



2010 IEEE Radio & Wireless Week



New Orleans, LA

10–14 January, 2010

RWW & RWS General Chair:

Charlie Jackson, *NGC*

RWS General Co-Chair:

Xiaodong Wang, *Columbia University*

SiRF General Chair:

Erich Kasper, *University of Stuttgart*

SiRF General Co-Chair:

Robert Weigel, *University of Erlangen-Nuremberg*

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SiRF Technical Program Chair:

Hermann Schumacher, *Ulm University*

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IEEE Antennas and Propagation Society (APS)

European Optical Society

<http://www.radiowireless.org>



GENERAL CHAIRMAN'S INVITATION TO THE IEEE RADIO AND WIRELESS WEEK

Join us for the 5th annual IEEE Radio and Wireless Symposium (RWS) in historic New Orleans from 10 -14 January 2010. This conference is the centerpiece of the Radio and Wireless Week (RWW), where participants learn about the latest in the wireless technology and network with colleagues while enjoying the historic cosmopolitan city of New Orleans. Great history, great food, great people, and great technical talks. The RWS is organized and sponsored by three societies of the Institute of Electrical and Electronics Engineering (IEEE), Microwave Theory and Techniques, Communications, and Antennas and Propagation. For the second year the European Optical Society has sponsored this conference, manifesting a broad and diverse representation of various technical communities.

The RWS meetings focus on the intersection between radio systems and wireless technology, which creates a unique forum for engineers to discuss hardware design and system performance of the state-of-the-art wireless systems. This tradition is continued with an expanded program that offers the latest information on our traditional subjects of wireless communications and networking, and associated enabling technologies as new services and applications emerge. We have organized the papers into 25 technical oral sessions. To accommodate the expanded technical program, we will continue the three-parallel sessions format for all three days of the RWS symposium with a combination of invited and regular technical papers. A number of papers that require much longer time to discuss their finer points are to be presented under interactive poster sessions on Tuesday and Wednesday. No other parallel sessions are to be held during the poster session. There will be a student paper competition, where the finalists will be judged on Monday.

The other part of RWW is the 10th topical meeting on the silicon monolithic integrated circuits in RF systems (SiRF). See page 3 for details on SiRF. Silicon provides critical building blocks for wireless systems. This year both conferences start on Monday, and there will be a common plenary session on Tuesday. The plenary speaker will be Bob Van Buskirk, president, RFMD Multi-market Products Group (MPG) with a talk on "Gallium Nitride (GaN) – The Power Game Changer". RWS and SiRF will hold a joint banquet on Wednesday.

Back to the Radio and Wireless Symposium. There will be three focused tracks: RF Power Amplifiers, Biomedical Applications of Microwave Systems, and Sensors and Sensor Networks. In addition to our contributed technical program, we have organized three panel sessions focused on current issues of interest titled "Green wireless technology", "60 GHz Technologies", and "Who Killed UWB and will it Rise a Third Time?". There will be focused sessions including one on Cognitive Radio Architectures for Portable Whitespace Devices. There will be workshops on Sunday afternoon January 10. This year, we will not hold workshops at the end of the week. The topics will include "RF MEMS and Applications", "Advances in SiGe BiCMOS Technology, Circuit and Applications", and "Enabling Gb/s 60GHz Wireless Communication". These topics cover some of the most exciting current topics being discussed in the technical sessions, but workshops are presented in an informal format, offering increased opportunities for exchange among speakers and audience.

There will be a modest exhibit with table top displays to allow vendors to show their latest products to the technical attendees on Monday and Tuesday. With these two conferences and a commercial exhibition all in one place, we offer you, the conference attendee, with convenient opportunities to expand your knowledge in all the technical and commercial aspects of the rapidly changing wireless field. Your suggestions are greatly appreciated to help us organize better meetings.

We look forward to seeing you in New Orleans!



Charlie Jackson
General Chair



Xiaodong Wang
General Co-Chair

2010 RWS Technical Program Committee

Antennas and Propagation Channel Modeling

Chair: Silvio Barbin

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Xun Gong
Ahmed Kishk
Jim Schaffner
Hirosi Shirai
Tom Weller

Michael Ong-Chuen
Wei Hong
Max Scardellitti
Tomohiro Seki
Seong-Youp Suh
Songnan Yang

Transceivers and Front-end Technologies, SOC and SIP

Chair: Emery Chen

Sheng-Fuh Chang
Minoru Fujishima
Telesphor Kamgaing
Gabriel Rebeiz

Nathalie Deltimple
T.S. Jason Horng
Chinchun Meng
Reza Tayrani

MIMO, Signal Processing, and Smart Antennas

Chair: Liuqing Yang

Zhizhang (David) Chen
Markku Juntti
Yinman Lee
Ryan Miyamoto
Vijay Nair
Xiang-Gen Xia

Haibin Huang
Nicholas Kirsch
Kevin Leong
Karl Molnar
Y.C. Wu

Software Defined Radios and Cognitive Radios

Chair: Abbas Omar

Kareem Baddour
Mohamed Helaoui
Zoran Miljanic
Robert Morelos-Zaragoza
Predrag Spasojevic

Gamal Hegazi
Ninoslav Marina
Ronato Negra
Petar Popovski
Robert Walters

High-speed and Broadband Wireless Technologies

Chair: Jian-ping Yao

Yves Baeyens
Michael Chia
William Jemison
Paul Yu

Tibor Berceli
Tian-Wei Huang
Asher Madjar

Wireless System Architecture and Modeling

Chair: Dev Palmer

Daniel Denevides da Costa
Upkar Dhaliwal
Gianfranco Manes

Michael Buehrer
Jivesh Govil
Chunming Zhao

Emerging Wireless Technologies and Applications

Chair: Reza Mahmoudi

Luciano Boglione
Rashaunda Henderson
Dariush Mirshekar
Helen Pak

Debabani Choudhury
Shigeo Kawasaki
Ed Niehenke

Digital Signal Processing as Applied to Wireless Systems

Chair: Hassane Mimoun

Genevieve Baudoin
Roman Marselek

Yanwu Ding

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George Ponchak, NASA Glenn Research Center

Technical Program Co-Chair:

Predrag Spasojevic, Rutgers University

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Jan-Erik Mueller, Infineon Technologies

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Marc Franco, RFMD

Allen Katz, Linearizer Technology Inc./TCNJ

Session Track Chairs - Biomedical Applications of Microwave Systems:

Victor Lubecke, University of Hawaii

Arye Rosen, Drexel University

Session Track Chairs - Sensors and Sensor Networks

Manos Tentzeris, Georgia Inst of Technology

Roger Kaul, IEEE MTT Society

Danjela Cabric, UCLA

Workshop / Short Courses

John Papapolymou, Georgia Inst of Technology

Planery / Focused / Panel Sessions

Debabani Choudhury, Intel

Luciano Boglione, University of Massachusetts Lowell

Poster Sessions:

Mehdi Shadaram, The University of Texas at San Antonio

Maximilian Scardellitti, NASA Glenn Research Center

Electronic Paper Submissions:

Jeremy Muldavin, MIT Lincoln Lab

George Heiter, Heiter Microwave Consulting

Jeff Pond, Naval Research Lab

John Barr, IEEE MTT Society

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Jennifer More, Fly Events LLC.

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Fred Schindler, RF Micro Devices

Steve Kenney, Georgia Tech.

George Heiter, Heiter Consulting

Afshin Daryoush, Drexel University

THE 10TH TOPICAL MEETING ON SILICON MONOLITHIC INTEGRATED CIRCUITS IN RF SYSTEMS

Message from the Chairs: Erich Kasper and Robert Weigel

The Topical Meeting on Silicon Monolithic Integrated Circuits in RF Systems (SiRF, <http://www.silicon-rf.org>) is a unique conference in that it covers a vertical range of topics related to Si-based RF circuits, ranging from materials to passives, MEMS, high-speed devices, integrated circuits, and applications that are all based on Si. This feature provides a precious opportunity for attendees to view this fast-evolving field from different standpoints and also offers a space for exchanging ideas between diverse research areas. Such cross-mingling will be additionally supported by the single-session format that has been a tradition of this conference. In the pioneering period of silicon RF - more than 15 years ago - only a minority of researchers believed in integrated Si circuits for micro- and mm-wave frequencies. At that time George Ponchak and Peter Russer initiated the first SiRF Meetings interchanging in the location between US and Germany. Heterostructures (SiGe on Si), shrinkage of device dimensions and low attenuation waveguides pushed high frequency applications tremendously and made silicon RF to a success story. Since then SiRF joined RWW (Radio Wireless Week, <http://www.radio-wirelessweek.org>) in order to benefit from the broader audience and the exhibitions. Over the three days of conference, 11 technical sessions will be held, including distinguished lecturer talk, one poster session for interactive discussion, topical sessions ranging from materials to devices, circuits and applications, and focused sessions on upcoming areas. Most of the podium sessions will open with an invited talk by world-leading experts in this field that cover a wide range of topics on Si-based circuits, technologies, devices, and modeling. Special emphasis is given to new directions in this area. General trends to be seen are the increased usage of established technologies as MOS or MEMS, improved measurement and calibration techniques and a shift to ever higher frequencies up to the sub mm- / Terahertz regime. Novel materials (metamaterials, nanoscale structuring), system integration aspects (waveguides with antenna, fast optoelectronics based on SOI and Ge/Si detectors/modulators) and upcoming applications (e.g. automotive radar) keep research and development crucial for continuing success. The popular best student paper competition will add excitement to the conference and the banquet will provide a casual stage for social interaction between attendants. You are welcomed to attend this unique and focused conference and enjoy meeting with great people in this dynamic field. The conference, which will be held as a part of the IEEE Radio and Wireless Week, will start on Monday January 11 and continue for three full days, ending on Wednesday January 13, 2010. Now, the location of the conference follows RWW in US, but the organization is shared between US, Europe and Asia. This one is organized by the Europeans with Erich Kasper and Robert Weigel as General Chairs, Hermann Schumacher and Robert Plana as Program Chairs, and Peter Russer / Clemens Ruppel responsible for Publicity / Finance. We look forward to meeting you at New Orleans.

SiRF 2010 Technical Program Committee

TPC Chair:

Hermann Schumacher, Ulm University

TPC Co-Chair:

Robert Plana, LAAS-CNRS

Technology, Devices, and Modeling:

Julio Costa, RFMD, USA (*Chair*)

Qingqing Liang, IBM

Saeed Mohammadi, Purdue University

Bernd Tillack, IHP

Mingta Yang, Qualcomm

Jyh-Chyurn Guo, National Chiao Tung University

Chih-Hung Chen, McMaster University

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Monir El-Diwany, National Semiconductor

Passives & MEMS:

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Hasan Sharifi, HRL Laboratories

Georges Papaioannou, University of Athens

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Hermann Schumacher, Ulm University

(*Chair*)

Larry Larson, UC San Diego

Begueret Jean Baptiste, IMS Bordeaux

Vince Fusco, Queens University of Belfast

Lance Kuo, Raytheon,

Frank Ellinger, TU Dresden

Christoph Scheytt, IHP

Linus Maurer, DICE

Applications and Wireless Architectures:

Chien-Nan Kuo, National Chiao Tung

University (*Chair*)

Donald Y.C. Lie, Texas Tech University

Alex Margomenos, Toyota

Francesco Dantoni, Texas Instruments

Didier Belot, ST Microelectronics

Jurgen Hasch, Bosch

Smart Materials and Nanotechnologies:

Henry Happy, IEMN, University of Lille (*Chair*)

Spartak Gevorgian, CHalmers University of

Technology

Adrian Ionescu, Ecole Polytechnique Federal

de Lausanne

Mircea Dragoman, IMT Bucharest

Peter Burke, UC Irvine

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SIRF

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Dimitrios Peroulis, Purdue University

Robert Plana, LAAS-CNRS

George Ponchak, NASA Glenn Research

Center

Jae-Sung Rieh, Korea University

Clemens Ruppel, EPCOS AG

Katsuyoshi Washio, Hitachi Ltd

Robert Weigel, University of Erlangen-

Nuremberg

ADVANCE REGISTRATION

Advance registration for RWW 2010 is open now until 30 December 2009. Onsite registration will be available at the Sheraton New Orleans beginning Sunday, 10 January 2010.

Please visit <http://www.radiowirelessweek.org> and follow the registration links. Visa, Mastercard, American Express, and Checks are accepted. Please make checks payable to Fly Events LLC and mail to: Fly Events LLC, Attn: RWW 2009, P.O. Box 29, Milltown, NJ 08850.

Should you have special dietary requirements or circumstances requiring special attention, please email info@flyevents.net

REGISTRATION HOURS

Registration will be open during the following times in the Sheraton New Orleans Hotel:

Sunday, 10 January:	10:00am-5:00pm
Monday, 11 January:	7:00am-5:00pm
Tuesday, 12 January:	7:00am-5:00pm
Wednesday, 13 January:	7:00am-5:00pm
Thursday, 14 January:	7:00am-10:00am

R W S T R A C K S

TWO DAY TRACK OF SESSIONS ON RF POWER AMPLIFIERS

RF power amplifiers are the subject of one of the greatest research efforts in recent times due to the increased demand for linearity and power efficiency in today's wireless communication equipment. This year, the RWS will feature two full days of RF Power Amplifier related sessions including presentations by MTT Distinguished Microwave Lectures Fadhel Ghannouchi and Bumman Kim, more than 20 papers focused on the latest in power amplifier technology and a new interactive workshop answering questions on power amplifier Linearization and Efficiency Enhancement.

Technical Committee

Chair: Marc Franco

Allen Katz	Peter Aaen
Richard Campbell	Bill Cantrell
Robert Caverly	Nick Cheng
Armando Cova	Murat Eron
Fadhel Gannouchi	Andrei Grebennikov
Gary Hau	Wolfgang Heinrich
Chris Hicks	Songcheol Hong
Wei Hong	Peter Kenington
Bumman Kim	James Komiak
Xing Lan	Chan-Ho Lee
Chao Lu	Stephen Maas
Mohammad Madhian	Arturo Mediano
Pilar Molina	Jan-Erik Mueller
Anthony Parker	Zoya Popovic
Frederick Raab	Timo Rahkonen
Milind Shah	Jon Shumaker
Franz Sinnesbichler	Joe Staudinger
Eric Strid	Almudena Saurez
Ali Tombak	John Walker
John Wood	Slim Boumaiza

We invite you to connect at the four-diamond Sheraton New Orleans Hotel, a center for all the radiance that makes New Orleans shine. Work, play or simply relax within an atmosphere of endless excitement from the heart of one of the world's greatest cities. Spend an afternoon shopping Royal Street and the French Market. Relax in Jackson Square or dine at a world famous restaurant in the French Quarter. Hear the sultry tones of a late night jazz show. And place yourself in the middle of it all right here. Located on historic Canal Street just steps from the French Quarter, the Sheraton New Orleans Hotel is a short walk from Bourbon Street, the Aquarium of the Americas, IMAX Theater, Riverwalk Marketplace and the assortment of renowned restaurants and live music clubs of the Vieux Carré. Sheraton New Orleans is where new stories begin as you refresh in the welcoming environment.

The exhibition area is open from 1:00pm-5:30pm on Monday 11 January and 10:00am-5:00pm on Tuesday, 12 January. Please visit our exhibitors in the Waterbury Ballroom at the New Orleans Sheraton Hotel for the latest information on wireless technologies!

For the latest information and details on how to become a sponsor and exhibit at RWW please visit:

<http://www.radiowirelessweek.org/>

TWO DAY TRACK OF SESSIONS ON SENSORS AND SENSOR NETWORKS

Sensors and sensor networks are critical components for manufacturing, structural health, security and transportation monitoring, and location and tracking systems. This year, the RWS will feature a special twoday archival RF Sensors and Sensor Networks Session Track to specifically focus on the latest developments in this field. This track will focus on sensor applications ranging from UHF (e.g. RFID-enabled sensors) to the millimeter-wave frequency range encompassing novel ideas such as integration of nanostructures for enhanced sensitivity and power scavenging, inkjet-printed "green" electronics and wearable/flexible/rugged materials and sensors.

Technical Committee

Chair: Manos Tentzeris

Manuel Benedetti	Fabio Coccetti
Javier Del Ser Lorente	Joe Dowling
Apostolos Georgiadis	Kostas Katsibas
Yoshihiro Kawahara	Xianming Qing
Alexandros Margomenos	Luca Roselli
Martin Vossiek	Robert Weigel
Li Yang	Yunqiang Yang

TRACK OF SESSIONS ON BIOMEDICAL APPLICATIONS OF MICROWAVE SYSTEMS

Microwave systems have been successfully applied to a wide range of biomedical applications, from specimen analysis to disease therapy. Emerging wireless approaches to sensors, telemetry, and information management are taking on the unique challenges of biomedical applications. This year, the RWS will feature a special archival RF Session Track to specifically focus on the latest innovations applying radio technology from KHz to THz, to challenges in medicine and biology.

Technical Committee

Chair: Victor Lubecke

Rizwan Bashirullah	Brian Gould
Christopher M. Collins	Amy Droitcour
Mohamed Mahfouz	Elise Fear
Mohammad-Reza Tofghi	

Social Events (Sheraton New Orleans Hotel)

Complimentary Daily Breakfast

Time: 7:00 AM–8:00 AM

Complimentary Daily Coffee Breaks

Place: Exhibit Area

Times: 9:45 AM–10:15 AM AND 3:15 PM–3:45 PM
Mon-Wed

Daily Lunch

A boxed lunch can't compete with any of the great restaurants in New Orleans. Make your own social event and take a colleague to lunch.

RWW Reception

Time: 6:00 PM–8:00 PM, Mon.

RWS / SiRF Reception and Banquet

Place: Gallery Ballroom

Time: 7:00 PM–9:00 PM, Tue.

Advance Price: \$50

On-site Price: \$60



Sunday Workshops

Enabling Gb/s 60GHz Wireless Communication

Organizers:
Debabani Choudhury, Intel
John Papapolymerou, Georgia Tech

Interest in implementing 60GHz short-range indoor wireless communications is still increasing, due to the available unlicensed bandwidth, high-data-rate, spectrum efficiency, as well as advances in integrated, low-cost radios. Multiple standard bodies are pushing 60GHz technology and developed usage models for various WPAN/WLAN applications. This workshop brings in several experts who will present different aspects of 60GHz wireless links including the challenges in system implementation for commercial applications.

Speaker - 1: Debabani Choudhury, Intel

Title: Recent Advances in 60 GHz Wireless System Architectures: Prospects and Challenges

Speaker - 2: Johann-Christoph Scheytt, IHP

Title: 60 GHz OFDM Transceiver RF Frontend Design in Si-Ge BiCMOS

Speaker - 3: Alberto Valdes Garcia, IBM TJ Watson

Title: System Design for 60 GHz Radios: Standard Specifications, Silicon Implementation and Link Experiments

Speaker - 4: Walter De Raedt, IMEC

Title: RF SiP techniques as an enabler for 60 GHz wireless modules

RF MEMS Wireless Applications

Organizers:
Bob Newgard, Rockwell Collins

Over the past decades, a tremendous amount of research has been done on the development of RF MEMS. The investment is beginning to pay-off as the research is being transitioned to manufacturing facilities. The workshop will address the wireless system applications opportunities for RF MEMS. The MEMS manufacturing representatives will discuss high-reliability RF MEMS switches for RF and microwave applications. The latest technology development in RF MEMS switches will be presented. In addition, the emerging technology of MEMS resonators, as applicable to RF filter applications, will be presented from academic institutions and National laboratories.

Speaker - 1: Julio Costa, RFMD

Title: RF MEMS Switch Technology for Radio Front End Applications

Speaker - 2: Troy Olsson, SNL

Title: Multi-Frequency AIN Filter Arrays for Advanced RF Systems

Speaker - 3: Jeremy Muldavin, MIT Lincoln Labs

Title: Cutting Edge RF MEMS Switch Developments, Science, and Technology

Speaker - 4: Ron Polcawich, Army Research Labs

Title: Low Voltage, Temperature Stable Piezoelectric MEMS Switches

Speaker - 5: Chris Gudemen, IMT

Title: Wafer-Level Packaging Technology for RF MEMS Switches

Speaker - 6: Gianlucca Piazza, University of Pennsylvania

Title: Aluminum Nitride piezoelectric MEMS for reconfigurable and low power transceivers

Speaker - 7: Jon Lovseth, Rockwell Collins, Inc.

Title: Optimal application space for RF MEMS

Advances in SiGe BiCMOS Technology and Circuits for Communication

Organizers:
Guofu Niu, Auburn University
John D. Cressler, Georgia Institute of Technology

This workshop will present the latest advances in SiGe BiCMOS technology, circuit design and applications for communication applications from both industry and academic experts. With advanced SiGe BiCMOS technology, high performance low cost RF products have been demonstrated in the past, across virtually the full spectrum from cellular transceivers, power amplifiers, to millimeter wave ICs. The experts will also discuss the advantages, disadvantages and future of SiGe BiCMOS technology, particularly for future communication applications.

Speaker - 1: Alvin Joseph, IBM

Title: SiGe Power Amplifiers and Front End Module Applications

Speaker - 2: Edward Preisler, Jazz Semiconductor

Title: Emerging Applications of SiGe-Based Electronics and Related Process Development

Speaker - 3: Katsuyoshi Washio, Hitachi

Title: Low-power SiGe HBT Technologies and MMICs for Future Wireless Communications

Speaker - 4: Christoph Scheytt, IHP

Title: SiGe BiCMOS Circuits for High-Frequency Communications and Sensing Applications

Speaker - 5: Foster Dai, Auburn University

Title: SiGe RFIC Design for Wireless Networks

Speaker - 6: Donald Lie, Texas Tech

Title: Design of Highly-Efficient RF Polar Transmitters Using SiGe Power Amplifiers and the Envelope-Tracking (ET) Technique

13:00

MO1A RWS Power Amplifiers Track
Rhythms 1

Distinguished Lecturers

MO1B SIRF Session
Rhythms 2

Modeling
Chair: *Julio Costa, RFMD*

MO1C RWS Sensor Track
Rhythms 3

Novel Wireless Sensors
Chair: *Luca Roselli, University of Perugia*
Co-chair: *Dimitrios Peroulis, Purdue University*

MO1D RWS Session
Gallery

Signal Processing for MIMO Systems
Chair: *Hsiao-Chun, Louisiana State University*

8:00 **SRD Based Power Amplifiers / Transmitters for Advanced Wireless and Satellite Communications**

Prof. Fadhel Ghannouchi, University of Calgary, Canada

The design of power amplifiers as critical components in any SRD based communication terminal has to be considered closely together with the system architecture to ensure optimal system level performances in terms of linearity and power efficiency. This implies the use of transmitter architectures that convert the analog baseband information to architecture dependent amplifier driving signals, such as sigma-delta, EE&R, Polar and LINC architectures. This talk lays out the principles behind SDR systems and examines the design of software-enabled linear and highly efficient RF/DSP co-designed power amplifiers / transmitters for multi-standard and multi-band applications.

8:20

8:40

Linear Power Amplifiers for Mobile Communication Systems

Prof. Bumman Kim, Pohang University of Science and Technology, Namgu Pohang, Korea

Linear power amplifiers for base-station application require high efficiency and good linearity. To achieve the goal, the main research has two directions: high efficiency linear power amplifier and error correction technique to further improve the linearity of the amplifier. We have pursued Doherty amplifier for the high efficiency linear power amplifier, and digital and analog predictions for the linearity enhancement. This talk presents these developments.

9:20

MO1B-1: Self-Aligned Epitaxial Graphene MOSFETs with a Field-Effect Mobility of 5000cm²/Vs (invited)

J. Moon¹, D. Curtis¹, M. Hu¹, D. Wong¹, P. Campbell², J. Tedesco², K. Gaskill², J. Robinson³, M. Fanton³, P. Asbeck⁴, ¹HRL Laboratories, Malibu, United States, ²Naval Research Laboratories, Washington, United States, ³EOC, Penn State University, Freeport, United States, ⁴University of California at San Diego, La Jolla, United States

MO1B-2: TFMS Microstrip Line Modeling and Characterization up to 110 GHz on 45 nm Node Silicon Technology: Application for CAD

T. Quemerais^{1,2}, L. Moquillon¹, J. Fournier², P. Benech², N. Corrao², ¹STMICROELECTRONICS, Crolles, France, ²Laboratoire IMEP-LHAC, Grenoble, France

MO1B-3: Low Phase Noise 18 kHz Frequency Tuning Step 5 GHz DCO Using Tiny Capacitors Based on Transmission Lines

R. K. Pokharel, K. Uchida, A. Tomar, H. Kanaya, K. Yoshida, Kyushu University, Fukuoka, Japan

MO1B-4: Scalable Transformer Model based on Ladder Topological Equivalent Circuit for Si RFICs

N. Shiramizu, T. Masuda, T. Nakamura, K. Washio, Hitachi, Ltd., Kokubunji, Japan

MO1C-1: Fully Integrated Millimeter-Wave Radiometers: Development Level and Perspectives

L. Aluigi, F. Alimenti, L. Roselli, University of Perugia, Perugia, Italy

MO1C-2: Bearing Cage Telemeter for the Detection of Shaft Imbalance in Rotating Systems

A. Ashtekar, A. S. Kovacs, F. Sadeghi, D. Peroulis, Purdue University, West Lafayette, United States

MO1C-3: Home Security Sensor Using 2.4GHz ISM Band

K. Ono, K. Ohta, I. Matsunami, A. Kajiwara, University of Kitakyushu, Kitakyushu, Japan

MO1C-4: Wireless Motion Sensor Using Ultra-wideband Impulse-Radio

K. Ohta, K. Ono, I. Matsunami, A. Kajiwara, University of Kitakyushu, Kitakyushu, Japan

MO1C-5 Design and Optimization of the Electromagnetic Front-end for Wireless Sensors Floating in Dissipative Media

D. Trincherro, R. Stefanelli, M. R. Perez Cerquera, Politecnico di Torino, Torino, Italy

MO1D-1: MIMO Radar Based on Reduced Complexity Compressive Sensing

Y. Yu¹, A. P. Petropulu¹, H. V. Poor², ¹Drexel University, Philadelphia, United States, ²Princeton University, Princeton, United States

MO1D-2: Novel Adaptive Blind-Equalizer-Order Selection Scheme for Multiple-Input Multiple-Output Channels

K. Yan, H. Wu, S. Y. Chang, Y. Wu, Louisiana State University, Baton Rouge, United States

MO1D-3: Joint Transmit and Receive Antenna Selection Using a Probabilistic Distribution Learning Algorithm in MIMO Systems

M. Naeem, D. C. Lee, Simon Fraser University, Burnaby, Canada

MO1D-4: BER Performance Assessment of Linearized MIMO Transmitters in Presence of RF Crosstalk

S. A. Bassam, M. Helaoui, F. Ghannouchi, University of Calgary, Calgary, Canada

MO1D-5: A Systematic Design Approach for Phased-array Receivers

W. Deng, R. Mahmoudi, A. V. Roermond, Eindhoven University of Technology, Eindhoven, Netherlands

MO2A RWS Power Amplifiers Track
Rhythms 1

Advances in Power Amplifier Technology

Chair: Marc Franco, RF Micro Devices
Co-chair: Zoya Popovic, University of Colorado at Boulder

MO2A-1: A CMOS Power Amplifier for Multi-mode LINC Architecture

H. Lee, H. Y. Lee, J.S. Paek, S. Hong, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea

MO2A-2: A High Power and Highly Efficient Multi-band Power Amplifier for Mobile Terminals

A. Fukuda, K. Kawai, T. Furuta, H. Okazaki, S. Oka, S. Narahashi, A. Murase, NTT DOCOMO, Inc., Yokosuka, Japan

MO2A-3: An High Efficiency WCDMA Power Amplifier with Pulsed Load Modulation (PLM)

S. Liao, Y. E. Wang, UCLA, University of California Los Angeles, Los Angeles, United States

MO2A-4: A CMOS Switching Power Amplifier for Δ Digitized Polar RF Transmitter

J. Paek, H. Y. Lee, H. Lee, S. Hong, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea

MO2A-5: A CMOS dB-Linear RF VGA for SAW-less WEDGE Transmitters

H. Akyol, B. Agarwal, H. A. Firouzkouhi, D. A. Badillo, Skywork Solutions Inc., United States

MO2B SIRF Session
Rhythms 2

Distinguished Lecturer

Chair: Hermann Schumacher, Ulm University

Current Status and Future Trends for Si and Compound MMICs in Millimeter-Wave Regime and Related Issues for System on Chip (SoC) and/or System in Package (SiP) (Invited)

Prof. Huei Wang, National Taiwan University, Taipei, Taiwan

The anticipated presentation will cover the current status and future trends of millimeter-wave MMICs, including those using III-V compound (GaAs, InP, GaN, etc.) and Si-based (CMOS, SiGe HBT and BiCMOS) MMIC technologies. Millimeter-wave MMICs used to be applied to military and astronomy systems for long time and started to be utilized for civil applications in the decade, such as communications and automotive radars. The evolution of IC technologies has enabled the performance of Si-based MMICs over 100 GHz, even in standard bulk CMOS processes. This is believed to have a major impact in the future development of millimeter-wave systems. Since low-cost mass-production potential pushes forward the technology, a very high integration of circuit functions on a chip, such as RF, base-band circuitry, automatic-control for a steady operation, and maybe even the antenna, etc. should be included, and thus the system on chip (SOC) issues should be addressed, especially in MMW regime. Moreover, millimeter-wave packaging cost always dominated in the module development. In order to simplify the assembly and reduced cost, the concept of system in package (SiP) has been proposed. This presentation will also survey the current technologies for SOC and SiP and discuss related issues and challenges.

MO2C RWS Sensor Track
Rhythms 3

Wireless Sensor Components and Technologies

Chair: George Heiter, Heiter Microwave consulting
Co-chair: Apostolos Geordiadis, CTTC

MO2C-1: Design of a 2.45 GHz Rectenna for Electromagnetic (EM) Energy Scavenging

G. A. Vera^{1,2}, A. Geordiadis¹, A. Collado¹, S. Via¹, ¹Centre Tecnologic de Telecomunicacions de Catalunya (CTTC), Castelldefels, Spain, ²Pontificia Universidad Catolica de Peru, Peru

MO2C-2: Inkjet Printing of Dual Band Conformal Antenna for Use in Wifi Frequency Bands

A. Rida¹, G. Shaker^{1,2}, F. Nasri¹, T. Reynolds¹, S. Nikolaou³, M. Tentzeris¹, ¹Georgia Institute of Technology, Atlanta, United States, ²University of Waterloo, Ontario, Canada, ³Frederick Research Center, Nicosia, Cyprus

MO2C-3: Development of a Batteryless Sensor Transmitter

C. Mikeka, H. Arai, Yokohama National University, Yokohama, Japan

MO2C-4: PVD Silicon Carbide as a Thin Film Packaging Technology for Antennas on LCP Substrates for Harsh Environments

M. C. Scardelletti¹, J. W. Stanton², G. E. Ponchak¹, J. L. Jordan¹, C. A. Zorman², ¹NASA Glenn Research Center, Cleveland, United States, ²Case Western Reserve University, Cleveland, United States

MO2C-5: Flexible Sheet-shaped Waveguide for Body-centric Wireless Communications

K. Eom, H. Arai, Yokohama National University, Yokohama, Japan

MO2D RWS Session
Gallery

MIMO and Smart Antenna

Chair: Yuanxun Ethan Wang, University of California at Los Angeles

MO2D-1: A Decoupling Technique for Compact Antenna Arrays in Handheld Terminals 10:10

L. K. Yeung, Y. E. Wang, University of California at Los Angeles, Los Angeles, United States

MO2D-2: A Lightweight X-Band Organic Antenna Array with Integrated SiGe Amplifier 10:30

C. E. Patterson, A. M. Yepes, T. Thrivikraman, S. K. Bhattacharya, J. D. Cressler, J. Papapolymerou, Georgia Institute of Technology, Atlanta, United States

MO2D-3: A Frequency Multiplication based LO Phase Shifting Technique for Phased-Array Architectures 10:50

Y. Soliman, R. Mason, Carleton University, Ottawa, Canada

MO2D-4: Development of a Substrate-Integrated Ku-Band Cavity-Backed Microstrip Patch Sub-Array of Dual Linear/Circular Polarization for DBS Applications 11:10

M. H. Awida¹, S. H. Suleiman², A. E. Fathy¹, ¹University of Tennessee at Knoxville, Knoxville, United States, ²Winegard Company, Burlington, United States

MO2D-5: Evaluation of the Reconfigurable Printed Fractal Tree Antenna for Enhanced Pattern Diversity in MIMO Systems 11:30

A. Lackpour^{1,2}, P. Mookiah², M. Olivieri¹, K. Dandekar², ¹Lockheed Martin Advanced Technology Laboratories, Cherry Hill, United States, ²Drexel University, Philadelphia, United States

MO3A RWS Power Amplifiers Track
Rhythms 1

PA Linearization and Efficiency Enhancement I

Chair: Allen Katz, The College of New Jersey
Co-chair: Arturo Mediano, University of Zaragoza

MO3D SiRF Session
Waterbury

Interactive / Poster Session

Chair: Dietmar Kissinger, University of Erlangen-Nuremberg

MO3C RWS Sensor Track
Rhythms 3

RFID Technologies

Chair: Manos M. Tentzeris, GEDC / Georgia Tech
Co-chair: Arpad Scholtz, Vienna University of Technology

MO3E RWS Session
Gallery

Distinguished Lecturers

13:10 MO3A-1: Kahn-Technique Transmitter for L-Band Communication/Radar (Invited)

F. H. Raab¹, M. C. Poppe², ¹Green Mountain Radio Research Co., Colchester, United States, ²Martin Poppe Associates LLC, Burlington, United States

An exciting session of papers on all topics related to silicon-based Radio Frequency Integrated Circuits, including Technology, Devices, and Modeling; Circuits; Passives and MEMS; and Late News Papers. In addition, all of the SiRF and RWS student paper finalist will be presenting posters and available to discuss their results in great detail.

MO3C-1: Inkjet-Printed Paper-Based RFID and Nanotechnology-based Ultrasensitive sensors: The "Green" Ultimate Solution for an ever Improving Life Quality and Safety? (Invited)

M. M. Tentzeris, Georgia Inst of Technology, Atlanta, United States

mmW CMOS/PCB Co-Designed Phased Array Technology

Prof. Joy Laskar, Georgia Institute of Technology

In this paper, we present the development of highly integrated mmW CMOS/PCB single-chip digital phased array solution, embedded in QFN package. Applications include low power 60 GHz multi-gigabit radio addressing the needs of a multitude of bandwidth hungry wireless multimedia applications such as high definition streaming and massive side-loading. The demonstrated solutions offer the lowest energy per bit transmitted wirelessly at multi-gigabit rates and meet the very stringent low-power specifications for portable consumer electronics.

13:30 MO3A-2: Practical High-Efficiency Partial-Envelope Tracking Power Amplifier with Broadband Applications

W. B. Sorsby, T. L. Kean, S. L. Heibel, G. M. Hegazi, Rockwell Collins Inc., Cedar Rapids, United States

13:50 MO3A-3: UHF GaN SSPA for Space Applications

A. Katz^{1,2}, B. Eggleston¹, D. McGee^{1,3}, J. MacDonald^{1,3}, ¹Linearizer Technology, Inc., Hamilton, United States, ²The College of New Jersey, Ewing, United States, ³Linear Space Technology, LLC, Hamilton, United States

MO3C-2: A UHF Frontend for MIMO Applications in RFID

R. Langwieser, C. Angerer, A. L. Scholtz, Vienna University of Technology, Vienna, Austria

Cross-Layer Design of Smart Antenna Systems

Nicholas E. Buris, president, NEBENS

A Cross-Layered design approach of Multiple Input Multiple Output (MIMO) antenna systems is presented in this talk. An electromagnetics exact formulation, which consists of full wave analyses of the antenna arrays on both sides of the link and a plane wave decomposition for the propagation environment, from baseband-to-baseband of a smart antenna system is given. Subsequently, the baseband signals are fed into link simulators, specific for each system of interest, to provide estimates of the Bit Error Rate (BER) and throughput. Calibration and channel estimation algorithms are described for Time Division Duplex (TDD) systems, such as the IEEE 802.16 (WiMAX). The state of the art in designing antennas for terminals and for base stations, examples of actual product designs for WiMAX and IEEE 802.11n, and some recommendations on research topics to further the state of the art are presented.

14:10 MO3A-4: Envelope Tracking Power Amplifiers with Reduced Peak-to-Average Power Ratio RF Input Signals

J. Jeong¹, D. F. Kimball^{2,1}, M. Kwak¹, P. Draxler^{3,1}, P. M. Asbeck¹, ¹Univ. of California at San Diego, La Jolla, United States, ²California Institute of Telecommunications and Information Tech., La Jolla, United States, ³Qualcomm Inc., San Diego, United States

MO3C-3: Impedance Measurement for Balanced UHF RFID Tag Antennas

H. Zhu¹, Y. C. A. Ko², T. T. Ye¹, ¹Hong Kong R&D Centre for Logistics and Supply Chain Management, Hong Kong, Hong Kong, ²Agilent Technologies Hong Kong Ltd, Hong Kong, Hong Kong

14:30 MO3A-5: High Efficiency 450W Asymmetric Three-Device Doherty Amplifier with Digital Feedback Predistortion

J. Staudinger¹, G. Bouisse², J. Kinney¹, ¹Freescale Semiconductor, Inc., Tempe, United States, ²Freescale Semiconductor, Inc., Toulouse, France

MO3C-4: Design and Non-Invasive Design Verification of a Slot-type Passive UHF RFID Tag

T. Bjöninen, L. Ukkonen, L. Sydänheimo, Tampere University of Technology, Rauma, Finland

MO4A RWS Power Amplifiers Track
Rhythms 1

PA Linearization and Efficiency Enhancement II

Chair: Bumman Kim
Co-chair: Frederick Raab

MO4A-1: A Transistor-Based High-Order Analog Predistorter with Memory Correction for WCDMA Applications

Y. Lee, M. Lee, S. Kam, Y. Jeong, Pohang University of Science and Technology, Pohang, Republic of Korea

MO4A-2: Advanced Design of High-Linearity Analog Predistortion Doherty Amplifiers Using Spectrum Analysis for WCDMA Applications

Y. Lee, M. Lee, S. Kam, Y. Jeong, Pohang University of Science and Technology, Pohang, Republic of Korea

MO4A-3: Memory Correction for a WCDMA Amplifier using Digital-Controlled Adaptive Analog Predistortion

R. N. Braithwaite, Powerwave Technologies, Santa Ana, United States

MO4A-4: Linearization of High-Efficiency Power Amplifiers using Digital Baseband Predistortion with Iterative Injection

D. Bondar¹, N. Lopez², Z. Popovic², D. Budimir¹, ¹University of Westminster, London, United Kingdom, ²University of Colorado, Boulder, United States

MO4A-5: Simple Predistortion System for Compensation of Temperature Dependent Nonlinearity of Power Amplifiers

N. Wolf¹, J.-E. Mueller², H. Klar¹, ¹Technical University of Berlin, Berlin, Germany, ²Infineon Technologies AG, Neubiberg, Germany

MO4B SIRF Session
Rhythms 2

Amplifiers

Chair: Christoph Scheytt, IHP
Co-chair: Guofu Niu, Auburn University

MO4B-1: Towards the Development of Terahertz Substrate Integrated Circuit Technology (invited)

Ke Wu, Ecole Polytechnique Montreal, Canada

MO4B-2: A CMOS Class-A 65nm Power Amplifier for 60 GHz Applications

T. Quemerais^{1,2}, L. Moquillon¹, S. Pruvost¹, J. Fournier², P. Benech², N. Corrao², ¹STMicroelectronics, Crolles, France, ²Laboratoire IMEP-LHAC, Grenoble, France

MO4B-3: Fully Balanced 60 GHz LNA with 37 % Bandwidth, 3.8 dB NF, 10 dB Gain and Constant Group Delay over 6 GHz Bandwidth

E. Janssen¹, R. Mahmoudi¹, E. van der Heijden², P. Sakian¹, A. de Graauw², R. Pijper², A. van Roermund¹, ¹Eindhoven University of Technology, Eindhoven, Netherlands, ²NXP Semiconductors, Eindhoven, Netherlands

MO4B-4: A Differential 77-GHz Receiver with Current Re-Use Low-Noise Amplifier in SiGe Technology

D. Kissinger¹, H. P. Forstner², H. Jaeger³, L. Maurer³, R. Weigel¹, ¹University of Erlangen-Nuremberg, Erlangen, Germany, ²Infineon Technologies, Neubiberg, Germany, ³Danube Integrated Circuit Engineering, Linz, Austria

MO4B-5: SiGe HBT Amplifiers with High Image Rejection for Quasi-millimeter-wave Frequency Range

T. Masuda, N. Shiramizu, T. Nakamura, K. Washio, Hitachi, Central Research Laboratory, Kokubunji, Japan

MO4C RWS Sensor Track
Rhythms 3

Wireless Localization and Positioning Technologies

Chair: Robert Weigel, University of Erlangen
Co-chair: Luca Catarinucci, University of Salerno, Lecce

MO4C-1: Analysis of the Indoor Positioning Performance of a Switched Six-Beams Dodecahedral Antenna

S. Maddio, A. Cidronali, G. Giorgetti, G. Manes, University of Florence, Florence, Italy

MO4C-2 Improving Item-Level Tracing Systems through Ad Hoc UHF RFID Tags

L. Catarinucci, R. Colella, M. De Blasi, L. Patrono, L. Tarricone, University of Salento, Lecce, Italy

MO4C-3: Methodical Leaky Feeder Design for Indoor Positioning Considering Multipath Environments

J. M. Engelbrecht¹, R. Collmann¹, U. Birkel², M. Weber², ¹HTW Dresden, University of Applied Sciences, Dresden, Germany, ²FH Giessen-Friedberg, University of Applied Sciences, Giessen, Germany

MO4C-4: Cross-System Localization in PLMN Using Neural Networks

M. Borenovic¹, A. Neskovic², D. Budimir¹, ¹University of Westminster, London, United Kingdom, ²University of Belgrade, Belgrade, Serbia

MO4C-5: Simple Radio Positioning System Based on Direct Sequence Spread Spectrum

S. Watanabe, M. Saito, M. Okada, Nara Institute of Science and Technology, Takayama, Ikoma, Japan

MO4E RWS Session
Gallery

Panel Session: Green Wireless Technology

Organizer: Alessandro Cidronali

The explosion of wireless connectivity for data, voice and multimedia contents has determined a pervasive growth of heterogeneous networks that provides continuous maximum potential performance. At present, the absence of a real time cross-layer resource management strategy makes the wireless network operate at its almost maximum power level, regardless of the user real estate and needs. Thus the wireless network should be capable to reconfigure its parameters as a function of the actual users' demand, in terms of quality of the signal and quantity of the channels (number of users).

Recently strategies capable to track the traffic and then make the single base station able to decide whether to switch itself on/off or modulate its output power level have been introduced. The challenge consists in making this operation consistent with the overall network efficiency: it doesn't make sense to increase the complexity over a given level if this will increase power consumption or if some part of the whole network is driven in an inefficient state. An enabler technology consists of a wireless front-end capable of maintaining high level of efficiency over a broad band and for peak power that might be adjusted according with the network requirements.

This panel focuses the issues related to the energy efficiency through a wireless network, analyzing the strategies and technologies capable to reduce the entire power budget while preserving the interconnectivity, beyond the consolidated paradigm of efficient RF PA design.

15:20

15:40

16:00

16:20

16:40

TU1A RWS Power Amplifiers Track
Rhythms 1

Recent Advances in PA Modeling and System Analysis

Chair: Robert Caverly, Villanova University
Co-chair: Almudena Suarez, University of Cantabria

TU1B SiRF Session
Rhythms 2

RF MEMS

Chair: Sergio Pacheco, Freescale Semiconductor
Co-chair: Manos Tentzeris, Georgia Inst of Technology

TU1C RWS Sensor Track
Rhythms 3

Novel Wireless Sensor Technologies and Applications

Chair: Silviya Kokalj-Filipovic, Rutgers University
Co-chair: Predrag Spacojevic

TU1D RWS Session
Gallery

Recent Progress in Cognitive Radios for Adaptive and Cooperative Operations

Chair: Ninoslav Marina, University of Oslo
Co-chair: Gamal Hegazi, Rockwell Collins

8:00 TU1A-1: Split Augmented Hammerstein Behavioral Model with Additional Distortion Path

M. Lee, Y. Lee, S. Kam, Y. Jeong, Pohang University of Science and Technology, Pohang, Republic of Korea

TU1B-1: Filter Technologies for Converged RF-Frontend Architectures: SAW, BAW and Beyond (Invited)

R. Aigner, TriQuint Semiconductor, Orlando, United States

TU1C-1: Effects of I/Q Mismatch on Measurement of Periodic Movement Using a Doppler Radar Sensor

Y. Yan¹, C. Li², J. Lin³, ¹University of Florida, Gainesville, United States, ²Texas Tech University, Lubbock, United States, ³University of Florida, Gainesville, United States

TU1D-1: Selection Combining with Quantized Channel Phase Compensation Over Rayleigh Fading

U. H. Rizvi¹, F. Yilmaz², M. Alouini², G. J. Janssen¹, J. H. Weber¹, ¹Delft University of Technology, Delft, Netherlands, ²Texas A & M University at Qatar, Doha, Qatar

8:20 TU1A-2: Envelope Tracking Transmitter System Analysis Method

J. Hoversten, Z. Popovic, University of Colorado at Boulder, Boulder, United States

TU1B-2: Charging and Discharging Studies in Microwave Capacitive Switches Under High Field Pulse Discharges

J. J. Ruan^{1,2}, G. Papaioannou^{1,3}, N. Nolhier^{1,2}, D. Trémouilles¹, F. Coccetti¹, R. Plana^{1,2}, ¹CNRS, Toulouse, France, ²Univ. of Toulouse, Toulouse, France, ³Univ. of Athens, Athens, Greece

TU1C-2: Radar Assisted Detection of Passive Electronic Components

C. Feige, T. Ostertag, M. Loschonsky, L. M. Reindl, University of Freiburg, Freiburg, Germany

TU1D-2: Signal Identification of Block Orthogonal Modulations

T. Yamamoto, I. Oka, S. Ata, Osaka City University, Osaka, Japan

8:40 TU1A-3: Memory Fading Volterra Series Model for High Power Infrastructure Amplifiers

J. Staudinger¹, J. Nanan², J. Wood¹, ¹Freescale Semiconductor, Inc., Tempe, United States, ²Freescale Semiconductor, Inc., Toulouse, France

TU1B-3: Characterization of an Embedded RF-MEMS Switch

M. Kaynak¹, B. Tillack¹, K. E. Ehwald¹, R. Scholz¹, F. Korndörfer¹, Y. M. Sun¹, S. Zehir², Y. Gurbuz², ¹IHP Microelectronics, Frankfurt Oder, Germany, ²Sabancı University, Istanbul, Turkey

TU1C-3: Avoidance Method of Interference Between RFID Systems Including Interference-Zone Change According to the Distance Between Channels

A. Uryu¹, Y. Umeda¹, O. Takyu¹, J. Mitsugi², ¹Tokyo University of Science, Noda, Japan, ²Keio University, Fujisawa, Japan

TU1D-3: Combining Cooperative Relaying with Spectrum Sensing in Cognitive Radio Networks

T. T. Do, B. L. Mark, George Mason University, Fairfax, United States

9:00 TU1A-4: A Novel Unbalanced Phase Calibration Technique for the LINC Transmitter

J. Hur, K. Kim, K. Lim, J. Laskar, Georgia Institute of Technology, Atlanta, United States

TU1B-4: Zero Level Metal Thin Film Package for RF MEMS

F. Barriere, P. Blondy, A. Crunteanu, A. Pothier, D. Mardivirin, A. Bessaoudou, F. Cosset, XLIM Université de LIMOGES / CNRS, Limoges, France

TU1C-4: A 1mm² Flip-Chip SP3T Switch and Low Noise Amplifier RFIC FEM for 802.11b/g Applications

C. R. Hale, R. J. Baeten, RF Micro Devices, Greensboro, United States

TU1D-4: Exploiting Multiuser Diversity for Spectrum Sensing in Cognitive Radio Networks

T. T. Do, B. L. Mark, George Mason University, Fairfax, United States

9:20 TU1A-5: Adaptive Matching for Efficiency Enhancement of Switching Mode and Non-linear Microwave Power Amplifiers

M. Gamal El Din, B. Geck, H. Eul, Leibniz University Hannover, Hanover, Germany

TU1B-5: Weighted Cooperative Sensing with Plural Antenna Elements

H. Tsuchiya, K. Umabayashi, Y. Kamiya, Y. Suzuki, Graduate School of Engineering, Tokyo University of Agriculture and Technology, Koganei, Japan

TU1C-5: Cooperative Spectrum Sensing for Cognitive Radio with Multiple Secondary Users

T. Sung, Cornell University, Ithaca, United States

Note: This paper will be presented in session TH2C

TU1D-5: Cooperative Spectrum Sensing for Cognitive Radio with Multiple Secondary Users

T. Sung, Cornell University, Ithaca, United States

Note: This paper will be presented in session TH2C

Plenary Speaker

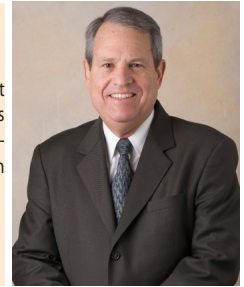
Rhythms

Radio and Wireless Symposium and Silicon RF Symposium

Chair: Charlie Jackson

Plenary Speaker: Bob Van Buskirk, President, RFMD Multi-market Products Group (MPG)
Title: "Gallium Nitride (GaN) - The Power Game Changer"

Abstract: A talk outlining the significant attributes of GaN as the "right semiconductor technology" at the "right time" in the RF power and power management industries will be presented. The path forward as GaN matures as a mainstream semiconductor technology and parallels with the maturation and commercialization of Gallium Arsenide (GaAs) HBT technology in the 1990s will be also discussed. The potential role of GaN as a "green technology" for next generation networks and global power applications will also be highlighted.



10:10
- 11:50

RWS TUP

Waterbury

Interactive Poster Session

Chairs: Mehdi Shadaram, The University of Texas at San Antonio
 Maximilian Scardelletti, NASA Glenn Research Center

TUP-1: Linearity Performance of an RF Power Amplifier Under Different Bias and Load Conditions with and without DPD

M. Obstad, M. Olavsbråten, Norwegian University of Science and Technology, Trondheim, Norway

TUP-2: Tunable Multiband Power Amplifier using Thin-Film BST Varactors for 4G Hand-held Applications

F. Ali¹, E. Lourandakis¹, R. Gloeckler², K. Abt³, G. Fischer¹, R. Weigel¹, ¹University of Erlangen-Nuremberg, Erlangen, Germany, ²ST-Ericsson, Nuremberg, Germany, ³Triquint Semiconductor, Munich, Germany

TUP-3: A 2.14 GHz GaN Power Amplifier with 1-bit Discrete Power Control

M. Mercanti, A. Cidronali, I. Magrini, G. Manes, University of Florence, Florence, Italy

TUP-4: Digital Compensation of the Power Amplifier Nonlinearities at Relay Station Receivers in 802.16j Very High Data Rate Systems

J. Zeleny¹, P. Rosson¹, C. Dehos¹, A. Kaiser², ¹CEA-LETI MINATEC Grenoble, France, ²EMN, Lille, France

TUP-5: FPGA-Based Set-Up for RF Power Amplifier Dynamic Supply with Real-Time Digital Adaptive Predistortion

P. L. Gilbert¹, G. Montoro¹, E. Bertran¹, J. A. Garcia², ¹Technical University of Catalonia, Castelldefels, Spain, ²Universidad de Cantabria, Santander, Spain

TUP-6: A Method for Estimating the IMD Performance Requirements of Circuit Blocks in the Error Signal Path of an Envelope Feedback Amplifier

N. G. Constantini¹, M. N. El-Gamal², ¹Ecole de Technologie Supérieure, Montreal, Canada, ²McGill University, Montreal, Canada

TUP-7: RF Power Amplifier Modeling for Three-Port Applications Using Polynomials with IIR Bases Functions

M. Masood¹, C. Rey², S. Kenney¹, G. Norris², R. Sherman², ¹Georgia Tech, Atlanta, United States, ²Freescale Semiconductor, Tempe, United States

TUP-8: An Equivalent Digital Implementation of Chireix Combiners under Ideal Source Excitation

W. Hamdane, A. Kouki, F. Gagnon, Ecole de Technologie Supérieure, Montreal, Canada

TUP-9: Ultra Wideband High Gain GaN Power Amplifier

S. Lin, M. Eron, Miteq Inc., Hauppauge, United States

TUP-10: Adaptive Leading-Edge Detection in UWB Indoor Localization

M. J. Kuhn, J. Turnmire, M. R. Mahfouz, A. E. Fathy, University of Tennessee, Knoxville, United States

TUP-11: Reconfigurable RF Front-End for Frequency-Agile Direct Conversion Receivers and Cognitive Radio System Applications

E. E. Djoumessi, K. Wu, Ecole polytechnique de Montreal, Montreal, Canada

TUP-12: Wearable Doppler Radar with Integrated Antenna for Patient Vital Sign Monitoring

R. R. Fletcher, S. Kulkarni, Massachusetts Institute of Technology, Cambridge, United States

TUP-13: Wearable Yagi Microstrip Antenna for Telemedicine Applications

H. R. Khaleel, H. M. Al-Rizzo, D. G. Rucker, T. A. Elwi, University of Arkansas at Little Rock, Little Rock, United States

TUP-14: Wideband, Fast, and Wide-Dynamic-Range Spectrum Sensing Using Dual-Stage Spectrum Detection

H. Abe¹, Y. Umeda¹, O. Takyu¹, T. Fujii², M. Nakagawa³, ¹Tokyo University of Science, Noda, Japan, ²University of Electro-Communications, Chofu, Japan, ³Keio University, Yokohama-shi, Japan

TUP-15: Hybrid Array for the Detection and Imaging of Termites

N. W. Le Marshall¹, G. A. Rankin², A. Z. Tirke³, ¹University of NSW@ADFA, Canberra, Australia, ²EWA Australia, Mawson Lakes, Australia, ³Scientific Technology, East Brighton, Australia

TUP-16: About the Path Loss in the RFID Radio Channel

R. Linares, R. Meneses, L. Montes, Instituto Politécnico Nacional, México, Mexico

TUP-17: Cognitive Agile Networking Testbed

H. Cao, C. König, A. Wilzeck, M. D. Pérez Guirao, Leibniz Universität Hannover, Hannover, Germany

TUP-18: Long Term Evolution Cellular Systems Integration of Real-Time Digital Television for Interactive Television and Broadband Data Applications

D. W. Prendergast^{1,2}, J. Diachina^{2,1}, Y. Wu¹, G. Gagnon¹, ¹Communications Research Center, Ottawa, Canada, ²Ericsson, Raleigh, United States

TUP-19: Experimental Evaluation of High Speed Parallel Data Transmission Technology for Wireless Repeater System

T. Seki, K. Nishimori, K. Hiraga, K. Nishikawa, Nippon Telegraph and Telephone Corporation, Yokohama, Japan

TUP-20: A 16-Element Power AIPAA with a 4-bit Digital LTCC Phase Shifter Operating at the 5.8 GHz-Band for Wireless Communication and Power Transmission

K. Yamashita¹, T. Yamamoto¹, H. Seita¹, H. Seita¹, E. Shimane², S. Kawasaki³, ¹Kyoto University, Uji, Japan, ²The University of Tokyo, Kashiwa, Japan, ³Japan Aerospace Exploration Agency, Sagami, Japan

TUP-21: Blind Carrier Frequency Estimation for SSB-SC Signals

H. Xiao¹, Y. Q. Shi¹, W. Su², J. Kosinski², ¹New Jersey Institute of Technology, Newark, United States, ²U.S. Army CERDEC, Fort Monmouth, United States

TUP-23: Adaptive Constellation sizing for OFDM-based Cognitive Radio Networks

T. Nadkar, V. Thumar, U.B. Desai, S. N. Merchant, Indian Institute of Technology Bombay, Mumbai, India

TUP-25: Clutter Suppression Scheme for Vehicle Radar

I. Matsunami, A. Kajiwara, The University of Kitakyushu, Kitakyushu, Japan

TUP-26: Two-Stage User Scheduling for SDMA Employing Relay-Based Feedback Links

P. Kuo, Y. Hsieh, P. Ting, ITRI, Hsinchu, Taiwan

TUP-27: A Study on Routing Protocol Suitable for Directional Links

K. Yamada, K. Umebayashi, Y. Kamiya, Y. Suzuki, Tokyo University of Agriculture and Technology, Koganei, Japan

TUP-29: A Stepped-Impedance Substrate Integrated Waveguide (SIW) Bandpass Filter

W. M. Fathelbab, M. J. Almkaw, South Dakota School of Mines and Technology, Rapid City, United States

TUP-30: A Compact High Directivity Coupler with ±0.15dB Error Under VSWR 2.5:1 for 3x3mm² UMTS Power Amplifier Modules

Y. Li, D. Prinodko, R. Zhu, H. Abdallah, S. Nabokin, M. Batrin, Y. Tkachko, Skyworks Solution Inc., Woburn, United States

TUP-32: Measurement-Based Models of Carbon Nanotube Networks

M. A. EL Sabbagh, S. M. El-Ghazaly, University of Arkansas, Fayetteville, United States

TUP-33: Cognitive OFDMA: Exploring a New FFT-Based Detection Technique for Opportunistic Usage

I. Demirdogen¹, A. Birol^{1,2}, S. Aldirmaz^{1,2}, H. Arslan¹, L. Durak^{1,2}, ¹University of South Florida, Tampa, United States, ²YILDIZ Technical University, Istanbul, Turkey

TUP-34: A Joint Blind Carrier Frequency and Phase Offset Detector and Modulation Order Identifier for MPSK Signals

H. B. Celebi, H. Arslan, University of South Florida, Tampa, United States

TUP-35: Intercarrier Interference Mitigation and Multi-user Detection employing Adaptive ICA for MIMO-OFDM Systems in Time Variant Channels

R. Ranganathan¹, T. Yang², W. Mikhael¹, ¹University of Central Florida, Orlando, United States, ²Embry-Riddle Aeronautical University, Daytona Beach, United States

TUP-36: Direct Digital Frequency Synthesizer with Designable Stepsize

E. McCune, RF Communications Consulting, Santa Clara, United States

TUP-37: A V-band 90-nm CMOS Low-Noise Amplifier with Modified CPW Transmission Lines for UWB Systems

I. Haroun^{1,2}, J. Wight¹, C. Plett¹, A. Fathy³, Y. Hsu⁴, ¹Clareton University, Ottawa, Canada, ²Communication Research Centre Canada, ³University of Tennessee, Knoxville, United States, ⁴Chip Implementation Centre, Hsinchu, Taiwan

13:20
- 14:50

TU3B SIRF/RWS Joint Session
Rhythms 2

Joint Session

Chair: Chien-Nan Kuo, National Chiao Tung University

13:10 TU3B-1: A Novel 77-GHz Radar Frontend with 19-GHz Signal Distribution on RF-PCB Substrate

F. Starzer¹, H. P. Forstner², C. Wagner¹, R. Feger¹, S. Scheiblhofer¹, A. Fischer¹, H. Jaeger³, A. Stelzer^{1,4}, ¹Johannes Kepler University of Linz, Linz, Austria, ²Infiniteon Technologies AG, Neubiberg, Germany, ³Dice GmbH, Linz, Austria, ⁴Johannes Kepler University of Linz, Linz, Austria

13:50 TU3B-2: On the Large-Signal Robustness of SiGe HBT LNAs for High-Frequency Wireless Applications

T. K. Thiruvikraman, A. Madan, J. D. Cressler, Georgia Institute of Technology, Atlanta, United States

13:50 TU3B-3: A V-band 90-nm CMOS Low-Noise Amplifier with Modified CPW Transmission Lines for UWB Systems

I. Haroun¹, J. Wight², C. Plett², A. Fathy³, Y. Hsu⁴, ¹Communications Research Centre, Ottawa, Canada, ²Carleton University, Ottawa, Canada, ³The University of Tennessee, Knoxville, United States, ⁴Chip Implementation Centre, Hsinchu, Taiwan

14:10 TU3B-4 A sub - 2 dB Noise Figure Wide-band LNA in 65 nm CMOS for Mobile TV Applications

A. Youssef¹, A. Ismail², J. Haslett¹, ¹University of Calgary, Calgary, Canada, ²Ultrawave Labs, Newport Beach, United States

14:30 RWS/SIRF RECEPTION & BANQUET (GALLERY BALLROOM)

Tuesday, January 12, 2010
 7:00 - 9:00 PM

Join your friends, co-workers, and fellow researchers in an informal setting of lively discussion, food, and drinks. In addition, see the student paper award winners from the RWS and SIRF receive their awards.

RWS STUDENT PAPER CONTEST

RWS 2010 Student Paper Chairs have selected 10 finalists among the students' paper submissions, one from each sub-committee. During the poster presentation from 1:10 pm to 2:30 pm on MONDAY, JANUARY 11, 2010 at the Waterbury Room, judges will visit the student posters and grade the papers in five different categories of novelty of paper, quality of poster, quantity of information presented, preparedness of the presenter, and interest to the RWS community. The committee of judges will then select three best papers for first, second and third places. The awards will be announced and presented during the RWS Banquet. Please visit the poster papers associated with our student papers.



TU4A RWS Power Amplifiers Track
Rhythms 1

Interactive Panel Session on Power Amplifiers (15:20 - 17:00)

Chair: Marc Franco, RFMD
Co-chair: Allen Katz, Linearizer Technology Inc.

Join a panel of experts in a roundtable discussion of power amplifiers and their use in wireless systems. This is your opportunity to listen to the panel, ask questions, and debate the significance of the past two days of papers.

Panel Members:

- Richard Campbell, University of Portland
- Bumman, Kim, KAIST
- Nick Cheng, Skyworks
- Frederick Raab, Green Mountain Radio Research
- Allen Katz, The College of New Jersey / Linearizer Technology
- Steve Cripps, Hyawave Associates
- Marc Franco, RF Micro Devices

TU4B SiRF Session
Rhythms 2

Focused Session on Device Modeling

Chair: Umberto Ravaoli, University of Illinois
Co-chair: Peter Russer, TU Munich

TU4B-1: Advanced Methods for Silicon Device Modeling (Invited)

U. Ravaoli, University of Illinois, Urbana-Champaign, United States

TU4C RWS Sensor Track
Rhythms 3

Wireless Sensor Networks

Chair: Danijela Cabric, UCLA
Co-chair: Kenneth Hsu, Rochester Institute of Technology

TU4C-1: Understanding Topology Challenges in the Implementation of Wireless Sensor Network for Cold Chain

A. Gupta, C. Diallo, M. Marot, M. Becker, Institut Telecom: Telecom-SudParis, Evry, France

TU4C-2: SFRP: A Selective Flooding based routing protocol for Clustered Wireless Sensor Networks

K. Subbu, X. Li, University of North Texas, Denton, United States

TU4C-3: Real-time Urban Bridge Health Monitoring Using a Fixed Wireless Mesh Network

F. X. Li, A. Islam, G. C. Perera, P. K. Kolli, Youngstown State University, Youngstown, United States

TU4C-4: Estimation of Distribution Algorithm for Sensor Selection Problems

M. Naeem, D. C. Lee, Simon Fraser University, Burnaby, Canada

TU4C-5: TelosRFID: An Ad-Hoc Wireless Networking Capable Multi-Protocol RFID Reader System

M. P. Lewis, K. W. Hsu, Rochester Institute of Technology, Rochester, United States

TU4D RWS Session
Gallery

Wireless Transceiver Front-end ICs

Chair: Yi-Jan Emery Chen, National Taiwan Univ
Co-chair: Minoru Fujishima, Hiroshima Univ

TU4D-1 AM-AM Characteristics of Low Noise Block Converters

H. Fujii¹, T. Asai¹, Y. Okumura¹, R. Kawauchi², I. Hiradate², H. Akazawa², T. Sotoyama², ¹NTT DoCoMo, Inc., Yokosuka, Japan, ²Panasonic Mobile Communications Co., Ltd., Yokosuka, Japan

TU4D-2: Miniature Size Highly Integrated Subharmonic Single Sideband Upconverter MMIC for Ka-band Transmitter Systems

P. K. Singh, S. Basu, Y. Wang, National Cheng Kung University, Tainan, Taiwan

TU4D-3: A High IIP₂ Gilbert Mixer-Based Downconverter Design for Direct-Conversion WiMAX Receivers

J. M. Wu¹, R. F. Ye², T. S. Horng², ¹National Kaohsiung Normal University, Kaohsiung, Taiwan, ²National Sun Yat-Sen University, Kaohsiung, Taiwan

TU4D-4: Reduction of Supply Voltage and Power Consumption of an Injection-Locked Oscillator for Biomedical Telemetry

M. R. Haider¹, A. B. Islam², S. K. Islam², ¹Sonoma State University, Rohnert Park, United States, ²The University of Tennessee, Knoxville, United States

TU4D-5: RF Passives Modeling for a Multi-layer PCB Design Library

K. Vaesen¹, R. Jansen¹, W. De Raedt¹, H. Kuwabara², T. Kishi², K. Nawa², T. Bessho³, ¹IMEC vzw, Leuven, Belgium, ²Toyota, Tokyo, Japan, ³Toyota, Aichi, Japan

TU4E RWS Session
Gallery

Panel Session: 60 GHz Technologies (15:20 - 17:00)

Organizer: Prof. Dariush Mirshekar

60 GHz has become an important band for high speed wireless communications. Join the panel in a lively discussion of the applications that can be served and technology developments required to fulfill the promises of the 60 GHz band.

TU4B-2: Modeling of Substrate Noise in Monolithic Integrated Circuits (Invited)

A. Cangelaris, University of Illinois at Urbana-Champaign, United States

TU4B-3: Power Wave Formulation of Oscillation Conditions: Avoidance of Bifurcation Modes in Cross-Coupled VCO Architectures

Sidina Wane¹, Damienne Bajon², ¹NXP Semiconductors, Caen, France, ²ISAE, Toulouse, France

TU4B-4: Compact Modeling of Collector Base Junction Space Charge Region Transit Time Effect on Noise in SiGe HBTs

Z. Xu¹, G. Niu¹, R. M. Malladi², ¹Auburn University, Auburn, United States, ²IBM Microelectronics, Essex Junction, United States

15:20

15:40

16:00

16:20

16:40

WE1A RWS Session
Rhythms 1
Novel RF Components
Chair: Mehran Mokhtari, Teledyne Scientific
Co-chair: Tzyy-Sheng Horng, National Sun Yat-sen University

WE1B SiRF Session
Rhythms 2
Late News Papers
Chair: Hermann Schumacher, Ulm University
Co-chair: Didier Belot, ST Microelectronics

WE1C RWS Session
Rhythms 3
Digital Signal Processing as Applied to Adaptive Systems
Chair: Hassane Mimoun, ESIEE Paris - University Paris Est
Co-chair: Ding Yanwu, Wichita State University

WE1D RWS Biomedical Track
Gallier AB
Distinguished Lecturer
Chair: Prof. Rizwan Bashirullah, University of Florida
Co-chair: Dr. Arye Rosen, Drexel University

8:00 WE1A-1: Hermetically-Sealed Evanescent-mode Resonators Utilizing Packaging as Cavities
 W. N. Allen, X. Liu, D. Peroulis, Purdue University, West Lafayette, United States

WE1B-1: Further Generalized Four-Port De-embedding Method by Dropping Ideality Assumptions on The THROUGH Structure
 K. Xia^{1,2}, G. Niu¹, X. Wei³, ¹Auburn University, Auburn, United States, ²Maxim Integrated Products, Beaverton, United States, ³Huazhong University of Science and Technology, Wuhan, China

WE1C-1: Physical layer for future broadband radio systems (Invited)
 M. Bellanger, Conservatoire National des Arts et Metiers, Paris, France

RF/Microwave Cardiac Ablation
 Dr. James McKinnie, MD, Tulane University School of Medicine

8:20 WE1A-2: A 5th-Order Switched-Capacitor Complex Filter for Low-IF Narrowband Wireless Receivers
 K. Suzuki¹, M. Ugajin², M. Harada², ¹NTT, Yokosuka-shi, Japan, ²NTT, Atsugi-shi, Japan

WE1B-2: A Plastic Packaged Ku-Band LNB with Very High Susceptibility to Supply PLL in 0.18 μ m CMOS
 K. Miyashita, Asahi Kasei Microdevices, Atsugi, Japan

WE1C-2: A Joint Symbol Detection Algorithm Efficient at Low SNR for a Multi-Device STBC-MIMO System
 M. Naeem, D. C. Lee, Simon Fraser University, Burnaby, Canada

8:40 WE1A-3: Ferroelectric Thick-Film Varactors based on Barium-Strontium-Titanate for High Power Applications
 H. Maune, M. Sazegar, Y. Zheng, R. Jakoby, Technische Universitat Darmstadt, Darmstadt, Germany

WE1B-3: Temperature Calibration of a Differential Pair based Direct Digital Synthesizer through Subsampling Spectral Analysis
 B. Laemmler¹, C. Wagner², H. Jaeger³, R. Weigel¹, ¹University Erlangen-Nuremberg, Erlangen, Germany, ²University Linz, Linz, Austria, ³DICE, Linz, Austria

WE1C-3: Joint Beamforming and Power Control in Downlink Multiuser MIMO Systems
 S. Abraham¹, D. C. Popescu¹, O. A. Dobre², ¹Old Dominion University, Norfolk, United States, ²Memorial University of Newfoundland, Canada

9:00 WE1A-4: A Novel Model for simulation of RF Oscillator Phase Noise
 S. Yousefi¹, T. Eriksson¹, D. Kuylenskierna², ¹Chalmers University of Technology, Gothenburg, Sweden, ²Chalmers University of Technology, Gothenburg, Sweden

WE1B-4: A Design and Analysis of a W-Band Detector in 0.18- μ m SiGe BiCMOS
 L. Zheng¹, L. Gilreath^{1,2}, V. Jain^{3,1}, P. Heydari¹, ¹University of California, Irvine, Irvine, United States, ²Northrop Grumman Space Technology, Redondo Beach, United States, ³Sabertek, Irvine, United States

WE1C-4: A Novel Volume-Based Scheduling Scheme for Multiuser Multiple-Input Multiple-Output Downlink System
 L. Jin¹, X. Gu², Z. Hu², ¹The University of Manchester, Manchester, United Kingdom, ²British Telecom, Ipswich, United Kingdom

9:20 WE1A-5: Development of a Dual-SPDT RF-MEMS Switch for Ku-band
 D. Yamane¹, W. Sun¹, H. Fujita¹, H. Toshiyoshi¹, S. Kawasaki², ¹The University of Tokyo, Tokyo, Japan, ²Japan Aerospace Exploration Agency, Sagami-hara, Japan

WE2A RWS Session
Rhythms 1

Advances in RF Passive Components

Chair: Nathalie Deltempo, IMS Laboratory
Co-chair: Dimitrios Peroulis, Purdue University

WE2A-1: A Compact Third-Order RXP-Based 5 GHz Bandpass Filter with Enhanced Stopband Characteristics in Ultra Thin Organic Substrate

S. Hwang, S. Min, H. Chan, V. Sundaram, M. Swaminathan, Georgia Institute of Technology, Atlanta, United States

WE2A-2: 60 GHz Reflection Type Phase Shifter Based On Liquid Crystal

S. Bulja¹, D. Mirshekar-Syahkal¹, M. Yazdanpanahi¹, R. James², S. E. Day², F. Fernandez², ¹University of Essex, Colchester, United Kingdom, ²University College London, London, United Kingdom

WE2A-3: Design of Marchand Balun of Spiral Shape Using Physical Transformer Model on Silicon Integrated Passive Device Substrate

C. Huang, C. Chen, T. Horng, National Sun Yat-sen University, Kaohsiung, Taiwan

WE2A-4: Integration of Ridge Waveguide Filter in Printed Circuit Board

M. A. EL Sabbagh¹, R. R. Mansour², ¹University of Arkansas, Fayetteville, United States, ²University of Waterloo, Waterloo, Canada

WE2A-5: Broadband 90-degree Phase Shifter Using Two Short Stubs

G. Sung, Hankyong National University, Ansong, Republic of Korea

WE2B SiRF Session
Rhythms 2

Technology

Chair: Bernd Tillack, IHP
Co-chair: Katsuyoshi Washio, Hitachi

WE2B-1: Challenges and opportunities for RF-MEMS in aeronautics and space - The EADS perspective (invited)

V. Ziegler¹, W. Gautier², A. Stehle², B. Schoenlinner¹, U. Prechtel¹, ¹EADS Innovation Works, Munich, Germany, ²EADS Deutschland GmbH, Ulm, Germany

WE2B-2: RF Power Potential of 45 nm CMOS Technology

U. Gogineni¹, J. del Alamo¹, C. Putnam², ¹Massachusetts Institute of Technology, Cambridge, United States, ²IBM Microelectronics, Essex Junction, United States

WE2B-3: A Deep Silicon Via Ground for SiGe Power Amplifiers

V. A. Blaschke, T. B. Thibeault, L. B. Lanzerotti, C. B. Cureton, R. L. Zwingman, A. B. KarRoy, E. J. Preisler, D. B. Howard, M. B. Racanelli, Jazz Semiconductor, Newport Beach, United States

WE2B-4: Efficient Polysilicon Passivation Layer for Crosstalk Reduction in High-Resistivity SOI Substrates

K. Ben Ali^{1,2}, C. Roda Neve¹, A. Gharsallah², J. Raskin¹, ¹Microwave Laboratory, Louvain-la-Neuve, Belgium, ²Research Unit of Microwaves, Electronic Circuits and Systems, Tunisia, Tunisia, Tunisia

WE2C RWS Session
Rhythms 3

Digital Signal Processing as Applied to Communication Systems

Chair: Roman Marsalek, Univ of Technology
Co-chair: Genevieve Baudoin, ESIEE Paris

WE2C-2: Dynamic Threshold Adaptation for Spectrum Sensing in Cognitive Radio Systems

D. R. Joshi¹, D. C. Popescu¹, O. A. Dobre², ¹Old Dominion University, Norfolk, United States, ²Memorial University of Newfoundland, St John's, Canada

WE2C-3: 10-Gbps Forward Error Correction System for 120-GHz-band Wireless Transmission

S. Okabe¹, T. Ikeda¹, F. Suginoshta¹, K. Shogen¹, A. Hirata², M. Yaita², N. Kukutsu², Y. Kado², ¹Japan Broadcasting Corporation, Setagaya-ku, Japan, ²Nippon Telegraph and Telephone Corporation, Atsugi-shi, Japan

WE2C-4: Joint Transmitter and Receiver IQ Imbalance Estimation and Compensation for OFDM Systems

I. Lu, J. Chang, Polytechnic Institute of New York University, Brooklyn, United States

WE2D RWS Biomedical Track
Gallier AB

Distinguished Lecturer

Chair: Prof. Victor Lubecke, University of Hawaii
Co-chair: Dr. Arye Rosen, Drexel University

Microwave and Laser Therapy for Benign Prostatic Hyperplasia (BPH)

Dr. Raju Thomas, M.D., Professor and Chairman of Urology Chief of Endourology, Laparoscopy, and Stone Disease Head of the Tulane Prostate Cancer Program

WE2D-1: Design of a Compact and Broadband 90-degree Phase Shifter Using Two Short Stubs

G. Sung, Hankyong National University, Ansong, Republic of Korea

WE2D-2: Design of a Compact and Broadband 90-degree Phase Shifter Using Two Short Stubs

G. Sung, Hankyong National University, Ansong, Republic of Korea

WE2D-3: Design of a Compact and Broadband 90-degree Phase Shifter Using Two Short Stubs

G. Sung, Hankyong National University, Ansong, Republic of Korea

WE2D-4: Design of a Compact and Broadband 90-degree Phase Shifter Using Two Short Stubs

G. Sung, Hankyong National University, Ansong, Republic of Korea

10:10

10:30

10:50

11:10

11:30

WE3A RWS Focused Session
Rhythms 1

Cognitive Radio Architectures for Portable Whitespace Devices

Chair: Debabani Choudhury, Intel
Co-chair: Srikathyayani, Srikanteswara, Intel

WE3B SIRF Session
Rhythms 2

Passives

Chair: Clemens Ruppel, EPCOS
Co-chair: Pierre Blondy, University Limoges

WE3C RWS Session
Rhythms 3

High Speed and Broadband Wireless Technologies I

Chair: Jianping Yao, University of Ottawa
Co-chair: Ke Wu, Ecole Polytechnique Montreal

WE3D RWS Biomedical Track
Gallier AB

Application of Microwave and RF Systems for Breast Cancer and Cell Detection and Discrimination

Chair: Victor M. Lubecke, University of Hawaii
Co-chair: Arye Rosen, Drexel University

13:10 WE3A-1: A Review of TV Whitespace Portable Devices (Invited)

S. Srikanteswara, D. Choudhury, Intel, Hillsboro, United States

WE3B-1: Recent Advances in Integrated Ferroelectric and Multiferroic Materials (Invited)

M. Maglione, ICMCB CNRS Universite of Bordeaux, Pessac cedex, France

WE3C-1: Broadband Access Technologies for Very High Throughput Wireless Sensor Communications Networks (Invited)

G. Chang¹, W. Jian^{1,2}, Z. Jia¹, A. Chowdhury¹,
¹Georgia Institute of Technology, Atlanta, United States, ²Beijing University of Post & Telecommunication, Beijing, China

WE3D-1: Open-Ended Coaxial Probe Measurements for Breast Cancer Detection

M. J. Kuhn¹, M. Awida², M. R. Mahfouz¹, A. E. Fathy²,¹University of Tennessee, Knoxville, United States, ²University of Tennessee, Knoxville, United States

13:30 WE3A-2: Wideband RF Front End Design Considerations for a Flexible White Space Software Defined Radio (Invited)

S.M. Hasan, R. Nealy, T.J. Brisebois, T. Newman, T. Bose, J.H. Reed, Virginia Tech, Blacksburg, United States

WE3B-2: Analysis and Measurement of a Novel On-Chip Variable Delay Transmission Line with Fixed Characteristic Impedance

W. Woods, H. Ding, G. Wang, IBM, Essex Junction, United States

WE3C-2: Transmission of 1.25-Gb/s Quasi-Single-Sideband Optical UWB Signals over Single-Mode Fiber

S. Pan, J. Yao, University of Ottawa, Ottawa, Canada

WE3D-2: Towards Contrast Enhanced Breast Imaging using Ultra-Wideband Microwave Radar System

M. Klemm, L. Leendertz, D. Gibbins, I.J. Craddock, A. Preece, R. Benjamin, University of Bristol, Bristol, United Kingdom

13:50 WE3A-3: Fractal Antenna Solutions for Whitespace Services (Invited)

N. Cohen, Fractal Antenna Systems, Inc., Waltham, United States

WE3B-3: RF MEMS Phase Shifters for 24 and 77GHz on High Resistivity Silicon

T. Buck¹, E. Kasper², ¹Robert Bosch GmbH, Gerlingen, Germany, ²Institute for Semiconductor Engineering, Stuttgart, Germany

WE3C-3: Low Power Self-quenched Super-regenerative Impulse-FM-UWB Transceiver for WBAN

M. Anis¹, G. Grau¹, N. Wehn², Advico, ¹Recklinghausen, Germany, ²University of Technology, Kaiserslautern, Germany

WE3D-3: MRI-based Temperature and SAR Mapping With a New Dual-Coil Solenoid/Birdcage Heating/Masurement System

S. Oh¹, C. A. Roopnarlane², M. Tofighi², C. M. Collins¹, ¹The Pennsylvania State University, Hershey, United States, ²The Pennsylvania State University, Middletown, United States

14:10 WE3A-4: Connectivity Brokerage: From Coexistence to Collaboration (Invited)

A. Parsa¹, A. O. Ercan², P. Malagon³, F. Burghardt¹, J.M. Rabaey¹, A. Wolisz^{1,4}, ¹UC Berkeley, Berkeley, United States, ²Ozyegin University, Istanbul, Turkey, ³Universidad Politecnica de Madrid, Spain, ⁴Technische Universitat Berlin, Germany

WE3B-4: An ESD Protection Free Monolithic Harmonic Filter for WLAN Applications

J. Ding¹, A. Springer¹, T. Bartl², G. Hueber³, R. Hagelauer⁴, ¹Johannes Kepler University, Linz, Austria, ²Infineon Technologies AG, Neubiberg, Germany, ³DICE GmbH & Co KG, Linz, Austria, ⁴Johannes Kepler University, Linz, Austria

WE3C-4: Ultra Wide Band System Realization for 4x4 MIMO Test Bed

A. Khwaja, P. Miranda, V. Mistry, C. Hinton, S. Garg, A. Sharma, A. Daryoush, Drexel University, Philadelphia, United States

WE3D-4: Resonant based Microwave Biosensor for Biological Cells Discrimination

K. Grenier¹, D. Dubuc¹, P. Poleni², M. Kumemura¹, H. Toshiyoshi², T. Fujii², H. Fujita², ¹LIMMS/CNRS-IIS laboratory, Tokyo, Japan, ²Institute of Industrial Science, Univ. Tokyo, Tokyo, Japan

14:30 WE3A-5: On the Limits of Interweaved Cognitive Radios (Invited)

G. Chung¹, S. Vishwanath¹, C.S. Hwang², ¹University of Texas, Austin, United States, ²Samsung Electronics Co. Ltd. Yongin, Korea

WE3B-5: Non-invasive Measurement of Liquid Content inside a Small Vial

S. Mukherjee, Phinix LLC, Milpitas, United States

WE3C-5: Ultra Wide Band System Realization for 4x4 MIMO Test Bed

A. Khwaja, P. Miranda, V. Mistry, C. Hinton, S. Garg, A. Sharma, A. Daryoush, Drexel University, Philadelphia, United States

WE3D-5: Non-invasive Measurement of Liquid Content inside a Small Vial

S. Mukherjee, Phinix LLC, Milpitas, United States

WE4A RWS Session
Rhythms 1
High Speed and Broadband Wireless Technologies II
Chair: Afshin Daryoush, Drexel University
Co-chair: Jianping Yao, University of Ottawa

WE4A-1: Multiport Interferometer Techniques for Innovative Transceiver Applications (Invited)
 K. Wu, Ecole Polytechnique Montreal, Montreal, Canada

WE4A-2: A Code-Shifted Reference Impulse Radio Ultra-Wideband (IR-UWB) Transmitter
 J. D. Lowe¹, Z. Chen¹, H. Nie², ¹Dalhousie University, Halifax, Canada, ²University of Northern Iowa, Cedar Falls, United States

WE4A-3: Millimeter Accuracy UWB Positioning System Using Sequential Sub-sampler and Time Difference Estimation Algorithm
 D. Yang, A. E. Fathy, H. Li, M. Mahfouz, G. D. Peterson, University of Tennessee, Knoxville, United States

WE4A-4: Short Range Vehicular Radar Using Stepped-FM Based UWB-IR
 R. Nakamura, R. Yokoyama, A. Kajiwara, University of Kitakyushu, Kitakyushu, Japan

WE4B SiRF Session
Rhythms 2
Signal Generation
Chair: Dietmar Kissinger, University of Erlangen-Nuremberg
Co-chair: Robert Aigner, TriQuint Semiconductor

WE4B-1: Millimeter-wave Design in Silicon Technologies (invited)
Didier Belot, ST Microelectronics, Crolles, France

WE4B-2: 64 to 86 GHz VCO Utilizing Push-Push Frequency Doubling in a 80 GHz fT SiGe HBT Technology
 G. Liu, C. A. Ulusoy, A. Trasser, H. Schumacher, Ulm University, Ulm, Germany

WE4B-3: An Integrated Fractional-N Frequency Synthesizer for Software-Defined Radio Applications
 S. A. Osmany, F. Herzel, J. C. Scheytt, IHP GmbH, Frankfurt(Oder), Germany

WE4B-4: A 1.9V 25GHz SiGe Static Frequency Dividers with Clock-Sharing Topology
 W. Cai, F. Ellinger, J. Carls, Technische Universitaet Dresden, Dresden, Germany

WE4B-5: Fast Hopping Carrier Generation for 14-Band Multi-band OFDM UWB in Digital CMOS
 M. Farazian¹, P. S. Gudem², L. E. Larson¹, ¹University of California, San Diego, La Jolla, United States, ²Qualcomm Inc., San Diego, United States

WE4C RWS Session
Rhythms 3
Advanced Compact Antennas
Chair: Silvio Ernesto Barbin, Center for Information Technology Renato Archer
Co-chair: Chia-Chan, National Chung-Chen University

WE4C-1 Tunable Reduced Size Planar Folded Slot Antenna Utilizing Varactor Diodes
 M. C. Scardelletti¹, G. E. Ponchak¹, J. L. Jordan¹, N. Jastram², J. V. Mahaffey³, ¹Nasa Glenn Research Center, Cleveland, United States, ²University of Minnesota, Minneapolis, United States, ³University of Akron, Akron, United States

WE4C-2 UWB Dielectric Resonator Antenna with Low Cross-polarization
 K. Ryu, A. Kishk, University of Mississippi, University, United States

WE4C-3 Design of 40-GHz CRLH-TL Chip Antenna Using 0.35-um CMOS-MEMS Technology
 C. Lin, C. Chang, S. Hsieh, National Chung Cheng University, Chiayi, Taiwan

WE4C-4 Internal Mobile Antenna For LTE / GSM850 / GSM900 / PCS1900 / WiMAX / WLAN
 Y. Jeong^{1,2}, S. Lee¹, J. Yoon¹, W. Lee^{1,2}, W. Choi², Y. Yoon¹, ¹Yonsei University, Seoul, Republic of Korea, ²LG Electronics, Seoul, Republic of Korea

WE4C-5 Design of a Miniaturized UWB Monopole Antenna at 24 GHz for Short Range Automotive Radar
 M. Ramezani, H. Miladi, M. Shahabadi, S. Mohajerzadeh, A. Tamaddon, University of Tehran, Tehran, Iran

WE4D RWS Biomedical Track
Gallier AB
Application of Microwave and RF Systems for Human Detection and Monitoring
Chair: Rizwan Bashirullah, Univ of Florida
Co-chair: Arye Rosen, Drexel University

WE4D-1: UHF Measurement of Breathing and Heartbeat at a Distance
 J. Silvius, D. Tahmouh, US Army Research Laboratory, Adelphi, United States

WE4D-2: A Coherent Low IF Receiver Architecture for Doppler Radar Motion Detector Used in Life Signs Monitoring
 I. Mostafanezhad, O. Boric-Lubecke, V. Lubecke, University of Hawaii at Manoa, Honolulu, United States

WE4D-3: Ultra Low Power RF Transceiver Architecture for In-body Communication System
 M. Anis¹, G. Grau¹, N. Wehn², ¹Advico Microelectronics, Recklinghausen, Germany, ²University of Technology, Kaiserslautern, Germany

WE4D-4: Fat Arm Spiral Antenna for Wide-band Capsule Endoscope Systems
 S. Lee, Y. Yoon, Yonsei University, Seoul, Republic of Korea

WE4D-5: Conventional Volume Coil and Travelling-wave Antenna for Homogeneous Excitation of the Human Head in MRI at 300 MHz
 C. Kao, Z. Cao, S. Oh, Y. Ryu, C. M. Collins, PSU College of Medicine, Hershey, United States

15:20

15:40

16:00

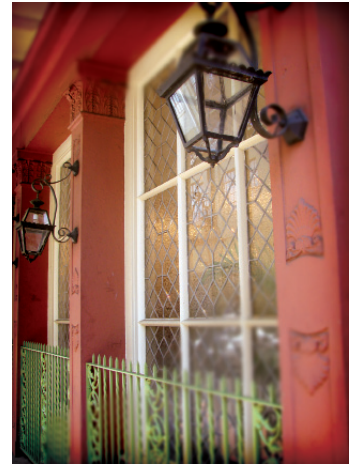
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16:40

TH1A RWS Session
Rhythms 1
Propagation, Field Calculation, Testing and Antennas
Chair: Xun Gong, University of Central Florida
Co-chair: Tomohiro Seki, Nippon Telegraph and Telephone Corporation

TH1B RWS Session
Rhythms 2
Wireless System Architectures and Modeling I
Chair: Gianfranco Manes, Univ of Florence
Co-chair: Dev Palmer, US Army Research Office

TH1C RWS Session
Rhythms 3
Power Transmission and Imaging
Chair: Reza Mahmoudi Eindhoven, University of Technology
Co-chair: Rasaunda Henderson, University of Texas at Dallas



8:00 TH1A-1: Results of Mobile Channel Sounding Measurements in the 4.9 GHz Public Safety Band

Y. L. de Jong, Communications Research Centre Canada, Ottawa, Canada

TH1B-1: Remote Sampler - Central Brain Architecture

T. A. Sexton, P. Lusina, C. A. DeVries, Research In Motion, Irving, United States

TH1C-1: Using Power-Line Networks to Extend Ranges of 2.4 GHz Wireless Communications Inside Multi-Storey Buildings

Q. W. Pan, A. Kathnaur, Manukau Institute of Technology, Manukau, New Zealand

8:20 TH1A-2: Evaluation and Field Testing of an Embedded Antenna in a Small UAV Wing Structure

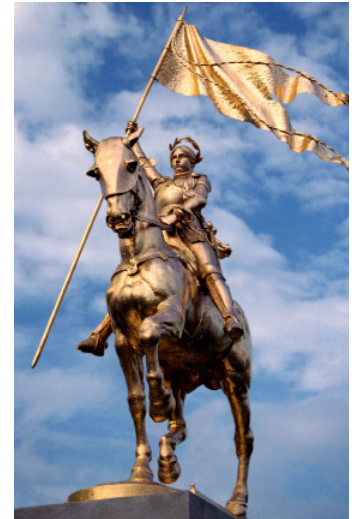
M. S. Sharawi^{1,2}, O. A. Rawashdeh², D. N. Alofi², ¹King Fahd University for Petroleum and Minerals, Dhahran, Saudi Arabia, ²Oakland University, Rochester, United States

TH1B-2: Cross-Layer Resource Allocation for Wireless Distributed Computing Networks

X. Chen, S. Hasan, T. Bose, J. H. Reed, Virginia Tech, Blacksburg, United States

TH1C-2: A Wireless Power Station for Laptop Computers

J. A. Taylor, Z. Low, J. Casanova, J. Lin, University of Florida, Gainesville, United States



8:40 TH1A-3: Enhancing Wireless Security Through Reconfigurable Antennas

P. Mookiah, K. R. Dandekar, Drexel University, Philadelphia, United States

TH1B-3: Analysis of the Saturation Throughput and Node Contention Levels in the 802.11 MAC Protocol

K. B. Anna, M. Bassiouni, University of Central Florida, Orlando, United States

TH1C-3: Multi-band 700MHz/ 2.4GHz/ 60GHz RF Front-End for Radio-over-Fiber Base Stations

I. Haroun^{1,2}, J. Wight², C. Plett², A. Fathy³, ¹Carleton University, Ottawa, Canada, ²Communications Research Centre Canada, Ottawa, Canada, ³University of Tennessee, Knoxville, United States

9:00 TH1A-5: Wide Band Side Fed Bifilar Helix Antenna Caged In Passive Quadrifilar Helix Structure

W. A. Shah, S. Shoaib, Q. Islam, M. Amin, Institute of Space Technology, Islamabad, Pakistan

TH1B-4: Mobile Ad Hoc Backbones: Formation and Maintenance

M. A. Nanni, S. Basagni, Northeastern University, Boston, United States

TH1C-4: A Reconfigurable UWB System for Real-Time Through Wall Imaging Applications

Y. Wang¹, Y. Yang², A. E. Fathy¹, ¹The University of Tennessee, Knoxville, United States, ²Agilent Technologies, Inc., Colorado Springs, United States



9:20

TH1B-5: Throughput Performance of a Busy-Tone Protocol in CCA Modified, Long Range IEEE 802.11 Networks

H. J. Zhu, J. Sydor, Communications Research Centre, Industry Canada, Ottawa, Canada



TH2A RWS Session
Rhythms 1
Channel Modeling
 Chair: Ahmed Kishk, University of Mississippi
 Co-chair: Songnan Yang, Intel Corporation

TH2A-1: Simulating Doppler Components in the Vehicle-to-Vehicle Communication Channel

L. Cheng, A. Saraf, Trinity College, Hartford, United States

TH2A-2: Low Complexity EM Based Channel SVD Estimation in MIMO-OFDM Systems

S. Bokharaiee¹, H. Zamiri Jafarian², E. Shweddyk¹, ¹University of Manitoba, Winnipeg, Canada, ²University of Toronto, Toronto, Canada

TH2A-3: Iterative Method for Extracting Impulse Response of a RF Channel with its Band-limited Transfer Function

S. Luo¹, Z. Chen², N. Polu¹, M. Murillo¹, ¹Cape Breton University, Sydney, Canada, ²Dalhousie University, Halifax, Canada

TH2A-4: Analysis of Path loss Exponent and Fading Signal Distribution for 60GHz Communication Systems in Indoor Environment

K. Song, Donggeui Institute of Technology, Busan, Republic of Korea

TH2A-5: Effects of Path Visibility on Channel Capacity of Urban MIMO Systems

S. Hemrungle¹, T. Hori¹, M. Fujimoto¹, K. Nishimori², ¹University of Fukui, Fukui, Japan, ²NTT Corporation, Yokosuka, Japan

TH2B RWS Session
Rhythms 2
Wireless System Architectures and Modeling II
 Chair: Dev Palmer, US Army Research Office
 Co-chair: Gianfranco Manes, University of Florence

TH2B-1: Error Rate Considerations for a High Data Rate DS-SS BPSK Dual Space Diversity RAKE

R. Framjee, V. K. Prabhu, University of Texas at Arlington, Arlington, United States,

TH2B-2: Adaptive Low Power Receive Diversity for LTE

J. W. Kunze¹, A. Bilgic¹, J. Hausner², ¹Ruhr-University Bochum, Bochum, Germany, ²Infineon Technologies, Neubiberg, Germany

TH2B-3: VANET Adaptive Power Control from Realistic Propagation and Traffic Modeling

L. Cheng, R. Shakya, Trinity College, Hartford, United States

TH2B-4: VANET Worm Spreading from Traffic Modeling

L. Cheng, R. Shakya, Trinity College, Hartford, United States

TH2B-5: Ultra-High-Speed Transmission over Millimeter-Wave using Microstrip Antenna Array

K. Hiraga, T. Seki, K. Nishimori, K. Nishikawa, K. Uehara, NTT Corporation, Yokosuka, Japan

TH2C RWS Session
Rhythms 3
Modulation and Transmitter Architecture
 Chair: Reza Mahmoudi, Tech Univ Eindhoven
 Co-chair: Rashaunda Henderson, Univ of Texas at Dallas

TH2C-1: Multi-level QAM Single-Carrier High-Efficiency Broadband Wireless System for Millimeter-wave Applications

Y. Toriyama¹, K. Kojima¹, T. Taniguchi¹, M. Zhang², J. Hirokawa², ¹Japan Radio Co., Ltd., Mitaka, Japan, ²Tokyo Institute of Technology, Meguro, Japan

TH2C-2: Adaptive Modulation for Maximum Throughput of Multi-User SC-FDMA System in Frequency Selective Channel

J. Kim, H. Ryu, Chungbuk National University, Cheongju, Republic of Korea

TH2C-4: Performance Evaluation of User Selection based on Average SNR in Base Station Cooperation Multi-User MIMO

Y. Seki, O. Takyu, Y. Umeda, Tokyo University of Science, Noda, Japan

TH2C-5: Concurrent Dual-Band Transmitter Architecture for Spectrum Aggregation System

T. Kitayabu, Y. Amano, H. Ishikawa, KDDI R&D Laboratories Inc., Fujimino, Japan

TU1D-5: TU1D-5: Cooperative Spectrum Sensing for Cognitive Radio with Multiple Secondary Users

T. Sung, Cornell University, Ithaca, United States

Note: This paper was moved from TU1D



Panel Session (15:20 - 17:00)
Gallery
Who Killed UWB and Will it Rise a Third Time?
 Organizer: Upkar Dhaliwal

Need we say more? Who knew it died so many times and keeps rising again? Why did they kill it? Should it ever have been promoted? This should be an interesting and lively discussion that you will want to take part in.

10:10

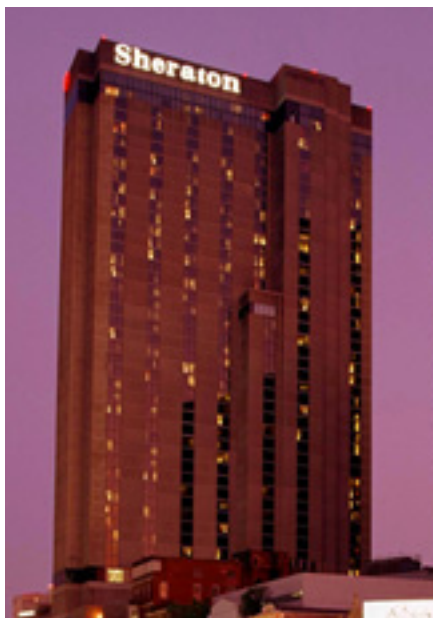
10:30

10:50

11:10

11:30

Hotel Information



Hotel Info

The RWW 2010 Planning Committee has secured a favorable rate of \$159 for RWW Attendees and Exhibitors at the official meeting venue, the Sheraton New Orleans. In order to receive the special Symposium rate, please book your accommodations by 9 December 2009. Please note the discounted rates are based on availability outside official Symposium dates. For reservations outside the official dates please contact the hotel directly. Government rates are subject to availability and not available via the hotel website. Please call the Sheraton New Orleans directly at 504-525-2500 to acquire the government rate. Government credentials will be required at check-in.

Reservation requests received by hotels after 9 December 2009 will be accepted on a space and rate available basis, and the group rate may not apply.

For Online Reservations:
<http://radiowirelessweek.org/rww2010/hotel.html>

For Telephone Reservations:
To speak to a speak to a Reservations Specialist to book your room, or if you have special needs or requirements, feel free to call the Starwood Reservations center at 1-800-325-3535 (for U.S. residents only) seven days a week from 6:00 a.m. to midnight. For international attendees please follow this link for your country's phone number. Mention "IEEE RWW 2010" to receive the negotiated room rate

Getting There

Transportation Info

New Orleans is one of the world's busiest ports and the cultural capital of the South, yet the city is remarkably compact and easy to navigate. Visitors are always pleasantly surprised to learn that many of the city's attractions, accommodations and event venues are within walking distance of each other; in fact, "hoofing it" (in New Orleans' case, translated as walking or grabbing a mule-drawn carriage) is a favorite means of transportation in the Crescent City. But, if you prefer wheels to legs, New Orleans has a very accessible and reasonably priced public transportation system, too. It only costs \$1.25 to take an RTA bus . . . or one of the city's famed streetcars, which travel the Riverfront and Canal Street. Where else can you actually ride on a historic landmark?

Louis Armstrong International Airport (MSY) is 15 miles from the Central Business District and French Quarter.

Taxicabs: A cab ride costs about \$28.00 from the airport to the Sheraton New Orleans, French Quarter and surrounding areas for one or two persons and \$12.00 (per passenger) for three or more passengers. Pick-up is on the lower level, outside the baggage claim area. There may be an additional charge for extra baggage. As of 1 January 2010, all taxis are required to accept major credit cards without the addition of a surcharge.

Airport Shuttle: You may reserve a shared ride service between the Sheraton New Orleans Hotel and Louis Armstrong International Airport through New Orleans Airport Shuttle. Rates are \$15pp one way / \$30pp roundtrip. Call 504-522-3500 for information or make reservations online at: <http://www.airportshuttleneworleans.com>

Advance reservations are required 48 hours prior to travel for all ADA accessible transfers. Please call well enough in advance for the specially-equipped shuttle to be reserved.

Complete details on additional ground transportation options including train, limousine and car service to/from local areas can be found at: http://www.flymsy.com/ground_transportation.htm



General Directions to the Hotel

From East

Take Interstate 10 West to the Canal Street Exit #235B. Turn right on Canal Street. The hotel is about 10 blocks down on the right side (at the corner of Camp Street).

From North

From the Causeway exit, take Interstate 10 East to the New Orleans Business District. Continue to the Poydras Street exit. Follow Poydras Street for approximately 8 blocks. Turn left on Camp Street. Continue on Camp Street for approximately 3 blocks. The hotel will be on the right.

From Louis Armstrong New Orleans International Airport

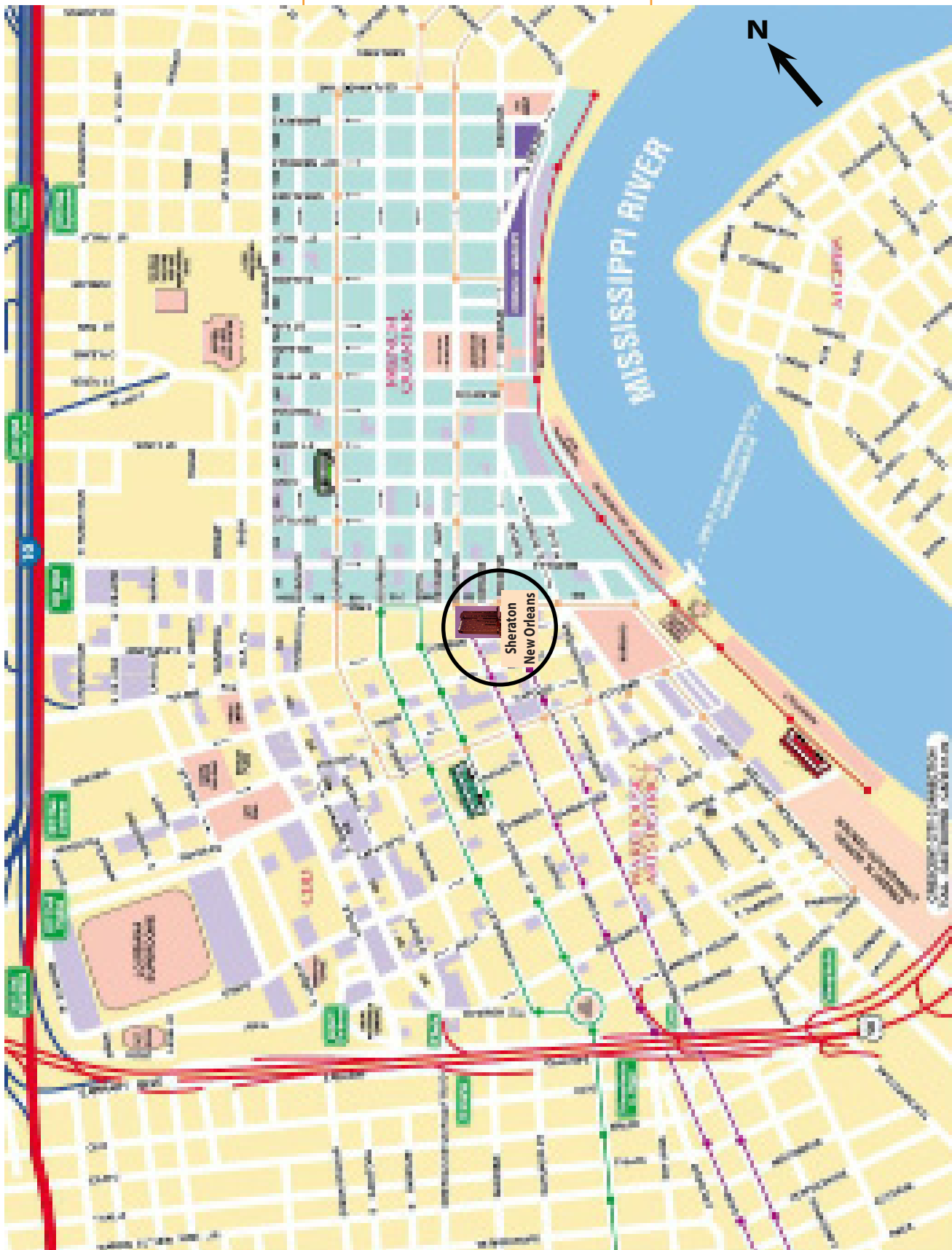
Take Interstate 10 East to the New Orleans Business District. Continue on to the Poydras Street Exit. Continue down Poydras Street to Camp Street. Turn left on Camp Street. Go 3 blocks and the hotel will be on the right side on the corner of Camp and Canal.

From South

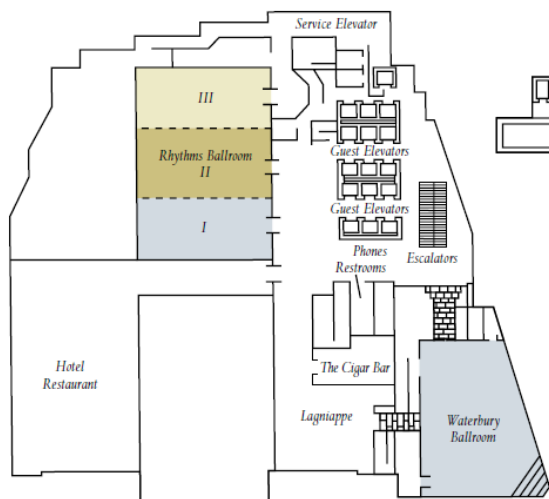
Take Highway 90 to the Westbank Expressway. Proceed on the Westbank Expressway to the Crescent City Connection (approximately 10 miles). From the right lane, exit at Camp Street (8 red lights). Turn right on Canal Street.

* Valet parking service is available on a first come first serve basis (spaces are limited and oversized vehicles are not permitted). Vehicles are secured in a covered garage adjacent to the hotel. Overnight parking rate for cars is \$30.18 including tax per night. *

New Orleans Area Map



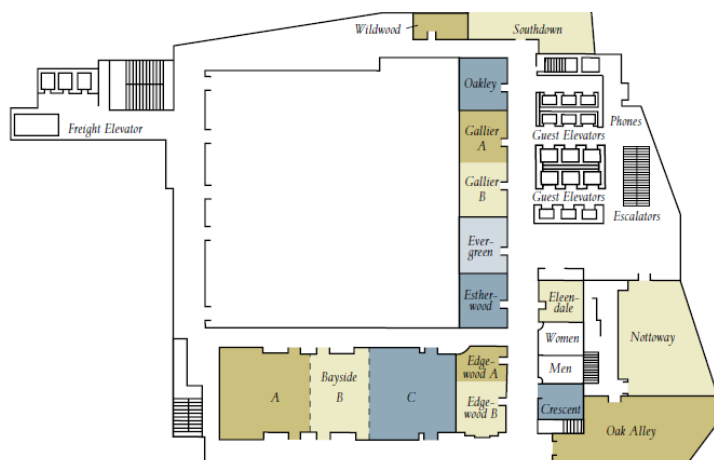
Sheraton New Orleans Hotel Maps



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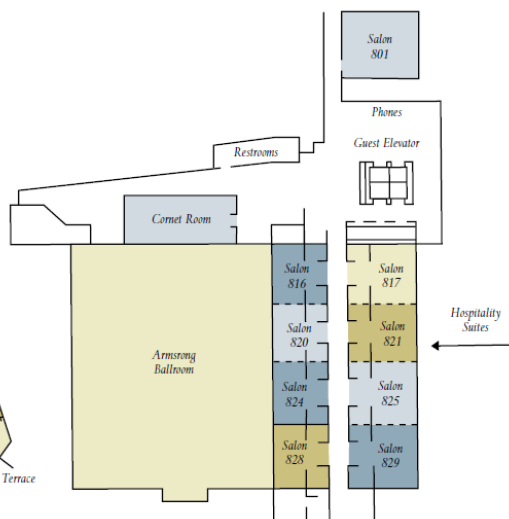
THIRD FLOOR



FOURTH FLOOR



FIFTH FLOOR



EIGHTH FLOOR

N O T E S





2010 IEEE Radio and Wireless Week

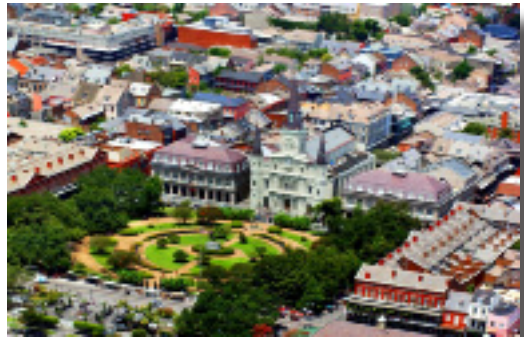
2010 IEEE Radio & Wireless Week at a Glance

Activity	SUN 1/10				MON 1/11				TUE 1/12				WED 1/13				THU 1/14			
	M	N	A	E	M	N	A	E	M	N	A	E	M	N	A	E	M	N	A	E
RWS Breakfast																				
Workshops																				
Plenary Session																				
RWS Session																				
RWS Session																				
RWS Session																				
Sensor Track																				
Power Amplifier Track																				
Biomedical Track																				
Distinguished Lecturers																				
Panel Session																				
Poster Session																				
Student Poster Session																				
RWW Reception																				
Banquet																				
RWW TPC Appreciation																				
Exhibits Exhibition																				
Coffee Break																				
SIRF Workshops																				
Technical Sessions																				
Poster Session																				
Reception / Banquet																				

M = Morning N = Noon A = Afternoon E = Evening

INFORMATION ABOUT NEW ORLEANS, LOUISIANA

This is a once in a lifetime chance to see the Crescent City, where a unique American culture has flourished in the French Quarter. Don't miss the food, including Po-Boys, Jambalaya, and Cajun food. Don't miss restaurants like Emeril's Delmonico, K-Paul's LA Kitchen (Prudhomme), and the famous Café Du Monde. And of course, this is the home for Dixieland music/Jazz. There are also museums, aquariums, the historic Bourbon Street, Mardi Gras, and Jackson Square to name a few. Visit <http://www.radiowirelessweek.org/> for more information.



All Photos courtesy of New Orleans CVB