



AUTOMATIC RF TECHNIQUES GROUP

NEWSLETTER

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73rd ARFTG Microwave Measurement Conference: “Practical Applications of Nonlinear Measurements”

OVERVIEW



*The Boston Convention Center, venue for the 73rd
ARFTG Microwave Measurement Conference*

More than 100 attendees participated in the 73rd ARFTG Microwave Measurement Conference that took place at the Boston Convention and Exhibition Center (BCEC), Boston, Massachusetts, on June 12th, 2009. As is usual for Spring ARFTG conferences, this conference formed part of Microwave Week 2009, which also included the International Microwave Symposium (IMS), the Radio Frequency Integrated Circuits (RFIC) symposium, and many workshops, tutorials and other meetings. All these events took place at the BCEC. As well as its conference, ARFTG also sponsored a meeting of the NVNA Users' Forum and a joint ARFTG/IMS Workshop. Taken together, these activities ran from Sunday, June 7th, through to Friday, June 12th.

A CD containing the 73rd ARFTG conference digest can be purchased by contacting Jim Taylor (jtaylor114@kc.rr.com), the ARFTG Executive Secretary. For more information on ARFTG and its activities, including details of conferences past, present and future, visit the ARFTG website at www.arftg.org.

CONFERENCE TECHNICAL SESSIONS

The 73rd ARFTG conference began with a welcome and introduction from Charles Wilker, the Conference Chair. This conference received sponsorship from:

- Agilent Technologies
- Maury Microwave Corporation
- Tektronix.

The overall conference theme was “Practical Applications of Nonlinear Measurements”, and featured a Keynote Speech, four technical sessions and two interactive forums. The Keynote Speech, titled “Practical Applications of Nonlinear Measurements”, was given by Kate Remley, of NIST, Boulder, Colorado, United States. The technical sessions consisted of papers given as oral presentations. These technical sessions addressed nonlinear measurements, VNA calibration and other microwave measurement topics. The two interactive forums featured a total of 12 papers presented as posters during the breaks from the technical sessions.



Interactive forum papers are presented as posters to encourage technical interactions between presenters and attendees

Selected by the conference attendees as best oral paper presentation from the technical sessions was “Wave Distortion in Multiplying, Switching or Sampling Mixers” by Y. Rolain, J. Schoukens, W. Van Moer, G. Vandersteen (VUB, Brussels, Belgium) and J. Dunsmore (Agilent Technologies, Santa Rosa, United States). Selected as the best interactive forum paper presentation was “Two-tier L-L De-embedding Method for S-parameter Measurements of Devices Mounted in Test Fixture” by J. E. Zuñiga-Juarez, J. A. Reynoso-Hernández (Centro de Investigacion Cientifica y Educacion Superior de Ensenada, Ensenada, Mexico) and J. R. Loo-Yau (Centro de Investigacion y Estudios Avanzados del I. P. N., Guadalajara, Mexico). Selected as the Best Exhibitor at the conference was Tektronix.

As on previous occasions, the ARFTG conference also included an exhibits area and an awards luncheon, both of which are described below.

CONFERENCE EXHIBITS

A total of nine companies chose to exhibit their latest equipment at this conference. These companies were:

- Agilent Technologies
- Anritsu Corporation
- Cascade Microtech
- Focus Microwave
- Maury Microwave
- NMDG
- Rohde & Schwarz
- Suss MicroTec
- Tektronix.

To exhibit at future conferences, please contact the ARFTG Exhibits Chair, Brett Grossman (brett.grossman@intel.com).

AWARDS LUNCHEON

ARFTG President, Leonard Hayden, presided over the awards luncheon. This began with Certificates of Appreciation being presented to the organizers of the 73rd conference: Conference Chair, Charles Wilker; Conference Host, Brian Wadell; Technical Program Chair, Dave Blackham; Exhibits Chair, Brett Grossman; and the Session Chairs, John Wood, Mohamed Sayed, John Martens, Ken Wong and Rusty Myers.

This was followed by awards being presented for the previous (72nd) conference, held in Portland, Oregon. The award for best oral paper presentation was given to G. Simpson (co-authors D. Ballo, J. Dunsmore and A. Ganwani) for the paper “A New Noise Parameter Measurement Method Results in more than 100x Speed Improvement and Enhanced Measurement Accuracy”. The award for best interactive forum paper presentation was given to M. Randus and K. Hoffman, for the paper “A Simple Method for Extreme Impedance Measurement – Experimental Testing”. And finally the best exhibitor award was presented to Agilent Technologies.

The following two special awards were also acknowledged:

- the ARFTG Distinguished Service Award, to: John Gregory Burns, “for his outstanding leadership and dedicated service to ARFTG”
- the ARFTG Career Award, to: Roger D. Pollard, “for a career of meritorious achievement and outstanding contribution in the field of automated microwave and millimeter-wave measurements, and active device characterization”.



John Gregory Burns, receiving acknowledgement for the ARFTG Distinguished Service Award from ARFTG President, Leonard Hayden



Roger D. Pollard, receiving acknowledgement for the ARFTG Career Award from ARFTG President, Leonard Hayden

NVNA USERS' FORUM - INTERNATIONAL

The 'international' meeting of the NVNA Users' Forum was held on Friday afternoon, June 12th, also at the BCEC, Boston. Approximately 30 people from industry, government and academia attended the meeting, which began with a technology update given by Marc Vanden Bossche, NMDG, on nonlinear capabilities with vectorial network analyzers. This was followed by a discussion on NVNA IF Bandwidth, which covered measurement needs, trade-offs (such as speed, accuracy, and dynamic range), ways to optimize or enlarge IF bandwidth, minimum step between points, and the relative merits of mixer- and sampler-based NVNA architectures. Finally, Basim Noori, Cardiff University, gave a research update on his PhD topic "Doherty PA Linearization". A summary of this meeting will be available shortly at www.arftg.org.

JOINT ARFTG/IMS WORKSHOP

A joint ARFTG/IMS workshop was held during Microwave Week 2009. The workshop took place on Wednesday, June 10th, at the BCEC, Boston. The workshop was titled "Advanced Measurement Techniques, Adapted for Different Memory Effects", and was organized by Dominique Schreurs (K U Leuven, Belgium) and Marc Vanden Bossche (NMDG, Belgium).

FUTURE EVENTS

NVNA Users' Forum – Europe

This meeting will be held during European Microwave Week 2009, which takes place from September 28th to October 2nd, 2009, in Rome, Italy. (Information on European Microwave Week is available at

www.eumweek.com.) The NVNA Users' Forum will be on Wednesday, September 30th, from 08:45 AM to 10:25 AM and will be co-sponsored by the European Microwave Association. The meeting will be chaired by Jean-Pierre Teyssier, XLIM, University of Limoges. For more details, see page 50 of the conference program book, available at www.eumweek.com.

Fall 2009 ARFTG Symposium

This year's Fall ARFTG Symposium will comprise the 74th Microwave Measurement Conference, the NIST/ARFTG Measurement Short Course, a Nonlinear Measurement Workshop and the NVNA Users' Forum. All these events will be held at the Omni Interlocken Resort, near Boulder, Colorado, from December 1st to 4th, 2009. There will also be an opportunity, during the Symposium, to visit the NIST laboratories in nearby Boulder. Laboratories within the RF Electronics Group will be on show during the visit. The timetable for all these events is given below.

Fall 2009 ARFTG Symposium - schedule of events

Tuesday December 1 st 8:00 am – 5:00 pm	NIST / ARFTG Short Course
Wednesday December 2 nd 8:00 am – 12:00 noon	
Wednesday December 2 nd 1:00 pm – 5:00 pm	Workshop: "Nonlinear Measurements for Power Amplifier Design and Verification"
Wednesday December 2 nd 5:00 pm – 7:00 pm	NVNA Users' Forum
Thursday December 3 rd 8:00 am – 5:00 pm	74 th Microwave Measurement Conference
Thursday December 3 rd 6:30 pm – 10:00 pm	Awards Banquet
Friday December 4 th 8:00 am – 12:00 noon	74 th Microwave Measurement Conference (continued)
Friday December 4 th 1:30 pm – 4:00 pm	Visit to NIST RF laboratories in Boulder

Microwave Measurement Conference

The theme for the 74th ARFTG Microwave Measurement Conference is "System Modeling and Measurement for High Accuracy Verification". The

deadline for submitting a paper for consideration by the conference Technical Program Committee is September 11th, 2009. To submit a paper, go to http://www.mtt-tmps.org/symposia_v6/ARFTG_Fall/start.html. As on previous occasions, the conference will offer ample opportunity for participants to interact with leading professionals in fields such as RF communications and other microwave technologies. For more information, visit www.arftg.org or contact the Conference Chair, Ronald Ginley (rginley@boulder.nist.gov), or the Technical Program Chair, David Walker (dwalker@boulder.nist.gov).



The Omni Interlocken Resort, near Boulder, Colorado, venue for the Fall 2009 ARFTG Symposium

NIST / ARFTG Short Course

This one-and-a-half day short course will include topics specific to the conference theme (i.e. “System Modeling and Measurement for High Accuracy Verification”). Additional topics include: connectorized and on-wafer S-parameters, power, thermal noise, phase noise, nonlinear measurements and uncertainty analysis. For more information, visit www.arftg.org or contact the short course organizer, Dominique Schreurs (dominique.schreurs@esat.kuleuven.be).

NVNA Users’ Forum – US

This meeting will also take place during the Fall 2009 ARFTG Symposium. The program should be available at www.arftg.org approximately one month prior to the meeting. Those with potential agenda items for this meeting should contact the Forum organizers: John Wood (john.wood@freescall.com), Jean-Pierre Teyssier (teyssier@brive.unilim.fr) and Dominique Schreurs (dominique.schreurs@esat.kuleuven.be).

Measurement Workshop

For more information about ARFTG’s highly successful measurement workshops, visit www.arftg.org or contact the workshop organizer, Jean-Pierre Teyssier (teyssier@brive.unilim.fr). The Fall 2009 ARFTG Symposium workshop is titled, “Nonlinear

Measurements for Power Amplifier Design and Verification”.

Spring 2010 ARFTG activities

The 75th ARFTG Microwave Measurement Conference will be held on May 28th, 2010, in Anaheim, California, as part of Microwave Week 2010, in conjunction with IMS (www.ims2010.org) and the RFIC symposium (www.rfic2010.org). The provisional ARFTG conference theme is “Measurement of Modulated Signals for Communications”. **The deadline date for submission of electronic paper abstracts/summaries is likely to be during December 2009** – considerably earlier than in previous years. For more information, visit www.arftg.org or contact the Conference Chair, Ken Wong (ken_wong@agilent.com) or the Technical Program Chair, John Wood (john.wood@freescall.com).

It is also planned to hold a meeting of the NVNA Users’ Forum – International, as part of the Spring 2010 ARFTG activities, and to co-sponsor appropriate workshops and/or tutorials that will be taking place during Microwave Week 2010.

UPDATED ARFTG CD

The ARFTG digests compilation CD that contains the digests from ARFTG conferences during the years 1982 to 2001 has now been supplemented with an additional CD that updates this collection by including conferences from 2002 to 2007. The cost of the combined CDs is currently \$105 for members or \$140 for non-members. In future, it is planned to merge these two CDs into one that will contain *all* ARFTG conference digests from 1982 to date. In addition, a CD containing the Nonlinear Measurement Workshop compendium of six workshops presentation material, 2001 through to 2006, is also available for purchase. The cost is currently \$70 for members or \$105 for non-members. Additional information on purchasing either or both of the above CDs can be obtained by contacting Jim Taylor (jtaylor114@kc.rr.com), the ARFTG Executive Secretary.

ADDENDUM

Every effort has been made to publish correct information in this newsletter. Significant errors should be reported to the ARFTG Executive Committee Secretary, Nick Ridler (nick.ridler@ieee.org), so that corrections can be reported in the next issue. The photos of the ARFTG conference and awards luncheon that appear in this newsletter were supplied courtesy of Tim Lee (tt.lee@ieee.org).