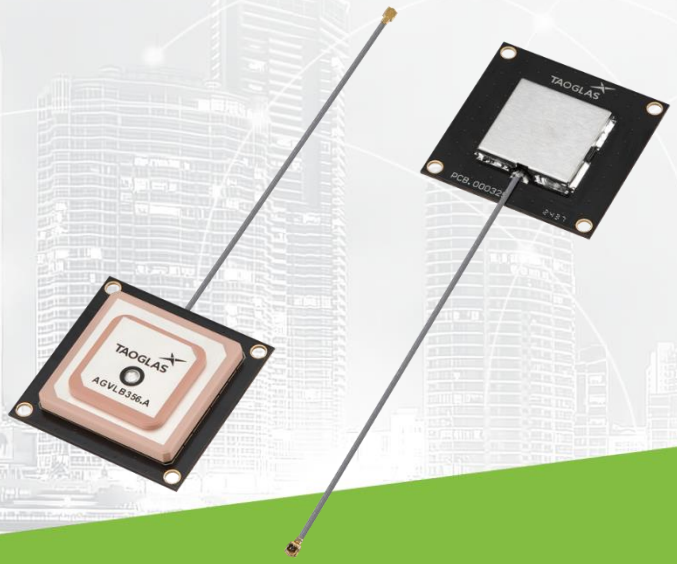
TAOGLAS



Datasheet

Part No:
AGVLB356.A.07.0100AO

Description

GPS-GLONASS-BeiDou-IRNSS L1 + L5 Stacked Active Patch 2 Stage LNA Antenna
35x35mm PCB 100mm 1.13 IPEX MHFI(U.FL)

Features:

Single Feed Stacked Patch Assembly
Covering Bands
– GPS L1 & L5
– BeiDou B1I
– GLONASS G1
Tuned for Centre Positioning on a 70x70mm Ground Plane
Dual Stage LNA
Dimensions: 35x35x10mm
Cable: 100mm of Ø1.13mm
Connector: I-PEX MHF® I (U.FL Compatible)
RoHS & REACH Compliant

1. Introduction

The Taoglas AGVLB356.A is a multi-band GPS, GLONASS, BeiDou and IRNSS, high-performance GPS L1 / L5 & BeiDou B1/B2a Active Stacked Patch Antenna for high precision GPS and BeiDou accuracy and fast positioning. It utilizes a 35 x 35 x 10.5mm advanced dual stacked ceramic patch antenna with optimized gain for GPS L1/L5, Galileo, IRNSS and BeiDou bands. Integration of IRNSS allows for better navigation accuracy and enables compliance with AIS-140 for tracking devices in India.

The AGVLB356.A has been designed for in-device mounting with a small size of just 35 x 35 x 10.5mm, it can fit in some of the most compact devices.

This compact antenna exhibits excellent radiation patterns on both GPS L1/L5 bands and with a low noise figure to preserve signal quality helps minimize time to first fix. It also features excellent out-of-band rejection to prevent out-of-band signals from overdriving or damaging its LNAs.

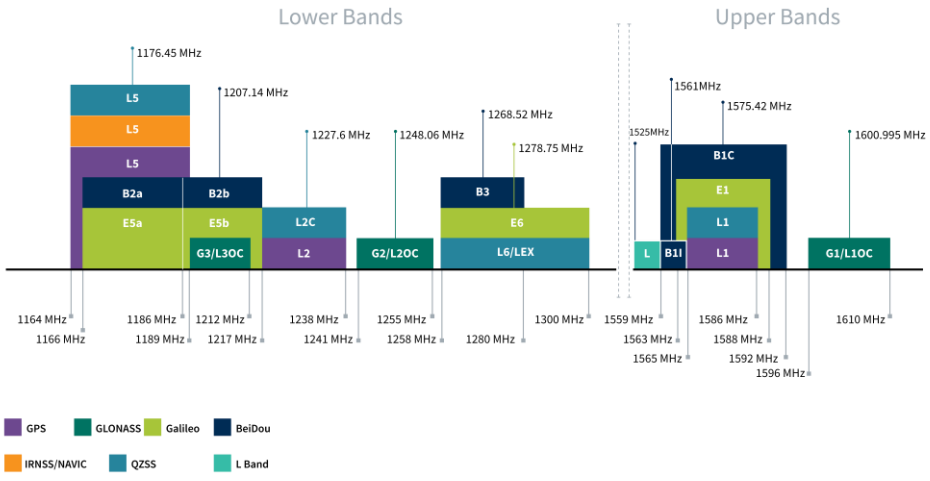
Typical Applications Include:

- Smart Infrastructure & IoT Gateways
- Transportation
- Agriculture
- Navigation
- Security
- Autonomous Vehicles

The cable and connector are fully customizable, 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

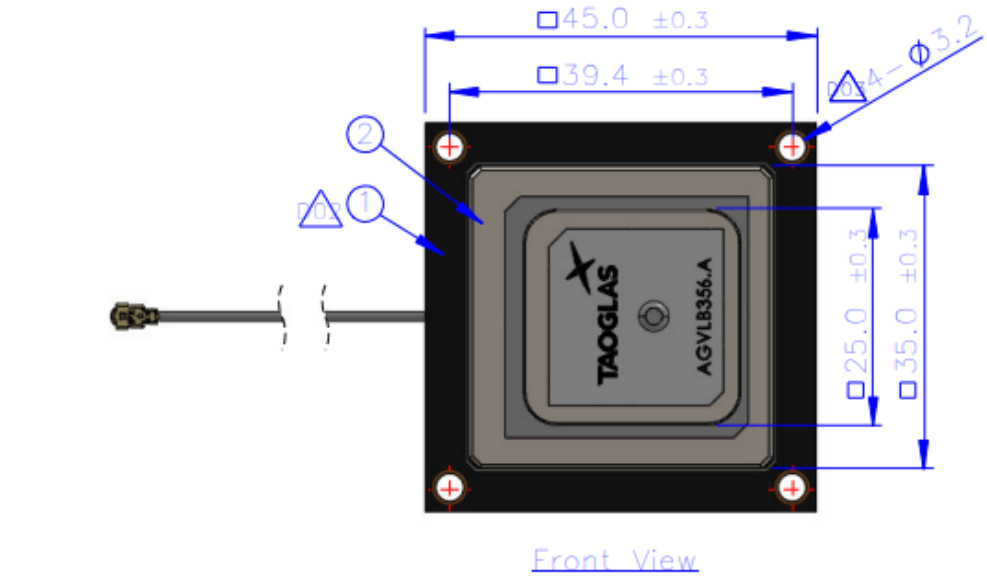
Passive GNSS Electrical				
Frequency (MHz)	**1176.45**	**1561**	**1575.42**	**1603**
VSWR (max.)	3:1			
Efficiency (%)	81.89	51.74	60.41	68.35
Average Gain (dB)	-0.87	-2.86	-2.19	-1.65
Peak Gain (dBi)	4.67	2.56	3.59	4.22
PCO_x (cm)	-0.96	-1.04	-0.8	-0.33
PCO_y (cm)	1.41	0.98	1.58	2.6
PCV (cm)	0.03	0.01	0.01	0.0
Polarization	RHCP			
Impedance	50 Ω			

LNA and Filter Electrical Properties				
Frequency (MHz)	**1176.45**	**1561**	**1575.42**	**1603**
Gain (dB)	30.10	29.60	29.50	29.20
Nosie Figure (dB)	3.12	2.73	2.76	2.43
Group Delay (ns)	26.80	28.90	24.80	29.10
Out Of Band Rejection (dB)	> 70dB @ 600-1000 MHz; > 60dB @ 1700-6000 MHz			
ESD Protection (IEC61000-4-2)	Contact: ±20kV, Air: ±25kV discharge			
Current Consumption (mA)	18			
Input Voltage (V)	+ 1.8 to 5.5			

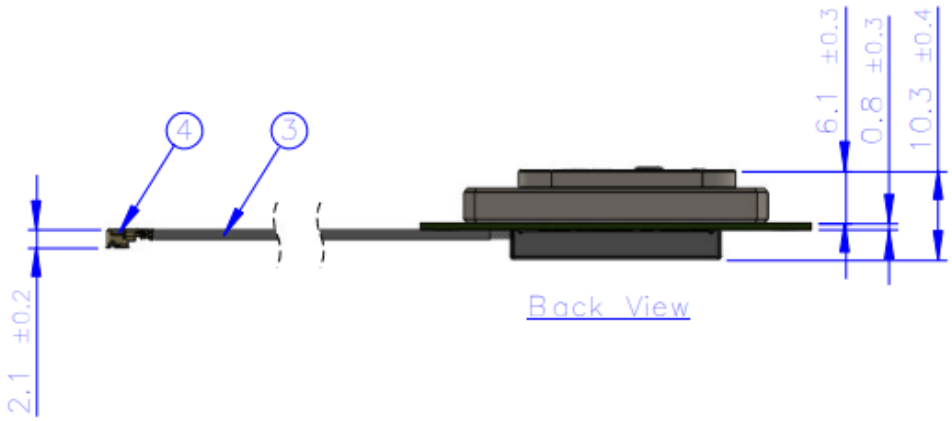
Mechanical	
Dimensions	35 x 35 x 10.5mm
Weight	35g
Material	Ceramic
Connector	IPEX.MHFHT
Cable	100mm 1.13 Coaxial Cable

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

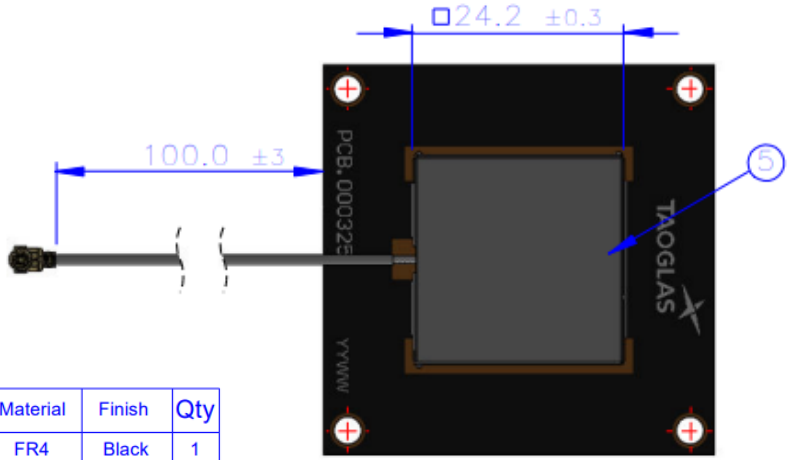
3. Mechanical Drawing



Front View



Back View



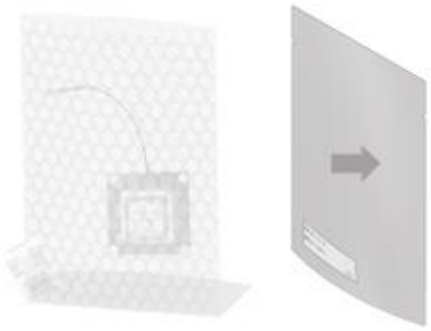
Side Views

	Name	Material	Finish	Qty
1	PCB	FR4	Black	1
2	Patch	Ceramic	Clean	1
3	1.13 Coaxial cable	FEP	Gray	1
4	IPEX.MHFHT	Composite	Au Plated	1
5	Shielding Case	SECC	Nature	1

4. Packaging

AGVLB356.A.07.0100AO
1 PCS / Bubble bag

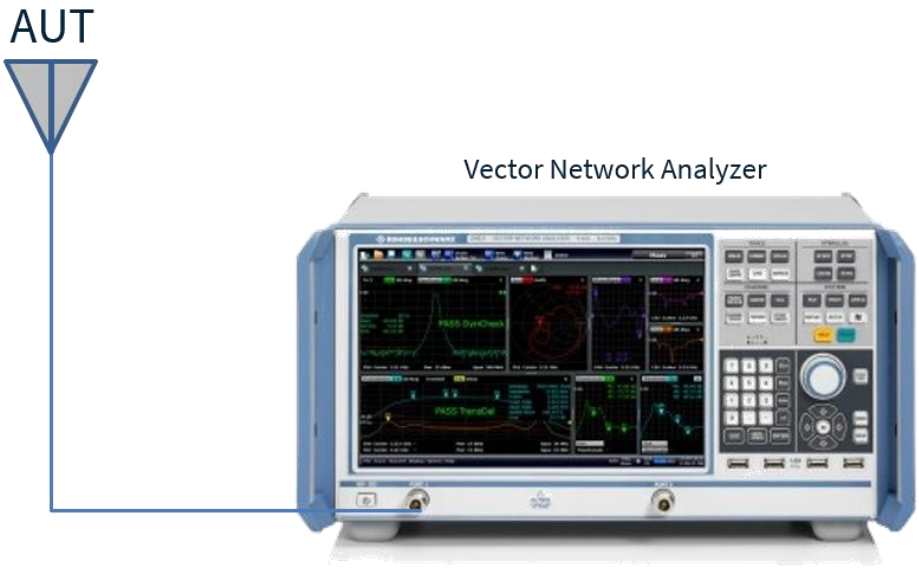
1 PCS / Vacuum bag
1 PCS / 3g Desiccant
Weight (g): 39 ±3%



60 PCS / Carton
6 PCS / Fragile sticker
Carton(mm): 390 x 320 x 290
Weight (Kg): 3.18 ±3%
Carton Label

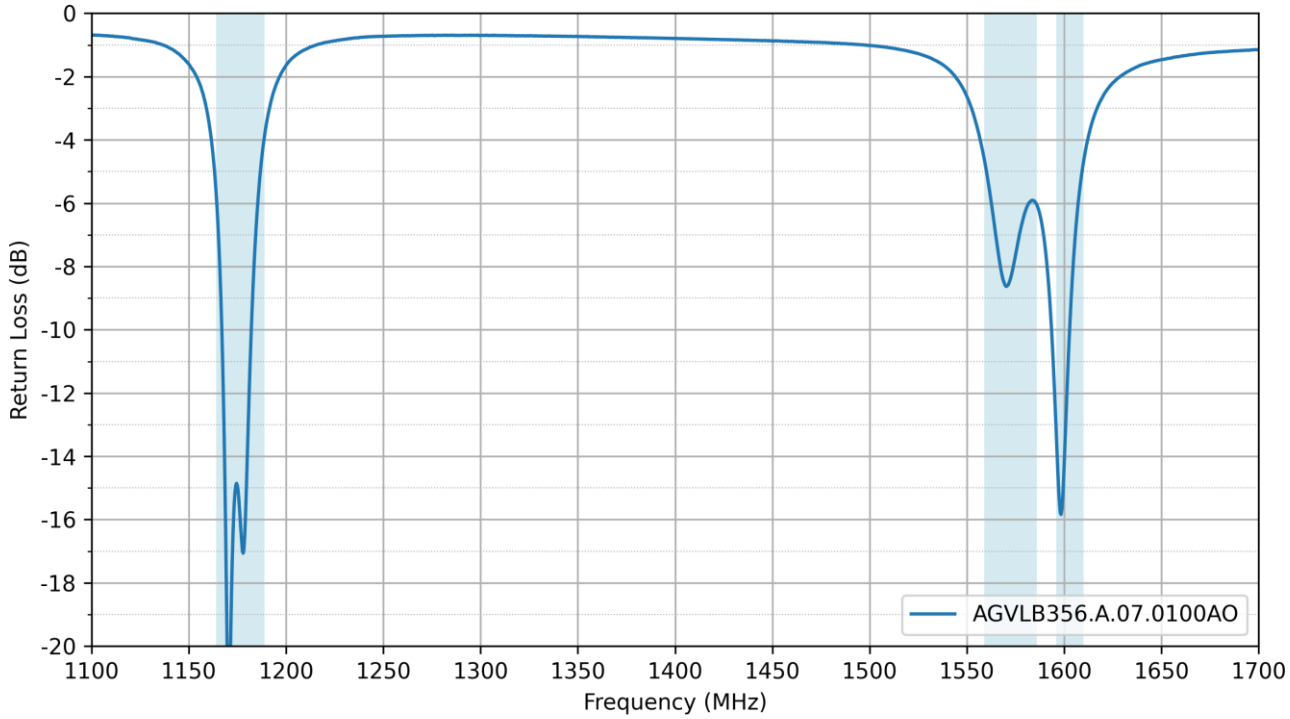
5. Antenna Characteristics

5.1 Test Setup

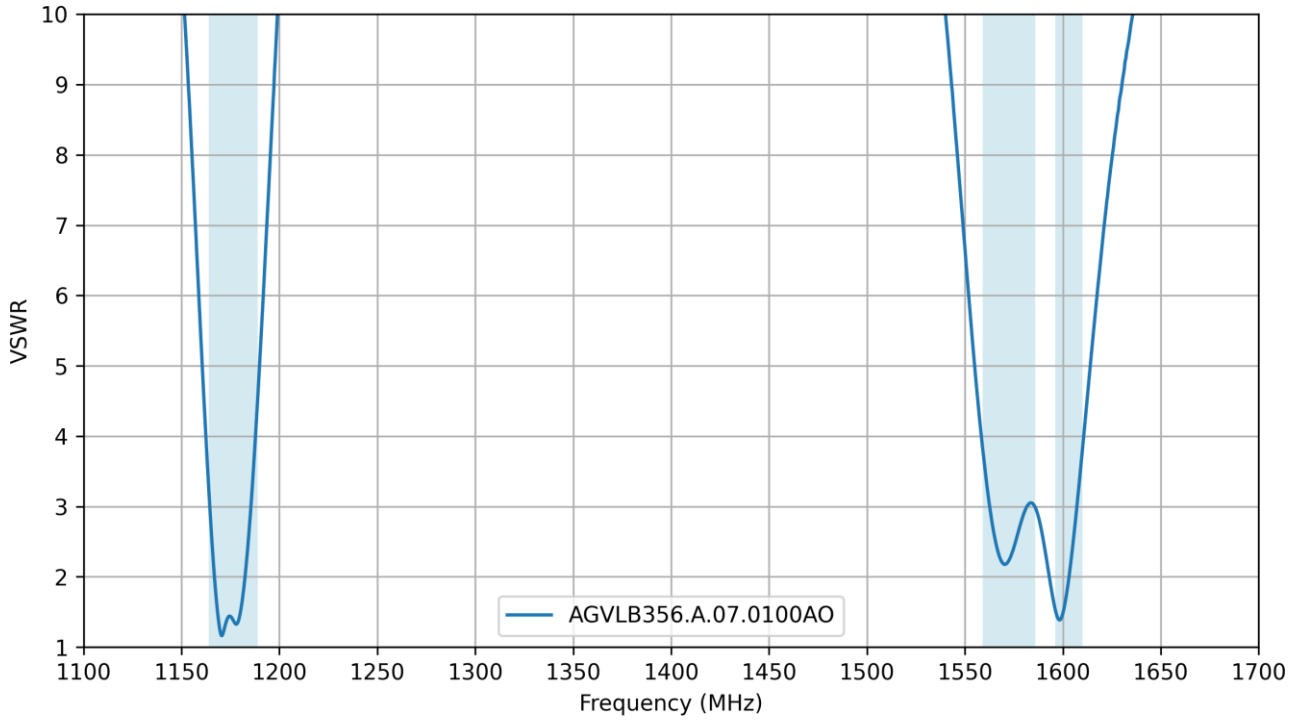


VNA Test Set-up on 30x30cm Metal Ground Plane

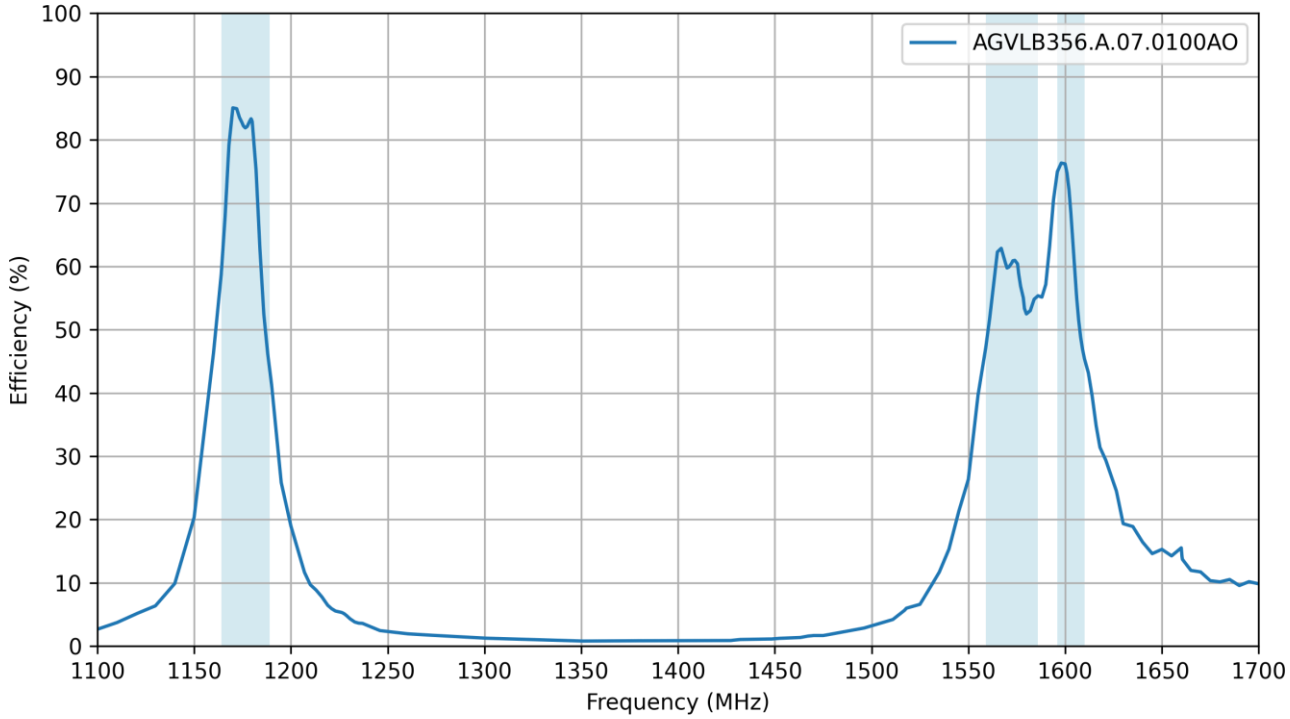
5.2 Return Loss



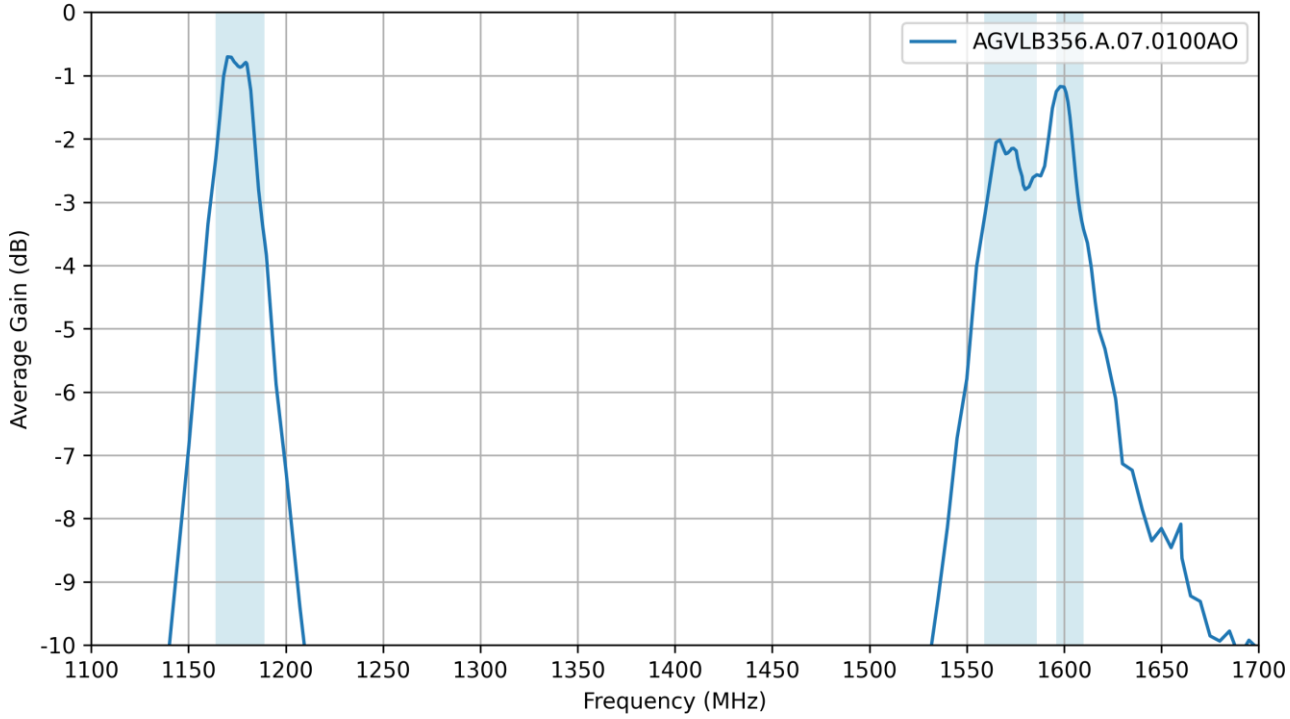
5.3 VSWR



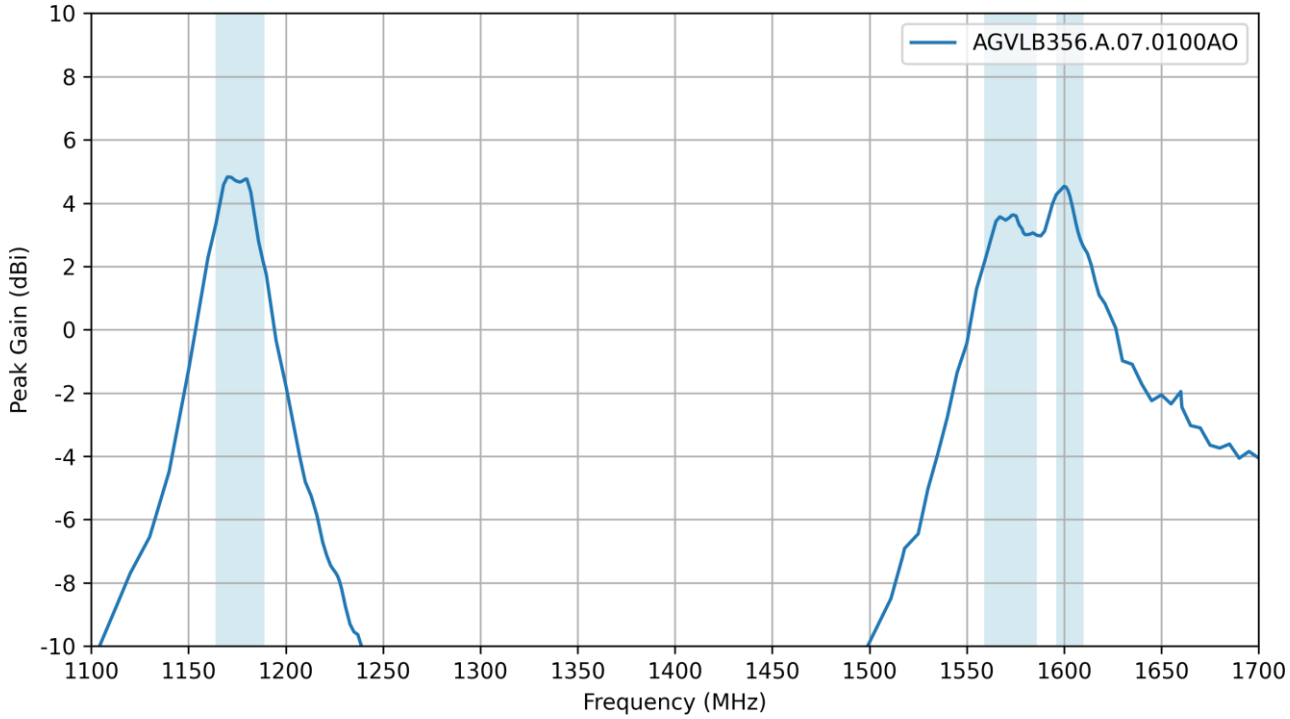
5.4 Efficiency



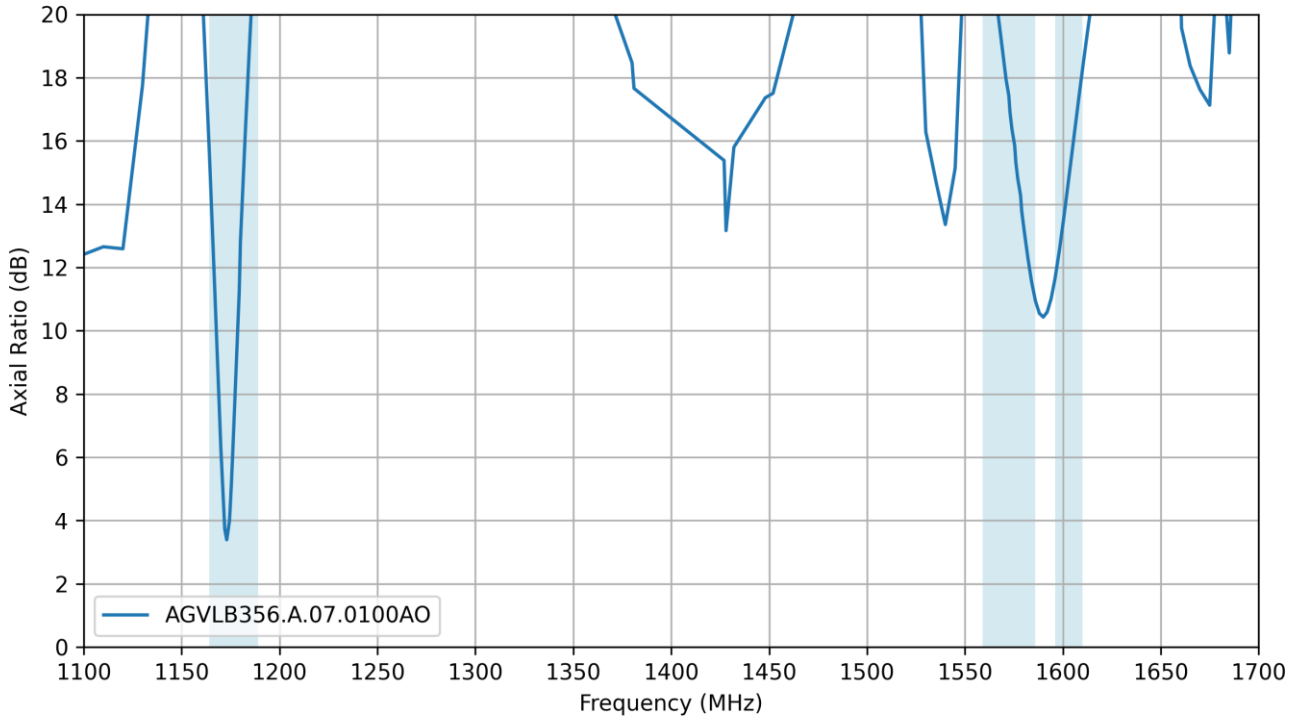
5.5 Average Gain



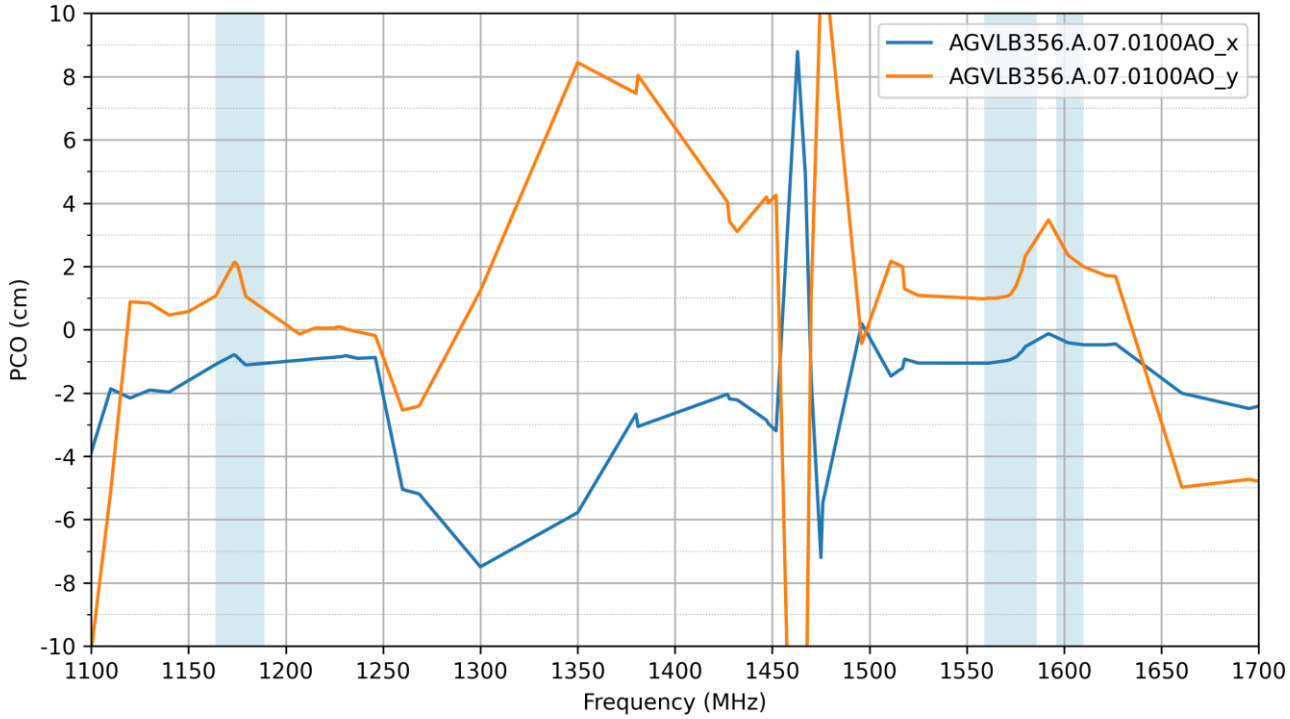
5.6 Peak Gain



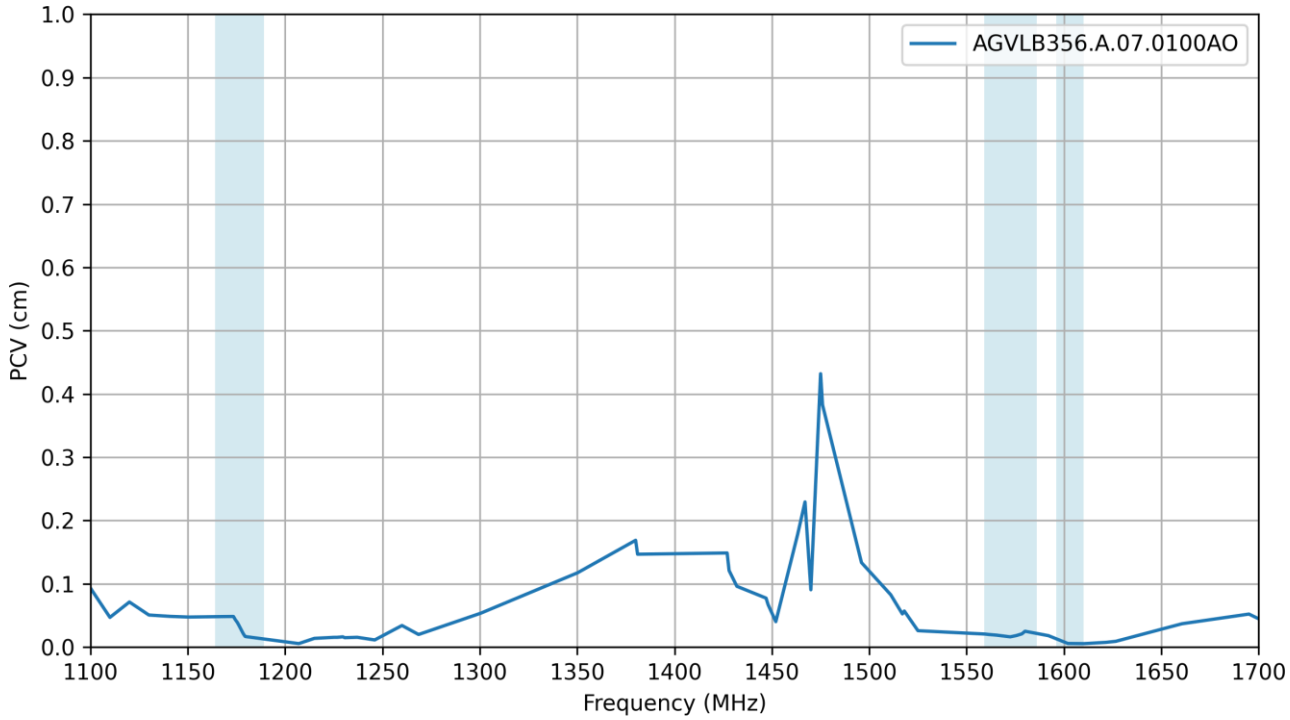
5.7 Axial Ratio - Passive



5.8 PCO

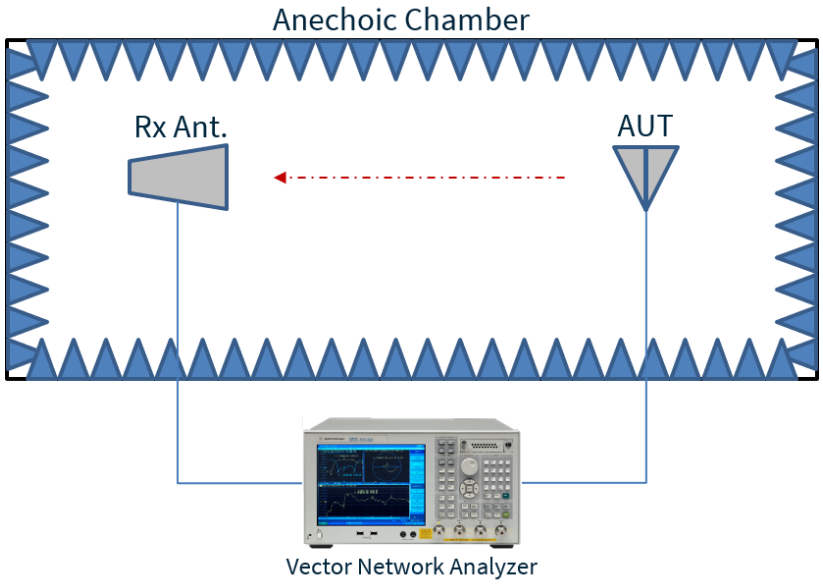

AGVLB356.A.07.0100AO_x
AGVLB356.A.07.0100AO_y
PCO (cm)
Frequency (MHz)
10
8
6
4
2
0
-2
-4
-6
-8
-10
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600
1650
1700

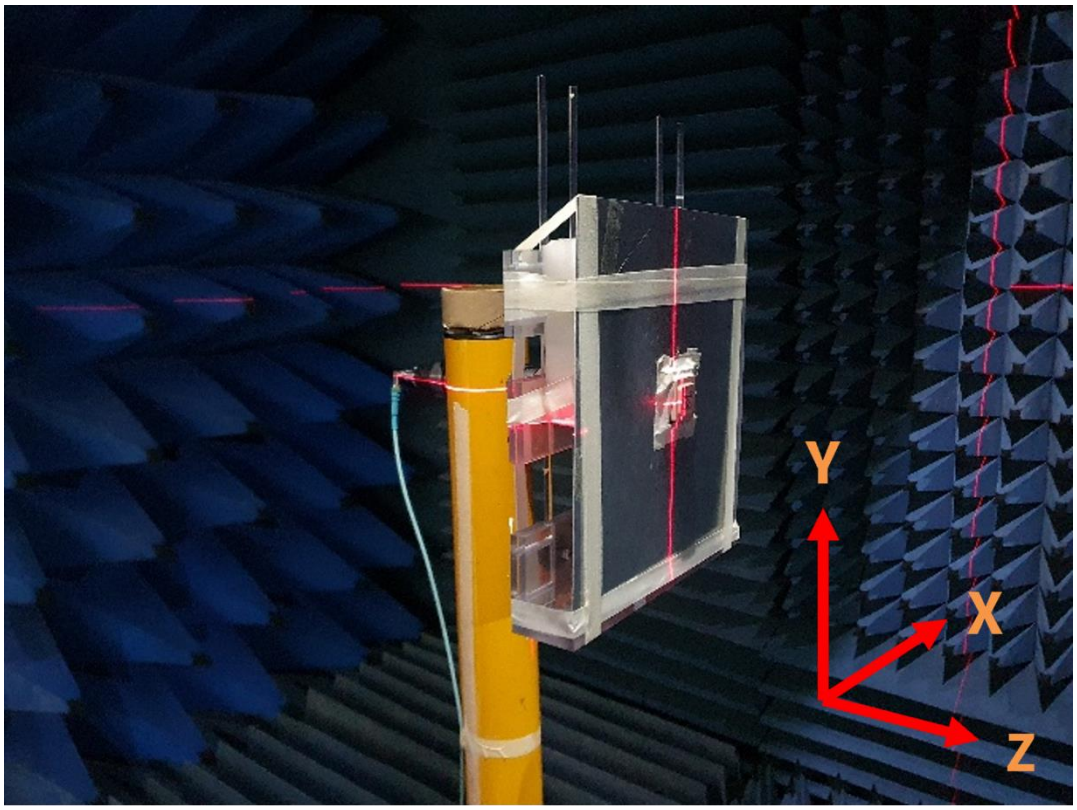
5.9 PCV


AGVLB356.A.07.0100AO
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

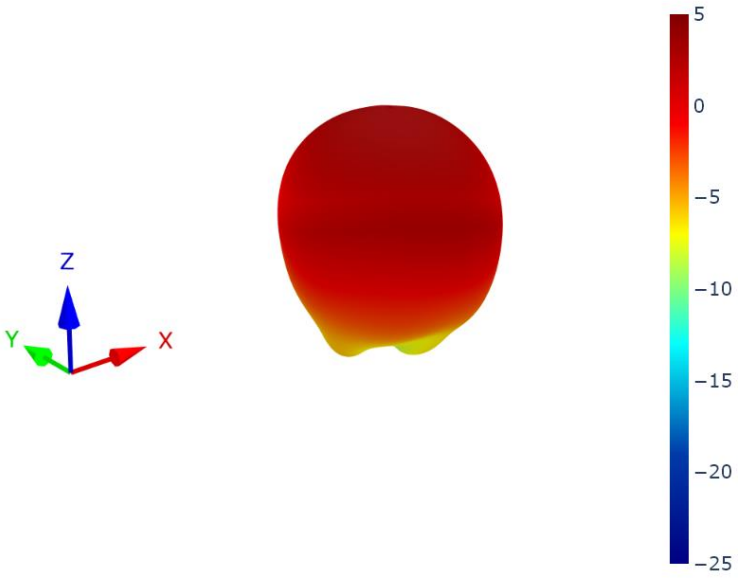
6.1 Test Setup



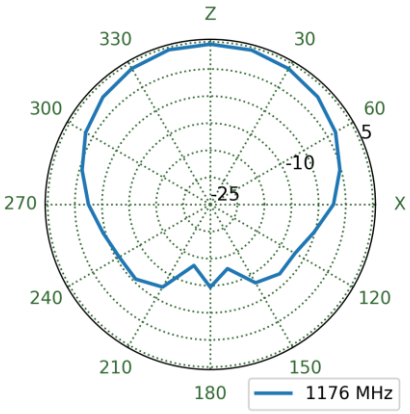


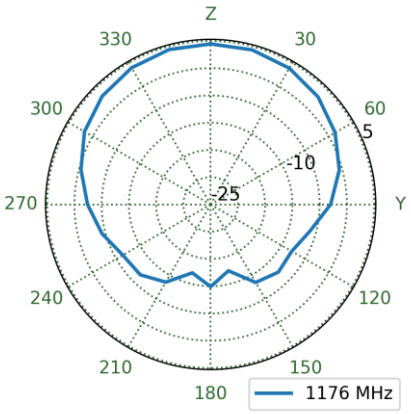
Chamber Test Set-up on 30x30cm Metal Ground Plane

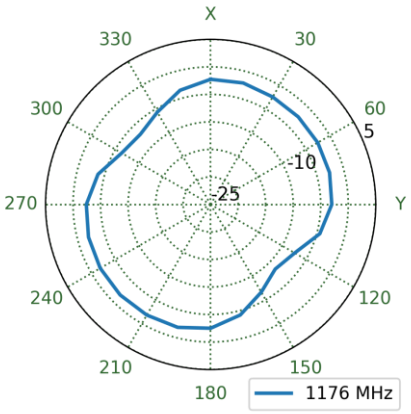
6.2 Patterns at 1176 MHz



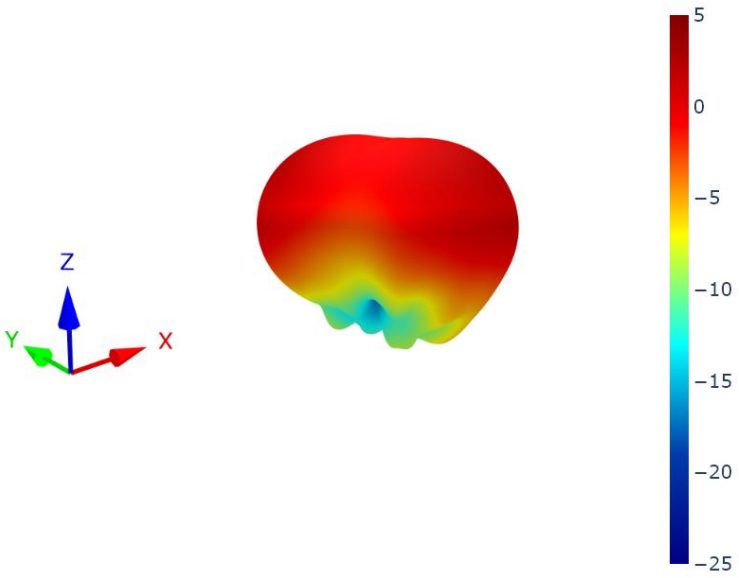
XZ Plane	YZ Plane	XY Plane

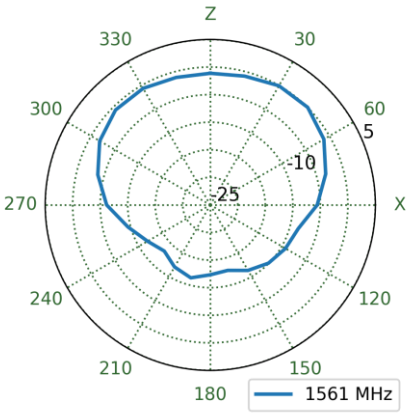
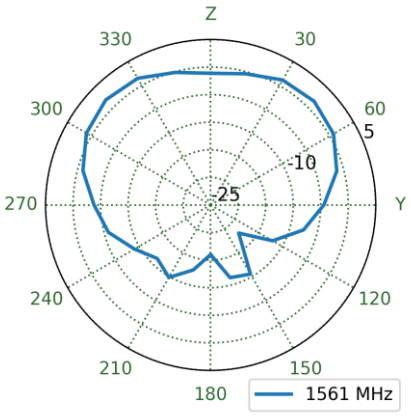
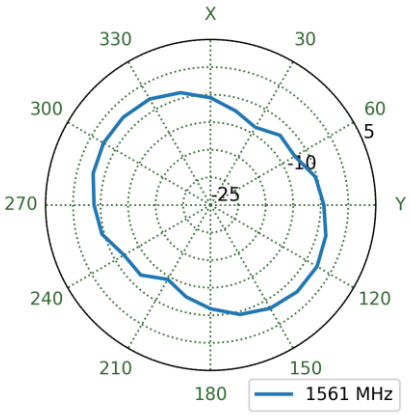




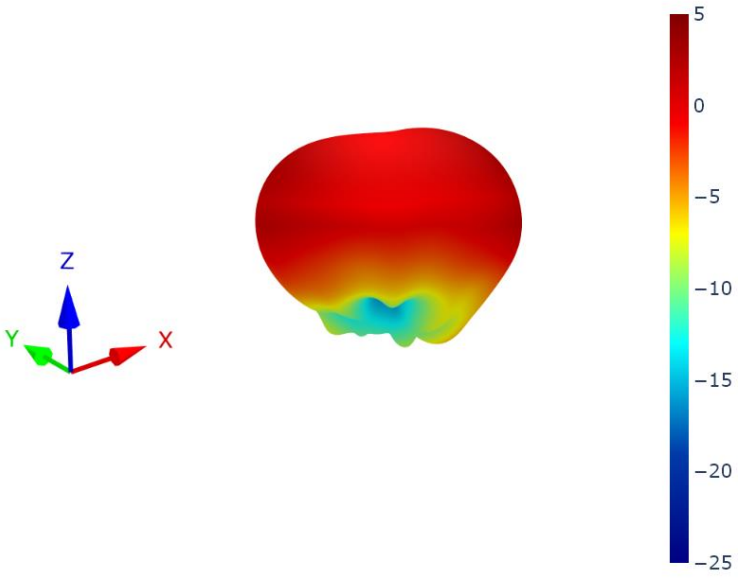


6.3 Patterns at 1561 MHz

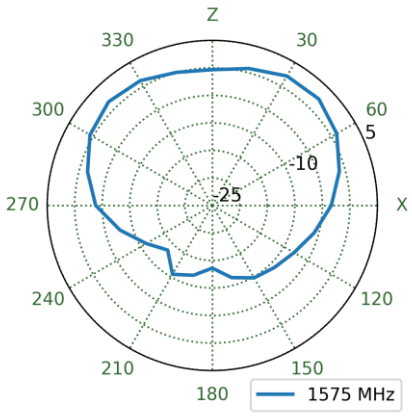


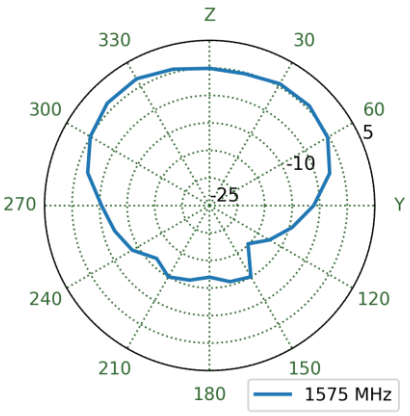
XZ Plane	YZ Plane	XY Plane
		

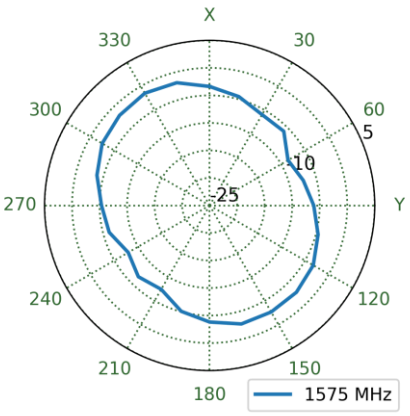
6.4 Patterns at 1575 MHz



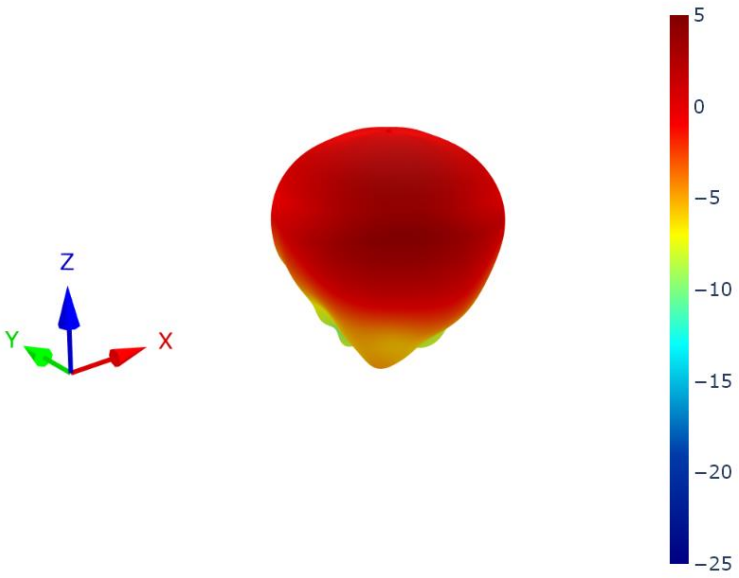
XZ Plane	YZ Plane	XY Plane



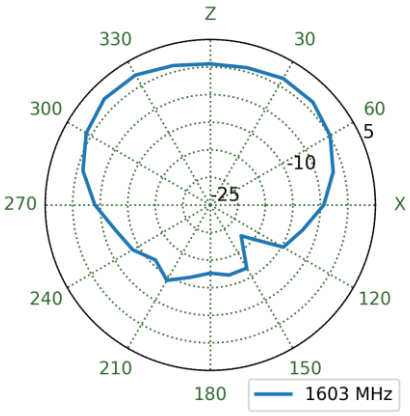


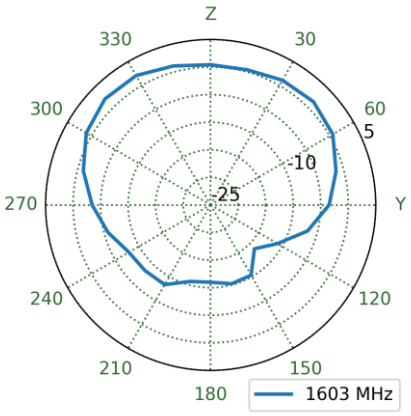


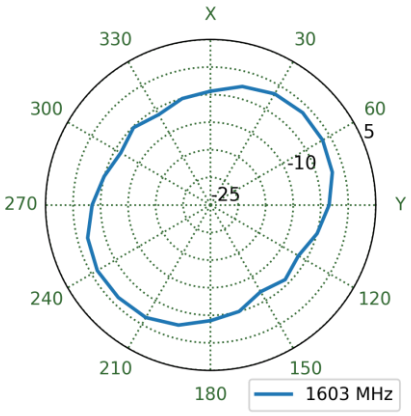
6.5 Patterns at 1603 MHz



XZ Plane	YZ Plane	XY Plane

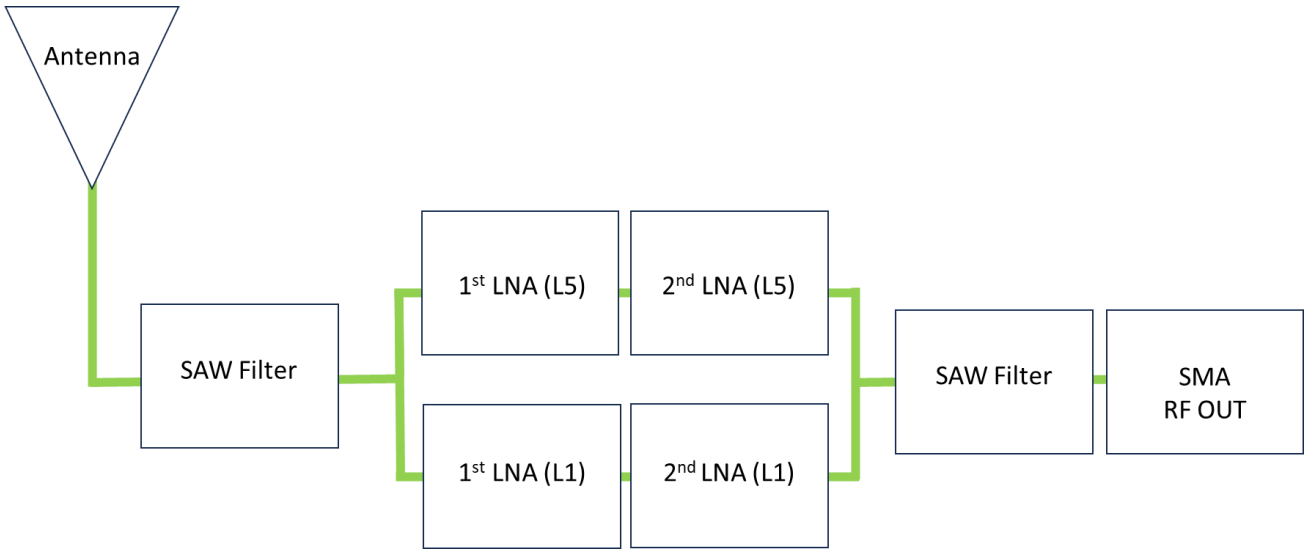




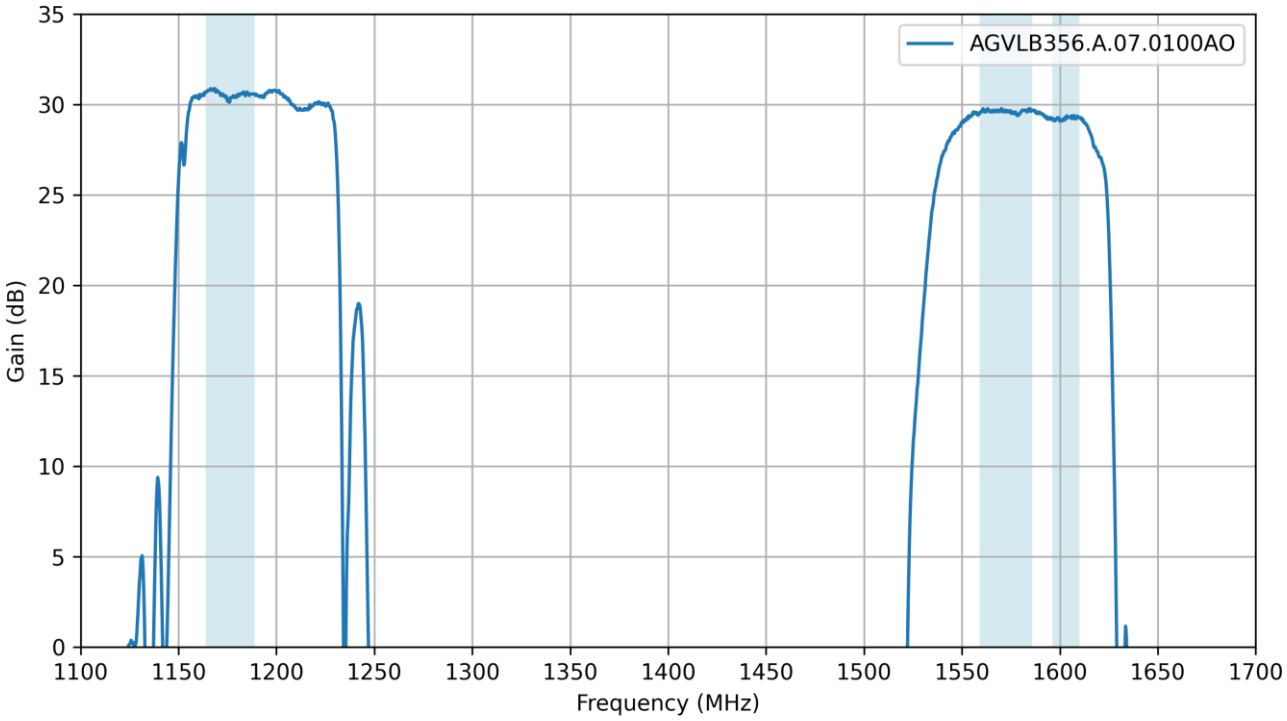


7. LNA Characteristics

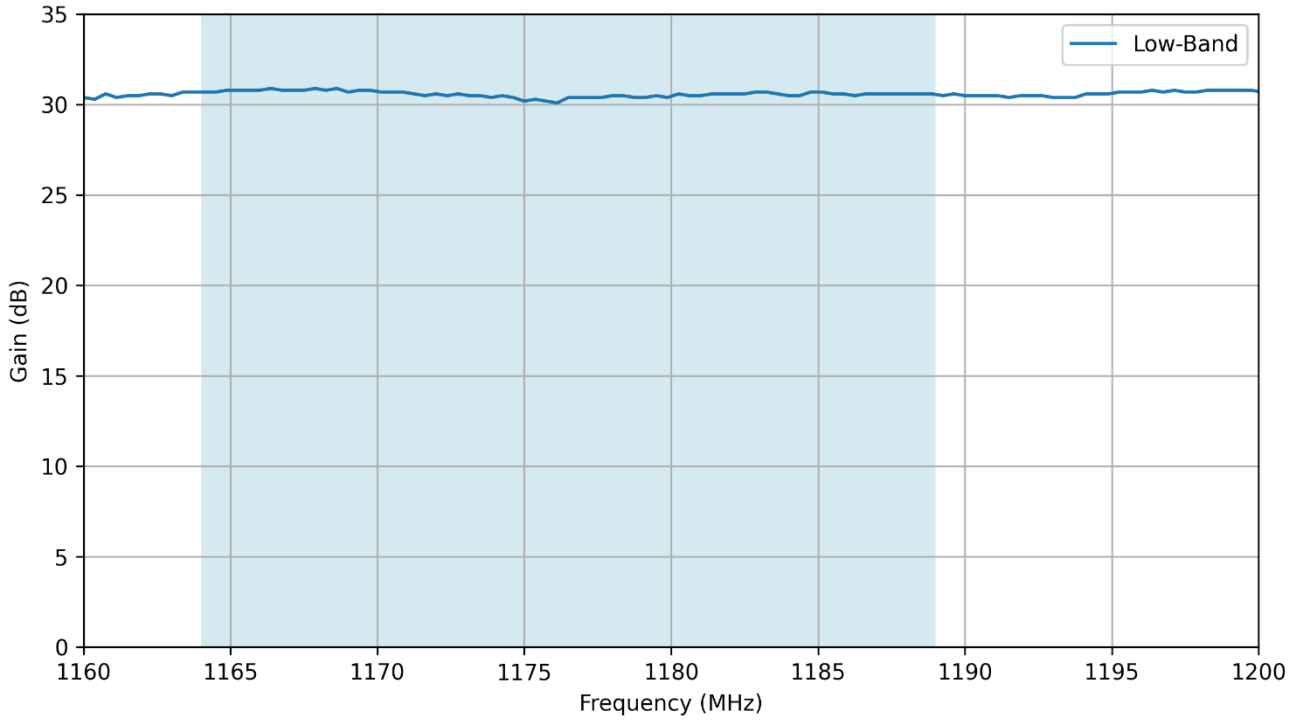
7.1 Block Diagram



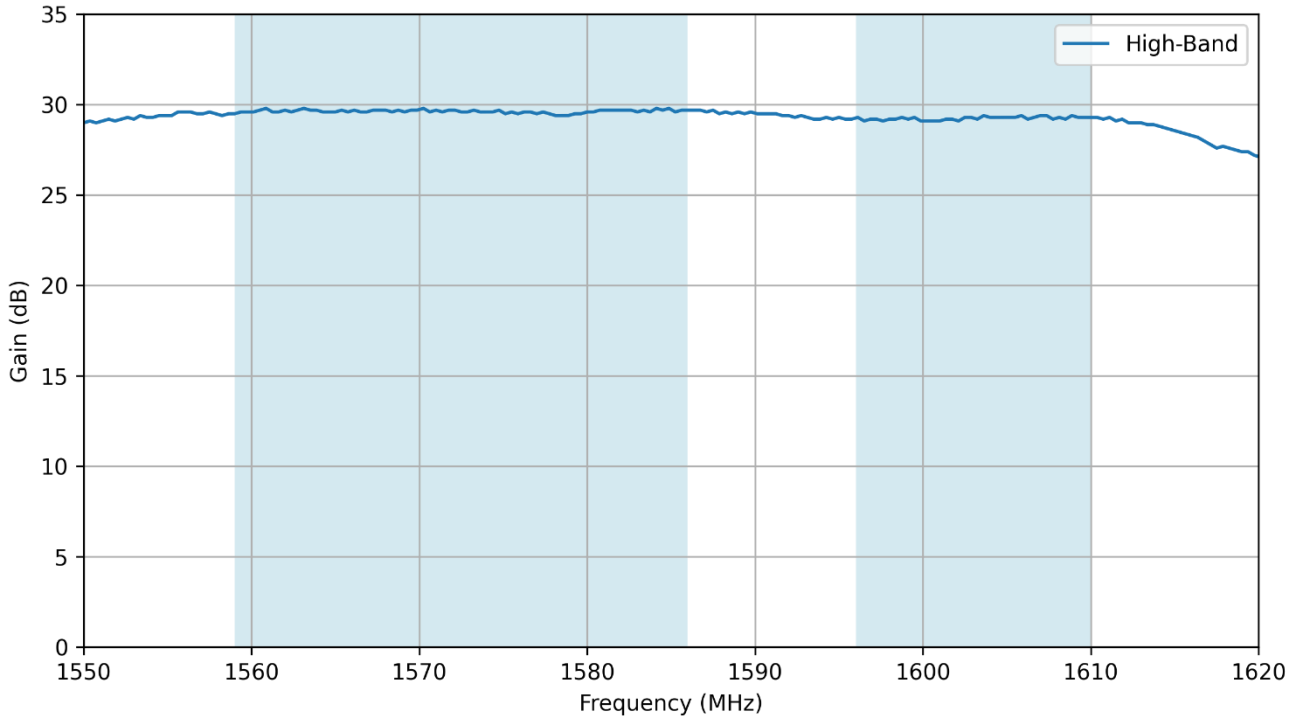
7.2 Gain – Wide-Band



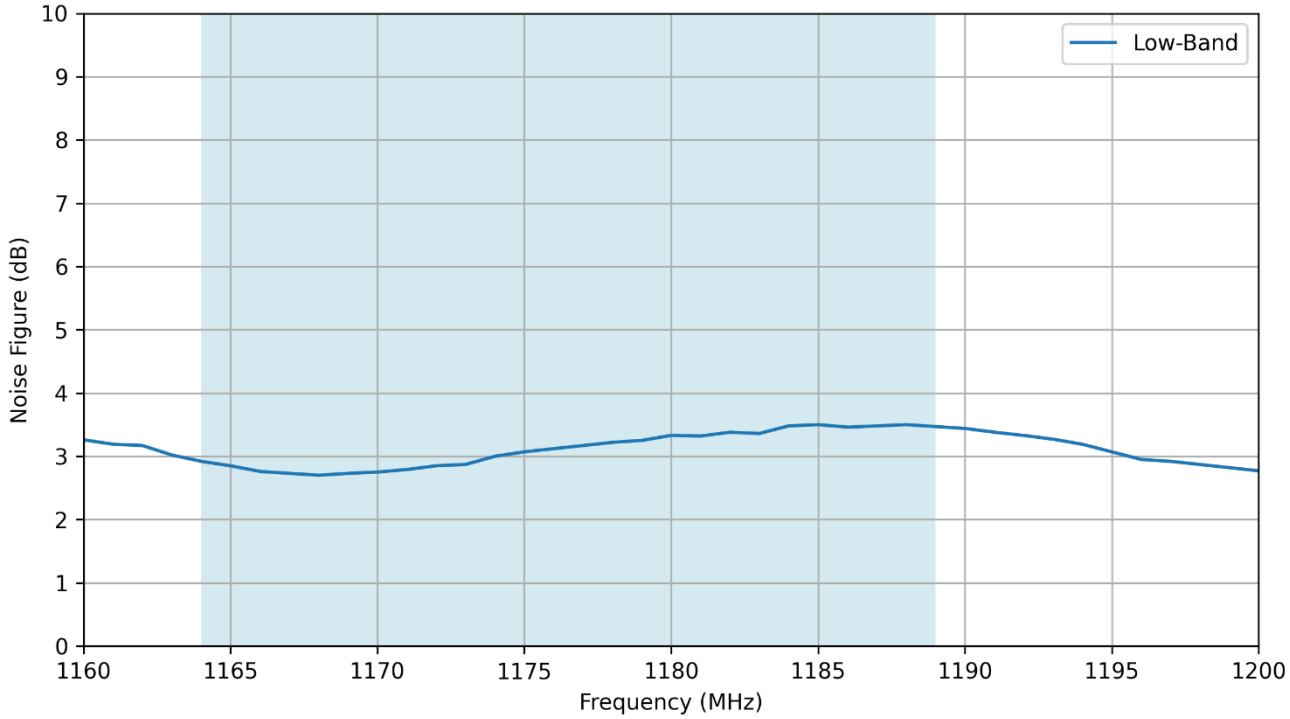
7.3 Gain – Low-Band



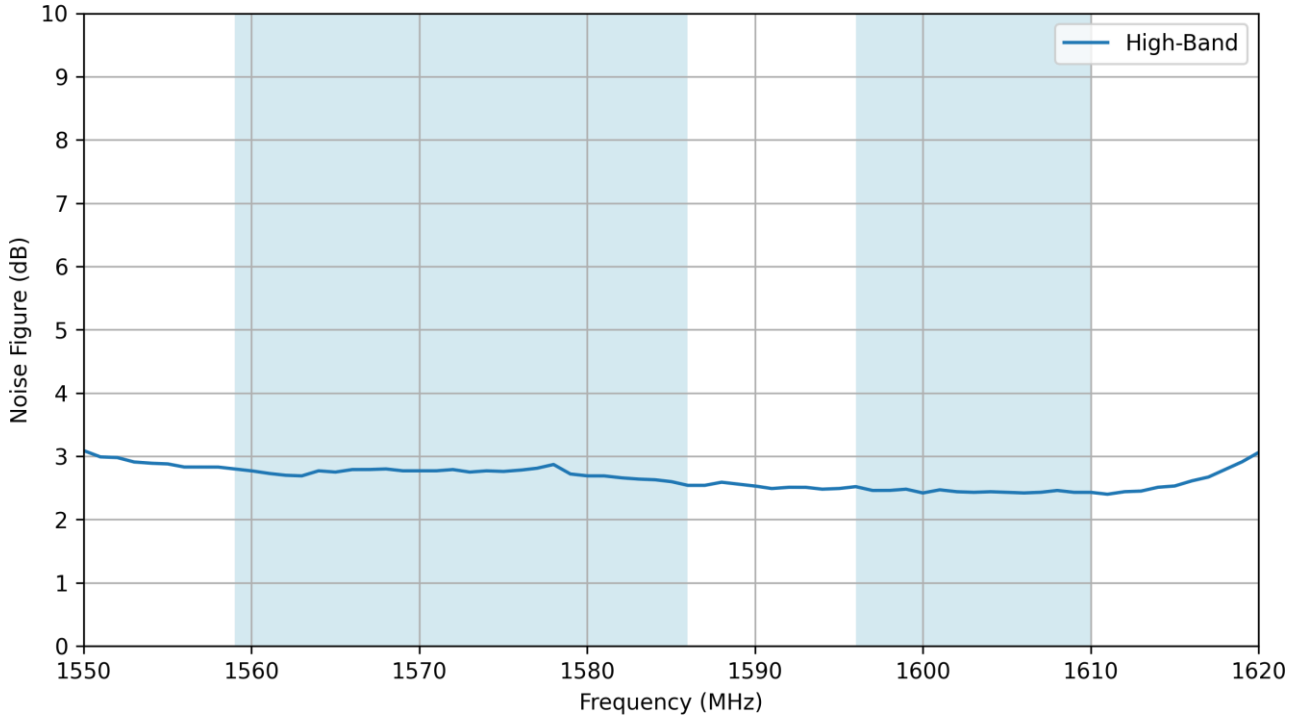
7.4 Gain – High-Band



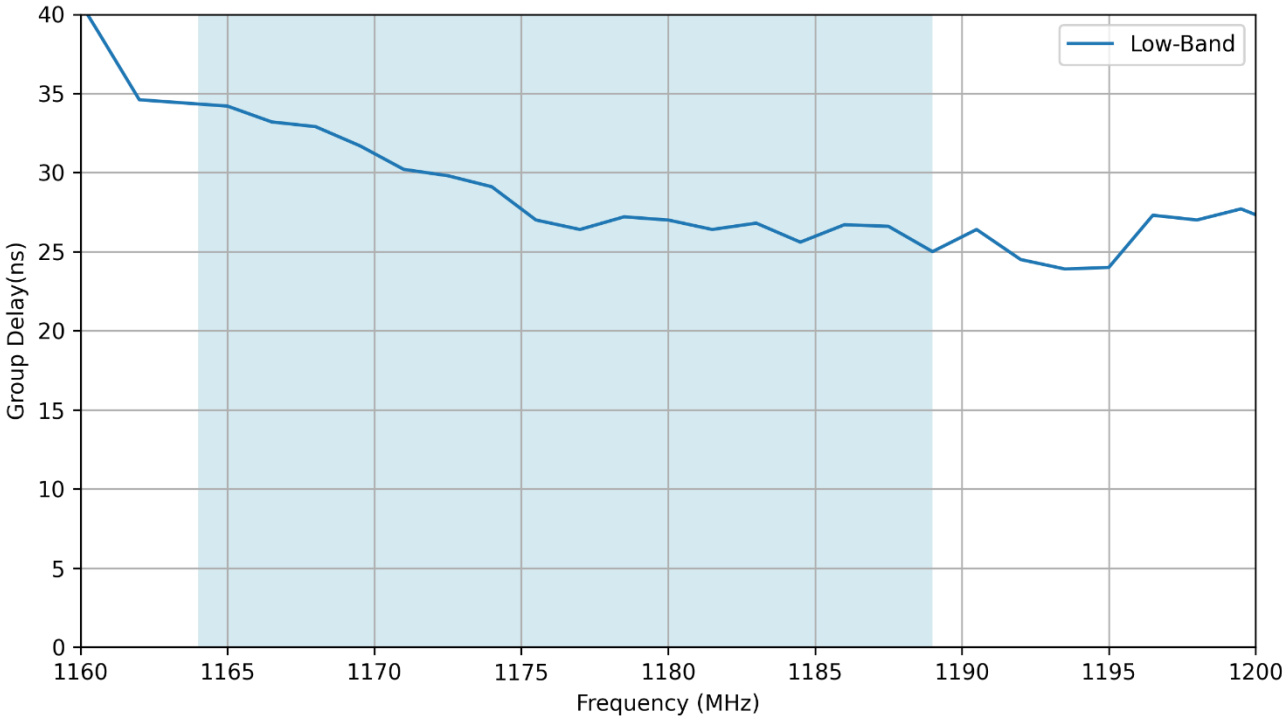
7.5 Noise Figure – Low-Band



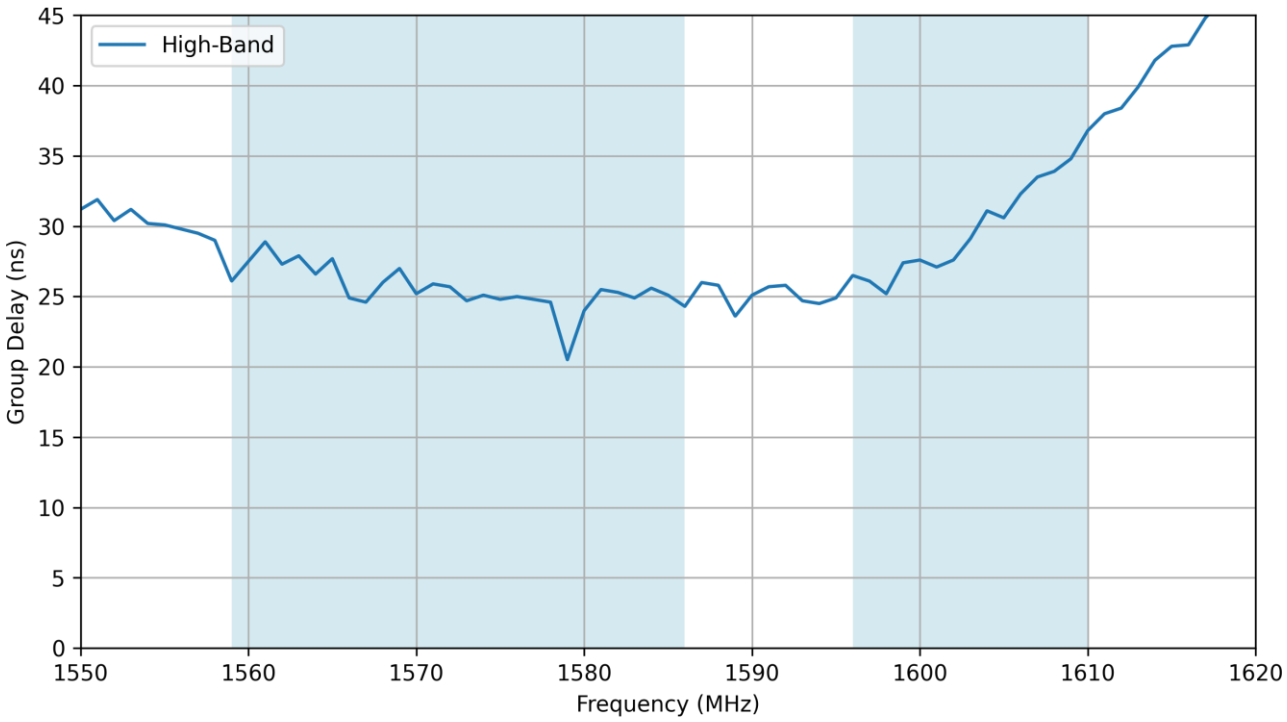
7.6 Noise Figure - High-Band



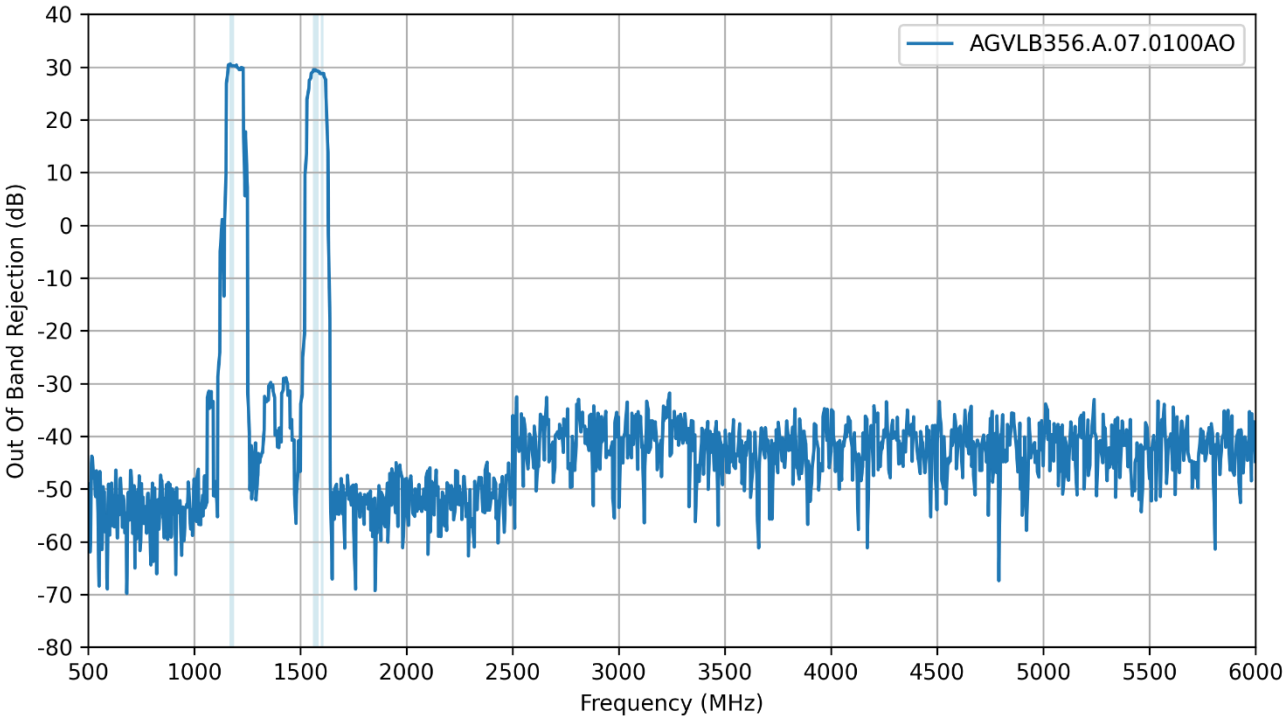
7.7 Group Delay - Low-Band



7.8 Group Delay - High-Band



7.9 Out Of Band Rejection



Changelog for the datasheet

SPE-25-8-107 – AGVLB356.A.07.0100AO

Revision: A (Original First Release)	
Date:	2025-03-31
Notes:	Initial Release
Author:	Gary West

Previous Revisions

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