The Product Safety Engineering Newsletter

Vol. 2, No. 4 December 2006

IEEE PSES
Product Safety Engineering Society

What's Inside

President's Message

First of all, I would like to commend the IEEE PSES Volunteers that organized 3rd Annual PSES Symposium. The symposium was held in October in Irvine, California. Bansi Patel Chaired this Conference with support from Richard Georgerian, PSES VP of Conferences, and an outstanding volunteer committee. They did a great job with the venue and technical program. The symposium drew approximately 200 people.

Our society is now challenged with making "quantum" changes to demonstrate our viability. The PSES strategy is to place primary focus on expanding our conference attendance, exhibitor participation and revenue. Other priorities include increasing membership and development of a product safety engineering journal.

Next year's symposium will be in Longmont, Colorado on October 22-23, 2007. In order to meet our society challenges, we are expanding the technical program to include areas of total product engineering compliance. The expectation is to increase the attendance by 50 to 100%! The exhibition venue is planned to increase by at least 300%! The IEEE Product Safety Engineering Society Board decided to change the title this next year to "2007 IEEE Symposium on Product Compliance Engineering". The name change is intended to promote the technical program for the 2007 symposium. The major topics of concentration will

Continued on Page 3

The
Product Safety Engineering Newsletter

Newsletter Committee

IEEE PSES Officers

IEEE PSES Web Sites

http://www.ieee-pses.org/
http://www.ieee-pses.org/symposium/
http://www.ieeecommunities.org/emc-pstc
http://www.ieee-pses.org/emc-pstc.html
http://www.ieee-pses.org/newsletters.html
http://www.ieee-pses.org/pses.html

be rules, regulations, standards and design for compliance to product safety, product electromagnetic compatibility, product environmental aspects, reliability and quality. Technical papers for this symposium are already being accepted. All of you are encouraged to participate and present at this symposium.

I would like to thank two PSES outgoing Board members that have contributed during the first three years of the society. Ted Freeman, Boeing, was a volunteer initially contributed from the Reliability Society to add experience to our Board. Thanks Ted! Dan Arnold is our outgoing Treasurer, a volunteer from Underwriters Laboratories. Dan has done a tremendous job and will provide mentorship for our incoming Treasurer, Murlan Marks.

I congratulate the following members that have been elected or re-elected to the PSES Board; Daniece Carpenter, Richard Georgerian Daniel Nachtigall and Elya Joffe.

I am looking forward to working with a new executive committee in 2007. The 2007 executive committee consist of the following positions:

President - Henry Benitez

Past President - Mark Montrose

President-Elect - Jim Bacher

Vice-President Membership - Ken Thomas

Vice-President Technical Activities- Jack Burns

Vice-President Conferences - Richard Georgerian

Vice-President Communications - Dan Roman

Treasurer - Murlan Marks

Secretary - Daniece Carpenter

I extend my thanks to the 2006 executive committee. Thanks Richard Pescatore, outgoing VP of Technical Services. Rich will remain on the PSES Board, just not on the executive committee. Thanks Rich for tackling a difficult task to setup the PSES initial structure for technical activities! Thanks to Daniece Carpenter for her tremendous efforts as VP of Membership and her agreement to remain on the executive committee as Secretary. Thanks to Jim Bacher, outgoing Communications VP and in-coming President-Elect.

I look forward to a tremendous 2007 for the Product Safety Engineering Society. I encourage all of you make sure that you have renewed your IEEE PSES membership and encourage others with product safety engineering interests to join as well.

Sincerely

Henry Benitez
IEEE Product Safety Engineering Society
h.benitez@ieee.org

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Chairman : Moshe Henig
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Vancouver Chapter

Chairman : Mohamed Omran
mohamed.omran@csa-international.org

People Looking To Start Chapters

Want to start a chapter? Send your contact information to Stefan Mozar and it will be included in the chapter news. If you haave chapter updates please send them to Stefan Mozar as well at s.mozar@ieee.org.

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The Role of Warnings and Instructions

by Gary Weidner

A gradually increasing lament is that the average engineering school teaches little, if anything, about product safety engineering. However, even though the new engineering graduate typically does not go into a position dealing specifically with product safety, he or she soon becomes aware of the ogre called liability. Liability arises because of a safety defect in a product, and in today's world the law considers inadequate safety-related warnings or instructions to be product defects.

The University of Wisconsin addresses this matter by offering to industry a three-day course titled "The Role of Warnings and Instructions." The course is directed toward anyone whose work touches upon the creation or review of directions and warnings. *PSEN* recently sat in on the course in order to give our readers an overview.

Beforehand

"Housekeeping" details are communicated in complete and well-organized form. Information about transportation, meals, lodging, parking, and other such details is provided in advance. Program Director Dick Moll signals, "We will make every effort possible to tailor this course to your interests." Well ahead of the course dates, enrollees receive questionnaires intended to clarify their specific work needs.

Day One

Dick Moll, a UW professor, opens the course with remarks highlighting the fact of life that if a hazard cannot be designed out or guarded against, there is a definite responsibility to warn.

Class introductions reveal that our students come from a diverse cross-section of business and industry. A sampling: Microsoft sent product safety and EMC engineers; La-Z-Boy sent product development and test lab managers; Whirlpool sent a safety specialist; 3D Systems sent a technical documentation specialist; American Honda sent a management person. Other attendees came from manufacturers of recreational vehicles, hand and power tools, architectural products, directional boring equipment, packaging and packaging equipment, light fixtures, and outdoor power equipment, as well as individuals from insurance companies, forensic engineering firms, and a law firm.

Dr. Moll introduces the course and the responsibility to warn.

The course is delivered by a series of five presenters. The first is Dr. Patricia Robinson, a well-known consultant in the area of warnings and instructions. Pat starts out with an overview of the legal context in the U.S. Breach of warranty, negligence, and strict liability in tort are explained, leading up to the question, "Can bad warnings/instructions make a product defective?" The answer: "You bet they can."

Pat outlines four conditions for which the law views warnings as necessary, clarifies the conditions under which a manufacturer is liable, and tells the group that instructions and warnings are considered inadequate when "the foreseeable risks of harm posed by the product could have been reduced or avoided by the provision of reasonable instructions and warnings…and the omission of the instructions

Dr. Robinson weaves the concepts of labeling into the overall product design cycle.

or warnings renders the product not reasonably safe." (*Restatement of the Law Third, Torts: Products Liability*)

Pat next offers an overview of how product safety is handled around the globe, mainly focusing on the European Union. Although this segment is nothing new for those already doing CE marking, Pat wraps it up with an interesting (and entertaining) treatment of the task of translating to other languages.

What Pat calls "integrated product safety" is discussed next. The key concepts are:

1 Conduct multiple hazard analyses.
2 Integrate product safety throughout:
   – Design
   – Manufacture
   – Marketing and sales
   – Service
3 Write and design for the user.

It's now time for a break, and the class adjourns to the break room where we had earlier enjoyed a breakfast buffet. It's becoming clear that this program is determined to feed students well. In addition to a considerable array of beverages and edibles, we find a freezer stocked with no less than twenty different ice cream products, frozen juices, and the like.

A detailed treatment of designing instructions is next. The key concepts are to evolve the product and the instructions concurrently, and to design the instructions for users (something that's more easily said than done). Pat explains how "weasel" words can unintentionally creep into instructions. For example, "Keep the cable tension springs in good condition." (What is "good condition?" How does the user keep the springs in good condition?)

Time flies when you're having fun, and it's already time for lunch. Down the hall we go, to a dining room offering an impressive lakefront view. The repast includes soup, salads, multiple hot entrees, and out-of-the-ordinary deserts. (Most popular: fudge-bottom pie.)

Lunches were served in a lakeside dining room.

Back in the classroom, Pat complements the presentation on designing instructions with one on designing warnings. We are taught to analyze the hazards first, warn only for residual hazards (that haven't been dealt with in some other way), meet applicable standards, and test our warnings. Many of the details are tied to two new, 2006 standards: ANSI Z 535.4-2006, *Product Safety Signs and Labels*, and ANSI Z535.6-2006, *Product Safety Information in Collateral Materials*. (Z535.6 was

2007 IEEE International Symposium on Electromagnetic Compatibility

EMC 2007

honolulu, hawaii

July 8-13, 2007

Hawaii Convention Center

East meets West

Through Education, Networking & Celebration

Education

New for the EMC Symposium is the Global EMC University. Recognizing the need for low cost, high quality education on EMC, the Global University was developed to provide tutorials with Continuing Educational Unit Credits (CEUs). Instructors are leading experts from around the world. A few of the University topics include:

- Printed Circuit Board Layout considerations for Reduced Emissions
- High-Frequency behavior of Resistors, Capacitors, Inductors, Ferrites
- General Properties of Antennas, both Intentional and Unintentional

This special track will complement the outstanding technical program of over 150 papers, numerous workshops and tutorials.

Networking

With EMC 2007 promoting "East meets West" this is an excellent opportunity for Attendees and Companies to become a part of the EMC Community throughout the Pacific Rim Region.

Celebration

A Special Anniversary Celebration will be held on the final day of the Symposium. To be honored are past EMC Society Presidents and some of the most influential EMC Papers presented since the founding of the EMC Society.

This Symposium was 50 years in the making. Don't miss it.

50 ANNIVERSARY 1957 — 2007 EMC SOCIETY

Join us for the Education · Join us for the Networking · Join us for the Celebration

www.EMC2007.org

East meets West Through Education, Networking & Celebration

IEEE

published in final form in November, 2006.)

Following another sumptuous break, the class breaks into groups for a workshop. Each group is given a sample product and told to evaluate potential hazards and devise suitable warnings against them. After each group has presented its findings and actions, we are asked to evaluate samples of instruction manual pages.

Here and there in the flow of information, Pat injects special insights. For example, she says that years back, writing of manuals was often assigned to those who failed at "real" engineering. In those days, the importance of warnings and instructions was not so well recognized. In another instance, the difference in philosophical mindset between "product liability avoidance" versus "product safety" is discussed. Hazard analysis and good documentation of it are stressed, in part because this is a way of showing "we care."

Since a continuous inflow of information can tend to numb the brain, we retire briefly to the break room. Following that, Professor Dick Moll takes over. His rather considerable experience in both teaching and "doing," combined with many assignments as an expert witness, are the basis for class discussion of an interesting series of case study-type anecdotes. Not afraid to be humble, Dick ends his session with a video clip of a barracuda-like attorney relentlessly attacking him at a deposition.

Day Two

Jerry Reganess, standards Compliance Manager for Hazard Communication Systems, leads off the morning, telling the class that "More than 70 percent of product liability lawsuits contain the allegation of 'the failure to warn' or 'inadequate warnings.' " He reiterates the already underscored point that, besides design or manufacturing defects, defective warnings can cause a product to be found defective in the eyes of the law.

Jerry segues nicely into the role of risk assessment, telling us that "Safety labels are a direct result of your product's risk assessment." After a capsule

Jerry Reganess explains the new aspects of the ANSI Z535 series of standards.

view of the relevant ANSI, EN, and ISO standards, he moves on to a detailed review of the ANSI Z535 series of standards.

New versions of the Z535 standards have been published recently, so this is an area of considerable interest. We are informed about the brand-new, soon-to-be published Z535.6, which has the somewhat cumbersome title, *Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials*. [*Note—Z535.6 has since been published.*]

Considerable attention is devoted to Z535.4, *Product Safety Signs and Labels*. The new version of Z535.4 substantially expands the amount of information that a safety label must communicate:

4 The nature of the hazard
5 The degree of seriousness
6 The consequence of interaction
7 How to avoid the hazard.

More detail is provided as Jerry covers signal words, colors, and symbols, displaying examples of good and poor label content and placement on the product. Helpful tips are given for constructing warning text.

After a break, Jerry covers U.S.-International harmonization of the relevant standards. Although the

We break into groups for a label design exercise.

new ANSI Z535.4 is much closer to its counterpart ISO 3864-2, there are differences. Both common ground and differences are covered in conjunction with material from ISO 7010 (symbols). As a wrap-up to the standards aspect, Jerry outlines the overall design of warning labels.

Following another epicurean delight (lunch), Jerry touches on the matter of replacement labels, then presents a lecture on label durability. Product environment, product surface to receive a label, and label materials/physical construction are treated in turn.

Although label requirements are becoming more and more uniform, Jerry cautions that the understandable desire of product manufacturers for single label solutions that meet the requirements of all markets is usually not attainable.

We take a break, then next to speak is Cal Burnton, a lawyer whose practice is devoted primarily to product liability, product safety, and related areas. "Adequate warnings labels and instruction manuals are important parts of a product safety program," says Cal, pointing to the two benefits:

8 They prevent accidents by giving information to the user;
9 The manufacturer can use them as evidence, should there be a product liability lawsuit.

Stressing that the manufacturer has a duty to warn of hazards associated with the product, Cal reviews the legal theories of liability—negligence and strict liability. The manufacturer is presumed to be an expert on the product. Additionally, the manufacturer must anticipate foreseeable use, misuse, or modification. Under strict liability, the issue is whether a hazard exists, regardless of whether the manufacturer knew about it. Furthermore, the manufacturer cannot solve poor design through warnings, and the manufacturer is presumed to know all applicable standards.

Using case studies to illustrate and clarify each of his points, Cal goes on to list the factors in deciding whether to warn:

10 Type of product
11 Nature of possible injury
12 Information and skills of user
13 Information available to manufacturer about use of product
14 Cost and burden of instructions
15 Possibility warnings will prevent harm.

Cal next provides tips regarding "foreseeable misuse." One tip: consider the environment in which the product is to be used, and help define the envi-

Cal Burnton covers the legal perspective.

IEEE PSES Membership savings

UL University Offers IEEE PSES Members 15 Percent Discount

UL University (ULU) has established a discount code which will provide all IEEE-PSES members with a 15 percent discount off the price of all ULU instructor-led workshops, online programs, videos, books, and other services/products offered under the ULU brand. The discount is automatically applied during registration or purchase of ULU products. Registration or product purchase can be accomplished online at www.uluniversity.com or by calling 888-503-5536 in the U.S. or the country-specific number posted on the ULU website.

To receive the discount, members must enter or mention the discount code found in the Members Only section of the PSES website.

If you or any member has specific questions regarding ULU products or services, please call or email me or call the local country specific number posted on the UL University website.

Tony Robertson
Manager – Customer Training

Advantages of Membership in the IEEE PSES

Makes you part of a community where you will:

- Network with technical experts at local events and industry conferences.
- Receive discounts on Society conferences and symposiums registration fees.
- Participate in education and career development.
- Address product safety engineering as an applied science.
- Have access to a virtual community forum for safety engineers and technical professionals.
- Promotion and coordination of Product Safety Engineering activities with multiple IEEE Societies.
- Provide outreach to interested engineers, students and professionals.
- Have access to Society Publications.

IEEE | PSES Product Safety Engineering Society

E-Mail List: http://www.ieee-pses.org/emc-pstc.html
Virtual Community: http://www.ieeecommunities.org/emc-pstc
Symposium: http://www.ieee-pses.org/symposium/

Membership: The society ID for renewal or application is "043-0431". Yearly society fee is US $35.

ronment by describing product usage in the manual.

In a bit of good news for manufacturers, Cal explains that there is no duty to warn where the hazard is "open and obvious," and he illustrates with a case study. Another tasty break, then he gives us the legal perspective on assessing the adequacy of warnings. We examine several cases to learn whether a failure to warn caused an accident. For his final topic, Cal elaborates on when the post-sale duty to warn arises.

Although the details of some of the case studies are almost hilarious, many of them provide sobering insights because they illustrate real-life examples of how simple oversights in the design of warnings or instructions resulted in serious problems.

Day 3

This half-day session is led by Dr. Lila Laux, an expert in human factors and engineering psychology. Lila's topic is evaluating (assessing the effectiveness of) warnings and instructions. Lila opens by defining a warning according to ANSI Z535.4, and then makes a crucial point: "People are often not good receivers of warnings." In other words, a warning may be technically correct in that it meets the requirements of the standard, while nonetheless not communicating effectively about a hazard.

A warning needs to be evaluated for three reasons:

16 To verify that it meets relevant standards
17 To determine whether it effectively alerts and informs
18 To assess how effectively it motivates appropriate user behavior.

Lila readily acknowledges the difficulties in developing effective warnings. Examples of those difficulties are:

19 People may use products in ways that seem totally irrational to the manufacturer
20 Almost 50 percent of Americans do not read above the 4th grade level
21 Users tend to believe the government would not let something hazardous be sold
22 Some individuals believe they are invincible.

Yet in spite of factors like these, Lila is here to tell us that most rational people, when adequately instructed and warned, will try to heed the warnings and instructions. Furthermore, she contends that customers are far less likely to sue a manufacturer who they think cares about their welfare than one they perceiver as uncaring. The contention is backed up by examples of jury reactions to manufacturers perceived by the jury as either caring or uncaring.

After the final break of the course (the huge tub of fresh red raspberries seemed especially inviting), Lila reminds us that evaluating warnings includes monitoring their post-sale effectiveness, and she describes ways to accomplish that.

Actually, there are questions that should be asked before testing warnings, and after covering them Lila launches into the testing process. We are taught:

23 How to use checklists (a 62-item example checklist is provided in the handouts)
24 How to determine whether or not to conduct user tests
25 How to evaluate test results.

Lila next teaches us about the communication mechanisms and psychology involved in commu-

Dr. Laux explains how to evaluate the effectiveness of warnings.

nicating warnings. Then we go on to more about effectiveness testing. It's interesting to note that the adequacy of our effectiveness testing itself must be evaluated. Toward that end, Lila addresses these questions:
26 Who do we test?
27 How do we do/administer the test?
28 What should be in a test protocol?
29 How much testing is needed?
30 How do we interpret the results?
31 What should we test?
32 When should we test?

A "keep out of trouble" warning: manufacturers should always be prepared to act on the results of testing a warning. Woe unto a manufacturer who tests and finds that a warning is deficient, yet does not act to remedy that situation.

Lila also tells us that safety warnings are most effective when embedded in instruction manual text, versus in a separate section. However, for many products, UL standards require safety warnings to be grouped in a separate section. Her recommendation is that warnings grouped in a separate section also be embedded in the manual text at appropriate locations. And a final caution is that warnings should last the life of the product.

The Bottom Line
Hopefully this article provides the reader with sufficient information to determine whether enrolling in this course would be advantageous. In general, the value of the information provided in the course, the quality and quantity of handouts (a thick binder), and the amount of class interaction and involvement were excellent.

An interesting aspect of the course was the way each speaker repeated various admonitions of the others, but each one from a different perspective. One detail that the course lacks is some sort of dealing with the fact that many traditional UL product safety standards stipulate various safety warnings in painful detail.

All in all, "It is <u>much</u> cheaper to develop adequate and effective warnings and safety instructions than it is to defend yourself even once against litigation"—Lila Laux.

The Role of Warnings and Instructions course will be offered twice in 2007:
April 11–13
November 6–8
Visit epd.engr.wisc.edu

Two product liability resource books:
Restatement of the Law Third, Torts: Products Liability
American Law Institute
www.ali.org

Product Liability Desk Reference
Aspen Publishers
www.aspenpublishers.com

The Product Safety Engineering Newsletter is published quarterly during the last month of each calendar quarter. The following deadlines are necessary in order to meet that schedule.

Closing dates for submitted articles:

1Q issue: February 1
2Q issue: May 1
3Q issue: August 1
4Q issue: November 1

Closing dates for news items:

1Q issue: February 15
2Q issue: May 15
3Q issue: August 15
4Q issue: November 15

Closing dates for advertising:

1Q issue: February 15
2Q issue: May 15
3Q issue: August 15
4Q issue: November 15

eDJ Publication Schedule

The eDJ is published as a special section of the PSEN.
Contact Mike Sherman for details.

2006 IEEE Product Safety Engineering Society Symposium Report

by Doug Nix, A.Sc.T.

IRVINE, CA—The IEEE's Product Safety Engineering Society met for the third time on the 23rd and 24th of October this year at the beautiful Hyatt Hotel in Orange County. The Hyatt provided a superb setting for this conference with excellent facilities, outstanding food, and very comfortable accommodations. California did its part by providing outstanding weather, a major bonus for those of us traveling from more northern climates!

The symposium brings together Product Safety Engineering professionals from around the world to discuss the latest thinking in building better, safer products. The PSES is IEEE's youngest society, and the fastest growing society in IEEE's history. Membership has grown to 550 worldwide with attendance at this year's symposium up about 54 percent over last year, with approximately 200 delegates attending. Delegates came from Canada, Germany, Japan, and the United States this year.

The keynote addresses by Grant Schmidbauer of Nemko USA and Jack ReVelle of ReVelle Solutions set an upbeat tone for the first day of the proceedings.

Once again, Underwriter's Laboratories was the Platinum Patron for the event and provided a booth for the exhibition featuring their UL University pro-

gram. UL University provides training programs for safety engineers, technologists and technicians

through web-based courses and face-to-face training sessions. Their program can be viewed at www.uluniversity.com.

Intertek was the GOLD Patron for the event with Nemko as the SILVER Patron. Associated Research was the Workshop Patron.

Garwood Laboratories, G & M Compliance, Pacific Oak Technology and TÜV Rheinland of North America were the Tote Bag Sponsors for the event and provided the delegates with tote bags and other goodies.

Technical sessions ranged from risk assessment methods, through testing methods and experimental design to new developments in medical device standards and the always-popular RoHS and WEEE directives.

NARTE held examination prep sessions for the Certified Product Safety Engineer and Certified Product Safety Technician exams.

UL University held their Hazard-Based Safety Engineering course in the two days following the symposium.

Exhibitors included:

Advanced Test Equipment Rentals, San Diego, CA
ED & D, Inc., Research Triangle Park, NC
G & M Compliance Inc., Orange, CA
Garwood Laboratories Inc., San Clemente, CA
Intertek ETL SEMKO, Laguna Niguel, CA
NARTE, Medway, MA
NEMKO USA, Inc., Dan Diego, CA
Northwest EMC, Inc., Irvine, CA
Pacific Oaks Technology, Inc., Pasadena, CA
TÜV Rheinland of North America, Inc., Newtown, CT
TÜV SÜD America Inc., San Diego, CA
Underwriters Laboratories Inc., Northbrook, IL

Next year the Society will be gathering in Denver, CO. See you in the mountains!

2007 IEEE Symposium on Product Compliance Engineering

Sponsored by the IEEE Product Safety Engineering Society

22-23 October 2007 Longmont, Colorado

Call for Papers, Workshops, and Tutorials

The IEEE Product Safety Engineering Society seeks original, unpublished papers and tutorials on all aspects of product safety and compliance engineering including, but are not limited to:

- **Product Safety:** Consumer, medical, computer (IT), test and measurement, power supplies, telecommunication, industrial control, electric tools, home appliances, cellular and wireless, etc.
- **Safety Subjects:** Electrical, mechanical, fire, thermal, chemical, optical, software, functional, reliability, etc.
- **EMC / RF:** Electromagnetic emissions, electromagnetic immunity, regulatory, Introduction to EMC/RF for the safety engineer and compliance engineer.
- **Components:** Grounding, insulation, opto-couplers, capacitors, transformers, current-limiters, fuses, power line filters, ferrite, environmental, electromagnetic emissions, electromagnetic immunity, regulatory, etc.
- **Certification:** Product safety, electromagnetic emissions, electromagnetic immunity, environmental, processes, safety testing, regulatory, etc.
- **Standards Activities:** Development, interpretations, status, interpretations, country requirements, etc.
- **Safety Research:** Body physiological responses to various hazardous energy sources, unique safeguard schemes, etc.
- **Environmental:** RoHS, WEEE, EuP (Energy-using Products), Energy Star, Packaging Directives, REACH (Chemical), CeC, etc.

Mark your calendars to attend the 2007 IEEE Symposium on Product Compliance Engineering.

Author's Schedule

Intent to present and topic (e-mail) April 29, 2007
Draft e-paper June 1, 2007
Notification of Acceptance July 6, 2007
Complete e-paper August 17, 2007

See http://www.ieee-pses.org/symposium/index.html#CFP for more details on requirements and dates.

www.ieee-pses.org/symposium

News and Notes

Society

The following people were elected or reelected to the board of directors of the PSES:

Daniece Carpenter

Richard Georgerian

Daniel Nachtigall

Elya Joffe

We would also like to thank our out going PSES Board members for their excellent contributions during these initial stages of the Society:

Dan Arnold

Ted Freeman

The Board of driectors elected the following at the last board of directors meeting:

President-Elect - Jim Bacher

Vice-President Membership - Ken Thomas

Vice-President Technical Activities- Jack Burns

Vice-President Conferences - Richard Georgerian

Vice-President Communications - Dan Roman

Treasurer - Murlan Marks

Secretary - Daniece Carpenter

PSES to approach academia

The March 2006 *PSEN* noted that the PSES is developing a letter to go to the deans of engineering schools, inviting participation in the PSES. At last report, the letter remains under development.

"WHO-IS-IN-WHAT" project

The value of networking with others who do the same work is widely recognized. Therefore, the *PSEN* is conducting a networking experiment.

By this notice, we are surveying PSES members to learn what product-safety-related committees, panels, IEC National Committees, National Committee Advisory Groups, trade association technical or standards committees, and such you belong to. If sufficient responses are obtained, we will publish names, committee affiliation(s), and e-mail addresses in a "WHO-IS-IN-WHAT" section of the *PSEN*.

Help us to let others know what group(s) you belong to and to let you know what groups others belong to. Kindly reply by e-mail to gweidner@ieee.org with your affiliations such as in the examples below.

EXAMPLES
UL STP 778, Motor Operated Water Pumps
SAE Mtc Sc2, Sweeper, Cleaner, And Machinery
USNC TC 61 TAG, Appliances, General Requirements
(Also regional and national groups from all countries…)
(Also trade association technical or standards committees…)

If you elect to respond and have your affiliations published, it is highly unlikely that you will be deluged with inquiries. This is simply an opportunity for each of us to leverage our PSES membership by having knowledge of who to go to with an occasional question or concern.

Notes

Product safety self-declaration proposal remains under consideration by U.S.-OSHA

The issues of *PSEN* reported that the U.S. Occupational Safety and Health Administration (OSHA) had posted in the *Federal Register* a public notice and request for information and comments regarding a proposal to allow IT manufacturers to bypass OSHA-mandated Nationally Recognized Testing Laboratories (NRTLs) and self-certify that their products meets safety standards. Deadline for comments was February 13, 2006. The matter has been included in the current OSHA Regulatory Agenda under Regulatory Identification Number 1218-AC21, with review of comments scheduled to be completed during October 2006. An OSHA NRTL staff person told *PSEN* in November that the comments are still under review.

For calendar year 2006 the EMC-PSTC list posted 3,208 email messages. All messages are archived at the IEEE EMC-PSTC Forum on the IEEE Virtual Communities web site. EMC-PSTC Subscriber Count by Country

* Australia 8
* Canada 11
* China 3
* Denmark 4
* Finland 1
* France 2
* Germany 12
* India 3
* Ireland 1
* Israel 3
* Italy 3
* Japan 3
* Luxembourg 1
* Netherlands 2
* New Zealand 1
* Norway 1
* Poland 3
* Republic of Korea 2
* Singapore 3
* Spain 4
* Taiwan 6
* Thailand 1
* United Kingdom 36
* United States 666

* Total number of users subscribed to the list: 806

What's new

NEMA presses UL on two issues

The U.S.-based National Electrical Manufacturers Association is turning up the heat on Underwriters Laboratories in two areas of particular concern:

File reviews—NEMA's Insulating Materials Division members say that UL is ordering unnecessary file reviews triggered by minor changes in the standard for these products. UL has agreed to a meeting with these manufacturers. (The file review process is time-consuming and expensive.)

Conformity assessment problems—NEMA's Electrical Connector Section met with UL officials including Bill Colavecchio, UL's vice president and general manager of global industrial products in September. Section members aired problems such as inconsistent costs for very similar Listing projects; increasing times for obtaining quotations (also inconsistency in those times); and errors in specifying the technical criteria for Listing projects. Colavecchio expressed concern, described present UL efforts to improve these situations, and promised additional efforts.

—from *NEMA Electroindustry*

• **Volunteers Needed as Editors** Lingfeng Chen has resigned from the News & Notes Column. We need volunteers for this column. Please contact Gary Weidner if you are interested. He can be reached at gweidner@ieee.org.

EDITORIAL

Here We Go Again…

Please forgive a bit of harping on something you've seen here before: the dismal performance of most engineering schools in teaching about product safety and about standards. It's highly encouraging to see a gradually rising awareness of this matter. Here are some remarks recently published concerning standards-related education.

Writing in *Consortium Standards Bulletin*, Andrew Updegrove (a member of the ANSI Board) says, "While engineering schools are supposed to provide some level of instruction relating to standards and their development, courses dedicated to this topic are almost nonexistent. Instead, standards are dealt with piecemeal through brief mentions in other courses—an ad hoc approach that lacks cohesiveness…One reason for this state of affairs may be that accumulating experience in standard setting does not appear to have significant resume value…

"In a better world, identification as a 'standard setting professional' would be a credential of significance that would add luster to a resume, give rise to greater opportunities of advancement, and result in higher compensation. Absent such recognition, there will be little motivation for those that come in contact with the standards setting process to do more than meet basic expectations, and look forward to moving on.

"If standards are as important as I believe they are, it's time for the concept of a 'standards professional' to become recognized, and for employers to send the message that qualification as such is a smart move for those wishing to advance their career."

Writing in *NEMA Electroindustry*, Don Purcell (Chairman, The Center for Global Standards Analysis) says, "In today's fast paced and highly competitive world, however, are the standards education efforts of the private and public sectors sufficient? Or is there a need to make significant investments in creating academic opportunities for the best and brightest students to study the complex field of international standardization?

"In recent years, Japan has initiated a multidisciplinary program to create relevant curriculums for global technology standards at the university level…South Korea has established an international standards education program for 47 universities and 7000 engineering students…But only one university in the United States, the Catholic University School of Engineering in Washington, DC, offers a graduate course on Strategic Standardization."

Meanwhile, the ANSI Committee on Education says it "welcomes industry participation." Is this an area where the PSES should step forward? Do members in other countries have comments?

2004 / 2005 / 2006 IEEE-PSE Symposium

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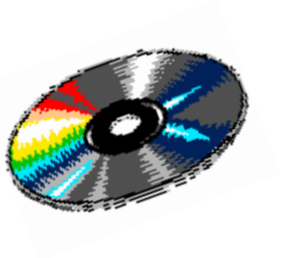

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Table A comparison between the second and the third edition of IEC 61000-4-3

Clause	IEC 61000-4-3, Third Edition	Clause	IEC 61000-4-3, Edition 2.1
1	The object of this standard is ... evaluating the immunity of electrical and ... fields. The test method documented in this part of IEC 61000 describes a consistent method to assess the immunity of an equipment or system against a defined phenomenon.	1	The object of this section is ... evaluating the performance of electrical and ... fields. Testing is not required at frequencies other than those specified in clause 5 of this standard. The possible future introduction of new radio services which may degrade the performance of electrical and electronic equipment may result in test levels being specified in other frequency bands.
	NOTE 1 As described in IEC Guide 107, this is a basic EMC publication for use by product committees of the IEC. As also stated in Guide 107, the IEC product committees are responsible for determining whether this immunity test standard should be applied or not, and if applied, they are responsible for determining the appropriate test levels and performance criteria. TC 77 and its sub-committees are prepared to co-operate with product committees in the evaluation of the value of particular immunity tests for their products.		This section does not intend to specify the tests to be applied to particular apparatus or systems. Its main aim is to give a general basic reference to all concerned product committees of the IEC. The product committees (or users and manufacturers of equipment) remain responsible for the appropriate choice of the tests and the severity level to be applied to their equipment.
	This part ... related to the protection against RF electromagnetic fields from any source. Particular considerations are ... from digital radiotelephones and other RF emitting devices.		This section ... related to general purposes. Particular considerations are ... from digital radio telephones.
	NOTE 2 Test methods ... in this part for evaluating the effect		NOTE Test methods ... in this section for measuring the effect ....
	This standard is an independent test method. Other test methods may not be used as substitutes for claiming compliance with this standard.		-
2	IEC 60050(161)	2	IEC 60050(161): 1990
	IEC 61000-4-6		IEC 61000-4-6: 1996
3	Terms and definitions	4	Definitions
	For the purpose of this part of IEC 61000, ...		For the purpose of this section of IEC 61000-4, ...
3.10	*E*c field strength applied for calibration	-	-
3.11	*E*t carrier field strength applied for testing	-	-
3.12	full illumination *(Definition follows)*	-	-
3.14	independent windows method *(Definition follows)*	-	-
3.16	intentional RF emitting device *(Definition follows)*	-	-

Continued on Page 28

Clause	IEC 61000-4-3, Third Edition	Clause	IEC 61000-4-3, Edition 2.1
3.20	Pc forward power needed to establish the calibration field strength	-	-
3.21	partial illumination *(Definition follows)*	-	-
	-	4.14	Stripline *(Definition follows)*
	-	4.15	Spurious radiation *(Definition follows)*
3.27	uniform field area (UFA) hypothetical vertical plane of the field calibration in which variations are acceptable small. The purpose of field calibration is to ensure the validity of the test results. See 6.2	-	-
4	In the recent years ... RF emitting devices operating ... between 0.8 GHz and 6 GHz. ... . See 5.2.	3	In the recent years ... radio transmitters operating ... between 0.8 GHz and 3 GHz. ... .
	... there is also radiation caused by...		... there is also spurious radiation caused by...
	For the most part, this ... is dealt with ... the IEC 61000-4 standard series.		For the most part, this ... is dealt with ... this standard.
5	The test levels are given in Table 1.	-	-
	(Title of Table 1) Table 1 – Test levels related to general purpose, digital radio telephones and other RF emitting devices *(the table follows)*	5.2	*(Title of Table 2)* Table 2 – Frequency ranges: 800 MHz to 960 MHz and 1.4 GHz to 2.0 GHz *(the table follows)*
	This standard does not suggest that a single test level is applicable over the entire frequency range. Product committees shall select the appropriate test level for each frequency range needing to be tested as well as the frequency ranges. See Annex E for a guidance for product committees on the selection of test levels.	-	-
	The test field strength column	5.2	The test field strength column ... .
5.1	The tests are normally performed without gaps in the frequency range 80 MHz to 1000 MHz.	5.1	The preferential range of test levels is given in table 1. Frequency range: 80 MHz to 1,000 MHz
	-		*(Title of Table 1)* Table 1- Test levels *(the table follows)*
	-		Table 1 gives ... . For testing of equipment, ...
	NOTE 2 ... modulation schemes for equipment under test.		NOTE 2 ... modulation schemes.
5.2	Test levels related to ... telephones and other RF emitting devices	5.2	Test levels related to ... telephones

Clause	IEC 61000-4-3, Third Edition	Clause	IEC 61000-4-3, Edition 2.1
	The tests are normally performed in the frequency ranges 800 MHz to 960 MHz and 1.4 GHz to 6.0 GHz.		The preferred range of test levels is given in table 2 for the frequency ranges from 800 MHz to 960 MHz and from 1.4 GHz to 2.0 GHz.
	The frequencies or frequency bands to be selected for the test are limited to those where mobile radio telephones and other intentional RF emitting devices actually operate. It is not intended that the test needs to be applied continuously over the entire frequency range from 1.4 GHz to 6 GHz. For those frequency bands used by mobile radio telephones and other intentional RF emitting devices, specific test levels may be applied in the corresponding frequency range of operation.		-
	Also if ... , ... bands allocated to ... telephones and other intentional RF emitting devices in those countries.		If ... , ... bands allocated to ... telephones in those countries.
	NOTE 1 ... telephones and other intentional RF emitting devices.		NOTE 1 ... telephones devices.
	NOTE 4 The primary threat ... is from radio telephone systems and other intentional RF emitting devices with power levels similar to that of radio telephones. Other... 2.4 GHz or higher frequencies, ...		NOTE 4 The principle threat ... is from radio telephone systems. Other... 2.4 GHz, ...
6	-	6	NOTE Alternative methods of generating EM fields include TEM cells and stripline circuits, screened rooms, partially lined shielded rooms, and open area test sites. These devices have limitations in the size of equipment which can be accommodated in the uniform field, the frequency range, or infringement of local regulations. Care should be taken to ensure that the conditions of test are equivalent to those in the anechoic chamber.
	RF signal generator(s) ... of being ... sine wave with a modulation depth of 80%. They shall have manual control (e.g., frequency, amplitude, modulation index) or, in the case of RF synthesizers, they shall be programmable with frequency step sizes and dwell times.		RF signal generator(s) ... which can be ... sinewave to 80% depth. They shall have either an automated sweep capability of 1.5×10^{-3} decade/s or slower or, in the case of r.f. synthesizers, be capable of being programmed with frequency-dependent step-sizes and dwell times. They shall also be capable of being set manually.
	The use of ... filters ... avoid ... harmonics.		The use of ... filters ... avoid ... harmonics to equipment which is intended to receive signals for monitoring purposes.
	Power amplifiers: ... The harmonics generated ... shall be such that any measured field strength in the UFA at each harmonic frequency shall be at least 6 dB below that of the fundamental frequency (see Annex D).		Power amplifiers: ... The harmonics and distortion produced ... shall be at a level less than or equal to 15 dB below carrier level.
IEC 61000-4-3 Comparison			Page 3 of 11

Clause	IEC 61000-4-3, Third Edition	Clause	IEC 61000-4-3, Edition 2.1
	Field generating antennas (see annex B): ... , horn or any other linearly		Field generating antennas (see annex B): ... , or any other linearly ... . Circularly polarized antennas are under consideration.
	An isotropic field sensor with adequate		A horizontally and vertically polarized or an isotropic field strength monitoring antenna with dipoles about 0.1 m total length or less, adequate ... .
6.1	The test facility typically ... large enough to accommodate the EUT whilst	6.1	The preferred test facility ... that shall be large enough to accommodate the EUT whilst ... .
6.2	IEC 61000-4-3 uses ... a uniform field area (UFA, ...), ...	6.2	IEC 61000-4-3 uses ... a “uniform area” (...), ...
	In a common procedure (field calibration), the capability of the test facility and the test equipment to generate such a field is demonstrated. At the same time, a database for setting the required field strength for the immunity test is obtained. The field calibration ... can be fully covered by the UFA.		The calibration ... can be fully enclosed by the “uniform area”.
	-		Modulation is not present during the calibration to ensure the proper indication of any field sensor.
	The field calibration is performed with no EUT in place (see Figure 3). In this procedure, the relationship between field strength within the UFA and forward power applied to the antenna is determined. During the test, the required forward power is calculated from this relationship and the target field strength. The calibration is valid as long as the test setup used for it remains unchanged for testing, therefore the calibration setup (antenna, additional absorber, cables, etc.) shall be recorded. It is important that the exact position, ... is documented. Since even small displacements may ..., the same positions shall be used also for the immunity test.		The uniform area is calibrated in the empty enclosure. The exact position, ... shall be recorded. Since even small displacements will ..., the same position shall be used for testing. The antennas and cables which have been used to establish the calibrated field shall be used for the testing. Since the same antennas and cables are used, the cable losses and antenna factors of the field generating antennas are not relevant.
	It is intended that the full field calibration process should be ... annually and ... . Before each batch of testing (see Clause 8), the validity of the calibration shall be checked.		It is intended that the full area calibration should be ... at least annually and ... .
	The transmitting antenna ... allow the UFA to fall within the ... field.		The transmitting antenna ... allow a calibration area of 1.5m x 1.5 m to fall within the ... field.

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Clause	IEC 61000-4-3, Third Edition	Clause	IEC 61000-4-3, Edition 2.1
	(Title of Table 2) Table 2 – Requirements for uniform field area for application of full illumination, partial illumination and independent windows method		-
	If the requirements ... illuminate the entire EUT, ... , a second alternative method (known as "the independent window method"), described in Annex H, may be used.		If the requirements ... illuminate the entire EUT simultaneously, ... , the illumination method described in Annex J shall be used.
	It is required to ensure that the amplifiers can handle the modulation and are not saturated during testing. The preferred method to ensure the amplifiers are not saturated during testing is to carry out the calibration ... at least 1.8 times ... applied to the EUT.		Calibration shall be carried out ... at 1.8 times ... applied to the EUT to ensure that the amplifiers can handle the modulated signal and are not saturated.
	NOTE 3 Other methods		NOTE 1 Other methods ... .
	Two ... methods are described below using an 1.5 m × 1.5 m UFA (16 grid points) as an example. These methods are		Two ... methods are described below. These methods are ... if they are applied in the right way.
	-		NOTE 2 The field calibration requirements are fulfilled if a maximum of 3 % of the frequencies does not meet the 6 dB criterion but are at least within the tolerance of –0 dB to + 10 dB.
6.2.1	Procedure to be followed at both horizontal and vertical polarisations:	6.2.1	Procedure to be followed
	b) ... the required calibration field strength *E*c.		b) ... the required test field strength *E*c.
	i) Stop the procedure if ... . Denote this forward power by *P*c;		i) Stop the procedure if ... .
	j) Confirm that the test system (e.g. the power amplifier) is not in saturation. Assuming that *E*c has been chosen as 1.8 times *E*t, perform the following procedure at each calibration frequency: j-1) Decrease the output from the signal generator by 5.1 dB from the level needed to establish a forward power of *P*c, as determined in the above steps. (-5.1 dB is the same as *E*c /1.8.); j-2) Record the new forward power delivered to the antenna; j-3) Subtract the forward power measured in step j-2 from *P*c. If the difference is between 3.1 and 5.1 dB, then the amplifier is not saturated and the test system sufficient for testing. If the difference is less than 3.1 dB, then the amplifier is saturated and is not suitable for testing.		-

Clause	IEC 61000-4-3, Third Edition	Clause	IEC 61000-4-3, Edition 2.1
	NOTE 2 ... This can best be done by ... the amplifier. However, the 1 dB compression of the amplifier is verified with a 50 Ω. termination when the impedance of an antenna to be used for the test is different from 50 Ω. The saturation of the test system is assured by confirming the 2 dB compression point described to step j). For more information refer to the Annex D.		NOTE 2 ... This can best be done by ... the system. The amplifier saturation can be checked by using spot frequencies, and with frequency steps recommended as follows: – 20 MHz from 80 MHz to 200 MHz; – 50 MHz from 250 MHz to 1,000 MHz; – 100 MHz from 1,400 MHz to 2,000 MHz
6.2.2	Procedure to be followed at both horizontal and vertical polarisations:	6.2.2	Procedure to be followed
	l) Stop the procedure if ... . Denote this forward power by *P*c;		l) Stop the procedure if ... .
	m) Confirm that the test system (e. g. the power amplifier) is not in saturation. Assuming that *E*c has been chosen as 1,8 times *E*t, perform the following procedure at each calibration frequency: m-1) Decrease the output from the signal generator by 5.1 dB from the level needed to establish a forward power of *P*c, as determined in the above steps. (-5.1 dB is the same as *E*c /1.8.) m-2) Record the new forward power delivered to the antenna. m-3) Subtract the forward power measured in step m-2 from *P*c. If the difference is between 3.1 dB and 5.1 dB, then the amplifier is not saturated and the test system is sufficient for testing. If the difference is less than 3.1 dB, then the amplifier is saturated and is not suitable for testing.		
	NOTE 2 ... *(see 6.2.1 above)*		NOTE 2 ... *(see 6.2.1 above)*
7	All testing of equipment ... to actual installation conditions.	7	All testing of equipment ... to the installed case.
	Low dielectric constant (low permittivity) materials, such as rigid polystyrene, should be considered.	-	-
	NOTE 1 Non-conductive supports are used to prevent … .	7.1	NOTE The use of non-conductive supports prevents … .
	NOTE 2 At higher frequencies (e.g., above 1 GHz), tables or supports made from wood or glass reinforced plastic can be reflective. So, a low dielectric constant (low permittivity) material, such as rigid polystyrene, should be used to avoid field perturbations and to reduce degradation of field uniformity.	-	-
7.2	Floor-standing equipment should be ... 0.05 m to 0.15 m above the supporting plane.	7.2	Floor-standing equipment should be ... 0.1 m above the supporting plane.
	Floor-standing equipment ... may be so arranged.		Floor-standing equipment ... may be so arranged, if specifically required by the product committees.
	NOTE Non-conductive rollers may be used as the 0.05 m to 0.15 m support.		-

Clause	IEC 61000-4-3, Third Edition	Clause	IEC 61000-4-3, Edition 2.1
7.3	Cables shall be attached to the EUT and arranged on the test site according to the manufacturer's installation instructions and shall replicate typical installations and use as much as possible.	7.3	In one EUT position, the wires shall be arranged parallel to the uniform area of the field to minimize immunity. All results shall be accompanied by a complete description of the wiring and equipment position and orientation so that results can be repeated.
	If the length specified is greater than 3 m or is not specified, then the length of cable used shall be chosen according to typical installation practices. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length.		Wiring is left exposed to the electromagnetic field for a distance of 1 m from the EUT. The wiring shall be bundled low-inductively to 1 m length. The bundled length of exposed wiring is run in a configuration which essentially simulates normal wiring; that is, the wiring is run to the side of the EUT, then either up or down as specified in the installation instructions. The horizontal/vertical arrangement helps to ensure worst-case conditions.
	If a product committee determines excess cable length needs to be decoupled (for example, for cables leaving the test area), then the decoupling method used shall not impair the operation of the EUT.		The EMI filtering used shall not impair the operation of the EUT. The method used shall be recorded in the test report.
8	The test procedure includes:	8	-
8.1	Laboratory reference conditions *(text follows)*		-
8.1.1	Climatic conditions		-
	Unless otherwise specified by the committee responsible for the generic or product standard, the climatic conditions in the laboratory shall be within any limits specified for the operation of the EUT and the test equipment by their respective manufacturers. Tests shall not be performed if the relative humidity is so high as to cause condensation on the EUT or the test equipment. NOTE Where it is considered that there is sufficient evidence to demonstrate that the effects of the phenomenon covered by this standard are influenced by climatic conditions, this should be brought to the attention of the committee responsible for this standard.		The EUT shall be tested within its intended operationg and climatic conditions. The temperature and relative humidity shall be recorded in the test report.
8.1.2	Electromagnetic conditions		-
	The electromagnetic conditions of the laboratory shall be such to guarantee the correct operation of the EUT in order not to influence the test results.		-

Clause	IEC 61000-4-3, Third Edition	Clause	IEC 61000-4-3, Edition 2.1
8.2	– for floor-standing equipment, the height of the support;		... For floor-standing equipment, whether it is to be tested at a height above the ground plane of 0.1 m or 0.8 m;
	– the frequency range, ... ;		– the rate of sweep of frequency, ... ;
	– ... the method used to exercise the EUT.		– ...the EUT exercising method.
	The test procedures ... for the use of field generating antennas as defined in Clause 6.		The test procedures ... are for the use of biconical and log-periodic antennas in a modified semi-anechoic chamber. Guidance on alternative test procedures is given in annex D.
	Before testing ... the calibrated field strength should be checked to verify that the test equipment/system is operating properly.		Before testing ... the established field strength should be checked by placing the field sensor at a calibration grid point, and with the field generating antenna and cables in the same positions as used for the calibration, the forward power needed to give the calibrated field strength can be measured. This shall be the same as recorded during the calibration. Spot checks shall be made at a number of calibration grid points over the frequency ranges to be considered. Both polarizations shall be checked....
	The EUT face being illuminated shall be contained within the UFA unless partial illumination is being applied. See Clause 6.2 regarding field calibration and use of partial illumination.		-
	The frequency ranges ... are swept with the signal modulated according to 5.1 and 5.2, pausing ...		The frequency ranges ... are swept with the signal 80% amplitude modulated with the signal 80% amplitude modulated with 1 kHz sinewave, pausing ...
	The test ... antenna facing each side of the EUT. ... all sides shall be exposed to the field during the test. When technically justified, some EUTs can be tested by exposing fewer faces to the generating antenna. In other cases, as determined for example by the type and size of EUT or the frequencies of test, more than four azimuths may need to be exposed.		The test ... antenna facing each of the four sides of the EUT. ... the test shall be performed on all sides.
	NOTE 1 As the electrical size of the EUT increases, the complexity of its antenna pattern also increases. The antenna pattern complexity can affect the number of test orientations necessary to determine minimum immunity.		-
	NOTE 2 If an EUT consists of several components, ...		NOTE 1 If an EUT consists of several components, ...
10	– any ... test was performed;	10	– any ... test was performed, for example, shielded enclosure;

Clause	IEC 61000-4-3, Third Edition	Clause	IEC 61000-4-3, Edition 2.1
	– a complete description of the cabling and equipment position and orientation shall be included in the test report; in some cases a picture may be sufficient for that.		-
B.1	This antenna consists of coaxially balun ...	B.1	This antenna consists of coaxially wound balun ...
	The compact size ... are minimized.		The compact size ... are minimized. Typical dimensions are: width 1,430 mm, depth 810 mm and diameter 530 mm.
B.2	-	B.2	Typical dimensions are: height 60 mm, width 1,500 mm and depth 1,500 mm.
-	-	B.3	Circularly polarized antenna *(text follows)*
C.1	Care shall be taken to ... the chamber.	J.1	Care shall be taken to ... the chamber. Further guidance is given in annex C.
D.2 a)	1) ... This is an acceptable error, ...	K.2 a)	1) ... This is probably an acceptable error, ...
D.3.2	– with a coupler by taking account of the antenna factor at the harmonics as provided by the antenna manufacturer.	-	-
D.4	Examples showing	K.4	Examples for the calibration procedures showing ....
E.2	- *Class 4:* Portable transceivers are in use within less than 1 m of the equipment. Other sources of significant interference may be within 1 m of the equipment.	-	-
E.4	Special measures for fixed transmitters *(text follows)*	Annex G	Special measures for fixed transmitters *(text follows)*
Annex F	This standard and IEC 61000-4-6 define ...	Annex H	This section of IEC 61000-4 and IEC 61000-4-6 define ...
G.1	– CDMA (Code Division Multiple Access): *(text follows)*;	I.1	-
	– FDD (Frequency Division Duplex): *(text follows)*;		-
	– HIPERLAN: High performance radio local area network;		-
	– IMT-2000 (International Mobile Telecommunication 2000): *(text follows)*;		-
	– RFID (Radio Frequency Identification): *(text follows)*;		-
	– RTTT (Road Traffic & Transport Telematics): includes road toll systems.		-
	(in Table G.1 and Table G.2) Access Technique		*(in Table I.1 and Table I.2)* Modulation type
IEC 61000-4-3 Comparison			Page 10 of 11

Clause	IEC 61000-4-3, Third Edition	Clause	IEC 61000-4-3, Edition 2.1
	(Title of Table G.3) Table G.3 – Other RF devices *(the table follows)*		-
H.1	When ... above 1 GHz, the test distance shall be 1 m when using the independent windows method	J.1	The test distance should be 1 m, particularly when ... above 1 GHz which use the independent window method ... .
-	-	Annex D	Other test methods – TEM cells and striplines
-	-	Annex E	Other test facilities

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Online Communities Story

"*A professional society provides a forum for advances to be related, and for people to learn about them*."-Benjamin Richard Teare, Jr.

When IEEE was founded, its members could easily get together for face-to-face, real time communication due to their location. But, as the membership of the Institute grew, efforts had to be made to increase the participation of those living in other parts of the country.

Additionally, as the scope of electrical engineering expanded, engineers became more specialized and sought to exchange information with others in the same specialties. It was this need to interact that lead to the formation of the first Technical Committee in 1903.
Today, with the continuing growth in membership throughout the world, we must find new ways to provide that same level interaction regardless of location. Additionally, the IEEE recognizes other organizational and individual member needs such as:

- Ability for IEEE Members, Governance, Committees, and Staff to collaborate, synchronously or asynchronously, outside of live meetings and teleconferences
- Retain IEEE "corporate memory"
- Increase volunteerism and by making it easier for individuals to participate
- Accelerate the sharing and delivery of domain-specific knowledge for IEEE Members and Customers which can be utilized to accomplish their work-related tasks

Through the means of new technology, we can now bridge geographical boundaries and provide additional opportunities for IEEE Members, Volunteers, Staff, and Governance to communicate and collaborate through use of Online Communities.
An Online Community consists of a group of individuals that have a shared purpose or common interests that utilize online communication and collaboration tools to facilitate the accomplishment of their goals or to fill voids that may currently exist by relying solely on in-person or real-time interactions. Online Community Members are engaged in value-creating relationships with "anytime/anywhere" access to shared knowledge. Through the use of tools in the software platform, community members interact socially, which facilitates a sense of togetherness.
Some benefits of Online Communities are:

- Online collaboration and continued communication outside of in-person meetings and teleconferences.
- Networking opportunities
- Discussions on the latest technologies, vital issues, and IEEE activities
- Just-in time education for application on the job
- Access to technical experts and peers for question asking, advice, and problem-solving
- Peer review of work

At IEEE, the goal of online collaboration is to call forth the best that members have to offer one another and minimize all of the obstacles that we can in order for this exchange to occur.

IEEE delivers tools and methods for online collaboration so that each community can quickly focus on vital issues or projects at hand, operate in a cost-effective manner, enhance continuity of effort, clarify and gain consensus through dialogue, create synergistic interdependence with other IEEE constituencies and create valuable resources.

User Guide for IEEE Online Communities:
http://www.ieee.org/portal/pages/services/communities/userguides.html

To discuss Carl's paper go to https://www.ieeecommunities.org/emc-pstc?go=1306656

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