

## Specification

Part No.	: <b>GPSDSF.35.7.A.08</b>
Product Name	: Embedded 2in1 Low Profile Stacked Patch for GPS/GLONASS/Galileo & SDARS (XM)
Feature	: Highest Efficiency and Gain GPS: 69.8% Efficiency @1575.42 MHz GLONASS: 78.6% Efficiency @1602 MHz SDARS (XM): 67.6% Efficiency @2338.75 MHz AR values: GPS: 5.0 dB typ. GLONASS: 7.5 dB typ. SDARS(XM): 3.8 dB typ. RHCP on GPS and GLONASS / LHCP on SDARS Ground-plane Through-Hole Mounting Pin Type Dual Feed Patch Assembly Dimensions: 35*35*7.15mm Tuned for Centre Positioning on a 70*70mm <b>RoHS Compliant</b>



## 1. Introduction

The GPSDSF.35.7.A.08 is a passive 35x35mm ceramic stacked patch antenna with both SDARS and GNSS capabilities. This patch provides world-class performance for both SDARS and GNSS services, with AR GPS:5.0 dB typ, GLONASS: 7.5 dB typ. SDARS(XM): 3.8 dB typ right hand circular polarization and nearly 70% efficiency at 2332.5 MHz for SDARS and 70-80% efficiency at GPS/GLONASS/GALILEO frequencies. Using one patch for both services results in the most economical and space-efficient solution for demanding applications requiring both SDARS and GNSS functionality. At just 7.15 mm in height, the GPSDSF.35 is also extremely low-profile.

Typical Applications:

- OEM Sharkfin Automotive Antennas
- Truck Mounted Antenna Systems

This antenna has been tuned and tested on a 70 x 70 mm ground plane. Custom tuning services can be provided for further optimization to customer-specific device environments. Contact your regional Taoglas sales office for support.



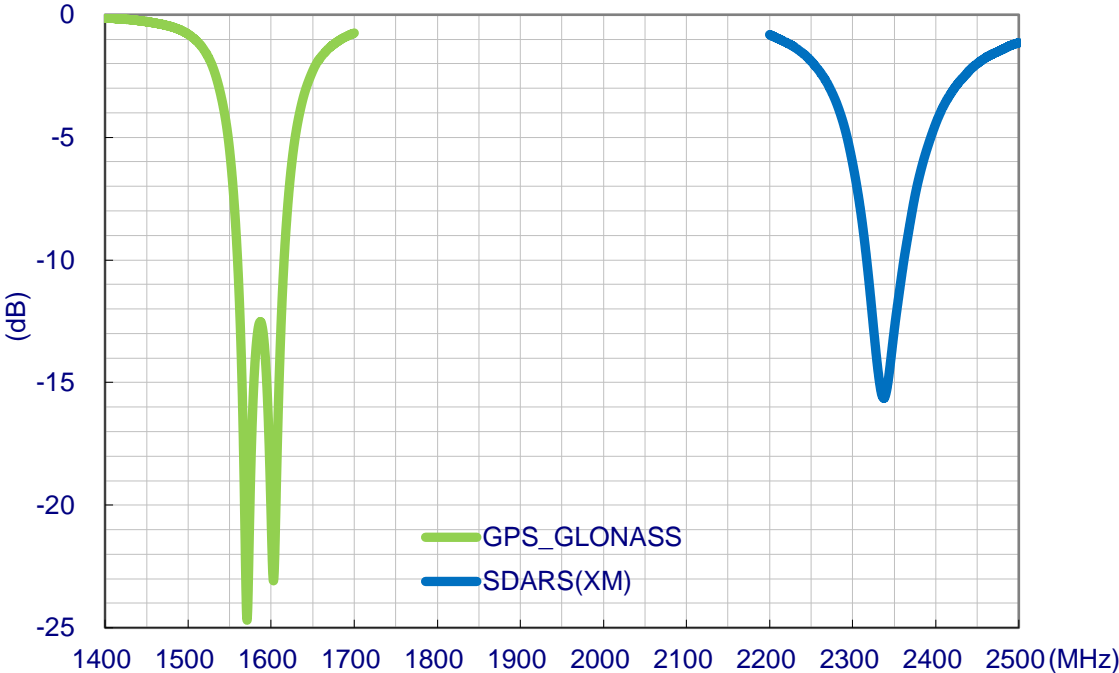
## 2. Specification

Electrical	
Frequency	GPS: 1575.42 ± 1.023 MHz GLONASS: 1602 ± 5MHz SDARS(XM) : 2338.75 ± 6.25 MHz
Centre Frequency	1591 ± 3 MHz 2338.75 ± 3 MHz
Return Loss	GPS: -10dB max. GLONASS: -10dB max. SDARS(XM): -10dB max.
Zenith Gain	GPS: +3.4 dBi typ. GLONASS: +3.6 dBi typ. SDARS(XM): +4.7 dBi typ.
Efficiency	GPS: 69 % GLONASS: 78 % SDARS(XM): 67 %
Axial Ratio at Zenith	GPS: 5.0 dB typ. GLONASS: 7.5 dB typ. SDARS(XM): 3.8 dB typ.
Polarization	R.H.C.P. For GPS/ GLONASS L.H.C.P. For SDARS(XM)
Impedance	50 Ω
Mechanical	
Dimensions	35 x 35 x 7.15mm GPS: 35 x 35 x 4 mm SDARS: 25 x 25 x 3 mm
Material	Ceramic
Pin Diameter	0.8mm
Pin Length	2.4mm
Weight	22.1g
ENVIRONMENTAL	
Operation Temperature	-40°C to +85°C
Humidity	Non-condensing 65°C 95% RH

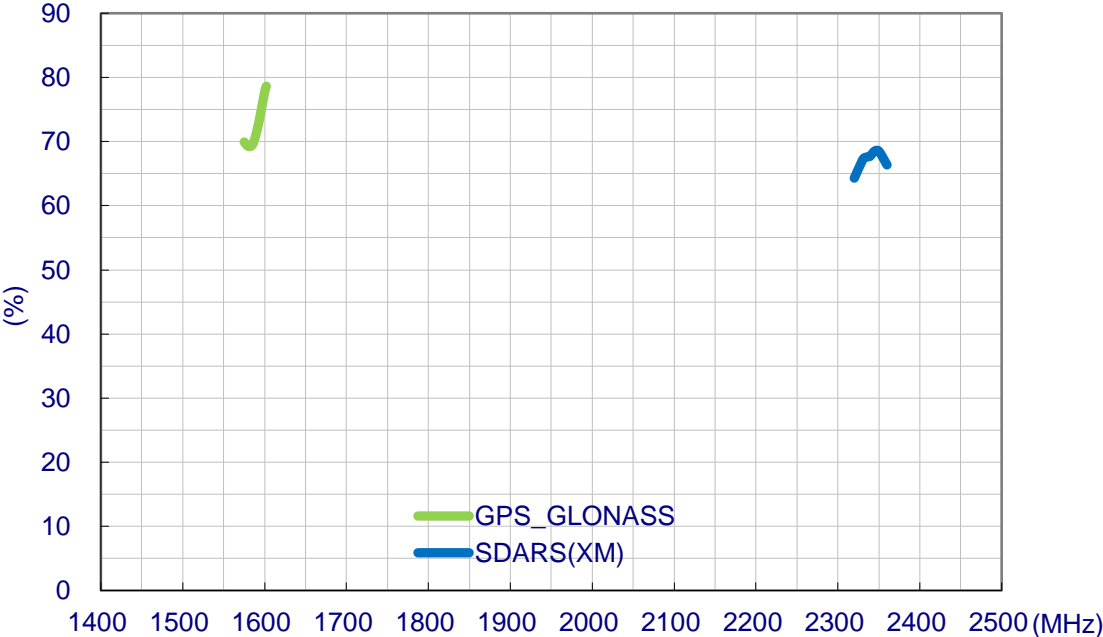
\* Antenna properties were measured with the antenna mounted on 70\*70mm Ground Plane

### 3. Antenna Characteristics

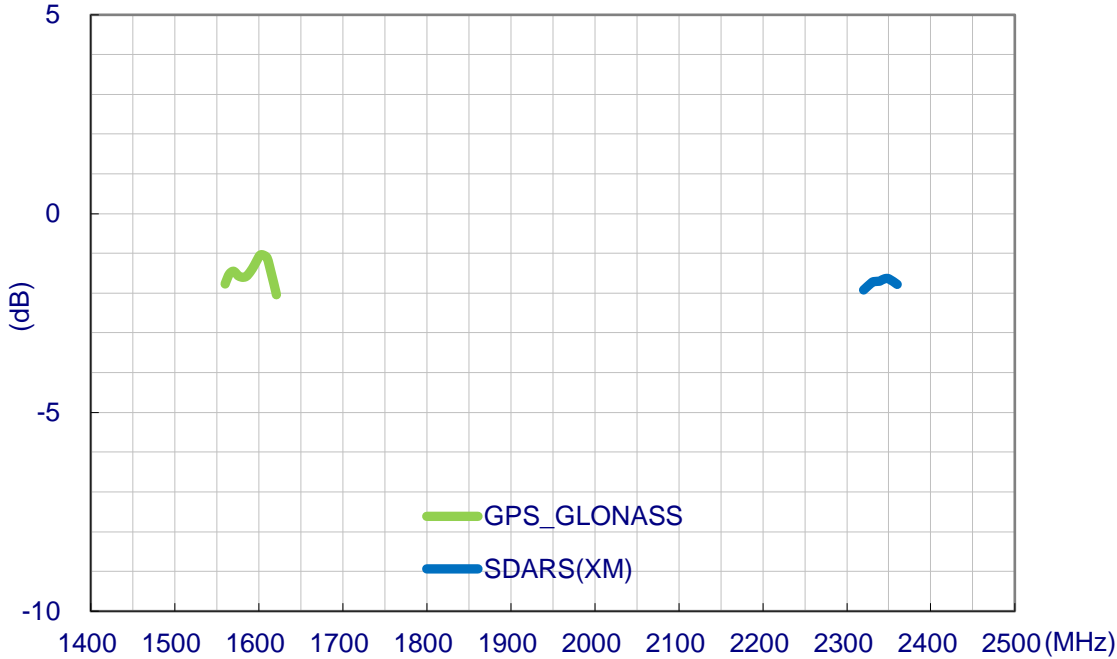
#### 3.1 Return Loss



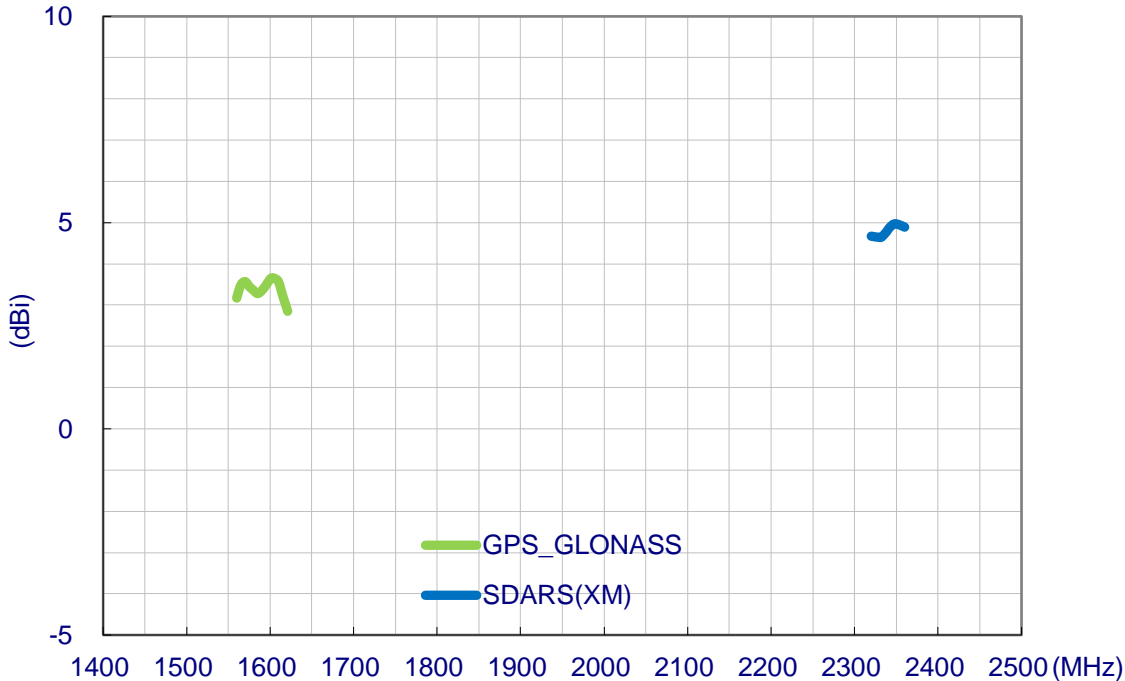
#### 3.2 Efficiency



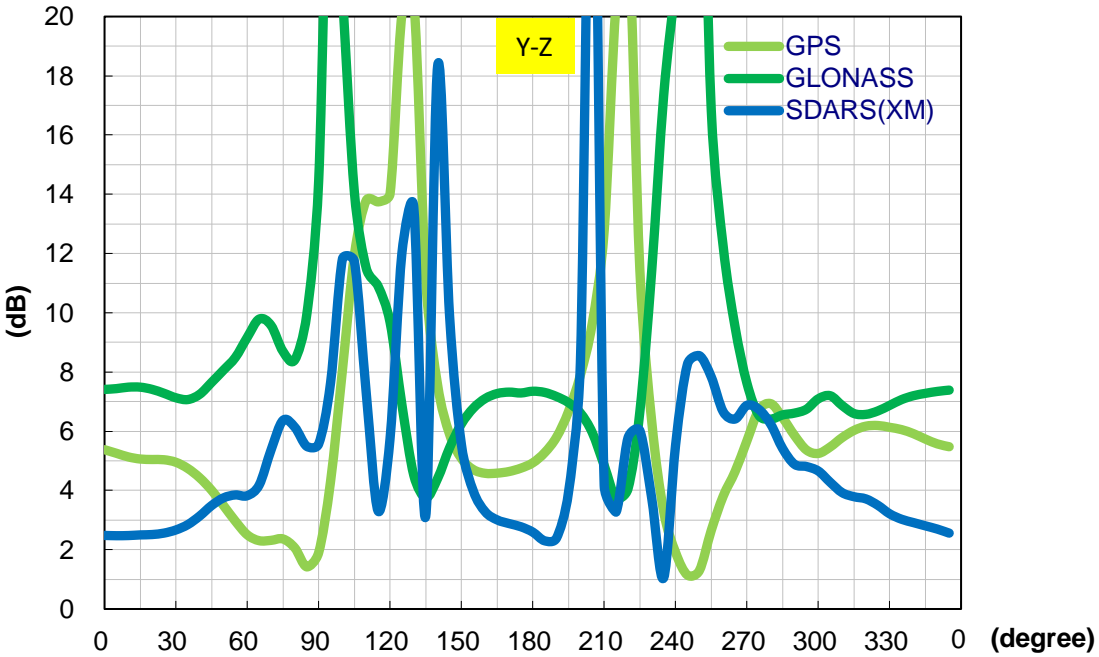
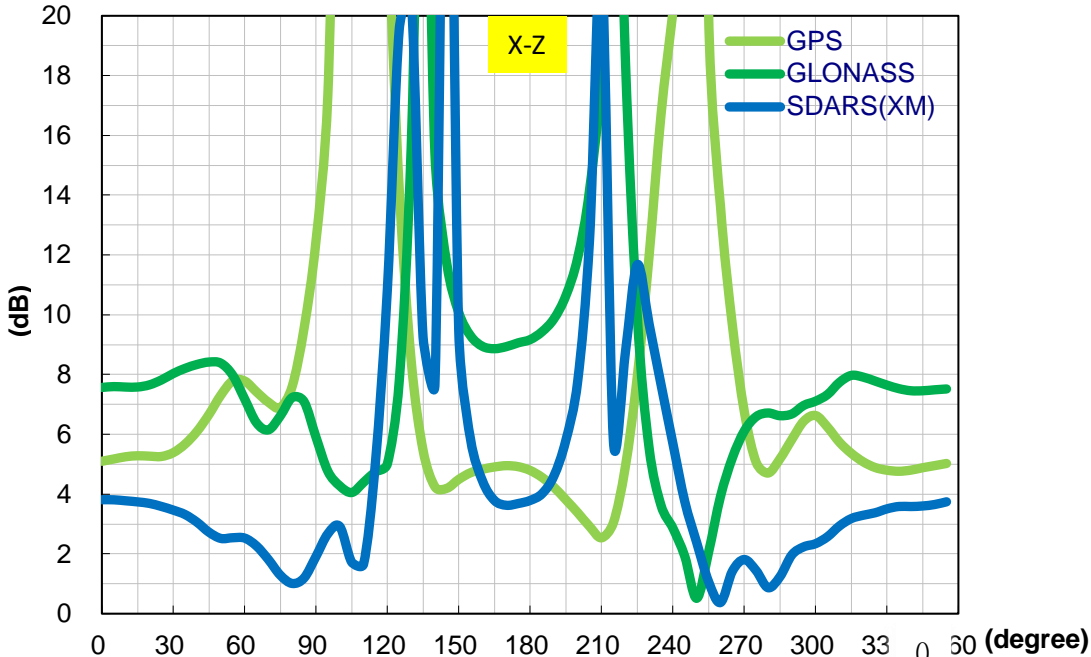
### 3.3 Average Gain



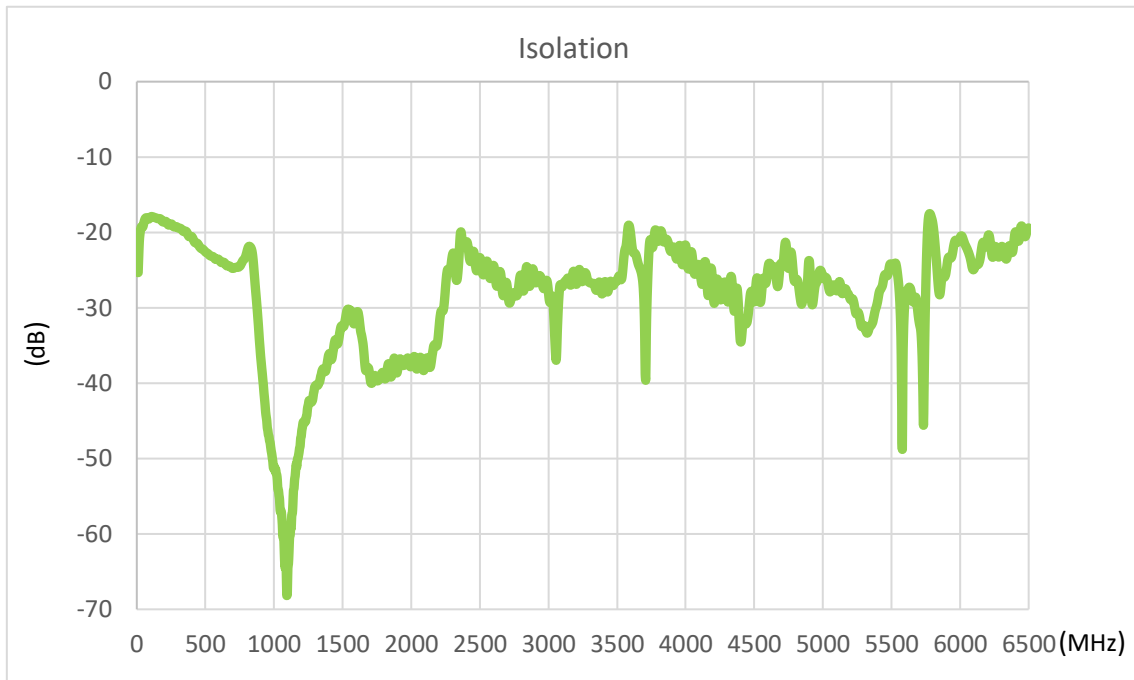
### 3.4 Peak Gain



**3.5 Axial Ratio (Zenith is at 0°)**



### 3.6 Isolation



### 3.7 XM Gain Requirements (Satellite) – Ground Plane

AUT Location	Elevation Angle(degrees)	Linear Average Gain(dBic)
Passive Ground Plane	$20 \leq \phi \leq 25$	-1.3
	$25 \leq \phi \leq 30$	-0.7
	$30 \leq \phi \leq 50$	0.8
	$50 \leq \phi \leq 70$	2.9
	$70 \leq \phi \leq 90$	3.9

### XM Gain Requirements (Terrestrial) – Ground Plane

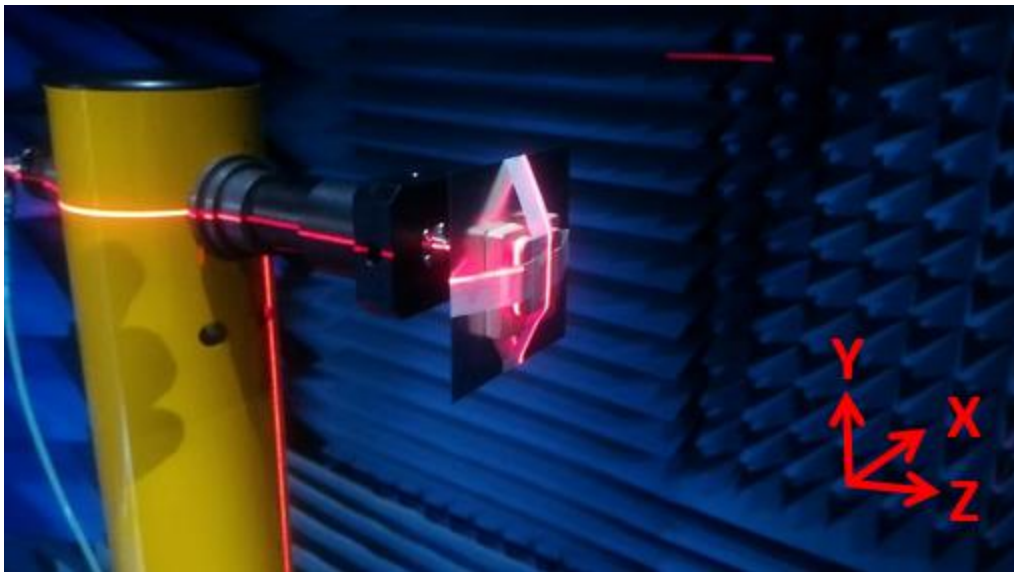
AUT Location	Elevation Angle(degrees)	Antenna Mean Passive VP Gain Over Solid Angle (dBi)	Antenna P/P Gain variation (dB)
Passive Ground Plane	$0^\circ \leq \phi \leq 10^\circ$	-5.7	-
	$\phi = 5^\circ$	-	4.3



## 4. Antenna Radiation Pattern

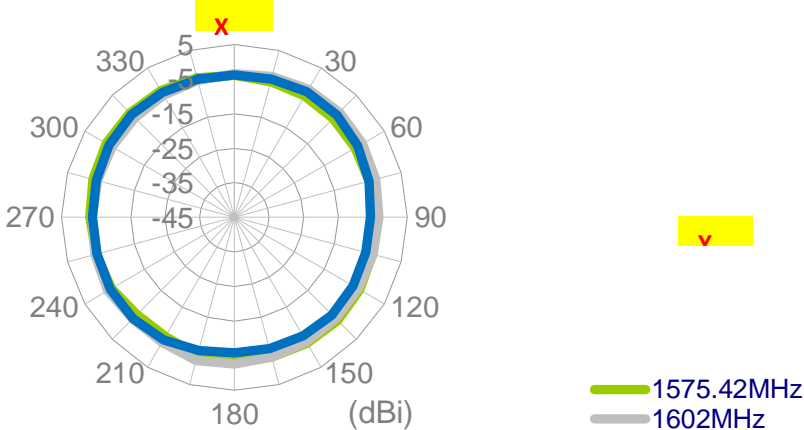
### 4.1 Measurement Setup

The GPSDSF.35.7.A.08 antenna is tested on a 70 x 70mm ground plane in a CTIA certified Anechoic Chamber. The test setup is shown below.

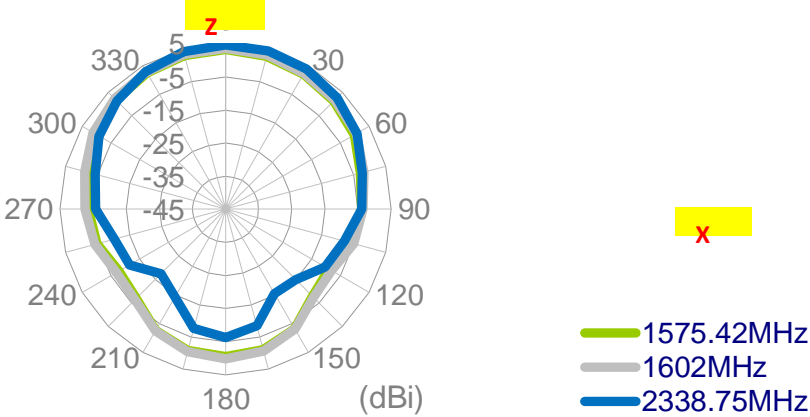


### 4.2 2D Radiation Pattern

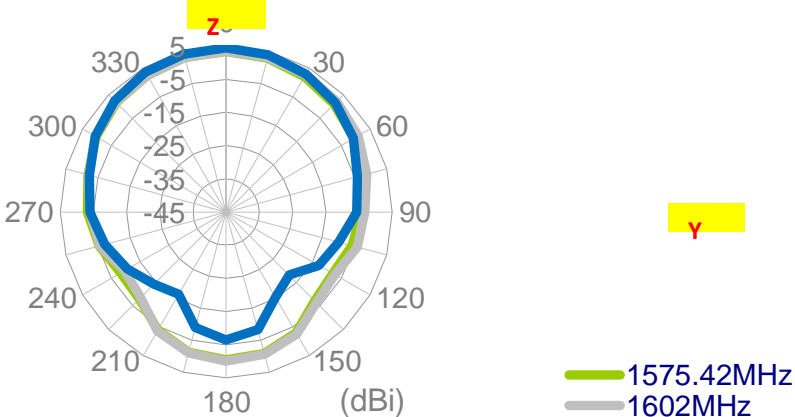
X-Y Plane



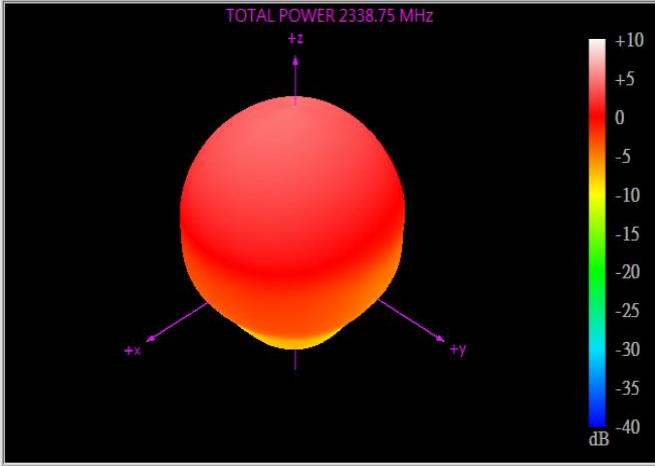
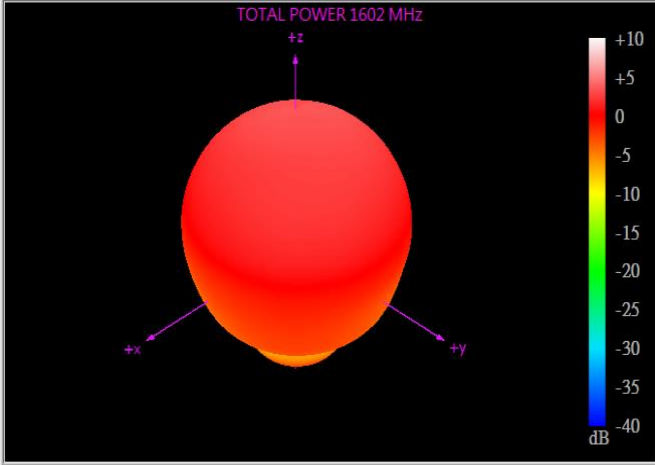
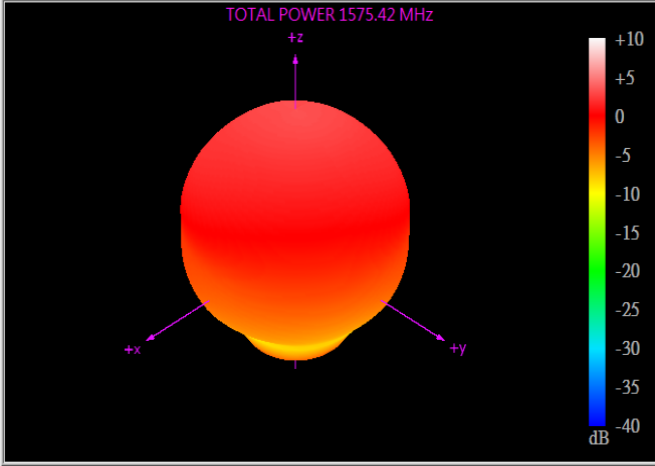
X-Z Plane



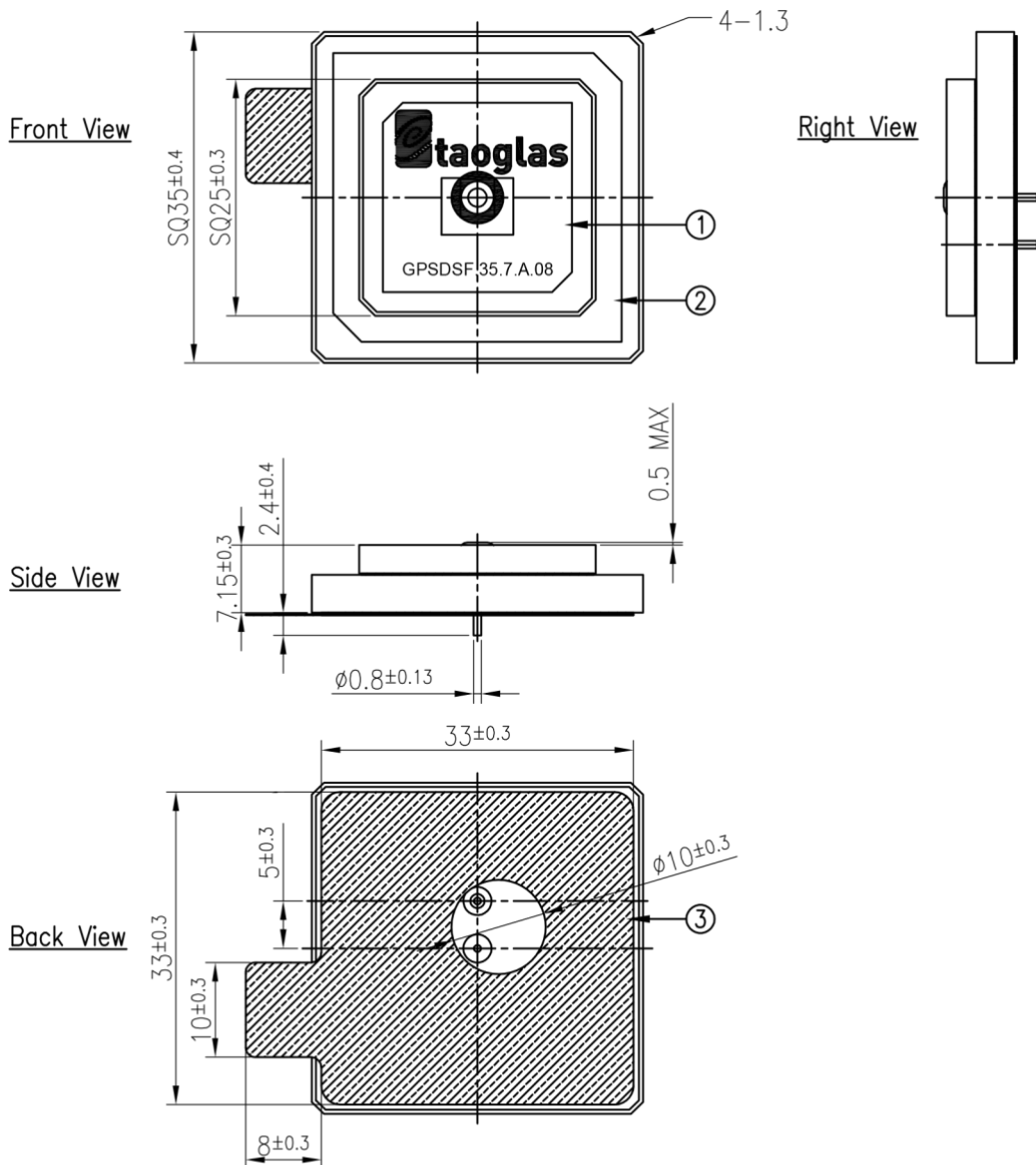
Y-Z Plane




# 5. 3D Radiation Pattern



## 6. Mechanical Drawing (Unit:mm)

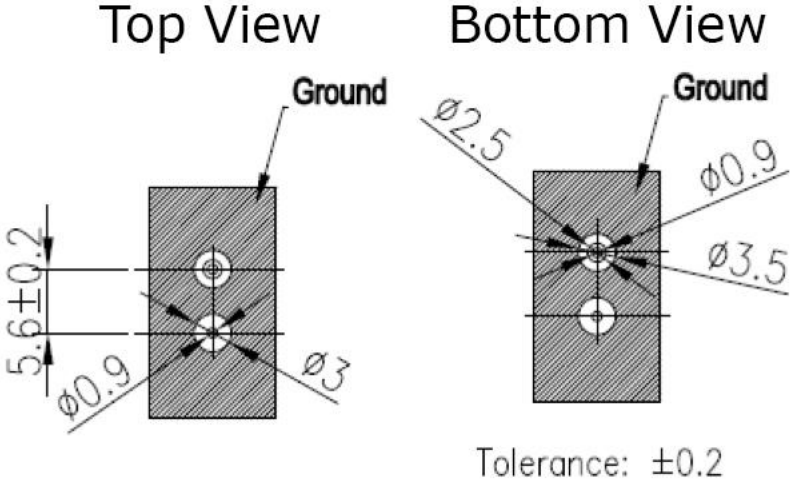


NOTES: 1. Double Sided Adhesive Area.   
 2. Soldermask Area 

	Name	P/N	Material	Finish	QTY
1	Patch-1 (25x25x3mm)	001517J120000A	Ceramic	Clear	1
2	Patch-2 (35x35x4mm)	001517J130000A	Ceramic	Clear	1
3	Double Sided Adhesive	001517J130000A	NITTO 5015	White Linter	1

# 7. Feed Pin Pad Layout Recommendation

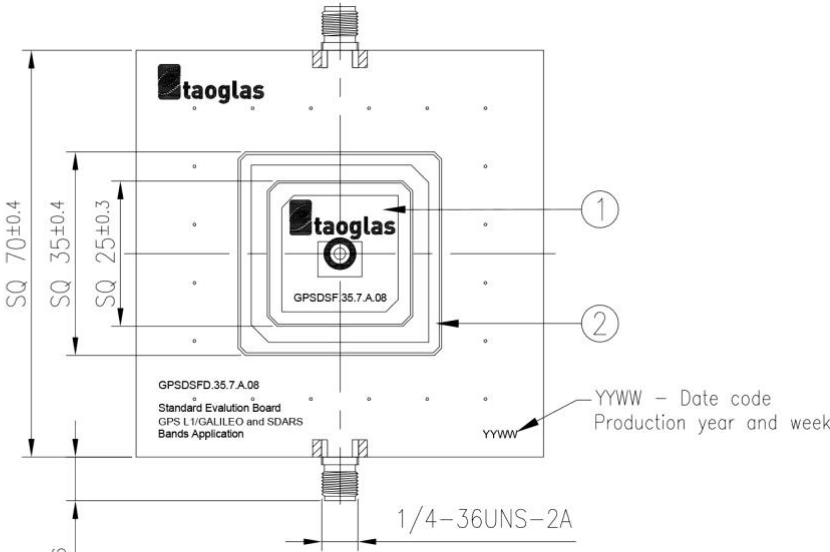
(unit:mm)



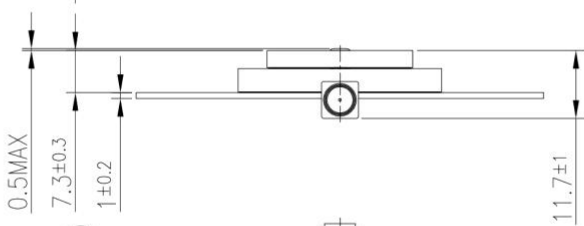
## **8. Evaluation Board - (Unit:mm)**

**GPSDFSFD.35.7.A.08**

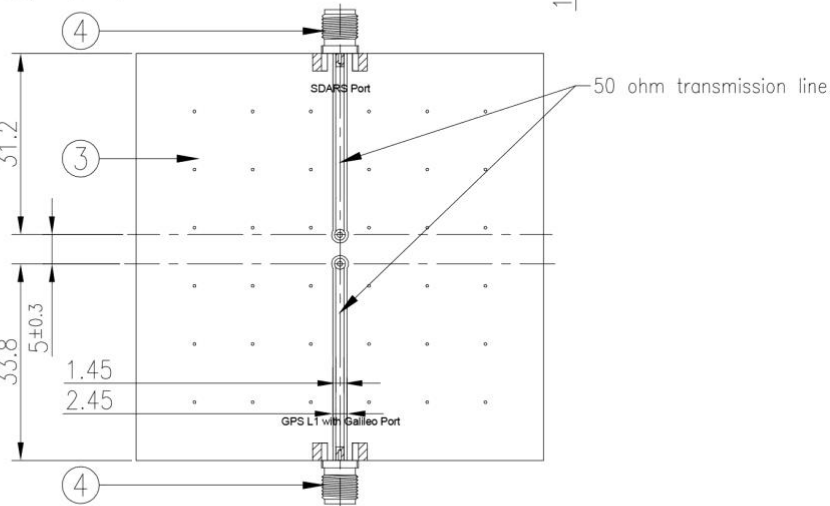
Front View



Side View



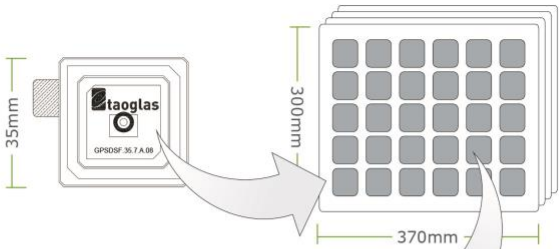
Back View



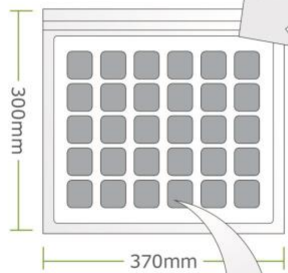
	Name	Material	Finish	QTY
1	Patch-1 (25x25x3mm)	Ceramic	Clear	1
2	Patch-2 (35x35x4mm)	Ceramic	Clear	1
3	PCB	Composite 1t	Black	1
4	SMA(F)ST	Brass	Au Plated	2

# 9. Packaging

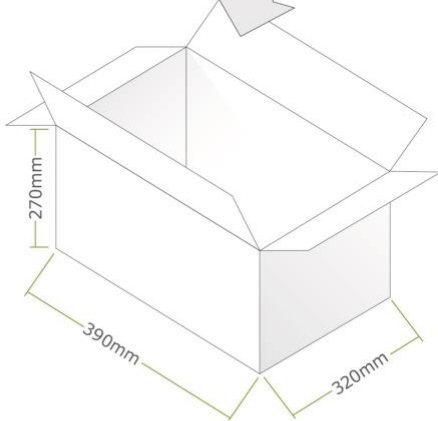
30 pcs GPSDSF.35.7.A.08 per Tray  
 Tray Dimensions - 300\*370\*30mm  
 Weight - 848g



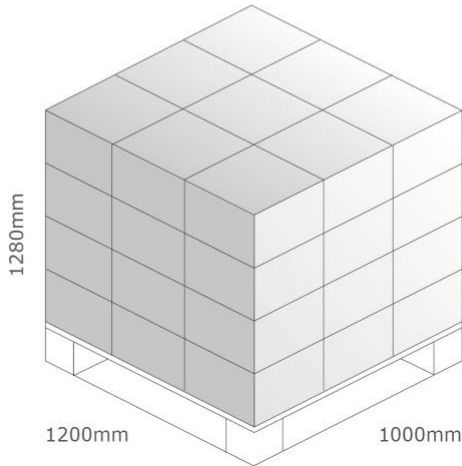
120 pcs GPSDSF.35.7.A.08 per Vacuum Bag  
 Vacuum Bag Dimensions - 300\*370\*50mm  
 Weight - 3.4kg



360 pcs GPSDSF.35.7.A.08 per Carton  
 Carton Dimensions - 390\*320\*270mm  
 Weight - 13.07kg



Pallet Dimensions:  
 1200mm\*1000mm\*1280mm  
 36 Cartons per Pallet  
 9 Cartons per Layer, 4 Layers





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