

## PW1515-004

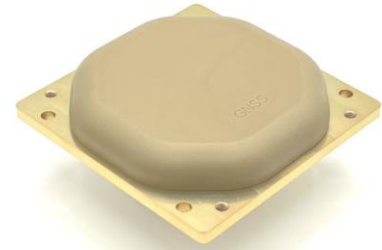
## Active GNSS L1/E1 Antenna

### Features

- ✓ Size < 1U
- ✓ Omni-directional pattern
- ✓ Integrated LNA and filter with low current consumption
- ✓ Radiation tolerant
- ✓ Stable phase center
- ✓ Wide operating temperature range
- ✓ Designed to NASA GEVS (GSFC-STD-7000)
- ✓ TRL 9

### Benefits

- ✓ Commercial off-the-shelf (COTS)
- ✓ Acceptance Tests available
- ✓ Compatible Test Hat available
- ✓ LNA-only version (without radiating element) available for Hardware-In-The-Loop (HITL) tests
- ✓ Qualified for space applications
- ✓ True circular polarization with extremely low Axial Ratio over the entire frequency band



### Product Overview

PW1515-004 is a high-performance GNSS L1/E1 antenna designed for harsh space environments. It features excellent axial ratio over the entire frequency band, making it ideal for reliable space vehicle navigation.

This antenna is a perfect choice for LEO, MEO, and GEO missions. Specifically, it is designed to overcome challenges present in the LEO environment over long mission lives, such as Atomic Oxygen, MMOD, etc.

The integrated LNA and filter further improve signal fidelity and make this antenna a perfect choice for applications where interference may be an issue. PW1515-004 is radiation tolerant, lightweight and easy to integrate. It is also available with Test Hats and HITL versions to facilitate testing and integration.

### Related Products

Part Number	Description
PW1515-304	GNSS L1/E1 Test Hat
PW1515-204	GNSS L1/E1 LNA
PW2022-002	Active S-Band RHCP Dual-Port (TX+RX) Omni Antenna
PW1115-002	Active GNSS L1/E1/L2/L5/E5 Antenna

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## Electrical Specifications

Parameter / Condition	Min	Typ	Max	Unit
Operating Frequency	1559		1591	MHz
Polarization		RHCP		
Axial Ratio		2	3	dB
VSWR			2:1	
Passive Gain	4.5	5	5.5	dBic
Pattern Coverage		Omni		
LNA Gain (Notes 1 and 2)	12	15	18	dB
Noise Figure (Note 2)		2.5	3.5	dB
Output 1-dB Compression Point	12	15		dBm
Rejection @ 1650 MHz	50			dBc
Voltage	4.5	5	12	V
Current		25	30	mA

**Note 1:** LNA gain is customizable upon request

**Note 2:** Measured over the full operating temperature range

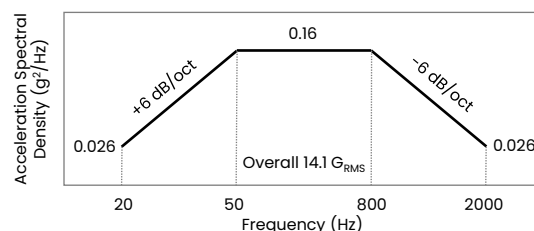
## Mechanical Specifications

Parameter / Condition	Value	Unit	Limits
Connector	SMA Female		
Mass	270	g	Max
Compatible Test Hat	PW1515-304		

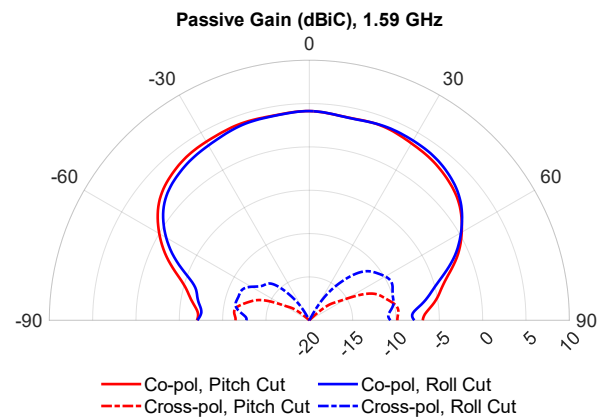
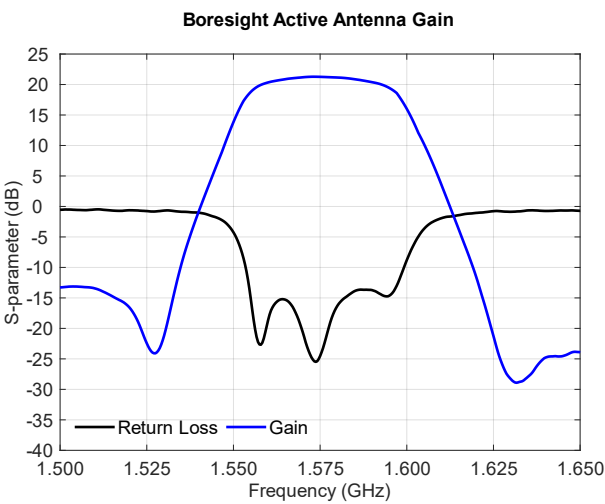
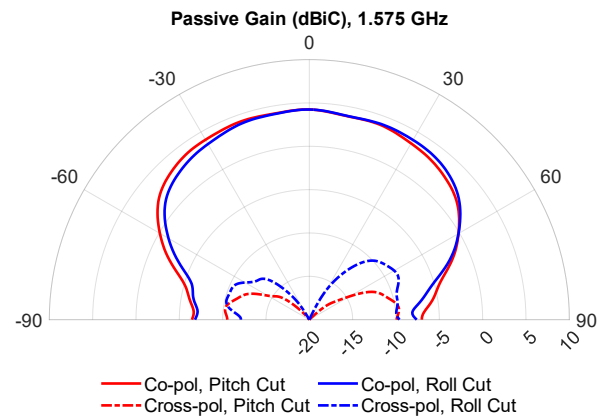
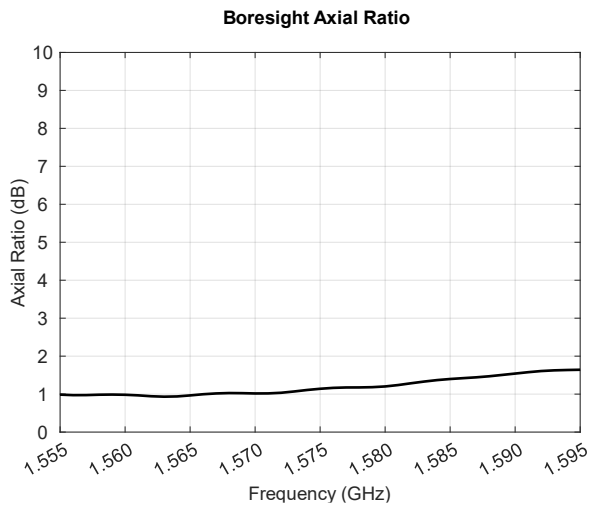
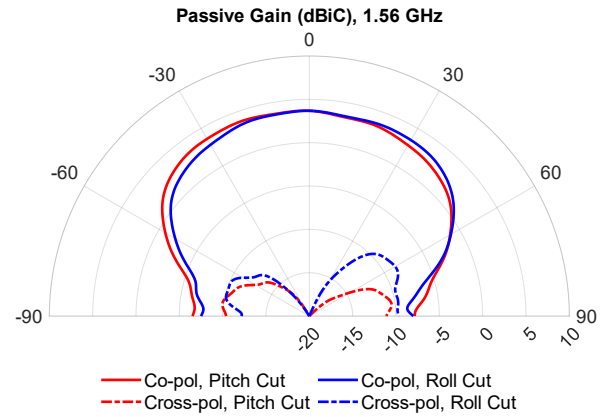
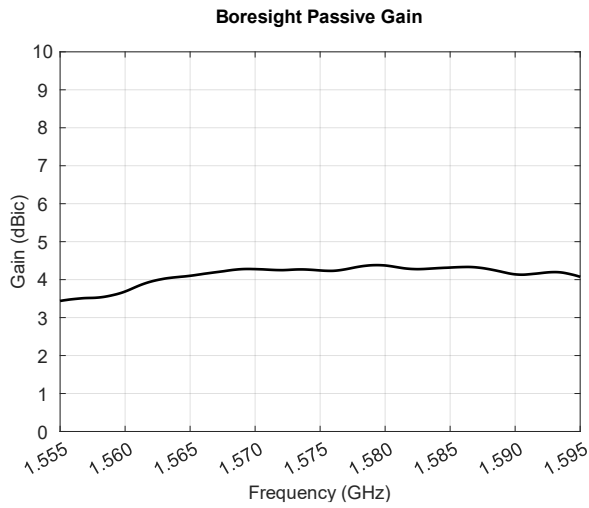
## Environmental Specifications

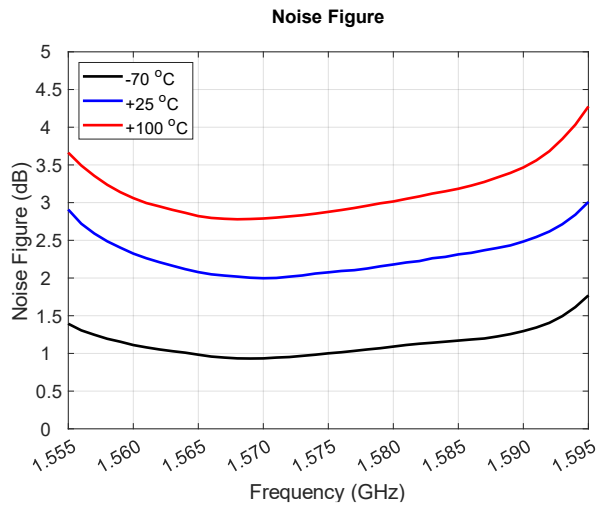
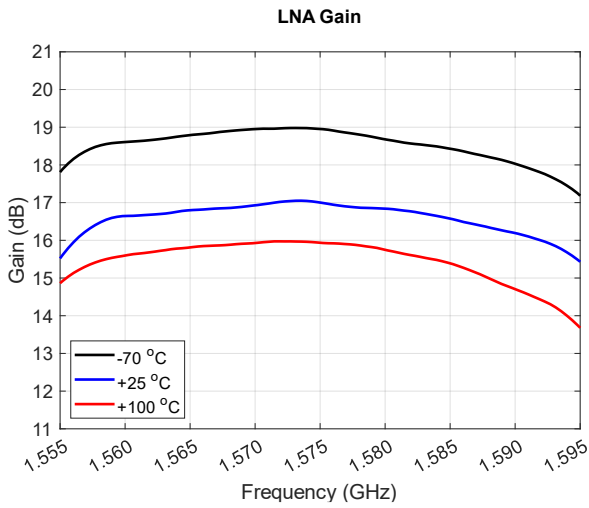
Parameter / Condition	Min	Typ	Max	Unit
Operating Temperature	-70		100	°C
Humidity (MIL-STD-810 Method 507.6)	65%			
Storage Temperature	-70		100	°C
Radiation Hardness (TID)	3			Mrad
Destructive Single Event Effects (Note 1)	37			MeV-cm <sup>2</sup> /mg
Vibration	14.1			G <sub>RMS</sub>

Random Vibration Test Levels  
(GSFC-STD-7000)

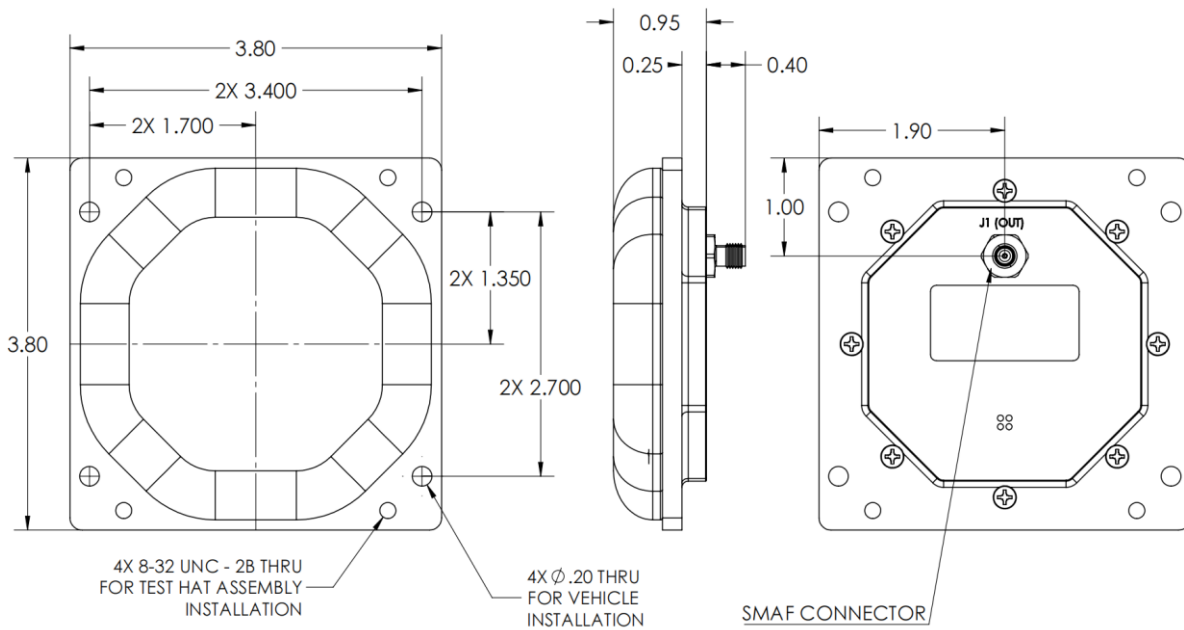


**Note 1:** No destructive SEE was observed when tested with heavy ions up to the above LET





**Mechanical Outline**



**Dimensions shown in inches.**

Tolerances - Two Place Decimal: ±0.010, Three Place Decimal: ±0.005

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