

2015 Asia-Pacific Symposium on Electromagnetic Compatibility

(APEMC 2015)

Taipei, Taiwan
26-29 May 2015



IEEE Catalog Number: CFP1578I-POD
ISBN: 978-1-4799-6671-4



Tuesday May 26, 2015

Time	VF105 (Wu Fu Room)	VF106 (Liu He Room)	VF107 (Qi Xian Room)	VF109 (Jiu Ru Room)	VF110 (Shi Quan Room)
08:00 09:30	Registration & Refreshments (Registration at VF International Reception Hall)				
09:30 10:00	Opening (10F Auditorium)				
10:00 10:50	K1: Keynote Speaker 1 (10F Auditorium)				
10:50 11:10	Coffee/Tea Break (10F Auditorium)				
11:10 12:00	K2: Keynote Speaker 2 (10F Auditorium)				
12:00 13:50	Lunch (Grand Garden Restaurant)				
13:50 15:30	TT01-1: EMC on Tour I	SS01: High Speed Interconnect Characterization	TS02: EM Immunity, EMI Evaluation and SAR Analysis	TS03: Antenna and Wave Propagation I	WS01-1: An innovative insight into the EMC world: Phenomenon, Analysis and Solution I
15:30 15:50	Coffee/Tea Break (VF International Reception Hall)				
15:50 17:30	TT01-2: EMC on Tour II	TS01: Signal Integrity and Power Integrity I	TS12: Transportation EMC	TT04: IEEE Transactions on Electromagnetic Compatibility	WS01-2: An innovative insight into the EMC world: Phenomenon, Analysis and Solution II
	Interactive Poster Presentation for BPA / BSPA (Outside International Reception Hall)				
17:30 18:30	Mini-tour on The Grand Hotel				
18:30 21:00	Welcome Reception (Yuan Shan Club)				

Wednesday May 27, 2015

Time	VF105 (Wu Fu Room)	VF106 (Liu He Room)	VF107 (Qi Xian Room)	VF109 (Jiu Ru Room)	VF110 (Shi Quan Room)
From 08:00	Registration (VF International Reception Hall)				

08:30 10:10	TT02-1: ESD Protection Designs for Circuits and Systems I	TS04: Signal Integrity and Power Integrity II	SS03: EMC of Integrated Circuits	TS05: Wireless Communication EMC	WS02-1: Practical EMC engineering implement in telecommunication equipment I
10:10 10:30	Coffee/Tea Break				
10:30 12:10	TT02-2: ESD Protection Designs for Circuits and Systems II	TS06: Electromagnetic Environment and Wave Propagation	SS05-1: Technology Trends for High Gain Antennas in the Theoretical, Numerical, Design and Application Aspects I	SS04: Interaction of Electromagnetic Wave with Humans	WS02-2: Practical EMC engineering implement in telecommunication equipment II
12:10 13:50	Lunch & Invited Speech (10F Song-Bo Room)		12:00 13:00	IEEE EMC YP Luncheon (VF101 Yi Pin Room)	
13:50 15:30	Poster Session (Outside International Reception Hall)				
15:30 15:50	Coffee/Tea Break (VF International Reception Hall)				
15:50 17:30	TT03: Combined Effects of Ionizing Radiation, Accelerated Aging and Electromagnetic Interference in Modern ICs: Comprehension and Current Solutions	SS07: Signal/Power Integrity for Advanced Design	SS05-2: Technology Trends for High Gain Antennas in the Theoretical, Numerical, Design and Application Aspects II	SS06: ESD Protection Techniques for Circuits and Systems	WS03: EMC challenge and test solution

Thursday May 28, 2015

Time	VF105 (Wu Fu Room)	VF106 (Liu He Room)	VF107 (Qi Xian Room)	VF109 (Jiu Ru Room)	VF110 (Shi Quan Room)
From 08:00	Registration (VF International Reception Hall)				
08:30 10:10	DL of EMC Society I	TS08: EMC Measurement and Instrumentation I	TS09: Antenna and Wave Propagation II	TS07: Transient Analysis, Electronic Packaging and Advanced Material EMC	SS08-1: Advanced Issue on Lightning Protection I
10:10 10:30	Coffee/Tea Break (VF International Reception Hall)				
10:30 12:10	DL of EMC Society II	TS10: EMC Measurement and Instrumentation II	TS11: System Level EMC and Protection I	SS09: Electromagnetic Modeling and Dosimetry of the pregnancy and the child	SS08-2: Advanced Issue on Lightning Protection II
12:10 13:50	Lunch (Grand Garden Restaurant)				
13:50 15:30	DL of EMC Society III	TS13: Signal Integrity and Power Integrity III	TS14: System Level EMC and Protection II	SS02: Near Field Scan for EMC purpose	WS04: Novel Considerations in Automotive EMC
15:30 	Coffee/Tea Break (VF International Reception Hall)				

15:50					
15:50 17:10	WS05: EMC Technology and Simulation for Next-Generation Vehicle	SS11: SI/PI/EMC at Cloud and IoT era	SS12: Simulation and Testing for Automotive EMC	SS10: Flexible and film nanomaterial applications for board, package and IC chip level EMC	WS06: Measurement Technologies for Next-generation High-frequency/High-speed Systems
18:30 21:00	Banquet (12F Grand Ballroom)				

Friday May 29, 2015

Time	VF105 (Wu Fu Room)	VF106 (Liu He Room)	VF107 (Qi Xian Room)	VF109 (Jiu Ru Room)	VF110 (Shi Quan Room)
From 08:00	<i>Registration</i> (VF International Reception Hall)				
08:30 10:10	WS07: New Test Methodologies for Emerging Technologies	TS15: EMC Measurement and Instrumentation III	SS13-1: ESD and Transients I		WS08-1: Numerical/Computational EM Techniques in the Applications of EMC/Antennas I
10:10 10:30	Coffee/Tea Break (VF International Reception Hall)				
10:30 12:10	WS09-1: The IEC Advisory Committee on EMC (ACEC):How it coordinates EMC standards in the IEC I	TS17: EMC Measurement and Instrumentation IV	SS13-2: ESD and Transients II	TS18: Integrated Circuit EMC II	WS08-2: Numerical/Computational EM Techniques in the Applications of EMC/Antennas II
12:10 13:50	Lunch (Golden Dragon Banquet Room)				
13:50 15:50	WS09-2: The IEC Advisory Committee on EMC (ACEC):How it coordinates EMC standards in the IEC II	SS16: Common-mode issues related to EMI and SI	TS19: Microwave Circuit and Transmission Line	SS15: EMC Modeling and Design of High-Speed Integrated System	SS14: Aerospace System Electromagnetic Compatibility Topics.

Tuesday, May 26

08:00 - 09:30

Registration & Refreshments

Registration at VF International Reception Hall

09:30 - 10:00

Opening

10F Auditorium

10:00 - 10:50

K1: Keynote Speaker 1

Chair: Tzong-Lin Wu (National Taiwan University, Taiwan)

10F Auditorium

Inventing a Smarter Future: Intelligence Everywhere

Dr. Wen-Hann Wang (Corporate Vice President, Intel, USA)

10:50 - 11:10

Coffee/Tea Break

10F Auditorium

11:10 - 12:00

K2: Keynote Speaker 2

Chair: Tzong-Lin Wu (National Taiwan University, Taiwan)

10F Auditorium

A Perspective on Integrated Circuits in Semiconductors: Technology and Industry

Dr. Nicky Lu (Chairman and CEO, Etron Technology, Inc., Taiwan)

12:00 - 13:50

Lunch at 1F Grand Garden Restaurant.

13:50 - 15:30

SS01: High Speed Interconnect Characterization.

Special Session

Room: VF106 (Liu He Room)

Chairs: Jun Fan (Missouri University of Science and Technology, USA), Xiaoning Ye (Intel, USA)

13:50 [*A Novel De-Embedding Method Suitable for Transmission-Line Measurement*](#) 1

Bichen Chen (Missouri University of Science and Technology, USA); Xiaoning Ye and Bill Samaras (Intel, USA); Jun Fan (Missouri University of Science and Technology, USA)

14:10 [*Multi-Port Characterization of Vias Using Indirect Contact Probing Method*](#) 5

Jongwoo Jeong (Ulsan National Institute of Science and Technology, Korea); Jingoek Kim (UNIST, Korea); No-Weon Kang (Korea Research Institute of Standards and Science, Korea); Ki Jin Han (Ulsan National Institute of Science and Technology, Korea)

14:30 [*High Speed Interconnect Optimization*](#) 8

Mallikarjun Vasa (Dell, India); Arun Chada and Bhyrav Mutnury (Dell, USA); Sanjay Kumar (Dell, India); Vasanth RD (Ansys, India)

14:50 [*System Level Interconnect Electrical Performance Characterization*](#) 12

Thonas Su and Jimmy Hsu (Intel, Taiwan); Kai Xiao (Intel Corporation, USA); Yuan-Liang Li (Intel, USA)

15:10 [*Accurate Characterization of PCB Transmission Lines for High Speed Interconnect*](#) 16

Xiaoning Ye (Intel, USA); Jun Fan, Bichen Chen and James Drewniak (Missouri University of Science and Technology, USA); Qinghua Bill Chen (Yangtze Delta Region Institute of Tsinghua University, P.R. China)

TS02: EM Immunity, EMI Evaluation and SAR Analysis

Room: VF107 (Qi Xian Room)

Chairs: Jianqing Wang (Nagoya Institute of Technology, Japan), Chi-Fang Huang (Tatung University, Taiwan)

13:50 [*Evaluation on Filter Topologies in High Power Density Converter Design for Power Quality and EMI Control*](#) 20

Yitao Liu and Kye Yak See (Nanyang Technological University, Singapore); R Simanjorang (Advanced Technology Centre, Rolls-Royce Singapore Pte. Ltd, Singapore); Chandana Gajanayake (Rolls-Royce Singapore Pte Ltd, Singapore)

14:10 [*The Study of SAR Distribution in Microwave Ablation for Tumours*](#) 24

Chi-Fang Huang, Cheng-Feng Li and Hsuan-Yi Chao (Tatung University, Taiwan)

14:30 [*A Two-Step Approach for EMI Evaluation of a Wearable ECG*](#) 27

Wei Liao, Jingjing Shi and Jianqing Wang (Nagoya Institute of Technology, Japan)

14:50 [*Measurements of Transverse Conversion Loss for Evaluating EM Immunity of Twisted-Pair Cable*](#) 30

Arvind C Patel (Psiber Data Pte. Ltd., Singapore); Yu Song Meng (National Metrology Centre, A*STAR, Singapore); Harshang N Pandya (Psiber Data Pte. Ltd., Singapore); Yueyan Shan (National Metrology Centre, A*STAR, Singapore)

15:10 [*Immunity Testing Research Method of Unmanned Aerial Vehicle System with Limited Operational Life*](#) 33

Valentin Butin (FSUE VNIIA & NRNU MEPhI, Russia); Pavel Kundyshev (All-Russia Research Institute of Automatics, Russia)

TS03: Antenna and Wave Propagation I

Room: VF109 (Jiu Ru Room)

Chairs: Hsi-Tseng Chou (Yuan Ze University, Taiwan), Chia-Lun Tang (Auden Techno Corp., Taiwan)

13:50 [*SAR Reduced Antenna Solution for Tablet Application*](#) 37

Chia-Lun Tang (Auden Techno Corp., Taiwan)

14:10 [*A Compact Multiband Antenna for LTE/WWAN Mobile Handset*](#) 40

Hao-Tien Lo, Cheng-Chi Yu, Chang-Kai Liao, Jiin-Hwa Yang and Huan-Wun Liou (Feng Chia University, Taiwan)

14:30 [Broadband Wide-beam Circular Polarization Antenna for Global Navigation Satellite Systems Application](#) 44

Dau-Chyrh Chang (Oriental Institute of Technology, Taiwan); Po-Wei Cheng (Oriental Institute of Technology & Communication Research Center, Taiwan); Chih-Hung Lee (ETC, Taiwan); Chia-Tsung Wu (Cirocomm Technology, Taiwan)

14:50 [Beam-Switchable Phased Array Antennas for the Near-field RFID Applications](#) 47

Hsi-Tseng Chou, Kai-Hao Bai, Chien-Te Yu, Chun-Chin Sun, Yao-Jiu Chen and Ming-Yu Lee (Yuan Ze University, Taiwan)

15:10 [Dual-Band Planar Antenna for LTE 700/2300/2500 Operation in Laptop Computer](#) 50

Chow-Yen-Desmond Sim and Yuan-Lung Lee (Feng Chia University, Taiwan)

TT01-1: EMC on Tour I

Tutorial

Room: VF105 (Wu Fu Room)

Chair: Frits Buesink (University of Twente, The Netherlands)

Speaker: Frits J.K. Buesink (University of Twente, The Netherlands)

WS01-1: An innovative insight into the EMC world: Phenomenon, Analysis and Solution I

Workshop

Room: VF110 (Shi Quan Room)

Chair: Alex Lu (ROHDE & SCHWARZ Taiwan Ltd., Taiwan)

[MIMO Antenna Designs with Reduced Ground Effects](#) N/A

Desmond Sim (Feng Chia University, Taiwan)

[Timing Considerations Using FFT-based Measuring Receivers for EMI Compliance Measurements](#) N/A

Jens Medler (Rohde&Schwarz, Taiwan)

[Radiated Spurious Emission Measurements using TD Scan](#) N/A

Song Jian (Rohde&Schwarz, Taiwan)

15:30 - 15:50

Coffee/Tea Break

VF International Reception Hall

15:50 - 17:30

Interactive Poster Presentation for BPA / BSPA

VF International Reception Hall

Chairs: Tzzy-Sheng Jason Horng (National Sun Yat-sen University, Taiwan), Hsi-Tseng Chou (Yuan Ze University, Taiwan)

Best Symposium Paper Award (BPA) Finalists:

Expansions in Spherical Harmonics for the Modeling of Near-Field Coupling in EMC

Arnaud Breard (Ecole Centrale Lyon, France)

Effects of Imbalance on Conducted Immunity of a PLC Link Onto a DC Power-Bus for Spacecraft

Flavia Grassi (Politecnico di Milano, Italy)

Power Integrity Modeling, Measurement and Analysis of Seven-Chip Stack for TSV-based 3D IC Integration

Hui Min Lee (A*STAR Institute of High Performance Computing, Singapore)

On-chip Integrated Magnetic Thin-Film Solution to Countermeasure Digital Noise on RF IC

Masahiro Yamaguchi (Tohoku University, Japan)

Bandstop Power Delivery Network with Wideband Noise Isolation Up to 40 GHz

Shih-Hsien Wu (National Central University, Taiwan)

EMI Tests of the NASA/Orion Spacecraft ~ Parachute System Simulators

John Norgard (NASA, USA)

Quantification of Minimal Needed Cable Terminations

Bart van Leersum (University of Twente, The Netherlands)

Measurement Uncertainty Introduced by Instruments in Frequency Domain Channel Measurement Systems with a Covariance-Based Analysis

Xin Zhou (National Institute of Metrology & Beijing Jiaotong University, P.R. China)

EMC/EMI Near-field Testbed for EM Phasor Measurements Using Active Optical Sensors

Niels Kuster (IT'IS Foundation, Switzerland)

A Two-Step Approach for EMI Evaluation of a Wearable ECG

Jianqing Wang (Nagoya Institute of Technology, Japan)

Best Student Paper Award (BSPA) Finalists:

Stacked Low-Voltage PMOS for High-Voltage ESD Protection with Latchup-Free Immunity

Kai-Neng Tang (National Chiao-Tung University, Taiwan)

Spatially-Resolved Near-Field Diagnosis of Differential Signaling Performance for Wireless Device RFI/EMC Applications

Kai-Syuan Chen (National Sun Yat-sen University, Taiwan)

Development of an On-Chip Sensor for Substrate Coupling Study in Smart Power Mixed ICs

Veljko Tomasevic (INSA Toulouse & LAAS CNRS, France)

A Fast and Accurate Statistical Eye-diagram Estimation Method for High-speed Channel Including Non-linear Receiver Buffer Circuit

Heegon Kim (KAIST, Korea)

Tri-Section Quarter Wavelength Resonator Common Mode Filter

Chin-Yi Lin (National Taiwan University, Taiwan)

Ray-Based Analysis of Small-Scale Fading for Indoor Corridor Scenarios At 15 GHz

Qi Wang (Beijing Jiaotong University, P.R. China)

A Novel De-Embedding Method Suitable for Transmission-Line Measurement

Bichen Chen (Missouri University of Science and Technology, USA)

Design of On-Chip Microwave Filters in Integrated Fan-Out Wafer Level Packaging (InFO-WLP) Technology

Chi-Kai Shen (National Taiwan University, Taiwan)

Fast Transient Simulation of Power Distribution Network Based on Stabilized Explicit Method

Kaoru Nakagaki (Shizuoka University, Japan)

Effects of Time-Variant Non-Linear TSV Parameters on Transient Analysis for Signal Integrity

Stefano Piersanti (University of L'Aquila, Italy)

TS01: Signal Integrity and Power Integrity I

Room: VF106 (Liu He Room)

Chairs: Yoshiki Kayano (Akita University, Japan), Chun-Long Wang (National Taiwan University of Science and Technology, Taiwan)

15:50 [*Wideband Common-Mode Suppression Filter Design for Multi Differential Signal Pairs*](#) 53

Ding-Bing Lin, Guo-Jun Zhong and Yong-Xun Chen (National Taipei University of Technology, Taiwan)

16:10 [*Differential-Mode Noise Suppression Using L-Shaped Pad*](#) 56

Chun-Long Wang, Che-Yu Lin, Bao-Ren Huang and Zih-Siang Yan (National Taiwan University of Science and Technology, Taiwan)

16:30 [*Improved Two-Probe Approach for In-Circuit Measurement Based on Three-Port Network Pre-Calibration*](#) 60

Xingming Li and Shanqing Hu (Beijing Institute of Technology & Beijing Key Laboratory of Embedded Real-time Information Processing Technology, P.R. China); Kye Yak See and Kangrong Li (Nanyang Technological University, Singapore)

16:50 [*Tri-Section Quarter Wavelength Resonator Common Mode Filter*](#) 64

Chin-Yi Lin, Yang-Chih Huang and Tzong-Lin Wu (National Taiwan University, Taiwan)

17:10 [*Development of an On-Chip Sensor for Substrate Coupling Study in Smart Power Mixed ICs*](#) 67

Veljko Tomasevic (INSA Toulouse & LAAS CNRS, France); Sonia Ben Dhia (INSA de Toulouse, France); Alexandre Boyer (INSA Toulouse, France)

TS12: Transportation EMC

Room: VF107 (Qi Xian Room)

Chairs: Frederic Lafon (VALEO, France), Shih-Yi Yuan (Feng Chia University, Taiwan)

15:50 [*Inter-laboratory Comparison Between CISPR25 Chambers. Identification of Influent Parameters and Analysis by 3D Simulation*](#) 71

Frederic Lafon, Renaud Dupendant and Josselin Davalan (VALEO, France)

16:10 [*Using Reverberation Chamber for Vehicle Radiated Emission Measurement*](#) 75

Rudolph Wen (Automotive Research & Testing Center, Taiwan)

16:30 [*EMI Modeling Method of Interior Permanent Magnet Synchronous Motor for Hybrid Electric Vehicle Drive System Considering Parasitic and Dynamic Parameters*](#) 78

Younghwan Kwack, Hongseok Kim, Chiuk Song, Minkang Moon and Dong-Hyun Kim (Korea Advanced Institute of Science and Technology, Korea); Beomshik Kim and Eulyong Kim (Hyundai Kia Motors, Korea); Joungho Kim (Korea Advanced Institute of Science and Technology, Korea)

16:50 [*Modeling and Analysis of Return Paths of Common Mode EMI Noise Currents From Motor Drive System in Hybrid Electric Vehicle*](#) 82

Minkang Moon, Hongseok Kim, Jinwook Song, Younghwan Kwack and Dong-Hyun Kim (Korea Advanced Institute of Science and Technology, Korea); Beomshik Kim and Eulyong Kim (Hyundai Kia Motors, Korea); Joungho Kim (Korea Advanced Institute of Science and Technology, Korea)

TT01-2: EMC on Tour II

Tutorial

Room: VF105 (Wu Fu Room)

Chair: Frits Buesink (University of Twente, The Netherlands)
Speaker: Frits J.K. Buesink (University of Twente, The Netherlands)

TT04: IEEE Transactions on Electromagnetic Compatibility

Tutorial
Room: VF109 (Jiu Ru Room)
Chair: John Norgard (NASA, USA)
Speaker: John D. Norgard (NASA, United States)

WS01-2: An innovative insight into the EMC world: Phenomenon, Analysis and Solution II

Workshop
Room: VF110 (Shi Quan Room)
Chair: Alex Lu (ROHDE & SCHWARZ Taiwan Ltd., Taiwan)

- 15:50 [*Analysis of Platform RFI Noise Impact on Wireless User Scenario Application*](#) N/A
Han-Nien Lin (Feng Chia University, Taiwan)
16:10 [*A New Design Technique for Broadband EMI Measurement Antenna*](#) N/A
Yung-Chi Tang (Bureau of Standards, Metrology and Inspection, Taiwan); Chih-Hung Lee & Chi-Yuan Yao (ETC, Taiwan)

17:30 - 18:30

Mini-tour on The Grand Hotel

18:30 - 21:00

Welcome Reception

The Yuanshan Club

Wednesday, May 27

08:30 - 10:10

SS03: EMC of Integrated Circuits

Special Session
Room: VF107 (Qi Xian Room)
Chair: Daryl Beetner (Missouri University of Science and Technology, USA)

- 08:30 [*Prediction of Aging Impact on Electromagnetic Susceptibility of an Operational Amplifier*](#) 86
He Huang (LAAS CNRS, France); Alexandre Boyer (INSA Toulouse, France); Sonia Ben Dhia (INSA de Toulouse, France); Bertrand Vrignon (Freescale Semiconductor, Inc., France)
08:50 [*Radiated Emissions Modelling From Near-Field Data - Toward International Standards*](#) 90
Abhishek Ramanujan, Frederic Lafon and Priscila Fernandez-Lopez (VALEO, France)
09:10 [*A Fast and Accurate Statistical Eye-diagram Estimation Method for High-speed Channel Including Non-linear Receiver Buffer Circuit*](#) 94
Heegon Kim, Kiyeong Kim, Sumin Choi and Hyunsuk Lee (KAIST, Korea); Jounggho Kim (Korea Advanced Institute of Science and Technology, Korea)
09:30 [*An Analog Front End Based on Chopped Signals Highly Immune to RFI*](#) 98
Franco Fiori (Politecnico di Torino, Italy)
09:50 [*Predicting EMI Induced Delay Errors in Integrated Circuits: Sensitivity to the Velocity Saturation Index*](#) 102
Xu Gao and Chunchun Sui (Missouri University of Science and Technology, USA); Sameer Hemmady and Joey Rivera (Techflow Inc., USA); Lisa Andivahis (DTRA, USA); David Pommerenke and Daryl Beetner (Missouri University of Science and Technology, USA)

TS04: Signal Integrity and Power Integrity II

Room: VF106 (Liu He Room)
Chairs: Yinglei Ren (Intel Asia-Pacific Research & Development Ltd., P.R. China), Chun-Te WU (Da-Yeh University, Taiwan)

- 08:30 [*Combine Partial EBG Structure and Z-shape Power Bus for Noise Isolation in Multi-layer PCBs*](#) 106
Tse-Hsuan Wang, Jui-Wen Chiang and Ding-Bing Lin (National Taipei University of Technology, Taiwan)
08:50 [*Case Learnings of Power Noise Impact on SATA*](#) 109
Yinglei Ren (Intel Asia-Pacific Research & Development Ltd., P.R. China); Thonas Su and Jimmy Hsu (Intel, Taiwan); Bruce Liu (Intel Asia-Pacific R&D Ltd., P.R. China); Ming Wei (Intel corp, USA); Wei Shen (Intel, P.R. China); Yuan-Liang Li (Intel, USA)
09:10 [*Efficient Method for Predictive Package Power/Ground Planes Modeling Using Multi-Conductor Transmission Lines*](#) 113
Afef Bouchaala (STMicroelectronics, France); Lionel Courau and Philippe Galy (STMicroelectronics, Switzerland); Olivier Bonnaud (Université de Rennes, France)

09:30 [*Bandstop Power Delivery Network with Wideband Noise Isolation Up to 40 GHz*](#) 117

Shih-Hsien Wu and Yo-Shen Lin (National Central University, Taiwan)

09:50 [*An Equation-Based Method for Calculating Electromagnetic Interference on Printed Circuit Board*](#) 121

Chun-Te WU, Sung-Ling Hsiao and Cheng-Nan Chiu (Da-Yeh University, Taiwan); Han-Chang Hsieh (Bureau of Standards, Metrology & Inspection, Taiwan)

TS05: Wireless Communication EMC

Room: VF109 (Jiu Ru Room)

Chairs: Ifong Wu (National Institute of Information and Communications Technology, Japan), Yong-Chi Tang (Bureau of Standards, Metrology & Inspection, Taiwan)

08:30 [*Interference Free FM Reception in the Car with Ungrounded Antenna Base*](#) 124

Jan van den Elzen (TomTom International BV, The Netherlands)

08:50 [*Evaluation of Radiation Mechanism of LED Noise and Its Impact on Communication Quality of Digital Terrestrial Television Broadcasting*](#) 128

Ifong Wu, Shinobu Ishigami and Yasushi Matsumoto (National Institute of Information and Communications Technology, Japan)

09:10 [*Intentional Electromagnetic Interference Through Saturation of the RF Front End*](#) 132

Gerrit Stefan van de Beek, Robert Vogt-Ardatjew and Frank Leferink (University of Twente, The Netherlands)

09:30 [*Design and Implementation of Planar EMI Filter Under the Condition of Impedance Mismatching*](#) 136

Zheng Song and Shishan Wang (Nanjing University of Aeronautics and Astronautics, P.R. China); Bor-Lin Li (Scientific and Research Center (Wujiang), Delta Electronics, P.R. China)

09:50 [*The Application of Multi-Stage EMI Filter Design Method in Planar EMI Filter*](#) 140

Zheng Song and Shishan Wang (Nanjing University of Aeronautics and Astronautics, P.R. China); Bor-Lin Li (Scientific and Research Center (Wujiang), Delta Electronics, P.R. China)

TT02-1: ESD Protection Designs for Circuits and Systems I

Tutorial

Room: VF105 (Wu Fu Room)

Chair: Ming-Dou Ker (National Chiao-Tung University, Taiwan)

Electrostatic Discharge (ESD) Protection of Automotive Electronics in Si BiCMOS/BCD Technologies

Juin J. Liou (University of Central Florida, USA)

WS02-1: Practical EMC engineering implement in telecommunication equipment I

Workshop

Room: VF110 (Shi Quan Room)

Chair: Yaojiang Zhang (Huawei Technologies Co., LTD., P.R. China)

[*Key Technologies Challenge of EMI Control for High Speed Telecommunication Equipment*](#) N/A

Yaojiang Zhang (Huawei Technologies Co., Ltd., China)

[*PCB Design for Optimizing Power Integrity and EMI*](#)

Bruce Archambeault (IBM, USA)

[*Integrated Analytical and Numerical Modeling for System Level Conducted/Radiated Electromagnetic Immunity Synthesis*](#) N/A

Xian-Ke Gao Richard (IHPC, Singapore)

10:10 - 10:30

Coffee/Tea Break

VF International Reception Hall

10:30 - 12:10

SS04: Interaction of Electromagnetic Wave with Humans

Special Session

Room: VF109 (Jiu Ru Room)

Chair: Niels Kuster (IT'IS Foundation, Switzerland)

10:30 [*Numerical Simulations in Virtual Anatomical Models: The Devil is in the Details*](#) 144

Marie-Christine Gosselin and Esra Neufeld (IT'IS Foundation, ETH Zurich, Switzerland); Davnah Payne (IT'IS Foundation, Switzerland); Niels Kuster (IT'IS Foundation, ETH Zurich, Switzerland)

10:50 [*Assessment Methodologies of Child Exposure in Realistic Wireless Contexts*](#) 147

Krayni Anis (Telecom Paris & Orange France, France), Abdelhamid Hadjem (Orange Labs, Paris, France), Alain Simille, Christophe Roblin (Telecom Paris Tech, Paris, France) and Joe Wiart (Orange Labs & WISHT LAB, Paris, France)

11:10 [*Thresholds for Interference with Neuronal Activity*](#) 151

Esra Neufeld (IT'IS Foundation, ETH Zurich, Switzerland); Ioannis Oikonomidis and Niels Kuster

(IT'IS Foundation, Switzerland)

11:30 [*Interaction of Electromagnetic Waves with Humans in Wearable and Biomedical Implant Antennas*](#) 154

Kush Agarwal and Yong-Xin Guo (National University of Singapore, Singapore)

SS05-1: Technology Trends for High Gain Antennas in the Theoretical, Numerical, Design and Application Aspects I

Special Session

Room: VF107 (Qi Xian Room)

Chair: Hsi-Tseng Chou (Yuan Ze University, Taiwan)

10:30 [*A Dual-Band S-shaped Fractal Orthogonal Dipole Antenna for Vehicular Navigation Systems*](#) 158

Baiqiang You, Tuanhui Xue, Yang Zhao, Jianhua Zhou, Tianshi Wang and Jie Li (Xiamen University, P.R. China)

10:50 [*New Integrated Workflow for EMI Simulation*](#) 162

Benson Wei (ANSYS, Taiwan); Steve Pytel (ANSYS, USA)

11:10 [*Finite Element Electromagnetic Strategies for Sector Panel Array Simulation*](#) 166

Benson Wei (ANSYS, Taiwan); Matthew Commens (ANSYS, Inc., USA)

11:30 [*A K-Band FMCW Radar with the Receiving Antenna Diversity in the Car Detection Applications*](#) 169

Tsang-Pin Chang, Kuo-Lun Hung and Hsi-Tseng Chou (Yuan Ze University, Taiwan)

11:50 [*Asymptotic Analysis of Scattering From Reflectarray Antennas for the Near-Field Focused Applications*](#) 173

Shih-Chung Tuan (OIT, Taiwan); Hsi-Tseng Chou (Yuan Ze University, Taiwan)

TS06: Electromagnetic Environment and Wave Propagation

Room: VF106 (Liu He Room)

Chairs: Dau-Chyrh Chang (Oriental Institute of Technology, Taiwan), Chia-Mei Peng (Jinwen University of Science and Technology, Taiwan)

10:30 [*Reducing Unwanted Reflections in NIM's OATS with Broadband Calculable Dipole Antenna*](#) N/A

Meng Donglin, Xie Ming and Hong Li (National Institute of Metrology, P.R. China)

10:50 [*Ray-Based Analysis of Small-Scale Fading for Indoor Corridor Scenarios At 15 GHz*](#) 181

Qi Wang, Bo Ai, Ke Guan, Yan Li and Zhangdui Zhong (Beijing Jiaotong University, P.R. China)

11:10 [*High Frequency Response Sensitivity of Electrically Large Enclosure with Aperture and Its Statistical Analysis Method*](#) 185

Yuan Zhao, Xiang Zhao and Liping Yan (Sichuan University, P.R. China); Haijing Zhou (Institute of Applied Physics and Computation Mathematics, P.R. China); Kama Huang (Sichuan University, P.R. China)

TT02-2: ESD Protection Designs for Circuits and Systems II

Tutorial

Room: VF105 (Wu Fu Room)

Chair: Ming-Dou Ker (National Chiao-Tung University, Taiwan)

IC Response to System-level ESD

Elyse Rosenbaum (University of Illinois at Urbana- Champaign, USA)

WS02-2: Practical EMC engineering implement in telecommunication equipment II

Workshop

Room: VF110 (Shi Quan Room)

Chair: Yaojiang Zhang (Huawei Technologies Co., LTD., P.R. China)

10:30 [*The Modeling and Simulation of Enclosure Shielding Effectiveness Considering Lossy Properties of the Loaded PCB*](#) N/A

Shiquan He (University of Electronic Science and Technology of China, China)

10:50 [*Application of High Impedance Surface for Electromagnetic and Electromagnetic Compatibility Designs*](#) N/A

Xingchang Wei (Zhejiang University, P.R. China)

11:10 [*EMI Design Consideration in High Speed Connector/Cable Application*](#) N/A

Xin Wu (Lorom Cable & System Design, P.R. China)

12:10 - 13:50

Lunch & Invited Speech

Room: 10F, Song Bo Room

12:40 - 13:30 Invited Speech

Building Stunning Client Devices

Dr. Jay Kirkland (Vice President, Client Computing Group (CCG) of Intel., USA)

12:00 - 13:00

IEEE EMC YP Luncheon

Room: VF101 (Yi Pin Room)

How to do a Presentation

Bruce Archambeault (IBM, USA)

13:50 - 15:30

Poster Session

VF International Reception Hall

Chairs: Ming-Shing Lin (National Yunlin University of Science and Technology, Taiwan), Wen-Shan Chen (Southern Taiwan University of Science and Technology, Taiwan)

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ChienHung Chen (ROC Air Force Academy, Taiwan)

[Pixelated Design for Multiple Antennas in MIMO Handset Applications](#) 192

Ting-Yu Ku and Yen-Sheng Chen (National Taipei University of Technology, Taiwan)

[A Parametric Study of Genetic Algorithms for Pixelated Antenna Design](#) 196

Yi-Hsiang Chiu and Yen-Sheng Chen (National Taipei University of Technology, Taiwan)

[Small Monopole Antenna with Two Curved Strips for Wireless USB Applications](#) 200

Wen-Shan Chen, Guan-Lun Lin and Chih-Kai Yang (Southern Taiwan University of Science and Technology, Taiwan)

[The Multi-band Monopole Antenna for USB Devices](#) 204

Wen-Shan Chen, Guan-Quan Lin and Hung-Ming Liu (Southern Taiwan University of Science and Technology, Taiwan)

[A Small Dual Stacked Log Periodic Dipole Array Antenna \(LPDA\) with Improved Gain of Low Frequency for Immunity Testing](#) 208

Aihua Zou (Pan Asia Technical Automotive Center Co.,Ltd., P.R. China); Changwu Xu (Shanghai Baolong Automotive Corporation, P.R. China)

[Bandwidth Enhancement of Microstrip Fed Koch Snowflake Fractal Slot Antenna](#) 212

Chun-Te WU, Wei-Zhe Dai and Cheng-Nan Chiu (Da-Yeh University, Taiwan); Han-Chang Hsieh (Bureau of Standards, Metrology & Inspection, Taiwan)

[Development of High Power Transient Electromagnetic Field Sensors](#) 215

Chao Yang, Cui Meng and Rongmei Chen (Tsinghua University, P.R. China)

[Electromagnetic Interference Measurement Study in BGA Package](#) 219

Meng-Hua Tu, Ren-Fang Hsu and Wu Sung-Mao (National University of Kaohsiung, Taiwan); Cheng-Chang Chen (Bureau of Standards, Metrology and Inspection, Taiwan)

[Design of the Multifunction IC-EMC Test Board with Off-Board Probes for Evaluating a Microcontroller](#) 223

Yin-Cheng Chang (Chip Implementation Center, National Applied Research Laboratories, Taiwan); Ping-Yi Wang and Shuohung Hsu (National Tsing Hua University, Taiwan); Mao-Hsu Yen (National Taiwan Ocean University, Taiwan); Yen-Tang Chang and Chiu-kuo Chen (Bureau of Standards, Metrology and Inspection, Taiwan); Da-Chiang Chang (Chip Implementation Center, National Applied Research Laboratories, Taiwan)

[The Reviews of Integrated EMI Filters Applied in Power Electronic System](#) 227

Zhenyang Yu, Shishan Wang and Zheng Song (Nanjing University of Aeronautics and Astronautics, P.R. China); Bor-Lin Li (Scientific and Research Center (Wujiang), Delta Electronics, P.R. China)

[A Concurrent Dual-Band 2.4/5.2 GHz Low-Noise Amplifier Using Gain Enhanced Techniques](#) 231

Yu-Jun Hong (National Taipei University of Technology, Taiwan); San-Fu Wang (Ming Chi University of Technology, Taiwan); Po-Tsung Chen, Yuh-Shyan Hwang and Jiann-Jong Chen (National Taipei University of Technology, Taiwan)

[A New Dual-band Monopole Antenna with a Wide and Adjustable Emission-Suppression Band](#) 235

Hui-Min Tang and Cheng-Nan Chiu (Da-Yeh University, Taiwan)

[Optimizing the Capacitor Placement Based on 2D Charge-Delivery Model of Power Delivery Network](#) 238

Xingming Li and Shanqing Hu (Beijing Institute of Technology & Beijing Key Laboratory of Embedded Real-time Information Processing Technology, P.R. China); Kye Yak See (Nanyang Technological University, Singapore)

[Electromagnetic Analysis and Measurement of High-speed Air Isolated Connector](#) 242

Mingmin Zhao (China Electric Power Research Institute, P.R. China)

[Design of On-Chip Microwave Filters in Integrated Fan-Out Wafer Level Packaging \(InFO-WLP\) Technology](#) 246

Chi-Kai Shen (National Taiwan University, Taiwan); Ming-Hsien Tsai and Huan-Neng Chen (Taiwan Semiconductor Manufacturing Company & Mixed-signal RF Solution Division, Taiwan); Chewn-Pu Jou (Taiwan Semiconductor Manufacturing Company, Taiwan); Sally Liu and Fu-Lung Hsueh (Taiwan Semiconductor Manufacturing Company, Mixed-signal RF Solution Division, Taiwan); Tzong-Lin Wu (National Taiwan University, Taiwan)

[EMC Simulation of Automotive Safety System](#) N/A

Chun-Chin Lin and Jason Chiang (Automotive Research & Testing Center, Taiwan)

[Analysis Between Single-probe and Four-probe Field Calibration for Vehicle EMS Test](#) 252

Shih-Chieh Chang and Hsin-Han Chung (Automotive Research & Testing Center, Taiwan)

[Study on the Validation Measurement of Current Harmonic for Electric Vehicle in Charging Mode](#) 255

Fu-Li Yang (Automotive Research & Testing Center, Taiwan)

[Study on Electromagnetic Interference of DC/DC Converter Used in the EV](#) 258

Xinjie Gao and Donglin Su (Beihang University, P.R. China); Yujun Li (Beijing Electric Vehicle Co., Ltd., P.R. China)

[*An On-Wafer Cu-based Microcoaxial Technology for Wideband and Low Loss Microwave and Mm-wave Applications*](#) 262

Yang Tian, Kokyan Lee and Hong Wang (Nanyang Technological University, Singapore)

[*Study on SATA-DOM RFI in Compact Server 3G Communication Platform*](#) 265

Wen-Po Ho, Chih-Hao Wang, Cheng-Hsiung Chiang and Yung-Chiang Hsieh (Micro-Star INTL CO., LTD., Taiwan)

[*Design of Dual Polarized Rectenna for Wireless Power Transmission*](#) 269

Yi Ching Huang, Guan Pu Pan, Tsung Lin Li and Jwo Shiun Sun (National Taipei University of Technology, Taiwan)

[*Fast Data Pattern Based Electromagnetic Interference Evaluation for IC Packaging*](#) 272

Nick K. H. Huang (The University of Hong Kong, Hong Kong); Lijun Jiang (University of Hong Kong, Hong Kong)

[*Near-Field Coupled Antenna Pair with Transmission Efficiency Enhancement for WPT*](#) 275

Jui-Hung Chou (National Taiwan University, Taiwan); Ding-Bing Lin and Sih-Jin Chen (National Taipei University of Technology, Taiwan)

[*An Adjustable Power Ratio Branch Line Design*](#) 278

Chia-Chi Liao (National Chin-Yi University of Technology, Taiwan); Jan-Dong Tseng and Chih-Kai Yang (National Chin Yi University of Technology, Taiwan); Chien-Chun Ku (National Chin-Yi University of Technology, Taiwan)

[*Numerical Analysis for the SAR Variation Due to Positioning Errors At 2100 MHz*](#) 282

Dan Liu (CATR, P.R. China); Chen Zhang (China Academy of Information and Communications Technology(CATR) of MIIT, P.R. China); Tongning Wu (China Academy of Telecommunication Research, P.R. China)

[*High Gain Bat Shape Antenna for IEEE 802.11a*](#) 286

Dau-Chyrh Chang and Jyun-Hong Su (Oriental Institute of Technology, Taiwan)

[*A Novel Metal Ground Plane Design Methodology for Optimizing MIMO Antenna Isolation*](#) 290

YiShang Huang, YuFeng Shih and LongLin Ji (MSI, Taiwan)

[*The Electrical Characteristics Extracting Technology for Single and Composite Flexible Print Circuit Materials*](#) 294

Wu Chang-Lin, Wu Sung-Mao and Wu Yu-Yung (National University of Kaohsiung, Taiwan)

[*Analysis of Taiwan Residential Districts Power Sources by Using Hydrogen Fuel Cells*](#) 298

Jenn-Jong Shieh (Ta Hwa University of Science and Technology, Taiwan); Yong-Chi Tang (Bureau of Standards, Metrology & Inspection, Taiwan); Andrew Lin (Mechanical Engineering, Taiwan)

[*Measurement Uncertainty Introduced by Instruments in Frequency Domain Channel Measurement Systems with a Covariance-Based Analysis*](#) 302

Xin Zhou (National Institute of Metrology & Beijing Jiaotong University, P.R. China); Zhangdui Zhong (Beijing Jiaotong University, P.R. China); Xin Bian (National Institute of Metrology, P.R. China); Xiong Lei, Ke Guan and Ruisi He (Beijing Jiaotong University, P.R. China); Ke Liu (National Institute of Metrology, P.R. China); Jianqiang Wu (Beijing Jiaotong University, P.R. China)

15:30 - 15:50

Coffee/Tea Break

VF International Reception Hall

15:50 - 17:30

SS05-2: Technology Trends for High Gain Antennas in the Theoretical, Numerical, Design and Application Aspects II

Special Session

Room: VF107 (Qi Xian Room)

Chair: Hsi-Tseng Chou (Yuan Ze University, Taiwan)

15:50 [*Analytic Solution of Transient Scattering Fields From a Hyperbolic Surface Illuminated by a Plane Wave*](#) 306

Shih-Chung Tuan (OIT, Taiwan); Hsi-Tseng Chou (Yuan Ze University, Taiwan)

16:10 [*A Novel Electromagnetic Absorber Design Based on Periodic Salisbury Screens*](#) 309

Yi-Sheng Chang (Yuan Ze University, Taiwan), Hsieh-Ming Kun, Pai-Lu Wang, Jun-Wen Zhang (National Chung-Shan Institute of Science & Technology, Taiwan) and Hsi-Tseng Chou(Yuan Ze University, Taiwan)

16:30 [*Design of Directional Coupler with an Arbitrary Realizable Power Ratio and Identical Output Phase*](#) 313

Tsai-Wen Hsiao (Yuan Ze University, Taiwan); Meng-Jiun Jiang (Chung-Shan Institute of Science and Technology, Taiwan); Hsi-Tseng Chou and Chien-Te Yu (Yuan Ze University, Taiwan)

16:50 [*The Fast Contour Deformation Method for Calculating the High Frequency Scattered Field From the Fock Current on the Convex Scatterer*](#) 316

Yu Mao Wu (Fudan University, P.R. China); Weng Cho Chew (University of Illinois at Urbana-Champaign, USA); Lijun Jiang (University of Hong Kong, Hong Kong)

17:10 [A Collective Uniform Geometrical Theory of Diffraction Ray Field Analysis of Very Long and Narrow Finite Planar Arrays](#)''' %-

Prabbakar Pathak (The Ohio State University, USA); Hsi-Tseng Chou (Yuan Ze University, Taiwan)

SS06: ESD Protection Techniques for Circuits and Systems

Special Session

Room: VF109 (Jiu Ru Room)

Chairs: Ming-Dou Ker (National Chiao-Tung University, Taiwan), Shen-Li Chen (National United University, Taiwan)

15:50 [ESD Protection Design for Gigahertz Differential LNA in a 65-nm CMOS Process](#)''' &&

Chun-Yu Lin (National Taiwan Normal University, Taiwan); Mei-Lian Fan (National Chiao Tung University, Taiwan); Wei-Hao Fu (National Taiwan Normal University, Taiwan)

16:10 [Stacked Low-Voltage PMOS for High-Voltage ESD Protection with Latchup-Free Immunity](#)''' &)

Kai-Neng Tang, Seian-Feng Liao and Ming-Dou Ker (National Chiao-Tung University, Taiwan); Hwa-Chyi Chiou, Yeh-Jen Huang, Chun-Chien Tsai, Yeh-Ning Jou and Geeng-Lih Lin (Vanguard International Semiconductor Corporation, Taiwan)

16:30 [A New Methodology for Human Metal Model Characterization](#)''' &-

Sirui Luo (University of Central Florida, USA), Javier A. Salcedo (Analog Devices Inc.), Jean-Jacques Hajjar, Yuanzhong (Paul) Zhou and Juin Liou (University of Central Florida, USA)

16:50 [Current Challenges in Component-level and System-level ESD Simulation](#)''' ' +

Elyse Rosenbaum (University of Illinois at Urbana-Champaign, USA); Kuo-Hsuan Meng, Yang Xiu and Nicholas Thomson (UIUC, USA)

17:10 [Hierarchical Modeling Approach for System Level ESD Analysis: From Hard to Functional Failure](#)''' ' +

Fabrice Caignet (LAAS-CNRS & University of Toulouse, France), Remi Beges (LAAS-CNRS Toulouse & Freescale Semiconductor, France), Patrice Besse, Jean-Philippe Laine (Freescale Semiconductor, France), Nicolas Nohier and Marise Bafleur (LAAS-CNRS Toulouse, France)

SS07: Signal/Power Integrity for Advanced Design

Special Session

Room: VF106 (Liu He Room)

Chair: Hideki Asai (Shizuoka University, Japan)

15:50 [Comparison Between Latency Insertion Method \(LIM\) and Relaxation Method in Thermal Integrity Analysis](#)''' (%

K Sakamoto, Tadatoshiki Sekine and Hideki Asai (Shizuoka University, Japan)

16:10 [Fast Transient Simulation of Power Distribution Network Based on Stabilized Explicit Method](#)''' ()

Kaoru Nakagaki, Tadatoshiki Sekine and Hideki Asai (Shizuoka University, Japan)

16:30 [A Compact Dual-Band Common-Mode Filtering Component for EMC in Wireless Communication](#)''') \$

Chi-Hsuan Cheng and Tzong-Lin Wu (National Taiwan University, Taiwan)

16:50 [Signal Integrity Design of Bump-less Interconnection for High-speed Signaling in 2.5D and 3D IC](#)''') &

Hyunsuk Lee, Heegon Kim, Sumin Choi, Dong-Hyun Kim and Kyungjun Cho (KAIST, Korea); Jounggho Kim (Korea Advanced Institute of Science and Technology, Korea)

TT03: Combined Effects of Ionizing Radiation, Accelerated Aging and Electromagnetic Interference in Modern ICs: Comprehension and Current Solutions

Tutorial

Room: VF105 (Wu Fu Room)

Chair: Fabian Vargas (Catholic University – PUCRS, Brazil)

WS03: EMC challenge and test solution

Workshop

Room: VF110 (Shi Quan Room)

Chairs: Hsi-Tseng Chou (Yuan Ze University, Taiwan), Thomas Kuo (Keysight Technologies Taiwan Ltd., Taiwan)

[Using EMI receiver for click measurement](#)'''B#5

Peiwen Yang (Keysight Technologies, Taiwan)

[Implementing an FFT-Based EMI measurement](#)'''B#5

Kok-Chuan Lim (Keysight Technologies, Taiwan)

[Application on Real Time Spectrum Analysis \(RTSA\)](#)'''B#5

Michael Leung (Keysight Technologies, Taiwan)

18:00 - 22:00

IEEE EMC Young Professionals Karaoke KTV (Optional)

(Cashbox Party World KTV Chunghwa Branch)

Address: No. 55, Sect. 1, Chunghwa Road. Near Exit 4 of MRT Ximen Station

Thursday, May 28

08:30 - 10:10

Distinguished Lectures of EMC Society I

Distinguished Lecturers

Room: VF105 (Wu Fu Room)

Chair: Bruce Archambeault (IBM, USA)

[Creation of Undesirable Common Mode Noise on High Speed Differential Signals](#) B#5

Bruce Archambeault (Archambeault EMI/EMC Enterprises, Missouri University of Science & Technology, USA)

[Radio-Frequency Interference \(RFI\) Modeling for Portable Devices](#) B#5

Jun Fan (Missouri University of Science & Technology, USA)

SS08-1: Advanced Issue on Lightning Protection I

Special Session

Room: VF110 (Shi Quan Room)

Chairs: Jinliang He (Tsinghua University, P.R. China), Farhad Rachidi (EPFL, Switzerland)

08:30 **[FDTD Computations of Lightning-Induced Voltages in the Presence of Nearby Buildings](#)**) *

Thang H. Tran (Tsuruoka National College of Technology, Japan); Yoshihiro Baba (Doshisha University, Japan); Vladimir Rakov (University of Florida, USA); Alexandre Piantini (IEE/USP, Brazil)

08:50 **[Observation and Analysis of Residual Voltage of SPD Connecting to Overhead Line](#)** * \$

Yijun Zhang (Chinese Academy of Meteorological Sciences, P.R. China); Shaodong Chen and Xu Yan (Lightning Protection Center of Guangdong Province, P.R. China)

09:10 **[Flashover Analysis in Distribution System Affected by Lightning-Induced Voltage and Ground Potential Rise](#)** * (

Shozo Sekioka (Shonan Institute of Technology, Japan)

09:30 **[Voltage Balancing Performance of an Insulator with Ring-shaped Parallel Gap Lightning Protection Device](#)** * ,

Wenxia Sima, Yanxiao He, Qing Yang, Tao Yuan and Qi Wang (Chongqing University, P.R. China)

TS07: Transient Analysis, Electronic Packaging and Advanced Material EMC

Room: VF109 (Jiu Ru Room)

Chairs: Mauro Feliziani (University of L'Aquila, Italy), Chien-Chang Huang (Yuan Ze University, Taiwan)

08:30 **[Hybrid Time-Domain Adaptive Integration Method for Simulating Transient Electromagnetic Responses of an Arbitrary Structure with Large Scale](#)** + &

Yang Guo, Jian-Yao Zhao and Wenyan Yin (Zhejiang University, P.R. China)

08:50 **[Prediction of Shielding Effectiveness in Graphene Enclosures by FEM-INBC Method](#)** * + *

Silvano Cruciani (University of L'Aquila, Italy); Mauro Feliziani (University of L'Aquila, Italy); Francescaromana Maradei (University of Rome La Sapienza, Italy)

09:10 **[Effects of Time-Variant Non-Linear TSV Parameters on Transient Analysis for Signal Integrity](#)** * , \$

Stefano Piersanti, Francesco de Paulis and Antonio Orlandi (University of L'Aquila, Italy); Brice Achkir (Cisco Systems, USA); Jun Fan (Missouri University of Science and Technology, USA)

09:30 **[Transient Analysis of Inter Layer Crosstalk](#)** * , (

Chun-Lin Liao (Dell & Taiwan Branch, Taiwan); Terence Rodrigues (Dell, USA)

TS08: EMC Measurement and Instrumentation I

Room: VF106 (Liu He Room)

Chairs: Sarinya Pasakawee (National Institute of Metrology Thailand, Thailand), Chung-I G. Hsu (National Yunlin University of Science and Technology, Taiwan)

08:30 **[Calibration and Uncertainty Evaluation of a 3-Axis Probe for EMC Testing](#)** * , ,

Vitawat Sittakul (King Mongkut's University of Technology North Bangkok, Thailand); Sarinya Pasakawee (National Institute of Metrology Thailand, Thailand)

08:50 **[Improvement of Measurement Accuracy for Capacitive Voltage Probe Without Pre-Calibration](#)** * - %

Nobuo Kuwabara (Kyushu Institute of Technology, Japan)

09:10 **[Antenna Selection for Testing the Computer-Telephone-Integration Near-Field Interference](#)** * * -)

Ding-Kang Shen and Cheng-Nan Chiu (Da-Yeh University, Taiwan); Ruth Wu (Lenovo, P.R. China); Kevin Wang (Compliance Certification Service Inc., Taiwan)

09:30 **[Study of Magnetic Probes Used in EMI Measurements](#)** * * - -

Ming-Shing Lin (National Yunlin University of Science and Technology, Taiwan); Cyuan-Min He (NYUST, Taiwan); Chung-I G. Hsu (National Yunlin University of Science and Technology, Taiwan)

09:50 **[EMC/EMI Near-field Testbed for EM Phasor Measurements Using Active Optical Sensors](#)** * * (\$ &

Sven Kuhn (IT'IS Foundation, Switzerland); Martin Wild, Mario Gomez, Eugene Grobbelaar, Peter Sepan, Beyhan Kochali, Andreas Fuchs and Jan Lienemann (Schmid&Partner Engineering AG, Switzerland); Niels Kuster (IT'IS Foundation, Switzerland)

TS09: Antenna and Wave Propagation II

Room: VF107 (Qi Xian Room)

Chairs: I-Fong Chen (Jinwen University of Science and Technology, Taiwan), Wen-Jiao Liao (National Taiwan University of Science and Technology, Taiwan)

08:30 [Printed ACPW Feed Monopole Antenna for LTE /WLAN Applications](#) (\$*

Su-Mei Shen (National Taipei University of Technology, Taiwan); I-Fong Chen and Chia-Mei Peng (Jinwen University of Science and Technology, Taiwan); Ding-Bing Lin (National Taipei University of Technology, Taiwan)

08:50 [A Novel Reduced Size Microstrip Antenna for RFID Reader in UHF Band Applications](#) (%\$

I-Fong Chen, Chia-Mei Peng and Guan-Lin Chen (Jinwen University of Science and Technology, Taiwan)

09:10 [Device-Integrated Omni-Directional PIFA Antenna](#) (%

Chin-Che Tsai and Wen-Jiao Liao (National Taiwan University of Science and Technology, Taiwan)

09:30 [Efficiency Enhancement of Defect Monopole Antenna with Asymmetry Environment](#) (%+

Jing Ting Liou and Dau-Chyrh Chang (Oriental Institute of Technology, Taiwan)

10:10 - 10:30

Coffee/Tea Break

VF International Reception Hall

10:30 - 12:10

Distinguished Lectures of EMC Society II

Distinguished Lecturers

Room: VF105 (Wu Fu Room)

Chair: Bruce Archambeault (IBM, USA)

Signal Integrity Design of TeraByte/s Data-bandwidth TSV and Interposer for 2.5D/3D IC

Jounggho Kim (Korea Advanced Institute of Science and Technology, Korea)

Maxwell's Legacy: The Heart and Soul of the EM Discipline B#5

Bob Scully, (National Aeronautics and Space Administration (NASA) Space Center, USA)

SS08-2: Advanced Issue on Lightning Protection II

Special Session

Room: VF110 (Shi Quan Room)

Chairs: Jinliang He (Tsinghua University, P.R. China), Farhad Rachidi (EPFL, Switzerland)

10:30 [Discussions on Factors Influencing the Effective Protection Distance of SPD to Loads](#) (&\$

Jinliang He (Tsinghua University, P.R. China)

10:50 [Measurements of Transient Grounding Impedance of a Wind Turbine At the Mont-Crosin Wind Park](#) (&(

Aleksandr Smorgonskii, Nicolas Mora and Farhad Rachidi (EPFL, Switzerland); Marcos Rubinstein (University of Applied Sciences of Western Switzerland, Averdun, Switzerland); Nikolay Korovkin (St. Petersburg State Technical University, Russia); Keyhan Sheshyekani (Shahid Beheshti University, Iran)

11:10 [On the Simulation of Lightning Current for the Application in Lightning Arrester and Material Ablation Tests](#) (&

Yuwei He, Zhengcai Fu and Anfeng Jiang (Shanghai Jiao Tong University, P.R. China)

11:30 [Trends in the Number of Lightning Days At Major Domestic Sites Based on the Observation Record of the Japan Meteorological Agency](#) (' &

Takahiro Nakashima (Chubu University & Yamamoto Lab., Japan); Kazuo Yamamoto and Shinichi Sumi (Chubu University, Japan)

SS09: Electromagnetic Modeling and Dosimetry of the pregnancy and the child

Special Session

Room: VF109 (Jiu Ru Room)

Chair: Tomoaki Nagaoka (National Institute of Information and Communications Technology, Japan)

10:30 [Variability of SAR for Human Fetuses From Wireless Radio Terminals Placed Various Positions Around the Abdomen in Pregnancy](#) (' *

Akihiro Tateno (Chiba University, Japan); Tomoaki Nagaoka (National Institute of Information and Communications Technology, Japan); Kazuyuki Saito (Chiba University, Japan); Soichi Watanabe (National Institute of Information and Communications Technology, Japan); Masaharu Takahashi and Koichi Ito (Chiba University, Japan)

10:50 [Numerical Dosimetry of Pregnant Woman for Resonance-based Wireless Power Transfer System](#) ((\$

SangWook Park (Korea Automotive Technology Institute, Korea)

11:10 [SAR Calculation in Semi-Homogeneous Human Models of Pregnancy for RF Exposure](#) (((

Tomoaki Nagaoka (National Institute of Information and Communications Technology, Japan);

Tetsu Niwa (Tokai University School of Medicine, Japan); Soichi Watanabe (National Institute of Information and Communications Technology, Japan)

11:30 [Evaluation of EM Absorption Characteristics in Realistic Adult and Child Models in Vicinity of Wireless Power Transfer Systems](#)'''((,

Jerdvisanop Chakarothei, Kanako Wake and Soichi Watanabe (National Institute of Information and Communications Technology, Japan)

TS10: EMC Measurement and Instrumentation II

Room: VF106 (Liu He Room)

Chairs: Atsuhiko Nishikata (Tokyo Institute of Technology, Japan), Chung-I G. Hsu (National Yunlin University of Science and Technology, Taiwan)

10:30 [Measurement of Complex Permittivity for Liquids Using the Coaxial Line Reflection Method](#)'''() & Kouji Shibata and Masaki Kobayashi (Hachinohe Institute of Technology, Japan)

10:50 [Predicting the Maximum Radiated Electric Field Strength From Unintentional Radiators](#)'''() * Benjamin Menssen (Leibniz University of Hanover & Institute of Electrical Engineering and Measurement Technology, Germany); David Hamann (Leibniz University of Hanover, Germany); Heyno Garbe (Leibniz Universität Hannover, Germany)

11:10 [Evaluation of Radiated Emissions From Circuit Boards by Non-Contact Measurement Techniques](#)'''(* \$

Ming-Shing Lin (National Yunlin University of Science and Technology, Taiwan); Yi-Syuan Jhang (NYUST, Taiwan); Chung-I G. Hsu (National Yunlin University of Science and Technology, Taiwan)

11:30 [Gap Influence and Mode Converter Design for Non-destructive Complex Permittivity Measurement Using Circular TE01-mode Open-end Waveguide](#)'''(**

Ken Tanaka and Atsuhiko Nishikata (Tokyo Institute of Technology, Japan)

TS11: System Level EMC and Protection I

Room: VF107 (Qi Xian Room)

Chairs: Frits Buesink (University of Twente, The Netherlands), Han-Nien Lin (Feng-Chia University, Taiwan)

10:30 [Enhance the Protection Capability of Intentional Electro Magnetic Interference with Zinc Oxide Sintered Gas Discharge Tube](#)'''(* +

Chu-Yeh Tien (Chung Cheng Institute of Technology, National Defense University, Taiwan); Liann-Be Chang (Chang Gung University, Taiwan); Ping-Yu Kuei (Chung Cheng Institute of Technology, National Defense University, Taiwan); Chien-Fu Chih (Chang Gung University, Taiwan)

10:50 [Quantification of Minimal Needed Cable Terminations](#)'''(+ \$

Bart van Leersum, Frits Buesink and Frank Leferink (University of Twente, The Netherlands)

11:10 [Electromagnetic Radiation of Railgun and Shielding Effects From Its Structures](#)'''(+(

Shen Shou Chung (National Yang Ming University, Taiwan); Yu-Chou Chuang (Tatung University, Taiwan)

12:10 - 13:50

Lunch at 1F Grand Garden Restaurant

13:50 - 15:30

Distinguished Lectures of EMC Society III

Distinguished Lecturers

Room: VF105 (Wu Fu Room)

Chair: Bruce Archambeault (IBM, USA)

[Methodologies to Determine Worst-case Heating for MRI Conditional Devices](#)'''B#5

Ji Chen (University of Houston, USA)

[Crosstalk management in high speed interconnect](#)'''B#5

Xiaoning Ye (Intel, USA)

SS02: Near Field Scan for EMC purpose

Special Session

Room: VF109 (Jiu Ru Room)

Chair: Sonia Ben Dhia (INSA de Toulouse, France)

13:50 [Near-Field Injection At Die Level](#)'''(+,

Alexandre Boyer (LAAS-CNRS, France); Bertrand Vrignon (Freescale Semiconductor, Inc., France); John Shepherd (Freescale Semiconductor, Inc, France); Manuel Cavarroc (LAAS-CNRS, France)

14:10 [Expansions in Spherical Harmonics for the Modeling of Near-Field Coupling in EMC](#)'''(. &

Arnaud Breard (Ecole Centrale Lyon, France); Thi Quynh Van Hoang (IMEP – LAHC, University Grenoble Alpes, France); Mario Alves Dos Santos (Escola Politécnica PEA/EPUSP, Brazil); Laurent

Krähenbühl (Ecole Centrale de Lyon & CNRS, France); Christian Vollaire (Ampere Lab, France);
Carlos Sartori (USP, Brazil)

14:30 [Near Field Measurement for EMC Validation of Electronic Board in IMA](#)'''(, *

Christian Marot (AIRBUS, France); Anass Jaber (Serma Ingénierie, France)

14:50 [Dynamic System Level ESD Current Measurement Using Magnetic Field Probe](#)'''(- \$

Fabrice Caignet (LAAS-CNRS & University of Toulouse, France), Nicolas Nollher and Marise
Bafleur (LAAS-CNRS, France)

TS13: Signal Integrity and Power Integrity III

Room: VF106 (Liu He Room)

Chairs: Tzyy-Sheng Jason Horng (National Sun Yat-sen University, Taiwan), Heegon Kim (KAIST,
Korea)

13:50 [High Dip Insertion Loss Due to Periodic Defect Structure in High Speed Transmission Line](#)'''(- (

Dau-Chyrh Chang (Oriental Institute of Technology, Taiwan); Hsiao-Bin Barry Liang (Lorom
Group, Taiwan); Jian-Ren Wang (Yuan Ze University, Taiwan); Qiong-Nan Chen and Jun-Pin
Zhang (Lorom Industrial Co., Ltd, P.R. China); Stephen Yo-Sheng Lin (National Chi Nan
University, Taiwan)

14:10 [Characterization of Flip-Chip Interconnection for High Speed Digital Transmission](#)'''(- ,
Chien-Chang Huang, Fang-Yi Lo and Wei-Che Lin (Yuan Ze University, Taiwan)

14:30 [Common-Mode Noise Effect for Differential Traces Adjacent Ground Lines Connection A Ground
Plane](#)''') \$&

Guang-Hwa Shiue, Hao-Che Hung, Syue-Liang Hong and Shu-An Chou (Chung Yuan Christian
University, Taiwan)

14:50 [Investigation on Common-Mode Noise for Differential Lines Crossing Other Differential Lines](#)''') \$*

Syue-Liang Hong, Hao-Che Hung, Shu-An Chou and Guang-Hwa Shiue (Chung Yuan Christian
University, Taiwan)

TS14: System Level EMC and Protection II

Room: VF107 (Qi Xian Room)

Chairs: Masahiro Yamaguchi (Tohoku University, Japan), Yu Song Meng (National Metrology Centre,
A*STAR, Singapore)

13:50 [Experimental Evaluation of Writing Process Induced EMI/EMC in Magnetic Recording System](#)''') %\$

Yu Song Meng, Yueyan Shan and Hoon Neo (National Metrology Centre, A*STAR, Singapore);
Zhejie Liu and Zhimin Yuan (Data Storage Institute, Singapore); Yong-xin Guo (National
University of Singapore, Singapore)

14:10 [A Fast Electromagnetic Effects Analysis Method At System-level Considering Nonlinear Modules](#)''') %'

Liping Yan and Xiang Zhao (Sichuan University, P.R. China); Qiang Liu and Haijing Zhou
(Institute of Applied Physics and Computation Mathematics, P.R. China)

14:30 [A Study of EMI and ESD Troubleshooting Between Handheld Connector and Grounding/a>
Wen Cheng Lai and Jhin-Fang Huang \(National Taiwan University of Science and Technology,
Taiwan\)](#) **51**

WS04: Novel Considerations in Automotive EMC

Workshop

Room: VF110 (Shi Quan Room)

Chairs: Janet O'Neil (ETS-Lindgren & TMC China, USA), Yulung Tang (ETS-Lindgren, Taiwan)

[An Overview of Automotive EMC Standards and Emerging Requirements](#)''' B#5

Jaekon Shin (Korea Automobile Testing & Research Institute, Korea)

[The Increasing Need for Wireless Testing in the Automotive Industry – Evaluating Antenna
Performance and EMC in Vehicles](#)''' B#5

Yulung Tang (ETS-Lindgren, Taiwan)

[High-Power and High-Efficiency Wireless Power Charging System for Electric Automotive Vehicles and
Electromagnetic Compatibility Design Challenges](#)''' B#5

Jounggho Kim (Korea Advanced Institute of Science and Technology, Korea)

15:30 - 15:50

Coffee/Tea Break

VF International Reception Hall

15:50 - 17:30

SS10: Flexible and film nanomaterial applications for board, package and IC chip level EMC

Special Session

Room: VF109 (Jiu Ru Room)

Chairs: Yih-Peng Chiou (National Taiwan University, Taiwan), Masahiro Yamaguchi (Tohoku University,
Japan)

- 15:50 [Transmission-Line Based Modeling for Conformal Shielding in Advance System-in-Package \(SiP\)](#) & %
Ching-Huei Chen and Ying-Cheng Tseng (National Taiwan University, Taiwan); I-Chia Lin, Chieh-Chen Fu and Kuo-Hsien Liao (Advanced Semiconductor Engineering (ASE) Incorporation, Taiwan); Tzong-Lin Wu (National Taiwan University, Taiwan)
- 16:10 [Ferrite Thin Film Noise Suppressor Suitable for Flexible Printed Circuit](#) & (
Koichi Kondo (NEC TOKIN Corporation, Japan); Hiroshi Ono (NEC TOKIN America Inc., Japan); Shigeyoshi Yoshida (NEC TOKIN Corporation, Japan)
- 16:30 [The Effects of Shape Anisotropy of the Magnetic Particles in a Composite on RF Power Absorption](#) & (
Baekil Nam, Jinu Kim, Joonsik Lee and Ki Hyeon Kim (Yeungnam University, Korea)
- 16:50 [Radiated and Conductive Noise Suppression of Non-magnetic Metal-Coated Non-woven Fabric](#) & *
Tomoya Tanaka, Chie Okamura, Shinichi Okajima and Kazufumi Kato (Asahikasei Fibers Corporation, Japan); Yuki Asazuma (Tohoku University, Japan); Sho Muroga (National Institute of Technology Toyota College, Japan); Masahiro Yamaguchi (Tohoku University, Japan)
- 17:10 [On-chip Integrated Magnetic Thin-Film Solution to Countermeasure Digital Noise on RF IC](#) & *
Masahiro Yamaguchi, Satoshi Tanaka and Yasushi Endo (Tohoku University, Japan); Sho Muroga (National Institute of Technology Toyota College, Japan); Makoto Nagata (Kobe University, Japan)

SS11: SI/PI/EMC at Cloud and IoT era

Special Session

Room: VF106 (Liu He Room)

Chairs: Yuan-Liang Li (Intel, USA), Xiaoning Ye (Intel, USA)

- 15:50 [An Efficient Hybrid Hot-spotting and Optimization Method for Radiated Emission Compliance Check](#) & (\$
Fang-Pin Xiang, Kong Wenjie, Zhang Le and Er-Ping Li (Zhejiang University, China)
- 16:10 [Dual-striplines Design Optimizations for Minimum Crosstalk](#) & ('
Weifeng Shu (Intel Asia-Pacific Research & Development Ltd., P.R. China); Kai Xiao (Intel Corporation, USA); Jimmy Hsu (Intel, Taiwan); Yinglei Ren (Intel Asia-Pacific Research & Development Ltd., P.R. China); Xiaoning Ye and Yuan-Liang Li (Intel, USA)
- 16:30 [Channel Noise Scan for Post-layout Check of Printed Circuit Board](#) & (+
Jimmy Hsu and Thonas Su (Intel, Taiwan); Gong Ouyang (Intel, USA); Patt Chang (Intel, Taiwan); Kai Xiao (Intel Corporation, USA); Falconee Lee and Yuan-Liang Li (Intel, USA)
- 16:50 [Spatially-Resolved Near-Field Diagnosis of Differential Signaling Performance for Wireless Device RFI/EMC Applications](#) &) %
Kai-Syuan Chen, Yu-Hao Liu and Tzyy-Sheng Jason Horng (National Sun Yat-sen University, Taiwan)

SS12: Simulation and Testing for Automotive EMC

Special Session

Room: VF107 (Qi Xian Room)

Chair: Sergio A Pignari (Politecnico di Milano, Italy)

- 15:50 [Electric Field Probe Using a Differential Amplifier Circuit with High Input Impedance](#) &) (
Shinji Ohoka (NIPPON SOKEN, INC., Japan); Fumio Asakura (NIPPON SOKEN, INC, Japan); Hiroshi Taki (DENSO, Japan)
- 16:10 [Pspice Libraries Development for EMC Analysis](#) &) +
Frederic Lafon, Abhishek Ramanujan and Priscila Fernandez-Lopez (VALEO, France)
- 16:30 [A Quantified Method for Characterizing Harmonic Components From EMI Spectrum](#) &) * %
Donglin Su, Kaixiang Zhu, Mu Niu and Xiaoxiao Wang (Beihang University, P.R. China)
- 16:50 [Prediction of Radiated Emissions From Cables with Multiple Connections to a Metal Plane](#) &) * (
Guanghua Li (Missouri University of Science and Technology, USA); Gary Hess, Robert Hoeckele and Pete Jalbert (United Technologies Aerospace Systems, USA); Victor Khilkevich, Thomas Van Doren, David Pommerenke and Daryl Beetner (Missouri University of Science and Technology, USA)
- 17:10 [SPICE Simulation in Time-Domain of the CISPR 25 Test Setup for Conducted Emissions in Electric Vehicles](#) &) * -
Giordano Spadacini, Flavia Grassi and Sergio A Pignari (Politecnico di Milano, Italy)

WS05: EMC Technology and Simulation for Next-Generation Vehicle

Workshop

Room: VF105 (Wu Fu Room)

Chair: Shu-Lin Hsu (Automotive Research & Testing Center, Taiwan)

Development and Application of EMC Technology on Electric Vehicle

Daven Lee (Teseq (Taiwan) Ltd., Taiwan)

Electrical Transient Conduction along Shielded High Voltage Lines (ISO 7637-4)

Daven Lee (Teseq (Taiwan) Ltd., Taiwan)

[EMC Design and Improvement for Automotive Electrical/Electronic Products](#) & & B #5

Fever Chen (Delta Electronics, Inc., Taiwan)

[Simulation of Full Vehicle EMI/EMS](#) & & B #5

Jack Wu (ANSYS Inc., Taiwan Branch, Taiwan)

[*Simulation of EMI/EMS for Automotive Subsystems*](#)'''B#5

Martin Leung (Computer Simulation Technology (CST) Taiwan, Taiwan)

WS06: Measurement Technologies for Next-generation High-frequency/High-speed Systems

Workshop

Room: VF110 (Shi Quan Room)

Chair: Da-Chiang Chang (Chip Implementation Center, National Applied Research Laboratories, Taiwan)

[*Tips and Techniques for Wafer-Level Sub-THz Calibration*](#)'''B#5

Sia Choon Beng (Cascade Microtech, USA)

[*On-Wafer Antenna Probes at Millimeter and Sub-millimeter Wavelengths*](#)'''B#5

Jerry Shiao (National Nano Device Laboratories, Taiwan)

[*Mixed-Signal Active Harmonic Load pull for Wideband and Ultra High Speed Device*](#)'''B#5

Yuxing Li & Tim Yu (Maury Microwave, USA)

[*Simulation to Prototyping to Test for 5th Generation Communications*](#)'''B#5

Che-Cheng Chen (Keysight Technologies, Taiwan)

[*Signal Integrity Bit Error Rate Test Solutions*](#)'''B#5

Toshihiro Suzuki (Anritsu Corporation, Japan)

18:30 - 21:00

Banquet

12F The Grand Ballroom

Friday, May 29

08:30 - 10:10

SS13-1: ESD and Transients I

Special Session

Room: VF107 (Qi Xian Room)

Chairs: Shinobu Ishigami (National Institute of Information and Communications Technology, Japan),
Ken Kawamata (Tohoku Gakuin University, Japan)

08:30 [*Reconstruction Technique of ESD Field and Impact on Wireless Communications*](#)''' +'

Shinobu Ishigami (National Institute of Information and Communications Technology, Japan);

Kaoru Gotoh (National Institute of Information and Communications Technology, Japan);

Yasushi Matsumoto (National Institute of Information and Communications Technology, Japan)

08:50 [*A Study on Transmission Line Modeling Method for System-level ESD Stress Simulation*](#)''' ++

Takahiro Yoshida (Tokyo University of Science, Japan)

09:10 [*Comparison of ESD Protection Effect Between Protective Elements on Electric Devices and ESD Countermeasure Materials by Applying Voltage with ESD Gun*](#)''' , %

Takayoshi Ohtsu (National Institute of Technology, Numagu College, Japan); Hideyuki Doyama

(Suauka National College of Technology, Japan); Hiroyasu Ishizuka (RCJ, Japan); Kouichi

Sagisaka (Yuka Denshi, Japan)

09:30 [*Fundamental Study on Fault Occurrence Mechanisms by Intentional Electromagnetic Interference Using Impulses*](#)''' ,)

Yuichi Hayashi, Naofumi Homma, Takaaki Mizuki, Takafumi Aoki and Hideaki Sone (Tohoku University, Japan)

TS15: EMC Measurement and Instrumentation III

Room: VF106 (Liu He Room)

Chairs: Frank Leferink (University of Twente, The Netherlands), Shuichi Kobayashi (Voluntary EMC Laboratory Accreditation Center Inc., Japan)

08:30 [*Improvement of Radiated Emission Measurement Reproducibility with VHF-LISN Obtained From Final Results of International Inter-laboratory Comparison on Termination Control of Power Line*](#)''' , -

Shinichi Okuyama (NEC Platforms, Japan); Nobuo Kuwabara (Kyushu Institute of Technology,

Japan); Kunihiro Osabe and Hidenori Muramatsu (VCCI Council, Japan)

08:50 [*Investigation of Measurement Uncertainties and Errors in EMI Measurement Apparatus*](#)''' - '

Jian Song and Yong-Xin Guo (National University of Singapore, Singapore)

09:10 [*Comparison Experiments on Hybrid and Biconical/LPD Antennas in Radiated Emission Measurement Below 1 GHz*](#)''' - *

Ikuo Makino (RF Metrology Center, Fujitsu General EMC Laboratory, Japan); Shinichi Okuyama

(NEC Platforms, Japan); Hiroyuki Shimanoe (S-Tech Inc, Japan); Hidenori Muramatsu (VCCI

Council, Japan)

09:30 [*Development of Artifact for Inter-Laboratory Comparison for the Purpose of Improving Reproducibility of Radiated Emission Test*](#)'''**\$\$

Atsuya Maeda (A. Maeda Associates Inc, Japan); Shuichi Kobayashi (Voluntary EMC Laboratory Accreditation Center Inc., Japan); Rikio Watanabe (IPS Corporation, Japan)

09:50 [*Statistical Analysis of Three Different Stirrer Designs in a Reverberation Chamber*](#)***\$(
Aizan Ubin (Universiti Tun Hussein Onn Malaysia, Malaysia); Robert Vogt-Ardatjew and Frank
Leferink (University of Twente, The Netherlands); Mohd Zazar Mohd Jenu (Universiti Tun Hussein
Onn Malaysia, Malaysia); Gerrit Stefan van de Beek (University of Twente, The Netherlands)

WS07: New Test Methodologies for Emerging Technologies

Workshop

Room: VF105 (Wu Fu Room)

Chairs: Yulung Tang (ETS-Lindgren, Taiwan), Janet O'Neil (ETS-Lindgren & TMC China, USA)

[*ANSI Standard C63.4-2014 – The New Changes that Impact IT Equipment Testing*](#)**B#5

Donald Heirman (Don Heirman Consultants, USA)

[*Effective Use of Reverberation Chambers for New DO-160 and Wireless OTA Test Requirements*](#)**B#5

Yulung Tang (ETS-Lindgren, Taipei, Taiwan)

[*The Importance of the Antenna in EMC Measurements: Results of a Comparison Test for a Bore Sight
Antenna and a Normal Antenna from 1 GHz-6 GHz*](#)

Tang Yung-Chi (Bureau of Standards, Metrology & Inspection, Taiwan)

[*Estimation of Absorber Material Effectiveness Using Reverberation Techniques*](#)**B#5

Vignesh Rajamani & Chuck Bunting (Oklahoma State University, USA)

WS08-1: Numerical/Computational EM Techniques in the Applications of EMC/Antennas I

Workshop

Room: VF110 (Shi Quan Room)

Chairs: Prabbakar Pathak (The Ohio State University, USA), Shih-Chung Tuan (OIT, Taiwan)

[*A systematic Antenna Scattering Based Hybrid Numerical – UTD Analysis to Predict the EM Wave
Interaction Between Reader – Tag Antennas in RFID Systems*](#)

Prabhakar H. Pathak (The Ohio State University, USA)

[*Advanced Simulation Platform for In-body and On-body Transmitting Devices*](#)

Nicholas Chavannes & Erdem Ofli (Schmid & Partner Engineering AG (Speag), Switzerland)

[*Advanced Numerical Modelling Techniques in FEKO for Real-World EMC Problems*](#)

Ulrich Jakobus (Altair Development S.A. (Pty) Ltd, South Africa)

10:10 - 10:30

Coffee/Tea Break

VF International Reception Hall

10:30 - 12:10

SS13-2: ESD and Transients II

Special Session

Room: VF107 (Qi Xian Room)

Chairs: Shinobu Ishigami (National Institute of Information and Communications Technology, Japan),
Ken Kawamata (Tohoku Gakuin University, Japan)

10:30 [*Dependence of Grounded Metal-Plate's Approach Speed on Spark Length for Air Discharges of
Electrostatic Discharge Generator*](#)***\$,

Yoshinori Taka (National Institute of Technology, Koshiro College, Japan); Ken Kawamata
(Tohoku Gakuin University, Japan); Osamu Fujiwara (Nagoya Institute of Technology, Japan)

10:50 [*Improved ESD Test Method for Testing Spacecraft Equipment*](#)***%&

Patrice Pelissou (Astrium Satellites, France); Bertrand Daout (Montena S.A., Switzerland); Karl-
Friedrich J Wolf (European Space Agency (ESA) & ESTEC, The Netherlands)

11:10 [*Analysis of Multiple Discharge Events At a Small Gap Exposed by Fluctuated Static E-Fields*](#)***%*

Masamitsu Honda (Impulse Physics Laboratory Inc., Japan)

TS17: EMC Measurement and Instrumentation IV

Room: VF106 (Liu He Room)

Chairs: Kye Yak See (Nanyang Technological University, Singapore), Andrzej Sowa (Wroclaw
University of Technology, Poland)

10:30 [*Closed-form Expressions for Estimating Maximum Radiated Emissions From the Traces of a
Printed Circuit Board*](#)***&\$

Ahmed Yahya Sayegh (University Tun Hussien Onn Malaysia, Malaysia); Mohd Zazar Mohd Jenu
(Universiti Tun Hussein Onn Malaysia, Malaysia)

10:50 [*The Effect of Magneto-Dielectric Absorbing Coating on Unsymmetrical Antenna Cables*](#)***&/(

Robert Vogt-Ardatjew (University of Twente, The Netherlands); Andrzej Sowa (Wroclaw
University of Technology, Poland); Frank Leferink (University of Twente, The Netherlands)

11:10 [*Reference Box to Control Measurements of Low Frequency HIRF Transfer Functions*](#)***&

Wilfrid Quenum, Jean Philippe Parmantier and Isabelle Junqua (ONERA, France)

11:30 [*Evaluation of Conducted EMI Measurement Without LISN Using Two-Port ABCD Network*](#)

TS18: Integrated Circuit EMC

Room: VF109 (Jiu Ru Room)

Chairs: Daryl Beetner (Missouri University of Science and Technology, USA), Soyoung Kim (Sungkyunkwan University, Korea)

10:30 [Time-domain Conducted EMI Instruction Waveform Cutting Algorithm](#)**** *

Shih-Yi Yuan (Feng Chia University, Taiwan); Ting-En Wu, Zi-Rong Wu, Chia-wei Chen, Yi-jia Huang and Yi-Ying Li (University of Feng Chia, Taiwan)

10:50 [The Measurement and Comparison of 8051 Microcontroller Instruction Waveform](#)**** (\$

Yan-Wei Zhang and Zhi-Xiang Zhong (University of Feng Chia, Taiwan); Shih-Yi Yuan (Feng Chia University, Taiwan)

11:10 [Investigation of Off-board DPI Method](#)**** ('

Gang-Wei Cao and Yen-Tang Chang (Bureau of Standards, Metrology and Inspection, Taiwan); Kwong-Kau Tiong (National Taiwan Ocean University, Taiwan); Han-Nien Lin (Feng-Chia University, Taiwan)

11:30 [Band-Pass Filter Co-Designed with ESD Protection Using Integrated Passive Device Technology](#)**** (+

Ming-Hsien Tsai (Taiwan Semiconductor Manufacturing Company, Mixed-signal RF Solution Division, Taiwan); Jun-De Jin (Taiwan Semiconductor Manufacturing Company & Mixed-signal RF Solution Division, Taiwan); Tzu-Jin Yeh (Taiwan Semiconductor Manufacturing Company, Mixed-signal RF Solution Division, Taiwan); Chewn-Pu Jou (Taiwan Semiconductor Manufacturing Company, Taiwan); Sally Liu and Fu-Lung Hsueh (Taiwan Semiconductor Manufacturing Company, Mixed-signal RF Solution Division, Taiwan)

11:50 [Coupling Analysis and Equivalent Circuit Model of the IC Stripline Method](#)****) \$

Jongtae Hwang (Sungkyunkwan University & Samsung Electronics, Korea); Wonjoo Jung and Soyoung Kim (Sungkyunkwan University, Korea)

WS08-2: Numerical/Computational EM Techniques in the Applications of EMC/Antennas II

Workshop

Room: VF110 (Shi Quan Room)

Chairs: Prabbakar Pathak (The Ohio State University, USA), Shih-Chung Tuan (OIT, Taiwan)

The latest simulation technology and best practice in automotive

Benson Wei (Ansys Taiwan, Taipei, Taiwan)

[Simulation of EMC Performance in Modern Electronics](#)***B#5

Martin Leung (Computer Simulation Technology (CST))

[Wireless Router EMC Analysis](#)***B#5

Martin Leung (Computer Simulation Technology (CST))

WS09-1: The IEC Advisory Committee on EMC (ACEC): How it coordinates EMC standards in the IEC I

Workshop

Room: VF105 (Wu Fu Room)

Chair: William A. Radasky (Metatech Corporation, USA)

[What is ACEC?](#)***B#5

William Radasky (Metatech Corporation)

[Trends in CISPR and its Subcommittees](#)***B#5

Don Heirman (Don HEIRMAN Consultants)

[Trends in TC 77 and its Subcommittees](#)***B#5

William Radasky (Metatech Corporation)

12:10 - 13:50

Lunch at VF Golden Dragon Banquet Room

13:50 - 15:50

SS14: Aerospace System Electromagnetic Compatibility Topics.

Special Session

Room: VF110 (Shi Quan Room)

Chair: Bob Scully (NASA, USA)

13:50 [Considerations for Intraoperability for Aerospace Applications](#)****) (

Mark Mifsud, FIEAust CPEng (Nova Systems, Australia)

14:10 [Robustness of Ethernet in Complex Aircraft Environment](#)****) +

Matthias Kreitlow (Bundeswehr Research Institute for Protective Technologies and NBC Protection, Germany); Robert Keibel and Franziska Nieder (Airbus, Germany); Frank Sabath (WIS, Germany); Frank Smailus and Thiemo Stadler (Airbus, Germany)

14:30 [Statistical Estimation of the Electromagnetic Noise Induced by Field-to-Wire Coupling in](#)

[Random Bundles of Twisted-Wire Pairs](#)***%

Giordano Spadacini, Flavia Grassi and Sergio A Pignari (Politecnico di Milano, Italy)

14:50 [Effects of Imbalance on Conducted Immunity of a PLC Link Onto a DC Power-Bus for Spacecraft](#)***)

Flavia Grassi, Giordano Spadacini and Sergio A Pignari (Politecnico di Milano, Italy)

15:10 [Plasma Vehicle Charging Analysis for Orion Flight Test 1](#)**B#5

Bob Scully (NASA, USA)

15:30 [EMI Tests of the NASA/Orion Spacecraft ~ Parachute System Simulators](#)**B#5

John Norgard and Bob Scully (NASA, USA)

SS15: EMC Modeling and Design of High-Speed Integrated System

Special Session

Room: VF109 (Jiu Ru Room)

Chairs: Er-Ping Li (Zhejiang University, P.R. China), Xing-Chang Wei (Zhejiang University, P.R. China)

13:50 [Equalization Tuning and System Validation on Cascaded Re-drivers for 6Gbps Storage Applications](#)***++

Xinjun Zhang (Intel Asia-Pacific Research & Development Ltd., P.R. China); Ming Wei (Intel corp, USA); Weifeng Shu and Yinglei Ren (Intel Asia-Pacific Research & Development Ltd., P.R. China)

14:10 [An Asymmetric Spiral-Shaped DGS Optimized by Genetic Algorithm for Wideband Common-Mode Suppression](#)***, %

Yong-Sheng Li, Xing-Chang Wei and Er-Ping Li (Zhejiang University, P.R. China)

14:30 [A Compact Common-mode Noise Suppression Filter for High Speed Differential Signals Using Defected Ground Structure](#)***,)

Xian-Ke Gao (Institute of High Performance Computing, Singapore); Hui Min Lee (A*STAR Institute of High Performance Computing, Singapore); Siping Gao and En-Xiao Liu (Institute of High Performance Computing, Singapore); Ching Eng Png (A*STAR Institute of High Performance Computing, Singapore)

14:50 [Power Integrity Modeling, Measurement and Analysis of Seven-Chip Stack for TSV-based 3D IC Integration](#)***, -

Hui Min Lee (A*STAR Institute of High Performance Computing, Singapore); En-Xiao Liu (Institute of High Performance Computing, Singapore); Ganesh Samudra (National University of Singapore, Singapore); Er Ping Li (Institute of High Performance Computing, Singapore)

15:10 [Mitigating the Ground-Bounce by Adjusting the Boundary Condition and k-Vectors of the Structure](#)**B#5

Jinsu Jeon (Incheon National University, Korea); Sungtek Kahng (University of Incheon, Korea); Muhammad Kamran Khattak (Incheon National University & Ghulam Ishaq Khan Institute of Technology, Korea)

SS16: Common-mode issues related to EMI and SI

Special Session

Room: VF106 (Liu He Room)

Chairs: Yoshiki Kayano (Akita University, Japan), Yoshitaka Toyota (Okayama University, Japan)

13:50 [A SMD-Type Filter Solution for EMI/RFI Mitigation on High-Speed Digital Interfaces and Its Application](#)***-*

Yen-Ju Lin, Ying-Cheng Tseng, Chih-Ying Hsiao and Tzong-Lin Wu (National Taiwan University, Taiwan)

14:10 [Characteristics of Mode-Conversion of Bent Differential-Paired Lines with Different EM Coupling](#)***+\$\$

Yoshiki Kayano (Akita University, Japan); Hiroshi Inoue (The Open University of Japan, Japan)

14:30 [Measurement of Transfer Characteristics of Conducted Disturbance From AC Power Supply Port to Ethernet Port Considering Transmission Mode](#)***+\$(

Tohlu Matsushima (Kyoto University, Japan); Kazuhiro Takaya and Yuichiro Okugawa (NTT Corporation, Japan); Osami Wada (Kyoto University & Graduate School of Engineering, Japan)

14:50 [Analytical Solution of the Electromagnetic Radiation From Coupled Differential Microstrip Pairs](#)***+ \$,

Fengchao Xiao (UEC, Japan); Kimitoshi Murano (Tokai University, Japan); Yoshio Kami (University of Electro-Communications, Japan)

15:10 [Novel Extended Mixed-Mode S-Parameters and Mode Conversion of Four-Conductor Lines](#)***+&

Zhang Nan, Kim Jonghyeon and Nah Wansoo (Sungkyunkwan University, Korea)

15:30 [Electromagnetic Immunity Analysis Using Modal-equivalent Circuit in Cable Interconnection System](#)***+%&

Yoshitaka Toyota, Kengo Iokibe and Liuji Koga (Okayama University, Japan)

TS19: Microwave Circuit and Transmission Line

Room: VF107 (Qi Xian Room)

Chairs: Chow-Yen-Desmond Sim (Feng Chia University, Taiwan), Hsin-Chia Lu (National Taiwan University, Taiwan)

13:50 [Analysis of Transmission Characteristics for Twisted Pair Cables Using the RLGC Parameters of the Cable](#)***+&\$

Mitsutaku Yamamura and Yoshio Kami (University of Electro-Communications, Japan); Kimitoshi Murano (Tokai University, Japan); Fengchao Xiao (UEC, Japan)

- 14:10 [Hybrid Type Rat-Race Coupler Designs](#)++&
Lin-Zong Zheng and Jan-Dong Tseng (National Chin Yi University of Technology, Taiwan); Bing-Shu Wu (National Chin-Yi University of Technology, Taiwan); Jhih-Min Li (National Chin Yi University of Technology, Taiwan)
- 14:30 [Mixed Type Branch Line Coupler Designs](#)++&
Ssu-Jung Wu and Jan-Dong Tseng (National Chin Yi University of Technology, Taiwan); Kuang-Hao Lin (National Formosa University, Taiwan); Yu-Hui Shih (National Chin Yi University of Technology, Taiwan)
- 14:50 [Tune-All Microstrip Bandpass Filter](#)++' &
Nan-Wei Chen (Yuan Ze University, Taiwan); Siang-Rong Hsu (Yuan-Ze University, Taiwan); Bo-Zhi Chow (Compal Electronics Inc., Taiwan)
- 15:10 [A Low-Pass Quart-Wave Transformer](#)++')
Chih-Jung Chen (National Taiwan Ocean University & National Taiwan Ocean University, Taiwan); I-Ting Pan (National Taiwan Ocean University, Taiwan)
- 15:30 [A Miniaturized Planar Crossover Using Dual Transmission Lines](#)++' ,
Ming-Lun Ng and Yi-Hsin Pang (National University of Kaohsiung, Taiwan)

WS09-2: The IEC Advisory Committee on EMC (ACEC): How it coordinates EMC standards in the IEC II

Workshop

Room: VF105 (Wu Fu Room)

Chair: Donald Heirman (Don HEIRMAN Consultants, USA)

- 13:50 [Emission Standardization in the 2-150 kHz Frequency Band](#)++B#5
William Radasky (Metatech Corporation)
- 14:20 [EMC for E-mobility](#)++B#5
William Radasky (Metatech Corporation)
- 14:45 [Recent Topics in IEC TC 62 \(Electrical Equipment in Medical Practice\) and its Subcommittees](#)++B#5
Don Heirman (Don HEIRMAN Consultants)
- 15:20 [Human Exposure to RF](#)++B#5
Don Heirman (Don HEIRMAN Consultants)

Organized by IEEE Taipei EMC Chapter and National Taiwan University
May 25-29, 2015 | The Grand Hotel, Taipei, Taiwan