

## PW2022-103

## S-Band RHCP Isoflux Antenna

### Features

- ✓ Designed for lunar applications
- ✓ Wide bandwidth for both TX and RX operations
- ✓ Isoflux pattern with optimized low-elevation gain for lunar missions
- ✓ Wide operating temperature range
- ✓ Designed to NASA GEVS (GSFC-STD-7000)
- ✓ TRL 8

### Benefits

- ✓ Commercial off-the-shelf (COTS)
- ✓ Acceptance Tests available
- ✓ Compatible Test Hat available
- ✓ Qualified for space applications
- ✓ True circular polarization with low Axial Ratio over the entire frequency band
- ✓ Consultation services available (link budget, architecture and system design)



### Product Overview

PW2022-103 is a high-performance wideband antenna engineered for TT&C applications in lunar missions. It delivers excellent circular polarization performance across the entire frequency band, with an isoflux radiation pattern optimized for lunar applications where enhanced low-elevation gain is critical.

This 2-in-1 antenna supports a wide bandwidth, enabling simultaneous TX and RX operations through a single port—eliminating the need for separate antennas and additional cabling. It is built to withstand the harsh conditions of the lunar environment over long mission durations, addressing challenges such as Corona, Multipaction, and MMOD.

The S-band TT&C antenna is lightweight, easy to integrate, and optionally available with Test Hats to simplify testing and system integration.

### Related Products

Part Number	Description
PW2022-303	S-Band RHCP Isoflux Test Hat
PW2022-102	S-Band RHCP Dual-Port (TX+RX) Omni Antenna
PW2022-111	S-Band Dual-CP Wideband Omni Antenna
PW8484-100	X-Band RHCP High-Gain Isoflux Antenna

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### Electrical Specifications

Parameter / Condition	Min	Typ	Max	Unit
Operating Frequency	2000		2300	MHz
Polarization		RHCP		
Axial Ratio				
2000–2120 MHz (at 30° Elevation)	1.3	2.3	3.3	dB
2200–2300 MHz (at 20° Elevation)	1	1.5	2.5	dB
VSWR			2:1	
Peak Gain				
2000–2120 MHz (at 30° Elevation)	0	0.5	1	dBic
2200–2300 MHz (at 20° Elevation)	0.7	1.2	1.7	dBic
Pattern Coverage		Isoflux		
Half Power Beam Width				
2000–2120 MHz	190	200	210	deg
2200–2300 MHz	75	80	85	deg
Power Handling	20			W

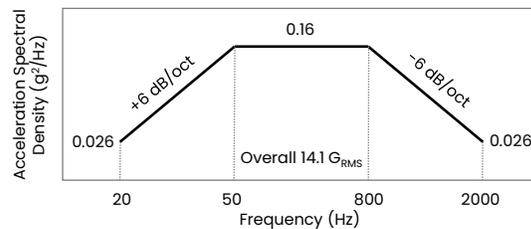
### Mechanical Specifications

Parameter / Condition	Value	Unit	Limits
Connector	SMA Female		
Mass	170	g	Max
Compatible Test Hat	PW2022-303		

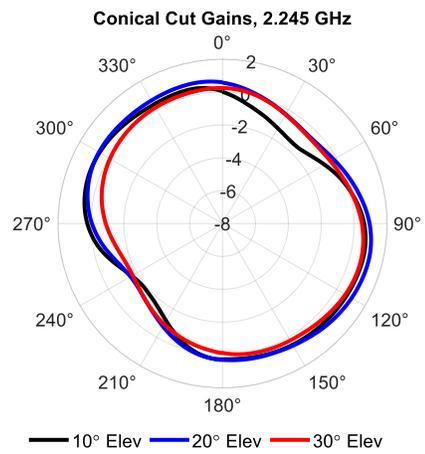
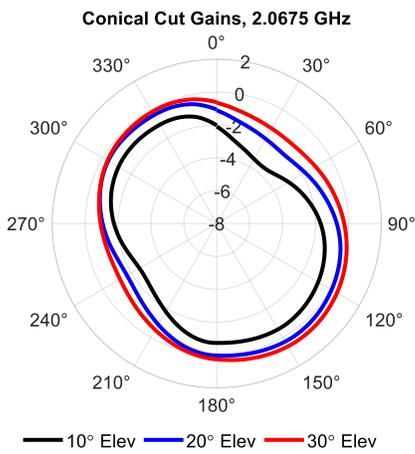
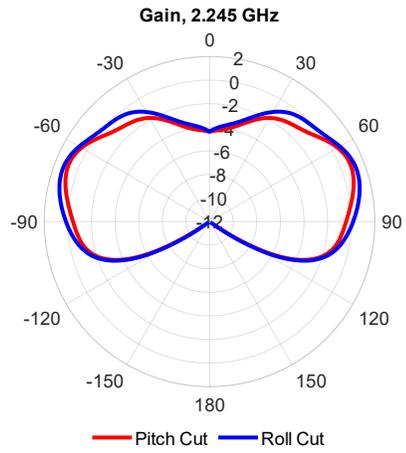
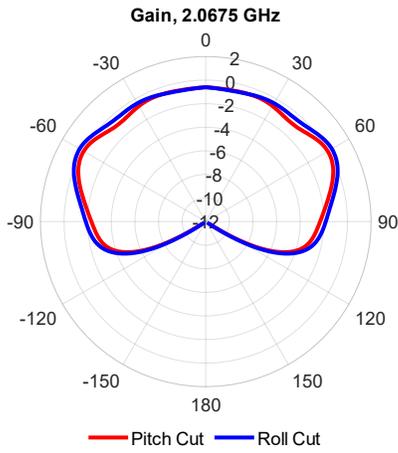
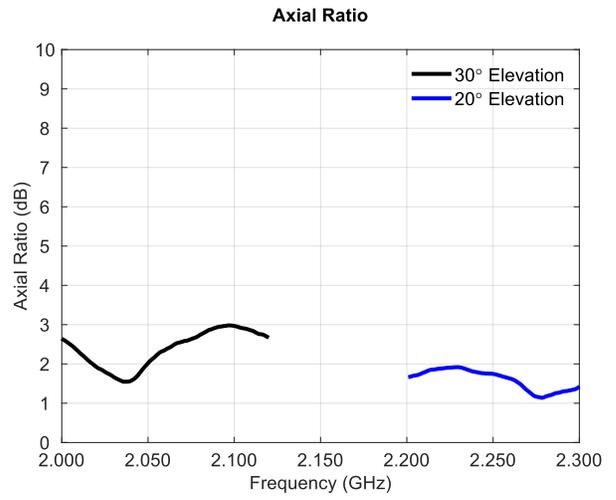
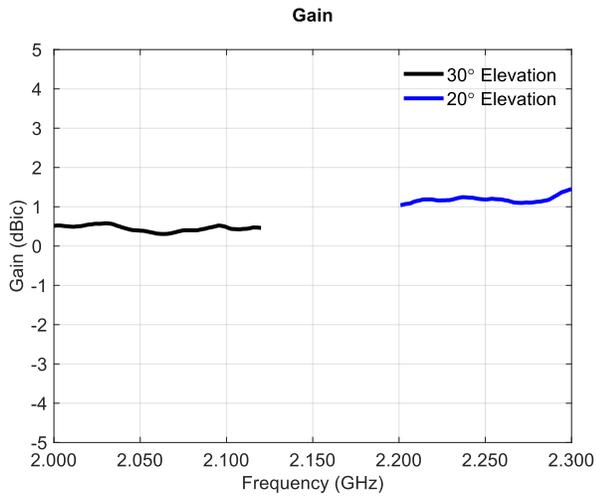
### Environmental Specifications

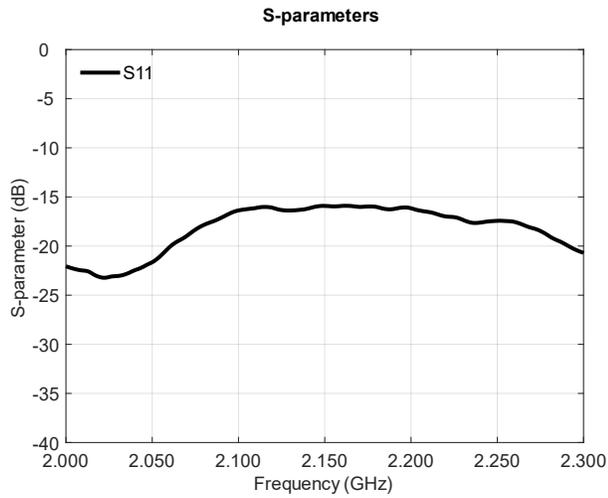
Parameter / Condition	Min	Typ	Max	Unit
Operating Temperature	-70		100	°C
Multipactor Margin (Note 1)	10			dB
Vibration	14.1			G <sub>RMS</sub>

Random Vibration Test Levels  
(GSFC-STD-7000)

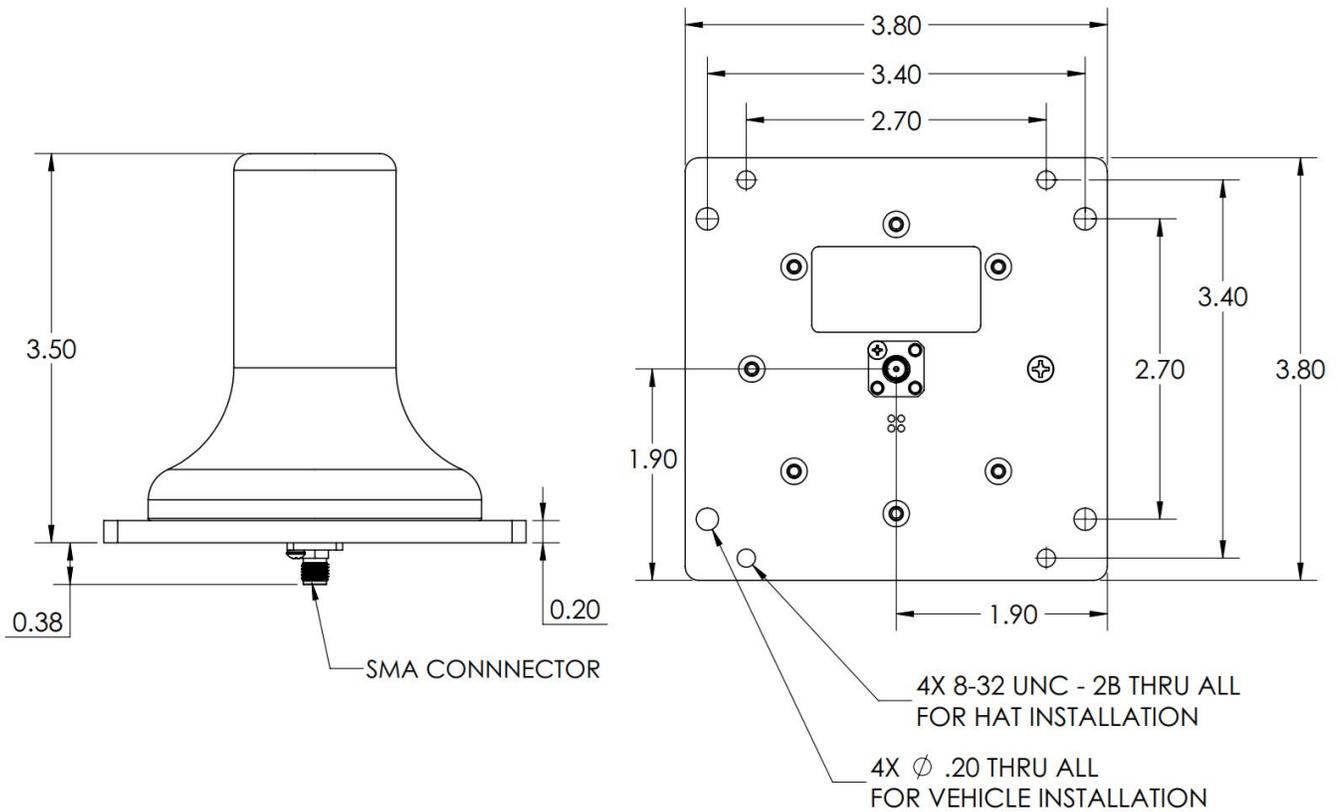


**Note 1:** Verified by simulation for 20W TX power





**Mechanical Outline**



**Dimensions shown in inches.**

Tolerances - Two Place Decimal:  $\pm 0.010$ , Three Place Decimal:  $\pm 0.005$

**Contact PlaneWave, Inc.**

6925 Canby Ave, Ste 110  
Reseda, CA 91335

[www.planewaveinc.com](http://www.planewaveinc.com)  
[sales@planewaveinc.com](mailto:sales@planewaveinc.com)