

## GNSS Multi-Band Antenna, Multi-Port 4G LTE and 802.11ac MIMO Connectivity



The Coach™ II dual-carrier antenna platform is designed to meet the requirements of increasingly complex RF communication systems in transportation and IIoT applications. These antennas feature four 4G LTE elements compatible with the world's leading multi-network cellular routers that support carrier aggregation for high-speed data transmissions needed in dense RF environments used in Intelligent Transportation Systems (ITS). The platform also incorporates dual band 802.11ac Wi-Fi MIMO connectivity with four Wi-Fi element options. In addition, the antennas include PCTEL's proprietary high-rejection multi-GNSS technology for high precision tracking and asset management. Black or white low-profile housing options are available.



Coach™ II

### Features

- 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                                                           |
|------------|--------------------|-----------------------------------------------------|----------------------------------|---------------------------------------------------------------------------|
| GL9X1AX-SF | 4G LTE (All Ports) | Four-17 feet (2-ft RG-316/15-ft Pro-Flex™ Plus 195) | SMA Plug (Male)                  | 1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut (all models) |
|            | Wi-Fi (All Ports)  | Four-17 feet (2-ft RG-316/15-ft Pro-Flex™ Plus 195) | Reverse Polarity SMA Plug (Male) |                                                                           |
|            | GNSS               | One-17 feet RG-316                                  | SMA Plug (Male)                  |                                                                           |
| GL7X1AX-SF | 4G LTE (All Ports) | Four-17 feet (2-ft RG-316/15-ft Pro-Flex™ Plus 195) | SMA Plug (Male)                  | 1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut (all models) |
|            | Wi-Fi (All Ports)  | Two-17 feet (2-ft RG-316/15-ft Pro-Flex Plus 195)   | Reverse Polarity SMA Plug (Male) |                                                                           |
|            | GNSS               | One-17 feet RG-316                                  | SMA Plug (Male)                  |                                                                           |

### ELECTRICAL SPECIFICATIONS - RF ANTENNAS

| Elements            | Frequency Range (MHz) | SWR** | Gain (dB)* |                  | Efficiency*      | Polarization     | Nominal Impedance | Maximum Power |
|---------------------|-----------------------|-------|------------|------------------|------------------|------------------|-------------------|---------------|
|                     |                       |       | Max        | (Typ. +/- Range) | (Avg. +/- Range) |                  |                   |               |
| LTE Primary (1&3)   | 600-698               | 2.5   | 2.6        | 0.6 +/-2.0       | 35% +/-18%       | Linear, Vertical | 50 ohms           | 25 watts      |
|                     | 698-802               | 2.0   | 4.3        | 2.5 +/-1.8       | 54% +/-12%       |                  |                   |               |
|                     | 824-960               | 1.9   | 5.4        | 3.1 +/-2.2       | 60% +/-11%       |                  |                   |               |
|                     | 1710-2200             | 1.6   | 7.6        | 5.7 +/-2.0       | 70% +/-11%       |                  |                   |               |
|                     | 2300-2690             | 1.4   | 7.1        | 5.9 +/-1.1       | 74% +/-9%        |                  |                   |               |
|                     | 3400-3800             | 1.2   | 6.9        | 6.3 +/-0.6       | 77% +/-2%        |                  |                   |               |
| LTE Secondary (2&4) | 600-698               | 3.4   | -0.5       | -2.3 +/-1.8      | 17% +/-5%        |                  |                   |               |
|                     | 733-802               | 2.2   | 2.3        | 0.8 +/-1.5       | 32% +/-9%        |                  |                   |               |
|                     | 824-960               | 2.9   | 3.0        | 1.1 +/-1.9       | 29% +/-5%        |                  |                   |               |
|                     | 1805-2200             | 1.6   | 6.4        | 5.2 +/-1.2       | 68% +/-8%        |                  |                   |               |
|                     | 2300-2690             | 2.0   | 5.7        | 5.1 +/-0.7       | 57% +/-16%       |                  |                   |               |
|                     | 3400-3800             | 1.7   | 8.2        | 6.5 +/-1.7       | 63% +/-11%       |                  |                   |               |
| Wi-Fi               | 2400-2500             | 1.3   | 9.1        | 7.2 +/-1.9       | 74% +/-4%        |                  |                   |               |
|                     | 4900-5900             | 1.5   | 11.4       | 9.1 +/-2.3       | 59% +/-14%       |                  |                   |               |

\*Measured with 7-in cables and a 2-Ft ground plane \*\*Measured with 17-ft cables and no ground plane

## GNSS Multi-Band Antenna, Multi-Port 4G LTE and 802.11ac MIMO Connectivity



### ELECTRICAL SPECIFICATIONS - RF ANTENNAS, continued

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

| Elements            | LTE Primary (1&3) |    | LTE Secondary (2&4) |      | Wi-Fi        |      |
|---------------------|-------------------|----|---------------------|------|--------------|------|
| LTE Primary (1&3)   | 698-960 MHz       | 15 | 698-960 MHz         | 15.0 | 698-960 MHz  | 20.0 |
|                     | 1.71-2.7 GHz      | 25 | 1.71-2.7 GHz        | 25.0 | 1.71-2.7 GHz | 17.0 |
|                     |                   |    |                     |      | 4.9-5.9 GHz  | 35.0 |
| LTE Secondary (2&4) |                   |    | 698-960 MHz         | 20.0 | 698-960 MHz  | 22.0 |
|                     |                   |    | 1.71-2.7 GHz        | 30.0 | 1.71-2.7 GHz | 16.0 |
|                     |                   |    |                     |      | 4.9-5.9 GHz  | 32.0 |
| Wi-Fi               |                   |    |                     |      | 2.4-2.5 GHz  | 25.0 |
|                     |                   |    |                     |      | 4.9-5.9 GHz  | 32.0 |

### 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)<br>≤ 12.0 V (survivability) | < 2.0 dB (typical) | f <sub>0</sub> = 1586 MHz<br>f <sub>0</sub> ± 50 MHz: ≥ 60 dBc<br>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°<br>-2 dBic @ 20° | Right hand circular | 50 ohms           |

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

| Dimensions                    | Housing Material                                       | Temperature Range | Gasket Design & Construction                                                                                                                                                                                           |
|-------------------------------|--------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.1 x 3.6 in<br>(130 x 92 mm) | Black or White,**** UV-Stable<br>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 17-ft cables and no ground plane \*\*\*\* For black radome, order P/N GL9X1AX-SF; for white radome, order P/N GL9X1AX-SFW.