

# RFIC TECHNICAL SESSIONS



08:00–09:40 | Monday, 5 June 2017  
Hawai'i Convention Center

	Room 312	Room 313A	Room 313B
	<p><b>RM01A: 28GHz Phased-Array Transceivers for 5G Systems</b> Stefano Pellerano, <i>Intel Corporation</i> Hossein Hashemi, <i>University of Southern California</i></p>	<p><b>RM01B: Advanced Technologies for Optical, Millimeter-Wave and Radio Frequency Applications</b> Freek van Straten, <i>Ampleon</i> Richard Chan, <i>QORVO</i></p>	<p><b>RM01D: High-Performance Frequency Synthesizers</b> Jeyanandh Paramesh, <i>Carnegie Mellon University</i> Jaber Khoja, <i>Rockwell Collins</i></p>
08:00-8:20	<p><b>RM01A-1: Bi-Directional Flip-Chip 28GHz Phased-Array Core-Chip in 45nm CMOS SOI for High-Efficiency High-Linearity 5G Systems</b> Umut Kodak, Gabriel M. Rebeiz, <i>University of California, San Diego, USA</i></p>	<p><b>RM01B-1: Sub-THz Source Integrated in Low-Cost Silicon Photonic Technology Targeting 40Gb/s Wireless Links</b> Elsa Lacombe<sup>1</sup>, Frederic Giancesello<sup>1</sup>, Cedric Durand<sup>1</sup>, Guillaume Ducournau<sup>2</sup>, Cyril Luxey<sup>3</sup>, Daniel Gloria<sup>1</sup>, <sup>1</sup>STMicroelectronics, France, <sup>2</sup>IEMN, France, <sup>3</sup>EpOC-UNS, France</p>	<p><b>RM01D-1: A 59-to-276GHz CMOS Signal Generation for Rotational Spectroscopy</b> Xiaolong Liu<sup>1</sup>, Yue Chao<sup>2</sup>, Howard C. Luong<sup>1</sup>, <sup>1</sup>HKUST, China, <sup>2</sup>Qualcomm, USA</p>
08:20-8:40	<p><b>RM01A-2: A 28-GHz Phased-Array Transceiver with Series-Fed Dual-Vector Distributed Beamforming</b> Yi-Shin Yeh<sup>1</sup>, Ed Balboni<sup>2</sup>, Brian Floyd<sup>1</sup>, <sup>1</sup>North Carolina State University, USA, <sup>2</sup>Analog Devices, USA</p>	<p><b>RM01B-2: RF NMOS Switch with Dedicated Sinks for Reduced Leakage Current</b> M.S.M. Al-Sa'di, J.J.T.M. Donkers, P.H.C. Magnée, I. Brunets, J.W. Slotboom; <i>NXP Semiconductors, The Netherlands</i></p>	<p><b>RM01D-2: A Fully Integrated 75–83GHz FMCW Synthesizer for Automotive Radar Applications with -97dBc/Hz Phase Noise at 1MHz Offset and 100GHz/mSec Maximal Chirp Rate</b> Jakob Vovnoboy, Run Levinger, Nadav Mazor, Danny Elad; <i>ON Semiconductor, Israel</i></p>
08:40-9:00	<p><b>RM01A-3: A 28GHz CMOS Direct Conversion Transceiver with Packaged Antenna Arrays for 5G Cellular System</b> Hong-Teuk Kim, Byoung-Sun Park, Seung-Min Oh, Seong-Sik Song, Jong-Moon Kim, So-Hyeong Kim, Tak-Su Moon, Seung-Yeon Kim, Ji-Young Chang, Sung-Woong Kim, Woo-Seong Kang, Seung-Yoon Jung, Geum-Young Tak, Jin-Kyoung Du, Yu-Suhk Suh, Yo-Chuol Ho; <i>LG Electronics, Korea</i></p>	<p><b>RM01B-3: RF-pFET in Fully Depleted SOI Demonstrates 420GHz FT</b> Josef Watts<sup>1</sup>, Kumaran Sundaram<sup>2</sup>, Kok Wai Johnny Chew<sup>2</sup>, Steffen Lehmann<sup>3</sup>, Shih Ni Ong<sup>2</sup>, Waj Heng Chow<sup>2</sup>, Lye Hock Chan<sup>2</sup>, Jerome Mazurier<sup>4</sup>, Christoph Schwan<sup>3</sup>, Yogadissen Andee<sup>4</sup>, Thomas Feudel<sup>3</sup>, Luca Pirro<sup>4</sup>, Elke Erben<sup>3</sup>, Edward Nowak<sup>1</sup>, Elliot Smith<sup>3</sup>, El Mehdi Bazizi<sup>3</sup>, Thorsten Kammler<sup>3</sup>, Richard Taylor III<sup>1</sup>, Bryan Rice<sup>3</sup>, David Haramé; <sup>1</sup>GLOBALFOUNDRIES, USA, <sup>2</sup>GLOBALFOUNDRIES, Singapore, <sup>3</sup>GLOBALFOUNDRIES, Germany, <sup>4</sup>CEA-LETI, France</p>	<p><b>RM01D-3: A Subharmonically Injection-Locked PLL with 130fs RMS Jitter at 24GHz Using Synchronous Reference Pulse Injection from Nonlinear VCO Envelope Feedback</b> Dongseok Shin, Shinwoong Park, Sanjay Raman, Kwang-Jin Koh; <i>Virginia Tech, USA</i></p>
09:00-9:20	<p><b>RM01A-4: An Ultra Low-Cost 32-Element 28GHz Phased-Array Transceiver with 41dBm EIRP and 1.0–1.6Gbps 16-QAM Link at 300 Meters</b> Kerim Kibaroglu, Mustafa Sayginer, Gabriel M. Rebeiz; <i>University of California, San Diego, USA</i></p>	<p><b>RM01B-4: Validation of a Functional Principle for a Broadband Millimeter-Wave Power Detection Structure in a Recent BiCMOS Technology</b> F. Trenz<sup>1</sup>, R. Weigel<sup>1</sup>, Dietmar Kissinger<sup>2</sup>; <sup>1</sup>FAU Erlangen-Nürnberg, Germany, <sup>2</sup>IHP, Germany</p>	<p><b>RM01D-4: A Highly Reconfigurable RF-DPLL Phase Modulator for Polar Transmitters in Multi-Band/Multi-Standard Cellular RFICs</b> T. Buckel<sup>1</sup>, T. Mayer<sup>1</sup>, T. Bauernfeind<sup>2</sup>, S. Tertinek<sup>2</sup>, C. Wicpalek<sup>2</sup>, A. Springer<sup>1</sup>, R. Weigel<sup>3</sup>, T. Ussmueller<sup>4</sup>, <sup>1</sup>Johannes Kepler Universität Linz, Austria, <sup>2</sup>DMCE, Austria, <sup>3</sup>FAU Erlangen-Nürnberg, Germany, <sup>4</sup>Universität Innsbruck, Austria</p>
09:20-9:40			<p><b>RM01D-5: A Low-Noise Inductor-Less Fractional-N Sub-Sampling PLL with Multi-Ring Oscillator</b> Dongyi Liao, Ruixin Wang, Fa Foster Dai; <i>Auburn University, USA</i></p>

# RFIC TECHNICAL SESSIONS

10:00–11:40 | Monday, 5 June 2017  
Hawai'i Convention Center



	Room 312	Room 313A	Room 313B
	<b>RM02A: Radio Building Blocks for 5G Systems</b> Walid Ali-Ahmad, <i>Qualcomm</i> Bodhisatwa Sadhu, <i>IBM T.J. Watson Research Center</i>	<b>RM02B: Modeling and Characterization for Emerging High Frequency and RF Front-End Applications</b> Tzung-Yin Lee, <i>Skyworks Solutions</i> Edward Preisler, <i>TowerJazz</i>	<b>RM02D: Millimeter-Wave and THz Sources</b> Mohyee Mikhemar, <i>Broadcom</i> Ehsan Afshari, <i>University of Michigan</i>
10:00-10:20	<b>RM02A-1: A 25–30GHz 8-Antenna 2-Stream Hybrid Beamforming Receiver for MIMO Communication</b> Susnata Mondal, Rahul Singh, Ahmed I. Hussein, Jeyanandh Paramesh; <i>Carnegie Mellon University, USA</i>	<b>RM02B-1: Accurate Modelling and Optimization of Inhomogeneous Substrate Related Losses in SPDT Switch IC Design for WLAN Applications</b> Fadoua Gacim, Philippe Descamps; <i>CRISMAT, France</i>	<b>RM02D-1: An 8-Element Common-Mode-Coupled 106GHz Fundamental Oscillator with -111 dBc/Hz Phase Noise at 1MHz Offset</b> Alireza Imani, Hossein Hashemi; <i>University of Southern California, USA</i>
10:20-10:40	<b>RM02A-2: A 29-to-57GHz AM-PM Compensated Class-AB Power Amplifier for 5G Phased Arrays in 0.9V 28nm Bulk CMOS</b> Marco Vigilante, Patrick Reynaert; <i>Katholieke Universiteit Leuven, Belgium</i>	<b>RM02B-2: A Simplified CMOS FET Model Using Surface Potential Equations for Inter-Modulation Simulations of Passive-Mixer-Like Circuits</b> Mahmood Baraani Dastjerdi, Harish Krishnaswamy; <i>Columbia University, USA</i>	<b>RM02D-2: A 195GHz Single-Transistor Fundamental VCO with 15.3% DC-to-RF Efficiency, 4.5mW Output Power, Phase Noise FoM of -197dBc/Hz and 1.1% Tuning Range in a 55nm SiGe Process</b> Hamid Khatibi <sup>1</sup> , Somayeh Khyabani <sup>1</sup> , Andreia Cathelin <sup>2</sup> , Ehsan Afshari <sup>3</sup> ; <sup>1</sup> <i>Cornell University, USA</i> , <sup>2</sup> <i>STMicroelectronics, France</i> , <sup>3</sup> <i>University of Michigan, USA</i>
10:40-11:00	<b>RM02A-3: A Quad Channel 11-bit 1GS/s 40mW Collaborative ADC Based Enabling Digital Beamforming for 5G Wireless</b> Aurangozeb <sup>1</sup> , Farshid Aryanfar <sup>2</sup> , Masum Hossain <sup>1</sup> ; <sup>1</sup> <i>University of Alberta, Canada</i> , <sup>2</sup> <i>Straight Path Communications, USA</i>	<b>RM02B-3: Broadband Effect of Linear Tapered Transitions Between Probe Pads and GCPW Signal Lines On-Chip</b> Tinus Stander; <i>University of Pretoria, South Africa</i>	<b>RM02D-3: Energy Efficient Distributed-Oscillators at 134 and 202GHz with Phase-Noise Optimization through Body-Bias Control in 28nm CMOS FDSOI Technology</b> Raphaël Guillaume <sup>1</sup> , François Rivet <sup>2</sup> , Andreia Cathelin <sup>1</sup> , Yann Deval <sup>2</sup> ; <sup>1</sup> <i>STMicroelectronics, France</i> , <sup>2</sup> <i>IMS (UMR 5218), France</i>
11:00-11:20	<b>RM02A-4: A 16-Element 4-Beam 1GHz-IF 100MHz-Bandwidth Interleaved Bit-Stream Digital Beamformer in 40nm CMOS</b> Sunmin Jang <sup>1</sup> , Jaehun Jeong <sup>2</sup> , Rundao Lu <sup>1</sup> , Michael P. Flynn <sup>1</sup> ; <sup>1</sup> <i>University of Michigan, USA</i> , <sup>2</sup> <i>Broadcom, USA</i>	<b>RM02B-4: Accurate EM Simulation of SMT Components in RF Designs</b> Weimin Sun; <i>Skyworks Solutions, USA</i>	<b>RM02D-4: A Lens-Integrated 430GHz SiGe HBT Source with up to -6.3dBm Radiated Power</b> Philipp Hillger <sup>1</sup> , Janusz Grzyb <sup>1</sup> , Stefan Malz <sup>1</sup> , Bernd Heinemann <sup>2</sup> , Ullrich Pfeiffer <sup>1</sup> ; <sup>1</sup> <i>Bergische Universität Wuppertal, Germany</i> , <sup>2</sup> <i>IHP, Germany</i>
11:20-11:40		<b>RM02B-5: Variation of Intrinsic Components from Small-Signal Model of AlGaIn/GaN HEMTs in Linear and Saturation Regions After Off-State Bias</b> Yue-ming Hsin, Yi-Nan Zhong, Zhen-Wei Liu; <i>National Central University, Taiwan</i>	<b>RM02D-5: An Ultra-Wideband Harmonic Radiator with a Tuning Range of 62GHz (28.3%) at 220GHz</b> Ali Mostajeran, Ehsan Afshari; <i>Cornell University, USA</i>

MONDAY



# PANEL SESSION: 5TH GENERATION WIRELESS – WHERE IS THAT GOING AND WHAT’S IN IT FOR ME?



11:45–12:45 | Monday, 5 June 2017

Hawai'i Convention Center: 313C

**Panel Organizers and Moderators:** Oren Eliezer, *PHAZR, USA*; Brian Floyd, *North Carolina State University, USA*; Bodhisatwa Sadhu, *IBM T.J. Watson Research Center, USA*

## Abstract:

A panel of five experts from the industry and academia will debate different challenges associated with the development and deployment of 5th generation wireless systems; when and how the advancements in technologies such as massive MIMO, beamforming, phased arrays, and millimeter wave ICs will allow such systems to reach their performance and cost targets; and, of course, how will all that impact us, the community of RF engineers and end users.

## Panelists:

- Amitava Ghosh, *Nokia Fellow and Head of Small Cell Research, Nokia Bell Labs, USA*
- Gregory Chance, *Principal Engineer and 5G RF Architect, Intel, USA*
- Nitin Jain, *Founder, Chairman and CTO, Anokiwave, USA*
- Joy Laskar, *Co-Founder, CTO and Senior VP, Maja Systems, USA*
- Gabriel Rebeiz, *Distinguished Professor, University of California, San Diego, USA*

# RFIC TECHNICAL SESSIONS

13:30–15:10 | Monday, 5 June 2017  
Hawai'i Convention Center



MONDAY

	Room 312	Room 313A	Room 313B
	<p><b>RM03A: Ultra-Low Power Wake-Up Receivers</b> David Wentzloff, <i>University of Michigan</i> Arun Natarajan, <i>Oregon State University</i></p>	<p><b>RM03B: Next Generation Transmitters and Receivers for Cellular and Wireless Connectivity</b> Julian Tham, <i>Cypress Semiconductor</i> Yuan-Hung Chung, <i>MediaTek</i></p>	<p><b>RM03D: X Band PAs and Beyond</b> Jeffrey Walling, <i>University of Utah</i> Ranjit Gharpure, <i>University of Texas at Austin</i></p>
13:30-13:50	<p><b>RM03A-1: A 2.4GHz BLE-Compliant Fully-Integrated Wakeup Receiver for Latency-Critical IoT Applications Using a 2-Dimensional Wakeup Pattern in 90nm CMOS</b> Ming Ding, Peng Zhang, Chuang Lu, Yan Zhang, Stefano Traferro, Gert-Jan van Schaik, Yao-Hong Liu, Jarkko Huijts, Christian Bachmann, Guido Dolmans, Kathleen Philips; <i>Holst Centre, The Netherlands</i></p>	<p><b>RM03B-1: A Wideband Linear Direct Digital RF Modulator Using Harmonic Rejection and I/Q-Interleaving RF DACs</b> M. Mehrpoo, Mohsen Hashemi, Yiyu Shen, Rene van Leuken, Morteza S. Alavi, Leo C.N. de Vreede; <i>Technische Universiteit Delft, The Netherlands</i></p>	<p><b>RM03D-1: Fully Integrated CMOS X-Band Power Amplifier Quad with Current Reuse and Dynamic Digital Feedback (DDF) Capabilities</b> Florian Bohn, Behrooz Abiri, Ali Hajimiri; <i>Caltech, USA</i></p>
13:50-14:10	<p><b>RM03A-2: 95µW 802.11g/n Compliant Fully-Integrated Wake-Up Receiver with -72dBm Sensitivity in 14nm FinFET CMOS</b> Erkan Alpman<sup>1</sup>, Ahmad Khairi<sup>2</sup>, Minyoung Park<sup>1</sup>, V. Srinivasa Somayazulu<sup>1</sup>, Jeffrey R. Foerster<sup>1</sup>, Ashoke Ravi<sup>1</sup>, Stefano Pellerano<sup>1</sup>; <sup>1</sup>Intel, USA, <sup>2</sup>Carnegie Mellon University, USA</p>	<p><b>RM03B-2: A Dual Core Power Combining Digital Power Amplifier for 802.11b/g/n with +26.8dBm Linear Output Power in 28nm CMOS</b> Alden Wong, Philip Godoy, Ovidiu Carnu, Hao Li, Xingliang Zhao, Ashkan Olyaei, Amir Ghaffari, Sai-Wang Tam, Renaldi Winoto, Randy Tsang; <i>Marvell Semiconductor, USA</i></p>	<p><b>RM03D-2: A 42–46.4% PAE Continuous Class-F Power Amplifier with Cgd Neutralization at 26–34GHz in 65nm CMOS for 5G Applications</b> Sheikh Nijam Ali<sup>1</sup>, Pawan Agarwal<sup>1</sup>, Shahriar Mirabbasi<sup>2</sup>, Deukhyoun Heo<sup>1</sup>; <sup>1</sup>Washington State University, USA, <sup>2</sup>University of British Columbia, Canada</p>
14:10-14:30	<p><b>RM03A-3: A 335µW -72dBm Receiver for FSK Back-Channel Embedded in 5.8GHz Wi-Fi OFDM Packets</b> Jaeho Im, Hun-Seok Kim, David D. Wentzloff; <i>University of Michigan, USA</i></p>	<p><b>RM03B-3: A Fully-Integrated Digital-Intensive Polar Doherty Transmitter</b> Yiyu Shen<sup>1</sup>, M. Mehrpoo<sup>1</sup>, Mohsen Hashemi<sup>1</sup>, Michael Polushkin<sup>1</sup>, Lei Zhou<sup>1</sup>, Mustafa Acar<sup>2</sup>, Rene van Leuken<sup>1</sup>, Morteza S. Alavi<sup>1</sup>, Leo C.N. de Vreede<sup>1</sup>; <sup>1</sup>Technische Universiteit Delft, The Netherlands, <sup>2</sup>Ampleon, The Netherlands</p>	<p><b>RM03D-3: Waveform Engineering in a mm-Wave Stacked-HBT Switching Power Amplifier</b> Kunal Datta, Hossein Hashemi; <i>University of Southern California, USA</i></p>
14:30-14:50	<p><b>RM03A-4: A 365nW -61.5dBm Sensitivity, 1.875cm2 2.4GHz Wake-Up Receiver with Rectifier-Antenna Co-Design for Passive Gain</b> Kamala Raghavan Sadagopan<sup>1</sup>, Jian Kang<sup>1</sup>, Sanket Jain<sup>1</sup>, Yogesh Ramadas<sup>2</sup>, Arun Natarajan<sup>1</sup>; <sup>1</sup>Oregon State University, USA, <sup>2</sup>Texas Instruments, USA</p>	<p><b>RM03B-4: A 2x2 802.11ac WiFi Transceiver Supporting Per Channel 160MHz Operation in 28nm CMOS</b> Wen-Kai Li, Wei-Chia Chan, Tzung-Chuen Tsai, Hui-Hsien Liu, Wen-Ming Chang, Chang-Ming Lai, Tao Chiang, Chen-Lun Lin, Pi-An Wu, Hao-Wei Huang, Yen-Liang Yeh, Pang-Ning Chen, Jui-Lin Hsu, Sheng-Hao Chen, Chi-Yun Wang, Yu-Hsien Chang, Tsung-Hsun Yang, Ruey-Bo Sun, Wei-Hsiu Hsu, Jing-Hong Conan Zhan; <i>MediaTek, Taiwan</i></p>	<p><b>RM03D-4: Linear CMOS Power Amplifier at Ka-Band with Ultra-Wide Video Bandwidth</b> Daechul Jeong<sup>1</sup>, Kyunghoon Moon<sup>1</sup>, Seokwon Lee<sup>1</sup>, Byungjoon Park<sup>2</sup>, Jihoon Kim<sup>2</sup>, Juho Son<sup>2</sup>, Bumman Kim<sup>1</sup>; <sup>1</sup>POSTECH, Korea, <sup>2</sup>Samsung, Korea</p>
14:50-15:10	<p><b>RM03A-5: A 64µW, 23dB Gain, 8dB NF, 2.4GHz RF Front-End for Ultra-Low Power Internet-of-Things Transceivers</b> Anjana Dissanayake, Hyun-Gi Seok, Oh-Yong Jung, Sok-Kyun Han, Sang-Gug Lee; <i>KAIST, Korea</i></p>	<p><b>RM03B-5: A Current-Efficient Wideband Cellular RF Receiver for Multi-Band Inter- and Intra-Band Carrier Aggregation Using 14nm FinFET CMOS</b> Youngmin Kim, Pilsung Jang, Taehwan Jin, Jaeseung Lee, Heeseon Shin, Suseob Ahn, Jungyeol Bae, Junghwan Han, Seungchan Heo, Thomas Byunghak Cho; <i>Samsung, Korea</i></p>	<p><b>RM03D-5: Adaptive Gain and Phase Adjustment for Local Linearization of Power Amplifiers of Micro/mm-Wave Phase Arrays</b> Farid Shirinfar<sup>1</sup>, Reza Rofougaran<sup>2</sup>, Sudhakar Pamarti<sup>1</sup>; <sup>1</sup>University of California, Los Angeles, USA, <sup>2</sup>Movandi, USA</p>

# RFIC TECHNICAL SESSIONS

15:30–17:10 | Monday, 5 June 2017

Hawai'i Convention Center



	Room 312	Room 313A	Room 313B
	<b>RM04A: Low-Power Transceivers</b> Gernot Hueber, <i>NXP Semiconductors</i> Yao-Hong Liu, <i>IMEC</i>	<b>RM04B: RF Circuits for Emerging Applications and Gigabit Optical Links</b> Fred Lee, <i>Google</i> Ayman Fayed, <i>Ohio State University</i>	<b>RM04D: Reconfigurable Receiver Front-Ends</b> Eric Klumperink, <i>University of Twente</i> Ramesh Harjani, <i>University of Minnesota</i>
15:30-15:50	<b>RM04A-1: Crystal-Free Narrow-Band Radios for Low-Cost IoT</b> Brad Wheeler, Filip Maksimovic, Nima Baniasadi, Sahar Mesri, Osama Khan, David Burnett, Ali Niknejad, Kris Pister; <i>University of California, Berkeley, USA</i>	<b>RM04B-1: A 12-b, 1-GS/s 6.1mW Current-Steering DAC in 14nm FinFET with 80dB SFDR for 2G/3G/4G Cellular Application</b> Jaekwon Kim, Woojin Jang, Yanghun Lee, Seunghyun Oh, Jongwoo Lee, Thomas Byunghak Cho; <i>Samsung, Korea</i>	<b>RM04D-1: A Direct RF-to-Information Converter for Reception and Wideband Interferer Detection Employing Pseudo-Random LO Modulation</b> Tanbir Haque, Mathew Bajor, Yudong Zhang, Jianxun Zhu, Zarijon Jacobs, Robert Kettlewell, John Wright, Peter R. Kinget; <i>Columbia University, USA</i>
15:50-16:10	<b>RM04A-2: A 4mW-RX 7mW-TX IEEE 802.11ah Fully-Integrated RF Transceiver</b> Ao Ba, Kia Salimi, Paul Mateman, Pepijn Boer, Johan van den Heuvel, Jordy Gloude-mans, Johan Dijkhuis, Ming Ding, Yao-Hong Liu, Christian Bachmann, Guido Dolmans, Kathleen Philips; <i>Holst Centre, The Netherlands</i>	<b>RM04B-2: CMOS Integrated Galvanically Isolated RF Chip-to-Chip Communication Utilizing Lateral Resonant Coupling</b> Mahdi Javid <sup>1</sup> , Richard Burton <sup>2</sup> , Karel Ptacek <sup>3</sup> , Jennifer Kitchen <sup>1</sup> ; <sup>1</sup> <i>Arizona State University, USA</i> , <sup>2</sup> <i>Atomera, USA</i> , <sup>3</sup> <i>ON Semiconductor, Czech Republic</i>	<b>RM04D-2: A 0.3GHz to 1.4GHz N-Path Mixer-Based Code-Domain RX with TX Self-Interference Rejection</b> Abhishek Agrawal, Arun Natarajan; <i>Oregon State University, USA</i>
16:10-16:30	<b>RM04A-3: A Sub-1V, 2.8dB NF, 475µW Coupled LNA for Internet of Things Employing Dual-Path Noise and Nonlinearity Cancellation</b> Mustafijur Rahman, Ramesh Harjani; <i>University of Minnesota, USA</i>	<b>RM04B-3: A 200µm × 200µm × 100µm, 63nW, 2.4GHz Injectable Fully-Monolithic Wireless Bio-Sensing System</b> S. O'Driscoll <sup>1</sup> , S. Korhummel <sup>1</sup> , P. Cong <sup>1</sup> , Y. Zou <sup>1</sup> , K. Sankaragomathi <sup>1</sup> , J. Zhu <sup>2</sup> , T. Deyle <sup>3</sup> , A. Dastgheib <sup>1</sup> , B. Lu <sup>1</sup> , M. Tierney <sup>1</sup> , J. Shao <sup>1</sup> , C. Gutierrez <sup>1</sup> , S. Jones <sup>1</sup> , H. Yao <sup>1</sup> ; <sup>1</sup> <i>Verily, USA</i> , <sup>2</sup> <i>Google, USA</i> , <sup>3</sup> <i>Cobalt Robotics, USA</i>	<b>RM04D-3: A 0.7 to 1GHz Switched-LC N-Path LNA Resilient to FDD-LTE Self-Interference at ≥ 40MHz Offset</b> Gengzhen Qi <sup>1</sup> , Barend van Liempd <sup>2</sup> , Pui-In Mak <sup>1</sup> , Rui P. Martins <sup>1</sup> , Jan Craninckx <sup>2</sup> ; <sup>1</sup> <i>University of Macau, China</i> , <sup>2</sup> <i>IMEC, Belgium</i>
16:30-16:50	<b>RM04A-4: A Fully Integrated Reconfigurable Low-Power Sub-GHz Transceiver for 802.11ah in 65nm CMOS</b> Meng Wei, Zheng Song, Peiyi Li, Jianfu Lin, Junfeng Zhang, Jiachen Hao, Baoyong Chi; <i>Tsinghua University, China</i>	<b>RM04B-4: SiGe BiCMOS Linear Modulator Drivers with 4.8-Vpp Differential Output Swing for 120-GBaud Applications</b> Robert J.A. Baker <sup>1</sup> , James Hoffman <sup>1</sup> , Peter Schvan <sup>2</sup> , Sorin P. Voinescu <sup>1</sup> ; <sup>1</sup> <i>University of Toronto, Canada</i> , <sup>2</sup> <i>Ciena, Canada</i>	<b>RM04D-4: A Mixer-First Receiver with Enhanced Selectivity by Capacitive Positive Feedback Achieving +39dBm IIP3 and &lt;3dB Noise Figure for SAW-Less LTE Radio</b> Yuan-ching Lien <sup>1</sup> , Eric Klumperink <sup>1</sup> , Bernard Tenbroek <sup>2</sup> , Jon Strange <sup>2</sup> , Bram Nauta <sup>1</sup> ; <sup>1</sup> <i>University of Twente, The Netherlands</i> , <sup>2</sup> <i>MediaTek, UK</i>
16:50-17:10	<b>RM04A-5: A 3.4Mbps NFC Card Emulator Supporting 40mm<sup>2</sup> Loop Antenna</b> Tieng Ying Choke <sup>1</sup> , Ying Chow Tan <sup>1</sup> , Chin Heng Leow <sup>1</sup> , Junmin Cao <sup>1</sup> , Liming Jin <sup>1</sup> , Huaijiang Zhang <sup>1</sup> , Hon Cheong Hor <sup>1</sup> , Eng Chuan Low <sup>1</sup> , Weimin Shu <sup>1</sup> , Osama Shana'a <sup>2</sup> ; <sup>1</sup> <i>MediaTek, Singapore</i> , <sup>2</sup> <i>MediaTek, USA</i>	<b>RM04B-5: A 32Gb/s-NRZ, 15GBaud/s-PAM4 DFB Laser Driver with Active Back-Termination in 65nm CMOS</b> Bozhi Yin <sup>1</sup> , Nan Qi <sup>1</sup> , Jingbo Shi <sup>1</sup> , Xi Xiao <sup>2</sup> , Daigao Chen <sup>2</sup> , Miaofeng Li <sup>2</sup> , Zhiyong Li <sup>2</sup> , Jiangbing Du <sup>1</sup> , Zuyuan He <sup>2</sup> , Rui Bai <sup>3</sup> , Yi Wang <sup>6</sup> , Jun Zheng <sup>6</sup> , Fred Chang <sup>6</sup> , Huanlin Zhang <sup>6</sup> , Patrick Yin Chiang <sup>1</sup> ; <sup>1</sup> <i>Fudan University, China</i> , <sup>2</sup> <i>Wuhan Research Institute of Post &amp; Telecommunication, China</i> , <sup>3</sup> <i>Chinese Academy of Sciences, China</i> , <sup>4</sup> <i>Shanghai Jiao Tong University, China</i> , <sup>5</sup> <i>PhotonIC Technology, China</i> , <sup>6</sup> <i>Applied Optoelectronics, USA</i>	<b>RM04D-5: 85–110GHz CMOS Tunable Nonreciprocal Transmission Line with 45dB Isolation for Wideband Transceivers</b> Chang Yang, Ping Gui; <i>Southern Methodist University, USA</i>