Spring
Volume 20 2014

DLS News & Views

To help keep you better informed

IN THIS ISSUE

PLUS

D.L.S. expands environmental testing

Vibration/Shock Testing

D.L.S. Conformity Assessment has completed an expansion and upgrade in vibration and shock testing services. The recent acquisition of ETS Vibration equipment combined with upgraded handling equipment and an upgraded, acoustically controlled environment at the Wheeling East Campus facility allows D.L.S. to provide a much greater depth of service. The new equipment handling system with a large crane hoist means D.L.S. can handle heavier and larger equipment than in the past.

D.L.S. can accommodate any project that falls within the guidelines referenced below:

- 36" x 28" dimension vertical
- 48" x 48" dimension horizontal
- 18,000 lb force maximum
- 2,200 lbs maximum payload
- 200 lbs @ 100 Gs Sine
- 200 lbs @ 40 Gs Random
- 2" peak to peak
- 5-2500 Hz

D.L.S. performs testing to MIL-STD-810, MIL-STD-202, RTCA DO-160, ASTM, ANSI, IEC, ISO, SAE, ISTA, and mechanical or environmental standards.

Vibration Test Set-Up at DLS Wheeling East Campus

For more information regarding the upgrade of D.L.S. vibration and shock capabilities, or other D.L.S. environmental testing services such as sand and dust, humidity, fluid and chemical resistance, temperature extremes, salt spray, ingress protection, HALT/HASS testing, icing, flammability and other related testing, contact Jack Black at jblack@dlsemc.com or call 847-537-6400.

D.L.S. offers a one-stop shop for projects that involve EMC, Product and Electrical Safety, and Environmental testing as a single project, with experienced program coordinators.

RTCA DO-160 DER/DAR

Many aviation or avionic projects require formal approval and witnessing by a DER, Designated Engineering Representative, or a DAR, Designated Airworthiness Representative.

A DER is an individual appointed in accordance with 14 CFR 183.29 who holds an engineering degree or equivalent, possesses technical knowledge and experience, and meets the qualification requirements of Order 8100.8D. This usually involves showing compliance under RTCA DO-160 for EMC and Environmental testing.

A DER may be appointed to act as a Company DER and/or Consultant DER. A company DER can act as a DER for an employer or company and may only approve or recommend approval of technical data to the FAA for the company. A consultant DER is an individual appointed to act as an independent (self-employed) DER to approve or recommend approval of technical data to the FAA.

DER Technical Disciplines
- Acoustical Engineering
- Engine Engineering
- Powerplant Engineering
- Structural Engineering
- System and Equipment Engineering

A DAR is an individual appointed in accordance with 14 CFR 183.33 who may perform examination, inspection, and witnessing along with testing services necessary to the issuance of formal FAA certificates.

D.L.S. can support any project that requires a formal involvement of a DER or DAR. For additional information, please contact Barbara Inguagiato, Project Coordinator at barbi@dlsemc.com or at 847-537-6400.

HASS Testing at D.L.S. Wheeling East Campus

HASS testing (Highly Accelerated Stress Screening) is a series of tests in an accelerated manner that can establish reliability by revealing inherent flaws not detected by standard environmental testing, burn-in and other test methods. Not to be confused with HALT testing which tests until the product fails, HASS provides a risk reduction when establishing warrantee and life cycles for products prior to being placed on the market.

HASS testing uses stresses beyond specification, but within the expected capability of the design of the device being evaluated. HASS testing involves the combination of variable thermal and simultaneous vibration stresses, in conjunction with product specific stresses, and identifies defects and marginal product characteristics. The HASS test result can be used to determine "out of box" failures, which can relate to increased warranty costs.

HASS testing criteria is more rigorous than tests delivered by traditional compliance approaches. HASS testing substantially accelerates early discovery of manufacturing process issues. Reliability decisions can be made to address the variations at an early stage in the process which saves both time and money.

Early life product failures are often attributable to the inherent variability of manufac-

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Environmental Stress Screening at D.L.S. Wheeling East Campus

D.L.S. & MIL-STD-810 Environmental Testing

MIL-STD-810 addresses quite a broad range of environmental conditions and requirements that include: low pressure for altitude testing; exposure to high and low temperatures plus temperature shock, rain, icing, humidity, fungus, salt fog exposure; sand and dust exposure; explosive atmosphere; leakage; acceleration; shock and transport shock; gunfire vibration; and random vibration.

This standard was developed to consider environmental management and engineering processes that evaluate and confirm the confidence of the environmental worthiness and overall durability of a system or device design. The standard focuses on engineering direction to consider the influences

Temperature/Humidity Testing at D.L.S. Wheeling East Campus

that environmental exposure and stresses have on equipment throughout all phases of its service life. MIL-STD-810 describes the environmental tailoring process that results in realistic material designs and test methods based on material system performance requirements.

MIL-STD-810 provides for a methodology with test results extrapolated from these laboratory condition tests that would provide more credible results than may be obtained under actual service conditions. In many cases, real-world environ-

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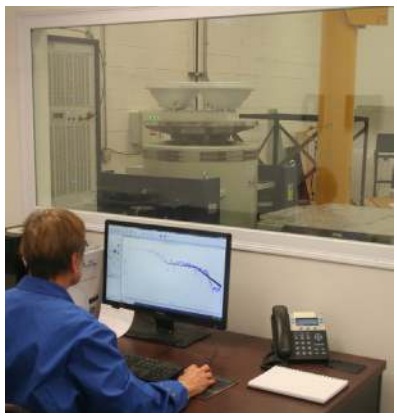

Vibration Testing at Wheeling East Campus

mental stresses (singularly or in combination) cannot be duplicated in test laboratories. The standard provides for what may be considered a minimal or somewhat realistic amount of environmental exposure, and realizes that an item that passes laboratory testing may not pass the actual field/fleet verification tests.

MIL-STD-810 is maintained by a Tri-Service partnership that includes the U.S. Air Force, the U.S. Army, and the U.S. Navy. The U.S. Army Test and Evaluation Command, or ATEC, serves as Lead Standardization Activity/Preparing Activity. ATEC is chartered under the Defense Standardization Program with maintaining the functional expertise and serving as the DoD-wide technical focal point for the standard. Updates and reviews of the standard are made periodically to address changing conditions that defense forces and related equipment come across.

The D.L.S Team is ready to support any upcoming testing for MIL-STD-810 (which is currently at Revision F) at our recently expanded Wheeling, IL campus. Additional information can be found at www.dlsemc.com/mil-std-810.

HASS Testing cont'd from left column

turing processes (solder and component changes, etc.). Even a well designed product can suffer high early failure rates where process-induced failures are not found and fixed before the product reaches the customer. HASS testing provides an early look at reliability and helps identify issues that would otherwise lead to field failures and shipment of marginal products.

If you are interested in HASS testing, contact Jack Black at jblack@dlsemc.com or click on www.dlsemc.com/HASS.

$25 Gift Card Winners

Thank you to all who entered our contest (announced in our Fall 2013 newsletter) by providing us their current contact information. Ten names were randomly drawn from the entries. We are proud to announce the winners are … (drum roll)… Jay A., Victor P., Jim L., Kevin S., Brian M., Dan J., Joe B., C.J. C., Bob F., and Bobbie M. Congratulations to you all! We ask that all readers continue to keep us updated of any change in email addresses at www.dlsemc.com/email-update. Thanks.

CISPR 22 & 13 Replacement

CISPR 32 & EN 55032 are both published standards that will replace CISPR 22 / EN 55022 and CISPR 13 / EN 55013. Indications are that CISPR 13 and CISPR 22, as well as EN 55013 and EN 55022 will be withdrawn on March 5, 2017. Manufacturers will have the option of testing to either CISPR 13/CISPR 22 or CISPR 32 until the DOW date. EN 55032 is listed on the current R&TTE Directive Harmonized Standards list and it is expected that EN 55032 will be listed in the next Official Journal Lists for the EMCD.

Equipment Approval in the World Market

For quite a number of years D.L.S. Electronic Systems, Inc. has provided testing, approvals and certification for U.S., Canada, and the European Union. As companies consider marketing in other countries, it is important to understand that type approval or certification is a mandatory requirement for importation of your electronic products into most countries around the world. The requirements are determined by each individual country's regulatory agency. In most countries this will require, along with applications and documents, either in-country testing by agency or agency recognized labs or submission of accepted test reports from recognized test labs. Some certifications are limited to terms of 1 to 5 years after which re-application for certification must be made. Many regulatory arrangements also require a certificate holder located in the country for which certification is being requested. D.L.S. Electronic Systems, Inc. has formed alliances which allows us to obtain approval or certification required for marketing your products in almost any country. Through this program we can provide a complete certification service including quoting, weekly updates on the status of your project, notification when certificate renewal is required, product labeling guidance, certificate holder service where required, and translation assistance.

Medical Exemption Expires

The CE mark for RoHS 2 entered into force on January 2, 2013. As a CE Mark directive, manufacturers that place products on the market that fall under this requirement must show compliance in their technical files and make reference to compliance on the manufacturer's Declaration of Conformity. Several categories have transition dates for implementation.

Effective July 22, 2014 exemption for medical devices and monitoring and control devices will

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expire; in vitro devices, however, are exempt until July 2016. As RoHS is a CE Mark requirement for the sale of goods placed on the market in the EU, changes may be needed to insure full compliance with all applicable directives for medical devices. Any Declaration of Conformity must be updated to show compliance with the RoHS directive.

RoHS restricts the use of certain hazardous substances in electrical and electronic (EEE) products. The current list of restricted substances is found in Annex II of the Directive and includes four heavy metals (lead, mercury, cadmium, and hexavalent chromium) and two brominated flame retardants PBB and PBDE.

Manufacturers will have to substitute materials and change manufacturing methods by the July 2014 or 2016 deadline.

One example of how a change made to meet RoHS can affect EMC compliance is when a mercury wetted relay is replaced by a solid state relay. This change can require retesting to show compliance with emission and immunity requirements of the EMC Directive.

To determine how this affects your products and what needs to be done to show full compliance for commerce in the European Union and for further updates and information, contact Jack Black at jblack@dlsemc.com or at 847-537-6400.

Instructor Tim Lusha

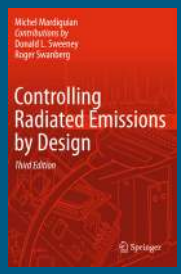
D.L.S. is proud to announce that Tim Lusha is joining our team of seminar instructors. Tim has been with D.L.S. for the past 17 years. He has four iNARTE certifications: EMC Engineer, EMC Laboratory Engineer, EMC and ESD Technician. He is a current member of RTCA DO-160, IEEE and ESDA. Tim has worked at D.L.S.'s Wisconsin facility involved in FCC, EC and VCCI commercial requirements as well as measurement uncertainty, transmitters and calibrations. He is presently at our Wheeling location immersed in MIL-STD-461 and DO-160 topics, custom test setups, software programs and networks for lightning and related testing. Tim is a graduate of the Milwaukee School of Engineering (MSOE) Milwaukee, WI in addition to graduate coursework in engineering and other courses in mechanical design.

Latest EMC Book Available

Design Techniques for Controlling Radiated Emissions, 3rd Edition **with** Worldwide Standards Updated

By Michel Mardiguian

Contributed to and Edited by Donald L. Sweeney and Roger Swanburg



Design Techniques for Controlling Radiated Emissions has been considered by Donald Sweeney to be the ideal textbook for his EMC By Your Design Seminars since 1992, when it was first published. He is now excited to announce he will be using Michel Mardiguian's new 3rd Edition in his April 8-10, 2014 seminar. All 13 chapters have been revised and updated addressing the newer technologies that have come along, especially the updating of clock speeds and the examples worked out in the book. Don has contributed to many parts of the book, including updating the Worldwide Standards and many of the graphics, as well as editing the entire book. A special feature of the book will be a link to a continuous update of world standards and requirements as they change.

Those who have previously attended a D.L.S. Seminar using the 1st or 2nd edition of the book, and who would like to take a refresher course using the new book, will be given a 50% discount from the April 2014 seminar price.

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D.L.S. Wheeling East Expands Environmemtal Testing

For a PDF copy of this newsletter, go to **www.dlsemc.com/newsletter**

Latest EMC Book

Design Techniques for Controlling Radiated Emissions, 3rd Edition
contributed to and edited by Donald L. Sweeney,
including the latest digital technology, published 2014

EMC By Your Design

An EMC Practical Applications Seminar and Workshop

using the most recent EMC Design Book
plus take home proprietary computer program,
expanded section on filter design, signal integrity,
and signal return currents on PCB's
and a free 45 min. individual product design evaluation

Tuesday, April 8 - Thursday, April 10, 2014
Hilton Hotel, Northbrook, IL

$300 discount if you register by March 16, 2014
We are also offering a special 50% discount on the April seminar to attendees of previous D.L.S. seminars who used the 1st or 2nd edition.

Classes fill quickly so register early

email cgorowski@dlsemc.com or call 847-537-6400
www.dlsemc.com/1001

Don't forget to schedule your free product review when you register.