

Industrial Workshop IW11

State-of-the-Art Test Methods for the Comprehensive Evaluation of Module and Vehicle Mounted Antenna-Dependent ADAS Features (by ETS-Lindgren)



Abstract:

The increasing demand for sensors and systems that use RF communication in one form or another in modern vehicles is driving the growing degree of complexity and control system density. For many of these advanced driver assistance systems (ADAS), it is necessary to perform some level of individual performance evaluation that may involve an over-the-air (OTA) component in the performance assessment. Although this may be just one aspect of the overall system operation, it is a vital part since there are many external environmental factors outside the control of the system that could have a profound impact on safety, reliability, and performance. The importance of OTA propagation for the sensors essential for ADAS operation has intensified the need for measurement facilities with enhanced sensitivity, capability, and increased frequency coverage in a simulated real-world environment. A few of the more significant test techniques are presented along with a discussion on their challenges and merits.



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Workshop Program (Thursday, 25 March 2021, 13.10-13.40h)

Topics to be addressed include:

1. Functional test with RADAR module including antenna pattern measurement
2. Functional test with RADAR and electronic control unit (ECU) – AI algorithm behavior included in the test
3. Sensor fusion test – test of complete vehicle installed ADAS module as closed VIL test
4. The above tests will be reviewed in a controlled environment for regression, repeatability, interoperability, and EMC

Speakers



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.



Mr. Ram Mirwani is the Director of Business Development, ADAS, with Konrad Technologies. He has over 24 years of experience in leading global business growth and market adoption for new technologies. His efforts span multiple areas including test automation, technical training, RF design, and (most recently) ADAS and Autonomous Vehicles. His publications include multiple technical videos and articles related to ADAS test methods and optimizing the ADAS product development cycle. Ram is based in Austin, Texas, USA, and is an avid traveler. He has a B.Sc in M.E. (1997) and an M.B.A (2010), both with honors, from Arizona State University.

Moderator



Dr. Christian Bornkessel received his Dipl.-Ing. degree in 1990 from the Technical University of Ilmenau, Germany and his Dr.-Ing. degree in 1993 from the University of Karlsruhe, Germany. From 1991 to 1995, he worked as a research assistant at the Institute for High Frequency Techniques and Electronics at Karlsruhe University in the field of numerical analysis of Electromagnetic Compatibility (EMC) aspects. From 1995 to 2014, he was with IMST GmbH, Kamp-Lintfort, Germany, where he worked as the head of the Test Center since 2010. He was responsible for the planning, implementation, accreditation, and operation of an accredited EMC test center. Since 2014, he is with Technische Universität Ilmenau, RF and Microwave Research Laboratory. There, he is responsible for a novel nearfield measurement facility called "VISTA" (Virtual Street). His current activities involve radio based car communication (V2X) as well as EMC aspects with a focus on human exposure to RF and LF electromagnetic fields. He is author and co-author of more than 100 contributions to peer reviewed journals and international conference proceedings, and he is a member of the German Commission on Radiological Protection and the ITG technical committee 7.1 "antennas".