AMTA Regional Event Agenda
June 1, 2026
AT&T Conference Center
Austin, Texas

7:30 am	On-Site Registration and Continental Breakfast
8:00 am	**AMTA Welcome** Janet O'Neil, ETS-Lindgren, AMTA 2026 Host Joel Kellogg, ETS-Lindgren, AMTA 2026 Host
8:10 am	**Keynote Presentation: Introduction to Leaky Waves and Leaky-Wave Antennas** David R. Jackson, University of Houston, Texas
10:00 am	BREAK
10:20 am	Continuation of above keynote tutorial presentation: **Introduction to Leaky Waves and Leaky-Wave Antennas** David R. Jackson, University of Houston, TX
12:15 pm	LUNCH
1:00 pm	**Introduction to Antenna Measurements: Antenna Range Selection and Standard Recommendations** Vince Rodriguez, NSI-MI Technologies/Ametek, Suwanee, GA
1:45 pm	**Recent Advances in Reflection Suppression in Modern Antenna Range Measurements** Kim Hassett, Next Phase Measurements, Garden Grove, CA
2:30 pm	BREAK
2:50 pm	**Measuring S-Parameters and Power with Uncertainty** Giampiero Espossito, Maury Microwave, Austin, TX
3:30 pm	**Advancements in Antenna Far-Field Gain Extrapolation Calibration** Zhong Chen, ETS-Lindgren, Cedar Park, TX
4:15 pm	**Real World Challenges with Antenna Calibration in the Aerospace Industry** Dennis Lewis, The Boeing Company, Seattle, WA
5:00 pm	**Closing Comments and Preview of June 2 Half-Day Workshop Technical Program** Joel Kellogg, AMTA 2026 Host, ETS-Lindgren, Cedar Park, TX
5:10 – 6:00 pm	RECEPTION with Attendees, Speakers, and Exhibitors

See the "June 2 Workshop at ETS-Lindgren" summary for complete information about the workshop program. Note the workshop is INCLUDED in the registration fee.

AMTA/IEEE Workshop
Innovative Solutions to Real-World Measurement Challenges

Tuesday, June 2, 2026
8:30 am – 1:00 pm (includes continental breakfast and lunch)
at
ETS-Lindgren, 1301 Arrow Point Drive, Cedar Park, Texas 78613

The workshop will begin with an update provided on industry standards, including:

- IEEE 149 - Recommended Practice for Antenna Measurements
    - Reverb antenna efficiency
    - Chamber evaluation methods
- IEEE 1720 – Near-Field Measurements
- ANSC C63® - American National Standard Committee: Latest Advances in EMC Test Site Evaluation in ANSC C63® Standards and CISPR: Validation Methods for Radiated Emission Test Sites using Cylindrical Mode Filtered Site VSWR
- IEEE 1309 - IEEE Standard for Calibration of Electromagnetic Field Sensors and Probes (Excluding Antennas) from 9 kHz to 40 GHz
    - Addition of reverb test method to next revision

An overview/comparison of test environments will be provided, including:

- Free space
- Reverberation chambers

Novel techniques to optimize data processing will be reviewed:

- With today's dramatically increased computational software and hardware capabilities, collecting measurement data has never been faster or easier. Thousands of data sets can be collected, but how does one manage this data realistically and evaluate it effectively? This has opened the door for new and novel techniques to evaluate the performance of the test environment as well as improve data post processing.

In this hands-on, interactive workshop, attendees will learn:

- Complex cavity evaluations (aircraft, rockets, satellites)
- Methods for evaluating paddles in chambers (with rigid and flexible walls), with a discussion on the challenges and solutions
- Standards update, including soon to be published/recently published standards
- Test environment evaluation/considerations
- Novel data post-processing techniques
- Uncertainty considerations to ensure accurate measurements

Live demonstrations following the presentations provide an opportunity for hands-on learning using the EMC chambers located at ETS-Lindgren, 1301 Arrow Point Drive, Cedar Park, Texas, 78613, 512-531-6400.

Workshop speakers include industry experts Zhong Chen of ETS-Lindgren, Lars Foged of MVG, and Dennis Lewis of Boeing. Together they have nearly 70 years of experience in EMC as well as antenna measurements and have published dozens of papers available on IEEE Xplore.

TECHNICAL PRESENTATIONS WITH LIVE DEMONSTRATIONS

Title: Cylindrical Mode Filtered Site VSWR – Latest Advances in EMC Test Site Evaluation in CISPR and ANSC C63® Standards

Abstract: This demonstration introduces Cylindrical Mode Filtered Site VSWR (CMF SVSWR), a new EMC chamber validation technique developed to address the limitations of conventional Site VSWR methods at frequencies above 18 GHz, including under-sampling, limited quiet-zone coverage, and reduced repeatability. The demonstration will show the complete CMF SVSWR measurement process in real time using a single circular vector-pattern measurement with the transmit antenna positioned at the edge of the turntable. Key theoretical concepts, including cylindrical mode decomposition, mode-domain filtering, antenna mode content, and statistical evaluation of ripple distributions, will be highlighted throughout the demonstration. These methods enable chamber reflections to be separated from antenna characteristics without additional reference measurements or specialized positioning fixtures.

The session will include live data acquisition, mode filtering, post processing, and SVSWR computation, with emphasis on the improved repeatability, reduced test time, and more complete quiet-zone characterization achieved with CMF SVSWR. The technique is currently under consideration for inclusion in the developing ANSI C63.25.3 standard for EMC test sites from 18 GHz to 40 GHz.

Presenter: Zhong Chen, ETS-Lindgren

Title: Reverberation Chamber Stirring Techniques and Antenna Effects

Abstract: Reverberation chambers have been used for many years in the Electromagnetic Compatibility Community (EMC) and more recently in the wireless industry. The statistical methods used to evaluate the fields inside these chamber require the collection of statistically independent samples. These samples can be generated by employing different stirring techniques such as mechanical mode stirring/tuning, spatial and frequency stirring. With the development of conductive fabric chambers and tents, another method of mechanical stirring is possible by movement of the fabric walls and is referred to in literature as a Vibrating Intrinsic Reverberation Chamber (VIRC). This demonstration will highlight the strengths and weaknesses of each of these techniques. Careful consideration must be given to the antenna placement inside the chamber. We will demonstrate the effects of direct and indirect antenna coupling as well as antenna gain on reverberation chamber measurements.

Presenter: Dennis Lewis, Boeing

Speaker Biographies

Zhong Chen is Chief Engineer at ETS-Lindgren, located in Cedar Park, Texas. He has more than 25 years of experience in RF testing, anechoic chamber design, as well as EMC antenna and field probe design and measurements. He is an active member of the ANSC C63® committee currently serving as Vice-Chair and is the immediate past Chair of Subcommittee 1 which is responsible for the antenna calibration (ANSI C63.5) and chamber/test site validation standards (ANSI C63.4 and the ANSI C63.25 series). Mr. Chen is chair of the IEEE Standard 1309 committee responsible for developing calibration standards for field probes, and IEEE Standard 1128 for absorber evaluation. He is a former member of the IEEE EMC Society Board of Governors and the Antenna Measurement Techniques Association (AMTA) Board of Directors. He is a past Distinguished Lecturer for the EMC Society and is recognized as an AMTA Fellow. His research interests include measurement uncertainty, time domain measurements for site validation and antenna calibration, and development of novel RF absorber materials. Several papers authored and co-authored by Mr. Chen have received best paper recognition at global conferences. Zhong Chen received his M.S.E.E. degree in Electromagnetics from the Ohio State University at Columbus.

Dennis Lewis received his BS EE degree with honors from Henry Cogswell College and his MS degree in Physics from the University of Washington. He has worked at Boeing for 35 years, and is recognized as a Technical Fellow, leading the enterprise antenna measurement capability for Boeing Test and Evaluation. Dennis holds 12 patents and is the recipient of the 2013 and 2015 Boeing Special Invention Award. He is a Senior Member of the IEEE and several of its technical Societies, including the Microwave Theory and Technologies Society (MTT-S), the Antennas and Propagation Society (AP-S) and the Electromagnetic Compatibility (EMC) Society. He actively contributes to these Societies as a member of the IEEE MTT-S Subcommittee 3 on Microwave Measurements, and as a current Board Member and past Distinguished Lecturer for the EMC Society. He is a Senior Member and served as Vice President on the Board of Directors for the Antenna Measurements Techniques Association (AMTA) and chaired its annual symposium in 2012 and 2023. Dennis developed and taught a course on Measurement Science at North Seattle College and is a past chairman of its Technical Advisory Committee. His current technical interests include aerospace applications of reverberation chamber test techniques as well as microwave and antenna measurement systems and uncertainties.

Lars Foged received his M.S. degree in Electrical Engineering from the California Institute of Technology (Caltech), USA, in 1990. He is currently Vice President of Research and Development at the Microwave Vision Group (MVG). He has held several leadership positions within the IEEE Antennas and Propagation Society (AP-S), including Chair of the Industry Initiatives Committee (IIC) and current Chair of the Antenna Standards Committee (ASC). In 2023, he received the IEEE AP-S Industrial Innovation Award. He served as Vice-Chair of the European Conference on Antennas and Propagation (EuCAP) in both 2011 and 2022, and is course organizer, and board member of the European School of Antennas (ESoA). He served as President of the Antenna Measurement Techniques Association (AMTA) in 2023 and is AMTA Fellow and Distinguished Achievement Award

recipient. He is the author of two books and numerous scientific papers on antennas and measurement techniques. His work has earned multiple distinctions, including Best Technical Paper Awards at AMTA (2013) and EuCAP (2021). *Please note Mr. Foged will give his presentation remotely from his office in Italy.*

The speakers wish to acknowledge the insightful technical contributions to this workshop program provided by John Ladbury of NIST as below.

John M. Ladbury received the B.S.E.E. and M.S.E.E. degrees (specializing in signal processing) from the University of Colorado, Boulder, in 1987 and 1992, respectively. Since 1987 he has worked on EMC metrology and facilities with the Radio Frequency Technology Division and is now with the Shared Spectrum Metrology Group in the Spectrum Technology and Research Division of N.I.S.T. in Boulder, CO. His principal focus has been on reverberation chambers, with some investigations into other EMC-related topics such as time-domain measurements and probe calibrations. He was involved with the revision of RTCA DO160D and is a member of the IEC joint task force on reverberation chambers. He has been awarded four "Best Symposium Paper" awards at IEEE International EMC symposia, a Technical Achievement Award from the IEEE EMC Society for significant contributions in the development of reverberation chamber techniques for EMC applications, a US Department of Commerce Bronze Medal for his research in Reverberation Chambers, and a US Department of Commerce Gold Medal for his role in evaluating the impact of LTE wireless signals on the performance of GPS receivers.