

**RMO1A**  
**Cellular Transceivers**  
 Chair: Fazal Ali  
 Cochair: Jyoti P. Mondal  
**HCC 313A**

08:00 **RMO1A-1: INVITED Single-Chip Cellular Radios for GSM, GPRS, EDGE**  
 D. Seippel, M. Hammes, J. Kissing, P. De Nicola, C. Vannier

08:20 **RMO1A-2: Integrated Blocker Filtering RF Front Ends**  
 A. Safarian, A. Shameli, A. Rofougaran, M. Rofougaran, F. De Flaviis

08:40 **RMO1A-3: A 90 nm CMOS Direct Conversion Transmitter for WCDMA**  
 X. Yang, A. B. Davierwalla, D. W. Mann, K. G. Gard

09:00 **RMO1A-4: A Superheterodyne Receiver Front-End With On-Chip Automatically Q-Tuned Notch Filters**  
 B. Chi, Z. Wang, S. Wong

09:20 **RMO1A-5: A Dual-Band High Efficiency CMOS Transmitter for Wireless CDMA Applications**  
 J. Deng, M. Chew, S. Vora, M. Cassia, T. Marra, K. Sahota

**RMO2A**  
**Power Efficient Transceivers**  
 Chair: Derek Shaeffer  
 Cochair: Steve Lloyd  
**HCC 313A**

10:10 **RMO2A-1: INVITED CMOS Radio with an Integrated 26 dBm Power Amplifier for a Complete System-on-Chip Cordless Phone**  
 C. Grewing, S. VanWaasen, B. Bokinge, W. Einerman, A. Emericks, R. Engberg, C. Hedenäs, R. Thüringer, et al.

10:30 **RMO2A-2: A Sub-10 mW 2 Mbps BFSK Transceiver at 1.35 to 1.75 GHz**  
 T. M. Hancock, M. Straayer, A. Messier

10:50 **RMO2A-3: A 6.3 GHz BFSK Transmitter with On-Chip Antenna for Self-Powered Medical Sensor Applications**  
 V. Karam, P. H. R. Popplewell, A. Shamim, J. Rogers, C. Plett

11:10 **RMO2A-4: A 0.13  $\mu$ m CMOS Ultra-Low-Power Front-End Receiver for Wireless Sensor Networks**  
 W. Chen, T. Copani, H. J. Barnaby, S. Kiaei

11:30 **RMO2A-5: A 0.5 V Receiver in 90 nm CMOS for 2.4 GHz Applications**  
 N. Stanic, A. Balankutty, P. Kinget, Y. Tsvividis

**RMO1B**  
**Pulsed UWB Transceivers**  
 Chair: Ranjit Gharpurey  
 Cochair: Madhukar Reddy  
**HCC 313B**

**RMO1B-1: A 10 GS/s 5-Bit Ultra-Low Power DAC for Spectral Encoded Ultra-Wideband Transmitters**  
 J. I. Jamp, J. Deng, L. E. Larson

**RMO1B-2: A 10 GS/s Distributed Waveform Generator for Subnanosecond Pulse Generation and Modulation in 0.18  $\mu$ m Standard Digital CMOS**  
 Y. Zhu, J. D. Zuegel, J. R. Marcianite, H. Wu

**RMO1B-3: A Fully Integrated CMOS Transmitter for Ultra-Wideband Applications**  
 T. Yuan, Y. J. Zheng, C. W. Ang, L. W. Li

**RMO1B-4: 65 nm CMOS Burst Generator for Ultra-Wideband Low Data Rate Systems**  
 D. Marchaland, F. Badets, M. Villegas, D. Belot

**RMO1B-5: A 0.18  $\mu$ m CMOS UWB LNA with 5 GHz Interference Rejection**  
 Y. Gao, Y. J. Zheng, B. L. Ooi

**RMO2B**  
**Voltage Controlled Oscillators**  
 Chair: Tian-Wei Huang  
 Cochair: Lars Jansson  
**HCC 313B**

**RMO2B-1: A 10 GHz Distributed Voltage Controlled Oscillator for WLAN Application in a VLSI 65 nm CMOS Process**  
 N. Seller, A. Cathelin, H. Lapuyade, J.-B. Bégueret, E. Chataigner, D. Belot

**RMO2B-2: A Q-band Low Phase Noise Voltage Controlled Oscillator Using Balanced pi-Feedback in 2- $\mu$ m GaAs HBT Process**  
 C-H. Lin, K-H. Liang, H-Y. Chang, Y-J. Chan, C-J. Chiong, E. Bryerton

**RMO2B-3: An X-Band Superharmonic Injection-Coupled Quadrature VCO (IC-QVCO) with a Tunable Tail Filter for I/Q Phase Calibration**  
 I. R. Chamas, S. Raman

**RMO2B-4: A 2.4-GHz LC-Tank VCO with Minimum Supply Pushing Regulation Technique**  
 X. Wang, B. Bakkaloglu

**RMO2B-5: 2 GHz CMOS Voltage Controlled Oscillator with Optimal Design of Phase Noise and Power Dissipation**  
 D. J. Young, S. J. Mallin, M. Cross

**RMO1C: Broadband and Reconfigurable CMOS LNAs**  
 Chair: Kirk Ashby  
 Cochair: Dan Nobbe  
**HCC 316B**

**RMO1C-1: A 1.2 V Inductorless Broadband LNA in 90 nm CMOS LP**  
 M. Vidojkovic, M. Sanduleanu, J. van der Tang, P. Baltus, A. van Roermond

**RMO1C-2: A 12 mW 7.5 GHz Bandwidth Inductorless CMOS LNA for Low-Power Low-Cost Multi-Standard Receivers**  
 B. G. Perumana, J.-H. C. Zhan, S. S. Taylor, J. Laskar

**RMO1C-3: A Highly Linear Broadband CMOS LNA Employing Noise and Distortion Cancellation**  
 W. Chen, G. Liu, B. Zdravko, A. Niknejad

**RMO1C-4: A 2.4 to 5.4 GHz Low Power CMOS Reconfigurable LNA for Multistandard Wireless Receiver**  
 C. T. Fu, C. L. Ko, C. N. Kuo

**RMO1C-5: A Multiband 900 MHz/1.8 GHz/5.2 GHz LNA for Reconfigurable Radio**  
 V. K. Dao, Q. D. Bui, C. S. Park

**RMO2C**  
**Millimeter Wave Front-Ends**  
 Chair: Georg Boeck  
 Cochair: Reynold Kagiwada  
**HCC 316B**

**RMO2C-1: 40 GHz Low-Noise-Receiver Circuits using BCB Above-Silicon Technology Optimized for Millimeter-Wave Applications**  
 S. Pruvost, R. Cuchet, D. Pellissier, I. Telliez, M. Devulder, X. Gagnard, P. Ancey, M. Aid, F. Danneville, S. Lepilliet, et al.

**RMO2C-2: A 60 GHz Double Balanced Gilbert Cell Down Conversion Mixer on 130 nm CMOS**  
 F. Zhang, E. Skafidas, W. Shieh

**RMO2C-3: A 77 GHz Receiver Front-End for Passive Imaging**  
 J. Powell, H. Kim, C. G. Sodini

**RMO2C-4: A Low-Power Low-Noise Single-Chip Receiver Front-End for Automotive Radar at 77 GHz in Silicon-Germanium Bipolar Technology**  
 M. Hartmann, C. Wagner, K. Seemann, J. Platz, H. Jaeger, R. Weigel

**RMO2C-5: 80 GHz and 160 GHz Transceiver in SiGe HBT Technology**  
 E. Laskin, P. Chevalier, A. Chantre, B. Sautreuil, S. P. Voignescu

**RMO1D**  
**PAs for Wireless Connectivity**  
 Chair: David Ngo  
 Cochair: Noriharu Suematsu  
**HCC 316A**

**RMO1D-1: A WCDMA HBT Power Amplifier Module with Integrated Si DC Power Management IC for Current Reduction under Backoff Operation**  
 G. Hau, J. Turpel, J. Garrett, H. Golladay

**RMO1D-2: A Flip-Chip Silicon IPMOS Power Amplifier and a DC/DC Converter for GSM 850/900/1800/1900 MHz Systems**  
 A. Tombak, R. J. Baeten, J. D. Jorgenson, D. C. Dening

**RMO1D-3: A 27.4 dBm DECT Power Amplifier for 2.5 V Supply in 0.13  $\mu$ m CMOS**  
 N. Zimmermann, T. Johansson, W. Simbürger, R. Thüringer, S. Heinen

**RMO1D-4: A Compact Dual-Band Power Amplifier Driver for 2.4 GHz and 5.2 GHz WLAN Transmitters**  
 H. Magnusson, H. Olsson

**RMO1D-5: A 3.5 GHz 25 W Silicon LDMOS RFIC power amplifier for WiMAX applications**  
 C. Cassan, P. Gola

**RMO2D**  
**Device Technology**  
 Chair: Aditya Gupta  
 Cochair: Chang-Ho Lee  
**HCC 316A**

**RMO2D-1: INVITED The Present State of the Art of Wide-Bandgap Semiconductors and Their Future**  
 M. J. Rosker

**RMO2D-2: Experimental Study on the Role of Hot Carrier Induced Damage on High frequency Noise in Deep Submicron NMOSFETs**  
 H. Su, H. Wang, T. Xu, R. Zeng

**RMO2D-3: High-Q Integrated Inductor Using Post-CMOS Selective Grown Porous Silicon (SGPS) Technique for RFIC Applications**  
 C. Li, H. Liao, C. Wang, J. Yin, R. Huang

**RMO2D-4: Characterization and Modeling of Metal-Double-Insulator-Metal Diodes**  
 S. Rockwell, D. Lim, B. Bosco, J. Baker, B. Eliasson, M. Forsyth, M. Cromar

**RMO2D-5: Fully Depleted SOI RF Switch with Dynamic Biasing**  
 C. L. Chen, C. K. Chen, P. W. Wyatt, J. M. Knecht, D.-R. Yost, P. M. Gouker, P. D. Healey, C. L. Keast



Monday

Technical Sessions

13:20–17:10

**RMO3A**  
**3G and SDR**  
 Chair: Didier Belot  
 Cochair: Andre Hanke  
**HCC 313A**

**RMO3A-1: INVITED Digital RF Processor (DRP) for Mobile Phones**  
 R. B. Staszewski, K. Muhammad, O. Eliezer

**RMO3A-2: Analog Path for Triple-Band WCDMA Polar Modulated Transmitter in 90 nm CMOS**  
 S. Akhtar, P. Litmanen, M. Ipek, J. Lin, S. Pennisi, F.-J. Huang, R. B. Staszewski

**RMO3A-3: A 100 MHz–2.5 GHz Direct-Conversion CMOS Transceiver for SDR Applications**  
 G. Cafaro, T. Gradishar, J. Heck, S. Machan, G. Nagaraj, S. Olson, R. Salvi, B. Stengel, B. Ziemer

**RMO3A-4: A Wideband OFDM Transceiver Implementation for Beyond 3G Radio Systems**  
 J. S. Koskinen, P. T. Eloranta, P. Sepinen, P. Kosonen, A. Pärssinen

**RMO3A-5: A Disruptive Software-Defined Radio Receiver Architecture Based on Sampled Analog Signal Processing**  
 F. Rivet, Y. Deval, J.-B. Begueret, D. Dallet, D. Belot

**RMO4A**  
**RFID**  
 Chair: Natallino Camilleri  
 Cochair: Srenik Mehta  
**HCC 313A**

**RMO4A-1: An 860 to 960 MHz RFID Reader IC in CMOS**  
 P. B. Khannur, X. Chen, D. L. Yan, D. Shen, B. Zhao, M. K. Raja, Y. Wu, A. B. Ajikuttira, W. G. Yeoh, R. Singh

**RMO4A-2: A UHF Mobile RFID Reader IC with Self-Leakage Canceller**  
 J.Y. Lee, J.H. Choi, K.H. Lee, B.K. Kim, M.S. Jeong, Y.H. Cho, H.Y. Yoo, K.O. Yang, S.Y. Kim, S.M. Moon, J.Y. Lee, S.K. Park, W.C. Kong, J. Kim, T.J. Lee, B.E. Kim, B.K. Ko

**RMO4A-3: A 900 MHz Direct-Conversion Transceiver for Mobile RFID Systems**  
 J. Jang, H. Lee, S. W. Choi, K. Ahn, M. S. Jung, E. S. Song, J. Kim, H. H. Roh, G. B. Kim, S. W. Bae, H. R. Oh, Y. R. Seong, J. S. Park

**RMO4A-4: Development of Long-Range UHF-band RFID Tag chip Using Schottky Diodes in Standard CMOS Technology**  
 N. Tran, B. Lee, J. W. Lee

**RMO4A-5: An RFID System with Fully Integrated Transponder**  
 A. Shamel, A. Safarian, A. Rofougaran, M. Rofougaran, F. De Flaviis

**RMO3B**  
**Techniques for WiMedia UWB**  
 Chair: Stefan Heinen  
 Cochair: Jacques C. Rudell  
**HCC 313B**

**RMO3B-1: INVITED Low-Cost Direct Conversion RF Front-Ends**  
 J.-H. C. Zhan, B. R. Carlton, S. S. Taylor

**RMO3B-2: 3.1–4.7 GHz WiMedia UWB RF/Analog Front-End in 130 nm CMOS**  
 M. W. Lynch, C. Demirdag, N. Belabbes, S. Carnevali, C. Lacy, M. Yu, W. An, H. Jin, J. Park, D. S. Malhi

**RMO3B-3: A Dual-Band Direct-Conversion RF Front-End for WiMedia UWB Receiver**  
 J. Kaukoviuri, J. Ryyänen, K. A. I. Halonen

**RMO3B-4: A 0.18  $\mu$ m CMOS Low-Spurious Local Signal Generator for MB-OFDM UWB Radio**  
 T. Tokairin, N. Matsuno, K. Numata, T. Maeda, S. Tanaka

**RMO3B-5: A Cochlea-Based Preselector for UWB Applications**  
 C. Galbraith, G. M. Rebeiz, R. Drangmeister

**RMO4B: Advanced Interconnect and Pad Modeling**  
 Chair: Francis Rotella  
 Cochair: Louis Liu  
**HCC 313B**

**RMO4B-1: A Wideband Scalable and SPICE-Compatible Model for On-Chip Interconnects Up To 80 GHz**  
 K. Kang, L. Nan, S. C. Rustagi, K. Mouthaan, J. Shi, R. Kumar, L.-W. Li

**RMO4B-2: CPW and Discontinuities Modeling for Circuit Design up to 110 GHz in SOI CMOS Technology**  
 A. Siligaris, C. Mounet, B. Reig, P. Vincent

**RMO4B-3: A Scalable Lossy Substrate Model for Nanoscale RF MOSFET Noise Extraction and Simulation Adapted to Various Pad Structures**  
 J. C. Guo, Y. H. Tsai

**RMO4B-4: Ultralow-Capacitance Bond Pad for RF Applications in CMOS Technology**  
 Y.-W. Hsiao, M.-D. Ker

**RMO4B-5: Experimental Characterization of the Effect of Metal Dummies on Spiral Inductors**  
 L. Nan, K. Mouthaan, Y.-Z. Xiong, J. Shi, S. C. Rustagi, B.-L. Ooi

**RMO3C: Advanced Frequency Synthesis Techniques**  
 Chair: Bertan Bakkaloglu  
 Cochair: Ting-Ping Liu  
**HCC 316B**

**RMO3C-1: INVITED Single and Dual Loop Ring Oscillator Based Frequency Synthesizers for Broadband Tuner Applications**  
 A. Maxim

**RMO3C-2: Frequency Synthesizer and FSK Modulator for IEEE 802.15.4 Based Applications**  
 W. Rahajandraibe, L. Zaid, V. C. de Beaupré, G. Bas

**RMO3C-3: A 9.1-to-11.5 GHz Four-Band PLL for Ku-Band Satellite and Optical Communication Applications**  
 J.-Y. Lee, K. Kim, S.-C. Lee, J.-K. Kwon, J. Kim, S.-H. Lee

**RMO3C-4: A Fully On-Chip 10 Gb/s CDR in a Standard 0.18  $\mu$ m CMOS Technology**  
 J. Li, J. Silva-Martinez

**RMO3C-5: A 9-Bit 9.6 GHz 1.9 W Direct Digital Synthesizer RFIC Implemented In 0.18  $\mu$ m SiGe BiCMOS Technology**  
 X. Yu, F. F. Dai, D. Yang, V. Kakani, J. D. Irwin, R. C. Jaeger

**RMO4C: Advanced Front-End Circuits**  
 Chair: Sayfe Kiaei  
 Cochair: Walid Ali-Ahmad  
**HCC 316B**

**RMO4C-1: Asymmetric DC Offsets and IIP2 in the Presence of LO Leakage in a Wireless Receiver**  
 I. Elahi, K. Muhammad

**RMO4C-2: A Low-Noise 2.5 GHz Direct-Conversion Receiver Front-End With Low-Distortion Baseband Filters**  
 O. Shana'a

**RMO4C-3: A CMOS 5 GHz Image-Reject Receiver Front-End Architecture**  
 D. Ozis, J. Paramesh, D. J. Allstot

**RMO4C-4: A 500  $\mu$ W 2.4 GHz CMOS Subthreshold Mixer for Ultralow-Power Applications**  
 H. Lee, S. Mohammadi

**RMO4C-5: A 2.5 mW 900 MHz Receiver Employing Multiband Feedback with Bias Current Reuse**  
 J. Han, R. Gharpurey

**RMO3D: Transmitter Linearization Techniques**  
 Chair: Freek van Straten  
 Cochair: Joe Staudinger  
**HCC 316A**

**RMO3D-1: INVITED Application of Digital Adaptive Predistortion to Mobile Wireless Devices**  
 G. Norris, J. Staudinger, J.-H. Chen, C. Rey, P. Pratt, R. Sherman, H. Fraz

**RMO3D-2: A High Performance Balanced Power Amplifier and its Integration into a Front-End Module at PCS Band**  
 G. Zhang, S. Chang, Z. Alon

**RMO3D-3: Power Amplifier Predistortion Linearization using a CMOS polynomial Generator**  
 A. A. Kidwai

**RMO3D-4: Switched Doherty Power Amplifiers for CDMA and WCDMA**  
 T. R. Apel, Y. Tang, O. Berger

**RMO3D-5: A 2.4 GHz Fully Integrated Transmitter Front End with +26.5 dBm On-Chip CMOS Power Amplifier**  
 P. C. Wang, C. J. Chang, W. M. Chiu, P. J. Chiu, C. C. Wang, C. H. Lu, K. T. Chen, M. C. Huang, Y. M. Chang, S. M. Lin, K. U. Chan, Y. H. Lin, C. C. Lee

**RMO4D: Advanced Testing Techniques**  
 Chair: Patrick Yue  
 Cochair: Danilo Manstretta  
**HCC 316A**

**RMO4D-1: INVITED Built-In Self Test of RF Transceiver SoCs: From Signal Chain to RF Synthesizers**  
 A. Valdes-Garcia, W. Khalil, B. Bakkaloglu, J. Silva-Martinez, E. Sanchez-Sinencio

**RMO4D-2: Built-In Self Testing of a DRP-Based GSM Transmitter**  
 O. Eliezer, I. Bashir, R. B. Staszewski, P. T. Balsara

**RMO4D-3: A Sub-1V CMOS LNA Dedicated to 802.11b/g Applications with Self-Test and High-Reliability Capabilities**  
 M. Cimino, M. De Matos, H. Lapuyade, T. Taris, Y. Deval, J. B. Bégueret

**RMO4D-4: On-Chip Circuit for Measuring Data Jitter in the Time or Frequency Domain**  
 M. Ishida, K. Ichiyama, T. J. Yamaguchi, M. Soma, M. Suda, T. Okayasu

**RMO4D-5: Direct Extraction Techniques for Thermal Resistance of MESFET and HEMT Devices**  
 I. Angelov, C. Kärnfelt

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MONDAY

**RTU1A**  
**Wireless LAN Transceivers**  
 Chair: Glenn Chang  
 Cochair: Srenik Mehta  
**HCC 313A**

08:00 RTU1A-1: An Area and Power Efficient Cartesian Phase Shifter + Mixer Circuit Applied to WLAN System  
 A. Afsahi, A. Behzad, S. Au, R. Roufoogaran, J. Racl

08:20 RTU1A-2: A Low-Power 5 GHz Transceiver in 0.13  $\mu\text{m}$  CMOS for OFDM Applications with Sub-mm<sup>2</sup> Area  
 Y. Han, L. E. Larson

08:40 RTU1A-3: A Single Chip 802.11abgn Enhancement Mode PHEMT MMIC with dual LNAs, Switches, and Distortion Compensation Power Amplifiers  
 H. Morkner, M. Vice, M. Karakucuk, W. Abey, L. Nguyen, J. Kessler, R. Ruebusch

09:00 RTU1A-4: A WiMAX Receiver with Variable Bandwidth of 2.5–20 MHz and 93 dB Dynamic Gain Range in 0.13  $\mu\text{m}$  CMOS Process  
 D.-R. Huang, S.-W. Kao, Y.-H. Pang

09:20 RTU1A-5: A Multistandard Digital Envelope Modulator for Polar Transmitters in 90 nm CMOS  
 P. T. M. van Zeijl, M. Collados

**RTU1E: Passive Components and Techniques**  
 Chair: Eli Reese  
 Cochair: Aditya Gupta  
**HCC 315**

08:00 RTU1E-1: A 0.3 mm<sup>2</sup> Miniaturized X-Band On-Chip Slot Antenna in 0.13  $\mu\text{m}$  CMOS  
 N. Behdad, D. Shi, W. Hong, K. Sarabandi, M.P. Flynn

08:20 RTU1E-2: A 60-GHz Millimeter-Wave CMOS Marchand Balun  
 J.-X. Liu, C.-Y. Hsu, H.-R. Chuang, C.-Y. Chen

08:40 RTU1E-3: De-Embedding Considerations for High QRFIC Inductors  
 K. Goverdhanam, Y. Tretiakov, G. Ali Rezvani

09:00 RTU1E-4: A Low-Loss Compact Linear Varactor Based Phase Shifter  
 J. H. Qureshi, S. Kim, K. Buisman, C. Huang, M. Pelk, A. Akhnoukh, L. E. Larson, L. K. Nanver, L. C. N. de Vreede

09:20 RTU1E-5: Design and Layout Techniques for the Optimization of nMOS SPDT Series-Shunt Switches in a 130 nm SiGe BiCMOS Technology  
 J. P. Comeau, J. D. Cressler, M. Mitchell

**RTU1B: High-Frequency Wideband Techniques**  
 Chair: Madhukar Reddy  
 Cochair: Ranjit Gharpurey  
**HCC 313B**

RTU1B-1: A 24 GHz Pulse-Mode Transmitter for Short-Range Car Radar  
 P. Zhao, H. Veenstra, J. R. Long

RTU1B-2: A 0.13  $\mu\text{m}$  CMOS Digital Phase Shifter for K-Band Phased Arrays  
 K.-J. Koh, G. M. Rebeiz

RTU1B-3: Low-Noise Low-Cost RX Solutions for Pulsed 24 GHz Automotive Radar Sensors  
 S. Pruvost, L. Moquillon, E. Imbs, M. Marchetti, P. Garcia

RTU1B-4: A 52 GHz, 8.5 dB Traveling Wave Amplifier in 0.13  $\mu\text{m}$  Standard CMOS process  
 M. Egels, J. Gaubert, P. Pannier and S. Bourdel

RTU1B-5: A 2–10 GHz Digital CMOS Phase Shifter for Ultra-Wideband Phased Array System  
 D.-W. Kang, S. Hong

**RTU1F: Novel Circuit Simulation and Modeling**  
 Chair: Kevin McCarthy  
 Cochair: Bob Stengel  
**HCC 314**

RTU1F-1: Internal Unilateralization Technique for CMOS mm-Wave Amplifiers  
 B. Heydari, E. Adabi, M. Bohsali, B. Afshar, M. A. Arbabian, A. M. Niknejad

RTU1F-2: Novel High-Q Inductor using Active Inductor Structure and Feedback Parallel Resonance Circuit  
 S. Seo, N. Ryu, H. Choi, Y. Jeong

RTU1F-3: Stability Analysis of On-Chip Multi-Stage RF Power Amplifier  
 M. Unterweissacher, K. Mertens, T. Brandtner, W. Pribyl

RTU1F-4: Top-Down PLL Design Methodology Combining Block Diagram, Behavioral, and Transistor-Level Simulators  
 B. Nicolle, W. Tatinian, J.-J. Mayol, J. Oudinot, G. Jacquemod

RTU1F-5: Nonlinear Behavioral Modeling of Passive RFID-Transponder-Frontends  
 K. Seemann, M. Hartmann, F. Cilek, A. Missoni, G. Holweg, R. Weigel

**RTU1C**  
**High Performance VCOs**  
 Chair: Stephen Dow  
 Cochair: Yann Deval  
**HCC 316B**

RTU1C-1: 11.8 GHz CMOS VCO with 62% Tuning Range Using Switched-Coupled Inductors  
 M. Demirkan, S. P. Bruss, R. R. Spencer

RTU1C-2: A Colpitts Oscillator Design for a GSM Base Station Synthesizer  
 J. Steinkamp, F. Henkel, P. Waldow, O. Pettersson, C. Hedenäs, B. Medin

RTU1C-3: Temperature-Compensated 2.45 GHz Ring Oscillator with Double Frequency Control  
 W. Rahajandraibe, L. Zaid, V. Cheynet de Beaupré, G. Bas

RTU1C-4: A Low-Phase-Noise Low-Power 27 GHz SiGe VCO using Merged-Transformer Matching-Circuit Technique  
 T. Nakamura, T. Masuda, K. Washio, H. Kondoh

RTU1C-5: A Low Phase Noise 9 GHz CMOS Quadrature VCO using Novel Source-Follower Coupling Technique  
 H.-K. Chen, S.-S. Lu, D.-C. Chang, Y.-Z. Juang

**RTU1D**  
**Full Integrated CMOS PAs**  
 Chair: Noriharu Suematsu  
 Cochair: Joe Staudinger  
**HCC 316A**

RTU1D-1: A Monolithic Voltage-Boosting Parallel-Primary Transformer Structures for Fully Integrated CMOS Power Amplifier Design  
 K. H. An, Y. Kim, K. S. Yang, H. Kim, W. Woo, J. J. Chang, C.-H. Lee, H. Kim, J. Laskar

RTU1D-2: A 90 nm CMOS Doherty Power Amplifier with Integrated Hybrid Coupler and Impedance Transformer  
 M. Elmala, R. Bishop

RTU1D-3: A 2.4 V<sub>pp</sub> Output, 0.045–32.5 GHz CMOS Distributed Amplifier  
 J. Aguirre, C. Plett

RTU1D-4: A 5.8 GHz Linear Power Amplifier in a Standard 90 nm CMOS Process using a 1V Power Supply  
 P. Haldi, D. Chowdhury, G. Liu, A. M. Niknejad

RTU1D-5: A 1.8 GHz 2W Fully Integrated CMOS Push-Pull Parallel-Combined Power Amplifier Design  
 O. Lee, K.S. Yang, Y. Kim, H. Kim, J.J. Chang, W. Woo, C.-H. Lee and J. Laskar

The pages shown here are an abridged version of the full RFIC Technical Program. Full details and recent changes can be found at [www.rfic2007.org](http://www.rfic2007.org) or in the RFIC Program Book.



Tuesday

Technical Sessions

13:20–17:10

**RTU3A: UWB and High-Frequency Front-Ends**  
 Chair: Frank Henkel  
 Cochair: Georg Boeck  
**HCC 313A**
**RTU3A-1: A 24 GHz CMOS Direct-Downconversion Subharmonic Downconverter**  
 R. M. Kodkani, L. E. Larson

**RTU3A-2: A 1.2 V, 5.8 mW Ultra-Wideband Folded Mixer in 0.13  $\mu$ m CMOS**  
 K. H. Choi, D. H. Shin, C. P. Yuc

**RTU3A-3: A Broadband CMOS Multiplier-Based Correlator for IR-UWB Transceiver SoC**  
 H. Xie, X. Wang, A. Wang

**RTU3A-4: A 3 to 9 GHz Dual-Band Up-Converter for a DS-UWB Transmitter in 0.18  $\mu$ m CMOS**  
 M. Annamalai, Y. Zheng, W. G. Yeoh

**RTU3A-5: A Miniature, Folded-Switching, Up-Conversion Mixer for UWB Applications Using 0.1  $\mu$ m CMOS Process**  
 P.-C. Huang, F.-C. Chang, S.-F. Chao, H. Wang

**RTU4A: Advanced Transmitter Building Blocks**  
 Chair: Freek van Straten  
 Cochair: David Ngo  
**HCC 313A**
**RTU4A-1: Ka-Band Low-Loss and High-Isolation 0.13  $\mu$ m CMOS SPST/SPDT Switches Using High Substrate Resistance**  
 B. Min, G. M. Rebeiz

**RTU4A-2: RF-MEMS Based Adaptive Antenna Matching Module**  
 A. v. Bezooijen, F. v. Straten, J. Sneep, R. Mahmoudi, A. H. M. v. Roermund

**RTU4A-3: An 8 GHz Beamforming Transmitter IC in 130 nm CMOS**  
 J. Wernehag, H. Sjöland

**RTU4A-4: A Spectrally Pure 5.0 W, High-PAE (6–12 GHz) GaN Monolithic Class-E Power Amplifier for Advanced T/R Modules**  
 R. Tayrani

**RTU4A-5: 1 Watt Conventional and Cascoded GaN-SiC Darlington MMIC Amplifiers to 18 GHz**  
 K. W. Kobayashi, Y. Chen, I. Smorchkova, R. Tsai, M. Wojtowicz, A. Oki

**RTU3B Wideband Potpourri**  
 Chair: Jacques C Rudell  
 Cochair: Stefan Heinen  
**HCC 313B**
**RTU3B-1: INVITED Power-Efficient Decision-Feedback Equalizers for Multi-Gb/s CMOS Serial Links**  
 J. F. Bulzacchelli, A. V. Rlylyakov, D. J. Friedman

**RTU3B-2: A Single-Chip DBS Tuner-Demodulator SoC using Discrete AGC, Continuous I/Q Correction, and 200 MS/s Pipeline ADCs**  
 A. Maxim, R. Poorfard, R. Johnson, P. Crawley, J. Kao, Z. Dong, M. Chennam, T. Nutt, D. Trager

**RTU3B-3: Heterogeneously Integrated 10 Gb/s CMOS Optoelectronic Receiver for Long-Haul Telecommunication**  
 H. Sharifi, S. Mohammadi

**RTU3B-4: Tuned LC Clock Buffers with Static Phase Adjust**  
 V. P. Reddy, W. S. Titus, J. G. Kenney

**RTU4B: New Trends in VCO Techniques**  
 Chair: Jinghong Chen  
 Cochair: Tian-Wei Huang  
**HCC 313B**
**RTU4B-1: A Compact 5 GHz Standing-Wave Resonator-Based VCO in 0.13  $\mu$ m CMOS**  
 D. Shi, J. East and M. P. Flynn

**RTU4B-2: A Dual-Band, Wide-Tuning-Range CMOS Voltage Controlled Oscillator for Multiband Radio**  
 B. Catli, M. M. Hella

**RTU4B-3: Double Cross Coupled Colpitts VCO with Low Phase Noise using InGaP/GaAs HBT Technology**  
 B. Shrestha, N. Y. Kim

**RTU4B-4: A 12 GHz Low Phase Noise VCO by Employing Novel CMOS Field-Plate Transistors**  
 C.-C. Wei, H.-C. Chiu, W.-S. Feng

**RTU4B-5: A Tuned-Input Tuned-Output VCO in 0.18  $\mu$ m CMOS**  
 S. Shekhar, S. Aniruddhan, D. J. Allstot

**RTU3C: Microwave and mm-wave Synthesizers and Components**  
 Chair: Sanjay Raman  
 Cochair: Lawrence Kushner  
**HCC 301A**
**RTU3C-1: Performance and Yield Optimization of mm-Wave PLL Front-End in 65 nm SOI CMOS**  
 D. Lim, J. Kim, J.-O. Plouchart, D. Kim, C. Cho, D. S. Boning

**RTU3C-2: A 16 to 19 GHz Subinteger Frequency Synthesizer for a 60 GHz Transceiver**  
 B. A. Floyd

**RTU3C-3: A 16 mW 8 Mbps Fractional-N FSK Modulator at 15.8–18.9 GHz**  
 M. Straayer, A. Messier, T. Hancock

**RTU3C-4: A 15 GHz 7-Channel SiGe:C PLL for 60 GHz WPAN Application**  
 J.-Y. Lee, S.-H. Lee, H. Kim, H.-K. Yu

**RTU3C-5: A Ka-Band, Static, MCML Frequency Divider in Standard 90 nm CMOS LP for 60 GHz Applications**  
 H. M. Cheema, R. Mahmoudi, A. H. M. van Roermund, M. A. T. Sanduleanu

**RTU4C: Advances in Low-Noise Amplifiers**  
 Chair: Brian A. Floyd  
 Cochair: Leonard D. Reynolds  
**HCC 301A**
**RTU4C-1: AGM-Boosted Current-Reuse LNA in 0.18  $\mu$ m CMOS**  
 J. S. Walling, S. Shekhar, D. J. Allstot

**RTU4C-2: A 2.4 GHz 0.82 mW Hybrid Balun for Low-Power Fully-Differential Direct Conversion Receivers in 0.18  $\mu$ m CMOS**  
 H. Shin, J. Park

**RTU4C-3: A Wide-Band CMOS Variable-Gain Low Noise Amplifier for Multistandard Terrestrial and Cable TV Tuner**  
 D. G. Im, S. S. Song, H. T. Kim, K. Lee

**RTU4C-4: 30 GHz CMOS Low Noise Amplifier**  
 E. Adabi, B. Heydari, M. Bohsali, A. M. Niknejad

**RTU4C-5: A 2 mW, Sub-2 dB Noise Figure, SiGe Low-Noise Amplifier For X-band High-Altitude or Space-based Radar Applications**  
 T. K. Thirvikraman, W.-M. L. Kuo, J. P. Comeau, A. K. Sutton, J. D. Cressler, P. W. Marshall, M. A. Mitchell

**RTU3D: Silicon Technology for mm-Wave ICs**  
 Chair: Marko Sokolich  
 Cochair: Mahesh Kumar  
**HCC 301B**
**RTU3D-1: INVITED Silicon Schottky Diode Power Converters Beyond 100 GHz**  
 C. Mishra, U. Pfeiffer, R. Rassel, S. Reynolds

**RTU3D-2: Hot Carrier Degradation and Performance of 65 nm RF n-MOSFET**  
 M. Fakhruddin, M. C. Tang, J. Kuo, J. Karp, D. Chen, C. S. Yeh, S. C. Chien

**RTU3D-3: 65 nm HR SOI CMOS Technology: emergence of Millimeter-Wave SoC**  
 F. Gianesello, S. Montusclat, B. Martineau, D. Gloria, C. Raynaud, S. Boret, G. Dambrine, S. Lepilliet, R. Pilard

**RTU3D-4: Novel Collector Structure Enabling Low-Cost Millimeter-Wave SiGe:C BiCMOS Technology**  
 J. P. John, J. Kirchgessner, D. Morgan, J. Hildreth, M. Dawdy, R. Reuter, H. Li

**RTU3D-5: Vertical-Ground-Plane Transmission Lines for Miniaturized Silicon-Based MMIC**  
 J.-W. Huang, C.-S. Wang, C.-K. Wang, S.-H. Yeh

**RTU4D: MOSFET Characterization and Modeling**  
 Chair: Yuhua Cheng  
 Cochair: Bumman Kim  
**HCC 301B**
**RTU4D-1: A New Approach of High-Frequency Noise Modeling for 70 nm NMOS by Accurate Noise-Source Extraction**  
 Y. Kiyota, C.-H. Chen, T. Kubodera, A. Nakamura, K. Takeshita, M. J. Deen

**RTU4D-2: A New Noise-Parameter Model of Short-Channel MOSFETs**  
 J. Jeon, I. M. Kang, Y. Yun, B.-G. Park, J. D. Lee, H. Shin

**RTU4D-3: CR018 Wideband Noise Model for AMS/RF CMOS Simulation**  
 M. T. Yang, C. W. Kuo, P. P. C. Ho, D. C. W. Kuo, C. C. Chen, T. J. Yeh, C. Tseng, J. Jayapalan, G. Brown, G. Yeap, Y. Du, S. Liu

**RTU4D-4: MOSFET Model Extraction Using 50 GHz Four-Port Measurements**  
 S. C. Rustagi, J. Shi, F. Lin

**RTU4D-5: Distortion Simulations with the PSP Model: Common-Gate Circuits**  
 C. M. Olsen, L. F. Wagner, J. Watts, J. R. Jones, J. J. Pekarik

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## RTUP

## RFIC Interactive Forum

Chair: Tina Quach

Cochair: Jenshan Lin

## Ballroom A

**RTUP-01: Coherent BPSK Demodulator MMIC Using an Antiparallel Synchronization Loop**  
Y. Zheng, C. E. Saavedra

**RTUP-02: A 0.13  $\mu\text{m}$  CMOS 5 GHz Fully Integrated 2 $\times$ 3 MIMO Transceiver IC with over 40 dB Isolation**  
R. Tachibana, S. Kousai, T. Kato, H. Kobayashi, R. Ito, A. Maki, D. Miyashita, Y. Araki, T. Hashimoto, H. Hoshino, T. Sekiguchi, M. Ashida, I. Seto, M. Hamada, R. Fujimoto, H. Yoshida, S. Otaka

**RTUP-03: A 5 $\times$ 5 mm Highly Integrated Dual-Band WLAN Front-End Module Simplifies 802.11a/b/g and 802.11n Radio Designs**  
C. W. P. Huang, W. Vaillancourt, C. Masse, J. Soricelli, T. Quaglietta, A. Long, G. Rabjohn, A. Parolin

**RTUP-04: A 5.2 GHz BFSK Receiver with On-Chip Antenna for Self-Powered RFID Tags and Medical Sensors**  
P.H. R. Popplewell, V. Karam, A. Shamim, J. Rogers, C. Plett

**RTUP-05: Achieving Wideband Sub-1 dB Noise Figure and High Gain with MOSFETs if Input Power Matching is Not Required**  
E. A. M. Klumperink, Q. Zhang, G. J. M. Wienk, R. Witvers, J. G. B. de Vaate, E. E. M. Woestenburger, B. Nauta

**RTUP-06: A Bondpad-Size Narrowband LNA for Digital CMOS**  
J. Borremans, P. Wambacq, G. V. der Plas, Y. Rolain, M. Kuijk

**RTUP-07: Fully Integrated High-Q Switched Capacitor Bandpass Filter with Center Frequency and Bandwidth Tuning**  
A. E. Oualkadi, M. E. Kaamouchi, D. Flandre

**RTUP-08: 60 GHz LNA using a Hybrid Transmission Line and Conductive Path to Ground Technique in Silicon**  
J. Alvarado Jr., K.T. Kornegay, D. Dawn, S. Pintel, J. Lasker

**RTUP-09: A Low Distortion FM Tuner Analog Front-End with Multi-tanh Low Noise Amplifier**  
J. Hu, M. R. May, M. D. Felder, L. DiSanza, L. H. Ragan

**RTUP-10: A 10 GHz Low Phase Noise 0.13  $\mu\text{m}$  CMOS LC-VCO for Mixed-Signal SoCs Using Noise Rejection Caged Inductors**  
A. Maxim

**RTUP-11: All-PMOS Wideband VCO with an Automatic Amplitude Controller for Multiband Multistandard Radios**  
Q. D. Bui, C. S. Park

**RTUP-12: A 5.8 GHz VCO with Precision Gain Control**  
L. Jia, A. Tamura, S. Kubota, Y. B. Choi, W. G. Yeoh

**RTUP-13: Substrate Coupling Effect under Various Noise Injection Topologies in LC-Voltage Controlled Oscillator**  
S.-S. Wang, Y.-C. Wu, S. S. H. Hsu, C.-Y. Chan

**RTUP-14: A 45-to-60 GHz SiGe:C VCO for Millimeter-Wave Applications**  
J.-Y. Lee, S.-H. Lee, H. Kim, H.-K. Yu

**RTUP-15: 5 GHz Frequency Synthesizer with Auto Calibration Loop**  
M. Kim, K. Lee, Y. Kwon, J. Lim, T. J. Park

**RTUP-16: Regenerative Frequency Divider with Synchronous Fractional Outputs**  
O. Momeni, K. Sengupta, H. Hashemi

**RTUP-17: A Highly Efficient Broadband (7–14 GHz) Monolithic Class-E Power Amplifier for Space-Based Radar**  
R. Tayrani

**RTUP-18: A 60 GHz CMOS Transmit/Receive Switch**  
C. M. Ta, S. Skafidas, R. Evans

**RTUP-19: A 26 to 40 GHz Wideband SiGe Balanced Power Amplifier IC**  
M. Chang, G. M. Rebeiz

**RTUP-20: Parasitic Capacitance Optimization of GaAs HBT Class-E Power Amplifier for High Efficiency CDMA EER Transmitter**  
K. Y. Kim, J. H. Kim, S. M. Park, C. S. Park

**RTUP-21: A High Dynamic Range CMOS RF Power Amplifier with a Switchable Transformer for Polar Transmitters**  
Y. Kim, B.-H. Ku, C. Park, D. H. Lee, S. Hong

**RTUP-22: 1.8 GHz CMOS Power Amplifier with Stage-Convertible Structure Using Differential-Line Inductor**  
C. Park, D. H. Lee, J. Han, S.-H. Baek, Y. Kim, S. Hong

**RTUP-23: A 97.2 mW 1.8 GHz Low-Power CMOS Transmitter for Mobile WiBro and WiMAX**  
H. Yoo, J. Kim, T. W. Kim, M. Jeong, Y. Cho, B. Kim, H. Shin, B.-E. Kim, B.-K. Ko

**RTUP-24: Low-Capacitance SCR with Waffle Layout Structure for On-Chip ESD Protection in RF ICs**  
C.-Y. Lin, M.-D. Ker

**RTUP-25: On the P+ Guard Ring Sizing Strategy to Shield Against Substrate Noise**  
S. Bronckers, G. Vandersteen, G. Van der Plas, Y. Rolain

**RTUP-26: A Highly Integrated X-Band Frequency Quadrupler MMIC**  
Y. Yamaguchi, T. Kaho, K. Uehara

**RTUP-27: An Efficient Technique for Performance Analysis of a Receiver in the Presence of Calibration/Compensation Algorithms**  
C. Fernando, K. Muhammad

**RTUP-28: Frequency Dependence of the Quality Factor and Design Rules of Integrated Magnetic Inductors**  
D. W. Lee, L. L. Li, K.-P. Hwang, Y. Min, S.X. Wang

**RTUP-29: Broadband Noise Modeling of SiGe HBT under Cryogenic Temperatures**  
B. Banerjee, S. Venkataraman, C.-H. Lee, J. Laskar