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Introduction – TARGET Special issue

During the years 2004–2007 the European Commission funded the Network of Excellence "Top Amplifier Research Groups in a European Team – TARGET" within the Sixth Frame Programme. This network united 49 academic and industrial groups being active in microwave power amplifier research for communication purposes. The scope of the network was ranging from materials research, active devices, nonlinear characterization, and modeling up to amplifier design, linearization, and transmitter architecture.

In this special issue, a brief survey over some important research fields and the results of the network are given. The two coordinators of the network, Gottfried Magerl and Sue Ivan, start with a description of how the network worked and which benefits it created for its participants in particular and for the microwave community in general [1]. Davide Resca and his co-authors present a contribution on nonlinear InP device modelling for W-band applications [2]. For the first time, they use a recently proposed technique for the distributed modeling of extrinsic parasitic effects in electron devices in conjunction with a lumped equivalent circuit model for the intrinsic device. Teresa M. Martín-Guerrero and her co-workers discuss the properties of GaN devices for power amplifier design [3]. Because these new devices require specific nonlinear models, a procedure for selecting an appropriate simplified nonlinear model and a procedure for extracting its parameters are discussed and evaluated. The agreement between experimental and model-predicted performance suggests that the described model can be useful in a preliminary power amplifier design. Jan Kuzmik and co-authors present a new transient electrical method for temperature measurement in the channel of AlGaN/GaN HEMTs [4]. This method combined with transient interferometric mapping provides a fundamental understanding of the heat propagation in a transient state of HEMTs. The fourth paper, authored by Vittorio Camarchia *et al.*, presents an investigation of a SiGe-based concurrent low-cost dual-band power amplifier that simultaneously operates at two frequencies of 2.45 and 3.5 GHz [5]. Moreover, new concepts and possible new system architectures for the development of the next generation of multi-band transceiver front-ends are provided with an extensive system-level evaluation of the amplifier. Alessandro Cidronali and his co-authors present a feasibility study [6] for the implementation of a concurrent dual-band power amplifier design suitable for 1.98 GHz WCDMA and 3.42 GHz WiMAX digital systems. The conclusions drawn in this paper justify the design effort for this innovative solution which is capable of increasing the PAE for concurrent dual-band operation while still maintaining the performance of more conventional solutions. José A. García *et al.* [7], address the main nonidealities appearing in polar transmitters, together with several implementation considerations. Special attention is paid to the role of AM modulation nonlinearity and parasitic AM-to-PM conversion, once architecture mechanisms such as time-delay mismatch between branches or limited bandwidth in the amplitude path are controlled. In addition, some circuit design and implementation guidelines for the RF modulating stage and the envelope amplifier are discussed.

Concluding I can say that with many partners of the network I share fond memories of TARGET. During our four years term we learned to closely cooperate and together we achieved quite remarkable research results. Although the EC decided to severely cut the funding of NoEs, our community is still active and our collaboration is alive. Ad majora!

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