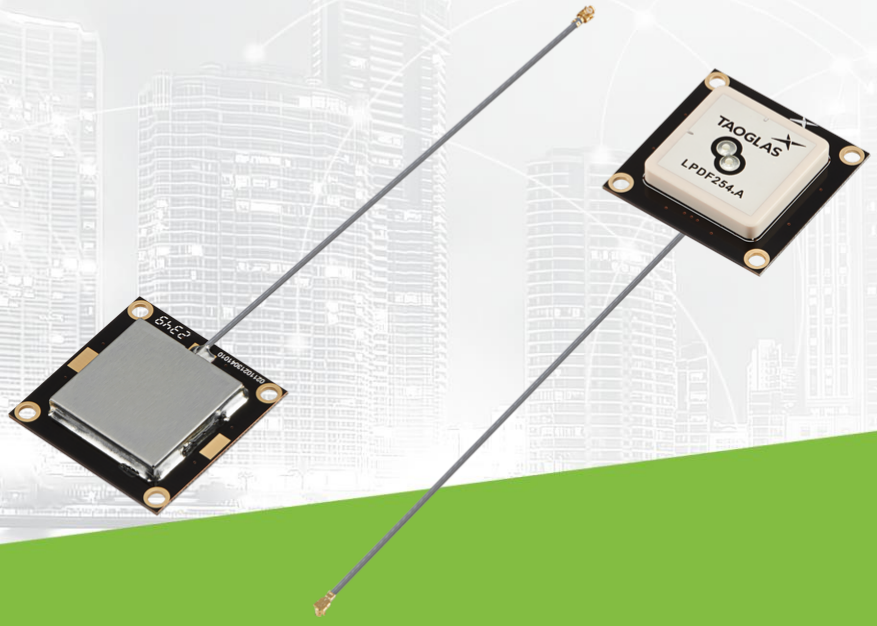
TAOGLAS



Datasheet

Active L-Band Patch Antenna

Part No:
ALPDF254.07.0100C

Description

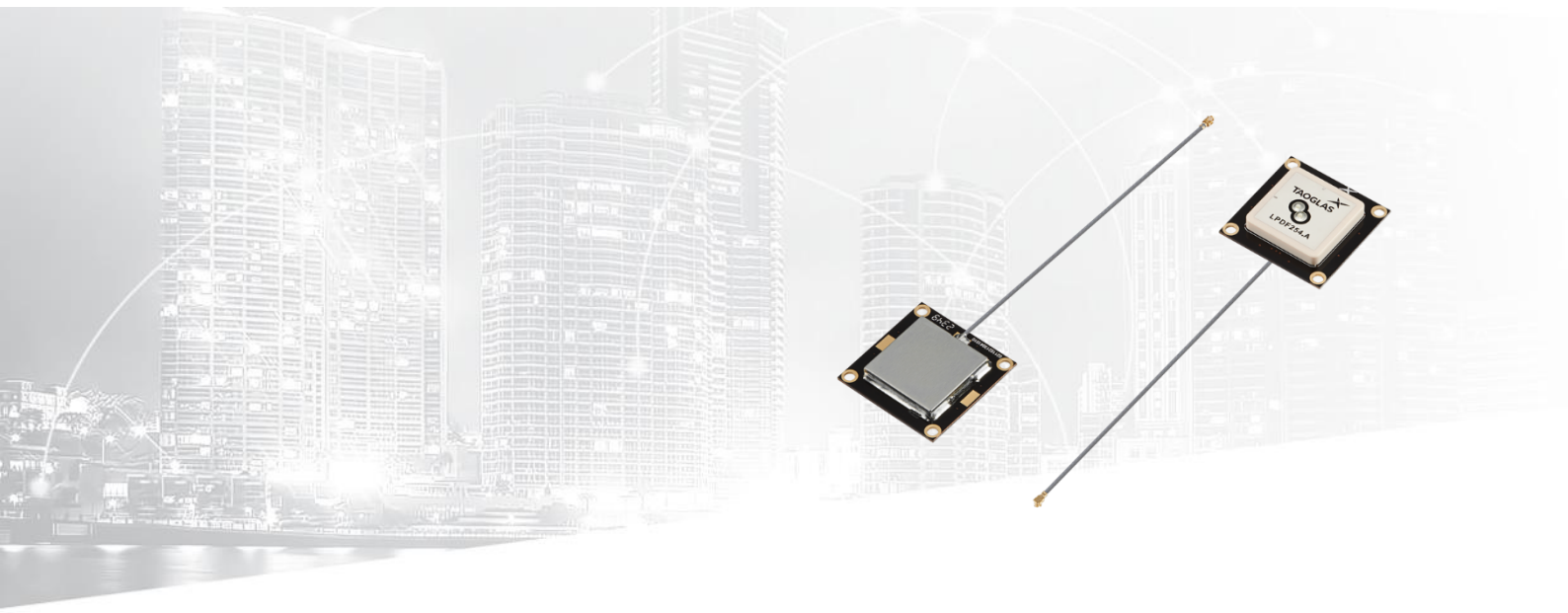
Active L-Band Dual Feed Patch Antenna

With 100mm of 1.37mm Cable and I-PEX MHFI U.FL Connector

Features:

Active L-Band Only Patch with Dual pin configuration
Covering Bands:
• L-Band from 1525-1559MHz
Low Axial Ratio
Cable: 100mm 1.37mm Cable
Connector: I-PEX MHFI U.FL
CE Certified for RoHS and RED
RoHS & Reach Compliant

1. Introduction



The Taoglas ALPDF254 is an active L-Band patch antenna for use on the L-Band spectrum positioning correction services. The antenna exhibits excellent gain and good radiation pattern stability leading to a reliable performance, enabling a high precision GNSS receiver to reach accuracies down to centimeter level. Satellite L-band communication systems allows GNSS correction service providers to broadcast a variety of services on specific channels, satellites, and the ALPDF254 has been expertly designed to exhibit the high efficiency required when using L-Band receivers.

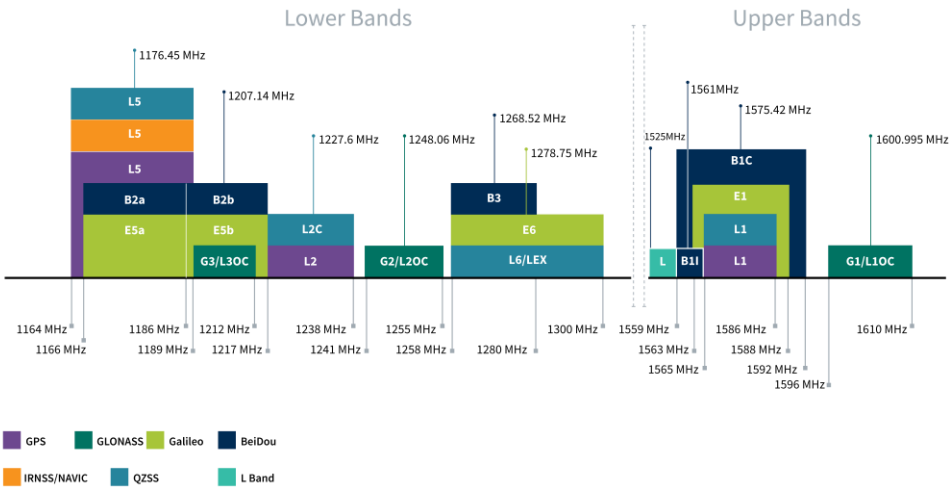
Typical applications include:
- UAVs and Robotics
- Autonomous Vehicles
- Precision and Smart Agriculture

The ALPDF254 includes LNAs to amplify the L-Band signal, and front-end SAW filters to reduce out of band noise, such as from nearby cellular transceivers. It offers better protection from nearby radiated power surges and greatly reduces the probability of damaging your receiver from nearby transmissions. The ALPDF254 has a single cable feed as the two pin feeds are combined with a hybrid coupler to get the best possible axial ratio for L-Band applications.

The cable and connector are fully customizable, subject to NRE and MOQ. For further information please contact your regional Taoglas customer support team.

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
	☐	☐	☐	☐	☐



Bands and Constellations Table

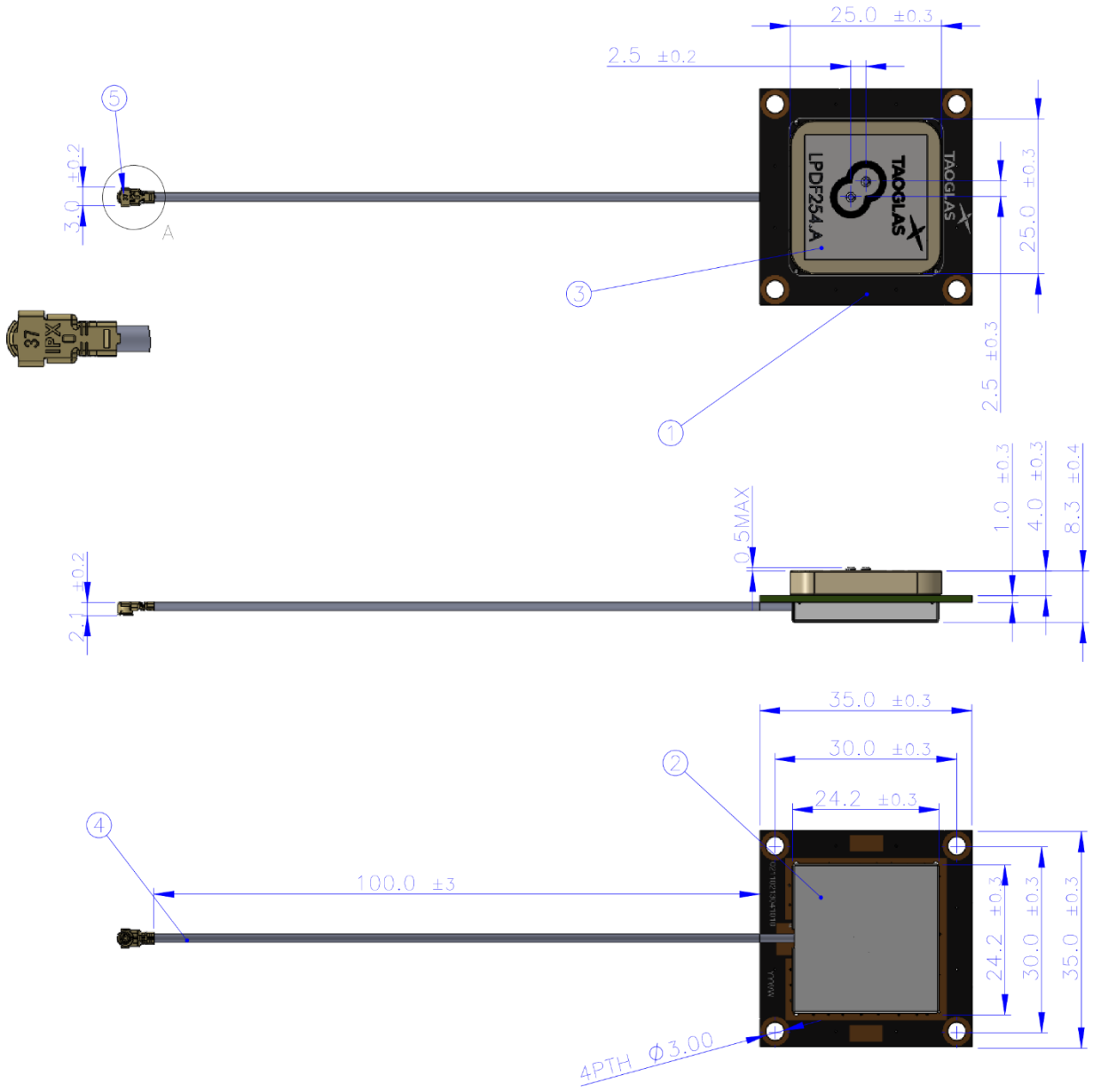
Electrical	
Frequency (MHz)	L Band
	1525-1559
Average Gain (dB)	-2.17
Efficiency (%)	>60
Peak Gain (dBi)	2.94
Axial Ratio (dB)	<3
Impedance	50 Ω
Polarization	RHCP
Radiation Pattern	Directional

LNA and Filter Electrical Properties	
Frequency (MHz)	L Band
	1525-1559
Gain@1.8V ~ 5V	28.4 dB
Noise@1.8V ~5V	2.0 dB
Power consumption@1.8V ~5V	4.9 mA
*Tested on 70x70 mm ground plane with hybrid coupler	

Mechanical	
Dimensions	35mm * 35mm * 8.3mm
Weight	29.5g
Material	Ceramic
Mount	Screw
Connector	I-PEX MHFI
Cable	1.37 Micro Coax

Environmental	
Temperature Range	-40°C to + 85°C
Humidity	Non-condensing 65°C 95% RH

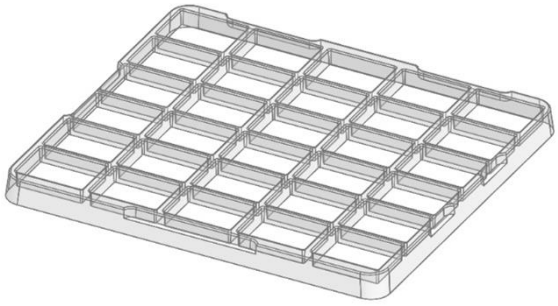
3. Mechanical Drawing



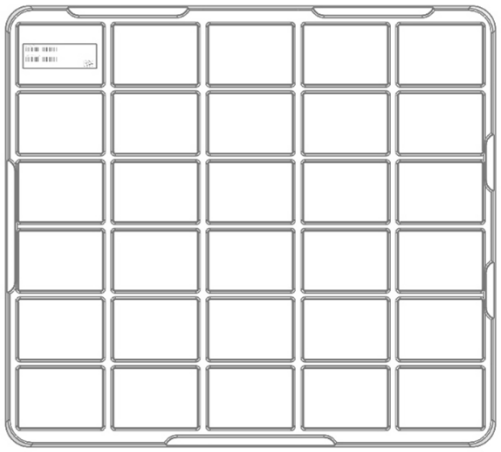
	Name	Material	Finish	Qty
1	PCB	FR4	Black	1
2	Shielding Case	SECC	Nature	1
3	Patch	Ceramic	Clean	1
4	1.37 Coaxial cable	FEP	Gray	1
5	IPEX.MHF1(20351-112R-37)	Brass	Au Plated	1

4. Packaging

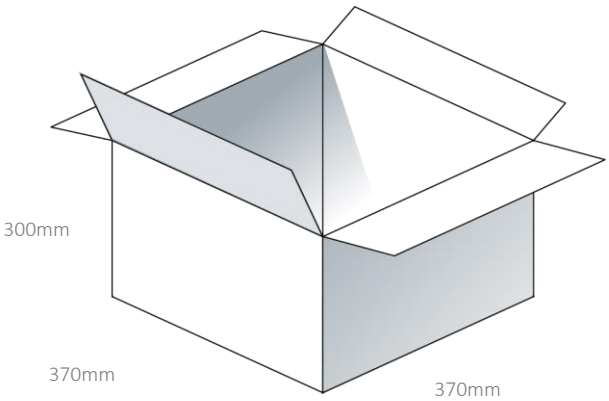
30pcs ALPDF254.07.0100C per tray
Weight – 0.6Kg



120pcs ALPDF254.07.0100C per vacuum package
Weight - 2.4Kg

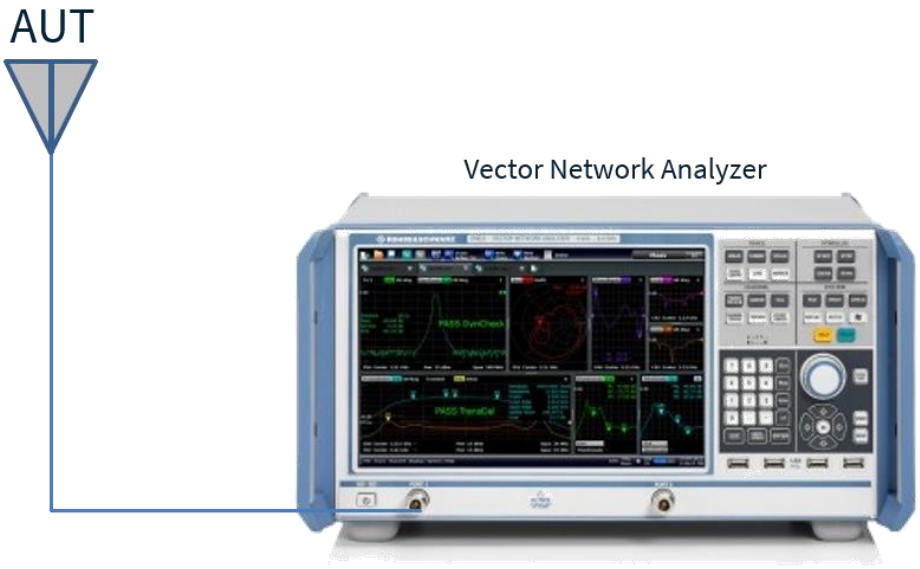


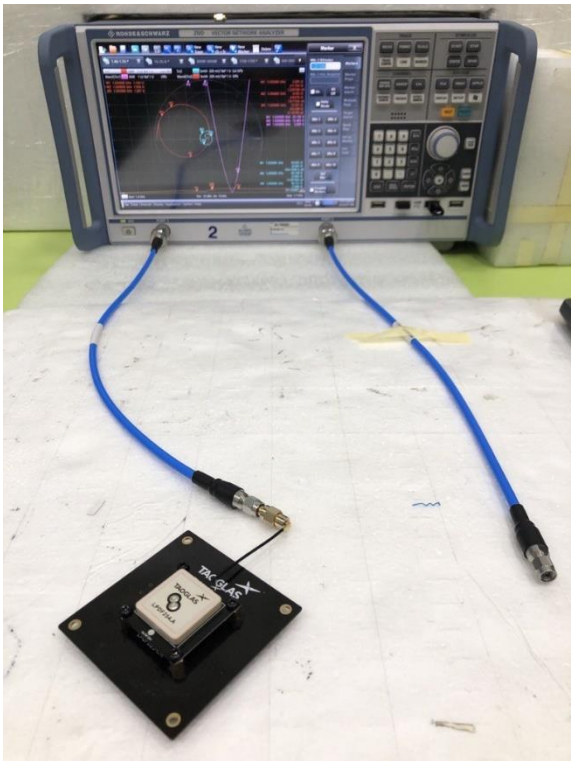
360pcs ALPDF254.07.0100C per carton
Dimensions - 390*320*290mm
Weight – 7.6Kg



5. Antenna Characteristics

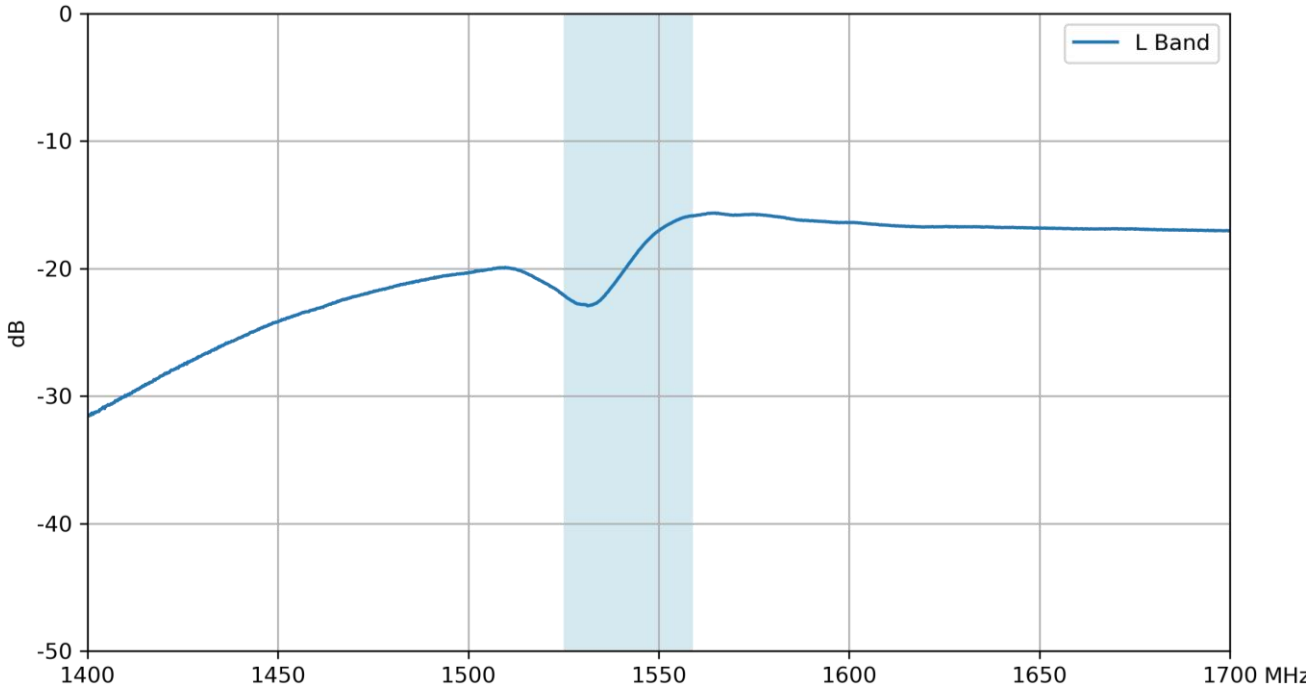
5.1 Test Set-up



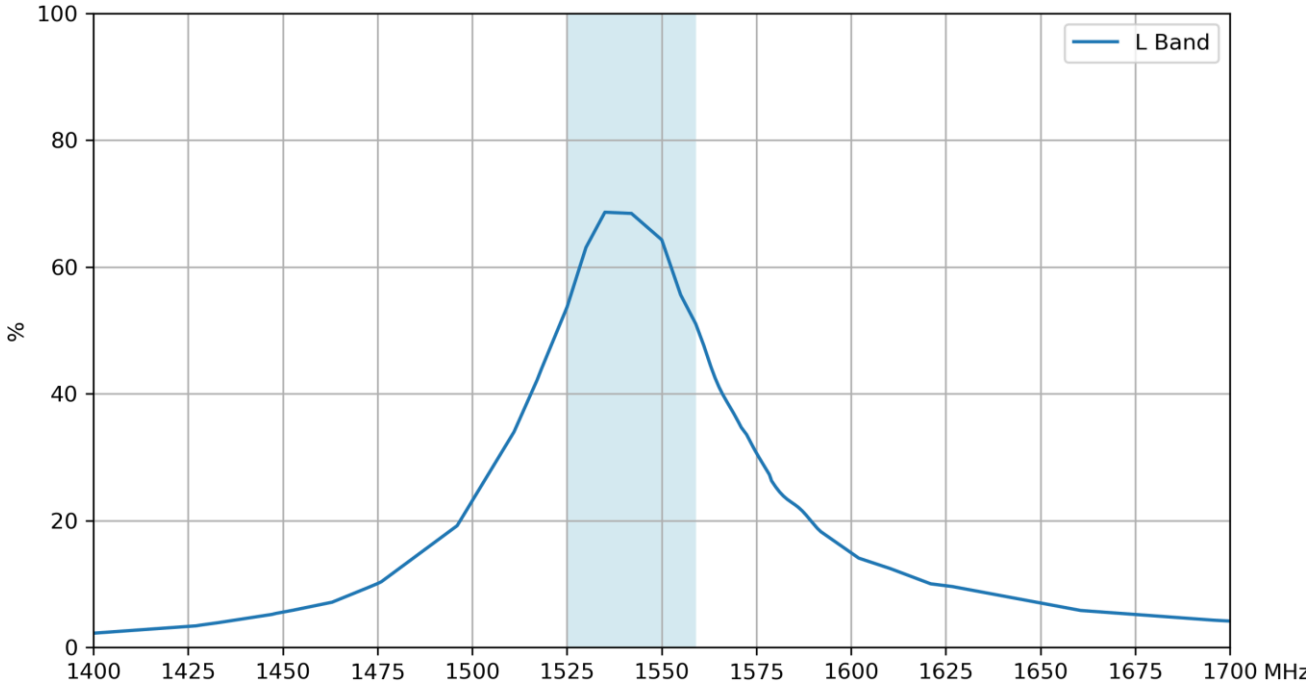


VNA Test Set up

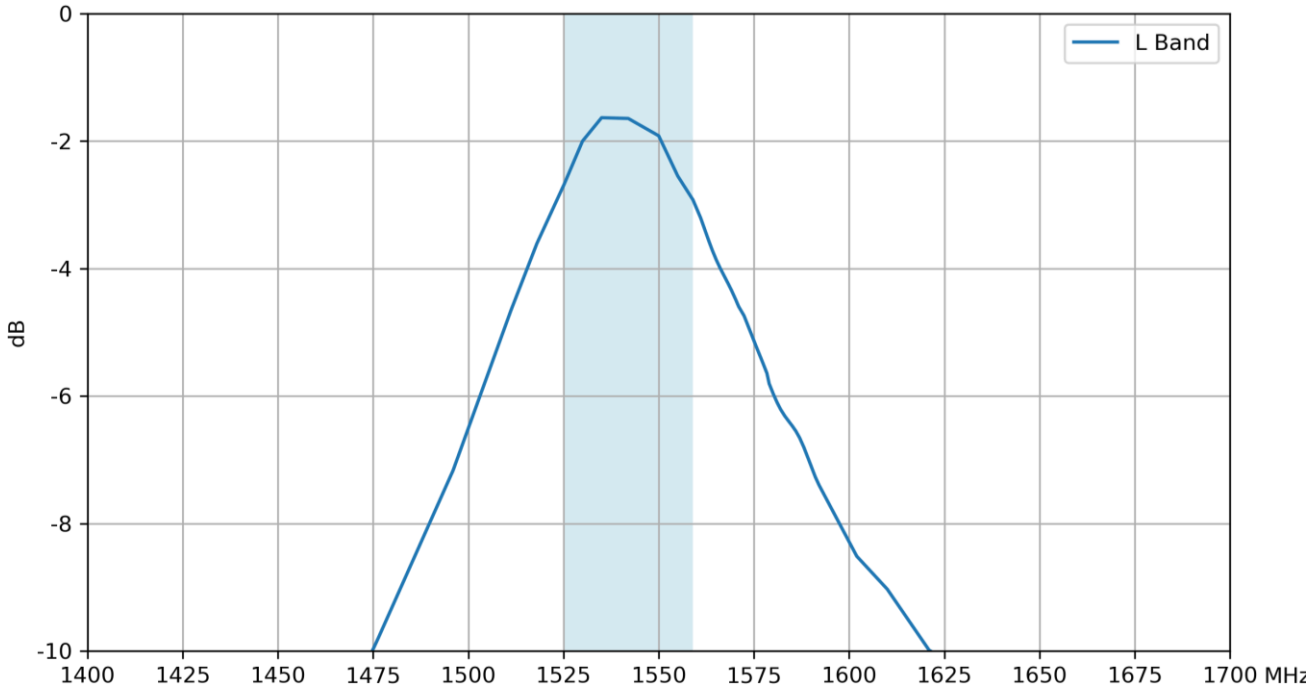
5.2 Return Loss



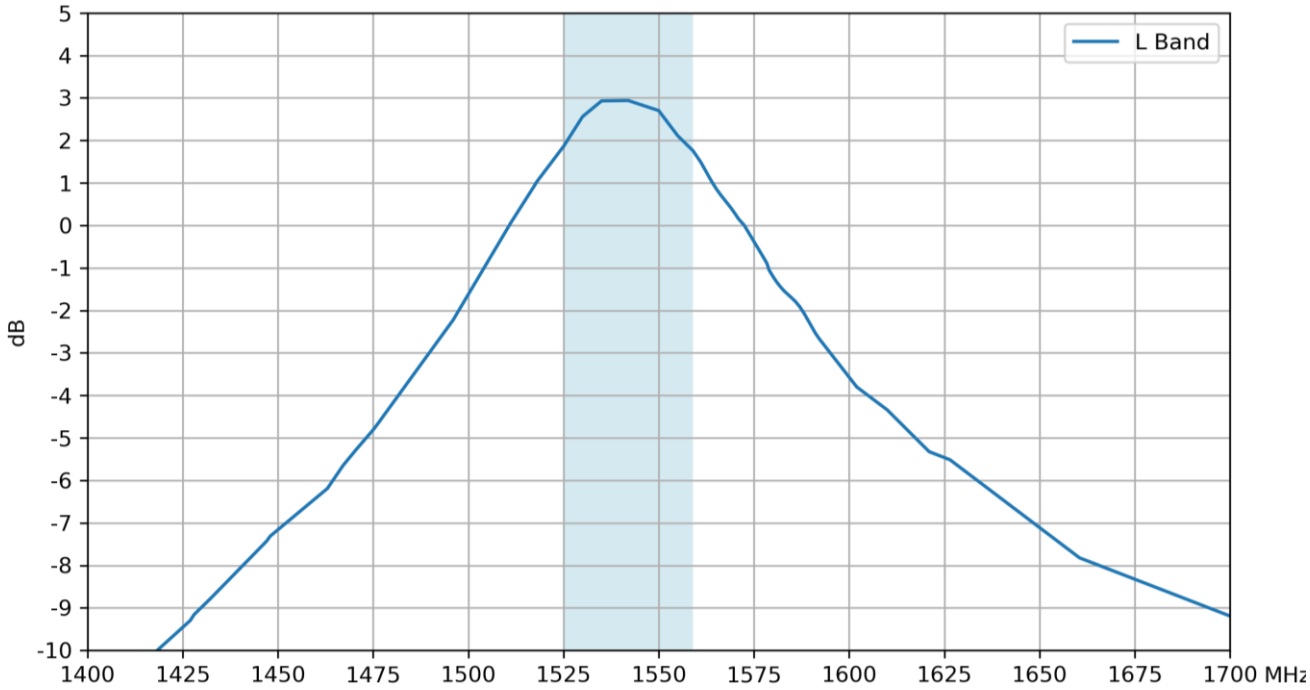
5.3 Efficiency



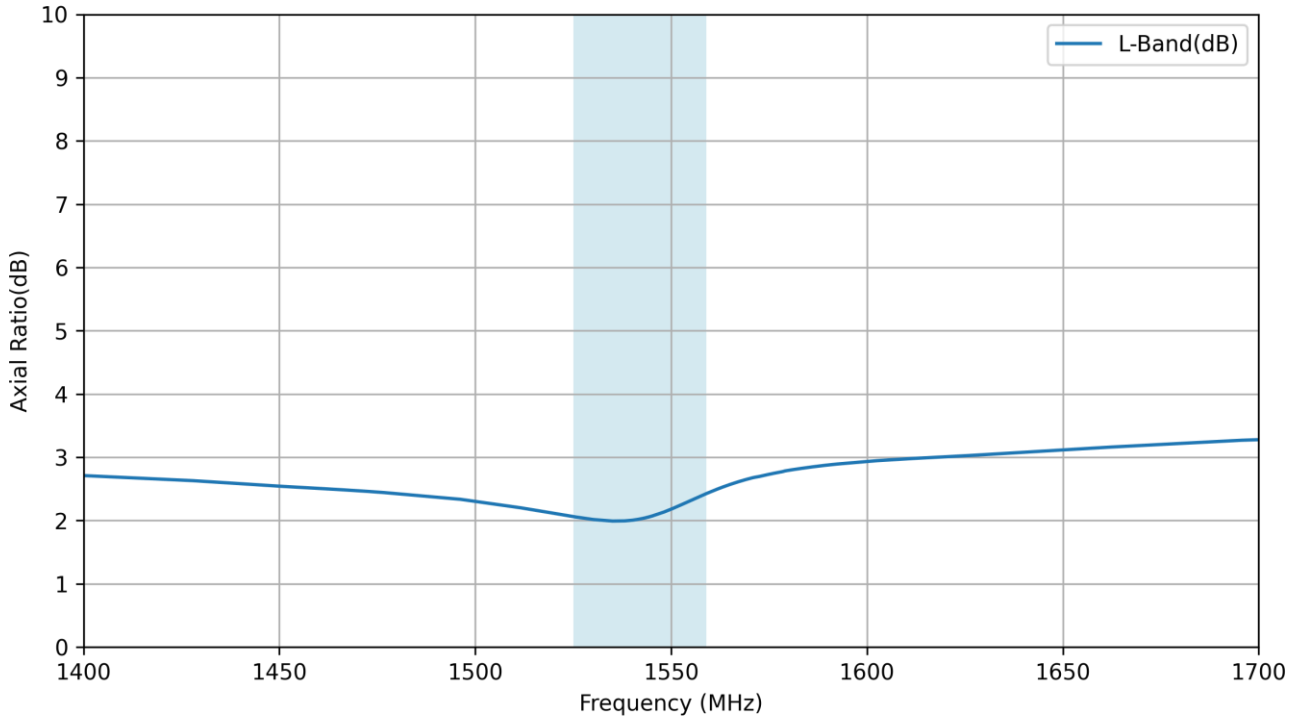
5.4 Average Gain



5.5 Peak Gain

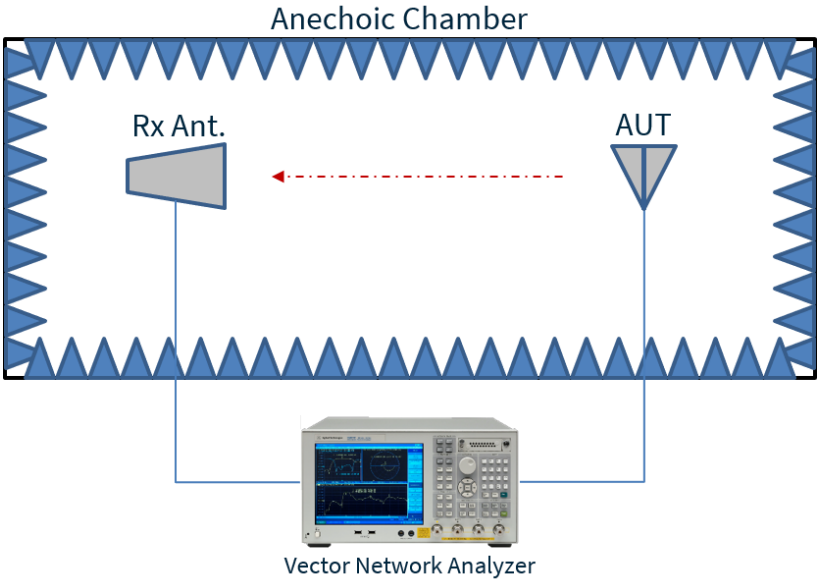


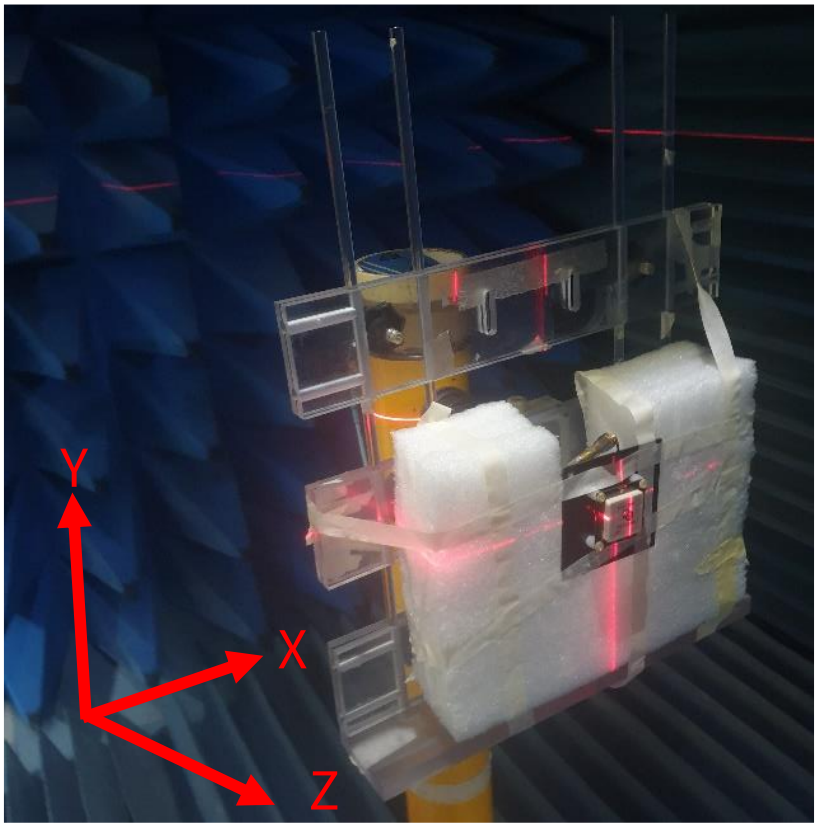
5.6 Axial Ratio



6. Radiation Patterns

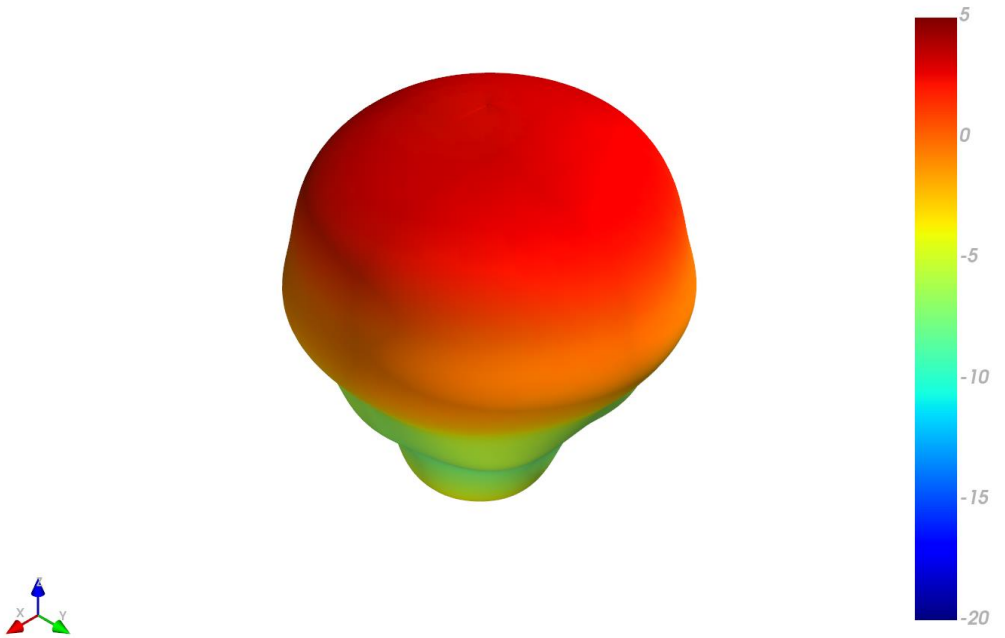
6.1 Test Setup



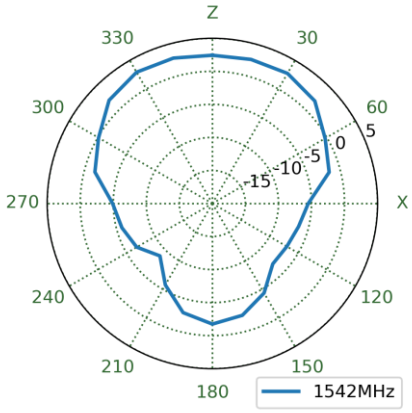


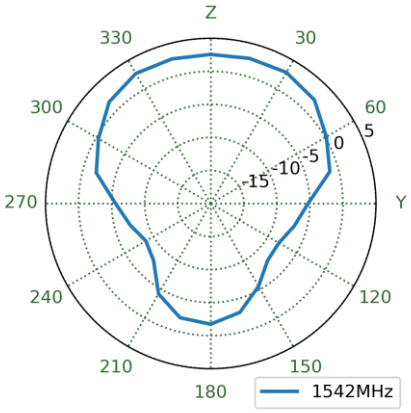
Chamber Test Set up

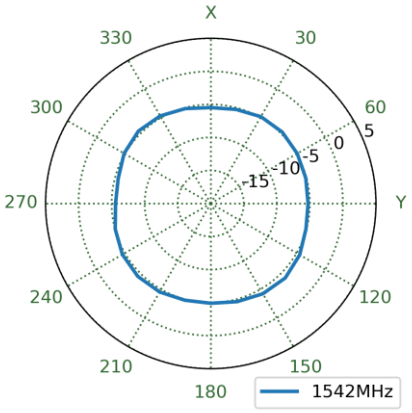
6.2 Patterns at 1542 MHz



XZ Plane	YZ Plane	XY Plane

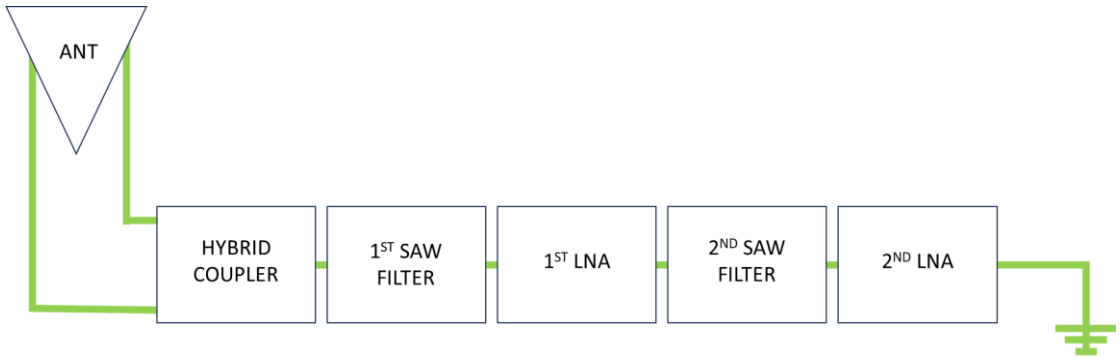




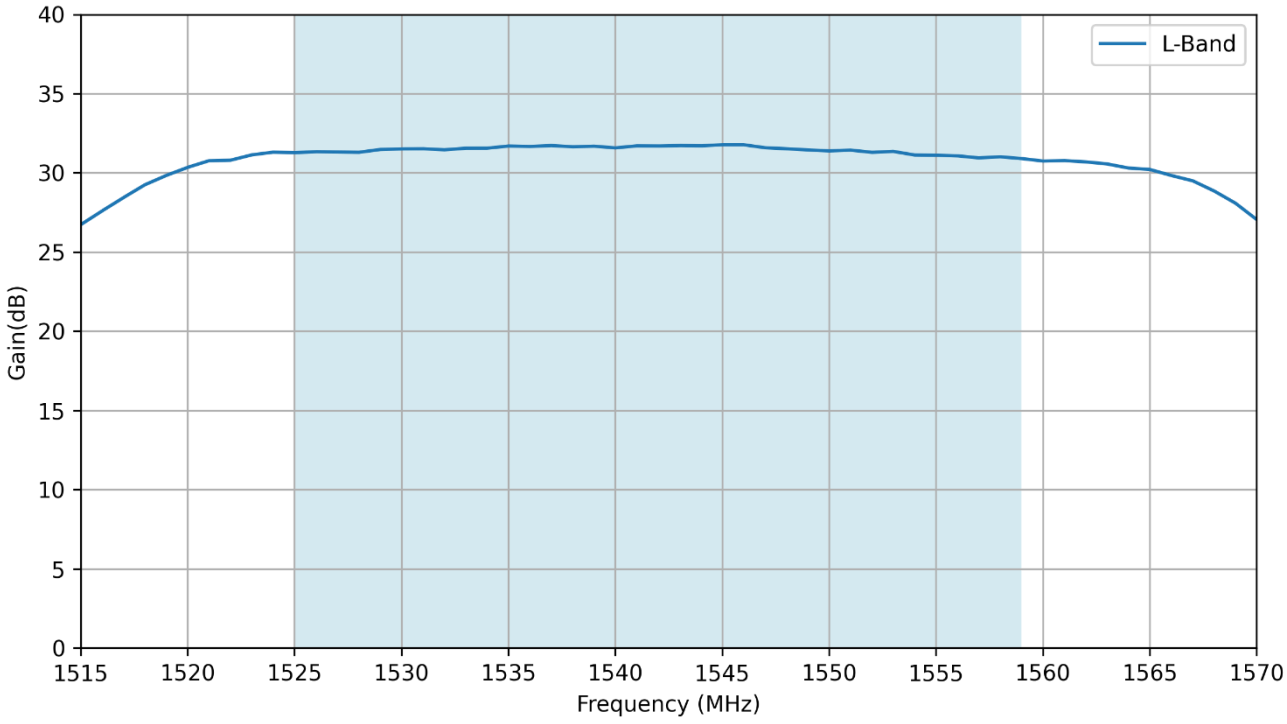


7. LNA Characteristics

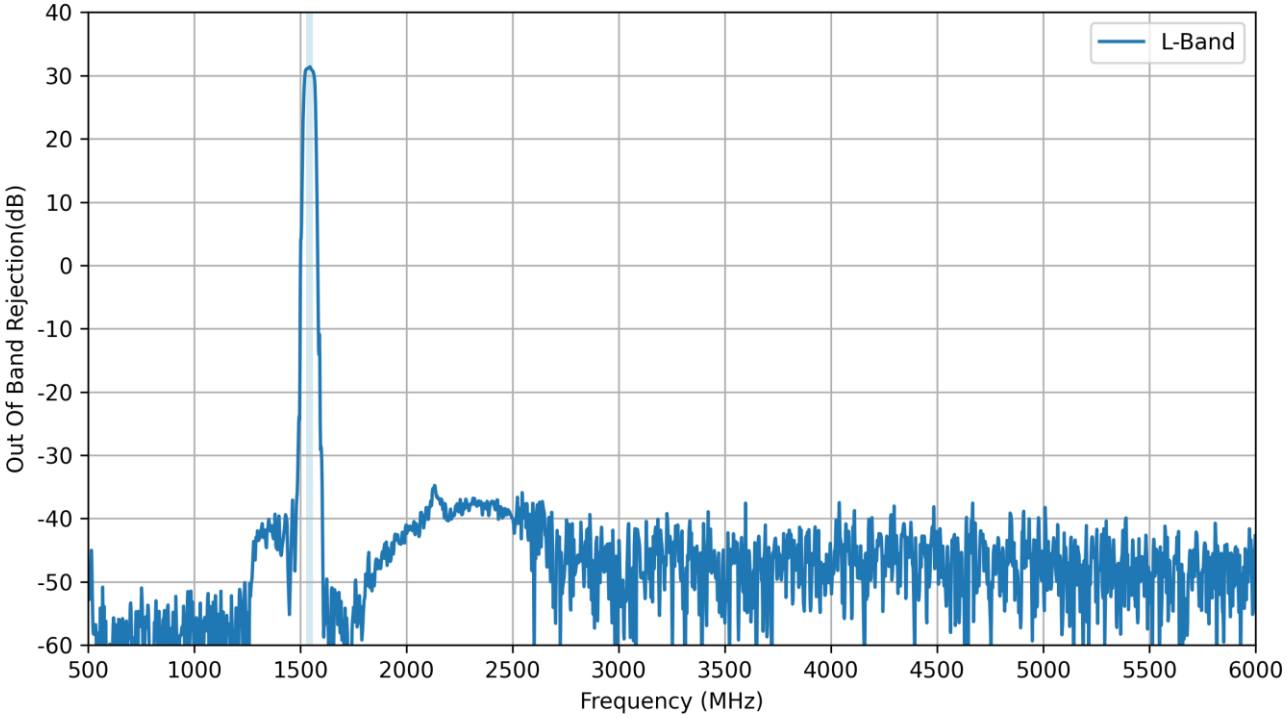
7.1 Block Diagram



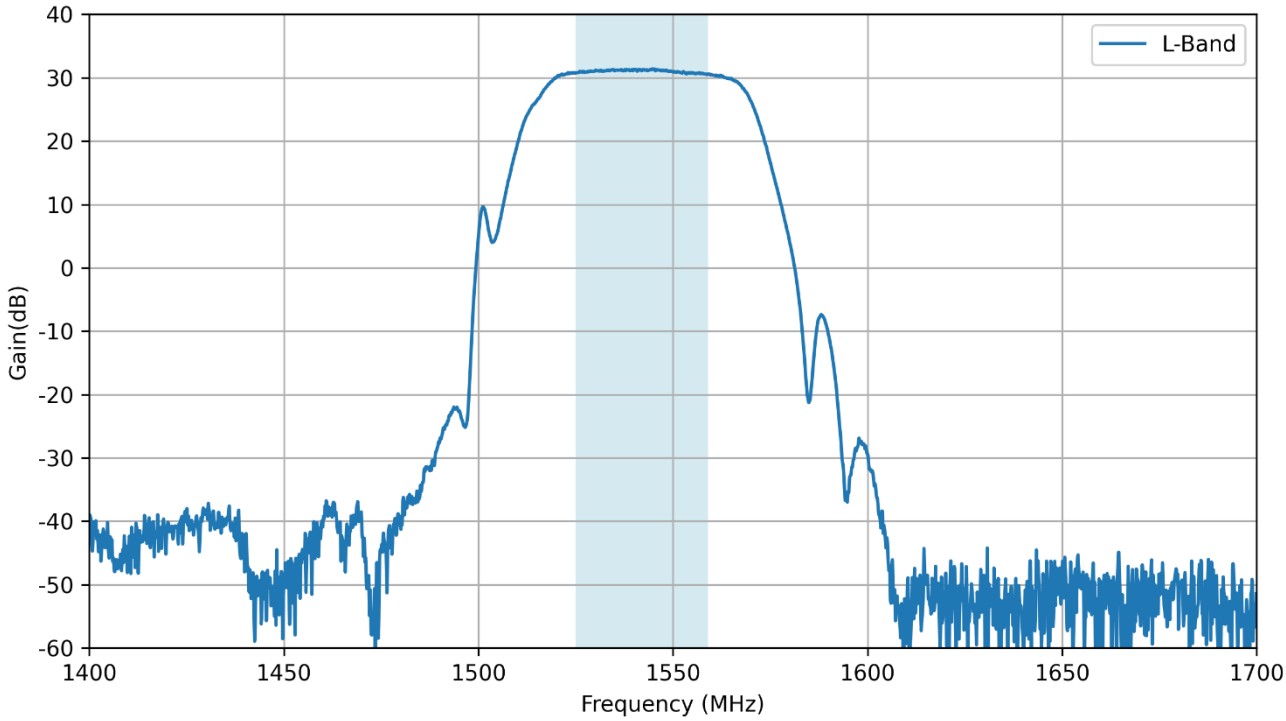
7.2 LNA Gain



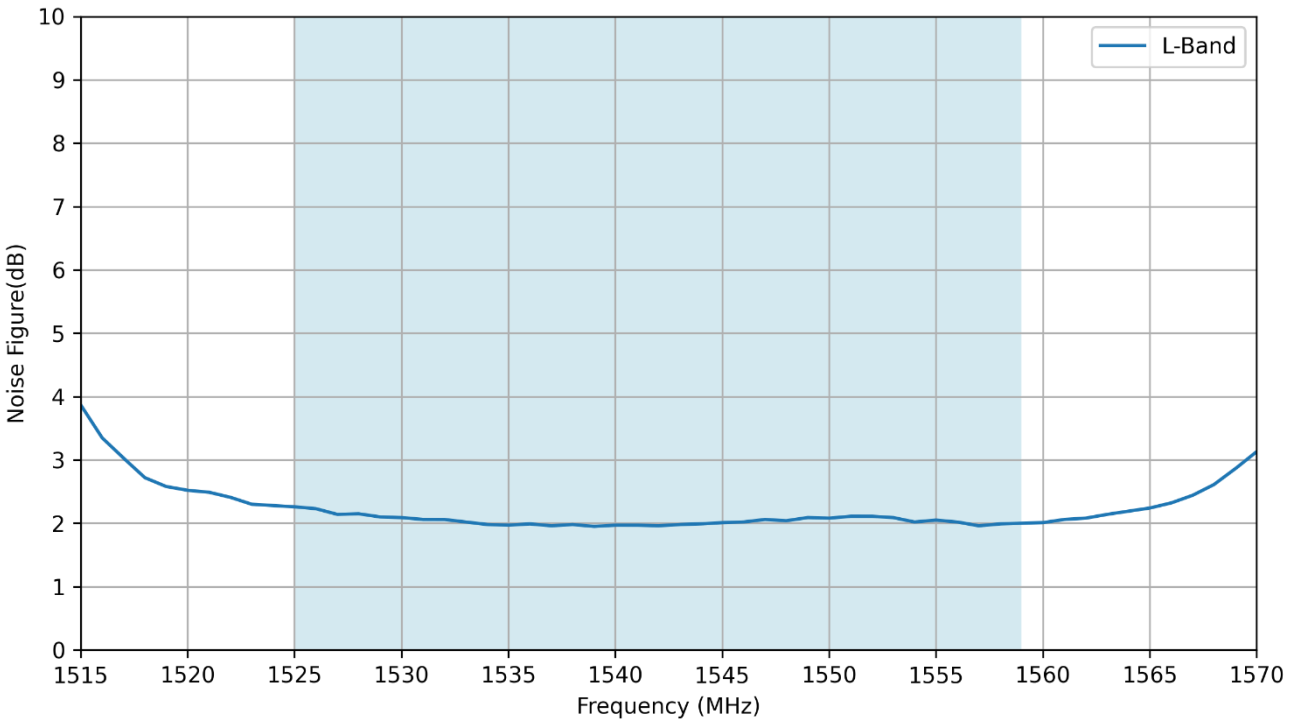
7.3 Out Of Band Rejection



7.4 Wideband Gain (s12)



7.5 Noise Figure



Changelog for the datasheet

SPE-23-8-282 - ALPDF254.07.0100C

Revision: B (Original First Release)	
Date:	29-01-2024
Notes:	Updated datasheet with new data and updated datasheet flow.
Author:	Gary West

Previous Revisions

Revision: A (Original First Release)	
Date:	2022-09-28
Notes:	Initial Release
Author:	Jack Conroy

TAOGLAS®

www.taoglas.com