High-Frequency Components, Circuits, Signals and Systems Department

**RESEARCH THEMES >**
- Power Amplification
- Frequency Synthesis
- Integrated Low Noise and Adaptive Filtering Functions
- Telecommunications Systems Study
- Sensor Systems
- Advanced Instrumentation
- Advanced Simulation

**KEYWORDS >**
- Microwave
- Power, Energy Oscillators
- Computer-Aided Design (CAD)
- Low Noise Amplifier
- Channel Coding
- Internet of Things
- E-Health
- Telecommunications
- Non-Linear Electronics
- Multiphysical Modelling

2012
The C2S2 department is organized around 4 main themes that consolidate the various skills and expertise of the department researchers nurtured within the 4 teams, which are the mainsprings for scientific project development.

- Power amplifiers
- Low noise receivers and frequency sources
- Advanced modelling and simulation
- Telecommunications systems

The activities of these teams are defined based on 7 scientific projects. These projects deal with the architecture of communications systems and focus more specifically on RF terminals and the optimization of the physical layers of wireless and optical telecommunications systems. They all require the use of the skills and expertise developed within the various teams.

- High energy-efficient linear power amplification
- Advanced RF instrumentation
- Wideband and frequency-agile integrated transmitters-receivers
- Nanometric-scaled component and circuit modelling
- Complex electronic system and circuit simulation
- Optimization of the physical layer of wireless and optical communications networks
- Communication systems and networks for E-health.

All these projects benefit from partnerships with academic and industrial laboratories and from the backing of national and European projects. Furthermore, long-term collaboration with our industrial partners (joint laboratories) provides us with access to GaN technology (MITIC), CMOS technology (NXL) and space technology (AXIS).
KEY FIGURES
(at 1st January 2012)

Teacher-researchers: 19
EPST and EPIC researchers: 3
Other researchers: 4
HDR (accredited to direct research): 14
Doctoral students in 2011-2012: 36
Engineers, technicians: 2
Administrative agents: 2
Dissertations defended (2008-2011): 45
Current national projects: 5 ANR (French National Research Agency), 2 FUI (Single Interministerial Fund), 2 CNES (National Centre for Space Studies), 3 Limousin Region
Current European projects: 2 FP7 (Seventh Framework Programme), 1 EDA, 1 EURIPIDES, 2 ESA (European Space Agency)
Others: 3 joint laboratories (MITIC with III-V Lab, AXIS with Thales Alenia Space, NXL with NXP)

PARTNERSHIPS

Active National University Partnerships:
IEMN (Lille), IREENA (Nantes), FEMTO (Besançon), ENST Brittany, INSA (Toulouse), LAAS (Toulouse).

Current International University Partnerships:
University of Padova (Italy), University of Turin (Italy), IMEC (Belgium), Oersted University (Denmark), Chalmers University (Sweden), University of Bilbao (Spain), Ohio State University (Columbus, Ohio USA), University of Rome (Italy), University of L’Aquila (Italy), University of Colorado, Boulder USA.

National Industrial Partnerships:
Thales, Freescale, Orange Labs, NXP, UMS-France, CNES, DGA.

International Industrial Partnerships:
Selex SI (Italy), UMS (Germany), ESA, Fraunhofer Institute Freiburg (Germany).

Research Federation:
MIRES

ECONOMIC ADDED VALUE
(2008-2011)

Number of patents filed: 5
Number of industrial or research agreements with major organizations: 36
Scientific production
of the research team
(2008-2011)

Website publication: hal.archives-ouvertes.fr/XLIM-C2S2

International articles: 26
Articles: 16 in peer-reviewed journals
Book chapters: 1
Conference presentations: 41

Major publications and/or patents over the last 5 years


