

# CMTA Platform

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

10x1 | GNSS L1/2/5



## Description

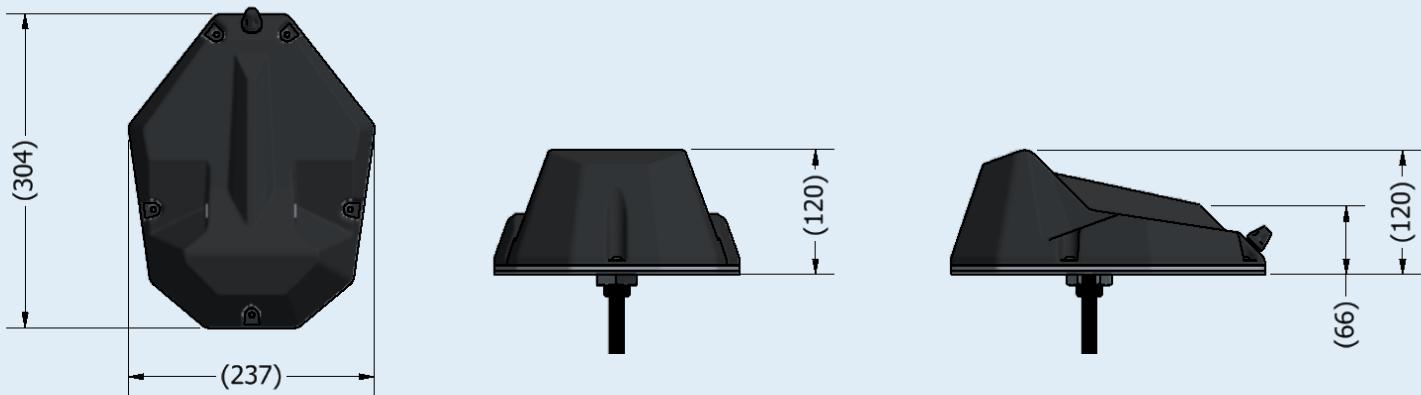
Multi-spectrum, HLCS compliant combination train-top antenna for Intelligent Transportation Systems such as off-highway rescue vehicles.

## 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 10x1antenna 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) <50mA (max.)	<1050MHz > 70 dB >1350MHz > 60 dB
1559-1610 MHz					<2.5 (L1 band)				<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	
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	≤ 2.5 dB
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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