



**EMC Antenna Calibration Round Table:
Experts Answer Questions to Maximize your Calibration Experience –
Now and in the Future**

Date: Thursday, April 15, 2021

Time: 8:00 am PDT	Welcome and Announcements – <i>Dennis Lewis, Technical Fellow, The Boeing Company, Seattle, Washington</i>
8:05 am	Overview on Antenna Calibrations for Electromagnetic Compatibility (EMC) Testing: SAE ARP 958D, ANSI C63.5-2017, CISPR 16-1-6:2017 <i>By Doug Kramer, Director, Lab Services, ETS-Lindgren, Cedar Park, Texas</i>
8:30 am	Round Table Panel – Open Discussion with EMC Antenna Calibration Experts <i>Doug Kramer and David Knight, Senior Research Scientist, National Physical Laboratory (NPL), Teddington, United Kingdom (UK)</i> <i>(See panelist and moderator biographies below)</i>
9:00 am	Wrap Up/Final Comments

Register: [Click here](https://attendeegotowebinar.com/register/1524688790064145165) to register now on line or enter the following on your browser:
<https://attendeegotowebinar.com/register/1524688790064145165>

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

TECHNICAL PROGRAM

Background: During the EMC Antenna Calibration Webinar sponsored by several IEEE EMC Chapters and ASC C63®, held on February 25, 2021, dozens of questions were asked by the nearly 300 attendees. Not all questions could be answered during the time allotted. By popular demand, we will answer the questions from the first webinar and any additional ones that arise during the Round Table discussion. We will begin with an overview of antenna calibration, drawing on information shared during the February 25 webinar, and follow with an open discussion. Our moderator has consolidated the questions to ask the panelists to answer. Note the depth of experience our moderator and panelists have in industry and government metrology to share with you!

View the original EMC Antenna Calibration Webinar [here](#) for additional background to better prepare you for the Round Table discussion or catch up quickly with the overview presentation below by Doug Kramer. This will set the stage for a lively discussion on the important topic of EMC Antenna Calibration.

Overview on Antenna Calibrations for Electromagnetic Compatibility (EMC) Testing: SAE ARP 958D, ANSI C63.5-2017, CISPR 16-1-6:2017

By Doug Kramer, Director, Lab Services, ETS-Lindgren, Cedar Park, Texas

Abstract: The landscape of EMC testing provides a wide variety of different requirements and test methods. Calibration is the process used to provide the traceability on measurement to the International System of Units (SI). Depending on the product testing method and writing body, the three most commonly referenced

documents for antenna calibration are CISPR 16-1-6, ANSI C63.5, and SAE ARP 958. This is an overview presentation of the three documents most commonly used by EMC testing standards for the calibration of an antenna, how to specify those services as you need them, and when to know the difference.

PANELIST BIOGRAPHIES



Doug Kramer is the Director, Lab Services (Acoustic/Calibration/EMC/Wireless Labs) for ETS-Lindgren in Cedar Park, Texas. He has 18 years of experience in managing commercial laboratories and providing test solutions to a variety of customers. He holds BSEE and MSEE degrees in Electrical Engineering from the University of Nebraska-Lincoln. He is the current chair of the ANSI C63.5 working group as well as the SAE ARP 958 revision working group. Doug supports the technical staff at ETS-Lindgren, many of whom are active contributors to the leading wireless industry organizations, including the WiMAX Forum®, CTIA Certification™, 3GPP, and the Wi-Fi Alliance®. Prior to joining ETS-Lindgren in 2011, Doug was the General Manager for the Nebraska Center for Excellence in Electronics (NCEE), the only full service EMC, environmental, and safety product testing facility in Nebraska.



David Knight graduated in 1990 with a BSc (Hons) in physics from Imperial College (London University). After work at British Aerospace Space Systems designing satellite control systems, he completed an MSc in control theory in 1993. Since then he has worked as a research scientist at NPL (Teddington, UK). He has developed improvements in the calibration of many types of antennas, on a wide variety of projects, for which he was recognized with the NPL Innovation Award. Currently he leads the VHF/UHF free-field group at NPL, and is a UK national committee member of CISPR/A. He is also a member of the ANSI C63.5 working group addressing antenna calibration.

HOST AND MODERATOR



Dennis Lewis received his BSEE degree with honors from Henry Cogswell College and his MS degree in Physics from the University of Washington. He has worked at Boeing for 32 years and is recognized as a Technical Fellow, leading the enterprise antenna measurement calibration and metrology capability for Boeing Test and Evaluation. Dennis holds 10 patents and is the recipient of the 2013 and 2015 Boeing Special Invention Award. He is a member of the IEEE and several of its technical societies including the Microwave Theory and Techniques Society (MTT-S), the Antennas and Propagation Society, and the Electromagnetic Compatibility (EMC) Society. He serves as a Board Member and is a past Distinguished Lecturer for the EMC Society. He is a Senior Member, served as Vice President on the Board of Directors for the Antenna Measurements Techniques Association (AMTA), and chaired its annual symposium in 2012. Dennis is a part time faculty member teaching a course on Measurement Science at North Seattle College and is chair of the Technical Advisory Committee. His current technical interests include aerospace applications of reverberation chamber test techniques as well as microwave measurement systems and uncertainties.