HTZ COMMUNICATIONS

Providing secure & reliable wireless connectivity in Railways

	22 dBuV/m -121 dBm
	31 dBuV/m -112 dBm
	40 dBuV/m -103 dBm
	49 dBuV/m -94 dBm
	58 dBuV/m -85 dBm
	67 dBuV/m -76 dBm
	76 dBuV/m -67 dBm
	85 dBuV/m -58 dBm
	94 dBuV/m -49 dBm
	103 dBuV/m -40 dBm
	112 dBuV/m -31 dBm

Mission-Critical Railway Communications

Reliable railway communications are essential for safe, secure, and efficient operations, as well as quality passenger services. Unlike conventional telecom networks, railway environments are uniquely complex —featuring cuttings, bridges, tunnels, and platforms that demand precise, high-resolution planning.

ATDI meets this challenge with fully deterministic propagation models and custom-made, high-quality GIS data. Every pixel is calculated with precision to meet stringent KPIs for redundancy, seamless handover, and traffic capacity.

Our flagship solution, HTZ Communications, supports all technologies from a few kHz up to 1 THz within a single, unified platform. It provides end-to-end radio network lifecycle management—from initial design to optimisation —including site selection, coverage analysis, interference mitigation, cross-border coordination, and automated frequency planning.

HTZ features a powerful built-in GIS engine and supports in-built correlation analysis between predictions and field measurements. This allows users to fine-tune propagation models and significantly enhance planning accuracy.

DMR/TETRA/P25/LTE-R & FRMCS

ACCURATE COVERAGE MODELLING – PREDICT SIGNAL BEHAVIOUR ALONG RAIL CORRIDORS WITH PRECISION

INFRASTRUCTURE IMPACT – ASSESS TUNNELS, BRIDGES, AND URBAN CLUTTER EFFECTS

OPTIMISED SITE PLACEMENT – IDENTIFY BEST LOCATIONS FOR BASE STATIONS

INTERFERENCE MANAGEMENT – ANALYSE RISKS ACROSS GSM-R, FRMCS, DMR, LTE, AND MNOS

THROUGHPUT & QOS – ENSURE HIGH-SPEED, RELIABLE CONNECTIVITY

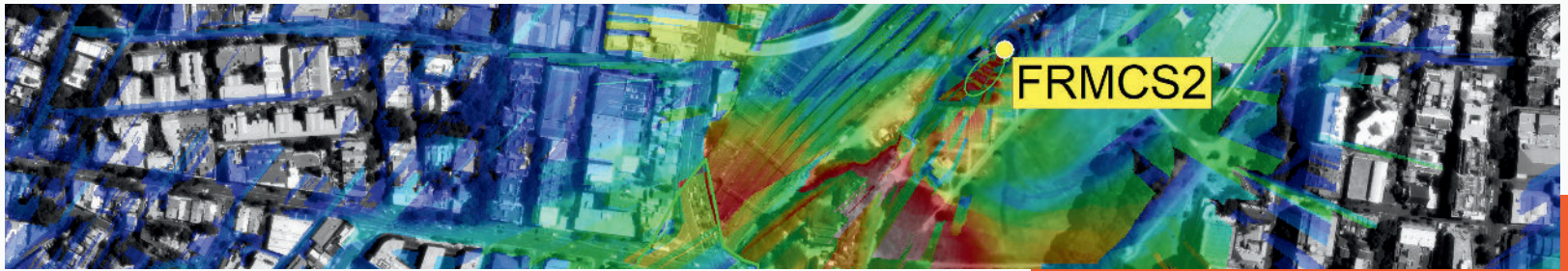MULTI-TECH SUPPORT – PLAN ALL MAJOR TECHNOLOGIES ON ONE PLATFORM

HANDOVER & MOBILITY ANALYSIS – EVALUATE PERFORMANCE DURING TRAIN MOVEMENT AND AT TUNNEL POINTS

REAL-WORLD CALIBRATION – REFINE MODELS WITH MEASURED DATA

LIVE GIS & NMS INTEGRATION – KEEP MAPS CURRENT AND ALIGN WITH NETWORK CHANGES

ATDI 30 YEARS OF EXPERIENCE

www.atdi.com
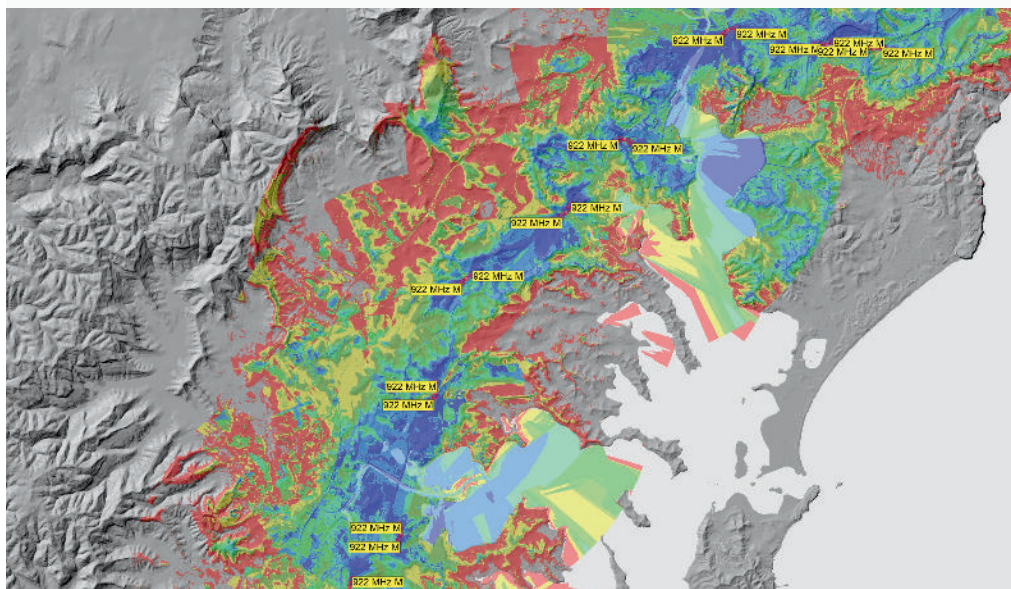
FRMCS2

Future-Ready Railway Communications

As the railway industry transitions from TETRA and GSM-R to FRMCS, the demand for robust, flexible, and forward-looking planning tools is greater than ever. With over 30 years of experience, ATDI supports railway operators, vendors, integrators, and consultants worldwide—offering expert guidance in network dimensioning, model tuning, and performance assurance for mission-critical communications.

ATDI's HTZ Communications is an all-in-one software suite equipped with a powerful RF engine capable of supporting all generations of radio systems. Designed for future railway needs, it enables prospective planning and evaluation of network migration strategies, including coverage gap analysis, network scaling, and throughput dimensioning.

HTZ helps operators assess the impact of evolving service demands—such as high-speed broadband, real-time data, smart sensors, and autonomous rail equipment—by factoring in data rate requirements and subscriber volume along the rail corridor. This ensures network readiness for the next generation of connected, intelligent railway operations.
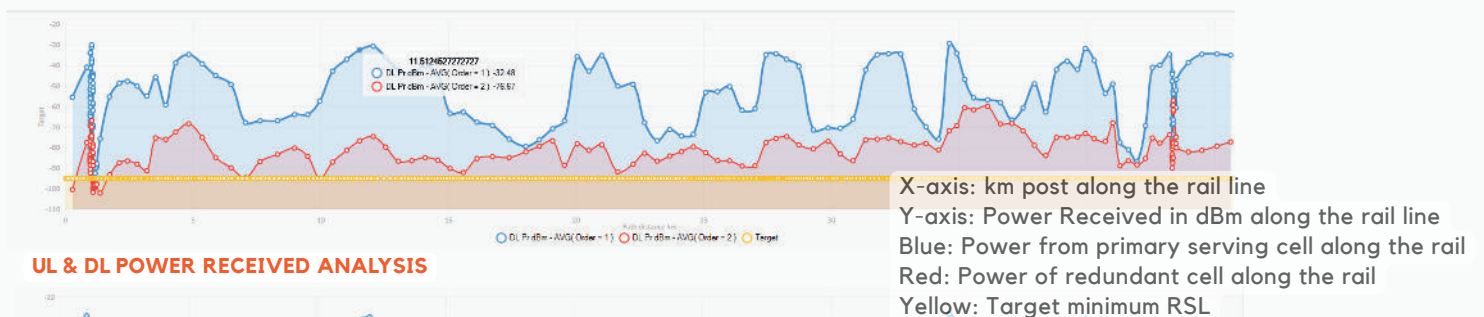
DL POWER RECEIVED - REDUNDANCY ANALYSIS

UL & DL POWER RECEIVED ANALYSIS

X-axis: km post along the rail line
Y-axis: Power Received in dBm along the rail line
Blue: Power from primary serving cell along the rail
Red: Power of redundant cell along the rail
Yellow: Target minimum RSL
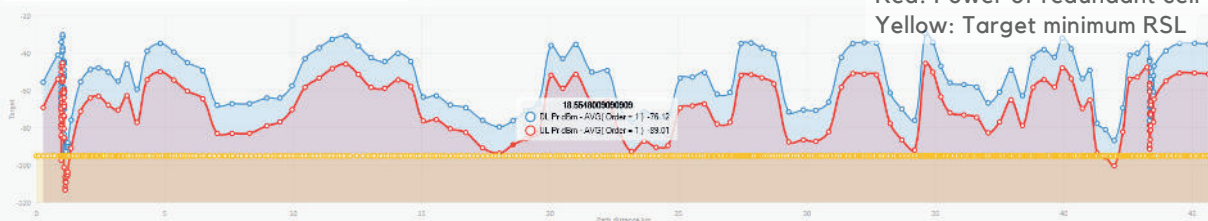
MICROWAVE BACKHAUL PLANNING FOR RAILWAYS WITH HTZ COMMUNICATIONS

Microwave links are vital for ensuring reliable backhaul in railway communications, especially with the shift to FRMCS. HTZ Communications provides a complete toolset for designing and analysing microwave links across complex railway terrains.

Key features include line-of-sight checks, Fresnel zone clearance, link budget analysis, and interference studies. The built-in GIS engine models rail-specific obstacles like tunnels, cuttings, and bridges with high precision.

HTZ supports all frequency bands and helps optimise redundancy, availability, and network performance, making it ideal for mission-critical rail operations.

ATDI 30 YEARS OF EXPERIENCE

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