

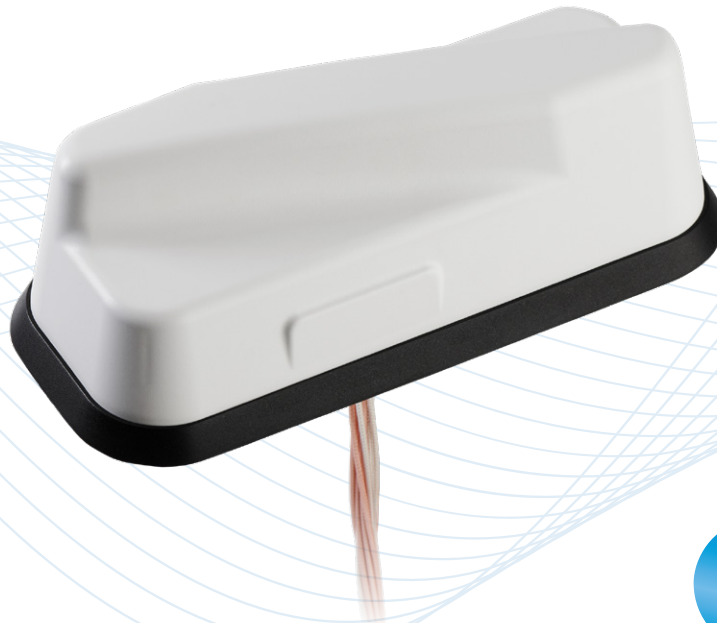
DATASHEET

COMBINATION ANTENNAS

Trooper™ II Slender Dual Carrier GNSS Multiband Antenna, 5G Cellular with 802.11ax

Combination Antennas - GNSS, 5G Cellular and Wi-Fi

GL9X1AX-TRB, GL9X1AX-TRW, GL9X1AX-TRB-KIT, GL9X1AX-TRW-KIT



Description

Dual carrier multiband 5G cellular and 802.11ax antennas with high rejection GPS/GLONASS, and slender footprint for high-speed Intelligent Transportation Systems and Industrial IoT applications.

Technologies

- 5G Cellular
- Wi-Fi
- GPS L1 / GLONASS

Features

- Four 5G FR1 elements
- High rejection GNSS for asset tracking
- Slender footprint
- Easy installation and/or replacement
- Weather proof, IP67 housing
- Built-in ground plane for installation flexibility
- Meets AAR certification requirements



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Combination Antennas - GNSS, 5G Cellular and Wi-Fi

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

¹ When installed according to PCTEL's installation instructions.

Certifications



Trooper™ II Slender Dual Carrier GNSS Multiband Antenna, 5G Cellular with 802.11ax Combination Antennas - GNSS, 5G Cellular and Wi-Fi

Standard Configurations

Model	Elements	Cable	Connector	Mount	Housing Color
GL9X1AX-TRB	LTE (All ports) Wi-Fi (All Ports) GNSS (1)	Four 2-ft RG-316 Four 2-ft RG-316 One 2-ft RG-316	SMA Plug Male (LTE) SMA Plug Male (Wi-Fi) SMA Plug Male (GNSS)	1-inch (25.4 mm) hole, 3/4-inch long (19.05 mm) zinc stud mount with jam nut	Black
GL9X1AX-TRW	LTE (All ports) Wi-Fi (All Ports) GNSS (1)	Four 2-ft RG-316 Four 2-ft RG-316 One 2-ft RG-316	SMA Plug Male (LTE) SMA Plug Male (Wi-Fi) SMA Plug Male (GNSS)		White
GL9X1AX-TRB-KIT	LTE (All ports) Wi-Fi (All Ports) GNSS (1)	Four 2-ft RG-316 kitted with 15-ft PFP-240 jumpers (total 17-feet coax) Four 2-ft RG-316 kitted with 15-ft PFP-240 jumpers (total 17-feet coax) One 2-ft RG-316 kitted with 15-ft PFP-240 jumper (total 17-feet coax)	SMA Plug Male (LTE) SMA Plug Male (Wi-Fi) SMA Plug Male (GNSS)		Black
GL9X1AX-TRW-KIT	LTE (All ports) Wi-Fi (All Ports) GNSS (1)	Four 2-ft RG-316 kitted with 15-ft PFP-240 jumpers (total 17-feet coax) Four 2-ft RG-316 kitted with 15-ft PFP-240 jumpers (total 17-feet coax) One 2-ft RG-316 kitted with 15-ft PFP-240 jumper (total 17-feet coax)	SMA Plug Male (LTE) SMA Plug Male (Wi-Fi) SMA Plug Male (GNSS)		White

Electrical Specifications – RF Antennas

F1 (MHz)	F2 (MHz)	SWR ²	Max	Gain (dB) ³		Efficiency ³		Polarization	Nominal Impedance	Maximum Power
				Typical	Range (±)	Avg	Range (±)			
LTE Primary Ports 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 Ports 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-U										
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%			

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

³ 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.

SPECIFICATIONS



Trooper™ II Slender Dual Carrier GNSS Multiband Antenna, 5G Cellular with 802.11ax Combination Antennas - GNSS, 5G Cellular and Wi-Fi

Electrical Specifications – RF Antennas (continued)

Minimum Isolation (dB)⁴

	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 Range	1565 - 1608 MHz
Amplifier Gain	@ 3.0 VDC: 26 dB (typical)
Output VSWR	2.0:1 (maximum)
DC Current	25 mA (typical)
DC Voltage	2.8 - 6.0 V (operating) ≤ 12.0 V (survivability)
Noise Figure	< 2.0 dB (typical)
Out-of-Band Rejection	f0 = 1586 MHz f0 ± 50 MHz: ≥ 60 dBc f0 ± 60 MHz: ≥ 70 dBc
Nominal Gain	3 dBic @ 90° -2 dBic @ 20°
Polarization	Right hand circular
Nominal Impedance	50 ohms

Mechanical Specifications

Physical

Dimensions (L x W x H)	10.5 L x 4.6 W x 3.5 H in (267 x 117 x 90 mm)
Weight	2 lbs (.91 kg)
Radome Construction	UV-Stable Rugged Thermoplastics
Operating / Storage Temperature	-40°C to +85°C
Gasket Design & Construction	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.

⁴ Measured with 2-ft RG-316 cables and no ground plane