

2014 9th European Microwave Integrated Circuit Conference

(EuMIC 2014)

**Rome, Italy
6-7 October 2014**



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EuMIC01: Modelling and Design of Active and Passive (M)MIC Components

Chair: Ali Rezazadeh, University of Manchester, UK

Co-Chair: Giovanni Ghione, Politecnico di Torino, Italy

Venue Aurelia, Time 09:00 – 10:40, Monday 6th October 2014

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Bo-Rong Lin¹, Nick G.M. Tao², Chien-Ping Lee², Tim Henderson², Barry J.F. Lin²
¹National Chiao Tung University, Taiwan; ²TriQuint Semiconductor, USA
- 5 **Characterization and Simulation of Traps in InGaP/GaAs HBT by GR Noise Analysis**
Ahmad Al Hajjar¹, Jean-Christophe Nallatamby¹, Michel Prigent¹, Jean-Claude Jacquet²
¹XLIM, France; ²III-V Lab, France
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- 13 **Analysis and Modeling of Skin and Proximity Effects for Millimeter-Wave Inductors Design in Nanoscale Si CMOS**
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- 17 **Integrated RF Transformer and Power Combiner Design in 150nm CMOS Process**
Errikos Lourandakis¹, Konstantinos Karouzakis¹, Padelis Papadopoulos¹, José Chicharro², Robert Weigel²
¹Helic, USA; ²FAU Erlangen-Nürnberg, Germany

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EuMIC02: Transmitter and Receiver Circuits

Chair: Christoph Scheytt, Universität Paderborn, Germany

Co-Chair: Frank van den Bogaart, TNO

Venue Cecilia, Time 09:00 – 10:40, Monday 6th October 2014

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¹Mitsubishi Electric, Japan; ²Tohoku University, Japan
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- 29 **240GHz Transmitter and Receiver for 3D Imaging System in SiGe BiCMOS Technology**
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¹Silicon Radar, Germany; ²IHP, Germany
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Paul Klatser¹, Rinus Boot¹, Gerard Voshaar¹, Chris Roeloffzen²
¹Bruco Integrated Circuits, The Netherlands; ²University of Twente, The Netherlands

EuMIC03: Millimetre-Wave PA in Silicon Technology

Chair: Chafik Meliani, IHP, Germany

Co-Chair: Ullrich Pfeiffer, Bergische Universität Wuppertal, Germany

Venue Flavia, Time 09:00 - 10:40, Monday 6th October 2014

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¹IMS (UMR 5218), France; ²STMicroelectronics, France
- 45 **An 8-Way Power-Combining E-band Amplifier in a SiGe HBT Technology**
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¹Sivers IMA, Sweden; ²IHP, Germany
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EuMIC04: Microwave Circuits

Chair: Massimo C. Comparini, Telespazio

Co-Chair: Éric Tournier, LAAS/CNRS

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¹Wave Advanced Technology Applications, Italy; ²Università di Roma "Tor Vergata", Italy
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Chair: Herbert Zirath, Chalmers University of Technology, Sweden

Co-Chair: Michael Schlechtweg, Fraunhofer IAF, Germany

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¹IEMN, France; ²CRHEA, France
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¹M/A-COM Technology Solutions, UK; ²M/A-COM Technology Solutions, USA
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Chair: Andreas Thiede, Universität Paderborn, Germany

Co-Chair: Manfred Berroth, Universität Stuttgart, Germany

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¹imec, Belgium; ²Vrije Universiteit Brussel, Belgium; ³Intel Mobile Communications, Germany
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Chair: Shmuel Auster, Elta Systems

Co-Chair: Angel Mediavilla, Universidad de Cantabria, Spain

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Andrea Malignaggi, Amin Hamidian, Georg Boeck, Technische Universität Berlin, Germany
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Wei-Ling Chang¹, Chinchun Meng¹, Chih-Kai Chang¹, Guo-Wei Huang²
¹National Chiao Tung University, Taiwan; ²NARLabs, Taiwan
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I. Kallfass¹, G. Eren¹, R. Weber², S. Wagner², Dirk Schwantuschke², R. Quay², Oliver Ambacher²
¹Universität Stuttgart, Germany; ²Fraunhofer IAF, Germany
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¹KIT, Germany; ²Fraunhofer IAF, Germany; ³Universität Stuttgart, Germany
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Chair: Giovanni Ghione, Politecnico di Torino, Italy

Co-Chair: Ernesto Limiti, Università di Roma “Tor Vergata”, Italy

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¹University College London, UK; ²Diamond Microwave Devices, UK
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¹CEA-LIST, France; ²GEMaC, France
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S.A.O. Russell¹, D.A.J. Moran¹, C. Verona², Ernesto Limiti², F. Cappelluti³, G. Ghione³, A.R. Barnes⁴
¹University of Glasgow, UK; ²Università di Roma “Tor Vergata”, Italy; ³Politecnico di Torino, Italy; ⁴ESA, The Netherlands

EuMIC10: mm-Wave Circuits and Components

Chair: Frank E. van Vliet, TNO, The Netherlands

Co-Chair: Ingmar Kalfass, Universität Stuttgart, Germany

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¹IBM Haifa Research Lab, Israel; ²Tel Aviv University, Israel
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D. Müller¹, J. Längst², Axel Tessmann³, Arnulf Leather³, Thomas Zwick¹, I. Kalfass²
¹KIT, Germany; ²Universität Stuttgart, Germany; ³Fraunhofer IAF, Germany

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EuMIC11: Low-Noise Amplifiers and Subsystems

Chair: Alina Caddemi, Università di Messina, Italy

Co-Chair: Ernesto Limiti, Università di Roma "Tor Vergata", Italy

Venue Aurelia, Time 09:00 - 10:40, Tuesday 7th October 2014

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¹Bergische Universität Wuppertal, Germany; ²IHP, Germany
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Chair: Alberto Santarelli, Università di Bologna, Italy

Co-Chair: Teresa Martin Guerrero, Universidad de Málaga, Spain

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¹Università di Bologna, Italy; ²United Monolithic Semiconductors, France; ³Katholieke Universiteit Leuven, Belgium
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Valeria Vadalà¹, Antonio Raffo¹, Giorgio Vannini¹, Gustavo Avolio², Dominique Schreurs²
¹Università di Ferrara, Italy; ²Katholieke Universiteit Leuven, Belgium
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Mohammad A. Alim¹, Ali A. Rezazadeh¹, Mayahsa M. Ali¹, Emerson P. Sinulingga¹, Peter B. Kyabaggu¹, Yongjian Zhang¹, Christophe Gaquière²
¹University of Manchester, UK; ²IEMN, France
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Alina Caddemi, Giovanni Crupi, Giuseppe Salvo, Università di Messina, Italy

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Chair: Claudio Lanzieri, Selex ES, Italy

Co-Chair: Paolo Colantonio, Università di Roma "Tor Vergata", Italy

Venue Domizia, Time 09:00 – 10:40, Tuesday 7th October 2014

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¹IQE Europe, UK; ²University of Bristol, UK; ³IQE Nanogan, UK
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Michael Mikulla¹, Sabine Storm², Niklas Henelius³, Marie-Antoinette Poisson⁴, Enrico Zanoni⁵, Martin Kuball⁶
¹Fraunhofer IAF, Germany; ²SiCrystal, Germany; ³Norstel, Sweden; ⁴III-V Lab, France; ⁵Università di Padova, Italy; ⁶University of Bristol, UK
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¹United Monolithic Semiconductors, France; ²United Monolithic Semiconductors, Germany
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A.R. Barnes, F. Vitobello, ESA, The Netherlands

EuMIC Poster: EuMIC Poster Session

Chair: Antonio Raffo, Università di Ferrara, Italy

Co-Chair: Paolo Colantonio, Università di Roma "Tor Vergata", Italy

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Anthony E. Parker¹, Simon J. Mahon²
¹Macquarie University, Australia; ²M/A-COM Technology Solutions, Australia
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¹University of Oulu, Finland; ²Universidade de Aveiro, Portugal
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¹National Central University, Taiwan; ²WIN Semiconductors, Taiwan
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¹Kyushu University, Japan; ²Chiba University, Japan; ³Tohoku University, Japan; ⁴Taiyo Yuden, Japan
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¹National Central University, Taiwan; ²ITRI, Taiwan
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¹FOI, Sweden; ²Uppsala University, Sweden; ³IHP, Germany
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¹Sharp, Japan; ²Hiroshima University, Japan
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- 301 **W-Band IQ Sub-Harmonic Mixers with Low LO Power for Cryogenic Operation in Large Arrays**
R. Gawande¹, R. Reeves¹, L. Samoska², K. Cleary¹, A.C. Readhead¹, T. Gaier², P. Kangaslahti², M. Varonen², S. Church³, K. Devaraj³, M. Sieth³, M. Morgan⁴
¹Caltech, USA; ²Jet Propulsion Laboratory, USA; ³Stanford University, USA; ⁴National Radio Astronomy Observatory, USA
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Yu Ye, Ling-Yun Li, Rui Tong, Xiao-Wei Sun, SIMIT, China

EuMIC 2014

EuMC/EuMIC01 : High Linearity CMOS Power Amplifiers

Chair: Eric Kerhervé, IMS (UMR 5218), France

Co-Chair: Jochen Rascher, FAU Erlangen-Nürnberg, Germany

Venue Baebiana, Time 14:20 - 16:00, Monday 6th October 2014

- 309 **A 57-66GHz Power Amplifier with a Linearization Technique in 65-nm CMOS Process**
Jin-Fu Yeh¹, Jen-Hao Cheng¹, Jeng-Han Tsai², Tian-Wei Huang¹
¹National Taiwan University, Taiwan; ²National Taiwan Normal University, Taiwan
- N/A **A High-Linearity Watt-Level 2.45-GHz CMOS Power Amplifier with Adaptive Bias and Integrated Diode Linearizer**
Zhixiong Ren, Lanqi Liu, Kefeng Zhang, Dongsheng Liu, Zhenglin Liu, Xuecheng Zou, HUST, China
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¹KETI, Korea; ²Seoul National University, Korea; ³Dongbu Hitek, Korea
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¹Wave Technology, Japan; ²Tohoku University, Japan
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¹Universidade de Brasília, Brazil; ²IMS (UMR 5218), France; ³STMicroelectronics, France

EuMC/EuMIC02 : GaN RF PA Solutions

Chair: Olof Bengtsson, FBH, Germany

Co-Chair: Rocco Giofrè, Università di Roma "Tor Vergata", Italy

Venue Flavia, Time 14:20 - 16:00, Monday 6th October 2014

- 329 **Gate Waveform Effects on High-Efficiency PA Design: An Experimental Validation**
*Gianni Bosi¹, Antonio Raffo¹, Giorgio Vannini¹, Elisa Cipriani², P. Colantonio²,
Franco Giannini²*
¹Università di Ferrara, Italy; ²Università di Roma "Tor Vergata", Italy
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*Gijs van der Bent, Peter de Hek, Marcel van der Graaf, Frank E. van Vliet, TNO, The
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John Papapolymerou, Georgia Institute of Technology, USA*
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Amplifier Including Package Engineering**
*E. Ture, V. Carrubba, S. Maroldt, M. Mußer, H. Walcher, R. Quay, Oliver Ambacher,
Fraunhofer IAF, Germany*

EuMIC 2014

EuMC/EuMIC03 : From Device Physics to Linear Power Amplifiers

Chair: Jean-François Villemazet, Thales Alenia Space

Co-Chair: Paul J. Tasker, Cardiff University, UK

Venue Baebiana, Time 16:40 - 18:20, Monday 6th October 2014

- 349 **Improved Phase Linearity in Source Field Plate AlGaIn/GaN HEMTs**
*P. Colantonio¹, Franco Giannini¹, R. Giofrè¹, L. Piazzon¹, Vittorio Camarchia²,
G. Ghione², M. Pirola², Roberto Quaglia², A. Nanni³, A. Pantellini³, C. Lanzieri³*
¹Università di Roma "Tor Vergata", Italy; ²Politecnico di Torino, Italy; ³Selex ES, Italy
- 353 **Soft Compression and the Origins of Nonlinear Behavior of GaN HEMTs**
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- 361 **High Bandwidth Investigations of a Baseband Linearization Approach Formulated in
the Envelope Domain Under Modulated Stimulus**
*F.L. Ogboi¹, P.J. Tasker¹, M. Akmal¹, J. Lees¹, J. Benedikt¹, S. Bensmida², K. Morris²,
M. Beach², J. McGeehan²*
¹Cardiff University, UK; ²University of Bristol, UK
- 365 **Impact of Dispersion Caused by Bandwidth Limitation on the Linearity of Multilevel
LINC Transmitters**
*Junqing Guan, Xuan Anh Nghiem, Ahmed Farouk Aref, Renato Negra, RWTH Aachen
University, Germany*

EuMC/EuMIC04: Device and Circuit-Level Modelling Techniques

Chair: *Giorgio Leuzzi, Università dell'Aquila, Italy*

Co-Chair: *Fabrizio Bonani, Politecnico di Torino, Italy*

Venue *Cecilia, Time 16:40 – 18:20, Monday 6th October 2014*

- 369 **Mixer-Like Modeling with Dynamic Baseband Characterization for Supply-Modulated PAs**
Gian Piero Gibiino¹, Gustavo Avolio², Dominique Schreurs², Alberto Santarelli¹, Fabio Filicori¹
¹Università di Bologna, Italy; ²Katholieke Universiteit Leuven, Belgium
- 373 **GaN-HEMT Nonlinear Modeling of Single-Ended and Doherty High-Power Amplifiers**
Rached Hajji, Matthew Poulton, D.B. Crittenden, Jeff Gengler, Peter Xia, TriQuint Semiconductor, USA
- 377 **Power Amplifier Behavioral Model with Focus on NL and Coupled Dynamics for Radar System Simulation**
C. Maziere¹, D. Gapillout¹, T. Gasseling¹, T. Decaesteke², Y. Mancuso²
¹AMCAD Engineering, France; ²Thales Systèmes Aéroportés, France
- 381 **Multi-Port De-Embedding Methodology Based on Exponential Mapping**
Mauro Ballicchia, Claudio Turchetti, Simone Orcioni, Università Politecnica delle Marche, Italy
- 385 **Memristors as Non-Linear Behavioral Models for Passive Inter-Modulation Simulation**
Jacques Sombrin¹, Patrice Michel¹, Geoffroy Soubercaze-Pun², Isabelle Albert²
¹TéSA, France; ²CNES, France

EuMIC 2014

EuMC/EuMIC05: GaN Solutions for X- and K-Bands

Chair: *Franco Giannini, Università di Roma "Tor Vergata", Italy*

Co-Chair: *Rüdiger Quay, Fraunhofer IAF, Germany*

Venue *Flavia, Time 16:40 – 18:20, Monday 6th October 2014*

- 389 **4W X-Band High Efficiency MMIC PA with Output Harmonic Injection**
Asmita Dani¹, Michael Coffey², Zoya Popović²
¹Infineon Technologies, USA; ²University of Colorado at Boulder, USA
- 393 **X-Band 10W MMIC High-Gain Power Amplifier with up to 60% PAE**
David Sardin, Tibault Reveyrand, Zoya Popović, University of Colorado at Boulder, USA
- 397 **A 25W X-Band GaN PA in SMT Package**
J.G. Leckey, M/A-COM Technology Solutions, UK
- 400 **Comparison of Second-Harmonic Matching of AlGaN/GaN HEMTs at K-Band**
C. Friesicke¹, R. Quay², Arne F. Jacob¹
¹Technische Universität Hamburg-Harburg, Germany; ²Fraunhofer IAF, Germany
- 404 **A 20-Watt Ka-Band GaN High Power Amplifier MMIC**
C.Y. Ng, K. Takagi, T. Senju, K. Matsushita, H. Sakurai, K. Onodera, S. Nakanishi, K. Kuroda, T. Soejima, Toshiba, Japan

EuMC/EuMIC06: Advanced Architectures for Power Amplifiers

Chair: Georg Fischer, FAU Erlangen-Nürnberg, Germany

Co-Chair: Marco Pirola, Politecnico di Torino, Italy

Venue Baebiana, Time 09:00 - 10:40, Tuesday 7th October 2014

- 408 **Wideband Envelope Amplifier for Envelope-Tracking Operation of Handset Power Amplifier**
Jooseung Kim¹, Dongsu Kim², Yunsung Cho¹, Daehyun Kang³, Sangsu Jin¹, Byungjoon Park¹, Kyunghoon Moon¹, Hadong Jin¹, Seungbeom Koo¹, Bumman Kim¹
¹POSTECH, Korea; ²Samsung Electronics, Korea; ³Broadcom, USA
- 412 **Experimental Investigation of Signal Time Misalignment in Dynamic Load Modulation Amplifiers**
Konstantinos Mimis, Gavin T. Watkins, Toshiba Research Europe, UK
- N/A **Effect of the Level Values of Three-Level EDSM on the Efficiency of Overall Transmitter**
Fahmi Elsayed, Mohamed Helaoui, Fadhel Ghannouchi, University of Calgary, Canada
- 420 **Phase-Modulated DSM-PWM Hybrids with Pulse Length Restriction for Switch-Mode Power Amplifiers**
Daniel Markert¹, Christoph Haslach¹, Holger Heimpel¹, Andreas Pascht¹, Georg Fischer²
¹Bell Labs, Germany; ²FAU Erlangen-Nürnberg, Germany

EuMIC 2014

EuMC/EuMIC07: CMOS and BiCMOS Solutions for RF and Millimetre-Wave PA

Chair: Eric Kerhervé, IMS (UMR 5218), France

Co-Chair: Baudouin Martineau, STMicroelectronics, France

Venue Flavia, Time 09:00 - 10:40, Tuesday 7th October 2014

- 424 **A Broadband 75 to 140GHz Amplifier in 0.13- μ m SiGe HBT Process**
Ping-Han Ho¹, Yu-Hsuan Lin¹, Huei Wang¹, Chafik Meliani²
¹National Taiwan University, Taiwan; ²IHP, Germany
- 428 **5-GHz Band SiGe HBT Linear Power Amplifier IC with Novel CMOS Active Bias Circuit for WLAN Applications**
Xin Yang¹, Tsuyoshi Sugiura², Norihisa Otani², Tadamasu Murakami², Eiichiro Otobe², Toshihiko Yoshimasu¹
¹Waseda University, Japan; ²Samsung R&D Institute Japan, Japan
- 432 **A K-Band Power Amplifier with Adaptive Bias in 90-nm CMOS**
Jenny Yi-Chun Liu, Chin-Tung Chan, Shawn S.H. Hsu, National Tsing Hua University, Taiwan
- 436 **Transformer Based Dual-Power-Mode CMOS Power Amplifier for Handset Applications**
Yunsung Cho¹, Byungjoon Park¹, Sangsu Jin¹, Jooseung Kim¹, Kyunghoon Moon¹, Daehyun Kang², Hadong Jin¹, Seungbeom Koo¹, Bumman Kim¹
¹POSTECH, Korea; ²Broadcom, USA

EuMC/EuMIC08: Technologies and Designs for Low-Noise Circuits

Chair: Bumman Kim, POSTECH, Korea

Co-Chair: Carlos Camacho-Penalosa, Universidad de Malaga

Venue Aurelia, Time 14:20 – 16:00, Tuesday 7th October 2014

- 440 **Improved Microwave Noise Performance in 0.15 μ m AlGaN/AlN/GaN HEMTs on Silicon**
G.I. Ng¹, S. Arulkumaran², K. Ranjan², S. Vicknesh²
¹Nanyang Technological University, Singapore; ²TL@NTU, Singapore
- 444 **Hybrid LNAs with SiGe HBTs on 7th Generation BiCMOS Process**
Saswata Bhaumik¹, Jan Geralt bij de Vaate²
¹NXP Semiconductors, The Netherlands; ²ASTRON, The Netherlands
- 448 **A 0.18 μ m CMOS Current Reuse Ultra-Wideband Low Noise Amplifier (UWB-LNA) with Minimized Group Delay Variations**
K. Yousef¹, H. Jia², Ramesh K. Pokharel², Ahmed Allam¹, M. Ragab¹, Haruichi Kanaya²
¹E-JUST, Egypt; ²Kyushu University, Japan
- 452 **Compact, Low-Power, Single-Ended and Differential SiGe W-Band LNAs**
Farzad Inanlou, Wasif T. Khan, Peter Song, Saeed Zeinolabedinzadeh, Robert L. Schmid, Taiyun Chi, A. Çağrı Ulusoy, John Papapolymerou, Hua Wang, John D. Cressler, Georgia Institute of Technology, USA
- 456 **A High Gain E-Band MMIC LNA in GaAs 0.1- μ m pHEMT Process for Radio Astronomy Applications**
You-Tang Lee, Chau-Ching Chiong, Dow-Chih Niu, Huei Wang, National Taiwan University, Taiwan

EuMIC 2014

EuMC/EuMIC09: Characterisation and Modelling of Dispersion and Noise in Microwave Transistors

Chair: Angel Mediavilla, Universidad de Cantabria, Spain

Co-Chair: Matthias Rudolph, Brandenburgische Technische Universität, Germany

Venue Cecilia, Time 14:20 – 16:00, Tuesday 7th October 2014

- 460 **VSWR Testing of RF-Power GaN Transistors**
Olof Bengtsson¹, Serguei Chevtchenko¹, Amitabh Chowdhary², Wolfgang Heinrich¹, Joachim Würfl¹
¹FBH, Germany; ²ESA, The Netherlands
- 464 **Trap Characterization of Microwave GaN HEMTs Based on Frequency Dispersion of the Output-Admittance**
C. Potier¹, A. Martin¹, M. Campovecchio¹, S. Laurent¹, Raymond Quéré¹, Jean-Claude Jacquet², O. Jardel², S. Piotrowicz², S. Delage²
¹XLIM, France; ²III-V Lab, France
- 468 **Low Frequency Noise Measurements — A Technology Benchmark with Target on Oscillator Applications**
Thanh Ngoc Thi Do, Mikael Hörberg, Szhou Lai, Dan Kuylenstierna, Chalmers University of Technology, Sweden
- 472 **GaN HEMT Noise Model Performance Under Nonlinear Operation**
Matthias Rudolph¹, Laurent Escotte², Ralf Doerner³
¹Brandenburgische Technische Universität, Germany; ²LAAS, France; ³FBH, Germany
- 476 **A Scalable HEMT Noise Model Based on FW-EM Analyses**
Andrea Nalli¹, Antonio Raffo¹, Giorgio Vannini¹, Sara D'Angelo², Davide Resca², Francesco Scappaviva², Giovanni Crupi³, Giuseppe Salvo³, Alina Caddemi³
¹Università di Ferrara, Italy; ²MEC, Italy; ³Università di Messina, Italy

EuMC/EuMIC10: Focus Session on System Level Characterisation and Modelling for Mobile Communications

Chair: Alessandro Cidronali, Università di Firenze, Italy

Co-Chair: Vittorio Camarchia, Politecnico di Torino, Italy

Venue Domizia, Time 14:20 – 16:00, Tuesday 7th October 2014

- 480 **Large-Signal Characterization of a Mixed-Signal SoC Receiver for Multiband SDR/CR Designs**
Diogo C. Ribeiro, Pedro Miguel Cruz, Nuno Borges Carvalho, Universidade de Aveiro, Portugal
- 484 **X-Band Outphasing Power Amplifier with Internal Load Modulation Measurements**
Michael Litchfield, Tibault Reveyrand, Zoya Popović, University of Colorado at Boulder, USA
- 488 **Frequency Extension of System Level Characterization and Predistortion Setup for On-Wafer Microwave Power Amplifiers**
Roberto Quaglia, Tao Jiang, Vittorio Camarchia, Politecnico di Torino, Italy
- 492 **A Low-Complexity Memoryless Model for Envelope Tracking RF Power Amplifiers**
G. Montoro¹, P.L. Gilabert¹, J.A. Garcia², M.N. Ruiz², R. Marante²
¹Universitat Politècnica de Catalunya, Spain; ²Universidad de Cantabria, Spain
- 496 **Envelope Tracking PA X-Parameters Characterization for Transceivers System Level Analysis**
Alessandro Cidronali, Stefano Maddio, Giovanni Collodi, Gianfranco Manes, Università di Firenze, Italy

EuMC/EuMIC11: Focus Session on Advances and New Applications in Carbon-Based Nanoelectronics

Chair: Luca Pierantoni, Università Politecnica delle Marche, Italy

Co-Chair: Dominique Baillargeat, XLIM, France

Venue Flavia, Time 14:20 – 16:00, Tuesday 7th October 2014

- 500 **Microwave Propagation Along Graphene at Microscopic and Macroscopic Scales**
Yi-Li Xu, Xing-Chang Wei, Erping Li, Gao-Le Dai, Zhejiang University, China
- 504 **Carbon Nanostructures Dedicated to RF Interconnect Management**
C. Brun¹, Dominique Baillargeat¹, Y.C. Chong², D. Tan², Philippe Coquet², B.K. Tay²
¹XLIM, France; ²CINTRA, Singapore
- 508 **High Frequency Characterization and Compact Electrical Modelling of Graphene Field Effect Transistors**
P. Nakkala¹, A. Martin¹, M. Campovecchio¹, Henri Happy², Mohamed Salah Khenissa², Mohamed Moez Belhaj², David Mele², Ivy Colambo², Emiliano Pallecchi², Dominique Vignaud²
¹XLIM, France; ²IEMN, France
- 512 **Microwave Applications of Graphene for Tunable Devices**
Luca Pierantoni¹, Davide Mencarelli¹, Maurizio Bozzi², Riccardo Moro², Stefano Bellucci³
¹Università Politecnica delle Marche, Italy; ²Università di Pavia, Italy; ³INFN-LNF, Italy

EuMC/EuMIC Poster: EuMC/EuMIC Poster Session

Chair: Luca Catarinucci, Università del Salento, Italy

Co-Chair: Diego Masotti, Università di Bologna, Italy

Venue Exhibition Hall, Time 10:00 - 17:30, Tuesday 7th October 2014

- 516 **Compact 10~13GHz GaN Low Noise Amplifier MMIC Using Simple Matching and Bias Circuits**
Woojin Chang¹, Young-Rak Park¹, Jae-Kyoung Mun¹, Sang-Choon Ko¹, Gye-Ik Jeon²
¹ETRI, Korea; ²RFCore, Korea
- 520 **Genetic-Algorithm-Based Synthesis of Low-Noise Amplifiers with Automatic Selection of Active Elements and DC Biases**
A.A. Kalentyev, L.I. Babak, D.V. Garays, TUSUR, Russia
- 524 **An X-Band Low-Power CMOS Low Noise Amplifier with Transformer Inter-Stage Matching Networks**
Jeng-Han Tsai, Wang-Long Huang, Cheng-Yen Lin, Ruei-An Chang, National Taiwan Normal University, Taiwan
- N/A **A 60-GHz LNA with Feed-Forward Bandwidth Extension Technique for Wireless NoC Application**
Xinmin Yu¹, Deukhyoun Heo¹, Partha Pratim Pande¹, Shahriar Mirabbasi²
¹Washington State University, USA; ²University of British Columbia, Canada
- N/A **Radio-Channel Characterization of an Over-Sea Communication**
Ismail Ben Mabrouk¹, J.C. Reyes-Guerrero²
¹University of Tabuk, Saudi Arabia; ²University of Bergen, Norway
- 536 **Blind Detection of Cyclostationary Signals Taking Advantage of Cyclic Spectrum Leakage**
Daniel Malafaia, José Vieira, Ana Tomé, Universidade de Aveiro, Portugal
- 540 **A 100W Decade Bandwidth, High-Efficiency GaN Amplifier**
James Custer, John Walker, Integra Technologies, USA
- 544 **A 2.1/2.6GHz Dual-Band High-Efficiency GaN HEMT Amplifier with Harmonic Reactive Terminations**
Jun Enomoto, Ryo Ishikawa, Kazuhiko Honjo, University of Electro-Communications, Japan
- 548 **High Power K-Band GaN on SiC CPW Monolithic Power Amplifier**
Omer Cengiz¹, Ozlem A. Sen², Ekmel Ozbay²
¹Middle East Technical University, Turkey; ²Bilkent University, Turkey
- 552 **Design of a GaN HEMT Power Amplifier Using Resistive Loaded Harmonic Tuning**
Sebastian Preis¹, Zihui Zhang², Mhd. Tareq Arnous²
¹FBH, Germany; ²Technische Universität Berlin, Germany
- 556 **Filtering Slot Antenna Using Coupled Line Resonator**
Kevin Nadaud¹, Dominique Lo Hine Tong², Erwan Fourn¹
¹IETR, France; ²Technicolor Connected Home, France
- 560 **Parasitic Elements Based Decoupling Technique for Monopole Four Square Array Antenna**
Sana Salama, Klaus Solbach, Universität Duisburg-Essen, Germany
- 564 **Bandwidth Enhanced Tri-Band Monopole Slot Antenna on Ultra-Thin Metal Housed Devices**
Soo-Ji Lee, Dong-Jin Lee, Sol-Ji Yoo, Kwang-Seok Kim, Tae-Dong Yeo, Jong-Won Yu, KAIST, Korea
- 568 **Design of a Near-Field-Focused Substrate Integrated Planar Array Antenna**
Lei Wang, Yu Jian Cheng, Fei Xue, UESTC, China

	<i>EuMC/EuMIC Poster Session continued...</i>
N/A	Accurate Modeling of PFD/CP for Fast Simulation of PLL Transient Dynamics <i>Bo Wang¹, Edouard Ngoya²</i> ¹ Peking University, China; ² XLIM, France
576	On the Unconditional Stability of N-Port Networks <i>Sergio Colangeli, Riccardo Cleriti, Diego Palombini, Ernesto Limiti, Università di Roma "Tor Vergata", Italy</i>
580	Cryogenic Probing of mm-Wave MMIC LNAs for Large Focal-Plane Arrays in Radio-Astronomy <i>R. Reeves¹, K. Cleary¹, R. Gawande¹, J. Kooi¹, J. Lamb¹, A.C. Readhead¹, S. Weinreb¹, T. Gaier², P. Kangaslahti², D. Russell², L. Samoska², M. Varonen³, R. Lai⁴, S. Sarkozy⁴</i> ¹ Caltech, USA; ² Jet Propulsion Laboratory, USA; ³ Aalto University, Finland; ⁴ Northrop Grumman, USA
584	Inkjet Printed Flexible Transmission Lines for High Frequency Applications up to 67GHz <i>Mohamed Moez Belhaj, W. Wei, Emiliano Pallecchi, Colin Mismar, Isabel Roch-jeune, Henri Happy, IEMN, France</i>
588	Designs of Third Harmonic Generators Using a Left-Handed Nonlinear Transmission Line on Microstrip-Line and Suspended Stripline <i>In-bok Kim, Hong-Joon Kim, Hyun-Chul Choi, Kang Wook Kim, Kyungpook National University, Korea</i>
592	Reconfigurable WLAN Notch for UWB Filters <i>W. Ahmad, D. Budimir, University of Westminster, UK</i>
596	Ferrite LTCC Edge-Guided Circulator <i>Shicheng Yang¹, Didier Vincent¹, Joey R. Bray², Langis Roy³</i> ¹ LT2C, France; ² RMCC, Canada; ³ Carleton University, Canada
600	Circulator Integrated in Low Temperature Co-Fired Ceramics Technology <i>Raymond van Dijk¹, Gijs van der Bent¹, Mohamed Ashari², Mark McKay³</i> ¹ TNO, The Netherlands; ² Via Electronic, Germany; ³ MESL Microwave, UK
604	Shape Optimization of Patch Resonator Bandpass Filters Using Multiple Circular Structures <i>Sai Ho Yeung¹, Tapan K. Sarkar¹, Kim Fung Man², Magdalena Salazar-Palma³, Alejandro García-Lampérez³</i> ¹ Syracuse University, USA; ² City University of Hong Kong, China; ³ Universidad Carlos III de Madrid, Spain
608	Compact Unequal Wilkinson Power Divider with Large Power Dividing Ratio <i>Haidong Chen, Tianyu Zhang, Wenquan Che, Wenjie Feng, NUST, China</i>
612	An All-Pass Topology to Design a 0–360° Continuous Phase Shifter with Low Insertion Loss and Constant Differential Phase Shift <i>Khaled Khoder, Marc Le Roy, André Pérennec, Lab-STICC, France</i>
616	An Enhanced Phase Shifted Transmitter Based on 2ndHT GaN-PAs with Energy Recovery Circuit <i>R. Giofré, L. Piazzon, R. Danieli, A. Spinosa, P. Colantonio, Franco Giannini, Università di Roma "Tor Vergata", Italy</i>
620	Wideband High Power High Efficiency Linear GaN Power Amplifier for Cognitive Radio Application <i>W. Dementitroux, L. Mandica, C. Richardeau, B. Gerfault, N. Berthou, P. Grandgeorge, Thales Communications & Security, France</i>
624	Reconfigurable Digital Cartesian Feedback for Transmitters <i>D. Ndong¹, S. Reed¹, J.F. Diouris², B. Feuvrie²</i> ¹ Telerad, France; ² IETR, France

EuMC/EuMIC Poster Session continued...

- 628 **A Compact Dual-Polarization ZOR Antenna**
Giorgio Garavaglia, M. D'Amico, Politecnico di Milano, Italy
- 632 **A Compact Electromagnetic Bandgap Structure Based on Multi-Layer Technology for 7-Tesla Magnetic Resonance Imaging Applications**
Zhichao Chen, Klaus Solbach, Daniel Erni, Andreas Rennings, Universität Duisburg-Essen, Germany
- 636 **Wideband High-Gain Multi-Layer Patch Antenna-Coupler with Metamaterial Superstrate for X-Band Applications**
Raid J. Hadi, Carl Sandhagen, Axel Bangert, Universität Kassel, Germany
- 640 **A Low Magnetic Bias Sub-Millimetre Wave Semiconductor Junction Circulator**
Ghassan N. Jawad¹, Robin Sloan²
¹University of Baghdad, Iraq; ²University of Manchester, UK
- 644 **Miniature Ceramic Filter-Antenna for Wireless Communications Systems at 60GHz**
F. Kouki¹, M. Thevenot¹, Stéphane Bila¹, Nicolas Delhote¹, T. Monédière¹, Serge Verdeyme¹, T. Chartier²
¹XLIM, France; ²SPCTS, France
- 648 **A Filter with Reconfigurable Band Edges Using Dual-Behavior Resonators**
X. Lu, K. Mouthaan, T.S. Yeo, National University of Singapore, Singapore
- 652 **4-Bit, 1 to 4GHz Reconfigurable Discriminator for Frequency Measurement**
M. Espinosa-Espinosa¹, I. Llamas-Garro¹, B.G.M. de Oliveira², M.T. de Melo², Jung-Mu Kim³
¹CTTC, Spain; ²UFPE, Brazil; ³Chonbuk National University, Korea
- 656 **Asymmetrical Mechanical Design for Bouncing Suppression in RF-MEMS Switches**
Emilien Lemoine, Cyril Guines, Arnaud Pothier, Pierre Blondy, XLIM, France
- 660 **Liquid Crystal Varactor Loaded Variable Phase Shifter for Integrated, Compact, and Fast Beamsteering Antenna Systems**
Wenjuan Hu, Onur Hamza Karabey, Alexander Gäbler, Ananto Eka Prasetiadi, Matthias Jost, Rolf Jakoby, Technische Universität Darmstadt, Germany
- 664 **Design of Multi-State Actuator for mm-Wave Reconfigurable Front-End Circuits Using CMOS-MEMS Technologies**
Yu-Sheng Su, Chia-Wei Chang, Yi-Chen Liu, Yi-Ming Chen, Chia-Can Chang, Sheng-Fuh Chang, National Chung Cheng University, Taiwan
- 668 **A Novel Latching RF MEMS Phase Shifter**
Maher Bakri-Kassem¹, Raafat R. Mansour², Safieddin Safavi-Naeini²
¹American University of Sharjah, UAE; ²University of Waterloo, Canada
- N/A **Glance on Microwave Engineering Research Activities at King Saud University**
Ibrahim Elshafiey, Abdel Fattah Sheta, Hamsakutty Vettikalladi, Khalid Jamil, King Saud University, Saudi Arabia

Additional Paper

- 676 **Towards Perfect Impedance Matching of Free Space to a 2D Material**
P. Pham¹, Y.-Y. Wang¹, P. Burke¹, W. Zhang², E. Brown²
¹University of California Irvine, California; ²Wright University, Ohio