

Detailed Program

09:00 – 16:40 Wednesday, August 15	
<i>Workshop A (Ballroom B)</i> 09:30 – 12:40	<i>Workshop B (Ballroom B)</i> 14:00 – 16:35
<i>RF and Analog IC Design for IoT</i> <i>Chair: Minkyu Je</i>	<i>mmWave IC Design for Emerging Applications</i> <i>Chair: Minkyu Je</i>
<p>A-1 Digitally-Assisted Polar-Modulated Phased Array Transmitter for 5G and IoT Xun Luo, UESTC</p> <p>A-2 Low-Power Low-Noise CMOS Oscillator Design for IoT Sensor Nodes Junghyup Lee, DGIST</p> <p>A-3 Body-Channel Communication IC Design for Low-Energy IoT Applications Joonsung Bae, Kangwon University</p> <p>A-4 RF/Analog IC Design for Internet of Biomedical Things Minkyu Je, KAIST</p>	<p>B-1 mm-Wave Front-End IC for 5G Communication Songcheol Hong, KAIST</p> <p>B-2 mmWave and sub-mmWave Circuits for Imaging Applications Jae-Sung Rieh, Korea University</p> <p>B-3 Harmonic radars techniques for small animals positioning Zuo-Min Tsai, National Chung-Cheng University</p> <p>B-4 Ultrahigh-Speed Terahertz Wireless Communication with Silicon Integrated Circuits Minoru Fujishima, Hiroshima University</p>

9:00 – 10:00 Thursday, August 16

Opening Session and Keynote (Ballroom A & B)

Multifunctional Systems



About the Speaker: Laureate Prof. Rob J Evans was born in Melbourne, Australia, in 1947. After completing a BE degree in Electrical Engineering at the University of Melbourne in 1969, he worked as a radar systems engineering officer with the Royal Australian Airforce. He completed a PhD in 1975 at the University of Newcastle followed by postdoctoral studies at the Laboratory for Information and Decision Systems, MIT, USA and the Control and Management Department, Cambridge University, UK.

In 1977 he took up an academic position at the University of Newcastle, where he served as Head of the Department of Electrical and Computer Engineering and a Chief Investigator and Co-Director of the ARC Centre of Excellence on Industrial Control Systems.

In 1992 he moved to the University of Melbourne, where he has served in many roles including Head of the Department of Electrical and Electronic Engineering, Research Leader for the Cooperative Research Centre for Sensor Signal and Information Processing, Director of the Defence Science Centre of Excellence in Networked Decision and Sensor Systems, Director of the Victoria Research Laboratory of National ICT Australia, Executive Dean of Engineering at the University of Melbourne, and Director of the Defence Sciences Institute. He is currently a Chief Investigator in the OzGrav ARC Centre of Excellence for gravity wave detection.

He has served on numerous national and international committees including many Government and Academy committees. He was a founding member of the Asian Control Conference Committee, co-chair of the international program committee for the 1993 IFAC World Conference, General Chair of the 2003 International Data Fusion Conference, General Chair of the 2004 Asian Control Conference. He was a member of the Council of the International Federation for Automatic Control from 2002 until 2008. He was Director of Hearing CRC from 2007-2015.

His research and industry engagement has ranged across many areas including theory and applications in industrial control, industrial and integrated electronics, radar systems, signal processing and telecommunications. He has published over 500 research papers, holds 21 granted patents around the world and has supervised over 100 PhD students. He is a Melbourne University Laureate Professor, a Fellow of the Australian Academy of Science (FAA), a Fellow of the Australian Academy of Technological Sciences and Engineering (FTSE), a Life Fellow of the Institution of Electrical and Electronic Engineers, USA (FIEEE) and a Fellow of the Institution of Engineers Australia.

Abstract : The idea of a universal RF radiating structure capable of operating over a wide frequency band and supporting multiple simultaneous steerable radiating beams operating at different frequencies is emerging as the next exciting wave in RF technology. This concept is particularly relevant for modern highly integrated RF circuits capable of supporting many simultaneous sensing and communication functionalities all on the same chip. In this talk we look back at the development of RF radiating systems over the past 50 years with a focus on the theory and practice of multiport array systems. We examine the many difficult challenges faced and how these were overcome resulting in today's impressive RF array industry. We also examine some of the new challenges facing the dream of a universal RF radiating system.

10:30 – 12:00 Thursday, August 16

Ballroom B – TH1 Invited Papers 1 – Amplifier ICs

Chair: Jae-Sung Rieh

TH1-01

Review of Millimeter-wave CMOS Power Amplifiers

Huei Wang; Jung-Lin Lin; Zuo-Min Tsai

TH1-02

16-Channel High-CMRR Neural-Recording Amplifiers Using Common-Mode-Tracking Power Supply Rails

Doojin Jang; Taeju Lee; Hyuntak Jeon; Seoktae Koh; Jaesuk Choi; Junghyup Lee; Minkyu Je

TH1-03

Machine-Learning Based Digital Doherty Power Amplifier

Rui Ma; Mouhacine Benosman; Koushik A. Manjunatha; Yuji Komatsuzaki; Shintaro Shinjo; Koon Hoo Teo; Philip Orlik

13:00 – 14:20 Thursday, August 16

Ballroom A – TH2 – Frequency Generation and Sampling ICs

Chair: Noriharu Suematsu

Ballroom B – TH3 – Mixer and Doubler ICs

Chair: Kenjiro Nishikawa

TH2-01

A 28 GHz Low Phase-Noise Colpitts VCO With Wide Tuning-Range in SiGe Technology

Zhigang Peng; Debin Hou; Jixin Chen; Yu Xiang; Wei Hong

TH2-02

A 300- μ W K-Band Oscillator with High-Q Open-Stub Capacitor in 55-nm CMOS DDC

Sangyeop Lee; Kyoya Takano; Ruibing Dong; Shuhei Amakawa; Takeshi Yoshida; Minoru Fujishima

TH2-03

A Fractional-N Divider for Phase-Locked Loop with Delta-Sigma Modulator and Phase-Lag Selector

Yupeng Fu; Lianming Li; Dongming Wang

TH2-04

A 28 GHz-band Direct RF Undersampling S/H CMOS IC with 40 dB SNR

Nagahiro Yoshino; Keita Norishima; Mizuki Motoyoshi; Suguru Kameda; Noriharu Suematsu

TH3-01

A 300 GHz 4th-harmonic mixer in 0.13 μ m SiGe BiCMOS technology

Chen Wang; Debin Hou; Jixin Chen; Wei Hong

TH3-02

An E-Band Gate-Pump SSB Mixer for Vital Signs Doppler Radar

Yu-Teng Chang; Hsin-Chia Lu

TH3-03

A 60-GHz Wideband Down-conversion Mixer for Low-power and High-speed Wireless Communication

Hae Jin Lee; Chul Soon Park

TH3-04

A K-band Frequency Doubler in 0.15- μ m GaAs pHEMT with an Autonomous Circuit for Stability Analysis

Kuan-Hsueh Lu; Jyun-Jia Huang; Wei-Cheng Chen; Hong-Yeh Chang; Yu-Chi Wang

14:20 – 15:00 Thursday, August 16

Atrium – THP Poster Session 1

Chair: Mohammad Madihian

THP-01

Intermodulation Distortion Analysis for Power Amplifier with Various Collector Voltages
Shau-Gang Mao; Wei-Ting Tsai; Chong-Yi Liou; Zheng-An Peng

THP-02

Single Balanced Mixer for UWB Applications
Saurabh Pegwal; Mahesh P Abegaonkar; Ananjan Basu; Shibani K Koul

THP-03

Tri-Band Microstrip Monopole Antenna for Energy Harvesting
Mina Shaker; Dalia Elsheikh, dalia; Hala Elsadek; Hani Ghali

14:50 – 15:50 Thursday, August 16

Ballroom B – TH4 Invited Papers 2 – Transmission Lines and Passive ICs

Chair: Minoru Fujishima

TH4 -01

Novel RF MEMS Switches and Phase Shifters
Shibani K Koul

TH4 -02

Tunability of Artificial Transmission Lines with Variable Capacitors
Dmitry Kholodnyak

TH4 -03

Dual-mode Frequency Tunable Planar Filter Design with Capacitive Coupling Technique
Kenjiro Nishikawa; Masashi Muraguchi

TH4-04

Broadband Three-Way LC-Ladder Divider on a Double-Sided PCB
Tadashi Kawai; Yosuke Okada; Akira Enokihara

09:00 – 12:00 Friday, August 17

Ballroom A – FR1– Amplifier ICs and Modeling
Chair: Huei Wang

Ballroom B – FR2 – Antenna ICs
Chair: Kamran Ghorbani

FR1-01

A 6.78-MHz 100-W Class E Power Amplifier Module with an Adaptive Power Combiner
Ui-Gyu Choi; Jong-Ryul Yang

FR1-02

A Compact 39-GHz 17.2-dBm Power Amplifier for 5G Communication in 65-nm CMOS
Yun Wang; Rui Wu; Kenichi Okada

FR1-03

A Fully-Integrated S-Band Differential LNA in 0.15- μm GaAs pHEMT for Radio Astronomical Receiver

Wei-Cheng Huang; Chau-Ching Chiong; Huei Wang

FR1-04

AlGaIn/GaN MIS HEMT Modeling of Frequency Dispersion and Self-Heating Effect

Hitoshi Aoki; Hiroyuki Sakairi; Naotaka Kuroda; Yohei Nakamura; Kentaro Chikamatsu; Ken Nakahara

FR2-01

Design of 60-GHz Circular-Polarization Antenna Array in Glass-IPD for Monostatic Radar MMICs
Wei-Kuo Cheng; Chia-Chan Chang; Tsung-Heng Tsai

FR2-02

Multiband Coplanar Monopole Antenna for Energy Harvesting

Dalia Elsheakh, dalia; Mina Shaker; Hala Elsadek; Hani Ghali

FR2-03

Integrated Butler Matrix and 1x4 Antenna Array for Board-to-Board Communication in the mmWave-range

Bernhard Klein; Michael Jennings; Ronny Hahnel; Dirk Plettemeier Wang

10:20 – 11:00 Friday, August 17

Atrium – FRP– Poster Session 2
Chair: Mohammad Madihian

FRP-01

Path Following of Autonomous Mobile Robot with Distance Measurement using RFID Tags
Suvankar Barai

FRP-02

A Drain Resistance Degradation Modeling Procedure of LDMOS's
Hitoshi Aoki; Masanori Shimasue

FRP-03

A 24-GHz High Linearity Down-conversion Mixer in 90-nm CMOS
Feifei Chen; Yunshan Wang; Jung-Lin Lin; Zuo-Min Tsai; Huei Wang

FRP-04

RF MEMS Switch with Enhanced Reliability
Vishal Kumar; S Koul; Ananjan Basu

11:00 – 12:30 Friday, August 17

Ballroom B – FR3: Invited Papers 3– Signal Generation ICs

Chair: Minkyu Je

FR3-01

Terahertz InP HBT Oscillators

Jae-Sung Rieh; Jongwon Yun; Daekeun Yoon; Jungsoo Kim; Heekang Son

FR3-02

Research Progress of the Circuits for the THz systems

Debin Hou; Jixin Chen; Peigen Zhou; Chen Wang; Pinpin Yan; Wei Hong

FR3-03

Dual Resonance Circuits by Defected Ground Structure Resonators for Low Phase Noise K-Band CMOS VCO

Ramesh K. Pokharel; Nusrat Jahan; Adel Barakat

13:30 – 15:30 Friday, August 17

Ballroom B – FR4: Invited Papers 4– Receiver, Transmitter and Transceiver ICs

Chair: Wei Hong

FR4-01

300GHz-Band CMOS Wireless Transceiver

Minoru Fujishima

FR4-02

Direct Digital RF Technology - Challenges for Beyond Nyquist Frequency Range -

Noriharu Suematsu

FR4-03

Reviews of High Image Rejection Up and Down Converters for Next-Generation Satellite Applications

Ian Huang; Yu-Ci Li; Wu-Chen Lin; Jeng-Han Tsai; Abdulelah Alshehri; Mazen Almalki; Abdulhamid Sayed; Hsin-Chia Lu; Tian-Wei Huang

FR4-04

Cryogenic receiver with superconducting filter

Hiroyuki Kayano

16:00 – 17:10 Friday, August 17

*Ballroom A – FR5– Amplitude, Frequency and
Phase Functional ICs*

Chair: Dmitry Kholodnyak

Ballroom B – FR6 – Switch ICs

Chair: Shibani Koul

FR5-01

Linearization Technologies for Power Amplifiers of Cellular Base Stations (Invited)

Yasunori Suzuki; Hiroshi Okazaki; Takahiro Asai; Yukihiko Okumura

FR5-03

A 0.033mm² Integrated Tunable Low-Pass Filter for Wideband Transceiver RFIC in 65 nm CMOS

Ping-Hsun Wu

FR5-02

A Ka-Band 360° Digitally-Controlled Passive Phase Shifter in 65-nm CMOS

Jiajun Zhang; Dixian Zhao

FR6-01

Silicon carbide micromechanical and autoemission structure-based RF switches for harsh environments

Anton Lagosh; Vladimir Golubkov; Vladimir Ilyin; Andrey Korlyakov; Victor Luchinin

FR6-02

Design and Development of 60 GHz Antenna Integrated with RF MEMS SPDT Switch for Transceiver Modules

Anushruti Jaiswal; Sukomal Dey; Mahesh P Abegaonkar; Shibani K Koul

FR6-03

A W-Band Low Loss, High Power SPDT Switch Using Reverse Saturated 0.13 μm SiGe HBTs

Peigen Zhou; Haoyi Dong; Zhigang Peng; Jixin Chen; Debin Hou; Pinpin Yan; Wei Hong

FR6-04

A Compact Bi-directional K and Ka Band SPDT in 0.13μm SiGe BiCMOS Process

Haoyi Dong; Jixin Chen; Debin Hou; Yu Xiang; Wei Hong