2006 67th ARFTG Conference

16 June 2006

San Francisco, CA

67th ARFTG Conference Agenda

8:00 to 8:15 AM   **Welcome and Introduction**

8:15 to 9:45 AM   **Session 1: Forward to Large Signal Measurements**
John Wood, Session Chair

Network Analyzers from Small Signal to Large Signal Measurements
Doug Rytting, Rytting Consulting, Santa Rosa, CA [11]

Tracking the Waveform of Microwave Oscillators
Y. Rolain, W. Van Moer, J. Schoukens and R. Pintelon, Vrije Universiteit
Brussels, Belgium [50]

Large Signal S-parameters
Michał Odyniec, HRL Laboratories, Malibu, CA [55]

Broadband High Power Amplifiers for Instrumentation
F.N.Sechi and M.Bujatti, Microwave Power, Inc., Santa Clara, CA [61]

9:45 to 10:30 AM   **Break and Interactive Forum**

10:30 to 12:10 PM   <u>**Session 2: High Power Device Measurements**</u>
Franco Sechi, Session Chair

Improving Load-Pull Measurement Time by Intelligent Measurement Interpolation and Surface Modeling Techniques
Paul Hart, John Wood, Basim Noori, Peter Aaen, Freescale Semiconductor, Inc., Tempe, Az [69]

Load-Pull Measurement Comparison of an LDMOS with Two-Tone and Digitally Modulated Stimuli.
Pejman Ghanipour, Shawn Stapleton., and Jong-Heon Kim(1) Simon Fraser University, Bumby, B.C. Canada, 1 Kwangwoon University, Seoul, Korea [73]

Power Accuracy and Source-Pull Effect for A High-Power RF Generator
Yufeng Han, Aaron Radomski,Yogi Chawla, John Valcore and Sal Polizzo, MKS-ENI Products, Rochester, NY [81]

Nonlinear Microwave System Characterization Based on Higher Order Statistics
João Paulo Martins, Nuno Borges Carvalho and José Carlos Pedro Instituto de Telecomunicações, Campo Universitário, Aveiro, Portugal [93]

Millimeter Wave Power Measurement above 110 GHz
Yuenie S. Lau, Tony Denning and Chuck Oleson - OML, Inc., Morgan Hill, CA [97]

12:10 to 1:20 PM   <u>**Lunch and Awards**</u>

1:20 to 3:00 PM   <u>**Session 3: VNA Measurements and System Characterizations**</u>
Yves Rolain, Session Chair

Using Simple Calibration Load Models to Improve Accuracy of Vector Network Analyzer Measurements
Nick M. Ridler - National Physical Laboratory, UK, and Nils Nazoa - LA Techniques Ltd, UK [104]

A Monte Carlo Analysis of VNA-Based Time Domain Uncertainties
J. Martens - Anritsu Company, Morgan Hill, CA [111]

De-Embedding Technique for S-Parameter Measurements under High RF Power, Coupled to Thermal Imaging
Brice Ivira - Institute of Microelectronics - Electromagnetism and Photonics (IMEP). Fabien Ndagijimana - Institute of Microelectronics, Electromagnetism and Photonics (IMEP). René-Yves Fillit - Ecole Nationale Supérieure des Mines de Saint-Etienne, France [121]

The Locus of Points of Constant Output VSWR around the Load Optimal Impedance: Evaluation of Power Transistors Robustness
Floria Blanchet (1), Hind Bousbia (2), Denis Barataud (2), Jean-Michel Nebus (2), Denis Pache (1) (1) ST Microelectronics, Cedex, France; (2) Xlim - Dép. C^2S^2– CNRS UMR n°6172, Cedex, France [129]

Statistical Estimation of the Propagation Constant in Multiline Calibrations
Kristoffer Andersson, Christian Fager - Microwave Electronics Laboratory, Chalmers University of Technology, Göteborg, Sweden [133]

3:00 to 3:45 PM   <u>**Break and Interactive Forum**</u>

Interactive Forum
John Wood, Forum Chair
David Blackham, Forum Co-Chair

Section A – Calibration

An Improved Multiline TRL Method
J. E. Zúñiga-Juárez, J. A. Reynoso-Hernández, and M. C. Maya-Sanchez. Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE) División de Física Aplicada, Departamento Electrónica y Telecomunicaciones, Ensenada, B.C. México [139]

An Enhanced Line-Reflect-Reflect-Match Calibration
Leonard Hayden, Cascade Microtech, Inc., Beaverton, OR [143]

Automatic Root Selection for the Unknown Thru Algorithm
J. Stenarson and K. Yhland SP Swedish National Testing and Research Institute, Boras, Sweden [150]

Estimation of Uncertainty of Calibration for Loop Antennas by Three-Antenna Method Using Automatic Network Analyzer
Masanori Ishii and Koji Komiyama - National Institute of Advanced Industrial Science and Technology, National Metrology Institute of Japan [156]

Calibration of Six-Port Reflectometers Using Null Double Injection
Dan Hui, Robert M. Weikle II, - Charles L Brown Department of Electric and Computer Engineering University of Virginia. Charlottesville, VA [164]

Section B – Modeling

Understanding the Nonlinearity of a Mixer Using Multisine Excitations
Koen Vandermot, Wendy Van Moer, Johan Schoukens and Yves Rolain - Vrije Universiteit Brussels, Belgium [181]

Modeling the Substrate Effect of RF MOSFET's Based on Four-Port Measurement
Shih-Dao Wu, Guo-Wei Hwang, and Kuo-hsiang Liao - National Nano Device Laboratories, Hsinchu,Taiwan, R.O.C. [186]

Wideband Characterization of a Doherty Amplifier Using Behavioral Modeling
D. Wisell (1,2,3), M. Isaksson (1,2), N. Keskitalo (1,3), D. Rönnow (1), 1 University of Gävle, Dept. of Electronics, Gävle, Sweden, 2 Royal Institute of Technology, Signal Processing Lab, Stockholm, Sweden, 3 Ericsson AB, Gävle, Sweden. [190]

Section C – Power Measurements

Noncontacting Measurement of Power in Microstrip Circuits
K. Yhland and J. Stenarson - SP Swedish National Testing and Research Institute, Boras, Sweden [201]

Using the Goodness-of-Fit to Validate the Power Sensor Linearity Specification
Yeou-Song (Brian) Lee – Anritsu Company, Morgan Hill, CA [206]

Section D – Microwave Measurements

Designing Power Amplifiers? Use Good Excitation Signals
Ludwig De Locht (1,2), Yves Rolain (2), Gerd Vandersteen (1,2), 1 IMEC, Wireless Research Kapeldreef 75, B-3001 Heverlee, Belgium, 2 Vrije Universiteit BrusselsDept. ELEC, Pleinlaan 2, B-1050 Brussels, Belgium [211]

Coplanar Microwave Probe Characterization: Caveats and Pitfalls
Uwe Arz, Dirk Schubert, Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany [214]

Multiport S-Parameter Calculation from Two-Port Network Analyzer Measurements With or Without Switch Matrix
Holger Heuermann – Univ. of Applied Sciences Aachen, Institute of High Frequency Technology, Germany [219]

Cold-Source Measurements for Noise Figure Calculation in Spectrum Analyzers
N. Otegi, J.M. Collantes - Electricity and Electronics Department, University of the Basque Country, Bilbao, Spain, M. Sayed - Microwave & MillimeterWave Solutions, Santa Rosa, CA [233]

Load-Pull Measurements of Differential Amplifiers
Dietmar Köther, Jörg Berben, IMST GmbH, Kamp-Lintfort, Germany [229]

Section E – System Characterizations

An Automated VCOs Characterization System
Jean-François Nowakowski - ST Microelectronics, Cedex, France [235]

The Role of Channel Frequency Response Estimation in the Measurement of RF Impairments in OFDM Systems
Huseyin Arslan, Electrical Engineering Department University of South Florida, Tampa, FL, and Daljeet Singh, Anritsu Company, Morgan Hill, CA [241]

Optical Fiber Link 1-Pass 2-Port Antenna Measurement System
Satoru Kurokawa, Masanobu Hirose, Koji Komiyama, National Institute of Advanced Industrial Science and Technology, AIST, Ibaraki, Japan [246]

The Applicability of Noise Power Ratio (NPR) in Real Communication Signals
Khaled M. Gharaibeh, Hijjawi Faculty of Engineering Technology, Yarmouk University, Irbid Jordan , Kevin G. Gard ,Michael B. Steer, Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC [251]

Field Profiling of Resonant Structure by an Active Circuit Loop Method
Chunguang Jing - Euclid Techlabs, LLC, Solon, OH, Thomas Wong - Department of Electric and Computer Engineering, Illinois Institute of Technology, Chicago, IL [254]

Statistical Evaluation of Finite Length Digital Modulation Sequences
P. Draxler- UCSD & QUALCOMM Inc., San Diego, P.M. Asbeck - University of California at San Diego, La Jolla, CA [259]

Design and Evaluation of Microwave System for Drying of Textile
Jan Vrba, Marika Pourová, Ondrej Žák, Jan Vrba (jr.), Czech Technical University in Prague, Dept. of Electromagnetic Field Technická 2, Czech Republic [262]