

Duration: 13:50 - 17:50

Room: Neu Delhi

WW-03

Recent Advancements in Wide-Band and Efficient GaN Power Amplifiers

Organisers:

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Abstract

Ever rising demand of high data-traffic, speed and resolution demand microwave linear power amplifiers (PA) with ever greater bandwidth and efficiency, yet at a low cost. As a result, PAs are considered as the most critical component in a RF front-end module. The new generation power systems, such as wireless transmitter, 5G cellular and radars (EW), require the latest state-of-the-art semiconductors, circuit topology, and integration technology to deliver optimum performance. The attractive material properties of GaN make GaN-HEMT a superior candidate to meet these demands. But GaN PAs are thermally limited much below the capability of the devices, which demands efficient and novel design techniques, thermal management, biasing and integration techniques. Broadband linear PAs with high efficiency at high PAPR, supporting higher order modulation, is a critical component for a 5G mobile and backhaul system. The effect of trapping/memory on a device performance raise several technical challenges to address.

This very timely workshop will highlight the recent important advancements in GaN PA circuits design and linearisation to system implementation. Most importantly, it will aware the participants on the critical issues with design hints, technology challenges and the latest state-of-the-art developments in terms of bandwidth, linearity, and efficiency. Further, the workshop will present PAs with circuit topologies including Doherty, outphasing, harmonic tuning, and envelope-tracking for enhanced performance at back-off power, and for enabling advanced industrial applications. The speakers are the leading contributors in both industrial and academic sectors.

Programme

13:50 - 14:00 Welcome

14:00 - 14:45 Harmonic Assisted Broadband Doherty Power Amplifier

Fadhel M. Ghannouchi, University of Calgary, Canada

Wenhua Chen, Tsinghua University, China

14:45 - 15:30 GaN MMIC High-Efficiency PAs Above X-Band

Zoya Popovic, University of Colorado at Boulder, USA

15:30 - 16:10 Break

16:10 - 16:40 5G Challenges and Potential PA Architectural Solutions

Kamal Samanta, Chris Clifton, Sony Europe, UK

16:40 - 17:10 Multiband GaN Doherty Power Amplifiers

Renato Negra, X. Anh Nghiem, RWTH Aachen University, Germany

17:10 - 17:40 Recent Development for Linear Amplification Based on GaN Technology

Didier Floriot, United Monolithic Semiconductors, France

17:40 - 17:50 Discussion