

International Workshop

'Technology of Multimode-Multiband Transceivers'

Florence April 17/18, 2007
Aula Magna del Rettorato, Università di Firenze

Supported by European Network of Excellence TARGET
Top Amplifier Research Groups in a European Team
Sponsored by Facoltà di Ingegneria, Università di Firenze

Wireless technology has been evolving across various vectors from cellular networks to wireless broadband networks to wireless personal area networks. As we move to the third decade of commercial wireless technology deployment, there is a growing trend for a multitude of these technologies emerging on various standard platforms. This scenario reflects in the request for transceiver architectures capable to implement these new applications in an 'always and everywhere' global connectivity.

Extending the scenario to already experienced 3G voice/data systems, users may be moving while simultaneously operating in a broadband data access or multimedia streaming session. The need to support low latency and low packet loss handovers of data streams as users transition from one access point to another is clearly a challenging task, which may require the concurrent use of more than one frequency band at the time. For full-mobile data services, no user interaction will be required to adapt their service expectations because of environmental limitations that are technically challenging but not directly relevant to the user (such as being stationary or moving). For these reasons, the air interface must be able to anticipate the user expectations and deliver accordingly. This is nothing else as the new paradigm of the communication technology also known as: ambient intelligence. The above-described scenario is a dramatic source of specification constrains for the RF transceiver and channel interface that

are more difficult to achieve with respect to conventional applications.

This workshop deals with the most relevant challenges including the devices technological and modeling aspects and the design methodologies for new system architectures.

The European Network of Excellence TARGET

Europe has a remarkable abundance of excellent research groups in the field of microwave amplifier research, in particular in characterisation, modelling, design, and linearization. Unfortunately they have only marginally co-operated in the past. The aim of TARGET is to overcome the current fragmentation of European research in the field of microwave power amplifiers for broadband wireless access by creating a progressive and durable integration of research capacities of the network partners.

The scientific fields of TARGET - amplifier and microwave research - are central for broadband wireless access in a mobile information society. There is pressing need to develop power stage circuits and design criteria to attain the highest performances, both in terms of amplifier efficiency and linearity.

Ultimately, European technology and research in the fields of active power devices beyond CMOS, of the characterisation and simulation of materials and devices, of amplifier design and linearization, and in the field of broadband transmitter system design shall attain a leading position in the world.

This challenge has been rightly acknowledged by the European Commission in making "Pushing the limits of CMOS and preparing for Post-CMOS" a strategic objective of the IST work programme. TARGET has started on January 1, 2004 and is scheduled for at least four years.

General Chair

GF Manes, Università di Firenze

Steering Committee

*Gottfried Magerl, Technische Universität Wien, scientific coordinator
Sue Ivan, Forschungszentrum Telekommunikation Wien Betriebs-GmbH, network coordinator
Tom Brazil, University College of Dublin
Franco Giannini, Università di Tor vergata
Rodoula Makri, National Technical University of Athens - ICCS
Gianfranco Manes, Università di Firenze
Angel Mediavilla, Universidad de Cantabria
Erich Prem, Forschungszentrum Telekommunikation Wien Betriebs-GmbH
Wolfgang Richter, Friedrich-Schiller-Universität Jena
Dominique Schreurs, Katholieke Universiteit Leuven
Jean-Pierre Teyssier, Université de Limoges, XLIM*

Scientific Programme

Alessandro Cidronali, Università di Firenze

Technical programme

April 17th Morning

09.00 – 09.15	Welcome	<i>Magnifico Rettore</i> , Università di Firenze D Beernaert, DG INFOSO G Magerl, Technische Universität Wien GF Manes, Università di Firenze
09.15-09.45	Keynote speech: Next generation Nanoelectronics Components and Electronics Integration	D Beernaert, DGINFSO, Unit G2, Head
09.45-10.15	Wireless Communications: Current and Future Technology	M Mc Cullagh, Frontier Silicon, United Kingdom

Session 1

Modelling and Design Tools

Chairs D Beernaert & G Manes

10.15-10.45	Behavioral Modeling of Nonlinear Microwave Circuits for System Analysis	D E Root, Agilent Technologies, S Rosa, CA, USA
10.45-11.15	Methodologies for CAD-Based Design at Device, Circuit and System Levels	T Brazil, University College Dublin, Ireland
11.15-11.45	<i>Coffee break</i>	
11.45- 12.15	Non-linear models of microwave transistors for power amplifier design	F. Filicori, Università di Bologna
12.15-13.00	Panel discussion Chair: D E Root	
13.00-14.30	<i>Lunch</i>	

April 17th Afternoon

Session 2

System Architectures

Chairs A Litwin & G Magerl

14.30-15.00	Multiband systems architectures	V K Nair, Corporate Technology Group, Intel Corporation, Hillsboro, OR, USA
15.00-15.30	System architectures for multi-band efficient transmitters	A Cidronali, Università di Firenze
15.30-16.00	<i>Coffee break</i>	
16.00-16.30	Dual-band efficient power amplifier design	F Giannini, Università di Tor Vergata, Roma
16.30-17.00	Passive components for wideband IC design	N. Provas, Helic Inc, Greece
17.00-17.30	Panel discussion Chair: V K Nair	
20.00-22.30	<i>Dinner</i>	

April 18th Morning

Session 3

Enabling and Future Technologies

Chairs A Mediavilla & D Schreurs

09.15-09.45	Smart antennas for reconfigurable radios	S M El Ghazaly, Univ. of Tennessee, TN, USA
09.45-10.15	Evaluation criteria for reconfigurable PA	D Köther, IMST GmbH, Germany
10.15-10.45	<i>Coffee break</i>	
10.45-11.15	Recent advances in RF MEMS for transceiver architectures	S Lucyszyn, Imperial College, London, UK
11.15-11.45	Mixed signal technologies	R Scholz, IHP Microelect. GmbH, Germany
11.45-12.15	Debug of wideband digital radio	R Sacchi Agilent Technologies, Italy
12.15-12.45	Panel discussion Chair: S M El Ghazaly	
13.00	Conclusion	