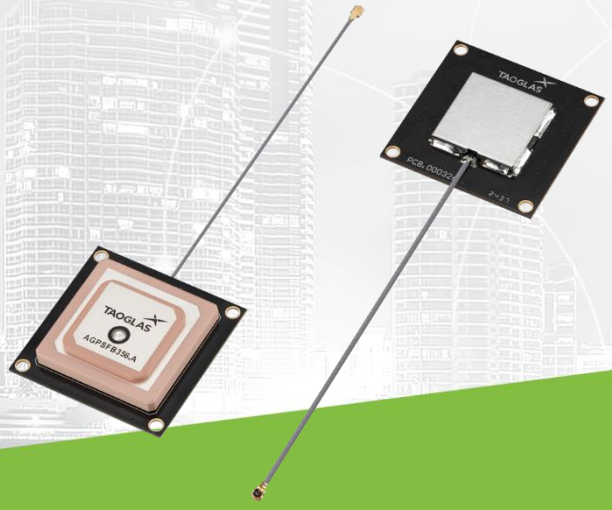
TAOGLAS



Datasheet

Part No:
AGPSFB356.A.07.0100AO

Description

GPS/GLONASS/BeiDou/IRNSS L1 + L2 Stacked Active Patch 2 Stage LNA Antenna 45x45mm PCB 100mm 1.13 IPEX MHFI(U.FL)

Features:

Single Feed Stacked Patch Assembly
Covering Bands
– GPS L1 & L2
– BeiDou B1I & B1C
– Galileo E1
– GLONASS G1
Dual Stage LNA
Dimensions: 45x45x10.3mm
Cable: 100mm of Ø1.13mm
Connector: I-PEX MHF® I (U.FL Compatible)
RoHS & REACH Compliant

1. Introduction

The Taoglas AGPSFB356 is a high-performance stacked active patch antenna, engineered to provide reliable and accurate positioning across a wide range of GNSS constellations, including GPS, GLONASS, BeiDou, Galileo, QZSS, SBAS, and IRNSS. Supporting both L1 and L2 frequency bands, this antenna is specifically designed for multi-band applications where precision and signal integrity are critical.

With a dual-stage LNA integrated into its compact 45x45mm form factor, the AGPSFB356 offers enhanced signal gain and noise reduction, ensuring optimal performance even in challenging environments. The 100mm coaxial cable and IPEX MHF® I (U.FL-compatible) connector facilitate easy integration into a wide array of embedded systems and devices.

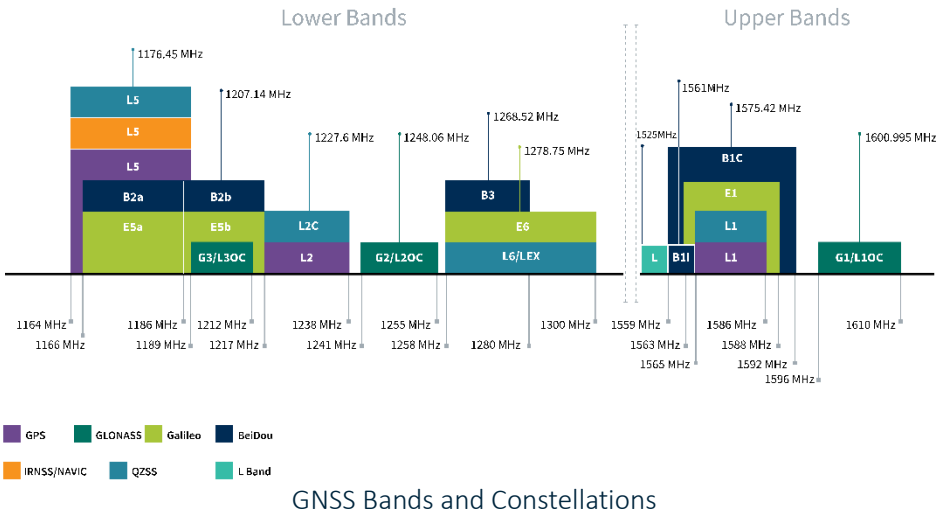
Typical Applications Include:

- 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

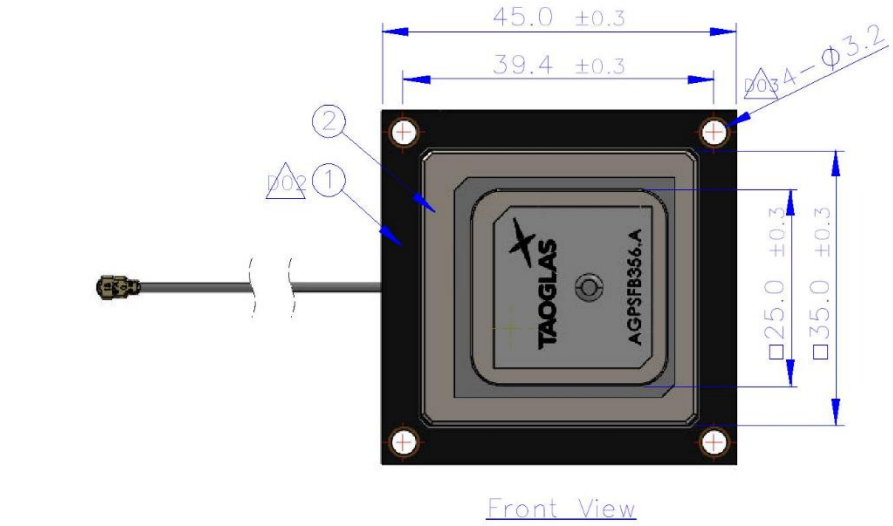
GNSS Electrical				
Frequency (MHz)	**1227.6**	**1561**	**1575.42**	**1600.995**
VSWR (max.)	3:1	4:1	2:1	3:1
Efficiency (%)	64.17	40.77	55.78	55.62
Peak Gain (dBi)	3.80	2.24	3.28	3.71
Average Gain (dB)	-1.96	-3.93	-2.73	-2.58
PCO_x (cm)	1.67	0.64	0.44	2.52
PCO_y (cm)	4.41	4.78	5.17	3.62
PCV (cm)	0.007	0.010	0.017	0.039
Polarization	RHCP			
Impedance	50 Ω			
***Passive test results obtained in a 30x30cm Ground Plane**				

LNA and Filter Electrical Properties				
Frequency (MHz)	**1227.6**	**1561**	**1575.42**	**1600.995**
Gain (dB)	29.64	29.28	29.30	28.30
Noise Figure (dB)	2.97	2.89	2.73	3.02
Group Delay (ns)	20.56	29.79	25.29	25.87
Out Of Band Rejection (dB)	> 80dB @ 600-1200 MHz; > 65dB @ 1700-6000 MHz			
ESD Protection	Contact: ±20kV, Air: ±25kV discharge			
Current Consumption (mA)	12-19			
Input Voltage (V)	1.8 to 5.5			

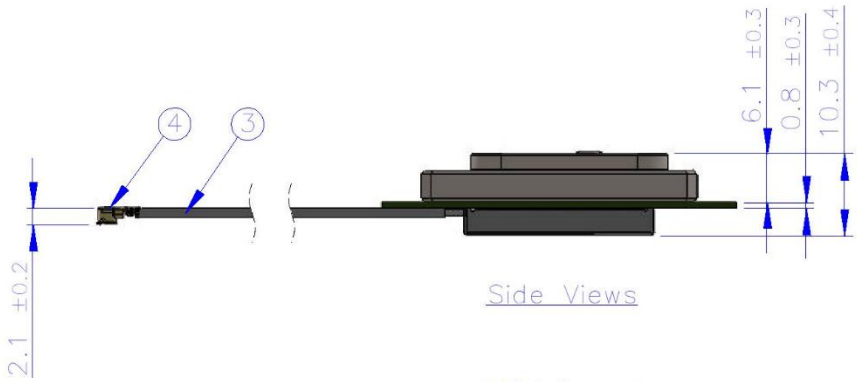
Mechanical	
Dimensions	45 x 45 x 10.3mm
Weight	34g
Material	Antenna: Ceramic PCB: FR4
Cable	100mm 1.13 Coaxial
Connector	IPEX.MHF I

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

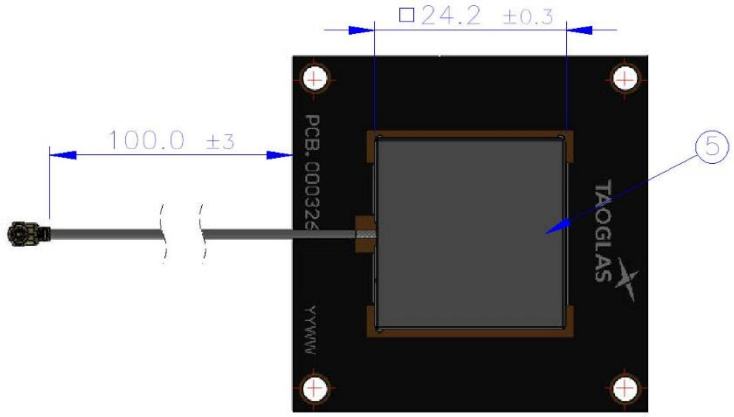
3. Mechanical Drawing



Front View



Side Views



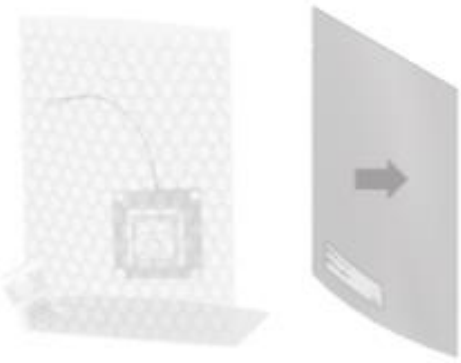
Back View

	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

1 PCS / Bubble bag

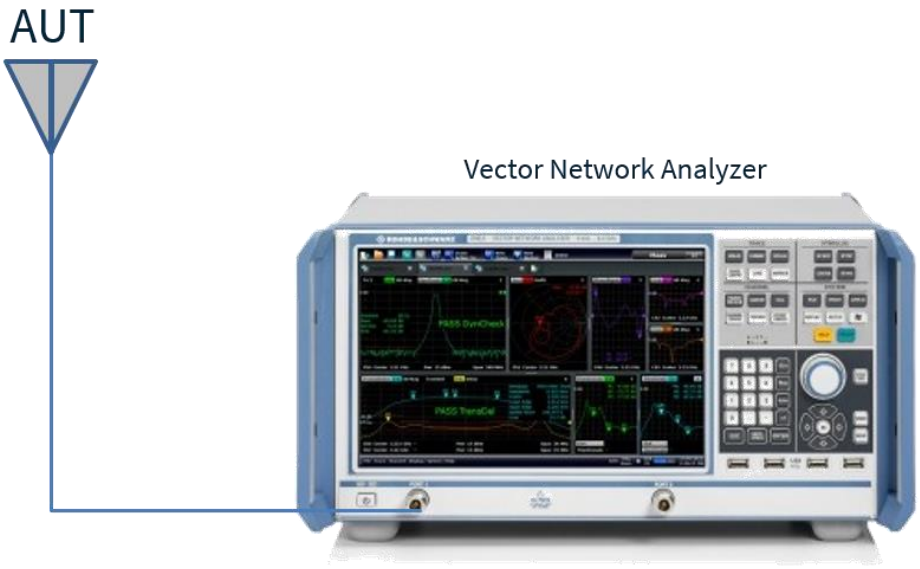
1 PCS / Vacuum bag
1 PCS / 3g Desiccant
Weight (g): 39 ±3%



60 PCS / Carton
6 PCS / Fragile sticker
Carton(mm): 390x320x290
Weight (Kg): 3.18 ±3%
Carton Label

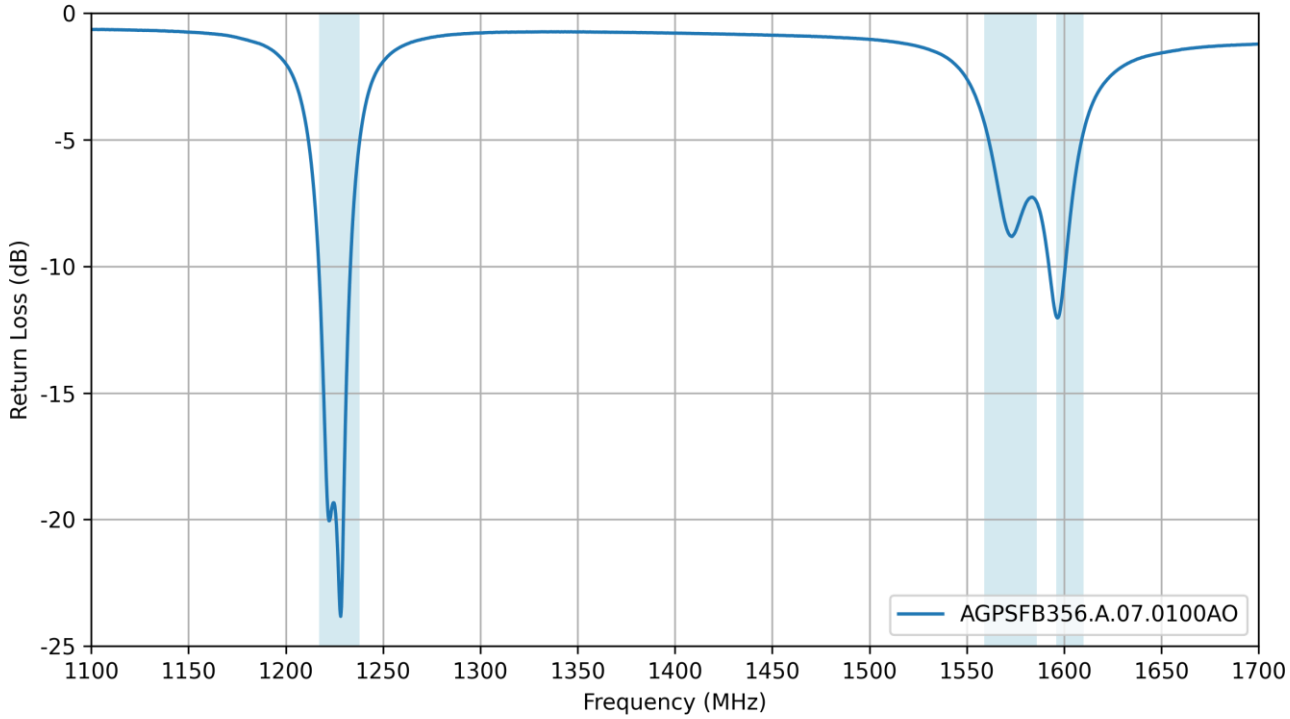
5. Antenna Characteristics

5.1 Test Setup

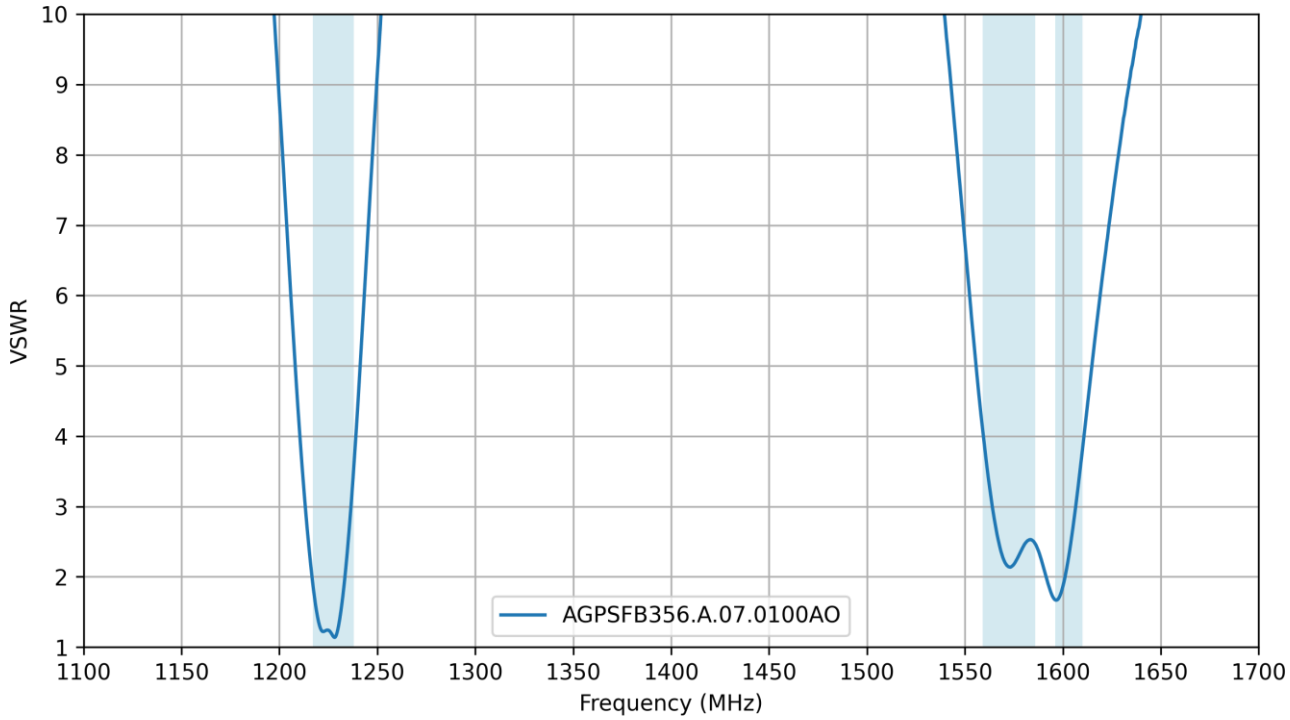


VNA Test Set-up

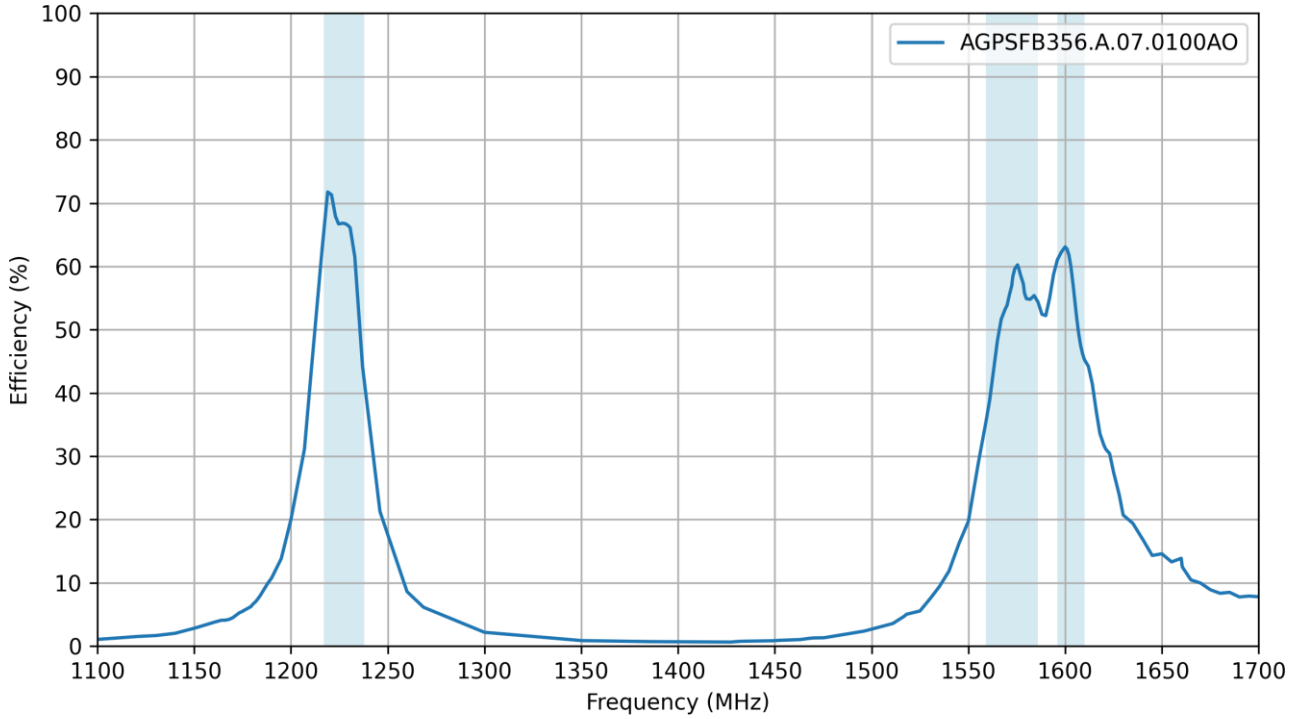
5.2 Return Loss



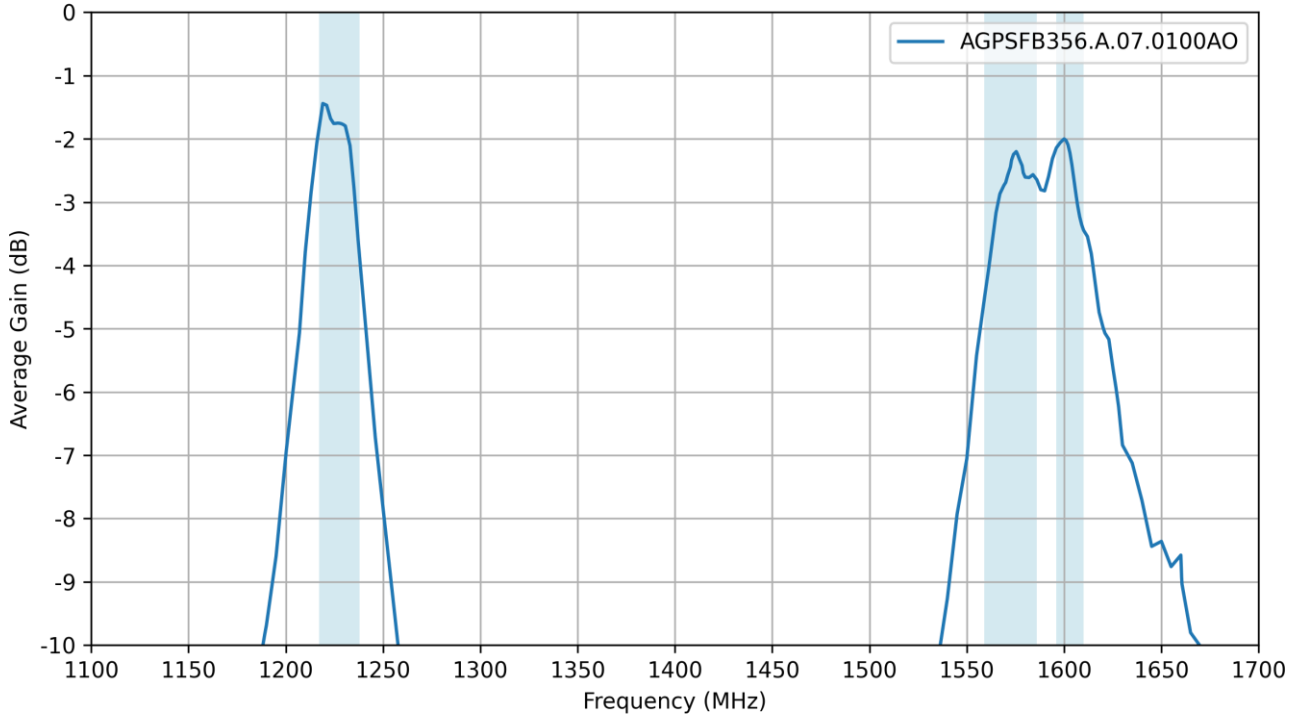
5.3 VSWR



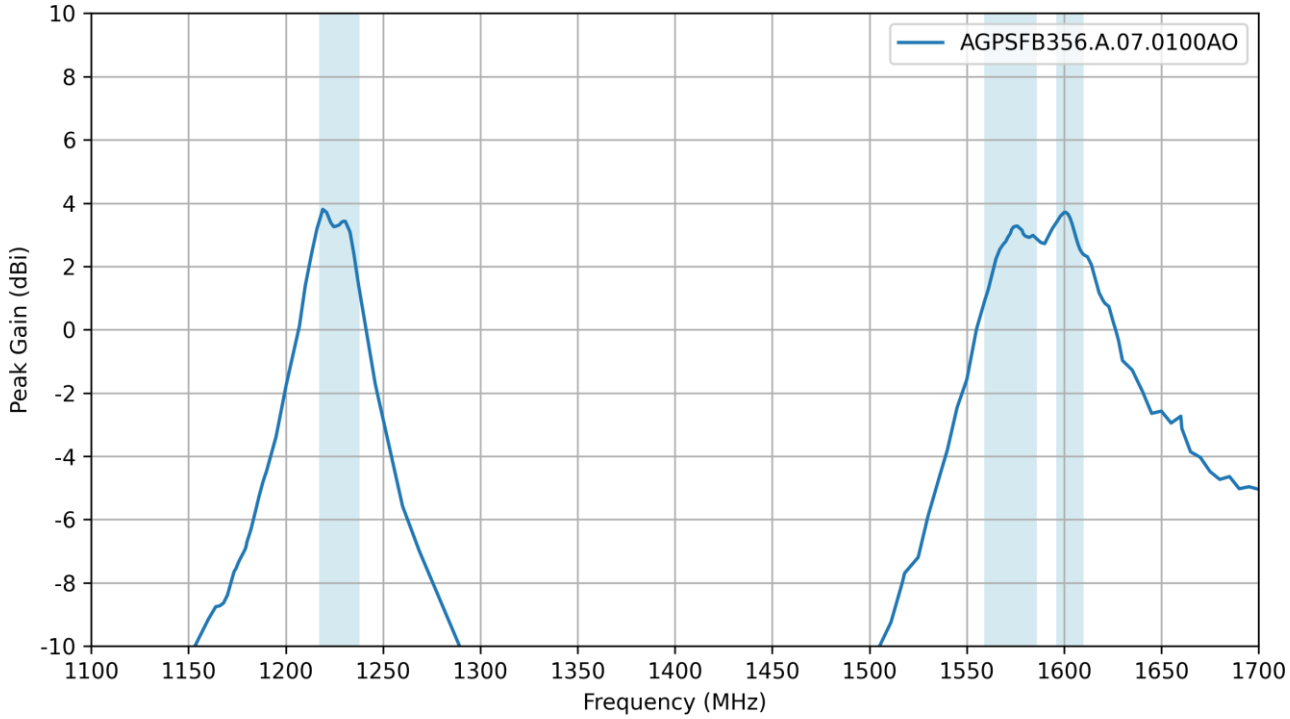
5.4 Efficiency



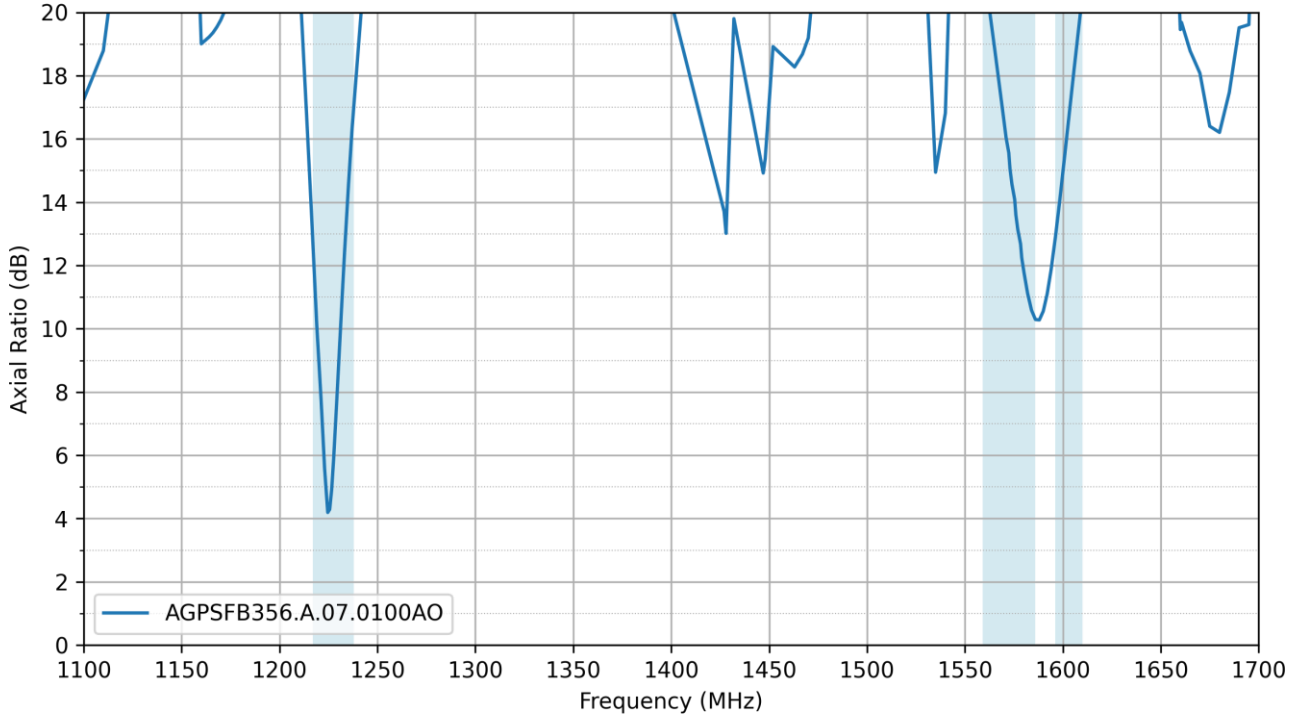
5.5 Average Gain



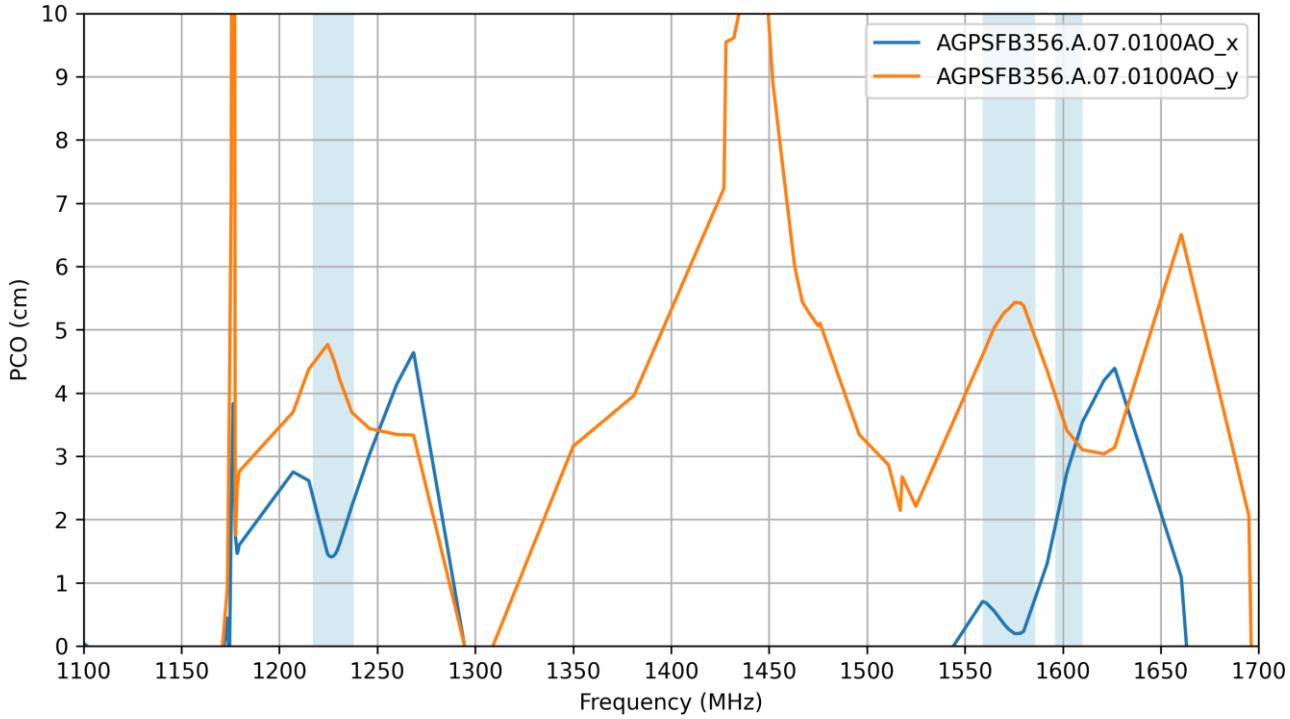
5.6 Peak Gain



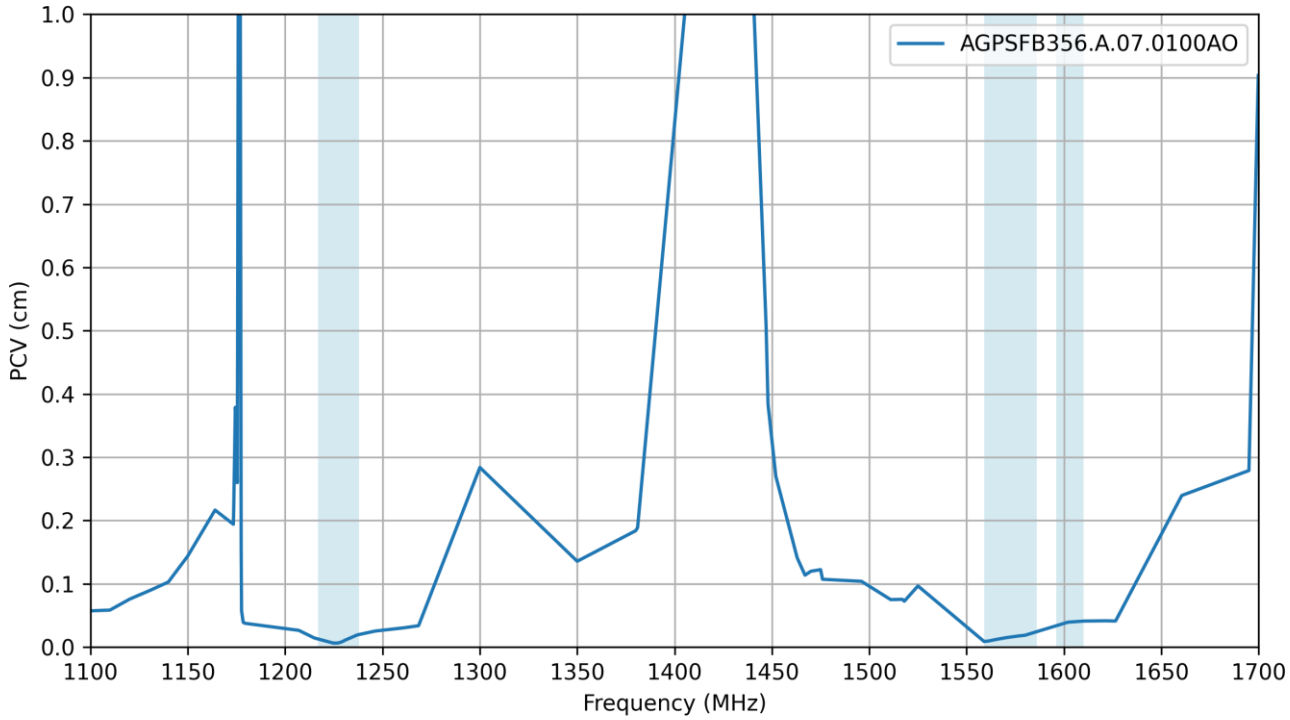
5.7 Axial Ratio



5.8 PCO

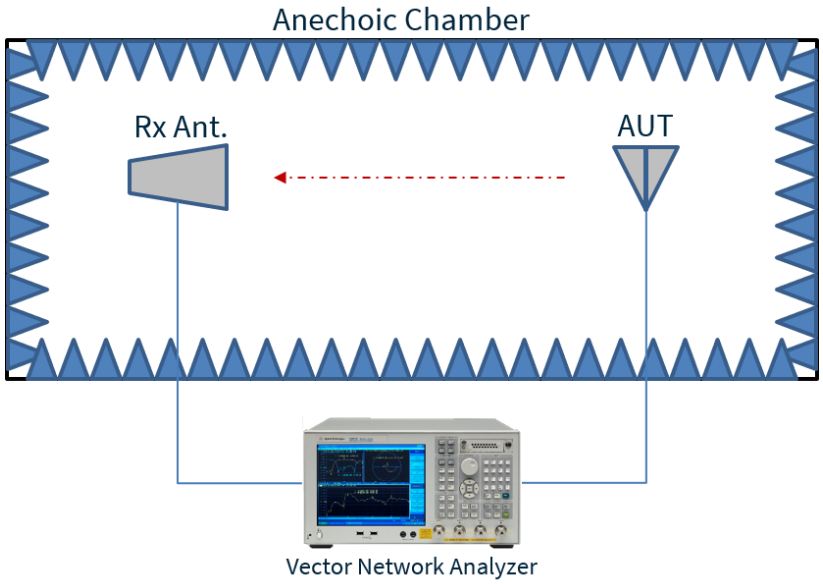

AGPSFB356.A.07.0100AO_x
AGPSFB356.A.07.0100AO_y
PCO (cm)
Frequency (MHz)
0
1
2
3
4
5
6
7
8
9
10
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600
1650
1700

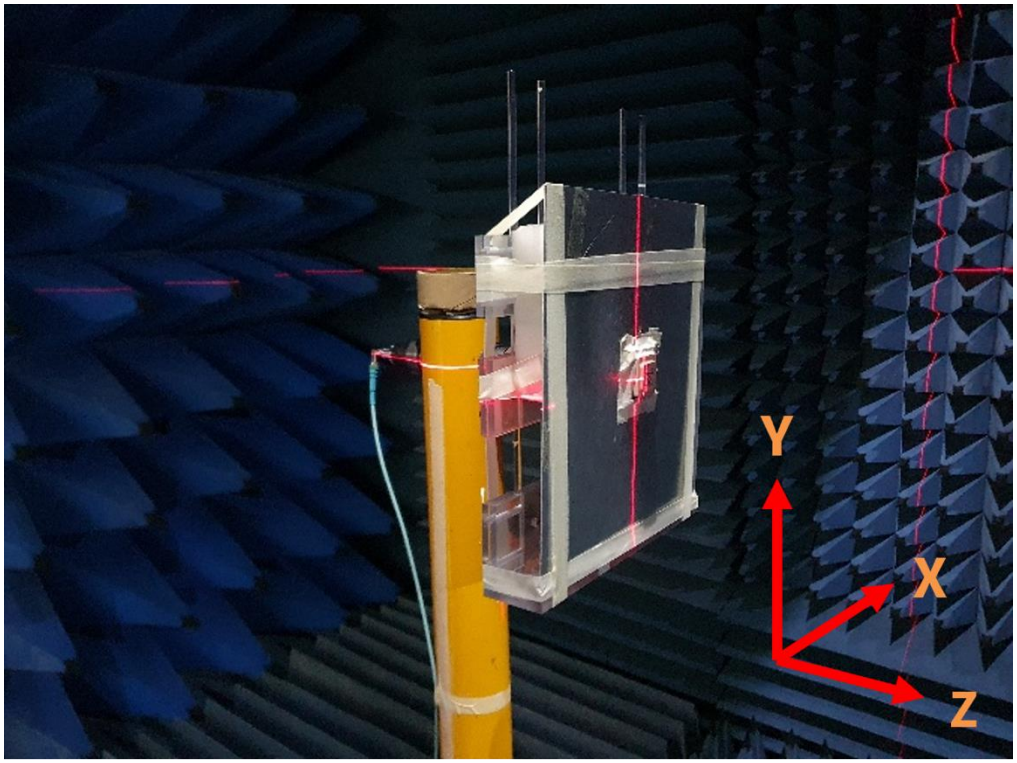
5.9 PCV


AGPSFB356.A.07.0100AO
PCV (cm)
Frequency (MHz)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600
1650
1700

6. Radiation Patterns

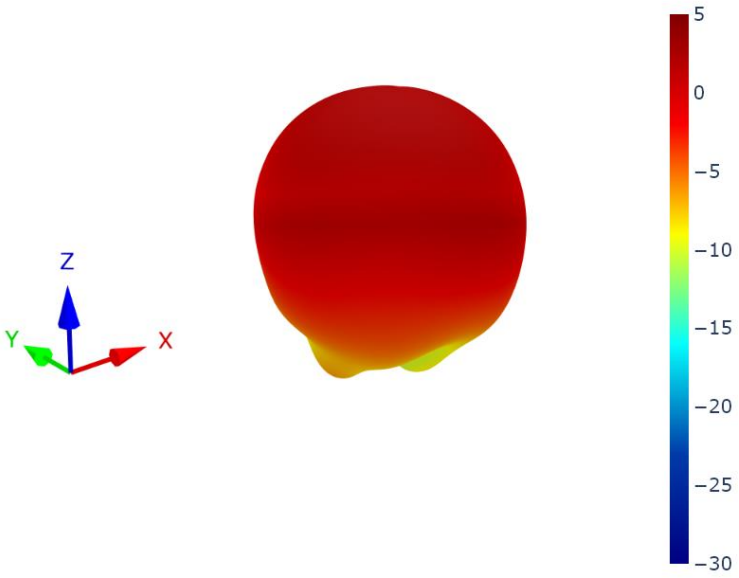
6.1 Test Setup



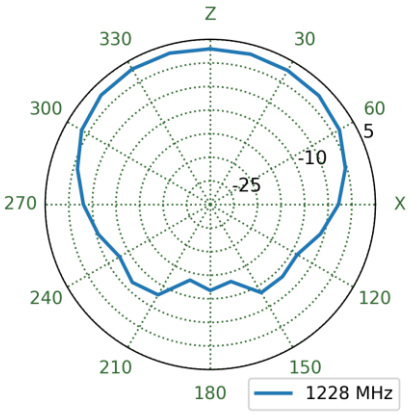


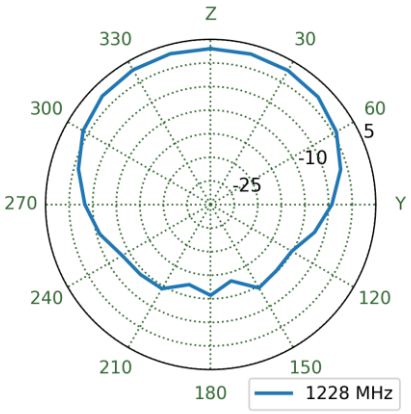
Chamber Test Set-up

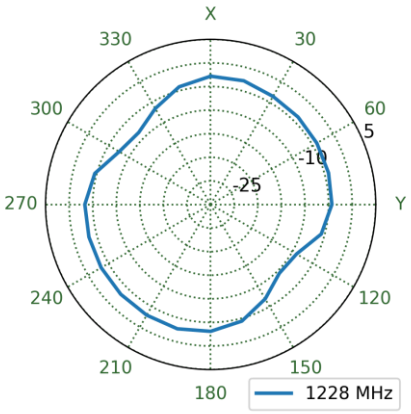
6.2 Patterns at 1228 MHz



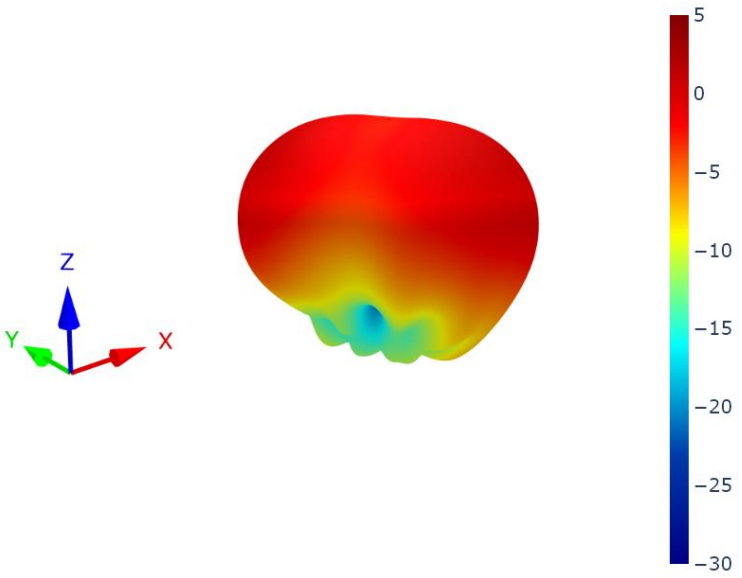
XZ Plane	YZ Plane	XY Plane

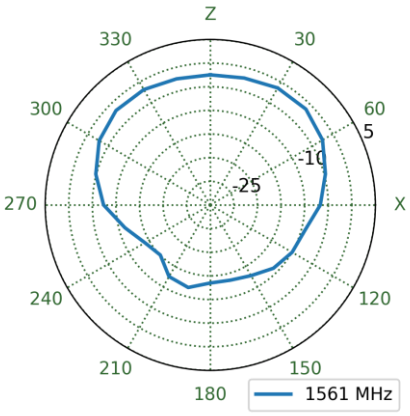
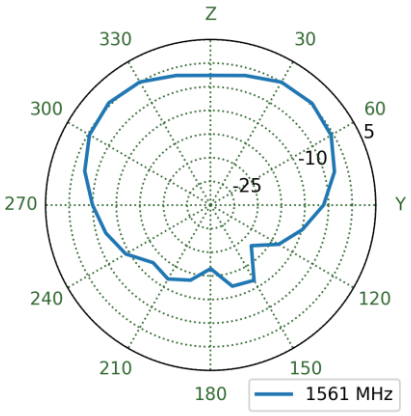
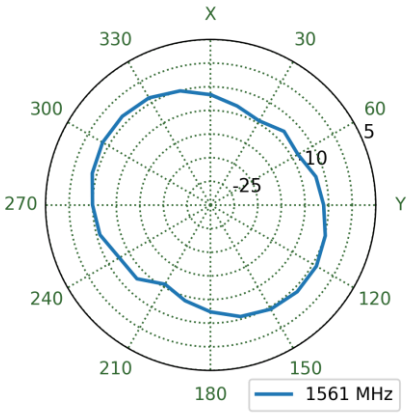




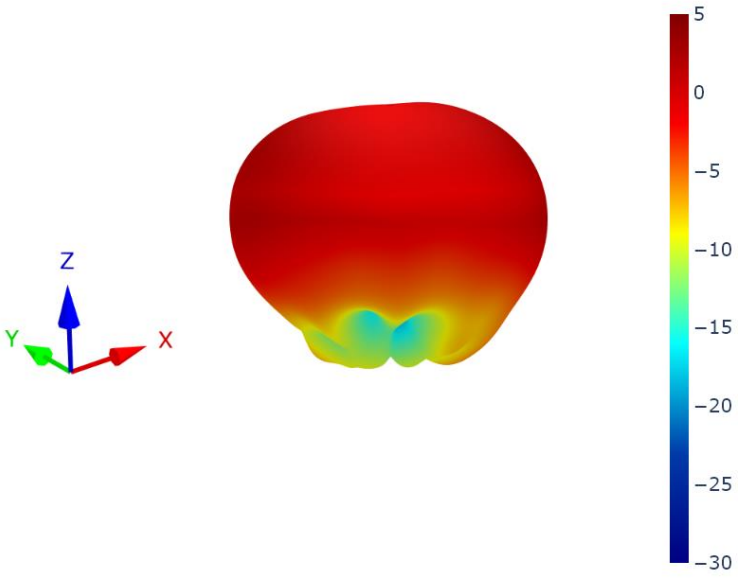


6.3 Patterns at 1561 MHz

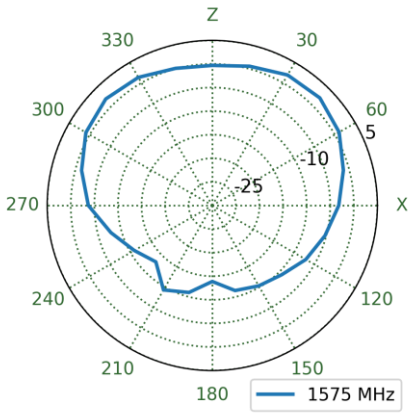


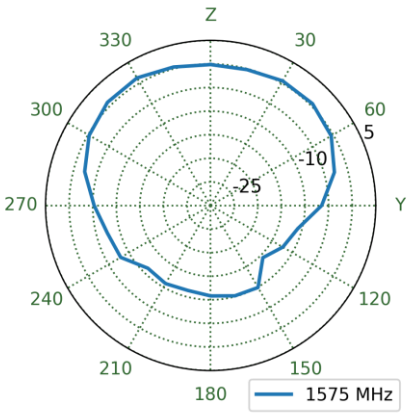
XZ Plane	YZ Plane	XY Plane
		

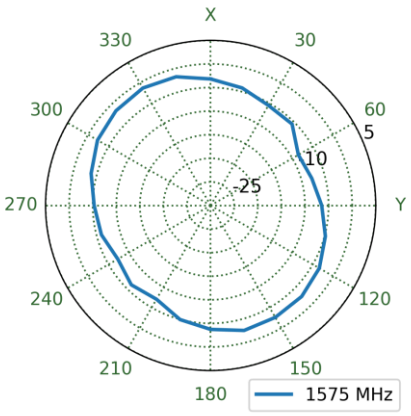
6.4 Patterns at 1575 MHz



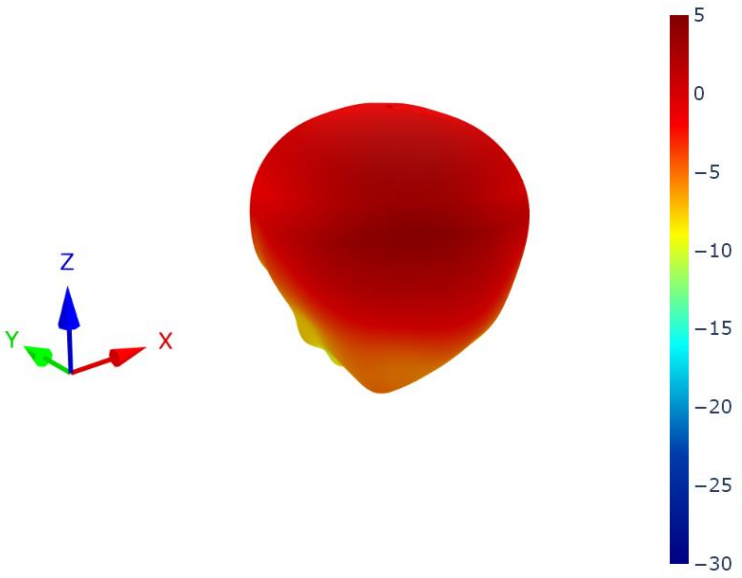
XZ Plane	YZ Plane	XY Plane

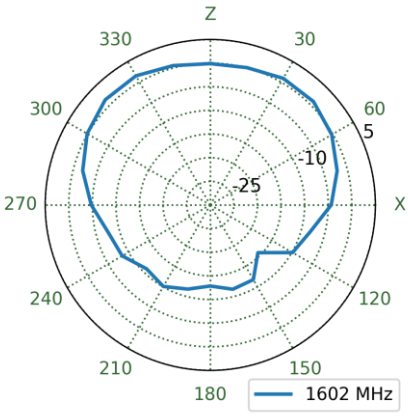
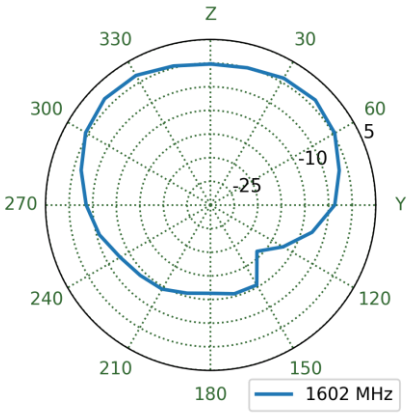
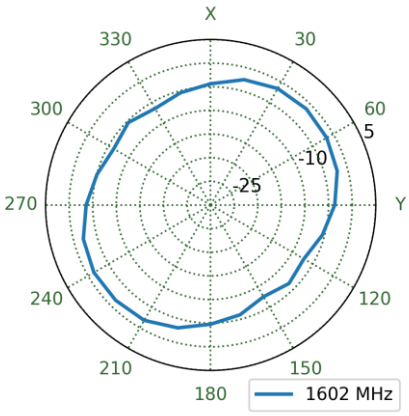






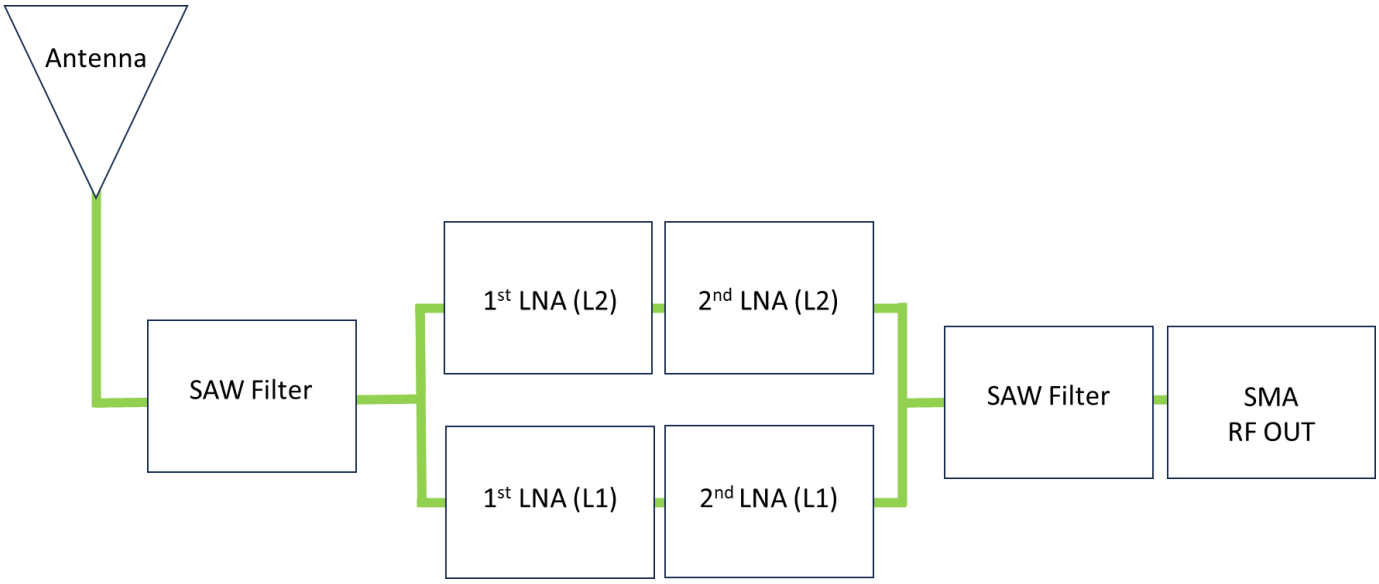
6.5 Patterns at 1602 MHz



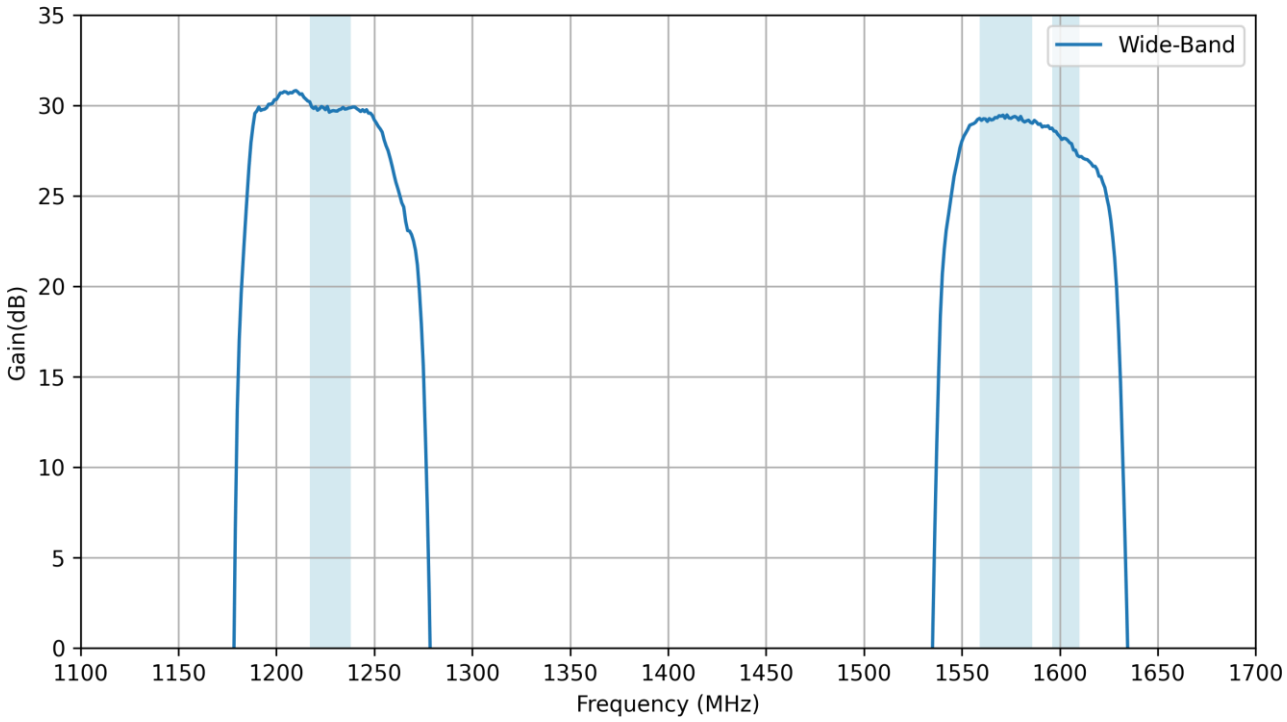
XZ Plane	YZ Plane	XY Plane
		

7. LNA Characteristics

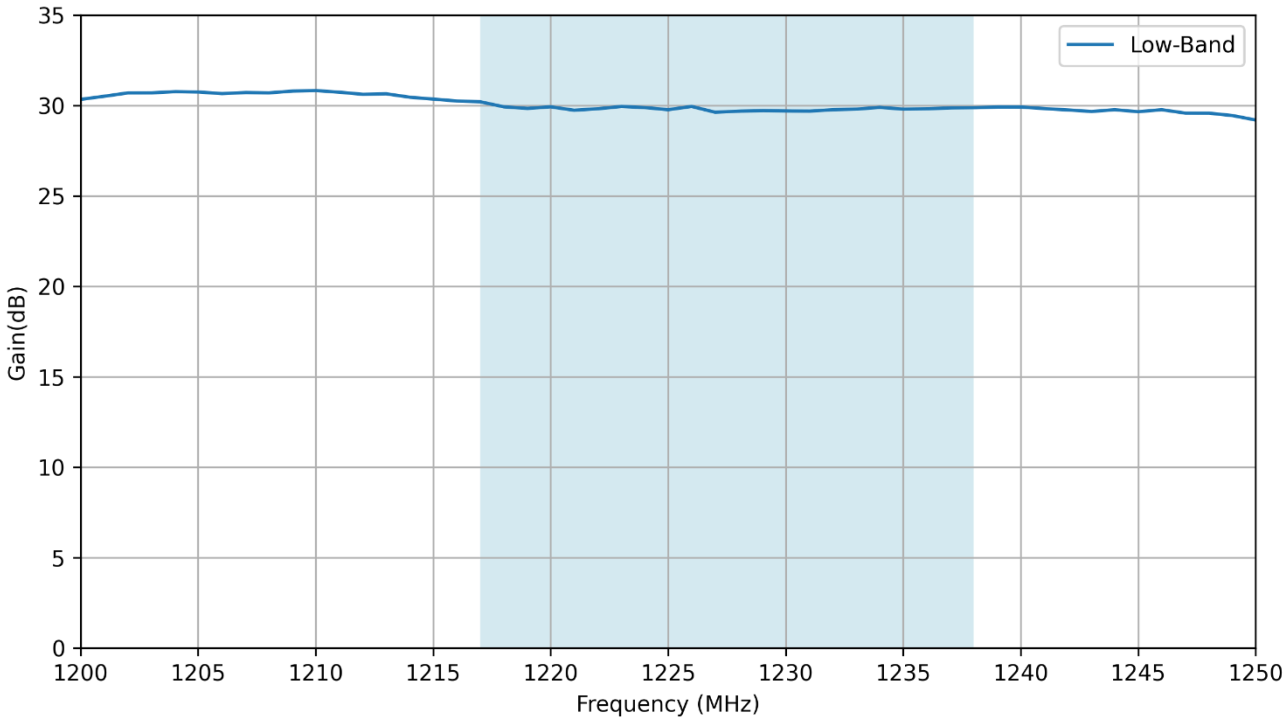
7.1 Block Diagram



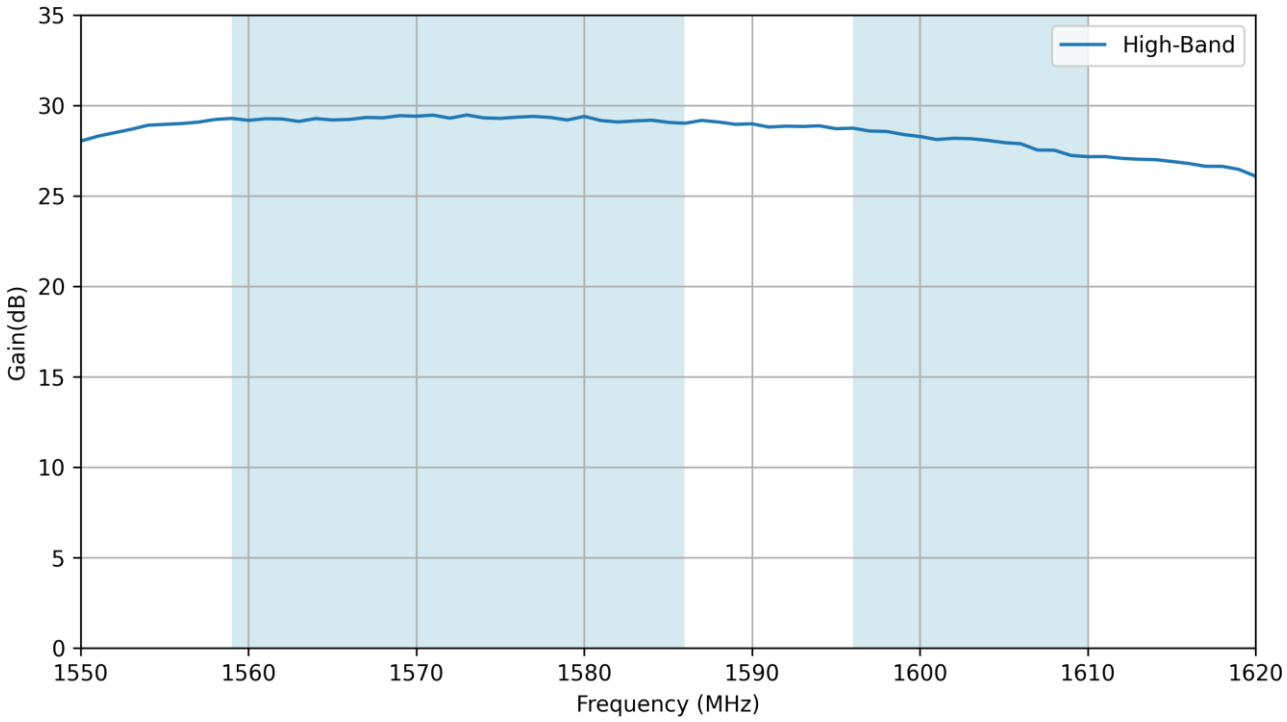
7.2 Gain – Wide-Band



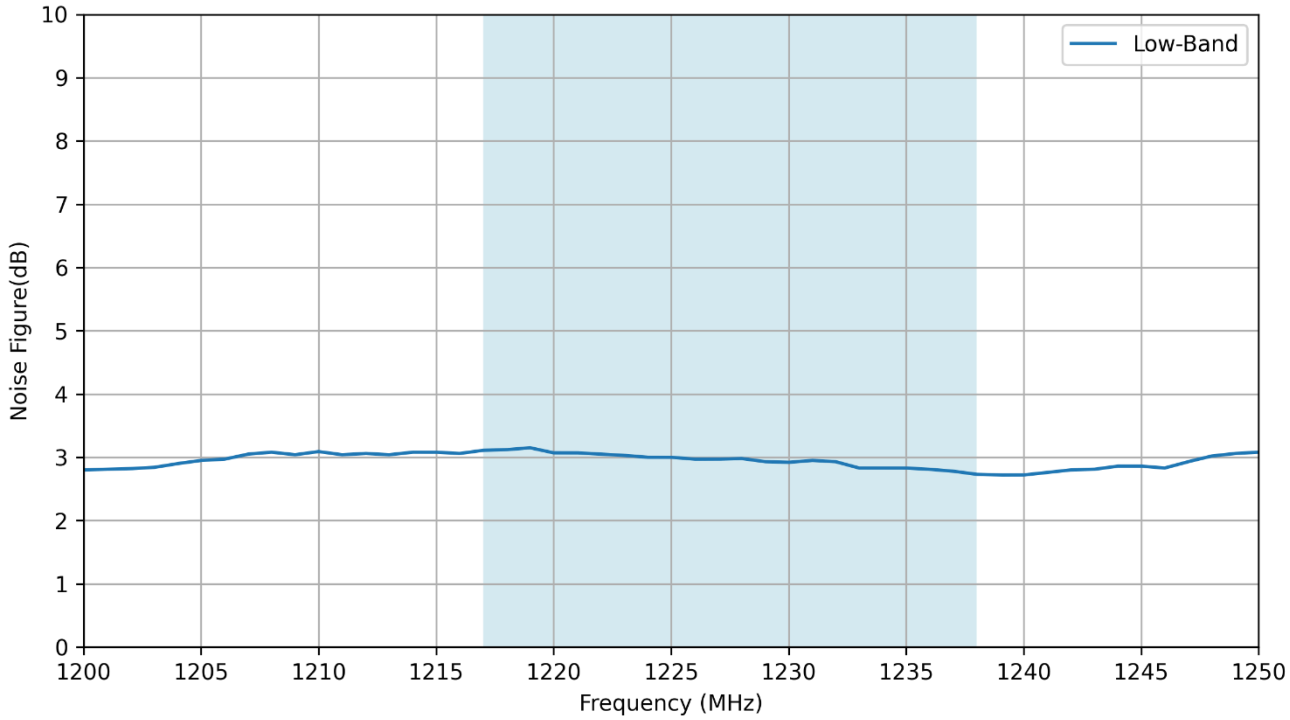
7.3 Gain – Low-Band



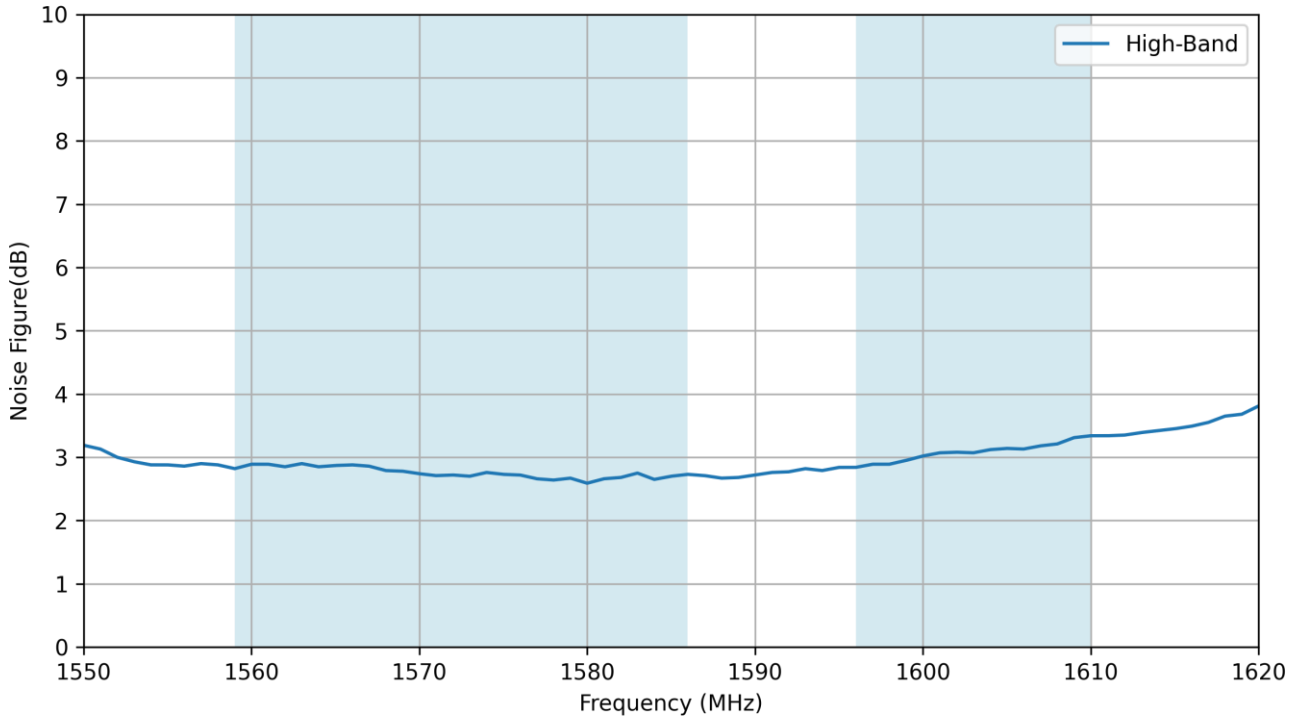
7.4 Gain – High-Band



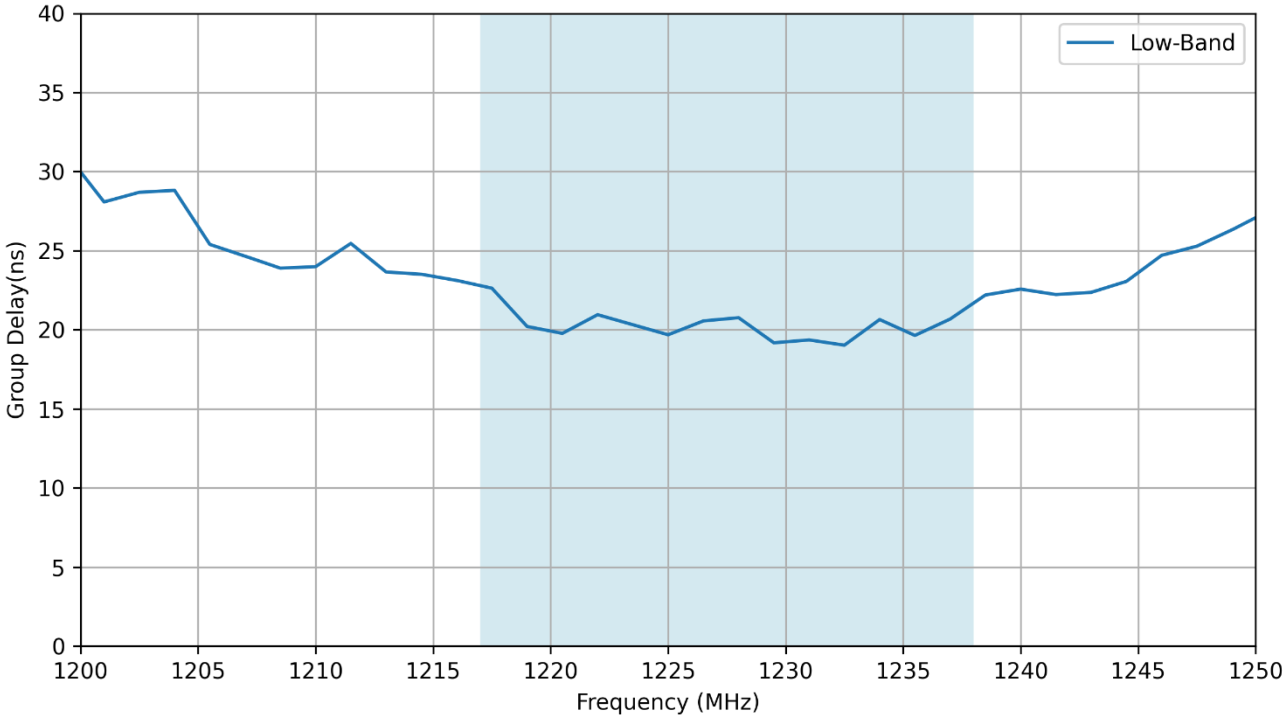
7.5 Noise Figure – Low-Band



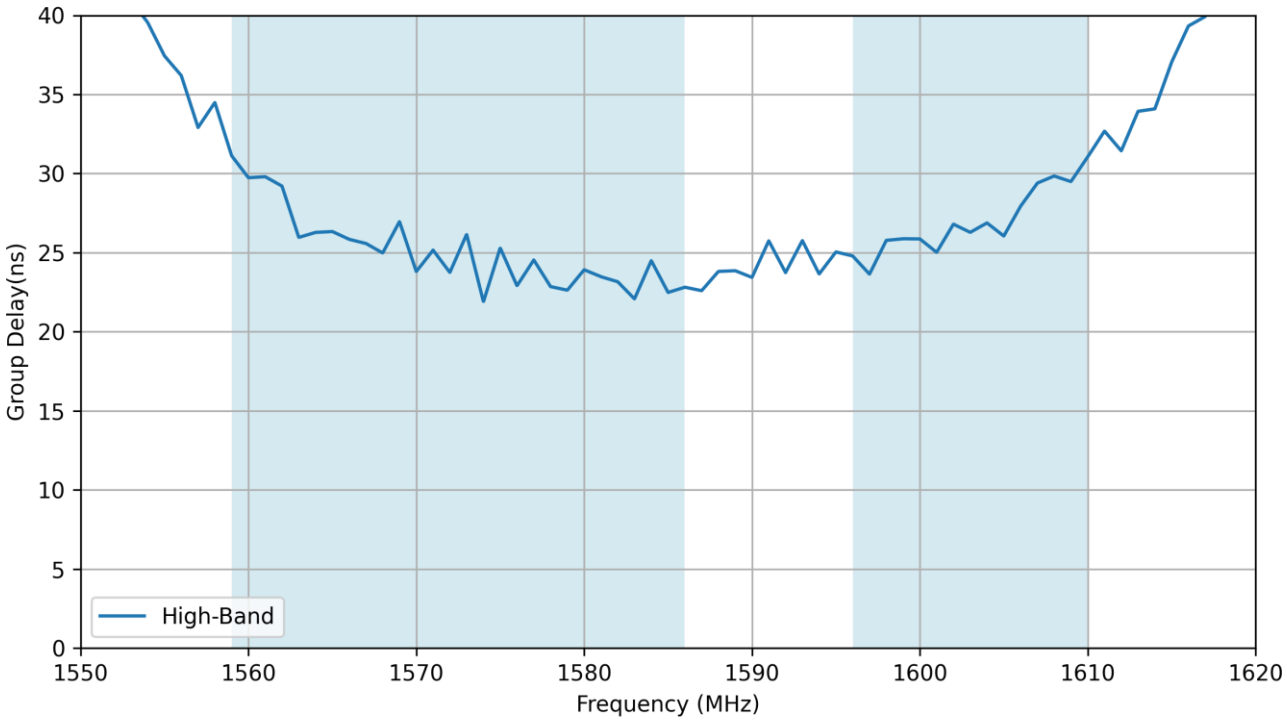
7.6 Noise Figure - High-Band



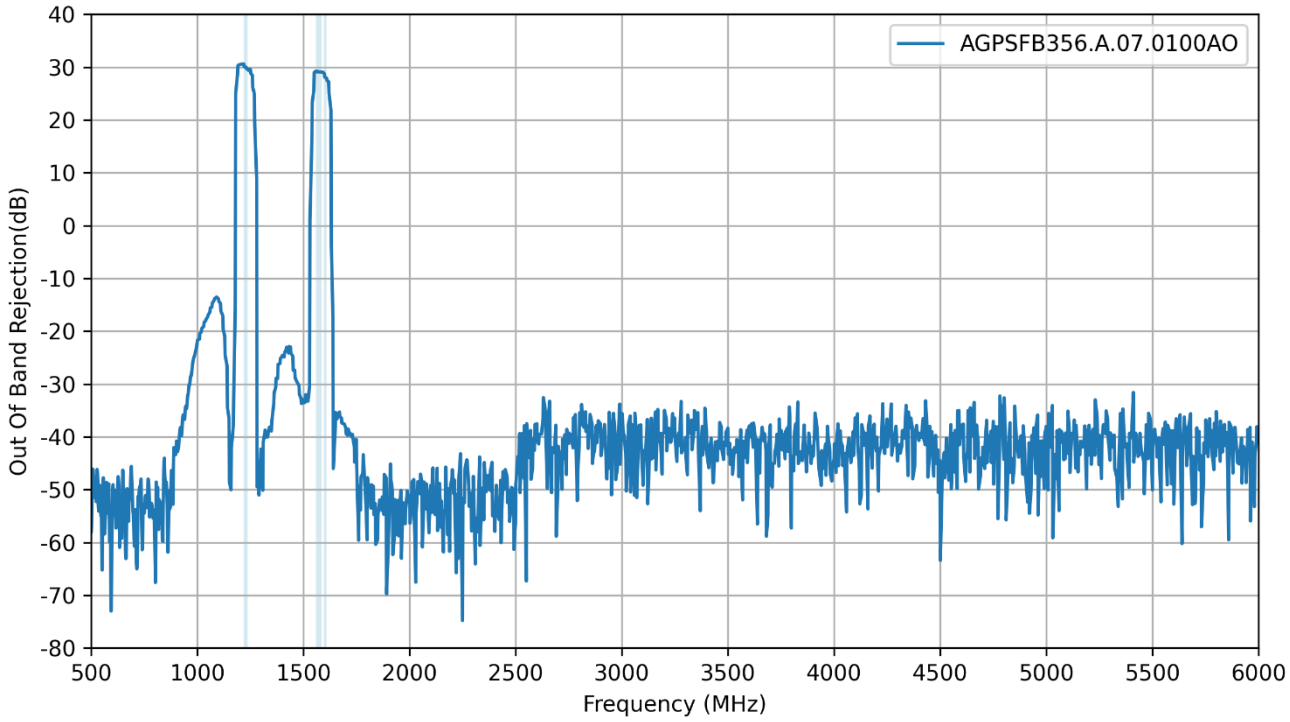
7.7 Group Delay - Low-Band



7.8 Group Delay - High-Band



7.9 Out Of Band Rejection



Changelog for the datasheet

SPE-25-8-120 – AGPSFB356.A.07.0100AO

Revision: A (Original First Release)	
Date:	2025-04-14
Notes:	Initial Release
Author:	Gary West

Previous Revisions

TAOGLAS®

www.taoglas.com