

Wednesday, 7 September

Poster and Oral Sessions

Date: Wednesday, 07/Sept/2022

9:00am -	SS-02A: Risk-Based EMC Location: G1	OS-03: Transmission lines Location: G2	OS-07A: Reverberation chambers Location: G3
10:20am			
10:20am -	F-03A: Coffe break Location: Exhibition Area		
10:50am			
10:50am -	SS-02B: Risk-Based EMC Location: G1	OS-04: Immunity Location: G2	OS-07B: Reverberation chambers Location: G3
12:10pm			
12:30pm -	Poster-2: Poster session 2 Location: Exhibition Area	L-03: Lunch break Location: Restaurant Area	
2:30pm			
2:30pm -	SS-04A: Stochastic Methods in EMC Location: G1	OS-05: Human exposure to EM field Location: G2	OS-08A: Measurements Location: G3
3:50pm			
3:50pm -	F-03B: Coffe break Location: Exhibition Area		
4:20pm			
4:20pm -	SS-04B: Stochastic Methods in EMC Location: G1	OS-06: EMC in safety and security applications Location: G2	OS-08B: Measurements Location: G3
5:40pm			

Session

SS-02A: Risk-Based EMC

Time:

Location: G1

Wednesday, 07/Sept/2022:

9:00am - 10:20am

Presentations

Study of Random Field Coupling onto a Scooter following the Risk-based EMC Approach

Vasiliki Gkatsi¹, Ivan Struzhko¹, Robert Vogt-Ardatjew¹, Frank Leferink^{1,2}

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

Vulnerability of Smart Grid-based Protection Systems to Ultra-Wide Band IEMI sources

Fernando Arduini¹, Thorsten Pusch¹, Michael Suhrke¹, Heyno Garbe²

¹Fraunhofer INT, Germany; ²Leibniz University Hannover, Germany

Including Experimental Aging of Shielded Cables into Bulk Current Injection Simulations

Oskari Leppäaho¹, Frédéric Lafon¹, Bruno Ferreri¹, Priscila Fernandez-Lopez¹, Marine Stojanovic¹, Richard Perdriau², Mohammed Ramdani²

¹Valeo, France; ²ESEO, France

Effectiveness of Forward Error Corrections Over Different Wired Communication Channels in Harsh Electromagnetic Environments

Pejman Memar¹, Hasan Habib¹, Zhao Chen², Dries Vanoost¹, Robert Vogt-Ardatjew³, Bärbel van den Berg⁴, Tom Holvoet⁵, Davy Pissoort¹, Jeroen Boydens¹

¹KU Leuven, Bruges Campus, Bruges, Belgium; ²Barco NV, Kortrijk, Belgium; ³University of Twente, Enschede, The Netherlands; ⁴Medisch Spectrum Twente Hospital, Enschede, The Netherlands; ⁵KU Leuven, Leuven, Belgium

Session

OS-03: Transmission lines

Time:

Location: G2

Wednesday, 07/Sept/2022:

9:00am - 10:20am

Presentations

Comparison of Emissions from a Transmission Line on a CISPR 25 Bench Setup and Test Vehicle

Ch Umer Sajjad¹, John F Dawson¹, Ayhan Gunsaya², Andy C Marvin¹

¹University of York, United Kingdom; ²Ford Motor Company, England

Independent Component Analysis of the Cyclostationary Signals in the Transmission Line

Yury V. Kuznetsov¹, Andrey B. Baev¹, Maxim A. Konovalyuk¹, Anastasia A. Gorbunova¹, Johannes A. Russer²

¹Moscow Aviation Institute, Russian Federation; ²Technical University of Munich, Germany

Characterization of Adhesive and Fastener Carbon Fiber Composite Joints Based on a Microstrip Transmission Line Method

DAVID RAMOS SOMOLINOS, BORJA PLAZA GALLARDO, DANIEL LÓPEZ SANZ, JOSÉ CIDRÁS ESTÉVEZ, VÍCTOR DÍAZ MENA, DAVID POYATOS MARTÍNEZ

INSTITUTO NACIONAL DE TÉCNICA AEROESPACIAL - INTA, Spain

Multiconductor Transmission Line Approach to Model Common-Mode Currents in Motor-Drive Systems

Maryam Shokri, Ramiro Serra, Martijn C. van Beurden

Eindhoven University of Technology, Netherlands, The

Session

OS-07A: Reverberation chambers

Time:

Location: G3

Wednesday, 07/Sept/2022:

9:00am - 10:20am

Presentations

Test level in Reverberation Chamber EMC Immunity Assessment Based on the Quantile to Average Ratio

Kristian Karlsson¹, Andreas Lundberg¹, Niklas Arabäck¹, Björn Bergqvist²

¹RISE Research Institutes of Sweden, Sweden; ²Volvo Car Corporation

An Experimental Study of the Signal to Noise Ratio of Radiated Emissions in the Presence of Thermal Noise in a Reverberation Chamber

Andy Marvin, Simon Bale

University of York, York, United Kingdom

Electrical Fields in Vehicular Cavities During Reverberation Chamber EMC Immunity Test

Kristian Karlsson¹, Robert Moestam², Björn Bergqvist³, Hans Kalaran⁴, Åsa Rosdalen³

¹RISE Research Institutes of Sweden, Sweden; ²China-Euro Vehicle Technology; ³Volvo Car Corporation; ⁴Volvo GTT

On Excitation Periodicity in Continuously Stirred Reverberation Chambers

Lukas Oppermann, Lorenz Löser

TU Braunschweig, Germany

Session

SS-02B: Risk-Based EMC

Time:

Location: G1

Wednesday, 07/Sept/2022:

10:50am - 12:10pm

Presentations

Combining 2003 Voting and Hamming Error Correction to Reduced the Occurrence of False Negatives in Wired Communication Lines under Continuous-Wave Electromagnetic Disturbances

Mohammad Kameli, Tim Claeys, Davy Pissoot

KU Leuven, ESAT-WaveCore KU Leuven Bruges Campus Bruges, Belgium

Risk Management Plan For Hospital Environment

Mumpy Das, Robert Vogt-Ardatjew, {Barbel} van den Berg de Bakker, Frank Leferink

University of twente, Netherlands, The

A Review On Links Between Different EMC Test Environments In Medical Technologies

Nandun Senevirathna^{1,2}, Rob Kleihorst¹, Anne Roc'h²

¹Philips Medical Systems Nederland B.V.; ²Eindhoven University of Technology

Combining Fast Field Probes with an EMI Detector to reveal Bit Errors induced by ElectroMagnetic Disturbances

Hasan Habib¹, Tim Claeys¹, Robert Vogt-Ardatjew², Bärbel van den Berg³, Guy A. E. Vandenbosch⁴, Davy Pissoot¹

¹KU Leuven, Bruges Campus; ²University of Twente; ³MST Hospital; ⁴KU Leuven

Session

OS-04: Immunity

Time:

Location: **G2**

Wednesday, 07/Sept/2022:

10:50am - 12:10pm

Presentations

Testing immunity of active implantable medical devices to industrial magnetic field environments

LUCIEN HAMMEN^{1,2,3}, LIONEL PICHON^{2,3}, YANN LE BIHAN^{2,3}, MOHAMED BENSETTI^{2,3}, GERARD FLEURY¹

¹Institut national de recherche et de sécurité (INRS), Vandoeuvre-lès-Nancy, France; ²Université Paris-Saclay, CentraleSupélec, CNRS, Gif-sur-Yvette, France; ³Sorbonne Université, CNRS, Paris, France

Correlation between Near-Field Scan Immunity and Radiated Susceptibility at Integrated Circuit Level

Alexandre Boyer, Nicolas Nolhier, Fabrice Caignet, Sonia Ben Dhia

LAAS-CNRS, France

An Interlaboratory Comparison on Radiated Immunity IEC 61000-4-3

Emrah Tas, Frederic Pythoud

Federal Institute of Metrology METAS, Switzerland

A new Investigation Methodology to predict Far Field Radiated Immunity from Near Field Scan Immunity Measurements

ANDRE DURIER¹, SONIA BEN DHIA^{2,3}, TRISTAN DUBOIS⁴, ALEXANDRE BOYER^{2,3}

¹CONTINENTAL AUTOMOTIVE FRANCE, France; ²LAAS-CNRS, France; ³INSA TOULOUSE, France; ⁴IMS BORDEAUX, France

Session

OS-07B: Reverberation chambers

Time:

Location: G3

Wednesday, 07/Sept/2022:

10:50am - 12:10pm

Presentations

A Novel Hybrid Nested Reverberation Chamber Measurement Technique for Shielding Effectiveness of Conductive Fabrics

Hakki Ekin Ozdemir¹, Muhammet Hilmi Nisanci², Fatih Ustuner³, Ahmet Yasin Citkaya¹, Hamid Torpi⁴, Mucahid Taha Mersin¹, Ridvan Aba¹, Coskun Cosar¹

¹TUBITAK BILGEM, Turkey; ²Sakarya University, Turkey; ³Istanbul Ticaret University, Turkey; ⁴Yildiz Technical University, Turkey

On the Feasibility of the Three-Antenna Technique for Estimating Antenna Radiation Efficiency in Bluetest Reverberation Test Systems

Samar Hosseinzadegan, Mats Kristoffersen, Patrik Svedjenäs, Sara Catteau, John Kvarnstrand

Bluetest AB, Sweden

Eigenmodes of a loaded Reverberation Chamber

Hans Kalaran¹, Kristian Karlsson², Robert Moestam³, Björn Bergqvist⁴, Åsa Rosdalen⁴

¹Volvo AB, Sweden; ²RISE Research Institutes of Sweden; ³China-Euro Vehicle Technology; ⁴Volvo Car Corporation

Comparison of susceptibility measurements on a reference test setup in two reverberation chambers including cabling variations

Thorsten Ragnar Pusch¹, Christian Adami¹, Tomas Hurtig², Mattias Elfsberg², Sven Fisahn³, Martin Schaarschmidt³

¹Fraunhofer INT, Germany; ²FOI Swedish Defence Research Agency; ³Bundeswehr Research Institute for Protective Technologies and CBRN Protection (WIS)

Session	
Poster-2: Poster session 2	<i>Location: Exhibition Area</i>
<i>Time:</i>	
Wednesday, 07/Sept/2022:	
12:30pm - 2:30pm	
Presentations	
D.O.E. Method Application to Optimize System Level RF Signal Path with Antenna Design	
Scott Lee, Tim Chen, Tyran Cho, Snake Chen, Weiting Liu Ring, Taiwan	
SPICE-Based Lumped Circuit Model of Multiconductor Lines Excited by an Incident Plane Wave	
Moustafa Raya , Mathias Magdowski, Sergey Tkachenko, Ralf Vick Otto von Guericke University Magdeburg, Germany	
Sharing and Electromagnetic compatibility studies between 5G networks and feeder links for mobile-satellite service in 6700-7075 MHz band	
Alexander Pastukh¹ , Valery Tikhvinskiy ^{1,2} , Evgeny Devyatkin ¹ , Vadim Belyavskiy ³ ¹ Radio Research and Development Institute (NIIR), Russian Federation; ² Bauman Moscow State Technical University, Russian Federation; ³ Spectrum Ltd	
Detection of fault location in branching power distribution network using deep learning algorithm	
Daiki Nagata , Shunya Fujioka, Tohlu Matshushima, Hideaki Kawano, Yuki Fukumoto Kyushu Institute of Technology, Japan	
An Exponential Back-off Algorithm Based Interference Avoidance Strategy for Bluetooth Low Energy against Wideband Interference	
Bozheng Pang , Tim Claeys, Hans Hallez, Jeroen Boydens KU Leuven, Belgium	
Influence of AWGN on the Possibility to Remove a Continuous Wave EM Disturbance in OFDM systems	
Aleksandr Ovechkin , Brian Leeman, Dries Vanoost, Tim Claeys, Guy A. E. Vandenbosch, Davy Pissoot KU Leuven, Belgium	
A computationally efficient hybrid FDTD method for solving field-to-wire coupling problems in shielded cables with junctions inside electrically large objects	
xuesong meng^{1,2} ¹ CAEP Software Center for High Performance Numerical Simulation, China, People's Republic of; ² institute of applied physics and computational mathematics, China, People's Republic of	
Out-of-the-Box Performance of popular SDRs for EMC pre-compliance Measurements	
Christian Spindelberger , Holger Arthaber TU Wien, Austria	
A Single-layer Dual-band Frequency Selective Surface for 5G Shielding	
Yu Huang¹ , Liping Yan ¹ , Xiang Zhao ¹ , Ming Ye ² , Xian-Ke Gao ³ ¹ Sichuan University; ² Huawei Technologies Sweden AB; ³ Electronics and Photonics Department Institute of High Performance	
Analysis and Design for Broadband Slot Transition from Microstrip to Rectangular Waveguide	
Yen Ching Li , Cheng Wu Ting, Chung Yuan Liu, Tzong Lin Wu National Taiwan University, Taiwan	

The Effects of Shielded Room Power Line Filters on CE101, CE102 and CS101 Test Results

Ali KARAALI, Erdem AKPINAR, Osman Ozgur GURSAHBAZ, Bager OZBEY

Aselsan A.Ş., Turkey

Realistic modeling for the calculation of transient induced currents in a measurement cable

Bachir Nekhoul

Jijel university, Algeria

Interlaboratory Comparison Measurements for Military Magnetic Emission Test

Osman Sen, Savas Acak, Soydan Cakir, **Bahadır Tektas**, Yasin Ozkan, Ali Karaali, Hulya Belirgen, Hakan Altun, Zeynep Sagir Sefer, Emre Camasircioglu, Ali Ozturk, Merve Deniz Kozan, Burak Demirdogen

TUBITAK UME, Turkey

Experimental Prediction of the Radiated Emission and Final Measurement Process Optimization based on Deep Neural Networks According to EN 55032

Hussam Elias, Ninovic Perez, Holger Hirsch

Duisburg-Essen University, Germany

Verification of the Voltage/Current Conversion Factor of Transformer-type-AAN for Conducted Emissions on unscreened balanced pairs

Nozomi Miyake¹, Naoya Haraguchi², Fujio Amemiya³, Nobuo Kuwabara⁴, Hidenori Muramatsu³

¹VCCI Council/ NEC Corporation, Japan; ²FUJIFILM Business Innovation Corp., Japan; ³VCCI Council, Japan; ⁴Kyushu Institute of Technology, Japan

Current Distribution in Flat Transparent Antennas

Reuven Zemach¹, Zion Menachem², Jacob Assayag¹, Amir Gamliel³, Motti Haridim⁴

¹Merchavim Institute of R&D in Negev; ²Shamoon College of Engineering, Beer Sheva, Israel; ³Investigations and Intelligence Dept., Israel Police, Jerusalem, Israel; ⁴HIT- Holon institute of Technology, Israel

Response of Muscle Tissue to Pulsed Electromagnetic Fields: An Asymptotic Description

Constantinos Balictsis

Biosolutions Ltd., Greece

Novel 3D Printable Copper Twisted Pair Array Heatsink Design for EMI Mitigation

Darwin Zhang Li¹, Tetsumune Kuromura², Yoshi Fukawa³

¹Good Simulations LLC, United States of America; ²Mitsui Mining & Smelting CO., LTD.; ³TechDream, Inc.

Radio Frequency Interference Considerations in Large-Scale STATCOM Installations

Emil Mäki Eriksson, Jon Rasmussen, Mose Akyuz

Hitachi Energy, Sweden

Analytical Method to Check and Correct the TDR Impedance Profile of Low-Loss Transmission Lines

Matthias Hampe, Margarita Tetzlaff, Thomas Müller

Ostfalia University of Applied Sciences, Germany

Early Considerations for Unit's Induced Electric Behaviour Characterization in the Extreme Low Frequency Domain

Anargyros T. Baklezos^{1,2}, Christos D. Nikolopoulos¹, **Panagiotis K. Papastamatis², Theodoros N. Kapetanakis¹, Ioannis O. Vardiambasis¹, Christos N. Capsalis²**

¹Hellenic Mediterranean University, Greece; ²National Technical University of Athens, Greece

Intermodulation distortion characterization of RF transceivers by means of a Transverse Electromagnetic cell

Alain Grèzes^{1,2}, Jérémy Raoult², Alexandre Martorell¹

¹Thales SIX GTS, Gennevilliers, France; ²IES, University of Montpellier, CNRS

Impact of the injection point selection during indirect application of ESD pulses according to IEC 61000-4-2

Panagiotis K. Papastamatis¹, Theodosios K. Lamprinos¹, Christos D. Nikolopoulos², Anargyros T. Baklezos¹, Ioannis F. Gonos¹, Ioannis A. Stathopoulos¹

¹School of Electrical and Computer Engineering, National Technical University of Athens, Greece; ²School of Engineering, Dept. of Electronic Engineering, Hellenic Mediterranean University, Greece

Session

SS-04A: Stochastic Methods in EMC

Time:

Location: G1

Wednesday, 07/Sept/2022:

2:30pm - 3:50pm

Presentations

Investigation of the Impact of Height Scans in Fully Anechoic Rooms on Detection of Maximal Radiated Field Strength Using Monte Carlo Simulation

Jörg Petzold, Mathias Magdowski, Ralf Vick
Otto-von-Guericke University, Germany

Theoretical Analysis of a Wall-Mounted Broadband Antenna for Source Stirred Reverberation Chambers

Alfredo De Leo, Paola Russo, Valter Mariani Primani
Università Politecnica Marche, Italy

A Source Stirred Vibrating Intrinsic Reverberation Chamber Using Two Antennas

Danilo Izzo, Robert Vogt-Ardatjew, Georgios Erotas, Frank Leferink
University of Twente, The Netherlands

Efficient EMC Risk Analysis of PCB Using Iterative Surrogate-Model Enrichment and Morris Sensitivity Analysis

Alexandre Plot^{1,2}, Philippe Besnier², Béatrice Azanowsky¹
¹THALES SIX GTS, France; ²Univ Rennes, INSA Rennes, CNRS, IETR - UMR 6164

Session

OS-05: Human exposure to EM field

Time:

Location: G2

Wednesday, 07/Sept/2022:

2:30pm - 3:50pm

Presentations

Assessment of Exposure to Magnetic Field from Pulse Width Modulated Currents

Markus Johansson, Jan Carlsson
Provinn AB, Sweden

Time Reversal in Reverberating Structures for Deep Focusing in Human Bodies

Emanuel Colella², Luca Bastianelli², Francesco Dragano¹, Valter Mariani Primiani^{1,2}, Franco Moglie^{1,2}
¹Università Politecnica delle Marche, Department of Information Engineering, Ancona, Italy; ²Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT), Parma, Italy

Comparison of Frequency and Code Selective Methods for Electromagnetic Exposure Measurement in the Vicinity of a LTE (4G) Base Station

Bahadır Tektas, Soydan Cakir
TÜBİTAK UME, Turkey

SAR computation due to Wearable Devices by using high-resolution body models and FDTD numerical code

Greta Silla¹, Luca Bastianelli^{1,2}, Emanuel Colella², Franco Moglie^{1,2}, Valter Mariani Primiani^{1,2}
¹Università Politecnica delle Marche, Italy; ²Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT), Parma, Italy

Session

OS-08A: Measurements

Time:

Location: G3

Wednesday, 07/Sept/2022:

2:30pm - 3:50pm

Presentations

Mono-Static Radar Cross-Section Measurement and Calibration for Complex Natural Resonance Extraction

Max Rosenthal, Felix Middelstaedt, Ralf Vick
Otto von Guericke University, Germany

Measurement of the unwanted magnetic field emissions along a model of a wind turbine

Cornelia Reschka, Heyno Garbe
Leibniz University Hannover, Germany

In-situ Measurements of Conducted and Radiated Emissions from Photovoltaic Installations

Sara Linder, Kia Wiklundh
Swedish Defence Research Agency, Sweden

Estimation of the Highest Influence on the Measured Results of a Three-axis Shielded Loop Antenna Using Three Transmitting Antenna and Tilted Antenna Methods

Denys Pokotilov¹, Robert Vogt-Ardatjew¹, Frank Leferink^{1,2}
¹University of Twente, The Netherlands; ²THALES, The Netherlands

Session

SS-04B: Stochastic Methods in EMC

Time:

Location: G1

Wednesday, 07/Sept/2022:

4:20pm - 5:40pm

Presentations

Efficient Frequency-Domain Uncertainty Quantification Using Parameterized Model Order Reduction

Francesco Ferranti¹, Daniele Romano², Luigi Lombardi³, Giulio Antonini², Ye Tao⁴, Michel Nakhla⁴
¹Vrije Universiteit Brussel; ²Università degli Studi dell'Aquila, Italy; ³Micron Semiconductor; ⁴Carleton University

Polynomial Chaos Kriging Metamodel for Automotive EMC Simulations

Arnold Bingler^{1,2}, Sándor Bilicz¹, Csörnyei Márk²
¹Department of Broadband Infocommunications and Electromagnetic Theory, Faculty of Electrical Engineering and Informatics, Budapest University of Technology and Economics, Hungary; ²Powertrain Solution–Power Electronics, Robert Bosch Kft.

Stochastic Modeling and Analysis of Automotive Wire Harness Based on Machine Learning and Polynomial Chaos Method

Tadatoshi Sekine¹, Shin Usuki², Kenjiro Miura³
¹Department of Mechanical Engineering, Shizuoka University, Japan; ²Research Institute of Electronics, Shizuoka University, Japan; ³Graduate School of Science and Technology, Shizuoka University, Japan

Analysis of aircraft shieldings for lightning indirect effects by a novel S-FDTD

Miguel Ruiz Cabello¹, Enrique Pascual Gil², Guadalupe Gutierrez Gutierrez², Hirahi Galindo Perez², Luis Diaz Angulo¹, Alberto Gascon Bravo¹, Salvador Gonzalez Garcia¹
¹University of Granada, Spain; ²Airbus, Spain

Session

OS-06: EMC in safety and security applications

Time:

Location: G2

Wednesday, 07/Sept/2022:

4:20pm - 5:40pm

Presentations

Time-frequency diagnosis of a fault in a network of shielded cable

Bachir Nekhoul

Jijel university, Algeria

Providing Assurance that Risks Associated with Electromagnetic Disturbances are Sufficiently Managed

Mohammad Tishehzan¹, Mark Nicholson¹, John F. Dawson¹, Davy Pissoot²

¹University of York, United Kingdom; ²KU Leuven, Belgium

Board-Level Hardware Trojan Detection Using on-Chip Touch Sensor

Masahiro Kinugawa¹, Yuichi Hayashi²

¹The University of Fukuchiyama, Fukuchiyama, Japan; ²Nara Institute of Science and Technology, Ikoma, Japan

FPGA Switching Current Modeling Based on Register Transfer Level Logic Simulation for Power Side-channel Attack Prediction

Masaki Himuro, Kengo Iokibe, Yoshitaka Toyota

Okayama University, Japan

Session

OS-08B: Measurements

Time:

Location: G3

Wednesday, 07/Sept/2022:

4:20pm - 5:40pm

Presentations

Measurement of steady-state and transient harmonics caused by TVS

Leonhard Petzel¹, David Pommerenke¹, Steffen Holland², Seyedmostafa Mousavi¹, Amin Pak¹

¹Graz University of Technology, Austria; ²Nexperia Germany GmbH, Germany

Time-domain Multitone Impedance Measurement System for Space Applications

Marc Pous^{1,2}, Marco Azpurua¹, Dongsheng Zhao², Johannes Wolf², Ferran Silva¹

¹Universitat Politècnica de Catalunya, Spain; ²European Space Agency, the Netherlands

3D Printed Probe for Simultaneous E and H Fields Measurements

Marcos Quílez, Marc Pous, Marc Mateu-Mateus, Jordi Solé Lloberas, Ferran Silva

Universitat Politècnica de Catalunya, Spain

Influence of Radio Frequency Interference on the Electromagnetic Emission of Integrated Circuits

Daniel Kircher, Bernd Deutschmann, Nikolaus Czepl

Graz University of Technology