



TAOGLAS®



Datasheet

Inception Series

Part No:
HP2356.A

Description

Inception Series Low Profile High Precision GNSS L1/L2 Passive Patch Antenna

Features:

Compact, 6mm thick Innovative 'patch within a patch' design

Bands Covered:

- BeiDou (B1I)
- GPS/QZSS (L1/L2)
- GLONASS (G1)

Dual Feed SDM Configuration

Dimensions: 35mm x 35mm x 6mm

RoHS & Reach Compliant

1.	Introduction	3
2.	Specification	4
3.	Antenna Characteristics	6
4.	Radiation Patterns	10
5.	Antenna Integration Guide	15
6.	Mechanical Drawing	16
7.	Packaging	17
<hr/>		
	Changelog	22

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 Inception Series HP2356.A, is a multi-band GNSS passive patch antenna designed for optimum positional accuracy and positioning. It utilizes an innovative ceramic patch within a patch antenna design with optimized gain for GPS L1/L2, Galileo, GLONASS and BeiDou bands and measures just 35*35*6mm. This ground-breaking design allows customers to integrate a multi-band L1/L2 GNSS patch into devices where this would not have been possible before due to height constraints. At only 6mm in height, the HP2356,A can be used in a variety of applications where typical stacked patch designs are too tall for the device.

Typical Applications Include:

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

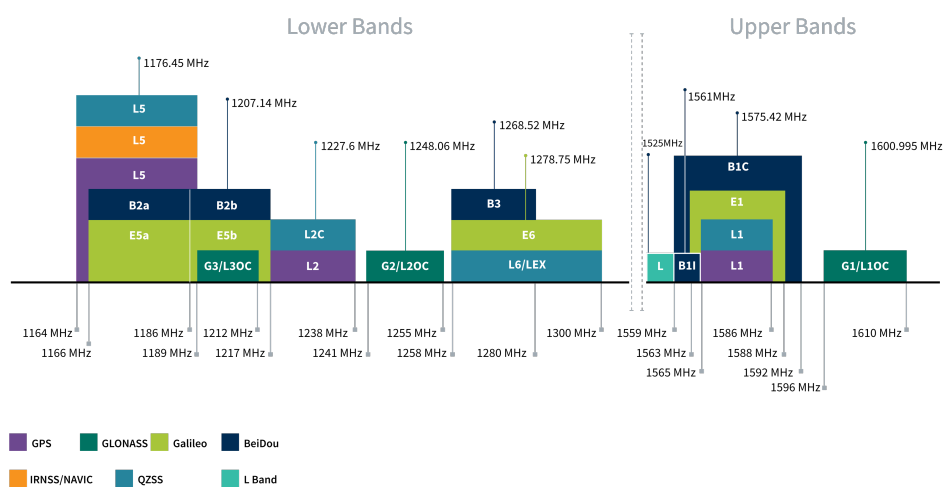
The HP2356.A has been tuned and tested on a 70 x 70mm ground plane and exhibits excellent radiation patterns. It is optimized to cover the bands required for the next generation of L1/L2 Multiband GNSS receivers that are currently available on the market.

If you require an easy to integrate active electronic circuit for the HP2356.A, the Taoglas TFM.100A can be designed onto the device PCB alongside the antenna. The module features a SAW/LNA/SAW/LNA topology in both the low and high band signal paths to prevent unwanted out-of-band interference from overdriving the GNSS LNAs or receiver. The SAW filters have been carefully selected and placed to provide excellent out-of band rejection while also maintaining low noise figure. 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. Specification

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
	■	□	■	□	□



GNSS Bands and Constellations

GNSS Electrical				
Frequency (MHz)	1227.6	1561	1575.42	1603
VSWR (max.)	1.5:1	1.5:1	1.5:1	1.5:1
Efficiency (%)	36.5	24.9	55.2	26.0
Average Gain (dB)	-4.38	-6.03	-2.58	-5.84
Peak Gain (dBi)	1.25	-1.80	1.60	-1.6
Axial Ratio (dB)	3.34	2.59	2.86	1.77
Polarization	TBD			
Impedance	50 Ω			

Mechanical	
Dimensions	35 x 35 x 6mm
Weight	TBD
Material	Ceramic

Environmental	
Operation Temperature	-40 - +85°C
Storage Temperature	-40 - +85°C
Relative Humidity	TBD
Moisture Sensitivity	TBD

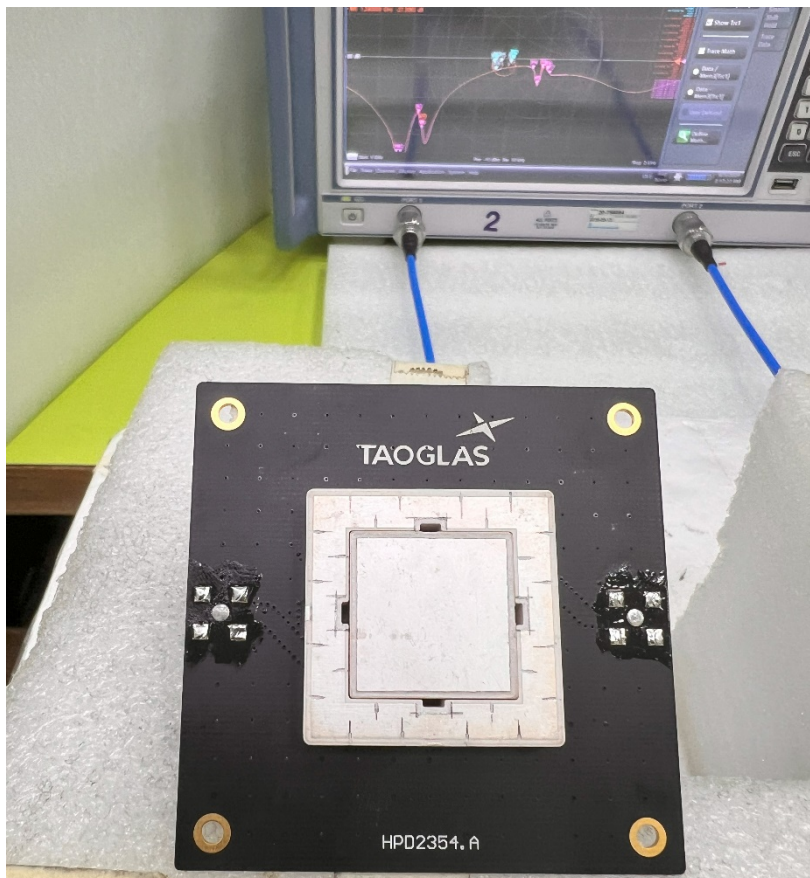
3. Antenna Characteristics

3.1 Test Setup

AUT

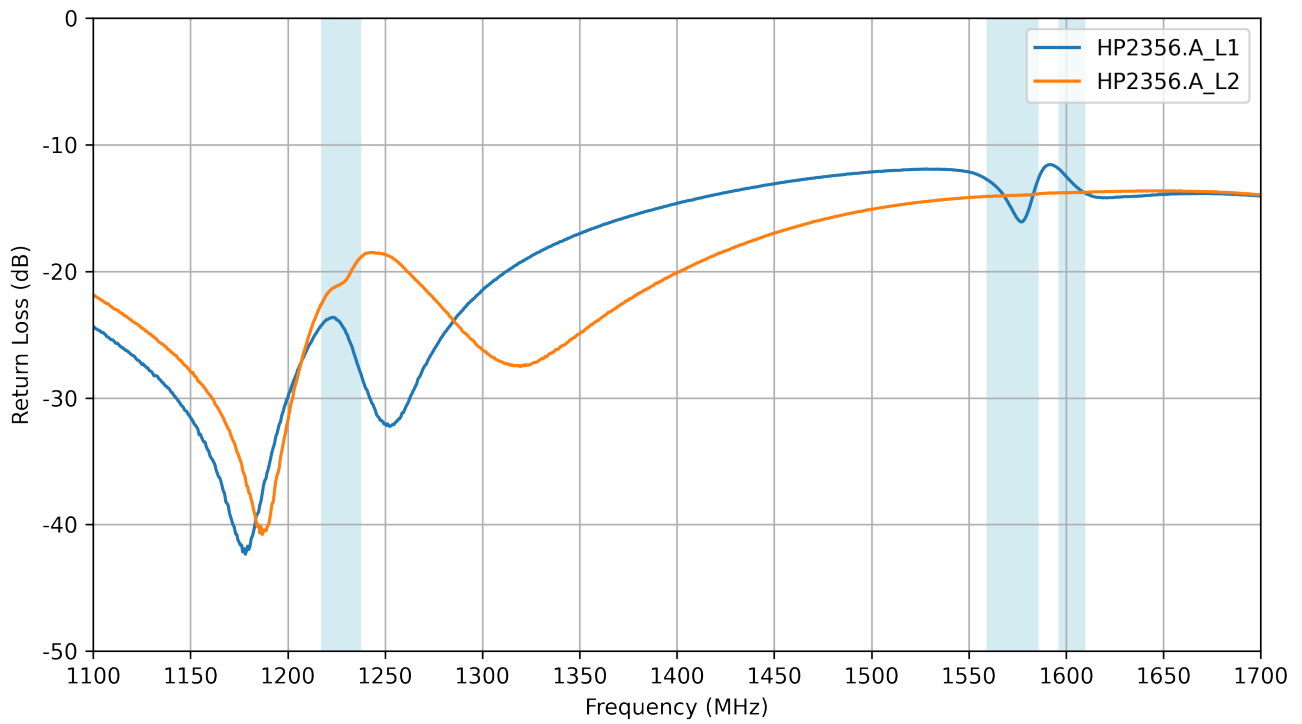


Vector Network Analyzer

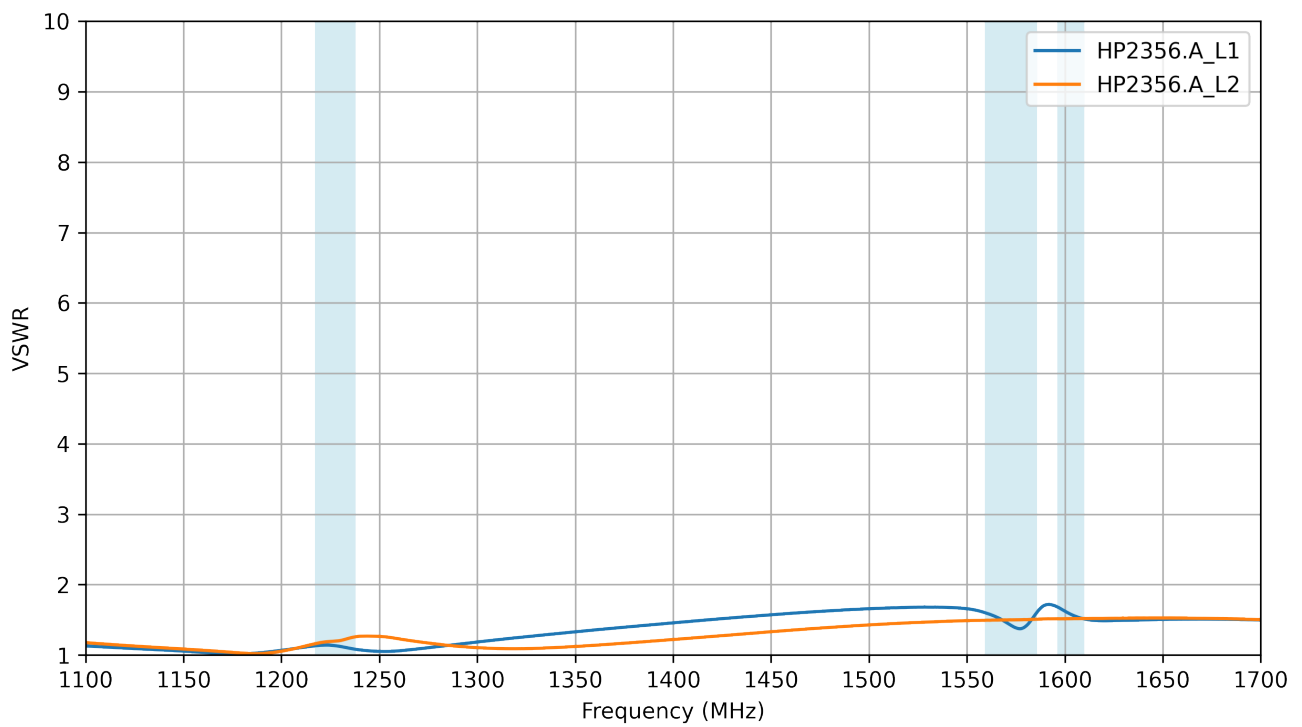


VNA Test Set-up

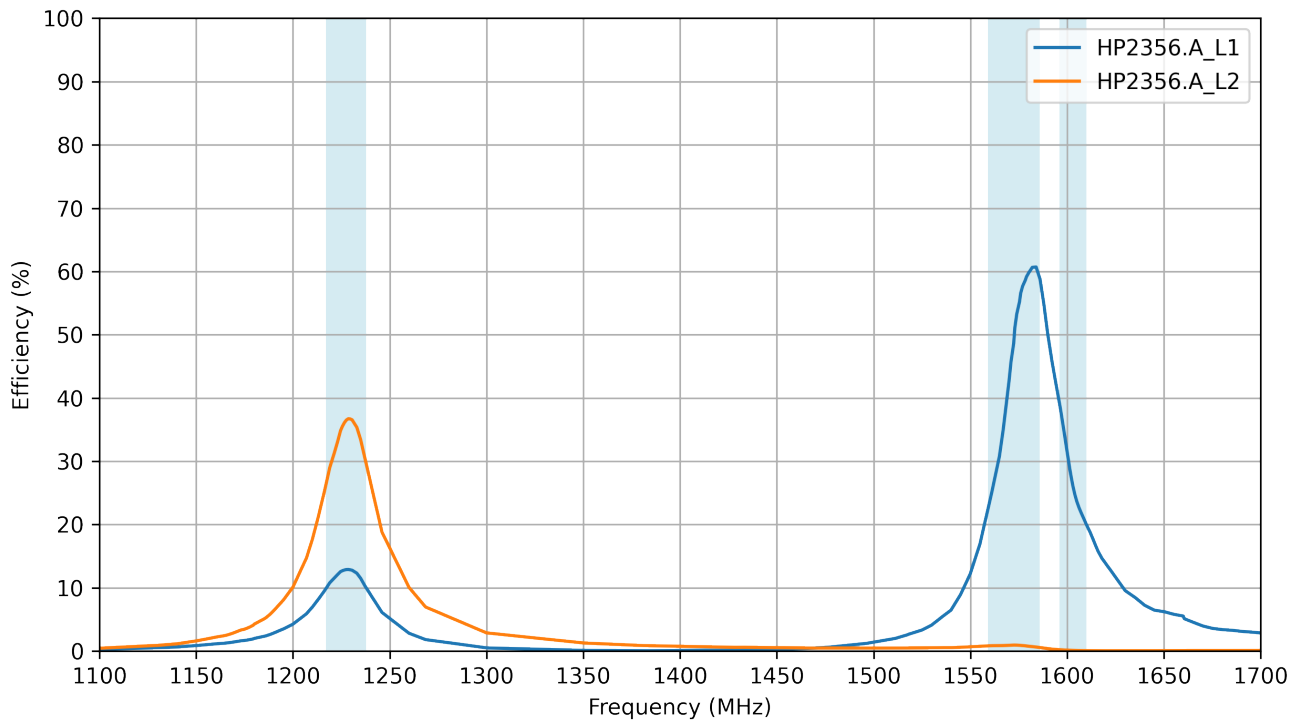
3.2 Return Loss



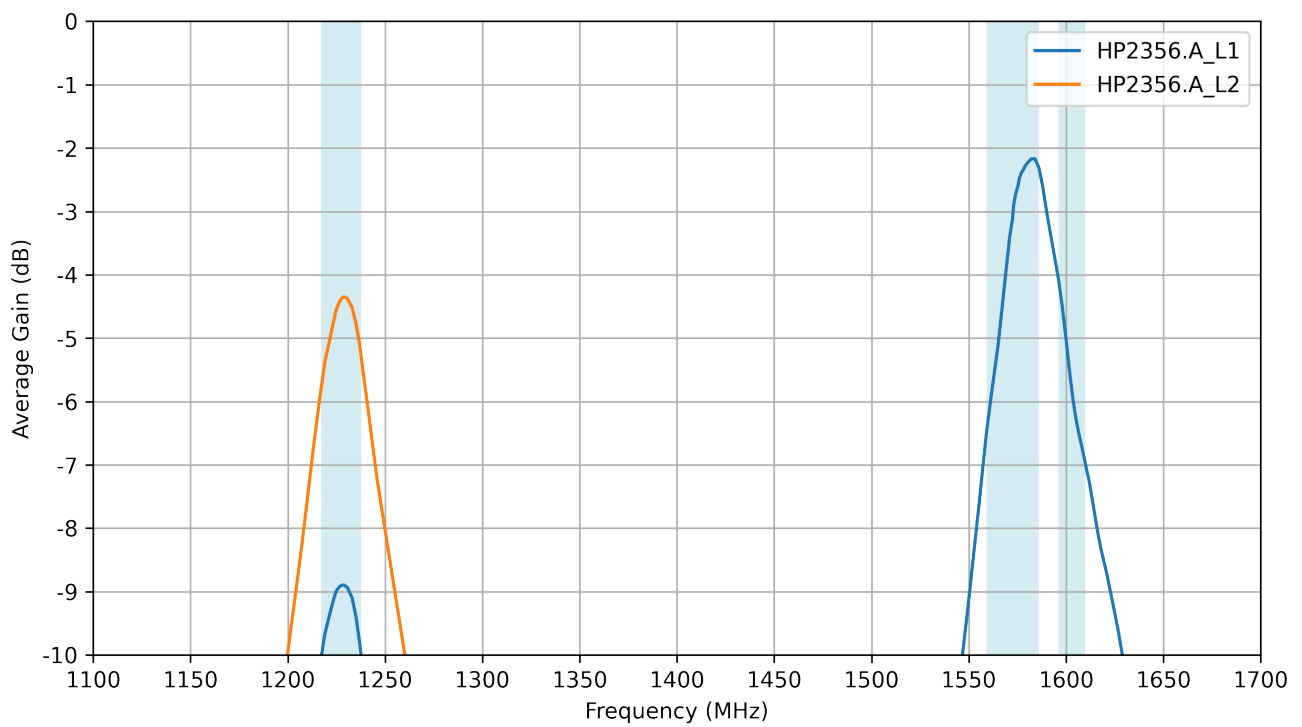
3.3 VSWR



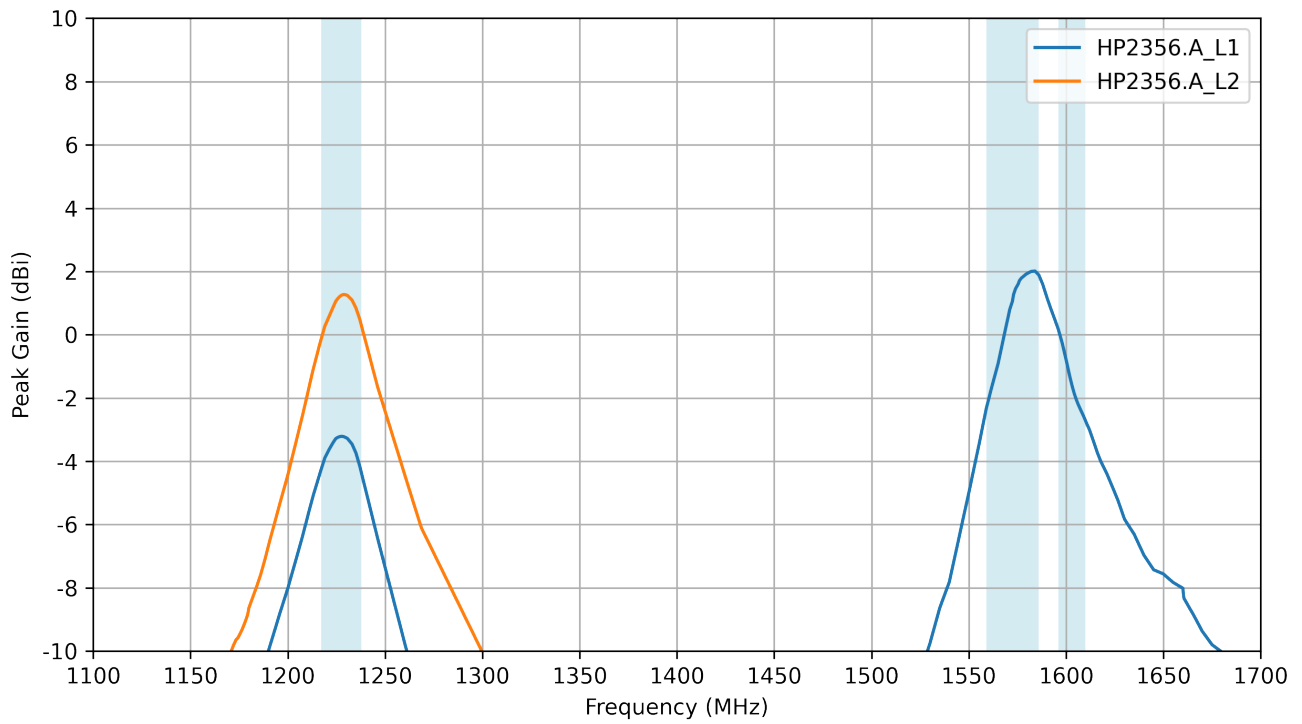
3.4 Efficiency



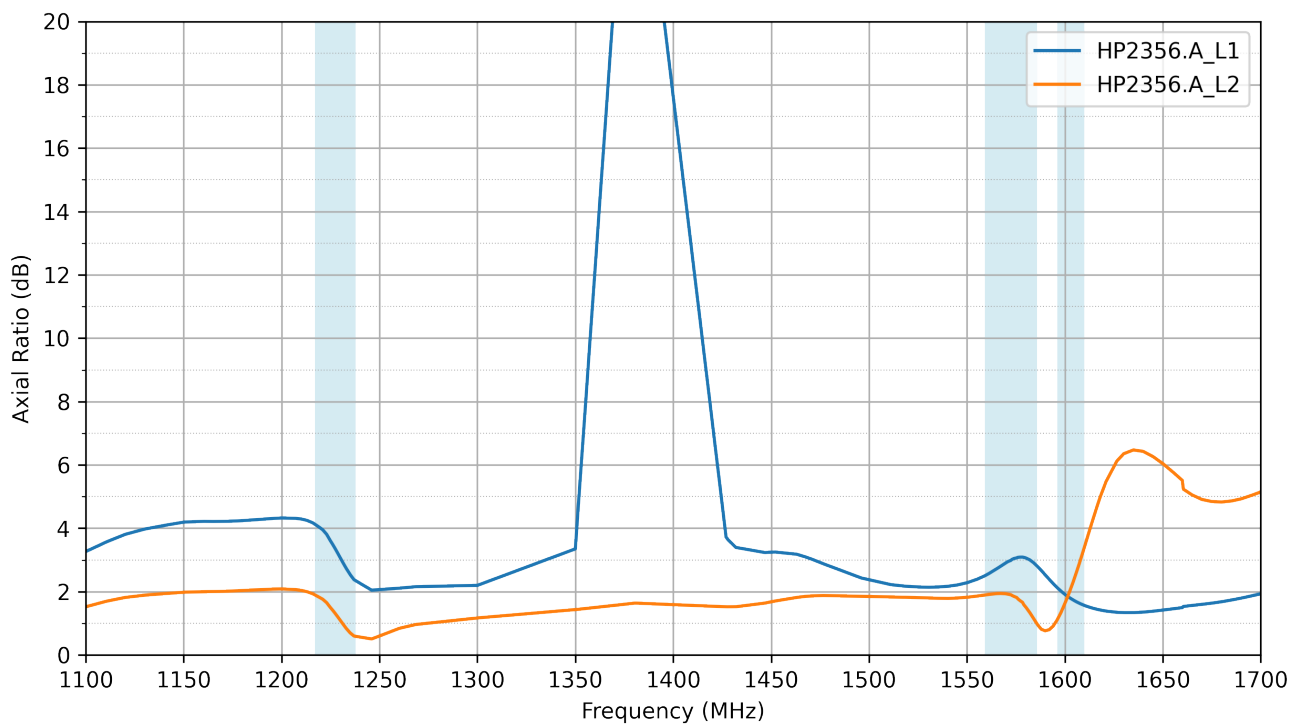
3.5 Average Gain



3.6 Peak Gain

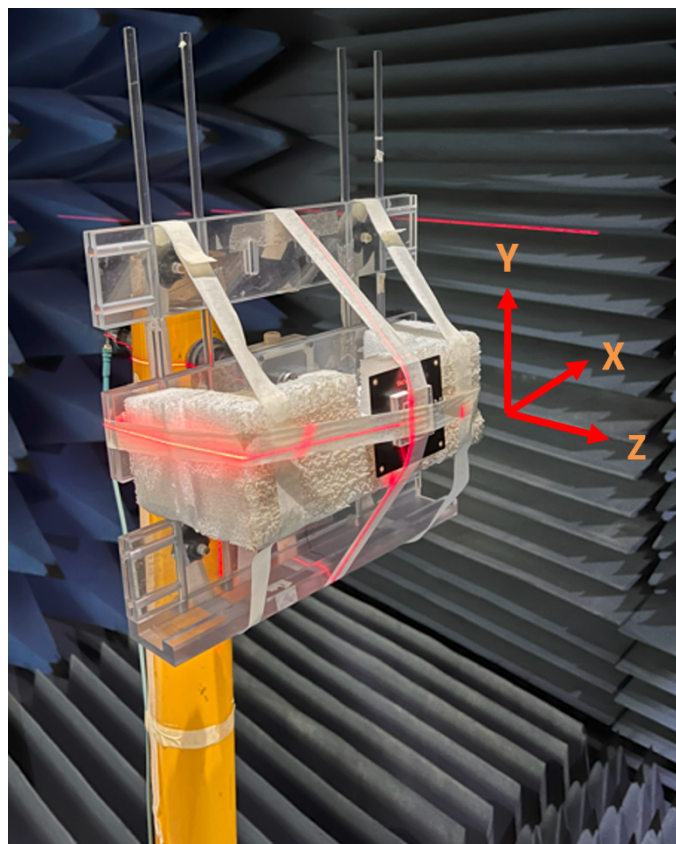
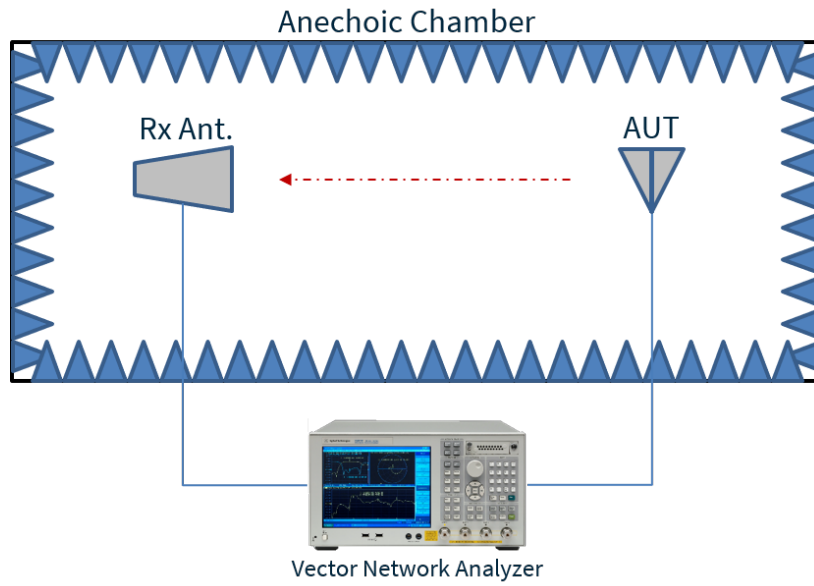


3.7 Axial Ratio



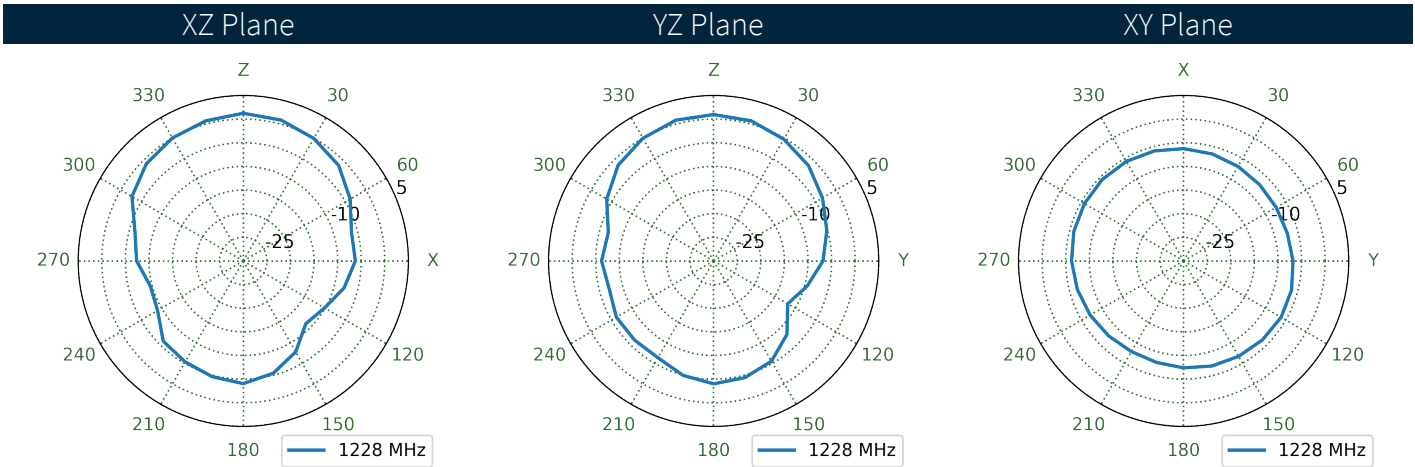
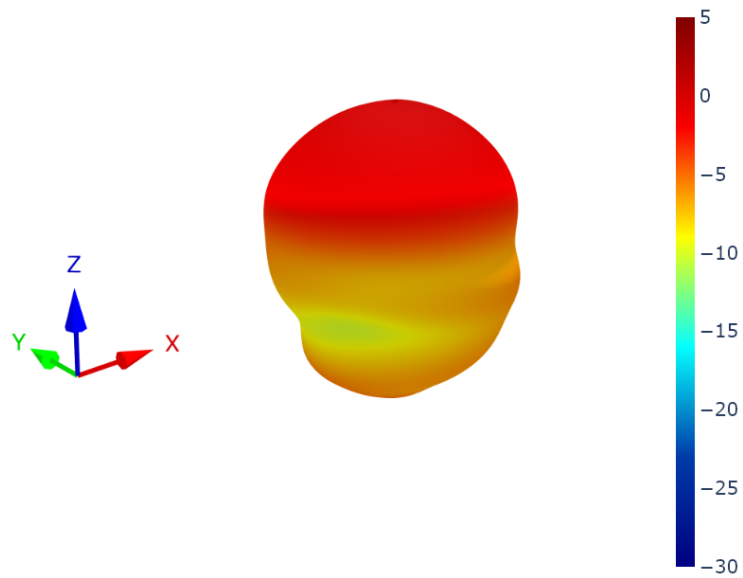
4. Radiation Patterns

4.1 Test Setup

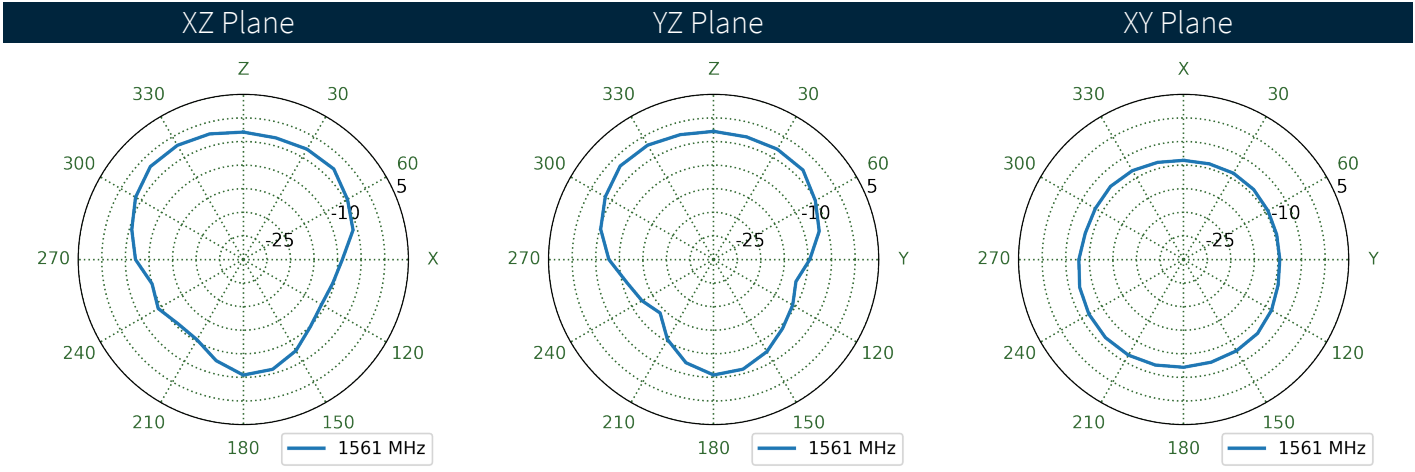
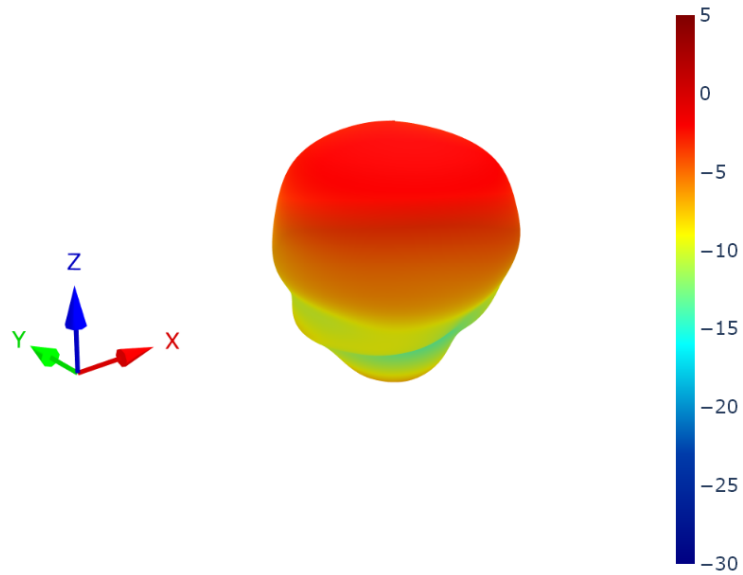


Chamber Test Set-up

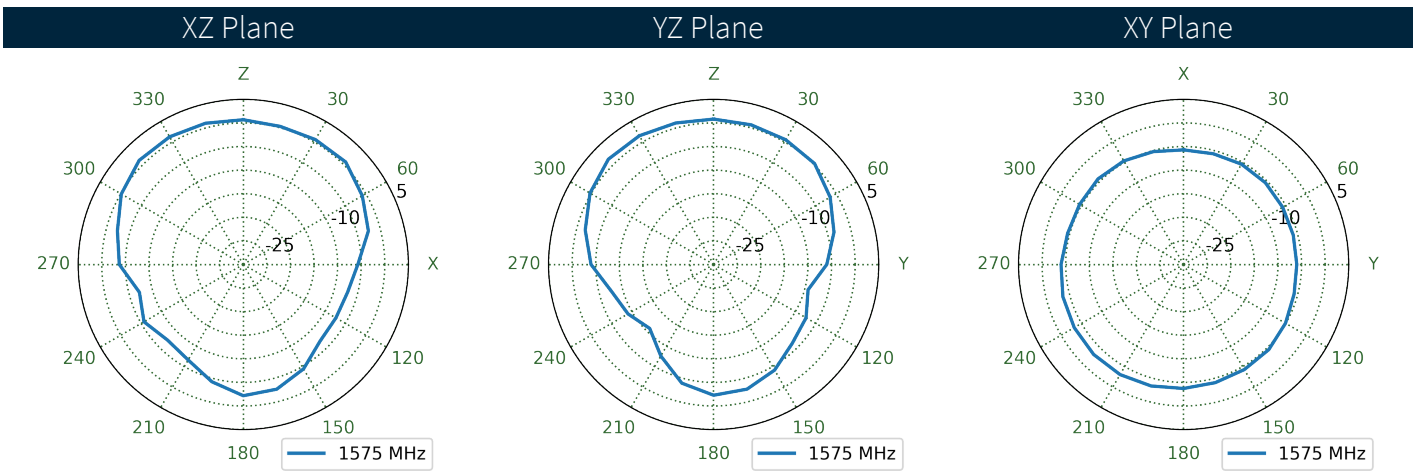
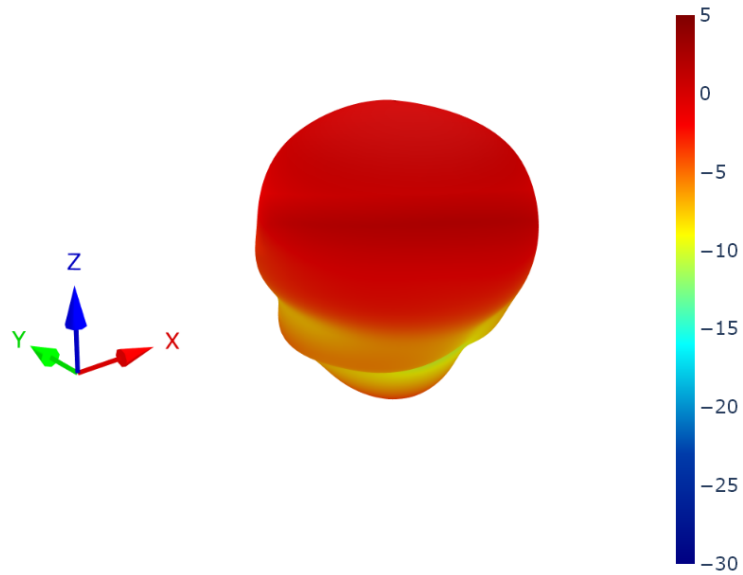
4.2 HP2356.A_L2 Patterns at 1228 MHz



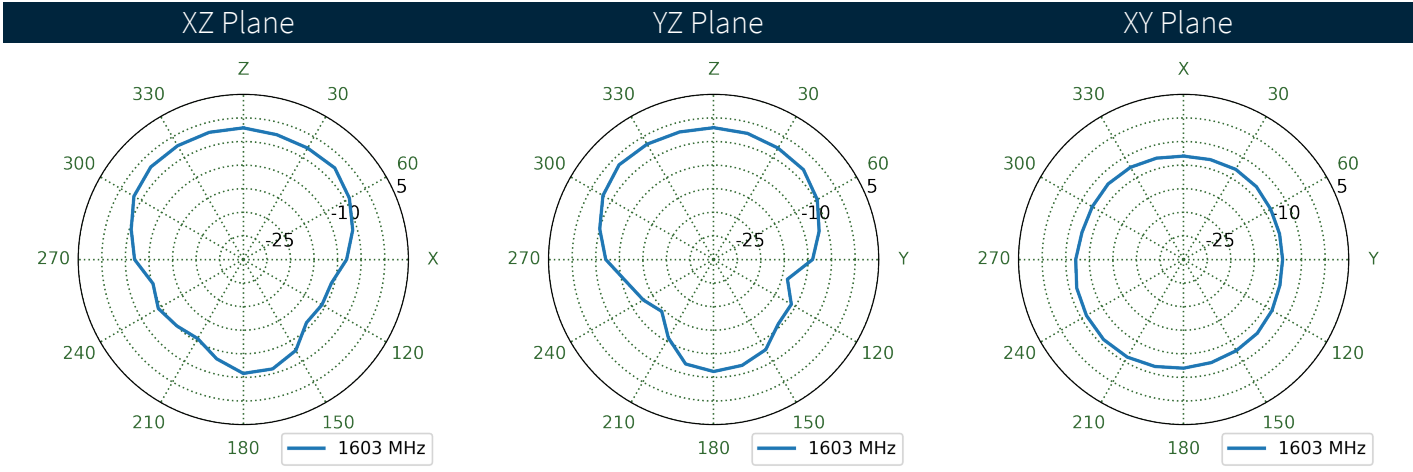
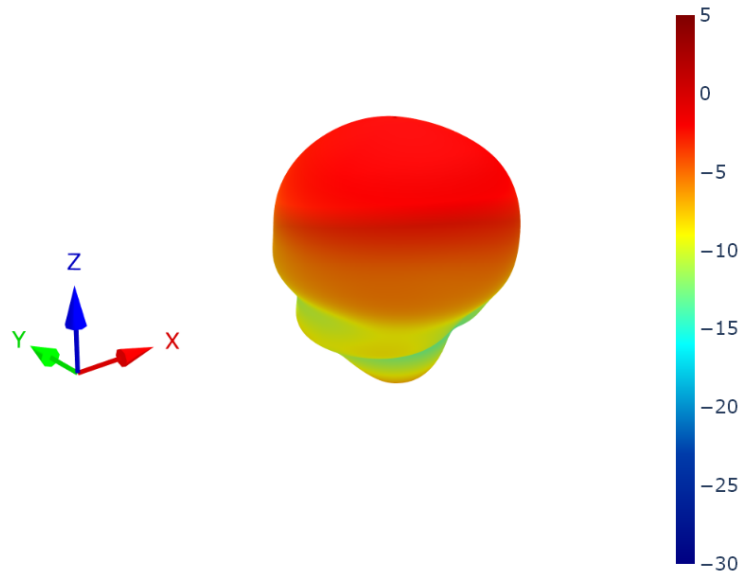
4.3 HP2356.A_L1 Patterns at 1561 MHz



4.4 HP2356.A_L1 Patterns at 1575 MHz



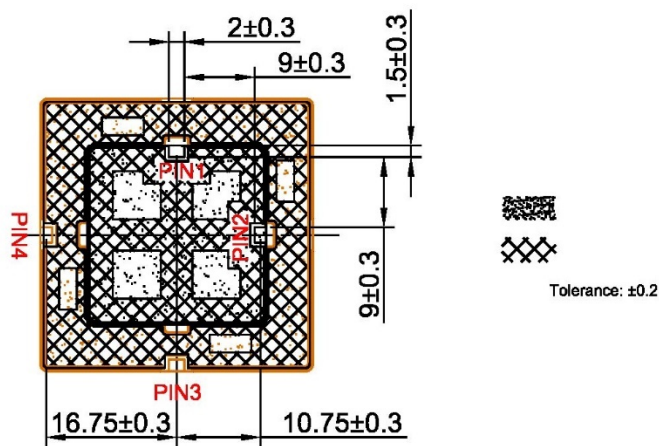
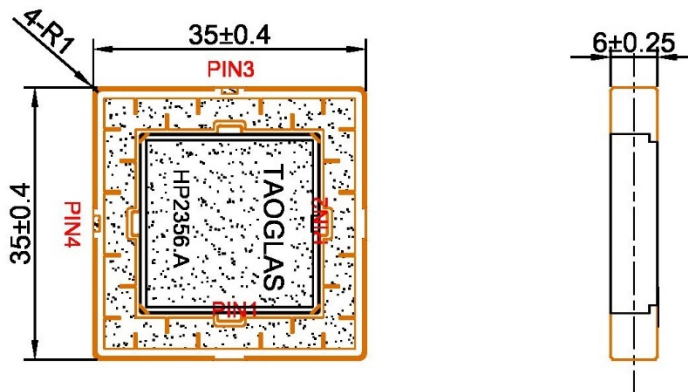
4.5 HP2356.A_L1 Patterns at 1603 MHz



5. Antenna Integration Guide

To-be added prior to launch!

6. Mechanical Drawing



7. Packaging

TBD

Changelog for the datasheet

SPE-24-8-343 - HP2356.A

Revision: A (Original First Release)	
Date:	2024-12-20
Notes:	Initial Release.
Author:	Gary West

Previous Revisions



www.taoglas.com

