



## IEEE EMC Society Chapter Meeting Announcement

The France, Germany, Italy, Los Angeles, Orange County, Oregon & SW Washington, Phoenix, Poland, San Diego, São Paulo, Santa Clara Valley, SE Michigan, Spain, and Turkey EMC Chapters  
Announce a LIVE Webinar:

### Advances in Automotive Design and Test for EMC Applications

*The Latest Information on Design Strategies and Test Methods Impacting the Future of the Automotive Industry*

**Date:** Thursday, April 22, 2021

<b>Agenda:</b>	8:00 am PDT	<b>Welcome and Announcements</b> – Rodrigo Rodriguez, Engineering Leader, EMC Team, Tesla
	8:05 am	<b>Putting an End to the Bad EMC Design Practices Commonly Employed in Automotive Products</b> by Todd Hubing, Professor Emeritus of Electrical and Computer Engineering, Clemson University, and President, LearnEMC
	8:40 am	<b>Automotive International EMC Standards Review</b> by Garth D’Abreu, Director, Automotive Solutions, ETS-Lindgren <i>(See presentation abstracts and speaker bios below.)</i>
	9:15 am	<b>Q&amp;A Session with the Speakers</b> – Moderated by Rodrigo Rodriguez
	9:30 am	Final Comments/Adjourn

**Register:** [Click here](https://register.gotowebinar.com/register/7531870568082066955) to register now on line or cut and paste this URL into your browser:

<https://register.gotowebinar.com/register/7531870568082066955>.

*There is no charge to attend and all IEEE members and non-members are welcome!*

**Questions:** Janet O’Neil, ETS-Lindgren, cell (425) 443-8106, email [j.n.oneil@ieee.org](mailto:j.n.oneil@ieee.org)

### TECHNICAL PROGRAM

#### **Putting an End to the Bad EMC Design Practices Commonly Employed in Automotive Products**

*By Todd Hubing, Professor Emeritus of Electrical and Computer Engineering, Clemson University and President, LearnEMC, Stoughton, Wisconsin*

**Abstract:** Many automotive products appear to be intentionally designed to maximize radiated emissions and immunity problems. In fact, product designers often add expensive components that serve no function other than to make electromagnetic interference problems worse. Why does this happen? One reason is that there is a lot of bad design advice coming from companies that sell components for EMI control. Another reason is that many engineers confuse ground with current-return and think that being electrically balanced is always better than the alternative. This presentation discusses these important concepts and highlights some of the design advice from component manufacturers that causes products to fail to meet EMC requirements.

#### **Automotive International EMC Standards Review**

*By Garth D’Abreu, Director, Automotive Solutions, ETS-Lindgren, Cedar Park, Texas*

**Abstract:** This presentation will review the current revisions of the main international automotive component and full vehicle standards, including CISPR 12, CISPR 25, ISO 11451-2, ISO 11452-2, and ECE Reg. 10.6. We will also briefly touch on the newly published CISPR 36. Attendees will learn how the increasing prevalence of electric vehicle variants has resulted in the addition of sections specific to these vehicle types. The presentation concludes with a look at some of the different facility setup and validation requirements of the standards.

## BIOGRAPHIES



**Dr. Todd Hubing** is Professor Emeritus of Electrical and Computer Engineering at Clemson University and President of LearnEMC. LearnEMC provides EMC instruction, consulting and design assistance to engineers working in the automotive, aerospace, and consumer electronics industries. Dr. Hubing holds a BSEE degree from MIT, an MSEE degree from Purdue University and a Ph.D. from North Carolina State University. He was an engineer at IBM for seven years and a faculty member at the University of Missouri-Rolla for 17 years before joining Clemson University in 2006. As the Michelin Professor of Vehicle Electronics at Clemson, he directed research in the Clemson Vehicular Electronics Laboratory and taught classes in vehicle electronics, electromagnetic compatibility, and digital signal integrity. Dr. Hubing has authored or co-authored over 200 papers and presentations on electromagnetic modeling, electromagnetic compatibility, and the design of reliable electronic systems. He is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a Fellow of the Applied Computational Electromagnetics Society, and a Past-President of the IEEE Electromagnetic Compatibility Society.



**Mr. Garth D'Abreu** is the Director, Automotive Solutions with ETS-Lindgren based at the corporate headquarters office in Cedar Park, Texas. He has primary responsibility for the design and development functions worldwide within the Systems Engineering group, specializing in turnkey solutions for Automotive EMC and Wireless test integration. Some of these more complex full vehicle and electronic sub-assembly (ESA) test chambers involve his coordination with the RF engineering team on custom components, and the certified, internal Building Information Modeling (BIM) team at ETS-Lindgren. Due to his considerable industry experience, he is the ETS-Lindgren global subject matter expert responsible for the ongoing research and development of Automotive EMC/Wireless test chambers for Regular, Autonomous, Electric, and Hybrid Electric Vehicles, focusing on combination anechoic chambers, reverberation chambers, GTEM cells, EMP protection applications, and wireless device (antenna measurement) test systems. Mr. D'Abreu is a Senior Member of the IEEE EMC Society and active participant in standards development, including the SAE, ISO and CISPR D automotive EMC standards, with over 25 years of experience in the RF industry. He holds a BSc degree in Electronics & Communications Engineering, from North London University, UK.



**Rodrigo Rodriguez** has been in the EMC field for over 18 years; he is currently the engineering leader for the EMC team at Tesla responsible for product design and validation testing of Electric Vehicles and energy products. Before joining Tesla, he worked nine years as the EMC Architect in the MRI division at GE Healthcare. He also worked at Continental Automotive (former Siemens Automotive) starting as a Hardware Design Engineer developing body electronic modules for six years; right after that, he focused on EMC design and validation testing for automotive electronic modules for body and powertrain controllers; he was also in charge of the EMC laboratory at Continental in Huntsville, Alabama. Mr. Rodriguez holds a Master of Engineering - Electromagnetics from University of Illinois at Chicago. He is based at the Tesla facility in Fremont, California.