TAOGLAS®




# High-Performance Multi-Function Connectivity for Modern Rail Systems

## Raptor X - Rail Antenna Series

**The Taoglas MA8020 represents a new generation of railway-certified multi-function antennas, built on the proven Raptor X platform. Re-engineered specifically for rail applications, it delivers reliable, high-speed connectivity for train-to-ground communication, passenger services, and real-time operational systems.**

Optimised for demanding rail environments, the MA8020 is engineered to meet stringent EN50155 railway standards for mechanical and RF performance and adheres to EN45545 fire safety requirements, ensuring long-term reliability, safety, and compliance in rolling stock installations. With integrated multi-band GNSS, cellular, and Wi-Fi® capabilities in a compact, low-profile housing, the MA8020 supports the growing need for connected, data-driven railway systems.

## Features

### Integrated Multi-Network Platform
- 1x GNSS (L1/L5) for precise positioning and timing
- Up to 4x 5G/4G (600–6000 MHz) for global connectivity
- Up to 5x Dual-band Wi-Fi (2.4/5.8 GHz) for onboard services
- Customisable cable lengths and connector configurations

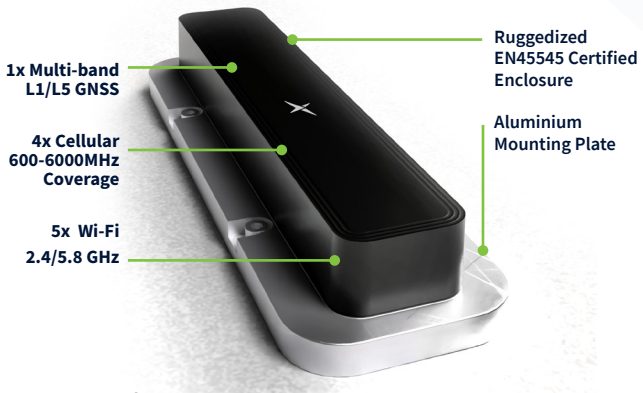
### Railway-Certified Design
- Designed for compliance with **EN50155** standards
- Compliant with **EN45545** flammability standards

### Compact Low-Profile Form Factor
- Slim, low profile housing supports installation in restricted clearance environments
- Reduces aerodynamic drag and supports modern train design

### Rugged Environmental Protection
- IP69K waterproof rating for harsh outdoor use and wash-down conditions
- IK10 impact-rated enclosure for maximum durability

### High-Efficiency MIMO Performance
- Multi-element design supports enhanced signal quality and throughput
- Optimised for high data-rate applications such as passenger Wi-Fi and telemetry

Ireland & USA ISO 9001:2015 Certified | Taiwan ISO 9001:2015 Certified | IATF16949 | CE UKCA | SGS




### Key Specifications:

| | |
|---|---|
| **Technologies:** | **1x GNSS:** L1/L5 Bands<br>**4x Cellular:** 5G/4G - 600MHz to 6GHz<br>**4x Wi-Fi:** 2.4GHz / 5.8 GHz |
| **Cables:** | RG-316D |
| **Mounting Connector:** | N-Type(F) |
| **Dimensions:** | L: 350 mm x W: 70 mm x H: 39 mm |
| **Dimensions with plate:** | L: 380 mm x W: 118 mm x H: 59 mm |
| **Weight:** | 0.94 Kg +/- 5% |
| **Weigh with plate:** | 1.96 Kg +/- 5% |
| **Temp Range:** | -40c to +85c (Storage & Usage) |
| **Radome Material:** | PC Sabic EXL 1414 (Black) |
| **Plate Material:** | Aluminium |

**Variations:** (Others upon request)

**10-in-1 - 1 GNSS, 4 Cellular, 5 Wi-Fi -** MA8020.10.1G4C5W.0.25M.N9.B

**8-in-1 - 1 GNSS, 4 Cellular, 3 Wi-Fi -** MA8020.8.1G4C3W.0.26M.N9.B

**7-in-1 - 1 GNSS, 2 Cell, 4 Wi-Fi -** MA8020.7.1G4C2W.0.27M.N9.B

**4-in-1 - 4 Cellular -** MA8020.4.4C.0.28M.N9.B

**Mounting Plate -** Add .am to the part number if the mounting plate is needed.



# One Antenna. Total Rail Connectivity

*Built for Rail. Proven for Safety. Engineered for Reliability.*



## Key Benefits

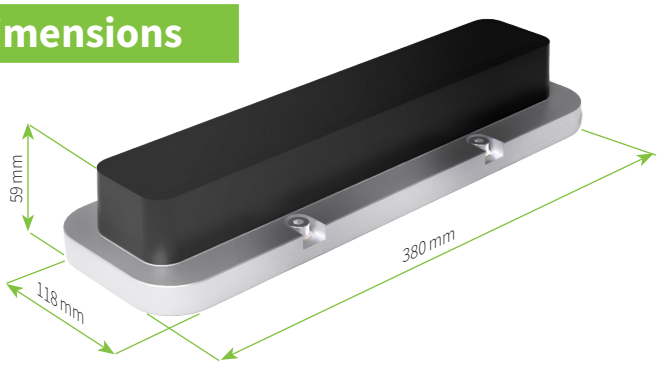
**Reliable Connectivity Across the Network**
Supports continuous, high-speed data transmission for signalling, monitoring, and passenger services

**Reduced Installation Complexity**
Multi-function integration for fewer antennas with a single mounting point and the durable, maintenance-resistant design minimises downtime and replacement cycles

**Railway-Grade Safety & Compliance**
Designed to meet critical railway standards, reducing risk in certification and deployment

**Future-Proof Platform**
Supports evolving 5G, Wi-Fi, and GNSS requirements for next-generation smart rail systems

## Dimensions




## Compliance

**EN45545 Compliance:**

**Material-Level Compliance**
Critical antenna components independently tested to EN45545-2:2020+A1:2023 and covers multiple requirement sets:

- R22 / R23 → External housing (rail vehicle interiors & exteriors)
- R24 → Electronic assemblies (PCB materials)

**Fire Performance Summary**
External radome (top housing):

- Compliant to R22 & R23 up to HL2 hazard level

Base mechanical structure:

- Compliant to R23 up to HL2
- Compliant to R22 up to HL1

**EN50155 Compliance:**

**Temperature & Environmental Testing:**

- Low temperature operation: -40°C startup and storage
- High temperature performance: up to +85°C
- Humidity resistance: cyclic damp heat testing

**Mechanical Robustness**

- Shock & vibration testing (EN50155 conditions)
- IP69K Waterproof and IK10 Impact Resistance

**Electrical & Power Integrity:**

- Insulation testing to EN50155 (Clause 13.4.7.2)
- DC power supply variation testing

**EMC Performance Tested Against:**

- EN50155:2021
- EN50121-3-2 (Rail EMC standard)
- All EMC tests passed with no performance degradation