http://www.apemc2017.org

Final Program

2017 Asia-Pacific International Symposium on Electromagnetic Compatibility

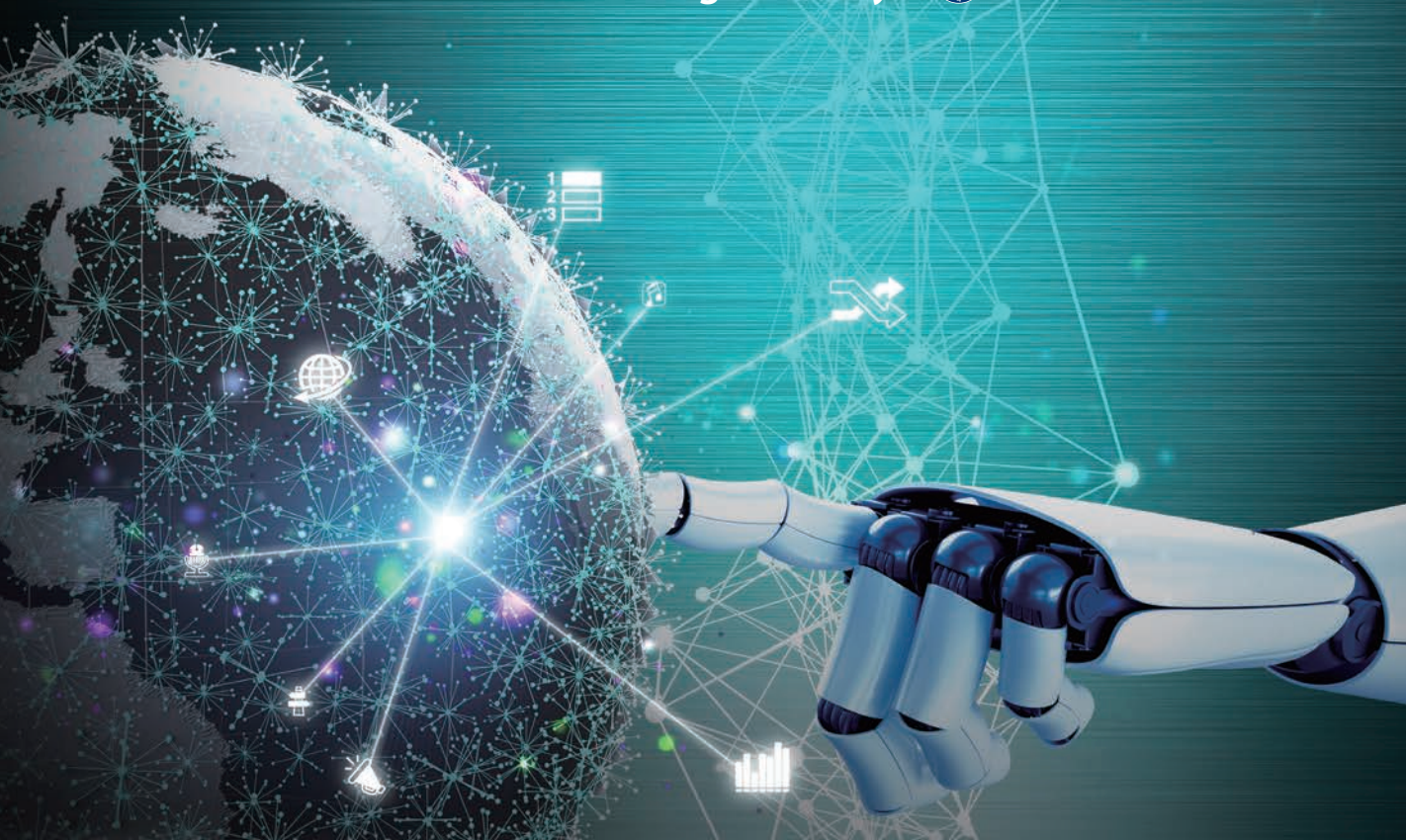
(APEMC 2017)

June 20-23, 2017

The Commons, Yonsei University, Seoul, Korea

Organized by KIEES IEEE EMC SOCIETY

Co-organized by 연세대학교 YONSEI UNIVERSITY KAIST



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Message From The General Chairs

In this year, APEMC 2017 will be held in Yonsei University, Seoul, Korea from June 20 to 23, 2017. As in the previous events over a decade, the APEMC 2017 will provide a major platform for leading researchers from academia and industry to exchange their outstanding knowledges, and experiences as well as to build up friendly networks.

The series of APEMC Symposia have been the greatest and the most successful annual events. The APEMC 2008 in Singapore, the APEMC 2010 in Beijing, China, the APEMC 2011 in Jeju, Korea, the APEMC 2012 in Singapore, the APEMC 2013 in Melbourne, Australia, the APEMC 2015 in Taipei, Taiwan, and the APEMC 2016 in Shenzhen, China have offered rich scientific programs of the highest quality invited talks and presentations from all over the world. It is becoming a leading international conference in EMC area.

It is our great pleasure to invite you to join the APEMC 2017. Especially, we have more than 150 excellent paper presentations in addition to brilliant keynote speeches, tutorials, and workshops, while respected speakers will come from all over the world, indicating that APEMC is becoming true internationally leading conference in EMC areas.

As you know, recently, EMC and signal integrity areas are becoming the most important key technologies in semiconductor, computer, smart phone, and automotive industries. Especially, it will be crucial technology in unmanned vehicles to ensure the safety of passengers. In particular, this trend will grow very rapidly, as the needs for system performance increase and system integration are ever continuously pressured.

Accordingly, the APEMC 2017 Symposium will provide a platform to share the recent progress of electromagnetic compatibility, including EMC Measurement and Instrumentation, Electromagnetic Environment, Transient EMC, Power System EMC and Smart Grid, System Level EMC and Protection, Transportation EMC, Antenna and Wave propagation, EMC in Nanotechnology and Advanced Materials, Aerospace EMC, Electronic Packaging EMC, Integrated Circuit EMC, Signal Integrity and Power Integrity, Wireless Communication EMC, Computational Electromagnetics, Biomedical Electromagnetics, and Wireless Power Transfer.

I sincerely appreciate all the graceful contributions from the paper presenters, invited speakers, and organizing committee members for their persistent and hard works. We look forward to meeting all of you soon at the APEMC 2017

Joungho Kim

General Chair, APEMC 2017
Korea Advanced Institute of Science and Technology (KAIST)

Jaekon Shin

General Co-Chair, APEMC 2017
Korea Automobile Testing & Research Institute (KATRI)

Conference Committee

◉ Organizing Committee

Conference General Chair	Joungho Kim (KAIST, Korea)
Conference General Co-chair	Jaekon Shin (Korea Automobile Testing and Research Institute, Korea)
Advisory Committee Chair	Wansoo Nah (Sungkyunkwan University, Korea)
Technical Program Committee Chair	Jong-Gwan Yook (Yonsei University, Korea)
Regular and Special Session Chairs	Jingook Kim (Ulsan National Institute of Science and Technology, Korea) Taewon Kang (Korea Research Institute of Standards and Science, Korea)
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Secretary	Seungyoung Ahn (KAIST, Korea)

Conference Committee

International Advisory Committee

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Jae Wook Lee	Korea Aerospace University, Korea
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Junwei Lu	Griffith University, Australia
Francescaromana Maradei	University of Rome La Sapienza, Italy
Ivan Ndip	Fraunhofer Institute , Germany
Hark-Byeong Park	Samsung Electronics, Korea
Hyun Ho Park	University of Suwon, Korea
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Yihong Qi	DBJ Technologies, Canada
William Radasky	Metatech Corporation, USA
Vesna Roje	University of Split, Croatia
Frank Sabath	Bundeswehr Research Institute for Protective Technologies and NBC-Protection, Germany
Zhongxiang Shen	Nanyang Technological University, Singapore
Jaekon Shin	Korea Automobile Testing and Research Institute, Korea
Eakhwan Song	Kwangwoon University, Korea
Thomas Steinecke	Infineon Technologies AG, Germany
Donglin Su	Beihang University, China
Madhavan Swaminathan	Georgia Institute of Technology, USA
Osami Wada	Kyoto University, Japan
Jianqing Wang	Nagoya Institute of Technology, Japan
Xing-Chang Wei	Zhejiang University, China
Tzong-Lin Wu	National Taiwan University, Taipei
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Xiaoning Ye	Intel, USA
Wenyan Yin	Zhejiang University, China
Ick-Jae Yoon	Chungnam National University, Korea
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Yaojiang Zhang	Huawei, China
Huapeng Zhao	University of Electronic Science and Technology of China, China

Sponsors

Diamond Sponsors

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ROHDE&SCHWARZ

ar rf/microwave instrumentation

Gold Sponsors

EMCIS EMC Instrument & Solution

ANSYS

Silver Sponsors

emtest

ERETEC INC.

대한실드엔지니어링(주) DHSE

NEC & P&I Solution

NT (株)NOISE TECH. NOISE TECHNOLOGY CO.,LTD.

KEYSIGHT TECHNOLOGIES

LUMILOOP

AMEMA electro magnetic applications, inc.

EM ENGINEERING

DONGSHIN MICROWAVE

PIM A BRAND OF narda Safety Test Solutions

ITC KOREA www.itck.co.kr

Bronze Sponsors

SIWON International Co.,Ltd.

Dt&C

C&R

Winintec

HCT HCT CO.,LTD.

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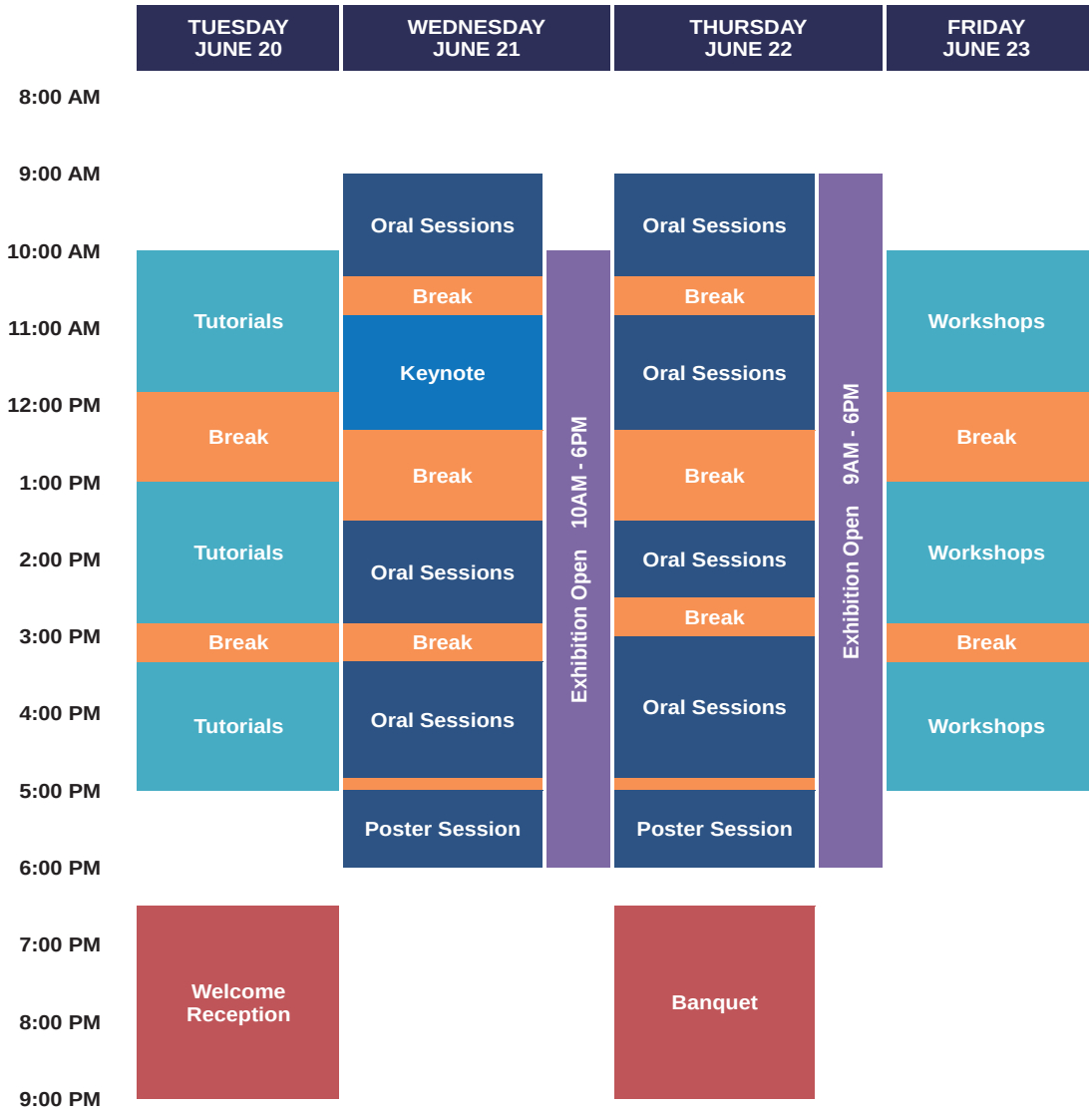
KATECH KOREA AUTOMOTIVE TECHNOLOGY INSTITUTE

한국전파진흥협회 전자파기술원

General Information

Schedule at a Glance



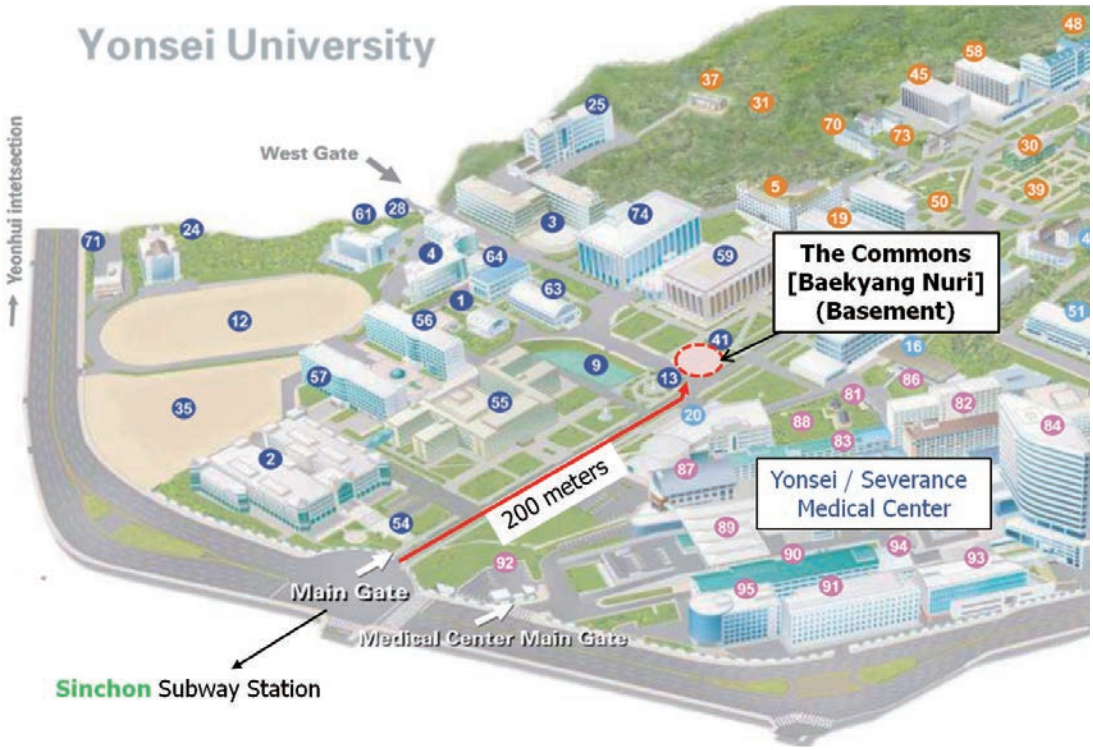
General Information

◉ Symposium Venue

- The Commons [백양누리(Baekyangnuri) in Korean], Yonsei University
  Address: 50 Yonsei-ro, Seodaemun-gu, Seoul 03722, Korea (http://commons.yonsei.ac.kr)
  ※ Baekyangnuri (백양누리) is more popularly called.

General Information

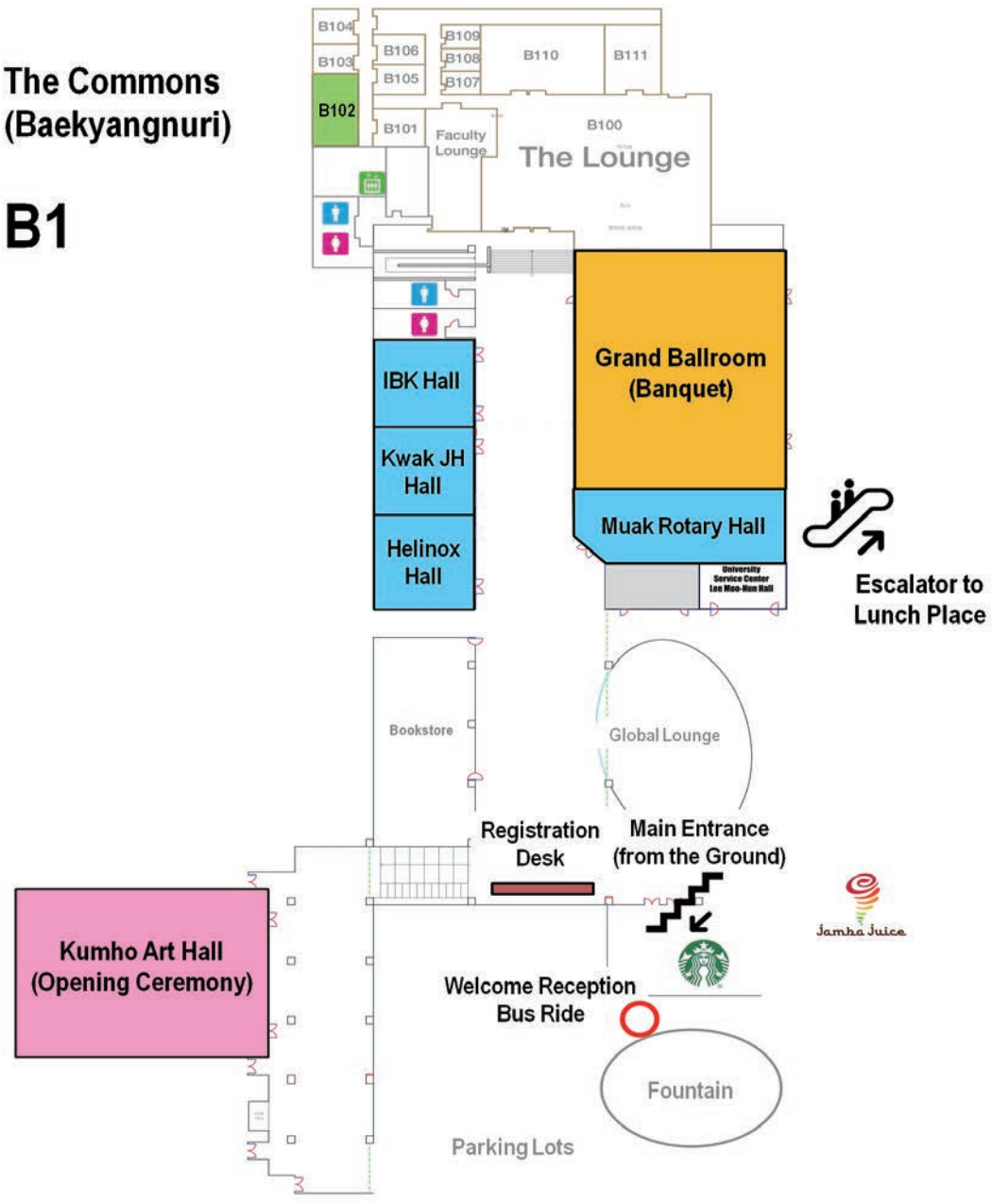
■ Campus map



20 Centennial Hall / University Museum
59 Central Library
74 Yonsei Samsung Library
63 Gymnasium
13 Eagle Statue
9 Basketball Court
41 Yonsei Hangeul Monument
55 Engineering Hall Ⅰ / College of Engineering / Graduate School of Engineering
56 Engineering Hall Ⅱ / College of Engineering
57 Engineering Hall Ⅲ / College of Engineering
2 Engineering Research Center (ERC)

General Information

■ Floor Plan



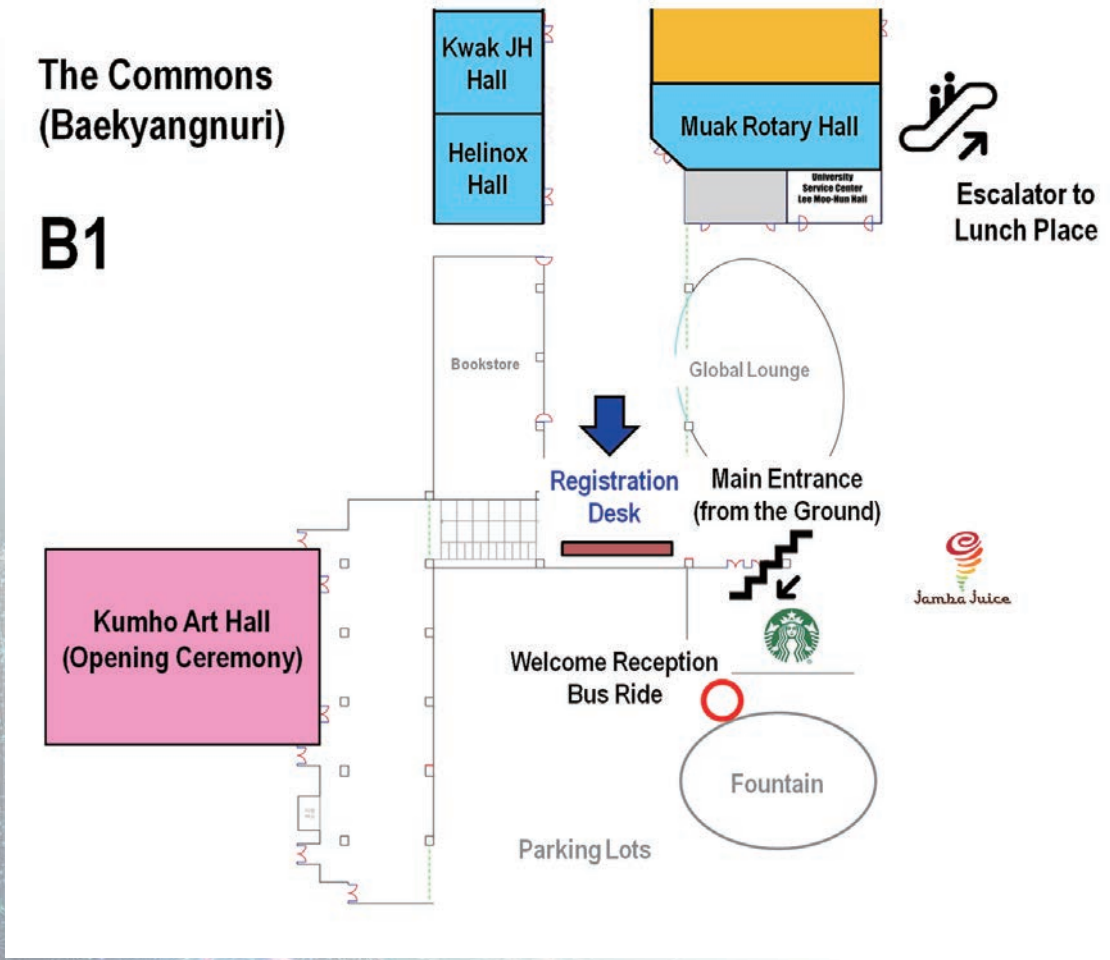
General Information

◉ Registration

- Date: Tuesday, 20 June and Friday, 23 June
- Time: 09:00~17:00
- Place: Lobby (B1), The Commons (Baekyangnuri), Yonsei University

- Date: Wednesday, 21 June and Thursday, 22 June
- Time: 08:00~18:00
- Place: Lobby (B1), The Commons (Baekyangnuri), Yonsei University

Open to all the APEMC 2017 participants.



General Information

◉ Lunch Service

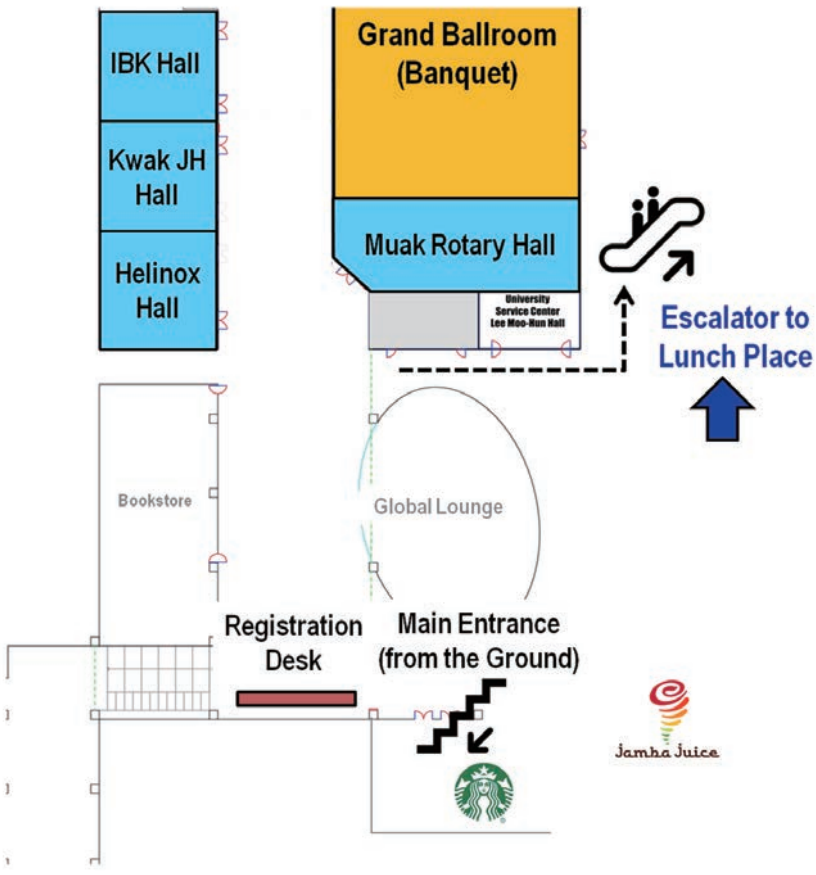
Lunch will be provided at the student cafeteria in the Student Union Building as below.

- Date: Tuesday, 20 June
- Time: 11:50~13:00
- Place: Lunchbox at 'Mannasaem' (1F)

- Date: Wednesday, 21 June and Thursday, 22 June
- Time: 12:20~13:30
- Place: Student Cafeteria Restaurant 'Booreulsaem' (2F)

- Date: Friday, 23 June
- Time: 11:50~13:00
- Place: Student Cafeteria Restaurant 'Booreulsaem' (2F)

※Tickets required



General Information

◉ Coffee Service

Complimentary Coffee will be provided at the lobby all the time during APEMC 2017 from June 20 to June 23.

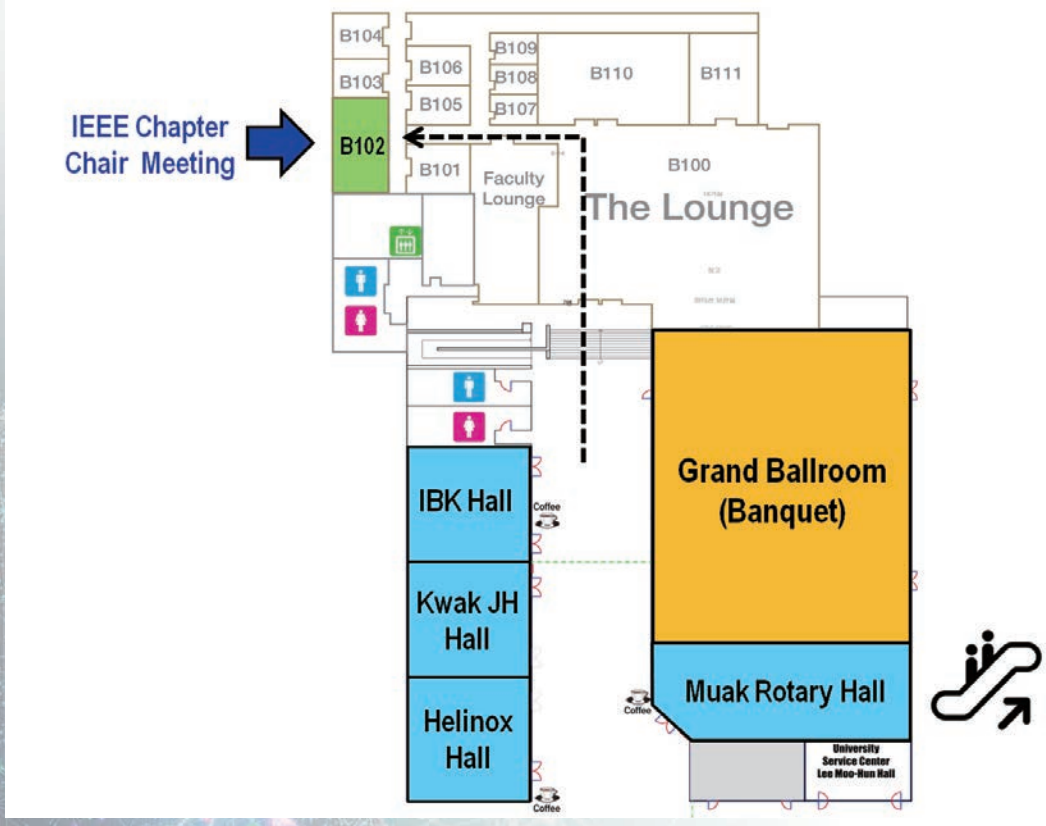
◉ WiFi Access

SSID: Yonsei_open

※ Free access in the venue

◉ IEEE Chapter Chair Meeting

- Date: Wednesday, 21 June
- Time: 12:00-13:00
- Place: B102 (Murray Hall)



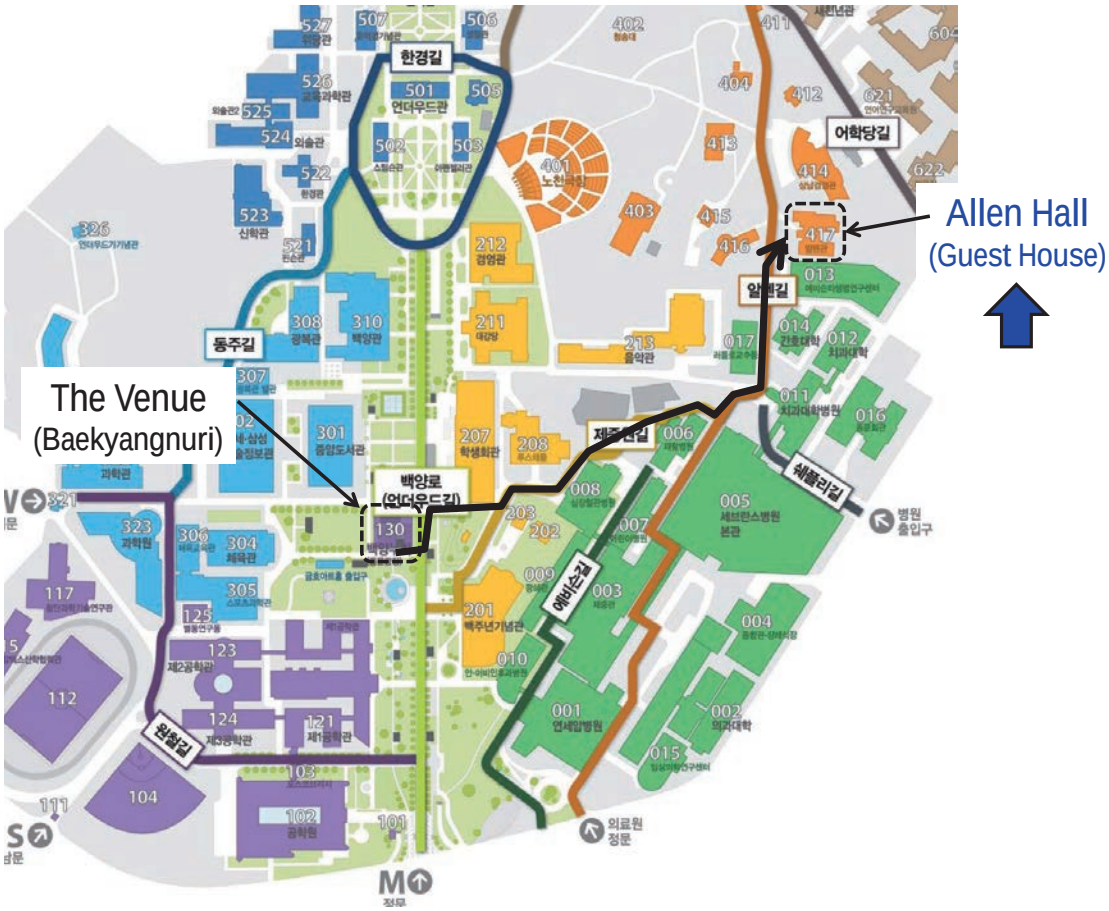
General Information

◉ APEMC International Steering Committee Meeting

- Date: Thursday, 22 June
- Time: 12:00-14:00
- Place: Allen Hall (Guest House)

※ About 10 minutes' walk from the symposium venue (Baekyangnuri)

[Yonsei University Campus Map]



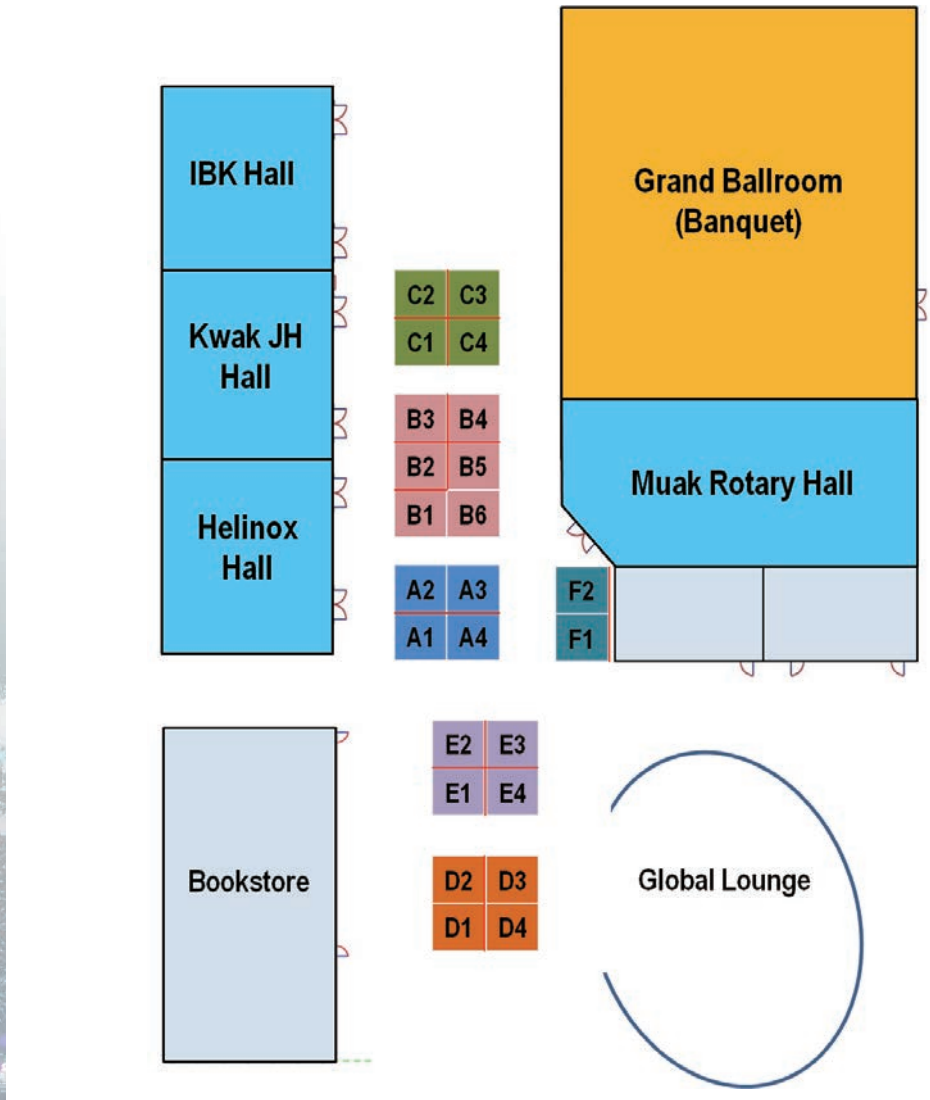
General Information

◉ Exhibition

■ Hours

- Wednesday, 21 June : 10:20 ~ 18:00
- Thursday, 22 June : 9:00 ~ 18:00

■ Floor Plan



General Information

Booth Location	Exhibitor	Website
A1, A4	POLLIWOG	www.polliwogeda.com
A2, A3	Rohde Schwarz Korea	www.rohde-schwarz.com/kr
B1, B6, B5	AR RF/Microwave Instrumentation EMC Solutions	www.arworld.us www.emcs.co.kr
B2	Electro Magnetic Applications	www.ema3d.com
B3	NOISE TECH	www.noisetech.co.kr
B4	Keysight Technologies Korea	www.keysight.com
C1	P&I Solution	www.pnisolution.com
C2	LUMILOOP	www.lumiloop.de
C3	Daehan Shield Engineering	www.dhse.kr dhseenm.mumusolutions.com
C4	Dalian Dongshin Microwave Absorbers	www.isorb.cn
D1, D2	ERETEC	www.eretec.com
D3, D4	EM Test Korea	www.emtest.co.kr
E1	ITC Korea	www.itck.co.kr
E2	PMM – Narda Safety Test Solutions	www.narda-sts.it
E3	ANSYS Korea	www.ansys.com/ko-KR/
E4	EM Engineering	www.eme.co.kr
F1, F2	EMCIS	www.emcis.co.kr emcis.cafe24.com/wpE/

General Information

◉ Instructions to Oral and Poster Presenters

1. Oral Presentation

Prepare Your Presentation

Each oral presentation is limited to 20 minutes including questions and answers. Length of presentation material should be in accordance to your time allotted.

You are requested to load your Power Point presentation materials before the session starts. The presenting authors should be ready in the session room before the session starts, since the session chair will check all presenters at the beginning of each session.

Determine Your Audio Visual Needs

All meeting rooms are equipped with the following audio-visual equipment:

- LCD Projector
- Windows-based PC
- Screen
- Laser Pointer

The computers in the meeting rooms are being provided to Windows-based PC users. The PC will be configured with Microsoft Windows operating system as well as with Microsoft Office.

Create a Backup Copy of Your Presentation

We recommend you bring at least 2 copies of your presentation to the meeting in case there is a problem with one of them. Thumb Drive and hard disk are accepted.

Give Your Presentation

Be considerate of the other speakers and audience by staying within your allocated time. The allocated time for your presentation includes a discussion and changeover to the next speaker. Session Chairs will hold you to the allotted time. This is essential to ensure adequate time for questions and discussion as well as adherence to the schedule.

Please discuss the same materials as reported in your paper submission. At the end of the meeting, all presentation files will be destroyed.

2. Poster Presentation

Poster sessions will be held at the Lobby.

Please register at the Registration Desk before proceeding to locate your assigned poster board. To locate your assigned poster board, look for the board marked with your Paper ID specified in the Final Program.

Prepare your poster

- Each presenter is provided with a 1.5 meter high by 1 meter wide poster board.

General Information

- The presentation must cover the same material as the paper.
- Place the title of your paper and your paper number prominently at the top of the poster to allow viewers to identify your paper easily. Indicate 1) the paper's identification number, 2) title, and 3) authors' names.
- Highlight the authors' names, e-mail and address information in case the viewer is interested in contacting you for more information.
- You have complete freedom in displaying your information in figures, tables, text, photographs, etc in the poster.
- Include the background of your research followed by results and conclusions. A successful poster presentation depends on how well you convey information to an interested audience.

Set-up Your Poster

- Posters should be posted from 10am to 6pm for the respective Poster date on June 21 and 22.
- Please make sure that your paper number is clearly visible on your poster board.
- Presenters are required to be at their posters during their scheduled Poster session.
- Tapes and other materials are available at the Information Desk, nearby the poster boards.

Remove Your Poster

- Posters must be removed after the respective Poster session within half an hour.
- Posters remaining after these times will be removed. APEMC organizer will not be responsible for posters and materials left on poster boards after the stated hours.

Information (Registration) Desk

- Staff at the Information (Registration) Desk will be available to assist you with location and other on-site needs. Tapes and scissors will be available for your use. If you have special needs for your poster presentation, please bring those supplies with you to the meeting.

Event Information

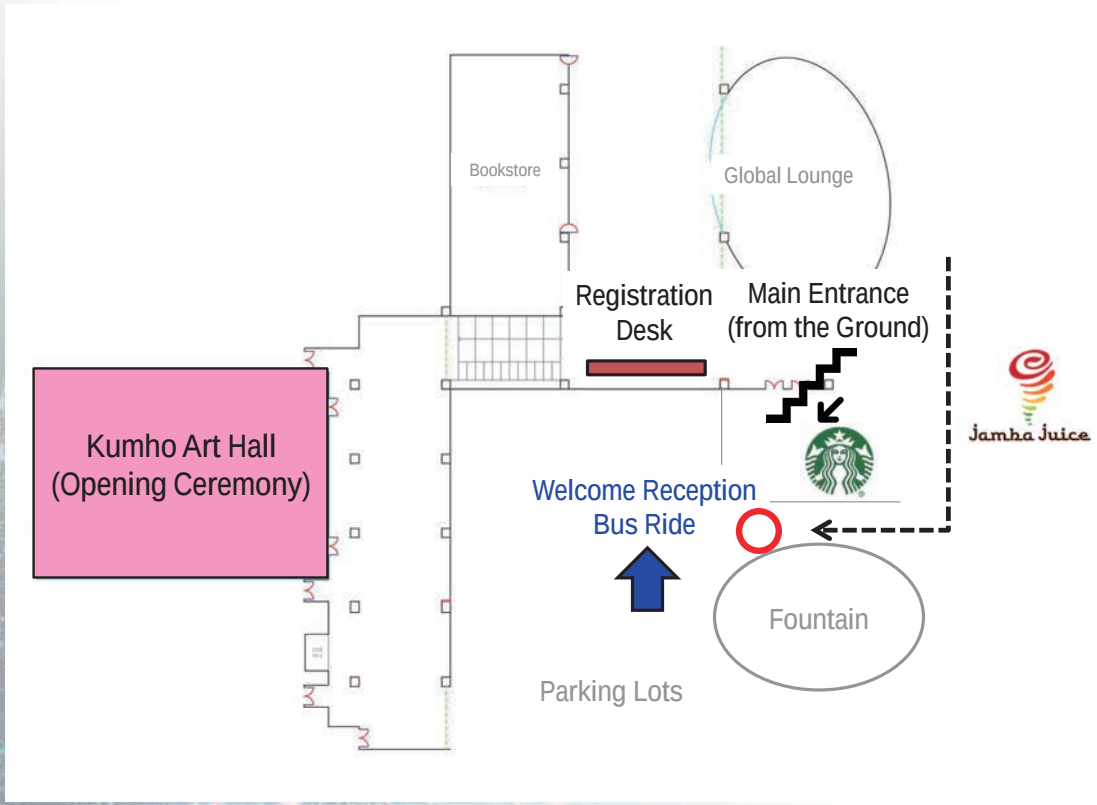
◉ Welcome Reception

- Date: Tuesday, 20 June
- Time: 18:30 ~ 21:00
- Place: Korea House
- Address: 10, Toegye-ro 36gil, Jung-gu, Seoul, 04626, Korea
- Phone number: 82-2-2266-9101
- Website: www.koreahouse.or.kr/en/main

※ Ticket required

There will be traditional Korean performance, and traditional food will be served.

How to get there? Shuttle buses will leave at the bus stop at 17:30. The bus stop location is shown below. Please try to find the gate between Starbucks and Jamba Juice. Exit through the gate and look for the fountain. Return bus services will be provided. It will leave Korea House at 21:00.



Event Information

Address
10, Toegye-ro 36gil,
Jung-gu, Seoul, 04626, Korea

Contact
82-2-2266-9101

Fax
82-2-2278-1776

Email
Khre@chf.or.kr

Subway
Line 3, 4; Chungmuro Station. Exit 3

Bus
Blue line 104, 105, 140, 263, 421, 507, 604
Green line 7011

Parking information
The KOREA HOUSE is equipped with a large parking space that can also accommodate tourist buses. The parking lot can accommodate up to 100 sedan automobiles.

Event Information

◉ Banquet

- Date: Thursday, 22 June
- Time: 18:30 ~ 21:00
- Place: Grand Ballroom (The Commons, Yonsei University)
  ※ Ticket required

Spend the evening to meet your new and old friends with some nice food and entertainment!
Awards will be presented.

- Best Student Paper Awards
- Best Symposium Paper Awards

(Yonsei University at night)

Grand Ballroom (The Commons, Yonsei University)

Memo

Technical Program

Technical Program at a Glance

Data	Time	Industrial Bank of Korea Hall	Kwak Joung-Hwan Challenge Hall	Helinox Hall	Muak Rotary Club Hall	Exhibition
20 June (Tuesday)	09:00~17:00	Registration (Lobby)				
	10:00~11:50	TU-AM-1 Introduction to "EMC Made Simple" – Printed Circuit Board and System Design	TU-AM-2 SI/PI/EMI Modeling, Simulation and Design			
	11:50~13:00	Lunch Break				
	13:00~14:50	TU-PM-1A Electromagnetic Compatibility of Switched-Mode Power Supplies (I)	TU-PM-2A The Role of the IEC Advisory Committee on EMC (ACEC) in Coordinating IEC EMC Activities (I)	TU-PM-3 How to Publish a Paper in the EMC Transactions		
	14:50~15:10	Afternoon Break				
	15:10~17:00	TU-PM-1B Electromagnetic Compatibility of Switched-Mode Power Supplies (II)	TU-PM-2B The Role of the IEC Advisory Committee on EMC (ACEC) in Coordinating IEC EMC Activities (II)	TU-PM-4 Metamaterials, Periodic Structures and EBG in EMC/ Wave Problems/ BioEM		
	18:30~21:00	Welcome Reception (Venue : Korea House)				

Technical Program

Data	Time	Industrial Bank of Korea Hall	Kwak Joung-Hwan Challenge Hall	Helinox Hall	Muak Rotary Club Hall	Exhibition
21 June (Wednesday)	08:00~18:00	Registration (Lobby)				
	09:00~10:20	WE-AM-1 EMC Measurements (I)	WE-AM-2 Wireless Power Transfer	WE-AM-3 EMC of Integrated Circuits (I)	WE-AM-4 EMC Materials	
	10:20~10:40	Morning Break				Open
	10:40~12:20	Opening Ceremony (Venue : Kumho Art Hall)				
		Keynote Speech I : Signal and Power Integrity – Research in EMC (Christian Schuster, Hamburg University of Technology, Germany) Keynote Speech II : Biological Effects of Radio Frequency Electromagnetic Fields on the Brain (Young-Hwan Ahn, Ajou University, Korea)				
	12:20~13:30	Lunch Break				
	13:30~14:50	WE-PM-1 EMC Measurements (II)	WE-PM-2 EMC Standards and Design	WE-PM-3 EMC of Integrated Circuits (II)	WE-PM-4 ESD and Transient EMC	
	14:50~15:10	Afternoon Break				
	15:10~16:50	WE-PM-5 Transport and Aerospace EMC	WE-PM-6 EMC Issues on Wireless Power Transfer	WE-PM-7 Hardware Security for Information/Communication Devices	WE-PM-8 Hot Issues Antenna & Wave Propagation	
	17:00~18:00	WE-PM-9 Poster Session (I) (Venue : Lobby)				

Technical Program

Data	Time	Industrial Bank of Korea Hall	Kwak Joung-Hwan Challenge Hall	Helinox Hall	Muak Rotary Club Hall	Exhibition
22 June (Thursday)	08:00~18:00	Registration (Lobby)				
	09:00~10:20	TH-AM-1 System-level EMC	TH-AM-2 Modeling and Simulation Techniques for EMC, SI and PI (I)	TH-AM-3 EMC Issues Related to Common-mode Noise (I)		Open
	10:20~10:40	Morning Break				
	10:40~12:20	TH-AM-4 Signal Integrity and Power Integrity	TH-AM-5 Power Electronics Related EMC	TH-AM-6 Biological Effects of EMC	TH-AM-7 Radio-Frequency Interference	
	12:20~13:30	Lunch Break				
	13:30~14:30	TH-PM-1 Electronic Packaging EMC	TH-PM-2 Modeling and Simulation Techniques for EMC, SI and PI (II)	TH-PM-3 EMC Issues Related to Common-mode Noise (II)	TH-PM-4 Electromagnetic Environment and High Power EMC	
	14:30~14:50	Afternoon Break				
	14:50~16:50	TH-PM-5 Antenna and Wave propagation	TH-PM-6 Computational Electromagnetics and Multiphysics methods for Simulating Complex Electromagnetic Environment Effects	TH-PM-7 Near Field Scanning Technology for EMC	TH-PM-8 EMC & Antenna Design for Wireless Communication Systems	
	17:00~18:00	TH-PM-9 Poster Session (II) (Venue : Lobby)				
	18:30~21:00	Banquet (Venue : Grand Ballroom)				

Technical Program

Data	Time	Industrial Bank of Korea Hall	Kwak Joung-Hwan Challenge Hall	Helinox Hall	Muak Rotary Club Hall	Exhibition
23 June (Friday)	09:00~17:00	Registration (Lobby)				
	10:00~11:50	FR-AM-1 Testing of Wireless Devices in the Modern World	FR-AM-2 Development of Time-Domain Computational Electromagnetics Methods for Fast Characterizing Complex Electromagnetic Environment Effects	FR-AM-3 Current Activity in the CISPR 16 Series of EMC Standards		
	11:50~13:00	Lunch Break				
	13:00~14:50	FR-PM-1A Advances in Automotive EMC Test and Measurement (I)	FR-PM-2A Protection of the Electric Power System from High-altitude Electromagnetic Pulse (HEMP) and Intentional Electromagnetic Interference (IEMI) (I)	FR-PM-3 EMC Standard Measurement in Japanese Industry – Efforts to Improve the Accuracy of Measurement		
	14:50~15:10	Afternoon Break				
	15:10~17:00	FR-PM-1B Advances in Automotive EMC Test and Measurement (II)	FR-PM-2B Protection of the Electric Power System from High-altitude Electromagnetic Pulse (HEMP) and Intentional Electromagnetic Interference (IEMI) (II)	FR-PM-4 Practical Aspects of a Comprehensive Space Charging Analysis		

Technical Program

◉ Keynote Speeches

Keynote Speech I : Signal and Power Integrity – Research in EMC		
Date : Wednesday, 21 June	11:00~11:40	Kumho Art Hall
Speaker: *Prof. Christian Schuster (Hamburg University of Technology, Germany)*		

Abstract : Electronic systems with their computing and communication capabilities are an essential part of the "digital society". Their design and continuous development using the latest technological advances is one of the success stories of electrical engineering. One chapter of this story deals with the "electromagnetic" integrity of these systems, i.e. the control and containment of currents, voltages, and electromagnetic fields that carry the signals and supply the power. The corresponding disciplines of signal and power integrity (SI/PI) are often considered part of the broader field of electromagnetic compatibility (EMC) and have become an important area of research and innovation over the last decades. This presentation addresses some of the trends that have driven signal and power integrity and summarizes "lessons learned". It then leads to the question of what we actually can consider core EMC contributions and where the field of EMC could contribute in the future.

Biography : Christian Schuster received the Diploma degree in physics from the University of Konstanz, Germany, and the Ph. D. degree in electrical engineering from the Swiss Federal Institute of Technology, Zurich, Switzerland. Since 2006 he is full professor and head of the Institute of Electromagnetic Theory at the Hamburg University of Technology (TUHH), Germany. Prior to that he was with the IBM T. J. Watson Research Center where he was involved in high-speed optoelectronic package and backplane interconnect modeling and signal integrity design for new server generations. He is a Senior member of the IEEE and several technical program committees of international conferences on signal and power integrity and electromagnetic compatibility. He was serving as a Distinguished Lecturer for the IEEE EMC Society in the period 2012-2013, as a member of the Board of Directors of the EMC Society in 2015, and is currently chair of the German IEEE EMC Chapter.

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Keynote Speech II : Biological Effects of Radio Frequency Electromagnetic Fields on the Brain

Date : Wednesday, 21 June	11:40~12:20	Kumho Art Hall

Speaker: ***Prof. Young-Hwan Ahn (Ajou University, Korea)***

Abstract : Electromagnetic fields (EMFs), so called 'bio-fields', are ubiquitous in today's environment. People are exposed to both natural and man-made EMFs almost continuously in daily life. The recent enormous expansion of mobile telecommunication services over the last decade has dramatically increased the amount of EMF irradiation and energy in the environment. Therefore, concerns have been raised about the effects of EMFs, especially radiofrequency (RF)-EMFs, on human health and safety.

In terms of the biological effects of EMFs on the brain, two events have been particularly significant. On May 31, 2011, the WHO/International Agency for Research on Cancer (IARC) classified RF-EMF as possibly carcinogenic to humans (Group 2B), based on the increased risk of glioma, a malignant brain tumor, associated with wireless phone use. On May 16, 2016, a study entitled "Report of Partial Findings from the National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Sprague Dawley rats" showed that RF radiation, i.e., the type emitted by cell phones, can cause cancer. However, the long-term biological safety of EMFs is still not clear.

The potential effects of EMFs on human health vary widely depending on the frequency and intensity of the fields. The health effects of extremely low-frequency (ELF)-EMFs generated by power lines, and RF-EMFs emitted by radio antennas and wireless networks, have been studied. Recently, in addition to the potential harmful influence of EMFs, possible beneficial effects of EMFs have generated interest. Intermediate-frequency (IF)-EMFs are being used increasingly not only in telecommunications but also in modern medical practice, especially for bone healing, nerve stimulation, and cancer therapy with tumor-treating fields (alternating electric fields in the 100–300 kHz frequency range). Life-threatening electromagnetic interference (EMI) emitted from medical devices is of practical interest for engineers.

Direct effects of EMFs on human health have been difficult to prove. Animal experiments are valuable for overcoming the ethical and technical limitations of human studies, because of their many similarities with humans. Humans are bioelectrical organisms and their organs, especially the heart and brain, are controlled by internal bioelectrical signals. Electrical signals travel around the brain and body, carrying messages in the blink of an eye. Therefore, RF-EMF might affect the function of the brain. The brain is significantly more complex than any other organ in the body. We have been studying the biological effects of RF-EMF on animal brains, following the research agenda recommendations of the World Health Organization. Today, I will review the research findings including those of my laboratory regarding exposure of the brain to RF-EMF and recent progress in this field.

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Tutorials (Tuesday, 20 June)

TU-AM-1: Introduction to "EMC Made Simple" – Printed Circuit Board and System Design

Time	10:00 – 11:50, Tuesday, 20 June
Room	Industrial Bank of Korea Hall (B145)
Chair	Mark Montrose (Montrose Compliance Services, Inc., Santa Clara, CA, USA)

Abstract

This tutorial presents applied, hands-on content associated with both the design of printed circuit boards and integration into an enclosure to create a functional system that meets any EMC requirement, both emissions and immunity at an introductory level. The target audience is everyone regardless of expertise level who would like to [re] learn electromagnetic theory in a unique non-academic manner "without the math". Electrical engineering involves understanding transmission line theory thinking in the time domain. An electromagnetic field propagates between a source and load using a transmission line; radiated field or conducted current. Any propagated electromagnetic energy loss that occurs within the transmission line creates undesired common-mode current. To make Maxwell Equations Made Simple, a subset of EMC Made Simple, a visualization approach is taken that allows attendees to understand what Maxwell tells us, converting his four equations conceptually into five simple algebraic equations to solve almost any EMC problem in minutes, using only a calculator. If we understand electromagnetic theory at the circuit or component level, designing anything electrical becomes simple.

- Introduction to "EMC Made Simple" – Printed Circuit Board and System Design
  Mark Montrose (Montrose Compliance Services, Inc., Santa Clara, CA, USA)

TU-AM-2: SI/PI/EMI Modeling, Simulation and Design

Time	10:00 – 11:50, Tuesday, 20 June
Room	Kwak Joung-Hwan Challenge Hall (B146)
Chair	Hideki Asai (Shizuoka University, Hamamatsu, Japan)

Abstract

Recently, with the progress of the electrical and electronic equipment, novel methodologies have been demanded for verification of the design. Therefore, a variety of electromagnetic (EM) simulation techniques have attracted attention very much for the efficient SI/PI/EMI (Signal Integrity/ Power integrity/ Electromagnetic Interference) design. In this session, we discuss several kinds of numerical techniques and their applications to efficient electronic design.

- Signal Integrity (SI) Design and Analysis of Heterogeneous Integration Using Embedded Multi-die Interconnect Bridge (EMIB) Technology for High Bandwidth Memory (HBM)
  Kyungjun Cho (KAIST, Daejeon, Korea)

- Advanced SI/PI/EMI Simulation Technology for Automotive ECU Design
  Hideki Asai (Shizuoka University, Hamamatsu, Japan)

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- Fast evaluation of transmission characteristics of wiring harnesses using the RLGC parameters
  Fengchao Xiao (The University of Electro-Communications, Tokyo, Japan)

- Circuit interpretation of mode conversion in differential-line interconnects under the assumption of weak imbalance
  Flavia Grassi (Politecnico di Milano, Milan, Italy)

TU-PM-1A & 1B: Electromagnetic Compatibility of Switched-Mode Power Supplies

Time	13:00 – 17:00, Tuesday, 20 June (14:50 – 15:10 Coffee Break)
Room	Industrial Bank of Korea Hall (B145)
Chair	Gunter Keller (Deggendorf Institute of Technology, Deggendorf, Germany)

Abstract

The tutorial is subdivided into six parts: Terminology and legal requirements, EMC tests (emissions and immunity), coupling mechanisms and countermeasures, types of interferences and their characteristics, origin of electromagnetic interferences in switched-mode power supplies and practical aspects of EMC design of switched-mode power supplies (SMPS).

After an overview of international standards and test procedures the coupling mechanisms are explained in theory and in SMPS applications with a number of worked examples. Signals are classified into differential and common mode and discussed in terms of Fourier analysis.

The origin of interferences are discussed in terms of normal operating mode of SMPS in low, medium and high frequency range, common-mode and differential-mode and due to parasitics of active and passive components.

Main part (half of the time) is the EMC design, including power factor correction, EMC filter, shielding, hard and soft-switching converters, suitable active and passive components, general and specific layout recommendations, examples: buck converter, flyback converter, immunity. Many recommendations are confirmed by measurements or simulations. Other characteristics as efficiency and life time are also taken into account.

- Electromagnetic Compatibility of Switched-Mode Power Supplies
  Gunter Keller (Deggendorf Institute of Technology, Deggendorf, Germany)

TU-PM-2A & 2B: The Role of the IEC Advisory Committee on EMC (ACEC) in Coordinating IEC EMC Activities

Time	13:00 – 17:00, Tuesday, 20 June (14:50 – 15:10 Coffee Break)
Room	Kwak Joung-Hwan Challenge Hall (B146)
Chairs	Donald Heirman (Don HEIRMAN Consultants, Lincroft, NJ, USA) William A. Radasky (Metatech Corporation, Goleta, CA, USA)

Abstract

This Tutorial continues to update researchers in the field of EMC of the coordination of EMC standards and activities in the International Electrotechnical Commission (IEC) by the IEC Advisory Committee on EMC known as ACEC. The members of this committee include representatives of IEC technical committees that produce EMC basic standards for measurement instrumentation/measurements and also product committees that apply the basic standards along with specific test levels, performance criteria, and emission limits.

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- What is ACEC?
  William A. Radasky (Metatech Corporation, Goleta, CA, USA)

- Recent Trends in CISPR and its Subcommittees
  Donald Heirman (Don HEIRMAN Consultants, Lincroft, NJ, USA)

- Recent Trends in TC77 and its Subcommittees
  William A. Radasky (Metatech Corporation, Goleta, CA, USA)

- Emission Standardization in the 2 kHz to 150 kHz Frequency Band
  William A. Radasky (Metatech Corporation, Goleta, CA, USA)

- EMC for E-mobility
  William A. Radasky (Metatech Corporation, Goleta, CA, USA)

- Recent Topics in IEC TC62 (Electrical Equipment in Medical Practice) and its Subcommittees
  Donald Heirman (Don HEIRMAN Consultants, Lincroft, NJ, USA)

- TC106 Overview: Assessment of Human Exposure to EMF
  Donald Heirman (Don HEIRMAN Consultants, Lincroft, NJ, USA)

TU-PM-3: How to Publish a Paper in the EMC Transactions

Time	13:00 – 14:50, Tuesday, 20 June
Room	Helinox Hall (B147)
Chair	John Norgard (NASA/JSC EMI/EMC E3 Lab, Houston, USA)

Abstract

This tutorial is on the IEEE Transactions on Electromagnetic Compatibility (EMCT).
Presentations on EMCT include:
i) How to publish a paper in the EMCT.
ii) How to prepare and write a good technical paper for the EMCT.
The presentation for part i), by Prof. Norgard, entitled "Publishing a Paper in the EMCT", will cover the initial paper preparation process (topic & text), the submission process, the review cycle (Reviewers, Associate Editors, and the Editor-in-Chief), and final paper publication procedures for the IEEE Transactions on EMC. In addition, acceptance criteria are covered, along with style guides, on-line web support and help-aids, and proper paper organization.
The presentation for part ii), by Dr. Wilson, entitled "Writing a Good EMCT Paper: My Perspective" will cover aspects of writing a good paper for submission to the IEEE Transactions on EMC. Covered will be goals, hints, and dos and don'ts for the abstract, index terms, main text, and conclusions of a paper. The material is very much from the personal perspective of the presenter based on his experience as both a reviewer and a former Editor-in-Chief of the Transactions. This EMCT tutorial is intended for anyone and everyone interested in publishing a paper in the EMCT, especially for the first time.

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- How to Publish a Paper in the EMC Transactions
  John Norgard (NASA/JSC EMI/EMC E3 Lab, Houston, USA)

- How to Prepare and Write a Good Technical Paper for the EMC Transactions
  Perry Wilson (NIST, Boulder, USA)

TU-PM-4: Metamaterials, Periodic Structures and EBG in EMC/Wave Problems/BioEM

Time	15:10 – 17:00, Tuesday, 20 June
Room	Helinox Hall (B147)
Chair	Sungtek Kahng (Incheon National University, Incheon, Korea)

Abstract

As the operating frequency goes higher and the demands on complex architectures of electronics and new materials increase, the classic guide lines and design rules on EMC and RF device designs are facing the challenges and limitations in meeting the requirements

In response to the need to find the alternatives, periodic structures such as FSS are adopted or hybridized with the conventional practices to stop the radiated/conducted noise and unwanted resonance more effectively.

Especially, the photonic bandgap design as the periodic structures with perfect or imperfect periodicity is revisited and becomes the EBG by being adapted to RF frequency from optics.

With a different motivation, metamaterial is researched that when permittivity and permeability the constitutive parameters of a material are given unusual or usual values, they possibly result in phenomena interpreted meaningful to overcome the limitations above in EMC, microwave engineering and Bio EM problems. Particularly, the left-handedness and the infinite wavelength are introduced by negative permittivity and negative permeability and zero refractive index, respectively, and they are used to change the direction or phase of wave propagation. The dispersion engineering stemming from the metamaterials has drawn attention in that it is helpful to reduce the volume of a structure and form a bandgap free from the resonance condition of the conventional periodic structure approach. So, in this session, the analysis and design methods of FSS, DNG/SNG/AMC and EBG are dealt with as well as advanced applications to EMC/antenna/RF designs/Bio EM & Human-EM Interaction. Also, we discuss the slow-wave effects of a periodic geometry and the resonant slots(non-metamaterial) of DGS and SRR/CSRR. Last but not least, a number of electromagnetic computational methods are shown to efficiently and accurately predict the scattering and radiation of the aforementioned structures.

- Introduction to Metamaterials and the Advanced Technologies in EMC and RF Passive Components/Antennas
  Sungtek Kahng (Incheon National University, Incheon, Korea)

- Advanced Technologies in RF Active Components
  Hongjoon Kim (Kyungpook National University, Daegu, Korea)

- Advanced Technologies in BioEM problems
  Sungtek Kahng (Incheon National University, Incheon, Korea)

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◉ Workshops (Friday, 23 June)

FR-AM-1: Testing of Wireless Devices in the Modern World

Time	10:00 – 11:50, Friday, 23 June
Room	Industrial Bank of Korea Hall (B145)
Chair	Alex Yeo (ETS-Lindgren, Singapore)

Abstract

With the continuous development of wireless technologies and their tight integration with various electronic/computer/communication devices, EMC issues, at both the system and the intra-system levels, become increasingly important. This tutorial will begin with a general overview on IoT and the new IEEE IoT Initiative, of which the IEEE EMC Society is a member. The workshop provides an overview and primer on testing wireless devices, the biggest challenges the test labs face with testing wireless devices and their techniques for addressing those challenges. We will look at the increasing concern of IEMI effects on wireless communication. The tutorial will conclude with a review of the growing wireless activity at the National Institute of Standards and Technology, the US Government metrology lab of the USA.

- Internet of Things: IoT, M2M, 5G & EMC
  Mike Violette (Washington Labs, Gaithersburg, MD, USA)

- Complex Challenges in Measuring 5G/Millimeter Wave Device Performance
  Andy Chung (ETS-Lindgren, Tokyo, Japan)

- Assessing the Vulnerability of Wireless Systems to (Intentional) EMI
  Frank Leferink (University of Twente Enschede, The Netherlands; Thales Netherlands Hengelo, The Netherlands)

- Millimeter-wave Channel Sounder Development at the National Institute of Standards and Technology
  Perry Wilson (National Institute of Standards and Technology, Boulder, CO, USA)

FR-AM-2: Development of Time-Domain Computational Electromagnetics Methods for Fast Characterizing Complex Electromagnetic Environment Effects

Time	10:00 – 11:50, Friday, 23 June
Room	Kwak Joung-Hwan Challenge Hall (B146)
Chair	Wen-Yan Yin (Zhejiang University, Hangzhou, China)

Abstract

In this workshop, new research progresses in the development of computational time-domain electromagnetics methods will be addressed for fast solving and characterizing various complex electromagnetic environment effects in the presence of high-power electromagnetic pulse (HP-EMP) or intentional electromagnetic interferences (IEMI). These methods mainly include hybrid finite difference time domain (FDTD), time-domain integral equation (TDIE), adaptive integration method (AIM) together with time-domain physics optics approximation, etc. Some typical numerical

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examples will be shown to demonstrate their capability for accurately predicting 3-D current and field distributions over missile, aircraft and warship platforms for different incident EMP strengths, directions, and polarization states.

- Development of Time-Domain Computational Electromagnetics Methods for Fast Characterizing Complex Electromagnetic Environment Effects
  Wen-Yan Yin (Zhejiang University, Hangzhou, China)

FR-AM-3: Current Activity in the CISPR 16 Series of EMC Standards

Time	10:00 – 11:50, Friday, 23 June
Room	Helinox Hall (B147)
Chair	Zhong Chen (ETS-Lindgren, Cedar Park, TX, USA)

Abstract
The CISPR 16 series is an important basic standard in EMC and continues to be updated by CISPR Sub Committee A. Important changes to this standard continue below 30 MHz, above 1 GHz and in the areas of equipment calibration. Our speakers include experts active in the CISPR Subcommittee A and in the ANSI ASC C63® committee on EMC. Mark Terrien will describe changes associated with CISPR 16-1-1 on EMI receivers; Zhong Chen will discuss measurement uncertainty associated with CISPR 16-4-2; and Wolfgang Muellner will discuss the methods being developed for radiated measurements below 30 MHz.

- Understanding the Importance of EMI Compliance Receiver Calibration Measurements
  Mark Terrien, (Keysight Technologies, Santa Rosa, CA, USA)

- CISPR 16 Measurement Instrumentation Uncertainties from Site Contribution for Radiated Emissions Measurements above 1 GHz
  Zhong Chen (ETS-Lindgren, Cedar Park, TX, USA)

- Recent Developments in CISPR 16 Series on Measurements below 30 MHz
  Wolfgang Muellner (Seibersdorf Laboratories, Siebersdorf, Austria)

FR-PM-1A & 1B: Advances in Automotive EMC Test and Measurement

Time	13:00 – 17:00, Friday, 23 June (14:50 – 15:10 Coffee Break)
Room	Industrial Bank of Korea Hall (B145)
Chair	Alex Yeo (ETS-Lindgren, Singapore)

Abstract
Vehicle platforms continue to become increasingly more complex with propulsion, entertainment and safety related systems all having to function reliably without impacting safety or the legacy communications infrastructure. In this workshop, industry experts will share their latest research in automotive EMC test and measurement. They will address current and future requirements brought on by the increasing use of electronic components as well as the increased

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demand for electric and hybrid vehicles. This has driven the need for ever increasing permutations of system operation, operating frequency ranges and immunity levels. This will be discussed in light of current EMC test chamber design and test challenges.

- An Update on Global Automotive EMC Standards and Testing
  Hyunwoo Park (Hyundai Calibration & Certification Technology, Icheon, Korea)

- EMC Chamber Design and Test Challenges for E-Vehicles and Electronic Sub-Assemblies (ESA)
  K.D. Kim (ETS-Lindgren, Cedar Park, TX, USA)

- Novel and Simplified Immunity Testing Methods for Automotive Applications
  Flavia Grassi (Politecnico di Milano, Milan, Italy)

- Common RF Absorbers Evaluations in the W Band (75-110 GHz)
  Zhong Chen (ETS-Lindgren, Cedar Park, Texas, TX, USA)

- Suppression of Power/Ground Noise on Power Window Control System in Automotive
  Karam Hwang (KAIST, Daejeon, Korea)

FR-PM-2A & 2B: Protection of the Electric Power System from High-altitude Electromagnetic Pulse (HEMP) and Intentional Electromagnetic Interference (IEMI)

Time	13:00 – 17:00, Friday, 23 June (14:50 – 15:10 Coffee Break)
Room	Kwak Joung-Hwan Challenge Hall (B146)
Chair	William A. Radasky (Metatech Corporation, Goleta, CA, USA)

Abstract

Over the past 28 years the International Electrotechnical Commission (IEC) has written 22 standards and reports dealing with the environments and protection of civil electronic systems from HEMP and IEMI. Because it has become clear that the electric power system is the most important critical infrastructure in advanced economies throughout the world, it is important that these standards be applied to protect the basic building blocks of the high voltage power system: substations and control centers. This tutorial will present how the IEC standards can be used to provide the necessary levels of protection against these two security threats.

- Description of the Radiated and Conducted Environments Associated with HEMP and IEMI
  William A. Radasky (Metatech Corporation, Goleta, CA, USA)

- Description of the Vulnerability of Electronic Equipment to HEMP and IEMI
  William A. Radasky (Metatech Corporation, Goleta, CA, USA)

- Approach to the Hardening of Power Substations and Control Centers to HEMP and IEMI
  William A. Radasky (Metatech Corporation, Goleta, CA, USA)

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FR-PM-3: EMC Standard Measurement in Japanese Industry – Efforts to Improve the Accuracy of Measurement

Time	13:00 – 14:50, Friday, 23 June
Room	Helinox Hall (B147)
Chair	Osami Wada (Kyoto University, Kyoto, Japan)

Abstract

In the Technical Working Groups in Expert Committee on EMC in KEC (KEC Electronic Industry Development Center) in Japan, practical research activities on EMC measurement technology related to EMC standard measurement have been conducted. The experts will explain important notes on ensuring measurement accuracy and measurement reliability in conducting measurement conforming to the EMC standard.

The topics in this workshop include; influence of measurement environment in radiated and conducted emission tests and influence of measurement system difference which have been clarified in a series of round robin tests; possibility of antenna calibration in an anechoic chamber and verification of its accuracy; important points on magnetic field measurement in radiated emission test below 30 MHz; and EMC measurement of automotive electronic devices. In addition, we will introduce the current status and future prospects of EMC test standards in Japan, particularly in comparison with US / European / Asian standards.

- Workshop Overview
  Osami Wada (Kyoto University, Kyoto, Japan)

- Radiated Emission Test - Influence of Measurement Environment
  Hirotsugu Hashimoto, (Riken Environmental System Co. Ltd., Kumagaya, Japan)

- Conducted Emission Test - Influence of Measurement System Difference
  Masahiro Inoue (KEC Electronic Industry Development Center, Kyoto, Japan)

- Verification of Accuracy and Validity of Antenna Calibration in Anechoic Chamber
  Yujiro Seki (IPS Corporation, Nagano, Japan)

- Important Points on Magnetic Field Measurement in Radiation Emission Test Below 30 MHz
  Fumiaki Yaguchi (TOYO Corporation, Tokyo, Japan)

- Japanese EMC Test Standards - Comparison with US / European / Asian Standards and Future Perspective
  Aki Hattori (Tokin EMC Engineering Co., Ltd., Kawasaki, Japan)

- Issues in EMC measurement of automotive electronic devices
  Takanori Uno (DENSO EMC Engineering Service Corporation, Kariya, Japan)

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FR-PM-4: Practical Aspects of a Comprehensive Space Charging Analysis

Time	15:10 – 17:00, Friday, 23 June
Room	Helinox Hall (B147)
Chair	Bryon Neufeld (Electro Magnetic Applications, Lakewood, CO, USA)

Abstract

Space charging presents a significant safety and reliability risk for many space platforms. Proper design strategy can mitigate or greatly reduce the risks associated with space charging. It is often not feasible or is even impossible to perform full vehicle testing for space charging, and testing does not offer the possibility to quickly and inexpensively check the effectiveness of design permutations. This makes numerical analysis an important part of developing an effective design strategy against space charging risks. In this presentation, we focus on some of the practical steps and issues involved with performing a comprehensive space charging analysis. We will discuss the model geometry development, materials characterization, simulation and processing that go into numerically assessing charging risks. We will also discuss how aspects of the space environment, including different plasma environments, sunlight illumination, and plume and wake effects, impact the charging analysis.

- Surface Charging, Geometry Development and Meshing
  Bryon Neufeld (Electro Magnetic Applications, Lakewood, CO, USA)

- Plume Modeling, Internal Charging
  Nicole Pothier McGillivray (Electro Magnetic Applications, Lakewood, CO, USA)

- Programmatic Considerations
  Bob Scully (NASA, Houston, TX, USA)

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Technical Sessions

Wednesday, 21 June | 09:00 – 10:20

WE-AM-1: EMC Measurements (I)	
Time	09:00 – 10:20, Wednesday, 21 June
Room	Industrial Bank of Korea Hall (B145)
Chairs	Ding-Bing Lin (National Taiwan University of Science and Technology, Taiwan) Jonghoon Kim (KAIST, Korea)
09:00	In-Circuit Common-Mode Impedance Measurement for Motor Drive System *Fei Fan, Kye Yak See and Kangrong Li (Nanyang Technological University, Singapore); Xiong Liu, Michael Adam Zagrodnik and Amit Kumar Gupta (Rolls-Royce Singapore Pte. Ltd., Singapore)*
09:20	Study on Electrical Performance and Reliability Assessment of HEMP Protection Filters Applied in Communication Facilities *Hyo-Sik Choi, Tae-Heon Jang and Won-Seo Cho (Korea Testing Laboratory, Korea)*
09:40	Design of an Bi-static C-band Radar for Characterisation of Wind Turbine Plants *Karsten Schubert and Jens Werner (Jade University of Applied Science, Germany); Fabian Schwartau (Technische Universität Braunschweig, Germany)*
10:00	The Noise Source Modulation Technique for the Determination of Electromagnetic Noise Path *Umberto Paoletti (Hitachi Ltd., Japan)*

WE-AM-2: Wireless Power Transfer	
Time	09:00 – 10:20, Wednesday, 21 June
Room	Kwak Joung-Hwan Challenge Hall (B146)
Chairs	Seungyoung Ahn (KAIST, Korea) Young-Jin Park (Korea Electrotechnology Research Institute, Korea)
09:00	A Study on Characteristics of Ferrite Sheets in Wireless Power Transfer at 6.78 MHz *Tae-Hyung Kim, Se-Hwa Yoon and Jong-Gwan Yook (Yonsei University, Korea); Gi-Ho Yun (Sungkyul University, Korea); Woong-Yong Lee (Amotech, Korea)*
09:20	Leakage Magnetic Field Suppression Effects of Expanded Graphite in LF-WPT System *In Gon Lee, Ic Pyo Hong and Kee-Sun Lee (Kongju National University, Korea)*
09:40	Novel Concepts in the Design of Near-Field Antenna for Short-Distance Wireless Power Transmission With High Transfer Efficiency *Ding-Bing Lin (National Taiwan University of Science and Technology, Taiwan); Hsi-Tseng Chou and Jui-Hung Chou (National Taiwan University, Taiwan); Yu-Lin Cheng (National Taipei University of Technology, Taiwan)*
10:00	Improvement of Power Transmission Efficiency by Negative Impedance Converter for WPT *Se-Hwa Yoon, Jong-Gwan Yook and Tae-Hyung Kim (Yonsei University, Korea); Gi-Ho Yun (Sungkyul University, Korea); Woong-Yong Lee (Amotech, Korea)*

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WE-AM-3: EMC of Integrated Circuits (I)	
Time	09:00 – 10:20, Wednesday, 21 June
Room	Helinox Hall (B147)
Chairs	SoYoung Kim (Sungkyunkwan University, Korea) Bo Pu (Samsung Electronics, Korea)
09:00	Temperature Compensated, Low EMI Relaxation Oscillator *Sung Jin Kim, Seung Il Huh, Sung Hun Cho and Kang-Yoon Lee (Sungkyunkwan University, Korea)*
09:20	Design and Analysis of Chip-level Wireless Power Transfer Using Magnetic-field Resonance Coupling and 0.18 um CMOS Technology *Jinwook Song, Seungtaek Jeong, Shinyoung Park and Joungho Kim (KAIST, Korea)*
09:40	Hierarchical Power Distribution Network Design in Fanout Wafer Level Package based Mobile AP-GPU *Youngwoo Kim, Kyungjun Cho, Gapyeol Park, Subin Kim and Joungho Kim (KAIST, Korea)*
10:00	Capacitor-less LDO Regulator Design Methods for High Noise Immunity *Soyeon Joo and SoYoung Kim (Sungkyunkwan University, Korea)*

WE-AM-4: EMC Materials	
Time	09:00 – 10:20, Wednesday, 21 June
Room	Muak Rotary Club Hall (B132)
Chairs	Kyung Sub Lee (Sungkyunkwan University, Korea) Sang-Woo Kim (Korea Institute of Science and Technology, Korea)
09:00	Performance of Flexible Noise Suppressor for IoT Devices Made Only of Meltblown Non-Woven Fabric *Masahiro Yamaguchi and Jiang Fu (Tohoku University, Japan); Sho Muroga (National Institute of Technology, Toyota College, Japan); Tomoya Tanaka, Chie Okamura, Lumina Obi and Kazufumi Kato (Asahi Kasei Fibers Corporation, Japan)*
09:20	A Transparent Electromagnetic Shielding Film by Applying Nano-imprinting Technology *Hyunseok Choi, Kyungsub Lee and Sujeong Suh (Sungkyunkwan University, Korea)*
09:40	Guideline for Improvement of Signal Loss With Using Shielding Materials for FPCB *Young-Min Im (Korea Electronics Technology Institute, Korea)*
10:00	Electromagnetic Wave Absorbing Properties of Magnetic Particles and Carbon Nanomaterials Reinforced composites *Sang Bok Lee, Jae Ryung Choi, Byung Mun Jung, Seungchan Cho and Sang-Kwan Lee (Korea Institute of Materials Science, Korea); Ki Hyeon Kim (Yeungnam University, Korea)*

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Wednesday, 21 June | 13:30 – 14:50

WE-PM-1: EMC Measurements (II)	
Time	13:30 – 14:50, Wednesday, 21 June
Room	Industrial Bank of Korea Hall (B145)
Chairs	Perry Wilson (National Institute of Standards and Technology, USA) Chulsoon Hwang (Missouri University of Science and Technology, USA)
13:30	Investigation Into the Influence of Ground Plane Insulation Thickness on Radiated Emission From Mains Cable of EUT *Shinichi Okuyama (VCCI Council; NEC Platforms, Japan); Nobuo Kuwabara (Kyushu Institute of Technology, Japan); Kuniyuki Miyata (Fujitsu, Ltd, Japan); Kunihiro Osabe (VCCI Council, Japan)*
13:50	Comparison of Configurations for Conducted Emission Measurement Specified in CISPR 32 and CISPR 13 *Nozomi Miyake (VCCI Council; NEC Corporation, Japan); Koichi Kakuda (NTT Advanced Technology Corporation, Japan); Yoshiaki Hiratsuka (FUJITSU Advanced Technologies Limited, Japan); Hidenori Muramatsu (VCCI Council, Japan)*
14:10	Use of FFT-based Measuring Receivers for EMI Compliance Measurements Against CISPR 32 *Jens Medler (Rohde & Schwarz GmbH & Co. KG, Germany)*
14:30	Comparison of Test Standards for Immunity Testing in Reverberation Chambers *Soydan Çakir and Çaglar Aslan (TUBITAK UME, Turkey); Frank Leferink (University of Twente, The Netherlands)*

WE-PM-2: EMC Standards and Design	
Time	13:30 – 14:30, Wednesday, 21 June
Room	Kwak Joung-Hwan Challenge Hall (B146)
Chairs	Peter S. W. Leung (City University of Hong Kong, Hong Kong) Tea-Heon Jang (Korea Testing Laboratory, Korea)
13:30	Smarter Concepts for Future EMI Standards *Iwan Setiawan, Cees Keyer and Frank Leferink (University of Twente, The Netherlands)*
13:50	The Systematic Design of Integrated Busbar EMI Filter Considering the Coupling Characteristics of Multi-physical Fields *Qianceng Lou, Xinxin Gao and Shishan Wang (Nanjing University of Aeronautics and Astronautics, China); Wei Yan (Nanjing Normal University, China)*
14:10	Robustness Analysis of Crosstalk-Based Hardware Trojans and Relevant Algorithms to Nonideal Positioning *Keliang Yuan (Tsinghua University, China); Flavia Grassi, Giordano Spadacini and Sergio A. Pignari (Politecnico di Milano, Italy)*

Technical Program

WE-PM-3: EMC of Integrated Circuits (II)	
Time	13:30 – 14:30, Wednesday, 21 June
Room	Helinox Hall (B147)
Chairs	SoYoung Kim (Sungkyunkwan University, Korea) Bo Pu (Samsung Electronics, Korea)
13:30	Embedded Bandstop Filter in Package to Enhance the Susceptibility of Integrated Circuits *Bo Pu (Samsung Electronics, Korea); SoYoung Kim and Wansoo Nah (Sungkyunkwan University, Korea)*
13:50	Application of EMC Qualification Methodology to Semicustom Digital Design *Hai Au Huynh and SoYoung Kim (Sungkyunkwan University, Korea)*
14:10	Exploring the Impact of Multi-Frequency Clocking and GALS Design on Power Supply Noises *Nguyen Van Toan, Dam Minh Tung and Jeong-Gun Lee (Hallym University, Korea)*

WE-PM-4: ESD and Transient EMC	
Time	13:30 – 14:50, Wednesday, 21 June
Room	Muak Rotary Club Hall (B132)
Chairs	Shinobu Ishigami (Tohoku Gakuin University, Japan) Ken Kawamata (Tohoku Gakuin University, Japan)
13:30	Measurement of Electric Field Waveform Caused by Micro Gap ESD in a Pair of Spherical Electrodes *Shinobu Ishigami, Ken Kawamata and Shigeki Minegishi (Tohoku Gakuin University, Japan); Osamu Fujiwara (Nagoya Institute of Technology, Japan)*
13:50	A Study on Response Characteristics Modeling Method for ESD Protection Device by Vector Network Analyzer *Nobuhiro Kimura and Takahiro Yoshida (Tokyo University of Science, Japan)*
14:10	Time Domain Measurement of Discharge Phenomenon Using Optical E-Field Sensor *Takayoshi Ohtsu, Norihiro Ogishima, Haruki Tashiro and Kohei Obara (National Institute of Technology, Numazu College, Japan); Ryuji Osawa (Seikoh, Giken Co., Ltd., Japan)*
14:30	System-level ESD Noise Induced by Secondary Discharges at Voltage Suppressor Devices in a Mobile Product *Junsik Park (Ulsan National Institute of Science and Technology, Korea); Jongsung Lee, Cheolgu Jo and Byongsu Seol (Samsung Electronics, Korea); Jingook Kim (Ulsan National Institute of Science and Technology, Korea)*

Technical Program

Wednesday, 21 June | 15:10 – 16:50

WE-PM-5: Transport and Aerospace EMC	
Time	15:10 – 16:30, Wednesday, 21 June
Room	Industrial Bank of Korea Hall (B145)
Chairs	Sergio A. Pignari (Politecnico di Milano, Italy) Haengseon Lee (Sogang University, Korea)
15:10	High Frequency Model of Power Autotransformer for Adjustable Speed Drive System *Chuang Bi, Yingzhe Wu, Chuan Li and Hui Li (University of Electronic Science and Technology of China, China); Yongjian Zhi (CRRC Zhuzhou Institute Co Ltd, China)*
15:30	Mitigation of Current Oscillations in the DC link of Electric Vehicles *Kelin Jia (Volvo CE, Sweden); Chuang Bi and Hui Li (University of Electronic Science and Technology of China, China)*
15:50	3-D Modeling of Common Mode Choke for Thermal Analysis *Yong Liu and Kye Yak See (Nanyang Technological University, Singapore); Rejeki Simanjorang (Rolls-Royce Singapore Pte. Ltd, Singapore)*
16:10	Harmonics and Common Mode Voltage Analysis With Different Power Converter Configurations in Aerospace Applications *Yong Liu and Kye Yak See (Nanyang Technological University, Singapore); Rejeki Simanjorang (Rolls-Royce Singapore Pte. Ltd, Singapore); Arie Nawawi and Lim Ziyou (Nanyang Technological University, Singapore)*

WE-PM-6: EMC Issues on Wireless Power Transfer	
Time	15:10 – 16:50, Wednesday, 21 June
Room	Kwak Joung-Hwan Challenge Hall (B146)
Chairs	Hiroshi Hirayama (Nagoya Institute of Technology, Japan) Seungyoung Ahn (KAIST, Korea)
15:10	Design Formula of a Small Circular Coil With Circular Cross-section for Maximum Q-factor *Do-Hyeon Kim and Young-Jin Park (Korea Electrotechnology Research Institute; University of Science and Technology, Korea)*
15:30	Suppression of Common-mode Radiation Using Folded-spiral Antenna for Wireless Power Transfer *Hiroshi Hirayama, Masanori Ando and Toshihito Sonobe (Nagoya Institute of Technology, Japan)*
15:50	Active Implantable Medical Device EMI Estimation for EV-Charging WPT System Based on 3D Full-wave Analysis *Takashi Hikage, Masakazu Yamagishi, Kazuki Shindo and Toshio Nojima (Hokkaido University, Japan)*
16:10	Reduction of Electromagnetic Interference for Wireless Power Transfer Coils in Mobile Devices *Jaehyoung Park and Seungyoung Ahn (KAIST, Korea)*
16:30	A Study of Electromagnetic Emission From Evanescent Mode WPT System Through Metal Sheets *Nak-Young Ko, Seong-Kyu Song, Jagannath Malik, Woo-Jin Park, Bon-Young Lee, Seok-Tae Seo and Franklin Bien (Ulsan National Institute of Science and Technology, Korea)*

Technical Program

WE-PM-7: Hardware Security for Information/Communication Devices	
Time	15:10 – 16:50, Wednesday, 21 June
Room	Helinox Hall (B147)
Chairs	Yuichi Hayashi (Tohoku Gakuin University, Japan) Jong-Gwan Yook (Yonsei University, Korea)
15:10	Hardware Security for Information/Communication Devices *Yuichi Hayashi (Tohoku Gakuin University, Japan); Jong-Gwan Yook (Yonsei University, Korea); William A. Radasky (Metatech Corporation, USA)*
15:30	Signal-to-Noise Ratio Measurements of Side-Channel Traces for Establishing Low-Cost Countermeasure Design *Yusuke Yano, Toshiaki Teshima, Kengo Iokibe and Yoshitaka Toyota (Okayama University, Japan)*
15:50	A Threat of Malicious Hardware Using On-chip Voltmeter *Daisuke Fujimoto, Ryo Miyachi and Tsutomu Matsumoto (Yokohama National University, Japan)*
16:10	Hardware Trojan Threats After IT Device Manufacturing *Masahiro Kinugawa (National Institute of Technology, Sendai College, Japan); Yu-ichi Hayashi (Nara Institute of Science and Technology, Japan)*
16:30	Estimate of the Effect of Concrete Wall for Information Leakage From LCD Monitor *Ho Seong Lee and Jong-Gwan Yook (Yonsei University, Korea)*

WE-PM-8: Hot Issues Antenna & Wave Propagation	
Time	15:10 – 16:30, Wednesday, 21 June
Room	Muak Rotary Club Hall (B132)
Chairs	Wonbin Hong (Pohang University of Science and Technology, Korea) Jungsuek Oh (Inha University, Korea)
15:10	An Electrically Small, 3D Printed Folded Spherical Meander Antenna *Myeongjun Kong, Geonyeong Shin, Suhyeon Lee and Ick-Jae Yoon (Chungnam National University, Korea)*
15:30	Analysis of Transparent Coplanar Waveguide With Few Microns - Grid Width *Seung Yoon Lee, Dooseok Choi and Wonbin Hong (Pohang University of Science and Technology, Korea)*
15:50	Dual-Polarized Vivaldi Antenna With Quarter-Wave Balun Feeding *Philip Ayiku Dzagbletey, Jae Yeon Shim, Jin Young Jeong and Jae-Young Chung (Seoul National University of Science and Technology, Korea)*
16:10	Photonic-assisted Imaging System for mm-wave Horn Antenna Near-Field Characterization *Young-Pyo Hong, Hyunji Koo and Dong-Joon Lee (Korea Research Institute of Standards and Science, Korea)*

Technical Program

Wednesday, 21 June | 17:00 – 18:00

WE-PM-9: Poster Session (I)	
Time	17:00 – 18:00, Wednesday, 21 June
Room	Lobby
Chairs	Kyung Sub Lee (Sungkyunkwan University, Korea) Taehoon Yoo (Dongyang Mirae University, Korea)
PS1-01	Study on Measurement Method of Shield Continuity for Shielded Cable with Drain Wire *Hong-je Jang and Tae-seung Song (Korea Testing Laboratory, Korea); Tae-hyeob Song (Korea Institute of Civil Engineering and Building Technology, Korea)*
PS1-02	Study of EMI Filter Performance Without LISN Based on Noise Impedances *Kang-Rong Li, Kye-Yak See and Fei Fan (Nanyang Technological University, Singapore)*
PS1-03	"Customization" in EMC Measuring System *Lei Zhou, Deng Linxiang, Chen Daosheng (Jiangsu Institute of Metrology, China); Yan Wei (Nanjing Normal University, China)*
PS1-04	Effect of ESD Generator Ground Strap Configuration on ESD Waveform *Jawad Yousaf, Jaeyoung Shin, Rao Leqian and Wansoo Nah (Sungkyunkwan University, Korea); Jinsung Youn, Daehee Lee and Chanseok Hwang (Samsung Electronics, Korea)*
PS1-05	More Insight Into Conducted Immunity Tests and Investigation of Support Influences *Osman Sen, Soydan Cakır and Savas Acak (TUBITAK UME, Turkey)*
PS1-06	Comparison of Log-Periodic, Dual-Stacked Log-Periodic, and Horn Antenna on the Field Uniformity and Power Efficiency from 80 MHz to 1 GHz *Dwi Mandaris and Niek Moonan (University of Twente, The Netherlands); Jaap Schuurmans (Thales, The Netherlands); Frank Leferink (University of Twente, The Netherlands)*
PS1-07	A Study of Measuring a Commercial Antenna Gain Using an R-SAM *Jong-Hyuk Lim, Bo-Weon Lee, Yun-Jo Choi, and Hee-Baek Kim (National Radio Research Agency, Korea)*
PS1-08	Comparison of Measurement Results on the Transfer Impedance of a Coaxial Cable *Hyung-uk Kim and Tea-Heon Jang (Korea Testing Laboratory, Korea)*
PS1-09	Unintentional Radiation of Electromagnetic Waves Caused by Deterioration of Metal Halide Lamps *Yeong-Min Lee, Young-Choul Lim and Hongsik Keum (Korea Radio Promotion Association, Korea); Jungyu Yang (Radio Research Agency, Korea); Jong-Gwan Yook (Yonsei University, Korea)*
PS1-10	Radiated Emission Tests due to the Direction of an Highly Directional EUT in a SAC And a RC *Sang Il Kwak, Jong Hwa Kwon and Dong-Uk Sim (Electronics and Telecommunications Research Institute, Korea); Young Joong Yoon (Yonsei University, Korea)*
PS1-11	Conceptual Design and Characteristics of Wireless Power Charging System for HTS Magnet using Copper Resonance Coupling Coils *Yoon Do Chung and Jiseong Kim (Suwon Science College, Korea)*

Technical Program

PS1-12	Electromagnetic Shielding Structure for Reduction of the Leakage Magnetic Field in Wireless Power Transfer System *Jongchan Kim, Domin Choi and Nam Kim (Chungbuk National University, Korea); Seung-Yeop Rhee (Chonnam National University, Korea)*
PS1-13	Analytic RF Multi Beam Synthesis Method considering Active Element Pattern of Array Antenna *Sang Wook Chi and Jeong Hae Lee (Hongik University, Korea)*
PS1-14	A Method to Improve Transfer Efficiency in Contactless Power Transfer Systems With Magnetically-Coupled Coils *Taejun Lim and Yongshik Lee (Yonsei University, Korea)*
PS1-15	Design and Optimization of Inductive Snubber for DC-DC Converter *Hyo Sub Shin, Hai Au Huynh and SoYoung Kim (Sungkyunkwan University, Korea)*
PS1-16	Investigation on Characteristic Impedance of Transmission Line in Meshed-ground Flexible Printed Circuit *Yantao Zhu (University of Electronic Science and Technology of China, China); Fengchao Xiao (University of Electro-Communications, Japan); Xiangyang Sun (University of Electronic Science and Technology of China, China); Yoshiki Kayano and Yoshio Kami (University of Electro-Communications, Japan)*
PS1-17	Introduction of Outdoor Radar Cross Section (RCS) Measurement System *Hyunsung Tae, Minkyeong Seo, Eungjoo Lee, Joon Hyuck Kwon and Eungjo Kim (Agency for Defense Development, Korea)*
PS1-18	A Consideration of Mechanism of Audio Signal Deterioration Caused by Propagation Noise between Audio Equipment *Takahiro Fujino and Takahiro Yoshida (Tokyo University of Science, Japan)*
PS1-19	The Analysis and Design of Milk Pasteurization System by Using Radio Frequency Electric Fields *Chanon Srisuma, Samran Santalunai, Thanaset Thosdeekoraphat and Chanchai Thongsopa (Suranaree University of Technology, Thailand)*
PS1-20	Experiment and Design a Suitable Induction Heating for Air Heat Exchanger Application *Keeratidech Thepsatitsilp, Worawut Boonpeang, Phanupong Saeung, Nuttakorn Pukseesang and Chanchai Thongsopa (Suranaree University of Technology, Thailand)*
PS1-21	Analysis and Verification for Errors of Normalized Site Attenuation Method Below 30 MHz *Hongsik Keum (Korea Radio Promotion Association, Korea); Jungyu Yang (Radio Research Agency, Korea); Nam Kim (Chungbuk National University, Korea); Seungwoo Lee (KEPCO, Korea)*
PS1-22	Bounded-Wave(BW) Outdoor HEMP Simulator *Kihwan Song, Joon Hyuck Kwon, Saedong Yeo and Eungjo Kim (Agency for Defense Development, Korea)*
PS1-23	Measurement of Magnetic Field Levels Generated by EV/HEV Vehicles With Respect to Human Exposure *Yunhyeong Jo and Jaehyun Park (I-SPEC, Korea); Seongkyu Lee (Hanyang University, Korea); Jaekon Shin (Korea Automobile Testing and Research Institute, Korea)*
PS1-24	Non-invasive Detection of Object by UWB Radar *Wei Ping Hung (National Chiao Tung University, Taiwan); Tsern-Huei Lee and Chia-Hung Chang (Chinese Culture University, Taiwan)*

Technical Program

Thursday, 22 June | 09:00 – 10:20

TH-AM-1: System-level EMC	
Time	09:00 – 10:00, Thursday, 22 June
Room	Industrial Bank of Korea Hall (B145)
Chairs	Jingook Kim (Ulsan National Institute of Science and Technology, Korea) Bumhee Bae (Samsung Electronics, Korea)
09:00	Study of Currents Induced in Wire Lines Placed inside the Metal Shield of Electronics in the Beginning of the Resonance Mode *Valentin Butin and Pavel Kundyshev (Dukhov Research Institute of Automatics, Russia)*
09:20	Recovery Method of S/W Failure Induced by ESD using Far-end Crosstalk between PCB Traces *JongJin Baek (Samsung Electronics, Korea); Hyosub Shin and SoYoung Kim (Sungkyunkwan University, Korea)*
09:40	Conducted EMI from Motor Drive System of Electric Vehicle Under Load Operation *Li Zhai and Chao Song (Beijing Institute of Technology, China)*

TH-AM-2: Modeling and Simulation Techniques for EMC, SI and PI (I)	
Time	09:00 – 10:20, Thursday, 22 June
Room	Kwak Joung-Hwan Challenge Hall (B146)
Chairs	Hui Min Lee (A*STAR Institute of High Performance Computing, Singapore) Ikpyo Hong (Kongju National University, Korea)
09:00	Evaluating Airborne Slotted Waveguide Antenna Arrays Using an Equivalent Model Based on Near-Field Samplings Over Slots *Si-Ping Gao, Hui Min Lee, Wei-Jiang Zhao, En-Xiao Liu and Ching Eng Png (Institute of High Performance Computing; A*STAR, Singapore)*
09:20	Evaluation of Electromagnetic Field According to Current Change of Wireless Power Transmission *SangWook Park, BeomJin Choi and EunHa Kim (Korea Automotive Technology Institute, Korea); SeungDo Kim (Green Power Co. Ltd., Korea)*
09:40	EM Coupling Analysis Between Windscreen Antennas and Power Cables in Electric Vehicles *Jaehoon Kim (Altair Engineering, Korea)*
10:00	Study of Monopole Antenna's Received Power in Reverberation and Anechoic Chambers *Huapeng Zhao, Jun Hu and Zhizhang Chen (University of Electronic Science and Technology of China, China)*

Technical Program

TH-AM-3: EMC Issues Related to Common-mode Noise (I)	
Time	09:00 – 10:20, Thursday, 22 June
Room	Helinox Hall (B147)
Chairs	Yoshitaka Toyota (Okayama University, Japan) Wansoo Nah (Sungkyunkwan University, Korea)
09:00	Dependency of Transmission Loss of Shielded-FPC on Thickness of Conductive Shield *Yoshiki Kayano (The University of Electro-Communications, Japan); Hiroshi Inoue (The Open University of Japan, Japan)*
09:20	An Efficient Partition Analysis for Electromagnetic Interference Estimation of High-Speed Input/Output Differential Interfaces *Chi-Kai Shen and Tzong-Lin Wu (National Taiwan University, Taiwan); Tze-Min Shen, Chih-Ying Hsiao, Ting-Kuang Wang and Kuan-Yu Chen (MStar Semiconductor, Taiwan)*
09:40	Technique of Immunity Estimation for In-Vehicle 1Gbps Ethernet *Miyuki Mizoguchi, Youhei Sekiya, Hiroyuki Mori and Noboru Maeda (Nippon Soken, Inc., Japan); Kaoru Yoshida, Hiroki Keino, Takashi Yasuda and Hideki Goto (Toyota Motor Corporation, Japan)*
10:00	Study of Magnetic Field Exposure Emitted From a Motor Drive System of an Electric and Hybrid Vehicle *Kyoseung Keum and Seongkyu Lee (Hanyang University, Korea); Jongkyoung Lee (E&R Tech, Korea); Jaekon Shin (Korea Automobile Testing and Research Institute, Korea); Jaehoon Choi (Hanyang University, Korea)*

Thursday, 22 June | 10:40 – 12:20

TH-AM-4: Signal Integrity and Power Integrity	
Time	10:40 – 12:20, Thursday, 22 June
Room	Industrial Bank of Korea Hall (B145)
Chairs	Jun Fan (Missouri University of Science and Technology, USA) Ick-Jae Yoon (Chungnam National University, Korea)
10:40	Transmission Line Model for Designing Common-Mode Suppression Filter on Multi Differential Signal Pairs *Ding-Bing Lin (National Taiwan University of Science and Technology, Taiwan); Yong-Xun Chen, Yi-Hsien Lee and Lin-Zong Zheng (National Taipei University of Technology, Taiwan)*
11:00	Improvement of Eye Diagram of USB 3.0 Signal in Laptop PC Using Passive Equalizer Embedded on Flexible PCB *Jun-Young Jang, Ho-Seong Lee and Jong-Gwan Yook (Yonsei University, Korea)*
11:20	Fabrication and Evaluation of the Quasi-distributed Constant Line Filter with Multiple Magnetic Cores *Yusuke Ohdaira, Koki Harada and Shigeyoshi Yoshida (NEC TOKIN Corporation, Japan); Toshiro Sato (Shinshu University, Japan)*
11:40	SI/PI Co-Optimization for LPDDR3 Mobile Interface *Nitin Srivastava, Antonio Ciccomancini Scogna, Hwan-Woo Shim, Albert Baek, YongHyock Lee, and Dong Sub Kim (Samsung Electronics, Korea)*
12:00	Signal Integrity Analysis of High Speed Connector for Multi-Media System *Huijin Song, Jonghoon J. Kim and Junyong Park (KAIST, Korea); Junho Lee and Seongmin Choi (Korea Electric Terminal Co., Ltd, Korea); Joungho Kim (KAIST, Korea)*

Technical Program

TH-AM-5: Power Electronics Related EMC	
Time	10:40 – 12:20, Thursday, 22 June
Room	Kwak Joung-Hwan Challenge Hall (B146)
Chairs	Tsuyoshi Funaki (Osaka University, Japan) Jingook Kim (Ulsan National Institute of Science and Technology, Korea)
10:40	Design of Effective Surge Protection Circuits for an Active EMI filter *Sangyeong Jeong and Dongil Shin (Ulsan National Institute of Science and Technology, Korea); Jongpil Kim and Seokjoon Kim (Hyundai Motor Group, Korea); Jingook Kim (Ulsan National Institute of Science and Technology, Korea)*
11:00	A Study on Wiring Pattern Design for Intelligent SiC Power Module With PEEC Method *Eisuke Masuda, Takaaki Ibuchi and Tsuyoshi Funaki (Osaka University, Japan); Hirotaka Otake, Yasuo Kanetake, Tatsuya Miyazaki and Takashi Nakamura (ROHM Co., Ltd., Japan)*
11:20	Extraction of Network Parameters for the Winding-to-Shaft Coupling Effect of an AC Motor *Younggon Ryu and Ki Jin Han (Ulsan National Institute of Science and Technology, Korea)*
11:40	Parameter Identification of Noise-source Linear Equivalent Circuit of DC-DC Converter and Its Evaluation *Yuhei Osaki, Yusuke Yano, Kengo Iokibe and Yoshitaka Toyota (Okayama University, Japan)*
12:00	System-level Modeling of Conducted Emission in Motor Driving Circuit for Brake System *Junesang Lee, Jungrae Ha, Minho Kim, Chanho Lee, Sangwon Yun and Yeongsik Kim (MANDO Company, Korea); Wansoo Nah (Sungkyunkwan University, Korea)*

TH-AM-6: Biological Effects of EMC	
Time	10:40 – 12:20, Thursday, 22 June
Room	Helinox Hall (B147)
Chairs	Nam Kim (Chungbuk National University, Korea) Yoon Myoung Gimm (Dankook University, Korea)
10:40	The Effects of RF-EMF in Alzheimer Disease Models *Yun-Sil Lee (Ewha Womans University, Korea)*
11:00	Time Reversal based Microwave Focusing for Medical Applications *Jang-Yeol Kim, Soon-Ik Jeon and Seong-Ho Son (Electronics and Telecommunications Research Institute, Korea)*
11:20	Transmission Array of a Focused Microwave Thermotherapy System for Leg Diseases *Soon-Ik Jeon, Jang-Yeol Kim and Seong-Ho Son (Electronics and Telecommunications Research Institute, Korea)*
11:40	Influence of RF-EMF Exposure on Neurotransmitters in Rat: Glutamate *Hye Sun Kim (Ajou University, Korea); Hyung-Do Choi (Electronics and Telecommunications Research Institute, Korea); Jeong-Ki Pack (Chungnam National University, Korea); Nam Kim (Chungbuk National University, Korea); Young Hwan Ahn (Ajou University, Korea)*
12:00	Effects of Wrist Model During the Specific Absorption Rate Evaluations on Smart-watch *Seon-Eui Hong, Jong-Hwa Kwon and Hyung-Do Choi (Electronics and Telecommunication Research Institute, Korea); Jeong-Ki Pack (Chungnam National University, Korea)*

Technical Program

TH-AM-7: Radio-Frequency Interference	
Time	10:40 – 12:00, Thursday, 22 June
Room	Muak Rotary Club Hall (B132)
Chairs	Chulsoon Hwang (Missouri University of Science and Technology, USA) Hyun Ho Park (The University of Suwon, Korea)
10:40	LCD Baseband Noise Modulation Estimation for Radio Frequency Interference in Mobile Phones *Chulsoon Hwang (Missouri University of Science and Technology, USA); Sunkyu Kong (Korea Advanced Institute of Science and Technology, Korea); Takashi Enomoto, Kenji Araki and Junji Maeshima (Sony Global Manufacturing and Operations Corporation, Japan); David Pommerenke and Jun Fan (Missouri University of Science and Technology, USA)*
11:00	Analysis of Throughput Performance of Smart TV by Noise Effect Using Simulation Methodology *Soonyong Lee and Yeonsik Yu, Hoyong Kim, Yonghee Cho and Sungsoo Choi (Samsung Electronics, Korea)*
11:20	SMPS Noise Modeling and Analysis in Mobiles at 3-level Buck Converter-based Fast Charging Mode *Kiyeong Kim, Hwan-Woo Shim, Antonio Ciccomancini Scogna, and Dong-Sub Kim (Samsung Electronics, Korea)*
11:40	Extraction of Equivalent Array Dipole-Moments Model From Only Magnitude Data of Near-Field Scan *Kyungjin Kwak (Ulsan National Institute of Science and Technology, Korea); Taeil Bae, Kichul Hong and Hyungsoo Kim (SK Hynix, Korea); Jingook Kim (Ulsan National Institute of Science and Technology, Korea)*

Thursday, 22 June | 13:30 – 14:30

TH-PM-1: Electronic Packaging EMC	
Time	13:30 – 14:30, Thursday, 22 June
Room	Industrial Bank of Korea Hall (B145)
Chairs	Ki Jin Han (Ulsan National Institute of Science and Technology, Korea) Myunghoi Kim (Hankyong National University, Korea)
13:30	Mitigation of Unintentional Radiation from the Package Lid Using PMC Packaging *Xiao-Li Yang, Er-Ping Li, Yong-Sheng Li, Dong-Ke Zhu and Ping Cheng (Zhejiang University, China); Hui-Chun Yu and Bin Li (Huawei Technologies Co. Ltd, China)*
13:50	Miniaturization of Planar EBG Structure using Dual Power Planes *Xingxiaoyu Lin, Yoshitaka Toyota and Kengo Iokibe (Okayama University, Japan); Toshiyuki Kaneko (KYOCERA Corporation, Japan)*
14:10	Modified Pinwheel Meander-line Perforated Plane Structure for System-in-Package *YoungBong Han, Hai Au Huynh and SoYoung Kim (Sungkyunkwan University, Korea)*

Technical Program

TH-PM-2: Modeling and Simulation Techniques for EMC, SI and PI (II)	
Time	13:30 – 14:30, Thursday, 22 June
Room	Kwak Joung-Hwan Challenge Hall (B146)
Chairs	Ikpyo Hong (Kongju National University, Korea) Hui Min Lee (A*STAR Institute of High Performance Computing, Singapore)
13:30	Estimating Frequency Spectrum of IC Power Supply Current Through Time-Domain Voltage Measurement on Power Distribution Network *Jun Wu Zhang, Eng Kee Chua and Kye Yak See (Nanyang Technological University, Singapore); Wee Jin Koh and Weng Yew Chang (DSO National Laboratories, Singapore)*
13:50	Modeling of Current Sources Near a Wall of Reverberation Chambers in Discrete Singular Convolution Method *Huapeng Zhao, Jun Hu and Zhizhang Chen (University of Electronic Science and Technology of China, China)*
14:10	Application of Space Object Conjunction Method in the System Level EMC Evaluation *Asad Husnain Baqar, Ping Xu and Tao Jiang (Harbin Engineering University, China); Yachen Zhang (Heilongjiang University, China)*

TH-PM-3: EMC Issues Related to Common-mode Noise (II)	
Time	13:30 – 14:30, Thursday, 22 June
Room	Helinox Hall (B147)
Chairs	Wansoo Nah (Sungkyunkwan University, Korea) Yoshiki Kayano (The University of Electro-Communications, Japan)
13:30	Generation of Common Mode in Non-Uniform Differential Interconnections *Xinglong Wu, Flavia Grassi, Xiaokang Liu, Jingkai Sun and Sergio A Pignari (Politecnico di Milano, Italy); Paolo Manfredi and Dries Vande Ginste (Ghent University, Belgium)*
13:50	A Novel Differential Serpentine Delay Line to Reduce Differential to Common Mode Conversion and Impedance Discontinuity *Jianquan Lou and Xiaoxia Zhou (CISCO, China); Shun Li (Ericsson, China); Yingchun Shu (CISCO, China); Alpesh Bhobe (CISCO, USA); Jinghan Yu (CISCO, China)*
14:10	Common Mode Reduction in Bi-directional DC-DC Converter by Changing Position of Parasitic Capacitor *Tohlu Matsushima, Takao Kuroyanagi, Takashi Hisakado and Osami Wada (Kyoto University, Japan)*

Technical Program

TH-PM-4: Electromagnetic Environment and High Power EMC	
Time	13:30 – 14:30, Thursday, 22 June
Room	Muak Rotary Club Hall (B132)
Chairs	Frank Leferink (University of Twente, The Netherlands) William A. Radasky (Metatech Corporation, USA)
13:30	Exposure to Electromagnetic Near-Fields Radiated by an RFID Reader Antenna *Kassem Jomaa and Fabien Ndagijimana (Grenoble Institute of Technology, France); Houssam Ayad, Majida Fadllallah and Jalal Jomaah (Lebanese University, Lebanon)*
13:50	Spacecraft Design Considerations for Spacecraft Charging Environments *Nicole Pothier (Electro Magnetic Applications, USA)*
14:10	Analysis and Reduction on Electromagnetic Interference for Photovoltaic Converter *Zhou Lei (Jiangsu Institute of Metrology, China); Yan Wei (Nanjing Normal University, China)*

Thursday, 22 June | 14:50 – 16:50

TH-PM-5: Antenna and Wave propagation	
Time	14:50 – 16:50, Thursday, 22 June
Room	Industrial Bank of Korea Hall (B145)
Chairs	Ick-Jae Yoon (Chungnam National University, Korea) Sungtek Kahng (Incheon National University, Korea)
14:50	On Signal-Strength-of-Arrival Based Localization with Unknown Transmit Power *Di Wang, Er-Ping Li and Jiao He (Zhejiang University, China)*
15:10	A Multi-Horn Antenna Produced by a 3D Printer *Yaron Levy and Moshe Raminfar (Azriely College of Engineering, Israel); Haim Matzner (Holon Institute of Technology, Israel); Ely Levine (Afeka College of Engineering, Israel)*
15:30	Phased Array Antenna Modules with Dual Ports for Independent Transmitting and Receiving Beam-Forming Networks *Hsi-Tseng Chou and Yen Ting Chen (National Taiwan University, Taiwan)*
15:50	Spectrum Analysis of Slit for Real Metal at Terahertz Frequencies *Jun Hur, Jong-Eon Park and Hosung Choo (Hongik University, Korea)*
16:10	Sidelobe Suppression of Reflector Antennas by Embedding Non-Resonant Periodic Metal Cells along the Reflector Edge Boundary *Shih-Chung Tuan (Oriental Institute of Technology, Taiwan); Hsi-Tseng Chou (National Taiwan University, Taiwan); Hsien-Kwei Ho (Yuan Ze University, Taiwan)*
16:30	An Analysis on the Compact Quasi-Isotropic Antenna Using Folded Split Ring Resonator *Joon-Hong Kim and Sangwook Nam (Seoul National University, Korea)*

Technical Program

TH-PM-6: Computational Electromagnetics and Multiphysics methods for Simulating Complex Electromagnetic Environment Effects	
Time	14:50 – 16:50, Thursday, 22 June
Room	Kwak Joung-Hwan Challenge Hall (B146)
Chairs	Wen-Yan Yin (Zhejiang University, China) Jae Wook Lee (Korea Aerospace University, Korea)
14:50	A Discontinuous Galerkin Time-Domain Method for Modeling of Power-Ground Planes With Narrow Slots and Signal Vias *Hui Min Lee, Si-Ping Gao and En-Xiao Liu (Institute of High Performance Computing; A*STAR, Singapore)*
15:10	JEMS-FD: Engineering Application Oriented High-Performance Program for Electromagnetic Compatibility Analysis *Wei-Jie Wang (China Academy of Engineering Physics, China); Hai-Jing Zhou (Institute of Applied Physics and Computational Mathematics, China)*
15:30	Shielding Effectiveness Prediction of Metallic Structures with Thin Slots Using FDTD *Mingjiang Fang, Liping Yan, Zhangshuai Cao and Xiang Zhao (Sichuan University, China); Qiang Liu and Haijing Zhou (Institute of Applied Physics and Computation Mathematics, China)*
15:50	Multi-GPU based Fast Electromagnetic Simulation Method for Analyzing PCB *Yuta Inoue and Hideki Asai (Shizuoka University, Japan)*
16:10	Application of Group Theory in 2D Electromagnetic Scattering in Resonant Frequency *Changwei Xu, Hao Guo, Li-Fei Geng, and Hong-Tao He (Luoyang Electronic Equipment Test Center, China)*
16:30	Hybrid Scheme Combining Iterative Physical Optics and Edge Current Method to Compute Scattering by Conducting Tail-Wing Structure *Jae-Won Rim, Hyunsoo Lee and Il-Suek Koh (Inha University, Korea)*

TH-PM-7: Near Field Scanning Technology for EMC	
Time	14:50 – 16:50, Thursday, 22 June
Room	Helinox Hall (B147)
Chairs	Xing-Chang Wei (Zhejiang University, China) Er-Ping Li (Zhejiang University, China)
14:50	Estimation of Initial Guess of Steepest Descent Method for Near Field Phase Retrieval *Huapeng Zhao, Ying Zhang, Jun Hu and Zhizhang Chen (University of Electronic Science and Technology of China, China)*
15:10	Near-Field-Based Array Failure Diagnosis Using Sparse Source Reconstruction *Huapeng Zhao, Ying Zhang, Qun Wan, Jun Hu, and Zhizhang Chen (University of Electronic Science and Technology of China, China)*

Technical Program

15:30	Study on the Phase Error of Plane Wave Spectrum Expansion *Sihong Tao, Huapeng Zhao, Ying Zhang, Jun Hu and Zhizhang Chen (University of Electronic Science and Technology of China, China)*
15:50	An Effective Equivalent Radiation Source Based on Near-field Scanning for Electromagnetic Interference Estimation *Jun Li, Xing-Chang Wei, Liang Gao and Yufei Shu (Zhejiang University, China)*
16:10	Investigation of the Probe-Factor Deconvolution Methods for Dynamic ESD Fields Measurements *Myungjoon Park and Jingook Kim (Ulsan National Institute of Science and Technology, Korea); Joungcheul Choi, Jinwoo Kim, Seonghoon Jeong, Manho Seung and Seokkiu Lee (SK Hynix Inc., Korea)*
16:30	Constant Velocity Motion of a Micro-Robot Using Uniform Magnetic Field *Dongwook Kim and Seungyoung Ahn (KAIST, Korea)*

TH-PM-8: EMC & Antenna Design for Wireless Communication Systems	
Time	14:50 – 16:50, Thursday, 22 June
Room	Muak Rotary Club Hall (B132)
Chairs	Eakhwan Song (Kwangwoon University, Korea) Soonyong Lee (Samsung Electronics, Korea)
14:50	A Novel Robust Design Method for a Mobile Antenna With a Metal Frame *Sungwoo Lee, Jong Min Lee and Keum Cheol Hwang (Sungkyunkwan University, Korea); Sanguk Park and Soonyong Lee (Samsung Electronics, Korea)*
15:10	Design of the PCB Embedded Active IC Structure for Ultra-thin Wearable Application With Low-RFI *Bumhee Bae, JongWan Shim, Younho Kim, HyungGeun Kim and HarkByeong Park (Samsung Electronics, Korea); Jonghoon Kim (KAIST, Korea);*
15:30	Advanced Impedance Matching Technology to Optimize RF Circuit Design of Practical Wireless Systems *Sinhyung Jeon, Kyungho Yoo, Youjin Kim, and Jeongnam Cheon (Samsung Electronics, Korea)*
15:50	IC Placement Optimization for RF Interference Based on Dipole Moment Sources and Reciprocity *Chulsoon Hwang and Qiaolei Huang (Missouri University of Science and Technology, USA)*
16:10	Design Optimization of Board-level Signal Integrity Depending on PCB Stack-up Configuration in a Mobile Device *Inmu Kim, Kipyoung Kim and Youngmin Cho (LG Electronics, Korea); Eakhwan Song (Kwangwoon University, Korea)*
16:30	Design and Analysis of On-chip Active Power Distribution Network for Efficient Simultaneous Switching Noise Suppression in Mobile AP *Subin Kim, Youngwoo Kim and Joungho Kim (KAIST, Korea)*

Technical Program

Thursday, 22 June | 17:00 – 18:00

TH-PM-9: Poster Session (II)	
Time	17:00 – 18:00, Thursday, 22 June
Room	Lobby
Chairs	Kyung Sub Lee (Sungkyunkwan University, Korea) Hyun Ho Park (The University of Suwon, Korea)
PS2-01	Element-Based Electromagnetic Interference Suppression for Modular Systems *Aixin Chen, Yue Zhao, Xiaojun Ying and Wenbin Wu (Beihang University, China)*
PS2-02	Noise Reduction Between High Speed Differential Pairs and Ground Shape *Chung-Han Tsai, Hank Lin, Shih-Keng Chuang and Bin-Chyi Tseng (ASUStek Computer Inc., Taiwan)*
PS2-03	A Study On EMI Generation From A Capacitive Touch Screen Panel *Hoonbae Kim and Byung-Wook Min (Yonsei University, Korea)*
PS2-04	Experimental Study on Probability Threshold of Electromagnetic Effect of Electronic Equipment *Xin Li, Ping Wu, Cui Meng, Yinong Liu and Hanbing Jin (Tsinghua University, China)*
PS2-05	Evaluation of Fibre Weaving of Substrate on Differential Microstrip Using an Analytical Approach *Eng Kee Chua, Jun Wu Zhang and Kye Yak See (Nanyang Technological University, Singapore); Wee Jin Koh and Weng Yew Chang (DSO National Laboratories, Singapore)*
PS2-06	Crosstalk Reduction by Introducing Periodic Structure into Dense Differential Pairs *Hiroaki Takeda, Kengo Iokibe and Yoshitaka Toyota (Okayama University, Japan)*
PS2-07	Crosstalk Suppression by Applying Multilevel Signal Transmission *Yafei Wang and Xuehua Li (Beijing Information Science and Technology University, China)*
PS2-08	Discontinuous Galerkin Time-Domain Analysis of Power/Ground Plate Pairs With Wave Port Excitation *Ping Li and Lijun Jiang (The University of Hong Kong, Hong Kong); Hakan Bagci (King Abdullah University of Science and Technology, Saudi Arabia)*
PS2-09	Surface Charging Dynamics in a Space Plasma *Bryon Neufeld (Electro Magnetic Applications, USA)*
PS2-10	Effective Equation of EMP Shielding Effectiveness with Multi-layered Waveguide-Below-Cutoff Array *Sangin Kim, Yuna Kim and Jong-Gwan Yook (Yonsei University, Korea)*
PS2-11	Modeling of Printed Spiral Coils Based on Conformal Mapping Method With Fringing Capacitance Effects *Kyungmin Kim, Hyukjun Oh and Eakhwan Song (Kwangwoon University, Korea)*
PS2-12	Synthesized Network Compensator for Crosstalk Cancellation *Sang Seop Song; Jeonghwan Kim; Ki Jin Han (Ulsan National Institute of Science and Technology, Korea)*
PS2-13	Small Handheld UHF RFID Reader Antenna for Industrial Laundry Applications *Guan-Lin Chen, Rong Cao and Chow-Yen-Desmond Sim (Feng Chia University, Taiwan)*

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PS2-14	A Ka-band Parallel-plate Parabolic Reflecting Structure to Implement the Beam Forming Networks for Phased Array of Antennas *Hsi-Tseng Chou (National Taiwan University, Taiwan); Ying-Shan Chen (Yuan-Ze University, Taiwan); Chia-Hung Chang (Feng Chia Unniversity, Taiwan)*
PS2-15	High-Performance DOA Estimation for Coprime Arrays With Unknown Number of Sources *Anh-Tuan Nguyen, Takashi Matsubara and Takakazu Kurokawa (National Defense Academy, Japan)*
PS2-16	Research on 8mm-band Elliptic Cylindrical Reflector Antenna and a New Feed Antenna *Liqing Wang and Nannan Wang (Harbin Institute of Technology, China)*
PS2-17	Size Reduction of a Sinuous Antenna Using Planar Meandering *Hosang Lee (Sungkyunkwan University, Korea); Taehoon Yoo (Dongyang Mirae University, Korea); Wansoo Nah (Sungkyunkwan University, Korea)*
PS2-18	Study on the Surface Wave Plasma Column for Plasma Antenna Applications Using Surfaguide Launcher *Mohammad Mahdi Abbasi and Shahrooz Asadi (Shahid Beheshti University, Iran)*
PS2-19	Modal Analysis of Radio Frequency Interference From Shield Can Holes in Mobile Devices *Hyun Ho Park (The University of Suwon, Korea); Eakhwan Song (Kwangwoon University, Korea)*
PS2-20	Modeling of Wave propagation in Thin Graphene Sheets With 3-D ADE-WLP-FDTD Method *Ru-Jun Liu and Wei-Jun Chen (Lingnan Normal University, China)*
PS2-21	Analysis of Impedance Matrix Fill-in Time in CBFM Optimization for Large Scale EMC Problem *Chan-Sun Park (Yonsei University, Korea); Ic Pyo Hong (Kongju National University, Korea); Heoung-Jae Chun (Yonsei University, Korea); Yong Bae Park (Ajou University, Korea); Youn-Jae Kim (Agency for Defense and Development, Korea); Jong-Gwan Yook (Yonsei University, Korea)*
PS2-22	EM Scattering From Dimples in a Circular Cylinder *Sangsu Lee and Yong Bae Park (Ajou University, Korea)*
PS2-23	Impact of Magnetic Field Generated by Wireless Power Transfer System of Electric Vehicle on Retinal Pigment Epithelium Cell in Vitro *Weinong Sun, Yaqing He, Yinliang Diao, Sai-Wing Leung, Yun-Ming Siu and Richard Kong (City University of Hong Kong, Hong Kong)*
PS2-24	Evaluating Human Exposure to Electromagnetic Field Radiated by the Commercial Wireless Power Charging Device *Jun Seok Kang, Byung Nam Kang, Kang Hui Jeon and Nam Kim (Chungbuk National University, Korea)*
PS2-25	Implementation of Chip-Level EMC Strategies in 0.18 μm CMOS Technology *Yin-Cheng Chang, Ping-Yi Wang and Shawn S. H. Hsu (National Tsing Hua University, Taiwan); Mao-Hsu Yen (National Taiwan Ocean University, Taiwan); Yen-Tang Chang and Jian-Li Dong (Bureau of Standards, Metrology and Inspection, Taiwan); Ta-Yeh Lin and Da-Chiang Chang (National Applied Research Laboratories, Taiwan)*

Transportation and Hotel Information

◉ Getting from Incheon International Airport to Yonsei University

1) Airport Limousine Bus (most recommended)

Pro: Short travel time, quiet, spacious, comfortable seats
Con: A bit more expensive than the subway

Fare : 14,000 ~ 16,000 Korean won (about $12-13 USD)
Bus interval: 20~30 minutes
Travel time: About 55 minutes to Yonsei University

Step 1: Buy a bus ticket at the following Bus Ticket Office located in Incheon International Airport: Exit 4 and 9 (indoors) & Exit 4, 6, 7, 8, 11, 13, and 9C (outdoors). See the below map of Incheon International Airport.
Step 2: Go to bus stop 5B or 12A located on the first floor of Incheon International Airport.

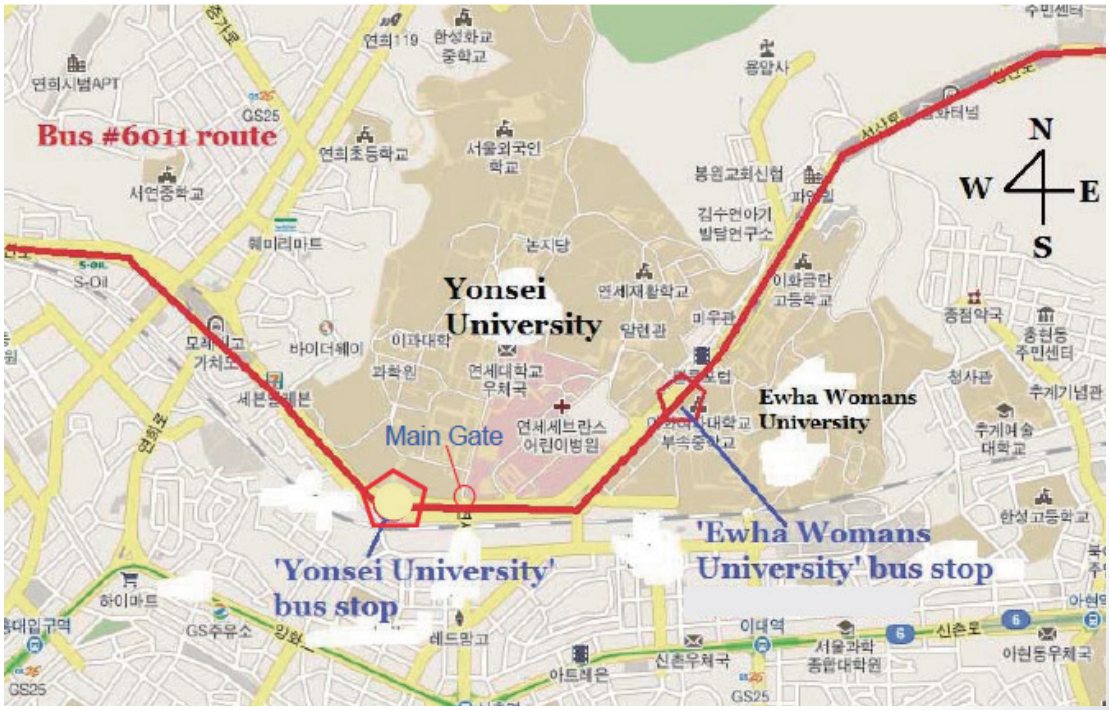
Transportation and Hotel Information

Step 3: Get on a bus with number 6011. (see image of bus below.)

Bus Route
Depart: Incheon International Airport
Stop #1: World Cup Stadium Station
Stop #2: Seongsan Hall
Stop #3: Yonsei University
Stop #4: Ewha Woman's University

The bus is equipped with audio announcement service in English & Japanese.
You have to press a bell to signal to the bus driver that you will be getting off at the next stop.

Transportation and Hotel Information

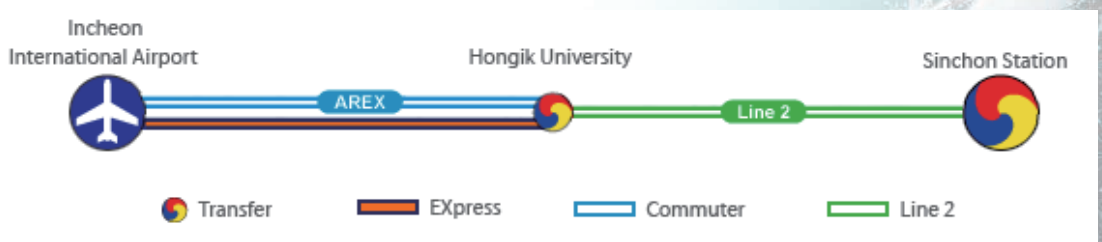


For more information visit: http://english.visitkorea.or.kr/enu/GK/GK_EN-2-2-2-3.jsp

2) Airport Railroads (AREX) and Subway

Airport Railroads (AREX) is connected from Incheon International Airport to Seoul Subway Station. If you want to go Yonsei University by AREX and Subway, please transfer 1time at the following station

- Fare : 4,050 Korean Won (about $ 4 USD)
- Estimated Time : About 1 hour 02 minutes (From Incheon Int. Airport station To Sinchon station)



AREXs service is provided by both commuter and express trains. For detailed time table refer to the website at http://www.arex.or.kr/main.do

Transportation and Hotel Information

3) Taxi

If you take a regular taxi (Il-Bahn-Taxi) that is not black, it will cost approximately 60,000 KRW to go directly from the airport to Yonsei University.
If you take a deluxe taxi (Mo-Boem-Taxi), which is black in color, as well as more spacious and comfortable, it will cost about 75,000 KRW.
The taxi fare may vary depending on traffic.

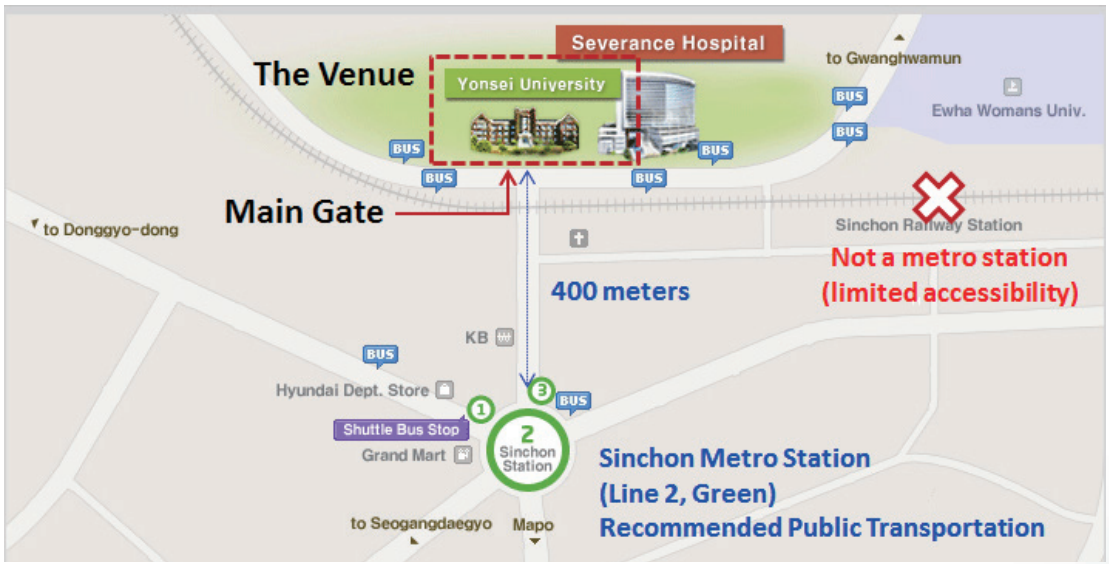
◉ Gimpo International Airport to Yonsei University by Taxi

If you take a regular taxi (Il-Bahn-Taxi) that is not black, it will cost approximately 20,000 KRW to go directly from the airport to Yonsei University.
If you take a deluxe taxi (Mo-Boem-Taxi), which is black in color, as well as more spacious and comfortable, it will cost about 25,000 KRW.
The taxi fare may vary depending on traffic.

◉ Bus Routes

Bus Routes	Bus Number	
Yonsei University / Infront of Yonsei University	blue bus	153, 163, 171, 272, 470, 601, 606, 672, 673, 700, 707, 710, 750A, 750B, 751
	green bus	6714, 7737
	red bus	9714, M6724, M7106, M7111, M7119
	airport bus	6011
	general bus	567, 73
	Reserved seat bus	770, 800
	Nonstop bus	1000, 1100, 1200, 1900, 2000, 2000-1

Transportation and Hotel Information



◉ Subway Exits

Name of Station	Exit Information
Sinchon Station (Seoul Subway Line #2)	Exit no.2 (Yonsei University , Severence Hospital Direction)
	Exit no.3 (Yonsei University, Korea Cyber University Direction)


5678 SMRT
Seoul Metropolitan Rapid Transit Corporation
Seoul Metropolitan Subway Line
1 Line 1
2 Line 2
3 Line 3
4 Line 4
5 Line 5
6 Line 6
7 Line 7
8 Line 8
9 Line 9
A Airport
1 Incheon Line 1
2 Incheon Line 2
G Gyeongui Jungang Line
G Gyeongchun Line
B Bundang Line
S Sinbundang Line
S Suin Line
U Uijeongbu Line
E Ever Line
G Gyeo
Munsan
Paju
Wollong
Geumchon
Geumneung
Unjeong
Yadang
Tanhyeon
Ilsan
Pungsan
Baengma
Goksan
Daehwa
Juyeop
Jeongbalsan
Madu
Baeksok
Daegok
Hwajeong
Wondang
Wonheung
Samsung
Ichuk
Gupabal
Dokbawi
Yeonsinnae
Bulgwang
Nokcheon
Hongje
Muaijae
Dongnimmun
Gyeonghuigung
Sungsh
Anguk
Gwanghwamun
Jonggak
Jon
Neunggok
Haengsin
Gangmae
Hwajeon
Gusan
Yeokchon
Eungam
Saejeol
Jeungsan
Digital Media City
Gajwa
Sinchon(G-J Line)
Ahyeon
Seodaemun
Chungjeongno
City Hall
Euljiro 1(il)ga
Eul
Geomdan Oryu
Wangsil
Geomdan Sageori
Majeon
Wanjeong
Dokjeong
Geomam
Gyeyang
Gaehwa
Banghwa
Gaehwasan
Airport Market
Sinbanghwa
Susaek
Cheongna Int'l City
Yeongjong
Unseo
Incheon Int'l Airport Cargo Terminal
Incheon Int'l Airport
Geombawi
Asiad Stadium
Seo-gu Office
Gajeong
Gajeong Jungang Market
Gimpo Int'l Airport
Gyulhyeon
Bakchon
Imhak
Gyesan
Gyeongin Nat'l Univ. of Education
Jakjeon
Galsan
Songjeong
Magok
Balsan
Ujangsan
Hwagok
Magongnaru
Yangcheon Hyanggyo
Gajang
Jeungmi
Deungchon
World Cup Stadium
Mapo-gu Office
Sinmokdong
Mangwon
Ewha Womans Univ.
Sinchon
Hongik Univ.
Sogang Univ.
Aeogae
Seoul Station (G-J Line)
Seoul Station
Hoehyeon
Hapjeong
Sangsu
Gwahak Jeonggang
Daeheung
Yeomchang
Yeomchang
Simokdong
Seonyudo
Dangsan
Yangpyeong
Sookmyung Women's Univ.
Namyeong
Gongdeok
Kkachisan
Sinjeong
Mok-dong
Omokgyo
Yeongdeungpo -gu Office
Yeongdeungpo Market
National Assembly
Mapo
Hyochang Park
Samgakji
Sinyongsan
Seongnam
West Woman's Community Center
Incheon Gajwa
Gajaeul
Juan National Industrial Complex
Bupyeong-gu Office
Bupyeong Market
Bupyeong
Baegun
Dongsu
Dongam
Ganseok
Bupyeongsamgeori
Ganseokogeori
Chunui
Bucheon Stadium
Yangpyeong-gu Office
Sinjeong negeori
Dorimcheon
Mullae
Singil
Yeouido
Yeouinaru
Yongsan
Ichon
Bucheon
Gulpocheon
Samsan Gymnasium
Sang-dong
Bucheon City Hall
Sinjung-dong
Bugae
Songnae
Jung-dong
Sosa
Kkachiul
Onu-dong
Gaebong
Gul
Onsu
Yeokgok
Cheonwang
Guro
Sindorim
Yeongdeungpo
Daebang
Saetgang
Noryangjin
Dongjak
Gwangmyeong sageori
Cheolsan
Gasan Digital Complex
Daerim
Namguro
Sinpung
Boramae
Nodeul
Heuksuk
Gubanpo
Juan
Dohwa
Jemulpo
Dowon
Dongincheon
Incheon
Citizens Park
Seokbawi Market
Arts Center
Incheon Bus Terminal
Munhak Sports Complex
Seonhak
Sinyeonsu
Incheon City Hall
Seokcheon Sageori
Moraenae Market
Mansu
Namdong-gu Office
Incheon Grand Park
Unyeon
Woninjae
Namdong Induspark
Hogupo
IncheonNonhyeon
Soraepogu
Wolgot
Darwol
Jeongwang
Oido
Doksan
Guro Digital Complex
Sindaebang
Sinjeabang samgeori
Jangsungbaeg
Sangdo
Soongsil Univ.
Namseong
Chongshin Univ.
Sadang
Geumcheon-gu Office
Gwangmyeong
Seoksu
Gwanak
Anyang
Myeonghak
Geumjeong
Sillim
Bongcheon
Seoul Nat'l Univ.
Nakseongdae
Namtaeryeong
Seonbawi
Seoul Racecourse Park
Seoul Grand Park
Gwacheon
Government Complex Gwacheon
Indeogwon
Pyeongchon
Beomgye
Gunpo
Sanbon
Surisan
Daeyami
Banwol
Sangnoksu
Hanyang Univ. at Ansan
Dangjeong
Uiwang
Sungkyunkwan Univ.
Hwaseo
Suwon
MaetanGwon
Suwon City Hall
Maegyo
Int'l Business District
Central Park
Univ. of Incheon
Singilonchoen
Ansan
Choji
Gojan
Jungang

Transportation and Hotel Information

Hotels

Accommodations near Sinchon Area

1. Shilla Stay Seodaemun

163, Migeun-dong, Seodaemun-gu, Seoul
Tel. +82-2-6388-9000
Distance: 3.3 Km to the Yonsei. Take a Bus #601,470,710(blue bus) at Bus stop in front of exit #4 at Seodaemun Subway Station" (1,300KRW/30min) or take a taxi (5,500KRW/16min.approx)
www.shillastay.com/seodaemun/inquires/location.do

2. Lotte City Hotels Mapo

109, Mapo-daero, Mapo-gu, Seoul
Tel. +82-2-6009-1000
Distance: 2.7 Km to the Yonsei. Take a Bus #163(blue bus) at Bus stop "Gongduk station exit 2" (1300KRW/25min) or take a taxi (4,800KRW/15min.approx)
www.lottehotel.com/city/mapo/en/location.asp

3. Aventree Hotel Jongno

65-1, Gyeonji-dong, Jongno-gu, Seoul
Tel. +82-2-736-1234
Distance: 4.0 Km to the Yonsei. Take a Bus #606 or #172 (blue bus) at Bus stop "Jogyesa" (1,300KRW/20min.approx) or take a taxi (5,500KRW/15min.approx)
www.aventreehotel.com/

4. New Kukje Hotel

12, Sejong Street22, Jung-gu, Seoul
Tel. +82-2-732-1262
Distance: 3.5 Km to the Yonsei. Take a Bus #710 or #470 (blue bus) at Bus stop "Gwanghwamun" (1,300KRW/20min. approx) or take a taxi (5,500KRW/15min.approx)
www.newkukjehotel.com/info/hotel_access_e.asp

Other Hotels in Sinchon Area

1. Casaville Serviced Residence Shinchon Seoul

137, Seogang-ro, Mapo-gu Seoul, Seoul
Tel. +82-2-3483-5343
Distance: 1.8 Km to the venue, 12 mins by taxi in regular traffic ($3~$4) or 27 mins walk
www.casaville-shinchon.co.kr

Transportation and Hotel Information

2. Tori Hotel

187-1, Daeheung-ro, Mapo-gu, Seoul
Tel. +82-080-675-0881
Distance: 2.1 Km to the venue, 12 mins by taxi in regular traffic ($3~$4) or 30 mins walk
www.tori-hotel.seoul-hotels-kr.com/ko/

3. DW Design Residence

35, Donggyo-ro 25-gil, Mapo-gu, Seoul
Tel. +82-2-3483-5341
Distance: 2.8 Km to the venue, 16 mins by taxi in regular traffic ($3~$4) or 30 mins walk

4. The Grand Suite

353, Yeonhui-ro, Seodaemun-gu Seoul, Seoul
Tel. +82-2-3483-5343
Distance: 2.8 Km to the venue, 14 mins by taxi in regular traffic ($3~$4) or 45 mins walk
www.grandsuite.co.kr

5. Mayplace Hotel

179, Yulgok-ro, Jongno-gu, Seoul
Tel:+82-2-742-8080 / Dir. Reservation e-mail: mpres@mayfield.co.kr
Distance: 7.8Km to the venue, 20~25 mins by taxi in regular traffic ($8~$9) or 40 mins by bus No. 601 ($1) including a 21 mins walk
www.mayplace.co.kr

6. Hotel President

16, Eulji-ro, Jung-gu, Seoul
Tel: +82-2-779-7111
Distance: 5.8 Km to the venue, 20 mins by taxi in regular traffic ($6~$7) or 38 mins by bus No.470 (1$) including a 22 mins walk
www.hotelpresident.co.kr

7. The Plaza Hotel

119, Sogong-ro, Jung-gu, Seoul
Tel: +82-2-771-2200
Distance: 5.4 Km to the venue, 19 mins by taxi in regular traffic ($7~$8) or 33 mins by bus No.M7111 (2$) including a 20 mins walk
www.hoteltheplaza.com

Transportation and Hotel Information

8. Ramada Hotel Suite Seoul Namdaemun

27 Chilpae-ro, Jung-gu, Seoul, 100135 KR
Tel. +82 22 1198900
Distance: 4.36 Km to the venue, 13 mins by taxi in regular traffic ($4~$5) or 35 mins by bus No.750A (2$) including a 20 mins walk
www.ramadahnd.com/ko/main/

9. Courtyard Marriott Seoul Namdaemun

9, Namdaemun-ro, Jung-gu, Seoul, 04526, Korea
Tel. +82-2-2211-8111 [Reservation]
Distance: 5.7 Km to the venue, 18 mins by taxi in regular traffic ($5~$6) or 33 mins by bus No.7111 (1$) including a 14 mins walk
www.marriott.com/hotels/travel/selsn-courtyard-seoul-namdaemun/

Downtown Myoung Dong Area

1. Lotte Hotel Seoul

30, Eulji-ro, Jung-gu, Seoul
Tel. +82-2-080-675-0881
Distance: 5.8 Km to the venue, 22 mins by taxi in regular traffic ($7~$8) or 40 mins by bus No.7017 (1$) including a 20 mins walk
www.lottehotel.com/seoul

2. Westin Chosun

106, Sogong-ro, Jung-gu, Seoul
Tel. +82-2-080-675-0881
Distance: 5.5 Km to the venue, 20 mins by taxi in regular traffic ($7~$8) or 40 mins by bus No.7017 (1$) including a 20 mins walk
www.echosunhotel.com

3. Koreana Hotel

135, Sejong-daero, Jung-gu, Seoul
Tel. +82-2-2171-7000
Distance: 4.9 Km to the venue, 18 mins by taxi in regular traffic ($6~$7) or 32 mins by bus No.710 (1$) including an 18 mins walk
www.koreanahotel.com

Transportation and Hotel Information

4. Fraser Place Namdaemun

58, Sejong-daero, Jung-gu, Seoul

Tel. +82-080-675-0881 Distance: 5.3 Km to the venue, 18 mins by taxi in regular traffic ($6~$7) or 38 mins by bus No.7017 (1$) including a 17 mins walk

www.fraserplace.co.kr

5. Sejong Hotel

145 Toegye-ro, Jung-gu, Seoul

Tel. +82-2-773-6000

Distance: 6.4 Km to the venue, 23 mins by taxi in regular traffic ($7~$8) or 42 mins by bus No.470 (1$) including a 22 mins walk

www.sejong.co.kr

6. New Kuk Je Hotel

29-2, Taepyeongno 1ga, Jung-gu, Seoul

Tel. +82-2-732-0161

Distance: 5.1 Km to the venue, 16 mins by taxi in regular traffic ($6~$7) or 35 mins by bus No.710 (1$) including a 21 mins walk

www.newkukjehotel.com

7. New Seoul Hotel (Best Western New Seoul)

16, Sejong-daero 22-gil, Jung-gu, Seoul

Tel. +82-2-735-8800

Distance: 5.1 Km to the venue, 16 mins by taxi in regular traffic ($6~$7) or 35 mins by bus No.710 (1$) including a 21 mins walk

www.bestwesternnewseoul.co.kr

POLLIWOG Corporation

Established in 2000 Polliwog Corporation has provided global electronics industry with unique sets of EDA software allowing users to efficiently verify and evaluate their product designs. We understand problems and provide solutions to our customers encountered with ever increasing performance and complexity issues in their design environment. Polliwog products have been developed based on inputs from our customers and needs of leading electronics industry.

Headquarters : in Korea (www.polliwogeda.com)

PollEx Suites is a set of PCB design exploring and reporting tools that assist users to import various formats of PCB design data and check for design flaws in manufacturing, electrical and thermal performances. The PollEx Suites consists of PollEx PCB, Cross Probe, Logic, BOM, CAM, DFM, DFE, DFA, Signal Integrity and Thermal.

Polliwog Product Lineup

Basic Suites

PollEx PCB
For reviewing ECAD Designs

PollEx Logic
For reviewing schematic designs

PollEx BOM
For importing MS/Excel format BOMs and intelligently reading in ASCII BOMs

PollEx CP (CrossProbe)
For checking discrepancies among PCB, schematic and BOM and comparing two versions of PCB or schematic designs

PollEx CAM
For reviewing 274D and 274X format Gerber data

PollEx Design Closure
For closing PCB designs with integrated design and validation

UPMS
For managing unified part library data

Manufacturing

Metal Mask Manager
For generating standard metal masks and verifying masking rules

Mounting Emulator
For validating component mounting process

Mounter-Machine Data Export
For exporting mounting data in machine-dependent mounter formats

Gerber to PCB
For extracting intelligent design data from Gerber/ODB++ data

Router Machine JIG Generator
For extracting router machine JIG data

Block JIG Generator
For extracting block JIG data

Solder-Pallet Data Extractor
For extracting soldering pallet data

Solder Quantity Calculator
For calculating solder quantity from metal mask or solder mask data

Verification

PollEx DFM
For detecting manufacturing defects in PCB designs

PollEx DFA
For detecting manufacturing/assembly defects in PCB designs

PollEx DFE
For detecting electrical defects in PCB designs

PollEx Logic DFE
For detecting electrical defects in schematic designs

Validation

PollEx SI
For board level signal integrity analysis

PollEx SI Explorer
For pre-design interactive signal integrity analysis

PollEx PI
For board level power integrity analysis

PollEx Thermal
For board level thermal analysis

Supports All Major ECAD Formats (PCB Layout)

Vendor	Product
Altium	PCAD / Protel
Cadence	Allegro Spectra Quest OrCAD Layout
Mentor Graphics	Board Station / Neutral File Expedition PADS ODB ++
ZUKEN	CADSTAR CR5000 Board Designer CR5000 PWS CR8000 Design Force

Supported ECAD Formats (Schematic)

Vendor	Application	EDA Format
Altium	PCAD - Schematic	EDIF
Cadence	OrCAD Capture	
Mentor Graphics	DxDesigner PADS Logic	
ZUKEN	System Designer	

"PollEx" will be the optimized tools for your design process.

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Success Story of PollEx DFE

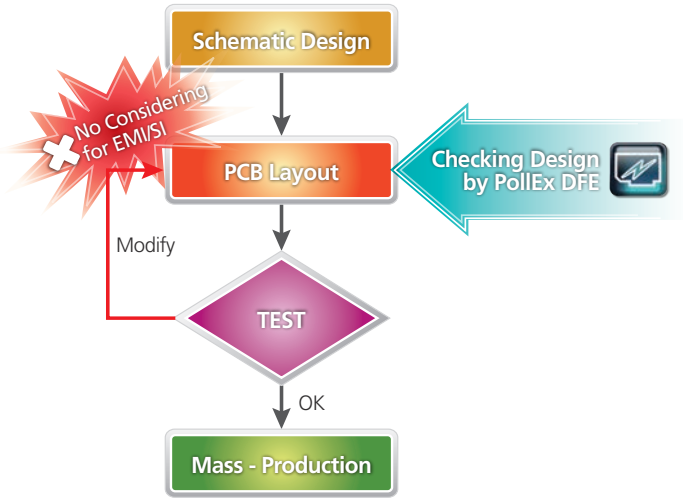
One of our valuable customer who is using PollEx DFE analyzed their results and effect of investment. They said.. "We always faced continuous flaws and delaying time to market on our design process, but now we can get a remarkable change with PollEx program."

Phase1. Set Up Automated Design Verification System

-. Prepare Design Rule Guide
-. Set Up PollEx DFE Environment

Phase2. Adopt Automated Design Verification System to Actual Design Process

-. Select Target Model
-. Effect Analysis:
1) Design Iteration Ratio
2) Estimate Signal/EMI Design Quality Assurance
3) Design Quality Assurance Test



Trial & Flaws in Design → **Automated Design Verification System**

Types	Before	After
Quality (Signal / EMI Quality)	- Average 2.0dB Margin - Memory Timing Margin: 10ps	- EMI 5dB Margin - Memory Timing Margin: Over 200ps
Performance (Design Reviewing Time)	- Manual-way Design Reviewing with DOC(4Days / PCB) - Available items for checking (8 items)	- Automated Detecting by PollEx DFE (1Hour / PCB) - Available items for checking (61 items)
Delivery (Modify, Quality Assurance)	- Debugging time for EMI Quality : Over 1Month - PCB Re-Design: Over 2 times - One-time Pass for Quality Assurance Test: Maximum 20%	- Design Quality Assurance Against EMI - PCB Re-Design: 0 time - One-time Pass Rate for Quality Assurance Test: Minimum 80%

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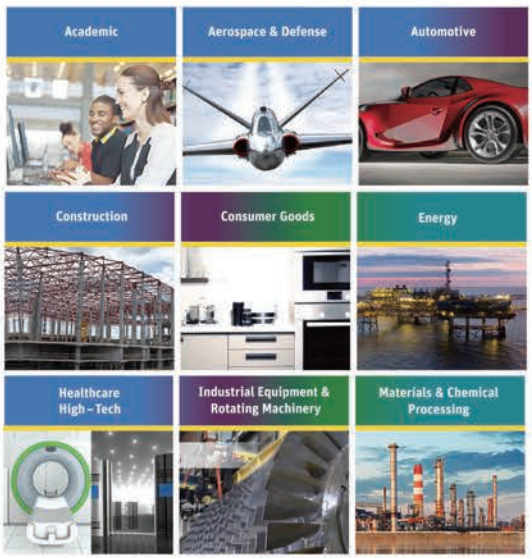

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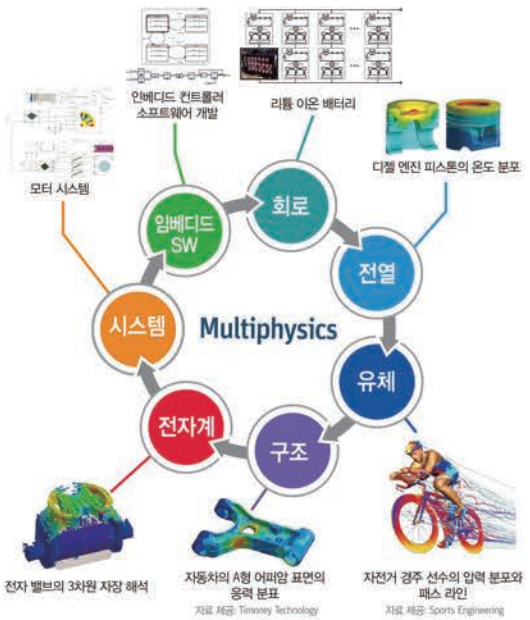

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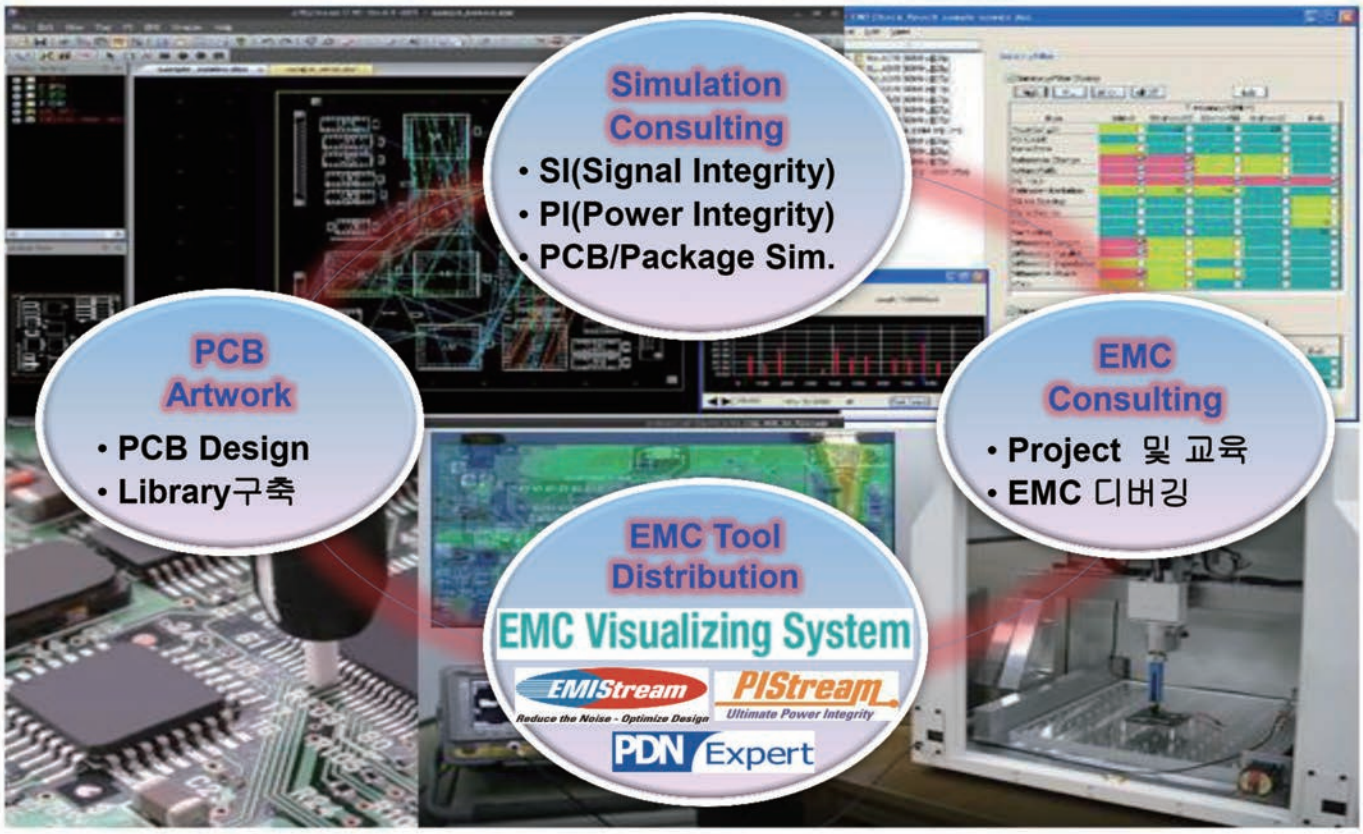

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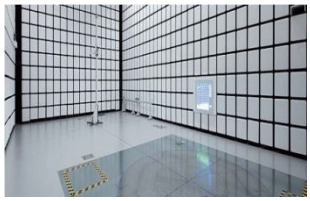

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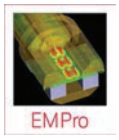

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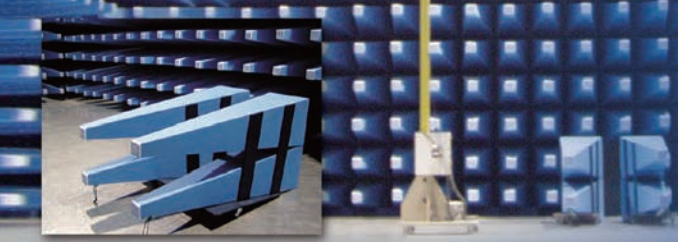

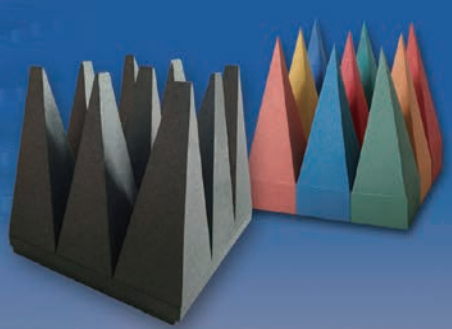

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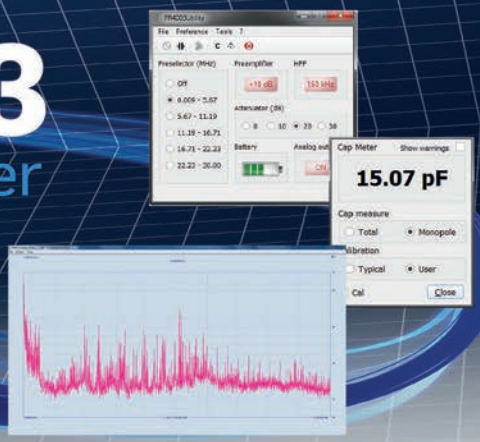

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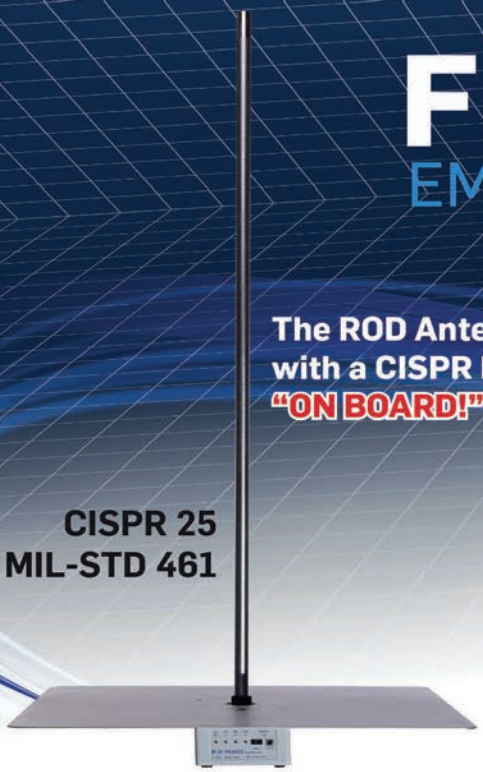

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EMC, RF 계측기 장비 취급

시원 Tripod
*시원이 직접 제작합니다
– EMC 안테나, 카메라용 매뉴얼 스탠드

SIWON International Co.,Ltd.
www.siwoninc.com

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유타워 2911호
전화번호 : 031-211-5538 / 팩스 : 031-211-5536
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KOSDAQ Dt&C LISTED COMPANY

www.dtnc.net

A Better Tomorrow

WE WILL MAKE
THAN YESTERDAY


10M Full Chamber
(3 systems)


EMS Chamber
(3 systems)


EMI Chamber
(5 systems)

RSE
(Radiated Spurious Emission)

Dt&C is enhancing the reliability and safety of our coustomers' products in order to improve the competitiveness of their quality. We are providing testing & certification services such as defense, aerospace, railway, vessel, nuclear energy, ICT, IoT devices, medical devices, appliances and so on.

System-Level EMC Engineering

- EMC 관리 체계
- EMC를 고려한 초기 시스템 설계
- Inter-, Intra-, Extra를 고려한 장해 분석 및 접지 시스템 설계
- 대형 고정 설비와 사회기간 시설에 관한 EMC 엔지니어링 평가 및 전자기 환경 분석
- EMC 기술 자문
- 서비스 분야: ICT건물, 철도, 자동차, 플랜트 및 관련 설비, 승강기, 전파밀집지역 등

System Design for Noise Reduction (A Circuit-to-System: RF, D/A System, etc.)

- 노이즈 분석 및 커플링 메커니즘 분석
- 전자기 회로 분석 모델링 및 EM 시뮬레이션
- SI/PI/EMI를 통한 PCB Artwork 서비스 제공
- 측정값과 시뮬레이션 데이터 상관관계 분석
- 노이즈 저감을 위한 PCB 단계의 공학 설계 (전기적 안전성 및 신뢰성 고려한 설계)

Solution for EMC Test & Analysis

- 전자기 환경의 측정 및 분석 엔지니어링
- EMC 규격 측정 분석
- EMC Site Survey & Evaluation (전자파 환경측정 차량 보유)

Education & Training for EMC & iNARTE

- EMC 전문 교육 실시
- iNARTE Approved Training Center (EMC / ESD)

EMC for Functional Safety Engineering (EFS: IEC61508 & ISO26262)

- ISO26262에 관한 EMC 시스템 절차 제공
- IEC61508에 관한 EMC 시스템 설계 경험 다수

ESD Test & Analysis

- ESD를 고려한 시뮬레이션 기법
- ESD 대책을 위한 회로 설계 기법
- ESD Test Solution 제공

Design of a EMC Test-JIG and Component

- 각종 EMC Test Fixtures 설계 및 제작, 노이즈 대책 부품 설계
- 고객 맞춤형 EMC 분석 및 시험 Software 개발

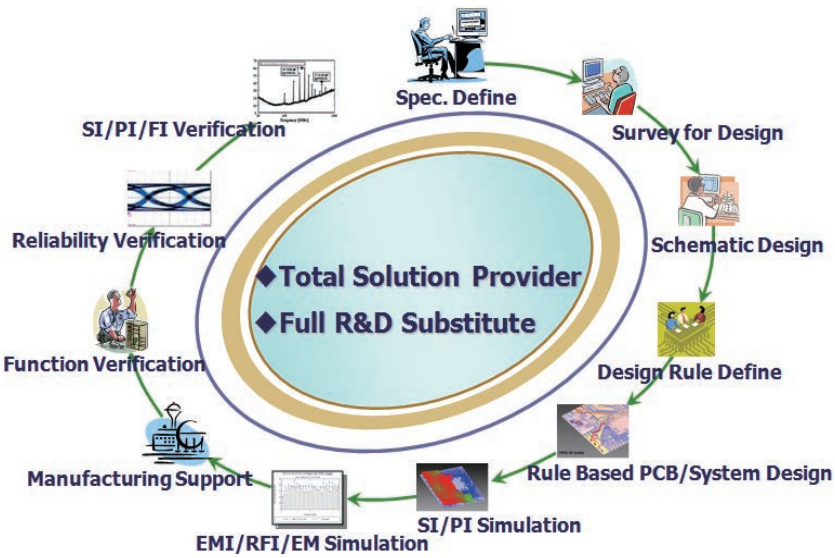
E&R www.enrc.co.kr
본 사 : 경기도 안양시 동안구 시민대로 387 디지털엠파이어 A동 305호
제2사업장 : 인천광역시 연수구 송도동 11-12
TEL : 031 8086 7880
FAX : 031 629 5502

Winintec
Win in Technology, Win 人 Technology

WININTEC co., LTD

Home-Page : www.winintec.com
E-Mail : winintec@winintec.com

- WININTEC corporation has the best technology based on more than 26 years of research and development experience in SI/PI/EMC/RFI area
- We provide optimizing solutions for various needs of customer



BUSINESS

◆ Design/Development Service
- Chip/PCB/System Design & Developmemnt considering SI/PI/EMC/RFI

◆ Consulting Service
- Root Cause Analysis & Solution Providing
- SI/PI/EMC Simulation
- Customized Training
- H/W Design/Verification Consulting

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HCT

www.hct.co.kr

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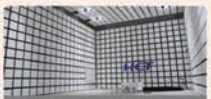
On your side, HCT

시험인증사업

전자파인체흡수율


유무선통신


안전성


전자파적합성


신뢰성


에너지

교정사업

온도/습도


음향진동

시간/주파수


전기, 자기/전자파


길이/관련량


질량/관련량

RRA 국립전파연구원 · KOLAS · FC · UL · IEC · IECEE · ACCREDITED · TUV · VCCI Council

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EMI/EMC Total Solution

(주)아이스펙

국내최초 · 혁신적 신기술 적용 http://www.i-spec.co.kr

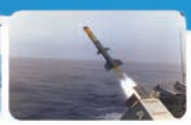
HEMP Filter NeP 획득

고고도 전자기펄스 방호장치 신제품인증

EMI/EMC Total Solution

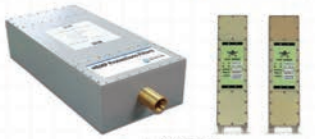
Business Area





1. EMC Consulting
   - Military Spec
   - Automotive
   - 특수규격 (EPRI TR (원전규격), IACS (조선규격), RTCA/DO-160 (항공기규격) IEC/EN60601-1(의료기기), 태양광, 풍력발전, 기타특수산업)

2. EMI/HEMP Filter 제조
   - 방산 장비 및 특수 목적용 EMI Filter 개발 및 제조
   - Facility EMI Filter 개발 및 제조
   - EMP Filter 개발 및 제조


▲ HEMP Filter


▲ EMI Filter

3. EMC Free Power Supply 개발


BTDS용 전원분배기


발사관 통제장치 전원공급기 모듈


TACAN용 전원공급장치


천무 시험장비용 전원공급장치

전자파 시험실



※ 전자파 시험실 2기 보유

641-460 경남 창원시 의창구 팔용동 28-6번지 Tel : 055.265.3698 / Fax : 055.265.3694 / www.i-spec.co.kr

EMI/EMC R&D Center, KATECH

" Creating a Future with Trust and Technology"

[Vision & Main Technology]

❖ The mission is to support the regional auto part industry, especially for Analysis/Assessment Technology for EMI/EMC

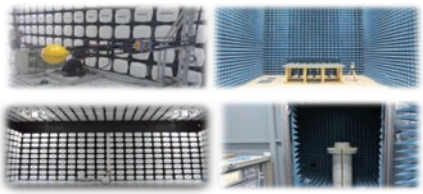
❖ R&D for WPT, RF and Biological effects of EMFs

[Facility & Infrastructure]

EMC
- ➢ Anechoic Chamber
  - 10m, 3m(2ea), Compact
- ➢ Shield Room(3ea)
- ➢ High voltage components for Green car
  - Power supply(150kW) and E-load(100kW)
  - Power supply(250kW) and E-load(10kW)
- ➢ EMI : 4 Set (Including ME, CTE)
- ➢ EMS : RI/BCI/MI/TI/ESD each 2set
- ➢ Simulation Tools
  - SI-wave, PCB V Lap, Maxwell
  - EMC Studio, FEKO, HFSS

EMF
- ➢ Analysis system for biological effects of EMFs
  - Field measurements system in automotive environments and SAR system

RF
- ➢ V2X Chamber
  - An OTA chamber and systems for V2X communication module and antennas

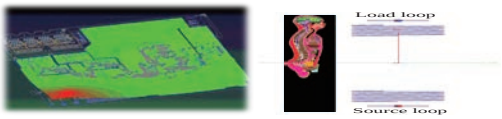


[Assessment, R&D]

EMC
- ➢ Circuit design/analysis/ debugging with consideration for EMC
- ➢ EMC Simulation
- ➢ Analysis for shield effectiveness and simulations - MIL/ASTM

WPT, EMF
- ➢ Design of a resonance-based WPT system
  - Power Transfer Efficiency and FOD
- ➢ Study on biological effects of EMF
  - Biological effects of EMF in the automotive environment

RF
- ➢ Communication module & antenna for V2X



Certification and Assessment
- ➢ Official recognized lab. For EMC
  - KOLAS, HKMC, GM, RTK, SSANGYONG, VCA
- ➢ Automotive and components
- ➢ High voltage components of Green car like as HEV, EV
- ➢ Europe E-mark as TS designation with international certification authorities
- ➢ Performing for EMF, SAR and Telematics system

303 Pungse-ro, Pungse-myon, Dongnam-gu, Cheonan-si, Chungnam 31214, Republic of Korea TEL +82-41-559-3313

KATECH KOREA AUTOMOTIVE TECHNOLOGY INSTITUTE

한국전파진흥협회(RAPA) 전자파기술원(EMTI)

한국전파진흥협회(RAPA) 전자파기술원(EMTI)에서는, **전자파 기술지원, 전문기술교육, 정책 및 표준기술 개발** 등의 사업을 추진함으로써 **전자파 관련 문제를 해소**하고, **국내 산업체의 전자파 규제 대응력 확보** 및 **기술경쟁력 제고**를 목표로 하고 있습니다.

중소기업체 지원

- EMC기술지원(무상지원)
  - · EMC 설계 · 대책기술 및 측정 지원
  - · 전자파 흡수율(SAR) 측정 지원
- 안테나 측정지원(유상지원)
  - · 자체 보유 측정 설비 및 시스템을 활용하여 중대형, 휴대폰, 밀리미터파, 수동상호혼변조 왜곡(PIMD) 안테나 측정지원
- 중소기업 우수제품 전파인증 시험비용 지원
  - · 우수 기술을 보유한 중소기업을 대상으로 전파인증(적합성평가) 시험비용 지원

전문기술교육 운영

- 전자파 종합기술교육
- EMC 광역단체 특화기술교육
- EMC 온라인 스터디그룹
- 안테나 기술교육

정책 지원 및 표준기술 개발

- 전자파적합성 및 전자파인체보호 기술 기준 개발
- 무선전력전송 기술 및 서비스 표준개발

전자파 정보 제공 및 협의회 운영

- Webzine 발간 및 기술정보 제공
- EMC FEST 및 무선전력전송 컨퍼런스 개최
- EMC소재부품전문협의회 운영
- 한국무선전력전송진흥포럼 운영 (http://kwpf.org)

EMC 기술 컨설팅

전기철도, 항공, 조선, 자동차 등의 산업체에서 발생하고 있는 전자파 문제 해결을 위한 컨설팅 서비스 제공

- 전자파 기술 컨설팅

한국전파진흥협회 전자파기술원 Electromagnetic wave Technology Institute

주소 : 서울시 용산구 원효로 41길29(원효로 3가 1-154번지)
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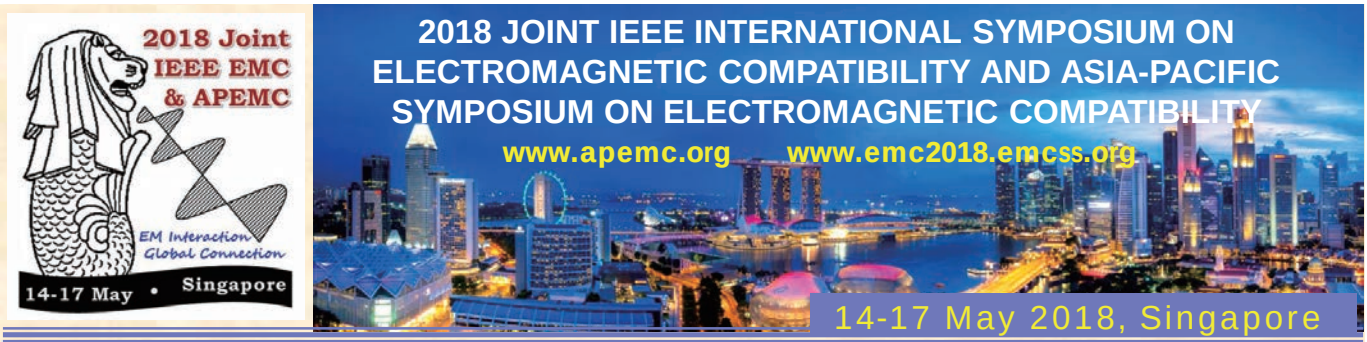

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emc@cma.sg

Call for Papers

The 2018 Joint IEEE International Symposium on Electromagnetic Compatibility & Asia-Pacific Symposium on Electromagnetic Compatibility (2018 Joint IEEE EMC & APEMC) will take place at **the Suntec Convention and Exhibition Center** in Singapore from 14 to 17 May 2018. The joint symposium combines the 60th IEEE International Symposium on EMC with the 9th APEMC Symposium. For the former, it is only the 4th time for it to be held outside the North America Continent in 60 years and the first time in Asia over the past three decades. For the latter, it is a homecoming to where the APEMC originated 10 years ago.

The symposium Technical Program Committee invites you to submit your original and unpublished papers in all aspects of electromagnetic compatibility (EMC) as well as signal and power Integrity (SI/PI), including but not limited to EMC/SI/PI design, modeling, management, measurements, and education.

All eligible papers (excluding abstract-reviewed papers) will be submitted for online publication at the IEEE Xplore, and authors will also be invited to submit extended versions of those papers for possible publication in a special issue of the IEEE Transactions on Electromagnetic Compatibility.

Plan ahead and join this unique symposium, meet international colleagues, present your latest research findings, share your insight and perspectives, ask questions, learn from experts and innovators, explore collaborations, visit exhibitions and see new products. Experience Singapore, where east meets west, and much more!

Important Dates

❑ **Preliminary Full Paper Submission** *(3 to 6 pages in PDF format; without author names & affiliations)*	Start: 18 August 2017 End: **24 November 2017**
❑ **Paper Acceptance Notification**	16 January 2018
❑ **Final Paper Due**	28 February 2018

Please visit symposium website for more information about

Topics of Interest | **Embedded Conference on SIPI** | **Call for Special Sessions**

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"a platform to share the recent progress of electromagnetic compatibility (EMC) technology"

2017 Asia-Pacific International Symposium on Electromagnetic Compatibility

(APEMC 2017)

June 20-23, 2017

The Commons, Yonsei University, Seoul, Korea