

2022 IEEE Radio Frequency Integrated Circuits Symposium (RFIC 2022)

**Denver, Colorado, USA
19-21 June 2022**



**IEEE Catalog Number: CFP22MMW-POD
ISBN: 978-1-6654-9612-4**

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|-------------------------|-------------------|
| IEEE Catalog Number: | CFP22MMW-POD |
| ISBN (Print-On-Demand): | 978-1-6654-9612-4 |
| ISBN (Online): | 978-1-6654-9611-7 |
| ISSN: | 1529-2517 |

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RFIC Plenary

Chair: Osama Shana'a, MediaTek, USA

Co-Chair: Donald Y.C. Lie, Texas Tech University, USA

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¹Tsinghua University, China ; ²CAS, China ; ³RITS, China 

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¹Southern Methodist University, USA ; ²Texas Instruments, USA 

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Chair: Hao Gao, Silicon Austria Labs, Austria — Co-Chair: Marcus Granger-Jones, Qorvo, USA





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Shuxin Ming, Rakibul Islam, Jin Zhou, University of Illinois at Urbana-Champaign, USA

RTu3B: mm-Wave/THz Devices and BIST/Calibration, and Circuits for Emerging Applications

Chair: Mona Hella, Rensselaer Polytechnic Institute, USA






Co-Chair: Fabio Sebastiano, Technische Universiteit Delft, The Netherlands

1D-1F, 13:30–15:10, Tuesday, 21 June 2022

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RTu3B-1 **LNFET Device with 325/475GHz f_T/f_{MAX} and 0.47dB NF_{MIN} at 20GHz for SATCOM Applications in 45nm PDSOI CMOS**
S.V. Khokale¹, T. Ethirajan¹, H.K. Kakara², B. Humphrey¹, K. Shanbhag¹, V. Vanukuru², V. Jain¹, S. Jain¹
¹GlobalFoundries, USA  ; ²GlobalFoundries, India 
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RTu3B-2 **E-Band CMOS Built-In Self-Test Circuit Capable of Testing Active Antenna Impedance and Complex Channel Response**
Seung-Uk Choi, Kyunghwan Kim, Kangseop Lee, Seunghoon Lee, Ho-Jin Song, POSTECH, Korea 
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RTu3B-3 **Millimeter-Wave VNA Calibration Using a CMOS Transmission Line with Distributed Switches**
Jun-Chau Chien, National Taiwan University, Taiwan 
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RTu3B-4 **Multi-Tone Frequency Generator for Gate-Based Readout of Spin Qubits**
Mathilde Ouvrier-Buffer, Alexandre Siligaris, José Luis Gonzalez-Jimenez, CEA-Leti, France 
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RTu3B-5 **A Dual-Antenna, 263GHz Energy Harvester in CMOS for Ultra-Miniaturized Platforms with 13.6% RF-to-DC Conversion Efficiency at -8dBm Input Power**
Muhammad Ibrahim Wasiq Khan, Eunseok Lee, Nathan M. Monroe, Anantha P. Chandrakasan, Ruonan Han, MIT, USA 







RTu4A: Emerging Wireless Communications

Chair: David D. Wentzloff, University of Michigan, USA — Co-Chair: Arun Paidimarri, IBM T.J. Watson Research Center, USA
1A-1C, 15:40–17:00, Tuesday, 21 June 2022

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RTu4A-1 **802.11ah Transmitter with -55dB at ± 3 MHz and -58dB at ± 20 MHz ACLR and 60dB 2nd-Order Harmonic Rejection for 470MHz ~ 790MHz TV White Space Band Devices**
Seong-Sik Myoung, Jonghoon Park, Chang Hun Song, Ryun Woo Kim, Jaeyoung Ryu, Jeongki Choi, Hoai-Nam Nguyen, Seungyun Lee, Ilyong Jung, Jong-Han Lim, Sok Kyu Lee, Newracom, USA 
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RTu4A-2 **A 915MHz 19 μ W Blocker-Enhanced Wake-Up Receiver with Frequency-Hopping Two-Tone Modulation Achieving 53dB Tolerance to In-Band Interference**
Heyu Ren¹, Dawei Ye¹, Binbin Chen¹, Xu Jin¹, Wenjun Gong¹, Rongjin Xu¹, C.-J. Richard Shi²
¹Fudan University, China  ; ²University of Washington, USA 
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RTu4A-3 **A 320 μ W Receiver with -58dB SIR Leveraging a Time-Varying N-Path Filter**
Milad Moosavifar, Yaswanth K. Cherivirala, David D. Wentzloff, University of Michigan, USA 
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RTu4A-4 **A 26-to-33GHz Time-Modulated Spectral-Spatial Mapping MIMO Receiver Array with Concurrent Steerable Multi-Beams Using Only One Beamformer and One Single-Wire Interface**
Tzu-Yuan Huang, Boce Lin, Naga Sasikanth Mannem, Hua Wang, Georgia Tech, USA 

RTu4B: Building Blocks for Next Generation Frequency Synthesis

Chair: Joseph D. Cali, Raytheon, USA — Co-Chair: Ehsan Afshari, University of Michigan, USA
1D-1F, 15:40–17:00, Tuesday, 21 June 2022

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RTu4B-1 **Class-C BAW Oscillator Achieving a Close-In FOM of 206.5dB at 1kHz with Optimal Tuning for Narrowband Wireless Systems**
Bichoy Bahr, Danielle Griffith, Ali Kiaei, Thomas Tsai, Ryan Smith, Baher Haroun, Texas Instruments, USA 
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RTu4B-2 **A 5.1dBm 127–162GHz Frequency Sextupler with Broadband Compensated Transformer-Based Baluns in 22nm FD-SOI CMOS**
Shuyang Li¹, Wenhua Chen¹, Xingcun Li¹, Yunfan Wang²
¹Tsinghua University, China  ; ²University of Michigan, USA 
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RTu4B-3 **A Digital-to-Time Converter Based on Crystal Oscillator Waveform Achieving 86fs Jitter in 22nm FD-SOI CMOS**
Xi Chen¹, Teerachot Siriburanon¹, Zhongzheng Wang², Jianglin Du¹, Yizhe Hu¹, Anding Zhu¹, R. Bogdan Staszewski¹
¹University College Dublin, Ireland  ; ²MCCI, Ireland 
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RTu4B-4 **Highly Accurate Frequency Quadrupler Based LO Phase Shifter Achieving 0.29° RMS Phase Error for Wideband E-Band Beamforming Receiver**
Kangseop Lee¹, Chan-Gyu Choi¹, Kyunghwan Kim¹, Seunghoon Lee¹, Seung-Uk Choi¹, Jayol Lee², Bontae Koo², Ho-Jin Song¹
¹POSTECH, Korea  ; ²ETRI, Korea 