

60th ARFTG Conference Digest
RF Measurements for Emerging Technologies
Monarch Hotel
Washington DC

Thursday, December 5, 2002

General Chair: J. Gregory Burns
Northrop Grumman, Baltimore, MD

Technical Co-Chair: Dominique Schreurs
K.U. Leuven, Leuven, Belgium

Technical Co-Chair: Harvey Newman
Naval Research Laboratory, Washington, DC

7:00 – 8:30 Breakfast

8:30 – 8:40 Opening Remarks

Session 1: VNA Accuracy
Session Chair: Joe Tauritz, University of Twente, The Netherlands

1.1 8:40 – 9:00 Nick M. Ridler

“Generalised Adaptive Calibration Schemes for RF Network Analysers Based on Minimising the Uncertainty of Measurement”

Nick M. Ridler, Andrew G. Morgan, and Martin J. Salter
National Physical Laboratory, Teddington, Middlesex, UK

1.2 9:00 – 9:20 Don Culver

“Traceability for Broadband VNA and Compatibility Study of Waveguide (WR-10) and 1 mm Coaxial Measurements”

Don Culver, Arno Pettai, and Yeou-Song (Brian) Lee
Anritsu Company, Morgan Hill, CA

1.3 9:20 – 9:40 Blair D. Hall

“A Computational Technique for Evaluating and Propagating the Uncertainty of Complex-Valued Quantities”

Blair D. Hall
Measurement Standards Laboratory of New Zealand, Lower Hutt, NZ

9:40 – 10:20 Break/Exhibits

Session 2: Measurement related modeling

Session Chair: Dominique Schreurs, K.U. Leuven, Leuven, Belgium

2.1 10:20 – 10:40 Woopoung Kim

“Measurement-based Modeling and Test Methodology for Integrated Substrates”

Woopoung Kim, Sung-Hwan Min, Suna Choi, and Madhavan Swaminathan
Georgia Institute of Technology, Atlanta, GA

2.2 10:40 – 11:00 Dominique Schreurs

“5.5GHz LSNA MOSFET Modeling for RF CMOS Circuit Design”

Wladyslaw Grabinski*, Ewout P. Vandamme**, Dominique Schreurs***,
Heinz Maeder*, Oliver Pilloud*, and Colin C. McAndrew****

* Motorola, Geneva, Switzerland

** Agilent Technologies, Bornem, Belgium

*** K.U. Leuven, Leuven, Belgium

**** Motorola, Tempe, Arizona

2.3 11:00 – 11:20 Philippe Crama

“Broad-Band Measurement and Identification of a Wiener-Hammerstein Model for an RF Amplifier”

Philippe Crama and Yves Rolain
Vrije Universiteit Brussel, Brussels, Belgium

2.4 11:20 – 11:40 Yilong Shen

“On the Analysis of Quasi-Static Bandpass Nonlinearities Using Volterra Series”

Y.Shen and J.L. Tauritz
University of Twente, Twente, The Netherlands

11:40 – 12:20 ARFTG Business Meeting and Election

12:20 – 13:20 Lunch

Session 3: Millimeter-wave and Optical Measurements
Session Chair: Len Chorosinski, Northrop Grumman, MD

3.1 13:20 – 13:40 Bruce G. Danly

“Challenges in the Network Analysis of Millimeter-wave Overmoded and Quasi-optical Components”

B. G. Danly, D. E. Pershing, and M. Ngo
Naval Research Laboratory, Washington DC

3.2 13:40 – 14:00 Robert Weikle

“Submillimeter-Wave Scattering Parameter Measurements With A Sampled-Line Six-Port Reflectometer”

Sadik Ulker and Robert M. Weikle, II
University of Virginia, Charlottesville, VA

3.3 14:00 – 14:20 Arno Pettai

“Innovative Measurement Technique for Characterizing Electro-Optical Components”

Arno Pettai, Amar Ganwani, Andy Standen, and Yeou-Song (Brian) Lee
Anritsu Company, Morgan Hill, CA

14:20 – 15:00 Break/Exhibits

Session 4: Non-linear Measurement Accuracy
Session Chair: Joe Tauritz, University of Twente, The Netherlands

4.1 15:00 – 15:20 Kate A. Remley

“Nose-to-Nose Oscilloscope Calibration Phase Error Inherent in the Sampling Circuitry”

Kate A. Remley
National Institute of Standards and Technology, Boulder, CO

4.2 15:20 – 15:40 Donald C. DeGroot

“Design and Fabrication of a Nonlinear Phase Reference Device”

James C. Booth, Susan A. Schima, Jeffrey A. Jargon, and Donald C. DeGroot
National Institute of Standards and Technology, Boulder, CO

4.3 15:40 –16:00 Steve Vandenplas

“Calibration issues for the Large-Signal Network Analyzer (LSNA)”

Steve Vandenplas, Jan Verspecht, Frans Verbeyst, Ewout Vandamme
and Marc Vanden Bossche
Agilent Technologies, Bornem, Belgium

Friday, December 6, 2002

8:00 – 9:00 Breakfast

Session 5: Large-Signal Measurements (9:00 – 10:20)
Session Chair: Dominique Schreurs, K.U.Leuven, Belgium

5.1 9:00 – 9:20 Paul J. Tasker

“High-Power Time-Domain Measurement Bench For Power Amplifier Development”

Johannes Benedikt and Paul J. Tasker
Cardiff University, Cardiff, UK

5.2 9:20 – 9:40 James Hwang

“Large-Signal Waveform Internal Probing of MMIC Power Amplifiers”

James C. M. Hwang
Lehigh University, Bethlehem, PA

5.3 9:40 – 10:00 Jeffrey Jargon

“Calculating Ratios of Harmonically-Related, Complex Signals and Its Application to
Nonlinear Large-Signal Scattering Parameters”

Jeffrey Jargon*, Donald DeGroot*, K.C. Gupta**, and Alessandro Cidronali***
* National Institute of Standards and Technology, Boulder, CO
** University of Colorado at Boulder, Boulder, CO
*** University of Florence, Florence, Italy

5.4 10:00 – 10:20 D. Rabijns

“An Automatic Harmonic Selection Scheme Based on Spectrum Analyzer
Measurements”

D. Rabijns, G. Vandersteen, Y. Rolain, W. Van Moer, A. Geens, and J. Schoukens
Vrije Universiteit Brussel, Brussels, Belgium

10:20 – 11:00 Break/Exhibits

Session 6: Linear Calibration Issues

Session Chair: Harvey Newman, Naval Research Laboratory, Washington DC

- 6.1 11:00 – 11:20 Donald C. DeGroot
“Multiline TRL Revealed”

Donald C. DeGroot*, Jeffrey A. Jargon, and Roger B. Marks
National Institute of Standards and Technology, Boulder, CO

* Currently visiting at Vrije Universiteit Brussel, Brussels, Belgium

- 6.2 11:20 – 11:40 Servaas Vandenberghe

“Identifying Error-Box Parameters from the Twelve-Term Vector Network Analyzer
Error Model”

S. Vandenberghe, D. Schreurs, G. Carchon*, B. Nauwelaers, and W. De Raedt*
K.U.Leuven, Leuven, Belgium

* IMEC, Leuven, Belgium

- 6.3 11:40 – 12:00 Ken Wong

“Power Sensor Calibration and Uncertainties”

Ken Wong, Agilent Technologies, Santa Rosa, CA

- 12:00 – Lunch and Tour