TAOGLAS

Datasheet

Accura Series

Part No:
TS.15.0111

Description

Passive GPS/GLONASS/Galileo/BeiDou Antenna

Features:

High Performance Passive GPS Direct Mount Antenna
Robust IP67 Waterproof Enclosure
Dims: Ø27.25mm * 60mm
Connector: SMA Male
RoHS & Reach Compliant

1. Introduction

The **TS.15.0111 Accura Series** from Taoglas is a small, lightweight, high-performance GNSS direct SMA(M) mount passive antenna. Covering GPS L1, Galileo E1, GLONASS G1 and BeiDou B1 bands, it is also engineered to cover the L-Band used in modern GNSS correctional services. The direct mount enclosure is built to withstand the harshest environments, making it ideal for applications in transportation, navigation, connected robotics and UAV's, and remote asset tracking.

Some key features for the TS.15 include:

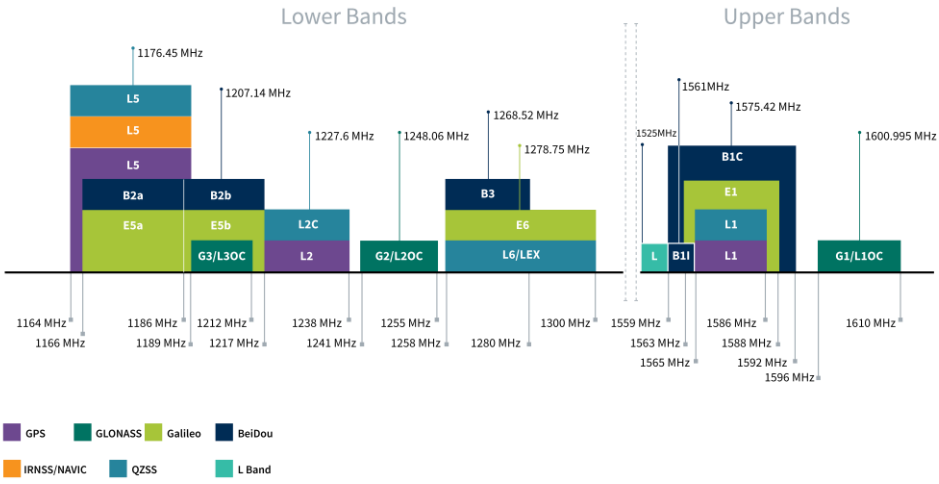
- **IP67 water resistance:** Withstands rain, dust, and even temporary submersion.
- **Waterproof O-ring:** Keeps water out, even in the most challenging conditions.
- **Robust external enclosure:** Protects the antenna from shock, vibration, and impact.
- **Secure mounting:** Unique indented SMA(M) connector ensure a solid, reliable connection.

Whether you're tracking vehicles, autonomous robotics or UAV's, navigating remote areas, or connecting your enterprise assets, the TS.15 delivers reliable GPS performance you can count on. For an active version of the product, look at the **TS.16.0111** on www.taoglas.com.

Contact your local Taoglas customer support team to learn more about how this versatile antenna can meet your specific needs.

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

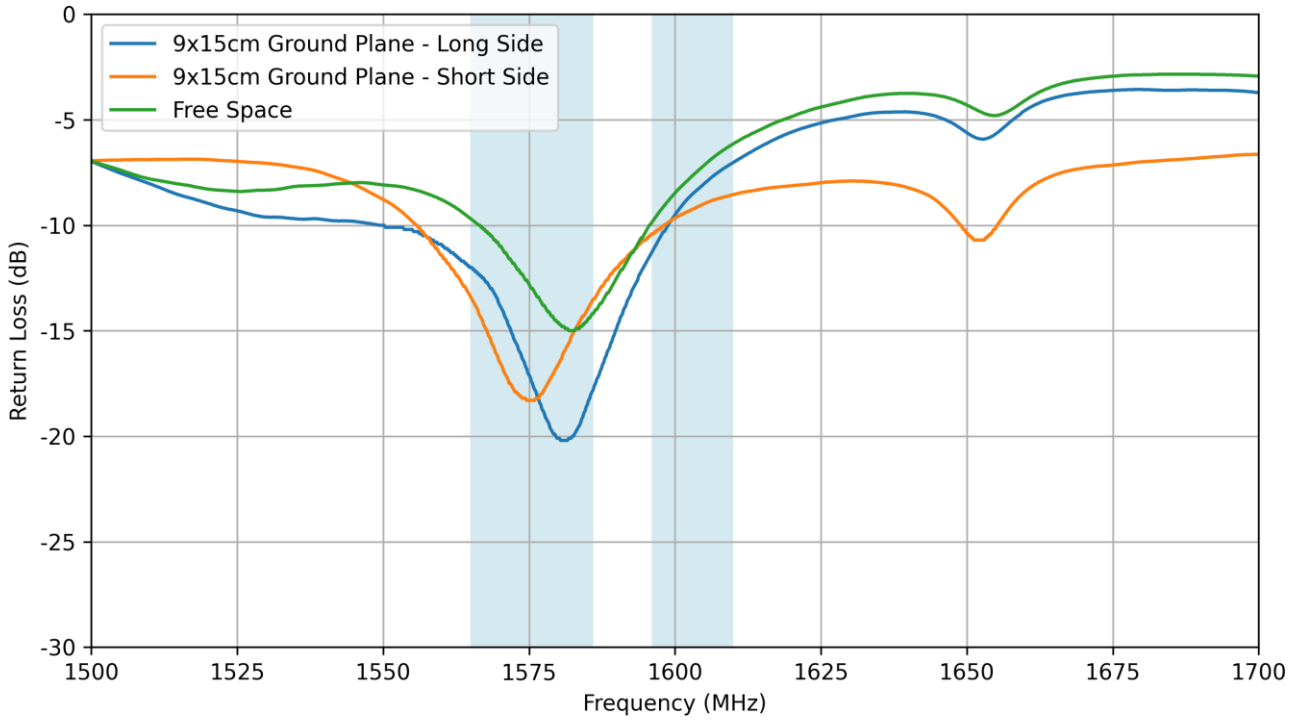
GNSS Electrical			
Frequency (MHz)	**1561**	**1575.42**	**1603**
VSWR (max.)	2:1	2:1	2:1
Passive Antenna Efficiency (%)	52.35	56.13	48.58
Passive Antenna Gain at Zenith (dBi)	1.19	2.29	1.4
Axial Ratio (dB)	0.49	0.77	0.94
Group Delay Mean (ns)	-4.8	-3.02	46.73
Polarization		RHCP	
Impedance		50 Ω	
***Results shown are tested in Free Space**			

Mechanical	
Dimensions	60 x 27.25 mm
Weight	17g
Material	PC+ASA
Connector	SMA Male Connector

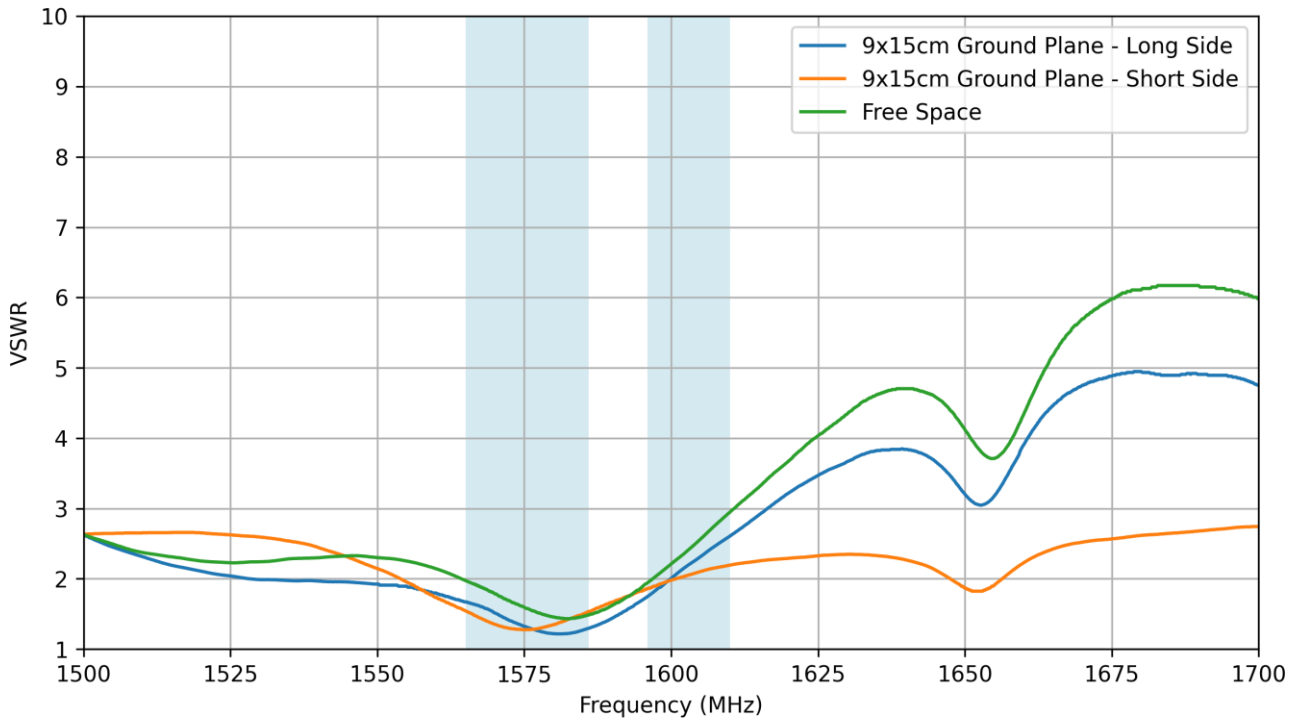
Environmental	
Operation Temperature	-40°C - +85°C
Storage Temperature	-40°C - +85°C
Waterproof	IP67

3. Antenna Characteristics

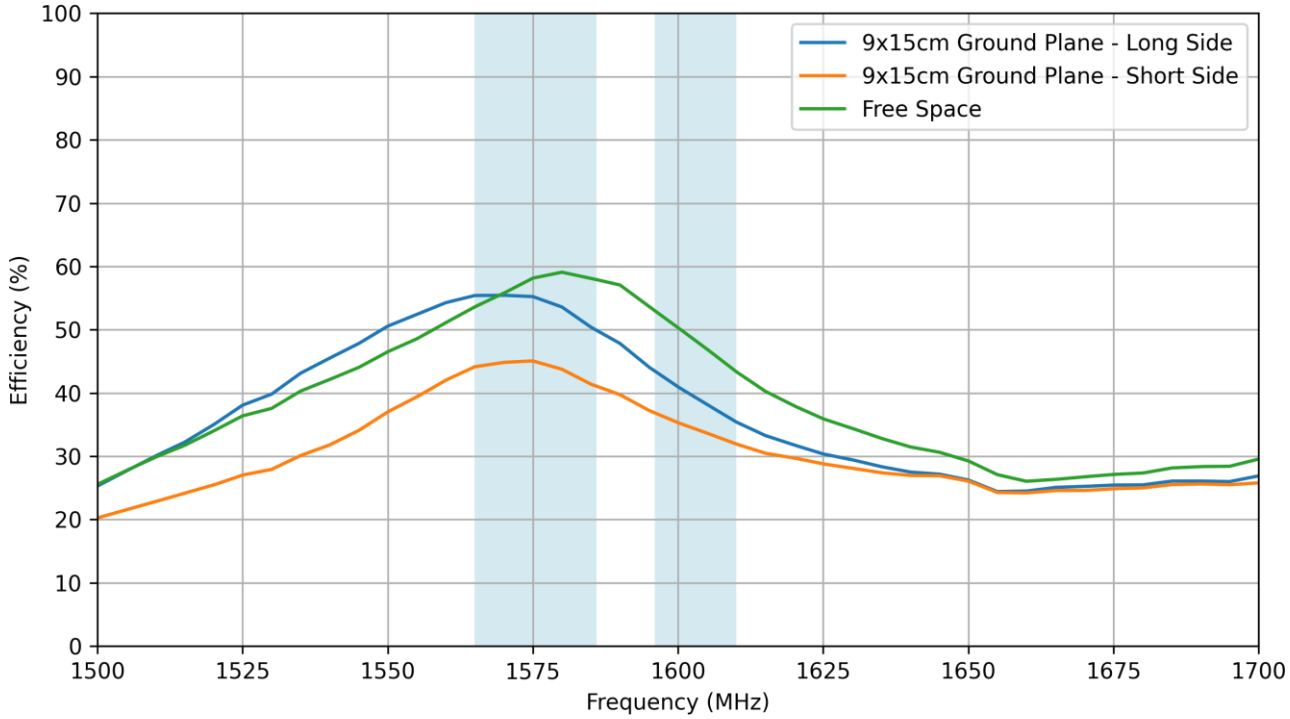
3.1 Return Loss



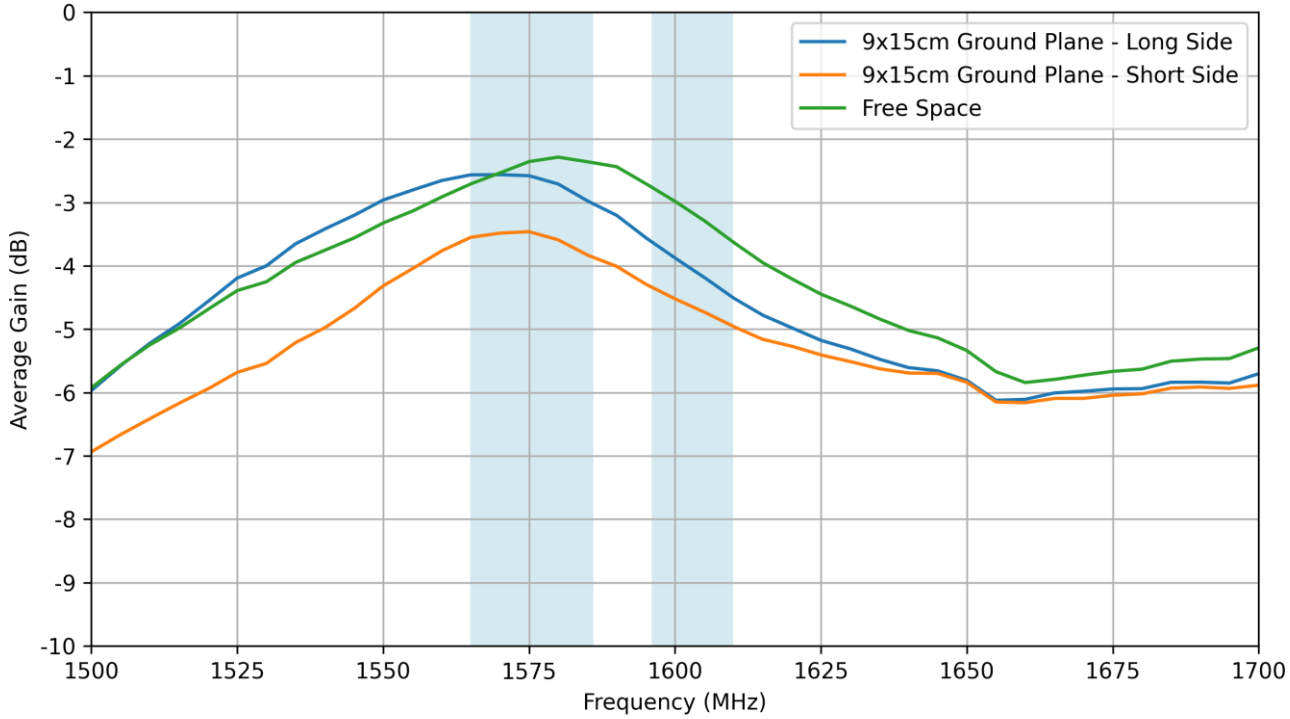
3.2 VSWR



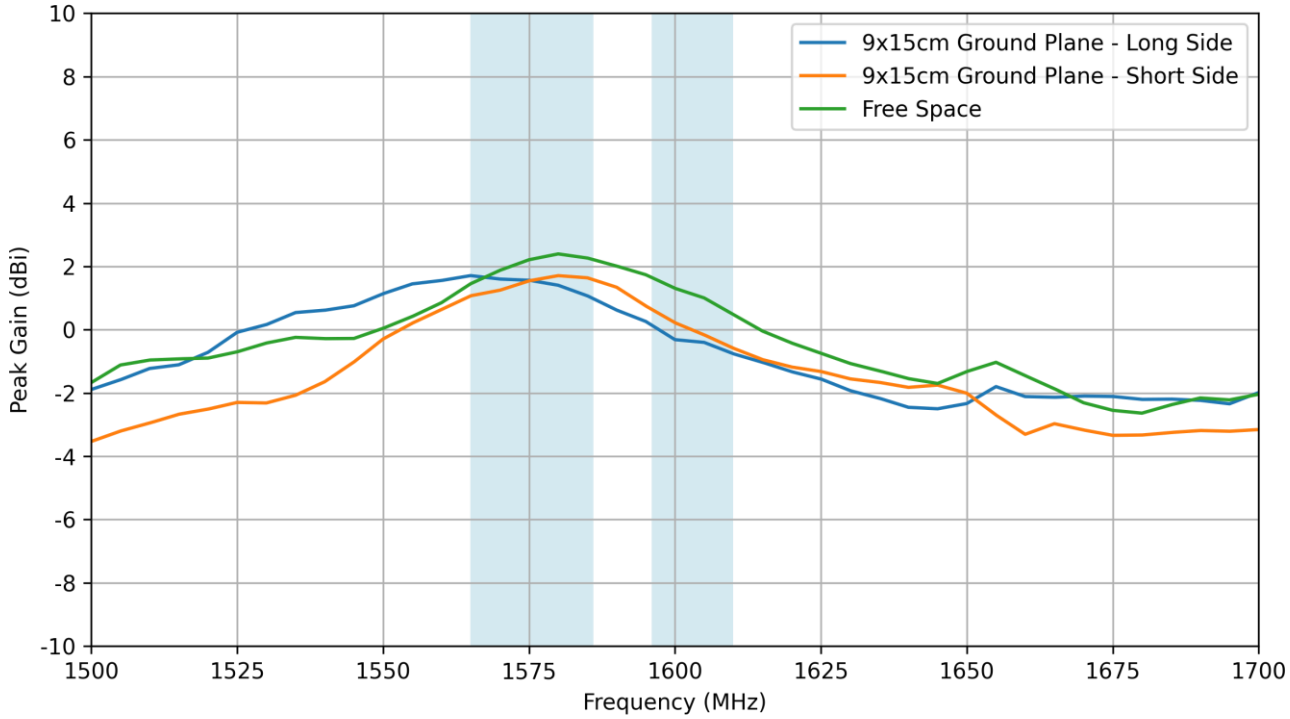
3.3 Efficiency



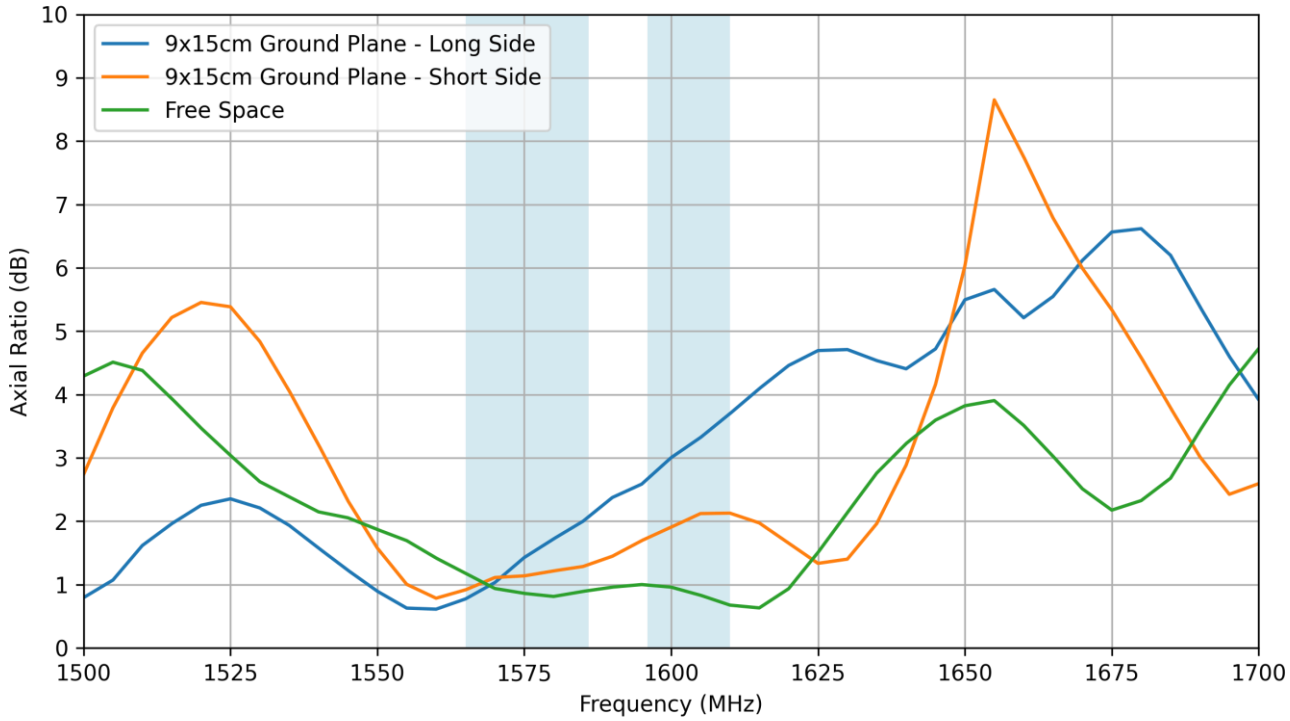
3.4 Average Gain



3.5 Peak Gain

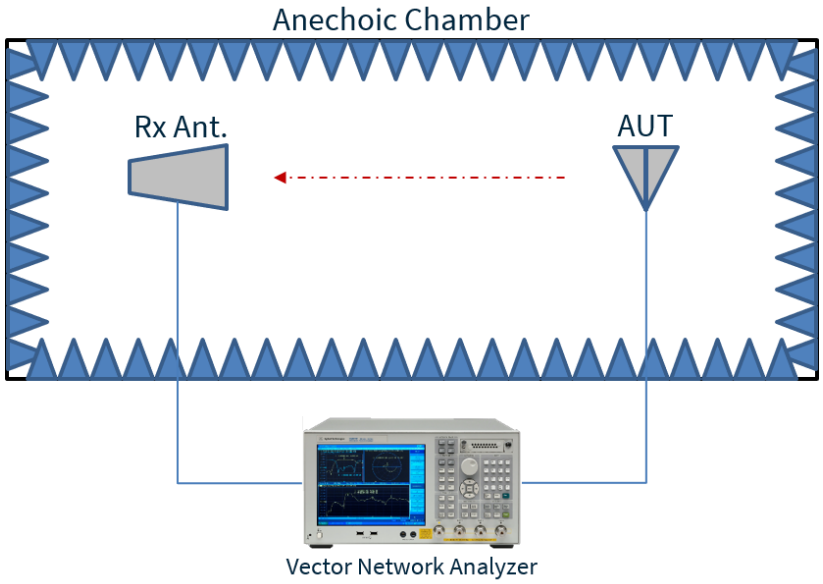


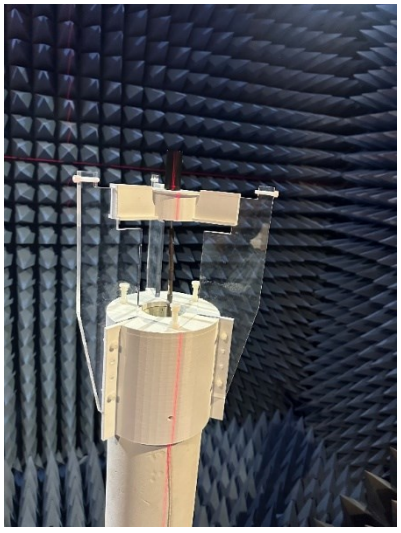
3.6 Axial Ratio



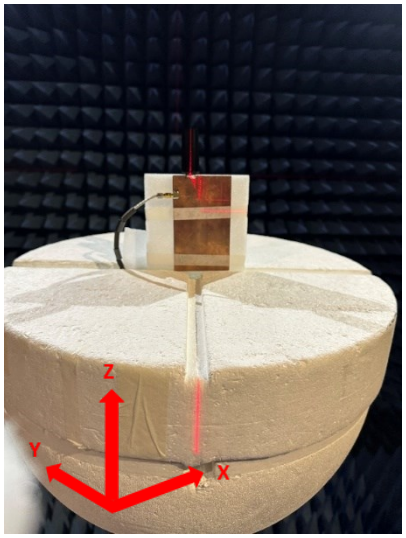
4. Radiation Patterns

4.1 Test Setup

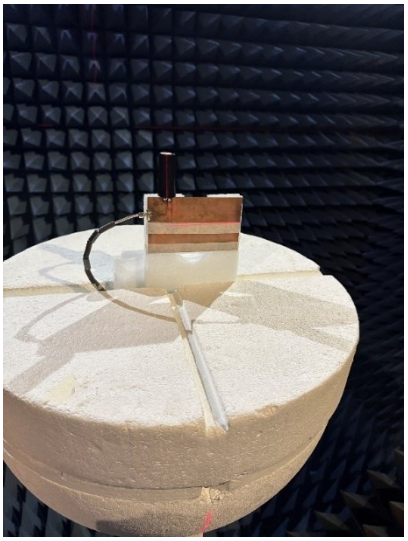




TS.15 Tested in Free Space

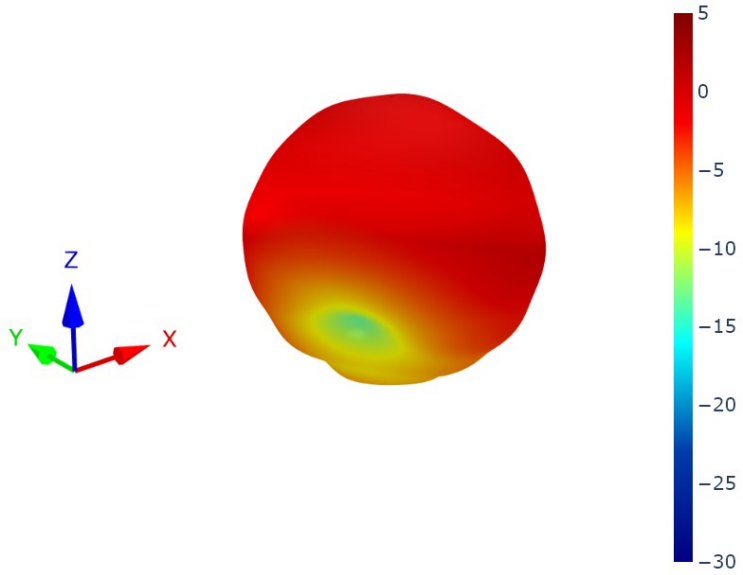


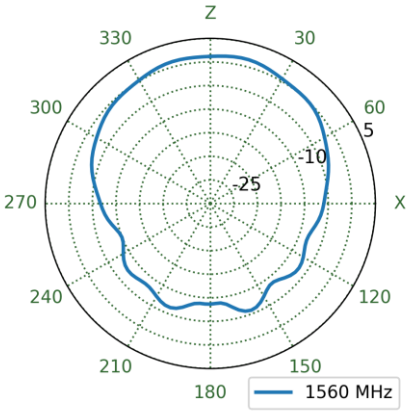
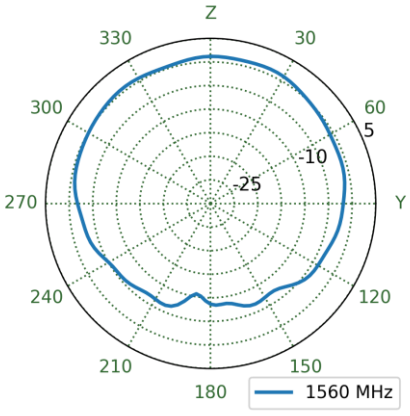
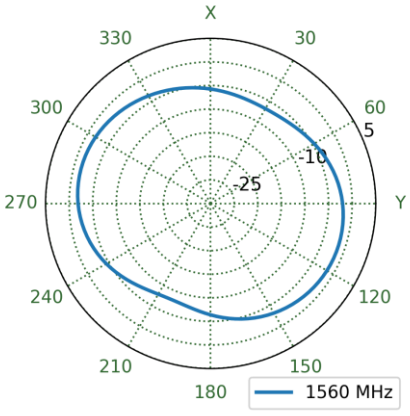
TS.15 Tested on 9x15cm Ground Plane



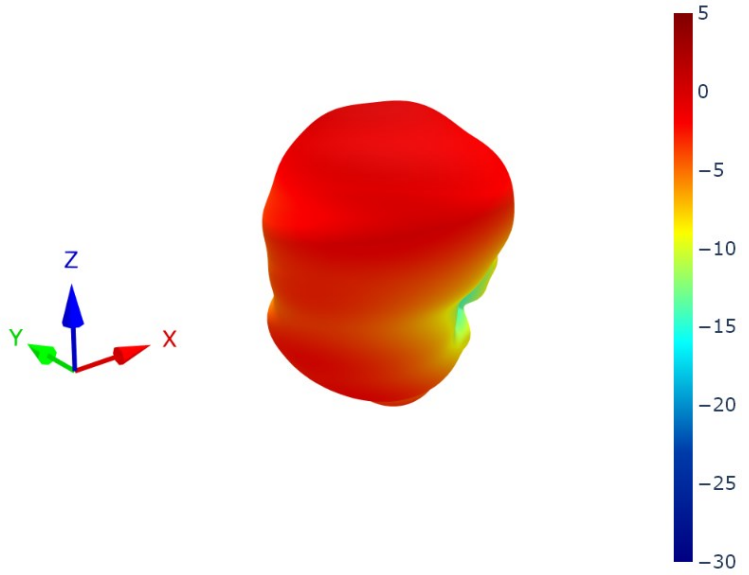
TS.15 Tested on 15x9cm Ground Plane

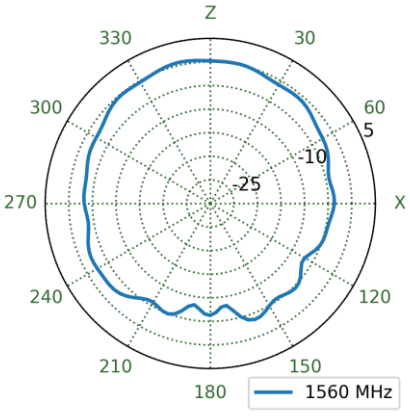
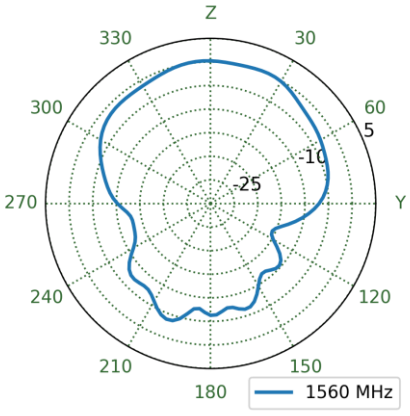
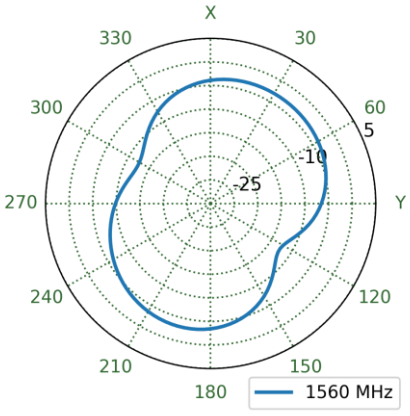
4.2 9x15cm Ground Plane (Long Side) Patterns at 1561 MHz



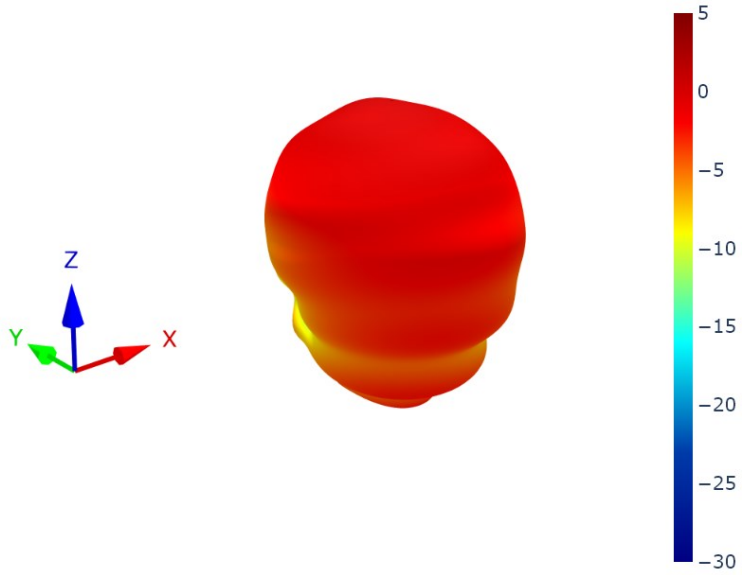
XZ Plane	YZ Plane	XY Plane
		

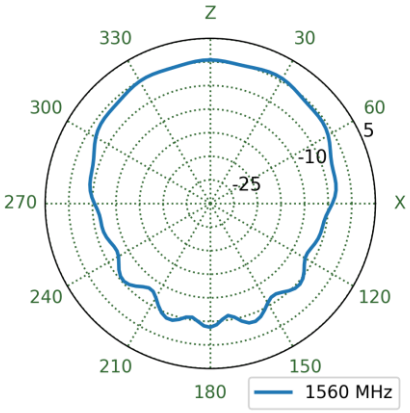
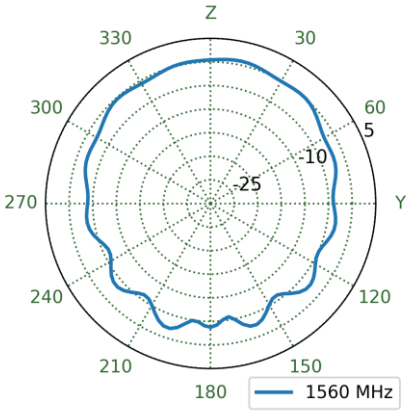
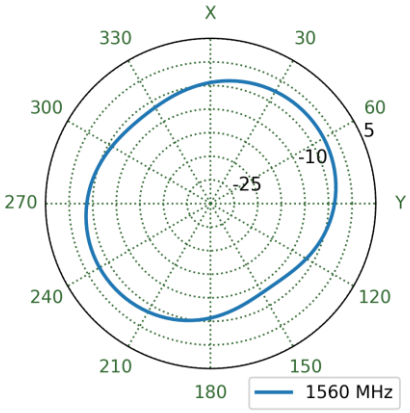
4.3 9x15cm Ground Plane (Short Side) Patterns at 1561 MHz



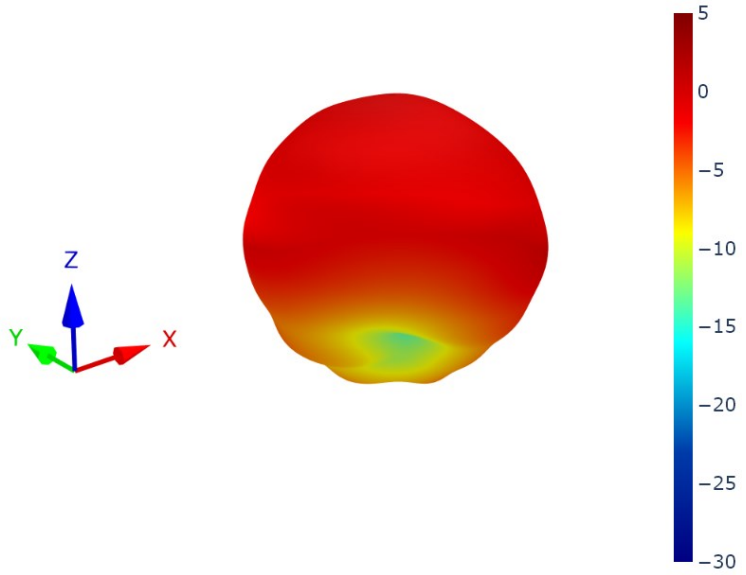
XZ Plane	YZ Plane	XY Plane
		

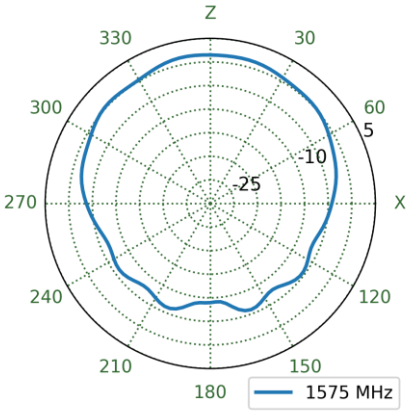
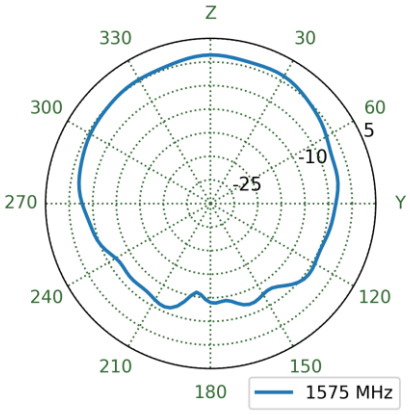
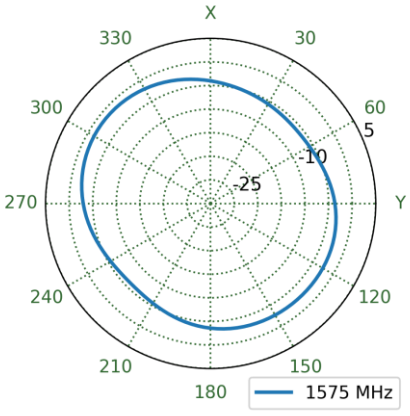
4.4 Free Space Patterns at 1561 MHz



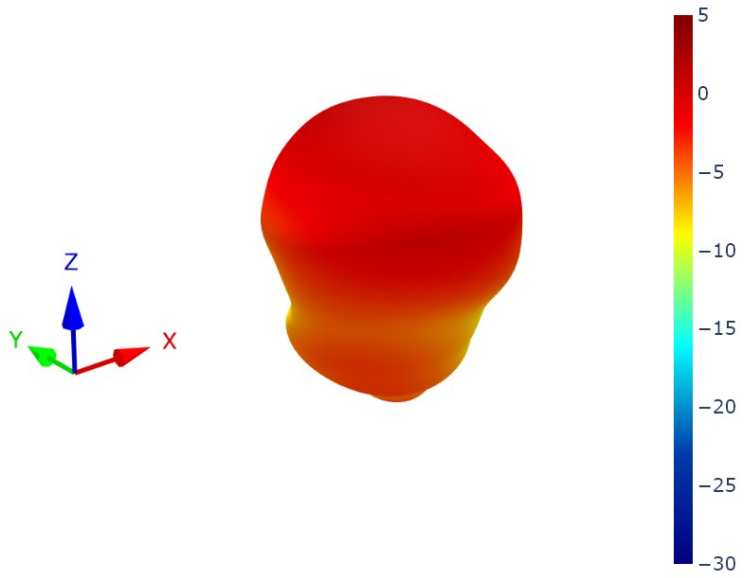
XZ Plane	YZ Plane	XY Plane
		

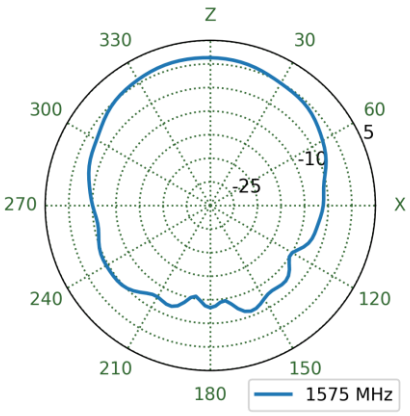
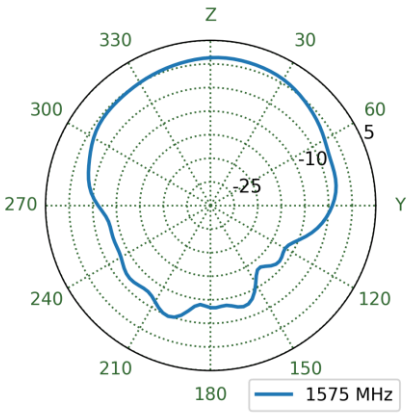
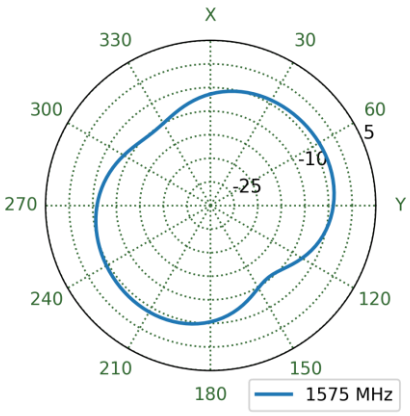
4.5 9x15cm Ground Plane (Long Side) Patterns at 1575 MHz



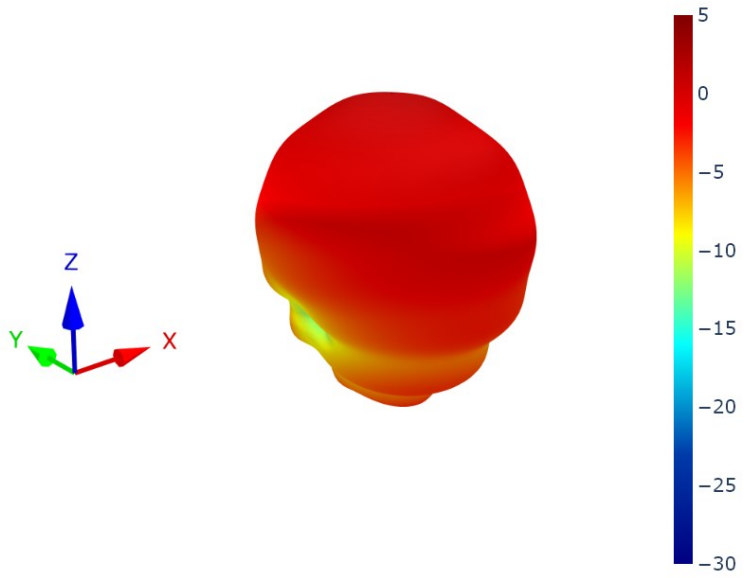
XZ Plane	YZ Plane	XY Plane
		

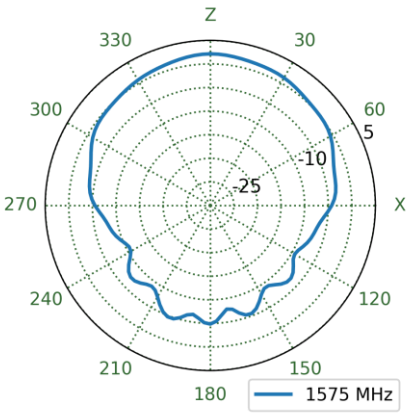
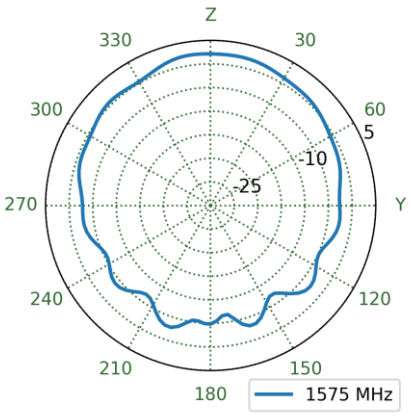
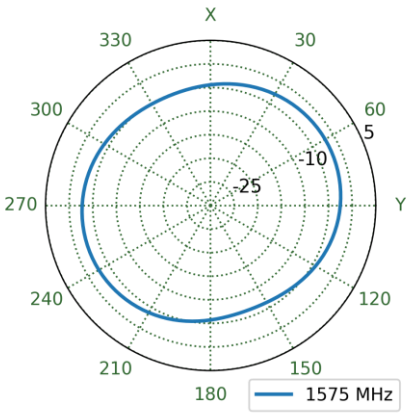
4.6 9x15cm Ground Plane (Short Side) Patterns at 1575 MHz



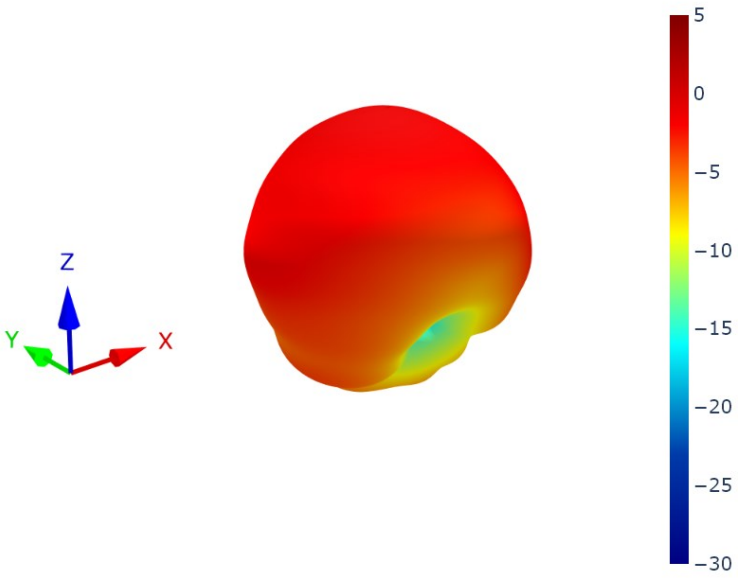
XZ Plane	YZ Plane	XY Plane
		

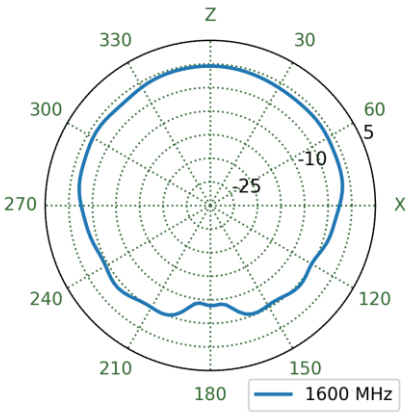
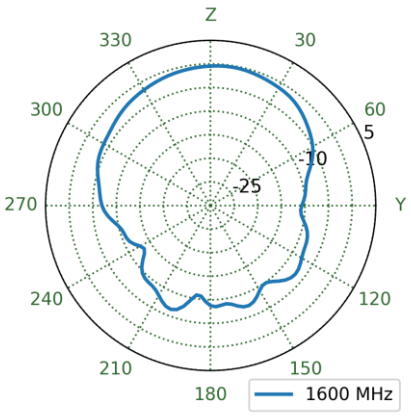
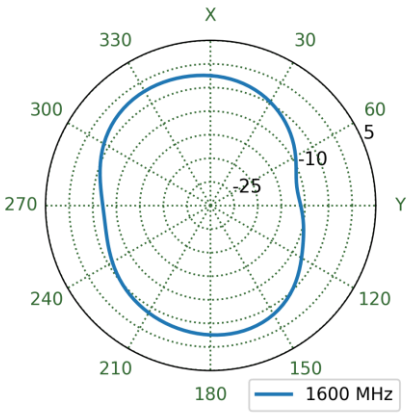
4.7 Free Space Patterns at 1575 MHz



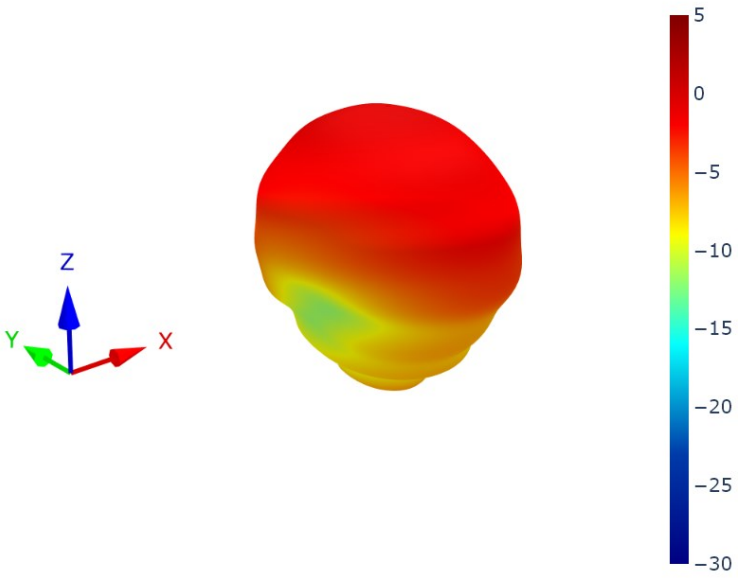
XZ Plane	YZ Plane	XY Plane
		

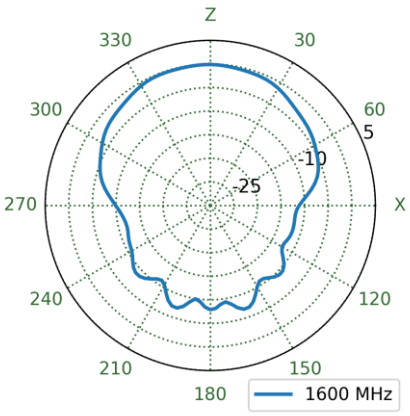
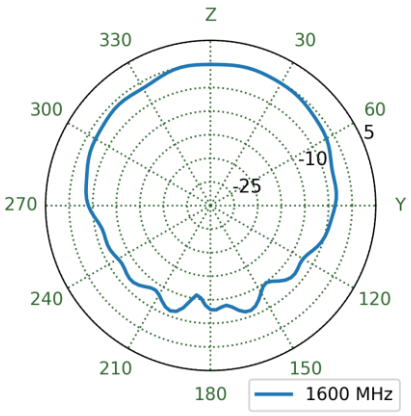
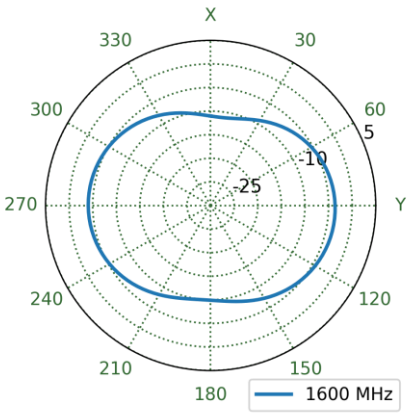
4.8 9x15cm Ground Plane (Long Side) Patterns at 1602 MHz



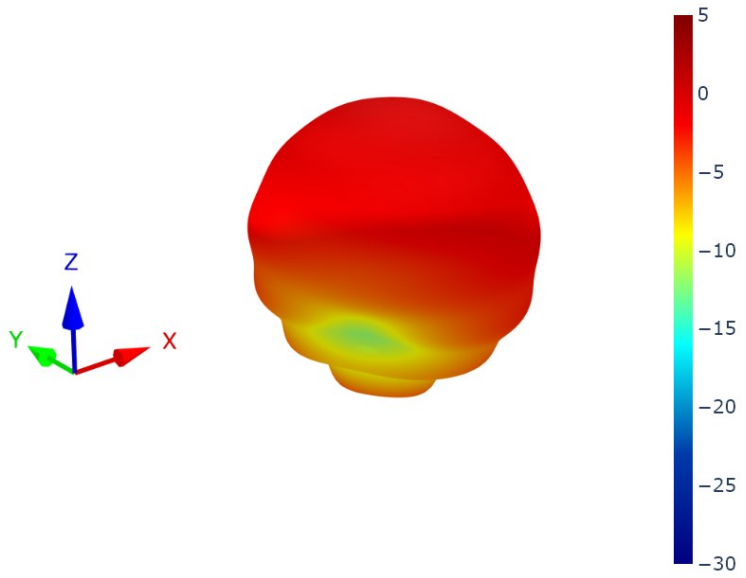
XZ Plane	YZ Plane	XY Plane
		

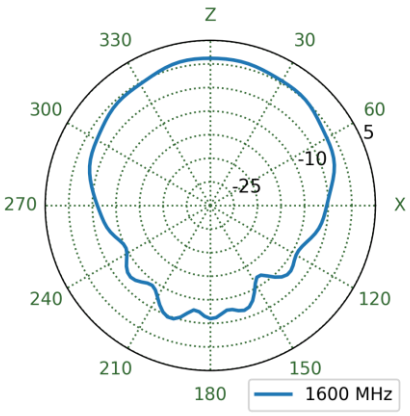
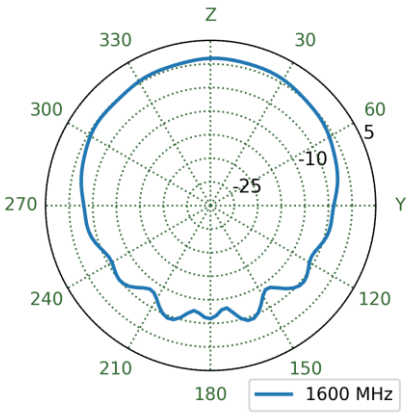
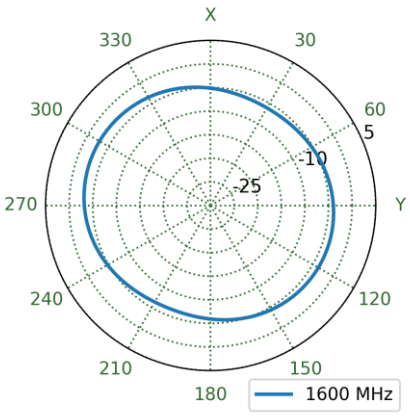
4.9 9x15cm Ground Plane (Short Side) Patterns at 1602 MHz



XZ Plane	YZ Plane	XY Plane
		

4.10 Free Space Patterns at 1602 MHz



XZ Plane	YZ Plane	XY Plane
		

5. Field Test Results

In this section Taoglas will present the field test result for TS.15.0111 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.

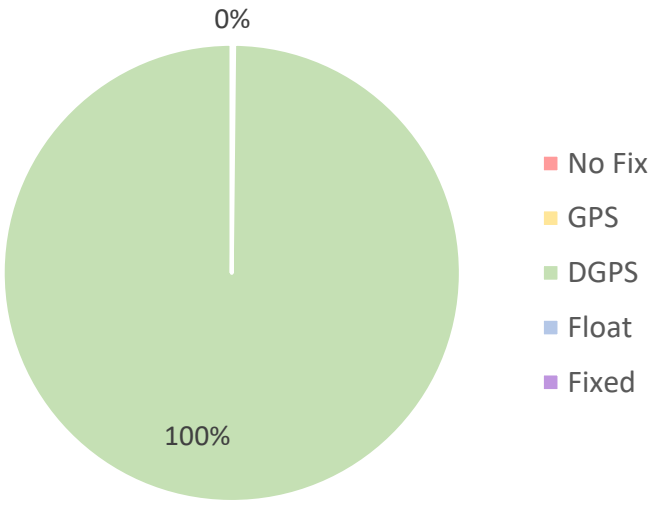
Taoglas will show the field test results using the following receivers:

5.1 Ublox ZED-F9P

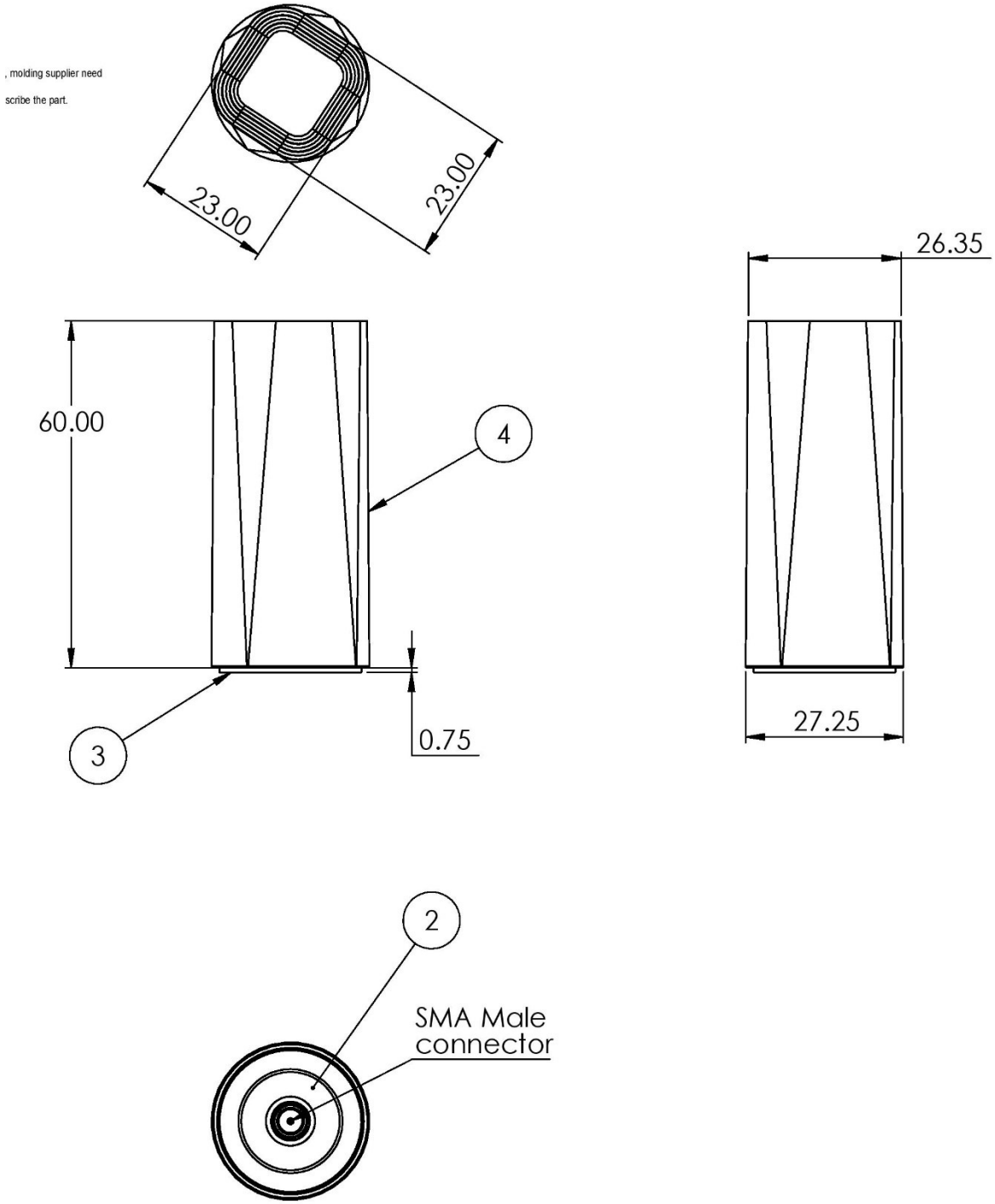
Receiver features:

- 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%)**	**TTFF (sec) [GPS, DGPS, Float,Fixed]**	**GPS Fix %**	**DGPS Fix %**
Free Space	No Correction	60.5 cm	72.64 cm	145.28 cm	32s 71s	0%	100%

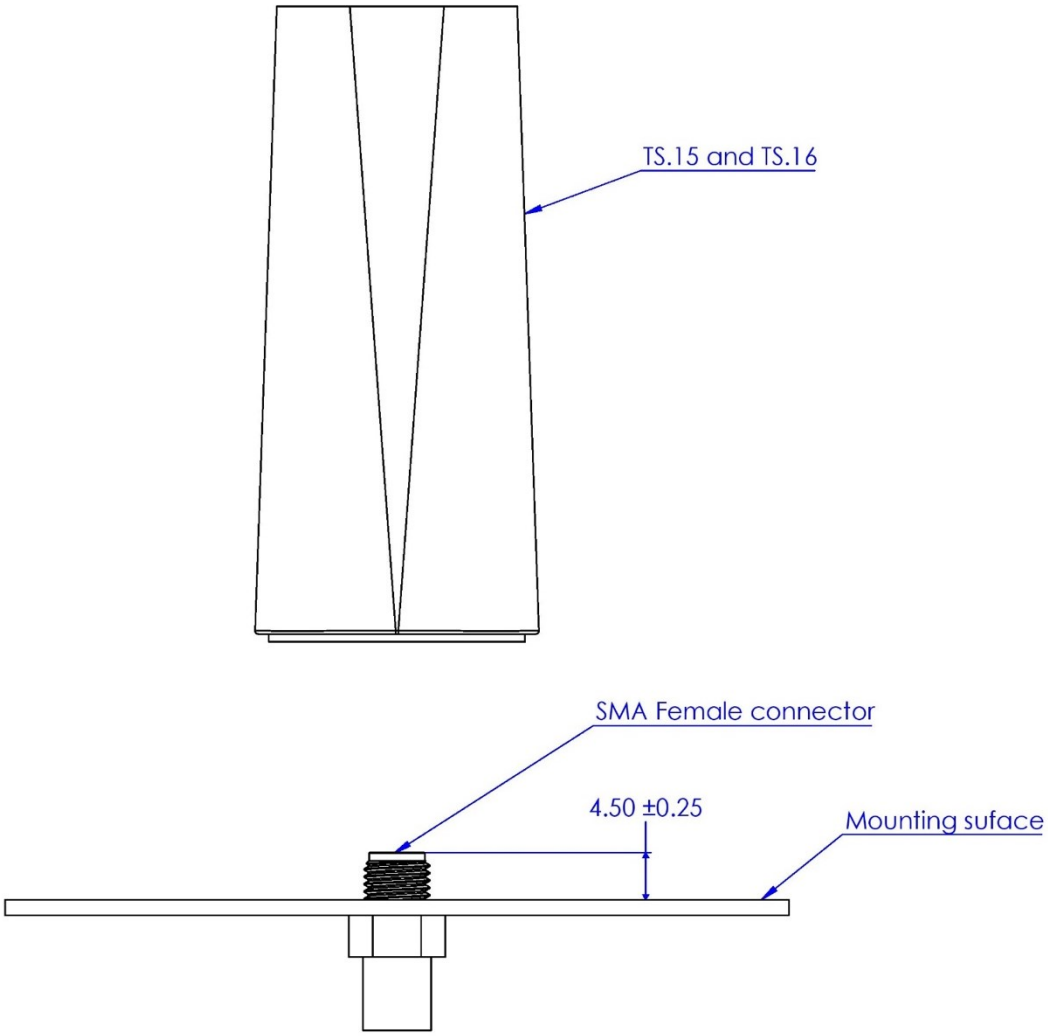


6. Mechanical Drawing



ITEM NO.	DESCRIPTION	QTY.
2	BOTTOM AND CONNECTOR	1
3	RUBBER GASKET	1
4	term mount helix housig REV 3	1

7. Installation Guide



Hand-tighten only. The bottom rubber gasket must fully seat to ensure a watertight seal.

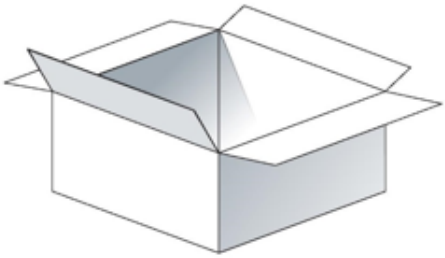
The TS.15 and TS.16 do not require a ground plane; they can be mounted to a bulkhead-mount SMA with a cable, or on a board-edge SMA at a right angle to a PCB. It should not be placed directly in the middle of a large (>15cm) ground plane, as this could degrade the axial ratio performance.

8. Packaging

1 pc TS.15.0111 per small pe bag

50 pcs TS.15.0111 per large pe bag

300 pcs TS.15.0111 per carton
Carton dimensions: 370x370x300mm



Changelog for the datasheet

SPE-24-8-022 – TS.15.0111

Revision: B (Current Version)	
Date:	2024-04-17
Notes:	Added Field Test Results
Author:	Gary West

Previous Revisions

Revision: A (Original First Release)	
Date:	2024-01-31
Notes:	Initial Release
Author:	Gary West

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