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Co-Chair: Klaus Beilenhoff, United Monolithic Semiconductors GmbH







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¹FAU Erlangen-Nürnberg, Germany; ²Intel Mobile Communications, Germany

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¹Jet Propulsion Laboratory, USA; ²Northrop Grumman Corporation, USA

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- 328   **Reconfigurable Multimodal Bandpass Filter Based on RF-MEMS Switchable CPW Air-Bridges**
Adrián Contreras¹, Jasmina Casals-Terré¹, Lluís Pradell¹, Flavio Giacomozzi², Jacopo Iannacci², Miquel Ribó³
¹Universitat Politècnica de Catalunya, Spain; ²FBK, Italy; ³Universitat Ramon Llull, Spain

EuMC/EuMIC01: Switch-Mode Power Amplifiers

Chair: Marc van Heijningen, TNO — Co-Chair: Denis Barataud, XLIM






Venue Kiew, Time 08:30 - 10:10, Tuesday 8th October 2013

- 332   **Concurrent Dual-Band High Efficiency Class-E Power Amplifier**
Fatemeh Norouzian, Peter Gardner, University of Birmingham, UK
- 336   **Wideband Class-E Power Amplifier Covering the Whole UHF Broadcast Band**
Jiafeng Zhou¹, Kevin Morris¹, Gavin T. Watkins², Keiichi Yamaguchi³
¹University of Bristol, UK; ²Toshiba Research Europe Ltd., UK; ³Toshiba Corporation, Japan
- 340   **Statistical Harmonic Load Termination Analysis of Switch-Mode Power Amplifiers Employing Bandpass-Pulse-Length Modulation**
Sebastian Krause¹, Stephan Maroldt¹, Christian Zech¹, Rüdiger Quay¹, Matthias A. Hein²
¹Fraunhofer IAF, Germany; ²Technische Universität Ilmenau, Germany
- 344   **Supply Modulator for Envelope-Tracking Operation of Dual-Mode Handset Power Amplifier**
Joosung Kim¹, Dongsu Kim¹, Yunsung Cho¹, Daehyun Kang², Byungjoon Park¹, Kyunghoon Moon¹, Bumman Kim¹
¹POSTECH, Korea; ²Broadcom Corporation, USA

EuMC/EuMIC02 : RF MEMS Based Components

Chair: Larissa Vietzorreck, TU Munich — Co-Chair: Lluis Pradell, Polytech. University of Catalonia






Venue Riga, Time 08:30 - 10:10, Tuesday 8th October 2013

- 348  **High Power GaN Monolithically Integrated RF MEMS Switches**
A.M. Mahmoud Mohamed¹, S. Boumaiza¹, Raafat R. Mansour¹, I. Zine-El-Abidine²
¹University of Waterloo, Canada; ²CMC Microsystems, Canada
- 352  **Characterization of High-Q Laterally Moving RF MEMS Tuneable Capacitor**
U. Shah, J. Oberhammer, KTH, Sweden
- 356  **High Capacitance Ratio RF MEMS Dielectric-Less Switched Capacitor**
*Mansour Fall¹, Siamak Fouladi², Frédéric Domingue¹, Christel Dieppedale³,
Bruno Reig³, Raafat R. Mansour²*
¹Université du Québec à Trois-Rivières, Canada; ²University of Waterloo, Canada;
³CEA-LETI, France
- 360  **A Novel Self Collapsed Corrugated MEMS Phase Shifter**
Maher Bakri-Kassem¹, Raafat R. Mansour²
¹American University of Sharjah, UAE; ²University of Waterloo, Canada
- 364  **Reliability of Nanocrystalline Diamond MEMS Capacitive Switches**
*L. Michalas¹, S. Saada², M. Koutsourelis¹, C. Mer², A. Leuliet³, P. Martins³,
S. Bansropun³, G. Papaioannou¹, P. Bergonzo², A. Ziaei³*
¹University of Athens, Greece; ²CEA-LIST, France; ³Thales Research and Technology,
France

EuMC/EuMIC03 : Ferroelectric Materials and Modeling

Chair: Francisco Medina, University of Seville — Co-Chair: Rolf Jakoby, TU Darmstadt








Venue Istanbul, Time 08:30 - 10:10, Tuesday 8th October 2013

- 368  **Tunable FBARs Based on Sol-Gel Grown PMN-PT Films**
A. Vorobiev¹, Spartak Gevorgian¹, M. Spreitzer², A. Veber², D. Suvorov²
¹Chalmers University of Technology, Sweden; ²Jožef Stefan Institute, Slovenia
- 372  **Loss Balance in Tunable Ferroelectric FBARs**
Spartak Gevorgian, A. Vorobiev, Chalmers University of Technology, Sweden
- 376  **Lateral Mode Intrinsically Switchable Barium Titanate Film Bulk Acoustic Wave Resonators**
Victor Lee¹, Seyit Ahmet Sis¹, Seungku Lee¹, Amir Mortazawi¹, Xinen Zhu²
¹University of Michigan, USA; ²Shanghai Jiao Tong University, China
- 380  **Thick-Film Barium-Strontium-Titanate Varactors for RF Power Transistors**
*Alex Wiens¹, Olof Bengtsson², Holger Maune¹, Mohsen Sazegar¹, Wolfgang Heinrich²,
Rolf Jakoby¹*
¹Technische Universität Darmstadt, Germany; ²FBH, Germany
- 384  **A Simple Nonlinear mBVD Model Parameter Extraction Method for Intrinsically Switchable Ferroelectric FBARs**
Seungku Lee, Victor Lee, Seyit Ahmet Sis, Amir Mortazawi, University of Michigan, USA

EuMC/EuMIC04: Nonlinear Device Characterisation

Chair: Dominique Schreurs, KU Leuven — Co-Chair: Johannes Benedikt, Cardiff University











Venue Copenhagen, Time 08:30 – 10:10, Tuesday 8th October 2013

- 388   **Benefits and Validation of 4-Dummies De-Embedding Method for Characterization of SiGe HBT in G-Band**
Marina Deng¹, Sylvie Lepilliet¹, François Danneville¹, Gilles Dambrine¹, Daniel Gloria², Nicolas Derrier², Pascal Chevalier²
¹IEMN, France; ²STMicroelectronics, France
- 392   **On High Resolution, Pulse-Profiled mm-Wave Intermodulation Measurements**
J. Martens, Anritsu Company, USA
- 396   **Low Cost AM/AM and AM/PM Characterization Setup Based on Scalar Measurements**
Riccardo Danieli, Luca Piazzon, R. Giofrè, Paolo Colantonio, Franco Giannini, Università di Roma "Tor Vergata", Italy
- 400   **94-GHz Load Pull Measurements of SiGe HBT by Extracting Output Power Density in W-Band**
Issam Hasnaoui¹, Elodie Canderle¹, Pascal Chevalier², Daniel Gloria², Christophe Gaquiere¹
¹IEMN, France; ²STMicroelectronics, France
- 404   **Nonlinear Charge Trapping Effects on Pulsed I/V Characteristics of GaN FETs**
Alberto Santarelli¹, Rafael Cignani¹, Gian Piero Gibiino¹, Daniel Niessen¹, Pier Andrea Traverso¹, Corrado Florian¹, Claudio Lanzieri², Antonio Nanni², Dominique Schreurs³, Fabio Filicori¹
¹Università di Bologna, Italy; ²Selex ES, Italy; ³Katholieke Universiteit Leuven, Belgium

EuMC/EuMIC05: Innovative Design Approaches for GaN Power Amplifiers

Chair: Ernesto Limiti, University of Rome — Co-Chair: Renato Negra, RWTH









Venue Kiew, Time 13:50 – 15:30, Tuesday 8th October 2013

- 408   **L-Band AlGaN/GaN Power Amplifier with Protection Against Load Mismatch**
M. van Heijningen¹, G. van der Bent¹, Eric H. van der Houwen¹, A. Chowdhary², F.E. van Vliet¹
¹TNO, The Netherlands; ²ESA, The Netherlands
- 412   **A 65–100GHz Impedance Transforming Hybrid Coupler for a V-/W-Band AlGaN/GaN MMIC**
P. Pahl¹, S. Diebold¹, D. Schwantuschke², Sandrine Wagner², R. Lozar², Rüdiger Quay², Ingmar Kallfass³, Thomas Zwick¹
¹KIT, Germany; ²Fraunhofer IAF, Germany; ³Universität Stuttgart, Germany
- 416   **Load-Modulated GaN Power Amplifier Implementing Tunable Thick Film BST Components**
Mhd. Tareq Arnous¹, Alex Wiens², Sebastian Preis¹, Holger Maune², Khaled Bathich¹, M. Nikfalazar², Rolf Jakoby², Georg Boeck¹
¹Technische Universität Berlin, Germany; ²Technische Universität Darmstadt, Germany
- 420   **Class-BJ Power Amplifier Modes: The IMD Behavior of Reactive Terminations**
Vincenzo Carrubba, Stephan Maroldt, Rüdiger Quay, Oliver Ambacher, Fraunhofer IAF, Germany
- 424   **Wideband High Efficiency High Power GaN Amplifiers Using MIC and Quasi-MMIC Technologies**
C. Berrached¹, D. Bouw¹, M. Camiade¹, Denis Barataud²
¹United Monolithic Semiconductors, France; ²XLIM, France

EuMC/EuMIC06 : III-V Transceiver Circuits

Chair: Ingmar Kallfass, University of Stuttgart — Co-Chair: Rüdiger Quay, Fraunhofer IAF

Venue Riga, Time 13:50 – 15:30, Tuesday 8th October 2013

- 428   **QFN-Packaged Highly-Linear Cascode GaN LNA MMIC from 0.5 to 3GHz**
*Stephan Maroldt¹, Beatriz Aja², Friedbert van Raay¹, Sebastian Krause¹,
Peter Brückner¹, Rüdiger Quay¹*
¹Fraunhofer IAF, Germany; ²Universidad de Cantabria, Spain
- 432   **A 0-Level Packaged RF-MEMS Switched Wideband GaAs LNA MMIC**
*A. Gustafsson¹, C. Samuelsson², R. Malmqvist¹, S. Seok³, M. Fryziel³, N. Rolland³,
B. Grandchamp⁴, Tauno Vähä-Heikkilä⁵, R. Baggen⁶*
¹FOI, Sweden; ²SAAB Aerosystems, Sweden; ³IEMN, France; ⁴OMMIC, France; ⁵VTT
Technical Research Centre of Finland, Finland; ⁶IMST GmbH, Germany
- 436   **A Compact 94GHz FMCW Radar MMIC Based on 100nm InGaAs mHEMT Technology with Integrated Transmission Signal Conditioning**
*Christian Zech, Axel Hülsmann, Rainer Weber, A. Tessmann, Sandrine Wagner,
Michael Schlechtweg, Arnulf Leuther, Oliver Ambacher, Fraunhofer IAF, Germany*
- 440   **A 240GHz Quadrature Receiver and Transmitter for Data Transmission up to 40Gbit/s**
*D. Lopez-Diaz¹, A. Tessmann¹, Arnulf Leuther¹, Sandrine Wagner¹,
Michael Schlechtweg¹, Oliver Ambacher¹, F. Kurz², S. Koenig³, J. Antes³, F. Boes³,
R. Henneberger⁴, Ingmar Kallfass⁵*
¹Fraunhofer IAF, Germany; ²Siemens AG, Germany; ³KIT, Germany; ⁴Radiometer Physics
GmbH, Germany; ⁵Universität Stuttgart, Germany


EuMIC/EuMC Poster01 : EuMIC/EuMC Poster Session

Chair: Alexander Kölpin, University of Erlangen Nürnberg — Co-Chair: Dietmar Kissinger, University of Erlangen Nürnberg













Venue Exhibition Hall, Time 10:00 – 18:00, Tuesday 8th October 2013

















- 444   **Antenna Design and Characterization for a 61GHz Transceiver in eWLB Package**
*M. Pourmousavi¹, M. Wojnowski², Roman Agethen¹, G. Sommer², Robert Weigel¹,
A. Hagelauer¹*
¹FAU Erlangen-Nürnberg, Germany; ²Infineon Technologies, Germany
- 448   **Transmission Lines on Flexible Substrates with Minimized Dispersion and Losses**
Heinrich Wolf, Horst Gieser, Linus Maurer, Fraunhofer EMFT, Germany
- 452   **Liquid Crystal and Infrared Thermography on Coated SAW Devices**
C. Huck¹, H.P. Zidek², Thomas Ebner², Karl C. Wagner², Achim Wixforth¹
¹Universität Augsburg, Germany; ²TDK Corporation, Germany
- 456   **A Novel Method to Improve the Power Capabilities of Microwave Components**
Rui Wang¹, Yun Li¹, Na Zhang¹, Wanzhao Cui¹, Ye Ming², Yongning He²
¹CAST, China; ²Xi'an Jiaotong University, China
- 460   **Microwave Characterization of Ferroelectric Thin Films for Novel Compact Tunable BST Filters**
*Rosa De Paolis¹, Fabio Coccetti¹, Sandrine Payan², Anthony Rousseau²,
Mario Maglione², Guillaume Guegan³*
¹LAAS, France; ²ICMCB, France; ³STMicroelectronics, France
- 464   **A New Fail-Safe Switch for Fast Ethernet Networks with a Defined State in Case of DC-Power Loss: Design and Test**
M. Balducci¹, W. Fischer², P. Klose², S. Schnee³, Roberto Sorrentino⁴, Volker Ziegler³
¹Universität Ulm, Germany; ²Airbus Deutschland, Germany; ³EADS Innovation Works,
Germany; ⁴Università di Perugia, Italy

EuMIC/EuMC Poster01 continued ...











- 468   **Resonant Substrate-Integrated Near-Field Sensors with Improved Sensitivity**
Nora Haase, Arne F. Jacob, Technische Universität Hamburg-Harburg, Germany
- 472   **Terahertz Range Diode Based on Electron Field Emission of AlGa_N Microcathode**
N.M. Goncharuk, V.V. Malyshko, V.A. Orehovskiy, N.F. Karushkin, RI "Orion", Ukraine
- 476   **Flexible Polyethylene Terephthalate-Based Inkjet Printed CPW-Fed Monopole Antenna for 60GHz ISM Applications**
K. Hettak¹, Tyler N. Ross², R. James¹, A. Momciu¹, J. Wight²
¹Communications Research Centre Canada, Canada; ²Carleton University, Canada
- 480   **Pneumatically Switched Microwave and Antenna Structures**
Wayne S.T. Rowe, Xutao Tang, RMIT University, Australia
- 484   **Towards a Large-Signal Noise Model for GaN HEMT Devices**
Matthias Rudolph¹, Ralf Doerner²
¹Brandenburgische Technische Universität, Germany; ²FBH, Germany
- 488   **Extension of the Load-Line Theory by Investigating the Impact of the Knee-Voltage on Output-Power and Efficiency**
Pinarelllo Sandro¹, Jan-Erik Mueller¹, Robert Weigel²
¹Intel Mobile Communications, Germany; ²FAU Erlangen-Nürnberg, Germany
- 492   **High-Efficiency Power Amplifier MMICs in 100nm GaN Technology at Ka-Band Frequencies**
Jérôme Chéron¹, Michel Campovecchio¹, Raymond Quéré¹, D. Schwantuschke², Rüdiger Quay², Oliver Ambacher²
¹XLIM, France; ²Fraunhofer IAF, Germany

EuMIC/EuMC Poster01 continued ...

- 496   **A Robust Ku-Band Low Noise Amplifier Using an Industrial 0.25- μ m AlGa_N/Ga_N on SiC Process**
Davide Resca¹, Francesco Scappaviva¹, Corrado Florian², Stéphane Rochette³, Jean-Luc Muraro³, Valeria Di Giacomo Brunel⁴, Christophe Chang⁴, Didier Baglieri⁴
¹MEC, Italy; ²Università di Bologna, Italy; ³Thales Alenia Space, France; ⁴United Monolithic Semiconductors, France
- 500   **Nonlinear Transistor Modeling for Industrial 0.25- μ m AlGa_N-Ga_N HEMTs**
Christophe Chang¹, Valeria Di Giacomo Brunel¹, Didier Flortot¹, Jan Grünenpütt², Michael Hosch², Hervé Blanck²
¹United Monolithic Semiconductors, France; ²United Monolithic Semiconductors, Germany
- 504   **A Novel Topology of Matching Network for Realizing Broadband High Efficiency Continuous Class-F Power Amplifiers**
Renbin Tong, Songbai He, Bohai Zhang, Zhongpo Jiang, Xianyun Hou, Fei You, UESTC, China
- 508   **A Simplified Procedure for the Design of Continuous Class-F Power Amplifiers**
B. Merrick, J. King, T. Brazil, University College Dublin, Ireland
- 512   **Design Methodology for Distributed Power Amplifier in Software-Defined Radio Applications**
Diego Palombini, Andrea Bentini, Mirko Palomba, Sergio Dibello, Ernesto Limiti, Università di Roma "Tor Vergata", Italy
- 516   **Microwave Watt-Level Rectifiers for Power Recycling Applications**
Junfeng Xu¹, Wei Tai², David S. Ricketts³
¹MIT, USA; ²Carnegie Mellon University, USA; ³North Carolina State University, USA

- 520   **Efficiency Enhancement of an Envelope Tracking Power Amplifier Combining Supply Shaping and Dynamic Biasing**
F.F. Tafuri, D. Sira, O.K. Jensen, T. Larsen, Aalborg University, Denmark
- 524   **Wideband High Efficiency Multi-Band, Multi-Mode (LTE/WCDMA/GSM) Power Amplifier for Mobile Terminals**
John C. Clifton¹, Alan Lawrenson¹, Hideshi Motoyama², Kazumasa Kohama²
¹Sony Europe, UK; ²Sony Corporation, Japan
- 528   **A Low Phase Noise Quadrature Ring Oscillator Using 0.5 μ m GaN-on-Si HEMT**
Fan-Hsiu Huang, Guan-Ting Lee, Hsien-Chin Chiu, Chang Gung University, Taiwan
- 532   **Variable Gain Amplifier Architecture with Constant Matching and Insertion Phase**
Mirko Palomba¹, Andrea Bentini¹, Riccardo Cleriti¹, Ernesto Limiti¹, Mauro Ferrari²
¹Università di Roma "Tor Vergata", Italy; ²Elettronica S.p.A., Italy
- 536   **A 159–169GHz Frequency Source with 1.26mW Peak Output Power in 65nm CMOS**
Bassam Khamaisi, Eran Socher, Tel Aviv University, Israel
- 540   **A Monolithic DC-70-GHz Broadband Distributed Amplifier Using 90-nm CMOS Process**
Si-Hua Chen¹, Shou-Hsien Weng¹, Yu-Cheng Liu¹, Hong-Yeh Chang¹, Jeng-Han Tsai², Meng-Han Li¹, Shu-Yan Huang¹
¹National Central University, Taiwan; ²National Taiwan Normal University, Taiwan
- 544   **Criteria for Maximum Spurious Free Dynamic Range of a Receiver System**
Justin R. Magers, National Instruments, USA
- 548   **Integrated RF Tunable Filter Based on Recursive Architecture and its Application**
Tatsuya Omori¹, Shinichiro Nishiuma¹, Ken Seo¹, Chang-Jun Ahn¹, Ken-ya Hashimoto¹, Mikio Kamada²
¹Chiba University, Japan; ²Asahi Kasei Microdevices Corp., Japan

- 552   **Concurrent Dual-Band 1-Bit Digital Transmitter Using Band-Pass Delta-Sigma Modulator**
Takashi Maehata¹, Kazuyuki Totani¹, Suguru Kameda², Noriharu Suematsu²
¹Sumitomo Electric Industries Ltd., Japan; ²Tohoku University, Japan
- 556   **Blind Nonlinear Compensation Technique for RF Receiver Front-End**
Yuelin Ma, Yasushi Yamao, University of Electro-Communications, Japan
- 560   **Design of a 24GHz Analog Frontend for an Optically Powered RFID Transponder for the Integration into Metallic Components**
Johannes Meyer, Quang Huy Dao, Bernd Geck, Leibniz Universität Hannover, Germany
- 564   **Frequency Enhancement of a 40-nm CMOS Static Frequency Divider by Negative Capacitance**
V. Issakov¹, G. Mangraviti¹, V. Szortyka¹, V. Vidojkovic¹, G. Vandersteen², P. Wambacq¹
¹IMEC, Belgium; ²Vrije Universiteit Brussel, Belgium
- 568   **InP DHBT TIA-DMUX Integrated Circuit for 100-Gb/s Optical Communication Systems**
J.-Y. Dupuy¹, A. Konczykowska¹, F. Jorge¹, M. Riet¹, P. Berdaquer¹, V. Nodjiadjim¹, J. Godin¹, A. Ouslimani²
¹III-V Lab, France; ²ECS-Lab (EA 3649), France
- 572   **Design and Breakdown Behavior of 77GHz Variable Gain Power Amplifiers in SiGe-Technology**
K. Borutta¹, B. Laemmler¹, Christoph Wagner², Linus Maurer², Robert Weigel¹, Dietmar Kissinger¹
¹FAU Erlangen-Nürnberg, Germany; ²DICE, Austria
- 576   **180GHz Frequency Doubler in Transferred-Substrate InP HBT Technology with 4dBm Output Power**
T. Jensen, Tomas Kraemer, Viktor Krozer, Wolfgang Heinrich, FBH, Germany

- 580   **An Efficient SiGe Double-Balanced Mixer with a Differential Rat-Race Coupler**
Herman Jalli Ng¹, Martin Jahn¹, Reinhard Feger¹, Christoph Wagner², Andreas Stelzer¹
¹Johannes Kepler Universität Linz, Austria; ²DICE, Austria
- 584   **A 60-GHz High-Gain, Low-Power, 3.7-dB Noise-Figure Low-Noise Amplifier in 90-nm CMOS**
Hsin-Chih Kuo, Huey-Ru Chuang, National Cheng Kung University, Taiwan
- 588   **E-Band Receiver and Transmitter Modules with Simply Reflow-Soldered 3-D WLCSP MMIC's**
K. Tsukashima¹, M. Kubota¹, O. Baba¹, T. Kawasaki¹, A. Yonamine¹, T. Tokumitsu¹, Y. Hasegawa²
¹Sumitomo Electric Industries Ltd., Japan; ²Sumitomo Electric Device Innovations Inc., Japan
- 592   **An Improved Switched Injection-Locked Oscillator for Ranging and Communication Systems**
Alexander Esswein, Robert Weigel, Thomas Ussmüller, Christian Carlowitz, Martin Vossiek, FAU Erlangen-Nürnberg, Germany
- 596   **Next-Generation CMOS-on-Insulator Multi-Element Network for Broadband Antenna Tuning**
Tero Ranta, Richard Whatley, Chih-Chieh Cheng, Marc Facchini, Peregrine Semiconductor Corporation, USA