Title: 'Front-End Technologies for Wireless Applications'

The complexity of microwave front-end designs and their components has increased significantly in the last years. At the same time wireless communication, data transfer and radar based systems are progressively being deployed into our daily life. Higher levels of integration, high volume fabrication technologies and lower production cost in combination with better performance have considerably contributed to the wide usage of microwave font-ends across all market segments. Emerging new technologies enable the development and the implementation of next generation wireless front-ends. Advances in semiconductor and integration technologies have a direct impact on the design methodology, the architecture and the actual implementation of todays and future front-ends.

This presentation will start with a short description of the basic building blocks of transceiver modules and will explain their functionality (i.e. amplifiers, LNAs, frequency converter, antennas, filters ….). An overview of the most important semiconductor technologies will be given including a comparison of their usability, capability, cost and maturity. For every semiconductor technology (e.g. SiGe, LDMOS, BiCMOS, GaAs, GaN etc.) a typical front-end application example will be given and specific implementation advantages & disadvantages will be discussed. In addition innovative integration technologies, which enable next generation front-end products, such as tuneability of antennas, passive integrated components, wafer level packaging or ink-jet printed booster antennas for high volume applications are also discussed. The application areas covered are mobile communications, base stations, radar sensors and RFID systems.

Overall the talk will provide a comprehensive view of today's diversity in semiconductor and implementation technologies, and how they address the challenges future front-end modules.