



**Automatic RF Techniques Group**  
67<sup>th</sup> Microwave Measurements Conference  
**Design and Measurements of High Power Devices and Systems**  
Renaissance Parc 55 Hotel, San Francisco, CA U.S.A. June 16, 2006  
[www.arftg.org](http://www.arftg.org)

**Technical Agenda**

8:00 to 8:15 AM

**Welcome and Introduction**

8:15 to 9:45AM

**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

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

**Large Signal S-parameters,**  
Michał Odyniec, HRL Laboratories, Malibu, CA

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

9:45 to 10:30 AM

**Break and Interactive Forum**

10:30 to 12:10 PM

**Session 2: High Power Device Measurements**

Franco Sechi, Session Chair

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

**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

**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

**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

**Millimeter Wave Power Measurement Above 110 GHz,**  
Yuenie S. Lau, Tony Denning and Chuck Oleson - OML, Inc., Morgan Hill, CA

12:10 to 1:20 PM

**Lunch and Awards**

1:20 to 3:00 PM

**Session 3: VNA Measurements and System Characterizations**

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

**SA Monte Carlo Analysis Of VNA-Based Time Domain Uncertainties**

J. Martens - Anritsu Company, Morgan Hill, CA

**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

**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<sup>2</sup>S<sup>2</sup>- CNRS UMR n°6172, Cedex, France

**Statistical Estimation Of The Propagation Constant In Multiline Calibrations,** Kristoffer Andersson,

Christian Fager - Microwave Electronics Laboratory, Chalmers University of Technology, Göteborg, Sweden

3:00 to 3:45 PM **Break and Interactive Forum**

# **Interactive Forum - Poster Papers**

John Wood, Session Chair  
David Blackham, Session 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

### **An Enhanced Line-Reflect-Reflect-Match Calibration,**

Leonard Hayden, Cascade Microtech, Inc., Beaverton, OR

### **Automatic Root Selection For The Unknown Thru Algorithm,**

J. Stenarson and K. Yhland SP Swedish National Testing and Research Institute, Boras, Sweden

### **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

### **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

## **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

### **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.

### **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.

## **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

### **Using The Goodness-Of-Fit To Validate The Power Sensor Linearity Specification,**

Yeou-Song (Brian) Lee – Anritsu Company, Morgan Hill, CA

## **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 Brussels Dept. ELEC, Pleinlaan 2, B-1050 Brussels, Belgium

### **Coplanar Microwave Probe Characterization: Caveats And Pitfalls,**

Uwe Arz, Dirk Schubert, Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany

### **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

### **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

### **Load-Pull Measurements Of Differential Amplifiers,**

Dietmar Köther, Jörg Berben, IMST GmbH, Kamp-Lintfort, Germany

## **SECTION E – System Characterizations**

### **Automated RF VCO Characterization System,**

Jean-François Nowakowski - ST Microelectronics, Cedex, France

### **The Role Of Channel Frequency Response Estimation For The Measurements 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

### **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

### **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

**Field Profiling Of Resonant Structures 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

### **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

### **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