



TAOGLAS®



Datasheet

Multi- GNSS L1/L5 Patch Antenna

Part No:
HP5354.A

Description

Multi-Band GNSS L1/L5 Patch Antenna

Features:

Compact 4mm Innovative GNSS Patch Antenna

Bands Covered:

- BeiDou (B1/B2a)
- GPS/QZSS (L1/L5)
- GLONASS (G1)
- Galileo (E1/E5a)

Dual feed solder mount configuration

Dimensions: 35 x 35 x 4mm

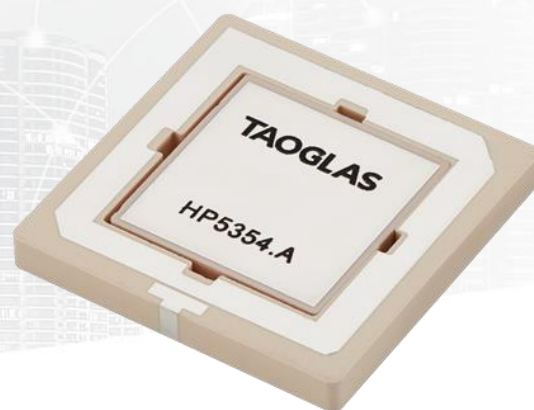
RoHS & Reach Compliant

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1. Introduction



The Taoglas HP5354.A, is a multi-band GNSS passive patch antenna designed for optimum positional accuracy and positioning. It utilizes a 35*35*4mm innovative ceramic patch antenna design with optimized gain for GPS L1/L5, Galileo, GLONASS and BeiDou bands.

This ground-breaking design allows customers to integrate a multi-band L1/L5 GNSS patch into devices where this would not have been possible before due to height constraints. At only 4mm in height, the HP5354 can be used in a variety of applications where typical stacked patch designs are too tall.

Typical Applications Include:

- Wearables
- Compact Asset Trackers
- Precision Agriculture
- Navigation
- Industrial Tracking
- Autonomous Vehicles

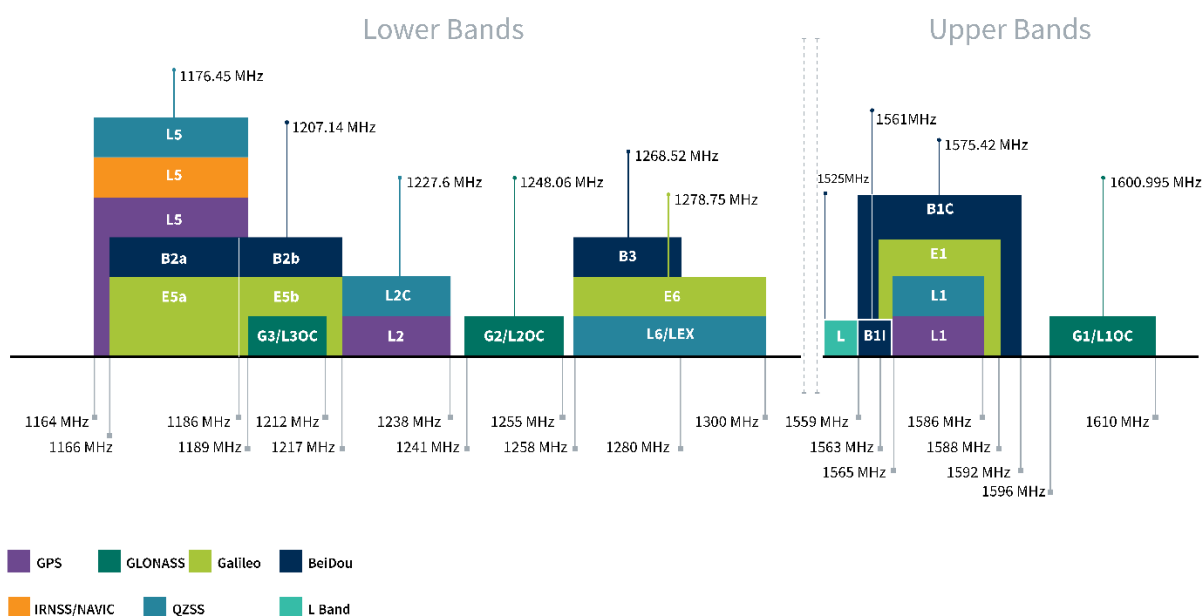
The HP5354.A has been tuned and tested on a 70 x 70 mm ground plane and exhibits excellent radiation patterns. The HP5354.A has been optimized to cover the bands required for the next generation of L1/L5 GNSS receivers that are currently on the market.

Care should be taken when integrating this antenna into a customer device,

Patch antennas can be specifically 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
	■	□	■	□	□
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
	■	■	■	□	□

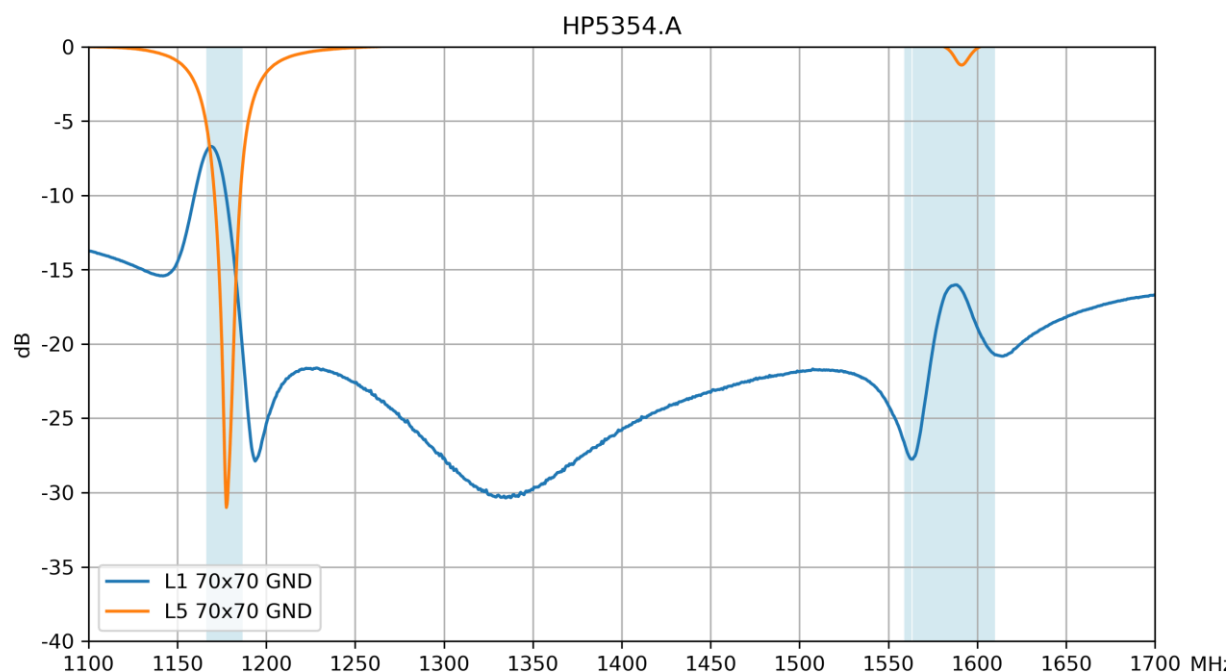


GNSS Electrical				
Frequency (MHz)	GPS L5	BeiDou_B1	GPS_L1	GLONASS_G1
	1166-1186	1559-1563	1563-1587	1569-1610
Efficiency (%)				
70x70 GND	41.7	28.8	52.2	54.9
Average Gain (dB)				
70x70 GND	-3.80	-5.41	-2.83	-2.61
Peak Gain (dBi)				
70x70 GND	2.07	-0.35	2.61	2.61
Impedance	50 Ω			
Polarization	RHCP			
Radiation Pattern	Directional			
*Tested on 70x70 mm ground plane				

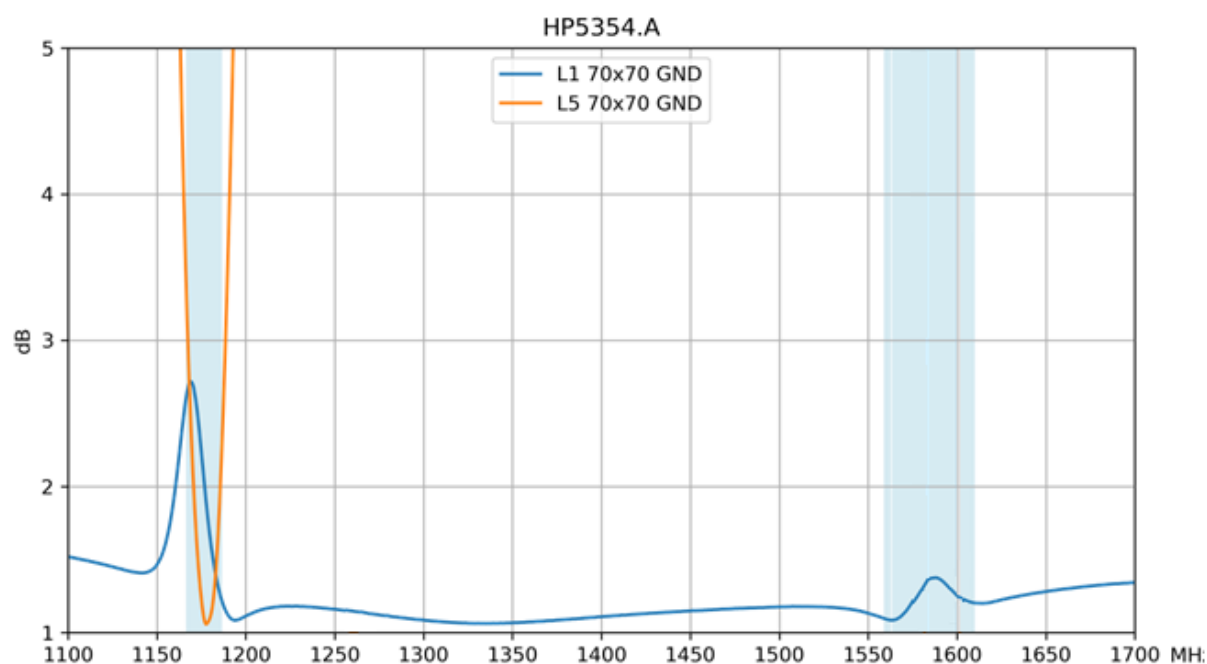
Mechanical	
Dimensions	35*35*4mm
Weight	16g
Material	Ceramics
Connector	SMD
Environmental	
Temperature Range	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

3. Antenna Characteristics

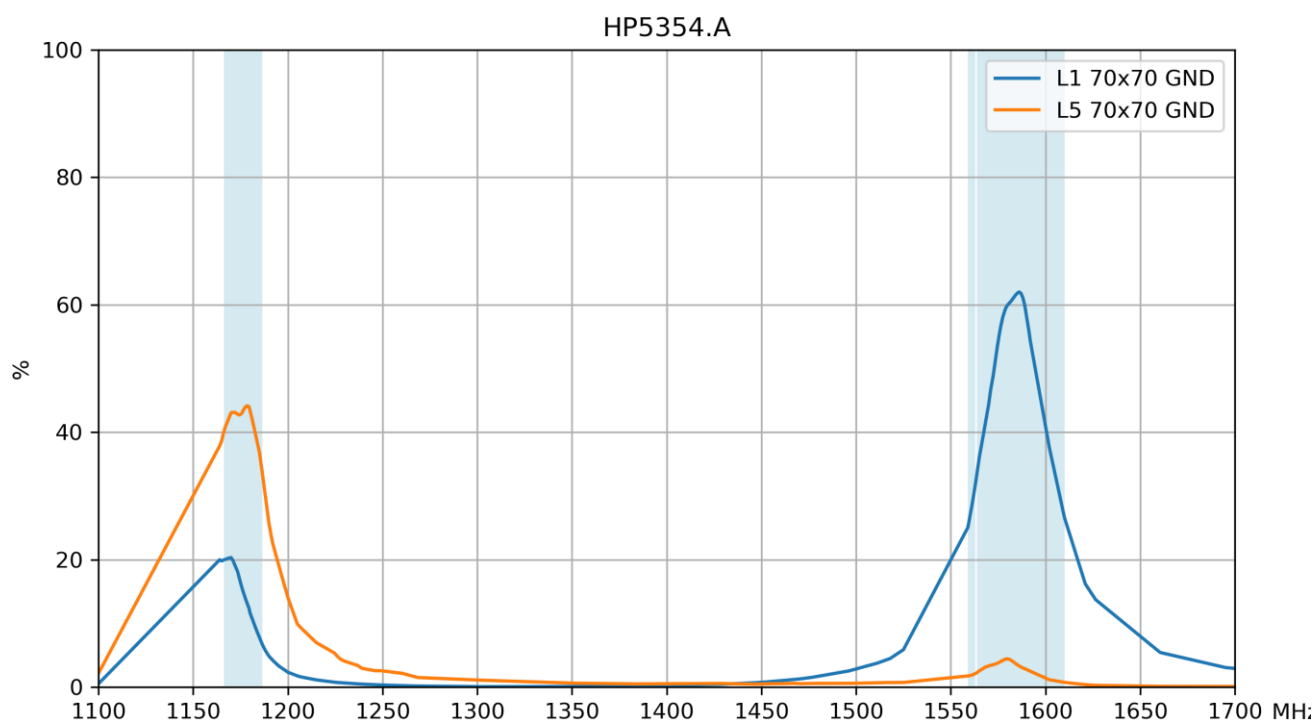
3.1 Return Loss



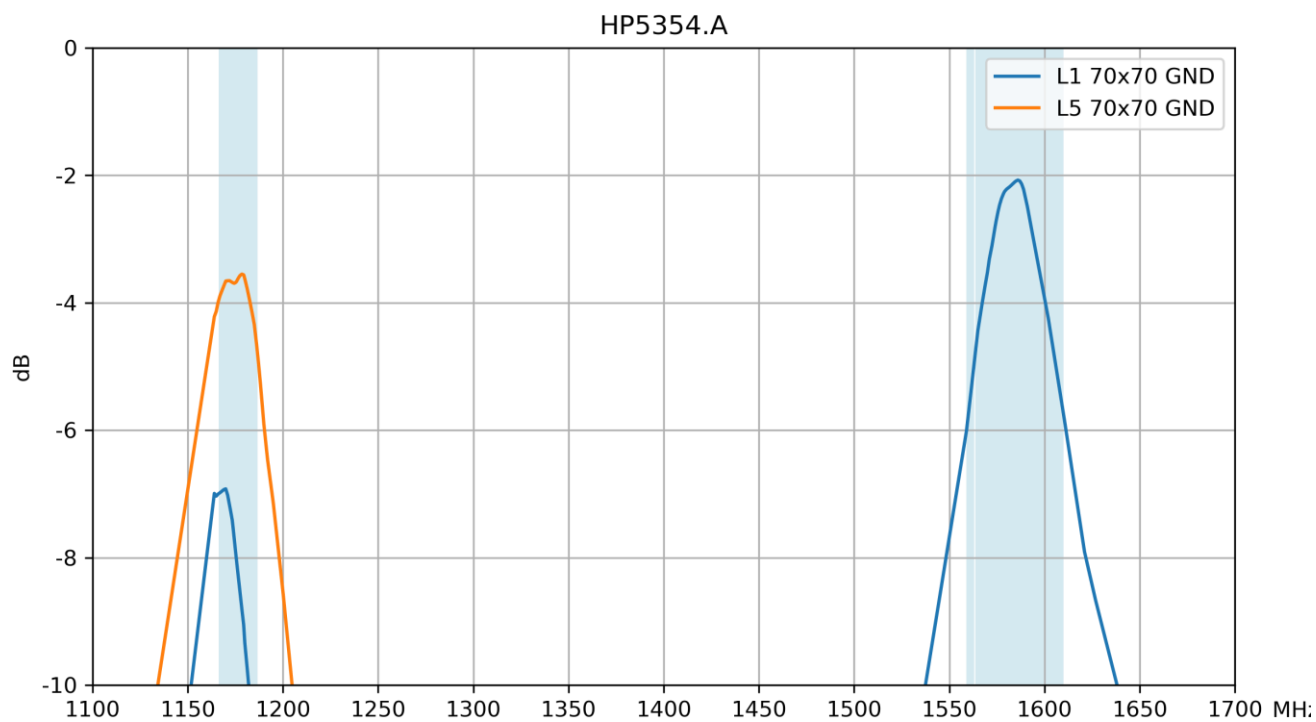
3.2 VSWR



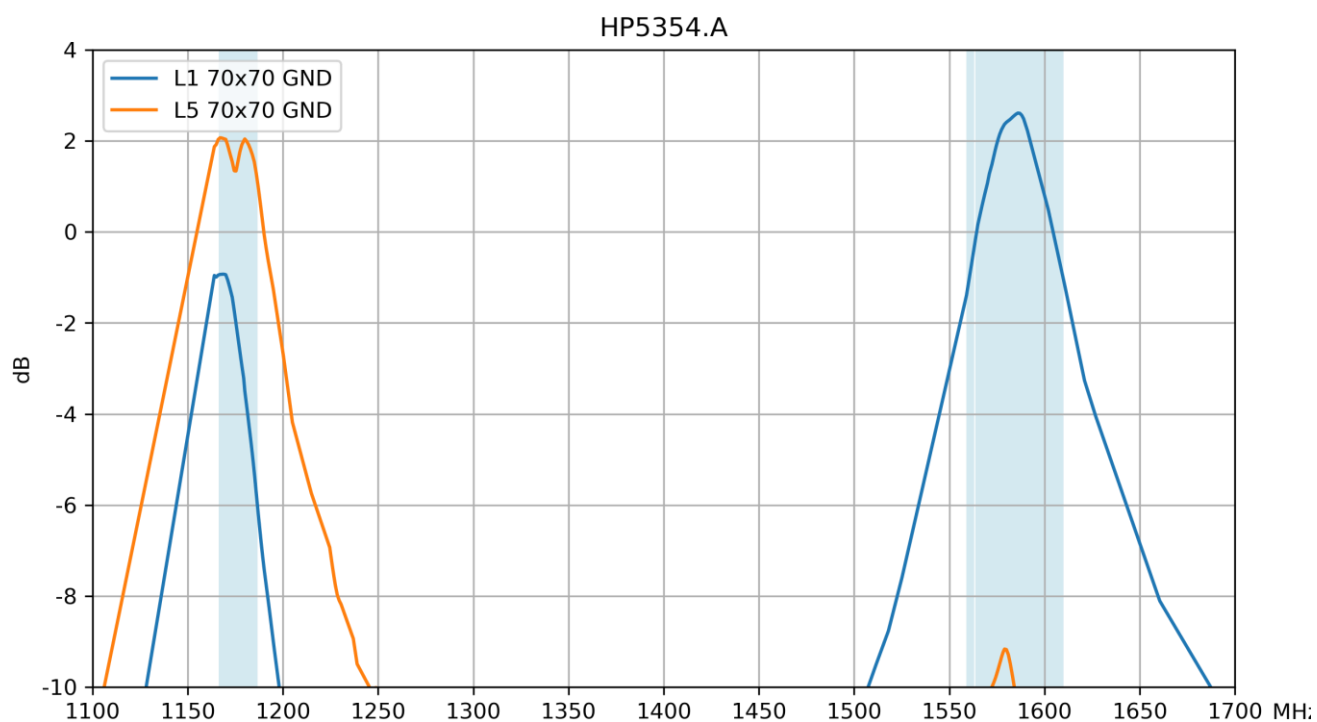
3.3 Efficiency



3.4 Average Gain

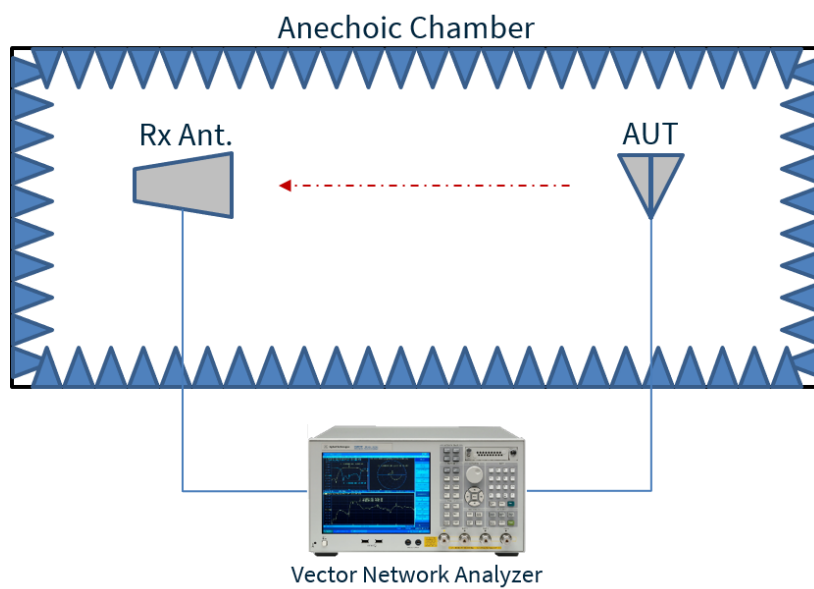


3.5 Peak Gain

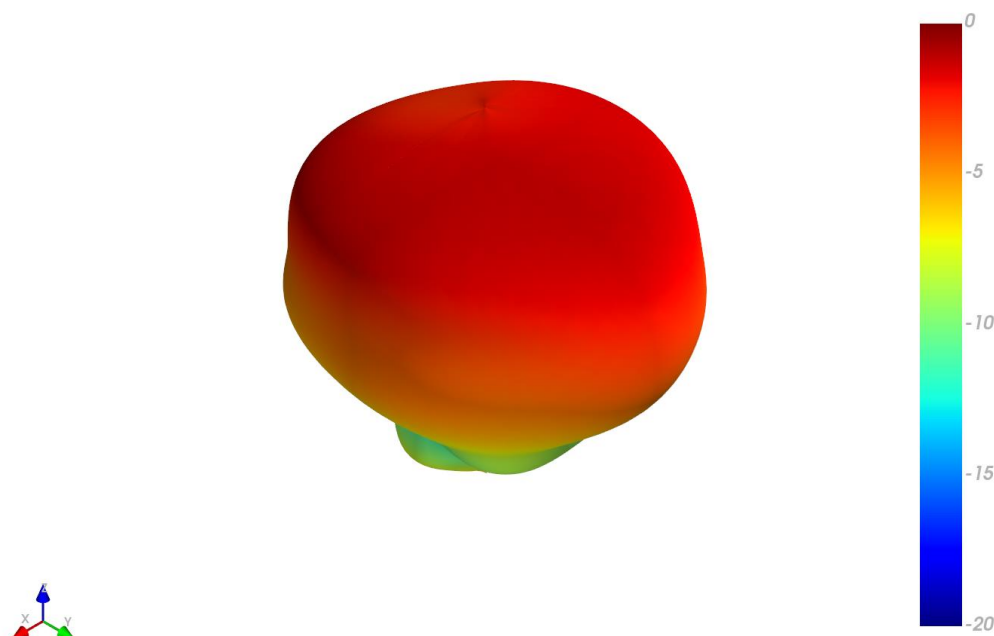


4. Radiation Patterns

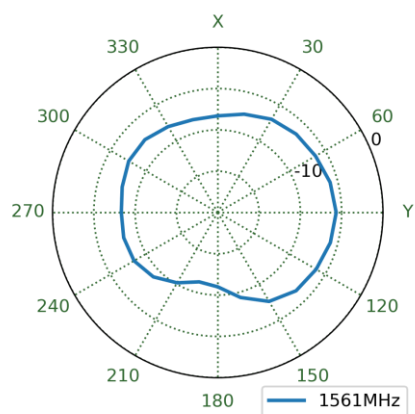
4.1 Test Setup



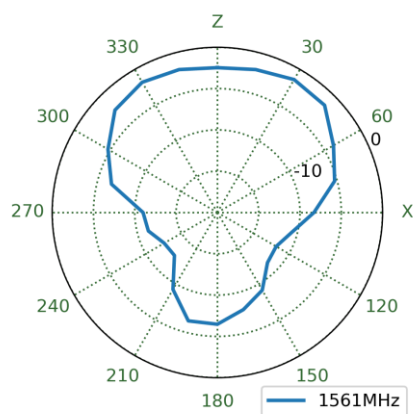
4.2 3D and 2D Radiation Patterns at 1561 MHz



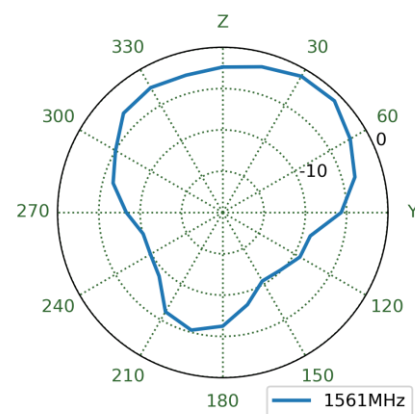
XZ Plane



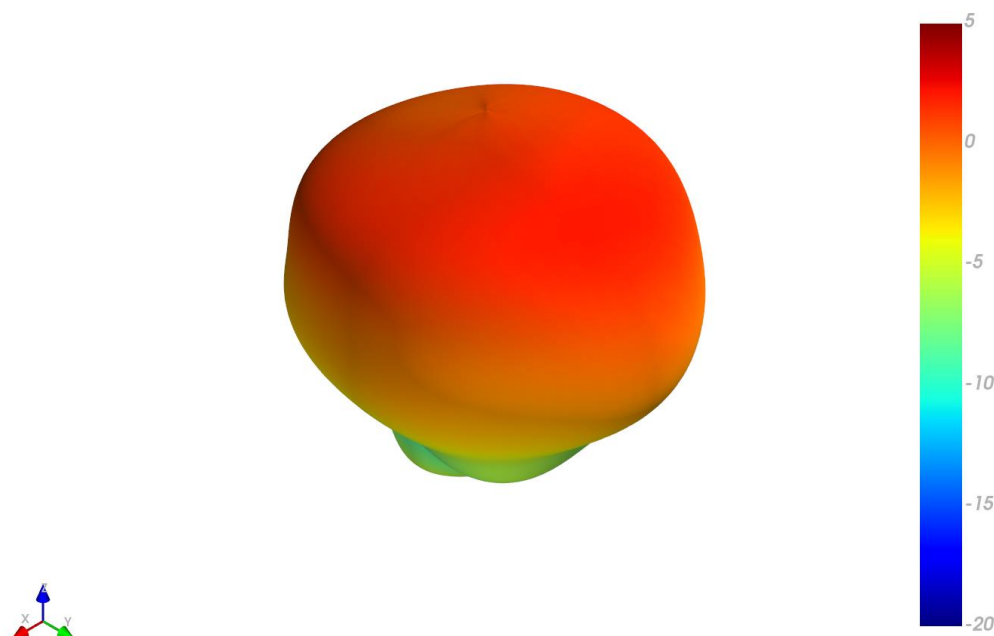
YZ Plane



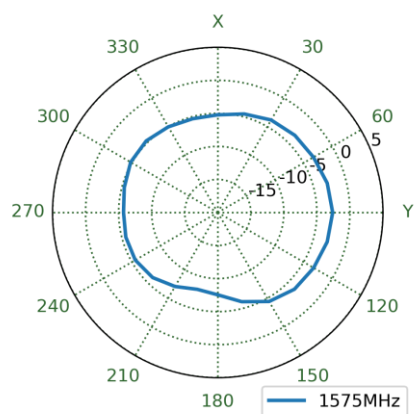
XY Plane



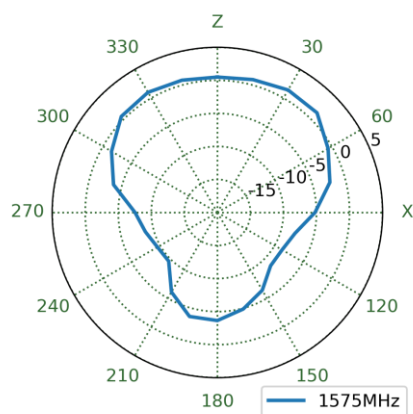
4.3 3D and 2D Radiation Patterns at 1575 MHz



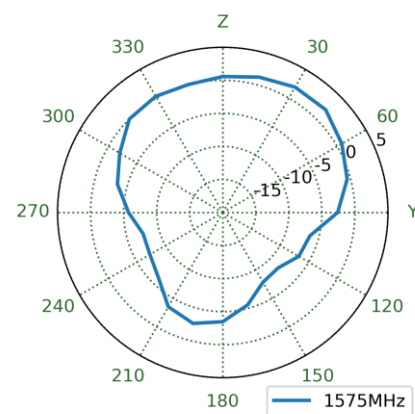
XZ Plane



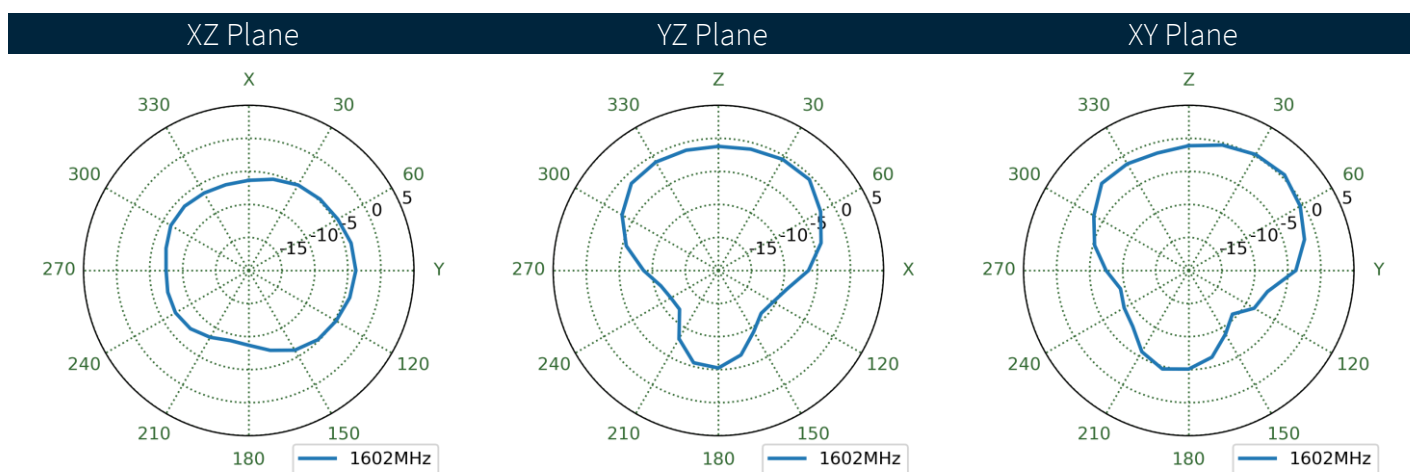
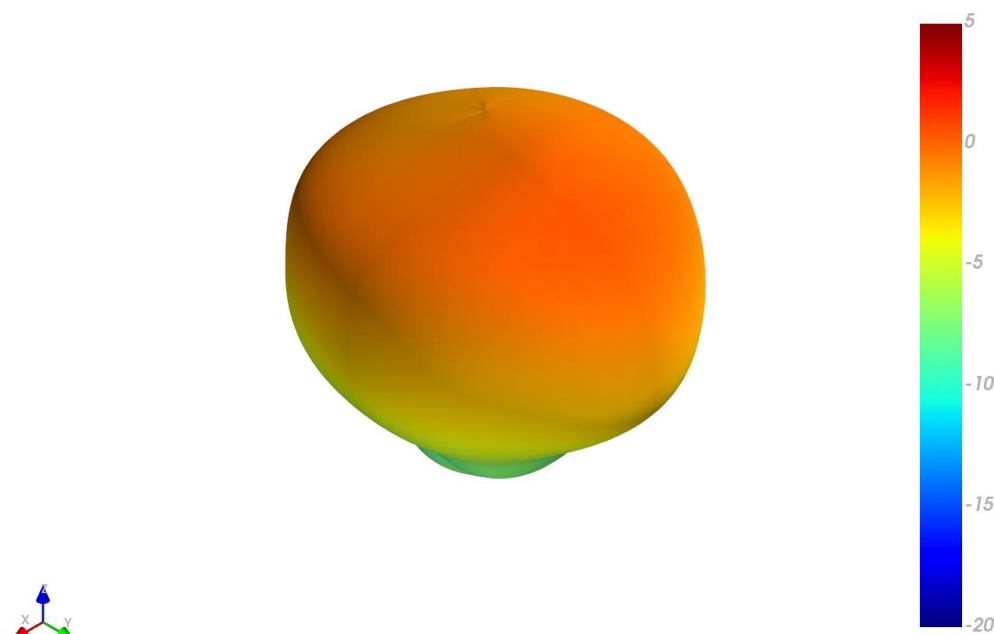
YZ Plane



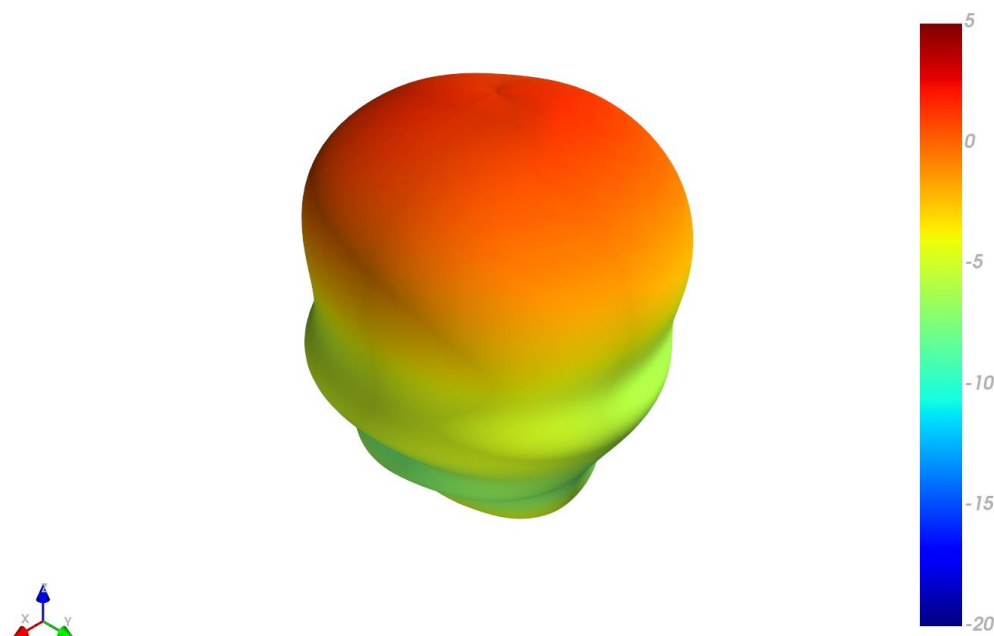
XY Plane



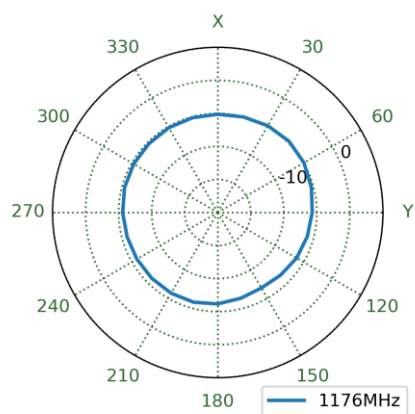
4.4 3D and 2D Radiation Patterns at 1602 MHz



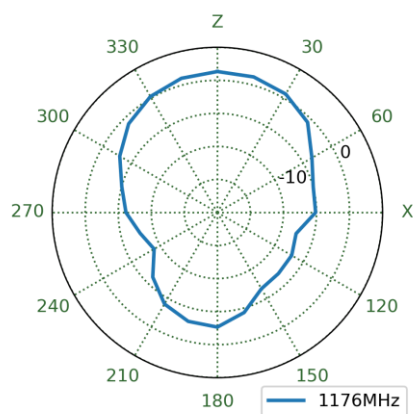
4.5 3D and 2D Radiation Patterns at 1176 MHz



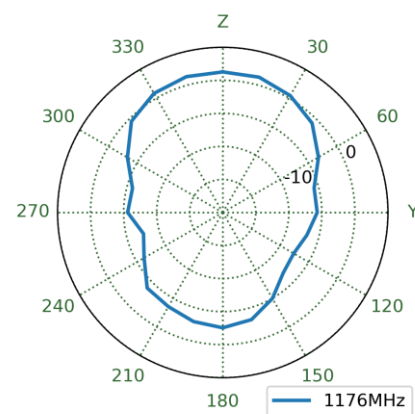
XZ Plane



YZ Plane



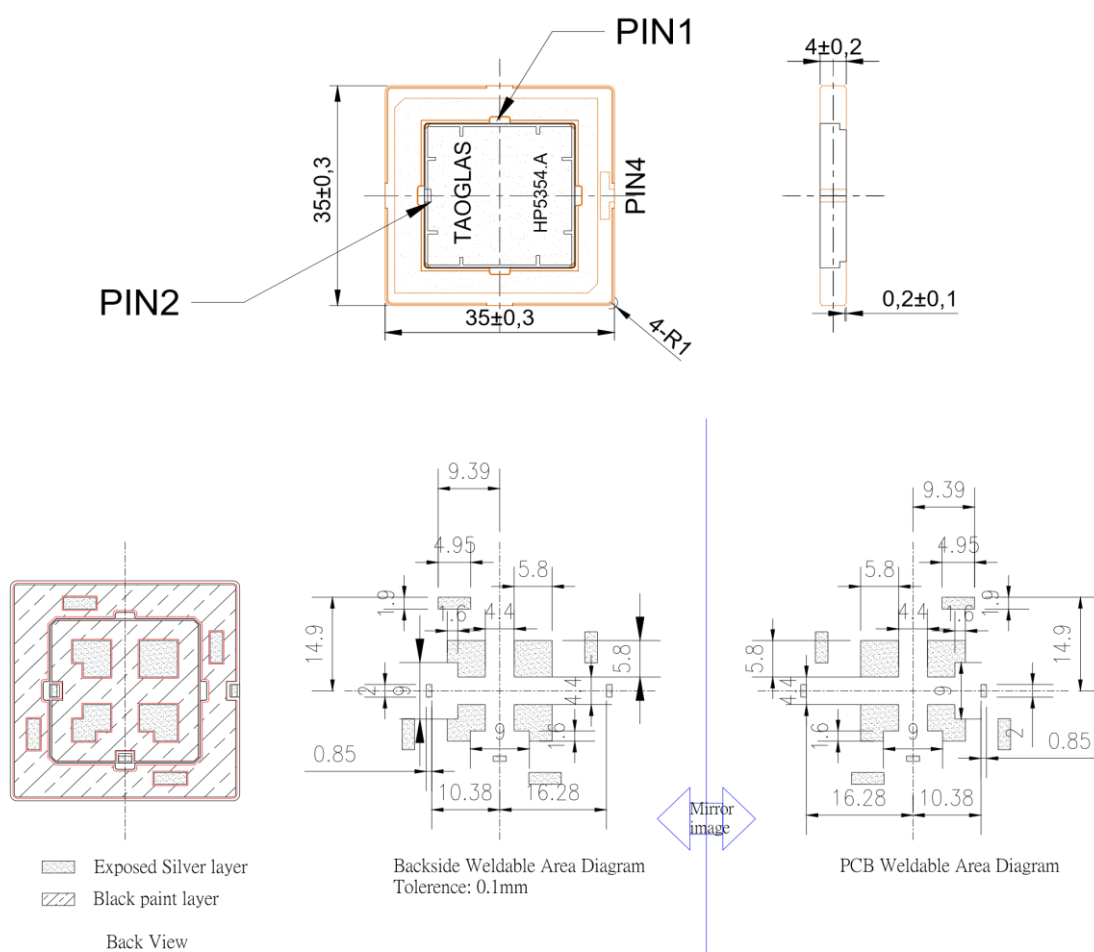
XY Plane



5. Mechanical Drawing

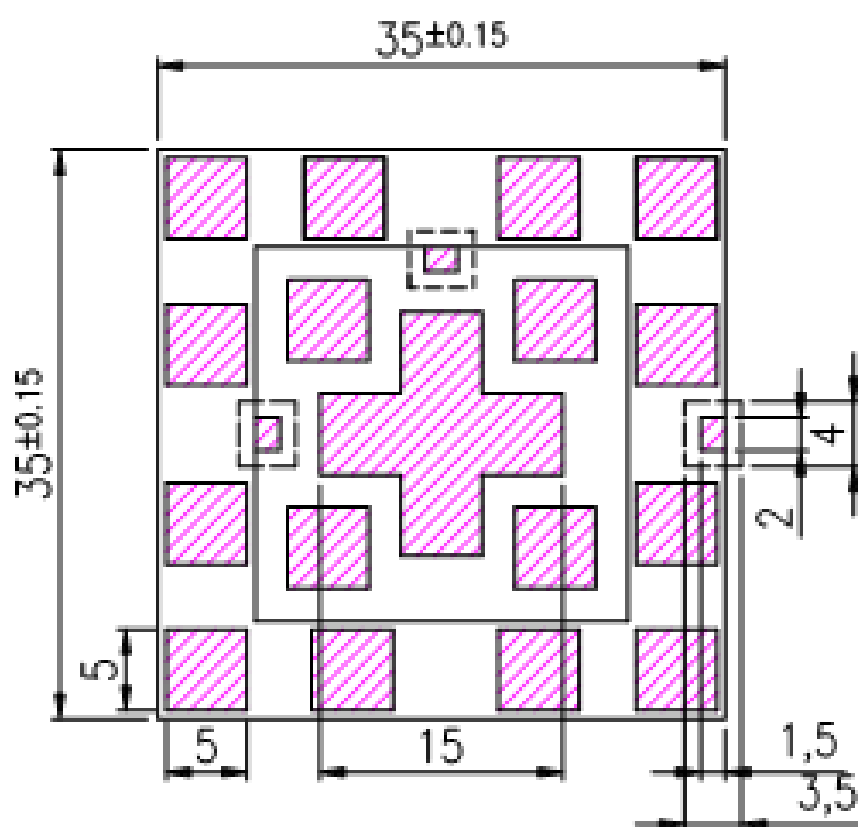
ISO NO.: EDW-22-8-1355
STATE: Release
NOTES:

REV.	DESCRIPTION	ENG.	APPROVED	DATE
D01	Initial Design	Aaron	Chozen	2023/03/20
D02	Define weldable area	Aaron	Chozen	2023/09/21



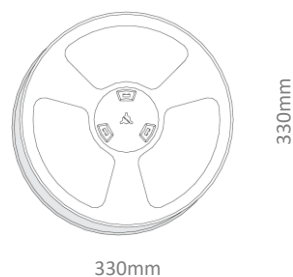
APPROVED BY: Chozen	 This drawing and its inherent design concepts are property of Taoglas. Not to be copied or given to third parties without the written consent of Taoglas.			
CHECK BY: Adam				
DRAWN BY: Aaron				
DATE: 2023/03/20				
UNLESS OTHERWISE SPECIFIED TOLERANCES ON:	TITLE : High precision GNSS L1/L5 Patch PART NO. : HP5354.A			
THIRD ANGLE PROJECTION	UNIT: mm	SCALE: 1:1	PAGES: 1/1	REV. D02

6. Footprint

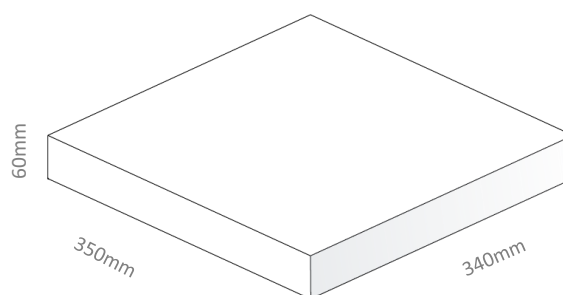


7. Packaging

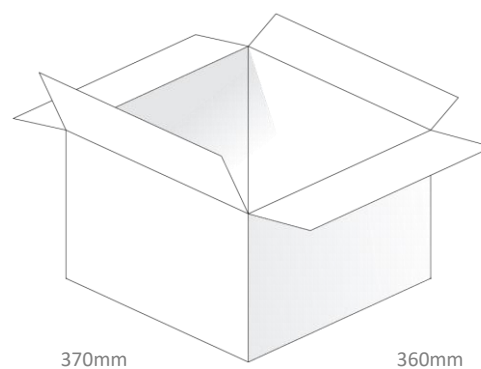
200pcs HP5354.A per Reel



200pcs HP5354.A per Inner Carton
Dimensions: 350*340*60mm



800pcs HP5354.A per Inner Carton Dimensions:
370*360*275 mm



Changelog for the datasheet

SPE-23-8-249– HP5354.A

Revision: A (Original First Release)	
Date:	2023-09-12
Notes:	Initial Release
Author:	Cesar Sousa

Previous Revisions



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