



TAOGLAS®



Datasheet

GPSF.36.7.A.30

Part No:
GPSF.36.7.A.30

Description:

GPS L1/L2 36mm Single Feed Stacked Patch
Passive Antenna Low AR

Features:

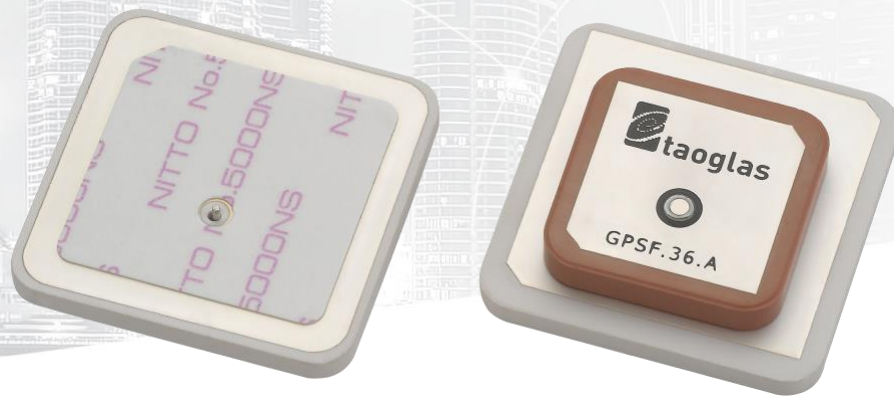
Highest Accuracy
Low AR < 2.7 GPS Antenna
GPS L1+L2 Band Operation
Single Feed Patch Assembly
L1:1575MHz; AR 1.69 @1575.42 MHz
L2:1227MHz; AR 2.70 @1227.6MHz
Dims: 36*36*7mm
Tuned for Centre Positioning on a 70*70mm
Ground-plane
Through-Hole Mounting Pin Type
RoHS Compliant

1. Introduction	3
2. Specifications	4
3. Antenna Characteristics	7
4. Radiation Patterns	12
5. Mechanical Drawing	14
6. Packaging	15
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Changelog	16

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1. Introduction



The GPSF.36.7.A.30 is a 36x36mm ceramic GPS L1/L2 low profile, low axial-ratio, embedded stacked passive patch antenna with a 7mm height. It is designed as a high performance yet economical solution for highest accuracy centimeter level tracking in telematics applications.

Typical applicable industries are

- UAVs and Drones
- Transportation
- Autonomous Vehicles
- Marine
- Agriculture
- Navigation

This compact antenna exhibits excellent gain and radiation pattern stability on both L1 and L2 bands, improved reliability of a GPS fix in urban areas, better signal reception with more satellites acquired, and a quicker time to first fix.

The antenna has been tuned and tested on a 70 X 70 mm ground plane, working at GPS 1575.42MHz and L2 1227.6MHz, with 5.44dBi gain and 3.10dBi gain, respectively. It can be easily through-hole mounted on PCB via pin. The double-sided adhesive on the bottom of the patch helps to keep it in place while being assembled.

For further optimization to customer specific device environments, a custom tuned patch antenna and circuit integration service into your device can be supplied, subject to NRE and MOQ. Contact your regional Taoglas office for this requirement, and for support to integrate and test this antenna's performance in your device.

2. Specifications

GNSS Frequency Bands Covered							
GPS/QZSS	L1 1575.42MHz	L2 1227.6MHz	L5 1176.45MHz	L6 1278.75MHz			
	■	■	□	□			
GLONASS	L1CR 1575.42MHz	L3PT 1201.5MHz	L2PT 1246MHz	L5R 1176.45MHz	L1PT 1602MHz		
	■	■	■	□	■		
Galileo	L1 1575.42MHz	E5b 1201.5MHz	E4 1215MHz	E3 1256MHz	E6 1278.75MHz	E2 1561MHz	E5a 1176.45MHz
	■	■	■	□	□	■	□
BeiDou	B1 1561MHz	B2 1207.14MHz	B3 1268.52MHz				
	■	■	□				
Compass	E5B(B2)/ E6(B3) 1268.56MHz	E2(B1) 1561MHz					
	□	■					
SBAS	Omnistar 1542.5MHz	WAAS/EGN OS 1575.42MHz					
	■	■					

■ GNSS Frequency Bands Covered. □ GNSS Frequency Bands Not Covered.

GNSS Systems Covered							
GPS L1C/A	GLONASS L1OF	BeiDou B1I	E6/B3	GLONASS L2OF	GPS L2C	B2I/E5b	GPS L5 B2a/E5a
✓	✓	✓	x	✓	✓	✓	x

Electrical		
	GPS L1	GPS L2
Center Frequency	1575.42 MHz	1227.60 MHz
Return loss (dB)	< -10	< -10
Efficiency (%)	91.30	67.57
Peak Gain (dBi)	5.44	3.10
Axial Ratio at Zenith (dB)	1.69	2.70
Impedance	50 Ohm	
Polarization	RHCP	

Mechanical		
	GPS L1	GPS L2
Ceramic Dimension	25*25*4mm	36*36*3 mm
Pin Diameter	0.80 mm	
Pin Length	1.50 mm	
PCB Dimension	70*70 mm	
Weight	23.4g	

Environmental	
Operation Temperature	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

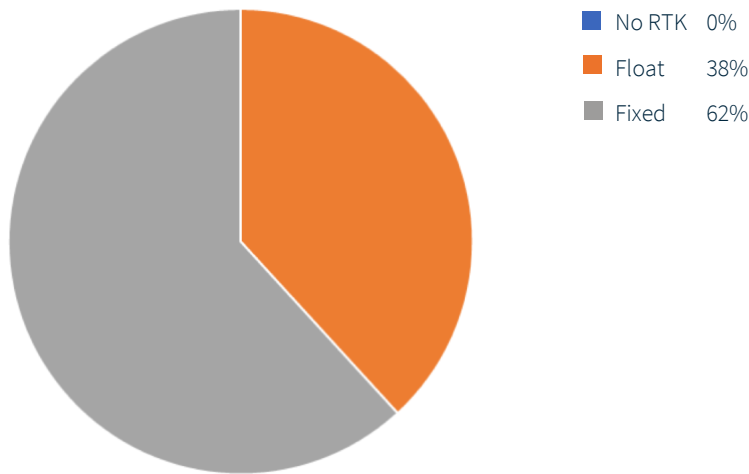
Tested on square 70*70 mm ground-plane.

GNSS System Performance for Taoglas High Precision Antennas with uBlox ZED-F9P

ZED-F9P GNSS Constellation Bands	ZED F9P Frequency Bands (MHz)	Recommended Minimum C/No for Standard Precision Acquisition/Tracking (dB-Hz)	Recommended Minimum C/No for RTK (dB-Hz)	Tracking C/No with GPSF.36.A (dB-Hz)	Standard Deviation Positioning accuracy (cm)	Group Delay @ Zenith Variation Across Single Constellation (ns)	Phase Center Offset PCO (cm)	Phase Center Variation PCV (mm)	TTFF (s)	Axial Ratio (AR/ dB) at Zenith
GPS L1	1563-1587	26-30/ 12-15	40	42.42	12	2.2	4	0.5	34.789	2
GPS L2	1215-1239.6	26-30/ 12-15	40	35	12	12	4.6	0.4	34.789	10
Galileo E1	1559-1591	26-30/ 12-15	40	38.57	12	2	4	0.78	34.789	8
Galileo E5b	1189-1214	26-30/ 12-15	40	31	12	12	4.6	14.5	34.789	20
Glonass G1	1598-1605	26-30/ 12-15	40	35	12	20	4	0.8	34.789	16
Glonass G2	1242-1249	26-30/ 12-15	40	26	12	5	4.6	0.5	34.789	20
Beidou B1I	1559-1563	26-30/ 12-15	40	38.75	12	2.2	4	0.7	34.789	5.5
Beidou B2I	1200-1214	26-30/ 12-15	40	31	12	12	4	2	34.789	20

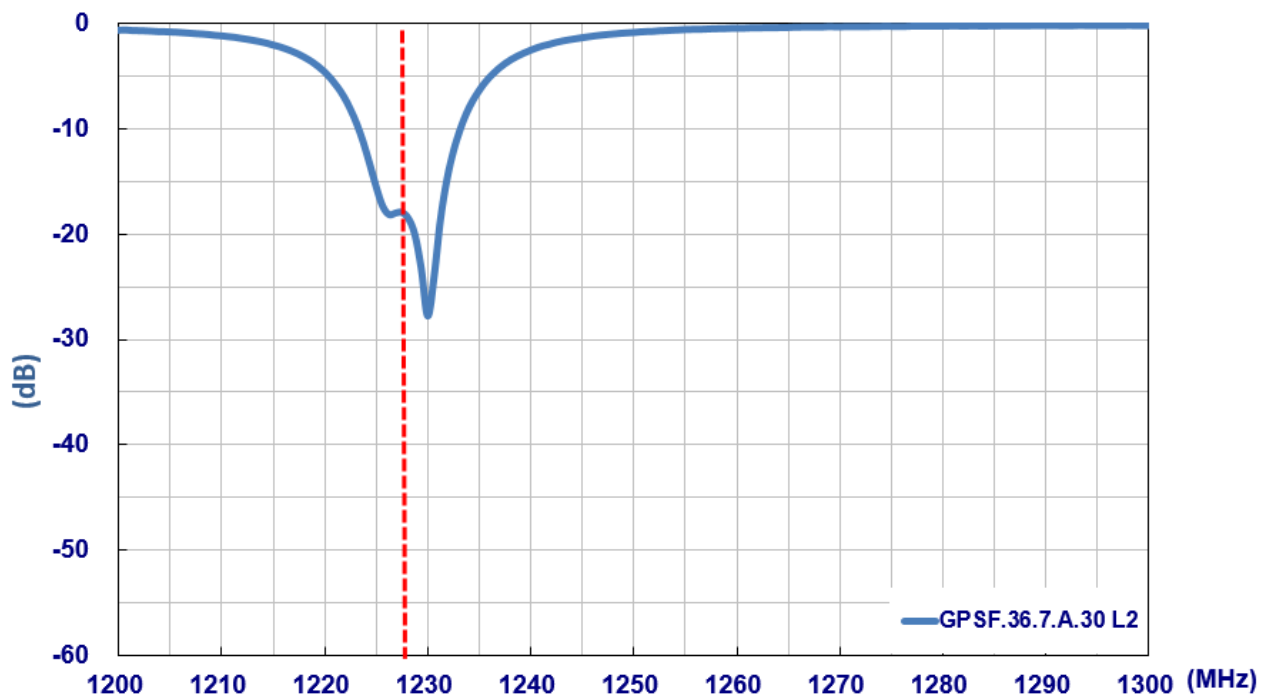
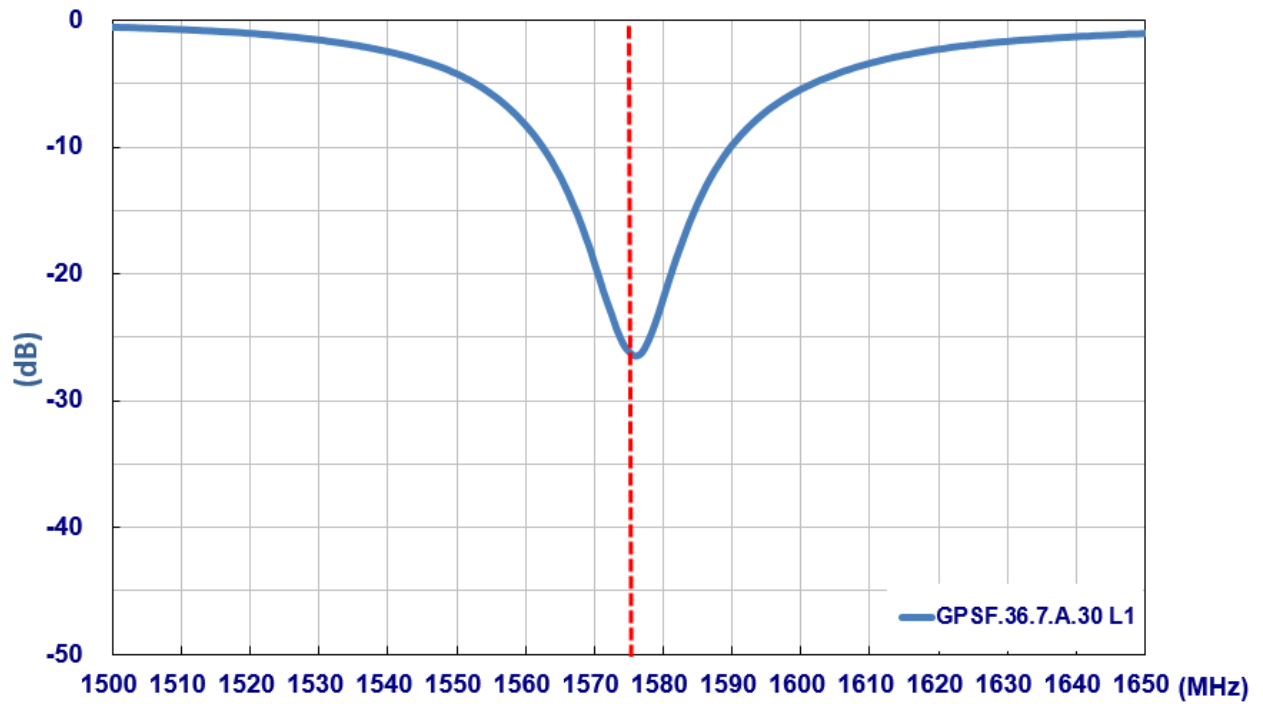
All outdoor measurements performed on the roof top of the Taoglas R&D Labs facility in Dublin Ireland

RTK AVAILABILITY

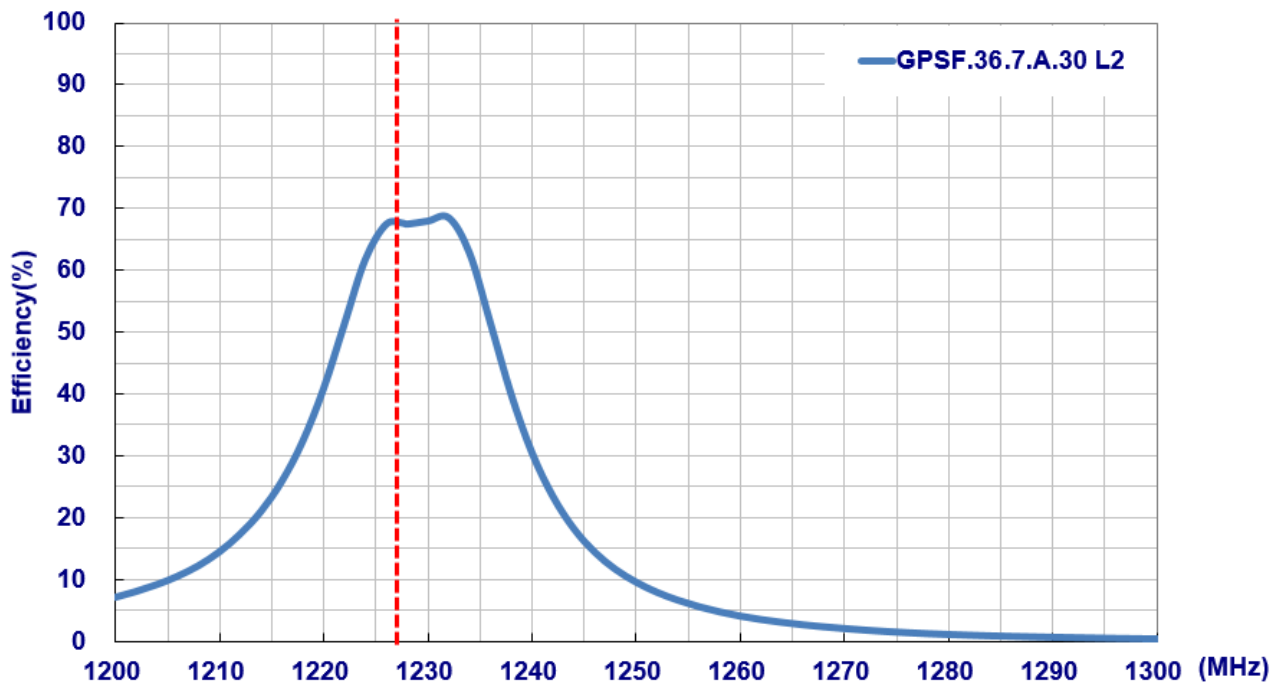
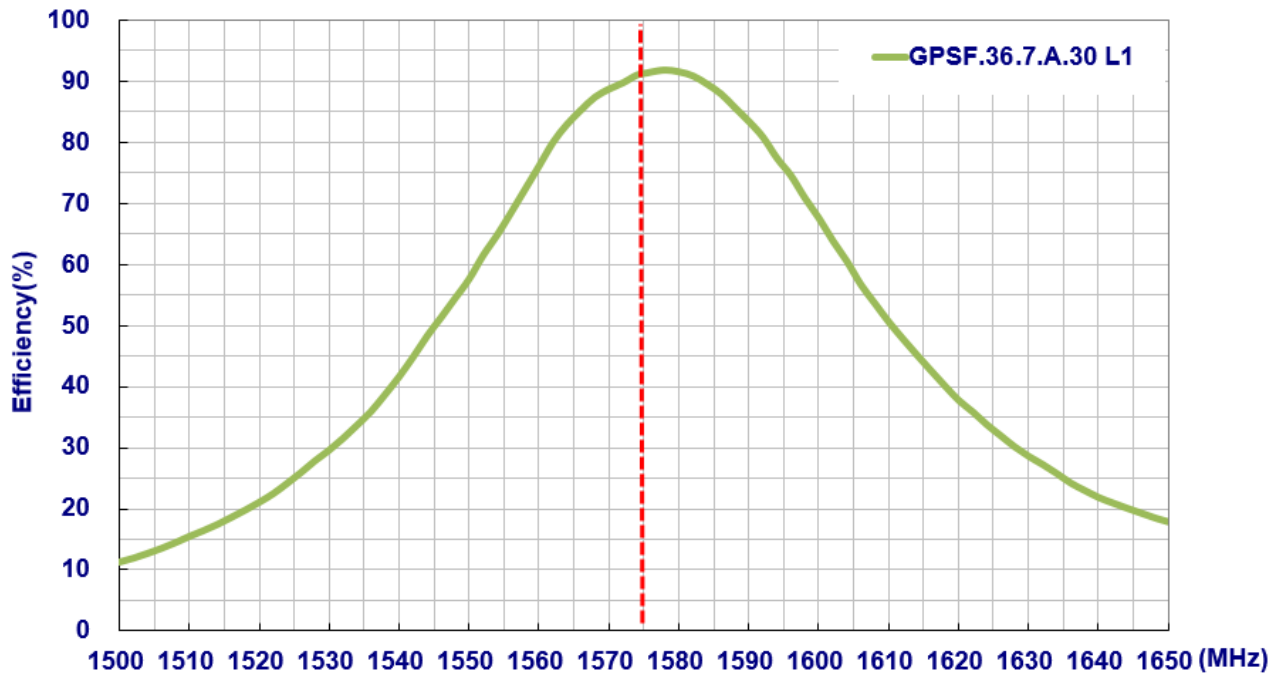


3. Antenna Characteristics

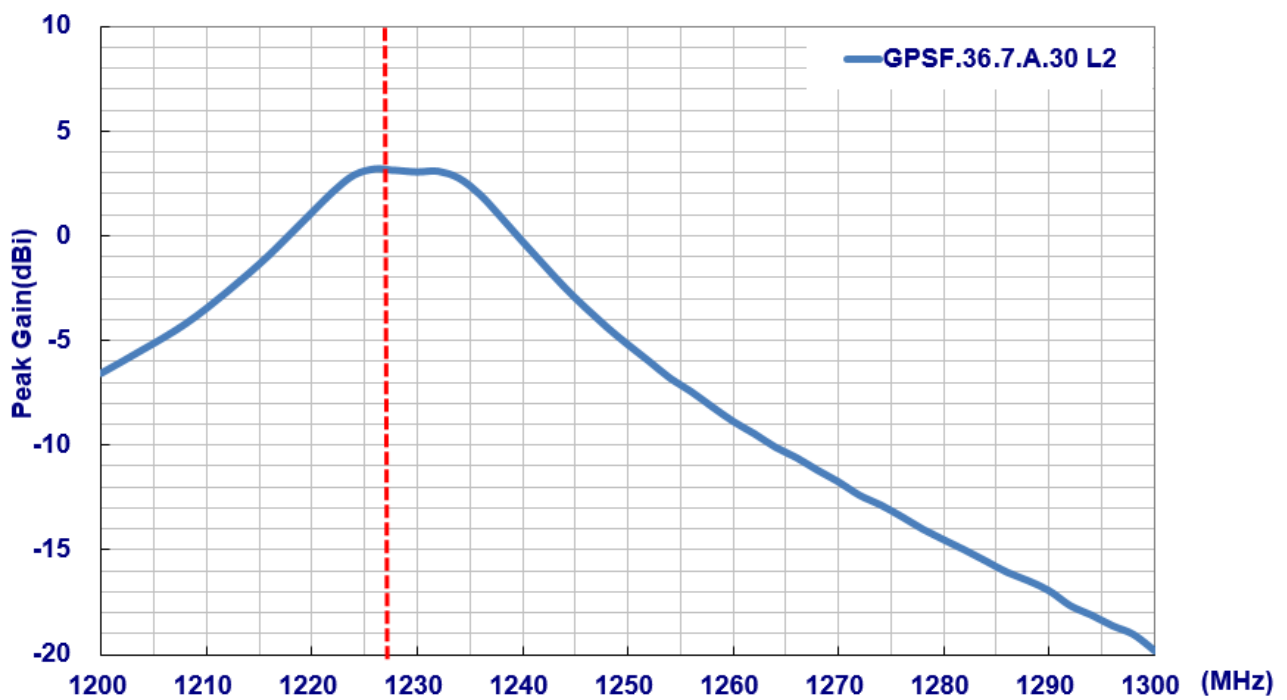
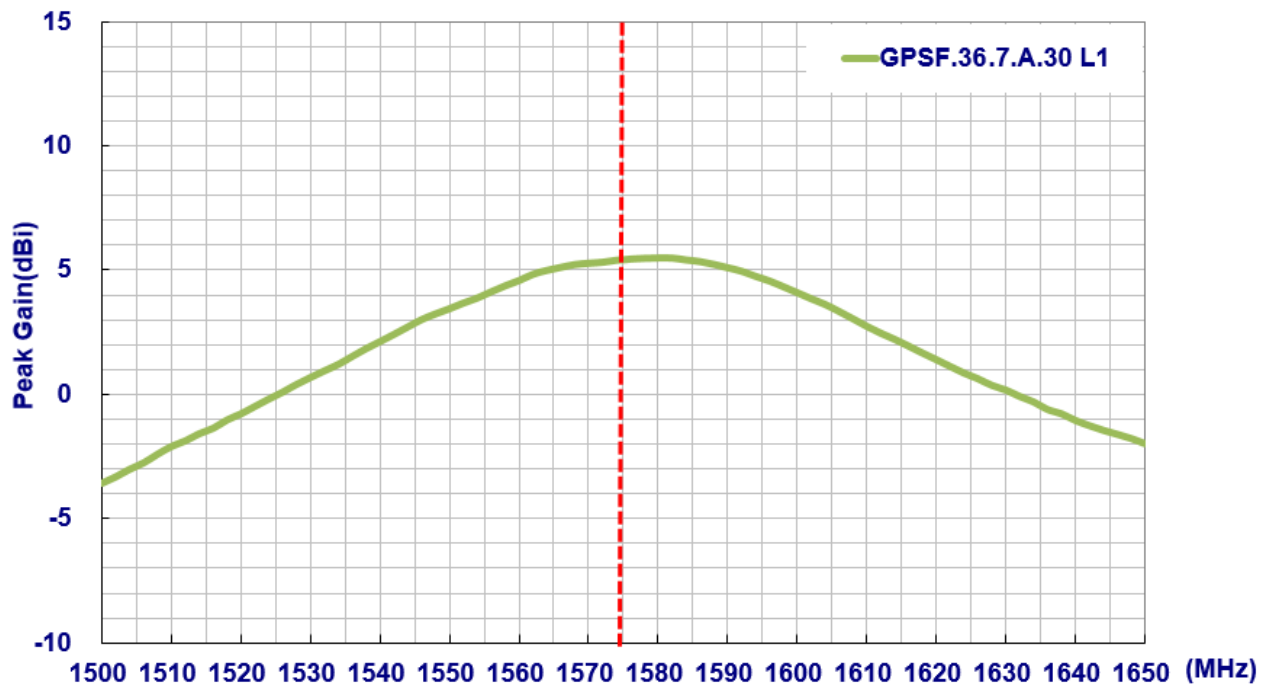
3.1 Return Loss



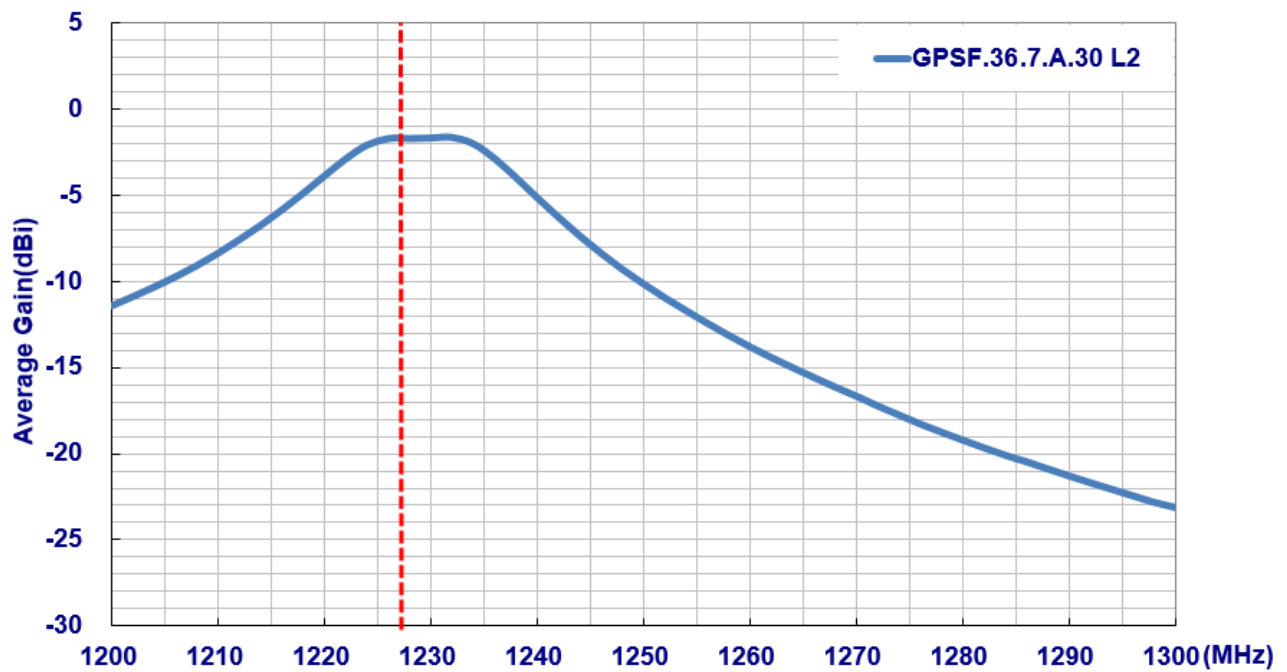
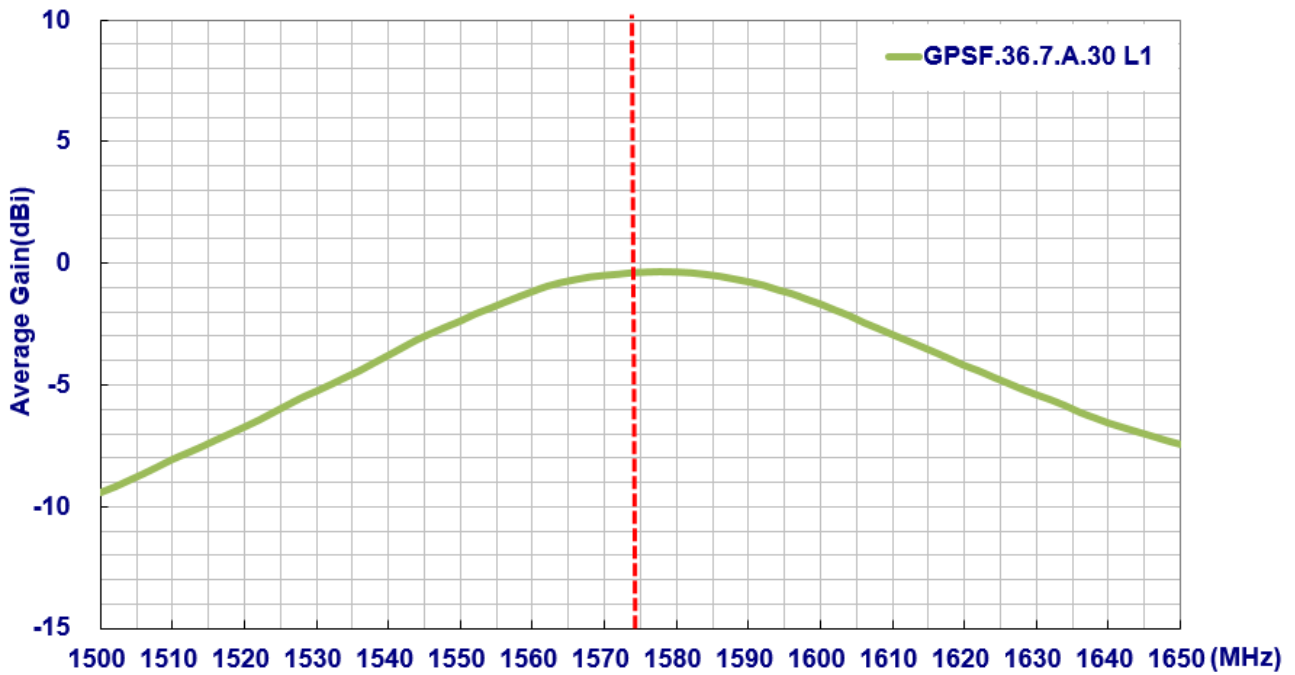
3.2 Efficiency



3.3 Peak Gain

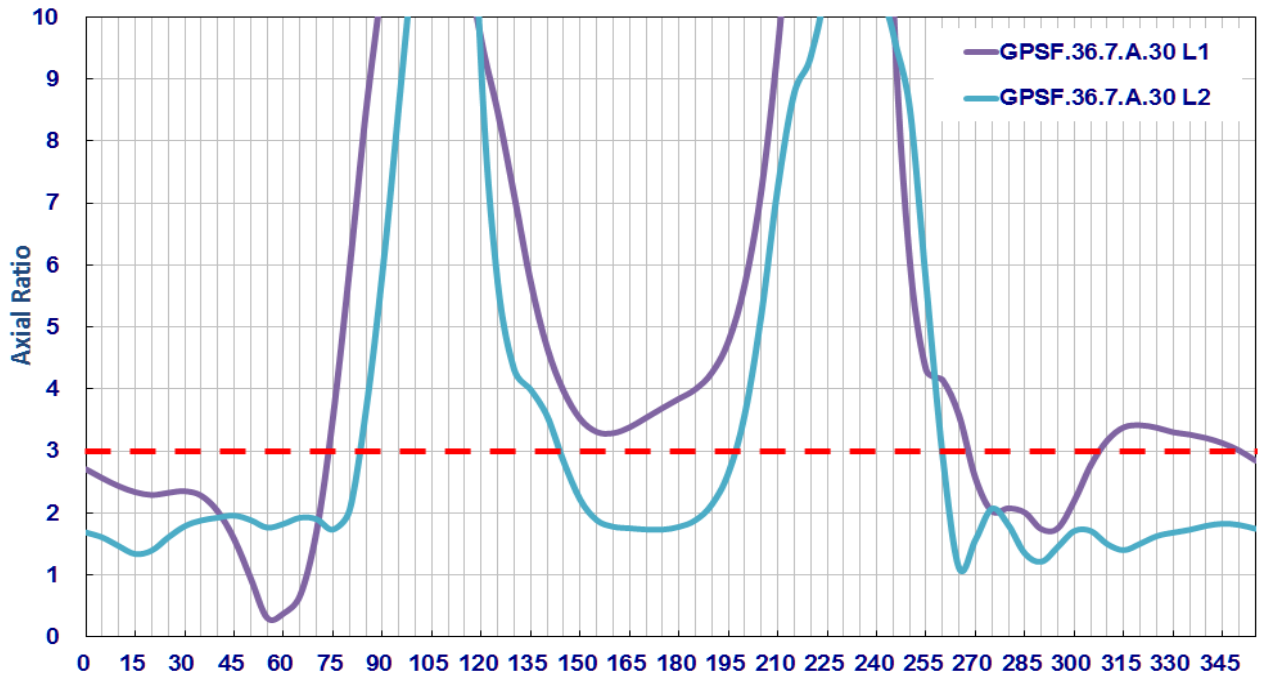


3.4 Average Gain



L2 1227MHz

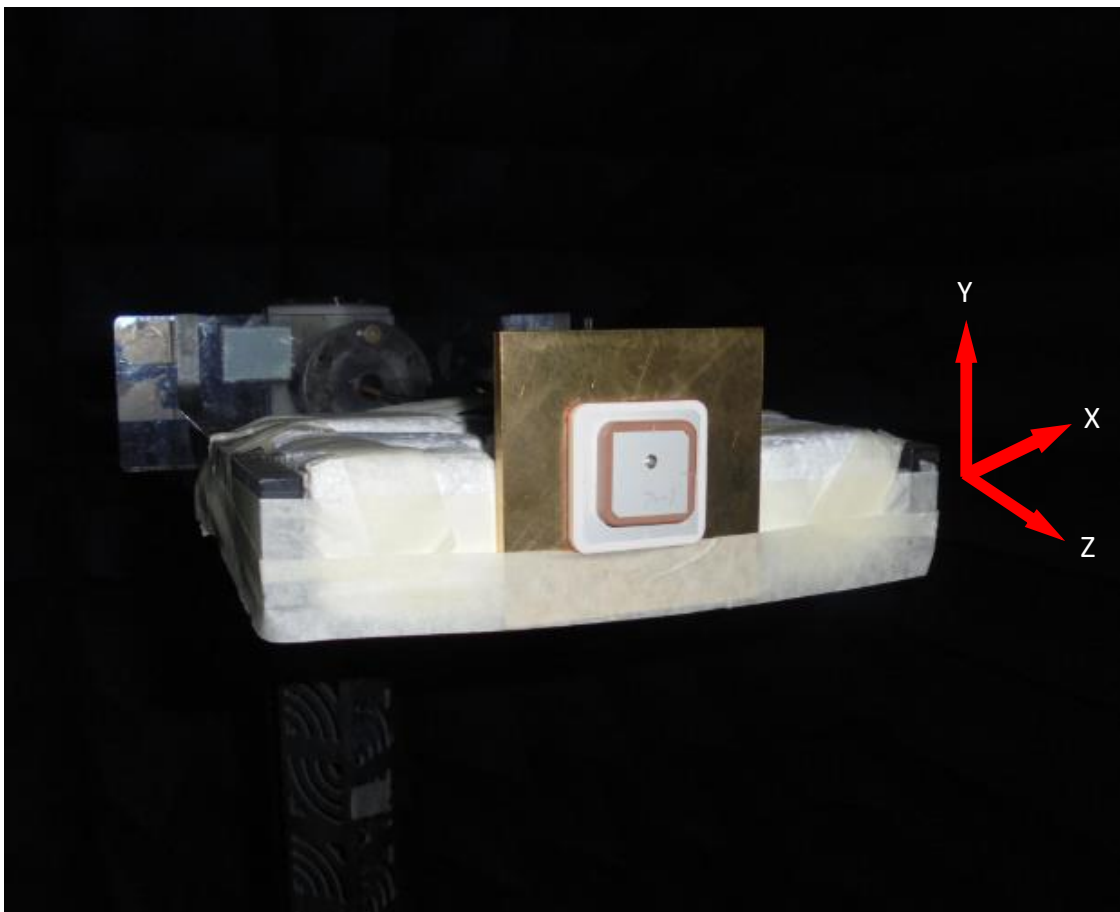
3.5 Axial Ratio



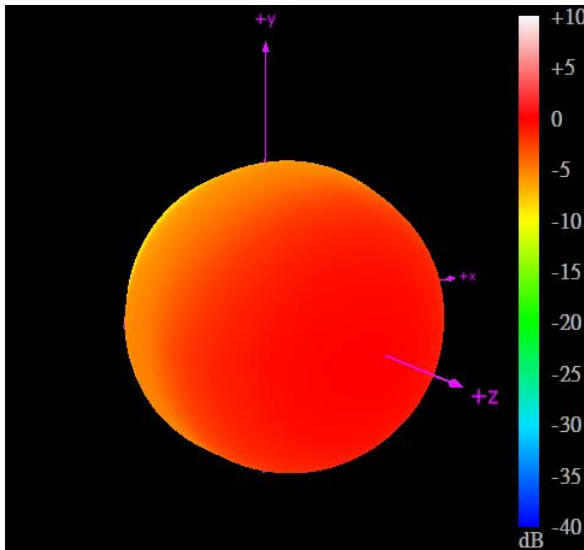
4. Radiation Patterns

4.1 Test Setup

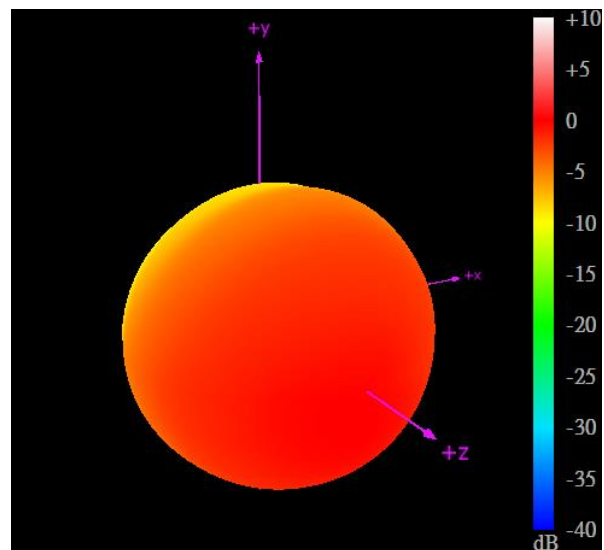
The GPSF.36.7.A.30 antenna is tested in free-space on a 70 mm X 70 mm ground plane in an Anechoic Chamber. The test setup is shown below.



4.2 3D and 2D Radiation Patterns



GPS L1 1575.42MHz

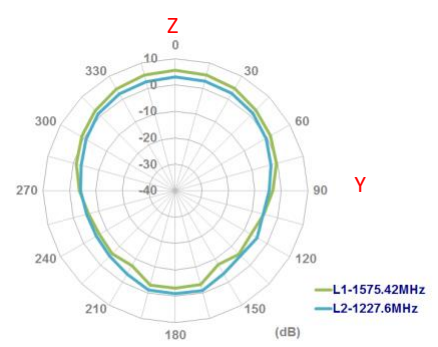
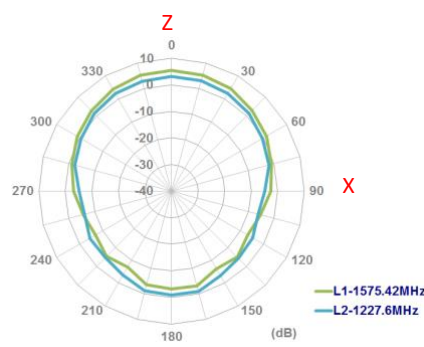
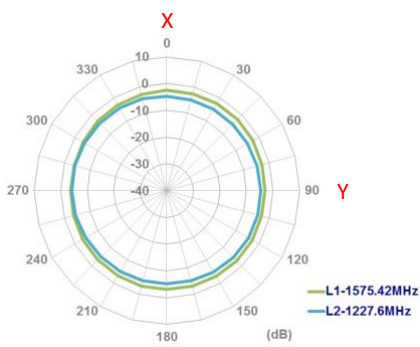


GPS L2 1227.6MHz

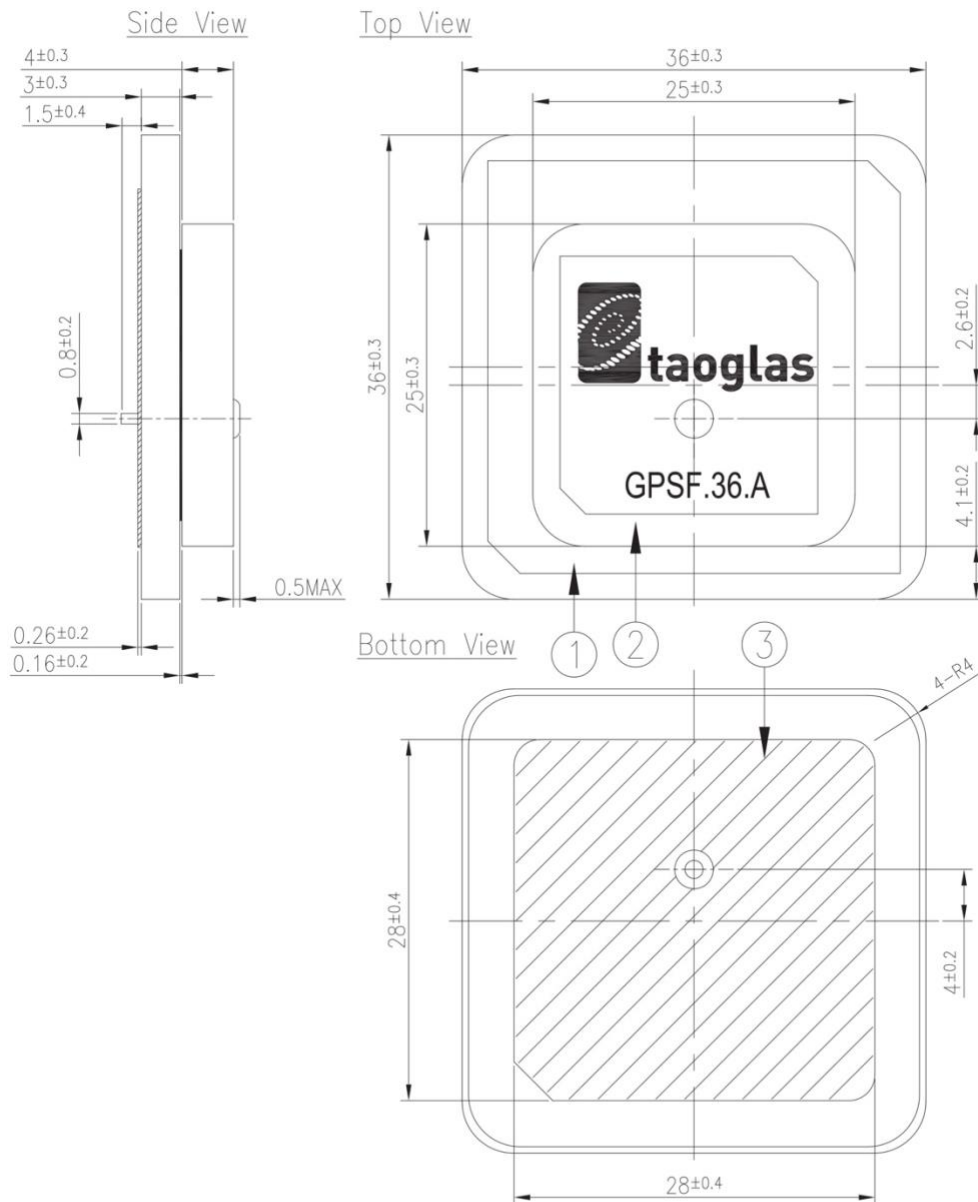
XY Plane

XZ Plane

YZ Plane



5. Mechanical Drawing (Units: mm)



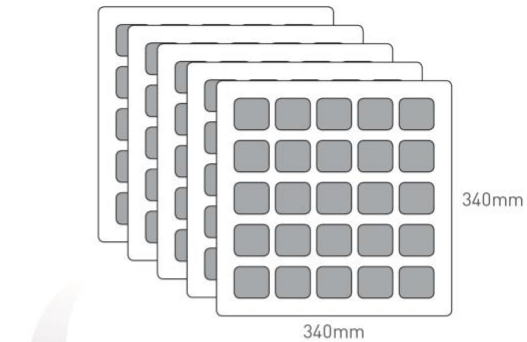
	Name	Material	Finish	QTY
1	Patch(36*36*3mm)	Ceramic	White	1
2	Patch(25*25*4mm)	Ceramic	Reddish Brown	1
3	Double Sided Adhesive	NITTO 5000NS	White Liner	1

 Download 3D Model

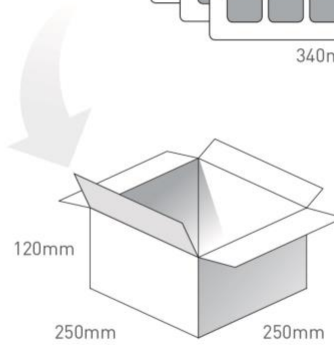
6. Packaging

Packaging Specifications

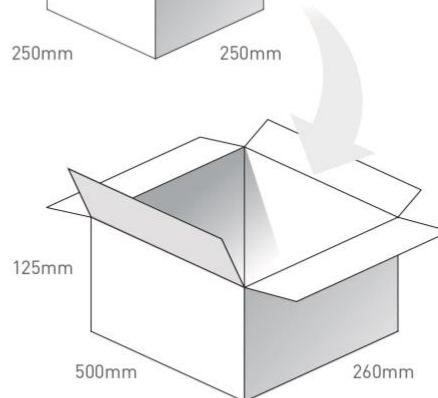
25 pcs GPSF.36.7.A.30 per tray
 Each tray in vacumed PE bag
 Tray Dimensions - 340*340*27mm
 Weight - .7Kg per tray



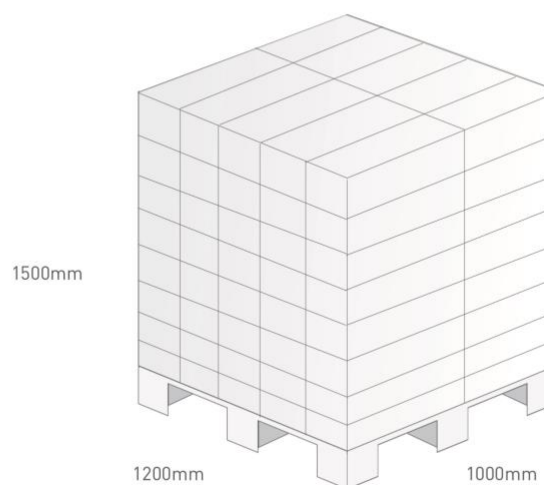
8 Trays per Carton - 200 pcs
 Carton Dimensions - 250*250*120mm
 Weight - 5.5Kg



400 pcs - Carton Dimensions - 500*260*125mm
 Weight - 12Kg



Pallet Dimensions 1200*1000*1500mm
 80 Cartons per Pallet
 10 Cartons per layer
 8 Layers



Changelog for the datasheet

SPE-17-08-027 - GPSF.36.7.A.30

Revision: B (Current Version)	
Date:	2019-12-08
Changes:	Added GNSS Frequency Bands Matrix and RTK Test Data
Changes Made by:	Yu Kai Yeung

Previous Revisions

Revision: A (Original First Release)	
Date:	2017-03-05
Notes:	Initial Release
Author:	Wayne Yang



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