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WS-03
Current Trends in Broadband, Efficient and Linear PAs for 5G Wireless Applications

Organisers:
Kamal Samanta[1], Bumman Kim[2]
[1]Sony Europe, [2]Pohang University of Science and Technology

Abstract
The ever-increasing demand for high data-traffic expects significant deployment of 5G cellular systems as of 2020. The 5G communication system demands high data rate, up to 10 Gbps, RF or hybrid beamforming, high-density devices for IOT and very dense base-station deployment. These unprecedented demands require new-generation power amplifiers (PAs) operating at higher frequency bands and delivering high linear power with wide-bandwidth and high efficiency, yet at a highly reduced size and cost. Therefore, broadband linear PAs with high efficiency at high PAPR, supporting higher order modulation, is one of the most critical components for a 5G mobile and backhaul system.
In this very timely workshop, we will highlight the recent important trends and the state-of-the-art developments in GaN- (for higher performance) as well as CMOS- (for lower cost) based PA circuits design and linearization to system implementation (with analog and hybrid beamforming) for 5G applications, including those for Ka-, V- and W-band handsets and infrastructure. GaN being the most suitable candidate for mmW performance, a special emphasis will be given on GaN based PA developments on Si as well as SiC semiconductor and linearization (recent advances in software and hardware implementations), covering PAs for large arrays and hybrid sub-six single element. The workshop will present the latest result and compare performance of novel PAs for various circuit and device technologies, and in terms of BW, ACLR/linearity, efficiency with high PAPR, and cost. Further, it will present PAs with circuit topologies including Doherty, out phasing, stacked and envelope tracking for enhanced performance (especially efficiency and bandwidth) at back-off power, to meet the challenging high performance and low cost requirements for 5G deployment.
The speakers are experts and are the leading contributors in both the industrial and academic sectors.

Programme

GaN/Si Power Amplifiers for 5G Mobile Telecommunications
Marc Rocchi[1]
[1]OMMIC

GaN PAs for 5G/6G Wireless Communication
Ruediger Quay[1]
[1]Fraunhofer Institute of Applied Solid-State Physics

Broadband & Packaged 5G High Power Frond-End for 28GHz Solutions
Mohammed Ayad[1]
[1]United Monolithic Semiconcuctors SAS

Progress of CMOS Power Amplifier Towards mm-Wave Band for 5G Application
Bumman Kim[1]
[1]Pohang University of Science and Technology

GaN MMIC High-Efficiency PAs above X-band
Zoya Popovic[1]
[1]University of Colorado

5G Linearization Options
Allen Katz[1]
[1]Linearizer Technology, Inc.