Datasheet

Ultima

Part No:
A.30.B.30AF111

Description

Straight Screwmount GPS-GLONASS-Beidou 3M SMA(M) RG-174LL

Features:

Heavy duty Permanent (screw) Mount Antenna
UV and vandal resistant PC housing and thread
IP Rating : IP67 (waterproof rated)
Dims: Ø55.4mm x 20.6mm
Cable: 3m RG-174
Connector: SMA(M)ST
RoHS & Reach Compliant

1. Introduction

The Taoglas A.30.B is a high-performance, heavy-duty GNSS antenna engineered to deliver reliable, precision positioning across multiple global navigation satellite systems. Supporting GPS, GLONASS, Galileo, and BeiDou constellations, this antenna ensures robust multi-band coverage for applications where accuracy, durability, and consistent signal quality are essential.

Designed with a rugged screw-mount structure, the antenna features a UV- and vandal-resistant PC housing and an IP67-rated enclosure, making it suitable for long-term outdoor deployment in challenging environmental conditions. The integrated 3-meter RG-174 cable and SMA(M) connector provide installation flexibility for a wide range of equipment and enclosure configurations.

With optimized performance on a 30 × 30 cm ground plane, the A.30.B.30AF111 delivers strong efficiency, stable gain characteristics, and the right-hand circular polarization required for high-precision GNSS reception. Its internal LNA and filtering architecture further enhance performance by providing low noise figures, excellent out-of-band rejection (to prevent Cellular B13 interference with GPS signals), and reliable operation across supported frequency bands.

Ideal for asset tracking, telematics, navigation, and timing applications, this antenna combines dependable mechanical design with advanced RF performance to support demanding GNSS-enabled systems.

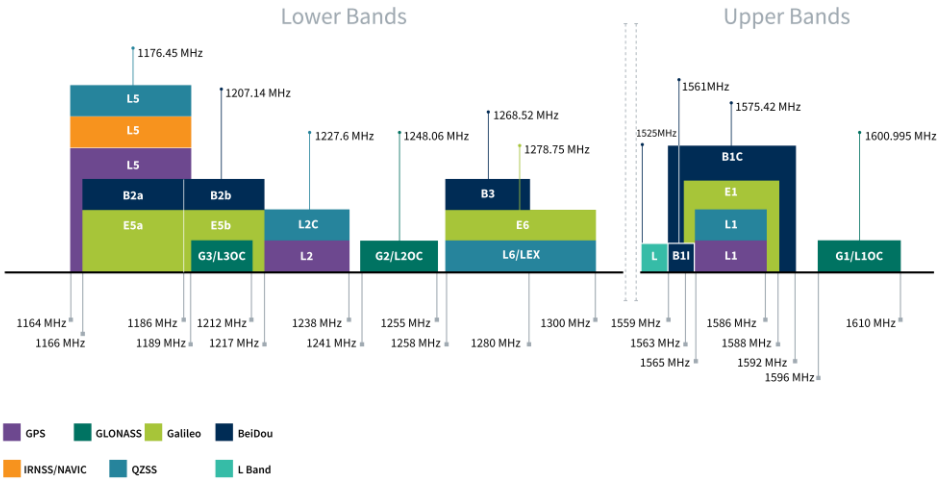
Typical Applications Include:

- Asset Tracking Systems
- Telematics & Fleet Management
- Agricultural Machinery & Precision Farming
- Smart Transportation & ITS Systems
- Marine & Watercraft Navigation
- Drones, UAVs & Autonomous Platforms
- Security, Surveillance & Tracking Devices

Cable length and connector is customizable. Contact you regional Taoglas Customer Support Team for more information or installation instructions.

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

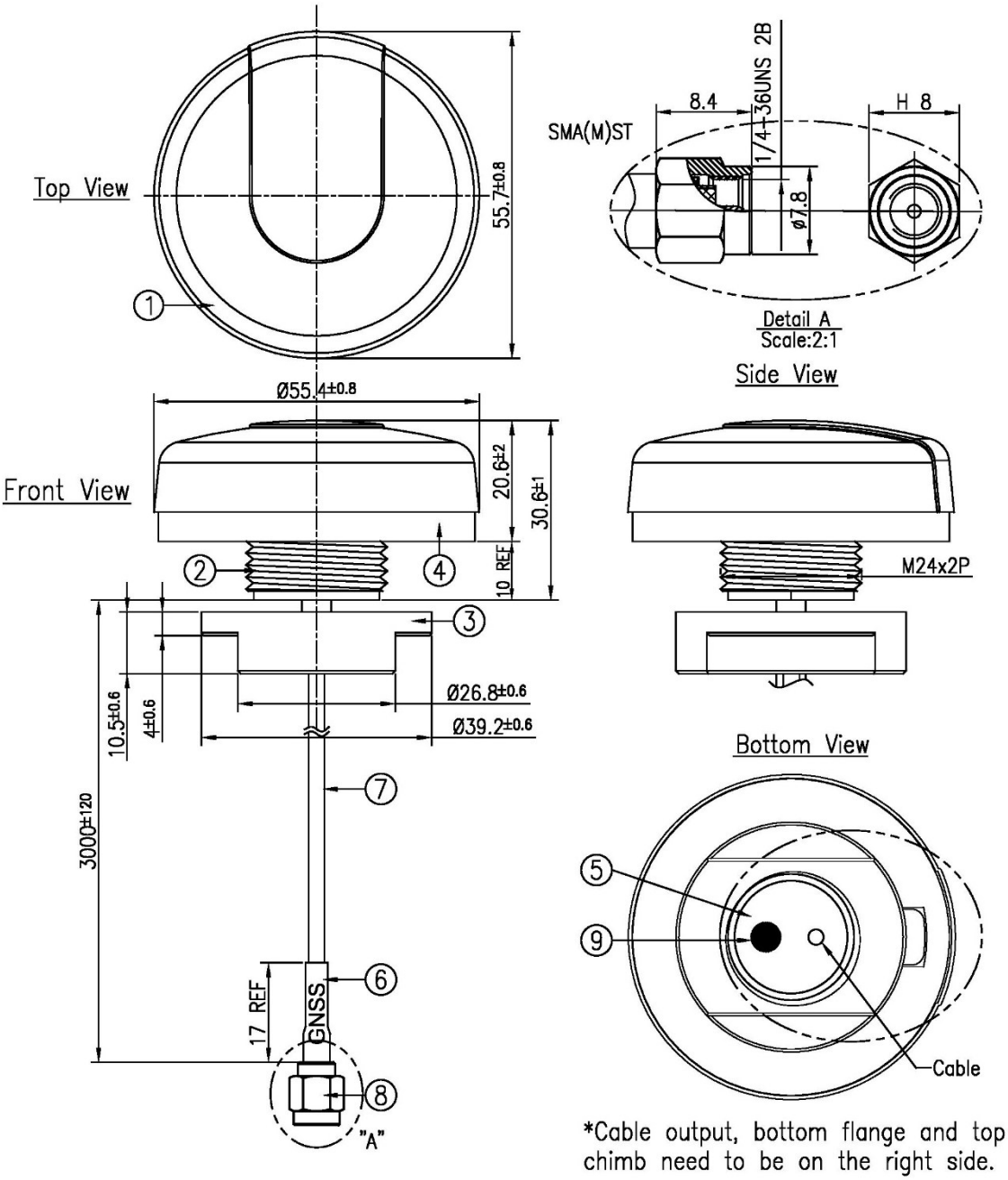
GNSS Electrical			
Frequency (MHz)	**1561**	**1575.42**	**1602**
Efficiency (%)	25.3	70.7	62.9
Average Gain (dB)	-5.95	-1.50	-2.01
Peak Gain (dBi)	-0.95	3.59	3.26
Polarization	RHCP		
Impedance	50 Ω		
Results shown in table are on a 30x30cm Ground Plane			

LNA and Filter Electrical Properties			
Frequency (MHz)	**1561**	**1575.42**	**1602**
Gain (dBi)	31.42	30.37	29.03
Noise Figure (dB)	2.12	2.01	2.31
Group delay Variation (ns)	19.4		
Input Voltage (V)	3V		
Power Consumption (mA)	8±2		
Out Of Band Attenuation (dB)	>50dB @ 1~1.4GHz and > 45dB @ 1.7~6GHz		

Mechanical	
Dimensions	Ø55.4mm x 20.6mm
Weight	86g
Material	PC
Connector	SMA(M)
Cable	3m of RG174
Shock (drop test)	1m drop on concrete 6 axes

Environmental	
Waterproof Rating	IP 67 Rated Enclosure
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Relative Humidity	Non-condensing 65°C 95% RH
Thermal Shock	100 cycles -40°C to +80°C

3. Mechanical Drawing



*Cable output, bottom flange and top chimb need to be on the right side.

	Name	Material	Finish	QTY
1	Housing_Top	PC	Black	1
2	Housing bottom	PC	Black	1
3	M24 Nut	ABS	Black	1
4	Double-Sided Adhesive With Foam(Black Foam)	CHI3015+3M9448	Black	1
5	Silicon Rubber	Silicon Rubber	Black	1
6	Heat Shrink Tube (GNSS)	PE	Blue Tube/White Text	1
7	RG174 low loss Coaxial Cable	PVC	Black	1
8	SMA(M)ST	Brass	Au Plated	1
9	Grommet plug	ASA/PW-9788	Black	1

4. Packaging

☑ 1 PCS / Bubble bag

☑ PE bag (mm): 100x300 (Ref)

☑ Weight (g): 86 ±3%

☑ 10 PCS / Big PE bag

☑ Big PE bag (mm): 280x450 (Ref)

☑ Weight (g): 885 ±3%

☑ SPQ Label

☑ 40 PCS / Carton

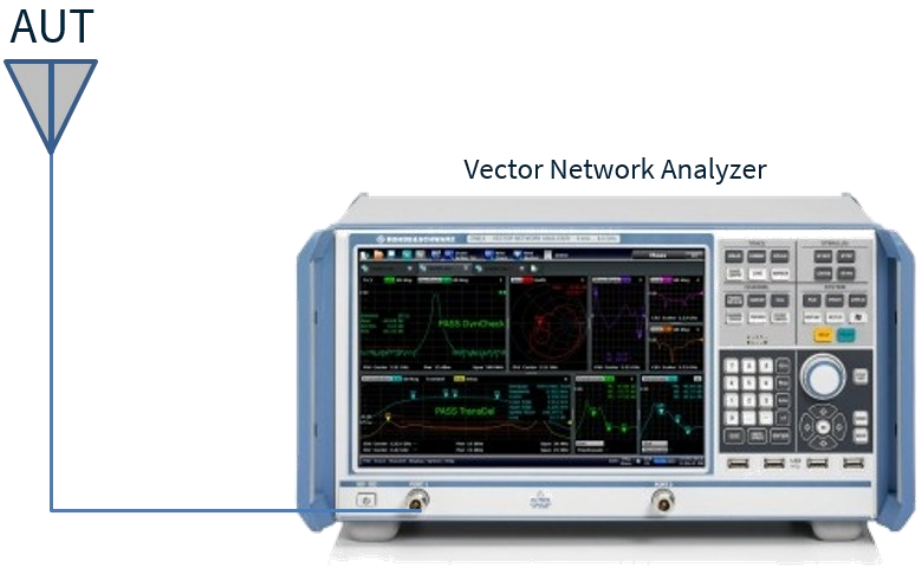
☑ Carton(mm): 320x250x230

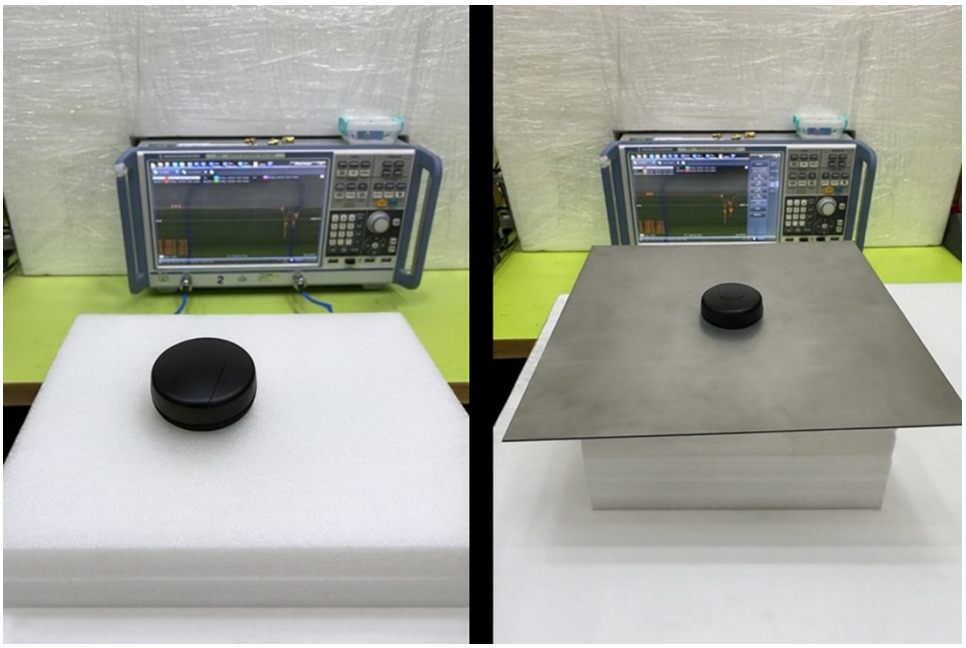
☑ Weight (Kg): 3.97 ±3%

☑ Carton Label

5. Antenna Characteristics

5.1 Test Setup

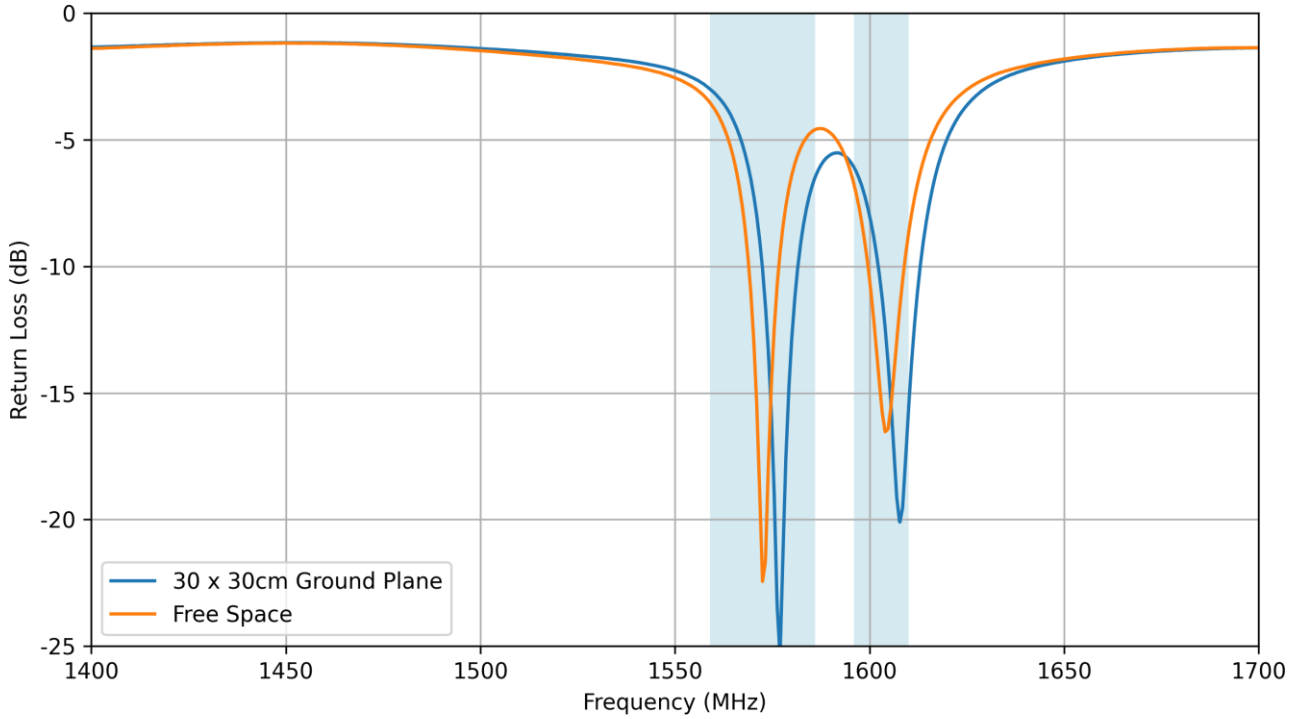




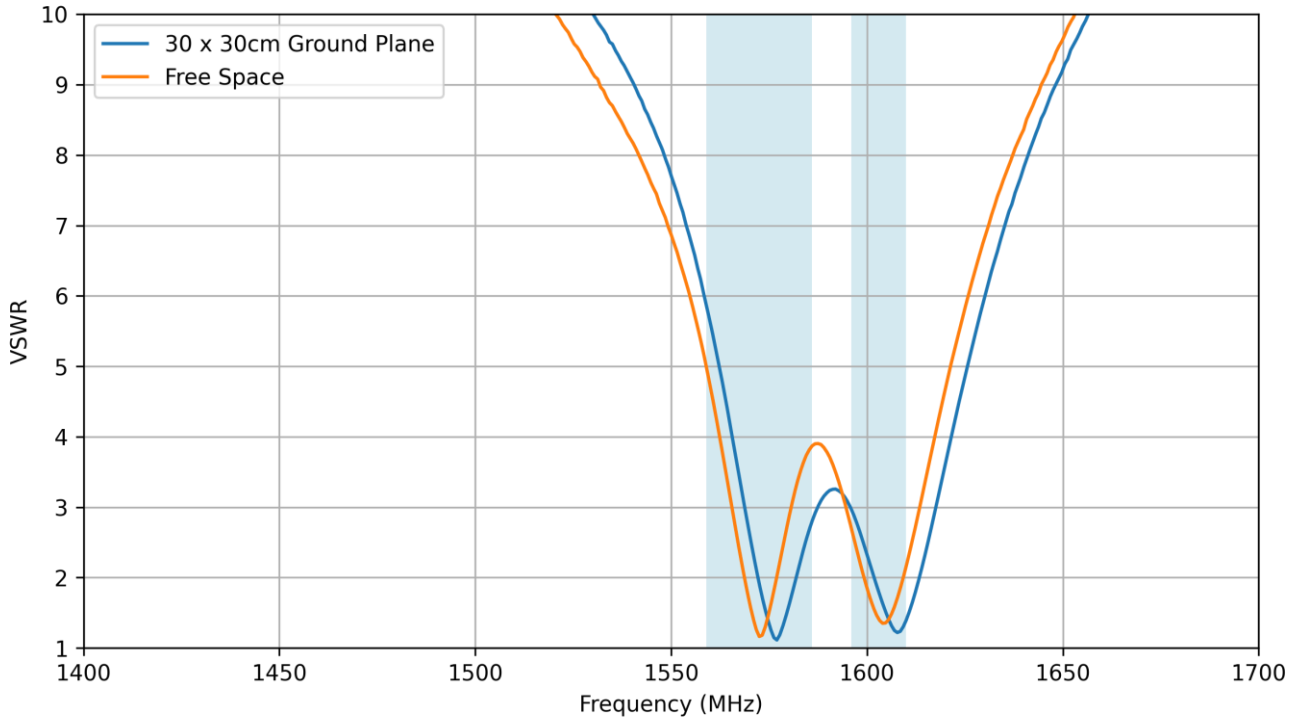
VNA Setup in Free Space

VNA Setup on a 30x30cm Ground Plane.

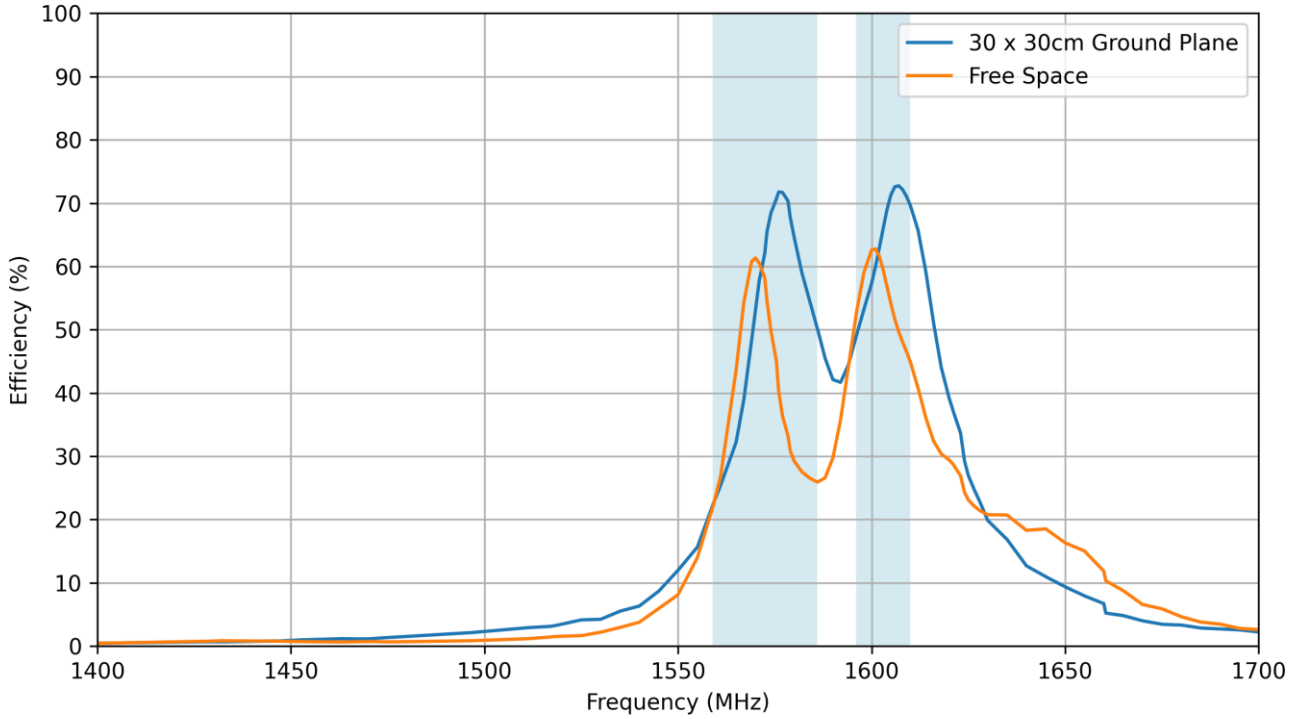
5.2 Return Loss



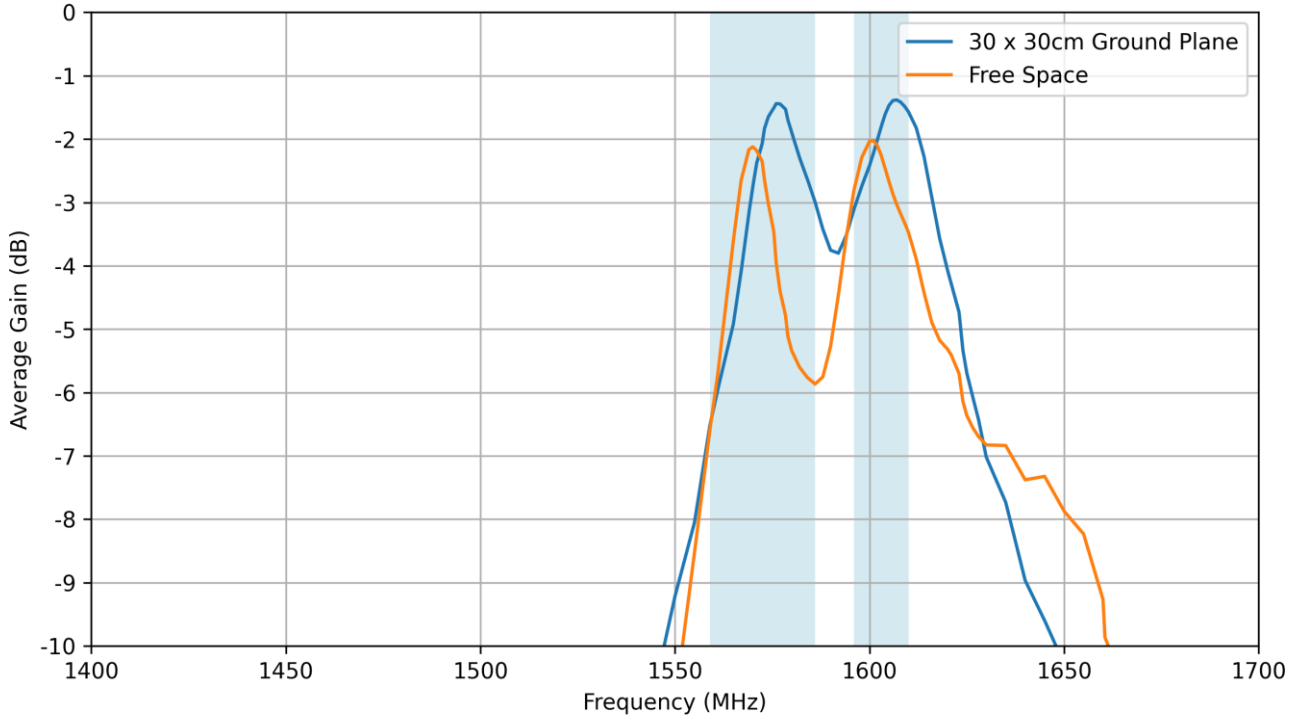
5.3 VSWR



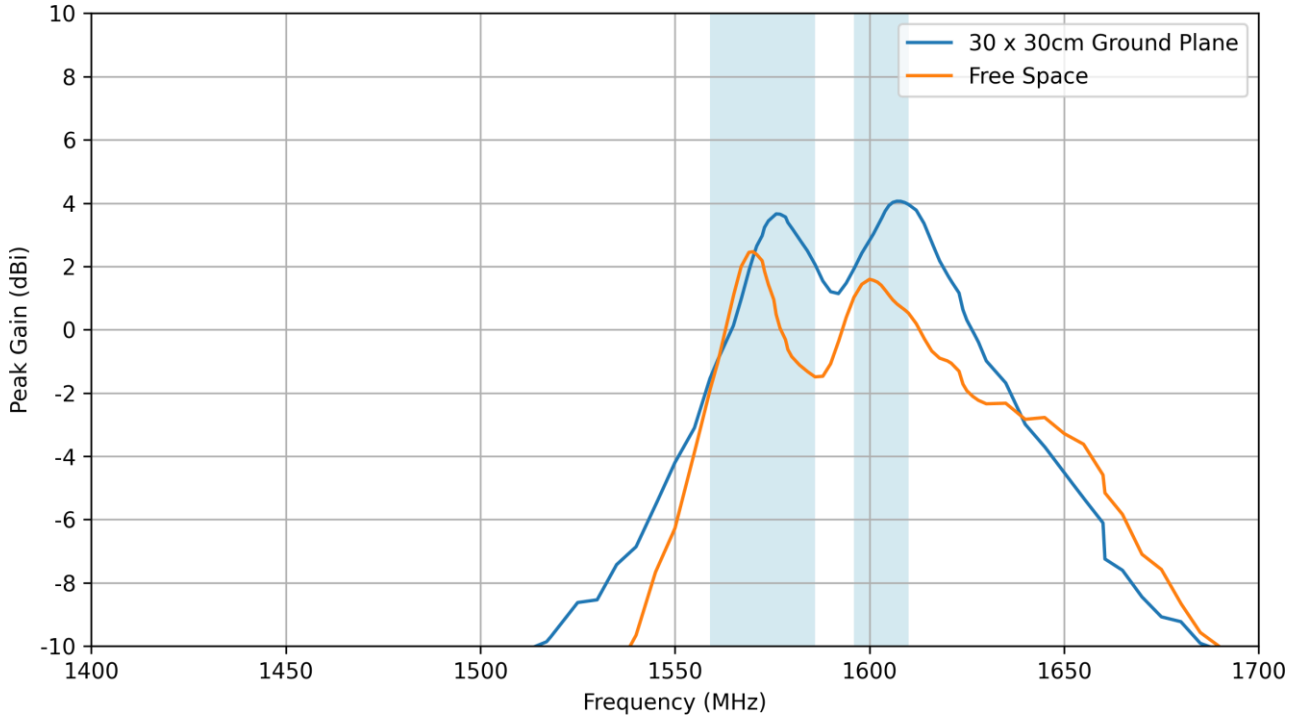
5.4 Efficiency



5.5 Average Gain

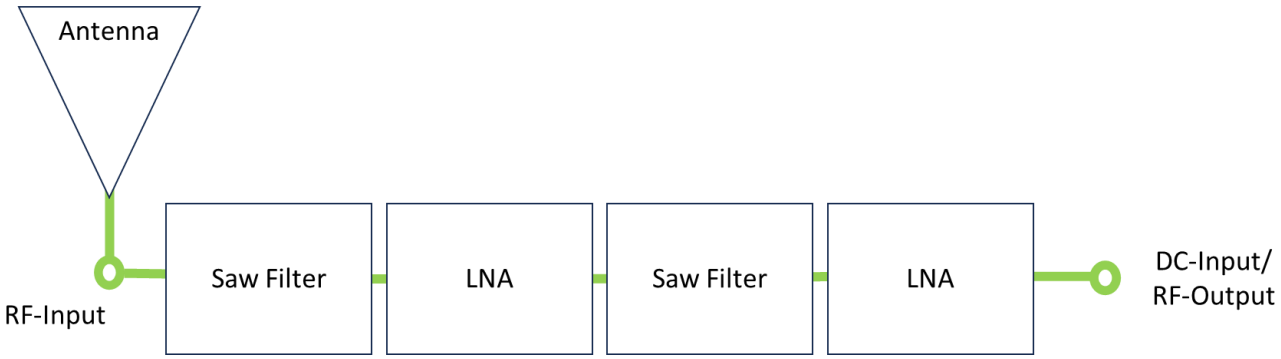


5.6 Peak Gain

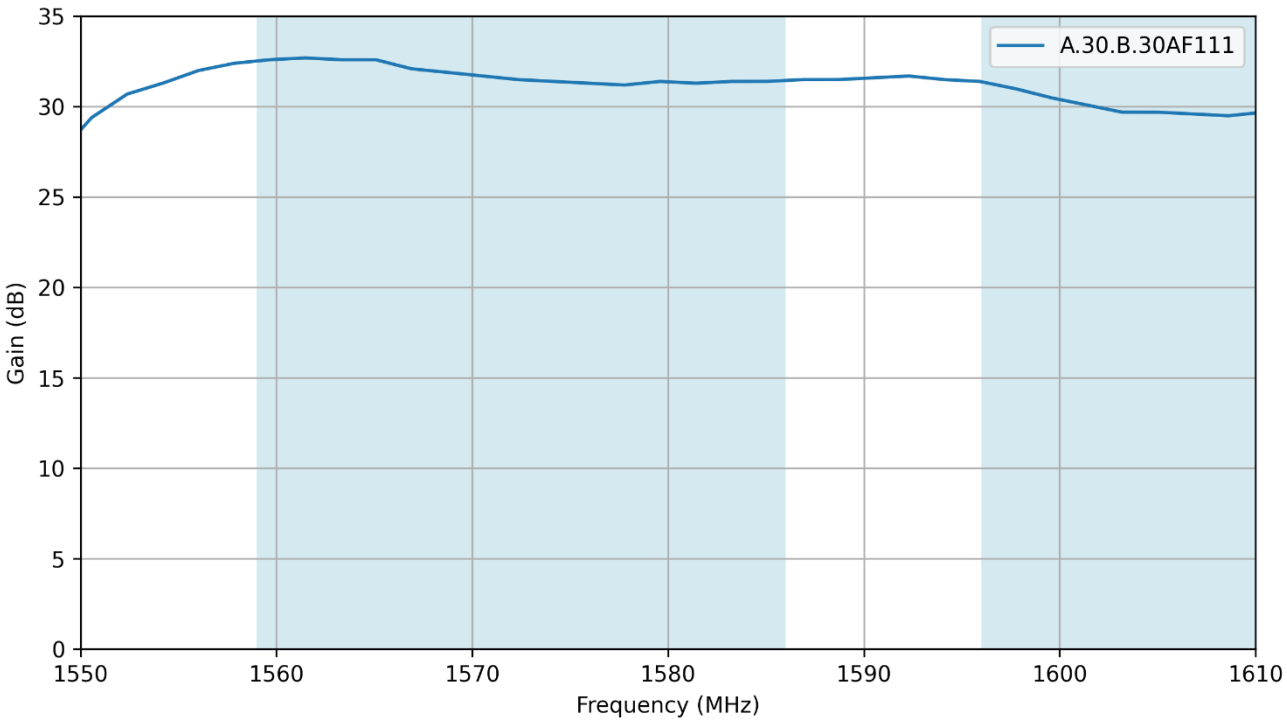

30 x 30cm Ground Plane
Free Space
Peak Gain (dBi)
Frequency (MHz)
10
8
6
4
2
0
-2
-4
-6
-8
-10
1400
1450
1500
1550
1600
1650
1700

6. LNA Characteristics

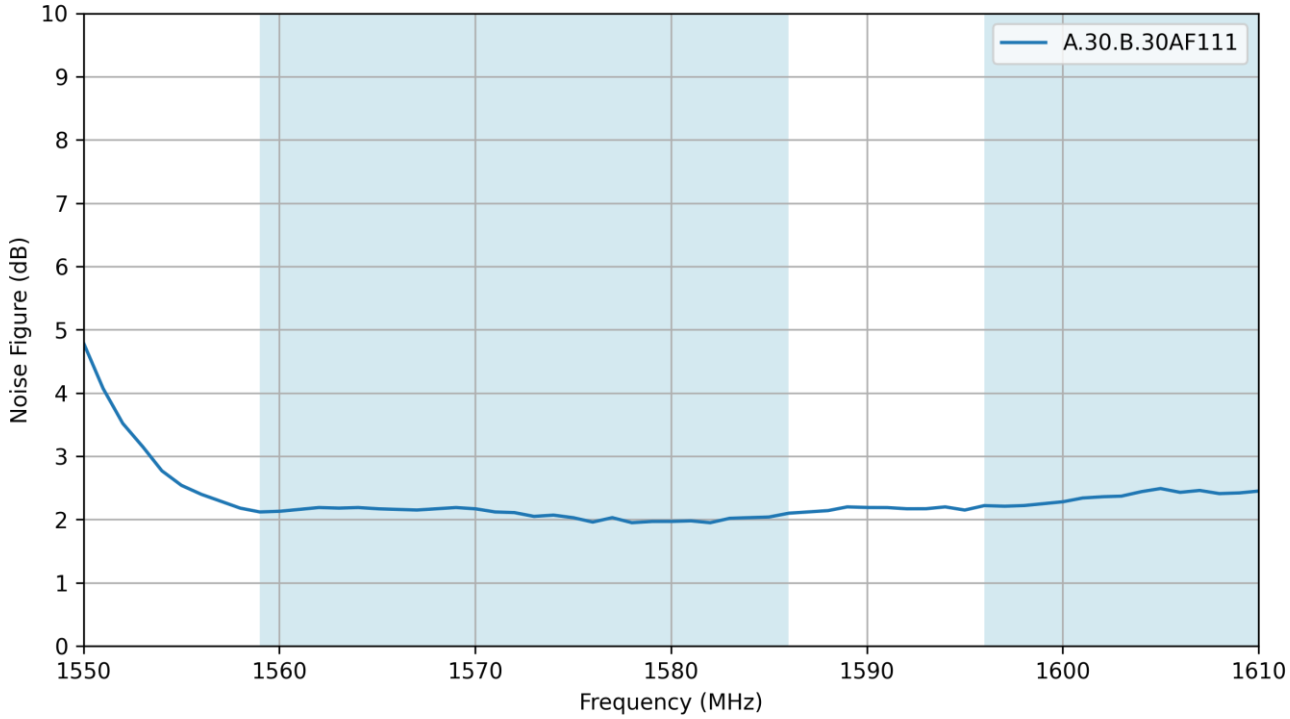
6.1 Block Diagram



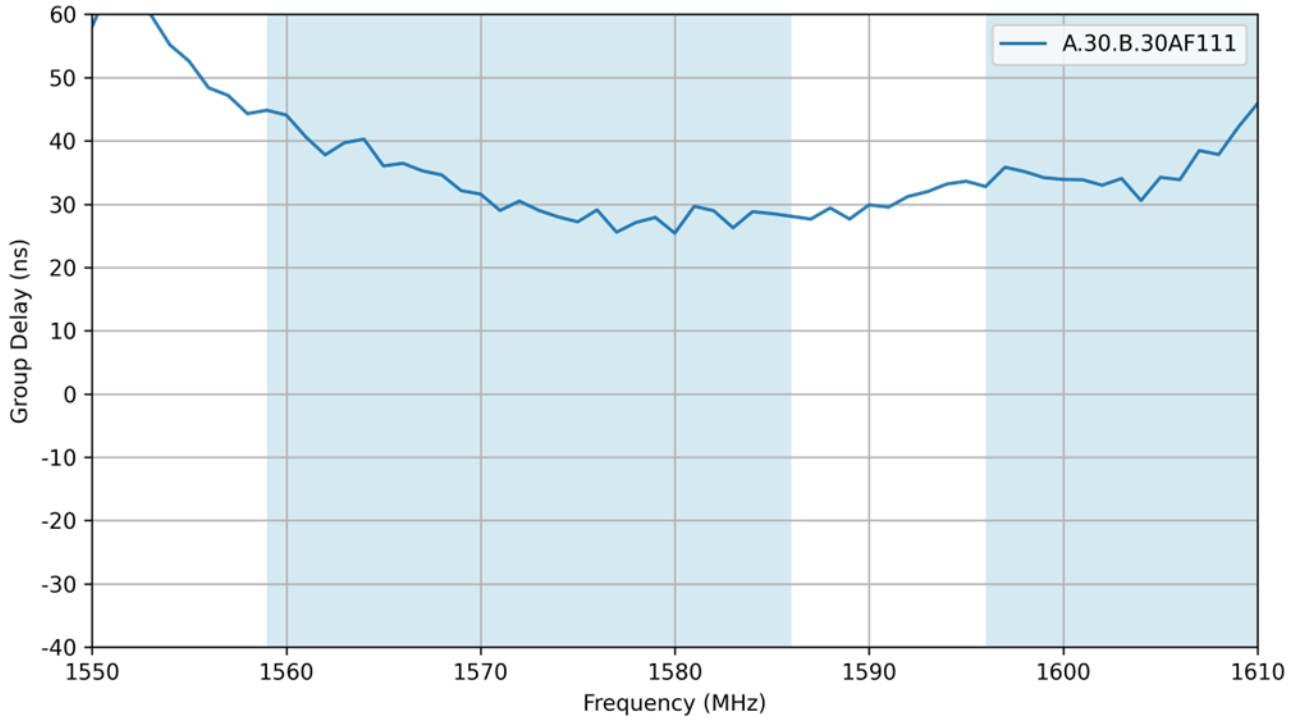
6.2 Gain



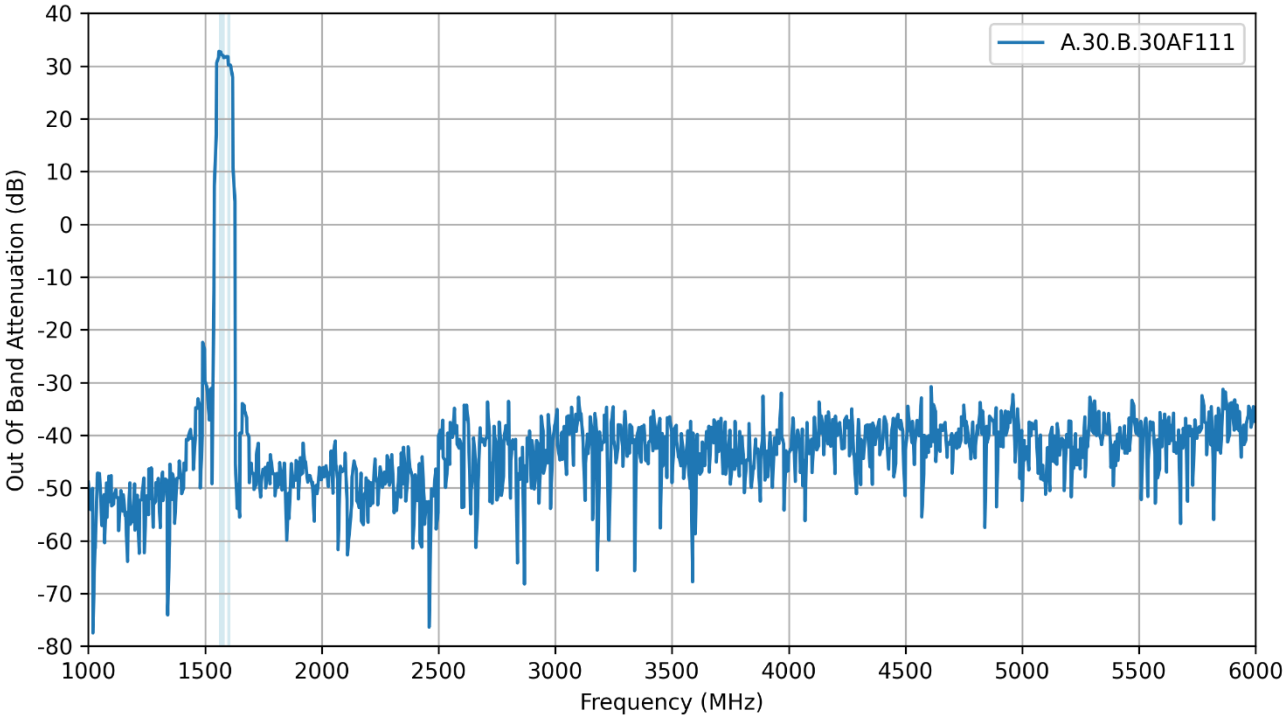
6.3 Noise Figure



6.4 Group Delay

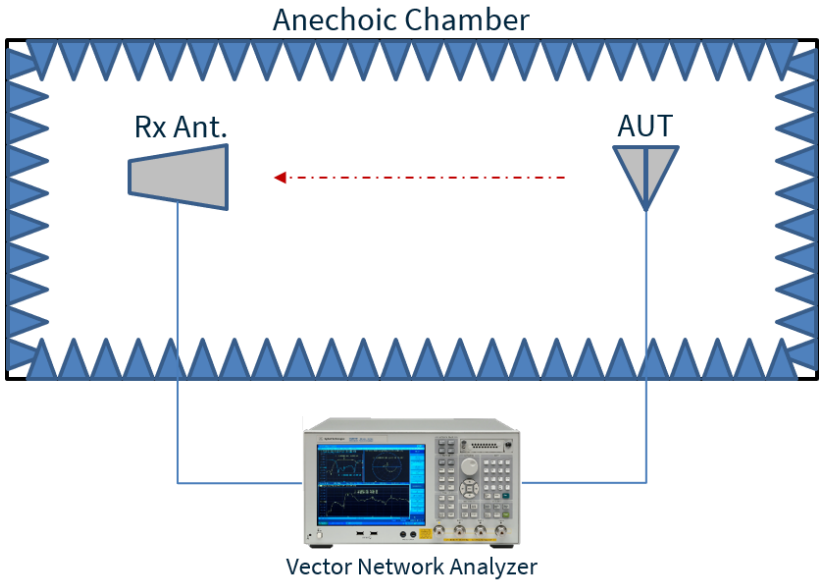


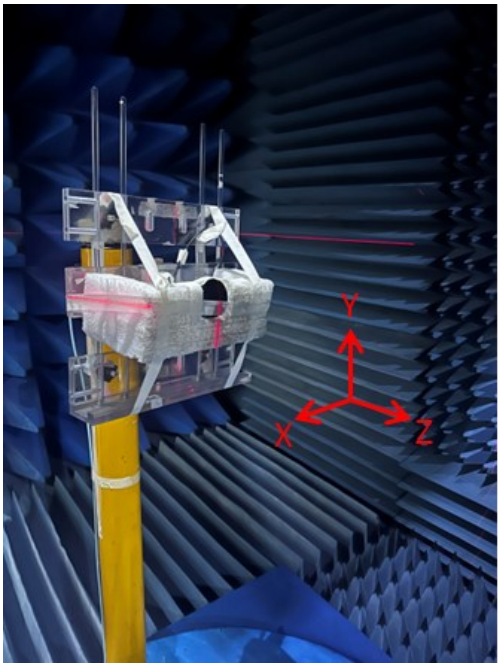
6.5 Out Of Band Attenuation



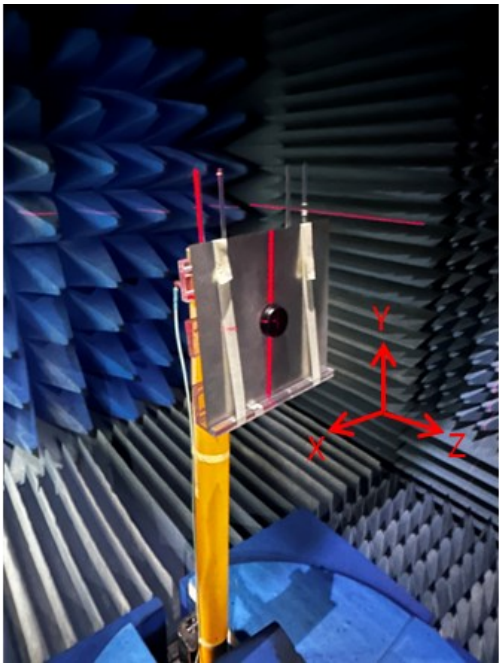
7. Radiation Patterns

7.1 Test Setup



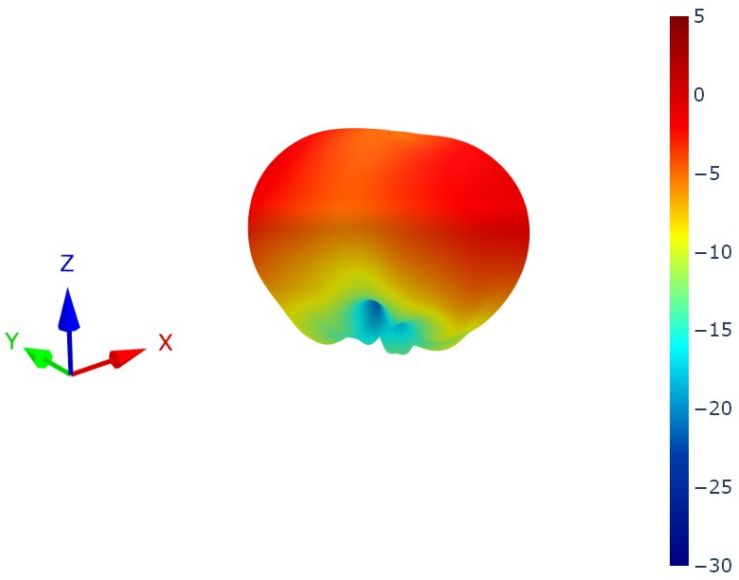


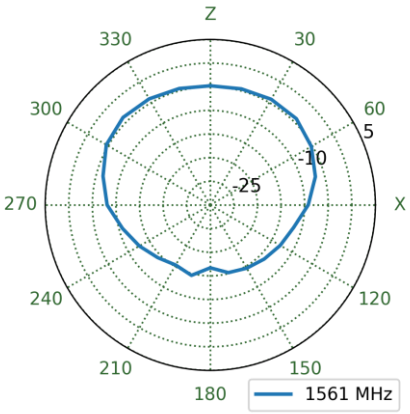
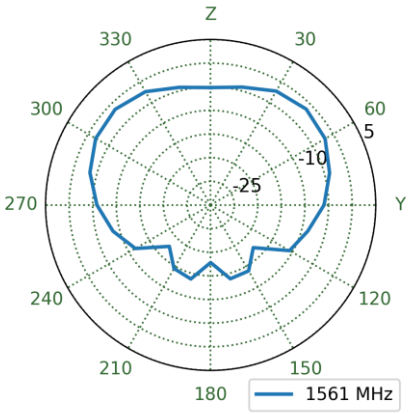
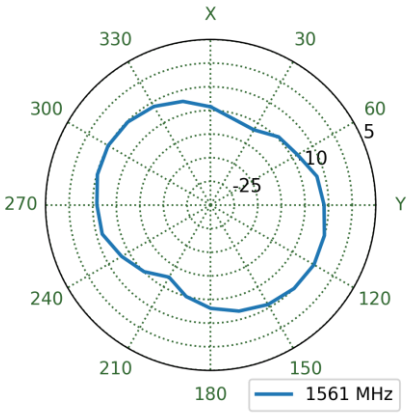
Chamber Setup in Free Space



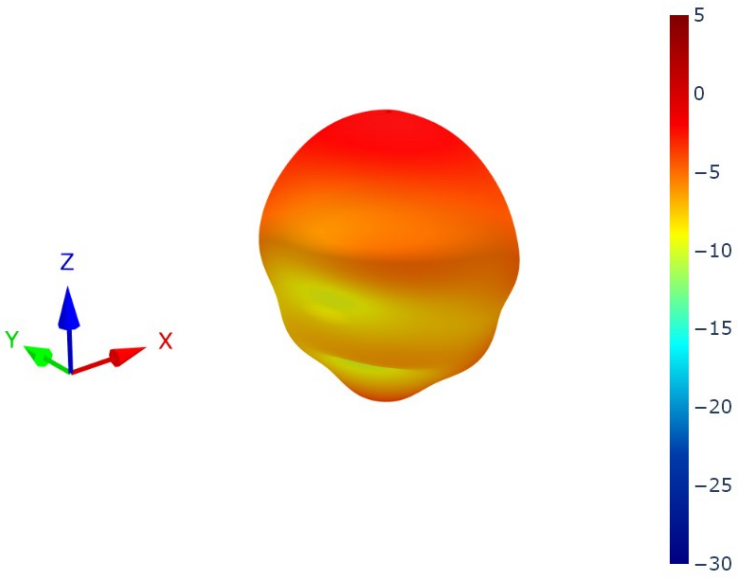
Chamber Setup on a 30x30cm Ground Plane.

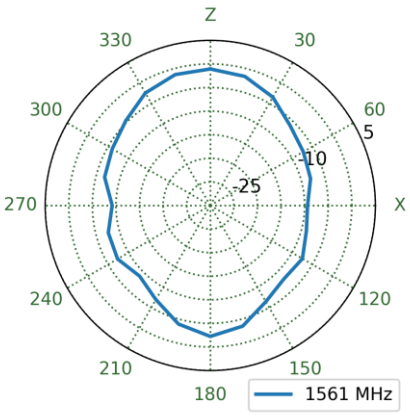
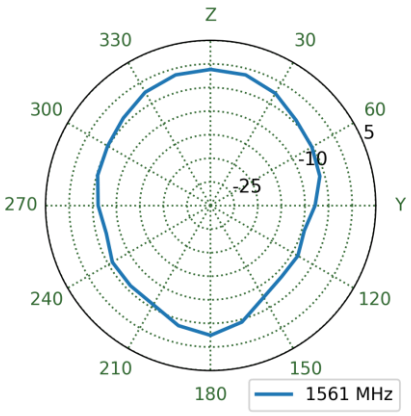
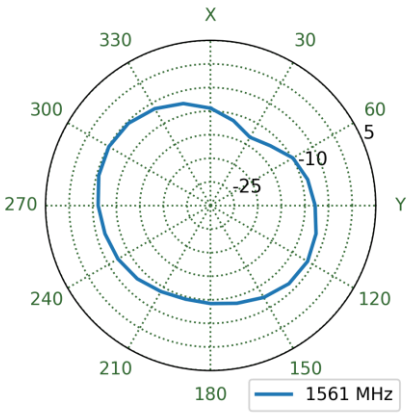
7.2 30 x 30cm Ground Plane Patterns at 1561 MHz



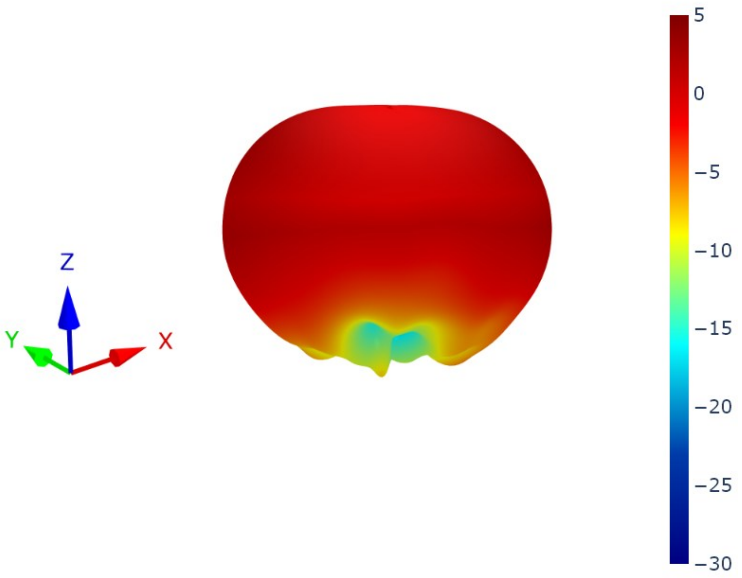
XZ Plane	YZ Plane	XY Plane
		

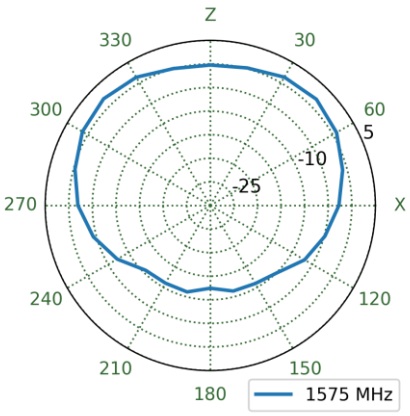
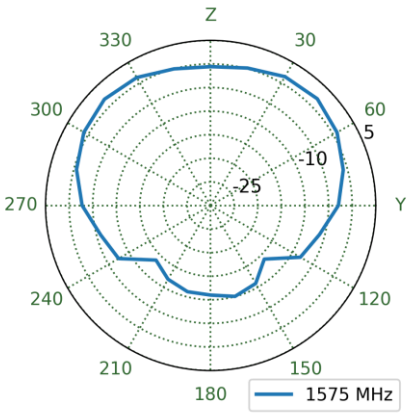
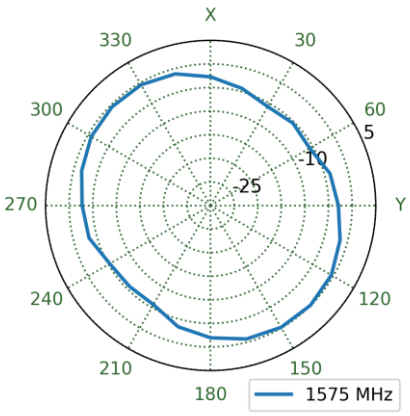
7.3 Free Space Patterns at 1561 MHz



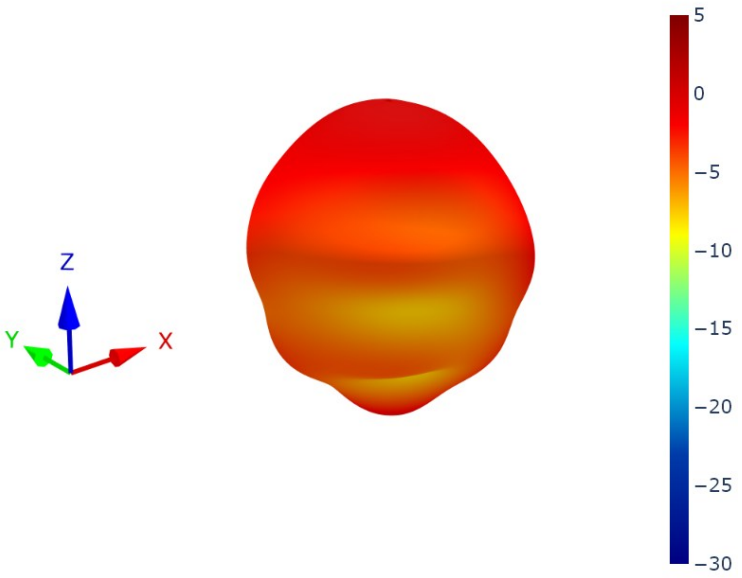
XZ Plane	YZ Plane	XY Plane
		

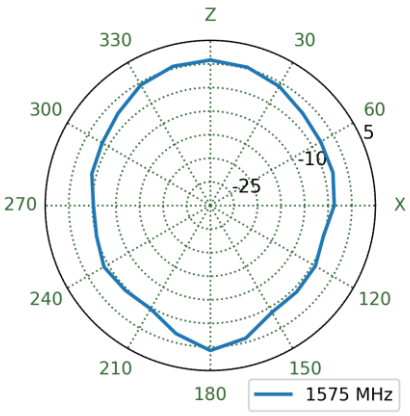
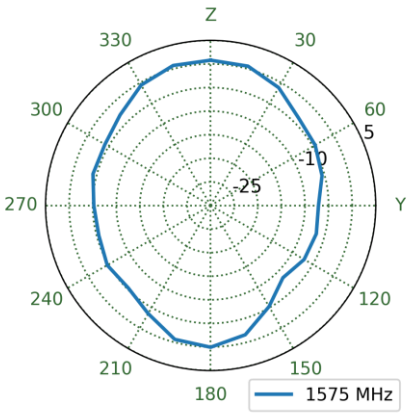
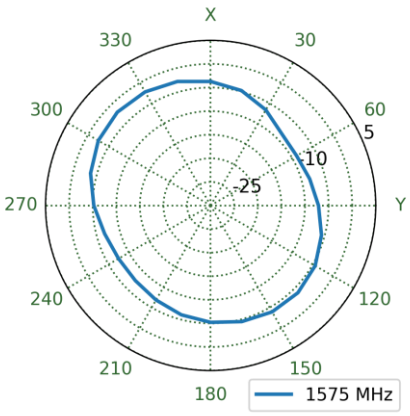
7.4 30 x 30cm Ground Plane Patterns at 1575 MHz



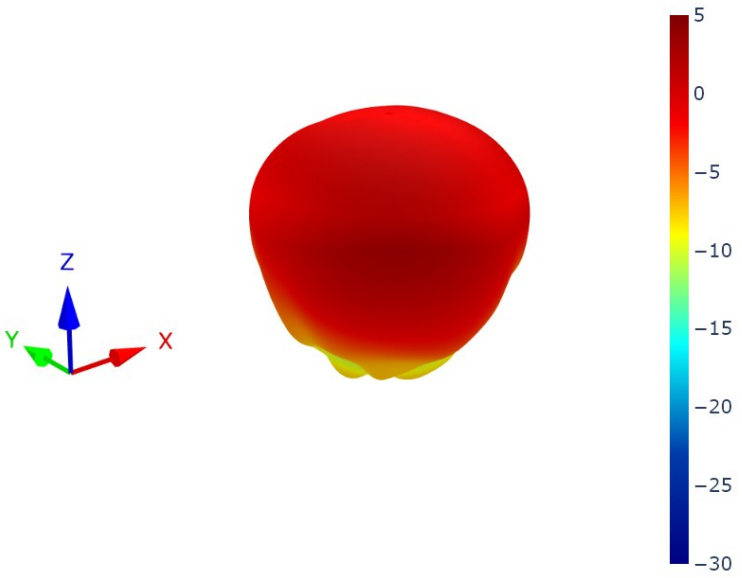
XZ Plane	YZ Plane	XY Plane
		

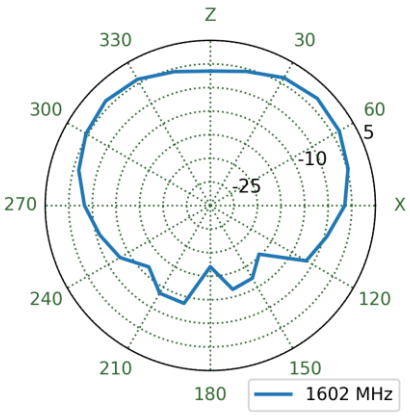
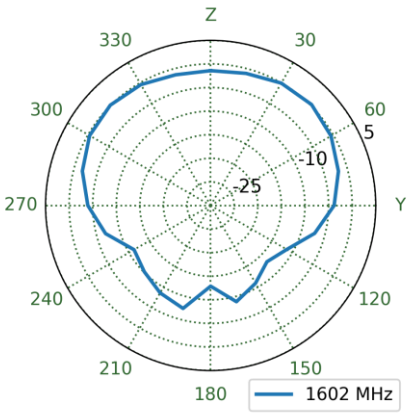
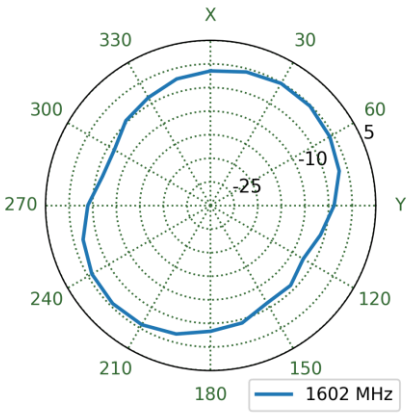
7.5 Free Space Patterns at 1575 MHz



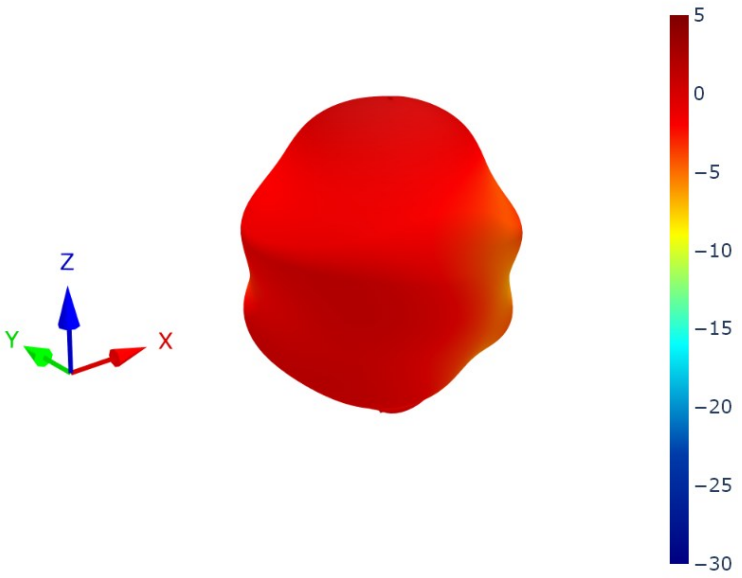
XZ Plane	YZ Plane	XY Plane
		

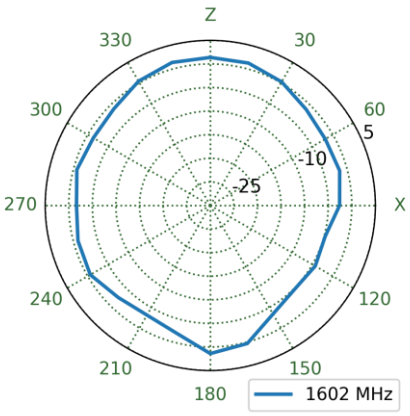
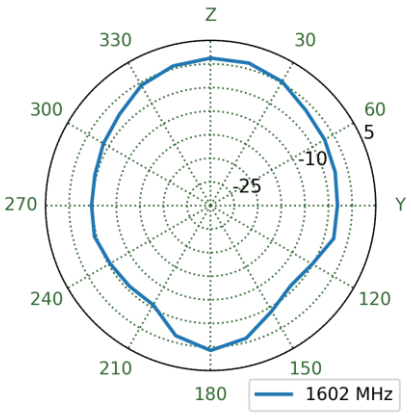
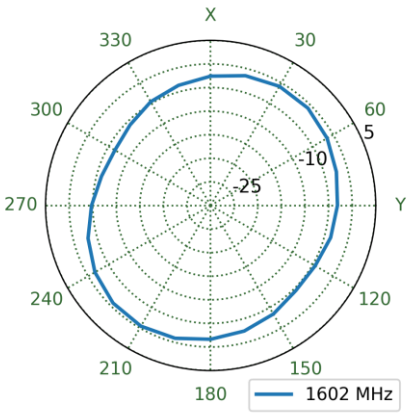
7.6 30 x 30cm Ground Plane Patterns at 1602 MHz



XZ Plane	YZ Plane	XY Plane
		

7.7 Free Space Patterns at 1602 MHz



XZ Plane	YZ Plane	XY Plane
		

Changelog for the datasheet

SPE-25-8-311 - A.30.B.30AF111

Revision: A (Original First Release)	
Date:	2025-11-19
Notes:	Initial Release
Author:	Gary West

Previous Revisions

TAOGLAS®

www.taoglas.com