

## RF Test 101: Defining the Problem, Finding Solutions

Mustapha Slamani, IBM Microelectronics

[Slamanim@us.ibm.com](mailto:Slamanim@us.ibm.com)

Rapid growth in the wireless communication market has introduced many challenges in the test community. Today's wireless communication products are more complex and more integrated than their predecessors. To keep pace with the market, the test community must produce innovative test solutions for integrated circuits containing digital, mixed-signal, and radio-frequency blocks. For example, a single chip in a handset cellular phone includes an I/Q modulator and demodulator, low-noise amplifiers, filters, analog-to-digital and digital-to-analog converters, a gain controller, a phase-locked loop, IF amplifiers, and a digital signal-processing block. When testing these parts, engineers face the complexity of a system-on-a-chip and the challenges of high frequency. The competitive market and low prices paid by the consumer for wireless phones have escalated the need for low-cost radio-frequency integrated circuits (RFICs).

Given this competitive low-cost environment, university research trends do not always seem to be in sync with industry needs. In the integrated circuit design field, university researchers have access to the same simulation and design tools that companies use. In the test field, however, most universities do not have access to the same expensive RF automatic test and bench-test equipments as their industry counterparts.

This panel, comprised of university researchers and industry engineers, will debate the best strategy in which to synchronize collaboration between universities and industry to better solve today's and future test challenges. Panelist from industry outlines the RF test problem and challenges they are facing and then summarize the top issues that should be solved. Panelists will provide details about the pros and cons associated with this kind of collaboration. The panel will address topics such as the following:

- Identify existing and future challenges facing industry in wireless products testing
- Role of Universities & industry
- Identify the infrastructure and resources available at university research labs that can handle industry needs
- Identify graduate students with an excellent knowledge of digital, analog, and RF integrated circuitry
- Identify the specific domains in which universities can benefit industry, for example, automatic test equipments, test boards, modeling, simulation, and so forth

**Organizer:** Mustapha Slamani, IBM Microelectronics

**Moderator:** Gordon Roberts McGill University

**Panelists:**

William R. Eisenstadt

University of Florida

Abhijit Chatterjee

Georgia Institute of Technology

Mustapha Slamani

IBM Microelectronics

James Paviol

Intersil

John McLaughlin

Agilent Technologies

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