Kenle Chen Seminar

Demystify RF Front-End: Recent Advances and Future Trends Toward 5G

December 1st, 2017
2:00pm – 3:00pm in WANG 3043

In the past decade, the explosive growth of mobile wireless applications has triggered insatiable demand for high data rate of wireless communication, reflected by a tremendous increase of data transmission speed from kbit/s level (2G) to sub-Gbit/s level (4G). Such a data-centric ecosystem has been the major driven force behind the evolution of wireless radio technology. Within the scope of this seminar, I will present the latest advances of radio frontend (RFFE) technology in wireless industry, including the state-of-the-art RFFE architectures in emerging mobile platforms, demystification of RFFE terminology, carrier aggregation, and envelope tracking. Moreover, this talk will overview the general trends and major challenges in RFFE development towards future generations (e.g., 5G). It is clearly envisioned that the future wireless communication will exploit a massively extended spectrum up to millimeter wave range, targeting for order(s)-of-magnitude improvement of speed, latency, capacity, etc. As a key enabler to this evolution, next-generation RFFE modules will call for ultra-high linearity, wideband, high efficiency and ultimate flexibility. Moreover, integration of RFFE on Silicon together with other functional blocks is also highly desirable, truly enabling the concept of System-On-Chip (SOC).

Dr. Kenle Chen earned Ph.D. degree in Electrical Engineering from Purdue University in 2013. He is currently an Assistant Professor with Electrical, Computer, and Biomedical Engineering Department, University of Rhode Island. Prior to his current position, he worked as a Staff RFIC Engineer with Skyworks Solutions from 2015-2017, where he focused on development of RF frontend modules for the emerging Smart-Phone platforms. From 2013 to 2015, he worked as Principal/Lead RFIC Engineer with innovational startups, where he led the Research & Development of multiple successful products of CMOS integrated power amplifiers and frontend solutions for the latest WLAN platforms, e.g., IEEE802.11ac/ax. As a graduate researcher at Purdue University from 2008 to 2013, he made significant contributions in high-efficiency broadband power amplifiers and co-design of reconfigurable RF circuits for smart communication systems.

Dr. Chen was a recipient of 2012 IEEE MTT-S graduate fellowship. He was the winner of the High Efficiency Power Amplifier Design Competition in IEEE MTT-S International Microwave Symposium (IMS) from 2011 to 2012, consecutively. He is an active reviewer for more than 10 international journals including IEEE T-MTT, T-BCAS, T-CAS I/II, MWCL, etc.