EMC Society of Australia

IEEE Sister Society EMC SOCIETY

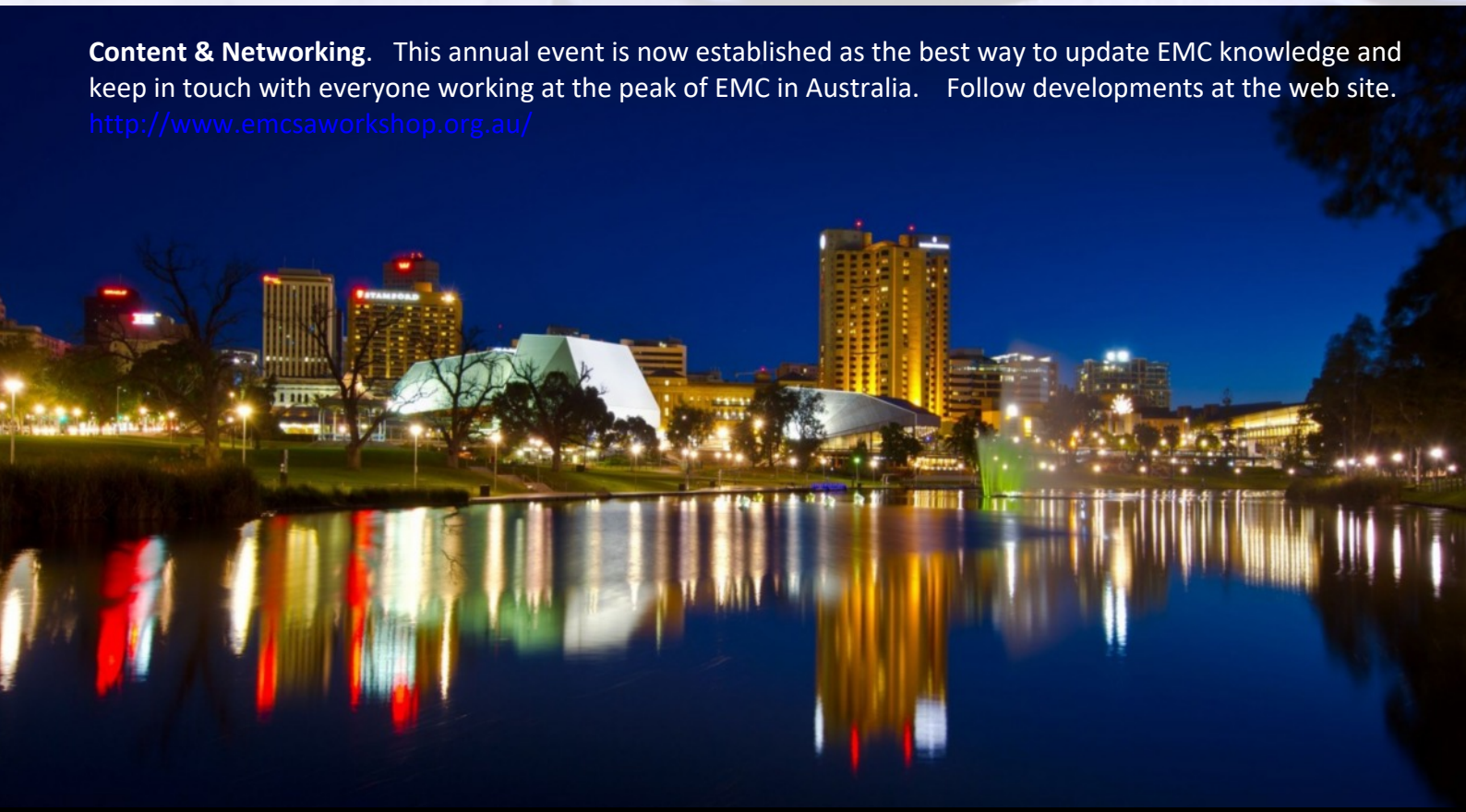
Workshop 2018

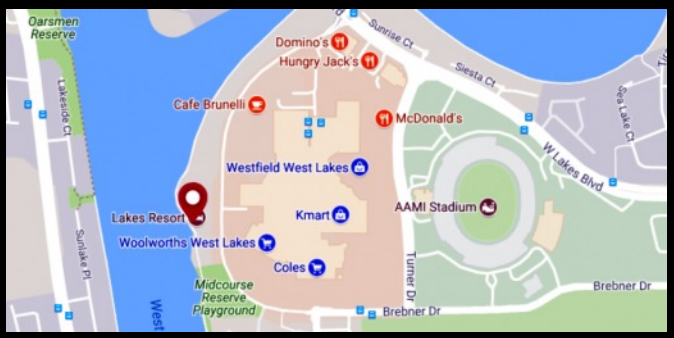
Annual Workshop, Adelaide 22nd, 23rd & 24th May 2018

The EMC Society of Australia (EMCSA) annual workshop will be convened in Adelaide, 22nd to the 24th of May 2018. Our annual workshop features short and long presentations from National and International experts in industry and academia, as well as Industry Exhibitions. The EMCSA Workshop will be held over 3 days:

- Tuesday 22nd Commencement of the EMCSA Workshop, with Trade Show, Speakers and welcome Cocktail Networking event.
- Wednesday 23rd Second day of the EMCSA Workshop, with speakers and Trade Show.
- Thursday 24th Especially crafted tutorials, created around specific topics and presented in smaller groups.

Content & Networking. This annual event is now established as the best way to update EMC knowledge and keep in touch with everyone working at the peak of EMC in Australia. Follow developments at the web site. http://www.emcsaworkshop.org.au/

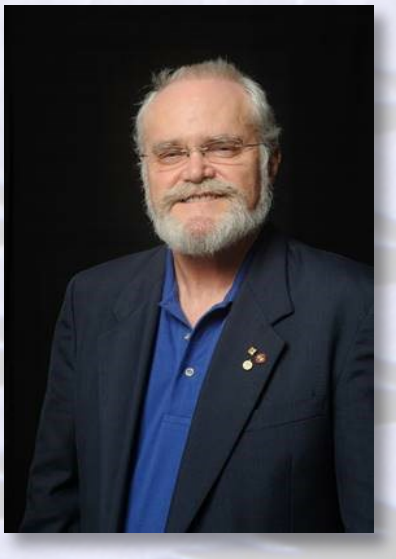




Location: Lakes Resort Hotel, 141 Brebner Dr, West Lakes SA 5021.

EMCSA Workshop 2018 - Keynote Presentations

EMC Requirements Tailored for Space Applications



Dr Bob Scully, Johnson Space Center E3 Group Lead Engineer

Abstract: This presentation will provide a brief overview of EMC requirements as applicable for space hardware, mostly at the system level. Discussion of LRU level requirements, the RF environment, the plasma environment and spacecraft charging, and a bit about lightning, and then open discussion to respond to any questions or comments.

Biography: Bob holds a PhD from the University of Texas at Arlington in Electrical Engineering with strong emphasis in electromagnetics, is an IEEE Fellow, a registered Professional Engineer in the state of Texas, a licensed commercial (PG-12-27194) and amateur (N9RCS) radio operator, holds various EMC certifications from the University of Missouri-Rolla (now Missouri University of Science and Technology) and iNARTE, and is a member of Tau Beta Pi and Eta Kappa Nu. Bob has served as the President of the IEEE EMC Society, the VP of Technical Services, Chair of the Technical Activities Committee, Technical Committee 1, and Technical Committee 4. Bob served as an Associate Editor for the EMC Society Transactions for several years, and is the founder and Chair of the Galveston Bay/Houston EMC Chapter. Bob is the Johnson Space Center E3 Group Lead Engineer, and is the lead for the Community of Practice for EMC within the Agency. Bob supports NASA's major programs including the International Space Station, the Multi-Purpose Crew Vehicle, and the Commercial Crew Development Program, providing expertise and guidance in development of tailored electromagnetic compatibility specifications, including control plans, interference control testing methodologies, ESD control, and lightning protection and test.

Advances in the Design of Anechoic Chambers for Modern Military Vehicles

Mr Zhong Chen, Director RF Engineering, ETS-Lindgren

Abstract: This presentation provides the latest information on chamber design considerations for today's increasingly sophisticated military vehicles. It aims to provide information so a user can understand the limitations of absorbers, chamber design tradeoffs, and test methods to validate the performance goals. The presentation is divided into three parts for anechoic chamber designs for military vehicles. The first part addresses chamber designs for EMC applications typically specified in MIL-STD-461. A brief introduction is provided on the requirements of the standard regarding the chamber design. The second part concentrates on anechoic chamber designs for antenna or radar measurements. Basic design and performance guidelines are presented, and test requirements are discussed in terms of the Free-Space VSWR method, which are typically used for these chambers. The third part of the presentation deals with absorber power handling for high power applications, which are often encountered in military vehicle measurements inside an anechoic chamber. Many of the design concepts and test methods presented also apply to test chambers for electric and autonomous vehicles.

Biography: Zhong Chen is the Director of RF Engineering at ETS-Lindgren, located in Cedar Park, Texas. He has over 20 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 ANSI ASC C63® committee and Chairman of Subcommittee 1 which is responsible for the antenna calibration and chamber/test site validation standards. He is chairman of the IEEE Standard 1309 committee responsible for developing calibration standards for field probes, and chairman of the IEEE Standard 1128 committee for absorber measurements. His research interests include measurement uncertainty, time domain measurements for site validation and antenna calibration, development of novel RF absorber materials, and anechoic chamber designs. Zhong Chen received his M.S.E.E. degree in electromagnetics from the Ohio State University at Columbus. He may be reached at zhong.chen@ets-lindgren.com.

EMCSA Workshop 2018 - Presentations & Tutorials

Tuesday 22nd May - Presentations

Keynote Speech – **EMC Requirements Tailored for Space Applications** – Dr Bob Scully, Johnson Space Center E3 Group Lead Engineer

RADHAZ Measurements – Emad Mansour, EMR Lead Engineer at EMC Technologies, Melbourne, Australia

EMC Management & Lab Accreditations – Poojita Rao – Cisco Systems Inc

A Practical Approach for Calibration of Harmonics and Flicker Test Systems - Stephen Phillips & Chris Zombolas – EMC Technologies, Melbourne, Australia

EMC engineering of military systems using off- the-shelf products Hobart class air warfare destroyer – Greg Gallagher, Raytheon Australia Pty Ltd

Challenges and Methods to Improve Accuracies in Antenna Calibrations and Site Qualification Measurements below 1 GHz – Zhong Chen, Director RF Engineering, ETS-Lindgren

Wednesday 23rd May - Presentations

Keynote Speech – **Advances in the Design of Anechoic Chambers for Modern Military Vehicles** – Zhong Chen, Director RF Engineering, ETS-Lindgren

Cable Design and Construction – Bob Scully, Johnson Space Center E3 Group Lead Engineer

Reverberation Chambers à la carte: An overview of the different mode-stirring techniques – Mike Hatfield, Naval Surface Warfare Center (NSWC), Dahlgren, VA

Achieving E3 compliance: Simulation Vs. Measurement – Mahan Rudd, Application Engineer, Electromagnetics, Altair Engineering, Inc.

Plus one more Defence EMC presentation will be added, speaker and title yet to be confirmed.

Thursday 24th May - Multiple Stream Tutorials

Tutorial 1 – Reverberation Chambers Theory and Practice – Mr Craig Denton & Mr Mike Hatfield

This tutorial aims to discuss the theory and practical applications of Reverberation chambers.

Tutorial 2 – Fundamentals of Shielding – Dr Bob Scully

This tutorial will look at aspects and details of fundamental shielding theory as based on Schelkunoff's approach, including discussion of magnetic shielding and engineering design considerations.

Tutorial 3 – Getting the best from electric field probes for EMC Testing – Mr Zhong Chen

This tutorial will discuss the theory and applications of the electric field probes, and calibrations methods. The presentation will discuss the influencing factors of the measurement uncertainties from the calibration process as well as the during the end use, and practical considerations on how to reduce the effects.

Tutorial 4 – Estimating Radiofrequency Radiation Hazards from Inside an Information Vacuum – Dr Paul Kay and Dr Kevin Goldsmith

This tutorial will provide an overview of RADHAZ and an update to the changes to the AS/NZS 2772.2 that were submitted to the Standards Australia committee TE-007, which have since been accepted in the standard and now appears at Annex E of the 2016 version, which is widely used in Defence and industry.

Tutorial 5 – Computer Simulation for Electromagnetics – Dr Franz Schlagenhaufer and Dr James Buchan

Computer simulation has become a powerful tool in understanding and predicting the electromagnetic behavior of devices and systems. This tutorial aims at an audience, not just performing the actual work, but also responsible for initiating and managing major modeling projects. What are the benefits of computer simulation, how reliable are the results, how can results be validated, what part plays the interpretation of results? That are the main focal points of the presentation. The tutorial will cover:

- *selection of a suitable simulation method;*
- *preparation of the simulation model;*
- *validation of simulation results;*
- *post-processing and presentation of simulation results.*

The presentation will include some real-life examples for illustration.

Details are subject to change, please see the event web site for current information. http://www.emcsaworkshop.org.au/