Wednesday Technical Sessions 08:00–09:40

WE1A: Power Characteristics and Perf. Enhancement Techniques for III-V and Silicon Based Devices

Chair: Zaher Bardai
Cochair: Paul Watson
HCC 311

WE1A-01: Voltage-Dependent Characteristics of 48 V AlGaN/GaN High Electron Mobility Transistor Technology on Silicon Carbide
J. D. Brown, S. Lee, J. Martin, R. Vetury, M. Poulton, J. Shealy, RFMD, Charlotte, USA

WE1A-02: Survivability of AlGaN/GaN HEMT
Y. Chen, R. Coffie, W. Luo, M. Wojtowicz, I. Smorchkova, B. Heying, Y. Kim, M. V. Aust, A. Oki, Northrop Grumman Corp., Redondo Beach, USA

WE1A-03: FET Gate Length Impact on Reliability
A. M. Darwish, A. Bayba, A. Hung, Army Research Lab, Adelphi, USA

WE1A-04: Robustness of GaAs Field-Plate Based MESFETs
T. A. Winslow, MACOM/Tyco Electronics, Roanoke, USA

WE1A-05: Varactor Topologies for RF Adaptivity with Improved Power Handling and Linearity
K. Buisman, C. Huang, A. Akhnoukh, M. Marchetti, L.C. de Vreede, L. K.Nanver, Delft University of Technology, Delft, The Netherlands; L. E. Larson, University of California at San Diego, La Jolla, USA

WE1A-06: Design for Integration of RF Power Transistors in 0.13 µm Advanced CMOS Technology
S. Huang, C. Chang, Nat'l Chiao Tung Univ.; K. Chen, G. Huang, Nat'l Nano Device Labs; C. Hung, V. Liang, United Microelectronics Corp. Hinschu, Taiwan

WE1B Innovative Active Circuits Operating Above 100 GHz

Chair: Rudy Emrick
Cochair: Ed Niehenke
HCC 312

WE1B-01: A 245 GHz MMIC Amplifier with 80 µm Output Periphery and 12 dB Gain
W. R. Deal, X.B. Mei, V. Radisic, W. Yoshida, P.H. Liu, J. Uyeda, M. Barsky, R. Lai, Northrop Grumman Corp., Redondo Beach, USA; T. Gaier, A. Fung, L. Samoska, Jet Propulsion Lab, Pasadena, USA

WE1B-02: A SiGe Monolithically Integrated 278 GHz Push-Push Oscillator
R. Wanner, G. R. Olbrich, P. Russer, Technische Universität München, München, Germany; R. Lachner, Infineon Technologies, Neubiberg, Germany

WE1B-03: High-Efficiency Terahertz Frequency Triplers
D.W. Porterfield, Virginia Diodes Inc., Charlottesville, USA

WE1B-04: Highly Efficient Harmonically Tuned InP D-HBT Push-Push Oscillators Operating up to 287 GHz
Y. Baeyens, N. Weimann, V. Houtsma, J. Weiner, Y. Yang, J. Frackoviak, P. Roux, A. Tate, Y. Chen, Alcatel-Lucent

WE1B-05: New Trend in THz Detection: High T_c Superconducting Hot Electron Bolometer Technology May Exhibit Advantage versus Low T_c Devices
A. J. Kreisler, A. F. Degardin, M. Aurino, C. Peroz, J. Villegier, G. Beaudin, Y. Delorme, M. Redon, A. Sentz, CEA, France

WE1B-06: A 100 GHz Tunable Photonic Millimeter Wave Synthesizer for the Atacama Large Millimeter Array Radiotelescope
J. Cliche, M. Tetu, M. Poulin, TeraXion, Québec, Canada; B. Shillue, National Radio Astronomy Observatory, Charlottesville, USA

WE1B-07: Metamorphic H-Band Low-Noise Amplifier MMICs
A. Tessmann, A. Leuther, H. Massler, M. Schlechtweg, Fraunhofer IAF, Freiburg, Germany

WE1C: Innovative Design and Construction of RF MEMS Switches

Chair: Chuck Goldsmith
Cochair: Jack Ebel
HCC 313A

WE1C-01: Coplanar-Waveguide Embedded Mechanically-Bistable DC-to-RF MEMS Switches
M. Sterner, N. Roxhed, G. Stemme, J. Oberhammer, Royal Institute of Technology, Stockholm, Sweden

WE1C-02: Nontoxic Liquid-Metal 2–100 GHz MEMS Switch
C. Chen, J. Whalen, D. Peroulis, Purdue University, West Lafayette, USA

WE1C-03: Thermally Actuated Nanocrystalline Diamond Microbridges for Microwave and High-Power RF Applications
S. Balachandran, Univ. of South Florida, Tampa, USA; J. Kusterer, D. Maier, M. Dipalo, E. Kohn, Univ. of Ulm, Ulm, Germany; R. Connick, T.M. Weller, Modelithics Inc., Tampa, USA

WE1C-04: Design of a 20 GHz Low-Loss Ohmic-Contact RF MEMS Switch
D. A. Goins, R. D. Nelson, J. S. McKillop, TeraVicta Technologies Inc., Austin, USA

WE1C-05: Carbon Nanotube Based Dielectric for Enhanced RF MEMS Reliability
C. Bordas, K. Grenier, D. Dubuc, S. Pacchini, E. Flahaut, M. Paillard, J. L. Cazaux, CNRS, CIRIMAT, Alcatel, Toulouse, France

WE1C-06: Schottky Contact RF MEMS Switch Characterization
B. W. Pillans, F. Morris, P. Chahal, G. Frazier, Raytheon, Dallas, USA; J. Lee, University of Texas at Dallas, Richardson, USA

WE1E: Special Session A Tribute to Dr. K. C. Gupta

Chair: Inder J. Bahl
Cochair: Madhu S. Gupta
HCC 316A

WE1E: A Tribute to Dr. K. C. Gupta

Dr. K. C. Gupta passed away at the age of 66 in February 2007. He was not only a scholar and a dedicated leader in the microwave field but also touched the lives of many people by his warmth, selfless service, and sincerity. KC was a most valuable role model, collaborator, mentor, educator, and wonderful friend whose wisdom and counsel will be remembered by many. Dr. Gupta was a pioneer in the field of microwave education and computer-aided design. Some of KC's well-known books are *Microstrip Lines and Slotlines*, *Computer-Aided Design of Microwave Circuits*, and *Neural Networks for RF and Microwave Design*. He was the founding editor for the *International Journal of RF and Microwave Computer-Aided Engineering*. KC's extensive professional activities included service as the IEEE MTT-S President in 2005. He received numerous awards including the IEEE Millennium Medal, the MTT-S Distinguished Service Award, and the MTT-S Distinguished Educator Award. Dr. Gupta was a Fellow of IEEE and a Life Fellow of IETE, India.

Wednesday Technical Sessions 08:00–09:40

WE1F Microwave Sensors for Object and Presence Detection

Chair: Ian Gresham
Cochair: Roger Sudbury
HCC 315

WE1F-01: A Ka-Band Correlation Radiometer for Human Presence Detection from a Moving Platform
J. A. Nanzer, R. L. Rogers, University of Texas Applied Research Labs, Austin, USA

WE1F-02: 24 GHz Intruder Detection Radar with Beam-Switched Area Coverage
M. Morinaga, T. Nagasaku, H. Shinoda, H. Kondoh, Hitachi, Ltd., Central Research Lab, Kokubunji-shi, Japan

WE1F-03: New Microwave Flow Sensor Based on a Left-Handed Transmission-Line Resonator
A. Penirschke, M. Schubler, R. Jakoby, Darmstadt University of Technology, Darmstadt, Germany

WE1F-04: A Robust 3D High-Precision Radio Location System
C. Meier, S. Lindenmeier, University of the Bundeswehr, Neubiberg, Germany; A. Terzis, DaimlerChrysler, Ulm, Germany

WE1F-05: Live Electrooptic Imaging of Microwave Near Fields via Ultraparallel Photonic Heterodyne
K. Sasagawa, A. Kanno, T. Kawanishi, M. Tsuchiya, National Institute of Information and Communications Technology, Koganei, Japan

WE1F-06: Composite Patch Array Antenna with Built-in Polarizer for Reducing Road Clutter Noises of 76 GHz Automotive Radars
H. Shinoda, H. Kondoh, Central Research Lab, Hitachi, Ltd., Tokyo, Japan

WE1G Power Dividers and Combiners

Chair: M. Salazar-Palma
Cochair: Mohamed Abouzahra
HCC 314

WE1G-01: An Unequal Wilkinson Power Divider with Variable Dividing Ratio
S. Oh, J. Koo, M. Hwang, C. Park, J. Lim, K. Choi, D. Ahn, Soonchunhyang University, Asan, Rep. of Korea; Y. Jeong, Chonbuk National University, Jeonju, Republic of Korea

WE1G-02: A Broadband Traveling-Wave Power Divider/Combiner using Asymmetric Tapered-Line Power Dividers
Y. Tahara, H. Oh-hashi, Y. Tarui, M. Miyazaki, Mitsubishi Electric Corp., Kamakura, Japan

WE1G-03: Compact Multi-Way Power Dividers Similar to the Bagley Polygon
I. Sakagami, T. Wuren, M. Fujii, M. Tahara, Univ. of Toyama, Toyama, Japan

WE1G-04: A Novel Compact Dualband Reconfigurable Power Divider for Smart Antenna Systems
R. Vincenti Gatti, A. Ocera, S. Bastioli, L. Marcaccioli, R. Sorrentino, University of Perugia, Perugia, Italy

WE1G-05: Synthesis of an Arbitrary Power Split Ratio Divider Using Substrate Integrated Waveguides
S. Yang, A. Fathy, Univ. of Tennessee, Knoxville, USA

WE1G-06: Universal Single-Layer Waveguide Power Divider for Slot Array Antenna Applications
D. Deslandes, F. Boone, University of Sherbrooke, Sherbrooke, Canada; K. Wu, École Polytechnique of Montréal, Montréal, Canada

WE1G-07: Modeling and Implementation of a Novel Coaxial Line Multioctave High-Power Combiners with Low-Intermodulation Distortion
S. Lin, A. E. Fathy, University of Tennessee Knoxville, Knoxville, USA; G. M. Hegazi, T. T. Chu, Rockwell Collins Inc, Cedar Rapids, USA

08:00–09:40

WEP1 Interactive Forum

Chair: Eric Bryerton
Cochair: Michael Forman
HCC Ballroom A

WEP1: Interactive Forum

Wednesday Technical Sessions 10:10–11:50

WE2A
Low-Noise CMOS and Low-Power HEMT Technologies
Chair: Tsuneo Tokumitsu
Cochair: Ho C. Huang
HCC 311

WE2A-01: Edge-Extended Design for Improved Flicker Noise Characteristics in 0.13 µm RF NMOS
C. Chan, Y. Lin, Y. Huang, S. Hsu, National Tsing Hua University, Hsinchu, Taiwan; Y. Juang, National Chip Implementation Center, Hsinchu, Taiwan

WE2A-02: A Silicon RFCMOS SOI Technology for Integrated Cellular/WLAN RF TX Modules
J. Costa, M. Carroll, J. Jorgenson, T. Mckay, T. Ivanov, T. Dinh, D. Kozuch, G. Remoundos, D. Kerr, A. Tombak, J. McMacken, M. Zybura, RF Micro Devices, Greensboro, USA

WE2A-03: Low-Loss Low-Cost All-Silicon CMOS NLTLs for Pulse Compression
M. Li, R.E. Amaya, R.G. Harrison, G.N. Tarr, Carleton University, Ottawa, Canada; J. Duchamp, P. Ferrari, Institute of Microelectronics, Grenoble, France

WE2A-04: 1.8 dB Insertion Loss 200 GHz CPW Bandpass Filter Integrated in HR SOI CMOS Technology
F. Gianesello, D. Gloria, S. Montusclat, S. Boret, B. Martineau, R. Pilard, C. Raynaud, G. Dambrine, S. Lepilliet

WE2A-05: High-power III-Nitride Integrated Microwave Switch with Capacitively-Coupled Contacts
G. Simin, Z. Yang, University of South Carolina, Columbia, USA

WE2A-06: Manufacturable and Reliable 0.1 µm AlSb/InAs HEMT MMIC Technology for Ultralow-Power Apps
Y. Chou, J. Yang, C. Lin, J. Lee, M. Lange, R. Tsai, N. Peter, N. Matt, A. Gutierrez, H. Quach, R. Lai, D. Farkas, M. Wojtowicz, P. Chin, M. Barsky, A. Oki, Northrop Grumman Corp.

WE2A-07: Ni-Zn Ferrite Film Coated on-Chip RF Inductor Fabricated by a Novel Powder-Mixed-Photoresist Coating Technique
C. Yang, F. Liu, T. Ren, L. Liu, Tsinghua Univ.; G. Chen, X. Guan, A.Z. Wang, Z. Yue, Tsinghua Univ.

WE2B
Modules and Chipsets for mm-Wave Commercial Applications
Chair: Debabani Choudhury
Cochair: James Wiltse
HCC 312

WE2B-01: A 6 Gbps Millimetre Wave Wireless Link with 2.4 b/Hz Spectral Efficiency
V. Dyadyuk, O. Sevimli, J. Bunton, J. Pathikulangara, L. Stokes, CSIRO, Epping, Australia

WE2B-02: A Single-Chip 25 pJ/b Multigigabit 60 GHz Receiver Module
S. Sarkar, J. Laskar, Georgia Electronic Design Center, Atlanta, USA

WE2B-03: Ka-Band BiCMOS 4 b Phase Shifter with Integrated LNA for Phased-Array T/R Modules
B. Min, University of Michigan, Ann Arbor, USA; G.M. Rebeiz, University of California, San Diego, USA

WE2B-04: A 40 GHz MMIC SPDT Bandpass Filter Integrated Switch
S. Chao, C. Kuo, Z. Tsai, H. Wang, National Taiwan University, Taipei, Taiwan

WE2B-05: A 2.5 V 77 GHz Automotive Radar Chipset
S. T. Nicolson, K. A. Tang, K. H. Yau, S. P. Voinigescu, University of Toronto, Toronto, Canada; P. Chevalier, B. Sautreuil, STMicroelectronics, Crolles, France

WE2C
RF MEMS Tunable Circuits
Chair: Youngwoo Kwon
Cochair: Tom Weller
HCC 313A

WE2C-01: Fully Packaged 4 bit 100 ps RFMEMS Time Delay
J. B. Muldavin, C. O. Bozler, S. Rabe, C. Keast, MIT Lincoln Lab, Lexington, USA

WE2C-02: A MEMS Tunable Frequency-Selective Surface Monolithically Integrated on a Flexible Substrate
G. M. Coutts, R. R. Mansour, S. K. Chaudhuri, University of Waterloo, Waterloo, Canada

WE2C-03: A MEMS-Reconfigurable Power Divider on High-Resistivity Silicon Substrate
A. Ocera, P. Farinelli, F. Cherubini, P. Mezzanotte, R. Sorrentino, University of Perugia, Perugia, Italy; B. Margesin, F. Giacomozzi, ITC-IRST, Povo, Italy

WE2C-04: An Integrated Tunable Bandpass Filter Using MEMS Parallel-Plate Variable Capacitors Implemented with 0.35 µm CMOS Technology
S. Fouladi, M. Bakri-Kassem, R. Mansour, University of Waterloo, Waterloo, Canada

WE2C-05: Narrowband Monolithic Piezoelectric-on-Substrate Filter Technology
R. Abdolvand, F. Ayazi, Georgia Institute of Technology, Atlanta, USA

WE2D
Material Measurement
Chair: Bela Szendrenyi
Cochair: Michael Janezic
HCC 316B

WE2D-01: Measurements of the Surface Resistance and the Effective Conductivity of Copper Cladded Laminates Employing Dielectric Resonator Technique
J. Krupka, Warsaw University of Technology, Warsaw, Poland

WE2D-02: A High-Temperature-Capable Planar-Type Coaxial Probe for Complex Permittivity Measurements up to 40 GHz
N. Kim, J. Yoon, D. Kim, Y. Kwon, Seoul Nat'l Univ., Seoul, S. Korea; J. Cho, Korea Inst. of Science and Tech., Seoul, South Korea; C. Cheon, Univ. of Seoul, Seoul, S. Korea

WE2D-03: Extracting the Broadband Permittivity of Liquids from Transmission Line Measurements with Microfluidic Channels
J. Mateu, N. Orloff, M. Rinehart, J. Booth, National Institute of Standards and Technology, Boulder, USA

WE2D-04: The Simultaneous Measuring Method of Permittivity and Permeability using Two-Port Probe
S. Park, J. Lee, C. Cheon, Department of Electrical Engineering, Seoul, Korea; Y. Chung, Department of Radio Science Engineering, Seoul, Korea; Y. Kwon, School of Electrical Engineering, Seoul, Korea

WE2D-05: Measurement of Complex Permittivity and Permeability using Two Flanged Rectangular Waveguides
M.W. Hyde, M.J. Havrilla, Air Force Institute of Technology, Wright-Patterson Air Force Base, USA

Wednesday Technical Sessions 10:10–11:50

WE2E
Design and Synthesis of Planar Filters
Chair: Chi Wang
Cochair: Kawthar A. Zaki
HCC 316A

WE2E-01: Exact Synthesis of Microwave Filters with Nonuniform Dissipation
A.C. Guyette, I.C. Hunter, R.D. Pollard, University of Leeds, Leeds, UK

WE2E-02: TEM Mode-Matching Analysis of Multicoupled Strip-Line Filters
J.A. Ruiz-Cruz, Univ Autónoma de Madrid; Y. Zhang, K.A. Zaki, Univ of Maryland, USA; J.M. Rebollar, J.R. Montejo-Garai, Universidad Politécnica de Madrid; A.J. Piloto, Kyocera America, San Diego, USA

WE2E-03: Nonreflective Transmission-Line Filters for Gain-Slope Equalization
M. A. Morgan, T. A. Boyd, National Radio Astronomy Observatory, Charlottesville, USA; T.L. Newton, R.H. Hayward, National Radio Astronomy Observatory, Socorro, USA

WE2E-04: Multilayer Quasielliptic Filters using Dual-Mode Resonators on Liquid Crystal Polymer Technology
R. Bairavasubramanian, J. Papapolymerou, Georgia Electronic Design Center, Georgia Tech, Atlanta, USA

WE2E-05: Novel Corrugated Coupled Stages with Multiharmonic Suppression and its Application to Bandpass Filter Design
J. Kuo, U. Lok, M. Wu, National Chiao Tung University, Hsinchu, Taiwan

WE2E-06: Two-Bit Switchable Bandpass Filter for 0.3–0.6 GHz
M. Koochakzadeh, A. Abbaspour-Tamijani, Ira A. Fulton School of Engineering, Arizona State University, Tempe, USA

WE2F
Sensors and Sensor Systems
Chair: Hiroshi Kondoh
Cochair: Alan Jenkins
HCC 315

WE2F-01: Millimeterwave Imaging Sensor Nets: A Scalable 60 GHz Wireless Sensor Network
M. Seo, B. Ananthasubramaniam, M. Rodwell, U. Madhow, Santa Barbara, USA

WE2F-02: Passive RF Receiver Design for Wireless Sensor Networks
P. V. Kolinko, L. E. Larson, University of California San Diego, La Jolla, USA

WE2F-03: A 1 Mbps 1.6 µA Micropower Active RFID CMOS LSI for the 300 MHz Frequency Band
K. Suzuki, M. Ugajin, M. Harada, NTT, Atsugi, Japan

WE2F-04: FMCW Based Readout System Accuracy Enhancement Techniques for Surface Acoustic Wave RFID Sensor
G. A. Hofbauer, PULSAR Electronics Corp., Waldschach, Austria

WE2F-05: Noncontact Measurement of Periodic Movements by a 22–40 GHz Radar Sensor using Nonlinear Phase Modulation
C. Li, J. Lin, University of Florida, Gainesville, USA

WE2G
Nonlinear Transistor Modeling
Chair: Matthias Rudolph
Cochair: Raghu Mallavarpu
HCC 314

WE2G-01: DC and Large-Signal Microwave MOSFET Model Applicable to Partially-Depleted, Body-Contacted SOI Technology
D. R. Burke, T. J. Brazil, Univ. College Dublin, Dublin, Ireland; M. El Kaamouchi, D. Vanoenacker-Janvier, Université Catholique de Louvain, Louvain-la-Neuve, Belgium

WE2G-02: A New Nonlinear HEMT Model Allowing Accurate Simulation of Very Low IM3 Levels for High-Frequency Highly Linear Amplifiers Design
J. Lhortolary, C. Chang, M. Camiade, J. Obregon, United Monolithic Semicond., Orsay, France; T. Reveyrand, M. Campovecchio, Lab Xlim CNRS, Limoges, France

WE2G-03: Large-Signal FET Modeling based on Pulsed Measurements
R.G. Brady, G. Rafael-Valdivia, T.J. Brazil, University College Dublin, Dublin, Ireland

WE2G-04: RF Linearity and Nonlinear Source Resistance in AlGaN/GaN HFETs
Y. Liu, R.J. Trew, G. Bilbro, North Carolina State University, Raleigh, USA

WE2G-05: A Drain-Lag Model for AlGaN/GaN Power HEMTs
O. Jardel, F. De Groote, T. Reveyrand, J. Teyssier, R. Quere, XLIM, Brive, France; C. Charbonniaud, AMCAD Engineering, Limoges, France; D. Floriot, Alcatel Thales III-V Lab, Marcoussis, France

WE2G-06: Virtual Gate Large-Signal Model of GaN HFETs
A.M. Conway, P.M. Asbeck, University of California, San Diego, La Jolla, USA

WE2G-07: Modeling and Characterization of Subnanosecond Impulse Response of High-Voltage Heterojunction Bipolar Transistors
S. Halder, R. Jin, J.C. Hwang, Lehigh University, Bethlehem, USA

WEP1
Interactive Forum
Chair: Eric Bryerton
Cochair: Michael Forman
HCC Ballroom A

WEP1: Interactive Forum

Wednesday Technical Sessions 13:20–15:00

WE3A: Focused Session
Advances in GaN Technology

Chair: Aryeh Platzker
Cochair: John L Heaton
HCC 311

13:20

WE3A-01: Wideband, High-Efficiency GaN Power Amplifiers Utilizing a Nonuniform Distributed Topology
J. Gassmann, P. Watson, L. Kehias, Air Force Research Lab, Wright-Patterson AFB, USA; G. Henry, Northrop Grumman, Linthicum, USA

13:30

13:40

WE3A-02: A 2 Watt, Sub-dB Noise Figure GaN MMIC LNA-PA Amplifier with Multi-Octave Bandwidth from 0.2–8 GHz
K.W. Kobayashi, Sirenza Microdevices, Torrance, USA; Y. Chen, I. Smorchkova, R. Tsai, M. Wojtowicz, A. Oki, NGST, Redondo Beach, USA

13:50

14:00

WE3A-03: Deep-Recessed GaN HEMTs using Selective-Etch Technology Exhibiting High-mW Performance without Surface Passivation
L. Shen, Y. Pei, L. McCarthy, C. Poblenz, A. Corrion, N. Fichtenbaum, S. Keller, S.P. Denbaars, J.S. Speck, U.K. Mishra, Univ. of California, Santa Barbara, Santa Barbara, USA

14:10

14:20

WE3A-04: AlGaN/GaN HEMTs with PAE of 53% at 35 GHz for HPA and Multifunction MMIC Applications
M. Kao, C. Lee, R. Hajji, P. Saunier, H. Tserng, TriQuint Semiconductor, Richardson, USA

14:30

WE3A-05: Multi-Watt Wideband MMICs in GaN and GaAs
D.E. Meharry, R.J. Lender, K. Chu, L.L. Gunter, K.E. Beech, BAE Systems Electron, USA

14:40

WE3A-06: A Comparison of AlGaN GaN HFETs on Si Substrates in Ceramic Air Cavity and Plastic Overmold Packages
R.J. Therrien, A. Chaudhari, S. Singhal, C. Snow, A. Edwards, C. Park, W. Nagy, J.W. Johnson, A.W. Hanson, K.J. Linthicum, I.C. Kizilyalli

14:50

WE3A-07: Degradation-Mode Analysis for Highly Reliable GaN-HEMT
Y. Inoue, S. Masuda, M. Kanamura, T. Ohki, K. Makiyama, N. Okamoto, K. Imanishi, H. Shigematsu, T. Kikkawa, N. Hara, K. Joshin, Fujitsu LABS, Atsugi, Japan

WE3B
Advances in Microwave and mm-Wave VCOs

Chair: Scott Wetenkamp
Cochair: Prasad Shastry
HCC 312

WE3B-01: A Fundamental VCO with Integrated Output Buffer Beyond 120 GHz in SiGe Bipolar Technology
S. Trotta, H. Knapp, K. Aufinger, T.F. Meister, J. Bock, W. Simbuerger, Infineon AG, Munich, Germany; A.L. Scholtz, Vienna University of Technology, Vienna, Austria

WE3B-02: Fundamental W-Band InP DHBT-Based VCOs With Low Phase Noise and Wide Tuning Range
R.E. Makon, R. Driad, K. Schneider, R. Aidam, M. Schlechtweg, G. Weimann, Fraunhofer IAF, Freiburg, Germany

WE3B-03: A PLL-Stabilized W-Band MHEMT push-push VCO with Integrated Frequency Divider Circuit
R. Weber, M. Kuri, M. Lang, A. Tessmann, M. Seelmann-Eggebert, A. Leuther, Fraunhofer Institute for Applied Solid-State Physics (IAF), Freiburg, Germany

WE3B-04: A 26 GHz Integrated Differential DRO Implemented using SiGe-HBT Technology
K.W. Hamed, A.P. Freundorfer, Queen's University, Kingston, Canada; Y.M. Antar, Royal Military College of Canada, Kingston, Canada

WE3B-05: An X-band Low Noise InP HBT VCO with Separate Varactor Layers
T. Magrisso, D. Elad, N. Buadana, Rafael, Haifa, Israel; S. Kraus, D. Cohen Elias, A. Gavrilov, S. Cohen, D. Ritter, Technion, Haifa, Israel

WE3C
Ferrite and Ferroelectric Components

Chair: Michael Steer
Cochair: Douglas Adam
HCC 313A

WE3C-01: Compact Analog Phase Shifters using Thin-Film (Ba,Sr)TiO_3 Varactors
L. Chen, R. Forse, T.C. Watson, Agile Materials and Technologies, Goleta, USA; R.A. York, University of California, Santa Barbara, USA

WE3C-02: A DC Voltage Dependent Switchable Thin Film Bulk Wave Acoustic Resonator Using Ferroelectric Thin Film
X. Zhu, J.D. Phillips, A. Mortazawi, University of Michigan, Ann Arbor, USA

WE3C-03: Frequency Agile 90° Hybrid Coupler Using Barium Strontium Titanate Varactors
E.A. Fardin, A.S. Holland, K. Ghorbani, RMIT University, Melbourne, Australia

WE3C-04: Tunable IF Filter using Thin-Film BST Varactors
G. Sanderson, T.C. Watson, Agile Materials & Technologies, Goleta, USA; D. Chase, Vareda, Goleta, USA; M. Roy, J.M. Paricka, Rockwell Collins, Cedar Rapids, USA; R.A. York, UCSB

WE3C-05: Experimental Characterization of the 3rd Order Nonlinearities in Thin-Film Parallel-Plate Ferroelectric Varactors
A. Deleniv, P. Rundqvist, A. Vorobiev, E. Kollberg, Chalmers University of Tech.; S. Gevorgian, Ericsson AB, Sweden

WE3C-06: 6–18 GHz Edge Mode Isolator
J.D. Adam, S.N. Stitzer, Northrop Grumman, Baltimore, USA; S. Gaglione, Northrop Grumman, Boca Raton, USA

WE3C-07: Microwave and Magnetostatic Characterization of Ferrite LTCC for Tunable and Reconfigurable SiP Applications
A. Shamim, L. Roy, N. Hojjat, Carleton Univ.; J. Bray, R.A. Elasoued, Royal Military; D. Baillargeat, Univ. of Limoge

WE3C-08: A High-Power Single-Bridge SP4T Waveguide Reciprocal Ferrite Switch
C.R. Boyd, Jr., Microwave Applications Group, Santa Maria, USA

WE3C-09: Development of High-Power Fast RF Vector Modulator with TEM Ferrite Phase Shifters
Y.W. Kang, J.L. Wilson, T.W. Hardek, A.V. Vassioutchenko, Oak Ridge National Lab, Oak Ridge, USA

WE3C-10: Numerical Modelling of Unbiased Microstrip Circulators Based on Magnetic Nanowired Substrate: Use of a Ferrite-Equivalent model
J. Allaeys, J. Mage, Thales, Palaiseau, France

WE3D
Accuracy Evaluation and Enhancement in TD EM Modeling

Chair: Zhizhang David Chen
Cochair: Manos Tentzeris
HCC 316B

WE3D-01: Radial Absorbers for Conformal Time-Domain Methods: A Solution to Corner Problems in Mesh Truncation
K. Sankaran, C. Fumeaux, R. Vahldieck, ETH Zürich, Zürich, Switzerland

WE3D-02: A Nonuniform Mesh High-Order Finite-Difference Time-Domain Method based on Biorthogonal Interpolating Functions
C.D. Sarris, University of Toronto, Toronto, Canada

WE3D-03: A Lagrangian Approach for the Handling of Curved Boundaries in the Finite-Difference Time-Domain Method
J.A. Russer, P.S. Sumant, A.C. Cangellaris, University of Illinois at Urbana-Champaign, Urbana, USA

WE3D-04: A High-Resolution Z-Transform Tensor Formulation of the FDTD Method
D.M. Sullivan, University of Idaho, Moscow, USA; J. Nadobny, Charite, Berlin, Germany

WE3D-05: Numerical Stability Analysis of FDTD Algorithms in Gyrotropic Media
M. Celuch, A. Moryc, W.K. Gwarek, Institute of Radioelectronics Warsaw University of Technology, Warsaw, Poland

WE3D-06: Numerical Dispersion of the ADI-FDTD Technique Including Lumped Models
Z. Chen, Q. Chu, Research Institute of RF and Wireless Techniques, Guangzhou, China

Wednesday Technical Sessions 13:20–15:00

WE3E
Wideband Planar Filters

Chair: Sridhar Kanamaluru
Cochair: Roberto Sorrentino
HCC 316A

WE3E-01: A Wideband CPS Bandpass Filter with Ultrawide Upper Stopband Using Stepped-Impedance Rat-Race Hybrid Couplers
C. Chi, C. Chang, National Chiao Tung University, Hsinchu, Taiwan

WE3E-02: Wideband Microwave Bandpass Filters With Hybrid Rings
R. Gomez-Garcia, University of Alcala, Alcala de Henares, Spain

WE3E-03: A Novel Millimeter-Wave Ultra-Wideband Bandpass Filter Using Microstrip Dual-Mode Ring Resonators Loaded with Open Tuning Stubs of Different Lengths
Z. Ma, Y. Kobayashi; P. Cai, X. Guan; T. Anada; G. Hagiwara

WE3E-04: Folded Compact Ultra-Wideband Stepped-Impedance Resonator Filters
M. Mokhtaari, J. Bornemann, University of Victoria, Victoria, Canada; S. Amari, Royal Military College of Canada, Kingston, Canada

WE3E-05: A Novel Compact Ultra-Wideband Bandpass Filter Using a Microstrip Stepped-Impedance Four-Modes Resonator
P. Cai, X. Guan, Shanghai Univ.; Z. Ma, Y. Kobayashi, Saitama Univ.; T. Anada, Kanagawa Univ.; G. Hagiwara

WE3E-06: Broadband and Compact Double Stepped-Impedance CPS Filters with Coupled-Resonance Enhanced Selectivity
N. Yang, C. Christophe, K. Wu, École Polytechnique, Montréal, Montréal, Canada; Z. Chen, Institute for Infocomm Research, Singapore, Singapore

WE3F: Focused Session
Microwaves in Support of Societal Security

Chair: Ed Niehenke
Cochair: K. Breuer, B. Spielman
HCC 315

WE3F-01: Advances in Security Technologies: Imaging, Anomaly Detection, and Target and Biometric Recognition
J.A. O'Sullivan, R. Pless, Washington University, St. Louis, USA

WE3F-02: Radar Based Concealed Threat Detector
J. Hausner, N.M. West, Electro Science Technologies, Albuquerque, USA

WE3F-03: Through-the-Wall Radar Life Detection and Monitoring
V.M. Lubecke, O. Boric-Lubecke, A. Host-Madsen, University of Hawaii, Honolulu, USA; A. Fathy, University of Tennessee, Knoxville, USA

WE3F-04: Imaging Through the Atmosphere at Terahertz Frequencies
M.J. Rosker, DARPA, Arlington, USA; H.B. Wallace, MMW Concepts LLC, Havre de Grace, USA

WE3F-05: Retrodirective Radar for Small Projectile Detection
E.R. Brown, E.B. Brown, Physical Domains, LLC, La Canada, USA; R.F. Sinclair, Sinclair R.F., Inc., Thousand Oaks, USA

WE3G
Linear Device Modeling

Chair: Wayne Struble
Cochair: Peter Aaen
HCC 314

WE3G-01: Robust Extraction of Access Elements for Broadband Small-Signal FET Models
A.E. Parker, Macquarie University, Macquarie University, Australia; S.J. Mahon, Mimix Broadband, Houston, USA

WE3G-02: A New Physics-Based Compact Model for AlGaN/GaN HFETs
H. Yin, G.L. Bilbro, R.J. Trew, North Carolina State University, Raleigh, USA

WE3G-03: A New and Better Method for Extracting the Parasitic Elements of On-Wafer GaN Transistors
A. Zarate-de Landa, J.E. Zuniga-Juarez, J.A. Reynoso-Hernadez, M.C. Maya-Sanchez, Centro de Investigacion Cientifica y de Educacion Superior de Ensenada, Ensenada, Mexico; E.L. Piner, K.J. Linthicum, Nitronex Corp. Raleigh, USA

WE3G-04: Switch-Based GaN HEMT Model Suitable for Highly-Efficient RF Power Amplifier Design
R. Negra, S. Boumaiza, F. M. Ghannouchi, University of Calgary, Canada; T. D. Chu, G. M. Hegazi, Government Systems, Cedar Rapids, USA

WE3G-05: Microwave Device Modeling Using Space-Mapping and Radial Basis Functions
S. Koziel, McMaster University, Hamilton, Canada; J.W. Bandler, Bandler Corp., Dundas, Canada

WEP2
Interactive Forum

Chair: Eric Bryerton
Cochair: Bela Szendrenyi
HCC Ballroom A

WEP2: Interactive Forum

WEDNESDAY

WE4A
X-Band and Millimeter-Wave Devices and Power Amplifiers
Chair: Anh-Vu Pham
Cochair: Eliot D. Cohen
HCC 311

WE4A-01: Compact InP HBT Power Amplifiers using Integrated Thick BCB Dielectrics
J.B. Hacker, W. Ha, C. Hillman, M. Urteaga, R. Pierson, B. Brar, Teledyne Scientific Co., Thousand Oaks, USA

WE4A-02: A High Efficiency and High Linearity 20 GHz InP HBT Monolithic Power Amplifier for Phased-Array Applications
M.V. Aust, A.K. Sharma, A.T. Chau, A.L. Gutierrez-Aitken, Northrop Grumman, Redondo Beach, USA

WE4A-03: A Robust 11 W High-Efficiency X-Band GaInP HBT Amplifier
A. Couturier, S. Heckmann, V. Serru, T. Huet, P. Chaumas, J. Fontecave, M. Camiade, J. Viaud, United Monolithic Semiconductors (UMS), Orsay, France; S. Piotrowicz, Alcatel-Thales, France

WE4A-04: A High-Gain, Two-Stage, X-Band SiGe Power Amplifier
J.M. Andrews, J.D. Cressler, M. Mitchell, Georgia Tech, Atlanta, USA

WE4A-05: A High Power and High-Breakdown Voltage Millimeter-wave GaAs pHEMT with Low Nonlinear Drain Resistance
H. Amasuga, A. Inoue, S. Goto, T. Kunii, Y. Yamamoto, T. Oku, T. Ishikawa, Mitsubishi Electric Corp., Itami, Japan

WE4A-06: A K-Band Low-Cost Plastic-Packaged High Linearity Power Amplifier with Integrated ESD Protection for Multiband Telecom Applications
B. Lefebvre, D. Bouw, J. Lhortolary, C. Chang, S. Tranchant, M. Camiade, United Monolithic Semiconductors

WE4A-07: Ka-Band 2 W and 4 W MMIC Power Amplifier In 7×7 mm Low-Cost SMT Package
K. Fujii, H. Morkner, Avago Tech Inc., San Jose, USA

WE4B
Novel Signal-Generation Techniques and Applications
Chair: Kenjiro Nishikawa
Cochair: John Kuno
HCC 312

WE4B-01: Novel Phase Difference Control Between Output Signals using Fractional-N PLL Synthesizers by Cyclic Shift of Control Data
K. Tajima, R. Hayashi, Mitsubishi Electric Co., Kamakura, Japan

WE4B-02: UWB Pulse Oscillator at 24 GHz with 2.1 GHz Bandwidth for Industrial Radar Sensor Applications
T. Wuchenauer, Siemens AG, Munich, Germany; M. Nalezinski, Epcos AG, Munich, Germany; W. Menzel, University of Ulm, Ulm, Germany

WE4B-03: New Frequency Plan and Reconfigurable 6.6/7.128 GHz CMOS Quadrature VCO for MB-OFDM UWB Application
T. Huang, J. Wang, National Cheng Kung University, Tainan, Taiwan, ROC

WE4B-04: A 1.1 V Low Phase Noise CMOS Quadrature LC VCO with 4-Way Center-Tapped Inductor
P. Upadhyaya, D. Heo, D.M. Rector, Washington State University, Pullman, USA; Y.E. Chen, National Taiwan University, Taipei, Taiwan

WE4B-05: A Low Phase-Noise 9 GHz CMOS Quadrature VCO using Novel Source-Follower Coupling Technique
H. Chen, S. Lu, D. Chang, Y. Juang, National Taiwan University, Taipei, ROC

WE4B-06: Low-Power OOK Transmitter for Wireless Capsule Endoscope
J. Ryu, S. Nam, J. Lee, M. Kim, School of EE and INMC, Seoul, South Korea; B. Kim, School of Information and Comm Eng, Seoul, South Korea; M. Lee, Dept; of E&CE, Seoul, S. Korea

WE4C
SAW and FBAR RF Filters and Modules
Chair: Robert Weigel
Cochair: Clemens Ruppel
HCC 313A

WE4C-01: High-Performance Single-Balanced Duplexer
P. Girard, M. Solal, Triquint Semiconductor, Apopka, USA

WE4C-02: Characterization of SAW Duplexer Inserts for LTCC RF Front-End Modules by Simulation and Measurement
R.D. Koch, R. Weigel, University of Erlangen-Nuremberg, Erlangen, Germany; F.M. Pitschi, J.E. Kiwitt, Epcos AG, Munich, Germany

WE4C-03: Low-Loss, Narrowband SAW Filters on Leaky Substrates
J. Meltaus, O. Holmgren, K. Kokkonen, Helsinki University of Technology, Espoo, Finland; S. Hong, Samsung Electro-Mechanics Co., Suwon, Korea; V.P. Plessky, GVR Trade SA, Bevaix, Switzerland

WE4C-04: Single-Crystal FBAR with $LiNbO_3$ and $LiTaO_3$ Piezoelectric Substance Layers
Y. Osugi, T. Yoshino, K. Suzuki, NGK Insulators, Ltd, Nagoya, Japan; T. Hirai, Soshin Electric Co., Ltd., Saku, Japan

WE4C-05: MW FBAR Structures Fabricated using Micromachined GaN Membranes
D. Neculoiu, A. Muller, D. Vasilache, IMT-Bucharest, Romania; G. Konstantinidis, A. Kosopoulos, Found. for Res and Techn-Hellas FORTH-IELS-MRG, Heraklion, Greece; K. Mutamba, Infineon Tech, Regensburg, Ger.; C. Sydlo, H.L. Hartnagel, Technische Univ. Darmstadt, Ger.; L. Bary, R. Plana, LAAS-CNRS, Toulouse, France

WE4D: Problems of Scale and Hybrid Modeling in Time-Domain Electromagnetics
Chair: Malgorzata Celuch
Cochair: Atef Elsherbeni
HCC 316B

WE4D-01: A New Multiresolution FDTD Approach Based on the Hybridization of MR-FDTD and DG-FDTD methods
R. Pascaud, R. Gillard, R. Loison, Institut d'Electronique et des Telecommunications de Rennes, Rennes, France; J. Wiart, M. Wong, France Telecom, Issy Les Moulineuax, France

WE4D-02: FDTD Modeling of Finite Electromagnetic Source over Periodic Structure via a Spectral Expansion Approach
R. Qiang, J. Chen, University of Houston, Houston, USA; F. Yang, University of Mississippi, University, USA

WE4D-03: Overcoming Limitations of Laguerre-FDTD for Fast Time-Domain EM Simulation
K. Srinivasan, M. Swaminathan, E. Engin, Georgia Institute of Technology, Atlanta, USA

WE4D-04: Central-Node Approach for Accurate Self-Adjoint Sensitivity Analysis of Dielectric Structures
Y. Song, N.K. Nikolova, McMaster University, Hamilton, Canada

WE4D-05: 2D Particle-in-Cell Simulation on Rising-Sun Magnetron
N. Faure, P. Leveque, XLIM, Limoges, France

WE4E
Planar Dual-Mode and Dual-Bandpass Filters
Chair: Richard Chen
Cochair: Toshio Nishikawa
HCC 316A

WE4E-01: Compact Dualband Bandpass Filters Using Dual-Mode Resonators
A. Gorur, Nigde University, Nigde, Turkey; C. Karpuz, Pamukkale University, Denizli, Turkey

WE4E-02: Analytical Synthesis Algorithm of Dualband Filters with Asymmetric Pass Bands and Generalized Topology
A. Garcia-Lamperez, Universidad Politécnica de Madrid, Madrid, Spain

WE4E-03: Multibandpass Filters Using Multiarmed Open-Loop Resonators with Direct Feed
M.H. Awida, A.M. Safwat, H. El-Hennawy, Ain Shams University, Cairo, Egypt; A. Boutejdar, A.S. Omar, University of Magdeburg, Magdeburg, Germany

WE4E-04: A Novel Broadband Suspended Substrate Stripline Filter using Resonators with T-Shaped Open-Circuited Stubs
J.S. Kim, KETI, Seongnam-si, South Korea; N.S. Kim, W.G. Moon, Acewavetech, Incheon, South Korea

WE4E-05: A Novel Compact Dual-Mode Filter Using Cross-Slotted Patch Resonator for Dualband Applications
W. Min-Hang; W. Sean,; J. Shih-Bin, L. Maw-Shung; C. Yu-Chi (Taiwan)

WE4E-06: A Compact-Size and High-Isolation Dualband Coplanar-Waveguide Bandpass Filter
H. Cheng-Yuan, Y. Ru-Yuan, S. Yan-Kuin, Nat'l Cheng Kung Univ.; Y. Chang-Sin, H. Chun-Yueh, Nat'l Univ. of Tainan; W. Min-Hang, Nat'l Nano Dev Lab, Taiwan

WE4F: Focused Session
Advances in Microwave Systems for Deep-Space Missions
Chair: Christopher C. DeBoy
Cochair: Timothy Pham
HCC 315

WE4F-01: Engineering the Next-Generation Deep-Space Network
B.J. Geldzahler, J.J. Rush, National Aeronautics and Space Administration, Washington, USA; L.J. Deutsch, J.I. Statman, Jet Propulsion Lab, Pasadena, USA

WE4F-02: Microwave Technologies for the New Horizons Mission to Pluto
C.B. Haskins, C.C. DeBoy, Johns Hopkins University, Applied Physics Lab, Laurel, USA

WE4F-03: Advances in Microwave/RF Design for the MESSENGER Mission to Mercury
R.E. Wallis, S. Cheng, P.M. Malouf, R.K. Stilwell, Johns Hopkins Applied Physics Lab, Laurel, USA

WE4F-04: Polarization Combining in the DSN — Recent Results
T.T. Pham, Jet Propulsion Lab, Pasadena, USA; C.C. DeBoy, Johns Hopkins University Applied Physics Lab, Laurel, USA

WE4F-05: Advanced RF Systems for ESA Deep Space Missions
P. Schmitz, M. Lanucara, R. Madde, European Space Agency/European Space Operations Center, Darmstadt, Germany

WE4G
Nonlinear Circuit Analysis and System Simulation
Chair: Stephen Maas
Cochair: Kevin Gard
HCC 314

WE4G-01: Fast Nonlinear Analysis of Reconfigurable Microwave Systems by a Behavioral Model of MEMS Switches
V. Rizzoli, D. Masotti, F. Mastri, University of Bologna, Bologna, Italy

WE4G-02: Nonlinear Distortion Analysis of Polar Transmitters
J.C. Pedro, P.M. Cabral, Universidade de Aveiro, Aveiro, Portugal; J.A. Garcia, Universidad de Cantabria, Santander, Spain

WE4G-03: The Impact of Long Term Memory Effects in Wireless QPSK Modulated Signals
R.E. Santos, N.B. Carvalho, Instituto de Telecomunicações, Universidade de Aveiro, Aveiro, Portugal; K.G. Gard, North Carolina State University, Raleigh, USA

WE4G-04: Distortion Evaluation of RF Power Amplifiers Using Dynamic Deviation Reduction Based Volterra Series
A. Zhu, University College Dublin, Dublin, Ireland; J.C. Pedro, University of Aveiro, Aveiro, Portugal

WE4G-05: Multitone, Multiport, and Dynamic Memory Enhancements to PHD Nonlinear Behavioral Models from Large-Signal Measurements and Simulations
J. Verspecht; D. Gunyan, J.M. Horn, J. Xu, A. Cognata, D.E. Root

WE4G-06: Semianalytical Formulation for the Stability Analysis of Coexisting Solutions in Coupled-Oscillator Systems
A. Collado, A. Suarez, S. Sancho, University of Cantabria, Santander, Spain

WEP2
Interactive Forum
Chair: Eric Bryerton
Cochair: Bela Szendrenyi
HCC Ballroom A

WEP2: Interactive Forum