

Chairman's Message



Tadeusz W. Wieckowski

Ladies and Gentlemen,

Dear Participants, Honourable Guests,

It is a great honour and pleasure for me to welcome all of you in the Wroclaw University of Technology, which this year is a host for the event joining 9th International Symposium on Electromagnetic Compatibility and 20th International Wroclaw Symposium on Electromagnetic Compatibility. Year 2010 is particularly important for our University. This year we celebrate the 100th anniversary of higher education in Wroclaw and the 60th anniversary of the Wroclaw University of Technology.

International Wroclaw Symposium on Electromagnetic Compatibility has been the oldest European conference dealing with this subject. It all began in 1972, and since then the meetings have been taking place in Wroclaw every second year. They were giving a chance for discussion and experience exchange between “the West and the East”, and in time they led to integration of the European scientific circles.

In 2010 we meet in Wroclaw for the 20th time in a row, and a new chapter in the EMC Conference history in Europe is being opened at the same time. According to the announcement made two years ago, a real integration of the European electromagnetic compatibility research community has taken place. After 38 years, the Wroclaw Symposium is completing its mission, and from now on, we are going to meet yearly within the EMC Europe Conference. It is going to be the biggest conference dedicated to that subject in Europe. The organisers are to be various scientific centres, in different places of Europe.

The combined conference is also special for yet another reason. The patronage over the conference has been taken by Dr Hamadoun Touré -

Secretary General of the International Telecommunication Union, which by itself testifies for its meaning not only for Europe.

In appreciation of Dr Toure's contribution to the Wroclaw scientific society, and the circles involved in electromagnetic compatibility research in particular, during the Conference the Doctor Honoris Causa degree from Wroclaw University of Technology will be conferred on Him. His personal commitment has greatly supported the research development in the electromagnetic compatibility domain in the Wroclaw University of Technology. Moreover, ITU have always been involved in organising the Wroclaw Conference.

During the Conference many interesting papers are going to be presented, grouped into topic sessions. The workshops and tutorials organised here for the first time are extensive. They are going to be held the day before and the day after the Conference. Also, a series of lectures for young scientists is to be presented.

I would like to cordially thank the Authors of papers, organisers of the invited sessions, workshops and tutorials, as well as the equipment exhibitors for their contribution to the Conference program. Special thanks I wish to direct towards the International Steering Committee and a large group of reviewers for their share in evaluation of the submitted works. I also thank the Local Organising Committee for their work dedicated for the Conference arrangements.

Thank you very much for your participation in the EMC EUROPE 2010 Conference. I hope, the meeting will be valuable for all of you, and I wish you a pleasant stay in Wroclaw.

I wish all the success for subsequent EMC Europe conferences and I invite you to the next event - EMC Europe 2011, to be held in York.

Professor Tadeusz W. Wieckowski
Chairman of the Local Organizing Committee

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Auspices

Symposium under the auspices of

Dr Hamadoun I. Touré

Secretary-General of the International Telecommunication Union (ITU)

Technical co-sponsors

IEEE EMC Society



EMC Society Polish Chapter



Polish Academy of Sciences (PAN)
Electronics and Telecommunications
Committee (KEiT)
Electromagnetic Compatibility Section



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Committees

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H.G. Krauthaeuser (<i>Germany</i>)	

Opening Ceremony

Tuesday September 14, 2010, 9:00

Wybrzeże Wyspiańskiego 27, Building A1

Welcome Addresses

9:00 – 9:30 (Aula, Building A1)

Prof. Dr.-Ing. Tadeusz W. Więckowski

Wrocław University of Technology (WrUT), Poland
Rector WrUT & Symposium Chair EMC Europe 2010

Magdalena Gaj

Ministry of Infrastructure, Poland
Undersecretary of State

Prof. Dr.-Ing. Jan Luiken ter Haseborg,

Technische Universität Hamburg-Harburg (TUHH), Germany
Chairman of the International Steering Committee (ISC) of EMC Europe

Prof. Francesca Maradei

University of Rome, "La Sapienza"
President of the IEEE EMC Society

Ceremony of conferment of an honorary doctor's degree to Hamadoun I. Toure

9:30 – 11:00 (Aula, building A1)

Congratulations to Honorary Doctor

11:00 – 12:00 (Main hall)

Keynote Speech: 12:00 – 12:40

"Intentional electromagnetic interferences and EMC problems. THz waves - EMC strategy for the future "

Maciej Mroczkowski

Military University of Technology, Poland

Monday, 13th September 2010 - Workshops & Tutorials

Room Time	Room A (build.C-13)	Room B (build.C-13)	Room C (build.C-13)	Room D (build.C-13)	Room G (build.C-13)
8:30	YSP1_Mo_A1: HIRF-SE Young Scientists' Programme - Measurements & Materials (1) <i>Open Site, Anechoic Chamber and TEM Cell Measurements</i> Chair: Andy Marvin	Ws1_Mo_B1: Electromagnetic compatibility tests methods and procedures for armament and military equipment according to MIL-STD 461E/F (1) Chair: Rafal Namiotko	Ws3_Mo_C1: Workshop on Spectrum Engineering Advanced Monte Carlo Analysis Tool - SEAMCAT (1) Chairs: Dariusz Wiecek Stella Lyubchenko		
10:30 - 11:00	Coffee break				
11:00	YSP1_Mo_A2: HIRF-SE Young Scientists' Programme - Measurements & Materials (2) <i>Reverberation Chamber Measurements</i> Chair: Frank Leferink	Ws1_Mo_B2: Electromagnetic compatibility tests methods and procedures for armament and military equipment according to MIL-STD 461E/F (2) Chair: Rafal Namiotko	Ws3_Mo_C2: Workshop on Spectrum Engineering Advanced Monte Carlo Analysis Tool - SEAMCAT (2) Chairs: Dariusz Wiecek Stella Lyubchenko		
13:00 - 14:00	Lunch (tent behind building C-13)				Me1_Mo_G1: CEN WS10/EG 7 meeting
14:00	YSP1_Mo_A3: HIRF-SE Young Scientists' Programme - Measurements & Materials (3) <i>Advanced and Composite Materials</i> Chair: Maria Sabrina Sarto		Ws3_Mo_C3: Workshop on Spectrum Engineering Advanced Monte Carlo Analysis Tool - SEAMCAT (3) Chairs: Dariusz Wiecek Stella Lyubchenko	Ws4_Mo_D1: Time Domain Measurement Systems (1) Location: Room D (build. C-13) Chair: Wolfgang Winter	Chair: Frank Leferink
15:00		Ws2_Mo_B3: High Intensity Radiated Field - Synthetic Environment (1) Chair: Andy Marvin			
16:00 - 16:30	Coffee break				
16:30	YSP1_Mo_A4: HIRF-SE Young Scientists' Programme - Measurements & Materials (4) <i>Communications in Airframes</i>	Ws2_Mo_B4: High Intensity Radiated Field - Synthetic Environment (2) Chair: Andy Marvin	Tut1_Mo_C4: Tutorial: Simulation of harmonics & interharmonics interferences in AC and DC mains supply Chair: Markus Fuhrer	Ws4_Mo_D2: Time Domain Measurement Systems (2) Chair: Wolfgang Winter	
17:30					
18:30					

HIRF-SE Young Scientists' Programme

YSP1	YOUNG SCIENTISTS' PROGRAMME	Time: 8:30 - 18:30
HIRF-SE YOUNG SCIENTISTS' PROGRAMME - MEASUREMENTS & MATERIALS		
Chaired by:	Andy Marvin	Room: A (C-13)

Speakers: Andy Marvin (University of York), Frank Leferink (University of Twente & Thales Netherlands), Maria Sabrina Sarto (Univ. of Rome Sapienza), Christos Anastasiou, Hellenic Aerospace Industries

Sessions: Abstract:

YSP1_Mo_A1 (8:30 - 10:30) Once again the EU FP7 funded High Intensity Radiated Field - Synthetic Environment (HIRF-SE) project is offering a Young Scientists' Programme (YSP) on EMC in Aerospace Systems.

Coffee break Lectures are presented by experienced industrialists and academics working on the HIRF-SE project.

YSP1_Mo_A2 (11:00 - 13:00) The presentations cover a wide variety of topics in Aerospace EMC and are aimed at encouraging young scientists and engineers to consider making a career in the field.

Lunch

YSP1_Mo_A3 (14:00 - 16:00)

Coffee break

YSP1_Mo_A4 (16:30 - 18:30)

Program:

YSP1_Mo_A1 session

Time: 8:30 - 10:30

Open Site, Anechoic Chamber and TEM Cell Measurements

Andy Marvin
University of York, United Kingdom

Principles and limitations of 'single wave' measurement environments for emissions and immunity measurements of equipment and shielding of planar materials.

YSP1_Mo_A2 session

Time: 11:00 - 13:00

Reverberation Chamber Measurements

Frank Leferink
University of Twente ----- Thales Netherlands, The Netherlands ,

Principles of reverberation chamber measurements for emissions, immunity and shielding - field statistics - Q factors - chamber calibration.

YSP1_Mo_A3 session

Time: 14:00 - 16:00

Advanced and Composite Materials

Maria Sabrina Sarto
Univ. of Rome Sapienza, Italy

Electromagnetic properties of composite and loaded materials used in airframe structures - measurements of these properties.

YSP1_Mo_A4 session

Time: 16:30 - 18:30

UWB Communications in Airframes

Christos Anastasiou
Hellenic Aerospace Industries

Workshops & Tutorials

WS1	WORKSHOP	Time: 8:30 - 13:00
ELECTROMAGNETIC COMPATIBILITY TESTS METHODS AND PROCEDURES FOR ARMAMENT AND MILITARY EQUIPMENT ACCORDING TO MIL-STD 461E/F		
Chaired by:	Rafał Namiołko	Room: B (C-13)

Speakers: Frank Leferink (University of Twente & Thales Netherlands), Francois Volery (Montena EMC), Andrzej Kaczmarek (Ośrodek Badawczo-Rozwojowy Centrum Techniki Morskiej S.A.), Łukasz Sójka (RADMOR S.A.), Lech Nowosielski (Military University of Technology), Dariusz Gibalski (Military Institute of Armament Technology)

Sessions: **Abstract:**

Ws1_Mo_B1
(8:30 - 10:30)

Coffee break

Ws1_Mo_B2
(11:00 - 13:00)

The stated interface requirements are considered necessary to provide reasonable confidence that a particular subsystem or equipment complying with the requirements will function within their designated design tolerances when operating in their intended electromagnetic environment. Due to the nature of performed functions, the equipment and systems used for military purposes have to meet predefined requirements and standards. Requirements are in principle based on the standard MIL-STD-461E/F. The above standard contains eighteen requirements and test methods for radiated and conducted electromagnetic fields interference susceptibility and emissions. The applicability of individual requirements for a particular equipment or subsystem is dependent upon the platforms where the item will be used: surface ships, submarine, aircraft and ground.

During the workshop we present the phenomena, calibration of the test stands, test procedures (conducted/radiated emission/immunity) and issues on example of armament and military equipment.

Program:

Ws1_Mo_B1 session

Time: 8:30 - 10:30

"Standardization for Defence Procurement - European Handbook" - European Commission initiative: CEN Workshop 10

Frank Leferink, University of Twente ----- Thales The Netherlands Netherlands,

Nuclear Electromagnetic Pulse (NEMP): phenomena, coupling on infrastructure and testing issues

Francois Volery, Montena EMC

Armament electromagnetic compatibility tests in reverberation chamber

Andrzej Kaczmarek

Ośrodek Badawczo-Rozwojowy Centrum Techniki Morskiej S.A., Poland

Ws1_Mo_B2 session

Time: 11:00 - 13:00

Automation of EMC measurement techniques for MIL-STD 461F procedures

Łukasz Sójka

RADMOR S.A., Poland

Immunity tests in the anechoic chamber according to MIL-STD requirements

Lech Nowosielski, Military University of Technology, Poland

Disturbance emission and matrix S measurements

Lech Szugajew, Dariusz Gibalski

Military Institute of Armament Technology, Poland

WS2	WORKSHOP	Time: 15:00 - 18:30
HIGH INTENSITY RADIATED FIELD - SYNTHETIC ENVIRONMENT		
Chaired by:	Andy Marvin	Room: B (C-13)

Speakers: Clifford De Raffaele, Carl James Debono, Adrian Muscat (Department of Communications and Computer Engineering); Luigi Pisu (Alenia Aeronautica S.p.a.); Harmen Schippers, Jaco Verpoorte (NLR); Ruben Oten (CIMNE); Chris Smartt (University of Nottingham); Luis D. Angulo, J. Alvarez, A. Rubio Bretones, Salvador G. Garcia (UGR & EADS-CASA)

Sessions: Program:

Ws2_Mo_B3
(15:00 - 16:00)

Ws2_Mo_B3 session

Coffee break

Simulating Electromagnetic Interference Emanating from Personal Wireless Communications Systems Inside Aircraft

Clifford De Raffaele, Carl James Debono, Adrian Muscat
Department of Communications and Computer Engineering,

Ws2_Mo_B4
(16:30 - 18:30)

Material Shielding Effectiveness measurement with a Customized Methodology based on Nested Reverberation Chamber Approach

Luigi Pisu
Alenia Aeronautica S.p.a.

Ws2_Mo_B4 session

Time: 15:00 - 16:00

Electromagnetic Analysis of Metal Braids

Harmen Schippers¹, Jaco Verpoorte¹, Ruben Oten²
¹NLR; ²CIMNE

TLM modelling techniques for time domain HIRF threat analysis

Chris Smartt
University of Nottingham

Time Domain Tools in EMC Assessment in Aeronautics

Luis D. Angulo, J. Alvarez, A. Rubio Bretones, Salvador G. Garcia
UGR & EADS-CASA

WS3	WORKSHOP	Time: 8:30 - 16:00
WORKSHOP ON SPECTRUM ENGINEERING ADVANCED MONTE CARLO ANALYSIS TOOL - SEAMCAT		
Chaired by:	Dariusz Wiecek, Stella Lyubchenko	Room: C (C-13)

Speakers: Stella Lyubchenko (European Communications Office (ECO)); Dariusz Wiecek, Jacek W. Wroński, Bartłomiej Gołębiowski (National Institute of Telecommunications (Poland))

Sessions: Program:

Ws3_Mo_C1
(8:30 - 10:30)

Ws3_Mo_C1 session

Time: 8:30 - 10:30

Coffee break

Opening

Dariusz Wiecek
National Institute of Telecommunications, Poland

Ws3_Mo_C2
(11:00 - 13:00)

Lunch

Ws3_Mo_C3
(14:00 - 16:00)

General presentation of SEAMCAT

Stella Lyubchenko
European Communications Office, Denmark

Modelling of unwanted and blocking interference and spectrum mask

Stella Lyubchenko
European Communications Office, Denmark

Ws3_Mo_C2 session

Time: 11:00 - 13:00

Basic examples of setting simulations

Stella Lyubchenko
European Communications Office, Denmark

Compatibility analysis examples and results

Jacek W. Wroński, Bartłomiej Gołębiowski
National Institute of Telecommunications, Poland

Ws3_Mo_C3 session

Time: 14:00 - 16:00

Development of additional Plug-ins for Seamacat

Jacek W. Wroński, Dariusz Wypiór
National Institute of Telecommunications, Poland

Presentation of newest evolutionary upgrade

Stella Lyubchenko
European Communications Office, Denmark

Conclusions and Questions

Stella Lyubchenko¹, Dariusz Wiecek²
¹European Communications Office, Denmark; ²National Institute of Telecommunications

Tut1

TUTORIAL

Time: 16:30 - 18:30

TUTORIAL: SIMULATION OF HARMONICS & INTERHARMONICS INTERFERENCES IN AC AND DC MAINS SUPPLY/F

Chaired by: Markus Furer

Room: **C** (C-13)

Speakers: Markus Furer (EM TEST, Switzerland)

Session: Program:

WTut1_Mo_C4
(16:30 - 18:30)

Tut1_Mo_C4 session

Time: 16:30 - 18:30

Simulation of harmonics & interharmonics interferences in AC and DC mains supply: field of application, severity levels, test setup. test instrumentation. characteristics and test procedures:

ACSupply:

- IEC/EN 61000-4-13 Generation of Harmonics & Interharmonics,
- IEC/EN 61000-4-14 Generation of voltage fluctuations,
- IEC/EN 61000-4-28 Generation of frequency variation,
- IEC/EN 61000-4-27 Unbalance Immunity test for three phase systems,

and DC Supply:

- IEC/EN 61000-4-17 Ripple on DC input,
- IEC/EN 61000-4-29 Voltage dips and interruptions.

WS4	WORKSHOP	Time: 14:00 - 18:30
TIME DOMAIN MEASUREMENT SYSTEMS		
Chaired by:	Wolfgang Winter	Room: D (C-13)

Speakers: Wolfgang Winter (emv GmbH), Zuzana Wood (emv GmbH),, Stephan Braun (GAUSS INSTRUMENTS GmbH)

Sessions: Program:

Ws4_Mo_D1
(14:00 - 16:00)

Ws4_Mo_D1 session

Time: 8:30 - 10:30

Coffee break

Basic theory, introduction of CISPR 16-1-1 compliant EMI time domain measurements

Wolfgang Winter¹, Zuzana Wood¹, Stephan Braun²

¹emv GmbH, Germany; ²GAUSS INSTRUMENTS GmbH, Germany

Comparison measurements between spectrum analyzers, conventional RF Test Receivers, Time Domain Measurement Systems

Wolfgang Winter, Zuzana Wood

emv GmbH, Germany

Automotive measurements on hybrid cars

Wolfgang Winter, Zuzana Wood

Ws3_Mo_C2 session

Time: 11:00 - 13:00

Practical measurements on household appliances with discussion and interpretation of test results

Wolfgang Winter, Zuzana Wood

emv GmbH, Germany

Meetings

Me1_Mo_G1	MEETING	Time: 13:00 - 18:30
CEN WS10/EG7 MEETING ON ELECTROMAGNETIC ENVIRONMENT		
Chaired by:	Frank Leferink	Room: G (C-13)

Tuesday, 14th September 2010 – 1st Symposium day

Room Time	Aula (build.A1)					Room E (build.C-13)
9:00	Opening Cremony Chairs Tadeusz W. Więckowski , Jan Luiken ter Haseborg Aula (build.A1)					YSP2_Tu_E1: HIRF-SE Young Scientists' Programme - Modelling (1) Boundary Element Modelling Techniques Chair: Heinz Brüns
9:30	Ceremony of conferment of an honorary doctor's degree to Hamadoun I. Toure Aula (build.A1)					
10:00						
11:00	Congratulations to Honorary Doctor Main hall (build.A1)					Lunch (tent behind building C-13) YSP2_Tu_E2: HIRF-SE Young Scientists' Programme - Modelling (2) Full Wave Volume Modelling Techniques Chairs: Christos Christopoulos, Phillip Sewell Coffee break YSP2_Tu_E3: HIRF-SE Young Scientists' Programme - Modelling (3) Power Balance Modelling Techniques
12:00	Plenary session „Intentional electromagnetic interferences and EMC problems. THz waves - EMC strategy for the future” - Maciej Mroczkowski, Military University of Technology , Warsaw Poland Chair: Ryszard Strużak (build.A1) Aula					
12:40	Lunch (tent behind building C-13)					
13:00 - 14:00						
	Room A (build.C-13)	Room B (build.C-13)	Room C (build.C-13)	Room D (build.C-13)	Room F (build.C-13)	
14:00	Inv_Tu_A1: Intentional electromagnetic interferences and EMC problems (1) - Invited session	O_Tu_B1: Regulatory and implementation issues	O_Tu_C1: Measurement techniques (1)	O_Tu_D1: Biological Effect (1)	CP_Tu_F1: Company presentations (1)	Chairs: Christos Christopoulos, Phillip Sewell
15:00	Chairs :Andrzej Kaczyński, Maciej Mroczkowski	Chair: Wiktór Sęga	Chair: Ryszard Zieliński	Chair: Mauro Feliziani	Chair: Andrzej E. Sowa	
15:30						
15:45 - 16:15	Coffee break					YSP2_Tu_E3: HIRF-SE Young Scientists' Programme - Modelling (3) Power Balance Modelling Techniques
16:15	Inv_Tu_A2: Intentional electromagnetic interferences and EMC problems (2) - Invited session	O_Tu_B2: Cables and Connectors	O_Tu_C2: Measurement techniques (2)	O_Tu_D2: Biological Effect (2)	CP_Tu_F2: Company presentations (2)	Chairs: Jean-Philippe de Parmantier, Isabelle Junqua
17:30	Chairs: Andrzej Kaczyński Maciej Mroczkowski	Chairs: Johan Catrysse Davy Pissoort	Chair: Jan Welinder	Chairs: Osamu Fujiwara Andrzej E.Sowa	Chair: Kamil Staniec	Break
17:45						
18:00						YSP2_Tu_E4: HIRF-SE Young Scientists' Programme - Modelling (4) C27J Airframe Lightning Certification using CEM
18:45						Chairs: Maria S. Sarto & Marcello D'Amore
19:30 - 23:00	Welcome cocktail (The City Museum of Art located in the Town Hall of Wrocław on the Market Square - Sukienice 14/15)					

Plenary session

	PLENARY SESSION	Time: 12:00 - 12:40
Chaired by:	Ryszard Strużak	Room: Aula (A1)

Intentional electromagnetic interferences and EMC problems. THz waves- EMC strategy for the future

Maciej Mroczkowski
Military University of Technology, Poland

Oral sessions

Inv_Tu_A1	ORAL SESSION - INVITED	Time: 14:00 - 15:45
INTENTIONAL ELECTROMAGNETIC INTERFERENCES AND EMC PROBLEMS (1)		
Chaired by:	Andrzej Kaczyński, Maciej Mroczkowski	Room: A (C-13)

Interoperability of radio communication at the military missions; Lessons learned

Krzysztof Cybulski
General Staff of the Polish Armed Forces, Directorate P6, Poland

Cognitive Radio Networks

Piotr Gajewski
Military University of Technology, Poland

Dynamic Spectrum Management for Military Wireless Networks

Piotr Gajewski¹, Marek Suchanski²
¹Military University of Technology, Poland; ²Military Communications Institute, Poland

O_Tu_B1	ORAL SESSION	Time: 14:00 - 15:45
REGULATORY AND IMPLEMENTATION ISSUES		
Chaired by:	Wiktor Sęga	Room: B (C-13)

CE Marking of Military Equipment: It is the Law! How to do it?

Frank Leferink^{1,2}
¹University of Twente, The Netherlands; ²Thales Nederland, The Netherlands

Implementation of Cognitive Radio in SEAMCAT

Stella Lyubchenko, Jean-Philippe Kermoal, Marc Le Devendec
European Communications Office, Denmark

Deployment of DVB-H Networks in Urban Areas Using Cable TV Networks

Jarosław Szóstka
Poznań University of Technology, Poland

Improvement of Russian Regulatory System on Protection against Electro-magnetic Attacks

Ruslan Kirichek, Vladimir Chvanov
CenterInform, Russian Federation

Redundancy Concept to Increase Transmission Reliability in WLAN Systems - Redundance-Transmission of Navigation Data via WLAN on Ships

Tobias Pilsak, Jan Luiken ter Haseborg
Hamburg University of Technology, Germany

O_Tu_C1	ORAL SESSION	Time: 14:00 - 15:45
MEASUREMENT TECHNIQUES (1)		
Chaired by:	Ryszard Zieliński	Room: C (C-13)

A Broadband Time-Domain EMI Measurement System for Measurements up to 18 GHz

Christian Hoffmann¹, Stephan Braun², Peter Russer³

¹Technische Universität München, LSt. f. Hochfrequenztechnik, Germany; ²GAUSS INSTRUMENTS GmbH, Germany; ³Technische Universität München, LSt. f. Nanoelektronik, Germany

Time Domain Measurements for CISPR 16-1-1 EMI Testing - Novel Method to Trace Interfering RF Disturbances

Wolfgang Winter, Markus Herbrig
emv GmbH, Germany

A Multi-Channel, FFT-Based, Amplitude Probability Distribution Measuring Instrument

Kaoru Gotoh¹, Shinobu Ishigami¹, Yasushi Matsumoto¹, Masatsugu Ryoshi², Jun-ichi Nishio², Shigeaki Yoshimura²

¹National Institute of Information and Communications Technology; ²Mitsubishi Electric Tokki Systems Corporation

An Effective and Low-Cost Measurement System for EMC Pre-Compliance Testing of Radiated Emissions in the Range 2-8 GHz

Federico Tramarin, Matteo Bertocco, Alessandro Sona
University of Padova, Italy

Narrowband Transmission Quality in Presence of Modified IEEE 802.15.4a UWB Signal

Jarosław Sadowski, Ryszard Katulski
Gdańsk University of Technology, Poland

Presentation of this paper has been moved from the session O_Th_D1 (Thursday 9:00pm - 10:45pm)

O_Tu_D1	ORAL SESSION	Time: 14:00 - 15:45
BIOLOGICAL EFFECT 1		
Chaired by: Mauro Feliziani	Room: B (C-13)	

Calculation of Whole-Body Average SARs in Infant Models for Far-Field Exposure over GHz Frequencies

Akimasa Hirata¹, Naoki Ito¹, Osamu Fujiwara¹, Tomoaki Nagaoka², Soichi Watanabe²

¹Nagoya Institute of Technology, Japan; ²National Institute of Information and Communications Technology

Estimation of Whole-Body Averaged SAR of Grounded Human at Resonance Frequency from Ankle Current of Simplified Phantom

Akimasa Hirata¹, Kazuya Yanase¹, Osamu Fujiwara¹, Simba Ally Simba², Takuji Arima², Soichi Watanabe²

¹Nagoya Institute of Technology, Japan; ²National Institute of Information and Communications Technology, Japan

Broadband Matching Windows for Waveguide SAR Calibration Systems to Span 1.7 GHz to 5.85 GHz

Ralf Mouthaan, Benjamin Loader, Daniel Bownds, Andrew Gregory

National Physical Laboratory, United Kingdom

Whole-Body Averaged SAR Measurement for Postured Japanese Human Models using Cylindrical-External Field Scanning

Takashi Hikage¹, Yoshifumi Kawamura¹, Toshio Nojima¹, Tomoaki Nagaoka², Soichi Watanabe²

¹Hokkaido University, Japan; ²National Institute of Information and Communications Technology

Inv_Tu_A2	ORAL SESSION - INVITED	Time: 16:15 - 18:00
INTENTIONAL ELECTROMAGNETIC INTERFERENCES AND EMC PROBLEMS (1)		
Chaired by: Andrzej Kaczyński, Maciej Mroczkowski	Room: A (C-13)	

Effective Method for IEEE 802.11 Hidden Transmission

Zbigniew Piotrowski, Krzysztof Sawicki, Mariusz Bednarczyk, Piotr Gajewski

Military University of Technology, Poland

Stealth Systems on Classic and Electromagnetic Battlefields and Problem of Coexisting Systems Survivability during Intentional Electromagnetic Interference (IEMI)

Lech Surzyński

Military University of Technology, Institute of Optoelectronics, Poland

Discussion

Moderator: brig. gen. (ret) Witold Cieslewicz

Armed Forces Communications and Electronics Association Polish Chapter, Poland

O_Tu_B2	ORAL SESSION	Time: 16:15 - 18:00
CABLES AND CONNECTORS		
Chaired by:	Johan Catrysse, Davy Pisssoort	Room: B (C-13)

Modelling and Measurement of Crosstalk between Shielded Cables

Stephen Greedy, Chris Smartt, David Thomas, Christos Christopoulos, Philip Sewell
University of Nottingham, United Kingdom

Simplified Modeling of Complex Cable Bundles with Inhomogeneous Cable Paths

Benedikt Schetelig¹, Jules Keghie¹, Ronald Rambousky², Stefan Dickmann¹

¹Faculty of Electrical Engineering, Helmut-Schmidt-University / University of the Federal Armed Forces Hamburg, Germany; ²Bundeswehr Research Institute for Protective Technologies and NBC Protection (WIS), Munster, Germany

Towards the Generation of Industrial Bundles through a Random Process under Realistic Constraints

Charles Jullien^{1,2}, Philippe Besnier¹, Michel Dunand², Isabelle Junqua³

¹IETR, France; ²LABINAL, France; ³ONERA, France

Analysis of Multiconductor Transmission Line's Sensitivity to Damage : Two Complementary Approaches

Maud Franchet¹, Nicolas Ravot¹, Odile Picon²

¹CEA LIST, Embedded Systems Reliability Laboratory, France; ²Université Paris-Est, ESY-COM, EA 2552

Measuring Line Parameters of Multiconductor Cables using a Vector Impedance Meter

Jos Knockaert¹, Joan Peuteman², Johan Catrysse³, Ronnie Belmans⁴

¹Technical University College of West-Flanders, Belgium; ²Katholieke Hogeschool Brugge - Oostende, Belgium; ³Katholieke Universiteit Leuven, Departement Electrical Engineering-ESAT/MICAS; ⁴Katholieke Universiteit Leuven, Departement Electrical Engineering-ESAT/ELECTA

Field Coupling to Randomly-Routed Wires: Theoretical and Experimental Comparison

Fatou Diouf¹, Flavio Canavero², Frank Leferink^{1,3}, Frits J.K. Buesink³

¹Thales Nederland B.V., Hengelo, The Netherlands; ²Politecnico di Torino, Turin, Italy;

³Twente University, Enschede, The Netherlands

O_Tu_C2	ORAL SESSION	Time: 16:15 - 18:00
MEASUREMENT TECHNIQUES (2)		
Chaired by:	Jan Welinder	Room: C (C-13)

Impedance Stabilization Networks by using Asymmetrical Transformer For more accurate conducted disturbances measurement on power line

Norihito Hirasawa¹, Yoshiharu Akiyama¹, Fujio Amemiya²

¹NTT, Japan; ²NTT-AT, Japan

Modeling of Bulk Current Injection (BCI) Setups for Virtual Automotive IC tests

Sergey Miropolsky¹, Stephan Frei¹, Jörg Frensch²

¹Technische Universität Dortmund, Germany; ²ELMOS Semiconductor AG, Germany

Proposal of Radiated Emission Measurement Using VHF-LISN

Chiharu Miyazaki¹, Katsuyuki Tanakajima², Masanori Yamaguchi³, Hiroshi Yamane⁴, Jiro Kawano⁵

¹Mitsubishi Electric Corporation, Japan; ²Intertek Japan K.K., Japan; ³EMC Education, Japan;

⁴NTT Facilities, Japan; ⁵VCCI Council, Japan

Effectiveness of VHF-LISN specified to Radiated Emission Test in Proficiency Testing Program

Kunihiro Osabe, Tetsuo Kato

VLAC, Japan

Study for Measurement Methods of Conducted Emission of Communication Ports

Hiroshi Yamane¹, Yoshiaki Hiratsuka², Jiro Kawano³

¹NTT Facilities, Japan; ²Fujitsu Advanced Technology INC., Japan; ³VCCI Council, Japan

O_Tu_D2

ORAL SESSION

Time: 16:15 - 18:00

BIOLOGICAL EFFECT (2)

Chaired by: Osamu Fujiwara, Andrzej E. Sowa

Room: **D (C-13)**

Safety Aspects of a System for Magnetic Heart Stimulation Induced by a Magnetic Pulse

Graziano Cerri, Alfredo De Leo, Roberto De Leo, Giuseppe Della Chiara, Valter Mariani Primiani, Franco Moglie, Anna Pia Pastore, Paola Russo

Universita Politecnica delle Marche - D.I.B.E.T, Italy

Performance Analysis of UWB Antennas for Body Area Network (BAN) Applications Using a Highly Accurate CAD Model of the Human Body

Valerio De Santis, Mauro Feliziani

University of L'Aquila, Italy

The Separation of Superimposed Magnetic Fields using Independent Component Analysis

Christian Rueckerl, Karl Eichhorn

HTWK Leipzig, Germany

Ergonomically Realistic Assessment of Hazards Related to Electromagnetic Fields Exposure while the Use of Welding Devices

Patryk Zradziński

Central Institute for Labour Protection - National Research Institute, Poland

Emissions from Automation Equipment Regarding Human Exposure - Approaches for an Assessment According to the Generic Standard IEC 62311

Bernd W. Jaekel¹, Ana N. Mladenovic², Mirjana Peric², Dusan Vuckovic², Nenad Cvetkovic², Slavoljub Aleksic²

¹Siemens AG, Germany; ²Faculty of Electronic Engineering, University of Nis, Serbia

HIRF-SE Young Scientists' Programme

YSP2	YOUNG SCIENTISTS' PROGRAMME	Time: 10:00 - 18:45
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HIRF-SE YOUNG SCIENTISTS' PROGRAMME - MEASUREMENTS & MATERIALS

Chaired by: Andy Marvin	Room: E (C-13)
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Speakers: Heinz-D. Brüns (TUHH Hamburg); Christos Christopoulos, Phillip Sewell (University of Nottingham); Jean-Philippe de Parmantier, Isabelle Junqua (ONERA); Maria Sabrina Sarto, Marcelo D'Amore (Univ. of Rome Sapienza)

Sessions: Abstract:

YSP2_Tu_E1
(10:00 - 12:00)
Lunch
Once again the EU FP7 funded High Intensity Radiated Field - Synthetic Environment (HIRF-SE) project is offering a Young Scientists' Programme (YSP) on EMC in Aerospace Systems. Lectures are presented by experienced industrialists and academics working on the HIRF-SE project.

YSP2_Tu_E2
(13:00 - 15:00)
Coffee break
The presentations cover a wide variety of topics in Aerospace EMC and are aimed at encouraging young scientists and engineers to consider making a career in the field.

Program:

YSP2_Tu_E3
(15:30 - 17:30)
Break
YSP2_Tu_E1 session Time: 10:00 - 12:00

Boundary Element Modelling Techniques

Heinz-D. Brüns
TUHH Hamburg, Germany

Principles of boundary element EM solvers in the frequency domain-EFIE, MFIE techniques – time domain techniques.

YSP2_Tu_E2 session Time: 13:00 - 15:00

Full Wave Volume Modelling Techniques

Christos Christopoulos, Phillip Sewell
University of Nottingham, United Kingdom

FD-TD, TLM principles – material modelling – stability – dispersion – frequency domain techniques – versatile unstructured mesh model ling.

YSP2_Tu_E3 session Time: 15:30 - 17:30

Power Balance Modelling Techniques

Jean-Philippe de Parmantier, Isabelle Junqua
ONERA, France

Principles, limitations and applications of power balance modelling techniques.

YSP2_Tu_E4 session Time: 17:45 - 18:45

C27J Airframe Lightning Certification using CEM

Maria Sabrina Sarto, Marcelo D'Amore
Univ. of Rome Sapienza, Italy

Company presentations

CP_WE_F1	ORAL SESSION	Time: 14:00 - 15:45
COMPANY PRESENTATIONS (1)		
Chaired by:	Andrzej E. Sowa	Room: F (C-13)

14:00 - 14:20	AM Technologies
14:25 - 14:45	EMS&S Feko
14:50 - 15:10	Würth Elektronik
15:15 - 15:25	CST Computer Simulation Technology

CP_WE_F2	ORAL SESSION	Time: 16:15 - 18:00
COMPANY PRESENTATIONS (2)		
Chaired by:	Kamil Staniec	Room: F (C-13)

16:15 - 16:35	HELMAR
16:40 - 17:00	SIEPEL
17:05 – 17:25	LS Telcom
17:30 – 17:50	Astat

Welcome cocktail

14th September 2010

19:30–23:00

***the City Museum of Art
Sukiennice 14/15***

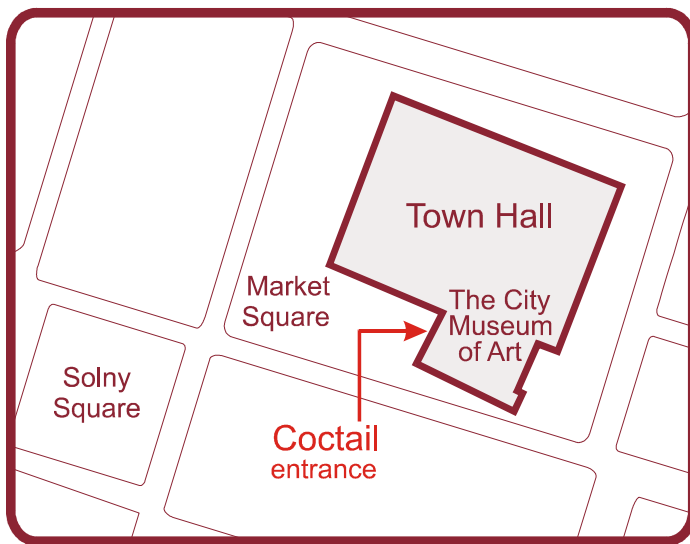
The Local Organizing Committee of the International Symposium EMC EUROPE 2010 Wroclaw cordially invites to attend the Welcome Cocktail in the City Museum of Art located in the Town Hall of Wroclaw on the Market Square. Regular registration includes the Welcome Cocktail, additional tickets for guests can be purchased.

Access to the City Museum of Art:

From most of hotels you can reach that place on foot. Ask at the registration desk for the best route:

- trams: 3, 10, 12, 20, 23
- buses: E, K, 122

Entrance to the Museum has been pointed on the map below.



More info about the City Museum of Art as well as other musea in Wroclaw you can find on the following website:

<http://www.muzeum.miejskie.wroclaw.pl/english/museum/city.php>

Wednesday, 15th September 2010 – 2nd Symposium day

Room Time	Room A (build.C-13)	Room B (build.C-13)	Room C (build.C-13)	Room D (build.C-13)	Room E (build.C-13)	Room G (build.C-13)
9:00	O_We_A1: Reverberation chambers (1) Chair: Frank Leferink	O_We_B1: Automotive systems (1) Chair: Stephan Frei	O_We_C1: Measurement techniques (3) Chair: Zbigniew Jóskiewicz	Ws5_We_D1: Workshop: EMC measurement and other selected EMC issues - ASTATS' partners day (1) Chair: Lukasz Wilk	Pan_We_E1: ITU Session - Panel on Efficient Use of the Spectrum/Orbit Resource Chair: FabioLeite	
10:45 - 11:15	Coffee break					
11:15	O_We_A2: Reverberation chambers (2) Chair: A.P.J. van Deursen	O_We_B2: Automotive systems (2) Chair: Marco Klingler	O_We_C2: EMC mitigation Chair: Heyno Garbe	Ws5_We_D2: EMC measurement and other selected EMC issues - ASTATS' partners day (2) Chair: Lukasz Wilk	Ws6_We_E2: ITU Workshop - International Spectrum Management Issues Chair: Fabio Leite	Me2_We_G1: EMC-S Meeting Chair: Fryderyk Lewicki
13:00 - 14:00	Lunch (tent behind building C-13)					
	EMC lab (build.C-15)	Exhibition Area (build.C-13)		Room D (build.C-13)	Room E (build.C-13)	Room G (build.C-13)
14:00pm - 3:45pm	Exp_We: Experiments and software demonstrations Chair: Ryszard Zieliński	We_Poster1: Poster session (1) Chair: Dariusz Więcek	We_Poster2: Poster session (2) Chair: Wojciech Krzysztofik	Ws5_We_D3: Workshop: EMC measurement and other selected EMC issues (ASTATS' partners day) Chair: Lukasz Wilk		Me3_We_G2: Steering Committee Meeting Chair: Jan Luiken ter Haseborg
15:45 - 16:15	Coffee break					
16:15 18:00	Room A (build.C-13)	Room B (build.C-13)	Room C (build.C-13)	Room D (build.C-13)	Room F (build.C-13)	Room G (build.C-13)
16:15 18:00	O_We_A3: Reverberation chambers (3) Chair: Tadeusz W. Wieckowski, Wojciech Krzysztofik	O_We_B3: Antennas - EMC aspects Chair: Andrzej Karwowski	O_We_C3: Susceptibility Chair: Mohamed Ramdani	Inv_We_D4: Invited session - URSI Comm. E WG , Spectrum management Chair: Terje Tjelta	CP_We_F1: Company presentations (3) Chair: Pawel Bienkowski	Me4_We_G3: PMC Meeting Chair: Andy Marvin
7:30pm - 11:00pm	Symposium Banquet					

Oral sessions

O_We_A1	ORAL SESSION	Time: 9:00 - 10:45
REVERBERATION CHAMBERS (1)		
Chaired by:	Frank Leferink	Room: A (C-13)

Fine Analysis of the Behavior of a Reverberation Chamber in the Frequency Domain with a Model Based Upon Image Theory

Emmanuel Amador¹, Christophe Lemoine¹, Philippe Besnier¹, Alexandre Laisné²

¹IETR, INSA de Rennes, France; ²CEAT, DGA-ATU, France

Fundamental Properties of Non-cuboid Reverberation Chambers

Lars Ole Fichte, Stefan Dickmann, Sebastian Lange, Stefan Schenke

Helmut-Schmidt-Universität Hamburg, Germany

K-factor as an Accurate Estimator of the Stirring Efficiency in Reverberation Chamber

Christophe Lemoine, Emmanuel Amador, Jérôme Sol, Philippe Besnier

IETR, France

Theoretical Considerations about the Determination of Statistically Independent Stirrer Position of Mode-Stirred Chambers

Mathias Magdowski, Ralf Vick

Otto-von-Guericke University Magdeburg, Germany

Occurrences of Received Power Anomalous Statistics in Reverberation Chamber

Valter Mariani Primiani¹, Franco Moglie¹, Gabriele Gradoni¹, Luk Arnaut²

¹Universita Politecnica delle Marche, Ancona, Italy; ²National Physical Laboratory, London, UK

O_We_B1	ORAL SESSION	Time: 9:00 - 10:45
AUTOMOTIVE SYSTEMS (1)		
Chaired by:	Stephan Frei	Room: B (C-13)

A Study of Stochasticity Effects of Cable Bundles in Automotive EMC Problems

Ekaterina Yavolovskaya^{1,2}, Sophia Iosava¹, Zurab Sukhiashvili¹, Temuri Injgia¹, Roman Jobava^{1,2}, Xavier Bunlon³, Marco Klingler⁴

¹EMCoS, Georgia; ²Electrical and Electronics Engineering Department, Tbilisi State University; ³Technocentre Department, Renault; ⁴PSA Peugeot Citroen Velizy Technical Center

Far Field Estimations and Simulation Model Creation from Cable Bundle Scans

Denis Rinas, S. Niedzwiedz, Stephan Frei

Dortmund University of Technology, Germany

Modeling of Automotive Bus Transceivers and ESD Protection Circuits for Immunity Simulations of Extended Networks

Ulf Hilger, Sergey Miropolsky, Stephan Frei

Technische Universität Dortmund, Germany

Influence of Aging and Environnement Conditions on EMC Performances of Electronic Equipment - Influence of Passive vs Active Components

Frederic Lafon¹, Francois de Daran¹, Laurent Caves¹, Mohamed Ramdani², Mhamed Drissi³

¹VALEO, France; ²ESEO - Lattis; ³IETR - INSA de Rennes

O_We_C1	ORAL SESSION	Time: 9:00 - 10:45
MEASUREMENT TECHNIQUES (3)		
Chaired by: Zbigniew Jóskiewicz	Room:	C (C-13)

Broadband Determination of Complex Permittivity and Permeability of High-loss Materials

Chun-Ping Chen¹, Tetsuo Anada¹, Deming Xu², Zhewang Ma³, C. Christopoulos⁴

¹Kanagawa University, Japan; ²Shanghai University, China; ³Saitama University, Japan;

⁴Nottingham University

The Effects of the EMC-Wooden Table on Single-Wire Wave (Sommerfeld Wave)

Mohamed Zeino, Gerhard Mönich

TU Berlin, Germany

FlexuStrip: a New Measuring Probe for the Characterisation of Large Machines In Situ

Johan Catrysse^{1,2}, Filip Vanhee¹, Davy Pissoot¹

¹KHBO, Belgium; ²MICAS/ESAT/KULeuven, Belgium

A Measurement Method to Determine the Reflection Coefficient of a Sommerfeld's Single-Wire Wave DUT.

Mohamed Zeino, Gerhard Mönich

TU Berlin, Germany

Design of Absorber Panels for Oblique Incidence Using Wire Array Sheet

Shinnichiro Yamamoto, Daisuke Ishihara, Kennichi Hatakeyama

University of Hyogo, Japan

O_We_A2	ORAL SESSION	Time: 11:15 - 13:00
REVERBERATION CHAMBERS (2)		
Chaired by: A.P.J. van Deursen	Room:	A (C-13)

On the Use of Reverberation Chamber to Simulate the Power Delay Profile of a Wireless Channels

Adam Jaroslaw Pomianek, Kamil Staniec, Zbigniew Jóskiewicz

Wroclaw University of Technology, Poland

A Statistical Approach to Radiated Immunity Testing of Digital Hardware in a Reverberation Chamber

Jiaqi Chen, Andrew C. Marvin, Ian D. Flintoft, John F. Dawson

University of York, United Kingdom

A Monte-Carlo Simulation of Mode-Stirred Chambers with Standing Waves

Mathias Magdowski, Ralf Vick

Otto-von-Guericke University Magdeburg, Germany

Maximum and Average Field Strength in Enclosed Environments

Frank Leferink^{1,2}

¹University of Twente, The Netherlands; ²Thales Netherlands, The Netherlands

O_We_B2

ORAL SESSION

Time: 11:15 - 13:00

AUTOMOTIVE SYSTEMS (2)

Chaired by: Marco Klingler

Room: **B (C-13)**

Numerical Analysis of the Electromagnetic Interference of a WAVE Inter-vehicle Communication System on Vehicle Electronics

Theodoros I. Kosmanis¹, Nikolaos V. Kantartzis², Theodoros T. Zygidis³, Paul T. Aisopoulos¹

¹Alexander Technological Educational Institute of Thessaloniki, Greece; ²Aristotle University of Thessaloniki, Greece; ³University of Western Macedonia, Greece

Active Shield to Minimize Magnetic Flux Density for On-Line Electric Vehicle (OLEV) Application

Seungyoung Ahn¹, Taigon Song¹, Heejae Lee¹, Junggun Byun¹, Deogsoo Kang¹, Yangbae Chun¹, Jae-Ha Yim¹, Junso Pak², Chun-taek Rim², Dong-Ho Cho², Joungho Kim²

¹On-Line Electric Vehicle Project, Korea Advanced Institute of Science and Technology, Korea, South (Republic of); ²Dept. of Electrical Engineering, Korea Advanced Institute of Science and Technology, South Republic of Korea

Power Line Impedance Characterization of Automotive Loads at the Power Line Communication Frequency Range

Marc Aragon, Mauricio Salinas, Ferran Silva, Pere J. Riu

Universitat Politècnica de Catalunya, Spain

Simulation of Noise Voltage Impulses after Switching Processes in Automotive Wiring Harnesses Using a SPICE Model

Ana Salas¹, Jörg Petzold¹, Mathias Magdowski¹, Ralf Vick¹, Thomas Rinkleff²

¹Otto-v.-Guericke-Universität Magdeburg, Germany; ²Volkswagen AG Wolfsburg, Germany

Interaction of Low Frequency Magnetic Fields with Car Chassis

Roman Jobava^{1,2}, Anna Gheonjian^{1,2}, David Karkashadze^{1,2}, Johannes Hippeli³

¹EMCoS Ltd., 27 Pekin Str., 0160 Tbilisi, Georgia; ²Electrical and Electronics Engineering Department, Tbilisi State University; ³AUDI AG, EMC Department, 85045 Ingolstadt, Germany

O_We_C2

ORAL SESSION

Time: 11:15 - 13:00

EMC MITIGATION

Chaired by: Heyno Garbe

Room: **C (C-13)**

Importance Analysis to Describe Reliability of Systems

Evgeni Genender, Marcin Mleczko, Heyno Garbe

Leibniz Universität Hannover, Germany

Procedure for Malfunction Detection of Circuits and Systems during Susceptibility Tests *(Paper withdrawn from the program on author's request)*

Bruno Audone², Ilario Marziali¹, Demis Boschetti¹, Paola Elia¹

¹Thales Alenia Space, Italy; ²EMC Consultant

A Simulation Flow for Time Domain Magnetic Radiations of ICs

Victor Lomne¹, Philippe Maurine¹, Lionel Torres¹, Michel Robert¹, Thomas Ordas^{1,2}, Mathieu Lisart², Jerome Toublanc³

¹LIRMM; ²STMicroelectronics; ³Apache Design Solutions

THD Measurement by Multi-Frequency Synchronous Detection

Andrzej E. Sowa, Jerzy S. Witkowski, Jan Duchiewicz, Tomasz Duchiewicz

Wroclaw University of Technology, Poland

High-Frequency Effective Impedance of Micro-Wires Based on Carbon Nanotube Technology

Maria Sabrina Sarto^{1,2}, Marcello D'Amore^{1,2}, Alessandro D'Aloia^{1,2}

¹Univ. of Rome Sapienza, Italy; ²Dept. Electrical Engineering, Research Center on Nanotechnology applied to Engineering

Presentation of this paper has been moved from the session O_Th_C4 (Thursday 4:15pm - 6:00pm)

O_We_A3

ORAL SESSION

Time: 16:15 - 18:00

REVERBERATION CHAMBERS (3)

Chaired by: Tadeusz W. Wieckowski, Wojciech Krzysztofik

Room: **A (C-13)**

Statistical Measurements of Fast Changing Electromagnetic Fields

Ramiro Serra¹, Frank Leferink^{1,2}

¹Thales Nederland BV, The Netherlands; ²University of Twente, The Netherlands

Numerical Modeling of the Reverberation Chamber Method for the Measurement of Material Absorbing Cross Section

Franco Moglie, Valter Mariani Primiani, Gabriele Gradoni

Universita' Politecnica delle Marche, Italy

Static Source-Mode Tuning Using a Constellation of LPDA Antennas in a Reverberation Chamber

Christo Tsigros¹, Marc Piette¹, Guy Vandenbosch²

¹Royal Military Academy, Belgium; ²Katholieke Universiteit Leuven

The Effect of Rician Statistics on the Measurement of Shielding Effectiveness of Enclosures in Reverberation Chambers

Andy Marvin, Rob Armstrong

University of York, United Kingdom

Optimizing the Stirring Strategy for the Vibrating Intrinsic Reverberation Chamber

Ramiro Serra¹, Frank Leferink^{1,2}

¹Thales Nederland BV, The Netherlands; ²University of Twente, The Netherlands

O_We_B3	ORAL SESSION	Time: 16:15 - 18:00
ANTENNAS - EMC ASPECTS		
Chaired by:	Andrzej Karwowski	Room: B (C-13)

Electric Field Distribution from Sector-Configuration Mobile Base Station Antenna System for Human RF Exposure Assessment

Junji Higashiyama, Yoshiaki Tarusawa
NTT DOCOMO, INC., Japan

Antenna to Antenna Coupling on an Aircraft Using a 1/10th Scale Model with Results Compared to the FEKO Electromagnetic Analysis Program

David Alexander Weston
EMC Consulting Inc, Canada

EMC Analysis of MIMO UWB Antenna System

Gennadij Chavka, Marek Garbaruk, Marek Nowakowski
Technical University of Bialystok, Poland

Effects of a Radiated Emission Test Site on a Receiving Antenna Scattering Parameters

Marco Stellini, Alessandro Sona
University of Padova, Italy

O_We_C3	ORAL SESSION	Time: 16:15 - 18:00
SUSCEPTIBILITY		
Chaired by:	Mohamed Ramdani	Room: C (C-13)

Impact of Aging on the Immunity of a Mixed Signal Circuit

Alexandre Boyer, Binhong Li, Sonia Ben Dhia, Christophe Lemoine
INSA de Toulouse, France

Preliminary Studies of the Impact of Dose Radiation on the Electromagnetic Susceptibility of Comparators

Sylvie Jarrix, Laurent Dusseau, Adrien Doridant, Tristan Dubois, Amable Blain, Jeremy Raoult
Institut d'Electronique du Sud (IES), France

RF Coupling in CMOS Analog Integrated Circuits

Philipp Schröter, Frank Klotz
Infineon Technologies, Germany

Bayesian Networks Modeling in System-level Susceptibility Assessments for Intentional EMI

Mao Congguang, Zhou Hui
Northwest Institute of Nuclear Technology, Peoples Republic of China

The Electromagnetic Disturbance on the Ethernet Ports of Telecommunication Equipments in Customer Premises

Kazuhiro Takaya, Yuichiro Okugawa, Masakatsu Ogawa, Kentaro Mokushi, Kazuo Murakawa
NTT East Corporation, Japan

Inv_We_D4	ORAL SESSION	Time: 16:15 - 18:00
SPECTRUM MANAGEMENT - INVITED SESSION - URSI COMM. E WG PART 1		
Chaired by:	Terje Tjelta, Ryszard Strużak	Room: D (C-13)

QUASAR Scenarios for White Space Assessments and Exploitation

Jens Zander¹, Jonas Kronander², Andreas Achtzehn⁵, Maziar Nekovee³, Ki Won Sung¹, Seong-Lyun Kim⁴

¹Royal Institute of Technology, Sweden; ²Ericsson AB, Sweden; ³BT Innovate and Design, UK; ⁴Yonsei University, Rep Korea; ⁵RWTH Aachen University, Germany

The Seasonal Abnormal Propagation of VHF/UHF Radio Waves in the West African Sub-Region

John R.K. Tandoh

National Communication Authority, Ghana

Introducing Mobile Services in the 790-862 MHz Band. How Many TV Households Might Suffer from Interference?

G  rard Lapierre, C  dric Perros, Eric Fournier

ANFR, France

Use of the Electromagnetic Spectrum for the Amelioration of Climate Change

William Luther

ASRC Management Services, United States of America

Spectrum Market or Spectrum Commons

Ryszard Stru  ak

National Institute of Telecommunications, Poland

Poster sessions

We_Poster1	POSTER SESSION	Time: 14:00 - 15:45
POSTER SESSION (1)		
Chaired by:	Dariusz Wi��cek	Room: Exhibition

Accuracy of the Current Transformer with Toroidal Core for Distorted Currents Transformation

Micha   Łukas   Kaczmarek, Ryszard Florian Nowicz

Technical University of Lodz, Poland

The Influence of Power Network Conductive Disturbances on Operation of the Inductive Current Transformers

Micha   Łukas   Kaczmarek

Technical University of Lodz, Poland

Dimensions of a Dark Spot, Produced by the Compensation Method

Boris M. Levin, Michael U. Bank, Motti Haridim, Vladimir Tsingauz

HIT - Holon Institute of Technology, Israel

Outage Statistics based Analysis of Sectorized Mobile system as a Spectrum Efficient Congestion Control Technique

Anjana Jain, P.D. Vyavhare, L.D. Arya, S. Pawar
SGSITS, India

High Frequency Calibration of the 41 Inch (1.04 m) Receiving Monopole with and without Connecting Counterpoises and with Different Sources

David Alexander Weston
EMC Consulting Inc, Canada

Increase the Immunity of an MCU Control Motor System by Detection Method

Fayu Wan, Fabrice Duval, Xavier Savatier, Anne Louis, Mazari Belahcene
IRSEEM/ESIGELEC, France

Analysis of Methods for the Summation of Log-Normal Distributions

Jacek W. Wroński
National Institute Of Telecommunications, Poland

Procedure to Calculate the Inductance of a Circular Loop Near a Metal Plate

Nobby Stevens, Lieven Destrycker, Werner Verschelde
Catholic University College Gent, Association K.U.Leuven, Belgium

Determination of the Complex Permittivity of Dispersive Materials without Assuming a Dielectric Relaxation Model

Marcello Artioli, Ugo Reggiani, Leonardo Sandrolini
University of Bologna, Italy

Analysis of Higher Harmonics Contents in Supply Voltages in Big Trade Building

Kazimierz Kuryło
Rzeszów University of Technology, Poland

ESD Arc Analysis and System-level Simulation

Jae-Deok Lim, Jong-Sung Lee, Byong-Su Seol, Cheol-Gu Jo
Samsung Electronics, Korea, South (Republic of)

Partial Vacuum Formation in Short Gap and Effect on Discharge Parameters

Fangming Ruan¹, Tomasz Dlugosz², Siyang Sun³, Feng Zhou⁴, Xuan Chen¹, Cheng Yang¹
¹Guizhou Normal University, Peoples Republic of China; ²Institute of Telecomm., Teleinform. & Acoustics, Wrocław University of Technology; ³Beijing University of Post & Telecommunication, Peoples Republic of China; ⁴Ministry of Industry & Information Technology, Peoples Republic of China

Electromagnetic Interference in Complex Power Supply Networks

Roelof B. Timens¹, Frits J.K. Buesink¹, Vladimir Čuk², Joseph F.G. Cobben², Wil L. Kling², Mathieu Melenhorst³, Frank B.J. Leferink^{1,3}
¹University of Twente, The Netherlands; ²Eindhoven University of Technology, The Netherlands; ³Thales Nederland B.V., The Netherlands

Modeling Conducted EMI of Matrix Converters

Jordi Espina¹, Josep Balcells¹, Antoni Arias¹, Nestor Berbel¹, Carlos Ortega²
¹Universitat Politècnica de Catalunya, Spain; ²Escola Universitaria Salessiana de Sarria, Spain

We_Poster2

POSTER SESSION

Time: 14:00 - 15:45

POSTER SESSION (2)

Chaired by: Wojciech Krzysztofik

Room: **Exhibition**

Estimating an EM Source Location using Freehand Scanning Method for EMF Distributions

Ken Sato, Hironori Negishi, Yoshitsugu Kamimura
Utsunomiya University, Japan

Audio Quality Assessment of Digital Sound Broadcasts in the Presence of Electromagnetic Interferences

Wolfgang Wegst¹, Jan Waldmann¹, Martin Aidam¹, Achim Enders²
¹Daimler AG, Germany; ²TU Braunschweig, Germany

Customisable Mains Filter for Educational Purposes

Adam Jaroslaw Pomianek
Wroclaw University of Technology, Poland

Non-Stationary EMF Standard

Pawel Bienkowski¹, Hubert Trzaska²
¹Wroclaw Univ of Technology, Poland; ²Wroclaw Univ of Technology, Poland

Application of Transient Pulses on Power Supply Networks using Commercial of the Shelf (CotS) Hardware

Johannes H. Hagmann¹, Lars-Ole Fichte¹, Stefan Dickmann¹, Martin Schaarschmidt², Stefan Potthast²
¹Helmut-Schmidt-Universität Hamburg, Germany; ²Wehrwissenschaftliches Institut für Schutztechnologien - ABC-Schutz (WIS), Munster, Germany

Practical Application of Satellite Low-Frequency Wave Experiment Results

Vera I. Larkina, Yu.Ya Ruzhin
IZMIRAN, Russian Federation

Current and Voltage at Outdoor PLC Ends to Estimate the Radiated Field

Mohamed Chaaban¹, Khalil El khamlichi Drissi¹, Christophe Pasquier¹, Ghazi Bousaleh²
¹Clermont Université, Université Blaise Pascal, UMR6602, LASMEA, BP 10448, F-63000 CLERMONT-FERRAND, FRANCE; ²Université Libanaise, IUT Saida, BP813 Saida Liban

Technical Aspects of EMF Monitoring in the Environment

Pawel Bienkowski, Bartłomiej Zubrzak
Wroclaw Univ of Technology, Poland

Undesired Emission from Magnetic-Resonant Wireless Power Transfer

Hiroshi Hirayama, Yuki Okuyama, Nobuyoshi Kikuma, Kunio Sakakibara
Nagoya Institute of Technology, Japan

An Evaluation of Ultra-Wideband Leading Edge Detection Positioning Receivers

Jerzy Kolakowski
Warsaw University of Technology, Poland

Repetition Rate and Pulse Width Influence on Electromagnetic Effects

Libor Palisek, Lubos Suchy
VOP-026 Sternberk, s.p., Czech Republic

Deterministic Coefficient of Electronic System Strenght on Electromagnetic Disturbances

Dariusz Klepacki, Włodzimierz Kalita, Kazimierz Kamuda, Wiesław Sabat
Rzeszów University of Technology, Poland

Panel discussion & Workshops

Pan_We_E1	PANEL DISCUSSION	Time: 9:00 - 10:45
PANEL ON EFFICIENT USE OF THE SPECTRUM/ORBIT RESOURCE		
Chaired by: Fabio Leite		Room: E (C-13)

WS5	WORKSHOP	Time: 9:00 - 15:45
SELECTED EMC ISSUES - ASTAT's PARTNERS DAY		
Chaired by: Łukasz Wilk		Room: D (C-13)

Speakers: François Volery (Montena EMC SA); Michael Rehfeldt (Teseq), Wolfgang Muellner (Seibersdorf laboratories); Chris Marshman, David Wall (Kemtron Ltd); Nick Wainwright (York EMC Services Ltd), Jan Eriksson (Detctus AB); Nicholas Wright (EMC Partner)

Sessions: Program:

Ws5_We_D1 (9:00 - 10:45)	Ws5_We_D1 session	Time: 9:00 - 10:45
<i>Coffee break</i>	Nuclear Electromagnetic Pulse (NEMP): phenomena, coupling on infrastructure, and testing issues	
Ws5_We_D2 (11:15 - 13:00)	François Volery Montena EMC SA, Switzerland	
<i>Lunch</i>	The latest concept of RF immunity test system for radiated testing acc IEC 61000-4-3 (80MHz..6GHz) - one box solution	
Ws5_We_D3 (14:00 - 15:45)	Michael Rehfeldt Teseq	
	Verification of Anechoic chamber and OATS ? experience and advices for Users/Suppliers	
	Wolfgang Muellner Seibersdorf laboratories, Austria	
	Choosing an EMI gasket for different enclosure applications	
	David Wall Kemtron Ltd.	

Ws5_We_D2 session Time: 11:15 - 13:00

Is it possible to measure emission coming from a chip?

Jan Eriksson
Detectus AB

Latest changes in IEC Conducted Immunity Standards

Nicholas Wright
EMC Partner

Ws5_We_D3 session

Time: 14:00 - 15:45

General presentation on the York EMC Services CPD portfolio covering our training programme and iNARTE certification process

Chris Marshman, Nick Wainwright
York EMC Services Ltd, United Kingdom

Presentation and demonstration on York EMC Services Instrumentation product range

Chris Marshman, Nick Wainwright
York EMC Services Ltd, United Kingdom

WS6

WORKSHOP

Time: 11:15 - 13:00

ITU WORKSHOP - INTERNATIONAL SPECTRUM MANAGEMENT ISSUES

Chaired by: Fabio Leite

Room: **E** (C-13)

Speakers: Colin Langtry (ITU-R Study Group 5); Pham Nhu Hai (ITU)

Sessions: Program:

Ws6_We_E2
(11:15 - 13:00)

Ws6_We_E2 session

The IMT-Advanced standardization process

Colin Langtry
ITU-R Study Group 5, Switzerland

Implementation of ITU GE06 Agreement for Digital Broadcasting

Pham Nhu Hai
ITU, Switzerland

ITU WRC-12 preparatory activities

Colin Langtry
ITU-R Study Group 5, Switzerland

Experiments and software demonstrations

Exp_We

ORAL SESSION

Time: 14:00 - 15:45

REVERBERATION CHAMBERS (1)

Chaired by: Ryszard Zieliński

Room: **Build. C-15**

Experiment 1 Practical experiment: Simulation of harmonics & interharmonics and interferences in mains supply from DC to 5 kHz performed with Netwave 7

Presenter: **Uwe Flor, EM TEST GmbH**

Experiment 2 Practical experiment: Harmonics & Flicker measurements with 90 kVA performed with DPA 503, ACS 503S4 and AIF 503S4

Presenter: Markus Fuhrer, EM TEST GmbH

Experiment 3 Time Domain Measurement Systems

Presenter: Wolfgang Winter, EMV GmbH

Experiment 4 EMC demo's for creating the "aha" effect

Presenter: Frits Buesink & Frank Leferink, University of Twente

Abstract: Electromagnetic fields are considered by many students as a difficult subject. Unwanted electromagnetic fields are even tougher for students. We have developed many experiments as demonstrations (demos) to show the effect of electromagnetic fields in real life products. These demo's will be demonstrated. They include demo's at PCB level, such as Lenz Law, crosstalk, ground bounce, parasitic effect of components etc.

Experiment 5 Demonstration of the Canadian government radio monitoring technology

Presenter: Don Paskovich, Canadian Government, Department: Industry Canada

Abstract: Radio monitoring done by the Canadian Government to support spectrum management activities is based on a suite of software called the Spectrum Explorer, developed by Industry Canada's Communications Research Centre, runs on various commercially available digital radio devices. This system allows high speed monitoring of actual radio use for interference/safety issues, provides information for issuing radio licensing and gathers data for future spectrum allocations. In addition, the system allows measurement of many signal parameters, e.g. bandwidth, modulation as well as having high speed direction finding capability for wideband and multiple frequency systems. Our demonstration over a computer running "Go To Meeting" will cover various aspects of the Spectrum Explorer capabilities and use and allow conference participants to discuss with CRC staff in Ottawa Canada the Spectrum Explorer system and its applications.

Experiment 6 The induced ESD phenomena and the strong EMI effects:

- charge induction caused by fluctuating electrostatic field**
- produce the induced ESD phenomena**
- cable-induced noise caused by induced ESD**

Presenter: Masamitsu Honda, Impulse Physics Laboratory, Inc.

Abstract: the authors have been researching the induced ESD phenomena for a long years and grasped that these phenomena are governed by the dynamic charge induction state before the discharge. By this demonstration of experiment, participants will get substantial understandings of the induced ESD phenomena as well as experience of severe EMI effects

Experiment 7 IC-EMC, a Software Demonstrator for predicting Electromagnetic Compatibility of Integrated Circuits

Presenter: Alexandre Boyer & Etienne Sicard, INSA of Toulouse

Abstract: The proposed computer demonstration concerns the freeware IC-EMC, a windows-based software demonstrator which aims at simulating parasitic emission and susceptibility of integrated circuits. IC-EMC is not only a tool dedicated to research about EMC of integrated circuits, but also a support for teaching EMC.

Experiment 8 LTE Layer 1 Experiments

Presenter: Marcin Dryjanski, Innovative Solutions for wireless systems

Abstract: LTE PHY Lab is a comprehensive implementation of the 3GPP Release 8 E-UTRA physical layer (both FDD and TDD). LTE PHY Lab can be used at all stages of the LTE software, hardware and IPR development, from research, prototyping and implementation, up to system benchmarking, verification and testing.

Company presentations

CP_WE_F2	ORAL SESSION	Time: 16:15 - 18:00
COMPANY PRESENTATIONS (3)		
Chaired by:	Paweł Bieńkowski	Room: F (C-13)

16:15 - 16:35	EM Test
16:40 - 17:00	Frankonia
17:05 - 17:25	EMCoS
17:30 - 17:50	Rohde & Schwarz

Meetings

Me2_We_G1	WORKSHOP	Time: 11:15 - 13:00
EMC-S MEETING		
Chaired by:	Fryderyk Lewicki	Room: G (C-13)

Me3_We_G2	WORKSHOP	Time: 14:00 - 15:45
STEERING COMMITTEE MEETING		
Chaired by:	Jan Luiken ter Haseborg	Room: G (C-13)

Me4_We_G3	WORKSHOP	Time: 15:30 - 18:00
PMC MEETING		
Chaired by:	Andy Marvin	Room: G (C-13)

Symposium Banquet

15th September 2010

19:30–23:00

the Regional Center for Business Tourism the Centennial Hall complex

The Local Organizing Committee of the International Symposium EMC EUROPE 2010 Wrocław cordially invites to attend the Symposium Banquet in the Regional Center for Business Tourism (RCBT) located at the Centennial Hall complex.

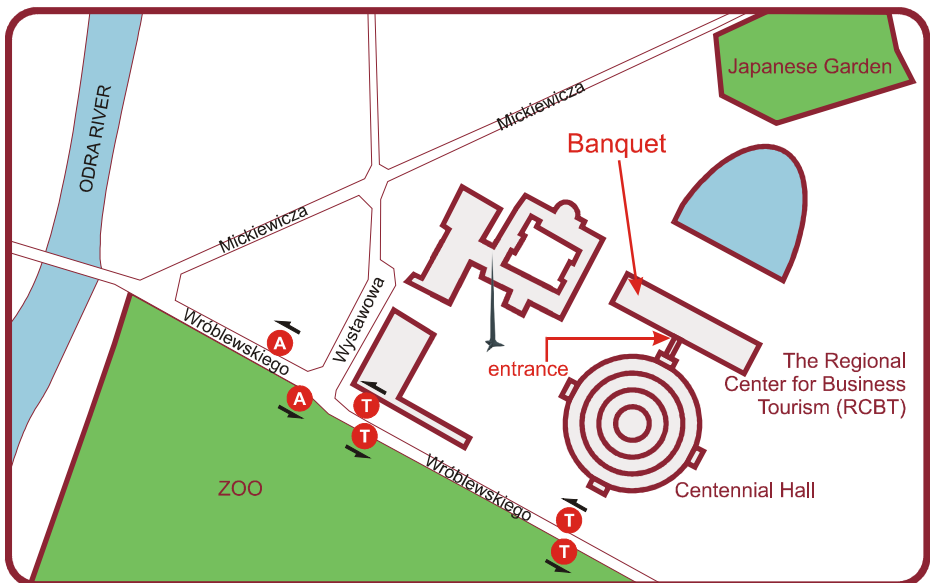
Regular registration includes the Symposium Banquet, additional tickets for guests can be purchased.

Access to the RCBT:

RCBT is located at the Centennial Hall what is set in the lush grounds of Park Szczytnicki, one of the oldest municipal parks in Europe. Please ask at the registration desk for the best route:

- trams: 2, 10.
- buses: E, 145, 146, 701.

The location of the the Regional Center for Business Tourism has been pointed on the map below.



More info about the Centennial Hall complex as well as the Regional Center for Business Tourism you can find on the following website:

<http://www.halaludowa.pl/index.php?lang=en>

Thursday 16th September 2010 – 3rd Symposium day

Room Time	Room A (build.C-13)	Room B (build.C-13)	Room C (build.C-13)	Room D (build.C-13)
9:00	O_Th_A1: Computational Electromagnetics Chair: Andrzej Karwowski	O_Th_B1: Lightning Chair: Karol Aniserowicz	O_Th_C1: Chambers Chair: Andrzej Kucharski	O_Th_D1: EMC in radio and wire communication (1) Chair: Kamil Staniec
10:45 - 11:15	Coffee break			
11:15	O_Th_A2: EMI reduction techniques - shielding (1) Chair: Francesca Maradei	O_Th_B2: EMC in power systems (1) Chair: Vladimir Pilinsky	O_Th_C2: Immunity Chair: Jan Luiken ter Haseborg	O_Th_D2: EMC in radio and wire communication (2) Chair: Ferran Silva
13:00 - 14:00	Lunch (tent behind building C-13)			
14:00pm	O_Th_A3: EMI Reduction Techniques - Shielding (2) Chair: Andrzej Kucharski	O_Th_B3: ESD Chair: Elya B. Joffe	O_Th_C3: EMC on PCB level Chair: Marco Leone	Inv_Th_D3: EMC in Power systems (2) - Invited session Chair: Vladimir Pilinsky
15:45 - 16:15	Coffee break			
16:15	O_Th_A4: EMC in transport and railway systems Chair: Andy Marvin	O_Th_B4: EMC in medical electronics Chair: Jaroslav Janiszewski	O_Th_C4: EMC Analysis. Modelling and Prediction Chair: Flavio Canavero	O_Th_D4: EMC at PCB and IC Level Chair: Graziano Cerri
18:00				

Oral sessions

O_Th_A1	ORAL SESSION	Time: 9:00 - 10:45
COMPUTATIONAL ELECTROMAGNETICS		
Chaired by:	Andrzej Karwowski	Room: A (C-13)

Simulation of Thin Conductive Panels Using Digital Filters in Transmission-Line Modelling

John Paul, Majid Alsadi, Christos Christopoulos
University of Nottingham, United Kingdom

Numerical Modeling of Multilayer Composite Materials for Lightning Problems in Aircraft Applications

Alexandre Piche, Ivan Revel, Gilles Peres
EADS France, France

Electromagnetic Modelling of Large Scale Structures with Non Linear Devices

Richard Perraud¹, Gilles Akoun¹, Alexandre Piche¹, Stefano Grivet-Talocia², Flavio Canavero², Toufic Abboud³, Francois Bereux³, Kamal Abboud³, Jesus Aspas Puertolas¹
¹EADS Innovation Works, France; ²Politecnico di Torino, Italy; ³IMACS, France

Exploiting Planes of Magnetic Symmetry in the Fast Multipole Method

Arne Schröder, Heinz-D. Brüns, Christian Schuster
Technische Universität Hamburg-Harburg, Germany

Quantifying TEM Cell Electric and Magnetic Field Coupling to Arbitrary Orientation of Microstrip Lines

Tvrtko Mandić¹, Renaud Gillon², Adrijan Baric¹

¹University of Zagreb, Croatia (Hrvatska); ²ON Semiconductors Belgium, Oudenaarde

O_Th_B1

ORAL SESSION

Time: 9:00 - 10:45

LIGHTNING

Chaired by: Karol Aniserowicz

Room: **B (C-13)**

Classification and Quantification of Lightning-Current Induced Voltages within Aircraft Structures

Frank Gronwald

Technical University Hamburg Harburg, Germany

Lightning Current Tests to Evaluate Vulnerability of Electronics in Composite Structures

Alex M. Blaj¹, Frits J.K. Buesink¹, Geert C. Damstra¹, Frank B.J. Leferink^{1,2}

¹University of Twente, Enschede, The Netherlands; ²Thales BV Netherlands, Hengelo, The Netherlands

Lightning Protection Strategy Used in LOFAR Radio Telescope

Menne Jan Norden, Jaap D. Bregman

Astron, The Netherlands

Lightning Test on an Electronic Lamp Driver

A.P.J. van Deursen, G. Geers-Bargboer, M. Casanova, H. Misdorn

The Netherlands,

Simulating Lightning Tests to Radar Systems

Alex Blaj¹, Frits J.K. Buesink¹, Frank B.J. Leferink^{1,2}

¹University of Twente, Enschede, The Netherlands; ²Thales BV Netherlands, Hengelo, The Netherlands

O_Th_C1

ORAL SESSION

Time: 9:00 - 10:45

CHAMBERS

Chaired by: Andrzej Kucharski

Room: **C (C-13)**

Characterization of a Comtest 5 x 4 x 3 m Reverberating Chamber

A.P.J. van Deursen, Jeroen Nijenhuis

The Netherlands,

Measurement Setups to Quantify the Electric Field Strength inside Shielded Enclosures

Tobias Dyballa, Jan Luiken ter Haseborg

Hamburg University of Technology, Germany

105 m Long Anechoic Chamber for High Power Microwave Measurements

Vincent Keyser, Jean-François Rosnarho
SIEPEL SAS, France

A Rectangular Waveguide Cell for Measurement of the Shielding Effectiveness of Anisotropic Materials

Linda Dawson, Ian D. Flintoft, Andrew C. Marvin, John F. Dawson
University of York, United Kingdom

Validation of the MoM Simulation Model for GTEM Including Pyramid Absorber

Moawia Al-Hamid, Steffen Schulze, Ralf Vick, Marco Leone
Otto-von-Guericke university of Magdeburg, Germany

O_Th_D1

ORAL SESSION

EMC IN RADIO AND WIRE COMMUNICATION (1)

Chaired by: Kamil Staniec

Narrowband Transmission Quality in Presence of Modified IEEE 802.15.4a UWB Signal

Jarosław Sadowski, Ryszard Katulski
Gdańsk University of Technology, Poland

This paper will be presented in session O_Tu_C1 (Measurement techniques (1)) on Tuesday 2:00pm - 3:45pm

Ultra-Wideband Propagation Channel ? Measurements and Simulations in Industrial Environments

Javier Ferrer Coll^{1,2}, Carl Karlsson¹, Peter Stenumgaard^{1,3}, Per Ångskog¹, José Chilo¹

¹Center for RF Measurement Technology, University of Gävle; ²School of Information and Communication Technology ? KTH Royal Institute of Technology; ³Swedish Defence Research Agency

Statistical Properties of Electromagnetic Environment in Wireless Networks, Intra-Network Electromagnetic Compatibility and Safety

Vladimir Mordachev¹, Sergey Loyka²

¹Belarus State University of Informatics and Radioelectronics (BSUIR), Belarus; ²School of Information Technology and Engineering University of Ottawa

RFID System Evaluation against Radiated Transient Noise

Marc Pous, Mireya Fernandez-Chimeno, Ferran Silva
Universitat Politècnica de Catalunya (UPC), Spain

Definition of APD-Based Emission Limits for the Protection of Coded Wireless Systems from Impulsive Interference

Yasushi Matsumoto¹, Kaoru Gotoh¹, Kia Wiklundh²

¹National Institute of Information and Communications Technology, Japan; ²Swedish Defence Research Agency

O_Th_A2

ORAL SESSION

Time: 11:15 - 13:00

EMI REDUCTION TECHNIQUES - SHIELDING (1)

Chaired by: Francesca Maradei

Room: **A (C-13)**

Far-Field and Near-Field Analysis of Shielding Effectiveness of Slotted Enclosure at Frequencies Below 1 GHz

Andrzej Rusiecki¹, Karol Aniserowicz²

¹PLUM sp. z o.o., Poland; ²Bialystok University of Technology

Frequency-Domain Analysis of Shielding Effectiveness of Lightning Protection Systems in the Case of Nearby Strike

Tomasz Maksimowicz, Karol Aniserowicz

Bialystok University of Technology, Poland

Spatial Distribution of Shielding Effectiveness Inside Lightning Protection System in the Case of Nearby Strike

Tomasz Maksimowicz, Karol Aniserowicz

Bialystok University of Technology, Poland

Magnetic Shielding Effectiveness of Multilayer Wire Mesh Screen

Onofrio Losito, Vincenzo Dimiccoli, Domenico Barletta

ITEL Telecomunicazioni s.r.l., Italy

Lightweight, Multilayer, Shielding Textile Materials with a High Capability to Absorb Electromagnetic Radiation within the Range of High Frequency

Stefan Brzeziński¹, Iwona Karbownik¹, Tomasz Rybicki^{1,2}, Grażyna Malinowska¹

¹Textile Research Institute, Poland; ²Technical University of Lodz, Poland

O_Th_B2

ORAL SESSION

Time: 11:15 - 13:00

EMC IN POWER SYSTEMS (1)

Chaired by: Vladimir Pilinsky

Room: **B (C-13)**

Equivalent Source Corresponding to Radiated Field of EMC Filter Components

Sanaa Zangui¹, Benjamin Vincent¹, Kevin Berger¹, Edith Clavel², Ronan Perrussel¹, Christian Vollaire

¹Laboratoire Ampere ? UMR CNRS 5005, France; ²Laboratoire G2Elab ? UMR CNRS 5269, France

Investigation of the Radiated Emissions from Adjustable Speed Drives

Steffen Schulze, Moawia Al-Hamid, Ralf Vick

Otto-von-Guericke University, Germany

Efficient EMI Filters for High-Current Mobile Applications

Thomas Weber¹, Jan Luiken ter Haseborg², Timo Maack², Tobias Kut²

¹Jenoptik AG, ESW GmbH, Germany; ²University of Technology Hamburg, Germany

Measurement of Power Frequency Electric and Magnetic Fields nearby Power Facilities in Several Countries *(Paper withdrawn from thr program on author's request)*

Kenji Tanaka¹, Yukio Mizuno¹, Katsuhiko Naito²

¹Nagoya Institute of Technology, Japan; ²N. S. Co., Ltd., Japan

O_Th_C2	ORAL SESSION	Time: 11:15 - 13:00
IMMUNITY		
Chaired by:	Jan Luiken ter Haseborg	Room: C (C-13)

Immunity Modeling of the LM2902 Operational Amplifier

Sjoerd Op't Land¹, Frederic Lafon², Francois de Daran², Frank Leferink¹, Mhamed Drissi³, Mohamed Ramdani⁴

¹TE Group, University of Twente; ²VALEO, France; ³IETR INSA de Rennes; ⁴ESEA - Lattis

A Immunity Measurement Bench Dedicated to Analog To Digital Converter

Jean-Baptiste Gros¹, Genevieve Duchamp¹, Jean-Luc Levant²

¹IMS Laboratory, France; ²ATEL Nantes, France

Methodology for Establishing Intensity Level Maps of Electromagnetic Fields in Hospitals

Noemí Carranza Herrezuelo¹, José Ángel Hernández Armas², Jorge García¹, Alejandro del Pozo Peralta¹, Jaime Herranz Gómez², Manuel Melián del Castillo², José Carlos Fernández de Aldecoa², Victoria Ramos¹

¹Telemedicine and eHealth Research Unit, Carlos III Health Institute, Spain; ²Subdirección de Ingeniería Hospital Universitario de Canarias (HUC) Tenerife, Canary Islands, Spain

The Generation of UWB Pulses with High Repetition Rates for Immunity Tests

Florian Brauer¹, Jan Luiken ter Haseborg¹, Stefan Potthast²

¹Hamburg University of Technology, Germany; ²Bundeswehr Research Institute for Protective Technologies and NBC-Protection, Germany

O_Th_D2	ORAL SESSION	Time: 11:15 - 13:00
EMC IN RADIO AND WIRE COMMUNICATION (2)		
Chaired by:	Feran Silva	Room: D (C-13)

The Maximum Impulsiveness Correction Factor for Middleton's Class A Interference for Different Modulation Schemes

Kia Wiklundh, Karina Mariana Fors, Peter Stenumgaard

Swedish Defence Research Agency, Sweden

A Cross-Layer Approach for Predicting the Effects of Noise on IEEE 802.11g Video Streaming Performance

Aniello Napolitano¹, Konstantinos Kyriakopoulos², David J. Parish², William Whittow², Leopoldo Angrisani¹, Michele Vadursi³

¹University of Naples Federico II, Italy; ²Loughborough University; ³University of Naples „Parthenope“

Coefficient of Variation in Time and Spatial EMF Measurements Near Transmitting Stations

Fryderyk Lewicki, Andrzej Lugowski

Telekomunikacja Polska S.A., Poland

„Virtual Testing Area” for Solving EMC Problems of Spatially Distributed Radiosystems based on Automated Double-Frequency Test System

Vladimir I. Mordachev, Eugene V. Sinkevich

Belarusian State University of Informatics and Radioelectronics (BSUIR), Belarus

Experimental Analysis of UHF RFID System Susceptibility to In-channel Radio Interference

Andrea Dalla Chiara, Matteo Bertocco, Alessandro Sona
University of Padova, Italy

Evaluation of the LCLs of Metallic Cables in Customer Premises and Immunity of VDSL Systems

Masakatsu Ogawa, Kentaro Mokushi, Kazuhiro Takaya, Yuichiro Okugawa, Kazuo Murakawa
NTT East Corporation

O_Th_A3	ORAL SESSION	Time: 14:00 - 15:45
EMI REDUCTION TECHNIQUES - SHIELDING (2)		
Chaired by: Andrzej Kucharski	Room:	A (C-13)

Characterisation of a New Joining Structure for Application to Shielding Boxes Made of Conductive Plastics

Johan Catrysse^{1,2}, Filip Vanhee¹, Davy Pissoot¹, Rik Dewitte^{1,3}, Dieter Hellert^{1,4}

¹KHBO, Belgium; ²MIAS/ESAT/KULeuven, Belgium; ³Bekaert Fibre Technologies, Belgium;

⁴Bekaert Faser Vertiebs GmbH, Germany

The use of Corrugations to Enhance Shielding Effectiveness of Fiber Optic Waveguide Feedthrough

Jan Carlsson, Lars Fast, Christer Karlsson

SP Technical Research Institute of Sweden, Sweden

Monitoring of Shielding Effectiveness Degradation

Alessandro Tacchini, Bruno Audone, Andrea Maggiali

Reggio Emilia Innovazione, Italy

High Electromagnetic Shielding Effectiveness of Hybrid Glass/Carbon Composite Laminate

Matthieu Gresil¹, Patrick Parneix²

¹LAMSS, United States of America; ²DCNS, France

O_Th_B3	ORAL SESSION	Time: 14:00 - 15:45
ESD		
Chaired by:	Elya. B.Joffe	Room: B (C-13)

Experimental Analysis of EMI Caused by Charged Human Walking Near by Electronic System

Masamitsu Honda¹, Satoshi Isofuku²

¹Impulse Physics Laboratory, Inc, Japan; ²Tokyo Electronics Trading Co., Ltd. Japan

Estimation of Rise Time and Frequency Spectra of Discharge Current Waveforms for Air Discharges of an ESD-Gun with Low Charge Voltages

Ikuko Mori¹, Osamu Fujiwara²

¹Suzuka National College of Technology, Japan; ²Nagoya Institute of Technology

Wideband Measurement of Radiated Electromagnetic Field Intensity Caused by Low Voltage ESD

Ken Kawamata¹, Shigeki Minegishi², Osamu Fujiwara³

¹Hachinohe Institute of Technology, Japan; ²Tohoku Gakuin University, Japan; ³Nagoya Institute of Technology

Ground Discharge Effect to the Sensitive Component in the Charged Board Event Type of Electrostatic Discharge

Tuomas Reinvaio¹, Timo Tarvainen¹, Toni Viheriäkös², Pasi Tamminen³

¹Esju Oy, Finland; ²Cascade Metrology, Finland; ³Nokia Corporation, Finland

Fine Modeling of Transmission Line Pulse (TLP) and Exploitation for Measurement Set-Up Optimization

Frederic Lafon¹, Francois de Daran¹, Sophie Rigour¹, Jeremy Lagrange¹, Mohamed Ramdani², Mhamed Drissi³

¹VALEO, France; ²ESEO - Lattis; ³IETR - INSA de Rennes

O_Th_C3	ORAL SESSION	Time: 14:00 - 15:45
EMC ON PCB LEVEL		
Chaired by:	Marco Leone	Room: C (C-13)

Analytic Iterative Approach to Crosstalk Analysis of Multiconductor Transmission Lines

Yan-zhao Xie, Flavio Canavero

Politecnico Di Torino, Italy

Nearfield-Immunity Scan on Printed Circuit Board Level with Suitable Calibration Method

Oliver Kroening, Marco Leone, Mario Krause

Otto-von-Guericke University Magdeburg, Germany

Optimised Equivalent Dipole Model of PCB Emissions Based on Genetic Algorithms

David W.P. Thomas, Xin Tong, Angela Nothofer, Philip Sewell, Chris Christopoulos

The University of Nottingham, United Kingdom

Physics-Based Derivation of Design Rules for Vias

Gerd Heinrich, Stefan Dickmann
Helmut-Schmidt-Universität, Germany

PCB Level Wireless Wide Area Networking Approach for Netbook Applications

Won-Keel Hong, Tae-Eun Kim, Sang-Hun Lee, Ik-Soo Lee, Jin-Ho Park, Dong-Il Seo
SamSung Electronics.co.LTD, Korea, South (Republic of)

Inv_Th_D3

ORAL SESSION

Time: 14:00 - 15:45

EMC IN POWER SYSTEMS (2) - INVITED SESSION

Chaired by: Vladimir Pilinsky

Room: **D (C-13)**

Determination of Acceptable Levels of Noise in Power-line Communications

Yuriv Khokhlov, Oleg Nevmerzhytskyi, Julia Petergerya
National Technical University of Ukraine 'Kyiv Polytechnic Institute', Ukraine

Features of Power-Line Impedance Effects on EMI Filter Performance

Abdolhadi Alizadeh, Vadim Bakiko, Vladimir Shvaichenko, Anna Vlasjuk
National Technical University of Ukraine "Kiev Polytechnic Institute", Ukraine

Intelligent Mains Radiofrequency Interference Filters

Vladimir Pilinsky, Vladimir Shvaichenko, Alexander Dovzhenko, Elena Shvaichenko
National Technical University of Ukraine "Kiev Polytechnic Institute", Ukraine

Application of Nanostructured Materials Ensuring the Electromagnetic Compatibility of Power Electronic

Aleksandr Machuliansky¹, Vladimir Pilinsky¹, Oksana Telychkina¹, Maria Rodionova¹, Zbigniew M. Jóskiewicz², Tadeusz W. Więckowski²

¹National Technical University of Ukraine "Kiev Polytechnic Institute", Ukraine; ²Wroclaw University of Technology, Poland

O_Th_A4

ORAL SESSION

Time: 16:15 - 18:00

EMC IN TRANSPORT AND RAILWAY SYSTEMS

Chaired by: Andy Marvin

Room: **A (C-13)**

Research on Conductive Interference Control for Station Track Circuit in Datong-Qinhuangdao Heavy-haul Railway

Shiwu Yang
Beijing Jiaotong University, Peoples Republic of China,

Calculations and Measurements of Input Impedance of Converter Traction Vehicles in Aspect of Interferences Level Reduction

Waldemar Zajac, Wojciech Czuchra
Cracow University of Technology, Poland

Characterisation by time-frequency analysis of the EM disturbances produced by railway substations

Tarik Hammi¹, Sylvie Baranowski¹, Virginie Deniau², Jean Rioult², Hamid Ouaddi^{1,3}, Gerald

Nottet³, M. Ayad²

¹Lille University, France; ²Inrets France; ³Alstom Transport France

An Analog Switching (Non PWM) High Power Inverter for EMI Suppression in On-Line Electric Vehicle (OLEV)

Taigon Song, Seungyoung Ahn, Heejae Lee, Junggun Byun, Dong-Ho Cho, JoungHo Kim

On-line Electric Vehicle, KAIST, Korea, South (Republic of)

O_Th_B4	ORAL SESSION	Time: 16:15 - 18:00
EMC IN MEDICAL ELECTRONICS		
Chaired by:	Jarosław Janiszewski	Room: B (C-13)

Pacemaker Interference by Low Frequency Electric and Magnetic Fields

Sven Hille¹, Karl Friedrich Eichhorn¹, Karl-Heinz Gonschorek²

¹HTWK Leipzig, Germany; ²Dresden University of Technology, Germany

RFID Systems in Medical Environment: EMC Issues

Mireya Fernandez-Chimeno, Ferran Silva

Universitat Politècnica de Catalunya, Spain

Load Cells Utilization in MEG Environment: a Feasibility Study by Electromagnetic Characterization and Shielding

Saverio Cristina, Vincenzopio Tamburrelli

University Campus Bio-Medico of Rome, Italy

Electromagnetic Interference Caused by Wireless Body Area Network to Medical Electronic Equipment

Kengo Kitaichi¹, Yuji Goto¹, Shinobu Ishigami², Kenichi Takizawa², Sung Grace Hui Hsia², Masamitsu Tokuda¹

¹Tokyo City University, Japan; ²National Institute of Information and Communications and Technology, Japan

O_Th_C4	ORAL SESSION	Time: 16:15 - 18:00
EMC ANALYSIS, MODELLING AND PREDICTION		
Chaired by:	Flavio Canavero	Room: C (C-13)

High-Frequency Effective Impedance of Micro-Wires Based on Carbon Nanotube Technology

Maria Sabrina Sarto^{1,2}, Marcello D'Amore^{1,2}, Alessandro D'Aloia^{1,2}

¹Univ. of Rome Sapienza, Italy; ²Dept. Electrical Engineering, Research Center on Nanotechnology applied to Engineering

This paper will be presented in session O_We_C2 (EMC mitigation) on Wednesday 11:15am - 1:00pm)

Towards Realistic Test Levels for Bulk Current Injection up to 6 GHz

Filip Vanhee¹, Davy Pissoot¹, Johan Catrysse¹, Georges Gielen², Guy Vandenbosch²

¹KHBO, Belgium; ²KU Leuven, Belgium

Hierarchical Approach Used to Analyze the EMC Performance of a ZVS Converter

Dongsheng Zhao¹, Anne Roc'h², Braham Ferreira³, Frank Leferink^{2,4}

¹VSL, Dutch Metrology Institute, Netherlands, The; ²University of Twente; ³Delft University of

Technology; ⁴Thales Netherlands

Multipole Parameters Out of Measurements: Uncertainty Considerations

Oliver Doering, Evgeni Genender, Heyno Garbe
Leibniz Universität Hannover, Germany

Differential to Common Mode Conversion in Balanced Devices and Systems

Bruno Audone², Ilario Marzali¹, Demis Boschetti¹, Paola Elia¹

¹Thales Alenia Space, Italy; ²EMC Consultant

(Paper withdrawn from the program on author's request)

O_Th_D4

ORAL SESSION

Time: 16:15 - 18:00

EMC AT PCB AND IC LEVE

Chaired by: Graziano Cerri

Room: **D (C-13)**

A Time Domain Noise Reduction Filter in Analog Signal Acquisition Interface for Temperature Sensors

Yoshihiro Akeboshi, Hiroyuki Joba, Seiichi Saito
Mitsubishi Electric Corp., Japan

Towards a global approach for the characterisation of IC's and on board shielding components

Johan Catrysse^{1,2}, Filip Vanhee¹, Davy Pissoot¹, Christian Brull^{1,3}, Guy Vandenbosch^{1,4}

¹KHBO, Belgium; ²MICAS/EAT/KULeuven, Belgium; ³SEM Schlegel Electronic Materials, Belgium; ⁴Telemic/ESAT/KULeuven, Belgium

Comparison between Complementary Split Ring Resonators and Electromagnetic Band-Gap as EMI Reduction Structures

Ignacio Gil, Raúl Fernández
Universitat Politècnica de Catalunya, Spain

Synchronous versus Asynchronous Circuits Reliability under Radiated Electromagnetic Disturbance

Luis Fernando Cristófoli¹, Aaron Henglez¹, Juliano Benfica¹, Letícia Bolzani¹, Fabian Vargas¹, Andreu Atienza², Ferran Silva²

¹Catholic University - PUCRS, Brazil; ²Universitat Politècnica de Catalunya - UPC, Spain

Friday 17th September 2010 – Workshops and Tutorials

Room Time	Room A (build.C-13)	Room B (build.C-13)	Room C (build.C-13)
9:00	Ws7_Fr_A1: Automotive EMC Modeling and Simulation (1) Chair: Marco Klingler	Ws8_Fr_B1: Advanced Numerical Techniques for EMC-related Bioelectromagnetic Applications (1) Chair: Mauro Feliziani	Tut2_Fr_C1: Tutorial: EMC Assurance in Railways (1) Chair: Chris Marshman
10:45 - 11:15	Coffee break		
11:15	Ws7_Fr_A2: Automotive EMC Modeling and Simulation (2) Chair: Marco Klingler	Ws8_Fr_B2: Advanced Numerical Techniques for EMC-related Bioelectromagnetic Applications (2) Chair: Mauro Feliziani	Tu2_Fr_C2: Tutorial: EMC Assurance in Railways (2) Chair: Chris Marshman
13:00 - 14:00	Lunch (tent behind building C-13)		
14:00pm		Ws9_Fr_B3: Modelling for EMC/EMI Applications (1) Chair: Paul Duxbury	Ws10_Fr_C3: The practical application of validation, verification and measurement uncertainty in EMC Laboratories (1) Chair: Nick Wainwright
15:45 - 16:15	Coffee break		
16:15 18:00		Ws9_Fr_B4: Modelling for EMC/EMI Applications (2) Chair: Paul Duxbury	Ws10_Fr_C4: The practical application of validation, verification and measurement uncertainty in EMC Laboratories (2) Chair: Nick Wainwright

Workshops & Tutorials

WS7	WORKSHOP	Time: 9:00 - 13:00
AUTOMOTIVE EMC MODELING AND SIMULATION		
Chaired by: Marco Klingler		Room: A (C-13)

Speakers: M. Schick (EM Software & Systems GmbH); Stephan Frei (Department of Electrical Engineering and Information Technology, Technische Universität Dortmund); Paul Duxbury (CST UK Ltd); Roman Jobava (EM Consulting and Software, EMCoS Ltd.); Marco Klingler (PSA Peugeot Citroen, Vélizy-Villacoublay); Todd Hubing (Clemson University International Center for Automotive Research); Jean-Roger K. Kuvedu-Libla (Delphi Electronics & Safety, Bascharage); Flavio Canavero (Politecnico di Torino)

Sessions: Abstract:

Ws7_Fr_A1 (9:00 - 10:45) EMC simulation tools are constantly improving in performance and accuracy. Unfortunately, following the same progression, automotive electric/electronic systems are also increasing in complexity and the needs of simulation are extending at each end of the frequency band. This workshop is intended to

Coffee break

Ws7_Fr_A2
(11:15 - 13:00)

present an overview of some current numerical solutions and the most recent achievements in modeling methods for automotive applications such as windscreen antennas, cables and harnesses. This overview will be accompanied by an update of recent computational techniques to cover the very low and the very high frequency bands. Presentations will also focus on the EMC modeling and simulation of real world automotive applications at system, sub-system, equipment and component levels. In particular, topics addressed by the speakers will include hybrid power-train systems EMC analysis, antenna implementation, equipment design, printed-circuit-board optimization, and electronic component characterization.

Program:

Ws7_Fr_A1 session

Time: 9:00 - 10:45

Efficient Windscreen Antenna Modeling for EMC problems solved with FE-KO

M. Schick¹, U. Jakobus², Marlize Schoeman²

¹EM Software & Systems GmbH, Germany; ²EM Software & Systems ? S.A. (Pty) Ltd, South Africa

Simulation of Emissions of Power Electronic System Components in Electrical and Hybrid Electrical Vehicles

Stephan Freij, Frank Kremer

Department of Electrical Engineering and Information Technology, Technische Universität Dortmund, Germany

Real World Cable Modeling for Automotive Applications

Paul Duxbury

CST UK Ltd, UK

Recent Achievements in Computational Techniques Related to Automotive EMC simulations

Roman Jobava¹, Faik Bogdanov¹, Anna Gheonjian¹, Ekaterina Yavolovskaya¹, David Karkashadze¹, Paata Tsereteli¹, Christoph Ullrich², Detlef Schleicher³, Hicham Tazi²

¹EM Consulting and Software, EMCoS Ltd., Tbilisi, Georgia; ²AUDI AG, Ingolstadt, Germany; ³VW AG, Wolfsburg, Germany

Ws7_Fr_A2 session

Time: 11:15 - 13:00

Comparisons between Time-Domain and Frequency-Domain simulations applied to an entire vehicle

Marco Klingler, Salah Benhassine, Yannick Merle

PSA Peugeot Citroen, Vélizy-Villacoublay, France

Simulations for Improved Performance of Tire Pressure Monitoring Systems

Todd Hubing, Hua Zeng

Clemson University International Center for Automotive Research, United States

Automotive EMC and Computer Aid Design of PCBs - Signal Integrity, Power Integrity, Ground Integrity

Jean-Roger K. Kuvedu-Libla

Delphi Electronics & Safety, Bascharage, Luxemburg

Components characterization and their influence on filters behavior for automotive applications

Flavio Canavero¹, Cyrus Rostamzadeh²

¹Politecnico di Torino, Italy; ²Robert Bosch LLC, Automotive Group, Farmington Hills, United States

WS8

WORKSHOP

Time: 9:00 - 13:00

ADVANCED NUMERICAL TECHNIQUES FOR EMC-RELATED BIOELECTROMAGNETIC APPLICATIONS

Chaired by: Mauro Feliziani

Room: **B** (C-13)

Speakers: Valerio De Santis (University of L'Aquila), Francesca Maradei (Sapienza University of Rome), Mauro Feliziani (University of L'Aquila), Graziano Cerri (Universita' Politecnica delle Marche, Ancona)

Sessions: Abstract:

Ws8_Fr_B1
(9:00 - 10:45)

Coffee break

Ws8_Fr_B2
(11:15 - 13:00)

The aim of the proposed special session is to present advanced numerical models and methods for bioelectromagnetic applications related to EMC aspects. This is obviously done not from a medical or biological point of view but from an engineering point view, mainly focusing on the fundamental importance of the recent numerical methods developed for dosimetry and medical applications. Nowadays, numerical modeling is become an indispensable tool posing the basis of our knowledge on how electromagnetic fields (EMFs) interact with the human body. This knowledge not only underlies the recommendations of professional bodies and government agencies given to prevent any related health hazard, but also provides insight into how these EMFs can be used for the benefit of patients in developing medical diagnostic and therapeutic techniques.

The special session will be addressed to researchers into three different macro-areas:

- i) Human body modeling including their physical properties. The conventional voxel-based models and the CAD models coming from segmentation procedures on MRI or CT image scans will be investigated.
- ii) Electromagnetic (EM) and thermal modeling and simulation. The recent advancements in bioelectromagnetic equation solution by numerical techniques (FDTD, FEM, FD2TD,...) will be presented. The thermal model will include thermoregulation and vascularization effects.
- iii) Applications. Numerical dosimetry of EMF sources. Communication performances of Body area network (BAN). UWB radar for breast cancer detection. Heart stimulation by magnetic field pulses.

Program:

Ws8_Fr_B1 session

Time: 9:00 - 10:45

Introduction

Mauro Feliziani

University of L'Aquila, Italy

Human Body Modeling

Valerio De Santis

University of L'Aquila, Italy

Electromagnetic Modeling

Francesca Maradei

Department of Electrical Engineering, Sapienza University of Rome, Italy

Thermal Modeling

Mauro Feliziani

University of L'Aquila, Italy

Ws8_Fr_B2 session

Time: 11:15 - 13:00

An Electromagnetic Model to Investigate the Heart Stimulation by Magnetic Field Pulses

Graziano Cerri, A. De Leo, R. De Leo, G. Della Chiara, V. Mariani Primiani, F. Moglie, A. P. Pastore, P. Russo

Universita' Politecnica delle Marche, Ancona, Italy

Microwave Imaging for Breast Cancer Detection

Valerio De Santis¹, Elise C. Fear²

¹University of L'Aquila, Italy; ²University of Calgary, Canada

Tut2

TUTORIAL

Time: 9:00 - 13:00

EMC ASSURANCE IN RAILWAYS

Chaired by: Chris Marshman

Room: **C** (C-13)

Speakers: Chris Marshman (York EMC Services Ltd); Ade Ogunsola Parsons

Sessions: Abstract:

Tut2_Fr_C1
(9:00 - 10:45)

Coffee break

Tut2_Fr_C2
(11:15 - 13:00)

The Railway environment is generally regarded as a 'severe' electromagnetic environment. From an operational perspective it is vital that, for example, introduction of new rolling stock does not pose a threat to the reliable and safe operation of the railway. In particular any EM disturbance introduced should not turn a red signal to green!

Railway equipment is within the scope of the EMC Directive 2004/108/EC and the Interoperability Directives.

Hence EMC assurance of equipment and systems for use within the Railway is concerned with demonstration of: compliance with regulations and of safety – this may mean producing an EMC 'Safety Case'.

This tutorial will describe best practices to achieve EMC assurance in Railways and will describe how the technical difficulties of measuring emissions from moving and in particular high speed trains, can be achieved.

Program:

Tut2_Fr_C1 session

Time: 9:00 - 10:45

Introduction to EMC in Railways: Definitions of EMI and EMC; sources of interference within the Railway environment eg Traction inverter drives; co-coupling mechanisms

Chris Marshman

York EMC Services Ltd, United Kingdom

Application of the EMC Directive to Railways; discussion on Fixed Installations

Chris Marshman

York EMC Services Ltd, United Kingdom

Railway EMC standards: EN 50121-x: 2006

Chris Marshman

York EMC Services Ltd, United Kingdom

Tut2_Fr_C2 session

Time: 11:15 - 13:00

The need for other "local" standards eg London Underground and Network Rail Standards

Chris Marshman

York EMC Services Ltd, United Kingdom

EMC Management: Management/Control Plans; test plans; EMC compliance evidence: test reports, gap analyses

Ade Ogunsola Parsons

EMC Measurements - including a novel technique for the measurement of emissions from moving trains, in particular high speed trains

Chris Marshman

York EMC Services Ltd, United Kingdom

WS9

WORKSHOP

Time: 14:00 - 18:00

MODELLING FOR EMC/EMI APPLICATIONS

Chaired by: Paul Duxbury

Room: **B** (C-13)

Speakers: Paul Duxbury (CST UK Ltd);

Sessions: Abstract:

Ws9_Fr_B3
(14:00 - 15:45)

Coffee break

Ws9_Fr_B4
(16:15 - 18:00)

Many organisations have recognised a need to design for EMC, rather than relying on the traditional end of design cycle test and measurement approach. One of the ways of designing for EMC is to use computational modelling. This application (rather than mathematically) based workshop will show how, through the use of computational electromagnetic modelling, it is now possible to consider EMC upfront, as a design issue, before a physical prototype is built.

During the course of the workshop, some of the issues which are facing electronics designers, and contributing to the worsening of the EMC problem, will be discussed. It will also be shown how these issues can be considered early in the design process and, the benefit of so doing. The workshop will consider what the main aims of the modelling should be and, what outcome can be expected. It will also consider how different applications require the use of different computational techniques.

One of the major benefits of using computational modelling in EMC design is the ability it gives to visualise the results, thereby providing the design engineer with much greater insight and understanding of the EM effects within their system. Through this visualisation, the design engineer can very quickly identify potential design issues and, their causes. They can then efficiently examine many different design options in a virtual (and therefore effectively cost-free) environment.

This workshop will discuss the techniques which can be used to simplify real world complex systems into models for full wave simulation that are able to be solved with today's software tools, while maintaining the required accuracy to solve the problem of interest. Validation of these simplified models will also be discussed.

WS10**WORKSHOP**

Time: 14:00 - 18:00

THE PRACTICAL APPLICATION OF VALIDATION, VERIFICATION AND MEASUREMENT UNCERTAINTY IN EMC LABORATORIES

Chaired by: Nick Wainwright

Room: **C** (C-13)

Speakers: Nick Wainwright (York EMC Services Ltd, United Kingdom)

Sessions: Abstract:

Ws10_Fr_C3
(14:00 - 15:45)*Coffee break***Ws10_Fr_C4**
(16:15 - 18:00)

EMC laboratory accreditation is based upon the international standard ISO17025:2005 General requirements for the competence of testing and calibration laboratories. This standard describes the management and technical requirements to which all laboratories must adhere.

One aspect that accreditation bodies have placed greater emphasis on in recent times is "assuring the quality of the result". That is, making sure that a test is developed and operates in accordance with the standard (validation) at the outset as well as assuring the integrity of the test on a day to day basis (verification).

Although ISO17025 requires the process to be implemented, it does not prescribe what form either validations or verifications should take. Typically validations are contained in test standards, but currently there is little guidance on what form verifications should take which results in a wide variation of implementations across laboratories as they try to find the balance between the accuracy of the verification and the time taken to compete it.

This workshop will explore the principles behind validation and verification and look at some practical applications that may be used to satisfy the requirements of the standard and accreditation bodies.

ISO17025 also requires laboratories to prepare measurement uncertainty budgets for each test. The principles of measurement uncertainty have become well established over recent years, however, the application of it to the end result has been controversial, with significantly differing opinions on how this should be done. The workshop will identify some of the issues and look at the currently accepted methods of applying measurement uncertainty.

Program:

Ws10_Fr_C3 session

Time: 14:00 - 15:45

Welcome and introduction**The role of calibration****Validation and verification of equipment and methods****Introduction to measurement uncertainty****Ws10_Fr_C4 session**

Time: 16:15 - 18:00

Establishing and applying uncertainty budgets for EMC tests

Speakers Information

Oral Sessions:

Each paper is allowed for 20 minutes presentation (including about 3 minutes for discussion). In sessions with 4 presented papers it is possible to extend the presentation time up to 25 minutes.

Video projectors and computers (MS Power Point and Acrobat reader) are available for presentation in each room.

Only presentation on CD-ROMs or pen drives are will be accepted.

Authors must meet their session chairman in the room at least 15 minutes before the beginning of the session. Each speaker must give a short biography to the chairman and load the presentation in the computer if did not send it before to the organizers.

Poster presentations

Authors must prepare a poster up to 1 m (wide) and 1,3 m (high) for the presentation of the paper.

Poster must be set in the assigned space in the Exhibition Area 15 minutes before the beginning of the session. At least one of the authors must be with poster during the poster session (between 14:00 and 15:45) to discuss the presented work. Poster must be removed from the Exhibition Area before 18:00.

Conference Registration

On Site Registration Fees (Vat included)

Regular 540 €

Student 220 €

One Day 220 €

The workshops and tutorials are included.

Workshops, tutorials (regular) 100 € per workshop day

Additional options

Printed Conference Proceedings 60 €

Proceedings on CD 40 €

Welcome Cocktail 45 €

Symposium Banquet 100 €

Exhibition

Exhibition booths are presented on the ground floor. In the time from 9:00 to 17:00 you are invited to attend the exhibiting companies. The list of all exhibitors as well as a floor plan is printed in the Exhibitor Book.

Internet Access

Participants equipped with computers and palmtops with wireless card 802.11b/g will be able to take advantage of the wireless LAN facility installed in the Wroclaw University of Technology, enabling them to connect to the Internet network. The available wireless network is PWR (without password).

On the 1st floor the computer room (room 1.10) is prepared for participants. It is possible to use the printer installed there.

Badges

For your convenience please wear your badge all times. Note that the colour of badges indicates status of participants:

Regular participant	White
Exhibition Staff	Green
Organizers	Blue

Transport in Wroclaw

Trams, buses, and taxis are at your disposal. A one-way tram and bus ticket costs 2 zloty. Fast buses are marked with capital letters (express buses), and tickets for them cost 2,8 zloty. In both cases price does not depend on the distance travelled. Passengers must punch the tickets. Tickets are sold in the newspaper kiosks.

In the days from **13 to 17 September 2010** all symposium participants can use the public transport using their badges as seasons ticket. The only badge allows transferring without ticket.

Because of street renovation and many changes in timetables – for actual information about routes please ask at registration desk.

