



95th ARFTG Microwave Measurement Conference

Technical Program

Live-Streamed talks

Chair: TBD

A-1
0930-1015 **Electro-Optic Mapping Techniques for Characterization of Microwave Circuits, Devices and Antenna Systems (Keynote)**
Kaz Sabet, EMAG Technologies Inc, Ann Arbor, MI, USA

C-1
1015-1100 **How Did We Get Here? A Short History of VNA Technology (Invited Talk)**
Andrea Ferrero, Keysight Technologies

Oral Session A: Electromagnetic Field Measurements

Chair: TBD

A-2
0840-0900 **Over-the-Air Test of Dipole and Patch Antenna Arrays at 28 GHz by Probing Them in the Reactive Field**
Utpal Dey¹, Jan Hesselbarth¹, Jose Moreir², Krzysztof Dabrowiecki³
¹University of Stuttgart, ²Advantest Europe GmbH, ³Feinmetall GmbH

A-3
0900-0920 **5G Waveform vs. CW: Near-Field Measurement of De-Coupled Electric and Magnetic Fields for Power Density Assessment**
Maryna Nesterova¹, Stuart Nicol¹, Yuliya Nesterova²
¹APREL, Inc, ²Queen's University

A-4
0920-0940 **Over-the-Air Characterization Of mm-Wave On-Chip Antennas and Tx Modules, Concept and Calibration**
Carmine De Martino¹, Akshay Visweswaran², Marco Spirito¹
¹Delft University of Technology, ²IMEC

Oral Session B: Sources and Nonlinear Device Measurements

Chair: TDB

- B-1**
1040-1100 **A Cryogenic Quantum-Based RF Source**
J. Brevik, A. Boaventura, M. Castellanos-Beltran, C. Donnelly N. Flowers-Jacobs, A. Fox, P. Hopkins, P. Dresselhaus, D. Williams, S. Benz, National Institute of Standards and Technology
- B-2**
1100-1120 **Modulation Distortion Analysis for Mixers and Frequency Converters**
J. Verspecht, T. Nielsen, A. Stav, J. Dunsmore, and J.-P. Teyssier
Keysight Technologies, Santa Rosa, CA
- B-3**
1120-1140 **Swept Notch NPR for Linearity Assessment of Systems Presenting Long-Term Memory Effects**
R. Figueiredo¹, A. Piacibello², V. Camarchia², N. Borges Carvalho³
¹University of Aveiro, ²Politecnico di Torino, ³Instituto de Telecomunicacoes
- B-4**
1140-1200 **Vector Gain Based Behavioral Models for Distortion Evaluation in mm-Wave Devices**
J. van 't Hof¹, E. Malotau¹, M. Squillante², M. Marchetti², L. Galatro³, M. Spirito¹
¹Delft University of Technology, ²Anteverta-mw B.V., ²Vertigo Tech

Oral Session C: VNA Measurements and Calibration

Chair: TBD

- C-2**
1350-1410 **Calibration, Repeatability and Related Characteristics of On-wafer, Broadband 70 kHz-220 GHz Single-Sweep Measurements**
Andrej Rumiantsev¹, Jon Martens², Steve Reyes²
¹MPI Corporation, ²Anritsu
- C-3**
1410-1430 **Multi-port Reflectometry Applied to a Varactor-Tuned Sampled-Line**
Steven Claessens and Taylor Barton
University of Colorado - Boulder
- C-4**
1430-1450 **Towards Commercially Available Quartz Calibration Substrates**
L. Galatro¹, C. De Martino², J. van 't Hof², M. Alomari³, J. Burghartz³, M. Spirito²
¹Vertigo Tech, ²Delft University of Technology, ³Institut für Mikroelektronik Stuttgart (IMS)

Oral Session D: Additional Measurement Topics

Chair: TBD

- D-1**
1540-1600 **Cryogenic Calibration of a Quantum-based Radio Frequency Source**
Zain Ahmed Khan^{1,2}, Peter Händel², and Magnus Isaksson¹
A. Boaventura, J. Brevik, D. Williams, A. Fox, M. Castellanos-Beltran, P. Hopkins, P. Dresselhaus, S. Benz,
National Institute of Standards and Technology
- D-2**
1600-1620 **Measurement of Dielectric Properties Using Reflected Group Delay of an Over-Coupled Resonator**
Gaurav Walia, Paul Laforge, Muhammed Suleman
University of Regina
- D-3**
1620-1640 **Setup and Control of a Millimeter-Wave Synthetic Aperture Measurement System with Uncertainties**
A. Weiss¹, J. Quimby¹, R. Leonhardt¹, B. Jamroz¹, D. Williams¹, K. Remley¹, P. Vouras¹,
A. Elsherbeni², ¹National Institute of Standards and Technology, ²Colorado School of Mines
- D-4**
1640-1700 **Over-the-Air Testing of Cellular Large-Form-Factor Internet-of-Things Devices in Reverberation Chambers**
K. Remley¹, C. Bax², E. Mendivil³, M. Foegelle³, J. Kvarnstrand⁴, D. Skousen⁴, D. Sánchez-Hernández⁵, M.
García-Fernández⁵, L. Chang⁶, J. Gutierrez⁷, E. Yen⁷, J. Harbour⁷
¹National Institute of Standards and Technology, ²Bureau Veritas, ³ETS-Lindgren, ⁴Bluetest AB, ⁵EMITE,
⁶Sporton, ⁷Dell.

Interactive Forum Session

Chair: TBD

Backward Unknown-Thru Calibration Method
JeongHwan Kim, Jin-Seob Kang, Jeong-Il Park, Chihyun Cho
KRISS

Active Interferometry-Based Vector Network Analyzer Reference Impedance Renormalization
Haris Votsi¹, Cristian Matei², Stavros Iezekiel¹, Peter H. Aaen³
¹University of Cyprus, ²University of Surrey, ³Colorado School of Mines

SOLT and SOLR calibration methods using a single multiport “thru” standard connection
Tibault Reveyrand, Silvia Hernandez, Sebastien Mons, Edouard Ngoya
XLIM, University of Limoges

Fast Software-Defined Radio-based System Performance Evaluation for Real-time Adaptive RF Systems
Austin Egbert¹, Benjamin Kirk², Charles Baylis¹, Anthony Martone³, Robert J. Marks II¹
¹Baylor University, ²Pennsylvania State University, ³Army Research Laboratory

Model of Probe Transition Including Probe Mispositioning

Robin Schmidt¹, Dominique Schreurs², Michael Dieudonné¹, Pawel Barmuta²
¹Keysight Technologies, ²Katholieke Universiteit Leuven

Vector Network Analyzer Calibration for Characterization of Packaged Power MOSFET Device at RF Frequency

Masahiro Horibe and Iku Hirano, AIST

High-Performance Probe for Over-the-Air Measurement

Mohammadreza Ranjbar Naeni, Yuchen Gu, Daniel van der Weide
University of Wisconsin-Madison

Complex Permittivity Measurement Technique for a 3D Printed Rectangular Dielectric Rod using an NRD Guides at 60-GHz Band

Takashi Shimizu and Yoshinori Kogami, Utsunomiya University