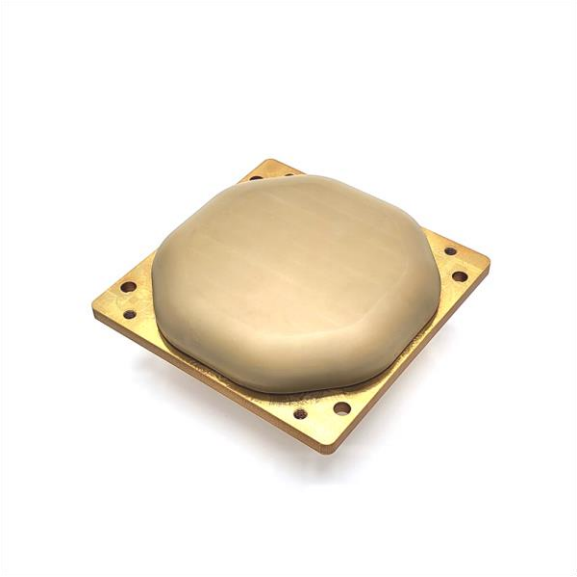
PW2022-111

S-Band Dual-CP Wideband Omni Antenna

Features

- ✓ Size < 1U
- ✓ Dual circular polarization: RHCP, LHCP or both
- ✓ Wide bandwidth for both TX and RX operations
- ✓ Omni-directional pattern
- ✓ 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
- ✓ Qualified for space applications
- ✓ True circular polarization with extremely low Axial Ratio over the entire frequency band
- ✓ Consultation services available (link budget, architecture and system design)

Product Overview

PW2022-111 is a high-performance wideband antenna designed for TT&C applications in harsh space environments. It features excellent axial ratio over the entire frequency band, making it ideal for demanding and reliable space communication links. This is a 2-in-1 antenna with a wide bandwidth which allows for simultaneous TX and RX operations on each of the ports, mitigating the need for two separate antennas and cables.

This antenna is a perfect choice for a variety of space applications, including LEO, MEO, and GEO. Specifically, it is designed to overcome challenges present in the LEO environment over long mission lives, such as Corona, Multipaction, Atomic Oxygen, MMOD, etc. The S-band TT&C antenna is lightweight and easy to integrate. It is also available with Test Hats to facilitate testing and integration.

Related Products

Part Number	Description
PW2022-311	S-Band Dual-CP Wideband Omni Test Hat
PW2022-102	S-Band RHCP Dual-Port (TX+RX) Omni Antenna
PW2222-110	S-Band Dual-CP TX Omni Antenna
PW2022-002	Active S-Band RHCP Dual-Port (TX+RX) Omni Antenna
PW1115-002	Active GNSS L1/E1/L2/L5/E5 Antenna

Electrical Specifications

Parameter / Condition	Min	Typ	Max	Unit
Operating Frequency	2025		2290	MHz
Polarization		RHCP/LHCP		
Axial Ratio		2	3	dB
VSWR			2:1	
Gain	4	5.5	6	dBic
Pattern Coverage		Omni		
Power Handling	20			W

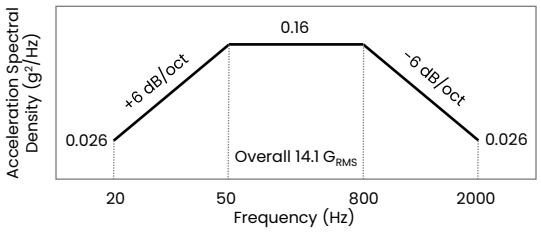
Mechanical Specifications

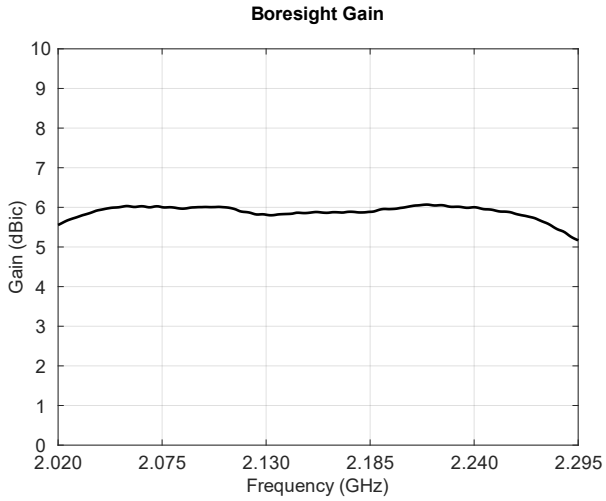
Parameter / Condition	Value	Unit	Limits
Connector	SMA Female		
Mass	185	g	Max
Compatible Test Hat	PW2022-311		

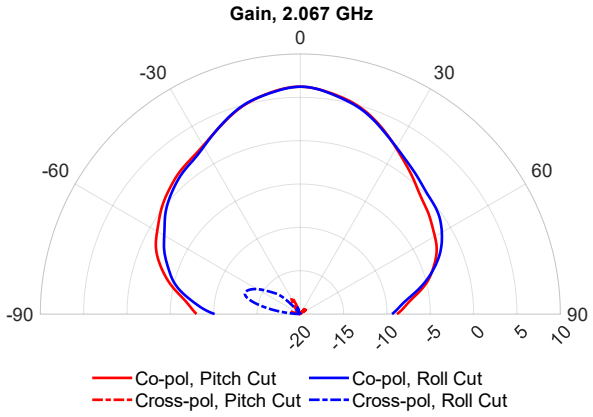
Environmental Specifications

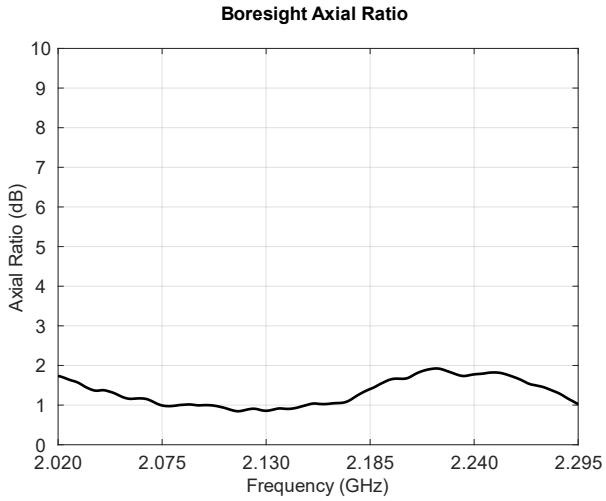
Parameter / Condition	Min	Typ	Max	Unit
LEO Mission Life	5			years
Operating Temperature	-70		100	°C
Humidity (MIL-STD-810 Method 507.6)	65%			
Storage Temperature	-70		100	°C
Vibration	14.1			G_{RMS}

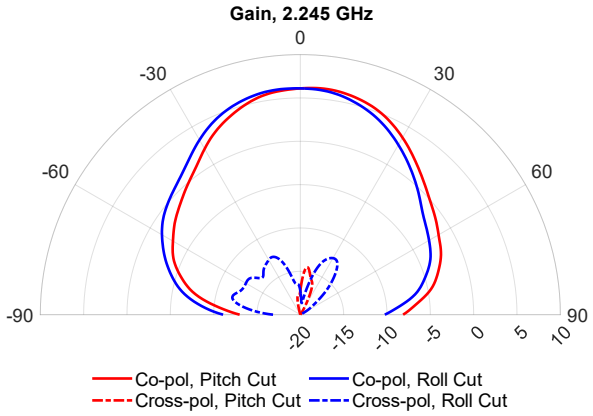
Random Vibration Test Levels
(GSFC-STD-7000)

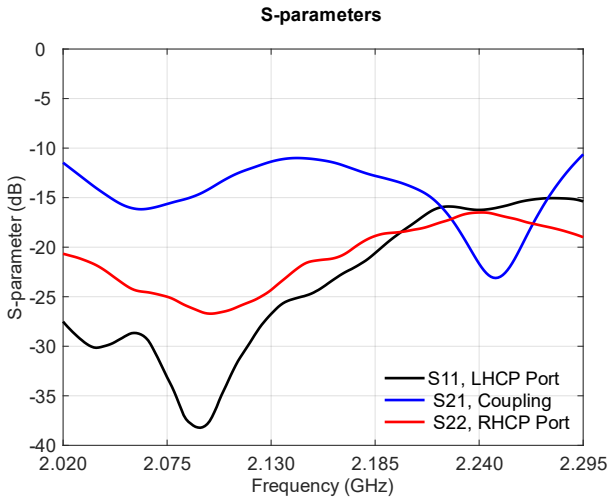



Boresight Gain
Gain (dBic)
Frequency (GHz)
2.020
2.075
2.130
2.185
2.240
2.295

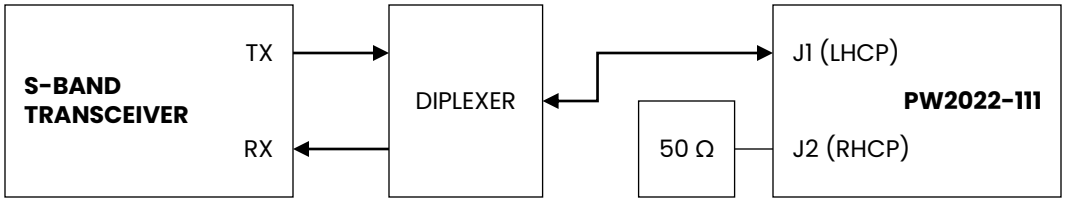

Gain, 2.067 GHz
Co-pol, Pitch Cut
Co-pol, Roll Cut
Cross-pol, Pitch Cut
Cross-pol, Roll Cut


Boresight Axial Ratio
Axial Ratio (dB)
Frequency (GHz)
2.020
2.075
2.130
2.185
2.240
2.295

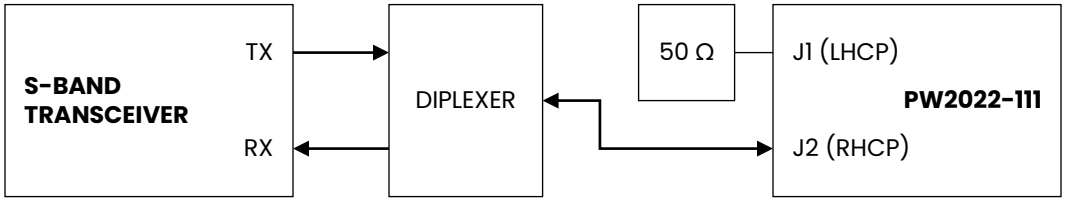

Gain, 2.245 GHz
Co-pol, Pitch Cut
Co-pol, Roll Cut
Cross-pol, Pitch Cut
Cross-pol, Roll Cut


S-parameters
S-parameter (dB)
Frequency (GHz)
2.020
2.075
2.130
2.185
2.240
2.295
S11, LHCP Port
S21, Coupling
S22, RHCP Port

Typical Application Diagram

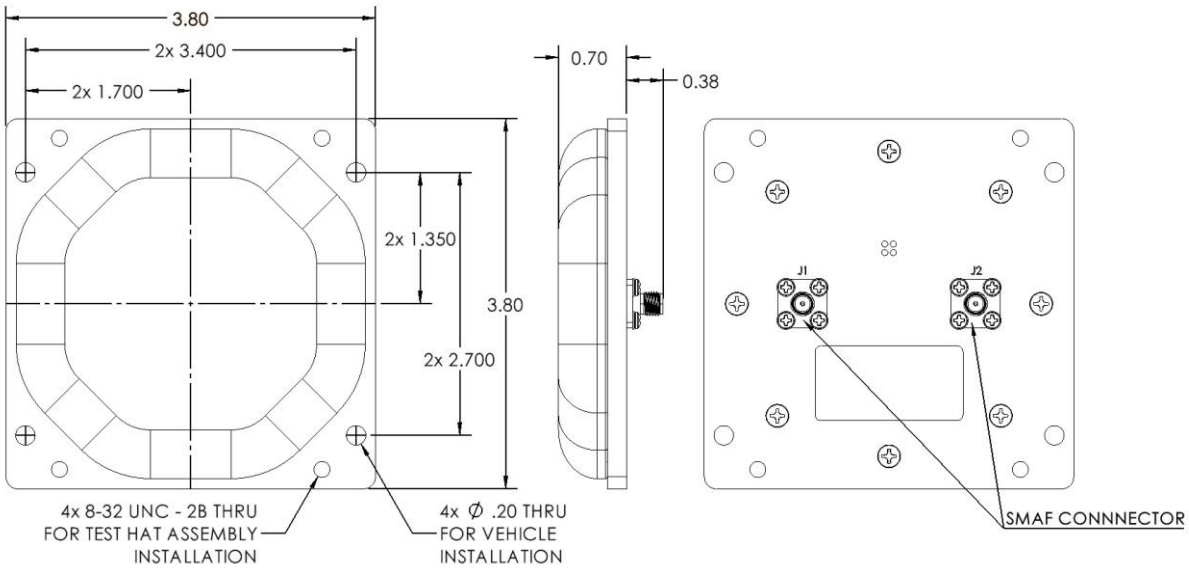


LHCP Link



RHCP Link

Mechanical Outline



Dimensions shown in inches.
Tolerances - Two Place Decimal: ±0.010, Three Place Decimal: ±0.005

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