Guest Editorial

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Modern SoCs embed analog and mixed-signal components to interface digital processing or to accelerate processing in high-performance devices, RF components to enable inter-systems communication, as well as MEMS components to perform sensing and actuation. Areas of application include computers and video technologies, data communications, instrumentation and measurement, environment and process control, automotive electronics, and many others. The success of these applications, as determined by their quality and reliability, requires the integration of comprehensive test methodologies and tools into design and test environments. Arguably, rapid growth in system integration is making analog, mixed-signal, RF, and MEMS testing issues increasingly challenging. According to industry experts, the cost of testing these devices in a SoC context can amount up to 50% of the overall manufacturing cost, despite the fact that they occupy a die area that is very small compared to their digital counterparts. This shows that reducing the cost of test while maintaining outgoing quality is in the coming years an area for industry focus, innovation and improvement.

This special issue brings together survey papers, tutorials, and research articles on all aspects of analog, mixed-signal, RF, and MEMS testing. It includes 15 excellent papers from

academia and industry. Most of these papers are expanded versions of the preliminary work presented at the 16th IEEE International Mixed-Signals, Sensors, and Systems Test Workshop, held in La Grande Motte, Montpellier, France, 7–9 June, 2010.

The papers are grouped into four sections and deal with RF testing, mixed-signal testing, high-speed testing, and sensor testing. RF testing papers discuss built-in test circuitry for extracting off-chip low-frequency or digital signatures that contain RF information, diagnosis tools, RFID on-line test, and the analysis of RF test signals using digital only test resources. Mixed-signal testing papers address DfT techniques for converters. The single paper on high-speed testing discusses a development platform for prototyping new multi-GHz ATE. Finally, sensor test papers focus on micro-fluidics, accelerometers, and photo-voltaic cells.

We would like to thank all authors and reviewers for their contribution to this special issue which we believe will be a valuable source for researchers and practitioners in this field. Special thanks are due to Prof. Vishwani Agrawal for dedicating a special issue to this important field and the Editorial Staff of the journal for working timelessly on the production of this issue.

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