

Unlocking the Next Generation of Cellular Connectivity: Advances in RF PA and Transmitter Architectures

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ABSTRACT

This industry-focused talk delves into the cutting-edge technologies propelling radio transmitters for both infrastructure and user equipment in next generation cellular applications. We begin by exploring the evolving trends and system-level requirements driving innovation. Then, we dive deep into groundbreaking advancements in RF Power Amplifiers (PAs) and Radio Frequency Front Ends (RFFE), showcasing transceiver system demonstrations that emphasize the critical roles of system integration, efficiency, and linearity enhancement for the large-scale deployment of 5G links across FR1 and FR2 bands.

Key highlights include: (1) Pioneering Solutions: Discover multi-channel phased array antenna-in-module (AiM), novel adaptive gate biasing and bandwidth expansion techniques for load modulated PAs, and cutting-edge broadband differential class-E PAs utilizing both silicon and III-V processes. (2) Holistic Performance Optimization: Explore broader strategies for boosting overall transmitter performance, including innovative digital envelope tracking (DigET) and advanced filtering techniques. (3) Real-World Insights: Gain valuable insights from system modelling, practical field experimental results, and a forward-looking perspective on transmitter evolution towards 6G/FR3 (7-20 GHz).