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EuMC01 : Passive Devices — Theory and Applications

Chair: Florence Podevin, RFIC-Lab (EA 7520), France

Co-Chair: Anthony Ghiotto, IMS (UMR 5218), France

08:30-10:10, Tuesday 1 Oct 2019, E05

- (NA) **Passive Ferrite Devices: Original Designs and New Challenges for the Future's Applications**
Hamza Turki, INOVEOS, France
- 1 **Self-Heating Study on a First Order Filter with Discrete and Continuous Tuning**
Miguel A. Sánchez-Soriano¹, Rozenn Allanic², Vincent Le Saux³, Hassan Bouazzaoui⁴, Alexandre Manchec⁴, Cédric Quendo²
¹Universidad de Alicante, Spain; ²Lab-STICC (UMR 6285), France; ³IRDL (UMR 6027), France; ⁴Elliptika, France
- 5 **Broadband Phase Control in Frequency and Time Domains: Radiation-Aware Power-Combining Solutions Using True Delay-Lines**
Sidina Wane¹, Damienne Bajon²
¹eV-Technologies, France; ²ISAE-SUPAERO, France
- 9 **Modal Analysis and Same-Bandedge Response Optimization of 3-D Lumped Networks**
Yelei Yao, Mustafa S. Bakr, Ian C. Hunter, University of Leeds, UK
- 13 **Arbitrary Terminated Negative Group Delay Circuit with Constant Signal Attenuation and its Application to Absorptive Bandstop Filter**
Girdhari Chaudhary¹, Wang Qi¹, Jongsik Lim², Yongchae Jeong¹
¹Chonbuk National University, Korea; ²Soonchunhyang University, Korea
-

EuMC02 : High Directivity Antennas

Chair: Diego Masotti, Università di Bologna, Italy

Co-Chair: Martino Aldrigo, IMT Bucharest, Romania

08:30-10:10, Tuesday 1 Oct 2019, E08

- (NA) **From Antenna Measurement to 5G OTA — A Paradigm Shift**
Benoit Derat, Rohde & Schwarz, Germany
- 17 **Analysis and Design of Arrays with Tilted Directive Dipole Elements**
C. Yepes¹, E. Gandini², S. Monni², F.E. van Vliet², A. Neto¹, D. Cavallo¹
¹Technische Universiteit Delft, The Netherlands; ²TNO, The Netherlands
- (NA) **Dual-Polarized Leaky Wave Antenna with Low Cross-Polarization Based on the Mode Composite Ridged Waveguide**
Yihong Su¹, Xian Qi Lin¹, Yong Fan¹, Yunlong Lu², Gaoming Xu²
¹UESTC, China; ²Ningbo University, China
- 25 **Substrate-Superstrate Leaky-Wave Antenna with Interleaved Metasurfaces for Directivity Improvement**
Silvia Tofani¹, Walter Fuscaldo¹, Paolo Burghignoli¹, Paolo Baccarelli², Alessandro Galli¹
¹Università di Roma "La Sapienza", Italy; ²Università di Roma Tre, Italy
- 29 **A High Directivity Beam-Steering Parasitic Antenna Array**
Husnain Ali Kayani, Christophe Craeye, Université catholique de Louvain, Belgium

EuMC03 : Battery-Less Circuits for Emerging Technologies

Chair: Nuno Borges Carvalho, Universidade de Aveiro, Portugal

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

13:50-15:30, Tuesday 1 Oct 2019, E04

- (NA) **Fly by Wireless**
Rhys Phillips, Airbus Defence & Space, France
- 33 **Millimetre-Wave Interrogation of Passive Sensors Embedded Inside Closed Reverberant Environments from Dual-Polarized Passive Repeaters**
T. Marchal, J. Philippe, Dominique Henry, M.V. De Paolis, A. Coustou, P. Pons, Hervé Aubert, LAAS, France
- 37 **Graphene Diodes for 5G Energy Harvesting: Design, Simulations and Experiments**
M. Aldrigo¹, M. Dragoman¹, S. Iordanescu¹, D. Vasilache¹, A. Dinescu¹, M. Shanawani², Diego Masotti²
¹IMT Bucharest, Romania; ²Università di Bologna, Italy
- 41 **A Single Cell Dual Band Rectifier at Millimeter-Wave Frequencies for Future 5G Communications**
Arslan Riaz, Muhammad Awais, M. Musab Farooq, Wasif Tanveer Khan, LUMS, Pakistan
- 45 **A 2.45GHz Signal Detector Based on Zero Biasing Field Effect Transistor**
Esam Shafah, Ahmed Moulay, Tarek Djerafi, INRS-EMT, Canada
-

EuMC04 : Non-Planar Filters I

Chair: Giuseppe Macchiarella, Politecnico di Milano, Italy

Co-Chair: Simone Bastioli, RS Microwave, USA

13:50-15:30, Tuesday 1 Oct 2019, E05

- (NA) **The Evolution of Mobile Networks Architectures and its Effects on Antenna Line Filter Products**
Giuseppe Resnati, CommScope, Italy
- 49 **Vertical Feeding Section with a Band-Rejection Filtering Function for a Low-Profile Antenna**
Motomi Abe, Tomohiro Takahashi, Masataka Otsuka, Toru Takahashi, Naofumi Yoneda, Mitsubishi Electric, Japan
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Sanggu Lee, Seunggoo Nam, Boyoung Lee, Juseop Lee, Korea University, Korea
- 57 **Ku-Band Waveguide Filter with Multiple Transmission Zeros by Resonant Source to Load and Bypass Cross-Coupling**
Daniel Miek¹, Ana Morán-López², Jorge A. Ruiz-Cruz², Michael Höft¹
¹Christian-Albrechts-Universität zu Kiel, Germany; ²Universidad Autónoma de Madrid, Spain
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¹RF Microtech, Italy; ²Thales Alenia Space, Italy; ³ESA-ESTEC, The Netherlands

EuMC05: Novel Antenna Materials

Chair: Ioan Lager, Technische Universiteit Delft, The Netherlands

Co-Chair: Józef Modelski, Warsaw University of Technology, Poland

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- 65 **Viability of Using Additive Manufacturing for Horn Antennas Fed with Empty Substrate Integrated Waveguide**
J.A. Martínez¹, J.V. Morro², H. Esteban², A. Belenguer¹, J.J. de Dios¹, V.E. Boria²
¹Universidad de Castilla-La Mancha, Spain; ²Universitat Politècnica de València, Spain
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Abas Sabouni¹, Abdulaziz I. Alali¹, Farnoush Sabouni², Ahmed A. Kishk³
¹Wilkes University, USA; ²Azad University, Iran; ³Concordia University, Canada
- 73 **Miniaturized Antenna on a Paper Substrate**
E. Vandelle¹, Tân-Phu Vuong¹, Gustavo Ardila¹, Simon Hemour², Ke Wu³
¹IMEP-LAHC (UMR 5130), France; ²IMS (UMR 5218), France; ³Polytechnique Montréal, Canada
- 77 **Graphene Nanoflakes Printed Dual-Band CPW Fed Monopole Antenna for WLAN Applications**
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- 81 **Determination of Effective Dielectric Constant and Resonant Frequency of Microstrip Patch Antenna with Multilayered Superstrate Structures**
Dinesh Rano, Mohammad S. Hashmi, IIT Delhi, India
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EuMC06: Applied Computational Electromagnetics

Chair: Hervé Aubert, LAAS, France

Co-Chair: Maurizio Bozzi, Università di Pavia, Italy

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- (NA) **Filter and Multiplexer Design Under SIMULIA's CST Studio Suite Environment**
Carlos Vicente, Aurora Software and Testing, Spain
- 85 **Identification of Vulnerability Within Front-Ends Chips Using 60GHz Near-Field Injection**
Jérémy Raoult, Pierre Payet, Laurent Chusseau, IES (UMR 5214), France
- 89 **Modeling and Analysis for Ultra-Wideband Single-Cell Sensing by a Coplanar Waveguide**
Alessandra Paffi¹, Micaela Liberti¹, Francesca Apollonio¹, Xiao Ma², Xiaotian Du², James C.M. Hwang²
¹Università di Roma "La Sapienza", Italy; ²Lehigh University, USA
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- 97 **Optical Range Diffraction Radiation of Electron Beam in the Presence of Twin Circular Dielectric Nanowires**
Dariia O. Yevtushenko, NASU, Ukraine

EuMC07: UHF, UWB and mm-Wave Techniques for Autonomous Sensors

Chair: *Alessandra Costanzo, Università di Bologna, Italy*

Co-Chair: *Giuseppina Monti, Università del Salento, Italy*

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- (NA) **Battery-Less UWB Indoor Location is the Way Forward for Industry 4.0**
Jan Mennekens, UWINLOC, France
- 101 **Robust Wireless Power Receiver for Multi-Tone Waveforms**
Mahmoud H. Ouda, Paul Mitcheson, Bruno Clerckx, Imperial College London, UK
- 105 **Miniaturized Millimeter Wave RFID Tag for Spatial Identification and Localization in Internet of Things Applications**
Ajibayo O. Adeyeye, Jimmy Hester, Manos M. Tentzeris, Georgia Tech, USA
- 109 **Modular and Reconfigurable Rectenna Unitcells with Beam-Forming Properties**
E. Vandelle¹, Tân-Phu Vuong¹, Gustavo Ardila¹, Simon Hemour², Ke Wu³
¹IMEP-LAHC (UMR 5130), France; ²IMS (UMR 5218), France; ³Polytechnique Montréal, Canada
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Yuto Uchida, Kousei Kumahara, Tomoki Sakogawa, Futoshi Kuroki, Masanori Eguchi, Kure KOSEN, Japan
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EuMC08: Dividers and Couplers

Chair: *Richard Snyder, RS Microwave, USA*

Co-Chair: *Rozenn Allanic, Lab-STICC (UMR 6285), France*

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- 117 **Analytical Design of the Radial Power Divider with Wide Isolation Bandwidths**
Ching-Wen Tang, Zhi-Hao Huang, National Chung Cheng University, Taiwan
- 121 **A Fully Differential Ultra-Broadband Power Divider with Integrated Resistors**
Björn Deutschmann, Kevin Erkelenz, Arne F. Jacob, Technische Universität Hamburg-Harburg, Germany
- 125 **A π -Type Isolation Network for Improvement of Matching and Isolation in Reconfigurable Multifunctional Bandpass Filter**
Xu Zhu¹, Tao Yang¹, Pei-Ling Chi², Ruimin Xu¹
¹UESTC, China; ²National Chiao Tung University, Taiwan
- 129 **Wideband and Compact 3-D Quadrature Coupler for 5G Applications**
Audrey Cayron¹, Christophe Viallon¹, Ayad Ghannam², Alessandro Magnani², Thierry Parra¹
¹LAAS, France; ²3DiS Technologies, France
- 133 **A Compact Wideband Wilkinson Power Divider Using Periodic Synthesized Transmission Line in Silicon IPD Process**
Zhipeng Li, Liming Lv, Rong Zeng, Juncai Lv, CAEP, China

EuMC09: Emerging Antenna Concepts

Chair: Ville Viikari, Aalto University, Finland

Co-Chair: Stefan Lindenmeier, Universität der Bundeswehr München, Germany

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- 137 **System for Multiplexed OAM Modes at 24GHz**
Christian Jiménez, Jerzy Kowalewski, Thomas Zwick, KIT, Germany
- 141 **Reflectarray with Mechanically Steerable Beam for DTH Application**
P. Pirinoli¹, T. Lohrey², M. Orefice¹, M. Beccaria¹, G. Dassano¹
¹Politecnico di Torino, Italy; ²Eutelsat, France
- 145 **Experimental Demonstration of a Dielectric Dome Antenna with Reduced Profile and Wide Scanning Capability**
E. Gandini¹, F. Silvestri¹, A. Benini², G. Gerini¹, E. Martini², S. Maci², M.C. Viganò³, G. Toso⁴, S. Monni¹
¹TNO, The Netherlands; ²Università di Siena, Italy; ³Viasat, Switzerland; ⁴ESA-ESTEC, The Netherlands
- 149 **Uniform Circular Array Factor Techniques to Optimize Orbital Angular Momentum Modes Designed with Dipole Antennas at E-Band**
Lei Fang, Rashaunda M. Henderson, University of Texas at Dallas, USA
- 153 **X-Band Slot Antenna Array in Air-Filled Substrate Integrated Waveguide**
H. Oraizi, P. Hosseini, A. Amini, IUST, Iran
-

EuMC10: Biomedical Applications

Chair: Jan Vrba, Czech Technical University in Prague, Czech Republic

Co-Chair: Christian Schulz, Ruhr-Universität Bochum, Germany

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- 157 **High Efficiency 5.8GHz Class F and Class J Amplifiers with Portable Haemostatic Applications**
Abdul M.A. Pirkani¹, Shaun Preston², Christopher I. Duff¹, Robin Sloan¹, Christopher P. Hancock²
¹University of Manchester, UK; ²Bangor University, UK
- (NA) **Microwave-Induced Thermoacoustic Tomography Through an Adult Human Skull**
A. Yan, X. Chen, F. Li, C. Liu, Sichuan University, China
- 164 **Combining 70MHz and 434MHz or wIRA Hyperthermia Applicators for Optimal Coverage of Semi-Deep Tumour Sites**
J. Crezee, R. Zweije, A. Bakker, G. van Tienhoven, H.P. Kok, University of Amsterdam, The Netherlands
- 168 **Design and Implementation of Injection Locked Oscillator Biosensors**
M. Babay¹, C. Dalmay¹, B. Barelaud¹, E.C. Durmaz², C. Baristiran Kaynak², M. Kaynak², D. Cordeau¹, A. Pothier¹
¹XLIM (UMR 7252), France; ²IHP, Germany

EuMC12 : MEMS, Phase-Change and Oxide Material Devices

Chair: Andrei Muller, EPFL, Switzerland

Co-Chair: Rolf Jakoby, Technische Universität Darmstadt, Germany

08:30-10:10, Wednesday 2 Oct 2019, E04

- (NA) **MEMS Switches for mm-Wave Applications**
Romain Stefanini, AirMems, France
- 172 **A Compact Radial Divider / Combiner for High Power MEMS Switches**
Rami Daher, Pierre Blondy, XLIM (UMR 7252), France
- 176 **A Millimeter Wave High-Power RF MEMS Switch Based on Two Membranes in Parallel**
*C. Dorion¹, Pierre Blondy¹, V. Madrangeas¹, A.H. Zahr², L.Y. Zhang², A. Ghalem²,
A. Beneteau², M. Rabanne², Romain Stefanini²*
¹XLIM (UMR 7252), France; ²AirMems, France
- 180 **A Miniaturized Monolithic PCM Based Scalable Four-Port RF Switch Unit-Cell**
Tejinder Singh, Raafat R. Mansour, University of Waterloo, Canada
- 184 **All-Oxide Thin Film Varactor: From Test Structure to SMD Component**
*D. Walk, D. Kienemund, P. Salg, L. Zeinar, A. Radetinac, P. Komissinskiy, L. Alff,
Rolf Jakoby, H. Maune, Technische Universität Darmstadt, Germany*
-

EuMC13 : Planar Filters I

Chair: Cristiano Tomassoni, Università di Perugia, Italy

Co-Chair: Jerzy Michalski, SpaceForest, Poland

08:30-10:10, Wednesday 2 Oct 2019, E05

- (NA) **Microwave Filter Manufactured on Conventional or Innovative Technologies**
Alexandre Manchec, Elliptika, France
- 188 **Back-to-Back Connected Multiplexers for a Broadband Channel Splitter and Channel Combiner**
Sanghoon Shin¹, Eric Naglich², Luciano Boglione¹
¹U.S. Naval Research Laboratory, USA; ²Booz Allen Hamilton, USA
- 192 **Ultra-Wideband Bandpass Filter Using Solder-Mask-Based Multilayer Technology**
*Hassan Bouazzaoui¹, Alexandre Manchec², Rozenn Allanic¹, Cédric Quendo¹,
Benjamin Potelon¹, Florent Karpus³*
¹Lab-STICC (UMR 6285), France; ²Elliptika, France; ³Protecno, France
- 196 **Direct Synthesis of Quad-Band Band-Pass Filter by Frequency Transformation Methods**
Y. Wu¹, Erwan Fourn¹, P. Besnier¹, Cédric Quendo²
¹IETR (UMR 6164), France; ²Lab-STICC (UMR 6285), France
- 200 **Design of a Substrate Integrated Half Mode Coaxial Cavity Filter with Multiple Transmission Zeros**
Satya Krishna Idury, Soumava Mukherjee, IIT Jodhpur, India

EuMC14: Focused Session Electromagnetic Methods for Monitoring and Manipulating Cells and Tissues

Chair: Francesca Apollonio, Università di Roma "La Sapienza", Italy

Co-Chair: Maxim Zhadobov, IETR (UMR 6164), France

08:30–10:10, Wednesday 2 Oct 2019, E06

- 204 **Millifluidic Sensor Dedicated to the Microwave Dielectric Spectroscopy of Liquids**
P. Jaque Gonzalez¹, D. Dubuc¹, K. Grenier¹, T. Veronese²
¹LAAS, France; ²Ovalie Innovation, France
- 208 **Ultra-Wideband Electrical Sensing of Nucleus Size in a Live Cell**
Xiaotian Du, Caroline Ladegard, Xiao Ma, Xuanhong Cheng, James C.M. Hwang, Lehigh University, USA
- 212 **A Microdosimetric Realistic Model to Study Frequency-Dependent Electroporation in a Cell with Endoplasmic Reticulum**
A. De Angelis¹, A. Denzi¹, C. Merla², F.M. Andre³, T. Garcia-Sanchez³, L.M. Mir³, Francesca Apollonio¹, Micaela Liberti¹
¹Università di Roma "La Sapienza", Italy; ²ENEA, Italy; ³LVTA (UMR 8203), France
- 216 **Radiation Performance of Highly Miniaturized Implantable Devices**
Denys Nikolayev¹, Maxim Zhadobov², Wout Joseph³, Luc Martens³, Ronan Sauleau²
¹EPFL, Switzerland; ²IETR (UMR 6164), France; ³Ghent University, Belgium
- 220 **Numerical Investigations of CW Electric Fields on Lipid Vesicles for Controlled Drug Delivery**
L. Caramazza¹, A. De Angelis¹, E. della Valle², A. Denzi¹, M. Nardoni¹, P. Paolicelli¹, S. Petralito¹, Francesca Apollonio¹, Micaela Liberti¹
¹Università di Roma "La Sapienza", Italy; ²University of Michigan, USA
-

EuMC15: Antennas for Communication

Chair: Ioan Lager, Technische Universiteit Delft, The Netherlands

Co-Chair: Tobias Chaloun, Universität Ulm, Germany

08:30–10:10, Wednesday 2 Oct 2019, E07

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Abdullah Haskou, Anthony Pesin, Jean-Yves Le Naour, Ali Louzir, Technicolor, France
- 228 **Compact, Integrated, Four-Sector, Antenna for Sub-6GHz 5G Indoor Access and Content Distribution Over WiFi**
Abdullah Haskou, Anthony Pesin, Jean-Yves Le Naour, Ali Louzir, Technicolor, France
- 232 **Characterization of a Low-Profile Quad-Feed Based Transmitarray Antenna at V-Band**
Antonio Clemente¹, Maciej Smierzchalski¹, Mathieu Huchard², Cyril Barbier², Thierry Le Nadan²
¹CEA-Leti, France; ²Radiall, France
- 236 **High Self-Interference Cancellation Antenna for In-Band Full Duplex Communication System**
Girdhari Chaudhary, Junhyung Jeong, Phanam Pech, Phirun Kim, Yongchae Jeong, Chonbuk National University, Korea
- 240 **Compact Wideband CPW-Fed Tri-Band Antenna with Multi-Shaped Strips for WLAN/WiMAX Applications**
Binyun Yan, Weixing Sheng, Jie Cui, Jie Lu, NJUST, China

EuMC16: Transmitter/Receiver Circuits

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

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

10:50-12:30, Wednesday 2 Oct 2019, E02

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Silvia Hernández, Mabel Pontón, Sergio Sancho, Almudena Suárez, Universidad de Cantabria, Spain
- 248 **HTS Quad-Band High-Sensitivity Receiver for a 4.5-m Radio Telescope**
Tamio Kawaguchi¹, Hiroyuki Kayano¹, Kazuhiro Tsubosaki², Hirotaka Kamide², Taro Asakura²
¹Toshiba, Japan; ²Toshiba Hokuto Electronics, Japan
- 252 **5G RF Front End Module Architectures for Mobile Applications**
Florinel Balteanu, Hardik Modi, Yunyoung Choi, Junhyung Lee, Serge Drogi, Sabah Khesbak, Skyworks Solutions, USA
- 256 **Reconfigurable Series Feed Network for Squint-Free Antenna Beamforming Using Distributed Amplifier-Based Negative Group Delay Circuit**
Minning Zhu, Chung-Tse Michael Wu, Rutgers, USA
- 260 **A Wideband Beamformer Using 3.25GS/sec Discrete-Time Analog FIR Filter ICs**
Shinwoong Park¹, Long Huang², Sanjay Raman²
¹Qualcomm, USA; ²Virginia Tech, USA
-

EuMC17: Special Session LAMC

Chair: Jose E. Rayas-Sanchez, ITESO, Mexico

Co-Chair: Guillermo Rafael-Valdivia, UTP, Peru and Almudena Suárez, Universidad de Cantabria, Spain

10:50-12:30, Wednesday 2 Oct 2019, E03

- 264 **RF Exposure Due to Mobile Devices Operated Close to the Human Body**
C. Fernández-Rodríguez¹, G. Bulla², A.A. de Salles²
¹IFRS, Brazil; ²UFRRGS, Brazil
- 268 **Microwave-Photonics and WDM-PON Fronthaul for 5G Mobile Systems: Research Activities in Brazil**
Murilo A. Romero¹, Arismar Cerqueira S. Jr²
¹Universidade de São Paulo, Brazil; ²Inatel, Brazil
- 272 **Applications of Broyden-Based Input Space Mapping to Modeling and Design Optimization in High-Tech Companies in Mexico**
José E. Rayas-Sánchez, Zabdiel Brito-Brito, ITESO, Mexico
- 276 **Thermo-Energetic Study in Blood Infected with Plasmodium falciparum Radiated at 2.45GHz**
Kurt D. Ngo¹, Carlos Plazaola², Guadalupe González², Carmenza Spadafora³, Mayteé Zambrano²
¹Universidad de Panamá, Panama; ²Universidad Tecnológica de Panamá, Panama; ³INDICASAT AIP, Panama
- 280 **Methodology for Modelling, Design and Implementation of RF Power Amplifiers Based on Pulsed Measurements**
G. Rafael-Valdivia¹, Omar Castellanos-Ballesteros²
¹UTP, Peru; ²UPSE, Ecuador

EuMC18: Emerging Components and Integration Techniques

Chair: Ke Wu, Polytechnique Montréal, Canada

Co-Chair: Kamal Samanta, Sony, UK

10:50-12:30, Wednesday 2 Oct 2019, E04

- (NA) **Towards More Effective Electrical Thermal Co-Design with Carbon Aluminum Composite EMI Shield**
Baratunde Cola, Carbice, USA
- 284 **Concurrent Dual-Mode Circulator**
Amir Afshani, Ke Wu, Polytechnique Montréal, Canada
- 288 **WR12 to Planar Transmission Line Transition on Organic Substrate**
Johannes Jakob¹, Roman Sammer², Franz Xaver Röhr², Werner Bogner¹, Stefan Zorn¹
¹Technische Hochschule Deggendorf, Germany; ²Rohde & Schwarz, Germany
- 292 **Hermetically Sealed Glass Package for Highly Integrated MMICs**
Thomas Galler¹, Tobias Chaloun¹, Kevin Kröhnert², Malte Schulz-Ruhtenberg³, Christian Waldschmidt¹
¹Universität Ulm, Germany; ²Fraunhofer IZM, Germany; ³LPKF, Germany
- 296 **90GHz Micro Laser Sintered Filter: Reproducibility and Quality Assessment**
Milan Salek, Xiaobang Shang, Michael J. Lancaster, Robert C. Roberts, Thomas Starke, Falko Boettcher, Daniel Weber, University of Birmingham, UK
-

EuMC19: Non-Planar Filters II

Chair: Vicente E. Boria, Universitat Politècnica de València, Spain

Co-Chair: Stéphane Bila, XLIM (UMR 7252), France

10:50-12:30, Wednesday 2 Oct 2019, E05

- 300 **Widely-Reconfigurable 2.5:1 Coaxial-Cavity Resonators Using Actuated Liquid-Metal Posts**
Kshitij Sadasivan, Dimitra Psychogiou, University of Colorado Boulder, USA
- 304 **3D Compact High-Q Filter Made of High-Permittivity Ceramic**
Y. Dia¹, L. Huitema¹, S. Bila¹, Marc Thévenot¹, Nicolas Delhote¹, C. Delaveaud²
¹XLIM (UMR 7252), France; ²CEA-Leti, France
- 308 **Synthesis Method for Manifold-Coupled Multiplexers**
D. Martínez Martínez¹, S. Bila¹, F. Seyfert², M. Olivi², O. Tantot¹, L. Carpentier³
¹XLIM (UMR 7252), France; ²Inria, France; ³CNES, France
- (NA) **A Novel De-Embedding Technique for Frequency Identification of Manifold Coupled Multiplexers**
Sayyed Reza Mirnaziry¹, Maysam Haghparast¹, Ali Akbar Ahmadi², Ali Kheirdoost¹
¹ITRC, Iran; ²Kharazmi University, Iran
- 316 **Low-Cost Hybrid Manufactured Waveguide Bandpass Filters with 3D Printed Insert Dielectric**
Uros Jankovic¹, Nandun Mohottige², Ananjan Basu³, Djuradj Budimir¹
¹University of Westminster, UK; ²Global Invacom, UK; ³IIT Delhi, India

EuMC20: EuMC Interactive Session 3

Chair: Mohamed Zaknoue, IEMN (UMR 8520), France

Co-Chair: Stéphane Bila, XLIM (UMR 7252), France

10:50-12:30, Wednesday 2 Oct 2019, Exhibition Hall

- 320 **Waveguide Coupler Design Method for Permittivity Measurement at Millimeter-Wave Applications**
Karrar Al Khanjar, Tarek Djerafi, INRS-EMT, Canada
- 324 **A 2×3 Hybrid Substrate Integrated Waveguide Coupler Applied to Beamforming Network**
Tongfeng Guo, Ben You, Ke Wu, Polytechnique Montréal, Canada
- 328 **Design of an X-Band Suspended Stripline Unequal Split Power Distribution Network**
G. Posada, J. Lapuente, C. Zarzuelo, Indra Sistemas, Spain
- 332 **60GHz Double Edge Coupled Marchand Balun for PCB Implementation**
Muhammad Umar, Martin Laabs, Niels Neumann, Dirk Plettemeier, Technische Universität Dresden, Germany
- 336 **Power Summation in Ultra-Thin Planar Dielectric Resonator with Gunn-Diodes**
A.E. Kogut¹, Z.E. Eremenko¹, I.K. Kuzmichev¹, R.S. Dolia¹, M.T. Islam²
¹NASU, Ukraine; ²UKM, Malaysia
- 340 **Electrolyte Concentration Measurements in DI Water with 0.125g/L Resolution by Means of CSRR-Based Structures**
Paris Vélez, J. Muñoz-Enano, Ferran Martín, Universitat Autònoma de Barcelona, Spain
- 344 **Conductor-Backed Coplanar Waveguide on BCB with Thin Metal Layers and Via Holes**
A.-S. Grimault-Jacquín, N. Zerounian, I. Kaid Omar, P. Crozat, F. Amar, C. Villebasse, D. Bouville, F. Hamouda, F. Aniel, C2N (UMR 9001), France
- (NA) **Design and Validation of V-Band Microwave Coaxial Switch**
Qunfeng Chang¹, Dong Wei², Qingxin Zhang¹, Xin Zhao¹, Guolong Zheng¹, Xiaoqin Ma¹
¹CASC, China; ²CIECC, China
- 352 **A W-Band Stepped Impedance Transformer Transition from SIW to RWG for Thin Single Layer Substrates with Thick Metal Cladding**
Steffen Hansen, Nils Pohl, Fraunhofer FHR, Germany
- 356 **Planar Millimeter-Wave Waveguide Transition for Material Characterization at 79GHz**
Wael A. Ahmad¹, Tomohiro Inoue², Dietmar Kissinger³, Herman Jalli Ng¹
¹IHP, Germany; ²Nippon Pillar, Germany; ³Universität Ulm, Germany
- 360 **C-Band Microstrip Lossy Filter Using Resistive-Loaded Closed-Loop Resonators**
Jiayu Rao¹, Hongliang Guo¹, Jia Ni¹, Jiasheng Hong¹, Petronilo Martin Iglesias²
¹Heriot-Watt University, UK; ²ESA-ESTEC, The Netherlands
- 364 **Dual-Band Bandpass SIW Resonator Filter with Flexible Frequency Ratio**
Wentao Lin, Tae-Hak Lee, Ke Wu, Polytechnique Montréal, Canada
- 368 **Planar Diplexer Design Using Hairpin Resonators Loaded with External Capacitors for Improvement of Isolation and Stopband Rejection Levels**
Yi-Fan Tsao¹, Ting-Jui Huang¹, Heng-Tung Hsu¹, Chia-Wei Wu²
¹National Chiao Tung University, Taiwan; ²Yuan Ze University, Taiwan
- 372 **Strip-Loaded Coplanar Waveguide Bandpass Filter with Wideband Spur-Free Response**
Mohamed A.G. Elsheikh, Amr M.E. Safwat, Ain Shams University, Egypt
- 376 **Design and Implementation of High Frequency and Large Group Delay Bridged-T All Pass Network**
Ritesh Kumar, K.J. Vinoy, Indian Institute of Science, India

EuMC Interactive Session 3 continued...

- 380 **Narrow Bandpass Filters Using Microstrip Lines Loaded with Asymmetric Bandstop Resonator Pairs**
Amir Ebrahimi, James Scott, Kamran Ghorbani, RMIT University, Australia
- 384 **Design and Manufacturing of a Compact Stripline Lowpass Filter to be Integrated into Panel Antennas**
Ana Álvarez Mellado, Carlos Zarzuelo Torres, Indra Sistemas, Spain
- 388 **Equivalent Calculation Method for Low-Pressure Discharge Threshold of Ridge Waveguide Filter**
Rui Wang¹, Wanzhao Cui¹, Yongdong Li²
¹CAST, China; ²Xi'an Jiaotong University, China
- 392 **A Post-Fabrication Tuning Method Using Space Mapping and Surrogate Modeling Techniques**
Song Li¹, Xiaolin Fan¹, Paul D. Laforge¹, Qingsha S. Cheng²
¹University of Regina, Canada; ²SUSTech, China
- 396 **Investigation of Stored Energy Distribution in Filters Using K-Means Clustering Algorithm**
Rucha A. Paradkar¹, Ian C. Hunter¹, Nutapong Somjit¹, Evaristo Musonda², Richard Parry³, Mustafa S. Bakr¹
¹University of Leeds, UK; ²University of Zambia, Zambia; ³Radio Design, UK
-

EuMC21: GaN HEMT Based Power Amplifiers

Chair: Almudena Suárez, Universidad de Cantabria, Spain

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

13:50-15:30, Wednesday 2 Oct 2019, E02

- (NA) **Broadband GaN Power Amplifier Design and Integration: Industrial Challenges and Advanced Techniques**
Kamal K. Samanta, Milmega, UK
- 400 **Over 20W 2.5 to 10.5GHz Wideband Two-Stage GaN MMIC Power Amplifier with Distributed and Reactively-Matched Amplifier Stages**
Jun Kamioka, Masatake Hangai, Ryota Komaru, Takuo Morimoto, Yoshitaka Kamo, Shintaro Shinjo, Mitsubishi Electric, Japan
- 404 **A 40W Ka-Band RF Amplification Chain for Space Telecommunication SSPA Applications**
James Belluot¹, Guillaume Le Rhun¹, Philippe Augoyat¹, Gregory Mouchon¹, Amel Maati¹, Allen Katz², Bob Gray², Roger Dorval²
¹Thales AVS, France; ²Linearizer Technology, USA
- 408 **A 10.8-GHz GaN MMIC Load-Modulated Amplifier**
Allison Duh¹, Maxwell R. Duffy¹, William Hallberg², Mauricio Pinto², Taylor Barton¹, Zoya Popović¹
¹University of Colorado Boulder, USA; ²Chalmers University of Technology, Sweden

EuMC22 : Near-Field and Far-Field Millimeter-Wave Measurements

Chair: Juan-Mari Collantes, Universidad del País Vasco, Spain

Co-Chair: Eric Bergeault, LTCI (UMR 5141), France

13:50-15:30, Wednesday 2 Oct 2019, E03

- (NA) **Radio Frequency Weapons: Sources, Effects, Test and Protection**
Jean-Christophe Joly, CEA-Gramat, France
- 412 **Probing Millimeter-Wave Antennas and Arrays in Their Reactive Near-Field**
Jan Hesselbarth¹, Georg Sterzl¹, Jose Moreira²
¹Universität Stuttgart, Germany; ²Advantest Europe, Germany
- 416 **Characterization of 5G Phased Arrays at 28GHz by Time-Domain Near-Field Scanning**
*Michael Haider¹, Pablo Corrales², Nicolas Gross³, Chueh-Jen Lin⁴, Su-Wei Chang⁴,
Wen-Tsai Tsai⁴, Sidina Wane², Damienne Bajon⁵, Johannes A. Russer¹*
*¹Technische Universität München, Germany; ²eV-Technologies, France; ³MVG, France;
⁴TMYTEK, Taiwan; ⁵ISAE-SUPAERO, France*
- 420 **Measurement Method for Characterizing Nonlinearity Under Near-Field and Far-Field Interferers in 5G mmW Phased Arrays**
*Nuutti Tervo, Marko E. Leinonen, Markku Jokinen, Janne P. Aikio, Olli Kursu,
Marko Sonkki, Timo Rahkonen, Aarno Pärssinen, University of Oulu, Finland*
- 424 **5G Millimeter-Wave Beam Adaptation for Indoor Moving Users**
R. Schulpen, A.B. Smolders, Ulf Johannsen, Technische Universiteit Eindhoven, The Netherlands
-

EuMC23 : Millimeter-Wave Transition Structures and Packaging Techniques

Chair: Mehmet Kaynak, IHP, Germany

Co-Chair: Claire Dalmay, XLIM (UMR 7252), France

13:50-15:30, Wednesday 2 Oct 2019, E04

- 428 **D-Band Silica-Based Package Substrate with EBG Structure for Flip-Chip Modules**
Masaharu Ito, Tsunehisa Marumoto, NEC, Japan
- 432 **F-Band Low-Loss Tapered Slot Transition for Millimeter-Wave System Packaging**
*Ahmed Hassona, Zhongxia Simon He, Vessen Vassilev, Herbert Zirath, Chalmers
University of Technology, Sweden*
- 436 **A Compact 28GHz RF Front-End Module Using IPDs and Wafer-Level Metal Fan-Out Packaging**
*Jong-Min Yook¹, Dongsu Kim¹, Bok-Ju Park², Sanghoon Sim², Yun-Seong Eo³,
Jun Chul Kim¹*
¹KETI, Korea; ²RFcore, Korea; ³Kwangwoon University, Korea
- 440 **Broadband Stacked-Patch Transition from Microstrip Line to Circular Dielectric Waveguide for Dual-Polarized Applications at W-Band Frequencies**
Andre Meyer, Simon Karau, Martin Schneider, Universität Bremen, Germany
- 444 **A Novel Miniaturized High Performance BGA RF Transition for Ka Band Applications**
F. Altuntas, E. Koc, N. Oznazli, T. Eker, Aselsan, Turkey

EuMC24 : Planar Filters II

Chair: Roberto Gómez-García, Universidad de Alcalá, Spain

Co-Chair: Dimitra Psychogiou, University of Colorado Boulder, USA

13:50-15:30, Wednesday 2 Oct 2019, E05

- 448 **Compact Square/Triangle Mixed-Shape Quarter-Mode Substrate Integrated Waveguide Bandpass Filter with Wide Stopband**
Phirun Kim, Qi Wang, Phanam Pech, Junhyung Jeong, Yongchae Jeong, Chonbuk National University, Korea
- 452 **Multilayered Wideband Balun Bandpass Filters Designed with Input-Reflectionless Response**
Li Yang¹, Roberto Gómez-García¹, José-María Muñoz-Ferrer¹, Wenjie Feng²
¹Universidad de Alcalá, Spain; ²NJUST, China
- 456 **Topology and Rigorous Design Method for Reflectionless Bandstop Filter**
Jongheun Lee, Boyoung Lee, Seunggoo Nam, Juseop Lee, Korea University, Korea
- 460 **Magnet-Less Non-Reciprocal Bandpass Filters with Tunable Center Frequency**
Dakotah Simpson, Dimitra Psychogiou, University of Colorado Boulder, USA
- 464 **Design of Wideband Bandpass Filters Using Parallel-Coupled Asymmetric Three Line Structures with Adjustment Elements**
Elif G. Sahin¹, A. Kursad Gorur², Ceyhun Karpuz³, Adnan Gorur¹
¹Niğde Ömer Halisdemir University, Turkey; ²Neçşehir University, Turkey; ³Pamukkale University, Turkey
-

EuMC25 : Active Antenna Arrays

Chair: Peter Gardner, University of Birmingham, UK

Co-Chair: Michal Mrozowski, Gdansk University of Technology, Poland

13:50-15:30, Wednesday 2 Oct 2019, E07

- 468 **Antenna Array Driven by Non-Isolated Power Amplifiers for MIMO Applications**
Haijun Fan, Yuan Ding, George Goussetis, Maria Jesus Canavate Sanchez, Heriot-Watt University, UK
- 472 **A Compact Micro-Diversity Module with Integrated Antenna Set for Automotive Satellite Radio Reception**
Simon Senega, Sebastian Matthie, Stefan Lindenmeier, Universität der Bundeswehr München, Germany
- 476 **A 28GHz 8-Channel Fully Differential Beamforming IC in 65nm CMOS Process**
Jeongsoo Park¹, Donghyun Baek², Jeong-Geun Kim¹
¹Kwangwoon University, Korea; ²Chung-Ang University, Korea
- 480 **25-40GHz 180° Reflective-Type Phase Shifter Using 65-nm CMOS Technology**
Jeong-Taek Lim, Sunkyu Choi, Eun-Gyu Lee, Han-Woong Choi, Jae-Hyeok Song, Sang-Hyo Kim, Choul-Young Kim, Chungnam National University, Korea
- 484 **V-Band Vector-Sum Phase Shifter with Frequency Mixing**
Shinya Yokomizo, Akihito Hirai, Takanobu Fujiwara, Masaomi Tsuru, Mitsubishi Electric, Japan

EuMC26: EuMC Interactive Session 4

Chair: *Tan-Phu Vuong, IMEP-LAHC (UMR 5130), France*

Co-Chair: *Laure Huitema, XLIM (UMR 7252), France*

13:50-15:30, Wednesday 2 Oct 2019, Exhibition Hall

- 488 **Additively Manufactured Interdigitated Capacitors Using Barium Titanate Nanocomposite Inks**
Michael Thomas Craton, Yining He, Aljoscha Roch, Premjeet Chahal, John Papapolymerou, Michigan State University, USA
- (NA) **Passive Intermodulation and Power Handling for High Power RF MEMS Switches**
Ian Burke, Darryl Evans, Chris Keimel, Marten Seth, Xu Zhu, Menlo Microsystems, USA
- 496 **Wearable 868MHz LoRa Wireless Sensor Node on a Substrate-Integrated-Waveguide Antenna Platform**
Patrick Van Torre, Thomas Ameloot, Hendrik Rogier, Ghent University, Belgium
- 500 **Textile Chipless Tag Based on Frequency Shift Coding Technique**
L. Corchia, Giuseppina Monti, Luciano Tarricone, Università del Salento, Italy
- 504 **Wearable RFID Tag on Denim Substrate for Indoor Localization Applications**
Giacomo Paolini, Diego Masotti, Alessandra Costanzo, Università di Bologna, Italy
- 508 **Ultrasensitive Planar Metamaterials for Material Characterization Using Tapered CSRR with Application to NDT of 3D Printed Structures**
Salem A. Alotaibi, Yepu Cui, Manos M. Tentzeris, Georgia Tech, USA
- 512 **Low Cost 3D Printed Fabry-Perot Antenna for Automotive Radar Applications**
U. Naeem¹, Vincent Fusco¹, Michael Keaveney², Mike O'Shea², James Breslin²
¹Queen's University Belfast, UK; ²Analog Devices, Ireland
- (NA) **A High Transmission Efficiency Metasurface-Based Spiral Phase Plate for Generating Vortex Waves**
Li Yu¹, Zihang Qi¹, Hua Zhu¹, Xiuping Li¹, Xiaoming Li², Xing Jiang²
¹BUPT, China; ²GUET, China
- 519 **Screen-Printed Dual-Band Flexible Frequency Selective Surface for 5G Applications**
Khelifa Hettak, Jafar Shaker, Communications Research Centre Canada, Canada
- 523 **An UHF Software Defined Reflectometer Using Under-Sampling Down-Conversion in the ADC**
V. Kible¹, R.N. de Lima², K.B. de Brito², A. Bülau¹, A. Zimmermann¹
¹Hahn-Schickard, Germany; ²Universidade Federal da Bahia, Brazil
- 527 **Radar Based Material Characterization at 145GHz Utilizing an Ellipsoidal Reflector**
Jochen Jebramcik, Jan Barowski, Jonas Wagner, Ilona Rolfes, Ruhr-Universität Bochum, Germany
- 531 **WGM Resonators for Conductivity Measurements of Graphene Films**
I. Protsenko¹, A. Barannik¹, N. Cherpak¹, A. Gubin¹, D. Kireev², S. Vitusevich²
¹NASU, Ukraine; ²Forschungszentrum Jülich, Germany
- 535 **Time Domain Characterization of Coupled Strip Line Networks without Changing Terminal Setups**
Iwata Sakagami¹, Xiaolong Wang², Takashi Ohira³
¹University of Toyama, Japan; ²Jilin University, China; ³Toyohashi University of Technology, Japan
- 539 **In-situ-Linearization for Instantaneous Frequency Measurement Systems**
Benedict Scheiner¹, Fabian Lurz¹, Fabian Michler¹, Robert Weigel¹, Alexander Koelpin²
¹FAU Erlangen-Nürnberg, Germany; ²Brandenburgische Technische Universität, Germany

EuMC Interactive Session 4 continued...

- 543 **Reconfigurable Nonlinear Circuit for Wireless Power Harvesting and Backscattering**
Xiaoqiang Gu¹, Simon Hemour², Ke Wu¹
¹Polytechnique Montréal, Canada; ²IMS (UMR 5218), France
- 547 **UHF Near-Field Wireless RFID Power Transfer Through Two Distant Rectangular Waveguides**
I. Rakotomalala, P. Lemaitre-Auger, S. Tedjini, LCIS (EA 3747), France
-

EuMC27: Outphasing and Doherty Power Amplifiers

Chair: Christian Fager, Chalmers University of Technology, Sweden

Co-Chair: Andreas Wentzel, FBH, Germany

16:10-17:50, Wednesday 2 Oct 2019, E02

- (NA) **Evaluation of DPD Algorithm: Thanks to System-Level Behavioral Modelling**
Wissam Saabe, AMCAD Engineering, France
- 551 **GaN Digital Outphasing PA**
Thomas Hoffmann, Andreas Wentzel, Florian Hühn, Wolfgang Heinrich, FBH, Germany
- 555 **An Experimental Study for the Design of Dual Input Load Modulated Wideband GaN Amplifier**
A. Courty¹, T. Reveyrand¹, P. Medrel¹, P. Bouysse¹, J.-M. Nébus¹, G. Soubercaze-Pun², L. Lapierre²
¹XLIM (UMR 7252), France; ²CNES, France
- 559 **A 60-GHz Symmetric Doherty Power Amplifier with 20.4% 6-dB Back-Off Efficiency**
Masaaki Tanio¹, Kang Ning², James F. Buckwalter²
¹NEC, Japan; ²University of California at Santa Barbara, USA
- 563 **400 Watt Sequential Power Amplifier Using Inverted Doherty-Type Active Load Modulation with 50% Efficiency at 10dB Back-Off Over 23% Fractional Bandwidth**
Florian Dietrich, Muh-Dey Wei, Renato Negra, RWTH Aachen University, Germany
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EuMC28: Calibration and Characterization Techniques

Chair: Nick Ridler, The National Physical Laboratory, UK

Co-Chair: Pawel Barmuta, Katholieke Universiteit Leuven, Belgium

16:10-17:50, Wednesday 2 Oct 2019, E03

- (NA) **Measurement and Modeling Techniques**
David E. Root, Keysight Technologies, USA
- 567 **Linearity and Efficiency Characterization of AlGaIn/GaN and InAlGaIn/GaN HEMTs Devices Using Multi-Tone Large Signal Measurements**
V. Gillet¹, Mohamed Bouslama¹, S. Piotrowicz², C. Potier², O. Patard², M. Prigent¹, Jean-Christophe Nallatamby¹, C. Chang³, R. Quéré¹
¹XLIM (UMR 7252), France; ²III-V Lab, France; ³United Monolithic Semiconductors, France
- (NA) **Improving Wafer-Level S-Parameters Measurement Accuracy and Stability with Probe-Tip Power Calibration up to 110GHz for 5G Applications**
Choon Beng Sia, FormFactor, Singapore
- 575 **Robust One-Tier Calibration for Microwave Microfluidics Using Unknown Liquids**
Pawel Barmuta¹, Juncheng Bao¹, T. Markovic¹, Arkadiusz Lewandowski², Meng Zhang¹, Bart Nauwelaers¹, Dominique Schreurs¹, Ilja Ocket¹
¹Katholieke Universiteit Leuven, Belgium; ²Warsaw University of Technology, Poland

EuMC29: Techniques and Technologies for the Enhancement of WPT Systems

Chair: Luciano Tarricone, Università del Salento, Italy

Co-Chair: Martino Aldrigo, IMT Bucharest, Romania

16:10-17:50, Wednesday 2 Oct 2019, E04

- 579 **Efficient Assessment of the Impact of Metallic Obstacles on the Wireless Power Transfer in Loosely Coupled Links**
Benjamin J.B. Deutschmann¹, Lukas Görtzschacher¹, Peter Priller², Jasmin Grosinger¹
¹Technische Universität Graz, Austria; ²AVL List, Austria
- 583 **Gains Maximization for Two-Port WPT Links with Three Coils**
Franco Matri¹, Mauro Mongiardo², Giuseppina Monti³, Luciano Tarricone³
¹Università di Bologna, Italy; ²Università di Perugia, Italy; ³Università del Salento, Italy
- 587 **Wireless Composite Right/Left-Handed Transmission Line Sensor for Permittivity Measurements**
Amrit Zoad¹, Alexander Koelpin², Andreas Penirschke¹
¹Technische Hochschule Mittelhessen, Germany; ²Brandenburgische Technische Universität, Germany
- 591 **A 2.4GHz-Band Enhancement-Mode GaAs HEMT Rectifier with 19% RF-to-DC Efficiency for 1 μ W Input Power**
Ryo Ishikawa, Tsuyoshi Yoshida, Kazuhiko Honjo, University of Electro-Communications, Japan
- 595 **A 2.45-GHz Self-Synchronous GaN FET Rectifier Using CRLH-TL-Based Gate Control Circuit**
Shinichi Tanaka, Takanori Noguchi, Shibaura Institute of Technology, Japan
-

EuMC30: Planar Filters III

Chair: Marco Politi

Co-Chair: Cédric Quendo, Lab-STICC (UMR 6285), France

16:10-17:50, Wednesday 2 Oct 2019, E05

- 599 **A Flexible Design Technique for Band-Pass Coupled-Line Planar Filters Overcoming Manufacturing Limitations**
S. Cogollos, V.E. Boria, J.D. Martinez, S. Sirci, Universitat Politècnica de València, Spain
- 603 **Non-Reciprocal RF-Bandpass Filters Using Transistor-Based Microwave Resonators**
Andrea Ashley, Dimitra Psychogiou, University of Colorado Boulder, USA
- 607 **Stacked Substrate Integrated Waveguide Filter with Air-Holed Cavities**
Cristiano Tomassoni¹, Lorenzo Silvestri², Maurizio Bozzi², Luca Perregrini²
¹Università di Perugia, Italy; ²Università di Pavia, Italy
- 611 **Wide-Stopband Bandpass Filter Based on Signal Interference Feedback**
Abdullah Alburaihan, PAAET, Kuwait
- 615 **Coupling Matrix Extraction by Entries Deviation and with Use of Sherman-Morrison Formula**
Jędrzej Michalczyk, Jerzy Julian Michalski, SpaceForest, Poland

EuMC31 : Antenna Arrays for 5G

Chair: Fredrik Tillman, Ericsson, Sweden

Co-Chair: Marina Gashinova, University of Birmingham, UK

16:10-17:50, Wednesday 2 Oct 2019, E07

- (NA) **5G Radios — Commercial Challenges and Opportunities**
Fredrik Tillman, Ericsson, Sweden
- 618 **A 28-GHz Phased-Array Receiver with an On-Chip BIST Function by Using a Shielded Symmetrical Signal Distributor**
Toshihiro Shimura, Takenori Ohshima, Yoji Ohashi, Fujitsu, Japan
- 622 **A Low-Cost and Low-Power Single Bit Phased Array at Ka-Band for 5G Applications**
Mohamamd Mazaheri¹, MohammadSadegh Vafaeinezhad¹, Mostafa Alizadeh², Mohammad Fakharzadeh¹, Safieddin Safavi-Naeini²
¹Sharif University of Technology, Iran; ²University of Waterloo, Canada
- 626 **Co-Channel Radiation Pattern Distortion in Transmitting 5G Antenna Arrays Due to 3rd Order Intermodulation Products**
Ricardo Figueiredo, Nuno Borges Carvalho, Universidade de Aveiro, Portugal
- 630 **A Beam-Steering Transmitarray Antenna for 5G MIMO Channel Sounding in V-Band**
Tuyen Pham¹, François Gallée², Ronan Sauleau¹
¹IETR (UMR 6164), France; ²Lab-STICC (UMR 6285), France
-

EuMC32 : Numerical Methods in Microwave Technology

Chair: Peter Zwamborn, TNO Defense, Safety and Security, The Netherlands

Co-Chair: Alessandro Galli, Università di Roma "La Sapienza", Italy

16:10-17:50, Wednesday 2 Oct 2019, E01

- (NA) **Advanced FEM Simulators Bring Fullwave Microwave Circuit Design up to Speed**
Michał Mrozowski, Gdansk University of Technology, Poland
- 634 **Analysis of Inhomogeneous Rectangular Cavities Using the Variational Meshless Method**
Vincenzo Lombardi, Maurizio Bozzi, Luca Perregrini, Università di Pavia, Italy
- 638 **A Novel Unconditionally-Stable Finite-Difference Solution of the 3D Time-Domain Wave Equation**
Mohammad Moradi¹, Vahid Nayyeri¹, Omar M. Ramahi²
¹IUST, Iran; ²University of Waterloo, Canada
- 642 **Validation of MoM-Based Solution of Waveguide Port Problem for Composite Structures Applied to Microwave Antenna and PCB Geometries**
Faik G. Bogdanov¹, Irina Chochia², Lily Svanidze³, Roman Jobava³
¹GTU, Georgia; ²EMCoS, Georgia; ³TSU, Georgia
- 646 **Improvements in Broadband Modeling of Microwave Circuits Using Rational Models**
S. Cogollos, V.E. Boria, H. Esteban, Universitat Politècnica de València, Spain

EuMC33 : Microwave Sensing for Biomedical Applications

Chair: Katia Grenier, LAAS, France

Co-Chair: Ilja Ocket, imec, Belgium

08:30-10:10, Thursday 3 Oct 2019, E01

- 650 **Electrically Controlled Tunable Broadband Interferometric Dielectric Spectroscopy: Groundwork for Single Cell Analysis**
Meng Zhang¹, Ilja Ocket², Paweł Barmuta¹, Juncheng Bao¹, Xiue Bao¹, Hui Yang¹, Bart Nauwelaers¹
¹Katholieke Universiteit Leuven, Belgium; ²imec, Belgium
- 654 **A Transmission Line Based Microwave Heater at 25GHz for Continuous Flow Microfluidics Fabricated on Silicon**
T. Markovic¹, B. Jones¹, Paweł Barmuta², Ilja Ocket¹, Bart Nauwelaers²
¹imec, Belgium; ²Katholieke Universiteit Leuven, Belgium
- 658 **An Approach to Improve Quality-Factor of Lossy Ring-Resonator Type of Electrode for Circulating Tumor Cell Detection**
Shouta Sora¹, Kousei Kumahara¹, Futoshi Kuroki¹, Masanori Eguchi¹, Takeshi Yamakawa², Fumihiko Tanaka³
¹Kure KOSEN, Japan; ²Fuzzy Logic Systems Institute, Japan; ³UOEH, Japan
- 662 **Highly-Sensitive Glucose Concentration Sensor Exploiting Inter-Resonators Couplings**
Carlos G. Juan¹, Benjamin Potelon², Cédric Quendo², Enrique Bronchalo¹, José M. Sabater-Navarro¹
¹Universidad Miguel Hernández de Elche, Spain; ²Lab-STICC (UMR 6285), France
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EuMC34 : Metasurface Based Antennas and Absorbers

Chair: Francisco Medina, Universidad de Sevilla, Spain

Co-Chair: Arokiaswami Alphones, NTU, Singapore

08:30-10:10, Thursday 3 Oct 2019, E03

- (NA) **Holographic Metasurface Antennas Enabling Mobile 5G Satellite Connectivity**
Mohsen Sazegar, Kymeta, USA
- 666 **A 60GHz Wideband Antenna Array Based on Metasurface with Gap Waveguide (GWG) Divider**
Chenyun Shi, Jie Cui, Weixing Sheng, Yubing Han, NJUST, China
- 670 **Non-Periodic Metasurface Beam Splitter for Dual Polarizations**
Cheng Tao, Tatsuo Itoh, University of California at Los Angeles, USA
- 674 **An Ultrathin Quad-Band Microwave Absorber with Small Frequency Ratio**
R. Adeline Mellita¹, S.S. Karthikeyan², P. Damodharan¹
¹IIITDM Kancheepuram, India; ²NIT Tiruchirappalli, India
- 678 **Wideband Metal-Dielectric Multilayer Microwave Absorber Based on a Single Step FDM Process**
Xhoandri Lleshi¹, Roman Grelot¹, Thi Quynh Van Hoang¹, Brigitte Loiseaux¹, Didier Lippens²
¹Thales Research and Technology, France; ²IEMN (UMR 8520), France

EuMC35 : SIW Technology for Passive Components

Chair: Magdalena Salazar-Palma, Universidad Carlos III de Madrid, Spain

Co-Chair: Hervé Leblond, Thales Alenia Space, France

08:30-10:10, Thursday 3 Oct 2019, E05

- (NA) **Evolution of Passive Microwave Engineering Driven by Technology, Simulation and Market Demand**
Siegbert Martin, Tesat-Spacecom, Germany
- 682 **SIW-Based Planar Orthomode Transducer for 28GHz Applications**
Sergey Churkin, Andrey Mozharovskiy, Oleg Soykin, Alexey Artemenko, Roman Maslennikov, InfiNet Wireless, Russia
- 686 **AFSIW Termination with Full- and Partial-Height Absorbing Material Loading**
Issam Merah¹, Anthony Ghiotto¹, Jean-Marie Pham¹, Tifenn Martin¹, Aurélie Boisse²
¹IMS (UMR 5218), France; ²Cobham Microwave, France
- 690 **A Connectorized X-Band 3-D Printed Air-Filled Self-Suspended Rectangular Coaxial Transmission Line**
Yang Yu¹, Jin Li², Cheng Guo³, Guan-Long Huang², Qingsha S. Cheng¹, Anxue Zhang⁴
¹SUSTech, China; ²Shenzhen University, China; ³University of Birmingham, UK; ⁴Xi'an Jiaotong University, China
- 694 **A Multi-Mode Waveguide with Mode Selective Effect**
Ken Ning, Xiao-Chun Li, Jun-Fa Mao, Shanghai Jiao Tong University, China
-

EuMC36 : Supply Modulated Power Amplifiers

Chair: Olof Bengtsson, FBH, Germany

Co-Chair: Paul Tasker, Cardiff University, UK

08:30-10:10, Thursday 3 Oct 2019, E06

- 698 **Discrete Supply Modulation of a Three-Stage K-Band PA**
Maxwell R. Duffy, Gregor Lasser, Zoya Popović, University of Colorado Boulder, USA
- 702 **Packaged Floating-Ground RF Power GaN-HEMT**
Sophie Paul, Gia Ngoc Phung, Wolfgang Heinrich, Olof Bengtsson, FBH, Germany
- 706 **Impact of the Input Impedance on the Linearity of Supply Modulated GaN HEMT Power Amplifiers**
Alexander Alt, Peng Chen, Sattam Alsahali, Guofeng Wang, Roberto Quaglia, Paul J. Tasker, Jonathan Lees, Cardiff University, UK
- 710 **Supply Modulator Ripple in Envelope Tracking Systems — Effects and Countermeasures**
Sattam Alsahali, Alexander Alt, Peng Chen, Guofeng Wang, Paul J. Tasker, Jonathan Lees, Cardiff University, UK

EuMC37: Phased Array Systems

Chair: Laure Huitema, XLIM (UMR 7252), France
Co-Chair: Wim van Cappellen, ASTRON, The Netherlands
08:30-10:10, Thursday 3 Oct 2019, E07

- 714 **Optically-Controlled Unit-Cell for Transmitarrays at X-Band**
Romain Cane¹, Ronan Sauleau¹, Mehdi Alouini²
¹IETR (UMR 6164), France; ²FOTON (UMR 6082), France
- 718 **Broadband Connected Slots Phased Array Feeding a High Gain Lens Antenna at 60GHz**
*Imran Aziz¹, Erik Öjefors², Robin Dahlbäck², Anders Rydberg¹, Gunnar Engblom²,
Dragos Dancila¹*
¹Uppsala University, Sweden; ²Sivers IMA, Sweden
- 722 **Active Ka-Band Radiator**
Philipp Kohl¹, Alexander Sommer¹, Michael Kilian¹, Benjamin Falk², Julian Lerche²
¹Airbus Defence & Space, Germany; ²Tesat-Spacecom, Germany
- 726 **Low Cost S-Band Beamsteering Antennas for Long Range Professional UAV**
P. Teillet¹, Marc Thévenot², Cyrille Menudier², P.-Y. Fulchiron¹
¹Delair, France; ²XLIM (UMR 7252), France
- 730 **Co-Designed Handset Antennas with Wide Angular mm-Wave Coverage and LTE MIMO**
*Joni Kurvinen, Henri Kähkönen, Anu Lehtovuori, Juha Ala-Laurinaho, Ville Viikari, Aalto
University, Finland*
-

EuMC38: Communication Systems

Chair: Alexander Koelpin, Brandenburgische Technische Universität, Germany
Co-Chair: Fabian Lurz, FAU Erlangen-Nürnberg, Germany
10:50-12:30, Thursday 3 Oct 2019, E01

- 734 **A Superheterodyne 300GHz Wireless Link for Ultra-Fast Terahertz Communication Systems**
*Iulia Dan¹, Guillaume Ducournau², Shintaro Hisatake³, Pascal Szriftgiser⁴,
Ralf-Peter Braun⁵, Ingmar Kallfass¹*
*¹Universität Stuttgart, Germany; ²IEMN (UMR 8520), France; ³Gifu University, Japan;
⁴PhLAM (UMR 8523), France; ⁵Deutsche Telekom, Germany*
- (NA) **A Study on 10Gb/s+ Data Transmission Rate with Utmost Frequency Efficiency in MIMO System**
Tong Yang, Zhi-jie Wang, Ao-song Zhou, CAST, China
- 742 **Implementation of RF Communication Subsets on Common Low Frequency Clocked FPGA**
*Mosabbah Mushir Ahmed¹, Etienne Perret¹, Romain Siragusa¹, David Hely¹,
Nicolas Barbot¹, Maxime Bernier², Frederic Garet²*
¹LCIS (EA 3747), France; ²IMEP-LAHC (UMR 5130), France
- 746 **System Modeling and Simulation in 5G: A Hybrid Beamforming Approach with Power Flux Equalization in the Elevation Plane**
*Salman Salman, Yanki Aslan, Jan Puskely, Antoine Roederer, Alexander Yarovoy,
Technische Universiteit Delft, The Netherlands*
- 750 **Latency Performance Evaluation of RF Front-End Transceiver Architecture**
Intikhab Hussain, Walid Dyab, Ahmed A. Sakr, Ke Wu, Polytechnique Montréal, Canada

EuMC39: Metamaterial Based Devices

Chair: Ferran Martín, Universitat Autònoma de Barcelona, Spain

Co-Chair: Jan Machac, Czech Technical University in Prague, Czech Republic

10:50-12:30, Thursday 3 Oct 2019, E03

- 754 **Microstrip Lines Loaded with Metamaterial-Inspired Resonators for Microwave Sensors/Comparators with Optimized Sensitivity**
J. Muñoz-Enano¹, Paris Vélez¹, M. Gil², J. Mata-Contreras³, K. Grenier⁴, D. Dubuc⁴, Ferran Martín¹
¹Universitat Autònoma de Barcelona, Spain; ²Universidad Politécnica de Madrid, Spain; ³Universidad de Málaga, Spain; ⁴LAAS, France
- 758 **Simple Laminated PCB Artificial Dielectrics for mm-Wave Quasioptical Lenses**
Michael Aiken, David Ricketts, North Carolina State University, USA
- 762 **Reflectionless Microwave Quarter-Wave Plate Using Hyperbolic Metamaterials**
Ryo Mochiziki¹, Naoki Shinohara¹, Atsushi Sanada²
¹Kyoto University, Japan; ²Osaka University, Japan
- 766 **Modelling of a 3D Periodic Surface Based on a Folded Resonator Embedded into a Waveguide**
Paul Le Bihan¹, María García-Vigueras¹, Erwan Fourn¹, Raphaël Gillard¹, Isabelle Le Roy Naneix², Stefan Varault², Christian Renard²
¹IETR (UMR 6164), France; ²Thales DMS, France
- 770 **Circuit Modelling of Metallic Dual-Band Dual-Polarized FSS**
C. Molero¹, E. Menargues², T. Debogovic², María García-Vigueras¹
¹IETR (UMR 6164), France; ²SWISSto12, Switzerland
-

EuMC40: 3D Printing and Additive Manufacturing Techniques For RF-Components

Chair: Kamal Samanta, Sony, UK

Co-Chair: Raafat Mansour, University of Waterloo, Canada

10:50-12:30, Thursday 3 Oct 2019, E05

- 774 **3D Printed Copper Waveguides by Selective Electron Beam Melting Process for E-Band**
K. Lomakin, R. Guschlbauer, F. Osmanlic, Z. Fu, M. Sippel, K. Helmreich, C. Körner, Martin Vossiek, G. Gold, FAU Erlangen-Nürnberg, Germany
- 778 **Optimizing the Conductivity of Ink-Jet Printed Microwave Components on Polymer Substrates by Laser Sintering**
Chaimaa El Hajjaji¹, Julien George¹, Souhayl Lmansouri¹, Nicolas Delhote¹, Serge Verdeyme¹, Dominique Baillargeat¹, Malgorzata Piechowiak², Olivier Durand²
¹XLIM (UMR 7252), France; ²CTTC, France
- 782 **Complex Structures in Microwave Circuits by Using Additive Manufacturing Techniques**
Héctor García-Martínez, Germán Torregrosa-Penalva, Ernesto Ávila-Navarro, Ángela Coves-Soler, Enrique Bronchalo, Universidad Miguel Hernández de Elche, Spain
- 786 **An Integrated Monobloc 3D Printed Front-End in Ku-Band**
Fabien Le Borgne, Gwendal Cochet, Julien Haumant, Daouda Diedhiou, Kilian Donnart, Alexandre Manchec, Elliptika, France
- 790 **Additive Layer Manufactured Waveguide RF Components**
Michael Kilian, Andreas Schinagl-Weiß, Philipp Kohl, Alexander Sommer, Christian Hartwanger, Michael Schneider, Airbus Defence & Space, Germany

EuMC/EuMIC01 : Low-Noise amplifiers

Chair: François Deborgies, ESA-ESTEC, The Netherlands

Co-Chair: Amparo Herrera Guardado, Universidad de Cantabria, Spain

08:30-10:10, Tuesday 1 Oct 2019, E01

- (NA) **New Frontier for RF GaN Technologies Applied to SIP Product**
Didier Floriot, United Monolithic Semiconductors, France
- 794 **Limiting the Output Power of Rugged GaN LNAs**
Evelyne Kaule¹, Cristina Andrei¹, Stefan Gerlich¹, Ralf Doerner², Matthias Rudolph¹
¹Brandenburgische Technische Universität, Germany; ²FBH, Germany
- 797 **High Robustness S-Band GaN Based LNA**
Zineb Ouarch Provost¹, Laurent Caillé¹, Marc Camiade¹, Maxime Olivier²,
David Leclerc², Clement Tolant², Michel Stanislawiak²
¹United Monolithic Semiconductors, France; ²Thales LAS, France
- 801 **A 23–31GHz Robust Low-Noise Amplifier with 1.1dB Noise Figure and 28dBm Psat**
Penghui Zheng, Shiyong Zhang, Jianxing Xu, Rong Wang, Xiaodong Tong, CAEP, China
- 804 **A 28–60GHz SiGe HBT LNA with 2.4–3.4dB Noise Figure**
Jubaid Abdul Qayyum¹, John Albrecht¹, John Papapolymerou¹, Ahmet Cagri Ulusoy²
¹Michigan State University, USA; ²KIT, Germany
-

EuMC/EuMIC02 : Photonic-Electronic Devices

Chair: Marion K. Matters-Kammerer, Technische Universiteit Eindhoven, The Netherlands

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

08:30-10:10, Tuesday 1 Oct 2019, E03

- (NA) **THz Optoelectronic Systems: Trends and Potential**
Rubén Criado, Luz WaveLabs, Spain
- 808 **Photonics-Based Compact Broadband Transmitter Module for E-Band Wireless Communications**
Muhsin Ali¹, Andrzej Jankowski², Robinson Cruzoe Guzmán¹,
Luis Enrique Garcia Muñoz¹, Frédéric van Dijk², Guillermo Carpintero¹
¹Universidad Carlos III de Madrid, Spain; ²III-V Lab, France
- 812 **Broadband Continuously Tuneable Delay Microwave Photonic Beamformer for Phased Array Antennas**
Robert Grootjans¹, Chris Roeloffzen¹, Caterina Taddei¹, Marcel Hoekman¹,
Lennart Wevers¹, Ilka Visscher¹, Paul Kapteijn¹, Dimitri Geskus¹, Andrea Alippi²,
Ronald Dekker¹, Ruud Oldenbeuving¹, Jörn Epping¹, Roelof Bernardus Timens¹,
Rick Heuvink¹, Edwin Klein¹, Arne Leinse¹, Paul van Dijk¹, René Heideman¹
¹LioniX International, The Netherlands; ²PHIX, The Netherlands
- 816 **300-GHz-Band Wireless Communication Using a Low Phase Noise Photonic Source**
Li Yi¹, Kenta Iwamoto¹, Takumi Yamamoto¹, Fumiya Ayano¹, Yihan Li²,
Antoine Rolland², Naoya Kuse², Martin Fermann², Tadao Nagatsuma¹
¹Osaka University, Japan; ²IMRA, USA
- 820 **Pulsed Photoconductive Connected Slot Array Operating at the Sub-mm Wavelength Band**
A. Garufo¹, P. Sberna¹, G. Carluccio¹, J.R. Freeman², D.R. Bacon², L. Li², J. Bueno³,
J.J.A. Baselmans³, E.H. Linfield², A.G. Davies², I.E. Lager¹, N. Llombart¹, A. Neto¹
¹Technische Universiteit Delft, The Netherlands; ²University of Leeds, UK; ³SRON, The Netherlands

EuMC/EuMIC03 : Microwave Integrated PA Technologies

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

Co-Chair: Nathalie Deltimple, IMS (UMR 5218), France

13:50-15:30, Tuesday 1 Oct 2019, E01

- (NA) **Challenges & Solutions of High Frequency and High Output Power GaN-Based SSPAs**
Jose María Agüero, TTI, Spain
- 824 **10W Ka Band MMIC Power Amplifiers Based on InAlGaN/GaN HEMT Technology**
C. Potier¹, S. Piotrowicz¹, C. Chang², O. Patard¹, L. Trinh-Xuan³, J. Gruenenpuett³, P. Gamarra¹, P. Altuntas¹, E. Chartier¹, J.-C. Jacquet¹, C. Lacam¹, N. Michel¹, C. Dua¹, M. Oualli¹, S.L. Delage¹
¹III-V Lab, France; ²United Monolithic Semiconductors, France; ³United Monolithic Semiconductors, Germany
- 828 **3.6GHz Integrated Inverse Class-E Amplifier with Polar Modulation Capability**
Andres Seidel¹, Albrecht Gündel², Martin Kreißig¹, Paul Stärke¹, Jens Wagner¹, Frank Ellinger¹
¹Technische Universität Dresden, Germany; ²Airrays, Germany
- 832 **Quasi Inverse Class-F X-Band Highly Efficient Power Amplifier with 51.8% Peak PAE in SiGe**
S. Redois¹, Eric Kerhervé¹, Anthony Ghiotto¹, B. Louis², V. Petit², Yves Mancuso²
¹IMS (UMR 5218), France; ²Thales DMS, France
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EuMC/EuMIC04 : Active Circuits

Chair: Domine Leenaerts, NXP Semiconductors, The Netherlands

Co-Chair: Mabel Pontón, Universidad de Cantabria, Spain

13:50-15:30, Tuesday 1 Oct 2019, E02

- 836 **A Compact and Broadband Phase Shifter with Bridged-T Circuit Topology**
Ryota Komaru, Masatake Hangai, Takuo Morimoto, Shintaro Shinjo, Mitsubishi Electric, Japan
- 840 **2-12GHz High-Power GaN MMIC Switch Utilizing Stacked-FET Circuits**
Masatake Hangai, Ryota Komaru, Shinichi Miwa, Yoshitaka Kamo, Shintaro Shinjo, Mitsubishi Electric, Japan
- 844 **A Novel Injection-Locked Frequency Tripler for V-Band Applications**
Yu-Hsin Chang¹, Yen-Chung Chiang²
¹National Formosa University, Taiwan; ²National Chung Hsing University, Taiwan
- 848 **A GaAs Frequency Doubler with 38dB Fundamental Rejection from 22 to 40GHz Using a Transformer Balun**
Sudipta Chakraborty¹, Leigh E. Milner², Simon Mahon¹, Anthony Parker¹, Michael Heimlich¹
¹Macquarie University, Australia; ²DST, Australia
- 852 **Low Phase Noise Digital Division by 2 and by 3 of a 30GHz Coupled Optoelectronic Oscillator**
Arnaud Collet¹, Olivier Llopis¹, Gilles Cibiel², Éric Tournier¹
¹LAAS, France; ²CNES, France

EuMC/EuMIC05 : Sub THz Components and Systems

Chair: *Christophe Gaquiere, IEMN (UMR 8520), France*

Co-Chair: *Alexandru Takacs, LAAS, France*

13:50-15:30, Tuesday 1 Oct 2019, E03

- 856 **A 0.5THz Signal Source with -11dBm Peak Output Power Based on InP DHBT**
*M. Hossain¹, N. Weimann¹, M. Brahem¹, O. Ostinelli², C.R. Bolognesi²,
Wolfgang Heinrich¹, Viktor Krozer¹*
¹FBH, Germany; ²ETH Zürich, Switzerland
- 860 **A 115-185GHz 75-115mW High-Gain PA MMIC in 250-nm InP HBT**
Zach Griffith, Miguel Urteaga, Petra Rowell, Teledyne Scientific & Imaging, USA
- 864 **High Data Rate W-Band Balanced Schottky Diode Envelope Detector for Broadband Communications**
*Angel Blanco Granja¹, Dimitrios Konstantinou², Simon Rommel², Bruno Cimoli³,
Sebastian Rodriguez³, Roland Reese¹, Ulf Johannsen², Rolf Jakoby¹, T.K. Johansen³,
Idelfonso Tafur Monroy², Andreas Penirschke⁴*
¹Technische Universität Darmstadt, Germany; ²Technische Universiteit Eindhoven, The Netherlands; ³Technical University of Denmark, Denmark; ⁴Technische Hochschule Mittelhessen, Germany
- 868 **A D-Band 4-Ways Power Splitter/Combiner Implemented on a 28nm Bulk CMOS Process**
Fernando Barrera, Alexandre Siligaris, Benjamin Blampey, José Luis Gonzalez-Jimenez, CEA-Leti, France
- 872 **A Novel Wide-Band Finger-Shaped Phase Shifter on Silicon-On-Glass (SOG) Technology for Sub-Millimeter Wave and Terahertz Applications**
Aidin Taeb, Suren Gigoyan, Mohammed Basha, Sujeet Chaudhuri, Safieddin Safavi-Naeini, University of Waterloo, Canada

EuMC/EuMIC06: EuMC/EuMIC Interactive Session 2

Chair: Tan-Phu Vuong, IMEP-LAHC (UMR 5130), France

Co-Chair: Anthony Ghiotto, IMS (UMR 5218), France

14:30-16:10, Tuesday 1 Oct 2019, Exhibition Hall

- 876 **Tune-All Substrate-Integrated-Waveguide (SIW) Bandpass Filters**
Martin Deng, Dimitra Psychogiou, University of Colorado Boulder, USA
- 880 **A Reconfigurable Array for Media Based Spatial Modulation**
Aritra Roy, K.J. Vinoy, Indian Institute of Science, India
- 884 **20-44GHz Mismatch Tolerant Programmable Dynamic Range with Inherent CMRR Square Law Detector for AGC Applications**
Ahmed E. Amer¹, Mohamed A.Y. Abdalla², Islam A. Eshrah²
¹Analog Devices, Egypt; ²Cairo University, Egypt
- 888 **A Miniatured 28-GHz FEM Using a 0.15- μ m InGaAs/GaAs E-Mode pHEMT Process**
Hui Dong Lee, Sunwoo Kong, Seunghyun Jang, Kwang-Seon Kim, Kwang-Chun Lee, Bonghyuk Park, ETRI, Korea
- 892 **A Planar Single-Ended Kilowatt-Level VHF Class E Power Amplifier**
Renbin Tong, Stefan Book, Long Hoang Duc, Dragos Dancila, Uppsala University, Sweden
- 896 **4096-QAM Microwave Transmitter Providing Efficiency Exceeding 50% and EVM Below 1%**
E. McCune, Q. Diduck, Eridan Communications, USA
- 900 **High-Reliability Active Integrated Power Limiter with Sharp Compression Profile in Ka-Band in 130nm SiGe Technology**
M. Potéreau¹, N. Deltimple¹, Anthony Ghiotto¹, O. Jardel², S. Rochette², H. Leblond², Jean-François Villemazet²
¹IMS (UMR 5218), France; ²Thales Alenia Space, France
- 904 **Unified Feedback Beamforming Digital Predistorter**
Suguru Habu, Yasushi Yamao, Hiroshi Suzuki, University of Electro-Communications, Japan
- 908 **Screening of Integrated GaAs Stacked-FET Power Amplifiers**
G. van der Bent, A.P. de Hek, F.E. van Vliet, TNO, The Netherlands
- 912 **Sub-THz On-Chip Dielectric Resonator Antenna with Wideband Performance**
Abdul Ali¹, Jongwon Yun², Herman Jalli Ng², Dietmar Kissinger³, Franco Giannini¹, Paolo Colantonio¹
¹Università di Roma "Tor Vergata", Italy; ²IHP, Germany; ³Universität Ulm, Germany
- 916 **Simple Microwave Measurement System Using Bi-Directional Configuration of VCSEL and PD-TIA from 6 to 16GHz**
Satoru Kurokawa¹, Masanobu Hirose¹, Shinichi Murata², Tsutomu Mitui²
¹AIST, Japan; ²Koden Electronics, Japan

EuMC/EuRAD01 : Diverse Radar Applications

Chair: Mehmet Karaaslan, Teledyne e2v, UK

Co-Chair: Korkut Yegin, Ege University, Turkey

10:50-12:30, Wednesday 2 Oct 2019, E01

- 920 **Transient Waveforms Shaping for Frequency Diversity Radar Applications**
G. Reineix, J. Hyvernaud, R. Négrier, V. Couderc, J. Andrieu, M. Lalande, XLIM (UMR 7252), France
- 924 **An Original UWB Radar Platform Based on Coherent Interleaving Sampling Technique**
O. Hamdi¹, M. Schutz¹, B. Lenoir², S. Farah³, S. Reynaud³, A. Delias⁴, Guillaume Neveux¹, Cyril Decroze¹, Denis Barataud¹
¹XLIM (UMR 7252), France; ²INOVEOS, France; ³CISTEME, France; ⁴AMCAD Engineering, France
- 928 **Clutter-Resistant Vital Sign Detection Using Amplitude-Based Demodulation by EEMD-PCA-Correlation Algorithm for FMCW Radar Systems**
Ching-Yao Huang, Guan-Wei Fang, Huey-Ru Chuang, Chin-Lung Yang, National Cheng Kung University, Taiwan
- 932 **Time-Domain Analysis of Microwave Signal Propagating Along FRPM Pipe Walls and Application to Nondestructive Inspection**
S. Matsukawa¹, K. Yoshida², Y. Nishimura², T. Okuda³, M. Hazama³, Satoru Kurokawa¹, H. Murata²
¹AIST, Japan; ²Mie University, Japan; ³Kurimoto, Japan
- 936 **Guided Wave Tank Level Sensor**
Alexander Kaineder¹, Christof Michenthaler², Dirk Hammerschmidt², Andreas Stelzer¹
¹Johannes Kepler Universität Linz, Austria; ²Infineon Technologies, Austria
-

EuMC/EuRAD02 : Antennas for Radar Application

Chair: Matthias Geissler, IMST, Germany

Co-Chair: Józef Modelski, Warsaw University of Technology, Poland

10:50-12:30, Wednesday 2 Oct 2019, E07

- 940 **Investigation of Bent PCB Laminates for Conformal Antennas at 80GHz**
Jonathan Mayer¹, Manuel Martina², Jerzy Kowalewski¹, Thomas Zwick¹
¹KIT, Germany; ²Schweizer Electronic, Germany
- 944 **Evaluation of Antenna Calibration and DOA Estimation Algorithms for FMCW Radars**
Michael Stephan¹, Kuangda Wang², Torsten Reissland¹, Robert Weigel¹, Ke Wu², Fabian Lurz¹
¹FAU Erlangen-Nürnberg, Germany; ²Polytechnique Montréal, Canada
- 948 **A 3D-Printed Coaxial-Fed Waveguide 2-Slot Array for an AESA Radar Application in the Ku-Band**
Sarra Abedrabbba¹, Rozenn Allanic¹, Norbert Dubroca², Julien Haumant³, Cédric Quendo¹, Thomas Merlet²
¹Lab-STICC (UMR 6285), France; ²Thales LAS, France; ³Elliptika, France
- 952 **Design of a Horizontally Polarized Slotted Waveguide Antenna Element for Airborne Ka-PolInSAR System**
Alicja Kość, Markus Limbach, Bernd Gabler, Andreas Reigber, DLR, Germany
- 956 **Millimeter-Wave Stepped Series Array with LTCC**
Sabin Kumar Karki¹, Juha Ala-Laurinaho¹, Jianfang Zheng¹, Markku Lahti², Ville Viikari¹
¹Aalto University, Finland; ²VTT Technical Research Centre of Finland, Finland

EuMC/EuRAD03: Space and UAV applications

Chair: César Barquinero, Indra Sistemas, Spain

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

13:50-15:30, Wednesday 2 Oct 2019, E01

- (NA) **New Trends on Telecom Satellites and Their Consequences on Microwave Units**
Jean-François Villemazet, Thales Alenia Space, France
- (NA) **Science Instruments for CubeSats and SmallSats**
Goutam Chattopadhyay, Jet Propulsion Laboratory, USA
- 960 **A New Radiospectrometer to Study the CMB Distortions Between 10-20GHz**
*Paz Alonso-Arias¹, Roger Hoyland¹, Javier De Miguel-Hernández¹,
J. Alberto Rubiño-Martín¹, Francesco Cuttaia², Luca Terenzi²*
¹IAC, Spain; ²INAF, Italy
- 964 **Comparison Between Mixer and Track and Hold UWB Receivers for SATCOM Applications**
*Arij Battikh¹, Abhijeet Dasgupta¹, Guillaume Neveux¹, Denis Barataud¹,
Cédric Chambon²*
¹XLIM (UMR 7252), France; ²Callisto, France
- 968 **Design Study for UAV-Mounted GPR**
M. Schutz¹, Cyril Decroze¹, M. Lalande¹, B. Lenoir²
¹XLIM (UMR 7252), France; ²INOVEOS, France
-

EuMC/EuRAD04: mmW Systems

Chair: Philippe Eudeline, Thales Air Systems, France

Co-Chair: Jean-Luc Polleux, ESYCOM, France

08:30-10:10, Thursday 3 Oct 2019, E02

- 972 **EM Analysis of a Propagation Channel in the Sub-THz Band for Many-Core Architectures**
*Ihsan El Masri, Thierry Le Gouguec, Pierre-Marie Martin, Rozenn Allanic, Cédric Quendo,
Lab-STICC (UMR 6285), France*
- 976 **Performance Analysis of Real-Time Full-Duplex E-Band Link**
Seyyid M. Dilek, Benjamin Schoch, Ingmar Kallfass, Universität Stuttgart, Germany
- 980 **Experimental Evaluation of a 60GHz Beamforming Solution with 32-Dipole Printed Array**
*Nebojsa Maletic¹, Andrea Malignaggi¹, Bogdan Antonovici², Jordan Bozmarov³,
Mohamed Elkhoully⁴, Jesús Gutiérrez¹, Vladimir Petrovic⁵, Eckhard Grass¹*
¹IHP, Germany; ²Balluff, Germany; ³TES Electronic Solutions, Germany; ⁴Nokia Bell Labs, USA; ⁵Robert Bosch, Germany
- 984 **On the Calibration of mm-Wave MIMO Radars Using Sparse Antenna Arrays for DoA Estimation**
*André Dürr, Dominik Schwarz, Fabian Roos, Philipp Hügler, Stephan Bucher,
Patrik Grüner, Christian Waldschmidt, Universität Ulm, Germany*
- 988 **Scalable High-Gaussicity Split-Block Diagonal Horn Antenna for Integration with Sub-THz Devices**
H.M. Santos¹, E.D. Lima¹, Pedro Pinho², L.M. Pessoa¹, D. Moro-Melgar³, H.M. Salgado¹
¹INESC TEC, Portugal; ²Instituto de Telecomunicações, Portugal; ³ACST, Germany

EuMC/EuRAD05 : Measurement and Modeling of Electromagnetic Field Scattering

Chair: Alexander Yarovoy, Technische Universiteit Delft, The Netherlands

Co-Chair: Marina Gashinova, University of Birmingham, UK

10:50-12:30, Thursday 3 Oct 2019, E02

- (NA) **Understanding Stealth : RCS Fundamentals — From Design to Measurements**
Sylvain Morvan, CEA-Cesta, France
- 992 **Co-Polarized Bi-Static RCS Measurements of Vulnerable Road Users Between 1 and 10GHz**
Andreas Schwind, Sreehari Buddappagari, Willi Hofmann, Ralf Stephan, Reiner S. Thomä, Matthias A. Hein, Technische Universität Ilmenau, Germany
- 996 **Monostatic RCS Measurements of a Passenger Car Mock-Up at 77GHz Frequency in Virtual Environment**
Sreehari Buddappagari Jayapal Gowdu, Andreas Schwind, Ralf Stephan, Matthias A. Hein, Technische Universität Ilmenau, Germany
- 1000 **Low Terahertz Signal Backscattering from Rough Surfaces**
Aleksandr Bystrov¹, Edward Hoare¹, Marina Gashinova¹, Thuy-Yung Tran², Mikhail Cherniakov¹
¹University of Birmingham, UK; ²Jaguar Land Rover Automotive, UK
- 1004 **Permittivity Estimation of Rough Dielectric Surfaces by Means of Polarimetric Bistatic Measurements at Millimeter Wave Frequencies**
Kais Ben Khadhra, Andreas Olk, Oscar Gomez, Andreas Fox, IEE, Luxembourg
-

EuMC/EuRAD06 : Integrated Antennas and Systems-in-Package

Chair: David Prinsloo, ASTRON, The Netherlands

Co-Chair: Claire Migliaccio, LEAT (UMR 7248), France

10:50-12:30, Thursday 3 Oct 2019, E07

- 1008 **122GHz FMCW Radar System-in-Package in LTCC Technology**
Akanksha Bhutani¹, Benjamin Goettel², Mario Pauli¹, Thomas Zwick¹
¹KIT, Germany; ²Wellenzahl, Germany
- 1012 **Subarray Optimization for Compactness Improvement of a 3D Printed Adaptive Phased Array Antenna Operating in Ku-Band**
Sarra Abedrabbah¹, Rozenn Allanic¹, Cédric Quendo¹, Annaig Guennou-Martin¹, Julien Haumant², Gwendal Cochet², Yves Quééré¹, Thomas Merlet³
¹Lab-STICC (UMR 6285), France; ²Elliptika, France; ³Thales LAS, France
- 1016 **Assessment of a Contactless Characterization Method for Integrated Antennas**
A.J. van den Biggelaar, D.P.P. Daverveld, A.C.F. Reniers, Ulf Johannsen, A.B. Smolders, Technische Universiteit Eindhoven, The Netherlands
- 1020 **Performances of Magneto-Electric Dipoles in an Antennas Array with a Reduced Beam Forming Network**
Abdul-Sattar Kaddour¹, Jorick Milbrandt¹, Cyrille Menudier¹, Marc Thévenot¹, Philippe Pouliguen², Patrick Potier², Maxime Romier³
¹XLIM (UMR 7252), France; ²DGA, France; ³CNES, France
- 1024 **Millimeter-Wave System-in-Package (SiP) for Non-Destructive Testing of Metallic Structures Under Multilayered Composites Using Backward-to-Forward Beamscanning Leaky Wave Antenna**
Karthik Thothathri Chandrasekaran¹, Nasimuddin², Siew Weng Leong², Kuen Sim Chan², Bin Luo², Muhammad Faeyz Karim¹, Arokiaswami Alphones¹, Kush Agarwal³, Michael Ling Chuen Ong²
*¹NTU, Singapore; ²A*STAR, Singapore; ³WaveScan Technologies, Singapore*

EuMC/EuRAD07 : EuMC/EuRAD Interactive Session 5

Chair: *Alexandru Takacs, LAAS, France*

Co-Chair: *Jean-Yves Dauvignac, LEAT (UMR 7248), France*

10:50-12:30, Thursday 3 Oct 2019, Exhibition Hall

- 1028 **Scattering by Infinite Graphene Strip Grating with Brake of Periodicity**
Mstyslav E. Kaliberda¹, Leonid M. Lytvynenko², Sergey A. Pogarsky¹
¹V.N. Karazin Kharkiv National University, Ukraine; ²NASU, Ukraine
- (NA) **EMC Conducted Emission Analysis of a 3D Multilayer Printed Circuit Board with Kron's Method**
Z. Xu¹, Y. Liu¹, B. Ravelo¹, O. Maurice², J. Gantet³, N. Marier³, B. Agnus⁴, S. Carras⁵
¹IRSEEM (EA 4353), France; ²ArianeGroup, France; ³Valeo, France; ⁴SCIENTEAMA, France; ⁵Filix, France
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Xiang Su¹, Xiaoxiao Zhang², Xiaomin Tan¹, Hongxing Dang¹
¹CAST, China; ²XUPT, China
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Stefan Erhardt¹, Thomas Kurin¹, Fabian Lurz¹, Robert Weigel¹, Alexander Koelpin²
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Maxime Wawrzyniak¹, Julien Bras², Aurore Denneulin², Tân-Phu Vuong¹
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Mehmet Akif Tulum¹, Ahmet Serdar Turk²
¹Neta Electronics, Turkey; ²Yildiz Technical University, Turkey
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¹eV-Technologies, France; ²ISAE-SUPAERO, France; ³TMYTEK, Taiwan; ⁴Keysight Technologies, France; ⁵MVG, France
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I. Munina¹, P. Turalchuk¹, A. Verevkin¹, V. Kirillov¹, D. Zelenchuk², A. Shitvov³
¹St. Petersburg Electrotechnical University, Russia; ²Queen's University Belfast, UK; ³Cardiff University, UK
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