

## Collaboration brings results on microwave amplifiers

Today's mobile information society needs higher microwave carrier frequencies and the possibilities to fully exploit available bandwidth. This requires special signals that can only be handled by microwave power amplifiers combining efficiency and linearity.

Europe is renowned for its excellence in the field of microwave amplifiers for broadband wireless access, but until the IST programme-funded [TARGET](#) project, research has been fragmented. Collaboration must be intensified among several highly specialised companies ranging from semiconductor foundries to system manufacturers and pockets of expertise in academic institutions if Europe is to break into the lead in this field.



"The rapidly increasing number and variety of wireless services creates quite challenging demands for the enabling technology," says project coordinator Sue Raab of the Telecommunication Research Centre Vienna Ltd. "In particular, power amplifiers in wireless systems play a key role. There is an urgent need to develop power stage circuits and design criteria to attain the highest performance."

The aim of the TARGET Network of Excellence project is to overcome the current fragmentation of European research in the field of microwave power amplifiers for broadband wireless access by integrating the research capacities of the 49 project partners. The four-year TARGET project, launched in January 2004, has made considerable progress so far.

"Our goal to establish cooperation and coordination between project partners has already been achieved by creating a common Internet and Intranet platform," she says. "This has enabled us to establish pools of shared data and software tools, create a common virtual lab infrastructure, and launch our first research projects."

At the end of TARGET's second year, an appreciable amount of research has been documented in international journals and at the top conferences in the field of microwave engineering. The strength of the network is drawn from partners' accumulated knowledge and skills.

Raab points out that cooperation has resulted in the development of record-breaking LDMOS (laterally diffused metal oxide semiconductor) power transistors, which enable wireless infrastructure designers to develop cost-effective, highly efficient cellular base station amplifiers. In addition, TARGET has established unified metrics for quality assessment of non-linear transistor and amplifier models.

She also notes that the results achieved by cooperating in the design of GaN-based power amplifiers far exceed European results and are appreciably superior to US results with respect to added efficiency at high power outputs. (GaN refers to gallium nitride based semiconductors for wireless base station power amplifiers.)

"At this year's exhibition at the European Microwave Week held in June, we presented an advanced course programme and offered it for the first time on a commercial basis," she says. "We are achieving the network's goal of durable integration."

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