



# Slender Dual Carrier GNSS Multi-Band Antenna, 5G & 4G LTE with 802.11ax

The Trooper™ II dual-carrier antenna platform supports the high speed requirements of complex RF communication systems used for Intelligent Transportation Systems (ITS), and Critical Communications applications. These antennas feature four 5G elements compatible with the world's leading multi-carrier cellular routers that support 600 MHz to 6 GHz frequencies. The platform also incorporates 802.11ax Wi-Fi MIMO connectivity, with four dual band 2.4/5 GHz Wi-Fi elements supporting DSRC 5.99 GHz applications. In addition, PCTEL's proprietary high-rejection multi-GNSS technology is included for high precision tracking and asset management.

## Features

- Slender 4.6-inch footprint ideal for installations with limited surface space
- Metal 1-inch stud mount with slotted jam nut provides single cable exit for easier installation and/or antenna replacement
- IP67 compliant design provides maximum protection against water or dust ingress
- Built-in ground plane for maximum placement flexibility
- Proprietary high rejection filtering allows wide-band coverage while achieving superior out-of-band rejection for all GNSS frequencies superior out-of-band rejection for all GNSS frequencies
- Meets AAR certification requirements for rail applications



GL9X1AX-TRB

## STANDARD CONFIGURATION

Model	Elements	Cable	Connectors	Mounting Method	Housing Color
GL9X1AX-TRB	LTE (All Ports)	Four 2-ft RG-316	SMA Plug (Male)	1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut	Black
GL9X1AX-TRW	Wi-Fi (All Ports) GNSS	Four 2-ft RG-316 One 2-ft RG-316	SMA Plug (Male) SMA Plug (Male)		White

## ELECTRICAL SPECIFICATIONS - RF ANTENNAS

Elements	F1	F2	SWR**	Gain (dB)*			Efficiency*		Polarization	Nominal Impedance	Maximum Power
				Max	Typical	Range (+/-)	Avg	Range +/-			
LTE Primary (1&3)	617	698	2.9	1.9	1.5	0.5	51%	2%	Linear	50 ohms	25 watts
	698	802	2.0	3.0	2.0	1.2	54%	6%			
	824	894	1.7	3.0	2.6	0.1	58%	1%			
	880	960	1.8	3.1	2.6	0.6	56%	1%			
	1710	2200	1.9	4.5	3.9	0.8	48%	3%			
	2300	2690	1.6	4.4	4.0	0.4	47%	1%			
	3400	4200	2.0	5.0	4.5	0.7	27%	2%			
	5150	5950	2.0	5.2	3.6	1.6	35%	2%			
LTE Secondary (2&4)	617	698	5.1	0.5	-6	1.8	29%	12%	Linear	50 ohms	25 watts
	733	802	2.3	2.0	1.0	1.4	46%	6%			
	824	894	2.9	1.2	1.0	0.8	48%	5%			
	880	960	4.0	1.2	1.0	2.2	37%	6%			
	1805	2200	2.0	5.2	4.1	1.1	41%	4%			
	2300	2690	1.8	5.0	4.8	0.4	40%	4%			
	3400	4200	1.4	5.7	4.7	1.4	29%	4%			
	5150	5950	2.0	6.4	5.0	1.4	43%	4%			
Wi-Fi-V	2400	2500	1.3	2.9	2.6	0.3	46%	1%	Linear	50 ohms	25 watts
	4900	5900	1.7	4.4	3.4	1.0	33%	3%			
Wi-Fi-H	2400	2500	1.3	2.8	2.3	0.5	48%	1%	Linear	50 ohms	25 watts
	4900	5900	1.9	3.2	1.9	1.3	31%	6%			

\* Gain and efficiency measured with 2-ft RG-316 cables and no ground plane. A 2-ft ground plane would increase average gain values by approximately 0.5 dB.

\*\* Typical SWR measured with 2-ft RG-316 cables and no ground plane.

## Slender Dual Carrier GNSS Multi-Band Antenna, 5G & 4G LTE with 802.11ax



### ELECTRICAL SPECIFICATIONS - RF ANTENNAS, continued

#### Minimum Isolation (dB)\*\*\*

Elements	LTE Primary (1&3)		LTE Secondary (2&4)		Wi-Fi	
LTE Primary (1&3)	600-960 MHz	15.0	600-960 MHz	13.0	617-960 MHz	25.0
	1.71-2.7 GHz	20.0	1.71-2.7 GHz	18.0	1.71-2.7 GHz	20.0
	3.4-4.2 GHz	40.0	3.4-4.2 GHz	25.0	3.3-5.9 GHz	25.0
	5.15-5.95 GHz	45.0	5.15-5.95 GHz	35.0		
LTE Secondary (2&4)			600-960 MHz	15.0	617-960 MHz	25.0
			1.71-2.7 GHz	20.0	1.71-2.7 GHz	17.0
			3.4-4.2 GHz	20.0	3.3-5.9 GHz	25.0
			5.15-5.95 GHz	35.0		
Wi-Fi					2.4-2.5 GHz	15.0
					4.9-5.9 GHz	30.0

### ELECTRICAL SPECIFICATIONS - GNSS ANTENNA

Frequency Band	Amplifier Gain	Output VSWR	DC Current	DC Voltage	Noise Figure:	Out-of-Band Rejection:
1565-1608 MHz	@ 3.0 VDC: 26 dB (typical)	2.0:1 (maximum)	25 mA (typical)	2.8-6.0 V (operating) ≤ 12.0 V (survivability)	< 2.0 dB (typical)	f <sub>0</sub> = 1586 MHz f <sub>0</sub> ± 50 MHz: ≥ 60 dBc f <sub>0</sub> ± 60 MHz: ≥ 70 dBc

### ELECTRICAL SPECIFICATIONS - GNSS ANTENNA

Frequency Band	Nominal Gain	Polarization	Nominal Impedance
1565-1608 MHz	3 dBic @ 90° -2 dBic @ 20°	Right hand circular	50 ohms

### MECHANICAL SPECIFICATIONS AND ENVIRONMENTAL SPECIFICATIONS (ALL MODELS)

Dimensions (L x W x H)	Weight	Housing Material	Temperature Range	Gasket Design & Construction
10.5 x 4.6 x 3.5 in (267 x 117 x 90 mm)	2 lbs (.91 kg)	UV-Stable Rugged Thermoplastics	-40°C to +85°C	Contour matching, conformable, thermoplastic-elastomer gasket designed to seal between radome and baseplate. Gasket flexes and conforms to contoured surfaces. Baseplate has a 3M™ VHB mounting pad for anti-rotation.

\*\*\*Measured with 2-ft RG-316 cables and no ground plane