

Electronics and Embedded Systems



Industrial Services

- R&D in Electronics
- Electronic devices prototyping and preproduction
- Tests and Measurements



MULTITEL, Your **R&D** and **Innovation** Partner

- Electronics and Embedded Systems | Speech-Centric Human-Machine Interfaces
Network Engineering | Applied Photonics | Traceability | Image Processing | Certification
- Development and implementation of innovative technology solutions
- Technology Transfer
- Strong participation in European research programmes

Electronics and Embedded Systems



Industrial Services

Research, engineering, design and development of electronic hardware devices and systems for the Industry

R&D IN ELECTRONICS

Based on its expertise in analogue and digital electronics, Multitel focuses on the design and development of Radio Frequency (Wireless) devices/components and systems and performs on-demand R&D activities in the following fields:

- Embedded Sensors
- Wireless Communication Systems, Secure Wireless Sensor Networks
- Passive and Active customized RFID solutions for harsh environments
- Outdoor and Indoor Real-Time Location Systems (positioning/localization)
- Real-Time Track & Trace of mobile assets
- Wireless Digital Video Broadcasting
- Wireless telemetry
- GPS/GSM/GPRS Identification/Positioning devices and systems
- Biometric Access Control
- RF remote control of systems and devices for the medical industry



ELECTRONIC DEVICES PROTOTYPING AND PREPRODUCTION

The Electronics and Embedded Systems Group provides you with support you with the design and manufacturing of electronic prototypes.

More specifically, the team provides:

- the design of electronics systems and subsystems
- the design of schematics and PCB layout according to submitted specifications
- the Manufacturing of prototypes and small-series PCB
- the Preproduction and production management of electronic devices and systems

The Electronics and Embedded Systems Group also offers its services for the soldering/desoldering /repair of electronic PCB containing SMD components in various packagings (QFN, QLP, BGA...).

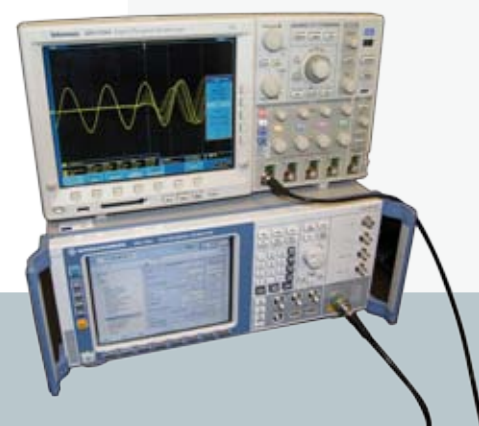
TESTS AND MEASUREMENTS

The Electronics and Embedded Systems Laboratory is fully equipped with devices meant for:

- The performing of tests and measurements on electronic devices and systems such as RF components and systems
 - Indoor RF communication infrastructures such as IEEE 802.11 Wi-Fi, IEEE 80215.4 ZigBee
 - and traceability systems such as RFID HF 13.56 MHz and UHF 868 MHz
- The characterization of antennas
- The characterization (performance measurements) of RF transceivers

The Group provides you with:

- The audit and characterization of Wireless Sensor Networks : quality, performances and evaluations
- The optimal calibration of RF devices and systems according to predefined networks geometries and topologies
- The audit of Wi-Fi networks deployment
- The testing and evaluation of harsh environments RFID systems
- The audit of industrial and on-site RFID systems deployments
- The characterization of RF Channels and preparation of EMC tests (CE certification)





In its anechoic chamber, Multitel performs pre-compliance EMC tests (both EMI and EMS) for electronics devices. This chamber is fully EN 50147-1:1997, IEC 61000-4-3:2006 and CISPR16-1-4-ED2 (Feb 2007) compliant. It covers a RF frequency range from 30 MHz to 18 GHz and offers a test zone of 0.5m x 0.5m at a distance of 3m.

Tests performed :

- EMC pre-compliance (EMI and EMS) tests of electronic prototypes and devices according to the following standards :
 - EN 55011/CISPR 11 and EN 55022/CISPR 22 for radiated and conducted EMS between 150 kHz and 6 GHz
 - EN 61000-4-3 and EN 61000-4-6 for radiated and conducted EMS between 150 kHz and 6 GHz
- Design of RF Antenna, studies and models on RF propagation
- Antenna arrays
- RF Telemetry
- Positioning algorithms based on RF propagation algorithms such as AoA (Angle of Arrival), ToA (Time of Arrival), TDoA (Time Difference of Arrival)
- Compatibility and cohabitation tests for ISM bands RF systems



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