EMITECH GNSS

TESTING LABORATORY SPECIALIZED IN PNT

PNT: Positioning, Navigation and Timing



Emitech-GNSS is a testing laboratory specialized in PNT (Positioning, Navigation and Timing), implementing a comprehensive set of services dedicated to the evaluation, validation, and certification of performance in terms of accuracy, integrity, and availability of positioning and timing systems.
These services address applications with high operational and regulatory stakes, involving critical navigation functions for which the reliability of GNSS solutions is a key determinant of safety, performance, and compliance.

Services
- *Test Engineering*
- *Test Facility Engineering*
- *Performance Optimization*

Measurements
- *Calibration attestation*
- *Accuracy & Integrity Assessment*
- *Jamming & Spoofing Robustness*
- *Critical Function Classification*

Business Sectors
- *Urban & Road*
- *Railway*
- *Drones*
- *Maritime*
- *Agriculture*

Emitech-GNSS is Cofrac accredited testing laboratory (ISO/IEC 17025)

Testing accreditation No. 1-6924
Scope available on www.cofrac.fr

cofrac ESSAIS

History

Founded in 2010 in Toulouse under the commercial name GUIDE-GNSS by the GUIDE association (GNSS Usage Innovation and Development of Excellence), the laboratory was established to address the need for reliable and reproducible methods to assess the performance of GNSS solutions. From the outset, it focused on metrology applied to positioning systems, developing innovative methods that contributed to the creation of European standards, notably the EN 16803 series. This involvement in standardization reflects its active role in structuring the field at both European and, today, international levels, through its leadership in drafting the ISO 25082 series.

Expertise

Over the years, Emitech-GNSS has strengthened its expertise through participation in research projects and large-scale industrial programs, including the landmark Ecotaxe project. This experience has enabled the laboratory to develop in-depth knowledge of operational constraints and application requirements across a wide range of environments.

PNT accuracy

Recognition of its capabilities is notably supported by its COFRAC accreditation No. 1-6924 in accordance with ISO/IEC 17025, attesting to the rigor of its processes and the reliability of its results. The laboratory masters the entire metrological chain of testing, from the design of representative scenarios to performance analysis under real conditions, including advanced simulation techniques and replay of previously recorded data.

PNT reliability

In a context where requirements for integrity and robustness of navigation systems continue to increase, Emitech-GNSS also stands out through the integration of innovative numerical simulation methods, particularly those based on machine learning (AI). Its approach, combined with capabilities for large-scale generation of GNSS measurements derived from real conditions, significantly enhances the representativeness and relevance of numerical models. This expertise is further protected by a European patent.

Emitech Group

The laboratory also benefits from high-level infrastructure and technical resources, including anechoic Faraday cages and advanced analysis systems capable of finely characterizing performance across a wide range of environments: urban, rural, rail, aeronautical, and maritime.

Integrated within the EMITECH Group, EMITECH-GNSS contributes to the development of comprehensive offerings in the field of radiodetermination, combining technical expertise, testing capabilities, and industrial deployment capacity. This complementarity enables support for complex projects, from specification phases through qualification and operational monitoring.

EMITECH GNSS

Instrumentation

Test Receivers & Sensors

- GNSS Fixed reference Stations
- GNSS Antennas
- Metrological receivers
- Inertial Measurement Units (IMU)
- Odometer
- Ref. Trajectory Computing Tools
- Statistical Analysis Tools

Test Benches

- Record & Replay Units
- GNSS Simulation Units
- Interference Generator
- Spectrum analyzers
- Oscilloscopes

Test Infrastructures

- Anechoic Faraday cages
- Climate Controlled Enclosures
- Vibrating Tables



GNSS



Electromagnetic compatibility



Climatic and physicochemical



Mechanics

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PNT - 03 - 2026

CORE BUSINESSES

Metrology

Metrology encompasses the methodologies and techniques used to perform GNSS measurements and to rigorously evaluate their uncertainties. It includes the specification of measurement methods, the execution of measurement campaigns, and the processing and interpretation of collected data to deliver reliable positioning performance metrics with well-characterized uncertainties.

Geolocation

Positioning technologies primarily based on GNSS are used to determine the spatial position and precise timing of measurement points with high accuracy and reliability. They provide continuous, absolute positioning and timing information, supporting a wide range of applications requiring robust and traceable geolocation.

Criticality

Critical functionalities or activities related to positioning performance whose degradation or failure may impact safety, security, or liability, or lead to significant financial consequences. These functions require stringent performance assurance, integrity monitoring, and risk mitigation.

MEASUREMENT TESTING TECHNIQUES

On-Site Testing

GNSS on-site testing is a technique performed in real-world environments to assess positioning system performance under operational conditions (constellations, disturbances, dynamics, environmental conditions, interference), ensuring highly representative results.

GNSS signal replay-based testing

GNSS signal replay-based testing is a technique that uses real-world GNSS signals previously recorded and replayed in a controlled environment to assess receiver performance under representative and reproducible conditions, enabling analysis of positioning accuracy.

GNSS signal simulation-based testing

GNSS signal simulation-based testing is a technique that uses computationally synthesized satellite signals to evaluate receiver performance under controlled, repeatable conditions, enabling functional analysis of an application based on anticipated or critical scenarios.

GNSS measurement simulation-based testing

GNSS measurement simulation-based testing is a technique that uses computationally simulated GNSS measurements to evaluate receiver performance under controlled, realistic and repeatable conditions. It leverages fault models enhanced by machine learning techniques (AI). The simulation can be synchronized with software-in-the-loop test benches and accelerated as needed. This enables functional analysis of an application based on anticipated or critical scenarios.

SERVICES OFFERED

SERVICES	TYPES	DESCRIPTIONS
TEST OPERATIONS	ACCURACY	**Reports or Test Attestations** - High-accuracy solutions – e.g. Receiver, FW, Services,... - Proprioceptive & exteroceptive sensors – e.g., IMU, SLAM... - Sensor fusion algorithms - Anti-spoofing & anti-jamming countermeasure systems - Time references (Timing) – EN16605
	INTEGRITY	
TEST FACILITIES	PRODUCTION	**Test scenarios and numerical model** - Definition and design of test scenarios - Massive data generation (real or synthetic) - Numerical models of GNSS environments, AI-based numerical models of positioning system
	MODELING	
PERFORMANCE OPTIMIZATION	CONSULTING	**R&D study and technical consulting** - Assistance to implement GNSS technologies - Research and Development studies - Training
	R&D	