

CMTA Platform

Multiband Antenna – GNSS + Cellular + Wi-Fi, Through Hole Mounted for Up to 10 Configurations

10x1 | GNSS L1/2/5



Description

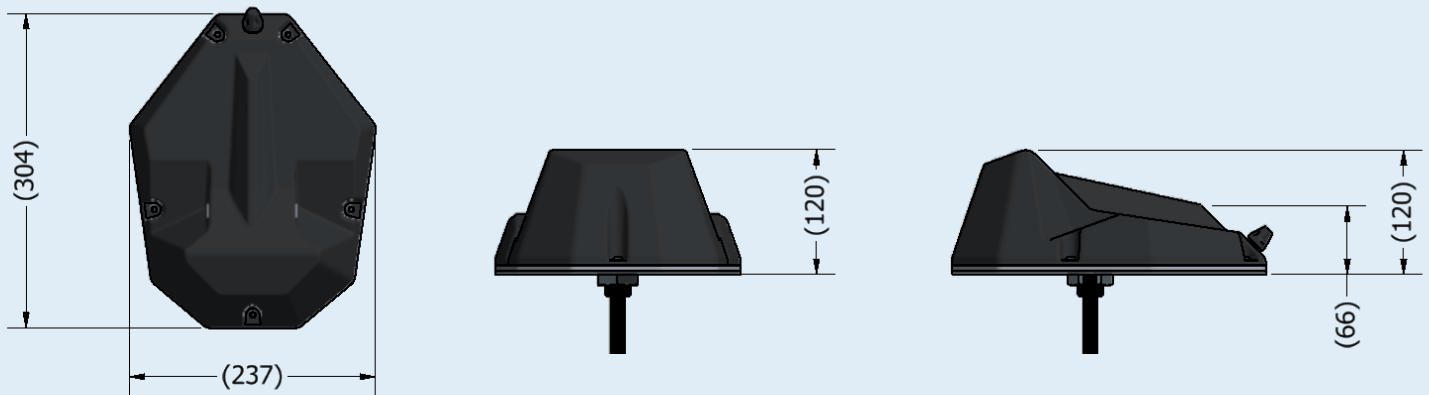
Multi-spectrum, HLCS compliant combination train-top antenna for Intelligent Transportation Systems such as off-highway rescue vehicles.

Connectivity

- 5G FR1 / LTE Cellular
- 2.4/5 GHz 802.11ax,c Wi-Fi
- GNSS
 - (GPS L2/L5)
 - Galileo E5A/E5B/E6
 - QZSS L6
- ATCS 900MHz
- Glonass L2/L3
- Beidou B2/B3

Features

- Multi-spectrum coverage of global GNSS systems for full HLCS compliance and support
- Four port 5G FR1 MIMO cellular coverage
- 801.11ax, ac Wi-Fi MIMO functionality
- Optional external ROD 900 MHz antenna for support of Advanced Train Control Systems (ATCS)
- Ultra rugged low profile platform for maximum clearance in train top installations
- AAR compliant for global installations



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The CMTA configurable multiband through hole mounted antenna (CMTA) platform for up to 10x1 antenna functions supports the high speed requirements of complex railway communication systems used in Intelligent Transportation Systems (ITS). Featuring multi-spectrum coverage of global GNSS systems, this antenna provides compliance with Hy-Rail Limits Compliance System (HLCS) standards. Proprietary high-rejection multi-GNSS technology enables high precision tracking and asset management for maximum safety and reliability.

This antenna incorporates four 5G FR1 elements compatible with the world's leading multi-carrier cellular routers that support 600 MHz to 6 GHz frequencies. The platform also includes four 802.11ax Wi-Fi MIMO elements that provide dual band 2.4/5 GHz coverage, for maximum data and video throughput. An additional 900 MHz flexible antenna supports Advanced Train Control Systems (ATCS) equipment that ensure rail system safety for monitoring, analyzing, and reporting railway locomotive and train locations for Positive Train Control systems.

The CMTA platform, a multiband antenna with robust construction complies with AAR railway standard, for maximum safety and durability. Its low profile housing and installation ease makes it the ideal solution for new railway network deployments and upgrades.

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Standard Configurations

| Part Number | Elements | Configurations | Cable | Connector | Mounting Method |
|-------------|--|--|----------------------------------|---------------------|---|
| CMTA-910001 | LTE (Primary) x2 LTE (Secondary) x2 Wi-Fi x4 GNSS x1 External Port (ATCS 900) x1 | 10 ports (2 LTE Primary + 2 LTE Secondary + 4 Wi-Fi + 1 GNSS + 1 External Port (Optional)) | 1.5 FT SMA Connector (all ports) | SMA (m) (all ports) | 1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut (all models) & mounting screws |

Electrical Specifications – RF Antennas

| Ports | Frequency Range (MHz) | Max. SWR* | Gain (dB)* | | Efficiency* (Avg. ± Range) | Polarization | Nominal Impedance | Max. Power |
|---------------------------|-----------------------|---------------|------------|-----------------------|----------------------------|------------------|-------------------|------------|
| | | | Max. | (Typ. ± Range) | | | | |
| LTE (Primary / Secondary) | 600-698 | < 3.0 / < 4.0 | 2.5 / 1.5 | 2.0 ± 0.5 / 1.0 ± 0.5 | 50% ± 7% / 30% ± 7% | Linear, Vertical | 50 ohms | 35 watts |
| | 698-802 | < 2.5 / < 3.5 | 3.0 / 3.0 | 2.5 ± 0.5 / 2.0 ± 0.5 | 65% ± 7% / 50% ± 7% | | | |
| | 824-960 | < 2.0 / < 4.0 | 3.5 / 3.0 | 3.0 ± 0.5 / 2.0 ± 0.5 | 50% ± 7% / 40% ± 7% | | | |
| | 1710-2200 | < 2.0 / < 2.5 | 4.0 / 4.0 | 3.5 ± 0.5 / 3.0 ± 0.5 | 65% ± 7% / 50% ± 7% | | | |
| | 2300-2690 | | 5.5 / 5.0 | 4.5 ± 1.0 / 4.0 ± 1.0 | 60% ± 7% / 50% ± 7% | | | |
| | 3300-4200 | | 6.5 / 5.5 | 5.5 ± 1.0 / 5.0 ± 1.0 | 50% ± 7% / 55% ± 7% | | | |
| | 4900-6000 | | 5.5 / 5.5 | 4.5 ± 1.0 / 4.5 ± 1.0 | 45% ± 7% / 45% ± 7% | | | |
| Wi-Fi | 2400-2500 | | 5.5 | 3.0 ± 2.0 | 50% ± 5% | | | 5 watts |
| | 4900-5925 | | 7 | 4.0 ± 2.0 | 48% ± 5% | | | |
| Optional ATCS 900 | 890-942 | | 4 | 2.5 ± 0.5 | 65% ± 5% | | | 35 watts |

Minimum Isolation (dB)

| Elements | Frequency Range (MHz) | LTE Primary (1&3) | LTE Secondary (2&4) | ATCS 900 | Wi-Fi |
|---------------------|-----------------------|-------------------|---------------------|----------|-------|
| LTE Primary (1&3) | 600-960 MHz | 9 | 13 | 23 | 31 |
| | 1.71-2.7 GHz | 19 | 22 | 38 | 20 |
| | 3.3-4.2 GHz | 30 | 28 | 55 | 26 |
| | 4.9-6 GHz | 27 | 33 | 47 | 23 |
| LTE Secondary (2&4) | 600-960 MHz | 13 | 11 | 25 | 30 |
| | 1.71-2.7 GHz | 22 | 30 | 34 | 16 |
| | 3.3-4.2 GHz | 28 | 28 | 56 | 22 |
| | 4.9-6 GHz | 33 | 34 | 50 | 21 |
| Wi-Fi | 2.4-2.5 GHz | 18 | 18 | 50 | 25 |
| | 4.9-6 GHz | 23 | 21 | 47 | 30 |

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Electrical Specifications – GNSS LNA (Active)

| Frequency Range (MHz) | LNA Gain | Nominal Impedance | Polarization | ESD | VSWR | Noise Figure | DC Voltage | DC Current | Out-of-Band Rejection |
|-----------------------|------------|-------------------|---------------------|-------|--------------------|------------------|--------------|----------------|--|
| 1164-1278 MHz | 40dB ±3 dB | 50 ohms | Right Hand Circular | >15kV | <2.7 (L2-L5 bands) | 3.0 dB (typical) | 2.5-12.0 VDC | 37mA (typical) | <1050MHz > 70 dB >1350MHz > 60 dB |
| 1559-1610 MHz | | | | | <2.5 (L1 band) | | | <50mA (max.) | <1450MHz > 70 dB >1690MHz > 30 dB >1730MHz > 70 dB |

Electrical Specifications – GNSS Antenna (Passive)

| 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 | |
| QZSS L6 | -4 dBic | 3 dBic | |

Mechanical and Environmental

Specifications

| | |
|-----------------------|--|
| Dimensions | 304mm L X 237mm W X 120mm H |
| Weight | 2.5kg without cable jumper |
| Housing Material | High-performance outdoor polymer alloy |
| Operating Temperature | 40-80°C |
| Storage Temperature | MIL-STD-810 test method 501.5 |
| Ingress Protection | IP67 |
| Humidity | MIL-STD-810 test method 507.5 |

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