

Radio Systems One-Day Course

Dr. Tajinder Manku

University of Waterloo, DC 1302, Friday, April 24, 2009 at 9 a.m.

Please register by emailing Vera Korody at vkorody@uwaterloo.ca, Registration is free.

The course is intended for those interested in learning, or reviewing the fundamentals in present cellular radio systems, and the various elements that make up a complete radio product. The course will use the standards GSM, GPRS, EDGE, WCDMA, HSPA+, and LTE as examples to illustrate radio design.

The audience requires knowledge in linear and nonlinear electronic design. A general knowledge of microwave and analog design would be helpful, but is not absolutely required.

Course Description (Subject to Change)

1. Introduction
2. Fundamental Radio Parameters
 - a. Noise
 - b. Linearity
 - c. SNR/EVM
 - d. ACLR
 - e. Spurious
3. Radio Line up
 - a. Passive Filtering – e.g. SAW's, switches
 - b. Power Amplifiers
 - c. Transceivers
4. RFIC Transceivers
 - a. Architectures
 - b. Frequency Synthesizer – “The radio heart beat”
 - c. Receiver chain
 - d. Transmit chain
 - e. Example Circuits

Dr. Tajinder Manku led the Radio Engineering team as an executive at Icera Semiconductor, and qualified the industry's first single-chip multi-standard 3G RF transceiver in products for Nokia, LG Electronics, and several others. The radio was qualified in a number of networks throughout the world. While managing the radio team, he also developed and managed the company's patent portfolio. Prior to Icera, Dr. Manku founded Sirific Wireless with the role of CTO. He developed the world's first integrated CMOS single-chip 2G, 2.5G, 3G, and 3.5G RF transceiver, which resulted in the acquisition of Sirific by Icera Semiconductor in May 2008. He has also led the development of a CMOS 4G LTE transceiver.

Dr. Manku has published more than >100 papers and holds >50 patents. He has been a Professor of Electrical Engineering at the University of Waterloo from 1995 to 2000 and holds a PhD in Electrical and Computer Engineering from the University of Waterloo.