



Automatic RF Techniques Group
93rd ARFTG Microwave Measurement Symposium
Measurement challenges for the upcoming RF and mm-wave communications and sensing systems
Boston, MA, USA, June 7, 2019

TECHNICAL AGENDA

Friday, June 7, 2019

8:00 to 8:10

[Welcome to the 93rd ARFTG Conference Introduction](#)

Conference Co-Chairs: [Mohammad Sayed and David Blackham](#)

TPC Co-Chairs: [Marco Spirito and Patrick Roblin](#)

Session A: Non-linear measurement techniques

Session Chair: Marco Spirito and Patrick Roblin.

8:10 to 8:50

KEYNOTE: Design of an On-Chip mmWave LSNA with Load Pull and Advanced Signal Sources

Dylan Williams, Jerome Cheron, Richard Chamberlin, Tasshi Denis

NIST

A-1

8:50 to 9:10

Characterizing Amplifier Modulation Distortion Using a Vector Network Analyzer

Jan Verspecht, Augustine Stav, Sam Kusano, Jean-Pierre Teyssier,

Keysight Technologies

A-2

9:10 to 9:30

Harmonic Cancellation Technique for Ultra-Wideband Filter-Less 5G Transmitter

Girish Chandra Tripathi¹, Meenakshi Rawat¹, Patrick Roblin²

¹*Institute of Technology Roorkee*, ²*The Ohio State University*

A-3

9:30 to 9:50

A Novel Modulated Rapid Load Pull System with Digital Pre-Distortion Capabilities

Sattam Alsaahali¹, Jonathan Lees¹, Aamir Sheik², Dragan Gecan², Alexander Alt¹, Guofeng Wang¹, Simon Woodington², Peng Chen¹, Paul Tasker¹

¹*Cardiff University*, ²*MESURO*

9:50 to 10:40

[Break – Exhibits and Interactive Forum](#)

Session B: Mixed-Signal and MIMO systems calibration and measurements

Session Chair: Peter Aaen and Joe Gering

B-1

10:40 to 11:00

Frequency response of real time digital oscilloscope with time-interleaving architecture

Chihyun Cho, Dong-Joon Lee, Hyun-Jee Goo, Joo-Gwang Lee

KRISS

B-2

11:00 to 11:20

Automatic vector signal generator calibration method suitable for multiport large-signal measurements

Tibault Reveyrand, Alexis Courty, Morgane Portelance, Pierre Medrel, Philippe Bouysse, J. M. Nebus

XLIM

B-3

11:20 to 11:40

Calibrated Digital Predistortion Using a Vector Network Analyzer as the Receiver

Thaimí Niubó Alemán^{1,2}, Yunsik Hahn², Patrick Roblin², Jean-Pierre Teyssier³, J. Apolinar Reynoso-Hernández¹, Vanessa Chen², Siddharth Rajan²

¹*CICESE*, ²*The Ohio State University*, ³*Keysight Technologies*

B-4

11:40 to 12:00

Over-the-Air Phase Measurement and Calibration Method for 5G mmW Phased Array Radio Transceiver

Markku Jokinen, Olli Kursu, Nuutti Tervo, Jani Saloranta, Marko E. Leinonen, Aarno Pärssinen
University of Oulu

12:00 to 13:30

Awards Luncheon

Session C: Calibration and measurements from coaxial to on-wafer and from RF to (sub)mm-wave

Session Chair: Leonard Hayden and Andrej Rumiantsev

C-1

13:30 to 13:50

Confidence and Prediction Intervals for Microwave Calibrations and Measurements

Dylan Williams, Benjamin Jamroz, Jacob Rezac

NIST

C-2

13:50 to 14:10

S-Parameter Definition for Adapters with a Dielectrically Loaded Connector

Johannes Hoffmann, P. Huerlimann, M. Wollensack, J. Ruefenacht, M. Zeier

METAS

C-3

14:10 to 14:30

TRL Error-box Split to Compensate for the Bias Dependency of ESD and Antenna Protection Diodes in mm-Wave

Carmine De Martino, Eduard Malotau, Marco Spirito

TU Delft

C-4

14:30 to 14:50

Electronic Calibration of One-Port Networks at Submillimeter Wavelengths using Schottky Diodes as On-Wafer Standards

Linli Xie¹, Matthew Bauwens², Souheil Nadri¹, Michael Cyberey¹, Alexander Arsenovic³, Arthur Lichtenberger¹, N. Scott Barker¹, Robert M Weikle¹

¹University of Virginia, ²Dominion MicroProbes, ³810 Labs

14:50 to 15:40

Break – Exhibits and Interactive Forum

Session D: Other areas of RF and microwave measurement techniques

Session Chair: Jim Booth and Jeffrey Jargon

D-1

15:40 to 16:00

Differential noise measurements: sensitivities and uncertainties with direct correlation- and balun-based methods

Jon Martens

Anritsu

D-2

16:00 to 16:20

Experimental Verification and Imaging of Radiation Due to Coaxial-to-Microstrip Transitions

Haris Votsi, Jonas Urbonas, Peter Aaen

University of Surrey

D-3

16:20 to 16:40

The HF-VNA, an interferometric approach for the accurate measurement of extreme impedances

Raffaele Romano¹, Faisal Mubarak², Marco Spirito³, Luca Galatro^{1,3}

¹Vertigo, ²VSL, ³TU Delft

D-4

16:40 to 17:00

Non-Contact Characterization of Antenna Parameters via One-Port Open-Fixture Network Calibration

Seckin Sahin, Niru Nahar, Kubilay Sertel

The Ohio State University

Interactive Forum

Session Chair: Rusty Myers

P-1

9:50 to 15:40

Investigating the Effects of IF Bandwidth and Averaging on Calibrated Scattering-Parameter Measurements

Jeff Jargon, Amanda Koepke, Paul Hale

NIST

- P-2**
9:50 to 15:40 **Noise Power Ratio Prediction and Measurement of a Ku band GaN Power Amplifier**
 Matthew Cullen, Mark Cavin, Lowell Hoover, Alan Cherrette
Lockheed Martin
- P-3**
9:50 to 15:40 **Two-Tone Intermodulation Measurement of W-band Amplifiers based on High-Linearity Frequency Down-Conversion**
 Yuh-Jing Hwang
Academia Sinica
- P-4**
9:50 to 15:40 **Low-Cost & Light-Weight 6 GHz Band Resin Based Cavity for Dielectric Plate Characterizations using Additive Manufacturing Techniques**
 Takashi Shimizu, Yoshinori Kogami
Utsunomiya University
- P-5**
9:50 to 15:40 **Investigation of Waveguide Sensors for Ultra-Short-Distance Measurements**
 Aleksandra Baskakova, Karel Hoffmann
Czech Technical University in Prague
- P-6**
9:50 to 15:40 **Impact of RFIC Spurious Noise on Receiver of Cellular Handset in Communication State**
 Masafumi Iwaki^{1,3}, Kazuhiro Matsumoto¹, Kazuhiko Kobayashi^{1,2}
¹Taiyo Yuden, ²Taiyo Yuden Mobile Technology Co., ³Chiba University
- P-7**
9:50 to 15:40 **Identity Authentication System using a Support Vector Machine (SVM) on Radar Respiration Measurements**
 Shekh Md Mahmudul Islam¹, Ashikur Rahman², Narayana Santhanam¹, Olga Boric-Lubecke¹, Victor Lubecke¹
¹University of Hawaii, ²Aptiv
- P-8**
9:50 to 15:40 **Machine Learning in a Quality Managed RF Measurement Workflow**
 Aric Sanders¹, John M. Bass², Arpita Bhutani³, MaryAnn S. Ho⁴, James C. Booth¹
¹NIST, ²Rose-Hulman Institute of Technology, ³Peak to Peak Charter School, Lafayette, Co, ⁴Fairview High School, Boulder Co.
- P-9**
9:50 to 15:40 **Waveguide Method for Surface Impedance Measurements on Composite Material Substrates**
 Dimitrios Fakis¹, Chris Worrall², Mihalis Kazilas³
¹Brunel University, ²National Structural Integrity Research Center, ³TWI
- P-10**
9:50 to 15:40 **Methodology of Nanoscale Electrical Characterization for Wide-Range Dielectric Permittivity Materials by Scanning Microwave Microscopy**
 Masahiro Horibe, Iku Hirano
AIST
- P-11**
9:50 to 15:40 **Spectral Purity Measurement of Millimeter-Wave Signal Sources**
 Jae-Yong Kwon^{1,2}, Aditia Nur Bakti², No-Weon Kang¹
¹KRISS, ²University of Science and Technology, Daejeon
- P-12**
9:50 to 15:40 **Challenges in Terahertz Fiber Based Inter-device Communications**
 Kathirvel Nallappan, Hichem Guerboukha, Yang Cao, Chahe Nerguizian, Maksim Skorobogatiy
Ecole Polytechnique de Montreal

Closing Notes. End of ARFTG-93rd Conference