



TAOGLAS®



Datasheet

Ulysses

Part No:
AA.162.301111

Description

Ultra-Low Profile Miniature Magnet Mounted GPS-GLONASS-Galileo Antenna

Features:

Ultra Low Profile Miniature Magnet Mounted
GPS-GLONASS-Galileo 1575-1610MHz
Dims: 40.0 x 38.0 x 10.0mm
Cable: 3m of RG-174
Connector: SMA(M)
RoHS & Reach Compliant

1.	Introduction	3
2.	Specification	4
3.	Mechanical Drawing	6
4.	Packaging	7
5.	Antenna Characteristics	8
6.	LNA Characteristics	13
7.	Radiation Patterns	15
8.	Field Test Results	18
	Changelog	19

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 Ulysses is a compact, high-performance GNSS antenna designed for applications requiring precise positioning and reliable satellite connectivity. With an ultra-low profile of just 10 mm, it supports GPS, Galileo, and GLONASS constellations to deliver accurate location data in a wide range of demanding environments. A high-gain wideband patch antenna with an integrated ground plane ensures dependable performance, while the IP67-rated enclosure provides protection against harsh outdoor conditions.

Key Features

- Ultra-low profile design (10 mm height)
- Supports GPS, Galileo, and GLONASS
- High-gain wideband patch antenna with integrated ground plane
- IP67 waterproof and dustproof rated
- Integrated SAW filter helps protect against out-of-band interference and potential LNA damage
- Manufactured in a TS16949-approved automotive-quality facility

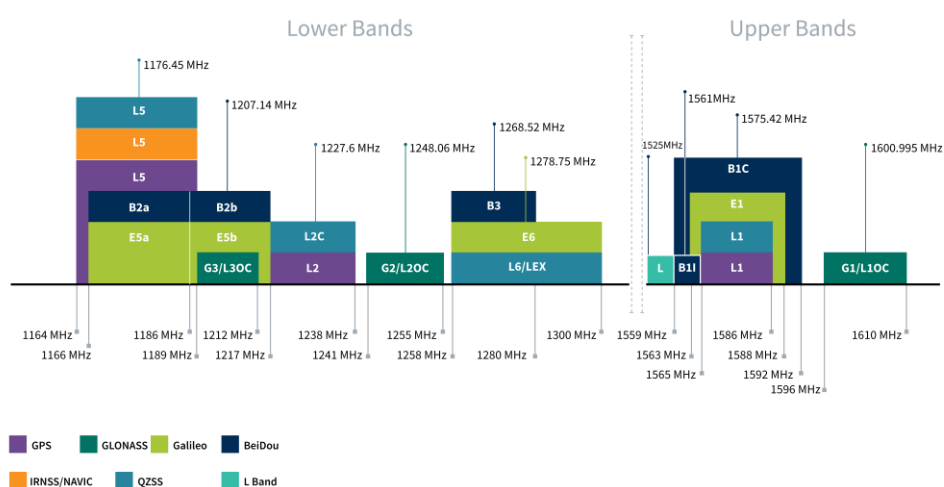
Typical Applications

- Fleet management and telematics
- Asset tracking and monitoring
- Precision navigation systems
- Automotive and transportation applications
- Industrial IoT devices
- Outdoor positioning and tracking equipment

For further information or assistance integrating this antenna into your application, please contact your local Taoglas sales representative.

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

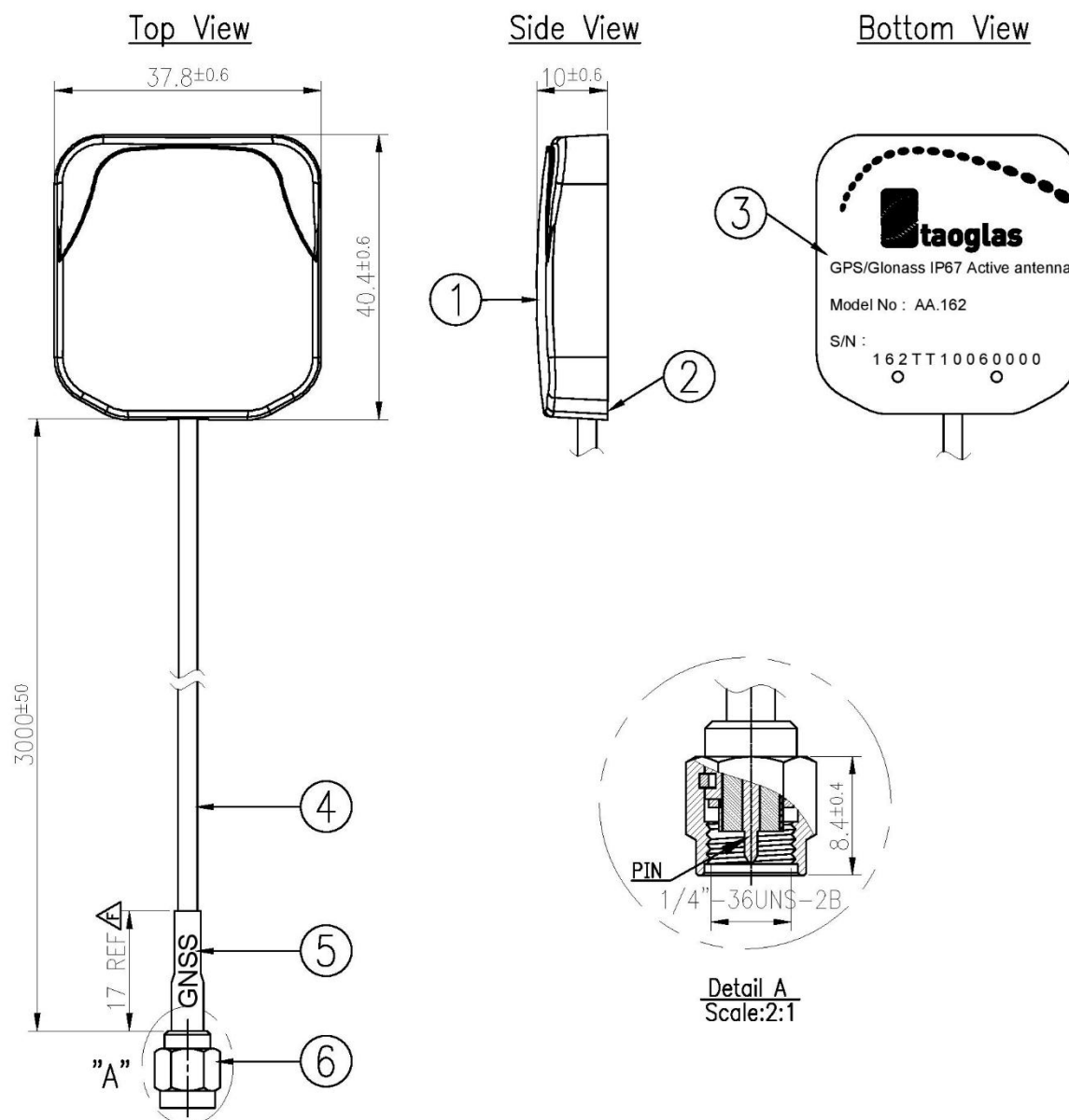
GNSS Electrical		
Frequency (MHz)	1575.42	1602
VSWR	2:1	2:1
Efficiency (%)	65.1	66.9
Peak Gain (dBi)	2.77	3.02
Average Gain (dB)	-1.87	-1.74
PCO_x (cm)	-0.5	-0.62
PCO_y (cm)	-3.81	-3.44
PCV (cm)	0.01	0.02
Polarization	RHCP	
Impedance	50 Ω	

LNA and Filter Electrical Properties		
Frequency (MHz)	1575.42	1602
Gain (dB)	31.3	29.7
Noise Figure(dB)	2.6	3.1
Out Of Band Rejection (dB)	> 75 dB @ 698–960 MHz; > 65dB @ 1710–6000 MHz	
ESD Protection Support	Air +/-25KV, Contact +/-20KV	

Mechanical	
Dimensions	37.8 x 40.4 x 10mm
Material	UV Resistant ABS
Connector	SMA(M)
Cable	3m of RG-174

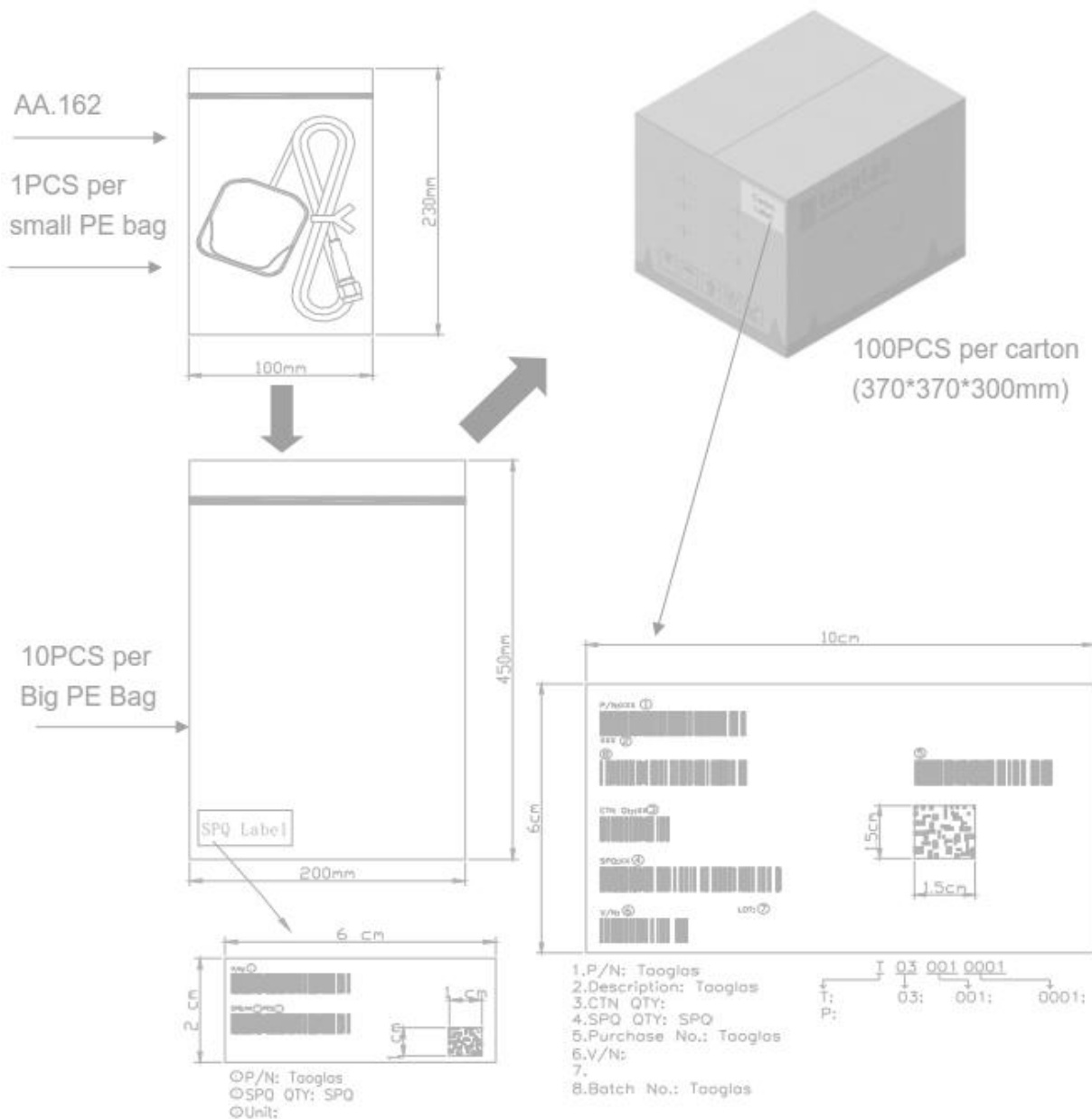
Environmental	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Relative Humidity	Non-condensing 65°C 95% RH

3. Mechanical Drawing



	Name	P/N	Material	Finish	QTY
1	Housing Top	000116K000000A	ABS+PC	Black	1
2	Housing Bottom	000116K010000A	ABS+PC	Black	1
3	Sticker	001016K000000A	Gloss Silver PET	Silver	1
4	RG174 Coaxial Cable	301315C000000A	PVC	Black	1
5	Heat Shrink Tube (GNSS)	001316C000000A	PE	Blue Tube/White Text	1
6	SMA(M)ST	200216D00009BA	Brass	Au Plated	1

4. Packaging



5. Antenna Characteristics

5.1 Test Setup

AUT

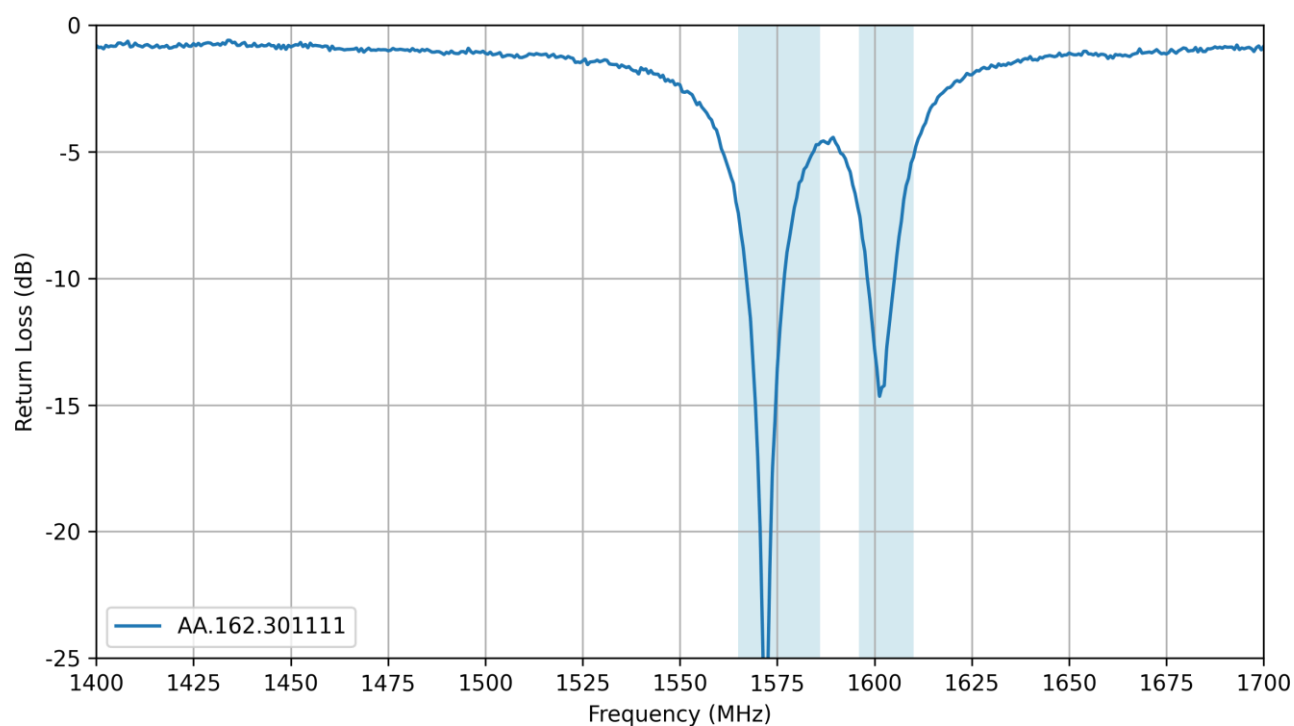


Vector Network Analyzer

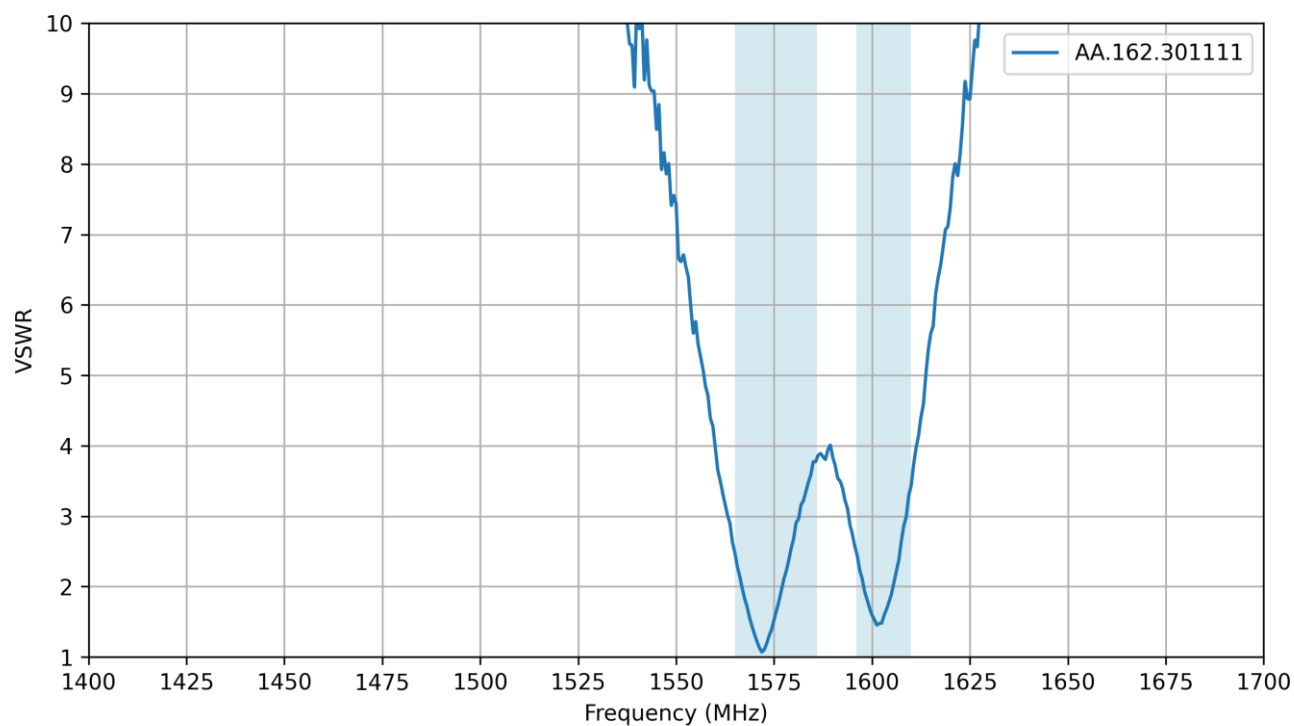


VNA Test Set-up

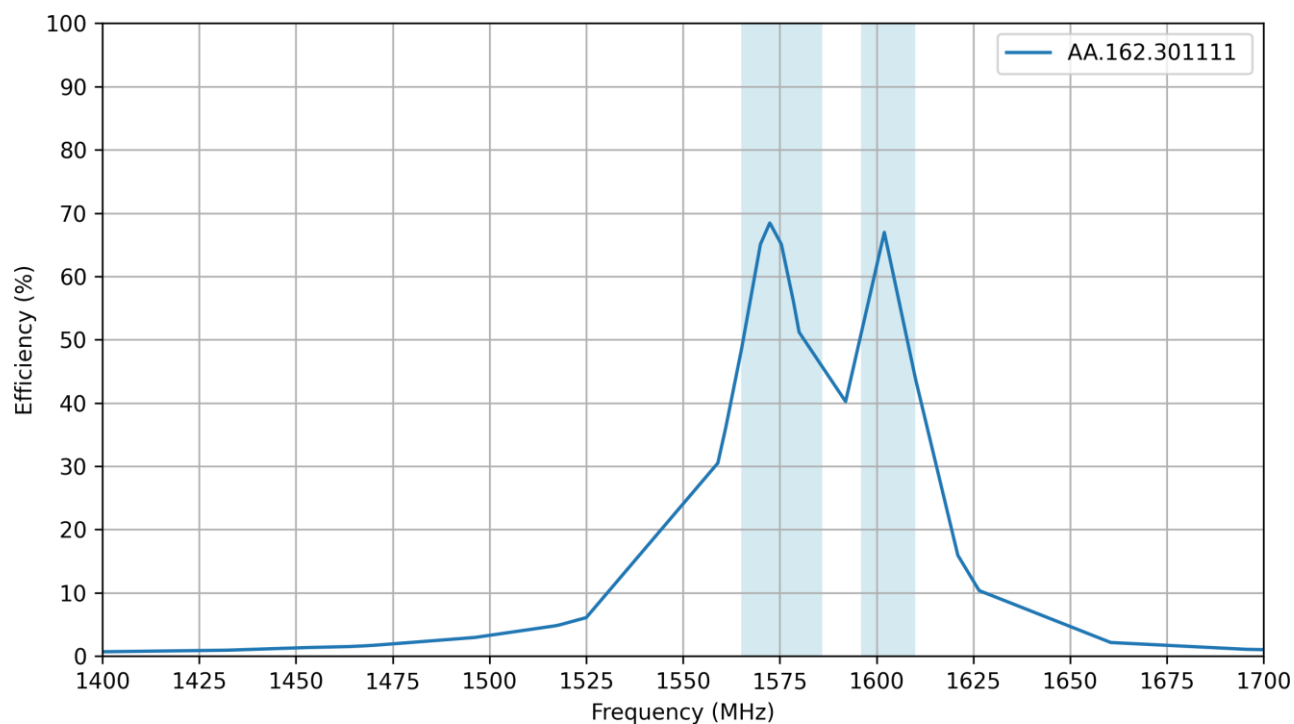
5.2 Return Loss



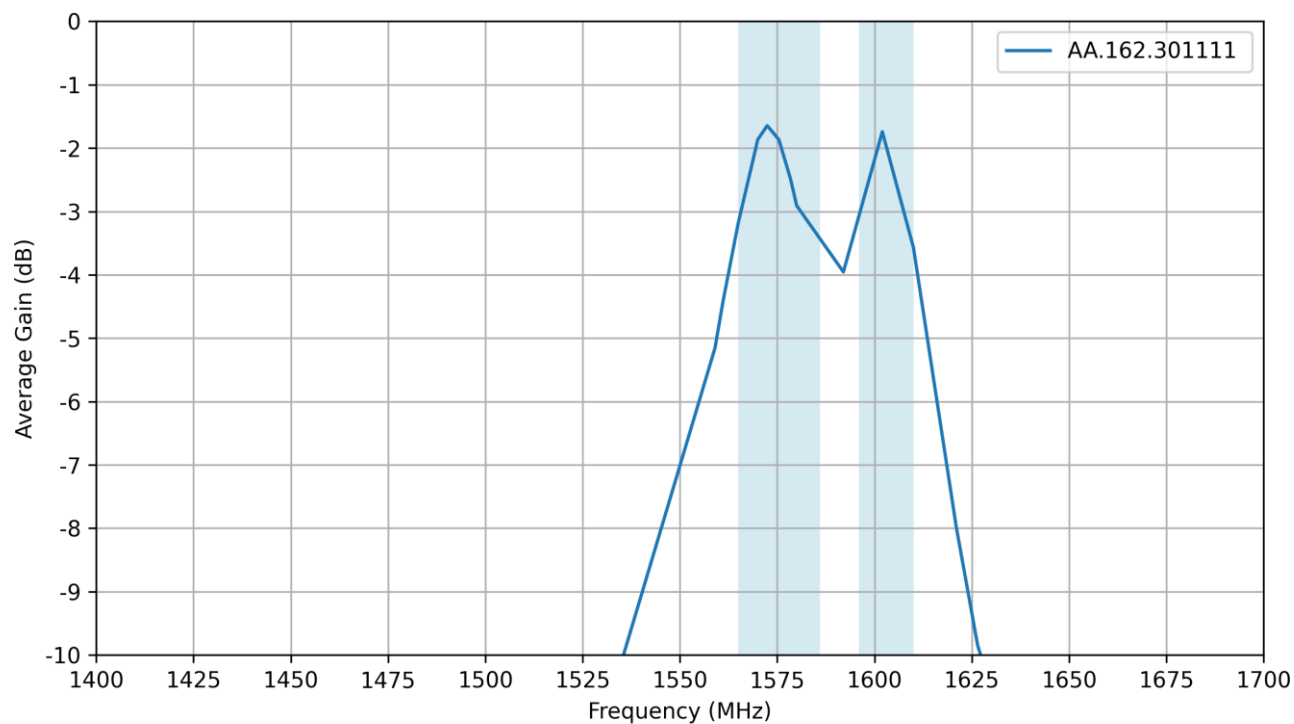
5.3 VSWR



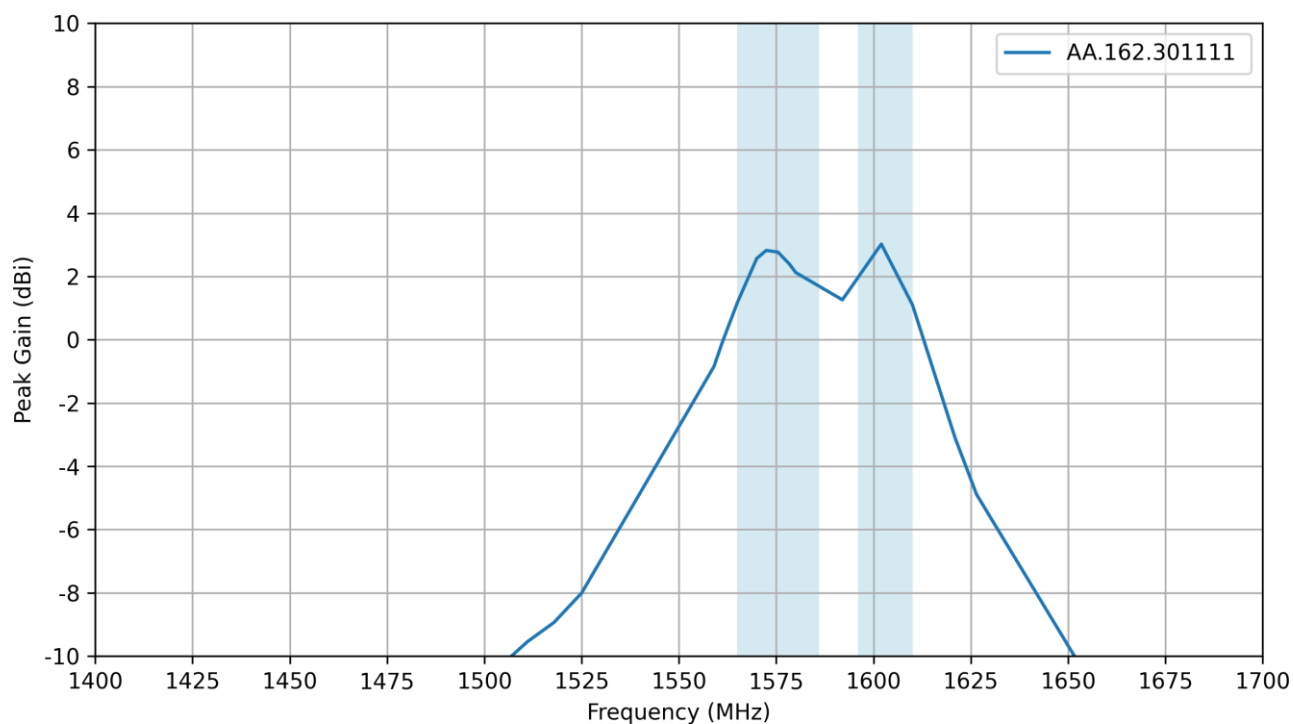
5.4 Efficiency



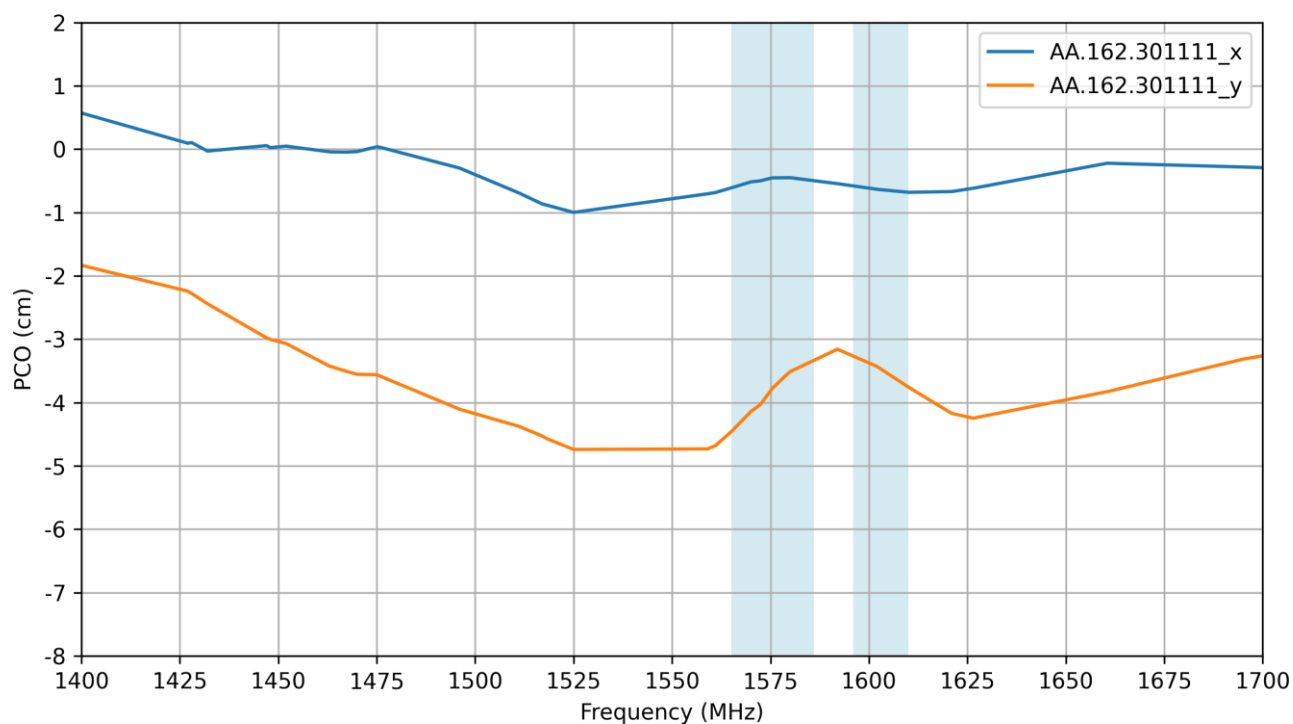
5.5 Average Gain



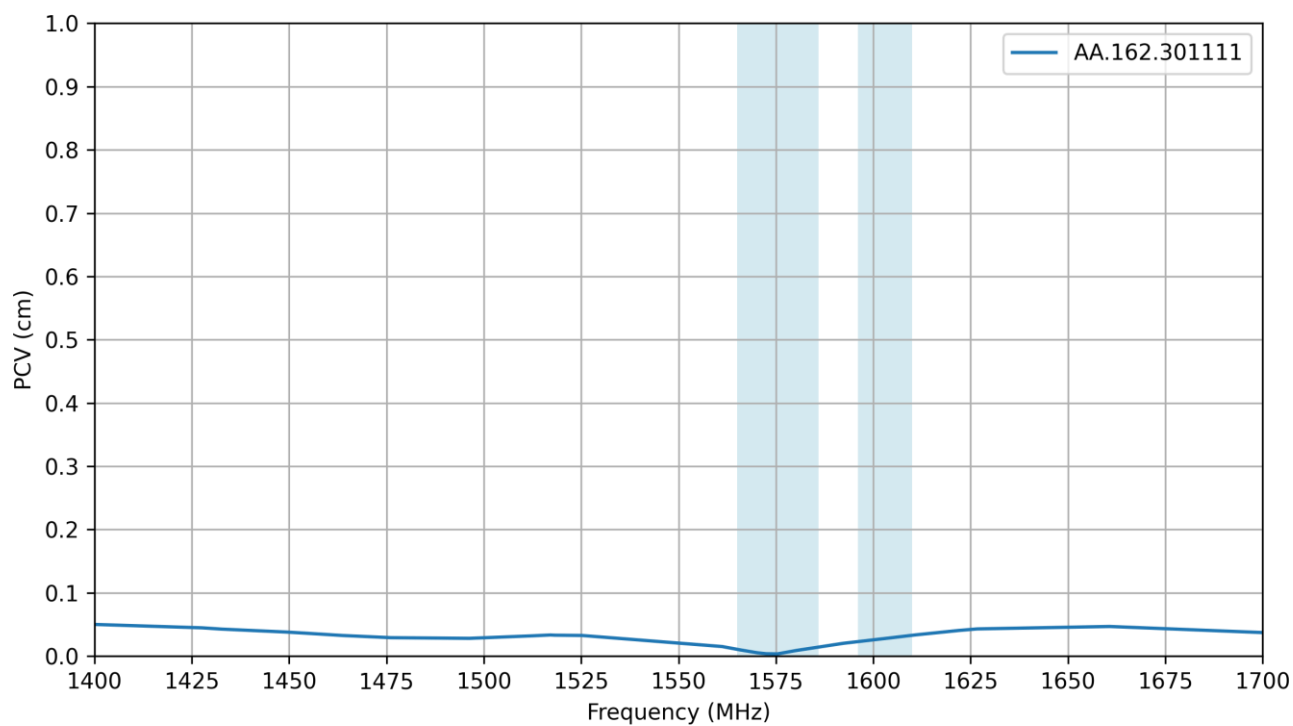
5.6 Peak Gain



5.7 PCO

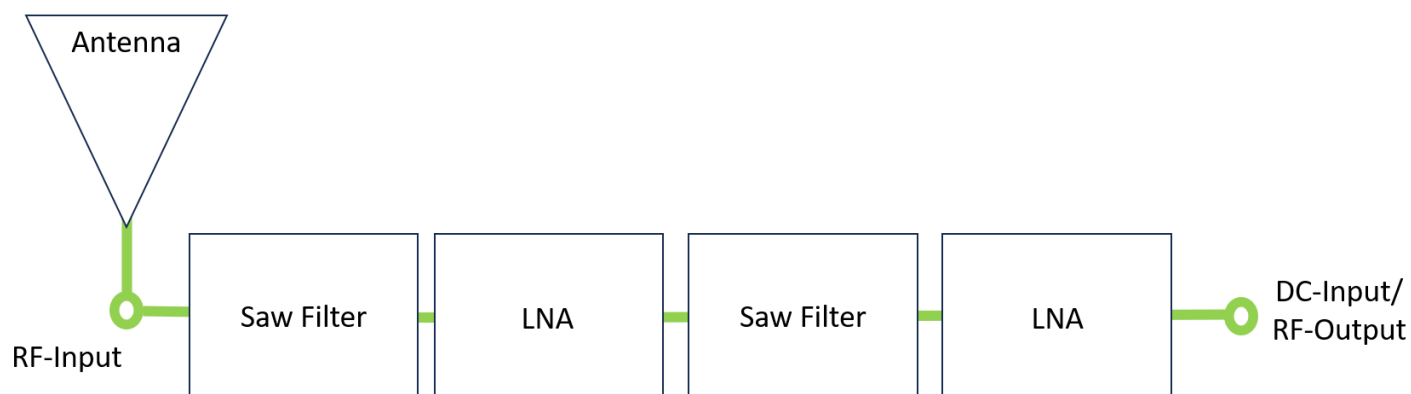


5.8 PCV

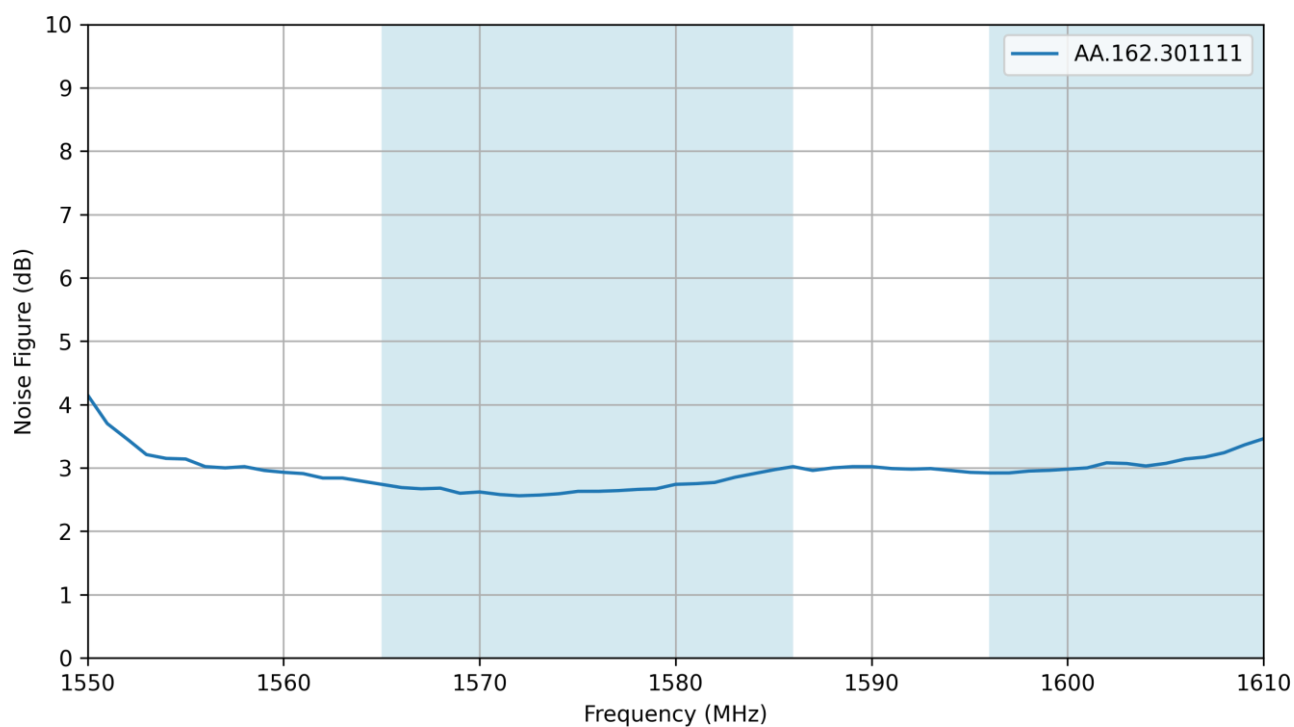


6. LNA Characteristics

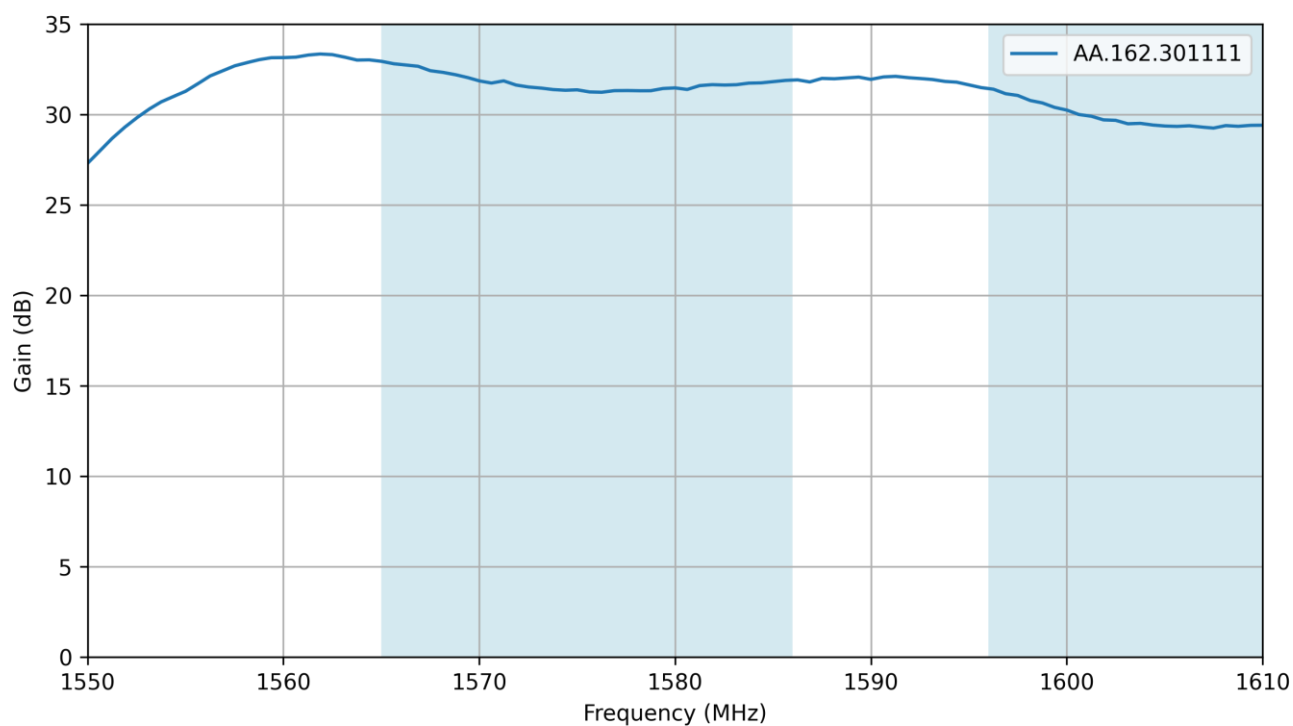
6.1 Block Diagram



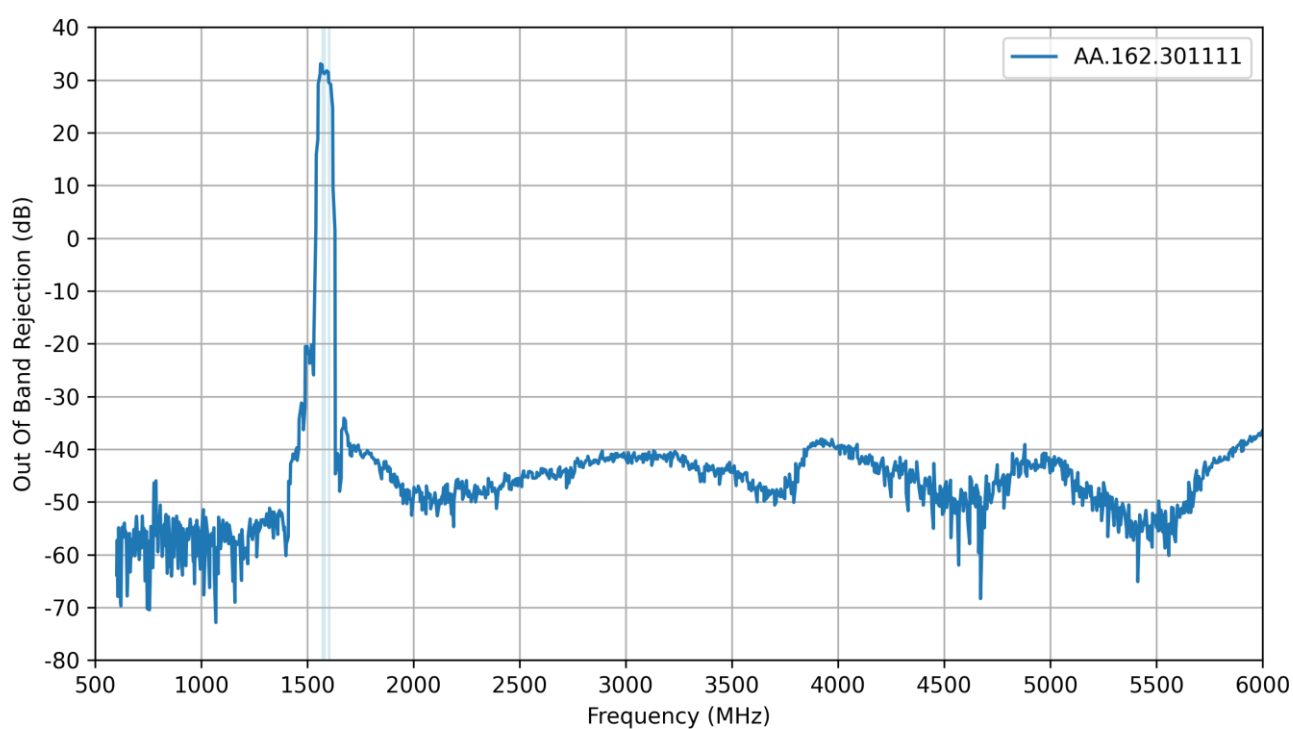
6.2 Noise Figure



6.3 Gain

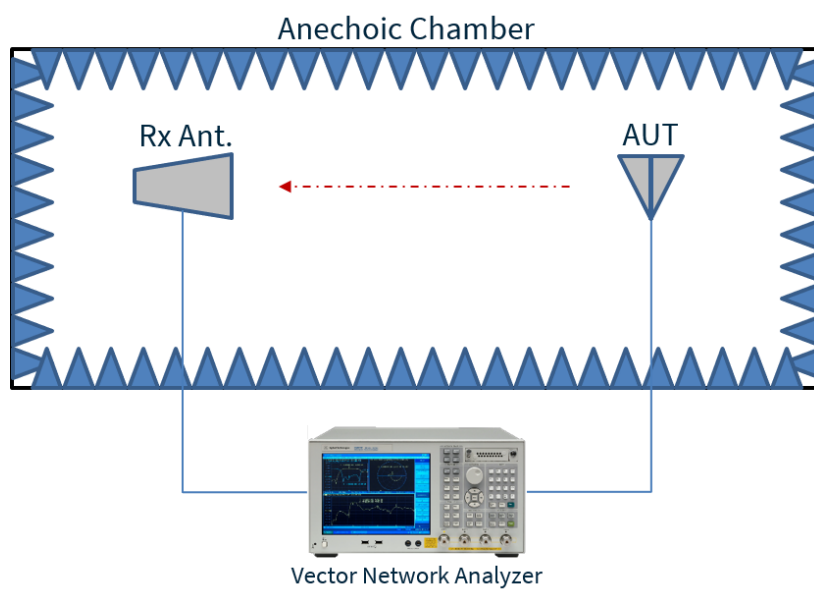


6.4 Out Of Band Rejection



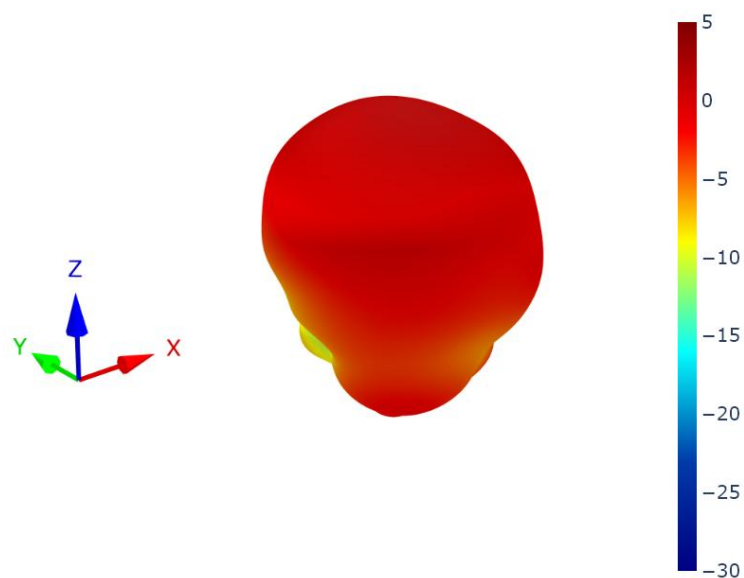
7. Radiation Patterns

7.1 Test Setup

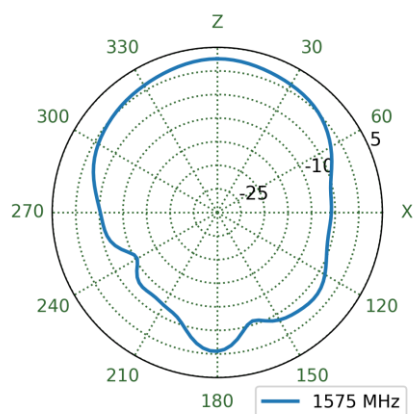


Chamber Test Set-up

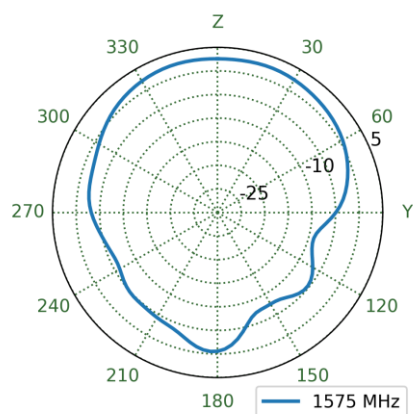
7.2 Patterns at 1575 MHz



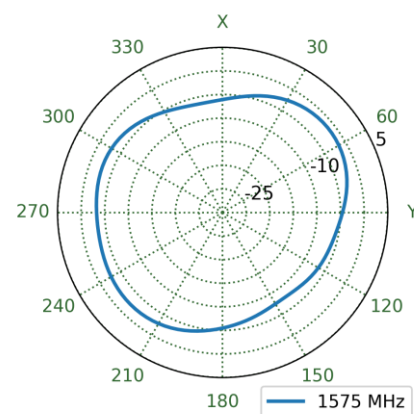
XZ Plane



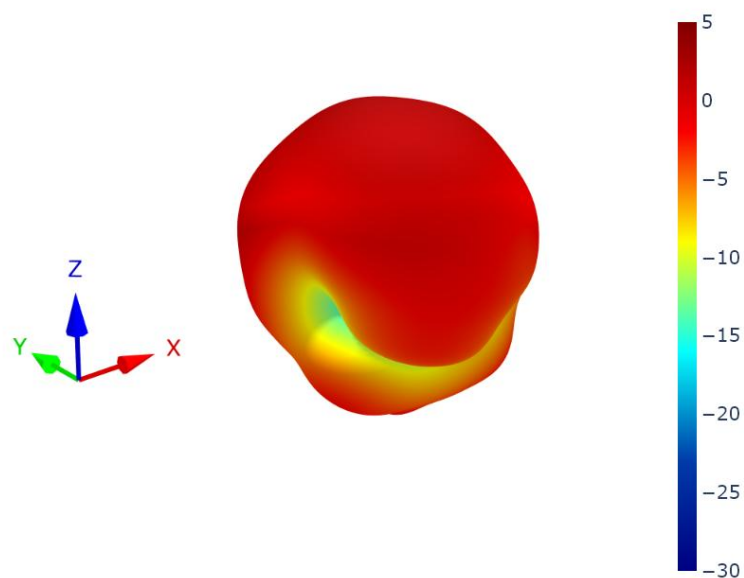
YZ Plane



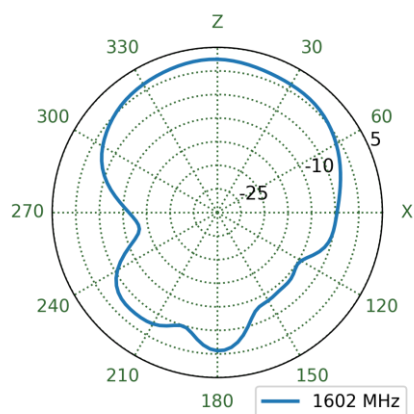
XY Plane



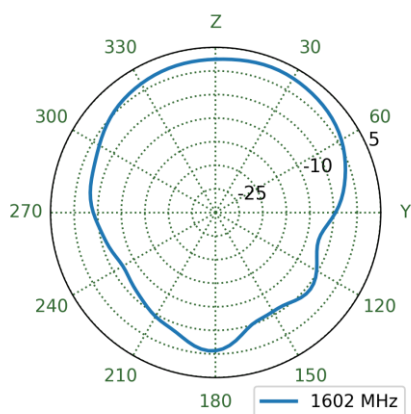
7.3 Patterns at 1602 MHz



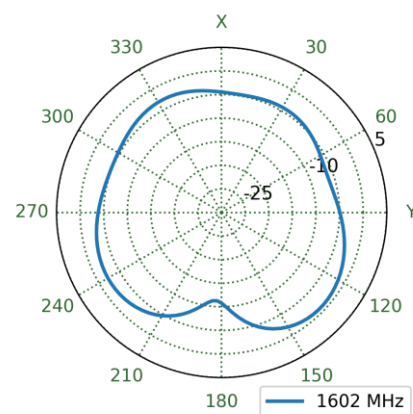
XZ Plane



YZ Plane



XY Plane



8. Field Test Results

In this section Taoglas will present the field test result for AA.162 antenna. The test was performed when the antenna was mounted on a static rooftop test set up in an open sky environment for at least **6 hours**.

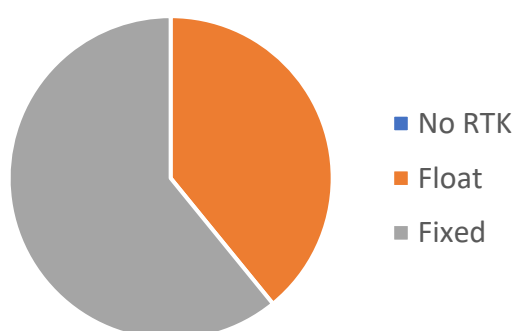
8.1 U-blox ZED-F9P

Receiver features:

- Multi-band GNSS: 184-channel GPS L1C/A L2C, GLONASS: L1OF L2OF, Galileo: E1B/C E5b, BeiDou: B1I B2I, QZSS: L1C/A L2C
- Multi-band RTK with fast convergence times and reliable performance
- Nav. update rate RTK up to 20 Hz
- Position accuracy = RTK 0.01 m + 1 ppm CEP

Positioning Accuracy Table (2D Accuracy)					
Test Condition	Correction Service	CEP (50%)	DRMS (68%)	2DRMS (95-98.2%)	TTFF (sec)
30x30 cm Ground Plane	RTK DISABLED	48.57 cm	58.41 cm	116.82 cm	29
	RTK ENABLED	18.08 cm	23.17 cm	46.35 cm	29

RTK Availability
30x30 cm Ground Plane



Changelog for the datasheet

SPE-11-8-148 – AA.162.301111

Revision: I (Current Version)

Date:	2026-07-09
Changes:	Full datasheet update.
Changes Made by:	Gary West

Revision: H

Date:	2021-10-26
Changes:	Updated drawing.
Changes Made by:	Jack Conroy

Revision: C

Date:	2013-03-27
Changes:	Updated specifications
Changes Made by:	Technical Writer

Revision: G

Date:	2020-06-02
Changes:	Added field test results.
Changes Made by:	Victor

Revision: B

Date:	2012-12-21
Changes:	Updated specifications
Changes Made by:	Technical Writer

Revision: F

Date:	2017-06-26
Changes:	updated drawing as per PCN 17-8-067.
Changes Made by:	Andy Mahoney

Revision: A (Original First Release)

Date:	2012-12-13
Notes:	Initial Release
Author:	SS

Revision: E

Date:	2016-03-01
Changes:	Amended tolerances on the drawing and also updated packaging.
Changes Made by:	Aine Doyle

Revision: D

Date:	2015-07-28
Changes:	Updated packaging
Changes Made by:	Aine Doyle



www.taoglas.com

