EMC Safety Radio

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DLS News & Views
To help keep you better informed

IN THIS ISSUE

PLUS

SHIELDING effectiveness

Chamber in High Demand

We mentioned in our August D.L.S. Newsletter that we had updated and expanded our shielding effectiveness testing capabilities, and what a response we received. We have been busy evaluating shielding materials, gaskets, air vents and many other products for which attenuation is important, and yet we have still been able to offer fast turn-around time and give detailed technical reports to a number of standards.

Our new chamber was specifically designed for D.L.S., based on a concept Don Sweeney, D.L.S. President, began developing over twenty years ago. It is hard to imagine the term "state-of-the-art" when referring to shield rooms, but that is how the new room is being described today. This chamber has been able to test materials from paper (where transmission was the goal instead of attenuation) to high attenuation composites where no transmission is desired.

We test a large variety of products in our new custom-designed shielding effectiveness chamber, including:

Gaskets · Laminates · Enclosures · Conductive Plastics
Vent Panels · Cables · Foils · Composite Materials
Conductive Coatings/Paints · Electro-Plated Plastics
Conductive Treated Plastics · Surface Mount Shields

The shielding effectiveness testing is performed in a customized chamber that provides two rooms separated by a welded-in-place, heavy steel constructed common wall. This inside common wall provides 120 dB attenuation from the first room to the second, up to 40 GHz. Full size transmit and receive antennas are utilized to gain the greatest amount of dynamic range during the testing. The room can easily accommodate panels up to 40 inches by 40 inches, and with special adaptor plates it can accommodate millimeter size samples. The entrance doors are sealed with duel knife edges for ease of entry and for maintaining the overall shielding effectiveness of the chamber.

Following is a partial list of Standards the chamber can test to:

Mil Std 285	*Mil Std 1377*	*ECA EIA-364-66A TP 66A*
Mil Std G 83528	*IEEE 299*	*NSA 65-6*
Mil Std 907B	*ASTM D 4935*	*SCTE 48-1-2006*

Let us know your shielding effectiveness needs today. We are here to serve you and help you find the best route to compliance.

For more information, see the up-coming Shielding Effectiveness article by our engineers Jack Prawica and Jereme Irwin, in Interference Technology 2007 EMC Directory & Design Guide or go to www.dlsemc.com/1008.


We test a wide range of sample sizes


Magnetic Testing 10kHz-30MHz


E-Field Testing 30 - 200 MHz


Testing 1 - 18 GHz


Testing 18 - 40 GHz

CHINA RoHS comparing EU, China, Japan & Korea RoHS

March 1, 2007 implementation. More information at www.dlsemc.com/1003

Critical dates of the EMC Directive

January 20, 2007

Transposition enacted into law.

89/336/EEC still in force.

New directive cannot be applied.

July 20, 2007

Date of application.

89/336/EEC can no longer be used.

New directive must be applied to new products and to old products being updated or changed when a new DoC is issued.

July 20, 2009

End of transitional period.

New directive mandatory for all products.

Products compliant with 89/336/EEC can no longer be sold.

Your EU Advantage

The EMC Directive affects an estimated 800 million products sold in the European Union (EU) each year. As of today there are 27 countries that are members of the EU. When the Euro was first issued in 1999, it was worth $.80. Today the Euro is worth $1.30, making the products you sell in Europe 60% less expensive for Europeans to purchase, yet you receive the same number of dollars for them. This is a huge advantage for U.S. manufacturers.

Current map of the EU

emc directive DEADLINE

July 20, 2007 is the deadline for the New EMC Directive.
Meet this deadline with the expert help of D.L.S. Electronic Systems, Inc.

by Donald L. Sweeney

New products being placed on the market after July 20, 2007 must meet the requirements of the New EMC Directive 2004/108/EC. Products placed on the market before July 20, 2007 and are in compliance with the Old Directive 89/336/EEC and remain in compliance, can be sold until July 20, 2009. If changes are made, and as a result a new DoC must be issued, the product must meet the requirements of the new EMC Directive. After July 20, 2009, all products must meet the requirements of the new directive.

Background Information

The new 14-page directive going into effect on July 20, 2007 was first issued on December 25, 2004 as a revision of the of the Old EMC Directive 89/336/EEC. The European Commission held a meeting in Brussels in early 2005, to introduce the new directive and explain the changes. I was one of only four Americans who had the honor of attending. Later in the year the first draft of the 61-page Guideline on how to use the directive was issued. The latest draft of the Guideline was issued in August 2006, and in the following overview I will try to simplify its contents. The New EMC Directive, the latest draft of The New Guideline and my interpretation of both can also be found in their entirety at **www.dlsemc.com/1007**.

Impact of New Directive

What is covered

- Any finished apparatus (from an appliance to a computer)
- Any combination of finished apparatus made commercially available as a single functional unit (An apparatus sold as a single system)
- Products that are intended for the end user and are liable to generate electromagnetic disturbance, or the performance of which is liable to be affected by such disturbance

The above include any electronic and electrical device with clocks, oscillators or devices generating electrical noise as from brushes in motors, as well as any device where the pickup of electromagnetic energy (from ESD to RF from a cell phone) might cause it to malfunction. Even a component or subassembly (liable to generate a disturbance) intended to be incorporated into an apparatus by an end user is covered by the new directive.

Don was one of only four Americans who attended the meeting on the EMC directive in early 2005.

How do these changes affect me?

A. You are required to perform an EMC Assessment.

First, you need to demonstrate compliance and the easiest and basic way to do this is through the use of Harmonized Standards. This means:

1. Determine the family of products your apparatus falls under and then use the product family standards already chosen by the standard committee experts. If there are no product standards, then you can use the generic standards.
2. Determine if the intended area of use is residential or non-residential
3. Perform the test.
4. To ensure compliance with all applicable requirements, follow the prescribed test procedures in the standard(s).
5. Steps 1-4 above are known as the Harmonized Route. Following these steps will give the presumption of conformity. This is considered the preferred route and will be the only one discussed here. As someone stated at the meeting in Brussels in 2005, "Harmonized Standards should give a 'better day in court' if challenged by the authorities."
6. The new EMC Directive puts full responsibility on the manufacturer for all aspects of the conformity assessment.
7. EMC assessment shall confirm that the apparatus meets the protection requirements in all its representative configurations.
8. There are other ways to show compliance but they are so complicated, involved and expensive there is no logical reason for doing them.

B. Information requirements

1. Each apparatus shall have markings identified in terms of type, batch and serial number with the name plate information.
2. For traceability purposes, the name and address of the manufacturer, authorized representative and person responsible for placing the product on the market must accompany the product, generally in the DoC.
3. You are required to supply a list of precautions that must be taken when assembling, installing,

maintaining and using the product.

4. A statement of residential/industrial use must be on the packaging and must also accompany the apparatus.
5. Instructions for use with the intended purpose must be included
6. Technical file: You are required to maintain a technical file available to the authorities containing date(s) of testing and details of the test(s), basically your test report. Be sure to include:
   - Test set-up along with similarities and deviations from "harmonized standard tests"
   - Instrumentation used
   - Rationale for choice of parameters and limits
7. Issue a DoC that includes:
   - reference to the directive(s) 2004/108/EC and any others which are applicable
   - identification of the apparatus
   - name and address of the manufacturer
   - reference to specifications you tested to
   - date of declaration
   - identification and signature

In summary:

The new Directive does not remove the Assessment requirements.

- You are still required to assess the apparatus!
- The revised EMC directive specifically places the EMC assessment in the hands of the manufacturer.
- Use of harmonized standards simplifies this assessment immensely.

You can obtain a copy of my IEEE EMC Symposium EMC Directive presentation at www.dlsemc.com/1006.

professional DEVELOPMENT

Need Professional Development Hours (PDHs) to renew your PE License or to stay current in your place of employment? D.L.S. will now issue 32 Professional Development Hours (PDHs) for completing the class EMC By Your Design - a Practical Applications Seminar and Workshop.

What are PDHs?

PDH credits are a way for Professional Engineers to document their continuing education. Each state has its own requirements and it is up to each engineer to conform to his or her state's requirements and to determine the applicability of the PDHs for that state. These credits are usually accepted by the Human Resource Department of most companies for on-going training requirements.

Why are PDHs important?

In the state of Illinois, for example, Professional Engineers are required to earn 30 PDH credits during the two-year time between renewal of their license, with one PDH equaling 50 minutes of presentation/classroom time. The hours must be earned during the renewal period. There are no "carry over" hours from one renewal period to the next.

The professional development activities must contribute to professional skills and/or scientific knowledge relevant to the practice of professional engineering; enhance the practice and values of professional engineering, related sciences, and engineering ethics; be developed and presented by persons with education and/or experience in the subject matter of the program.

Who is subject to the requirements?

Many states require professional engineers licensed in their state to have continuing education in order to renew their license. Many companies also require their professional staff to show proof of their continuing education.

How do I report my PDHs?

Professional Engineers may be required to certify on their renewal application that they are in compliance with the PDH requirements. They may be required to maintain a record of their PDHs for a period of six years. Recommended formats include recording the name and address of the provider, the hours for each program, the date and place of the program, a log of the activities, the number of hours claimed as PDHs, and a certificate of attendance, if available. In addition, a statement on the subject matter, printed program schedules, agendas, and/or minutes, registration receipts or other proof of participation may be required.

Responsibility of the Professional Engineer

It will be the responsibility of those using PDHs to document and maintain information and records for their own use. D.L.S. Electronic Systems, Inc. will not keep records of those attending but will offer a certificate of completion.

EMC By Your Design

A new Approach to Learning EMC Design Techniques

An EMC Practical Applications Seminar/Workshop with take-home computer programs and 32 Professional Development Hours

April 26, 27, 30 and May 1, 2007
Hilton Hotel, Northbrook, IL

D.L.S. is offering a four-day seminar/workshop that applies EMC design fundamentals to real-life situations. It teaches how to design your product to pass compliance testing, thereby eliminating costly last-minute changes. Donald L. Sweeney and Roger Swanberg, with over 75 combined years of experience in the field of EMC, now bring these EMC design fundamentals to students through hands-on, practical application to real life products. Participants will receive a free copy of the proprietary computer program designed by the instructors to solve the most complex EMC issues. Participants may bring a product of their choice for a free 45-minute individual consultation, during which they will have the opportunity to apply the concepts learned in the seminar.

To register call Carol at 847-537-6400 or email at cgorowski@dlsemc.com.
For more information visit **www.dlsemc.com/1001**.

$300 discount
if you register by March 26th

(If you cannot attend this class, the next one will be October 2007)

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DLS News & Views
To help keep you better informed

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INSIDE THIS ISSUE:

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

What can I do to expedite my Safety Evaluations?

You can save valuable time during safety testing by supplying the following:

- One working sample
- Extra consumable parts (i.e. fuses)
- Schematics and wiring diagrams
- Bill of material
- Critical component data sheets
- Critical component certification documentation
- Details for all intended markings
- Board artwork and voltage maps (mains circuits only)
- Installation/user manuals

Note: Examples of critical components include primary circuit components, plastic enclosures, power supplies, optoisolators, thermistors, PTC's, safety interlocks, motors and fans.

If some of these items are difficult to obtain, provide as many as possible at the start of the project and work to provide the rest at the earliest opportunity. You can avoid delays by providing the above items early during an evaluation.

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HHA SAFETY/EMC changes

HHA Safety Standard EN 60335-1's new EMC requirements significantly increase severity of immunity testing

A recent amendment to the IEC/EN 60335-1 standard, which covers household and similar appliances, added EMC requirements to this safety standard. These requirements apply to electrical appliances which incorporate protective electronic circuits, those which have a switch with an off position obtained by electronic disconnection and those with a switch that can electronically be placed in a stand-by mode. Some of these requirements became mandatory on October 1, 2006, while the rest are currently scheduled to become mandatory on October 1, 2007.

These new requirements were added to address the increased use of electronically controlled switching in these types of products. This type of switching has a potential to be interfered with which may cause inadvertent operation and related safety hazards.

The new requirements significantly increase the IEC 61000-4-x severity levels mandated in the EMC Standard EN 55014-2. As an example, products without protective/standby electronic switches are required to meet EN 61000-4-5 Surge levels of:

+ 1kV Differential Mode (line-to-line)
+ 2kV Common Mode (line-to-ground)

For products with these electronic switches, the levels are increased considerably to:

+ 2kV Differential Mode (line-to-line)
+ 4kV Common Mode (line-to-ground)

In addition to the surge test example above, there are many other immunity tests affected, including radiated susceptibility and ESD.

Since there is no grandfather provision, manufacturers of household and similar appliances should have their products evaluated, and potentially tested, immediately. This will assure they are prepared for the new IEC/EN 60335-1 EMC mandates becoming mandatory on October 1, 2007.

For more information call Steve at 847-537-6400.