TAOGLAS®

Datasheet

Part No:
AHP2356A.07.0100C

Description

GNSS L1-L2 Active 35 x 35 x 6mm Patch with 2 Stage LNA

Features:

Active 2 Stage LNA GNSS Antenna
Bands Covered:
- BeiDou (B1I)
- GPS/QZSS (L1/L2)
- Galileo E5b
- GLONASS (G1)

Overall Dimensions: 70mm x 70mm x 11mm
Cable: 100mm of 1.37 Coaxial
Connector: I-PEX MHFHT
RoHS & Reach Compliant

1. Introduction

The **Taoglas AHP2356A** is a compact, high-performance GNSS L1/L2 active patch antenna designed for next-generation positioning systems requiring high precision, reliability, and multiband support. Measuring 35 × 35 × 6 mm (antenna element) and 70 × 70 × 11 mm (with ground plane integration), it features a 2-stage LNA for enhanced signal clarity, excellent out-of-band rejection, and stable performance in demanding environments.

Covering GPS/QZSS (L1/L2), Galileo (E5b), GLONASS (G1), and BeiDou (B1I), the AHP2356A.07.0100C delivers strong, consistent reception across all major constellations, enabling robust and accurate navigation in mission-critical applications. Its optimized gain, low noise figure, and excellent axial ratio ensure superior signal integrity, even in challenging RF conditions.

The antenna comes with a 100 mm 1.37 mm coaxial cable terminated with an I-PEX MHFHT connector as standard. Both cable and connector can be fully customised to suit your requirements, supporting seamless integration into compact devices. Tuned and tested on a 70 × 70 mm ground plane, it exhibits outstanding radiation patterns and stable performance, while maintaining a low-profile form factor suitable for space-constrained designs.

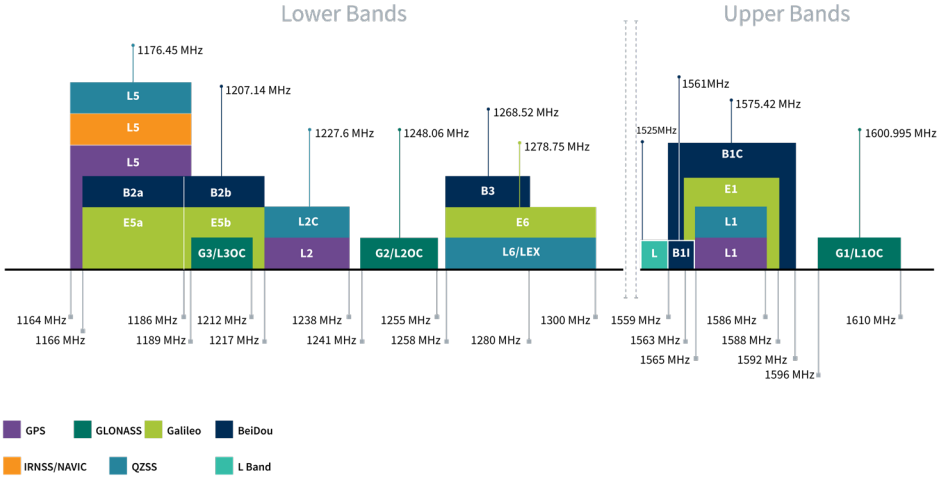
The AHP2356A is fully RoHS, RED and REACH compliant, making it suitable for use in regulated markets worldwide. In addition, Taoglas offers integration and custom tuning services to optimize antenna performance for specific device environments.

Typical Applications:

- Precision Agriculture
- Asset Tracking
- Navigation Systems
- Autonomous Vehicles & Robotics
- Industrial and Commercial Tracking
- Surveying Equipment

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 1207 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

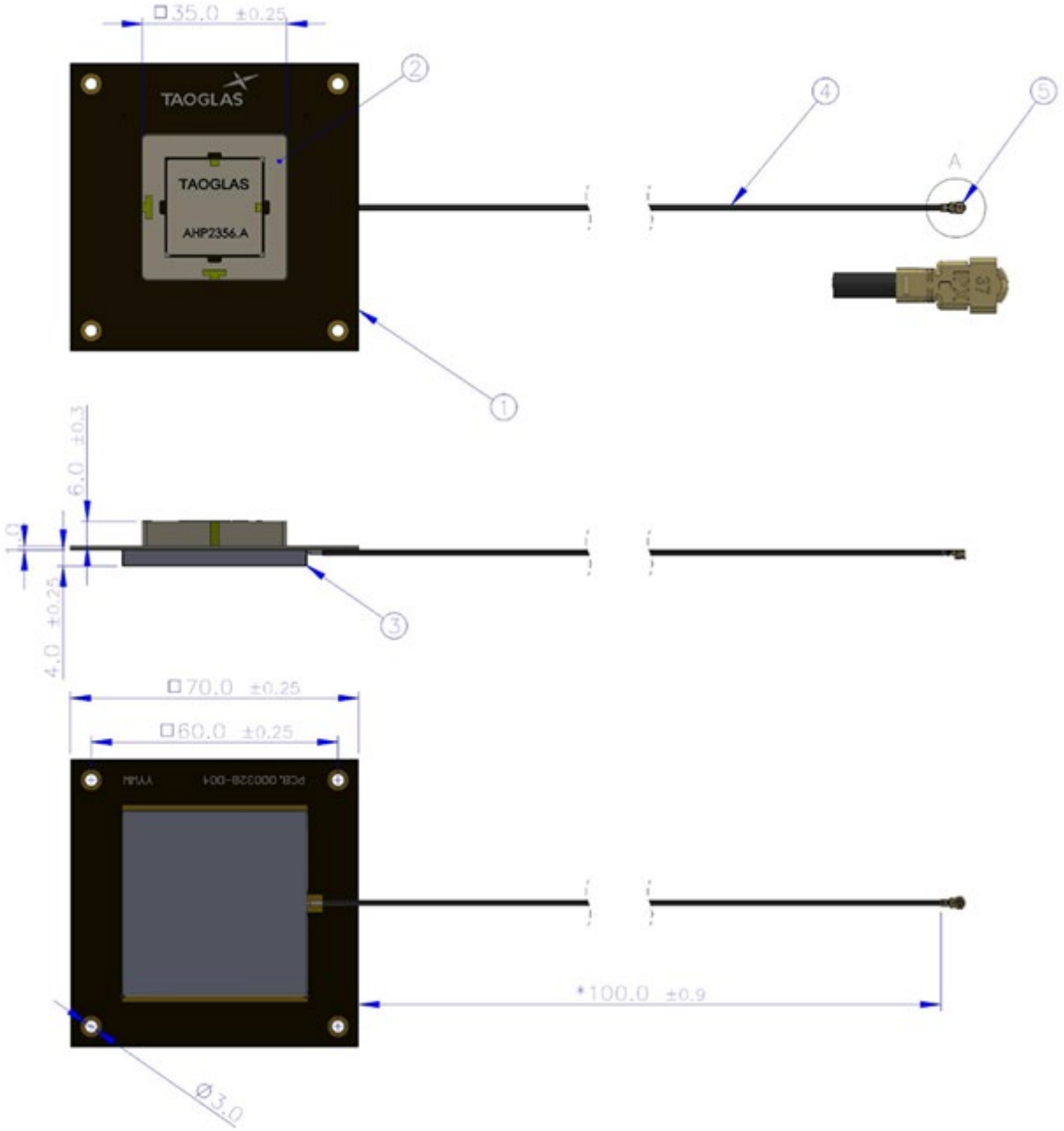
GNSS Electrical					
Frequency (MHz)	**1207**	**1227.6**	**1561**	**1575.42**	**1603**
VSWR (max.)	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1
Efficiency (%)	15	36.5	24.9	55.2	26.0
Average Gain (dB)	-8.32	-4.38	-6.03	-2.58	-5.84
Peak Gain (dBi)	-2.69	1.25	-1.80	1.60	-1.6
Axial Ratio (dB)	2.07	3.34	2.59	2.86	1.77
PCO_x (cm)	0.30	0.30	-0.30	-0.23	-0.1
PCO_y (cm)	1.17	1.20	2.45	2.38	2.44
PCV (cm)	0.002	0.006	0.01	0.01	0.01
Polarization	RHCP				
Impedance	50 Ω				

LNA and Filter Electrical Properties					
Frequency (MHz)	**1207**	**1227**	**1561**	**1575.42**	**1603**
Gain (dB)	28.19	28.06	27.53	27.38	25.74
Noise Figure (dB)	2.22	2.60	2.18	2.18	2.31
Group Delay (ns)	21.24	20.51	16.92	17.18	8.69
Out Of Band Rejection	> 70dB @ 700-960 MHz; > 60dB @ 1710-3000 MHz				
Current Consumption(mA)	18 ± 3				
Voltage in (V)	1.8~5.5V				

Mechanical	
Dimensions	70 x 70 x 11 mm
Weight	56g ± 3%
Material	Ceramic

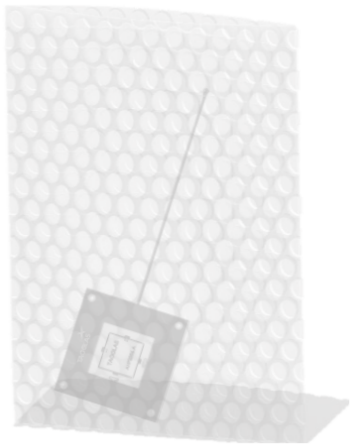
Environmental	
Operation Temperature	-40 - +85°C
Storage Temperature	-40 - +85°C
Humidity	Non-condensing 65°C 95% RH
Moisture Sensitivity Level (MSL)	3

3. Mechanical Drawing

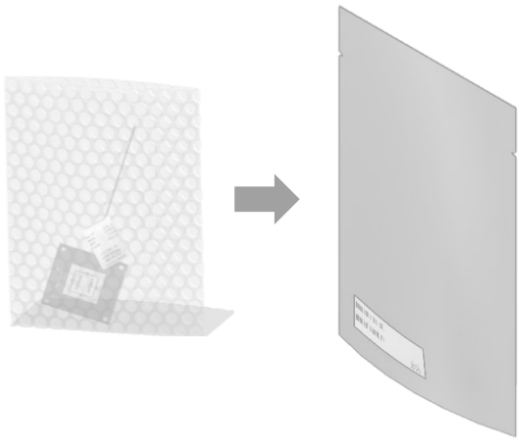


	Name	Material	Finish	Qty
1	PCB	NP-140	Black	1
2	Patch	Ceramic	White	1
3	Shielding Can	SPTE	Tin Plated	1
4	1.37 Coaxial cable	FEP	Black	1
5	IPEX MHFHT	Brass	Au Plated	1

4. Packaging



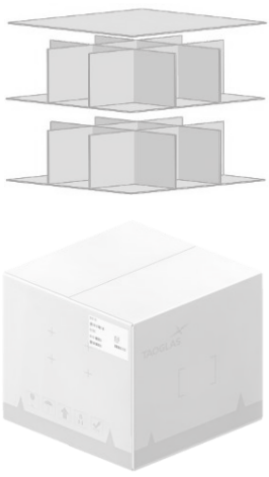
☑ 1 PCS / Bubble bag



☑ 1 PCS / Vacuum bag

☑ 1 PCS / 3g Desiccant

☑ Weight (g): 61 ±3%



☑ 90 PCS / Carton

☑ 2 PCS / Frame

☑ 3 PCS / Bulkhead Board

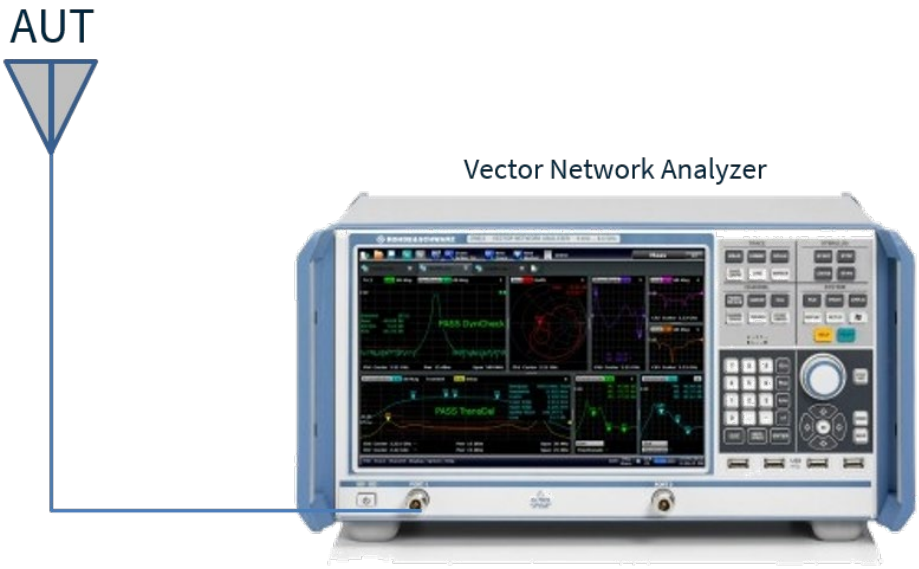
☑ Carton(mm): 370x370x300

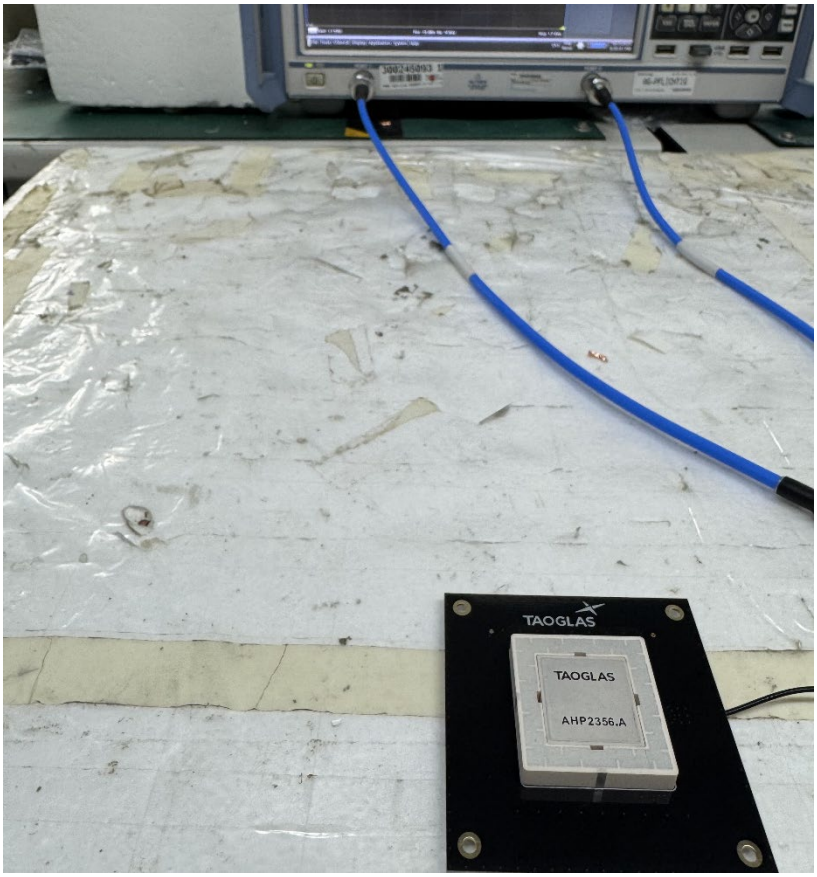
☑ Weight (kg): 6.39 ±3%

☑ Carton Label

5. Antenna Characteristics

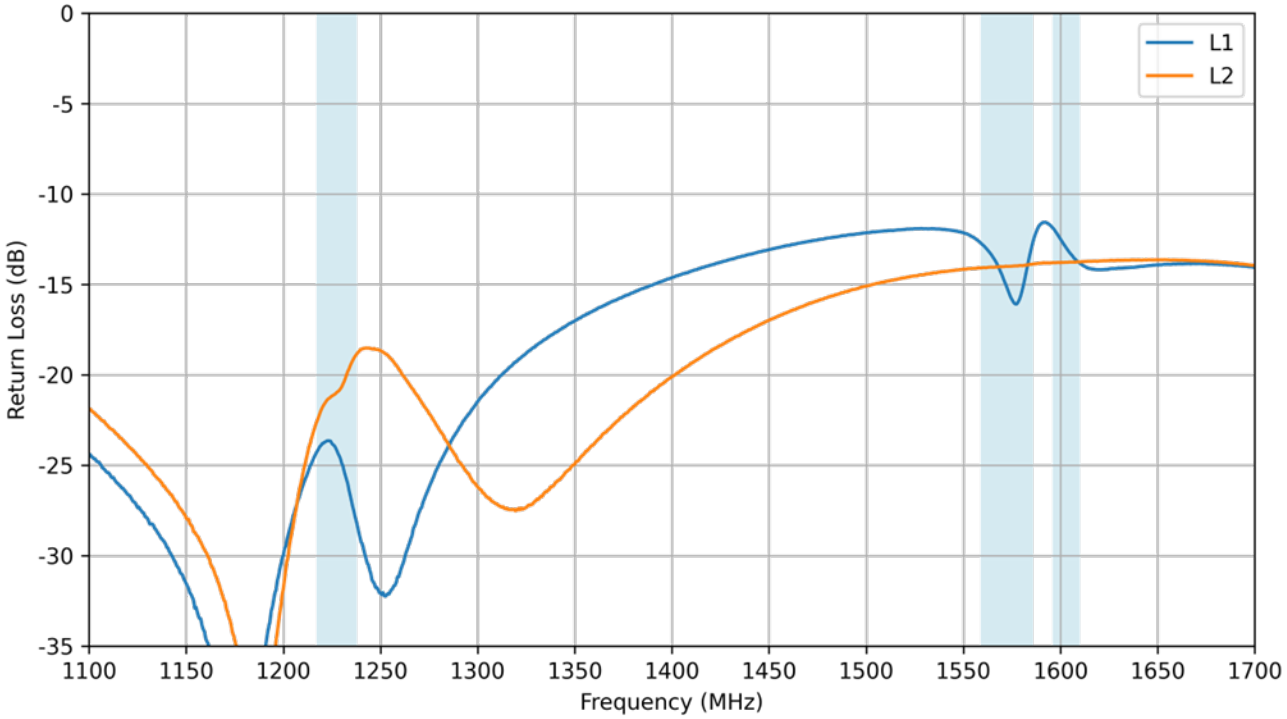
5.1 Test Setup



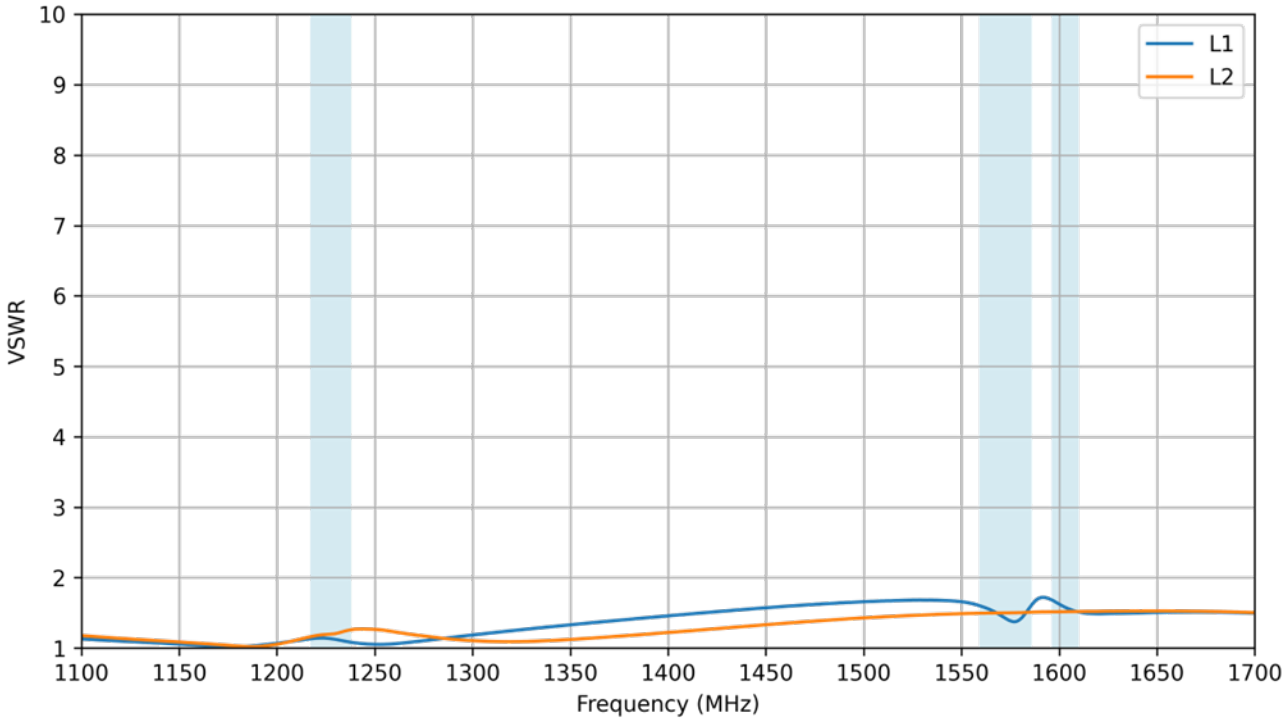


VNA Test Set-up

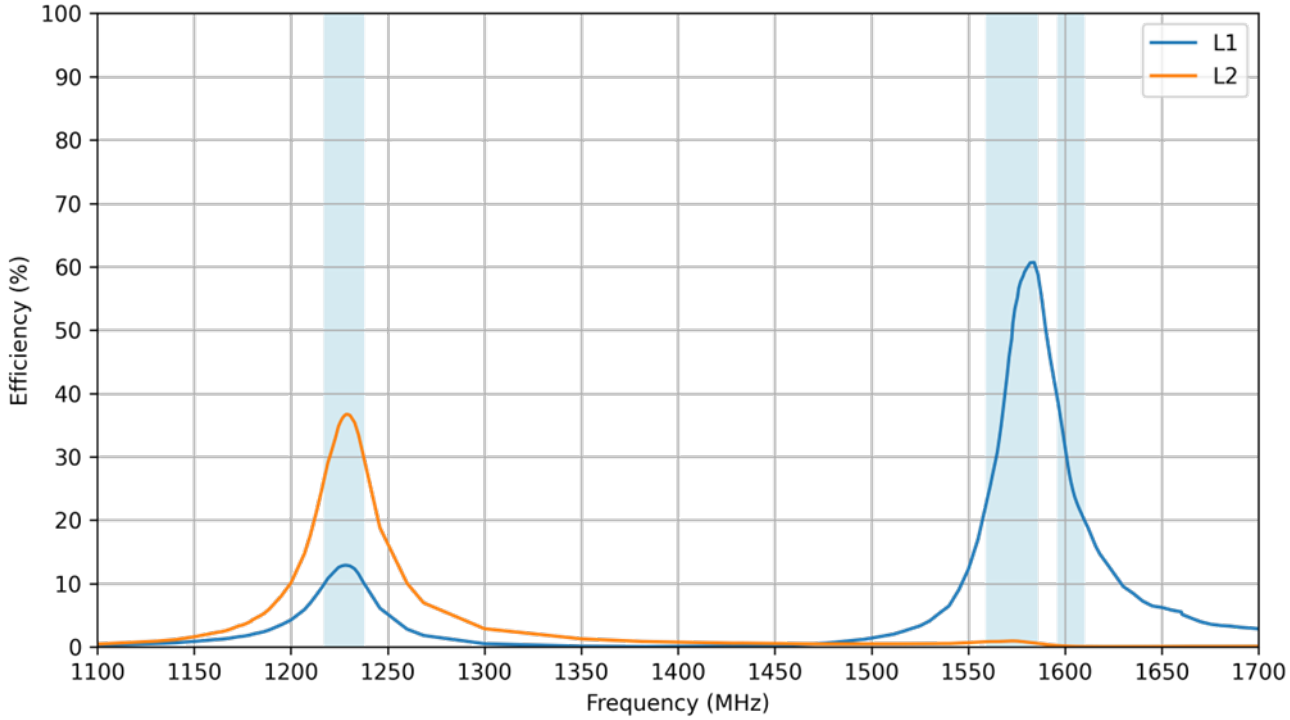
5.2 Return Loss



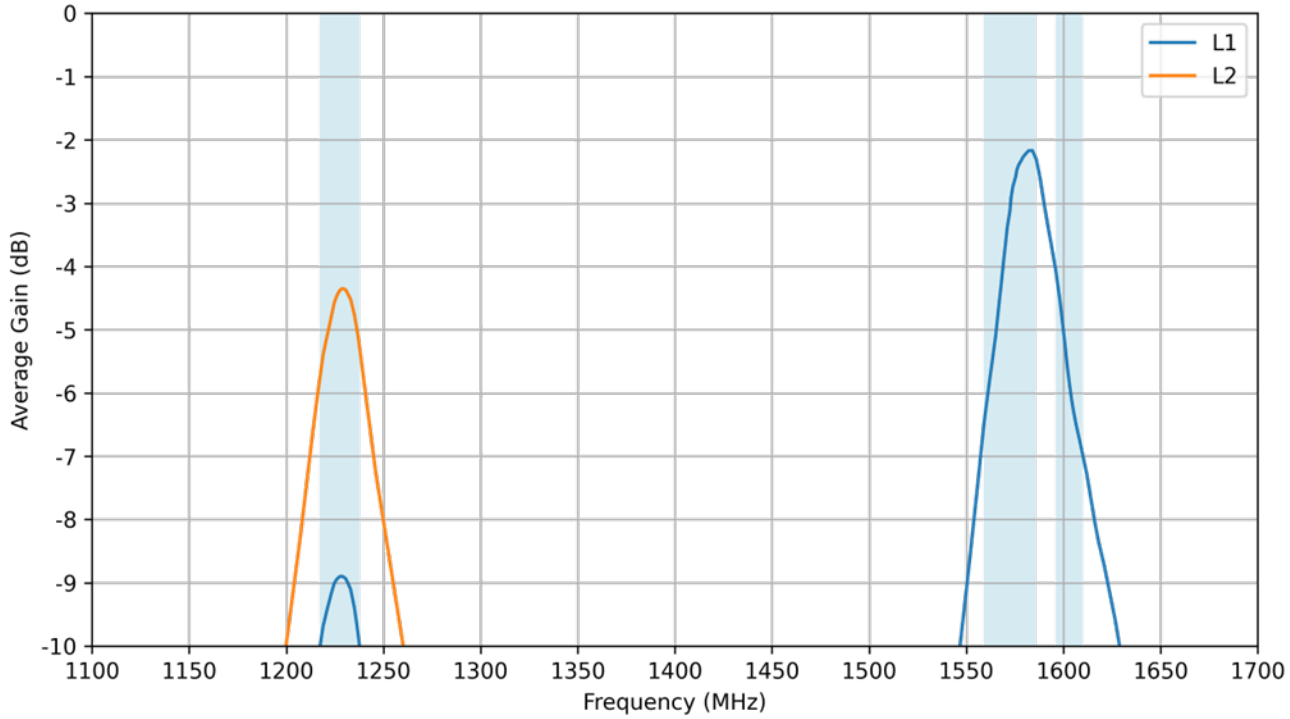
5.3 VSWR



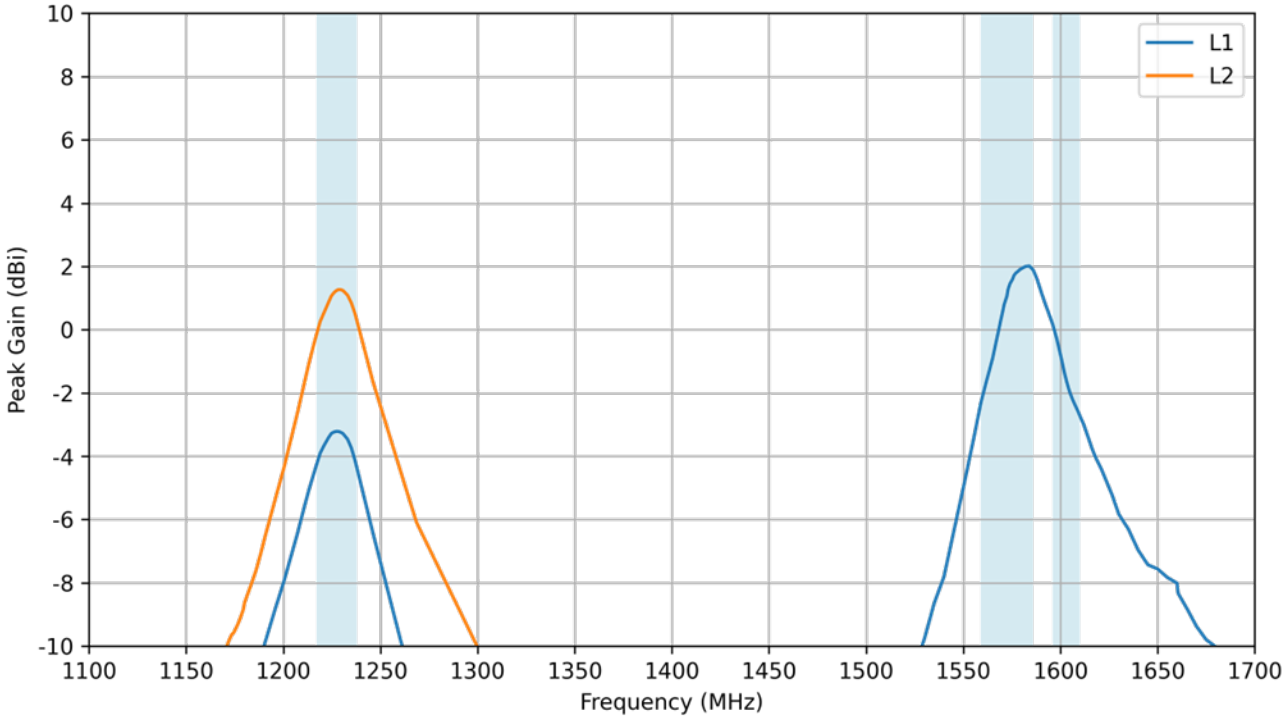
5.4 Efficiency



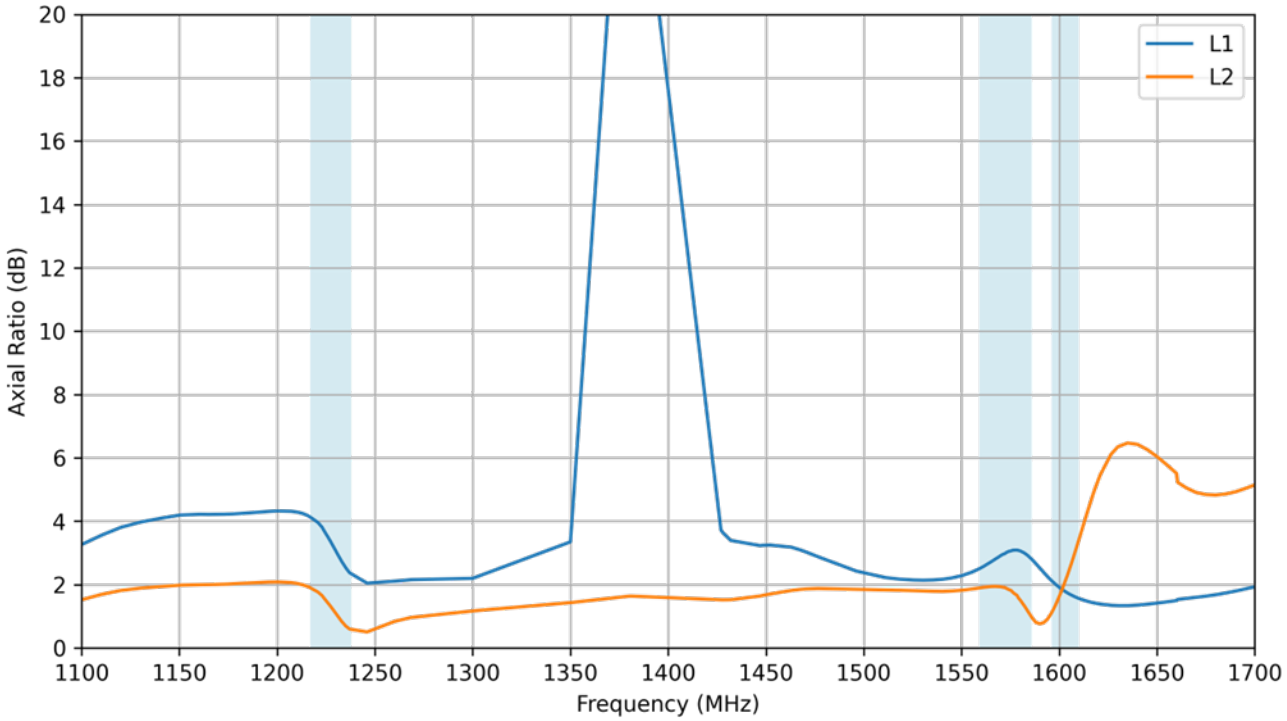
5.5 Average Gain



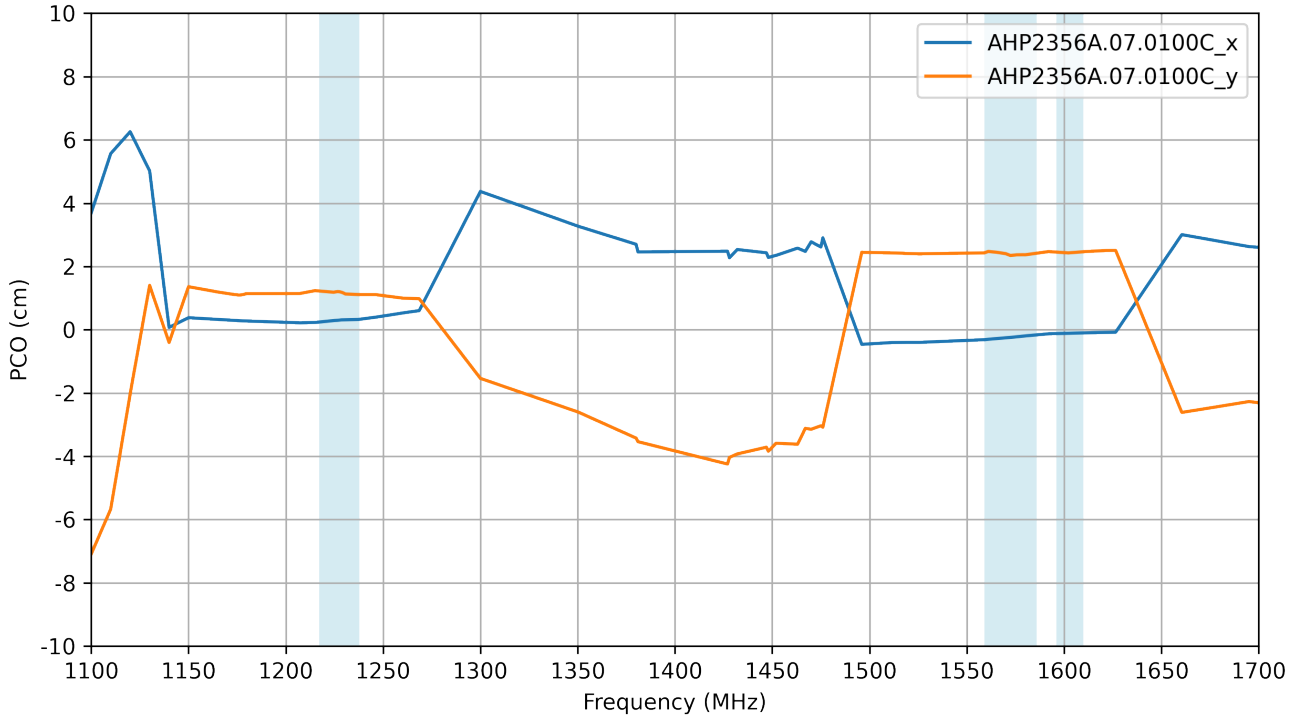
5.6 Peak Gain



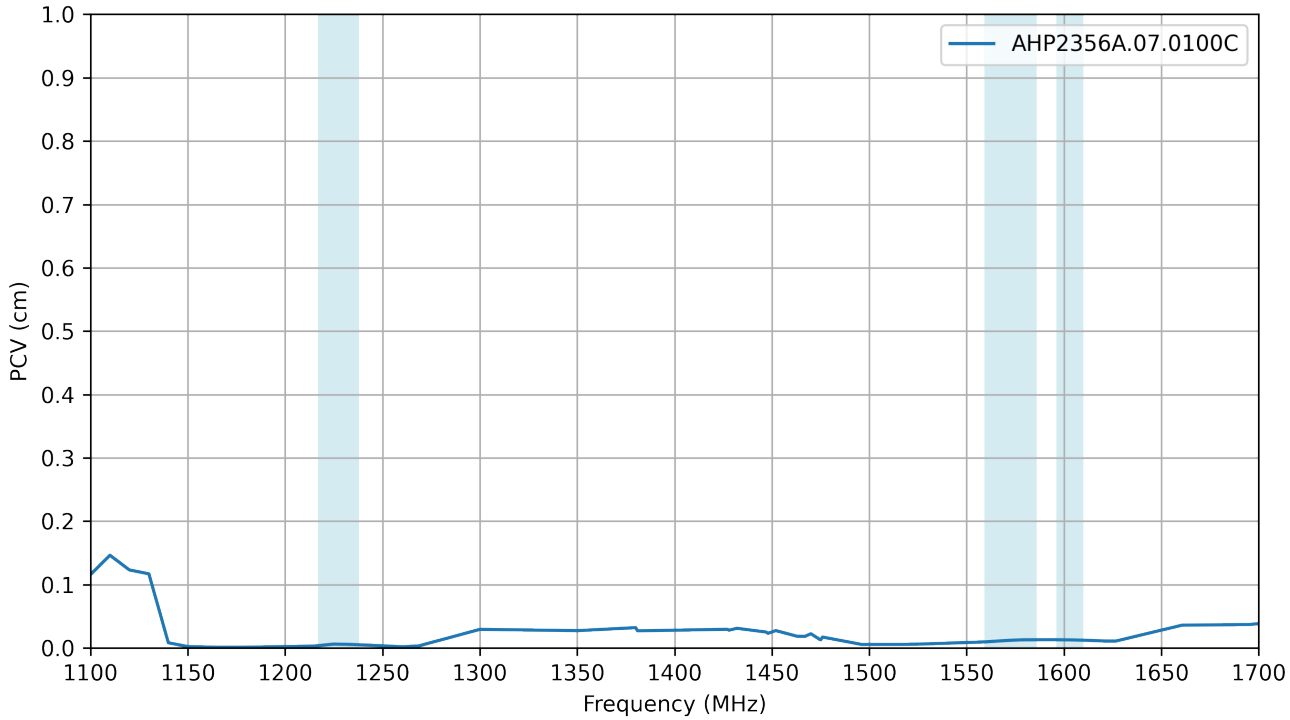
5.7 Axial Ratio



5.8 PCO

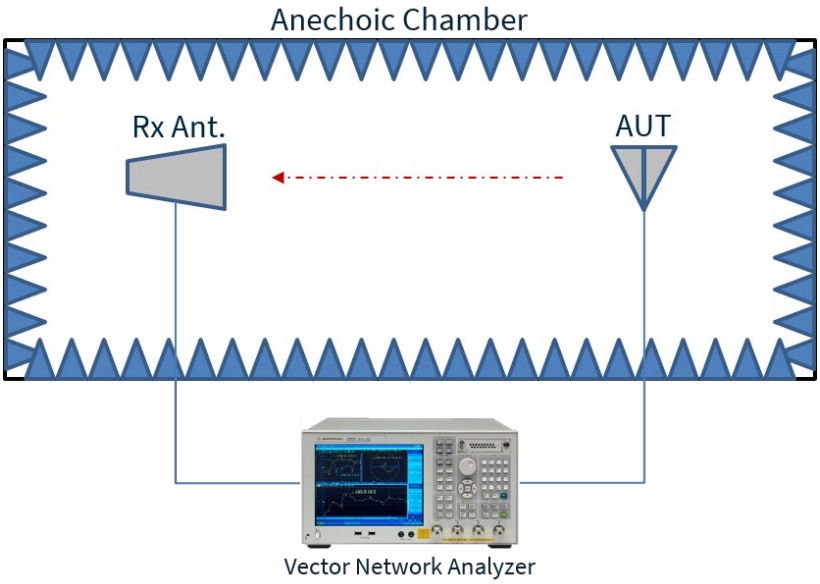

AHP2356A.07.0100C_x
AHP2356A.07.0100C_y
PCO (cm)
Frequency (MHz)
10
8
6
4
2
0
-2
-4
-6
-8
-10
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600
1650
1700

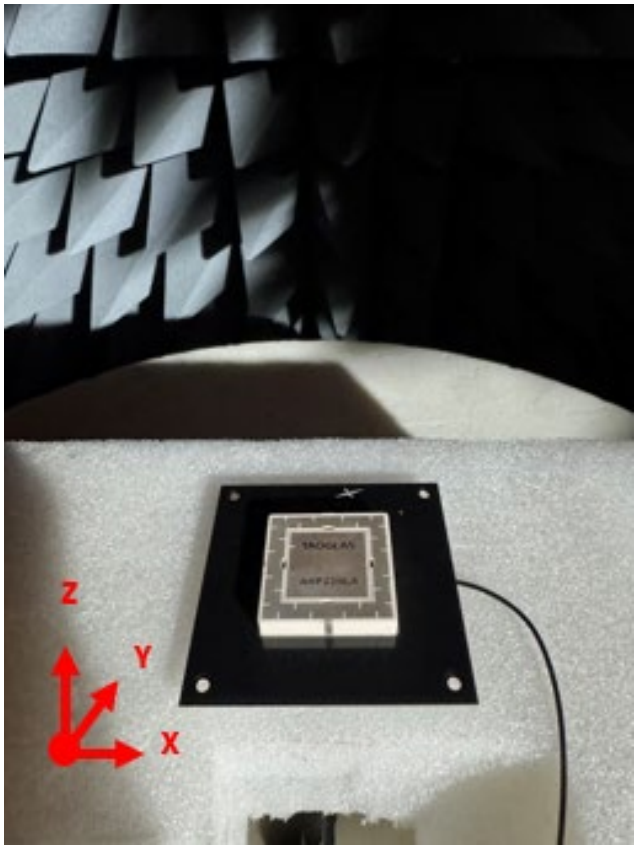
5.9 PCV


AHP2356A.07.0100C
PCV (cm)
Frequency (MHz)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600
1650
1700

6. Radiation Patterns

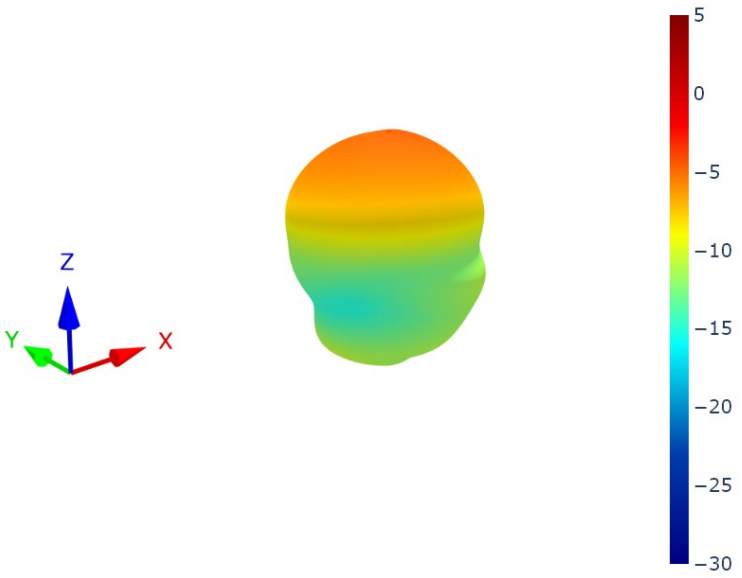
6.1 Test Setup

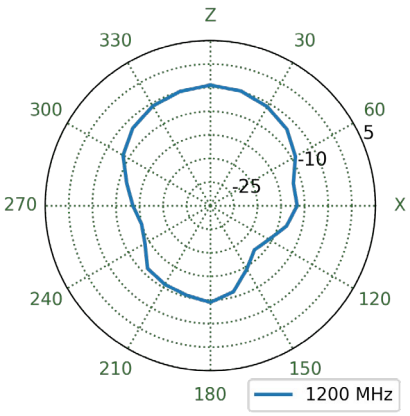
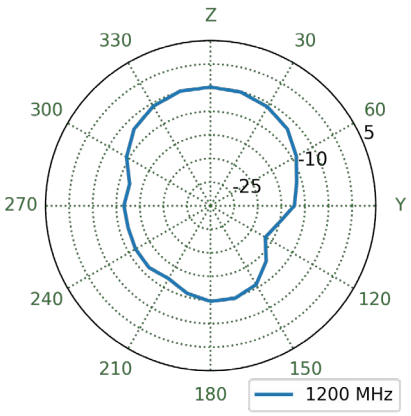
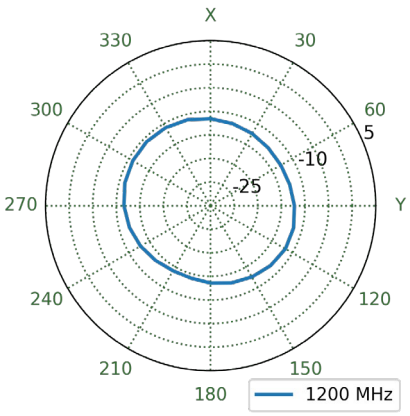




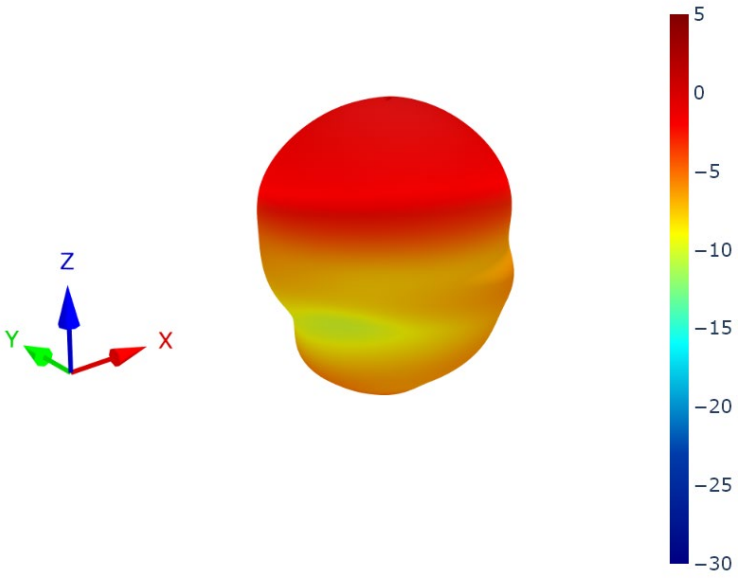
Chamber Test Set-up

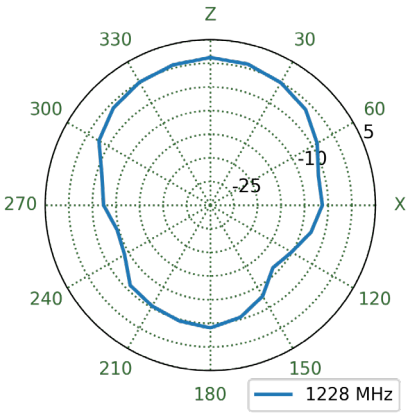
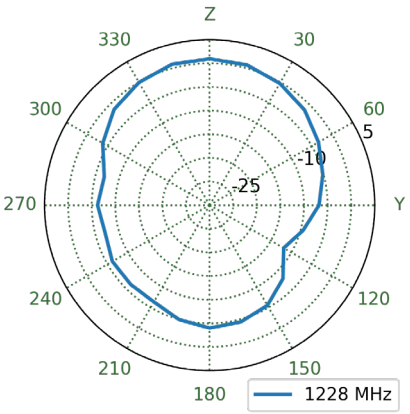
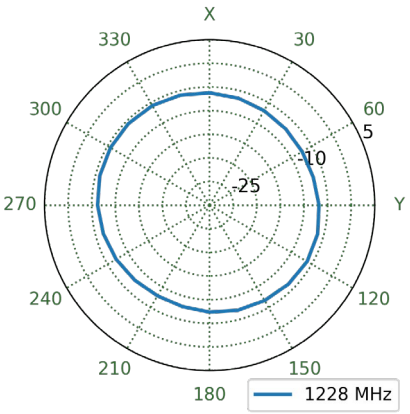
6.2 L2 Patterns at 1200 MHz



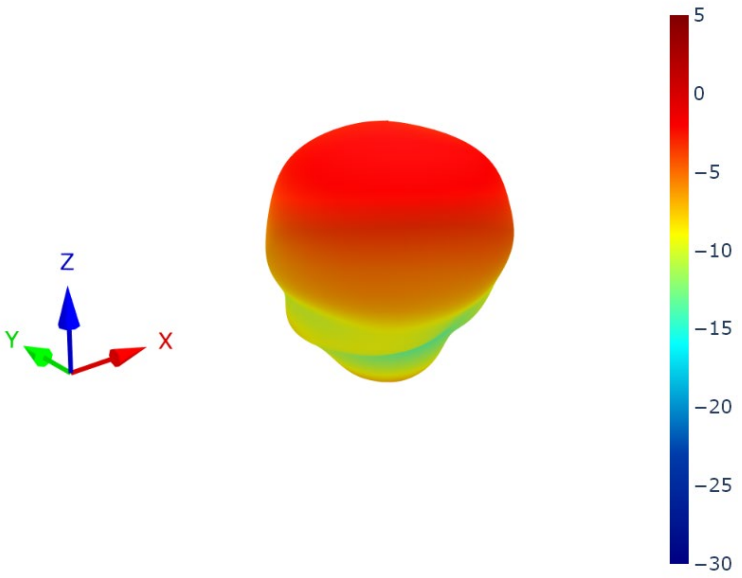
XZ Plane	YZ Plane	XY Plane
		

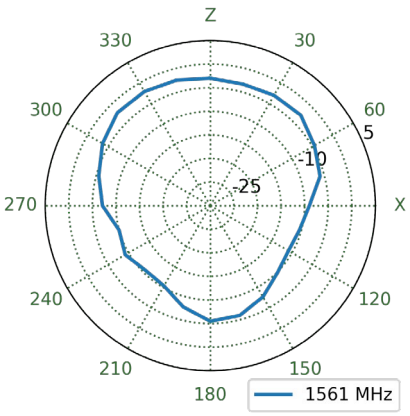
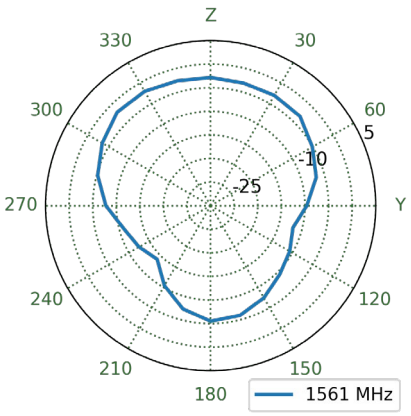
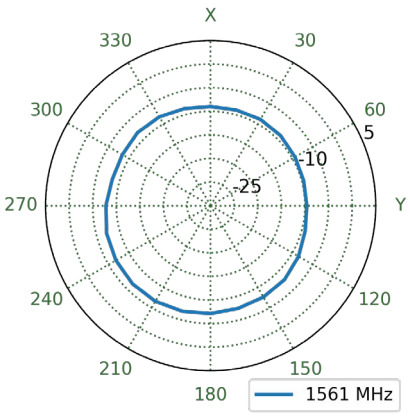
6.3 L2 Patterns at 1228 MHz



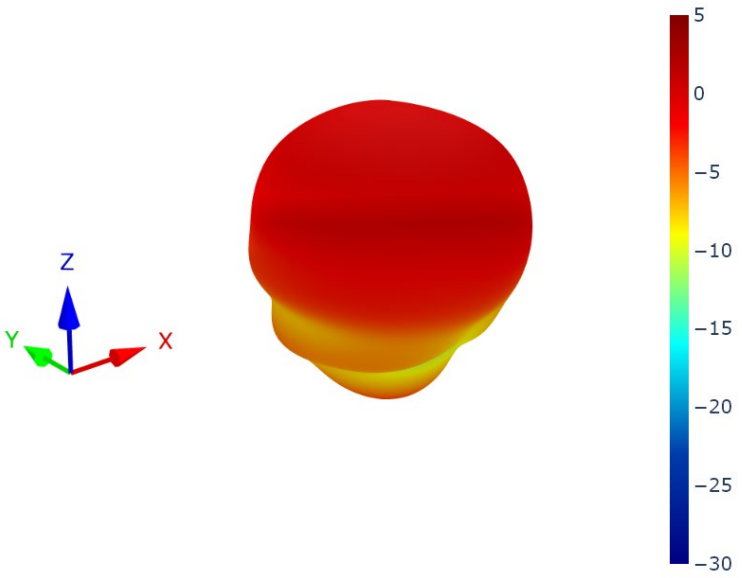
XZ Plane	YZ Plane	XY Plane
		

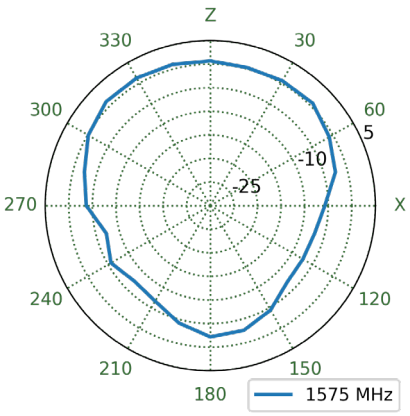
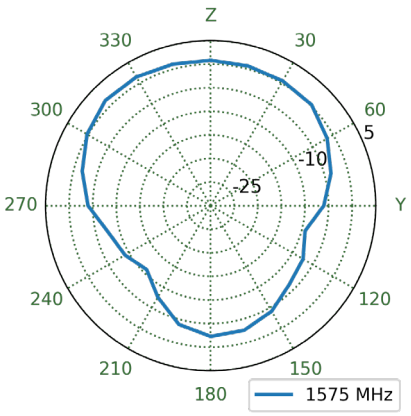
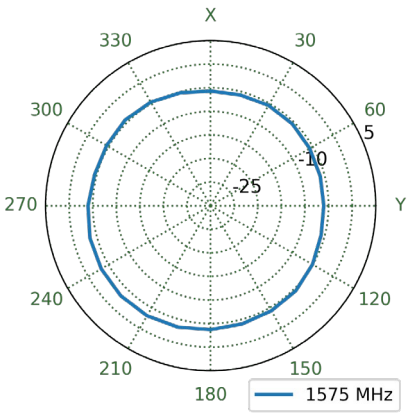
6.4 L1 Patterns at 1561 MHz



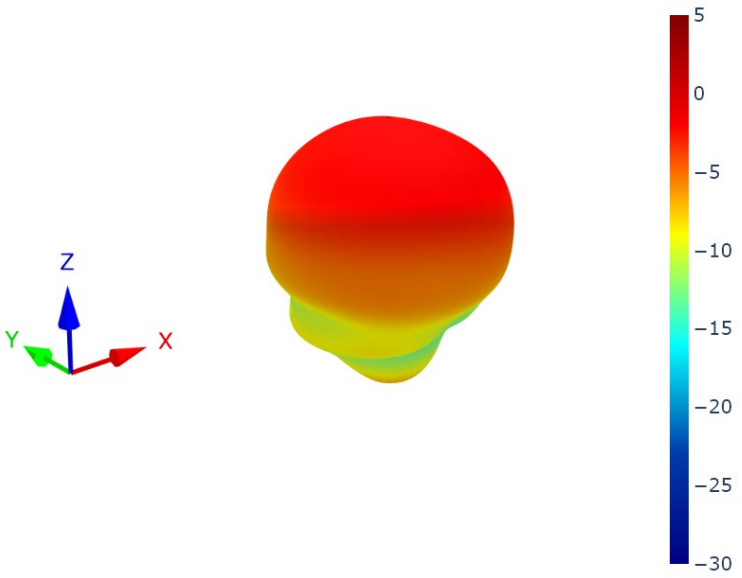
XZ Plane	YZ Plane	XY Plane
		

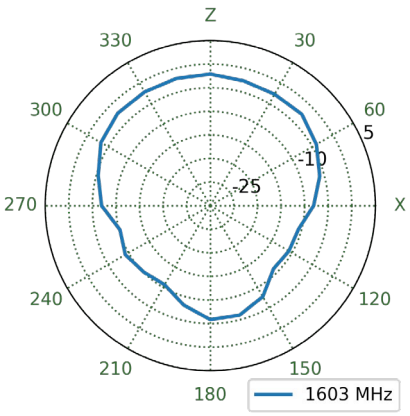
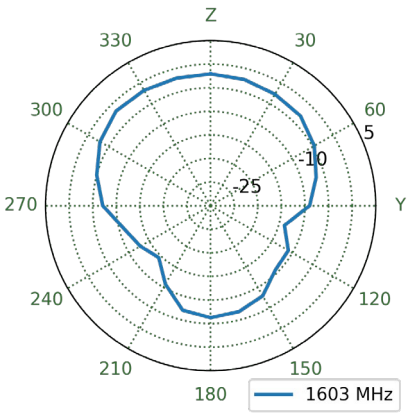
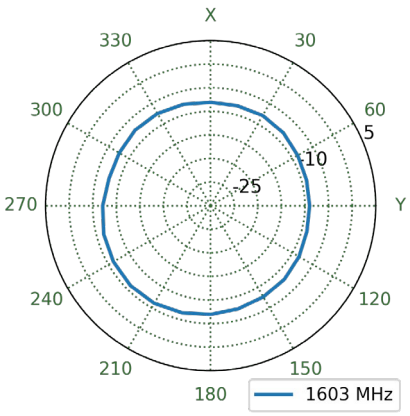
6.5 L1 Patterns at 1575 MHz



XZ Plane	YZ Plane	XY Plane
		

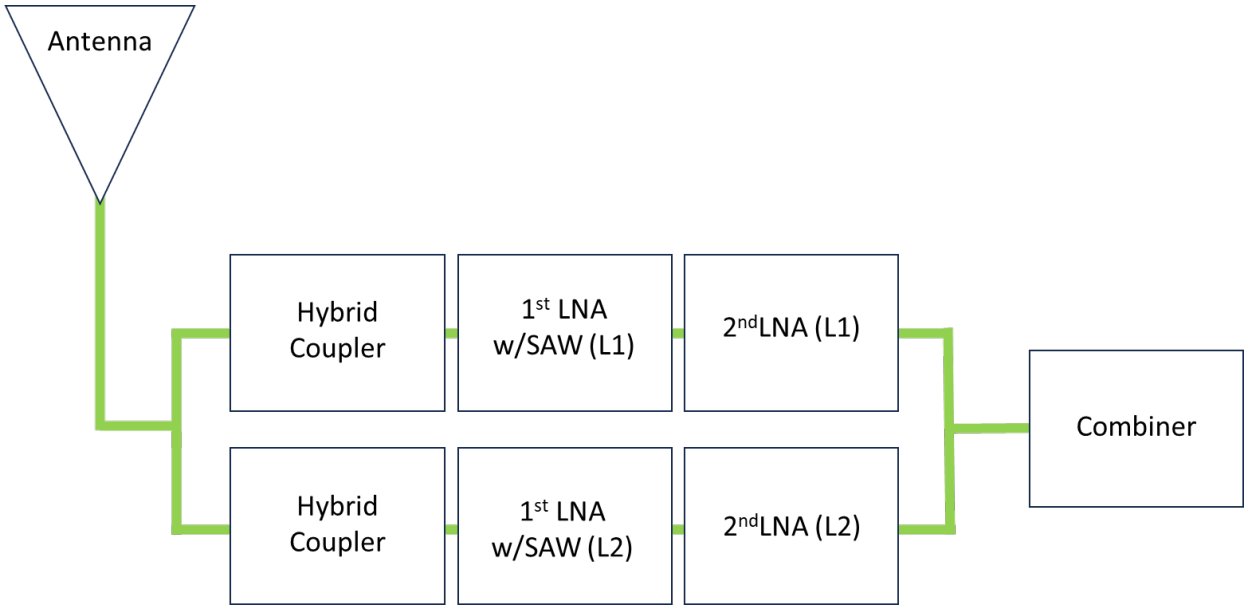
6.6 L1 Patterns at 1603 MHz



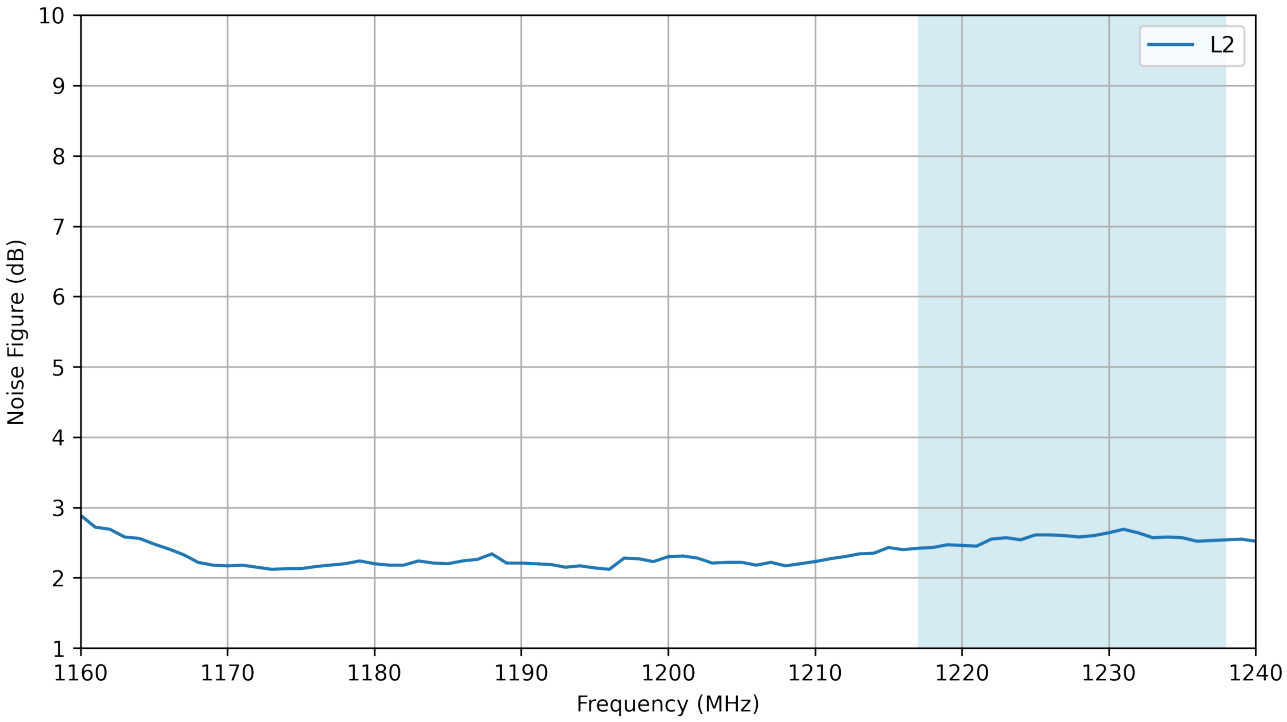
XZ Plane	YZ Plane	XY Plane
		

7. LNA Characteristics

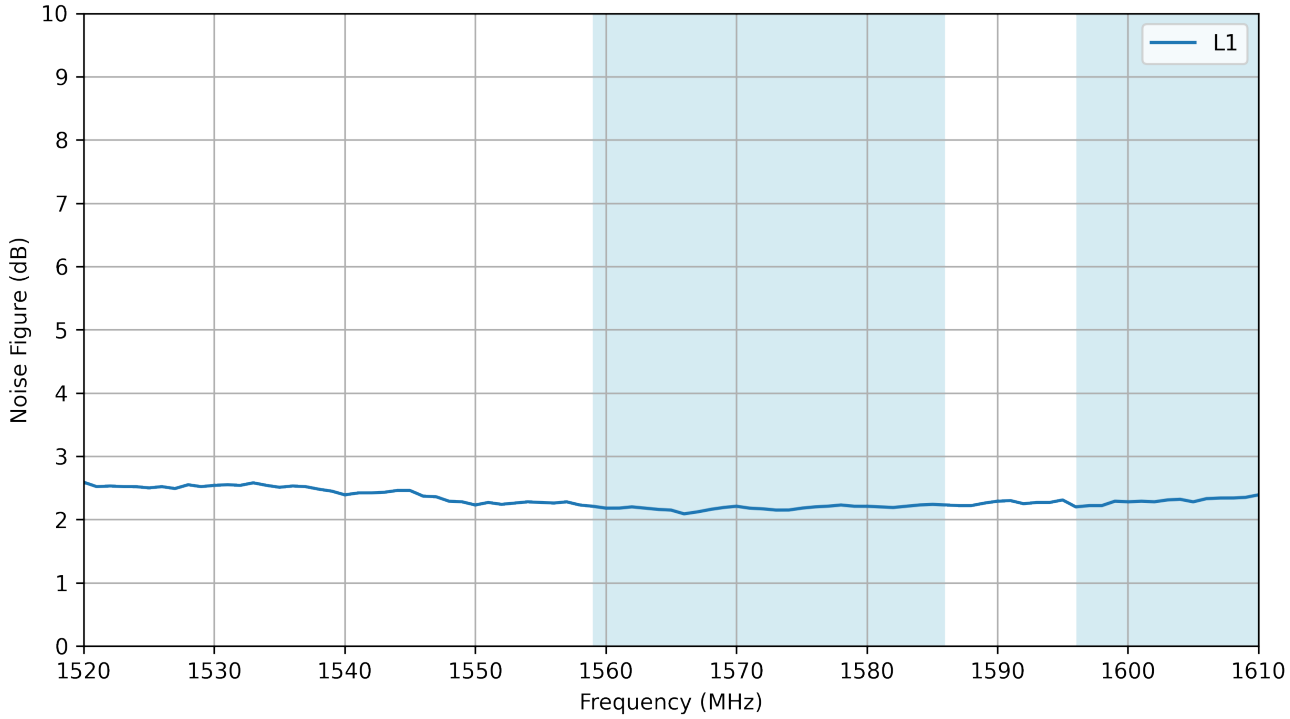
7.1 Block Diagram



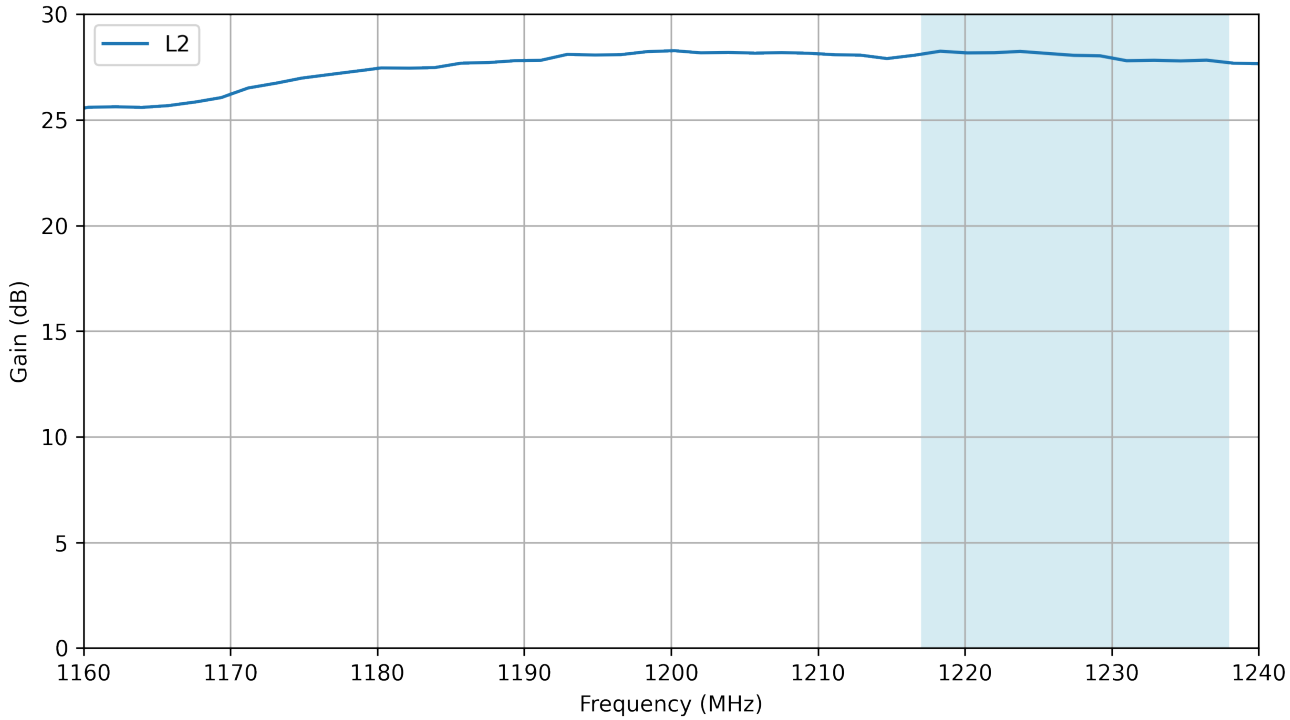
7.2 Noise Figure – L2



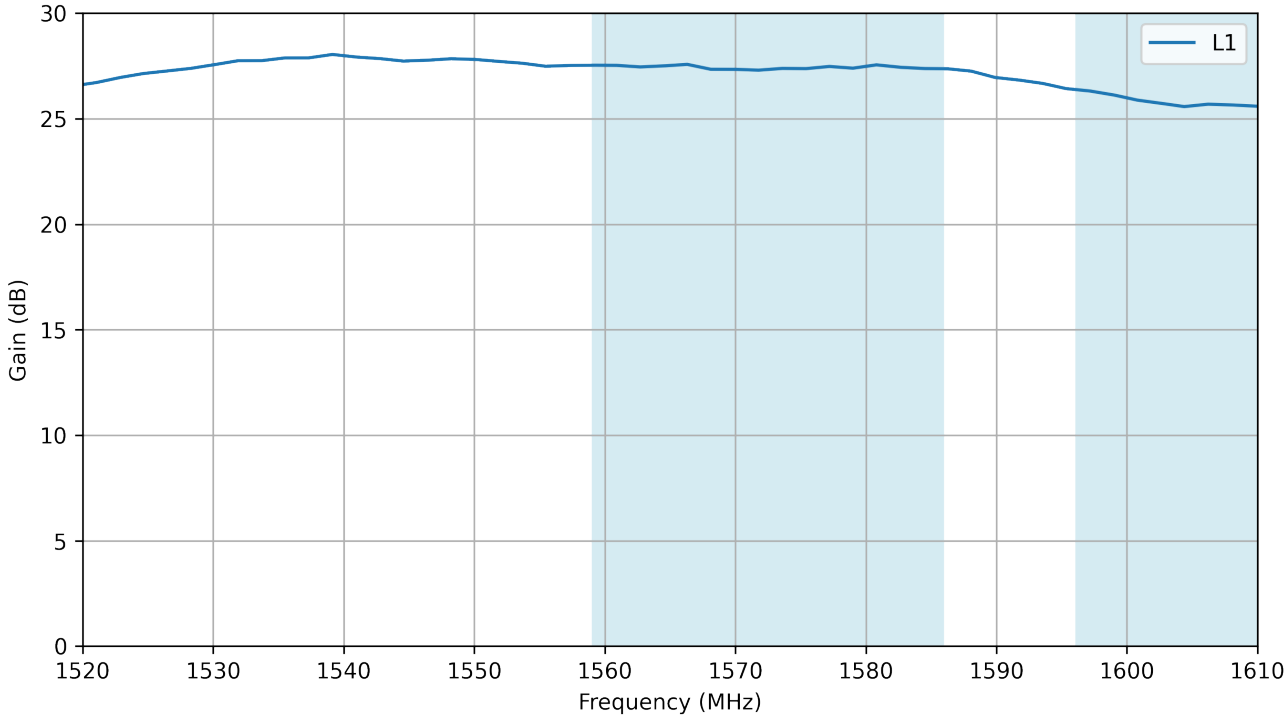
7.3 Noise Figure – L1



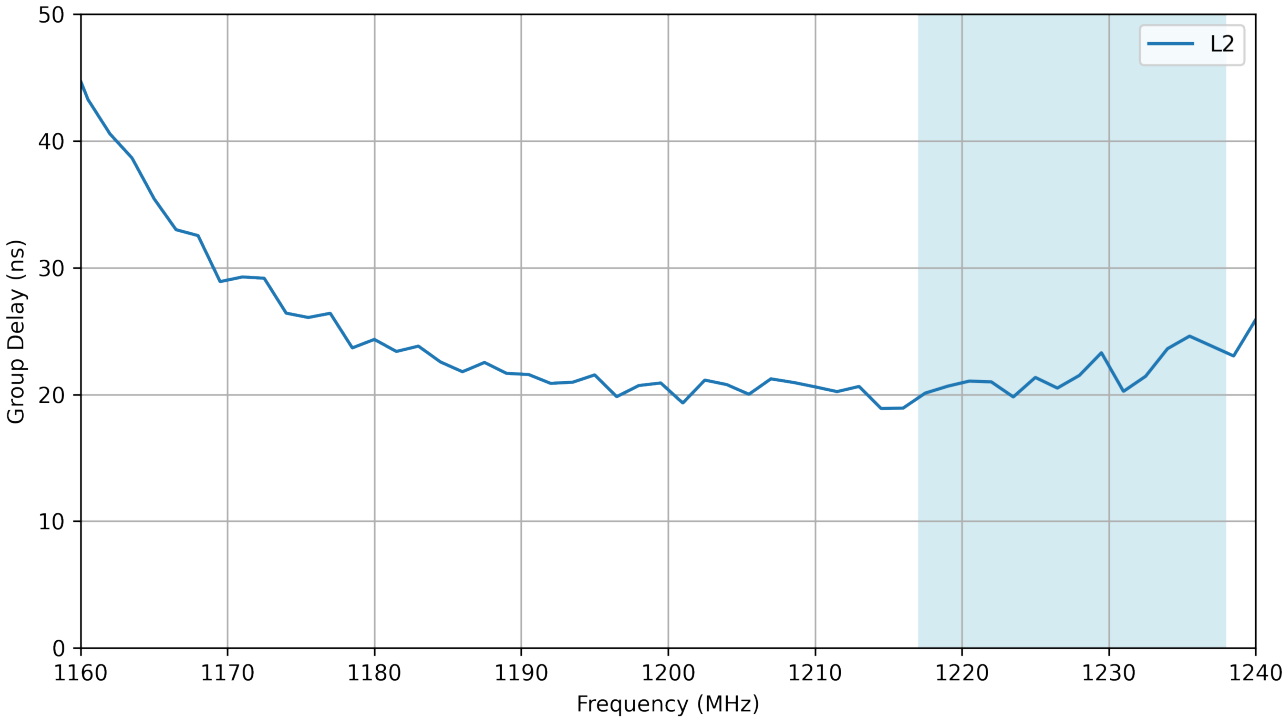
7.4 Gain – L2



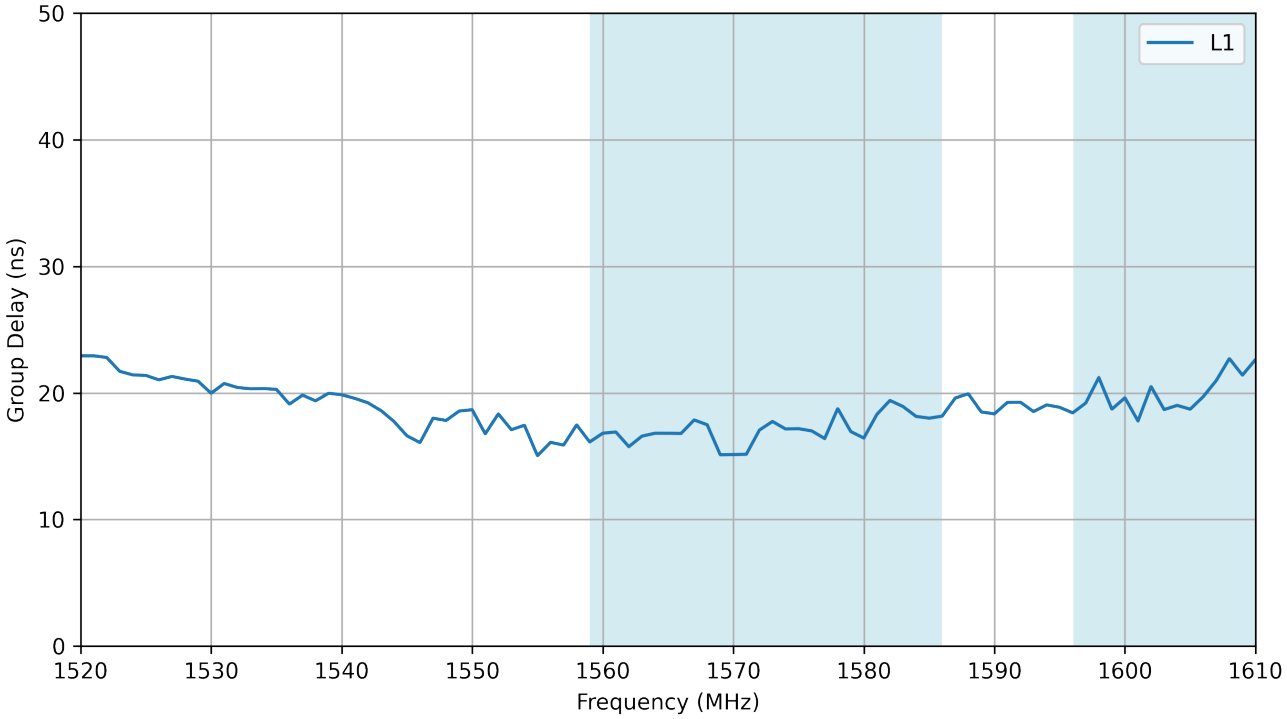
7.5 Gain – L1



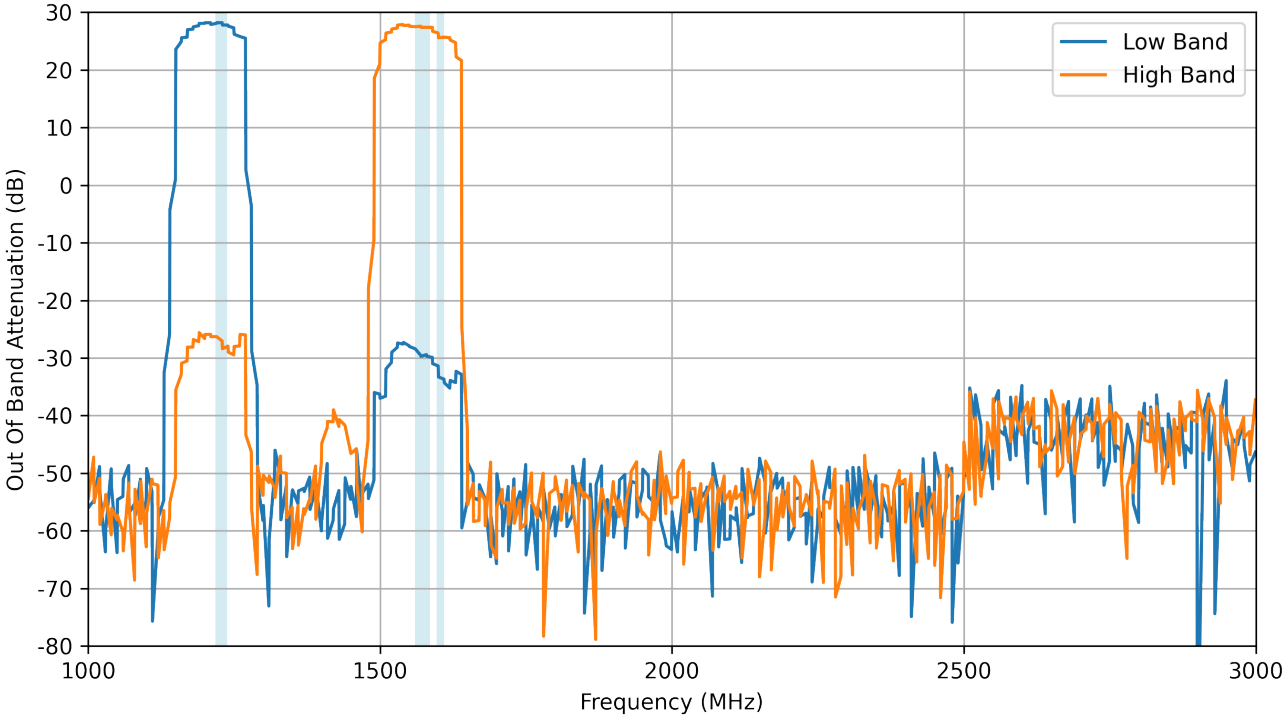
7.6 Group Delay – L2



7.7 Group Delay – L1



7.8 Out Of Band Attenuation



Changelog for the datasheet

SPE-25-8-245 - AHP2356A.07.0100C

Revision: B (Current Version)	
Date:	2026-01-30
Changes:	Updated EDW.
Changes Made by:	Gary West

Previous Revisions

Revision: A (Original First Release)	
Date:	2025-08-29
Notes:	Initial Release.
Author:	Gary West

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