

EMC DEMONSTRATIONS AND EXPERIMENTS

Tuesday, 19 August 2008, through Thursday, 21 August 2008
Wayne Hall, COBO Center

Sponsored by
IEEE EMC Society Education & Student Activities Committee (ESAC)
Co-Chairs/Organizers: Bruce Archambeault, Andrew Drozd,
William Goodwin, and Edward Wheeler

Now in its 16th consecutive year, **EMC Hardware Experiments** continues to be a highly popular symposium event. The experiments are devoted to demonstrating important EMC concepts focusing on electromagnetic coupling phenomena and effects, EMC measurement and troubleshooting methods. The experiments are partly based upon those documented in the ESAC's *EMC Experiments Manual*, originally compiled by Clayton Paul and Henry Ott. New experiments are added each year and several popular experiments from previous years will be reprised. The hardware experiments continue to focus on innovative concepts and methods that are of interest to the practical EMC engineer. Hands-on participation during the demonstrations is encouraged.

EMC Software Demonstrations highlight fundamental EMC modeling approaches and simulation methods. Various CEM modeling techniques will be demonstrated illustrating their application to simple canonical-type problems in order to show how specific EMC problems can be solved. These include the application of the moment method (MoM), finite difference and finite element techniques, transmission line methods, high-frequency ray tracing, and other approaches. The demonstrations will be conducted using general-purpose codes.* This year's agenda will include many new demonstrations as well as several popular problems from prior years.

TUESDAY, 19 AUGUST 2008

9:30am to 12:00pm

Measuring Structural Resonances of Cables and Assemblies (hardware demo)
Doug Smith, D.C. Smith Consultants

Test Issues Inherent in EN61000-4-3 Radiated Immunity Testing – Addressing the New Harmonic Requirements and Capital Equipment Upgrade Options (hardware demo)
David Seabury, ETS-Lindgren

Utilization of Circuit Simulation and Electromagnetic FEA Models to Predict Conducted Emissions (computer demo)
Zed Tang, Ansoft Corporation

Utilization of the Finite Element Method in Radiated Emissions and Susceptibility Studies (computer demo)
Matt Commens, Ansoft Corporation

1:30pm to 4:00pm

Noise Figure Demonstration (hardware demo)
Tom Holmes, Agilent Technologies, and Candace Suriano, Suriano Solutions

Chokes in DC-DC Converters, Bypass Capacitors and FM Wireless Microphones (hardware demo)
Keith Hoover, Rose-Hulman Institute of Technology

Modeling Arbitrarily-Shaped Power/Ground Planes Using Cavity Model and Segmentation Technique (computer demo)
Jun Fan, Missouri University of Science and Technology

Improving EMC Test Productivity with Automated EMC Test Software (hardware/computer demo)
Joe Tannehill, ETS-Lindgren, and David Guzman, RFTEK

WEDNESDAY, 20 AUGUST 2008

9:30am to 12:00pm

Low Cost Method for Comparison of Radiated Emissions Using a Toolbox (hardware demo)
James Muccioli, Jastech EMC Consultants

PCB-based EMC Issues and Their Solutions (hardware demo)
Bogdan Adamczyk, Grand Valley State University, and Jim Teune, Gentex Corporation

Transmission Line Transient Analysis (computer demo)
Alex Packard and Edward Wheeler, Rose-Hulman Institute of Technology, and James Drewniak, Missouri University of Science and Technology

Time domain Analysis of PCB Problems with the Discontinuous Galerkin Finite Element Time Domain Method (computer demo)
J. Alan Roden, The Aerospace Corporation

1:30pm to 4:00pm

Skin Effect, Impedance, and Resonance of Ground Planes (hardware demo)
Orin Laney, Atwood Research

Magnetic Crosstalk and Enclosure Resonances (hardware demo)
Lee Hill and Randal Vaughn, Silent Solutions

Finite Element Method Applied to Reverberation Chamber Analysis (computer demo)
Charles F. Bunting, Oklahoma State University

Benchmark Study on Resources for Computational Electromagnetics (computer demo)
C. J. Reddy, EM Software & Systems (USA), Inc.

THURSDAY, 21 AUGUST 2008

9:30am to 12:00pm

Insertion Loss (hardware demo)
Vino Pathmanathan, TRW, and Tom Holmes, Agilent Technologies

Modeling Printed Circuit Board Geometries with Full-wave EM Modeling Software (computer demo)
Haixin Ke and Todd Hubing, Clemson University

Use of Computation EM Tools in Training and Career Development (computer demo)
Colin E. Brench, Southwest Research Institute

EMC STUDENT DESIGN CONTEST

Come and watch as students demonstrate the award-winning entries that they submitted to this year's EMC Student Design Contest!

9:30am to 10:30am

Friedrich Kirk from California State University, Chico will demonstrate his design entitled "EMI Reduction in a Switch Mode Power Supply".

10:30am to 11:30am

Wilfred Ghonsalves and Tian He from California State University, Chico will present the results of their Student EMC Design Competition.

* Hardware equipment and computer codes used shall not be demonstrated for commercial or promotional purposes. The IEEE EMC Society does not specifically endorse any equipment item or software code used in any of the demonstrations. The sponsor

of the demonstrations, the EMC Society Education & Student Activities Committee, reserves the right to cancel any presentation or topic that is deemed to be of a commercial nature at any time prior to or during this session.