89TH ARFTG MICROWAVE MEASUREMENT CONFERENCE TECHNICAL PROGRAM

08:00–17:00 | Friday, 9 June 2017
Ala Moana Hotel, Hibiscus Ballroom

Welcome and Introduction

08:00–08:10 | (i) ARFTG President; (ii) Conference General Chair; (iii) Conference TPC Chair

Oral Session A: Communications I

08:10–9:40 | Chair: Jon Martens, *Anritsu*

Thermal Transport in Transistors Based on GaN and Novel 2D Materials (Keynote)
Ali Shakouri, *Purdue University, West Lafayette, IN, USA*

Independent Component Analysis for Multi-Carrier Transmission for 4G/5G Power Amplifiers
Praveen Jaruat[1], Girish Chandra Tripathi[1], Meenakshi Rawat[1], Patrick Roblin[2],
[1]Indian Institute of Technology, Roorkee, India, [2]The Ohio State University, Columbus, Ohio, USA

Digital Predistortion for 5G Wideband Power Amplifiers Using Multiple Band-Limited Feedback Signals
Qian Zhang, Wenhua Chen, Zhenghe Feng, *Department of Electronic Engineering, Tsinghua University, Beijing, China*

Experimental Testbed for PA Characterization and Pre-Distortion with Relaxed Sampling Rate Requirements
Peter Bagot[1], Souheil Ben Smida[1], Oualid Hammi[2],
[1]University of Bristol, Bristol, UK, [2]American University of Sharjah, Sharjah, United Arab Emirates

Oral Session B: Calibration

10:40–12:00 | Chair: Dave Blackham, *Keysight Technologies*

Software Tools for Uncertainty Evaluation in VNA Measurements: A Comparative Study
G. Avolio[1], D. F. Williams[2], S. Streett[2], M. Frey[2], D. Schreurs[1], A. Ferrero[3], M. Dieudonne[3],
[1]KU Leuven, Belgium, [2]NIST, Boulder, CO, USA, [3]Keysight Technologies, CA, USA

Quantifying the Error Contribution of Noise Parameters on Y-Factor Noise Figure Measurements
Ken Wong, Joe Gorin, Guoquan Lu, *Keysight Technologies, Santa Rosa, CA*

An Accurate Calibration Method of Microwave Noise Sources Using Noise Wave De-embedding Techniques
C.-Y. Edward Tong[1], Jake A. Connors[2], Edward Garcia[3],
[1]Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA, [2]Harvard University, Physics Department, Cambridge, MA, USA, [3]Noisewave Corporation, Whippany, NJ, USA

Mutual Interference in Calibration Line Configurations
F.J. Schmückle[1], T. Probst[2], U. Arz[2], G.N. Phung[1], R. Doerner[1], W. Heinrich[1],
[1]Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik (FBH), Berlin, Germany, [2]Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany

Oral Session C: Communications II

13:20–14:50 | Chair: Jeff Jargon, *NIST*

Radio Frequency Nanoelectronics: Microwave Measurements in Miniature (Keynote)
Thomas M Wallis, *NIST, Boulder, CO*

Coherent multi-tone stimulus-response measurements with a VNA
Jean-Pierre Teyssier, Joel Dunsmore, Jan Verspecht, Jim Kerr, *Keysight Technologies, Santa Rosa CA*

Measurement-Based Analysis of the Throughput-Power Level Trade-off with Modulated Multisine Signals in a SWIPT System
Steven Claessens, Mohammad Rajabi, Ning Pan, Sofie Pollin, and Dominique Schreurs, *Department of Electrical Engineering, University of Leuven, Leuven, Belgium*

SLIC EVM - Error Vector Magnitude without Demodulation
Karl Freiberger[1], Harald Enzinger[1], and Christian Vogel[2,1],
[1]Signal Processing and Speech Communication Laboratory, Graz University of Technology, Austria 2FH JOANNEUM – University of Applied Sciences, Austria

Oral Session D: General Measurement

15:40–17:00 | Chair: Andrej Rumiantsev, *MPI Corporation*

A Comparative Analysis of the Complexity/Accuracy Tradeoff in the Mitigation of RF MIMO Transmitter Impairments

Zain Ahmed Khan[1,2], Peter Händel[2], and Magnus Isaksson[1], *[1]Dept. Electronics, Mathematics, and Natural Sciences, University of Gävle, Sweden [2]ACCESS Linnaeus Center, Department of Information Science and Engineering, KTH Royal Institute of Technology, Stockholm, Sweden*

High Dynamic Range DC Coupled CW Doppler Radar for Accurate Respiration Characterization and Identification

Ashikur Rahman, Victor Lubecke, Ehsan Yavari, Xiaomeng Gao, and Olga Boric-Lubecke, *Department of Electrical Engineering, University of Hawaii at Manoa, Honolulu, Hawaii, USA*

New Interferometric Sensor for Scanning Near-Field Microwave Microscopy - Summary

Karel Hoffmann, *Czech Technical University in Prague, Prague, Czech Republic*

A Review of the IEEE 1785 Standards for Rectangular Waveguides Above 110 GHz

N M Ridler[1] and R A Ginley[2] *[1]NPL, Teddington, UK, [2]NIST, Boulder, CO, USA*

Interactive Forum Session

09:40–10:40 & 14:50–15:40 | Chair: Ron Ginley, *NIST*

Ultra-wideband Electromagnetic Detection of Biological Cells

N. Gholizadeh, X. Ma, H. Li, X. Du, Y. Ning, V. Gholizadeh, X. Cheng, and J. C. M. Hwang, *Lehigh University, Bethlehem, PA*

VNA Tools II: Calibrations Involving Eigenvalue Problems

Michael Wollensack, Johannes Hoffmann, Daniel Stalder, Juerg Ruefenacht, Markus Zeier, *Federal Institute of Metrology METAS Lindenweg 50, 3003, Bern-Wabern, Switzerland*

Trends for Computing VNA Uncertainties

David Blackham
Keysight Technologies, Santa Rosa, CA

TRL-Based Measurement of Active Antennas and Other More Complex Microwave Structures

Petr Ourednik, Viktor Adler, Premysl Hudec Faculty of Electrical Engineering, *Czech Technical University in Prague, Czech Republic*

An Automated Fault Detection Program for Multichannel Bandwidth Limited System

Chi Van Pham[1], Benjamin Sawtelle[1], Stephen Imbach[1], Anh-Vu Pham[1], Jironghe[2], *[1]Davis Millimeter Wave Research Center, University of California-Davis, Davis, CA, [2] Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, P.R. China*

Setup and Calibration Procedure for LPE PA Characterization with Synchronous Input-Output Excitations

Filipe M. Barradas, Telmo R. Cunha and José C. Pedro DETI, *Universidade de Aveiro, Instituto de Telecomunicações*

Performance Comparisons Between Impedance Analyzers and Vector Network Analyzers for Impedance Measurement Below 100 MHz frequency

Masahiro Horibe, *National Metrology Institute of Japan, National Institute of Advanced Industrial Science and Technology, Japan*

A Novel Experimental Method for Microwave Dielectric Characterization of Flexible or Rigid Thin Sheets

Ehsan Hajisaeid[1], Arcan F. Dericioglu[1], [2], Alkim Akyurtlu[1], *[1]Electrical and Computer Engineering Department, University of Massachusetts – Lowell, [2]Metallurgical and Materials Engineering Department, Middle East Technical University, Ankara, Turkey*

A Method for Improving High-Insertion-Loss Measurements with a Vector Network Analyzer

Jeffrey A. Jargon and Dylan F. Williams, *National Institute of Standards and Technology, Boulder, CO, USA*

Complex permittivity measurement for a low loss dielectric rod using a novel 50 GHz band TM_{010} mode cavity

Takashi Shimizu, Hikaru Inada, Yoshinori Kogami, *Graduate School of Engineering, Utsunomiya University*

A Phase Reference Standard Free Setup for Two-path Memory Model Identification of Wideband Power Amplifier

Kassem El-Akhdar[1], Damien Gapillout[1,2], Christophe Mazière[2], Sébastien Mons[1], and Edouard Ngoya[1], *[1]XLIM, University of Limoges, Limoges, France [2]AMCAD Engineering, Limoges, France*

Cryogenic Probe for Two-Port Calibration at 4.2 K and Above
Daniel E. Oates, Richard L. Slattery, David J. Hover, *MIT Lincoln Laboratory Lexington MA USA*

Design of WR-6 (110 GHz ~ 170 GHz) Waveguide Microcalorimeter
Wenze Yuan[1], Xiaohai Cui[1], Yong Li[1], Guangyu Wei[1,2] and Fei Gao[2], [1]*National Institute of Metrology, Beijing, China* [2]*School of Information and Electronics, Beijing Institute of Technology, Beijing, China*

Minimizing Discontinuities in Wafer-Level Sub-THz Measurements up to 750 GHz for Device Modeling Applications with Emphasis on Probe-Tip Power Calibration
Choon Beng Sia, *Cascade Microtech Inc, Singapore*

Pad-Open-Short De-embedding Method Extended for 3-Port Devices and Non-Ideal Standards
W. Khelifi[1], T. Reveyrand[1], J. Lintignat[1], B. Jarry[1], R. Quéré[1], L. Lapierre[2], V. Armengaud[2] [1]*XLIM, 123 av. Albert Thomas, 87060 Limoges Cedex, France* [2]*CNES, 18 av. E. Belin, 31400 Toulouse, France*

A Millimeter Wave MIMO Testbed for 5G Communications
Tian Hong Loh, David Cheadle, Philip Miller, *National Physical Laboratory, Teddington, United Kingdom*

Measurement of Scaled Complex Enclosures for EMI Applications
Bo Xiao[1], Steven M. Anlage[1, 2], [1]*Electrical and Computer Engineering, University of Maryland, College Park, MD, USA* [2]*Center for Nanophysics and Advanced Materials, Physics Department, College Park, MD, USA*

Mismatch uncertainty in RF & microwave power measurements
H. Silva, G. Monasterios, and A. Henze, *Instituto Nacional de Tecnologıa industrial (INTI), Lab. Metrologıa RF & Microondas*

Load-Pull Measurements using Centroidal Voronoi Tessellation
Paweł Barmuta[1,2], Konstanty Łukasik[1,2], Francesco Ferranti[3], Gian Piero Gibiino[4], Arkadiusz Lewandowski[2], Dominique Schreurs[1], [1]*KU Leuven,* [2]*Warsaw University of Technology,* [3]*CNRS UMR,* [4]*University of Bologna*

Broadband Microwave Dielectric Characterization Method for Printable Dielectric Inks
Elicia Harper, Mahdi Haghzadeh, Ehsan Hajisaeid, Craig Armiento, and Alkim Akyurtlu, *University of Massachusetts Lowell, Lowell, MA, USA*

CONFERENCE SCHEDULE OVERVIEW

Time	Activity	Duration
08:00–08:10	Welcome & Introduction	10 mins
08:10–09:40	Technical Session A	90 mins
09:40–10:40	Break Exhibition Interactive Forum Session	60 mins
10:40–12:00	Technical Session B	80 mins
12:00–13:20	Awards Luncheon	80 mins
13:20–14:50	Technical Session C	90 mins
14:50–15:40	Break Exhibition Interactive Forum Session	50 mins
15:40–17:00	Technical Session D	80 mins