



Thursday

Technical Sessions

08:00–09:40

Thursday

Technical Sessions

08:00–09:40

TH1A
High Power Amplifiers I

Chair: Wayne Kennan
Cochair: Kiki Ikossi
HCC 311

TH1A-01: High-Efficiency GaN HEMT Power Amplifier Optimized for OFDMEER Transmitter
S. Hong, Y.Y. Woo, I. Kim, J. Kim, J. Moon, B. Kim, Postech, Pohang, Republic of Korea; H.S. Kim, J.S. Lee, Samsung Electronics Co., LTD., Suwon

TH1A-02: C-Band GaN HEMT Power Amplifier with 220 W Output Power
K. Yamanaka, K. Mori, K. Iyomasa, H. Ohtsuka, H. Noto, M. Nakayama, Y. Isota, Mitsubishi Elec Corp., Kamakura, Japan; Y. Tsuyama, Mitsubishi Elec Corp., Amagasaki, Japan; Y. Kamo, Mitsubishi Elec Corp., Itami, Japan

TH1A-03: GaN HEMT 60 W Output Power Amplifier with Over 50 % Efficiency at C-Band 15 % Relative Bandwidth using Combined Short and Open-Circuited Stubs
K. Iyomasa, K. Yamanaka, K. Mori, H. Noto, H. Ohtsuka, M. Nakayama, S. Yoneda, Y. Isota, Mitsubishi Elec., Kamakura, Japan; Y. Tsuyama, Mitsubishi Elec., Amagasaki, Japan; Y. Kamo, Mitsubishi Elec., Itami, Japan

TH1A-04: A 80 W Two-Stage GaN HEMT Doherty Amplifier with -50 dBc ACLR, 42 % Efficiency 32 dB Gain with DPD for W-CDMA Base Station
N. Ui, H. Sano, S. Sano, Eudyna Devices Inc., Nakakoma-gun, Japan

TH1A-05: 50 % Drain Efficiency Doherty Amplifier with Optimized Power Range for W-CDMA Signal
T. Yamamoto, T. Kitahara, S. Hiura, Toshiba Corp., Corporate Manufacturing Engineering Center, Yokohama-Shi, Japan

TH1A-06: Efficient Operation of Traveling-Wave Tube Amplifier with Dynamically Adjusted Collector Bias Voltages
J.X. Qiu, D.K. Abe, B.G. Danly, B. Levush, Naval Res Lab, Wash, USA; T.M. Antonsen, Jr., Science App. Int'l Corp., McLean, USA; R.E. Myers, ATK Corp., Newington, USA

TH1B
Nonplanar Filters and Multiplexers

Chair: Dick Snyder
Cochair: Clark Bell
HCC 312

TH1B-01: Analytical Synthesis of Generalized Multiband Microwave Filters
Y. Zhang, K.A. Zaki, University of Maryland, College Park, USA; J.A. Ruiz-Cruz, Universidad Autónoma de Madrid, Madrid, Spain; A.E. Atia, Orbital Science Corp., Dulles, USA

TH1B-02: Novel Folded Resonators and Filters
H. Lin, Industrial Technology Research Institute, Chutung, Hsinchu, Taiwan

TH1B-03: Design of a Bandpass Transversal Filter Employing a Novel Hybrid Waveguide-Printed Structure
M. Martinez-Mendoza, J.S. Gomez-Diaz, D. Canete-Rebenaque, J.L. Gomez-Tornero, A. Alvarez-Melcon, Technical University of Cartagena

TH1B-04: Miniature High Power Comblines Filters
S. Mehta, P. Petre, J. Foschaar, HRL Labs, Malibu, USA

TH1B-05: Dualband Filters for Base Station Multiband Combiners
G. Macchiarella, Politecnico di Milano, Milano, Italy; S. Tamiasso, Andrew Telecommunication Products, Agrate Brianza, Italy

TH1B-06: Design and Testing of a Thermally Stable Filter Using Bimetal Compensation
B.F. Keats, R.R. Mansour, R.B. Gorbet, University of Waterloo, Waterloo, Canada

TH1B-07: Synthesis and Design Procedure for High Performance Waveguide Filters Based on Nonresonating Nodes
S. Cogollos, V.E. Boria, R.J. Cameron, M. Yu, Comdev; R.R. Mansour

TH1B-08: CMOS-Compatible Encapsulated Silver Bandpass Filters
M. Rais-Zadeh, H.M. Lavasani, F. Ayazi, Georgia Institute of Technology, Atlanta, USA

TH1C
Advances in Radar Systems

Chair: Arne F. Jacob
Cochair: Roger Kaul
HCC 313A

TH1C-01: Fully Integrated SiGe-BiCMOS Receiver (RX) and Transmitter (TX) Chips for 76.5 GHz FMCW Automotive Radar Systems Including Demonstrator Board Design
J. Feige, P. Wenekers, C. Trigas, J. Kirchge, R. Reuter, H. Li, Y. Yin, A. Ghazinour, Freescale, Munich, Germany; I. To, D. Morgan, P. Welch, S. Braithwaite, B. Knappenberger, D.G. Scheitlin, J.P. John, M. Huang, M. Tutt, Freescale, Tempe, USA; D. Jahn, Astyx, GMBH, Ottobrunn, Germany

TH1C-02: A 26 GHz Short-Range UWB Vehicular Radar using 2.5 Gc/s Spread-Spectrum Modulation
T. Fukuda, N. Negoro, S. Ujita, S. Nagai, M. Nishijima, H. Sakai, T. Tanaka, D. Ueda, Matsushita Electric Industrial Co., Ltd., Takatsuki, Japan

TH1C-03: Method for High-Precision Radar Distance Measurement and Synchronization of Wireless Units
S. Roehr, P. Gulden, Symeo GmbH, Munich, Germany; M. Vossiek, Clausthal University of Technology, Clausthal-Zellerfeld, Germany

TH1C-04: Adaptive Frequency Sweep Linearization Based on Phase Accumulator Principle
C. Wagner, H. Jaeger, DICE, Linz, Austria; A. Stelzer, University of Linz, Linz, Austria

TH1C-05: Center Tracking Quadrature Demodulation for a Doppler Radar Motion Detector
B. Park, V.M. Lubecke, O. Boric-Lubecke, University of Hawaii at Manoa, Honolulu, USA

TH1C-06: A Low-Cost 24 GHz Long-Range, Narrowband Monopulse Radar Front End for Automotive ACC Applications
V. Cojocar, D. Humphrey, B. Clarke, T. Young, V. Napijalo, M. Chinn, S. Seawright, H. Kurata, T. Yokoyama, H. Shimoda, H. Ikeda, T. Adachi, T. Honya, Y. Yamashita

TH1D
Biological Effects and Medical Applications

Chair: Arye Rosen
Cochair: Joseph Pribetich
HCC 316B

TH1D-01: A 433 MHz Hyperthermia System using Rotating Spiral Antennas for Uniform Treatment of Large Superficial and Subsuperficial Tumors
O. Arabe, Duke University, Durham, USA

TH1D-02: Role of Microwave Accelerators in Cancer Treatment
S.M. Hanna, Microwave Innovative Accelerators, Danville, USA

TH1D-03: High Frequency Dielectric Characteristics of Tumorous and Non-tumorous Breast Tissues
U.A. Khan, N. Al Moayed, N. Nguyen, M. Obol, K. Korolev, M.N. Afsar, High Freq. Mtls Meas. & Info Ctr., Medford, USA; S. Naber, Tufts Medical Center, Boston, USA

TH1D-04: Large-Scale Simulations Including a Human-Body Model for MRI
M.H. Vogel, Ansoft Corp., Pittsburgh, USA; R.P. Kleihorst, Philips Medical Systems, Best, The Netherlands

TH1D-05: Specific Absorption Rate (SAR) Numerical Evaluation: A Critical Discussion
L. Catarinucci, L. Tarricone, University of Lecce, Lecce, Italy

TH1D-06: Design Considerations for the Implanted Antennas
A. Mahanfar, Simon Fraser University, Burnaby, Canada; S. Bila, M. Aubourg, S. Verdeyme, XLIM, Limoges, France

TH1E: Components, Systems, and Applications for Millimeter-Wave and THz Imaging

Chair: John Cunningham
Cochair: Robert Weikle
HCC 316A

TH1E-01: Multichannel Receiver for an E-Band FMCW Imaging Radar
J. Schellenberg, R. Chedester, J. McCoy, Trex Enterprises, Kahului, USA

TH1E-02: A Low-Noise Chipset for Passive Millimeter-Wave Imaging
H.P. Moyer, J.J. Lynch, J.N. Schulman, R.L. Bowen, J.H. Schaffner, A.K. Kurdoghlian, T.Y. Hsu, HRL Labs, LLC, Malibu, USA

TH1E-03: Ultrasensitive ErAs/InGaAlAs Direct Detectors for Millimeter Wave and THz Imaging Applications
H. Kazemi, G. Nagy, L. Tran, E. Grossman, E. Brown, A. Gossard, A. Young, J. Zimmerman; G. Boreman; B. Lial

TH1E-04: 600 GHz Imaging Radar with 2 cm Range Resolution
R.J. Dengler, K.B. Cooper, G. Chat-topadhyay, I. Mehdi, E. Schlecht, A. Skalar, P.H. Siegel, Jet Propulsion Lab, Pasadena, USA; C. Chen, University of Delaware, Newark, USA

TH1E-05: A Micromachined 94 GHz Dielectric Resonator Antenna for Focal Plane Array Applications
D. Karlen, P. Enoksson, Chalmers U. of Tech.; L. Huss, J. Svedin, Swedish Defence Res. Agency; C. Rusu, The Imego Inst., Goteborg, Sweden

TH1E-06: Application of Finite Difference Time Domain Methods to Terahertz Spectroscopy Measurements of Breast Cancer
E. Pickwell-MacPherson; T. Lo, A. Fitzgerald, V. Wallace; E. Provanzano, S. Pinder; A. Purushotham

TH1E-07: Broadband Microwave-to-Terahertz Near-Field Imaging
S.V. Danylyuk, U. Poppe, N. Klein, Forschungszentrum Juelich, Germany; F. Kadec, P. Kuzel, M. Berta, Inst. of Physics, Acad. of Sci., Prague; R.C. Pullar, London South Bank U., UK; H. Romanus, Tech U., Ilmenau, Germany

TH1F
Frequency Conversion and Control

Chair: Huei Wang
Cochair: Mohammad Madihian
HCC 315

TH1F-01: An S-band 100 W GaN Protection Switch
M. Hangai, T. Nishino, Y. Kamo, M. Miyazaki, Mitsubishi Electric Corp., Kamakura, Japan

TH1F-02: A Novel Multistack Device Structure and its Analysis for High-Power CMOS Switch Design
M. Ahn, J. Laskar, Georgia Inst. of Tech.; C. Lee, Samsung RFIC Design Center, Atlanta, USA; B. Kim, Sungkyunkwan University, Suwon, South Korea

TH1F-03: A 35–50 GHz IQ-Demodulator in 0.13 μm CMOS Technology
C. Lin, P. Wu, K. Lin, H. Wang, National Taiwan University, Taipei, Taiwan; H. Chang, National Central University, Jhongli City, Taiwan

TH1F-04: A Planar Image-Rejection Mixer with 135/45° Power Dividers
K. Nishida, H. Mizutani, M. Tsuru, K. Kawakami, M. Miyazaki, Y. Isota, Mitsubishi Electric Corp., Kamakura, Japan

TH1F-05: K-Band LTCC Star Mixer with Broadband IF Output Network
T. Baras, J. Mueller, A.F. Jacob, Hamburg Univ. of Technology, Hamburg, Germany

TH1F-06: A 44 GHz 0.18 μm CMOS Superharmonic Frequency Divider
T. Luo, Y.E. Chen, National Taiwan University, Taipei, Taiwan

TH1G
Periodic Structures and Applications

Chair: Branka Jokanovic
Cochair: George E. Ponchak
HCC 314

TH1G-01: Superconducting Tunable Composite Right/Left-Handed Transmission Lines using Ferroelectric Thin Films with a Resistive Bias Network
Y. Wang, M.J. Lancaster, F. Huang, P.M. Suherman, D.M. Holdom, T.J. Jackson, University of Birmingham, Birmingham, UK

TH1G-02: New Left-Handed Microstrip Lines with Complementary Split-Ring Resonators (CSRRs) Etched in the Signal Strip
M. Gil Barba, J. Bonache, J. Garcia-Garcia, F. Martin, Universitat Autònoma Barcelona, Bellaterra, Spain

TH1G-03: Dual-Mode Metamaterial with Backward and Forward Wave Selectivity
A. Lai, K.M. Leong, T. Itoh, University of California Los Angeles, Los Angeles, USA

TH1G-04: Double-Lorentz Transmission-Line Metamaterial and its Application to Triband Devices
A. Rennings, T. Liebig, I. Wolff, IMST GmbH, Kamp-Lintfort, Germany; C. Caloz, École Polytechnique de Montréal, Montréal, Canada

TH1G-05: Large Experimental Bandpass Waveguide in 3D EBG Woodpile Manufactured by Layer-by-Layer Ceramic Stereolithography
N. Delhote, D. Baillargeat, S. Verdeyme, M. Thevenot, Xlim UMR CNRS 6172, Limoges, France; C. Delage, C. Chaput, Centre de transfert de Tech. Cer., Limoges, France

THP1
Interactive Forum

Chair: Eric Bryerton
Cochair: Scott Barker
HCC Ballroom A

THP1: Interactive Forum



Thursday

Technical Sessions

10:10–11:50

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Technical Sessions

10:10–11:50

TH2A
Power Amplifier Linearization
Chair: James Komiak
Cochair: F. M. Ghannouchi
HCC 311

TH2A-01: A 20 W Chireix Outphasing Transmitter for WCDMA Base Stations
A. Huttunen, R. Kaunisto, Nokia, Helsinki, Finland

10:20

TH2A-02: Spline-Based Model for Digital Predistortion of Wideband Signals for High-Power Amplifier Linearization
N. Safari, T. Roste, NTNU, Trondheim, Norway; P. Fedorenko, J. Kenney, Georgia Institute of Technology, Atlanta, USA

10:40

TH2A-03: A New Adaptive Digital Predistortion Technique Employing Feedback Technique
Y.Y. Woo, J. Kim, S. Hong, I. Kim, J. Moon, B. Kim, Postech, Pohang, Republic of Korea; J. Yi, LG Electronics Inc., Seoul, Republic of Korea

11:00

TH2A-04: Open-Loop Digital Predistortion Using Cartesian Feedback for Adaptive RF Power Amplifier Linearization
S. Chung, J.W. Holloway, J.L. Dawson, MIT, Cambridge, USA

11:20

TH2A-05: Analysis and Suppression of Memory Effects in Envelope Elimination and Restoration (EER) Power Amplifiers
P. Fedorenko, J.S. Kenney, Georgia Institute of Technology, Atlanta, USA

11:40

TH2C
Imaging and Ultra-Wideband Radars
Chair: Gregory Lyons
Cochair: Alfred Hung
HCC 313A

TH2C-01: An E-Band Electronically Scanned Imaging Radar System
K. Miyashiro, J. Schellenberg, J. Loveberg, V. Kolinko, J. McCoy, Trex Enterprises, Kahului, USA

TH2C-02: An UWB Wall Scanner Based on a Shape Estimating SAR Algorithm
S. Hantscher, A. Reizenzahn, C.G. Diskus, Johannes Kepler University, Linz, Austria

TH2C-03: Design and Implementation of a Low-Cost Real-Time Ultra-Wideband See-Through-Wall-Imaging Radar System
Y. Yang, A. Fathy, The University of Tennessee, Knoxville, USA

TH2C-04: FCC Compliant 3.1–10.6 GHz UWB Pulse Radar System Using Correlation Detection
J. Dederer, B. Schleicher, F. De Andrade Tabarani Santos, A. Trasser, H. Schumacher, University of Ulm, Ulm, Germany

TH2C-05: On the Design of Radar Absorbing Materials Using Left-Handed Transmission Line
H. Wang, W. Tang, Z. Shen, Nanyang Technological University, Singapore, Singapore

TH2C-06: Synthetic Aperture Radar Ghost Image Cancellation Using Broadband Time Reversal Averaging Techniques
Y. Jiang, J. Zhu, Carnegie Mellon University, Pittsburgh, USA

TH2D
Nonlinear and Linear Measurement
Chair: Jon Martens
Cochair: Dominique Schreurs
HCC 316B

TH2D-01: Complete Pure-Mode Balanced Measurement System
J. Dunsmore, K. Anderson, D. Blackham, Agilent Technologies, Santa Rosa, USA

TH2D-02: A Smart Load-Pull Method to Safely Reach Optimal Matching Impedances of Power Transistors
T. Reveyrand, D. Barataud, S. Mons, J. Nebus, XLIM, Limoges, France; T. Gas-seling, AMCAD Engineering, Limoges, France

TH2D-03: New Ultrafast Real-Time Active Load-Pull Measurements for High-Speed RF Power Amplifier Design
P. Roblin, S. Doo, X. Cui, Ohio State Univ., Columbus, USA; G.H. Jessen, AF Res. Lab, Dayton, USA; D. Chaillot, CEA, Bordeaux, France; J. Strahler, Andrew, Columbus, USA

TH2D-04: Singular-Value-Decomposition Based Four-Port Deembedding and Single-Step Error Calibration for On-Chip Measurement
X. Wei, G. Niu, Auburn University, Auburn, USA

TH2E: Focused Session
Advanced Signal Processing Techniques for Microwave Photonics
Chair: Young-Kai Chen
Cochair: Charlie Cox
HCC 316A

TH2E-01: Real-Time Digital Carrier and Data Recovery for a Synchronous Optical Quadrature Phase Shift Keying Transmission System
R. Noe, T. Pfau, O. Adamczyk, R. Peveling, V. Herath, S. Hoffmann, M. Porrmann, S.K. Ibrahim, S. Bhandare, Univ. Paderborn, Paderborn, Germany

TH2E-02: DSP-Based Highly Linear Microwave Photonic Link
T.R. Clark, M.L. Dennis, JHU Applied Physics Lab, Laurel, USA

TH2E-03: Feed-Forward Phase and Frequency Estimation in Coherent Digital and Analog Photonic Links using Digital Signal Processing
A. Leven, U. Koc, Y. Chen, Lucent Technologies, Murray Hill, USA; N. Kaneda, Lucent Technologies, Holmdel, USA

TH2E-04: 2-Dimensional Spatiotemporal Signal Processing for Dispersion Compensation in Optical Systems
A. Tarighat, B. Jalali, University of California Los Angeles, Los Angeles, USA

TH2E-05: Low Noise Figure Microwave Photonic Link
A. Karim, J. Devenport, L-3 Photonics, Carlsbad, USA

TH2F
New Trends in High Frequency Signal Generation
Chair: Paul Khanna
Cochair: John Papapolymou
HCC 315

TH2F-01: Design of Low Phase Noise Dielectric Resonator Oscillators with GaInP HBT Devices Exploiting a Nonlinear Noise Model
C. Florian, P.A. Traverso, F. Filicori, University of Bologna, Bologna, Italy; G. Vannini, University of Ferrara, Ferrara, Italy

TH2F-02: An X-Band Low Phase Noise Oscillator Employing a Four-Pole Elliptic-Response Microstrip Bandpass Filter
J. Choi, M. Chen, A. Mortazawi, University of Michigan, Ann Arbor, USA

TH2F-03: A 2.4/5 GHz Dualband VCO using a Variable Inductor and Switched Resonator
H.L. Kao, Chang Gung Univ., Tao-Yuan, Taiwan; D.Y. Yang, A. Chin, Nat'l Chiao-Tung Univ., Hsinchu, Taiwan; S.P. McAlister, Nat'l Res. Council of Canada, Ottawa, Canada

TH2F-04: A Second-Harmonic Oscillator Using an Overmoded-Waveguide Resonator with Gunn Diodes
J. Bae, M. Ikeda, Nagoya Institute of Technology, Nagoya, Japan

TH2F-05: Phase-Hit Immunity Methods for High Speed Communication Systems
Y. Qin, F. Matsumoto, D. Pham, C. Easaw, Stratex Networks, San Jose, USA

TH2F-06: A Single-VCO Fractional-N Frequency Synthesizer for Digital TV Tuners
Y. Yang, F. Lee, S. Lu, National Taiwan University, Taipei, ROC

TH2G
Transmission Line and Waveguide Transitions
Chair: Charles Buntschuh
Cochair: Ke Wu
HCC 314

TH2G-01: 94 GHz Broadband Transition from Coplanar Waveguide to Substrate Integrated Image Guide (SIIG)
A. Patrovsky, K. Wu, Poly-Grames Research Center, Montréal, Canada

TH2G-02: Substrate Integrated Waveguide-to-Microstrip Transition in Multilayer Substrate
Y. Ding, K. Wu, Poly-Games Research Center, Montréal, Canada

TH2G-03: A Novel Approach for a Periodic Structure Shielded Microstrip Line to Rectangular Waveguide Transition
F. Poprawa, A. Zirotto, Siemens AG, Munich, Germany; F. Ellinger, Dresden University of Technology, Dresden, Germany

TH2G-04: A New Ultra-Wideband Microstrip-to-CPS Transition
Y. Kim, D. Woo, K.W. Kim, Y. Cho, Kyungpook National University, Daegu, S. Korea

TH2G-05: Multilayer Coplanar Waveguide Transmission Lines Compatible with Standard Digital Silicon Technologies
Y. Zhu, S. Wang, H. Wu, University of Rochester, Rochester, USA

THP1
Interactive Forum
Chair: Eric Bryerton
Cochair: Scott Barker
HCC Ballroom A

THP1: Interactive Forum



Thursday

Technical Sessions

13:20–15:00

Thursday

Technical Sessions

13:20–15:00

TH3A
High Power Amplifiers II

Chair: S.C. Cripps
Cochair: B. Kim
HCC 311

TH3A-01: Advanced Design of Linear Doherty Amplifier for High Efficiency using Saturation Amplifier
J. Kim, B. Kim, Postech, Pohang, Republic of Korea; Y.Y. Woo, Samsung Electronics Co., LTD, Suwon, Republic of Korea

TH3A-02: A 900 MHz, 500 W Doherty Power Amplifier Using Optimized Output Matched Si LDMOS Power Transistors
C. Burns, A. Chang, D. Runton, Freescale Semiconductor, Tempe, USA

TH3A-03: N-Way Distributed Doherty Amplifier with an Extended Efficiency Range
K. Cho, W. Kim, S.P. Stapleton, Simon Fraser University, Burnaby, Canada; D. Kim, J. Kim, Kwangwoon University, Nowon-Gu, Republic of Korea

TH3A-04: Industry First 100 W Two-Stage RFIC for 900 MHz GSM EDGE Base Station Applications
X. Moronval, P. Peyrot, Freescale, Toulouse, France

TH3A-05: Hybrid High-Power Amplifiers for L-Band Space Application
C. Florian, I. Melczarsky, R. Cignani, F. Filicori, U. of Bologna, Italy; F. Scappaviva, M. Pirazzini, MEC SRL, Italy; G. Vannini, U. of Ferra, Italy; R.P. Paganelli, CNR, Italy; R. Giordani, M. Feudale, Alcatel Alenia Space, Italy

TH3A-06: 1 kW Push-Pull High-Efficiency RF BJT Transistor for Radar Applications
T. Shi, J. Chang, L. Leverich, M. Mallinger, C. Leader, Microsemi Corp., Santa Clara, USA

TH3B
Reconfigurable and Active Filters

Chair: Har Dayal
Cochair: Yoji Kotsuka
HCC 312

TH3B-01: 2 GHz Automatically Tuned Q-Enhanced CMOS Bandpass Filter
J.K. Nakaska, J.W. Haslett, University of Calgary, Calgary, Canada

TH3B-02: A New Method to Reconfigure BAW-SMR Filters using CMOS Transistors
M.H. El Hassan, E. Kerherve, Y. Deval, IXL Microelectronics Lab, Talence, France; D. Belot, ST Microelectronics, Crolles, France

TH3B-03: A Reconfigurable Filter Based on Doublet Configuration
C. Liao, C. Chang, National Chiao Tung University, Hsinchu, Taiwan; J. Lin, University of Florida, Gainesville, USA

TH3B-04: Compact Tunable Bandstop Filter Integrated with Large Deflected Actuators
W.D. Yan, R.R. Mansour, University of Waterloo, Waterloo, Canada

TH3B-05: 0.8 GHz to 2.4 GHz Tunable Ceramic Microwave Bandpass Filters
R. Matz, Siemens, Munich, Germany; P. Russer, M. Al Ahmad, TU Munich, Munich, Germany

H3B-06: High Performance and Compact Balanced-Filter Design for WiMAX Front-End Modules (FEM) Using LCP-Based Organic Substrates
R. Wu, C. Mmasi, V. Govind, S. Dalmia, C. Ghiu, G. White, Jacket Micro Devices Inc., Atlanta, USA

TH3B-07: Fixed Frequency and Tunable Metamaterial-Based Ring Resonators with Narrowly Spaced Resonances
C.A. Allen, K.M. Leong, T. Itoh, University of California, Los Angeles, Los Angeles, USA

TH3B-08: Novel Computer Controllable Metamaterial Beyond Conventional Configurations and its Microwave Absorber Application
Y. Kotsuka, C. Kawamura, Toaki University, Hiratsuka, Japan

TH3C
Advanced Packaging

Chair: Kavita Goverdhanam
Cochair: Clive Tzuang
HCC 313A

TH3C-01: Design and Characterization of Novel Paper-Based Inkjet-Printed RFID and Microwave Structures for Telecommunication and Sensing Applications
L. Yang, M.M. Tentzeris, Georgia Institute of Technology, Atlanta, USA

TH3C-02: An Ultra-Wideband BGA-Via Transition for High-Speed Digital and Millimeter-Wave Packaging Applications
T. Kangasvieri, J. Halme, J. Vahakangas, University of Oulu, Oulu, Finland; M. Lahti, VTT, Oulu, Finland

TH3C-03: Demonstration of a Low-Loss W-Band Interconnect and Circuit Isolation Structure for Wafer-Scale Assembly
D.S. Farkas, T. Luna, P.P. Chang-Chien, K. Tornquist, O. Fordham, R. Tsai, Northrop Grumman Corp., Redondo Beach, USA

TH3C-04: Broadband Flip-Chip Interconnects for Millimeter-Wave Si-Carrier System on Package
C. Li, C. Fu, T. Chao, C. Kuo, Y. Cheng, D.C. Chang, Chiao Tung University, Hsinchu, Taiwan

TH3C-05: Compact 60 GHz LTCC Stripline Parallel-Coupled Bandpass Filter with Parasitic Elements for Millimeter-Wave System on Package
K. Nishikawa, T. Seki, I. Toyoda, S. Kubota, NTT Corp., Yokosuka, Japan

TH3C-06: Integrated Hybrid Dielectric Resonator Antenna for System-in-Package Application
A.P. Popov, B. Ooi, M. Leong, National University of Singapore, Singapore; Y. Gao, Institute of Microelectronics, Singapore, Singapore

TH3D
Novel Radiation and Propagation Effects on Waveguiding Structures

Chair: David Jackson
Cochair: Tapan Sarkar
HCC 316B

TH3D-01: Effects of Frequency Selective Surface (FSS) on Enhancing the Radiation Efficiency of Metal-Surface Mounted Dipole Antenna
S. Zhan, R.J. Weber, J. Song, Iowa State University, Ames, USA

TH3D-02: Leaky Modes on a Grounded Wire-Medium Slab
P. Burghignoli, G. Lovat, F. Capolino, D.R. Jackson, D.R. Wilton, La Sapienza University of Rome, Italy

TH3D-03: Full-Wave Analysis of Periodic Microstrip Lines Excited by an Aperiodic Delta-Gap Source
R. Rodriguez-Berral, F. Mesa, University of Seville, Seville, Spain; G. Valerio, P. Baccarelli, P. Burghignoli, A. Galli, La Sapienza University of Rome, Italy

TH3D-04: Loss Reduction Technique of Printed Transmission Line at Millimeter-Wave Frequency
F. Kuroki, R. Tamaru, R. Masumoto, K. Miyamoto, Kure Nat'l Coll of Tech, Kure, Japan

TH3D-05: Full-Wave Analysis of Arbitrary Polygonal Section Waveguides
M. Lucido, G. Panariello, F. Schettino, University of Cassino, Cassino, Italy

TH3D-06: Full-Wave Analysis of Image Lines
M. Lucido, G. Panariello, F. Schettino, University of Cassino, Cassino, Italy

TH3D-07: Frequency Deviation Due to a Sample Insertion Hole in a Cylindrical Cavity by Circuitual Analysis
F.L. Penaranda-Foix, J.M. Catala-Civera, A.J. Canos-Marin, B. Garcia-Banos, Technical University of Valencia, Valencia, Spain

TH3E: Focused Session
Millimeter and Submillimeter Wave Imaging

Chair: Peter H. Siegel
Cochair: Koji Mizuno
HCC 316A

TH3E-01: Video-Rate Passive Millimeter-Wave Imaging using Phased Arrays
J.A. Lovberg, C. Martin, V. Kolinko, Sago Systems Inc., San Diego, USA

TH3E-02: Near-Field Imaging at Microwave and Millimeter-Wave Frequencies
D.M. Sheen, D.L. McMakin, T.E. Hall, Pacific Northwest National Lab, Richland, USA

TH3E-03: Terahertz Time-Domain Spectroscopy: Present and Future Modalities
J. Cunningham, C. Wood, A. Burnett, P. Uphadya, W. Fan, E. Linfield, G. Davies, University of Leeds, Leeds, UK

TH3E-04: THz Generation and Applications with Photonic Sources
C. Otani, RIKEN, Sendai, Japan; K. Kawase, Y. Ogawa, Tohoku Univ., Sendai, Japan

TH3E-05: Practical Challenges for the Commercialization of Terahertz Electronics
C.M. Mann, Thruvision Ltd, Abingdon, UK

TH3F
Smart-Antenna Technologies and Applications

Chair: Nicholas E. Buris
Cochair: Glenn Hopkins
HCC 315

TH3F-01: A New Millimeter-Wave Broadband Retrodirective Antenna Array
Y. Ren, K. Chang, Texas A&M University, College Station, USA

TH3F-02: A Retrodirective Array Based on Phase Detection and Frequency Scanning
M.K. Watanabe, G.S. Shiroma, B.O. Takase, J.M. Akagi, W.A. Shiroma, University of Hawaii, Honolulu, USA

TH3F-03: Interleaved Retrodirective Subarrays for Null-Steering Interference Rejection
D.S. Goshi, K.M. Leong, T. Itoh, University of California Los Angeles, Los Angeles, USA

TH3F-04: A Supergain Beamforming Approach with Closely Spaced Antennas
T. Lee, Y.E. Wang, UCLA, Los Angeles, USA

TH3F-05: Design of Coupled Oscillator Arrays for Second Harmonic Radiation
A. Georgiadis, Univ. of Cantabria, Santander, Spain

TH3F-06: Antenna-Array Detection in Highly Cluttered Environment using Time-Reversal Method
Y. Jiang, D.D. Stancil, J. Zhu, Carnegie Mellon University, Pittsburgh, USA

TH3F-07: Experimental Evaluation of Multiple Antenna Techniques for Remote Sensing of Physiological Motion
D. Samardzija, T. Sizer, Lucent Technologies, Holmdel, USA; B. Park, O. Boric-Lubecke, V.M. Lubecke, University of Hawaii, Honolulu, USA

TH3G
Innovative Passive Components

Chair: V. E. Boria-Esbert
Cochair: Aly Fathy
HCC 314

TH3G-01: Time-Domain Impedance Adaptors for Pulse-Based Systems with High-QRC loads
X. Wang, D. Peroulis, Purdue University, West Lafayette, USA; L.P. Katehi, University of Illinois, Champaign, USA

TH3G-02: Broadband Quadrature Hybrid Design using Metamaterial Transmission Line and its Application in the Broadband Continuous Phase Shifter
C. Lee, K.M. Leong, T. Itoh, University of California Los Angeles, Los Angeles, USA

TH3G-03: Broadband Transitions for Micromachined Waveguides
E.J. Wollack, NASA/Goddard Space Flight Center, Greenbelt, USA; F.M. Vanin, University of Maryland, College Park, USA

TH3G-04: A Novel DGS-Marchand Balun from 40 to 80 GHz with IF-Tap for Mixer Design
R. Rehner, D. Schneiderbanger, M. Sterns, S. Martius, L.P. Schmidt, University of Erlangen-Nuremberg, Erlangen, Germany

TH3G-05: A Hybrid Coupled-Resonator Bandpass Filter Topology Implemented on Lossy Semiconductor Substrates
R. Frye, RF Design Consulting, LLC; K. Liu, STATS ChipPAC Inc.; G. Badakere, Y. Lin, STATS ChipPAC

TH3G-06: Optimization of RF Performance of MIM Damascene Capacitors in Backend of Line
J. Piquet, C. Bermond, T. Lacrevez, T. VoB. Flechet, LAHC; M. Thomas, A. Farcy, J. Torres, STMicroelectronics, Crolles, France

TH3G-07: Microwave Dissipation Spectra in Arrays of Silicon Nanowires
M. Lee, C. Highstreet, Sandia National Labs, Albuquerque, USA; A.L. Vallett, S.M. Dilts, J.M. Redwing, T.S. Mayer, Penn State Univ, University Park, USA

TH3G-08: Ring Hybrid Balun with Good Amplitude and Phase Balance
M. Lee, W. Na, J. Song, I. Cho, University of Seoul, Seoul, South Korea; K. Ryu, Hanbat National University, Daejeon, South Korea

THP2
Interactive Forum

Chair: Eric Bryerton
Cochair: Matthew Morgan
HCC Ballroom A

THP2: Interactive Forum

THP2: Interactive Forum

THP2: Interactive Forum

THP2: Interactive Forum

THP2: Interactive Forum

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THP2: Interactive Forum

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Thursday

Technical Sessions

15:30–17:10

Thursday

Technical Sessions

15:30–17:10

TH4A
Low Noise Devices, Amplifiers, and Receivers
Chair: Terry Cisco
Cochair: Francois Danneville
HCC 311

TH4B
High Reliability RF MEMS Switches
Chair: N. Scott Barker
Cochair: Dimitrios Peroulis
HCC 312

TH4D: Novel Metamaterial Elements: Their Characteristics and Applications
Chair: Jan Zehentner
Cochair: Kai Chang
HCC 316B

TH4E: Special Session Submillimeter-Wave Radio Astronomy and Mauna Kea
Chair: Paul Goldsmith
Cochair: Peter H. Siegel
HCC 316A

TH4F
Phased-Array Systems and Enabling Technologies
Chair: William R. Deal
Cochair: Ryan Miyamoto
HCC 315

TH4G
New Developments in Transformers and Inductors
Chair: Jesse Taub
Cochair: Tapan K. Sarkar
HCC 314

THP2
Interactive Forum
Chair: Eric Bryerton
Cochair: Matthew Morgan
HCC Ballroom A

15:30

TH4A-01: 94 GHz Band High-Gain and Low-Noise Amplifier Using InP-HEMTs for Passive Millimeter Wave Imager
M. Sato, T. Hirose, T. Ohki, Fujitsu, Atsugi, Japan; H. Sato, K. Sawaya, K. Mizuno, Tohoku University, Sendai, Japan

TH4B-01: High-Power High-Reliability Submicrosecond RF MEMS Switched Capacitors
B. Lakshminarayanan, G.M. Rebeiz, University of California, San Diego, La Jolla, USA

TH4D-01: Composite Right/Left Handed Metamaterial Structures Composed of Dielectric Resonators and Parallel Mesh Plates
T. Ueda, Kyoto Institute of Technology, Kyoto, Japan; T. Itoh, N. Michishita, University of California at Los Angeles, Los Angeles, USA

TH4E-01: Submillimeter Astronomy and Mauna Kea — An Overview
P.F. Goldsmith, California Institute of Technology, Pasadena, USA

TH4F-01: Wideband Antenna Arrays with Reconfigurable Beamforming and Beamshaping
A. Ouacha, R. Erickson, R. Gunnarsson, B. Carlegrim, C. Samuelsson, S. Leijon, Swedish Defence Research Agency, Linköping, Sweden

TH4G-01: Broadband Impedance Transformer Based on Asymmetric Coupled Transmission Lines in Nonhomogeneous Medium
V. Zhurbenko, V. Krozer, P. Meincke, Technical University of Denmark, Kgs. Lyngby, Denmark

THP2: Interactive Forum

15:40

TH4A-02: A Broadband 42–63 GHz Amplifier Using 0.13 μm CMOS Technology
T. Wang, H. Wang, National Taiwan University, Taipei, Taiwan

TH4B-02: High-Cycle Life Testing of RF MEMS Switches
C.L. Goldsmith, D.I. Forehand, MEMtronics Corp., Plano, USA; Z. Peng, J.C. Hwang, Lehigh University, Bethlehem, USA

TH4D-02: Circuitual and Experimental Demonstration of a 3D Isotropic LH Metamaterial Based on the Rotated TLM Scheme
M. Zedler, P. Russer, Lst.f.HF-Technik, TU Munich, Munich, Germany; C. Caloz, PolyGrames, Polytechnique Montréal, Montréal, Canada

TH4E-02: The Caltech Submillimeter Observatory
T.G. Phillips, California Institute of Technology, Pasadena, USA

TH4F-02: A Monopulse Rotman Lens Phased Array for Enhanced Angular Resolution
L. Schulwitz, A. Mortazawi, University of Michigan, Ann Arbor, USA

TH4G-02: High-Performance 3D Helical RF Transformers
D. Weon, S. Mohammadi, Purdue University, West Lafayette, USA

15:50

16:00

TH4A-03: On Compact HBT RF Noise Modeling
M. Rudolph, P. Heymann, Ferdinand-Braun-Institut (FBH), Berlin, Germany

TH4B-03: Hot-Switching Test of Noncontact Type MEMS Switches
E. Shim, J. Park, W. Choi, Y. Kim, U. Kim, Y. Kwon, D. Cho, Seoul National University, Seoul, Korea

TH4D-03: Isotropic Epsilon-Negative Particles
J. Machac, P. Protiva, J. Zehentner, Czech Technical University in Prague, Prague 6, Czech Republic

TH4E-03: Submillimetre Astronomy with the James Clerk Maxwell Telescope
G. Davis, A. Chrysostomou, Joint Astronomy Centre, Hilo, USA

TH4F-03: An Active Electronic Ka-Band Antenna Beam-Forming Network Based on Injection-Locked Local Oscillators
H. Grubinger, H. Barth, R. Vahldieck, ETH Zürich, Zürich, Switzerland

TH4G-03: Fully Embedded 2.4 GHz LC Balun into Organic Package Substrate with Series Resonant Tank Circuit
J. Park, H. Seo, J. Park, Kwangwoon University, Seoul, Republic of Korea

16:10

16:20

TH4A-04: Ultralow-Power X-Band SiGe HBT Low-Noise Amplifiers
P. Roux, Lucent Technologies, Le Plessis Robinson, France; Y. Baeyens, J. Weiner, Y. Chen, Lucent Technologies, Murray Hill, USA

TH4B-04: A Novel Warped-Beam Design that Enhances RF Performance of Capacitive MEMS Switches
R. Al-Dahleh, R.R. Mansour, University of Waterloo, Waterloo, Canada

TH4D-04: Theoretical and Experimental Analysis of Magnetic Inclusions for the Realization of Metamaterials at Different Frequencies
F. Bilotti, A. Toscano, L. Vegni, University of Roma Tre, Rome, Italy; K. Aydin, K.B. Alici, E. Ozbay, Nanotechnology Research Center, Ankara, Turkey

TH4E-04: The Submillimeter Array
R. Blundell, Smithsonian Astrophysical Observatory, Cambridge, USA

TH4F-04: Wafer-Level Integrated Antenna Front End Module For Low-Cost Phased Array Implementation
J. M. Yang, Y. Chung, M. Nishimoto, M. Battung, T. Long, P. Chang-chien, K. Tornquist, M. Siddiqui, R. Lai, Northrop Grumman Space Technology

TH4G-04: High-Q Solenoidal Inductive Elements
Z. Feng, M. B. Steer, North Carolina State University, Raleigh, USA; C. A. Bower, J. Carlson, M. Lueck, D. Temple, RTI International, Research Triangle Park, USA

16:30

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TH4A-05: A SiGe-BiCMOS UWB Receiver for 24 GHz Short-Range Automotive Radar Applications
H. Veenstra, E. van der Heijden, M. Notten, G. Dolmans, Philips, Eindhoven, The Netherlands

TH4B-05: Dielectric Charging of RF MEMS Capacitive Switches under Bipolar Control-Voltage Waveforms
Z. Peng, J. Hwang, Lehigh University, Bethlehem, USA; X. Yuan, IBM Microelectronics Div., Hopewell Jct, USA; D. Forehand, C.L.

TH4D-05: Bandpass Filtering by Below-Cutoff Waveguides Loaded with Split-Ring Resonators: Relevance to the Lefthandedness
E. Semouchkina, S. Mudunuri, G. Semouchkin, R. Mittra, Penn State University, University Park, USA

TH4E-05: Technology for Submillimeter Astronomy
J. Zmuidzinis, California Institute of Technology, Pasadena, USA

TH4F-05: A Two-Dimensional Beam Scanning Antenna Array Using Composite Right/Left-Handed Microstrip Leaky-Wave Antennas
D. Lee, S. Lee, Y. Kwon, Seoul National University, Seoul, Korea; C. Cheon, University of Seoul, Seoul, Korea

TH4G-05: Symmetric Monolithic T-Coils for Broadband IC Design
M.T. Reiha, J.R. Long, Dimes, Delft, The Netherlands

16:50

17:00

TH4A-06: A 10.8 GHz CMOS Low-Noise Amplifier Using Parallel-Resonant Inductor
K. Sun, Z. Tsai, K. Lin, H. Wang, National Taiwan University, Taipei, Taiwan

TH4G-06: High-Value Passive Component Integration in LTCC Technology
E. E. Hoppenjans, W.J. Chappell, Purdue, West Lafayette, USA

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