



*The Computer Engineering Research Center
Mixed-Signal/RF Integrated Circuits Seminar Series*

Analog/RF CMOS Circuit Design

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Abstract

This talk presents a sample of the activities of the Communications Technology Lab of Intel Corporation in the area of analog/RF CMOS circuit design. The presentation is based on the 90-nm CMOS transceiver that the group has developed for Wireless LAN applications (802.11a/b/g). The fabricated system includes a robust frequency generation scheme, 2.4/5GHz receive chains, and a 5GHz integrated power amplifier. We also present two design techniques that use cheap digital signal processing power to improve analog/RF performance. The first technique uses digital pre/post-distortion to correct for IQ mismatches in the quadrature transceiver. The required corrections are estimated during a calibration phase that involves the actual analog/RF part. The second technique is a digitally assisted linearization scheme for integrated power amplifiers. The technique uses a varactor controlled by the baseband data to cancel the signal-dependent phase shift of the power amplifier that is responsible for AM-PM distortion. Measurement results are used to support the presented ideas.

Biography

Yorgos Palaskas was born in Greece. He received the Diploma in Electrical and Computer Engineering from the National Technical University of Athens, Greece, in 1996, and the M.S. and Ph.D. degrees, both in Electrical Engineering, from Columbia University, New York, in 1999 and 2002, respectively. His Ph.D. work was in the area of syllabic companding filters for wireless applications.

During the summer of 1999 he was with Texas Instruments, New Jersey, where he worked on disk drive electronics. During the summers of 2000 and 2001 he worked at Agere Systems, New Jersey (formerly Bell Labs), doing research on integrated IF filters. Since January 2003 he has been with the Communications Technology Lab of Intel Corporation, in Hillsboro, Oregon, where he has been doing research on innovative circuits and architectures for Wireless LAN, WiMAX, and UWB applications. Yorgos is currently leading the MIMO radio activities of the group and a number of projects in emerging CMOS technologies.

For more information about the Mixed-Signal/RF Integrated Circuits Seminar Series, please visit <http://www.cerc.utexas.edu/msrf-seminar/>