



AUTOMATIC RF TECHNIQUES GROUP

FALL 1995

NEWSLETTER

NUMBER 14

THE 46th CONFERENCE

OVERVIEW

Several factors contributed to the outstanding success of this conference in Scottsdale, Arizona on November 30 and December 1. The theme of "Testing for Wireless Applications" addressed a subject of widespread concern for the microwave industry so that considerable pre-conference interest was generated. One facility having an extended involvement in current and future wireless systems is the Motorola Semiconductor Products Sector located close to the conference site. Many individuals from this facility supported the conference in several ways including key contributions to the technical program; all of their efforts are greatly appreciated by ARFTG.

In addition to selecting a timely theme and favorable site, Conference Chair William Pastori took care of the necessary details and kept the events moving smoothly. Executive Secretary Henry Burger acted as Conference Host and assisted in many other essential matters. The conference was held at the Safari Resort Hotel.

Technical Program Chairs Michael Golio and David Halchin were responsible for organizing quality sessions that directly supported the conference theme and also discussed related subjects such as calibration of network analyzers for testing of wireless components and other applications. Vote of the attendees for best paper was a tie between Mr. Saswata Basu and co-authors for "Impedance Matching Probes for Wireless Applications" and Mr. Alan Kafton for "Advanced Technology Speeds RF-Integrated-Circuit Testing". The number of attendees at the sessions again exceeded 100.

A panel discussion on "Automated Measurement Issues for Commercial Linear Power Products" completed the technical program. The individual presentations discussed key issues but the attendees were already in the "go home" mode and asked few questions.

Exhibits Chair Michael Fennelly was able to stimulate interest of the attendees with a limited number of exhibitors which included ATN Microwave, Cascade Microtech, Karl Suss America, Maury Microwave, Roos Instruments, and W. L. Gore & Assoc. Attendees selected the exhibit by Cascade Microtech as the best.

Prior to the conference, Robert Judish of NIST conducted a two-day course on "Microwave and RF Measurements for Wireless Applications". The first day was a substantial update of the previous basic course while the second day discussed measurements critical to the wireless communications industry. The course again received many favorable comments. A listing of course subjects is included later in the newsletter.

TECHNICAL PROGRAM

Presentations

Two-Tier Multiline TRL for Calibration of Low-Cost Network Analyzers

Jeffrey A. Jargon and Roger B. Marks; NIST
A Comparative Study of TOSL, TRL, and TRL* Network Analyzer Calibration Techniques, Using Microstrip Test Fixtures

D. Zelinka, M. Shaw; Motorola SPS
Optimizing Time-Domain Network Analysis

Donald C. DeGroot and Roger B. Marks; NIST
T-Matrix De-Embedding of IC Metal Transmission Lines to 18 GHz

Timothy J. Maloney and Quat T. Vu; Intel
Line-Reflect-Match Calibrations with Nonideal Microstrip Standards

Dylan F. Williams; NIST
Jerry B. Schappacher; J micro Technology
Load-Pull Characterization and Modeling of Chip and Plastic Packaged HBT's for PCS Amplifier Applications

Gregory N. Henderson, Der-Woei Wu; M/A-Com

Technical Program Presentations (con't.)

On Wafer RF Testing Characterizes Current Sag on GaAs MESFETs

Tim Driver, Monica C. de Baca, Mike Golio,
Dave Halchin and William Knappenberger;
Motorola SPS

Using Digitally-Modulated Signals to Measure the Gain Compression and Phase Distortion of a Radio Frequency Amplifier

Michael S. Heutmaker, Eleanor Wu,
Chauncey Herring and John R. Welch;
AT&T Bell Laboratories

Automated Large-Signal Load-Pull Characterization of Adjacent-Channel Power Ratio for Digital Wireless Communication Systems

John F. Sevic and Robert Baeten; Motorola SPS
Gary Simpson; Maury Microwave
Michael B. Steer; North Carolina State University

A 10-6000 MHz Receiver and Signal Separation Test Set Developed for a Mixed-Signal Automatic Test Equipment System

Walid Y. Ali-Ahmad, Jack J. Chang, Eric C. K. Liu
and Martin I. Grace; Wiltron
John C. Dawson and Eliot Scull; Teradyne

Impedance Matching Probes for Wireless Applications

Saswata Basu, John E. Pence and Eric Strid;
Cascade Microtech

Testing of the 2.4 GHz Band Spread Spectrum Sound Transceiver Unit Using an Elastic Type SAW Convolver

Shunji Kato; Mitusi Mining and Smelting
Kazuhiko Yamanouchi; Tohoku University
Hiroshi Ide; CrystalSound

Advanced Technology Speeds RF-Integrated-Circuit Testing

Alan Kafton; Hewlett-Packard

Panel Discussion

Automated Measurement Issues for Commercial Linear Power Products

Panel Members:

John Barr	Hewlett-Packard
Robert Baeten	Motorola SPS
Mark Roos	Roos Instruments
Gary Simpson	Maury Microwave
Joseph Staudinger	Motorola SPS
David Wandrei	ATN Microwave

Digest Only

Complete Characterization of Low Noise Devices at Microwave Frequencies: Two Alternate Procedures for HEMTs

A. Caddemi, A. Di Paola and M. Sannino;
Universita di Palermo (Italy)

AWARDS BANQUET

The following were selected by the Executive Committee for awards at this meeting:

Automated Measurements Career Award Mr. Neil Larsen
(To be formally presented at a later meeting)

Service Award Mr. Michael Caldwell

Awards for the 45rd Conference:

Best Paper Mr. Frans Verbeyst and
Mr. Marc Vanden Bossche
Title: "VIOMAP, 16QAM and Spectral Regrowth:
Enhanced Prediction and Predistortion Based on
Two-Tone Black Box Model Extraction

Best Exhibitor - Hewlett-Packard

Certificates of Appreciation were given to the individuals responsible for the 46th Conference.

BUSINESS MEETING

As required by the ARFTG Constitution, a business meeting was scheduled as part of this conference. It was to be held on November 30 at 3:15 PM. However, due to program changes, President Gary Simpson opened the meeting at 1:57 PM following a scheduled paper. The required quorum of 20 voting members was present.

The first item of business was election of members to the Executive Committee; members serve three-year terms with the terms of four members expiring after this conference. Mr. Simpson was a candidate for re-election and relinquished control of the meeting to Membership Chair Raymond Tucker who conducted the elections. Biographies of the six candidates had been previously distributed. The four incumbents were Gary Simpson, Kevin Kerwin, Roger Marks, and Patrick Nolan; also nominated were Sam Pritchett and Joy Laskar; the incumbents were present and stated their desire to continue to serve. The other candidates had commitments and could not be present. Mr. Tucker collected the ballots.

The meeting resumed shortly with Dr. Roger Marks requesting an opportunity to discuss events scheduled with MTTS at future symposiums. Prior to the ARFTG Conference on Friday, June 21, 1996, there will be two events of interest: 1.) a joint session with MTTS on Thursday with a topic "Nonlinear Circuit Measurements"; 2.) a memorial for Mario Maury with plans to be determined. At the 1997 symposium in Denver; a joint session is planned with a topic to be selected; suggestions are invited and should be submitted to Dr. Marks at (303) 497-3037.

BUSINESS MEETING (con't.)

Mr. Randy Fenton of TRW was next given permission to address the meeting about On-Wafer V-Band and W-Band S-Parameter Measurement Comparison Programs; these programs are being organized by his facility to assist industrial facilities in evaluation of their measurement capabilities and problems. A sheet was distributed to describe the programs and furnish details on participation .

Treasurer William Pastori gave his report on ARFTG finances. Bottom-line totals from the current Balance Sheet and Profit/Loss Statement were presented for membership review; it was pointed out that these figures do not include some income from the Spring Conference and outstanding bills for this conference. Overall financial condition is considered excellent.

Mr. Tucker returned at this point and announced that the incumbents had been returned to the Executive Committee. He then briefly discussed the different types of membership status; paying the non-member fee at one of the yearly conferences makes it simple to remain current.

President Simpson returned and reminded attendees to complete the Conference Questionnaire with a vote for best paper and exhibitor; comments were also invited. The meeting was adjourned at 2:19 PM.

EXECUTIVE COMMITTEE MEETINGS

Officers of ARFTG are elected at the fall meetings. The individuals listed below were recommended by the Nominating Committee and were elected:

President:	Kevin Kerwin
Vice-President:	Kenneth Wong
Treasurer:	William Pastori (Continuing)
Secretary:	Patrick Nolan

A matter of grave concern to the committee involves authors who submit papers that are accepted but then fail to show at the conference for presentation of the paper. It is not possible to maintain quality of the technical sessions and meet obligations to attendees if papers are not presented as anticipated. Established policies for acceptance of papers are being reviewed and will be revised as necessary. A "letter of disappointment" from the President to these authors has also been authorized.

Considerable effort at each meeting involves planning for future conferences; available information on the next four conferences is shown on the next page. Additional Measurement Short Courses may be held with the fall conferences but plans are not firm.

Special events are planned for the 50th Conference (25th Anniversary) in Portland, Oregon; it will held during the first week of December 1997. Members who have ideas to contribute should contact William Pastori at (909) 987-4715. Retired member Jim Taylor has agreed to select some key moments from his film archives. All members past and present should make an extra effort to attend the anniversary meeting.

MESSAGE FROM THE PRESIDENT

Speaking for the EXCOM and the entire ARFTG community, I want to thank Gary Simpson for his two-year tenure of leadership as President. I am privileged to succeed Gary and will endeavor to continue the progress that was made during his term in office.

In the continuing wireless revolution, ARFTG is filling an important role as THE automatic RF and microwave techniques organization. More engineers than ever are facing high-frequency measurement, equipment, and computer-aided design challenges. Please encourage your colleagues to join ARFTG.

Attendance at recent conferences has grown and provided ARFTG with the resources to enhance future conferences and support other activities. The EXCOM is considering ways to invest in tools, speakers, and educational materials that will accomplish these goals.

For the first time, ARFTG is co-sponsoring a technical session with MTT-S at the forthcoming symposium in San Francisco; the session will be held one day prior to the 47th Conference. John Barr, our EXCOM MTT-S Liaison, is also a member of MTT-S AdCom and has established a good relationship between the groups to make these events possible and resolve differences.

Communications is an important issue and improvements are being considered. To assist libraries in acquiring ARFTG conference digests, the EXCOM is investigating requirements to have an ISBN number assigned. It has also been suggested that the group should establish a World Wide Web site; this would allow communication between members throughout the year in addition to the twice yearly conferences.

Your inputs are important! If you have ideas to make ARFTG better, please contact the undersigned at (707) 577-4061. Thank you,

Kevin Kerwin
ARFTG President

MICROWAVE AND RF MEASUREMENTS
FOR WIRELESS APPLICATIONS
SHORT COURSE

These sessions were held on November 28 and 29 at the conference hotel:

1. Microwave Circuit Theory
R. Marks; NIST
2. VNA Error Correction
D. Rytting; Hewlett-Packard
3. VNA Measurements
J. Juroshek; NIST
4. VNA Verification
W. Oldfield; Anritsu Wiltron
5. Power Measurements
F. Clague; NIST
6. Noise Measurements
W. Pastori; Maury Microwave
7. Modulation Theory Digital Wireless
Communication Systems
J. Sevic; Motorola
8. Wireless Transmitter and Receiver
Characterization
M. Rusch; Anritsu Wiltron
9. Design and Verification for Wireless
System Power Amplifiers
J. Dunsmore; Hewlett Packard
10. Spectrum Analysis
M. Engelson; JMS
11. Production RF Testing
M. Roos; Roos Instruments

An excellent job was again done by Robert Judish and all those connected with the course. Copies of the course notes are available; contact Henry Burger at (602) 839-6933.

FUTURE CONFERENCES

47th Conference on June 21, 1996 in San Francisco, California. Theme is "High Power RF/Microwave Device Measurements". Contact Ken Wong at (707) 577-2616.

(Joint Session with MTTs on June 20. Topic is "Nonlinear Circuit Measurements")

48th Conference on November 29 and 30, 1996 in Clearwater, Florida. Possible theme is "Nonlinearity in Transceivers". Contact Michael Fennelly at (508) 667-4200 X18.

49th Conference on June 13, 1997 in Denver, Colorado. Theme is TBD. Contact Roger Marks at (303) 497-3037.

50th Conference during early December 1997 in Portland, Oregon. Contact Edward Godshalk at (503) 627-4772.