

# ARFTG 64<sup>th</sup> Conference – Digital Communication System Metrics

**December 2, 2004**

**7:30 - 8:30 Registration and Breakfast**

**8:30 - 8:40 Opening Remarks**

**Session 1:     Uncertainty**

8:40 - 9:00     1-1

A generalised approach to the propagation of uncertainty in complex *S*-parameter measurements  
N.M. Ridler, M.J. Salter  
National Physical Laboratory, Teddington, Middlesex, UK

9:00 - 9:20     1-2

Calculations of measurement uncertainty in complex-valued quantities involving 'uncertainty in the uncertainty'  
B.D. Hall  
Measurement Standards Laboratory of New Zealand, Lower Hutt, New Zealand

9:20 - 9:40     1-3

Uncertainty Analysis of the Weighted Least Squares VNA Calibration  
Ken Wong  
Agilent Technologies, Santa Rosa, CA

9:40 - 10:00    1-4

Influence of RF Measurement Uncertainties on Model Uncertainties: Practical case of a SiGe HBT  
D. Schreurs, H. Hussain, H. Taher, B. Nauwelaers  
K.U.Leuven, Leuven, Belgium

**10:00 - 10:40 Break**

**Session 2:     Digital Communication System Metrics**

10:40 - 11:00   2-1

Accurate Estimation of Digital Communication System Metrics — SNR, EVM and Rho in a Nonlinear Amplifier Environment  
K.M. Gharaibeh, K.G. Gard, M.B. Steer  
North Carolina State University, Raleigh, NC

11:00 - 11:20   2-2

EVM Measurements for Broadband Modulated Signals  
Mike McKinley<sup>1</sup>, Kate A. Remley<sup>1</sup>, Maciej Myslinski<sup>1</sup>, J. Stevenson Kenney<sup>2</sup>  
<sup>1</sup>NIST  
<sup>2</sup>Georgia Institute of Technology

11:20 - 11:40 2-3

Dynamic complex IMD measurement system

B. Noori, M. Sajid, K. Salam  
REMEC/Spectrian, Folsom, CA

11:40 - 12:00 2-4

Volterra Characterization and Predistortion, Linearization of Multi-Carrier Power Amplifiers

S.K. Myoung<sup>1</sup>, D. Chaillot<sup>1,2</sup>, P. Roblin<sup>1</sup>, W. Dai<sup>3</sup>, S.J. Doo<sup>1</sup>

<sup>1</sup>Ohio State University, <sup>2</sup>on leave from CEA, <sup>3</sup>Agere Systems

12:00 - 12:20 2-5

Identifying the main nonlinear contributions: Use of multitone excitations during circuit design

L. De Locht<sup>1,2</sup>, G. Vandersteen<sup>1</sup>, P. Wambacq<sup>1</sup>, Y. Rolain<sup>2</sup>, R. Pintelon<sup>2</sup>, J. Schouken<sup>2</sup>, S.

Donnay<sup>1</sup>

<sup>1</sup>IMEC, Heverlee, Belgium

<sup>2</sup>Vrije Universiteit Brussel, Brussels, Belgium

## **12:20 - 13:40 Lunch**

### **Session 3: Semiconductor Modeling**

13:40 - 14:00 3-1

Analysing impact of MOSFET oxide breakdown by small- and large-signal HF measurements

D. Schreurs<sup>1</sup>, L. Pantisano<sup>2</sup>, and B. Kaczer<sup>2</sup>

<sup>1</sup>K.U.Leuven, <sup>2</sup>IMEC, Leuven, Belgium

14:00 - 14:20 3-2

The Normalized Difference Unit as a Metric for Comparing IV Curves

C. Baylis, L.P. Dunleavy, A.D. Snider

University of South Florida, Tampa, FL

14:20 - 14:40 3-3

An approximate method for extracting the effective parasitic capacitance of a large signal

LDMOS transistor

B. Noori and L. Giffin

REMEC/Spectrian, Folsom, CA

## **14:40 - 15:20 Business Meeting and Elections**

### **Session 4: Open Forum**

15:20 - 17:00

4-1

Design of On Chip Coplanar Waveguide Matching Circuit for SiGe BiCMOS RF Amplifier

H. Kanaya, T. Nakamura, K. Yoshida

Kyushu University, Fukuoka, Japan

4-2

Experimental analysis of short-circuit line technique for measuring permeability of ferromagnetic materials

V.B. Bregar<sup>1,2</sup>, D. Lisjak<sup>2</sup>, A. Žnidaršič<sup>1</sup>, M. Drofenik<sup>2,3</sup>

<sup>1</sup>Kolektor Group Feriti - Iskra Feriti, Ljubljana, Slovenia

<sup>2</sup>Jozef Stefan Institute, Ljubljana, Slovenia

<sup>3</sup>Faculty for Chemistry and Chemical Engineering, Maribor, Slovenia

4-3

Practical modeling and de-embedding procedure for matching circuit of triple band front-end module used for EGSM/DCS/PCS cellular phone system

N. Shibagaki<sup>1</sup>, K. Sakiyama<sup>2</sup>, M. Hikkita<sup>1</sup>

<sup>1</sup>Hitachi Central Research Lab, <sup>2</sup>Hitachi Media Electronics, Tokyo, Japan

4-4

A Non-Contacting Sampled-Line Reflectometer for Microwave Scattering Parameter Measurements

D. Hui, R.M. Weikle, II

University of Virginia, Charlottesville, VA

4-5

First results of microwave measurement of broadband radio interference filter

K. Hoffmann, Z. Skvor

Czech Technical University, Prague, Czech Republic

**18:30 - 20:30 Awards Banquet**

# ARFTG 64<sup>th</sup> Conference – Digital Communication System Metrics

**December 3, 2004**

**7:30 - 8:30 Continental Breakfast**

**Session 5: Differential Measurements**

8:30 - 8:50 5-1

New Measurement Results and Models for Non-linear Differential Amplifier Characterization

Joel Dunsmore

Agilent Technologies, Santa Rosa, CA

8:50 - 9:10 5-2

LRL/LRM Modifications for Simplified High Frequency Multiport/Differential Measurements

J. Martens, D. Judge, J. Bigelow

Anritsu Company, Morgan Hill, CA

9:10 - 9:30 5-3

Multimode TRL and LRL Calibrated Measurements of Differential Devices

T. Büber<sup>1</sup>, A. Rodríguez<sup>1,2</sup>, J.P. Lanteri<sup>1</sup>, J. Bennett<sup>1</sup>, R. Wohlert<sup>1</sup>, J. Mahon<sup>1</sup>, A. Khalil<sup>1</sup>, A. Jenkins<sup>1</sup>, I. Gresham<sup>1</sup>, N. Kinayman<sup>1</sup>, L.P. Dunleavy<sup>2</sup>

<sup>1</sup>M/A-COM, Inc., Lowell, MA

<sup>2</sup>University of South Florida, Tampa, FL

9:30 - 9:50 5-4

A high isolation dual signal probe technology

Tim Leshner, Leonard Hayden

Cascade Microtech, Beaverton, OR

**9:50 - 10:30 Break**

**Session 6: Microwave Measurement Technique**

10:30 - 10:50 6-1

Network Analyzer Functionality Simulator

P. Malmlöf

Ericsson AB,

Gävle, Sweden

10:50 - 11:10 6-2

A New Concept of PTP Vector Network Analyzer

V. Závodný, K. Hoffmann, Z. Skvor

Czech Technical University, Prague, Czech Republic

11:10 - 11:30 6-3

Large Signal Network Analyzer with Trigger for Baseband & RF System Characterization with Application to K-Modeling & Output Baseband Modulation Linearization

S.K. Myoung<sup>1</sup>, X. Cui<sup>1</sup>, P. Roblin<sup>1</sup>, D. Chaillot<sup>1,2</sup>, F. Verbeyst<sup>3</sup>,

M. Vanden Bossche<sup>3</sup>, S.J. Doo<sup>1</sup> and W. Dai<sup>1,4</sup>

<sup>1</sup>Ohio State University, <sup>2</sup>on leave from CEA, <sup>3</sup>NMDG, <sup>4</sup>presently at Agere Systems

11:30 - 11:50 6-4

Functional Tests for Peak Power Sensor and Meter

Y.-S. (Brian) Lee

Anritsu Company, Morgan Hill, CA

### **11:50 - 13:20 Lunch**

#### **Session 7: On-wafer Technique**

13:20 - 13:40 7-1

Impact of ground line position on CMOS interconnect behavior

M.F. Ktata<sup>1</sup>, U. Arz<sup>2</sup>, H. Grabinski<sup>1</sup>, H. Fischer<sup>3</sup>

<sup>1</sup>Universität Hannover, Hannover, Germany

<sup>2</sup>Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany

<sup>3</sup>Infineon Technologies, Munich, Germany

13:40 - 14:00 7-2

On-Chip Microwave Test Circuits for Production IC Measurements

W.R. Eisenstadt, R.M. Fox, Q. Yin, J-S Yoon, T. Zhang

University of Florida, Gainesville, FL

14:00 - 14:20 7-3

On-Wafer Measurement Setups for On-chip Antennas Fabricated on Silicon Substrates

Jau-Jr Lin<sup>1</sup>, Aravind Sugavanam<sup>1</sup>, Li Gao<sup>2</sup>, Joe E. Brewer<sup>1</sup>, and Kenneth K. O<sup>1</sup>

<sup>1</sup>University of Florida, Gainesville, FL

<sup>2</sup>Silicon Laboratories Inc., Austin, TX

### **14:20 - 16:00 Student Forum**