Spring
Volume 16 2012

# DLS News & Views

To help keep you better informed

## IN THIS ISSUE



## REGULATORY requirements update

### More Wireless and OATS Capabilities

**Wireless Device Testing**

With today's lower cost transmitter technology, wireless transceivers offer solutions to a wide variety of communication needs and are being incorporated into more products. These devices need to meet EMC regulations and most often need to be certified or approved before they can be marketed. In addition to testing of digital devices, our lab located at Genoa City, WI has over 25 years experience testing and certifying a wide range of wireless devices for compliance to FCC, Industry Canada, European Union, and Japan requirements, among others. We specialize in compliance of un-licensed low power wireless products and RF modules, including Bluetooth, Zigbee, Wireless LAN, Ultra Wide-band, RFID, and momentary operation transmitters. With our knowledge and unequalled support from start to finish, we make gaining certification of your wireless device a quick, painless process. Additional wireless device testing competencies include, but are not limited to, antenna patterning, frequency stability over extreme temperatures, and consulting for regulatory compliance of your products. Using state of the art test equipment and qualified, knowledgeable staff, compliance testing can be accomplished for a wide range of standards and at frequencies up to 40GHz.

Our hands-on approach to testing offers immediate feedback to our clients when non-compliant issues are found. Our facilities provide pre-compliance and final testing at the same location, and therefore without added delays.

The D.L.S. Open Field Site in Genoa City, WI is just a short trip from Chicago, Milwaukee, Rockford, and Madison. The comfortable atmosphere, accredited facilities, and knowledgeable engineers make emissions testing at D.L.S. Open Field in Genoa City, WI a breeze! For more information on our capabilities please visit **www.dlsemc.com/1019**.

**Requirements for Radiated Emissions testing at frequencies higher than 1GHz**

For many years the FCC has required testing of Part 15 digital devices for radiated emissions to frequencies above 1GHz. Many countries are following the FCC's path and have updated their regulations for Information Technology equipment to include this testing. As of October 1, 2011, the European Union (EN 55022), Australia (AS/NZS CISPR 22), and Japan (VCCI TS V-3/2010.04) all require testing for radiated emissions above 1GHz. Beginning January 1, 2012, Korea (KN22) also requires this testing.

Continued on page 2

### IEC 60601-1 Third Edition Medical Manufacturers Update

The third edition of IEC 60601-1 as compared to the second edition presents a monumental change in approach to testing of medical devices. This standard places a lot of attention on the risk management – ISO 14971 and essential performance of the equipment. Because of the lack of uniformity between European Union, USA and Canada at this time, both standards are still used today. For the medical device manufacturers, it is often hard to decide which version of the standard is the one they should use. Most of the people in the industry are opting for both versions of IEC 60601-1 to satisfy the requirements.

An in-depth article describing the details of these changes, written by Mitch Gaudyn, Manager of D.L.S.'s product safety division, was published in *Medical Design Magazine* Jan/Feb 2012 issue and can be accessed at **http://medicaldesign.com/testing/third-edition-iec-60601-1-1/**.

# Shielding Effectiveness Testing

D.L.S. offers shielding effectiveness testing on gaskets, coatings, laminates, composites, vents, windows, and other materials to current industry standards, including MIL-DTL-83528 and IEEE 299. The D.L.S. program also offers other materials characterization testing including EMP, Vibration Stability, and other referenced materials standards. Testing is offered on any standard configuration or size up to 40" by 40". Larger sizes can be accommodated as well. Call 847-537-6400 today for a proposal.

# On Site Compliance Consulting

D.L.S. offers a comprehensive compliance consulting program for on site product reviews and design assistance. This program covers EMC, Product Safety, and Environmental compliance projects, and covers all aspects of product design and development. The D.L.S. technical staff can travel to your facility and meet with your engineering staff to best utilize time and cost, and offer the most efficient consulting services.

Program availability includes FCC, UL, CE Mark, Mil STD, RTCA, Qi, CCC and other global compliance requirements in several categories, including Wireless, Avionics, Military Equipment, Nuclear, ITE, Machinery, Industrial Controls and Equipment, Restaurant Equipment, Medical Devices, Laboratory, and Audio Video. Speed your products to market by using D.L.S. consulting services.





## Wireless and Oats (continued)

Other countries that have already implemented this requirement include India, China, Taiwan, and South Africa. The highest frequency that must be tested is conditional based on the highest clock/timing signals of the device under test. The conditional requirements provided here are taken directly from EN 55022 – "*If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 6 GHz, whichever is less.*" In order to make these measurements the test site must meet the Site Validation / Site VSWR requirements of CISPR 16-1-4. To simulate a free-space environment, the CISPR 16-1-4 test site for testing above 1 GHz specifies RF-absorbing material covering the ground plane and very low reflections from around the device under test. All of our test sites meet this stringent requirement and are accredited for final compliance measurements up to 40GHz

### Wireless certification for Japan

The Agreement on Mutual Recognition of Conformity Assessment Procedures between the United States and Japan (US-Japan MRA) is now being fully implemented by both economies. The MRA provides for the mutual recognition of qualified Conformity Assessment Bodies (CAB's) and mutual acceptance of the results of equipment certification undertaken by recognized CAB's. What this means is that now you can have your low power wireless device (transceiver) tested and certified for the Japanese market at D.L.S. Electronic Systems. We can provide this service for you at a very competitive cost and short time from testing to certification. Examples of wireless devices that can be certified for marketing in Japan include Wireless LAN, Bluetooth, Zigbee, RFID, and Ultra Wide Band. Japan does have a "Host Independent" certification procedure similar to the FCC's "Modular Approval". In addition, as a VCCI approved laboratory D.L.S. can provide testing of Information Technology products for VCCI approval. Contact us for more information.

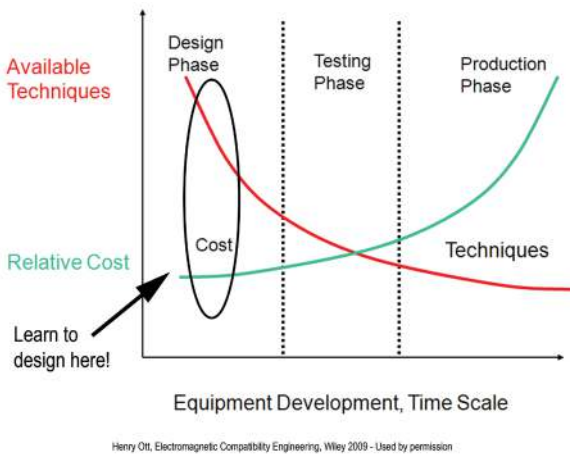
### FCC TV White Space

In 2008 the FCC approved rules that would allow the operation of fixed or personal/portable unlicensed radio transmitters in the broadcast television spectrum at locations where that spectrum is not being used by licensed service. The FCC's goal was to make available a significant frequency spectrum for new products

Continued on next page

## I'm a digital design engineer. Why should I take a class on EMC Design?

For years EMC has been considered black magic. Design engineers could not understand why their system worked in the lab, but failed in the field. Once designers learn the concepts of EMC and how they apply to real life circuits they can understand what they can do at the beginning of a project to minimize the impact of EMI/RFI. They learn to design their product to be Electromagnetic Compatible.



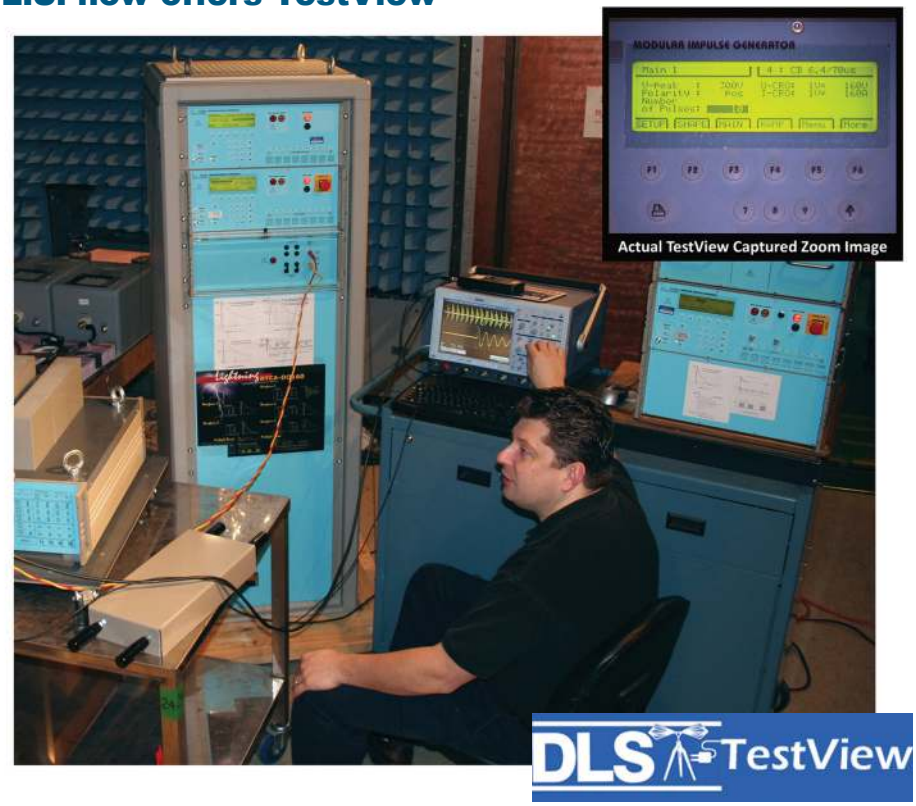

Henry Ott, Electromagnetic Compatibility Engineering, Wiley 2009 - Used by permission

If you design your product to take EMC into account up front, the cost to implement the many options is minimal and the number of options are almost unlimited. Once a product has been designed and you go to the test lab for compliance testing the options to fix any design flaws are greatly reduced and the cost to implement any fixes is dramatically increased!

## Wireless and OATS (continued)

and services such as broadband data services for businesses and consumers. This spectrum is commonly referred to as "TV White Space" and encompasses operation on the following available TV channels in the broadcast television frequency bands: 54–72 MHz (TV channel 2-4), 76–88 MHz (TV channels 5 and 6), 174–216 MHz (TV channels 7–13), 470–608 MHz (TV channels 14–36) and 614–698 MHz (TV channels 38–51). The rules governing the operation of these devices are contained in Part 15 Subpart H of the FCC's Code of Federal Regulations. FCC validation and measurement test procedures have just been released which define the test methods used in order to meet the technical requirements for certification. The requirements are quite extensive and are divided into two parts. The first part defines the RF characteristics that the device must meet, and the second part defines the interference avoidance requirements designed to protect incumbent services against harmful interference. These devices must include a connection between the TV White Space device and one or more TV band databases. The data base will tell the white space device what spectrum may be used at that location. All TV White Space devices are subject to FCC certification. We expect to see more of these devices entering the market soon, and that the need for TV White Space communications devices to provide broadband data and other consumer and business services will grow considerably in the next few years. Our wireless compliance specialists are prepared to provide efficient and cost-effective solutions to meet our clients testing and certification needs. Call us for more information.

## D.L.S. now offers TestView™




Save time and money by viewing, from your own office, your EMC compliance test being performed at D.L.S. Electronic Systems, Inc. in Wheeling, IL. TestView™ is a secure video system that enables clients to log in to D.L.S.'s test site from their own location and view their equipment being tested in real time. For example, a client could see a test engineer performing DO 160 Section 22 indirect lightning testing, as shown in the above photo. TestView™ allows the client to control the camera by making it zoom or pan to witness any part of their test at any time, as shown in the insert above (which on your computer screen would be 6.8 x 4.7 inches). It is zoomed in on the test panel which shows the generator settings. For more information call Jack Black at 847-537-6400 or go to www.dlsemc.com/testview.

## Why I feel so lucky and proud!

By Donald L. Sweeney

I have owned an EMC/EMI testing laboratory for over 28 years. We have grown from one paid employee (not me) to 39 employees today and from one open field site (with no weather protection) and a single shield room to 2 all-weather Open Area Test Sites, 10 anechoic lined chambers, a reverberation chamber, and high level HIRF capabilities, plus several other test rooms and test locations.

I am always receiving compliments about our lab, its employees and their testing knowledge and ability. Over the years, several incidents stand out that tell me we are doing it right!

I had a witness come to D.L.S. to review testing. I had known the individual for a number of years and offered to show him around our lab. He said, "When you have seen one EMI lab you have seen them all." It just so happened one of our clients heard the conversation and corrected the witness. He said, "Let me tell you there are EMI LABS, this…. This is an EMI LAB!

A couple of other incidents stand out, describing how nothing is impossible to our staff. We had a client with a product that was going to generate 1,000,000 BTUs of heat. That much heat confined in the large test chamber would have made working conditions intolerable. We had two large ventilation fans (1-18K and 1-20K cubic feet a minute) which we use to remove heat normally. Neither could have handled the heat load by itself. The staff, without the slightest hesitation, decided to put the two systems in parallel. Testing was done during the summer; the working environment was not affected one bit.

Another example is a number of years ago, we were contacted by a client who needed 120 days of testing completed in 30 days. How do you do that? Well the staff broke the system into 2 interconnected systems, locating each in one of two of our large chambers. They simply ran 2 shifts a day, 7 days a week for 30 days. On the 31st day, after testing was completed, the client shipped the product!

D.L.S. Electronic Systems, Inc
1250 Peterson Drive
Wheeling, IL 60090
847-537-6400 www.dlsemc.com

PRSRT STD
U.S. POSTAGE
PAID
Skokie, IL.
Permit No. 528

# NEW Regulatory Updates

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

In response to your many requests

## New 3-Day Format

*Keeping the same important concepts and material presented in a more condensed format*

## EMC By Your Design

An EMC Practical Applications Seminar and Workshop
with a free 45 min. individual product design evaluation on April 20,
take home proprietary computer program,
expanded chapter on filter design, signal integrity,
and signal return currents on PCB's
at no extra charge

**Tuesday, April 17 - Thursday, April 19, 2012**
Hilton Hotel, Northbrook, IL

**We are offering a special**
**$300 discount if you register by March 27, 2012**

## 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.