2015 IEEE International Conference on RFID Technology and Applications (RFID-TA 2015)

Tokyo, Japan
16 – 18 September 2015
Technical Program

Wednesday, September 16

2:00 PM – 6:00 PM

Room: 701+702: Workshop on Wireless Power Transfer for Various Applications
Room: 703: Special Tutorial IoT related regulations and standards

Conference Reception

Washington Hotel Ariake, 3F Room Iris, 18:00~

Thursday, September 17

S3: Localization and its applications

Room: 601, 8:30 AM – 9:45 AM

Chair: Gregory Durgin (Georgia Tech, USA)

Transmit Beamforming for Angle-of-Activation (AoAct) Estimation in Passive UHF RFID Systems....1

Markus Cremer (London South Bank University, United Kingdom); Uwe Dettmar, Rainer Kronberger, Robin Lerche, Carsten Hudasch and Thomas Knie (Cologne University of Applied Sciences, Germany); Anjum (Jim) Pervez (London South Bank University, United Kingdom)

Simultaneous AoA Estimations for Two Passive UHF RFID Tags....8

Meng-Chang Hua and Hsin-Chin Liu (National Taiwan University of Science and Technology, Taiwan)

Deployment of LED light control system using battery-less wireless human detection sensor networks....14

Tao Yu (Tokyo Institute of Technology, Japan); Yusuke Kuki and Gento Matsushita (Osaka University, Japan); Daiki Maehara (Tokyo Institute of Technology, Japan); Seiichi Sampei (Osaka University, Japan); Kei Sakaguchi (Osaka University & Tokyo
S1: Networking and Communications Protocols 1

Room: 701+702, 8:30 AM – 9:45 AM
Chair: Ismail Uysal (University of South Florida, USA)

Cooperative Tag Communications....27
Daniel Dobkin (Enigmatics, USA); Tali Freed, Christopher Gerdom, Carlos Flores, Eric Futak and Clay Suttner (Cal Poly San Luis Obispo, USA)
A performance analysis of interference rejection technique in multi-subcarrier multiple access....33
Yuki Igarashi (Keio University, Japan); Nitish Rajoria (Keio University, Japan); Yuusuke Kawakita (The University of Electro-Communications, Japan); Jin Mitsugi (Keio University, Japan); Haruhisa Ichikawa (The University of Electro-Communications, Japan)

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Jelena Kaitovic (Vienna University of Technology, Austria); Markus Rupp (TU Wien, Austria)

S2: RFID Information System

Room: 703, 8:30 AM – 9:45 AM
Chair: Joan Melià-Seguí (Universitat Oberta de Catalunya, Spain)

Multi-code Filtering & Collection: Proposal and Performance Evaluation....45
Iori Mizutani and Jin Mitsugi (Keio University, Japan); Masaki Ehara (Tokyo University of Technology, Japan)

Measuring User-Object Interactions in IoT Spaces....52
Raúl Parada (Universitat Pompeu Fabra, Spain); Joan Melià-Seguí (Universitat Oberta de Catalunya, Spain); Anna Carreras, Marc Morenza-Cinos and Rafael Pous (Universitat Pompeu Fabra, Spain)

Weighted Insert Scheme Based on R*-tree for Tracing Moving Objects with an RFID Tag....59
Gihong Kim and Bonghee Hong (Pusan National University, Korea)

S4: Networking and Communications Protocols 2

Room: 701+702, 10:15 AM – 11:30 AM
Chair: Hsin-Chin Liu (National Taiwan University of Science and Technology, Taiwan)

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Chair: Daniel Dobkin (Enigmatics, USA)

Experimental Performance Evaluation of Passive UHF RFID Systems under Interference....81
Bekir S Çiftler (Florida International University, USA); Abdullah Kadri (Qatar Mobility Innovations Center, Qatar); Ismail Güvenç (Florida International University, USA)

An Optimization Model for Antenna Selection and Deployment in Single and Multi-cell RFID Systems....87
Sicheng Zou (Cambridge University, United Kingdom); Michael J Crisp and Sithamparanathan Sabesan (University of Cambridge, United Kingdom); Abdullah Kadri (Qatar Mobility Innovations Center, Qatar); Richard Penty (Cambridge University, United Kingdom); Ian White (University of Cambridge, United Kingdom)

P1: Conference Plenary

Room: 607+608, 1:00 PM – 4:00 PM
• General Chair Welcome
• TPC report
• Best paper announcement
• Keynote Speech

Smart Supply Chain and Logistics in Rakuten
Keita Shimanuki, Rakuten

Product Content for Omni-channel Retail in Walmart
Ram Rampalli, Walmart
P2: Poster and Demo

Room: 701+702, 4:00 PM – 5:30 PM

Long range and low powered RFID tags with tunnel diode....N/A
Francesco Amato (Georgia Institute of Technology, USA); Christopher Peterson (Georgia Institute of Technology, USA); Muhammad Bashir Akbar (Georgia Institute of Technology, USA); Gregory Durgin (Georgia Tech, USA)

Near-Field Tag-Antenna-Based Presence Sensing with Object-Identification....N/A
Wataru Hattori (NEC Corporation, Japan); Kiyohiko Takahashi (NEC Corp., Japan); Ryo Kawai (NEC Corporation, Japan); Yusuke Takahashi (NEC Asia Pacific Pte Ltd., Singapore); Shinichi Mikami and Daichi Shimohata (NEC Engineering, Ltd., Japan)

A High-Capacity Protocol for Physical Distribution using 920-MHz band....N/A
Nobuaki Mochizuki (NTT Corporation, Japan)

A Performance evaluation of subcarrier allocation methods in multi-subcarrier multiple access....N/A
Nitish Rajoria (Keio University, Japan); Yuki Igarashi and Jin Mitsugi (Keio University, Japan); Yuusuke Kawakita and Haruhisa Ichikawa (The University of Electro-Communications, Japan)

Compact Linux Platform using Soft Processor for Software Defined Radio....N/A
Takeshi Matsuya, JIn Mitsugi and Jun Murai (Keio University, Japan)

Cost-Effective ETC System using RFID Tag....N/A
Yuriko Hattori (Tsukuba University of Technology, Japan)

Indoor Positioning Scheme Using Sensing Components for Improving the Operating Performance....N/A
Yih-Shyh Chiou (Chinese Culture University, Taiwan); Sheng-Cheng Yeh (Ming Chuan University, Taiwan)
A performance analysis of interference rejection technique in multi-subcarrier multiple access...N/A
Yuki Igarashi (Keio University, Japan); Nitish Rajoria (Keio University, Japan); Yuusuke Kawakita (The University of Electro-Communications, Japan); Jin Mitsugi (Keio University, Japan); Haruhisa Ichikawa (The University of Electro-Communications, Japan)

Multiple Access Channel Allocation Improvement for Sensor Nodes Setting Based on RFID Communication...N/A
Matsuda Tomoaki, Wakisaka Yuuki and Yuusuke Kawakita (The University of Electro-Communications, Japan); Jin Mitsugi (Keio University, Japan); Haruhisa Ichikawa (The University of Electro-Communications, Japan)

Multi-code Filtering & Collection: Proposal and Performance Evaluation...N/A
Iori Mizutani and Jin Mitsugi (Keio University, Japan); Masaki Ehara (Tokyo University of Technology, Japan)

Measuring User-Object Interactions in IoT Spaces...N/A
Raúl Parada (Universitat Pompeu Fabra, Spain); Joan Melià-Seguí (Universitat Oberta de Catalunya, Spain); Anna Carreras, Marc Morenza-Cinos and Rafael Pous (Universitat Pompeu Fabra, Spain)

Unobtrusive and Wireless Physiological Balance Sensing...N/A
Keishi Ohashi, Shigeki Kuroiwa, Sho Hideshima, Takuya Nakanishi, Akane Matsuzaka and Tetsuya Osaka (Waseda University, Japan)

Enhancing communication through a two-dimensional waveguide...N/A
Yoshiaki Hirano and Hiroko Kosaka (Teijin LTD, Japan)

Conference Dinner
Washington Hotel Ariake, 3F Room Iris,  7:00 PM – 9:00 PM

Special Entertainment: Japanese Traditional Musical Instrument : Tsugaru-Shamisen

Mr. Yusuke Okumura

Mr. Okumura has been learning Tsugaru-Shamisen for 22 years. He has been awarded various prizes at Tsugaru-shamisen national competitions - winning 1st place in junior section, and 2nd place in senior section twice
Friday, September 18

**S6: Networking and Communications Protocols 3**

Room: 701+702, 8:30 AM – 9:45 AM  
Chair: Azhar Hasan (National University of Sciences & Technology, Islamabad, Pakistan)

*Backwards Compatible Improvement of the EPCglobal Class 1 Gen 2 Standard...*114  
Hazem A. Ahmed (Friedrich-Alexander-Universität Erlangen-Nürnberg & Fraunhofer Institute for Integrated Circuits, Germany); Hamed Salah (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany); Joerg Robert (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Albert Heuberger (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)

*Q-frame-collision-counter: a novel and dynamic approach to RFID Gen 2’s Q algorithm...*120  
Nikita Khanna and Ismail Uysal (University of South Florida, USA)

*A Secure Minimalist RFID Authentication and an Ownership Transfer Protocol Compliant to EPC C1G2...*126  
Sviatoslav Edelev (University of Goettingen, Germany); Somayeh Taheri (Uni Goettingen, Germany); Dieter Hogrefe (University of Goettingen, Germany)

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Chair: Ken Gudan (Ricoh Innovations Inc, USA)

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Michal Grabia (Institute of Logistics and Warehousing, Poland)

*Development and Evaluation of a Ground Coil Monitoring System Using Semi-Passive Sensor Tags...*141  
Minoru Tanaka (Railway Technical Research Institute, Japan)

*Evaluation of Gamma Ray Durability of RF tag and Application to the Radiation Environment...*147  
Nobuyuki Teraura (Terra Code Research Institute, Japan); Kunio Ito (Japan NUS, Japan); Daisuke Kobayashi (Japan Atomic Energy Agency, Japan); Kouichi Sakurai (Kyushu University, Japan)
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Kentaroh Toyoda and Iwao Sasase (Keio University, Japan)
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Azhar Hasan (Massachusetts Institute of Technology & Georgia Institute of Technology, USA); Rahul Bhattacharyya (Massachusetts Institute of Technology, USA); Sanjay Sarma (MIT Auto-ID Center, USA)

S9: Power Harvesting

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Chair: Kei Sakaguchi (Fraunhofer HHI / Tokyo Institute of Technology)
An Efficient Wireless Power Transmission System by Employing 3 × 3 Stacked Coil Antenna Arrays....171
Shi Pu (Wuhan University of Technology, P.R. China); Hon Tat Hui (National University of Singapore, Singapore)
Ultra-low Power Autonomous 2.4GHz RF Energy Harvesting and Storage System....176
Ken Gudan (Ricoh Innovations Inc, USA); Shuai Shao (Ricoh Innovation Corporation, USA); Jonathan J Hull (Ricoh Innovations, Inc., USA); Alexander Hoang and Joshua Ensworth (University of Washington, USA); Matthew Reynolds (University of Washington & Duke University, USA)
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Christopher Valenta (Georgia Tech Research Institute – Electro-optical Systems Laboratory, USA)