

August

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DLS News & Views

To help keep you better informed

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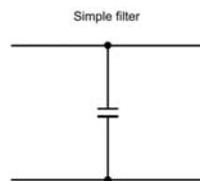
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Design Seminar contents expanded

Filter Design

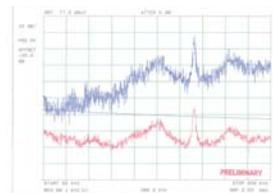
Our seminar/workshop class materials have been expanding. In addition to the book *PCB Design for Real-World EMI Control* by Dr. Bruce Archambeault, which was discussed in detail in the last newsletter, we have greatly expanded our chapter on filter design, including computer examples.

Filters can be as simple as a single-stage shunt capacitor (shown below), a series inductor, or a ferrite.

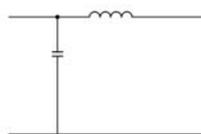


Single-stage shunt capacitor filter

A single stage filter can supply up to 20 dB/decade of attenuation.



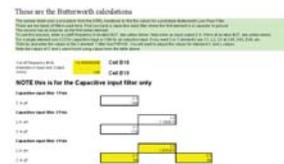
Possible results of a simple filter



Two stage filter

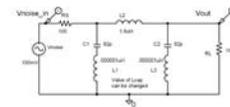
In class, we will use a simple program to choose component values, which are effective when the EMI frequency is very close to the intended pass frequency. This program allows us to be able to remove the guesswork out of choosing the component values when filters are expanded from two to ten stages.

We then use PSPICE to simulate these chosen values and see visually the response we might expect. Participants will be given a student version of PSPICE and introductory information on how to use it.



The following chart from Impedance spread sheet was used to choose standard values. This spread sheet is found as Butterworth filter calculator on your CD.

Simple program to
choose values of filter



PSPICE model of a 3-stage filter



PSPICE output

What students are saying

"Best program I've seen. Software provided is worth the price of the seminar."
- Scott D.

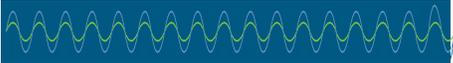
"Every design engineer should take this class." - Dave J.

"Lots of seemingly rare information."
- Jeremy M.

"Presented well, extremely relevant."
- Bryan P.

"It satisfied my requirements - practical application and problem solving."
- Jack R.

D.L.S. can provide testing services to meet several standards, including MIL-STD 810 E and RTCA DO-160E. Make D.L.S. your one stop shop for all your Military and Avionics testing needs. Contact Jack Black at jblack@dlsemc.com or at 847-537-6400 to review your next program.



New 3rd Edition of EN 60601-1

On September 12, 2009, the new 3rd edition of EN 60601-1, the European Safety Standard for Medical Electrical Equipment – Part 1 (General requirements for basic safety and essential performance), is currently scheduled to become a requirement for product evaluations not covered by a Part 2 standard. The 3rd edition contains significant changes, including the following examples:

- Formal ISO 14971 risk management system required for manufacturers and to assess risk acceptability of products in order to determine compliance options
- Part 1 certification now also requires use of all applicable collateral standards
- Medical supervision scope limitation removed (part of previous definition of medical electrical equipment)
- Scope expanded to include equipment which alleviates disease, injury or disability

Please note that other parts of the world, including Canada (and probably the U.S.), will not require evaluations to this new standard until some time in 2012. Contact D.L.S. for further information.

regulatory requirements **UPDATE**

EN 55022:2006 goes into effect in EU October 1, 2009

EN 55022:2006 goes into effect in the EU on October 1, 2009. The changes include new telecommunication T-LISNs (which D.L.S. Electronics has purchased and is using), new telecom communications requirements, and removal of the ferrite tube requirement during radiated emission testing.

Testing from 1 GHz to 6 GHz is introduced in amendment A1:2007 and goes into effect the following year, October 1, 2010. D.L.S. is currently testing above 1 GHz for EN 55022:2006 testing. EN 55022:2006/A1:2007 basically uses the same criteria as the FCC for determining if testing above 1 GHz is called for; however, the limits are not the same as FCC.

What it means:

For new and existing products that are shipped into Europe after September 30, 2010, compliance to the new requirements found in A1:2007 is mandatory. Customs could prevent entry into the EU of prod-

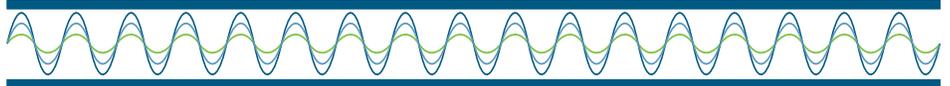
ucts that have not been tested to EN 55022:2006 with A1:2007. Therefore, any current or future products that will be shipped to EU Member States after September 30, 2010 should be tested to the new standard and Declaration of Conformity documents should be updated.

Additional countries:

Currently, Taiwan (BSMI) and Japan (VCCI) will require radiated emissions testing above 1 GHz starting April 1, 2010 using the same CISPR 22 test methods and specification limits.

Australia (ACMA) has already adopted CISPR 22:2006, but has put a delay on testing and limits above 1 GHz.

It is expected that Korea, Hong Kong, Singapore and South Africa will soon be adopting this latest version of CISPR 22.



Bill Stumpf, D.L.S. Site Manager, helps write new standards



The role of ANSI Accredited Standards Committee C63® - EMC is to develop definitions and methods of measurement of electromagnetic noise

and signal strengths, determine levels of signal strength, levels of unwanted sources, limiting ratio of noise (and/or unwanted sources) to signals, and develop methods of control of, and guidelines for influence, coupling and immunity. There are currently twenty C63 standards developed by this committee or currently

in development or re-issue. Bill is an active volunteer on Sub-Committees SC-1 Techniques & Development, SC-6 Accreditation/Conformity Assessment, and SC-8 Medical Device EMC Test Methods. Development of C63.10 is being done by members of SC-1.

Work on the C63.10 standard began in 2006. The C63.10 standard is intended to consolidate and develop procedures for testing the compliance of a wide variety of unlicensed wireless devices. Until now, the test procedures were scattered about in different FCC publications, application notes, and guidance documents, which has caused confusion regarding the testing of devices and inconsistent test results. The first edition of this standard is slated for publication later this year.

regulatory requirements **UPDATE** (cont'd)

iNARTE Engineers Show True Value in EMC Compliance World

When evaluating testing laboratories for their competence and expertise, remember while the test equipment is important, one must also look at the people that perform the testing and other valuable services. For EMC compliance engineers, the iNARTE accreditation program has long been considered the benchmark level of measure for the compliance testing industry. This program establishes the level of an engineer's competency, using a series of examinations based on a combination of technical knowledge and actual practical experience.

The military has long held that iNARTE certified engineers perform and witness strategic EMC testing projects, as estab-

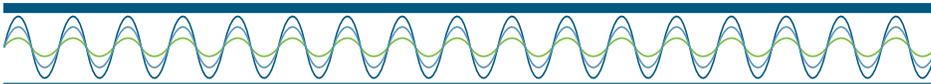
lished several years ago in the formal instructions written by NAVAIR for their testing requirements.

D.L.S. currently has 17 engineers certified by the iNARTE program. (This is the most of any independent lab in the world and provides D.L.S. the highest iNARTE honor, which is the iNARTE Certified Organization.) iNARTE Certification assures that an experienced engineer, who not only is knowledgeable in the performance of critical tests but is also experienced in EMC phenomena relating specifically to mitigation and problem solving, will be assigned to your project.

Experience the difference and the value first hand with D.L.S. and their iNARTE certified engineers on your next project.



Part of D.L.S.'s iNARTE Technical Staff



D.L.S. continues to expand Mil-Std/RTCA testing capacity

D.L.S. continues to meet the market demand for high frequency, high voltage and high intensity electromagnetic testing requirements. D.L.S. can provide testing to 40 GHz, as well as up to 2000 volts per meter pulsed. Combining this with

HALT testing and D.L.S.'s newly upgraded testing chambers allows us to offer greater scheduling flexibility than ever before. Contact us today at 847-537-6400 to review your testing requirements.

New EN 60065 Amendment

On July 1, 2010, new Amendment A11 to EN 60065, the European Safety Standard for Audio, Video and Similar Electronic Apparatus, is required to be used for product evaluations. Do you comply? Please contact D.L.S. for more information.



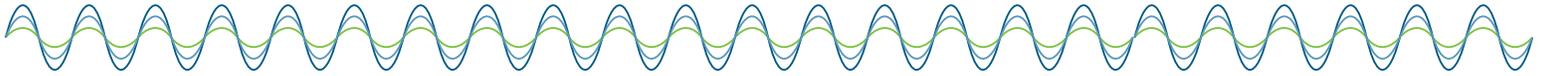
Guidance for FCC Transmitter Certification

Wireless transmitters sold in the U.S. require FCC certification. Such devices need to be tested to meet the specific FCC requirements designed for their frequency range and usage. In addition, documentation needs to be supplied to the FCC or a TCB (Telecommunication Certified Body) for review. Once the conditions of the review have been met, an FCC Grant of Certification is issued.

D.L.S. Electronic Systems, Inc. can submit all the exhibits necessary for an FCC certification. Not only will we test your product to the required FCC standards, but also we will provide the test reports, fill out the filing forms and process the required documentation necessary for your FCC certification. We can offer guidance to explain the FCC standards that must be met, including the requirements for labeling and user manual statements.

If you would like a brochure that offers an outline of the FCC exhibits required for an FCC Unlicensed Transmitter Certification, please contact Jack Black at jblack@dlsemc.com or at 847-537-6400.

by Jill Stumpf



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Regulatory Requirements Update

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Learn to control signal return currents on PCB's
and how EMC and signal integrity are interrelated

using *textbook* by Dr. Bruce Archambeault of IBM
"PCB Design for Real-World EMI Control"

See videos showing simulation of current flowing on PCB's



Now part of Don Sweeney and Roger Swanberg's
EMC by Your Design
An EMC Practical Applications Seminar and Workshop

with a free 45 min. individual product design evaluation,
take home proprietary computer program,
and second textbook at no extra charge

October 15, 16, 19 & 20, 2009
Hilton Hotel, Northbrook, IL

Now including expanded chapter on filter design
\$300 Discount if registered by **September 15, 2009**



Classes fill quickly so register early

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