

GNSS L1 L2 L5 Multi-Band Antenna, Dual-Port 4G LTE and 802.11ac MIMO

-PRELIMINARY-



PCTEL's GL125-DLTEMIMO multi-band antenna meets the stringent requirements of complex RF communication systems in rail transportation applications.

This antenna features two diversity 4G LTE elements that facilitate the high-speed data transmissions needed in dense RF environments used for Positive Train Control (PTC) networks. The platform also incorporates dual band 802.11ac Wi-Fi MIMO connectivity with two Wi-Fi elements. PCTEL's proprietary high-rejection, multi-constellation GNSS L1 L2 L5 technology is also included for high precision location tracking.

Features

- Full Multi-GNSS compatibility, covering global GNSS Systems: 1150-1290 MHz (GPS L2/L5; GALILEO E5A/E5B/E6; GLONASS L2/L3; BEIDOU B2/B3); 1500-1615 MHz (GPS L1; GALILEO E1; GLONASS L1; BEIDOU B1/B1-2)
- AAR Compliant
- 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 under severe environmental conditions (when installed on sealed surface)
- Proprietary high rejection filtering allows wide-band coverage while achieving superior out-of-band rejection for all GNSS frequencies



STANDARD CONFIGURATION

Model	Elements	Cable	Connectors	Mounting Method
GL125-DLTEMIMO	4G LTE (All Ports) Wi-Fi (All Ports) GNSS	Two 2-ft RG-316 Two 2-ft RG-316 One 2-ft RG-316	TNC Male TNC Male TNC Male	1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut (all models)

ELECTRICAL SPECIFICATIONS - RF ANTENNAS

Elements	Frequency Range (MHz)	Max SWR*	Gain (dB)*		Efficiency*	Polarization	Nominal Impedance	Maximum Power
			Max	(Typ. +/- Range)	(Avg. +/- Range)			
LTE	600-698	< 3.5:1	2.5	1.5 +/-1.1	55% +/-7%	Linear, Vertical	50 ohms	25 watts
	698-802	< 3.0:1	2.5	2.0 +/-0.5	55% +/-10%			
	824-960	< 2.5:1	1.8	1.4 +/-0.9	55% +/-10%			
	1710-2200	< 2.5:1	5.5	3.5 +/-2.0	65% +/-11%			
	2300-2690	< 2.0:1	6.2	5.1 +/-0.6	68% +/-9%			
	3400-3800	< 2.0:1	4.1	3.1 +/-1.0	55% +/-15%			
Wi-Fi	2400-2500	< 2.0:1	5.0	2.7 +/-2.2	65% +/-5%			
	4900-5925	< 3.0:1	5.5	3.2 +/-2.3	45% +/-25%			

*Measured with 2-ft cables without a ground plane

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ELECTRICAL SPECIFICATIONS - RF ANTENNAS, continued

Minimum Isolation (dB)

Elements	LTE Primary (1&3)		Wi-Fi	
LTE	600-960 MHz	11.5	600-960 MHz	20.0
	1.71-2.7 GHz	23	1.71-2.7 GHz	17.0
	3.3-3.8 GHz	24	3.3-5.9 GHz	35.0
Wi-Fi			2.4-2.5 GHz	25.0
			4.9-5.9 GHz	32.0

ELECTRICAL SPECIFICATIONS - GNSS ANTENNA (ALL GNSS BANDS)

Frequency Range (MHz)	LNA Gain	Nominal Impedance	Polarization	ESD	VSWR	Noise Figure	DC Voltage	DC Current	Out-of-Band Rejection:
1150-1290 MHz 1500-1615 MHz	28dB +/-3 dB	50 ohms	Right Hand Circular	>15kV	<2.0:1 (typical)	3.0 dB (typical)	2.5-12.0 VDC	37mA (typical) <50mA (max.)	<1050MHz >80 dB <1450MHz >70 dB <1125MHz >30 dB >1690MHz >30 dB >1350MHz >70 dB >1730MHz >80 dB

ELECTRICAL SPECIFICATIONS - GNSS ANTENNA

Band	Gain @ 10° Elevation	Gain @ 90° Elevation	Axial Ratio @ 90° Elevation
GPS L1	-5 dBic	2 dBic	≤ 2.5 dB
GPS L2	-6 dBic	3 dBic	
GPS L5	-7 dBic	1 dBic	
GLONASS L1	-7 dBic	0 dBic	
GLONASS L2	-8 dBic	0 dBic	
GLONASS L3	-4 dBic	3 dBic	
GALILEO E1	-5 dBic	2 dBic	
GALILEO E5	-4 dBic	3 dBic	
GALILEO E6	-4 dBic	3 dBic	
BEIDOU B1	-4 dBic	3 dBic	
BEIDOU B1-2	-4 dBic	3 dBic	
BEIDOU B2	-5 dBic	2 dBic	
BEIDOU B3	-8 dBic	0 dBic	

MECHANICAL SPECIFICATIONS AND ENVIRONMENTAL SPECIFICATIONS (ALL MODELS)

Dimensions	Housing Material	Temperature Range
5.1 x 3.6 in (130 x 92 mm)	Black, UV-Stable Rugged Thermoplastics	-40°C to +85°C