PRESS RELEASE

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Mobile handsets and other wireless devices about to become more cost and energy-efficient

The DRAGON FP7 project, a research project sponsored by the European Union, is due to come to a successful end in May 2013. The project consortium has developed a design platform comprising multi-standard transceiver specifications and novel flexible architectures, which will lead to increased efficiency and major cost and energy savings.

Industrial progress relies on continued growth of wireless capacity. Not only do more people count on mobile broadband services in their professional activities, but the number of objects connected by wireless interfaces is dramatically increasing. And as data rates increase, so does the corresponding energy consumption, which needs to be reduced in order to save energy and avoid thermal problems. Taking into account the fact that wireless data services are becoming an attractive low-cost alternative to be used in novel applications, the main goal of the DRAGON project was to research and use new design methodologies and architectural innovations - based on reconfigurability and state-of-the-art digital CMOS technology - to break the barriers imposed by the lack of scaling properties of analog components. With this concept, distinct reductions in cost, size and energy consumption for multi-standard cellular handsets could be achieved, while meeting higher demands on data rate.

The DRAGON project team studied energy and cost-efficient solutions for future radio terminals. In order to make sure the results were relevant to industry, partners used requirements based on the 3GPP LTE release 10 standard, supporting up to 40MHz RF bandwidth, and worked with state-of-the-art CMOS technology.

The research has focused on the development of new solutions for key radio building blocks, like receiver data converters and filtering, local oscillators for frequency synthesis, and high-efficiency power amplifiers and modulators. Test chips have been built and evaluated to demonstrate the feasibility of these building blocks. To assess the performance of the building blocks when used as parts in a complete radio modem, the project partners defined three different use case scenarios. These scenarios together with actual measured building-block parameters were used in a system-

level simulation tool, also developed in the DRAGON project. By comparing the simulated system performance with the LTE-based specification, the project team could verify that the novel DRAGON test circuits would work, also in a real radio modem:

- **Miniaturized low-cost receiver** circuits led to a significant area and power reduction by cleverly exploiting the digital CMOS process technology speed and density advances for the implementation of blocks with analog and RF functionality.
- **High efficiency multi-mode transmitter** circuits exploited digital modulation techniques and state-of-the-art digital CMOS technology to achieve a significant improvement in the power-added efficiency for an integrated CMOS-based transmitter.

Some of the achieved results are already state-of-the-art and published in the most prestigious IEEE conferences and journals. The project team has come significantly closer to its original goal, namely offering more functionality and performance at lower costs while improving scalability.

For more information about the DRAGON project please visit the project's website www.dragon-project.eu where public deliverables of the project as well as partners' [Technikon Forschungs- und Planungsgesellschaft mbH (AT), Ericsson AB (SE), Infineon Technologies Austria AG (AT), Lund University (SE), Katholieke Universiteit Leuven (BE), Interuniversity Microelectronics Centre (BE), Technische Universität Graz (AT)] publications are available.

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