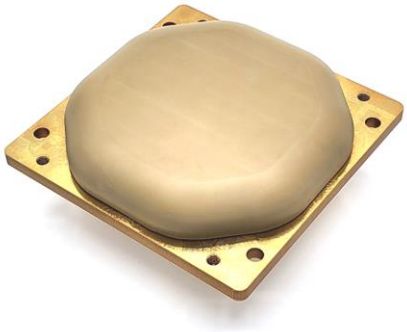
PW2022-102 S-Band RHCP Dual-Port (TX+RX) Omni Antenna

Features

- ✓ Size < 1U
- ✓ Shared aperture with separate TX and RX ports
- ✓ 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

PW2022-102 is a high-performance 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 that supports both TX and RX bands on two separate ports.

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
PW2022-302	S-Band RHCP Dual-Port (TX+RX) Omni Test Hat
PW2022-111	S-Band Dual-CP Wideband Omni Antenna
PW2222-110	S-Band Dual-CP TX Omni Antenna
PW2020-000	Active S-Band RHCP RX 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				
TX	2200		2290	MHz
RX	2025		2110	MHz
Polarization		RHCP		
Axial Ratio				
TX		2	4.5	dB
RX		2	3	dB
VSWR			1.8:1	
Port to Port Isolation	25			dB
Gain				
TX	1.5	2.5	3	dBic
RX	4.5	4.5	5.2	dBic
Pattern Coverage		Omni		
Power Handling	20			W

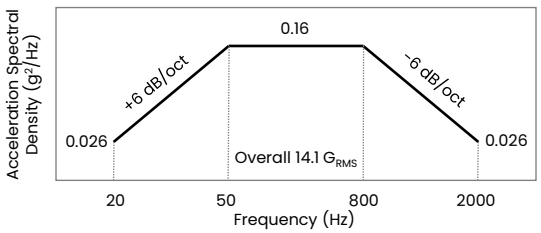
Mechanical Specifications

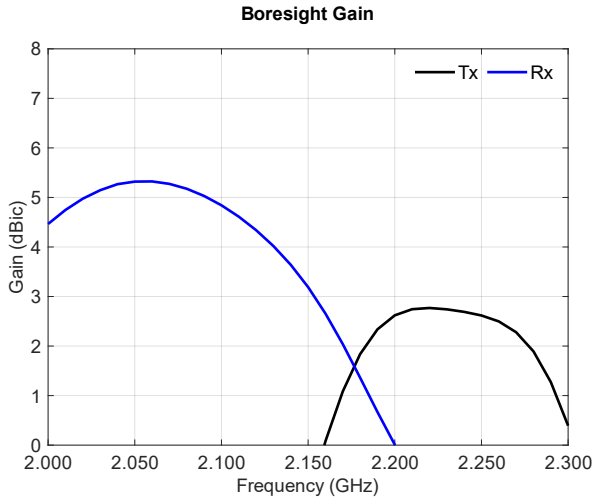
Parameter / Condition	Value	Unit	Limits
Connector	SMA Female		
Mass	200	g	Max
Compatible Test Hat	PW2022-302		

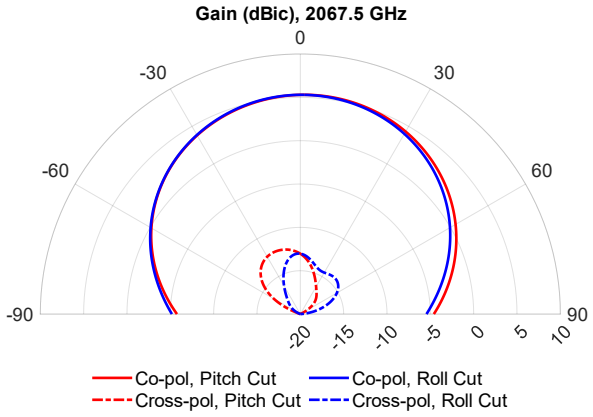
Environmental Specifications

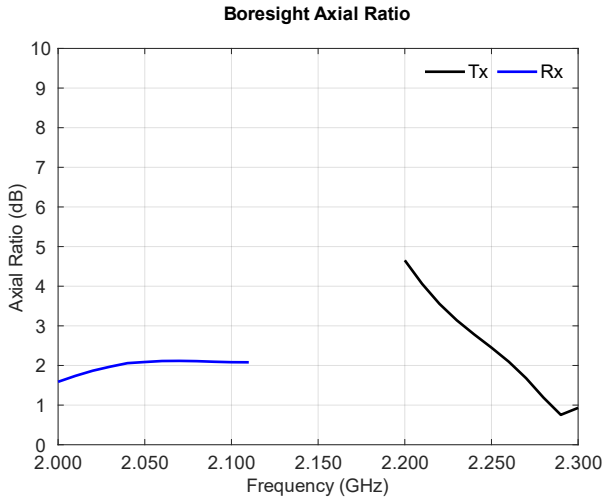
Parameter / Condition	Min	Typ	Max	Unit
LEO Mission Life	5			years
Operating Temperature	-70		100	°C
Humidity (MIL-STD-810 Method 507.6)	65%			
Storage Temperature	-70		100	°C
Vibration	14.1			G_{RMS}

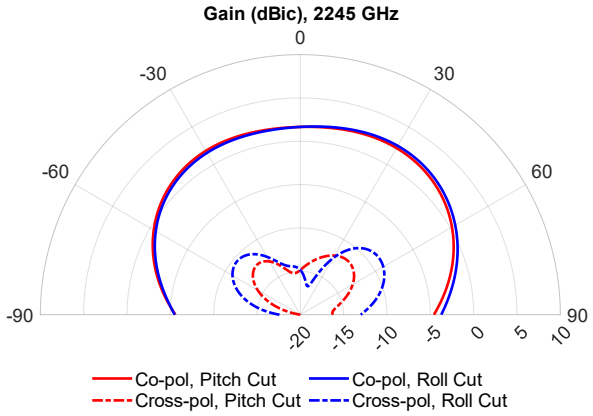
Random Vibration Test Levels
(GSFC-STD-7000)

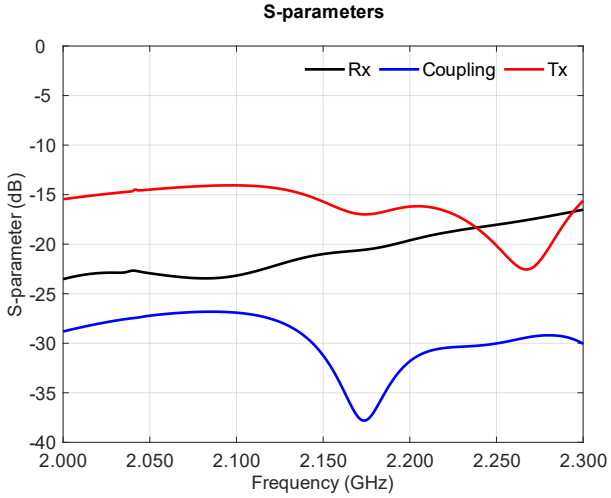



Boresight Gain
Tx
Rx
Gain (dBic)
Frequency (GHz)
0
1
2
3
4
5
6
7
8
2.000
2.050
2.100
2.150
2.200
2.250
2.300

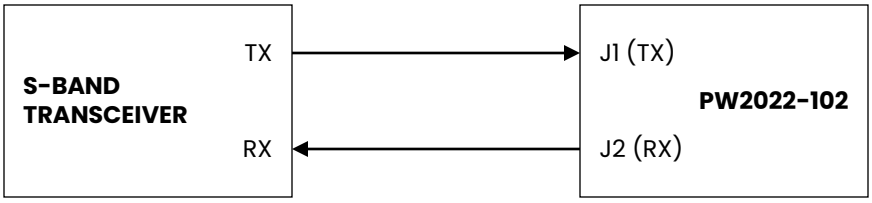

Gain (dBic), 2067.5 GHz
0
30
60
90
-30
-60
-90
-20
-15
-10
-5
0
5
10
Co-pol, Pitch Cut
Co-pol, Roll Cut
Cross-pol, Pitch Cut
Cross-pol, Roll Cut


Boresight Axial Ratio
Tx
Rx
Axial Ratio (dB)
Frequency (GHz)
0
1
2
3
4
5
6
7
8
9
10
2.000
2.050
2.100
2.150
2.200
2.250
2.300

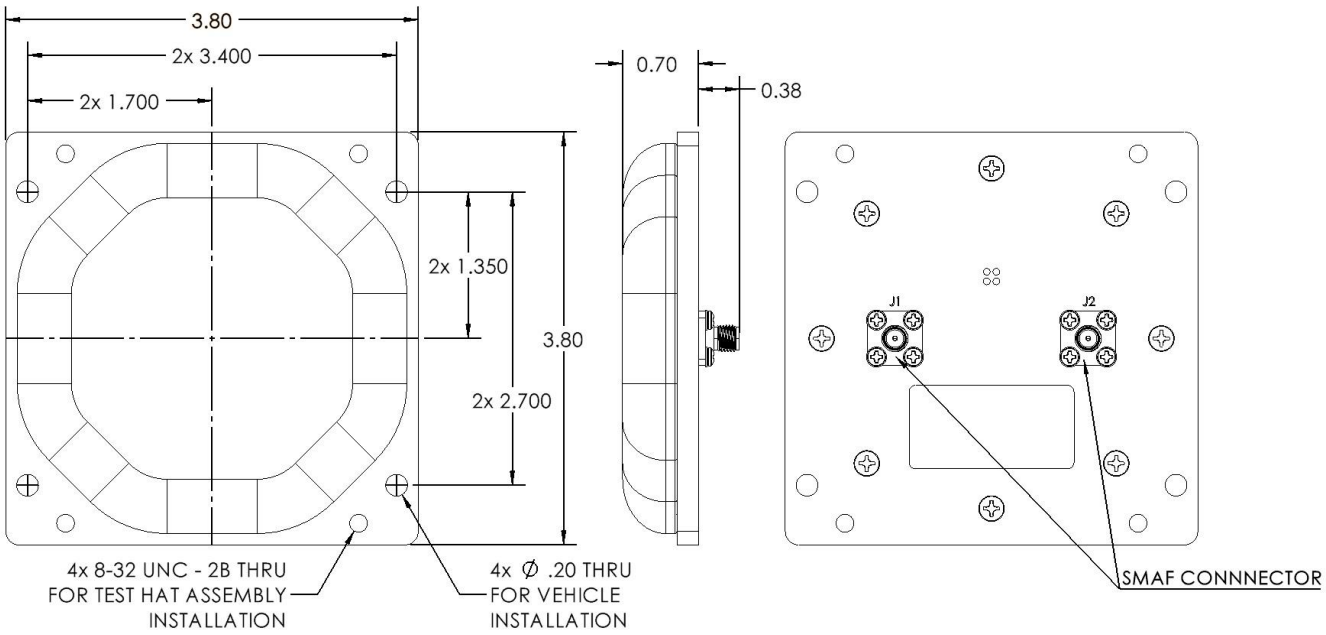

Gain (dBic), 2245 GHz
0
30
60
90
-30
-60
-90
-20
-15
-10
-5
0
5
10
Co-pol, Pitch Cut
Co-pol, Roll Cut
Cross-pol, Pitch Cut
Cross-pol, Roll Cut


S-parameters
Rx
Coupling
Tx
S-parameter (dB)
Frequency (GHz)
0
-5
-10
-15
-20
-25
-30
-35
-40
2.000
2.050
2.100
2.150
2.200
2.250
2.300

Typical Application Diagram



Mechanical Outline



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

Contact PlaneWave, Inc.

6925 Canby Ave, Ste 110
Reseda, CA 91335

www.planewaveinc.com
sales@planewaveinc.com