

MARATHON EMC 2021

Binational Edition

Part 1: Poland - Germany, 13th April 2021

MARATHON EMC2021 Binational Edition is continuation of the series of on-line courses initiated by the IEEE EMC-S PL Board of the Electromagnetic Compatibility Society Polish Chapter of the IEEE (USA)

Main theme: Alternative and out-of-standard EMC testing

AGENDA

Topic I	Radiated emission and immunity of small electronic devices in GTEM cells
Date	13th April 2021, 9:30 - 10:45
Description	The results of statistical approach to Uniform Field Area (UFA) in GTEMs in accordance with EN 61000-4-20 will be presented. The basics of emission measurement in comparison to anechoic chambers will be mentioned.
Speaker	Jan Sroka Warsaw University of Technology, Faculty of Electrical Engineering, Institute of Theoretical Electrotechnics and Information and Measurement Systems Department of High Voltage and Electromagnetic Compatibility
Topic II	EMC in reverberation chambers
Date	13th April 2021, 11:00 - 12:15
Description	The talk explains basic properties of reverberation chambers and presents some exemplary practical chambers with their parameters. The normative chamber validation as well as emission measurements and immunity tests are briefly explained. Finally, advantages and disadvantages are discussed.
Speaker	Mathias Magdowski Otto von Guericke University Magdeburg, Institute for Medical Technics
Topic III	ESD in Automotive In-Vehicle Networks
Date	13th April 2021, 12:30 - 13:45
Description	New trends in automotive engineering such as electrification and autonomous driving are big challenges for automotive networks. With increasing amount of data, there is no room for failure in such networks. In a rough automotive environment, Electrostatic Discharge (ESD) is a very importance event which can cause a malfunction and irreversible damage of the entire system. In this teleconference, it will be shown how the ESD challenges can be managed for dedicated automotive applications such as LIN, CAN, Ethernet and High-Speed Multimedia links. It will be discussed how an external ESD protection device can increase the level the system level robustness and what are the key selection parameter for an ESD protection device to fit for the automotive requirements.
Speaker	Andreas Hardock Nexperia - Application Marketing Manager
Moderator	Krzysztof Sieczkarek Łukasiewicz Research Network - Institute of Logistics and Warehousing Chairman of IEEE EMC-S PL

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MARATHON EMC 2021

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Part 2: Poland - Austria, 14th April 2021

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Main theme: All about ESD immunity testing

AGENDA

Topic I	Multiple topics in system level ESD
Date	14th April 2021, 9:30 - 11:00
Description	From testing to simulation and in near field techniques, from classical near field scanning to methods based on transformations
Speaker	David Pommerenke University of Graz
Topic II	Introduction to ESD gun verification
Date	14th April 2021, 11:15 - 11:30
Description	An example of the implementation of practical automation of ESD generator verification using a self-written program in the LabVIEW environment.
Speaker	Krzysztof Sieczkarek, Adam Maćkowiak, Centre for Radio Technologies and Electromagnetic Compatibility, Łukasiewicz Research Network - Institute of Logistics and Warehousing
Topic III	On estimating of measurement uncertainty and creating an uncertainty budget in ESD immunity testing
Date	14th April 2021, 11:30 - 12:15

Description	Detailed uncertainty analysis. Theoretical and practical introduction, implementation with the help of a spreadsheet.
Speaker	Jan Sroka Warsaw University of Technology
Topic IV	Live presentation of ESD immunity testing
Date	14th April 2021, 12:30 - 13:15
Description	How to prevent common mistakes. Interpretation of test standards. During the presentation the methodology of testing with the use of a real ESD generator will be shown on the stand test set-up for immunity testing at the Center for Radio Technologies and Electromagnetic Compatibility Ł-ILiM Poznań, Poland.
Speaker	Grzegorz Modrykamień, EMC-FORTO Krzysztof Sieczkarek, Centre for Radio Technologies and Electromagnetic Compatibility, Łukasiewicz Research Network - Institute of Logistics and Warehousing
Moderator	Krzysztof Sieczkarek Łukasiewicz Research Network - Institute of Logistics and Warehousing Chairman of IEEE EMC-S PL

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MARATHON EMC 2021

Binational Edition

Part 3: Poland - Switzerland, 20th April 2021

MARATHON EMC2021 Binational Edition is continuation of the series of on-line courses initiated by the IEEE EMC-S PL Board of the Electromagnetic Compatibility Society Polish Chapter of the IEEE (USA)

Main theme: Protection of electrical installations against electromagnetic disturbances

AGENDA

Topic I	Electromagnetic shielding of civil and military installations: theoretical and practical considerations
Date	20th April 2021, 9:00 - 10:15
Description	The presentation will focus on the measurement and modelling of shielding effectiveness for military and civilian site applications and the future prospects for electromagnetic shielding. Measurement techniques of various complexities are discussed as well as their limitations. Then, some modelling tools and their results are presented and discussed, as well as references. Finally, a perspective on the future of practical shielding is presented, as well as measurements of alternative shielding techniques and a discussion of the future of electromagnetic shielding.
Speaker	Carlos Romero Armasuisse Science and Technology, NEMP Laboratory
Topic II	Practical measurements of shielding effectiveness in medical applications
Date	20th April 2021, 10:30 - 11:15
Description	Hints on the Standard IEEE 299 (Method for Measuring the Effectiveness of Electromagnetic Shielding Enclosures), Why perform shielding effectiveness measurements in MRI environments (The Artifacts), How to measure the attenuation of a shield: Dedicated system Vs generic systems
Speaker	Łukasz Halbiniak - Product Manager - ASTAT, Jan Bulli - CEO - MPB Group

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Topic III	PLC - Definition of phenomena and testing methods (EMC protection of and against)
Date	20th April 2021, 11:30 - 12:15
Description	Definitions of phenomena, distortions in the home environment, what EMC standards have already been developed, what we have to test and what we should, major group of phenomena caused by PLC and related standards with testing methods.
Speaker	Grzegorz Modrykamień EMC-FORTO
Topic IV	Protection against lightning disturbances
Date	20th April 2021, 12:30 - 13:15
Description	Direct and indirect lightning hazards require complex protective measures. Understanding and consideration in the design of lightning protection electromagnetic effects of lightning on the current buildings heavily saturated microprocessor technology significantly increased their level of safety even in direct lightning discharge. There are still areas that require clarification of effective measures of protection against lightning disruptions due to the existence of other protection measures in one facility, e.g. against electrostatic discharge.
Speaker	Mirosław Zielenkiewicz, RST
Moderator	Krzysztof Sieczkarek Łukasiewicz Research Network - Institute of Logistics and Warehousing Chairman of IEEE EMC-S PL

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Part 4: Poland - Spain, 10th June 2021

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Main theme: More details on conducted emission in EMC

AGENDA

Topic I	Time-domain interference measurement and evaluation methods in Electromagnetic Compatibility
Date	10th June 2021, 9:30 - 10:15
Description	In this presentation, it will be shown that it is feasible to use a time-domain system based on the use of an oscilloscope to obtain EMI emissions measurements according to EMC standards. The time-domain methodology will be described from the acquisition stage to the different interference post-processing stages to provide results in compliance with CISPR16-1-1.
Speaker	Marc Pous Researcher at Universitat Politècnica de Catalunya
Topic II	Using an FFT EMI-Modal Receiver to optimize your EUT power line filter
Date	10th June 2021, 10:30 - 11:15
Description	Nowadays measurements of conducted emission are carried out with instruments that can only measure the emissions coming from line and neutral terminals but are not capable of separating the modal interference, common mode (CM) and differential mode (DM). Worldwide legislation, such as the European EMC Directive, sets mandatory interference limits that must be met. In this Workshop we will show how easy is to distinguish between the CM and DM interference, using an EMI-Modal Receiver, and how to properly use this information in the design of the Power Line Filter.
Speaker	Marco Bosi Engineer at WAVECONTROL / PhD Researcher at University of Bologna

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Topic III	How to write your own software for automation of conducted emission measurement.
Date	10th June 2021, 11:30 - 12:15
Description	During the workshop examples of original computer programs that automate the measurement of conducted emission on the LabView environment will be described. The indicated algorithms of proceeding coming directly from the standards and own methods of frequency selection will be shown. Examples of communication between the measurement receiver and computer using GPIB and /or LAN with automatic switching of the artificial network will be presented.
Speaker	Bartłomiej Nagórny, Krzysztof Sieczkarek Łukasiewicz Research Network - Institute of Logistics and Warehousing
Moderator	Krzysztof Sieczkarek Łukasiewicz Research Network - Institute of Logistics and Warehousing Chairman of IEEE EMC-S PL

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