45th Annual Meeting and Symposium of the Antenna Measurement Techniques Association

AMTA 2023
October 8-13
Seattle, WA

FINAL PROGRAM

Hosted by

Co-Hosted by

BOEING

ETS-LINDGREN
An ESCO Technologies Company
Welcome

I’m excited to welcome you to the 45th Annual Symposium of the Antenna Measurement Techniques Association. Our host committee has worked hard to create an exceptional event. We continue the tradition of featuring a strong technical program and exhibition, as well as an exciting social program.

The technical program kicks off with AMTA Boot Camp, a 1-day course on antenna and related measurement fundamentals taught by a group of seven industry and academic professionals. The technical sessions will be launched by keynote speaker, Dr. Nima Mahanfar, Senior Manager of Antenna Development for Amazon’s Project Kuiper. IEEE Invited Speaker, Dr. Stefano Maci of the University of Siena, Italy, will discuss the new paradigm of smart radio environment (SRE) from the perspective of metasurface-based intelligent surfaces (IS). Our EurAAP Invited Speaker, Dr. Manuel Sierra Castañer of the University of Madrid, Spain, will review today’s challenges in antenna measurements and summarize some of the most important advances in mobile communications for automotive, space, and defense applications. Dr. Bing Brunton, Professor and H. Stewart Parker Faculty Fellow at the University of Washington, Department of Biology, presents our Thursday Lunch and Learn. This presentation focuses on the transformative potential of data processing, including big data, machine learning, and compressed sensing. In between sessions, make sure you spend time in the Exhibit Hall meeting colleagues from over 30 industry companies. We close our week with an exclusive technical tour of The Boeing Company’s iconic 737 Production Facility, birthplace of the world’s most popular airliner.

We have a full social calendar for you! Enjoy cocktails and mingle with friends and colleagues at the Welcome Reception. Relax and take in the views during our Monday Night Outing, a private yacht lake cruise. Companion tours offer the chance to visit Seattle’s Pike Place Market, the Chihuly Glass Museum, Snoqualmie Falls, local wineries, and Bellevue – “Seattle’s Eastside” – for a garden tour and shopping.

Our venue is the Hyatt Regency Lake Washington. City attractions like the Space Needle and Museum of Pop Culture, plus abundant outdoor recreation afforded by Mount Rainier and the waters of the Puget Sound, are around every corner. You’ll find a variety of restaurants within walking distance, including local favorite, Ivar’s Seafood Bar.

On behalf of the AMTA 2023 Host Committee and co-hosts, The Boeing Company and ETS-Lindgren, we look forward to seeing you in the beautiful Pacific Northwest in October.

Dennis Lewis,
The Boeing Company

Future Symposia

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<th>Year</th>
<th>Date</th>
<th>Location</th>
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<td>2024</td>
<td>October 27 - November 1, Cincinnati, OH</td>
<td>Resonant Sciences</td>
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<td>2025</td>
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AMTA 2023 Schedule

Stay up to date with the latest conference information!

At the conference, look for the link to download the AMTA 2023 mobile app.

You’ll have instant access to awesome features including:
- The full event schedule
- Contact info of other attendees
- Detailed info about speakers, exhibitors, and sponsors
- Notifications of important activities, updates, and more
AMTA 2023 Board of Directors

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Teh-Hong Lee, The Ohio State University
Massimiliano Simeoni, European Space Agency
Edward Urbanik, Applied Research Associates
**Social Calendar**

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**Sunday, October 8**

**Welcome Reception**

6 - 7:30 p.m.  
Sponsored by NSI-MI Technologies

Enjoy drinks and appetizers with friends and colleagues at the Hyatt Lake Washington, while enjoying a scenic sunset view of the lake. This event is complimentary to all registered symposium participants and their guests.

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**Monday, October 9**

**Monday Night Outing**

5:30 - 9:30 p.m.  
Sponsored by Microwave Vision Group (MVG) and Next Phase Measurements (NPM)

Ahoy mates! Join us for a three-hour cruise including a champagne toast upon boarding the Waterways Olympic Star luxury yacht. Enjoy a delicious gourmet dinner buffet and spectacular views along Lake Union and Lake Washington. Nautical attire encouraged. Cocktails may be purchased at the no-host bar. Boarding starts at 5:30 p.m. from the dock at the Hyatt Regency Lake Washington. Sailing starts at 6 p.m. SHARP! Return to the Hyatt Regency Lake Washington dock between 9 and 9:30 pm. Cost: $100.

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**Tuesday, October 10**

**Student Day**

11 a.m. - 7 p.m.  
Dinner Sponsored by STAR Dynamics  
Team Prize Sponsored by Resonant Sciences  
General Sponsor: Denmar Technical Services

Student Day will provide an opportunity for local university students to get a taste of antenna engineering and related disciplines by interacting with practicing engineers in a variety of venues. As in previous years, students will be able to tour vendor exhibits, sit in on papers, and enjoy a complimentary meal while listening to a presentation targeting issues relevant to those soon entering the engineering profession. In addition, AMTA will host a hands-on Student Day Design Contest. This will give students an opportunity to show off their engineering skills to recruiters (students should bring their resumes!) and have fun at the same time. See www.2023.amta.org for additional information. Cost: Complimentary to all student attendees.

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**Wednesday, October 11**

**Banquet Reception**

6:30 - 7:30 p.m.

**Banquet Dinner and Awards**

7:30 - 9:30 p.m.

Banquet wine sponsored by the Microwave Vision Group (MVG)

The AMTA 2023 Awards Banquet Reception will take place in the Lake Washington Ballroom pre-function space and the Awards Banquet will be held in the Lake Washington Ballroom. The banquet dinner is included with full registrations and additional tickets may be purchased at a cost of $95 per ticket. During the registration process, you will be asked to select your choice of entree. Enjoy dinner with wine, plus you may come away with a great bingo prize!

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**Thursday, October 12**

**Women in Engineering Reception**

5:30 - 7:30 p.m.  
Sponsored by ETS-Lindgren and The Boeing Company

NEW for AMTA 2023! This event welcomes all AMTA symposium registrants and the local IEEE community to promote collaboration, with a spotlight on the work of female RF/Microwave engineers, researchers, and other contributors to our profession. Everyone is welcome - men and women - to attend and enjoy inspiring discussions and networking opportunities! Appetizers and drinks are included in the $18 ticket price. See www.2023.amta.org for program information.

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**Friday, October 13**

**Technical Tour – Boeing 737 Production Facility Renton**

9 a.m. - 1 p.m.

Welcome to Boeing’s iconic 737 Production factory located in Renton, Washington, adjacent to the Hyatt Lake Washington Hotel. This sprawling facility has been at the forefront of commercial aviation for decades, serving as the birthplace of the world’s most popular airliner, the Boeing 737. With its state-of-the-art manufacturing processes and dedicated workforce, the Renton factory remains a symbol of innovation, precision engineering, and the ongoing legacy of Boeing’s commitment to excellence in the aerospace industry. Attendance is limited to symposium registrants and will be confirmed on a first-come, first-served basis. Cost: $65  

**NOTE:** All attendees will be required to provide an approved form of identification on-site in order to enter the Boeing facility. Foreign Nationals will need to submit additional information not later than three weeks in advance of the tour date. Further details to follow.
Companion Tours*

Pike Place and Chihuly Glass Museum
Monday, October 9
9 a.m. - 3:30 p.m.

Established in 1907, Pike Place Market is home to over 150 craftspeople, 70 farmers, 60 public entertainers, many unique shops, and is the #1 most visited location in Seattle. Ride the elevated Monorail, built for the 1962 World’s Fair, to the “Center of the (Seattle) Center” where we’ll have lunch as a group. Next, visit the Chihuly Glass Museum and Garden located at the base of the iconic Space Needle. Learn about world-renowned glass artist Dale Chihuly. Wander the garden with its unique plant collection designed to complement Chihuly’s work. Meet in the Hyatt lobby at 8:45 a.m. Lunch is on your own. Cost: $85

Snoqualmie Falls and Wine Tasting
Tuesday, October 10
9:15 a.m. - 3 p.m.

Travel in style...settle into our chauffeured limousine and travel to Snoqualmie Falls, one of Washington’s most popular scenic attractions. You may recognize it as the setting for “Twin Peaks,” the TV series and a cult classic movie. At the falls, we’ll walk through the historic Salish Lodge and overlook the famous 270 foot waterfall. We’ll have lunch on our drive to Woodinville’s wine country. Enjoy wine tasting at DeLille Cellars. On the way back to the hotel, we’ll stop at the magnificent Chateau Ste. Michelle grounds to take photos and visit the gift shop. Meet in the Hyatt lobby at 9 a.m. Lunch is included. Cost: $90

Bellevue Botanical Garden and The Shops at The Bravern
Wednesday, October 11
9:30 a.m. - 2:30 p.m.

In 1981, Cal & Harriet Shorts left their “arboretum” land to the City of Bellevue, providing it remain a public park. In 2022, the 53-acre garden celebrated its 30th anniversary. Travel by chauffeured limousine and enjoy a private docent-led walking tour. Garden features include the Lost Trail, Urban Meadow, and the contemplative Tao Garden. Next, shop - or window-shop! - and soak in the ambience at The Shops at The Bravern. Its prestigious collection includes Gucci, Louis Vuitton, and Prada. We’ll enjoy lunch as a group at one of the many restaurants. Meet in the Hyatt lobby at 9:15 a.m. Lunch is on your own. Cost: $60.

* Attendance is limited at all Companion Tours; tours will be filled on a first come, first served basis. Comfortable walking shoes are recommended for all tours. Please bring money for lunch on Monday and Wednesday tours and for gratuities (all tours). Transportation vehicles provided are subject to change for all tours.
The AMTA Boot Camp is a 1-day course on antenna and related measurement fundamentals. Live hands-on demonstrations complement the material presented. The Boot Camp is an ideal training opportunity for those new to the antenna and related measurements community and for those who would appreciate an update or “refresher” course on these topics. Instructors are academic and industry experts who were selected based not only on their expertise, but for their ability to communicate effectively.

The AMTA Boot Camp Back-to-Basics Topics Include:

- General RF Measurements
- Material Measurements
- Antenna Measurements
- RCS Measurements
- EMC/EMI Measurements
- New Innovations and Trends

Technical Goals and Objectives of the AMTA Boot Camp Include:

- Gain Basic Understanding of the AMTA-Relevant Measurement Systems and Associated Equipment
- Obtain Basic Understanding of the Theory and Physical Principles of each Measurement System
- Acquire Technical Vocabulary for each Measurement System
- Gain appreciation for similarities and differences of each Measurement System
- Establish appreciation for the Challenges/Applications that are Driving the Need for Each Measurement System
- Identify Common Themes in Each Measurement System (Calibration, Standards, Best Practices, Uncertainties, etc.)

Contact the Boot Camp Coordinator (bootcamp@amta2023.org) for more details.

See www.2023.amta.org for complete instructor biographies.
**Dr. Nima Mahanfar**  
Amazon Project Kuiper  
**Monday, October 9**  
8:15 - 8:55 a.m.

**Amazon’s Project Kuiper: Overcoming Antenna Design Challenges to Advance Global Broadband Connectivity and Reach Unserved and Underserved Communities**

Nima Mahanfar, Ph.D. has been leading satellite phased array antenna and customer terminal development for Amazon since 2018, when he joined as a founding team member of Project Kuiper. He has 20+ years of experience leading research and development in RF and antennas at SpaceX, Microsoft, and Nokia. At SpaceX, he was a founding member of the Starlink program, where he built and led the Phased Array Team and developed several generations of phased arrays for satellite payloads. At Microsoft, as Director of Antennas and RF Engineering, he built and led a center of excellence for antenna and RF development for consumer electronics, such as Xbox and HoloLens products, shipping tens of millions of products for consumer use. Previously, he held engineering and leadership roles in consumer electronics at Nokia and Sierra Wireless.

He received his Ph.D. in electrical engineering from Université de Limoges (France) in 2005. He has authored and co-authored over 70 conference papers, journal articles, and patents in the field of antennas for satellites and wireless communication applications.

Project Kuiper is Amazon’s initiative to increase global broadband access through a constellation of satellites in low Earth orbit (LEO). Its mission is to deliver fast, affordable broadband to unserved and underserved communities around the world. Some of the challenges include building large, wideband spaceborne phased arrays for the satellite payload, as well as low-cost phased arrays for customer terminals that can be manufactured at scale.

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**Manuel Sierra Castañer**  
Telecommunications School of Universidad Politécnica de Madrid  
**Tuesday, October 10**  
8 - 8:25 a.m.

**New Challenges in Antenna Measurements Towards an Interconnected World**

Manuel Sierra Castañer was born in 1970 in Zaragoza (Spain). He obtained the degrees of Telecommunication Engineering in 1994 and the Ph.D. in 2000, both from the Technical University of Madrid (UPM) in Spain, where he is Full Professor since 2017. During the summers of 2012 and 2013, he was a visiting Professor at Tokyo Tech. He is a Senior Member of the IEEE and Fellow of the AMTA. Since January 2016, he has been a member of the EurAAP (European Association on Antennas and Propagation) Board of Directors, serving as the EurAAP Vice Chair from 2019 to 2021. He was the General Chair of EuCAP 2022 in Madrid. Currently, he is the Dean of the Telecommunications School of Universidad Politécnica de Madrid and has been appointed as the EurAAP ambassador for 2023 to 2024.
Stefano Maci (F04) received the Laurea Degree cum Laude at University of Florence in ’87 and from ’97 is a Professor at the University of Siena. In 2004-2007 he was WP leader of the Antenna Center of Excellence (ACE, FP6-EU) and in 2007-2010 he was International Coordinator of a 24-institution consortium of a Marie Curie Action (FP6). In 2004, he was the founder of the European School of Antennas (ESoA), a post graduate school that presently comprises 34 courses on Antennas, Propagation, Electromagnetic Theory, and Computational Electromagnetics with 150 teachers coming from 15 countries.

Professor Maci has been Director of the Ph.D. program in Information Engineering and Mathematics of University of Siena and was a member of the first National Italian Committee for Qualification to Professor. He was the recipient of the EurAAP Award in 2014, of the IEEE Schelkunoff Transaction Prize in 2016, of the Chen-To Tai Distinguished Educator Award in 2016, and of the URSI Dellinger Gold Medal in 2020. He was the Chair of EuCAP 2023 and currently is President of the IEEE Antennas and Propagation Society (AP-S).

The research interests of Prof. Maci include high-frequency and beam representation methods, computational electromagnetics, large phased arrays, planar antennas, reflector antennas and feeds, metamaterials and metasurfaces. His research activity is documented in over 200 papers published in international and IEEE journals, 10 book chapters, and some 450 papers in proceedings of international conferences. The papers he coauthored have been cited more than 10,000 times (h index 50, source: Google Scholar).

Bing Wen Brunton joined the faculty at University of Washington (UW) in 2014 to build an interdisciplinary research program at the intersection of biology, neuroengineering, and data science. She is currently a Professor and H. Stewart Parker Faculty Fellow at the Department of Biology, with affiliations at the eScience Institute for Data Science, the Paul G. Allen School of Computer Science & Engineering, and the Department of Applied Mathematics. She studied at Caltech (2006, B.S. in Biology, focus on biophysics) and then Princeton (2012, Ph.D. in Neuroscience, focus on computational and systems neuroscience). Her postdoctoral work (2012–2014, University of Washington) expanded her expertise in applied mathematics, dynamical systems, and neuroengineering.

The 2023 AMTA Distinguished Achievement Award is presented to Dr. Olav Breinbjerg who throughout his career has exemplified and promoted the goals and objectives of the Antenna Measurement Techniques Association.

The AMTA hereby cites Dr. Olav Breinbjerg for:

- Technical-scientific contributions to near-field antenna measurements in areas of validation standard antennas, antenna diagnostics, higher-order probe correction, low-frequency probes, phaseless techniques, and high-accuracy pattern and gain determination.

- Leadership in founding the Technical University of Denmark (DTU) Electromagnetic Test Centre, and for managing major test campaigns for high-accuracy measurement of European Space Agency (ESA) Earth observation satellite antennas as well as in developing the DTU-ESA Spherical Near-Field Antenna Test Facility.

- MSc- and PhD-level supervision and teaching in near-field antenna measurement techniques at the Technical University of Denmark and within the European School of Antennas.

- Contributions to international cooperations on antenna measurements within the EU Antenna Centre of Excellence, the EurAAP facility validation campaigns, and the IEEE Standards Committee; and for many years’ engagement and publications at AMTA.

- For outstanding and pioneering contributions to the practice of antenna design, analysis, and measurements.

Dr. Olav Breinbjerg was born in Silkeborg, Denmark, in 1961. He received the M.Sc. and Ph.D. degrees in electrical engineering from the Technical University of Denmark (DTU) in 1987 and 1992, respectively. He was on the Faculty of DTU’s Department of Electrical Engineering as an Assistant Professor from 1991 to 1995, Associate Professor from 1995 to 2005, and Full Professor from 2006 to 2021. From 1997 to 2021 he was also Head of the Electromagnetic Systems Group and the DTU-ESA Spherical Near-Field Antenna Test Facility, and he founded the DTU Electromagnetic Test Centre. He resigned his position at DTU in May 2021 and founded ElMaReCo for independent research consultancy. Olav Breinbjerg was a Visiting Scientist at Rome Laboratory in 1988, a Fulbright Research Scholar at the University of Texas at Austin in 1995, and a Visiting Professor at the University of Siena in 2011 and 2022. He has been the main supervisor of 17 Ph.D. students. His research is generally in applied electromagnetics - particularly in antennas, antenna measurements, computational techniques, and scattering - for applications in wireless communication and sensing technologies. He is the author or co-author of more than 75 journal papers, 250 conference papers, and 250 technical reports.

Dr. Breinbjerg was a recipient of a U.S. Fulbright Research Award in 1995, the 2001 AEG Elektron Foundation’s Award, the 2003 DTU Student Union’s Teacher of the Year Award, the 2013 and 2015 European School of Antennas Teacher of the Year Awards, and the 2020 Hans Christian Ørsted Award. Olav Breinbjerg is a Fellow of AMTA and IEEE and Knight of the Order of Dannebrog.
The 2023 AMTA Distinguished Service Award is presented to David Pinnell for his outstanding service to the Antenna Measurement Techniques Association.

The AMTA hereby cites David Pinnell for:

- Tirelessly supporting AMTA’s growth to the benefit of the organization and its members by actions such as helping to establish new policies that allowed non-US Board of Director members to serve in any Board position and the very first Boot Camp in 2016.
- Contributions through service on the Antenna Measurement Techniques Association Board of Directors in the positions of Treasurer (2015-2016), President (2017) and Past President (2018).
- Serving on the Host Committees for AMTA 2002 in Cleveland, Ohio and AMTA 2010 in Atlanta, Georgia.
- Serving as Co-Chair of AMTA 2013 in Columbus, Ohio and as Chair of AMTA 2021 in Daytona, Florida.
- Serving on the Nominations and Awards Committee in 2015 and 2017 and as Chair of the Committee in 2018.
- Serving in the role as Chief Financial Officer (CFO) since 2017 and continuing to serve in this capacity.
- Successfully led AMTA through US Internal Revenue Service audit during the year 2018.
- For his many years of ongoing AMTA support.

David Pinnell’s bio in his own words:

My career of nearly 44 years has taken me many places and each has played a significant part in bringing me to where I am today. Graduating high school early at the age of 16 and enlisting in the US Air Force at the age of 17 led to my enthusiasm and appreciation for technology. After serving 6 years of active duty, my civilian career afforded me the opportunity to work with many highly respected technical companies such as Electro-Magnetic Sciences, DynCorp, Denmar Technical, EG&G, Johnson Controls, and finally to STAR Dynamics.

I have been an AMTA member for 24 years, served on the host committee for AMTA 2002 & 2010, served as co-chair for AMTA 2013 and chair in 2021. I was awarded AMTA Senior Membership in 2013 and elected to the Board of Directors in 2014. I have served as Treasurer from 2015 to 2016 during which I helped to change Board policy and procedures to allow any elected BoD member to serve in any role, including that of treasurer. As a result, AMTA has had three non-US treasurers since 2017. I served in the position of President in 2017, Past President 2018, and I have served in an advisory role as CFO since 2017.

However, my accolades are less about me and more about those who encouraged and supported me along this path. God, who put me in the right place at the right time over and over again; my wife Amy, who has been my friend and confidant for over 40 years; Jim Lutz, who taught me to spell RCS; Randy Jost, who taught me to use it; Dan McCain, who taught me to manipulate it; Paul Swetnam, who convinced me to support it; and finally Jerry Jost, who has allowed me to lead, sell, and grow this amazing technology.

I also have been blessed along my path to be able to work alongside so many with a passion to teach, mentor, and challenge. They instilled in me that same desire. Encouraging and sharing knowledge with the next generation is essential and listening to the next generation and what they have to offer is just as important. I have come to know that even when teaching, you are rarely the smartest person in the room, you just have information that others desire. Every person around you has something to teach, if you take the time to listen. Isn’t this exactly what AMTA is all about?
The AMTA Distinguished Speaker Award is bestowed on an AMTA member who is a proven expert in the field of electromagnetic measurements and has excellent presentation and communication skills. The awardee is expected to travel internationally for invited presentations or lectures to AMTA regional events, AMTA nodes, meetings arranged by AMTA members, or to present at other meetings to increase interest in AMTA.

The Antenna Measurement Techniques Association Distinguished Speaker Award is presented to Dr. Olav Breinbjerg for a period of two years effective from January 1, 2024.

Benoit Derat has over 21 years of experience in antenna design, numerical and analytical modelling, as well as antenna measurements. On the latter topic, Benoit has lead the research and development of near and far-field assessment techniques, and the realization of tens of commercial products and associated solutions implementing a wide range of characterization technologies, including e.g. miniature probe-arrays, compact antenna test range, plane-wave synthesis, near-field transformations, etc... Since 2017, he is exerting his technical and leadership competences as Senior Director for solutions developments and customer project implementations at Rohde & Schwarz (Munich, Germany), focusing on Electromagnetic Compatibility, Over-The-Air and antenna test applications. Before joining R&S, he founded ART-Fi (Orsay, France), the company that created the first vector-array Specific Absorption Rate measurement system and originated the IEC 62209-3 international measurement standard for human exposure evaluation. Benoit was both the CEO and President of ART-Fi starting in 2010. Earlier, he worked for seven years long as an antenna and electromagnetics research engineer at SAGEM Mobiles, contributing to the development of the radiofrequency design of commercial mobile phones. Benoit authored so far more than 80 scientific conference and journal papers and is an inventor on more than 40 patents. He received an engineering degree from SUPELEC (Gif-sur-Yvette, France) in 2002 and a Ph.D. degree in physics from the University of Paris XI with honors in 2006.
Marco Anthony Sánchez, Managing Director (CEO) for Antenna Systems Solutions, received his Bachelor of Science degree in Mechanical Engineering from California State University of Northridge (CSUN) in 1991. While attending school Tony worked for a brief time as a mechanical designer contractor at Edwards Air Force Base for Computer Science Corp. (CSC); this is where his interest in antennas and antenna testing was born. A couple of years after graduating, Tony worked for Sensor Systems, Inc. in Chatsworth, CA an antenna manufacturer as a mechanical design engineer and later as an antenna designer and packaging engineer for different antenna projects. In late 1996, Tony joined Antcom Corporation in Torrance, CA as a systems design engineer and started his career in antenna measurements. At Antcom, Tony was responsible for designing their antenna measurement systems and was also part of the development team at the time. After five years with Antcom Corp. he moved to Temecula, CA to join Advance Electromagnetics Inc. (AEMI) a wholly owned subsidiary of Orbit/FR now MVG. His duties consist of project management, technical design, and marketing; he later took the role of Director of Operations. In 2009 Tony joined Nearfield Systems, Inc. (NSI) as a Program Manager. Tony has been an AMTA member since 1998 and has co-authored some technical papers. During his time in the antenna industry, Tony has worked to bring improved products and innovative technology to the antenna measurement community and promote the industry.

Jorge L. Salazar-Cerreño’s journey in engineering began with a Bachelor of Science in Electrical and Computer Engineering from the University Antenor Orrego, Trujillo, Peru, in 1994. He received a Master’s degree in the same field from the University of Puerto Rico, Mayaguez (UPRM) in 2002 and a Ph.D. in Electrical and Computer Engineering from the University of Massachusetts, Amherst, in 2011. At the University of Massachusetts, Dr. Salazar-Cerreño’s groundbreaking Ph.D. research pioneered the development of the first dual-polarized active phased array antennas for the National Science Foundation Engineering Research Center for Collaborative Adaptive Sensing of the Atmosphere. In 2014, Dr. Salazar-Cerreño joined the Advanced Radar Research Center at The University of Oklahoma. His role as a research scientist and subsequent elevation to associate professor at the School of Electrical and Computer Engineering in 2021 underscored his dedication to pushing the boundaries of radar technology. Dr. Salazar received the 2022 OU Outstanding Faculty Award and the 2021-2022 OU Annual Award for Excellence in Research Grants. He has coauthored 50 journal papers and contributed to more than 70 conference papers. Notably, he was both an author and coauthor of the best paper awards on Antenna Measurements and Applications in 2021, as well as the Phased Array Antenna Symposium in 2016 and 2013. He is an active senior member of the IEEE and AMTA. Dr. Salazar’s indelible mark on phased array antenna technology, radar technology, atmospheric sensing, and metrology stands as a testament to his unwavering dedication, pioneering spirit, and commitment to pushing the boundaries of scientific and education exploration.
The following outstanding contributors were awarded Fellow membership status in 2023

Zhong Chen
Joshua A. Gordon
Francesco Saccardi
Justin Dobbins

Zhong Chen is Chief Engineer at ETS-Lindgren, located in Cedar Park, Texas. He has over 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. Currently he is a member of the IEEE EMC Society Board of Directors and a former member of 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, Ohio, USA.

Joshua A. Gordon is a physicist in the RF Technology Division at NIST, and his research areas focus on investigating new technologies and approaches for antenna metrology, RF electric-field, and power metrology. These include pioneering robotic-based antenna metrology approaches, optical techniques for antenna alignment, Rydberg atom-based electric-field and RF power metrology, and Rydberg atom antennas. Dr. Gordon’s research has sought to explore the boundaries of knowledge from outside the discipline of antenna metrology to make radical changes and advancements in the state-of-the-art in antenna measurements and electromagnetic metrology. Dr. Gordon’s work in robotics for use in mm-Wave antenna measurement applications was recognized by the US Department of Commerce, receiving the 2016 US Department of Commerce Silver Medal for work on developing the Configurable Robotic Millimeter-Wave Antenna Range (CROMMA). Dr. Gordon’s work in Rydberg atom-based sensors has also been highly recognized for receiving the 2023 Department of Commerce Gold Medal and highest-honor Ron Brown Excellence in Innovation Award. Dr Gordon’s work has been published in book chapters and over 100 research papers for the advancement of antenna measurements and electromagnetic metrology. He is inventor on several patents related to spatial metrology technologies with applications to antenna alignment and robot calibration as well as Rydberg atom based electric-field sensing. Dr. Gordon received his doctorate in optical sciences and electromagnetics from the University of Arizona, College of Optical Sciences and is current Project Leader for the Antenna Metrology Project at the National Institute of Standards and Technology (NIST). Dr. Gordon is also active in the academic arena regularly serving as both a student and post doctoral mentor and technical advisors and has been an AMTA member since 2011, and is a senior member of both the AMTA and IEEE.
Justin Dobbins is a Senior Technical Fellow at Raytheon in Tucson, AZ, where he is responsible for design, development, and integration of measurement systems for advanced antenna and radome products. He received his BS and MS in Electrical Engineering from The University of Texas at Austin. While pursuing his MSEE he was a research assistant at UT’s Applied Research Laboratories where he designed, built, and tested a novel electrically small VHF antenna. Justin went on to work in the antenna group at NASA Johnson Space Center (JSC) where he completed a broad variety of both space and commercial projects. Soon after his arrival at NASA, Justin assumed technical responsibility for all antenna measurement facilities and in this role he was instrumental in several modernization and restoration upgrades that greatly improved the measurement quality and capability of the various test ranges at JSC.

In 2006 Justin joined Raytheon where he was initially part of design teams for both radar seeker and conformal antenna products. He went on to serve as a group lead for antenna design engineers, and in 2008 he became chief engineer for multiple advanced antenna and radome measurement facilities that Raytheon constructed to support products operating over a broad application space. In 2017 Justin was named the Lead Technologist for antennas and RF radomes at Raytheon’s heritage Missile Systems business unit, and he continues to serve in the same capacity today for RTX. Despite this product technology oversight role, Justin maintains a strong involvement as a subject matter expert in all aspects of Raytheon antenna and radome measurements. He has been an AMTA member since 2008, and an AMTA senior member since 2017.

Francesco Saccardi received the M.Sc. in telecommunication engineering from the University of Siena in 2010. He performed his thesis activity on antenna measurements at the Denmark Technical University (DTU).

In October 2010, he joined the Microwave Vision Group (MVG) where he is currently working in the R&D department. His activities are mainly focused on the research and development of innovative antenna measurement techniques for several applications. He has authored and coauthored more than 150 journal and conference papers on antenna measurement and related post-processing techniques. He has co-authored several chapters of the books “Post-processing techniques in antenna measurements” and “Modern automotive antenna measurements”. He is also actively contributing to IEEE standards related to antenna measurements. In 2013, he and his colleagues received the AMTA “Best Technical Paper Award” and in 2021, the EuCAP “Best Measurement Paper Award”. Since 2014, he is a teacher in the bi-annual European School of Antennas (ESOA) course on antenna measurement. He has taught in several seminars and workshops focused on near-field antenna measurements, plane wave generator-based antenna measurements, automotive measurements, and advanced post-processing techniques. Since 2020 he is a senior member of AMTA.

In 2007, AMTA created the Edmond S. Gillespie Fellow membership grade to recognize those members for their outstanding and pioneering contributions to the theory, practice, and art of antenna and RF measurements. Membership in the Fellow grade is to honor the memory of Dr. Edmond S. “Stan” Gillespie who made many contributions to the antenna community as a professor at California State University, Northridge, and his activities in both the AMTA and the IEEE Antennas and Propagation Society. A complete list of AMTA Fellows can be found on the AMTA web site www.amta.org.

The criteria for being named a Fellow are through contributions to AMTA in two of the following three areas:

1. Significant technical contributions through publications,
2. Excellence in education in the field of antenna measurements, and
3. Dedication through active AMTA service.
2023 Outstanding Service Awards

Michelle Taylor, 2021 President
Zhong Chen, 2022 Vice President
Jeffrey Guerrieri, 2022 Host Chair
The Boeing Company, 2023 Host
ETS-Lindgren, 2023 Co-Host

2023 Senior Members

Ila Agnihotri, Kymeta Corporation
Jorge Salazar-Cerreno, University of Oklahoma
Benoit Derat, Rohde & Schwarz
Marc Dirix, Antenna Systems Solutions S.L.
Tian Hong Loh, National Physical Laboratory (NPL)
Vikass Monebhurrun, CentraleSupelec
Shantanu Padhi, SP Consultant
Nate Roman, The Boeing Company
Lucia Scialaqua, Microwave Vision Group (MVG)
Michelle Taylor, NSI-MI Technologies

2023 Eric Walton Student Travel Scholarship Recipients

Sigurd Sándor Petersen
Aalborg University, Denmark

Henrik Jansen
RWTH Aachen University, Germany
412 TW Benefield Anechoic Facility
The BAF provides a robust and scalable RF T&E infrastructure to ensure weapons system survivability and mission effectiveness for the DoD, industry and our allies. The largest anechoic test facility provides a secure “virtual open-air RF range (OAR) within four walls and ceiling” —a valuable tool providing systems and test engineering applied to the development and the T&E of RF systems. We conduct Antenna Pattern, EW/IO, Electromagnetic Compatibility and Electromagnetic Environmental Effects (E3) tests.

7G aa Co. Ltd.
7G aa Co. Ltd. is a startup company of AIST. Recent research topics are electromagnetic field (EM-field) measurement using mobile robots, and antenna measurement technologies for 5G frequency bands and millimeter-wave bands up to 110 GHz. Further, we have already developed the RoF (Radio over fiber) systems for microwave devices, antenna measurements, and millimeter-wave generator using RoF technology more than 50 GHz (up to 320 GHz in near future). We can totally support your antenna measurements and microwave measurement.
AIST: National Institute of Advanced Industrial Science and Technology.

AMTA 2024
Resonant Sciences is proud to host the 46th Annual Meeting and Symposium of the Antenna Measurement Techniques Association (AMTA) in the greater area of Cincinnati, Ohio, USA from October 27 – November 1, 2024. Resonant, along with our Academic co-hosts from the Air Force Institute of Technology cordially invite you to attend and participate in this annual event.
AMTA is a non-profit, international organization dedicated to the development and dissemination of theory, best practices and applications of antenna, radar signature, and other electromagnetic measurement technologies.
Visit [www.amta.org](http://www.amta.org) for more information.

Anritsu
Anritsu offers Vector Network and Spectrum Analyzer solutions with the VectorStar™ product line covering 70 kHz up to 220 GHz in a single sweep. Conduct full vector s-parameter measurements at wide distances of 100 meters or more. Powered by PhaseLync™ technology, the ShockLine™ ME7868A modular distributed 2-port vector network analyzer enables engineers to synchronize two portable ShockLine MS46131A modular VNAs and connect them to a DUT or AUT to conduct vector transmission measurements over distances of 100 meters or more, and at a lower cost. All of your test and measurement needs are covered by Anritsu.

AP Americas
AP Americas is one of the leading global manufacturers of anechoic chambers and shielded rooms for various applications in EMC, antenna testing, 5G, wireless and high-frequency technology. Our successful solutions are based on the vast technical knowledge and expertise of our team, from sales to execution. We feature the Emerson & Cuming advanced WAVASORB® absorbers for a quality and high performing solution. AP Americas Inc., www.apamericas.com
ATEC
Advanced Test Equipment Corp. (ATEC) is a leading provider of test & measurement equipment rentals, sales, calibration, and service. Since 1981, test engineers, government agencies, and Fortune 500 companies have relied on ATEC to guide them to the right equipment, ship it quickly, and offer them the industry’s best technical expertise and customer care. ATEC’s broad inventory includes EMC, Power Supplies & Loads, RF Safety, Electrical, NDT, Environmental, Communications, and General Purpose test equipment. Explore the ATEC inventory at www.atecorp.com.

Century Metal Spinning Co.
Centary Metal Spinning offers 5-axis machining, fabrication, and laser cutting. We provide complex metal spinning and machining for “build to print” prototype and production applications. From quote to delivery, we deliver on time and within specifications. Our focus is Responsible Business Practices, Compliance, Customer Success, Confidentiality, and Manufacturing Excellence. To learn more, visit www.centurymetalspinning.com

Chamber Services, Inc.
Chamber Services, Inc. is a forward – thinking, Anechoic Facility Design, Construction and Services Company committed to delivering the highest level of service and superior quality products to valued customers. Our services include Anechoic Chamber Design, Consultation and Construction. Including Architectural, Modular and Welded RF Shielded Enclosure Installations/Relocations, RF Shielded Enclosure Maintenance, RF Absorber Material Removal/Installation, RF Absorber Material Maintenance, RCM and Pneumatic RF Shielded Door Installation and Maintenance, Zinc and Copper Coatings Flame Spray Service. Chamber Services Inc. association with the leading RF Shielding and RF Absorber manufactures provides a factory direct source for RF Shielded Enclosures, RF Shielded Doors, RF Absorber Materials, Power and Signal Line Filters, Waveguides, Pipe Penetrations, Custom Test Fixtures, Portable RF Absorber Panels and much more.

Delta Sigma Company
For over three decades Delta Sigma Company (DSC) has delivered turnkey RCS, antenna, and material measurement systems, best known for their reliability, accuracy, and feature-rich capabilities. DSC began in 1990, providing critical support to the F-117, B-2, ACM, and F-22 programs. In addition to RF measurement systems, DSC has developed a line of factory automation and mixed reality systems used across the transportation sector and within the U.S. Postal Service. Whether RF measurement, automation, or mixed reality systems, DSC will tailor a solution that meets your individual needs.

ETG Fire
ETG Fire is a single source fire protection systems and services company. We design, install, test, inspect, monitor, and maintain special hazard fire protection systems and complex fire alarm systems for customers nationally from our offices in Denver, CO, Seattle, WA, Coeur d’Alene, ID, Pasadena, CA, Cheyenne, WY, Dallas, TX, and Tulsa, OK. ETG Fire is a highly qualified provider of special hazard fire protection systems in the Anechoic Chamber industry sustaining a strong relationship with 3rd party authority having jurisdictions and property insurance companies satisfying the client’s needs.
**ETS-Lindgren**
ETS-Lindgren offers innovative EMC, Wireless, RF and Microwave test systems, including far-field, near-field, and compact range chambers for RCS and antenna measurement testing. Our global customers represent the automotive, defense/aerospace and wireless industries. Quality components include RF and Microwave absorber, multi-axis positioners, high performance antennas in standard and custom designs, among others. Wireless Systems enable 5G, OTA, MIMO, and CATR testing of mobile and mmWave devices featuring EMQuest™ software for fully automated antenna pattern measurement for passive antennas and active wireless devices. Services include calibration at our A2LA accredited lab.

**Hiller**
Hiller is the largest and oldest Special Hazard Fire Protection Company in the United States specializing in the protection of Anechoic Chambers.

**IEEE Antennas and Propagation Society (AP-S)**
The field of interest of the AP-S encompasses: antennas, including analysis, design, development, measurement, and testing; radiation, propagation, and the interaction of electromagnetic waves with discrete and continuous media; and applications and systems pertinent to antennas, propagation, and sensing, such as applied optics, millimeter- and sub-millimeter-wave techniques, antenna signal processing and control, radio astronomy, and propagation and radiation aspects of terrestrial and space-based communication, including wireless, mobile, satellite, and telecommunications. Learn more about:
AP-S at https://ieeeaps.org/
AP-S Young Professionals: https://ieeeaps.org/committees/ypa
AP-S Awards: https://ieeeaps.org/awards/complete-list-of-ap-s-awards

**IEEE Electromagnetic Compatibility (EMC) Society**
The IEEE EMC Society is committed to advancing technology through engineering related to the electromagnetic environmental effects of systems - to be compatible with themselves and their intended operational environment. Founded in 1957, the EMC Society addresses standards, measurement techniques and test procedures, instrumentation, equipment and systems characteristics, interference control techniques and components, education, computational analysis, and spectrum management, along with scientific, technical, industrial, professional or other activities that contribute to this field. With more than 3,500 members around the world, over 80 chapters globally, active Young Professionals and Women in Engineering communities, an annual symposium, as well as five peer-reviewed publications available on IEEE Xplore, the EMC Society welcomes your involvement! Visit www.emcs.org for more information.

**Impulse Technologies Inc.**
Impulse Technologies Inc. is a globally recognized single-source specialty RF components company. With capabilities including engineering, export licensing, procurement, repairs, spare part location, and specification solutions, Impulse is the go-to company for all of your RF and Millimeter-Wave needs. We have been the trusted advisor for Aerospace, Commercial, Defense, and Telecommunications markets for over thirty years. Beyond a wide array of manufacturers and suppliers, Impulse Technologies is dedicated to providing the assemblies, components, and solutions for our clients' requirements. Certified by both ITAR and ISO9001:2015 Impulse can always be trusted to meet the highest quality standards.
In Compliance
In Compliance Magazine features in-depth coverage of worldwide regulatory compliance issues for the electronics industry. Each month you’ll find technical articles from industry-leading authors on topics related to testing and design, standards updates and changes, products, services, and more! Available in print or digitally, we offer a variety of informational resources for electrical engineering professionals. Visit our website, activate your free subscription, and join one of our many eNewsletters for regular updates.

Junkosha Inc.
Junkosha is Japanese cable manufacturer who’s “Enabling Technology Innovators” through the pursuit of creating unsurpassed value, we contribute to expanding the possibilities of customers oriented toward high performance polymer technological innovation and also to the broader prosperity of society with the cutting edge technology such as “Phase and Amplitude stability” for mmWave frequency range.

Keysight Technologies
Keysight enables innovators to push the boundaries engineering by quickly solving design, emulation, and test challenges to create the best SatCom experiences. Whether you’re looking to design and validate guidance systems, satellite payloads, or even microwave communications, Keysight accelerates innovation with intelligent insights that reduce risk and speed time-to-market.

MVG, the Microwave Vision Group
MVG offers cutting-edge technologies for the visualization of electromagnetic waves. With advanced test solutions for antenna characterization, radar signature evaluation and electromagnetic measurements, we support company R&D teams in their drive to innovate and boost product development. Dedicated to the aerospace & defense, satellite, telecommunications, automotive, EMC & CE industries as well as research institutes, we are the one-stop shop for turn-key systems, solutions and services for near-field and far-field antenna measurement, CATR, RCS, radar, 5G OTA test solutions, and EMC testing. MVG: fast, accurate and reliable test and measurement solutions.

Next Phase Measurements
Next Phase Measurements (NPM) is a California-based US company with a management team of industry pioneers recognized all over the world having over 100 man-years of experience in antenna measurement systems. NPM leverages world class established products like industrial robots and receivers integrating them with its state-of-the-art software, NPM-AMS 2.0, to provide turnkey antenna measurements and upgrades for Near-Field, Far-Field, CATR, and RADOMÉ systems. NPM is also the distributor and value-added-reseller across the American continents for Antenna Systems Solutions, providing antenna measurement systems to the worldwide Aerospace, Defense, Commercial, Automotive, Wireless, Academic and Research markets.
Northrop Grumman
At Northrop Grumman, we pioneer technologies and break new boundaries to protect and advance humanity as we know it. From deep sea to outer space to cyber space we are defining possible at the edge of every frontier.

NSI-MI Technologies
NSI-MI Technologies is the preferred global supplier of antenna, RF and microwave testing equipment. Our renowned technical experts are dedicated to delivering high-quality engineering solutions and advanced products for a wide range of applications where precise measurement, motion control and data acquisition is required. We apply our expertise in microwave technologies, electromagnetic propagation and mechanical system design to provide complete antenna test systems for aerospace, defense, wireless, transportation and research industries. Whether investing in a turnkey system, precision component, or using our in-house testing facilities, we have the right solution for you.
You can always Test with Confidence™ at NSI-MI.

OphirRF
Since 1992, OphirRF has been designing and manufacturing High Power RF/Microwave Amplifier Systems and Modules for Defense Applications, EMC, and Test & Measurement purposes. Our capabilities include broadband, multi-octave amplifiers from 10 KHz to 40 GHz. Power ranges up to thousands of watts are achievable CW, and pulsed power in the tens of thousands of watts are no problem. All Ophir RF Amplifiers are made in the USA. Contact us with your most difficult requirement!

PPG Cuming Microwave Corporation & Cuming Lehman Chambers
PPG Cuming Microwave Corporation is an ISO 9001:2015, US manufacturer of C-RAM® RF/Microwave absorbers, C-STOCK® low-loss dielectric materials, and PPG C-SHIELD™ conductive materials, serving military & aerospace and commercial markets for over 40 years. With a full range of RF and power testing capabilities, our materials are tested and validated to meet industry standards. Cuming-Lehman Chambers, a wholly owned subsidiary, provides design, project management and installation of new anechoic chambers, host facilities, and specialty test boxes. In addition, when your project calls for a retrofit, refurbishment or relocation of an existing chamber our expert staff guides you through the considerations.

QuadSAT
QuadSAT is a Danish company founded in 2017 that supplies antenna testing and tracking solutions to the satellite, defence, wireless and broadcast markets. The QuadSAT system is a drone-based, mobile testing solution for antenna, satellite and RF diagnostics which is fully automated and location independent. It is a cost efficient and globally scalable solution that can operate on antennas of all sizes, transforming how antennas are tested. It delivers cost and time-efficient testing and verification of RF equipment, without compromising on quality.
Quantic PMI
Quantic PMI (Planar Monolithics) was founded in 1989 and soon established its reputation as a leading supplier of custom, high-reliability radio frequency microwave components and subsystems covering DC to 70 GHz. Delivering industry-standard performance for mission-critical applications in the military, communications, commercial and consumer industries, Quantic PMI continues to expand its portfolio of state-of-the-art hybrid MIC/MMIC components, modules, and subsystems. And as a Quantic company, we are part of an extended engineering ecosystem and powerful supply chain, defining a competitive advantage that extends to every Quantic PMI customer.

Raymond EMC
Raymond EMC specializes in the engineering, design, fabrication, installation, and testing of custom radio frequency (RF) shielded enclosures, reverb, and anechoic chambers for military, government, automotive, high-tech, medical, and industrial applications. Raymond EMC prides itself on being an industry leader in product quality, performance, and innovation while providing unmatched client care and product support.

Resonant Sciences
Resonant Sciences LLC is a growing leader in the defense industry with world-class experts in six focus areas: Advanced Apertures, EM Measurement Systems & Analysis, Aerospace Manufacturing, Integrated Electronics, EO/IR, and Instrumentation Radars. Resonant Sciences’ facilities include an electronics lab, a 60-foot anechoic chamber, a pick and place machine, and a variety of specialized test equipment. Our team also has significant experience supporting down range installations and flight testing. With our vertical integration and dynamic culture, Resonant Sciences is able to move quickly from prototypes to fully fielded operational systems.

Rohde & Schwarz USA, Inc.
Rohde & Schwarz develops, produces and markets products for test and measurement, broadcast and media, cybersecurity, secure communications and monitoring and network testing. Founded more than 80 years ago, the independent company has an extensive sales and service network in more than 70 countries.

SixArms
SIXARMS is an innovative company that is using cutting edge unmanned aerial vehicle (i.e. drone) technologies to produce efficient, accurate and cost-effective measurement solutions within the broadcast, telecommunication and defense RF environments. We have taken our extensive knowledge and experience in these areas, added an airborne platform, replaced out-of-date measurement practices and created portable airborne measurement systems to offer a new era in rapid characterization of transmission infrastructure. We offer consultancy services and measurement products around antenna proof of performance.
Sprinkler Innovations
Sprinkler Innovations manufactures FM approved self-retracting telescoping sprinkler assembly for Anechoic and EMC chambers. We provide a wide range of services for our retractable sprinkler head assemblies including design, installation, maintenance, and testing. All of our assemblies are manufactured entirely in the USA. With thousands of sprinkler assemblies installed worldwide, we can help integrate self-retracting sprinkler assemblies into your next project.

STAR Dynamics Corporation
STAR Dynamics Corporation has an extensive history within the international, defense-related Research Development, Test and Evaluation (RDT&E) community, leveraging a product legacy of ultra-wideband (UWB) RCS/Imaging and precision Time Space Position Information (TSPI) tracking Instrumentation Radar systems. Established in 1988, STAR Dynamics was built on innovation of state-of-the-art electromagnetic technology. With a strong pedigree of more than thirty years of development, manufacturing, sales and aftermarket support of high-technology radar systems, STAR Dynamics is now globally recognized as the industry leader of these instrumentation systems for both commercial and military applications. STAR Dynamics is also registered with the U.S. Department of Defense as a Veteran-Owned Small Business (VOSB), which has facilitated the company to expand its instrumentation technology base within the international defense community. STAR Dynamics is focused on providing the best support possible to its domestic and international customers, and investing in development of future technologies to maintain market superiority.

TDK RF Solutions
TDK RF Solutions is a world leader in the design, development, and manufacture of technical solutions for the electromagnetic compatibility testing and antenna measurement industries. We offer a complete range of solutions including automated test systems, TDK anechoic chambers, RF absorbers, antennas, software, and a wide range of test products. We call it Total System Technology®, and it means TDK RF Solutions is your best choice of partner for proven solutions and services backed by internal technical expertise. If you are in the market for a complete turnkey solution or looking to expand your test capabilities with a new antenna, contact us to see what TDK can do for you.

Testforce
Testforce is your expert in test. Armed with years of experience and knowledge in key technologies driving markets. We have built a longstanding reputation for helping customers address the mounting challenges of test and measurement. Tired of long lead times? Testforce is a stocking distributor of NI, Tektronix, EA, and Rohde & Schwarz.

Virginia Diodes, Inc.
VDI manufactures state-of-the-art test and measurement equipment for mm-wave and THz applications. These products include Vector Network Analyzer, Spectrum Analyzer and Signal Generator Extension Modules that extend the capability of high-performance microwave measurement tools to higher frequencies.
Monday, October 9

8 - 9 a.m.  Meeting Opening/Keynote Address
8 - 8:10 a.m.  Welcome and Introduction of Keynote Speaker: Lars Foged (AMTA President)

8:15 - 8:55 a.m.  Keynote Speaker: Nima Mahanfar, Amazon Kuiper, "Amazon’s Project Kuiper: Overcoming Antenna Design Challenges to Advance Global Broadband Connectivity and Reach Unserved and Underserved Communities"

8:55 - 9 a.m.  Opening Remarks and Technical Session Overview: Cosme Culotta-López (Technical Coordinator)

Session 1 _________________________________

9 - 10 a.m.  Space Applications
Chair: Jonathan Frasch, The Boeing Company

9 - 9:20 a.m.  0746_1123_000135
Comparative Analysis of GNSS Measurements produced by Real and Emulated Satellites via 3D Wave Field Synthesis in an OTA Testbed
Renato Zea Vintimilla¹, Mario Lorenz², Nitin Muchhal¹, Markus Landmann², Giovanni del Galdo¹, ¹Technische Universität Ilmenau, ²Fraunhofer Institute for Integrated Circuits IIS

9:20 - 9:40 a.m.  0746_1123_000039
BIOMASS Calibration Transponder Antenna Measurements in ESA-ESTEC HERTZ Facility
Ines Barbary¹, Luis Rolo¹, Eric Van Der Houwen¹, Mauro Bandinelli², Davide Bianchi², Dean Rowse²l, Mike Royle³, ¹European Space Agency, ESTEC, ²IDS Ingegneria Dei Sistemi, ³C-Core

9:40 - 10 a.m.  0746_1123_000042
Using the Three-Antenna Gain Method to Improve Measurement Accuracy for VHF Satellite and Space Applications
Bennett Gibson-Dunne¹, Greg Brzezina², Ken Oueng², Adrian Momciu³, ¹University of Waterloo, ²Canadian Space Agency at the David Florida Lab

10 - 10:30 a.m.  MORNING BREAK

Session 2__________________________________

10:30 - Noon  Recent European Activities on Antenna Measurements (EurAAP/EuCAP Convened Session)
Chair: Tian Hong Loh, National Physics Laboratory

10:30 - 10:50 a.m.  0746_1123_000071
Updated Status on the Activities of the EurAAP Working Group on Antenna Measurements
Lucia Scialacqua¹, Tian Loh², Javier Fernández Álvarez³, Michael Mattes³, Lars Foged¹, Manuel Sierra-Castañer⁴, ¹Microwave Vision Italy, ²National Physical Laboratory, ³DTU, ⁴Universidad Politécnica de Madrid

10:50 - 11:10 a.m.  0746_1123_000087
Recent Activities of a European Union Joint Research Project on Metrology for Emerging Wireless Standards
Tian Hong Loh¹, Wei Fan², Djamel Allai³, Akram Alomainy⁴, Frédéric Pythoud⁵, Emrah Tas⁶, ¹National Physical Laboratory, ²Aalborg University, ³Laboratoire National de Métrologie et d’Essais, ⁴Queen Mary University of London, ⁵The Federal Institute of Metrology METAS

11:10 - 11:30 a.m.  0746_1123_000090
Simulation Based Uncertainty Analysis for Radiation Pattern Measurements Using an Active Radar Module
Anna Gracich¹, Murat Sözer², Dirk Heberling¹,², ¹Institute of High Frequency Technology, RWTH Aachen University, ²Fraunhofer Institute for High Frequency Physics and Radar Techniques FHR

11:30 - Noon  0746_1123_000065
Observing a mm-Wave Metamaterial Lens from the Perspectives of Near-to-Far Field and CATR
Sungtek Kahng¹, Yejune Seo¹, Jaewon Koh¹, Woogon Kim¹, Dongjin Lim², Jongpil Kim³, ¹Incheon National University, ²C&G Microwave Co. Ltd.

Noon - 1:30 p.m.  EXHIBITOR SPONSORED LUNCH

Session 3__________________________________

1:30 - 3:10 p.m.  Standards and Characterization
Chair: John Locke, Molex Connected Mobile Solutions

1:30 - 1:50 p.m.  0746_1123_000024
The Demystification and Measurement of Receiving Efficiency
Ryan Cutshall, Justin Dobbins, Raytheon Technologies

1:50 - 2:30 p.m.  0746_1123_000136
Progress on the Development of IEEE Std 1128 - Recommended Practice on Absorber Evaluation
Zhong Chen¹, Vince Rodriguez², Lars Foged³, ¹ETS-Lindgren,
A 5G NR FR1 UWB Antenna as Benchmark for the Development of IEEE Standard P2816
Vikass Monebhrurun¹, Satyajit Chakrabarti², Richelieu Quoi³, ¹CentraleSupélec, ²Society for Applied Microwave Electronics Engineering and Research (SAMEER), Ministry of Electronics and Information Technology (MeitY), ³ART-Fi

2:50 - 3:10 p.m. 0746_1123_000054 Modified Thru-Reflect-Match Polarimetric Calibration Technique for Focused Beam Systems
Jeffrey Massman¹, Michael Havrilla², ¹Air Force Research Laboratory (AFRL), ²Air Force Institute of Technology

3:10 - 3:30 p.m.  AFTERNOON BREAK

Session 4
3:30 - 4:50 p.m. Antenna Design and Analysis
Chair: Claudio Curcio, University of Naples Federico II

3:30 - 3:50 p.m. 0746_1123_000013 Performance Comparison of Traditionally Manufactured and Additively Manufactured Luneburg Lenses
Anna Stumme, Alexander Golding, Mark Dorsey, US Naval Research Laboratory

3:50 - 4:10 p.m. 0746_1123_000105 Horn Antenna Manufacturing Using Additive Manufacturing Techniques
Jeffrey Fordham, Jon Swarner, Edwin Barry, NSI-MI Technologies

4:10 - 4:30 p.m. 0746_1123_000096 On the limitations of off-normal-incident measurement of reflectivity performance of microwave absorbers
Amin Enayati¹, Vince Rodriguez², ¹E&C Anechoic Chambers NV, ²NSI-MI Technologies

4:30 - 4:50 p.m. 0746_1123_000127 Breaking the Limits: A High Performance Dual-Polarized Ultrawideband Antenna for Radar and Communication Systems
Syed Jehangir, Jorge Salazar-Cerreno, Advanced Radar Research Center (ARRC), The University of Oklahoma

Tuesday, October 10
8 - 8:25 a.m. Invited EurAAP Speaker: Manuel Sierra-Castañer, Polytechnical University of Madrid, “New Challenges in Antenna Measurements Towards an Interconnected World”

8:25 - 8:30 a.m. Daily Announcements and Technical Session Overview by Technical Coordinator

11 a.m. - 7 p.m. Student Day

Session 5
8:30 - 9:30 a.m. Imaging, Algorithms, and Processing Techniques
Chair: Marion Baggett, NSI-MI Technologies

8:30 - 8:50 a.m. 0746_1123_000022 Novel Application of Compressed Sensing in Cylindrical Mode Filtering for Far-Field Antenna Measurements
Zhong Chen¹, Stuart Gregson², Yibo Wang¹, ¹ETS-Lindgren, Inc., ²Next Phase Measurements

8:50 - 9:10 a.m. 0746_1123_000034 A Novel Data Processing Technique for Calibrating Low Frequency Antennas with Long Ring Down Time in An Extrapolation Range
Yibo Wang¹, Zhong Chen¹, Dennis Lewis², Wayne Cooper², ¹ETS-Lindgren, Inc., ²The Boeing Company

9:10 - 9:30 a.m. 0746_1123_000036 Machine Learning Based Fourier Phase Retrieval for Planar Near-Field Antenna Measurements
Marc Dirix¹, Stuart Gregson²,³, ¹Antenna Systems Solutions, ²Next Phase Measurements, ³Queen Mary University of London

9:30 - 10 a.m. MORNING BREAK

Session 6
10 - Noon Antenna Measurements I
Chair: Zhong Chen, ETS-Lindgren

10 - 10:20 a.m. 0746_1123_000057 Measurements on Extended Long Objects for Radar Field Probes
Pax Wei, The Boeing Company (Retired)

10:20 - 10:40 a.m. 0746_1123_000010 A New Closed Form Field Asymptotic Expansion Applied to Far-field Evaluation of Antenna Arrays at Short Range Lengths
Benoit Derat, Rohde and Schwarz GmbH & Co. KG

10:40 - 11 a.m. 0746_1123_000019 Electric-Field Pattern Measurements of Acoustically Driven Piezoelectric Field Emitters
Srinivas Prasad Mysore Nagaraja, Brook Feyissa, Tristan Wilson, Jack Bush, Darmindra Arumugam, Jet Propulsion Laboratory

11 - 11:20 a.m. 0746_1123_000053 Constrained FoV Radiated Power as a Figure of Merit of Phased Arrays
Alejandro Antón Ruiz¹, Samar Hosseinzadegan², John Kvarnstrand², Klas Arvidsson², Andrés Alayón Glazunov³, ¹University of Twente, ²Bluetsen AB, ³University of Linköping

Please check the AMTA 2023 mobile app for the most current schedule of events.
**Final Technical Program**

**Session 7**

**1:30 - 3:30 p.m. Near-Field Measurements I**  
Chair: Nate Roman, The Boeing Company

**1:30 - 1:50 p.m.**  
0746_1123_000009  
Design and Performance Comparison of 3D Metal Printed Near Field Probe for K-Ka Band  
Ila Agnihotri, Kymeta Corporation

**1:50 - 2:10 p.m.**  
0746_1123_000014  
Antenna Coupling Evaluation Based on Accurate Measured Source Models and Simulations  
Lucia Scialacqua¹, C. J. Reddy², Lars Foged¹, Microwave Vision Italy, Altair Engineering, Inc

**2:10 - 2:30 p.m.**  
0746_1123_000017  
Planar Wide Mesh Scanning Using Multi-Probe Systems  
Fernando Rodríguez Varela¹, Manuel Sierra-Castañer², Francesco Saccardi³, Lucia Scialacqua³, Lars Foged⁴, ¹Universidad Rey Juan Carlos de Madrid, ²Universidad Politécnica de Madrid, ³Microwave Vision Italy

**2:30 - 2:50 p.m.**  
0746_1123_000029  
A Simple Non-Linear Planar Near-Field Antenna Measurement System  
Jason Jerauld, Tarron Teeslink, Felix Yuen, Nathan Landy, Tom Driscoll, Echodyne Corporation

**3:00 - 3:20 p.m.**  
0746_1123_000032  
Phase Measurement for 5G NR Modulated-Signal Using Rapid Spherical Near-Field System with Probe-Receiver Combined Array  
Jong-Hyuk Lim¹, Jungkuy Park¹, Dong-Woo Kim², Soon-Soo Oh², Radio Research Agency, ²Chosun University

**3:20 - 3:30 p.m.**  
0746_1123_000033  
Planar Line Scanning Using Multi-Probe Systems for Millimeter Wave Antennas  
Sangdong Kim⁴, Bong-seok Kim⁴, Jonghun Lee⁵, Tarun Chawla⁶, Greg Skidmore⁶, Ram Narayanan⁷, ¹DGIST, ²remcom, ³Pennsylvania State University

**3:30 - 3:50 p.m.**  
0746_1123_000034  
Chipscale Package Near-Field Measurement and Analysis Using Multi-Probe System  
Jonghun Lee⁵, Jungkuy Park¹, Jong-Hyuk Lim¹, Dong-Woo Kim², Soon-Soo Oh², Radio Research Agency, ²Chosun University

**3:50 - 4:10 p.m.**  
0746_1123_000035  
Near Field Measurement and Analysis in Frequency Ranges of 20 GHz to 90 GHz  
Jungkuy Park, Sol Choi, Korea Radio Research Agency

**3:50 - 4:10 p.m.**  
0746_1123_000036  
Designing 3D-Printed Patch Antennas with Varying Infill Densities  
Bibek Kattel, Winn Hutchcraft, Richard Gordon, University of Mississippi

**3:50 - 4:10 p.m.**  
0746_1123_000037  
An Investigation on SLA-Printed Waveguide Components at 10 GHz - 15 GHz  
Snorre Skeidsvoll, Cosme Culotta-López, QuadSAT ApS

**3:50 - 4:10 p.m.**  
0746_1123_000038  
Enhancing On-Chip Antenna Calibration: A Hybrid Multi-Axis Scanner Enabling Near-Field and Far-Field Measurements for Over-the-Air Calibration  
Edgar Oblitas¹, Jorge Salazar-Cerreno¹, Andy Bonthron², Edmond Megerdichian³, Ivan Rodionov², Maha Achour², ¹Advanced Radar Research Center (ARRC), The University of Oklahoma, ²remcom, ³Pennsylvania State University

**3:50 - 4:10 p.m.**  
0746_1123_000039  
New Designs for a Feed Fence to Reduce the Direct Coupling to the Quiet Zone on Compact Ranges  
Mark Ingerson, Vince Rodriguez, Daniël Janse van Rensburg, Anil Tellakula, NSI-MI Technologies

**3:50 - 4:10 p.m.**  
0746_1123_000040  
Diverse Utilization of an Anechoic Chamber for Automated Electronic Warfare (EW) Testing in Support of Explosive Ordnance Disposal (EOD)  
Joseph Friedel, David Oyediran, Thomas Higdon, NSWC-IH

**3:50 - 4:10 p.m.**  
0746_1123_000041  
Proficiency Test for Verification of Measurement Identity of Antenna Calibration Between Korea
Accreditation Agencies
Jeongan Lee, Youngho Kim, Sol Choi, Jonghyuk Lim, Jongkuy Park, Radio Research Agency

0746_1123_000086 Testing of a Dielectric-Filled Ridged Waveguide System for Oil/Water Ratio Measurements
Jose Alvarez, Aramco Americas: Aramco Research Center – Houston

5:30-6:30 p.m. IEEE 1720 Standard Working Group Meeting

Wednesday, October 11

8 - 8:25 a.m. Invited AP-S Speaker: Prof. Stefano Maci, University of Siena, “Metasurface Antennas in 5G and Beyond Scenarios”

8:25 - 8:30 a.m. Daily Announcements and Technical Session Overview by Technical Coordinator

Session 9

8:30 - 9:30 a.m. Computational Electromagnetics and Numerical Methods
Chair: Amedeo Capozzoli, University of Naples Federico II

8:30 - 8:50 a.m. 0746_1123_000114 The Electric Multipole Produced by an SAE J2954 Wireless Power Transfer System Employing DD Couplers
James McLean, Robert Sutton, TDK Corp.

8:50 - 9:10 a.m. 0746_1123_000035 Compressive Sensing Applied to Planar Near-Field Based Array Antenna Diagnostics for Production Testing
Clive Parini¹, Stuart Gregson², ¹Queen Mary University of London, ²Next Phase Measurements

9:10 - 9:30 a.m. 0746_1123_000023 Predication of Planar Near-Field Measurements Based on Full-Wave Three-Dimensional CEM Measurement Simulation
Rostyslav Dubrovka¹, Robert Jones¹, Clive Parini¹, Stuart Gregson², ¹Queen Mary University of London, ²Next Phase Measurements

9:30 - 10 a.m. MORNING BREAK

Session 10

10 - Noon Antenna Measurements II
Chair: Francesco Saccardi, Microwave Vision Group

10 - 10:20 a.m. 0746_1123_000129 A Self-Contained and Airborne SDR Transceiver System for UAS based Antenna Pattern Measurement and Phased Array Radar Calibration Validation
Khuda Burdi¹, Antonio Segales¹, Caleb Fulton¹, Daniel Wasielewski², Igor Ivic², Jorge Salazar-Cerreno¹, Robert Palmer¹, ¹Advanced Radar Research Center (ARRC), The University of Oklahoma, ²National Institute of Standards and Technology (NIST)

10:20 - 10:40 a.m. 0746_1123_000101 Estimating Uncertainties of System Level RF Parameters of Transponder Spacecraft Payloads
Edwin Barry, Pieter Betjes, Patrick Pelland, Daniël Janse van Rensburg, AMETEK / NSI-MI Technologies

10:40 - 11 a.m. 0746_1123_000046 Exploration of UAV-Based Testing and Qualification of NGSO Earth Stations
Andrian Buchi, Ondrej Pokorny, Snorre Skeidsvol, Sigurd Petersen, QuadSAT ApS

11 - 11:20 a.m. 0746_1123_000027 NIST’s Antenna Gain and Polarization Calibration Service Re-instatement
Joshua Gordon¹, Benjamin Moser², ¹National Institute of Standards and Technology (NIST), ²Colorado School of Mines

11:20 - 11:40 a.m. 0746_1123_000052 A Squat Cylinder-Dihedral Dual Calibration Device for Compact Ranges at UHF
Hirsch Chizever¹, Brett Haisty¹, Laura Suzuki², ²Delta Sigma Company, ²Applied Research Associates

11:40 - Noon 0746_1123_000132 Characterizing Compact Antenna Test Range Using Advanced Computational Techniques
Venkata Bhyrava Murthy Devata, Altair Engineering

Noon - 1:30 p.m. LUNCH

12:30 - 1:30 p.m. IEEE 1128 Standard Working Group Meeting

Session 11

1:30 - 3:30 p.m. Near-Field Measurements II
Chair: Francesco D’Agostino, University of Salerno

1:30 - 1:50 p.m. 0746_1123_000069 Evaluation of Near-Field to Far-Field Transformation Accuracy Based on Reference Radiation Models
Arun Bhatt¹, Afroditi Kyrligkitsi¹, Thomas Gemmer¹, Adam Tankielun¹, Hendrik Bartko¹, Benoit Derat¹, Thomas Dallmann², ¹Rohde and Schwarz GmbH & Co. KG, ²Radio Technologies for Automated and Connected Vehicles Research Group, TU Ilmenau

1:50 - 2:10 p.m. 0746_1123_000077 Accurate Evaluation of Antenna Measurement Range Performance with the SWE Transmission Formula
Francesco Saccardi, Andrea Giacomini, Lars Foged, Microwave Vision Italy
Final Technical Program

2:10 - 2:30 p.m.  0746_1123_000079
Design and Validation of Quasi Ideal Ultra-Wideband 3dB/180°
Couplers for High Precision Spherical Near-Field Probes
Andrea Giacomini¹, Francesco Saccardi¹, Vincenzo Schirosi¹,
Antoine Raulais¹, Lars Foged¹, Jean-Marc Baracco², ¹Microwave
Vision Italy, ²MARDEL SARL

2:30 - 2:50 p.m.  0746_1123_000084
Design of a Multiprobe Planar Near-Field Scanner for Ku-Band
Juha Ala-Laurinaho¹, Sabin Karki¹, Ville Viikari¹, Ari Alanne²,
Risto Lehto², Paul Moseley², Massimiliano Simeoni², ¹Aalto
University, ²DA Design Oy, ³ESA

2:50 - 3:10 p.m.  0746_1123_000100
Electrical Alignment Technique for Offset-Mounted and
Arbitrarily Oriented AUTs in a Robot-Based mm-Wave Antenna
Test System
Henrik Jansen¹, Roland Moch¹, Dirk Heberling¹, ², ¹Institute
of High Frequency Technology, RWTH Aachen University,
²Fraunhofer Institute for High Frequency Physics and Radar
Techniques FHR

3:10 - 3:30 p.m.  0746_1123_000104
A Simple Algebraic Approach for Finding Minimal but Most Representative Measurement Points
of Antenna Patterns
Robert Geise, HTWK University of Applied Science

3:30 - 4 p.m.  AFTERNOON BREAK

Session 12

4 - 5:30 p.m.  Poster Session II
Chair: Manuel Sierra-Castañer, Polytechnical University of
Madrid

0746_1123_000118  Free-Space Material Measurement for a
Small Dielectric Plate at W-Band
Jin-Seob Kang, Korea Research Institute of Standards and
Science (KRIS)

0746_1123_000137  The Impact of Rotating Linearly-
Polarized Feeds on Circularly-Polarized Gain Uncertainty
Adam Mehrabani¹, Rob Mercer², Jeff Fordham², ¹SAIC,
²AMETEK / NSI-MI Technologies

6:30 - 9:30 p.m. Awards Banquet

Thursday, October 12

Session 13

8:10 - 8:30 a.m.  RF Material Design and Characterization
Chair: Adam Mehrabani, SAIC

8:10 - 9:30 a.m.  0746_1123_000011
Design and Validation of Material Properties of Additively
Manufactured Latticed Material
Shoaib Anwar¹, Francesco Scattone², Evgeni Kaverine¹,
Andrea Giacomini³, Francesco Saccardi², Nicolas Gross¹,
Per Iversen², Lars Foged², ¹MVG Industries, ²MVG, ³Orbit
Advanced Technologies, Inc. (MVG)

8:30 - 8:50 a.m.  0746_1123_000044
An In-Situ Probe for Continuous Dielectric Permittivity
Monitoring
John Schultz, Compass Technology Group

8:50 - 9:10 a.m.  0746_1123_000106
Design of a Tunable Frequency-Selective Surface for
Microwave Material Measurement Applications
Michitaka Ameya, Yuto Kato, AIST
Final Technical Program

Christopher Howard¹, Kenneth Allen¹, Bill Hunt², ¹Georgia Tech Research Institute, ²Georgia Institute of Technology

9:10 - 9:30 a.m.  0746_1123_000134
New Methods for Extraction of VHF Electrical Properties of Conductive Coatings
Ren Geryak, John Schultz, Compass Technology Group

9:30 - 10 a.m.  MORNING BREAK

Session 14__________________________________

10 - 11:40 a.m.  Range Design, Instrumentation, and Characterization
Chair: Lydell Frasch, The Boeing Company (Retired)

10 - 10:20 a.m.  0746_1123_000025
A Unique Spherical Near-Field Test System for Commercial Aircraft Radar Radome Testing
Kefeng Liu¹, Anbang Liu², Dennis Lewis³, ¹ETS-Lindgren, Inc., ²MJK Electronic Engineering, ³The Boeing Company

10:20 - 10:40 a.m.  0746_1123_000099
Accurate Antenna Characterisation at UHF/VHF Frequencies with Plane Wave Generator Systems
Lars Foged¹, Francesco Saccardl¹, Vincenzo Schirosi¹, Andrea Giacomini¹, Francesco Scattone¹, Lucia Scialacqua¹, Arianna Diamantl¹, Enrico Tartaglino¹, Nicolas Gross², Shoab Anwar², Evgueni Kaverine², Per Iversen³, Edward Szpindor³, ¹MVG Italy, ²MVG Industries, ³The Boeing Company

10:40 - 11 a.m.  0746_1123_000004
Recommendations for RF Absorber Treatment of Ranges Having a Movable Gantry or Multiple Probes
Vince Rodriguez, Mark Ingerson, AMETEK / NSI-MI Technologies

11 - 11:20 a.m.  0746_1123_000064
Introducing LORENTZ: A Novel Low-temperature Near-Field Terahertz Chamber for Instrument Characterisation
Paul Moseley¹, Luis Rolo¹, Andrey Baryshev²,³, Tobias Vos⁴, Alena Belitskaya⁵, Daniele Ronso da Costa Lima⁶, Peter de Maagt¹, Paul Hartogh⁵, ¹European Space Agency, ESTEC, ²Kapteyn Astronomical Institute, ³Dutch Terahertz, ⁴SRON, ⁵MPS

11:20 - 11:40 a.m.  0746_1123_000126
Measurement Uncertainties in Outdoor Far-field Antenna Ranges
Edwin Barry, Pieter Betjes, Eric Kim, AMETEK / NSI-MI Technologies

Noon - 1:30 p.m.  LUNCH  “Lunch & Learn” Keynote Speaker: Dr. Bing Brunton, University of Washington, “Data-Driven Analytic Methods for Sparse, Dynamic Models of Multimodal Brain and Behavior Data”

Session 15__________________________________

1:30 - 3:10 p.m.  RCS Measurements
Chair: Justin Dobbins, Raytheon Technologies

1:30 - 1:50 p.m.  0746_1123_000038
Background and Clutter Removal Algorithm for RCS Extraction in Semi-Anechoic Chamber
Papa Ousmane Leye, Adamo Banelli, Shaikha Aldhaheri, Chaouki Kasmi, Felix Vega, Islam Yahia, Technology Innovation Institute

1:50 - 2:20 p.m.  0746_1123_000056
The Small Resonant Sphere for Validating Radar Cross Section Measurement Accuracy
Donald Hilliard, Michael Emire, Long To, Advanced Research and Technology Corporation

2:20 - 2:50 p.m.  0746_1123_000080
Compact RCS Test Range Feed Carousel and Baffle House Design
Gil Yemini¹, Stefano Sensanli¹, Andrea Giacomini², Lars Foged³, Marcel Boumans³, Matan Kahanov³, Maria Baskin⁴, Ilan Kaplon⁵, ¹ORBIT/FR Engineering Ltd. MVG, ²Microwave Vision Italy, ³Antenna Measurement Experts GmbH, ⁴Center of Technology, Rafael

2:30 - 2:50 p.m.  0746_1123_000095
Reproducible Measurements of “Fan Blades in a Pipe” CEM Benchmark
Jon Kelley, Kurt Norris, Brian Mackie-Mason, Brody Barton, David Chamulak, Scott Schaeffer, Mark Martin, Kendall Crouch, Clifton Courtney, Ali Yilmaz, Lockheed Martin Aeronautics Company

Session 16______________________________

3:40 - 4:50 p.m.  Antennas and Measurements for 5G and Future Communication Systems
Chair: Domenic Belgiovane, Microwave Vision Group

3:40 - 4 p.m.  0746_1123_000028
Enhanced Simulation-Augmented OTA Technique Applied to Absorbed Power Density Evaluation
Benoit Derat¹, Thorsten Liebig², David Schaefer², Winfried Simon², ¹Rohde and Schwarz GmbH & Co. KG, ²IMST GmbH

4 - 4:20 p.m.  0746_1123_000119
Performance Evaluation of RU and RIS Based on OTA Mode Near Field and Bistatic Measurement Systems
Chang-Lun Liao¹,², You-Hua Lin²,³, Ike Lin³, Chang-Fa Yang², ¹Telecommunication Laboratories Chunghwa Telecom Co., Ltd., ²National Taiwan University of Science and Technology, ³WaveFidelity Inc.

4:20 - 4:30 p.m.  Closing Remarks and 2023 Vision for AMTA

5:30 - 7:30 p.m.  Women in Engineering Reception
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[Diagram of exhibit hall with booth locations and exhibitor names]
**Exhibitor**  
Sprinkler Innovations 602  
STAR Dynamics 700  
TDK RF Solutions 502  
Testforce 116  
Virginia Diodes 401

**Booths 1-8 are located in the Grand Ballroom foyer of the Exhibit Hall/Technical Session rooms.**