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
- ANSC C63® - American National Standard Committee Validation Methods For Radiated Emission Test Sites, 1 GHz To 18 GHz (C63.25.1), 30 MHz to 1 GHz (C63.25.2), and (C63.25.3) 18 GHz to 40 GHz
    - Modal filtering techniques
    - Time domain measurement techniques
- 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 workshop provide an opportunity for hands-on learning using the Antenna and EMC labs 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 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.

LIVE DEMONSTRATIONS

Title: Test Site Measurements using Orthogonal Time and Mode Domain Transformation

Abstract: Antenna or site validation measurements are conducted in frequency and spatial domains. Data post processing in their orthogonal domain often provides a great deal of insights. Two particular transformations and post processing prove to be especially useful – time domain and mode domain transform. Time domain transform and gating is an effective technique to isolate reflections in antenna measurements. This function is included in commercial vector network analyzers. Although its applications seem straightforward, the implementations and limitations can feel like a "black-box". This demonstration provides an in-depth understanding of the method through the application of measuring the Voltage Standing Wave Ration (VSWR) of a test site. Mode domain transform is to decompose the spatial response at a particular frequency to its mode coefficients representations. Here, we place an antenna at the edge of a turntable, and performing a single cut vector pattern measurement. The vector S21 is then transformed to the spectrum or cylindrical mode domain, where a filter can be applied to isolate the chamber effects. The VSWR is derived by comparing the original pattern in the chamber to the "clean" filtered pattern. The demonstrations aim to illustrate the post processing techniques using orthogonal transformations. Both time and spectrum domain processing offer unique insights, and produce highly correlated results to the traditional Site VSWR method. The techniques have been adopted or are under consideration for the ANSI C63.25 standards by the ANSC C63® committee for EMC test sites validations.

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

NOTE: Immediately following this workshop, a Working Group meeting of the IEEE 1309 Probe Calibration Standard will be held at ETS-Lindgren. Workshop leaders will attend and invite anyone interested in this standard to attend as well. For more information, contact the Working Group Chair Zhong Chen at zhong.chen@ets-lindgren.com.

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.

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.