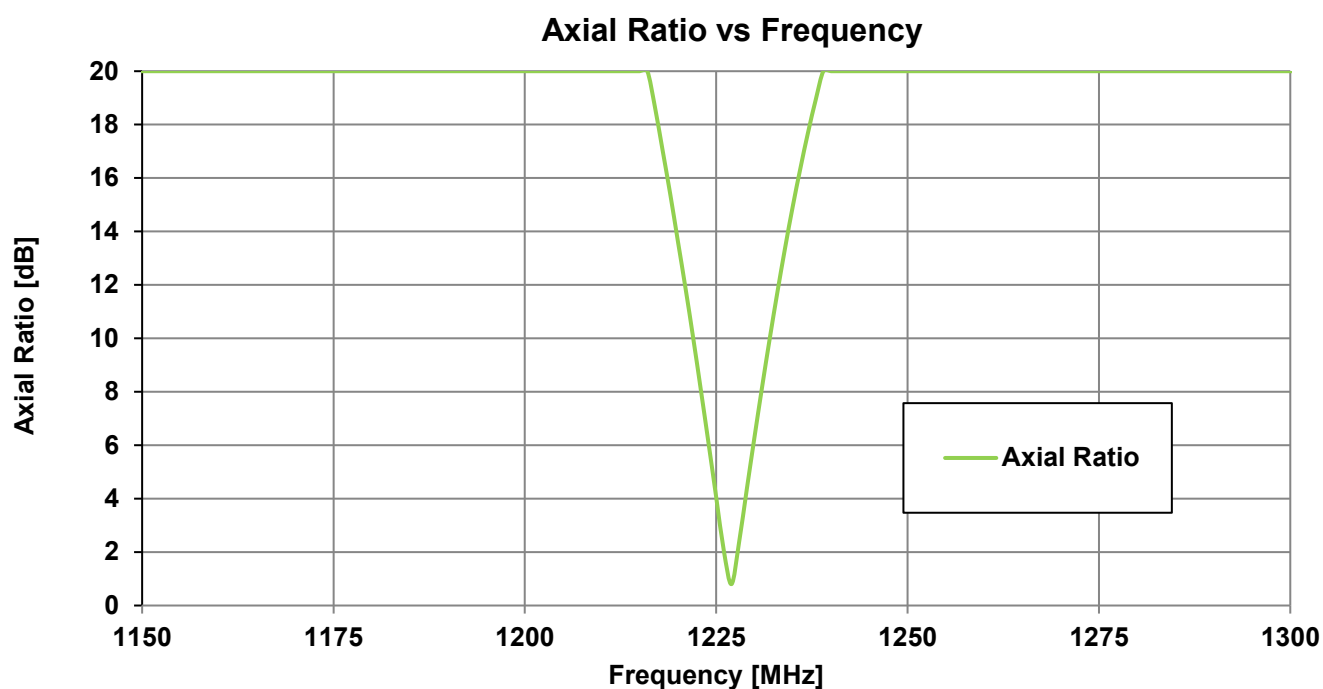
3.3 Average Gain



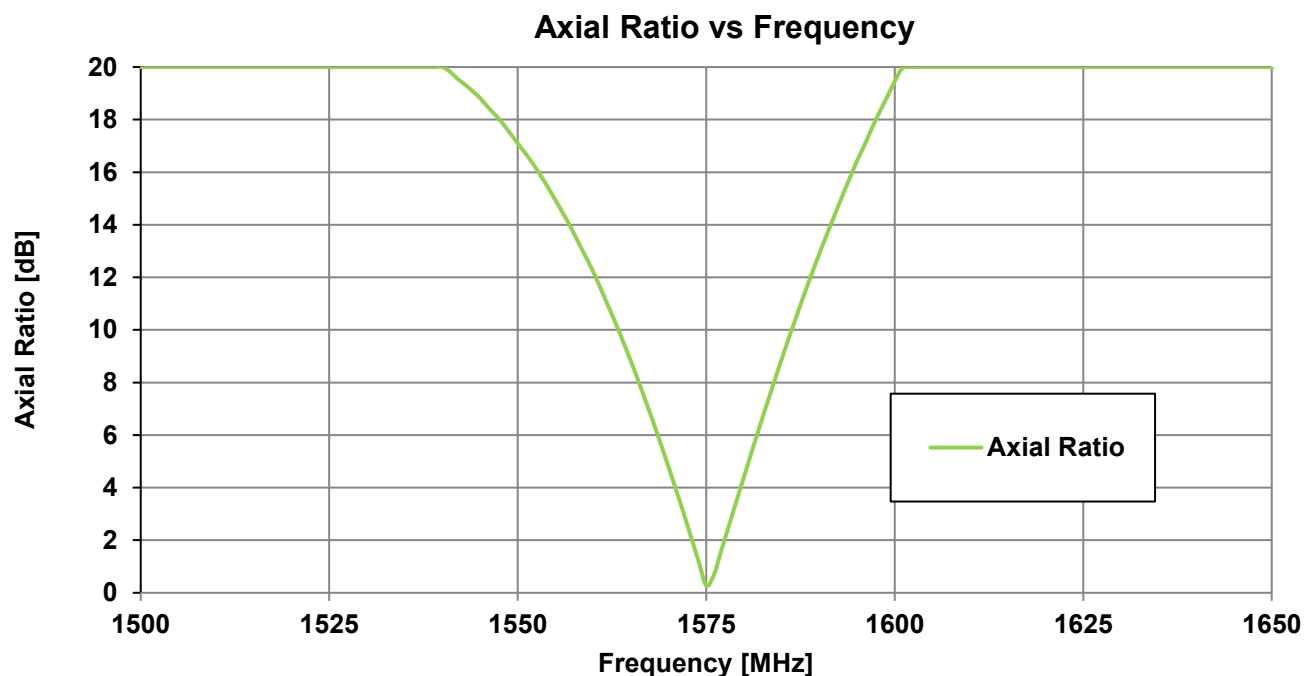
3.4 Peak Gain



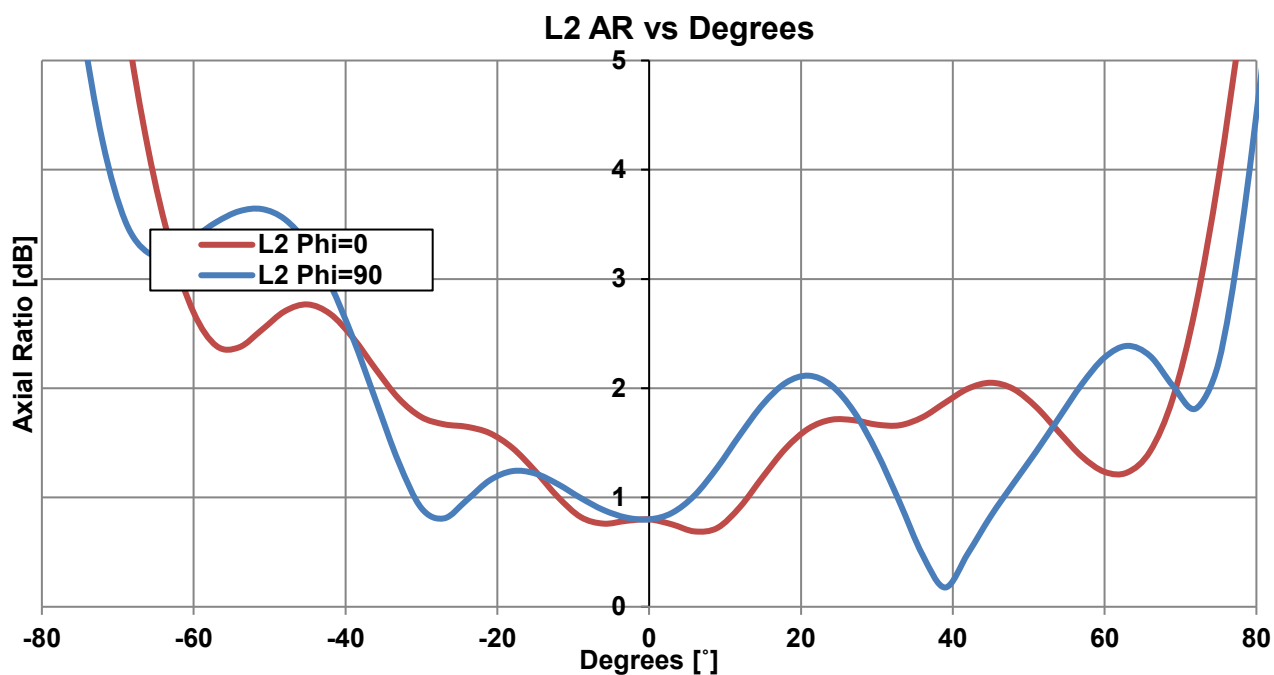
3.5 GPS L2 Axial Ratio vs Frequency



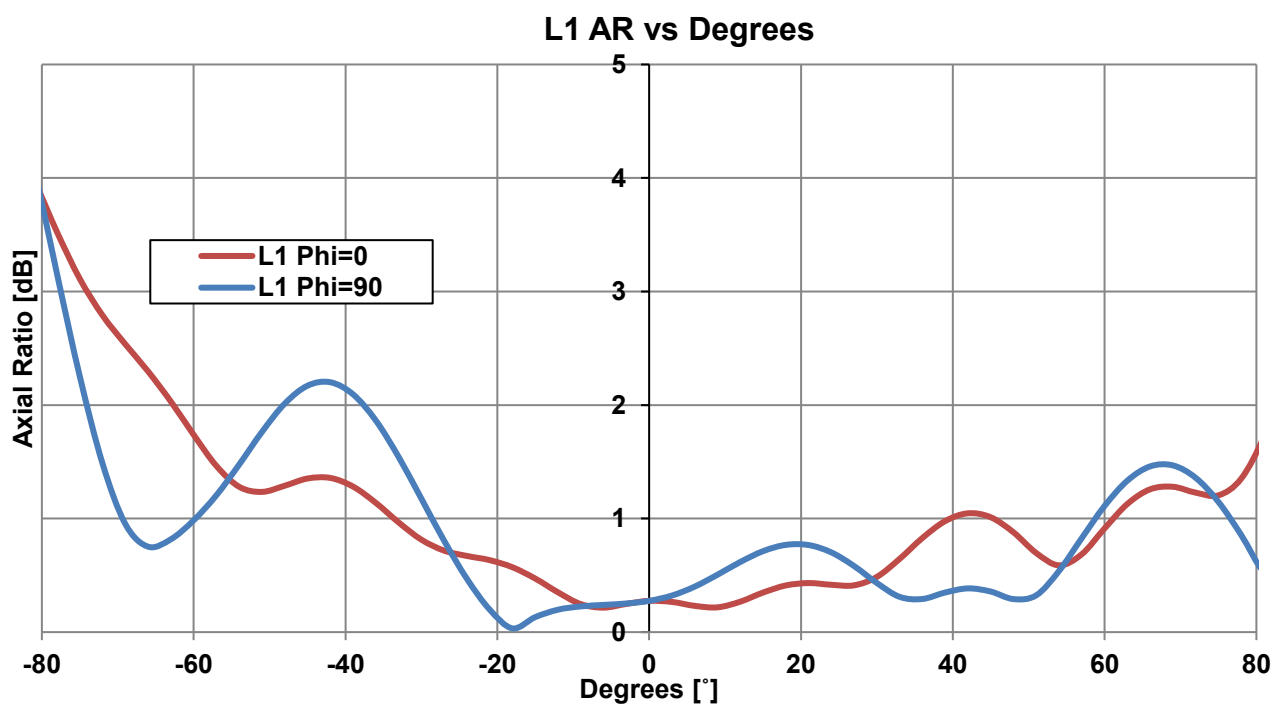
3.6 GPS L1 Axial Ratio vs Frequency



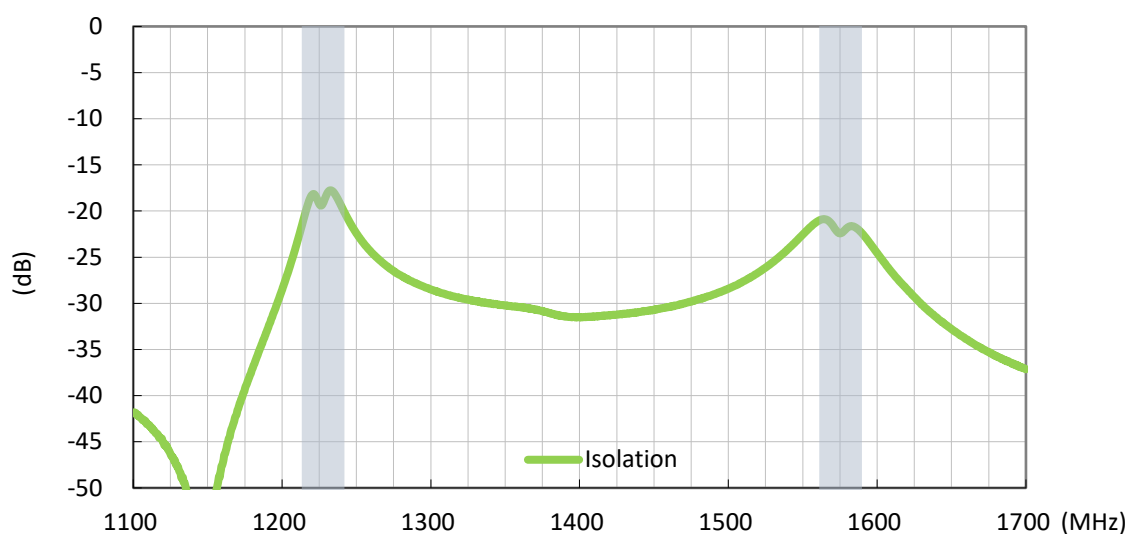
3.7 GPS L2 Axial Ratio vs Degrees



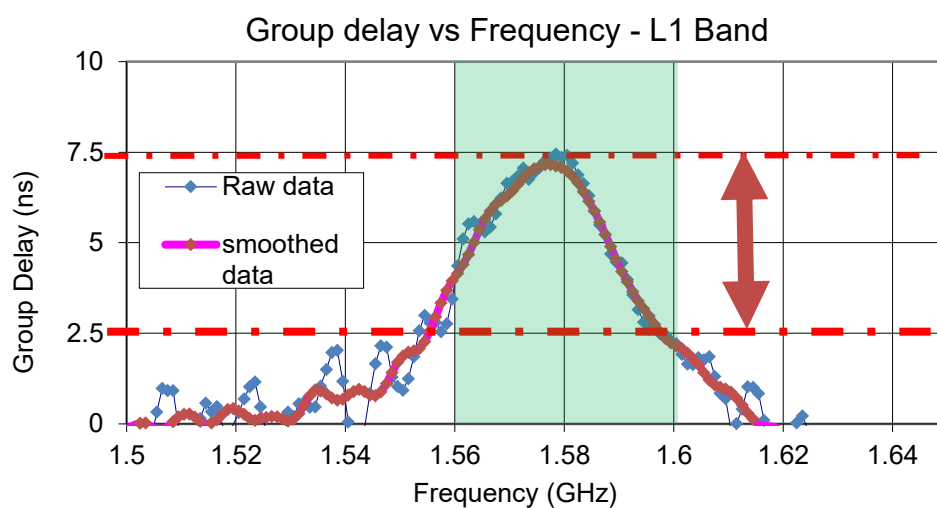
3.8 GPS L1 Axial Ratio vs Degrees



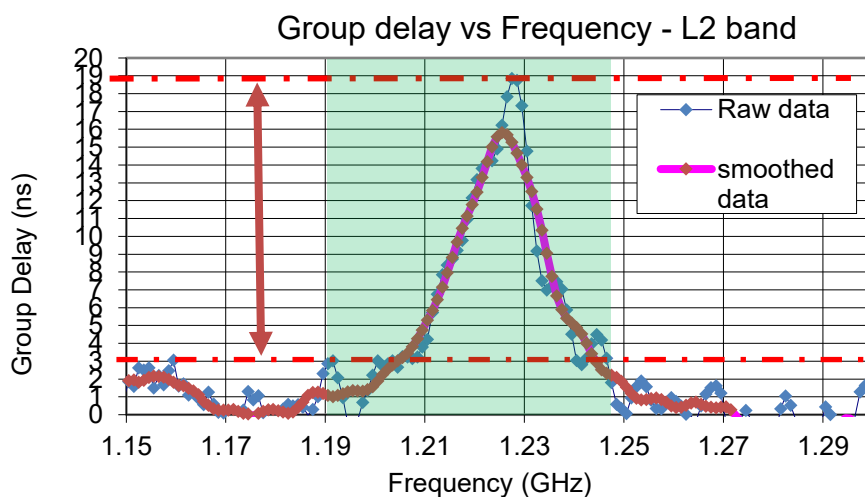
3.9 Isolation



3.10 Group Delay vs Frequency

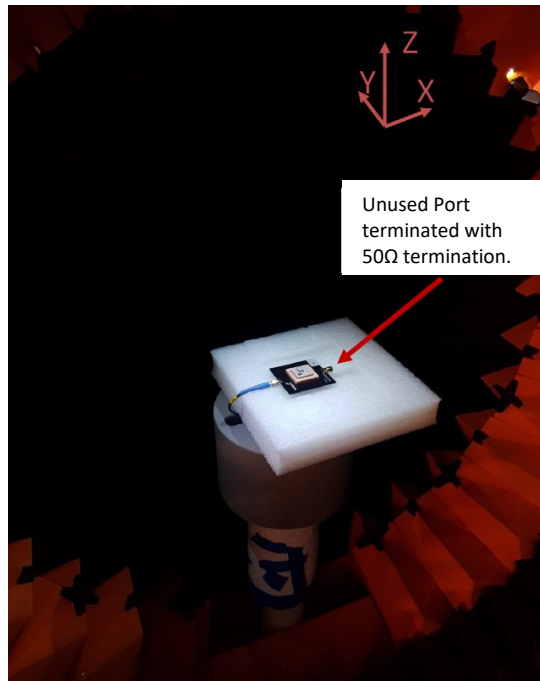


3.11 Group Delay vs Frequency

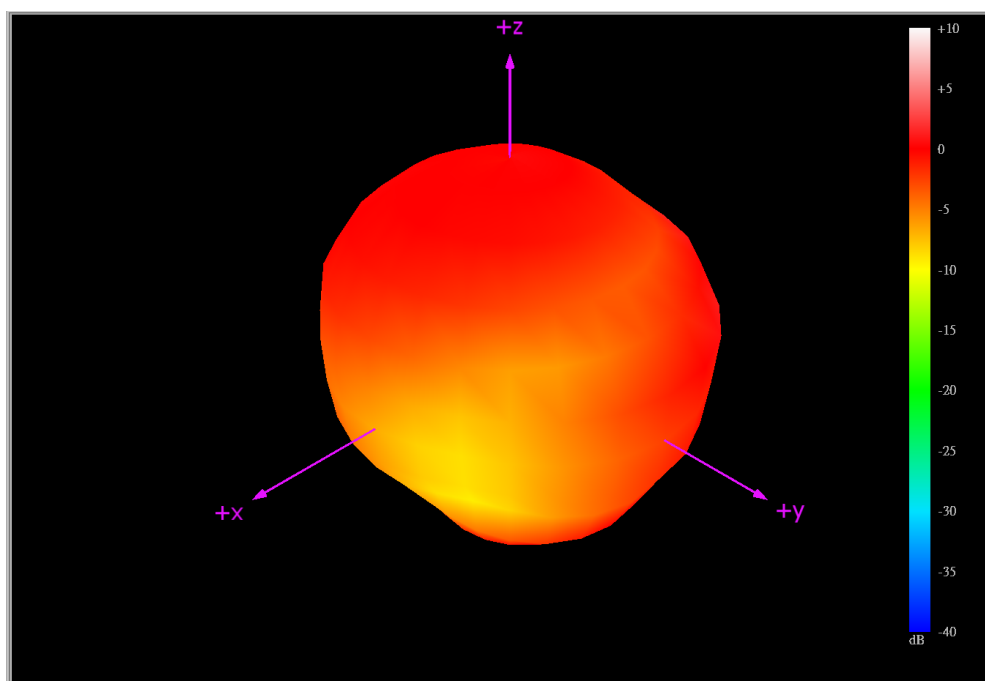


4. Radiation Patterns

4.1 Test Setup



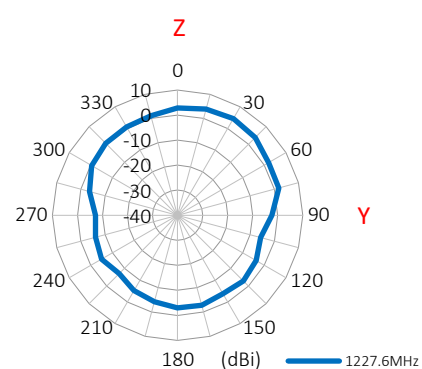
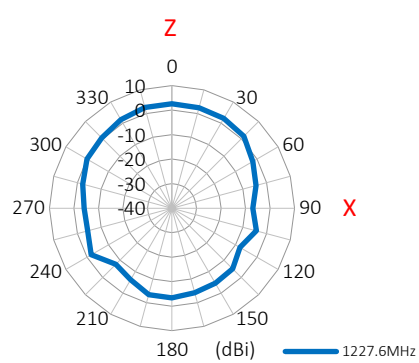
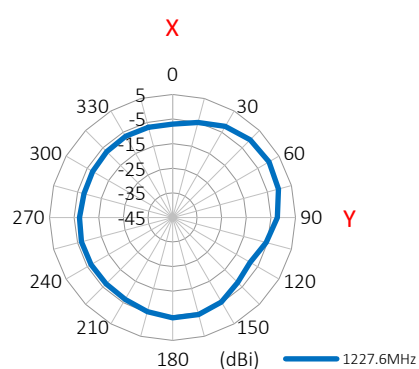
4.2 1227.6MHz 3D and 2D Radiation Patterns



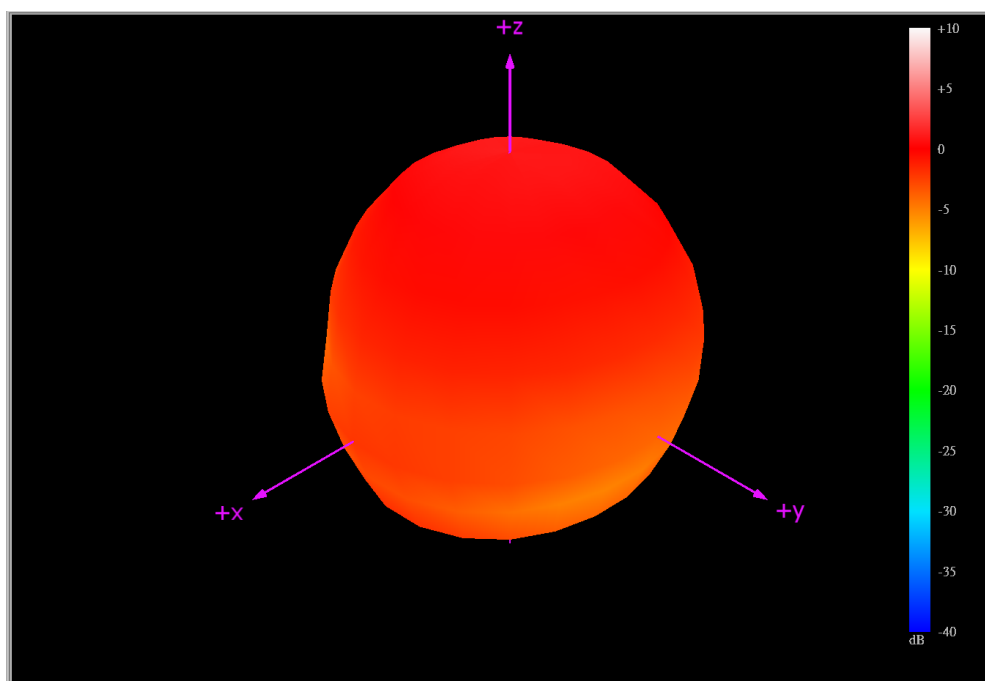
XY Plane

XZ Plane

YZ Plane



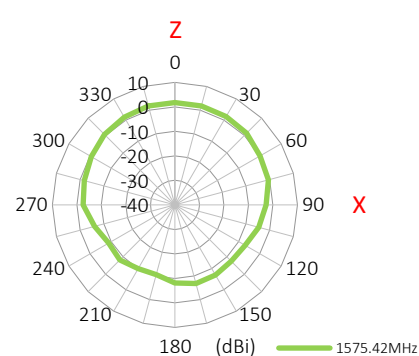
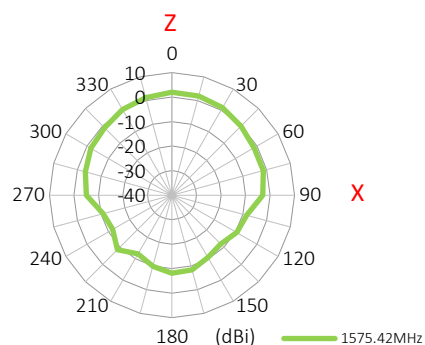
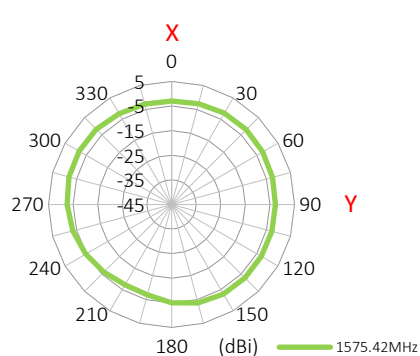
4.3 1575.42MHz 3D and 2D Radiation Patterns



XY Plane

XZ Plane

YZ Plane



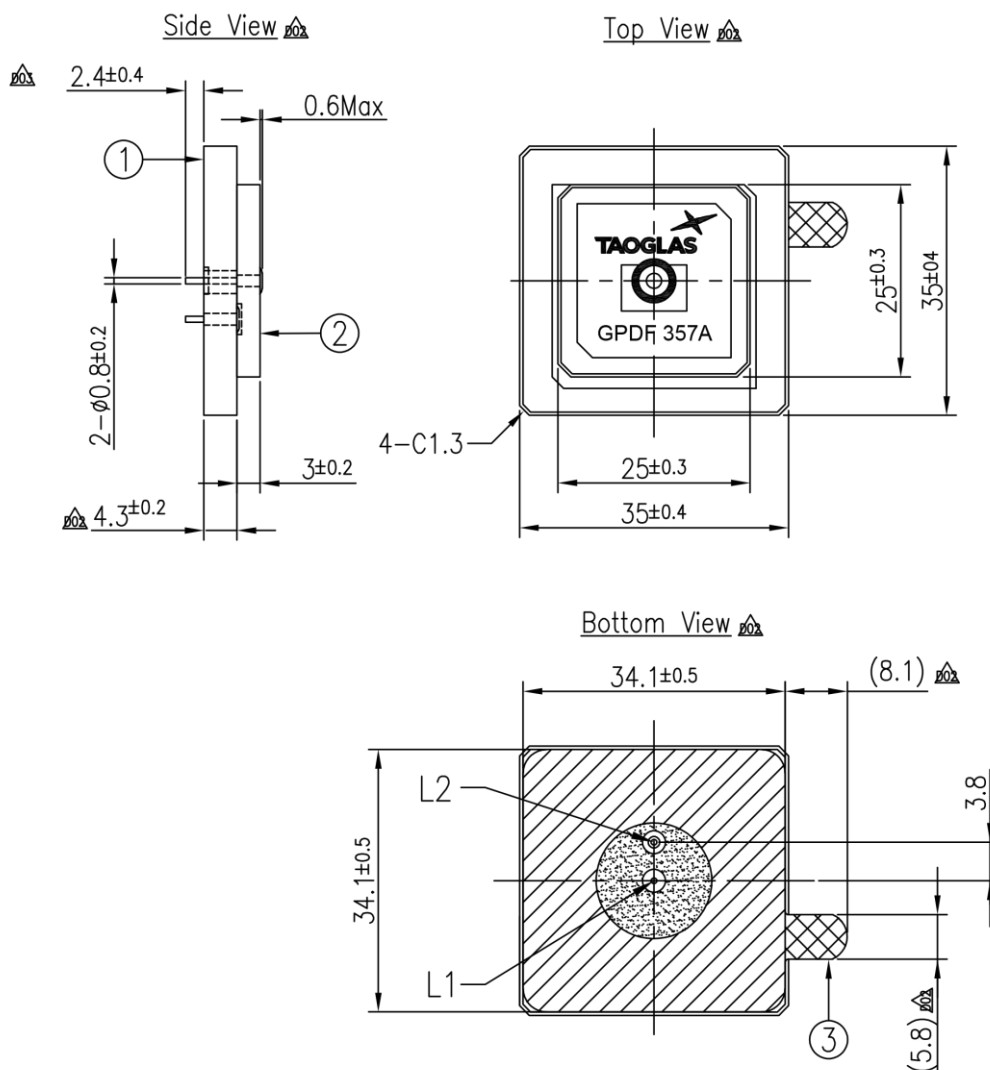
5. Mechanical Drawing (Units: mm)

ISO NO.: EDW-19-8-1546

STATE: Release

NOTES: 1. Double sided adhesive area. 
2. Silver area. 
3. Release paper area. 

REV.	DESCRIPTION	ENG.	APPROVED	DATE
001	Initial Design	Rachel Di	Aaron	2019/12/05
002	Amend Appearance & Dimension	Rachel Di	Aaron	2020/01/17
003	EC-21-08-010	Mickey	Buluto	2021/03/02



	Name	P/N	Material	Finish	QTY
1	Patch-1(35X35X4mm)	013ABBL00101D	Ceramic	Clear	1
2	Patch-2(25X25X3mm)	013ABBL00101D	Ceramic	Clear	1
3	Double sided Adhesive	013ABBL00101D	NIITO 5000NS	White Liner	1

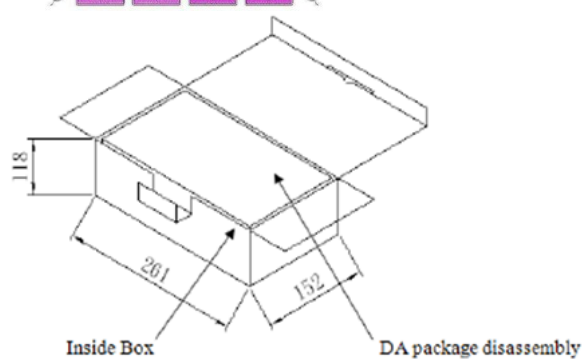
APPROVED BY: Clark	 TW Design Centre This drawing and its inherent design concepts are property of Taoglas. Not to be copied or given to third parties without the written consent of Taoglas.			
CHECK BY: Aaron				
DRAWN BY: Rachel Di	TITLE : GPS L1/L2 Dual Feed Double Stacked Patch (Tuned for 70x70 GP)			
DATE: 2019/12/02				
UNLESS OTHERWISE SPECIFIED TOLERANCES ON:	XX±0.5 X±0.3 .X±0.2 XXX±0.1 XXX±0.05	PART NO. : GPDP357A		
THIRD ANGLE PROJECTION		UNIT: mm	SCALE: 1.25:1	PAGES: 1/1 REV. D03

6. Packaging

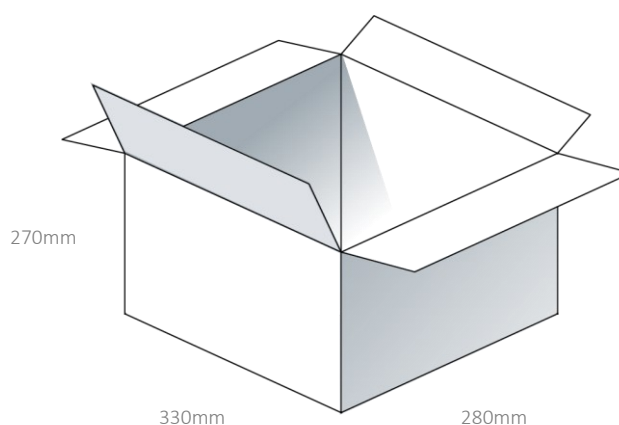
12pcs GPDF357A per Tray
Weight: 360g



72pcs GPDF357A per PE Bag and Inside Box
Dimensions: 261*152*118 mm
Weight: 3Kg



288pcs GPDF357A per carton
Dimensions - 330*280*270mm
Weight -12.4Kg



Changelog for the datasheet

SPE-20-8-006-A – GPDF357A

Revision: D (Current Version)	
Date:	2024-12-10
Changes:	Updated specifications
Changes Made by:	Cesar Sousa

Previous Revisions

Revision: C	
Date:	2023-02-21
Changes:	Updated GNSS Bands & Constellations Graphics
Changes Made by:	Cesar Sousa

Revision: B	
Date:	2021-06-12
Changes:	Updated Pin Length to 2.4mm Updated Drawing
Changes Made by:	Dan Cantwell

Revision: A	
Date:	2020-05-29
Changes:	Initial Release
Changes Made by:	Jack Conroy



www.taoglas.com