



# Standards Activity Galore in Motor City

*Don Heirman, Associate Editor, EMC Society Vice-President for Standards*

What a week in Detroit for our EMCS standards activity! All of the major committees met including the Standards Development Committee (SDCom), Standards Education and Training Committee (SETCom) and the Standards Advisory and Coordination Committee (SACCom). In addition, six standards working groups also met and progressed in the maintenance of their work.

Also, there were elections held or reported for the officers of SDCom and for the chairmanship of SACCom. First, I would like to report that Andy Drozd (ANDRO Computational Solutions) was elected for a three year term as SDCom chair succeeding Stephen Berger (TEM Consulting). Colin Brench (Southwest Research Institute) and Ed Hare (ARRL) continue in their present roles as Vice Chairman and Secretary, respectively. In SACCom, Erik Borgstrom (Environ Laboratories) was elected chair taking over for Dave Guzman (RF Tek). We wish the new officers well. There was also an associated standards workshop including a workshop on ANSI C63.4 next edition that just was successfully balloted and a workshop on ANSI

ASC C63® measurement uncertainty as is being drafted in ANSI C63.23. I'll provide more information on these workshops later in this article.

Since this edition of the Newsletter focuses on the activity associated with the Detroit EMC symposium, we asked for different contributions from the members of SDCom, SETCom and SACCom as well as from the VP for Standards. For SDCom, Ed Hare submitted a call for volunteers and an article on demystifying the standards process which he calls "a process for everyone." So first we hear from Ed followed by Kwok Soohoo who, as he reports in his "new kid on the block" contribution, there's much activity in SDCom. He also gives a good perspective on what it is like to get involved in SDCom activity and provides a summary of the SDCom projects as updated at the Detroit symposium meetings. Next, we have Qiubo Ye reporting on SETCom activity followed by Dave Guzman on the new leadership of the SACCom. Finally, I conclude this Newsletter issue's Standards Activity article with a summary of the annual ANSI ASC C63® workshops held this year in Detroit.

## Standards: A Process for Everyone

*By Ed Hare, SDCom Secretary, w1rfi@arrl.org*

As EMC engineers, we use EMC standards all the time. We tend to think of standards as mysterious sacred texts that spring up from places unknown to guide our engineering lives. In reality, standards are written by engineers like you and me, requiring only interest and a willingness to be one of the hands that get raised at the meeting when the question is posed: "Who can take on this work?"

In my travels in the standards world, I often hear grumbling that a particular standard is out of date, or needs to be updated or changed. More often than not, the grumbler is right -- standards need to be maintained to be useful. But many of us who have seen the same problems in some of our standards may not have given thought about how we can help make the changes we want to see in the standard.

As shown in Mr. Soohoo's article below, the process is open to all. Not only can all of us participate in the standards process, participation is encouraged. For standards to have value, one of the cornerstones of the process involves consensus. All stakeholders are important, and every interest should be represented and included in the final result (even minority interests).

As the overworked Secretary of the EMC Society's Standards Development Committee, I keep in touch with the Chairs of the Working Groups (WG) developing or modifying standards. If you can help, even if just with advice, email me at w1rfi@arrl.org and I will put you in contact with the WG Chair, who will be delighted to hear from you.

Standards do not have to be done by some mysterious strangers that somehow pull the words out of thin air; they are

done by the engineering community. That means you and me. You already know about me, but it is time to ask yourself what you can do about things you see in standards that could be better. If you are willing to do the doing, I am willing to help put you in touch with the people who feel the same way.

At some future date, when you use the next revision of the standard you have relied on for years, you will recognize your own words in the text. There is no feeling of accomplishment I know of that matches the awe of knowing that your own fingerprints are part of the venerable standards that help hold our disciplines together.

## EMC Standards Development Activities as Viewed by the "New Kid on the Block"

*By Kwok M. Soohoo, Member of EMCS Standards Development Committee, ksoohoo@us.ibm.com*

I've been a member of the SDCom for about three years now which still qualifies me as the "new kid on the block" since the majority of the committee members have a longer history of involvement compared to mine. It is rather humbling to interact with long time EMC standards development experts who have worked tirelessly to shape the EMC standards we use today, including experts such as Dr. Ralph Showers with over five decades of standards development experience whom we lovingly acknowledge as one of the founders of the EMC Society.

My interest in EMC standards development activities stemmed from working on commercial and super computers which are subjected to worldwide EMI emission and immunity standards/regulations. Like the old saying goes, "If you can't

beat them, then join them.” By joining the SDCom I have the opportunity to look into the future of EMC standards development as well as pick and choose to work on the activities that interest me.

The first thing I learned is that the process of getting an idea for a standard into a final document is a complex, long and arduous task. The following flow chart from the SDCom web site ([http://grouper.ieee.org/groups/emc/emc/ieee\\_emcs\\_-\\_sdcom\\_mainpage.htm](http://grouper.ieee.org/groups/emc/emc/ieee_emcs_-_sdcom_mainpage.htm)) describes the process:

**The Standards Development Process**



To get to the final step of this process typically takes years and lots of hard work and patience from the involved parties. The standards development process gets even more complicated and convoluted when multiple sponsors are involved; a case in point is the Broadband over Power Lines (BPL) project IEEE P1775 which is sponsored by three IEEE Societies (Power Engineering, Communications and EMC). In order for three Societies to determine that the draft standard is ready for ballot, a panel comprised of “12 wise men” was created, with four members from each Society. Mr. Ed Hare (SDCom Secretary) wrote an article describing the process in the EMC Society Newsletter, Spring 2008 issue. With multiple sponsors, it is very important to follow the five imperative principles (due process, openness, consensus, balance, and the right of appeal) to drive the standards development process to prevent conflicts between the sponsoring Societies. The first draft of P1775 was voted down as not ready for balloting last year. I cast one of the votes against sending the draft for balloting; my main concern was that the draft lacks indoor EMI emission limits governing the BPL device which would minimize potential interference to adjacent equipment such as wireless, blue tooth devices, etc. (The PAR states that the standard shall not contain emissions limits, but that it must contain EMC criteria.) The draft standard only deals with outside EMI measurements 10 meters from the building that houses the BPL device. The draft standard P1775 is currently going through a revision process and it is expected to be sent back to the panel of 12 voting members.

The following comprehensive list contains the active standards that are being worked on by various committee members; the status updates are from the Detroit EMC Symposium SDCom meetings.

- IEEE 139 - IEEE Recommended Practice for the Measurement of Radio Frequency Emissions from Industrial, Scientific and Medical (ISM) Equipment Installed on User's Premises.

*Status: Begin revision for 5-year review 8/2009. No action required.*

- IEEE 187 - IEEE Standard on Radio Receivers: Open Field Method of Measurement of Spurious Radiation from FM and Television Broadcast Receivers

*Status: Secretary to report on status with IEEE Standards Association (SA) Review Committee (RevCom).*

- IEEE 299 - IEEE Standard Method for Measuring the Effectiveness of Electromagnetic Shielding Enclosures

*Status: Begin revision for 5-year review 8/2009. No action required.*

- P299.1 - Standard method for Measuring the Shielding Effectiveness of Enclosures and Boxes Having Dimensions Between 0.1 m and 2 m.

*Status: Report to be issued by WG Chair Dr. Maria Sabrina Sarto.*

- IEEE 377 - IEEE Recommended Practice for Measurement of Spurious Emission from Land-Mobile Communication Transmitters

*Status: Secretary to report on status with RevCom.*

- IEEE 473 - IEEE Practice for an Electromagnetic Site Survey (10 kHz to 10 GHz)

*Status: Report to be issued by WG Chair Mr. Elya Joffe.*

- IEEE 475 - Measurement Procedure for Field-Disturbance Sensors, 300 MHz to 40 GHz

*Status: Standard expires at end of 2011, but with interest in extending the frequency range below 300 MHz, it would be best to begin revision for 5-year review by 8/2009. SDCom will continue discussion about forming WG.*

- IEEE 1128 - Recommended Practice for RF Absorber Evaluation in the Range of 30 MHz to 5 GHz

*Status: Standard expires at the end of 2011, but there was some discussion that the frequency range of 5 GHz is insufficient with higher use of the spectrum. The standard should be revised instead of reaffirmed. It would be best to begin revision for 5-year review in 2008. SDCom will continue discussion about forming WG.*

- IEEE 1140 - Test Procedures for the Measurement of Electric and Magnetic Fields from Video Display Terminals (VDTs) from 5 Hz to 400 kHz

*Status: Consider revision for 5-year review 8/2009. Secretary to report on possible use of standard material in other standards and technical areas.*

- IEEE 1302 - Guide for the Electromagnetic Characterization of Conductive Gaskets in the Frequency Range of DC to 18GHz

*Status: Secretary to report status with RevCom.*

- IEEE1309 - IEEE Standard Method for the Calibration of Electromagnetic Field Sensors and Field Probes, Excluding Antennas, from 9 kHz to 40GHz

*Status: Report needed from WG Chair Mr. Chen.*

*Secretary to report on progress submitting change of Chair assigned in the SA Project Authorization Request (PAR).*

- IEEE 1560 - Methods of Measurement of Radio Frequency Interference Filter Suppression Capability in the Range of 100 Hz to 40 GHz

*Status: The standard expires at end of 2010. WG Chair Mr. Kermit Phipps reported that no change is needed for document. Can be submitted for reaffirmation at any time.*

- IEEE P1597.1 - IEEE Standard for Validation of Computational Electromagnetics (CEM) Computer Modeling and Simulation

*Status: In ballot. WG Chair is Mr. Andrew Drozd.*

- IEEE P1597.2 - IEEE Recommended Practice for Computational Electromagnetics (CEM) Computer Modeling and Simulation Applications  
*Status: Secretary to upload draft immediately upon return from SA Mandatory Editing Committee (MEC) review.*
- IEEE 1642 - Recommended Practice for Protecting Public Accessible Computer Systems from Intentional EMI  
*Status: WG Chair Dr. William Radasky reported that the draft standard is 50% complete.*
- IEEE P1688 - Standard for Module Electromagnetic Interference (EMI) Testing  
*Status: Report to be issued by WG Chair Mr. Fred Heather.*
- IEEE P1775- Standard for Broadband Powerline Communication Equipment - Electromagnetic Compatibility (EMC) Requirements - Testing and Measurements Methods  
*Status: Resolving issues so that it can be brought to ballot, WG member is Ed Hare.*

The next SDCOM meeting will be held on November 19, 2008 in Long Beach, California to track standards development progress.

### Biography of the "New Kid on the Block"



*Mr. Kwok Soohoo is a 35 year veteran at IBM working on large computing system EMC development and compliance verification. His current position is Senior and Lead EMC engineer at the IBM Poughkeepsie site responsible for all current and future development of large main frame commercial computers used in the Fortune 500 Companies and super-computers used in national laboratories around the world. He is an active member of the EMC Society TC1 (Electromagnetic Compatibility Management Technical Committee), TC4 (Electromagnetic Interference Control Technical Committee), TC5 (High Power Electromagnetics Technical Committee) and a member of the EMC Standards Development Committee. He is the Program Chairman of the IEEE Mid-Hudson Section in New York. He is a NARTE certified ESD & EMI Engineer and Senior Member of the IEEE. He holds a BS degree in Physics from Fordham University and an MS in EE from Union College. E-mail contact: ksoohoo@us.ibm.com*

### SETCom Activity During the 2008 IEEE International Symposium on EMC

*By Qiubo Ye, Chairman*

SETCom's Chair Qiubo Ye and Vice-Chair Johan Catrysse attended the Detroit symposium.

As one of the three major standards management meetings held during the symposium week, the SETCom meeting was held on Monday morning, August 18, 2008. Qiubo chaired the meeting and its agenda was as follows:

1. Opening remarks and introductions
2. Review of scope of SETCom
3. Membership in SETCom
4. Review of past year's activities
5. Future plans and brainstorming
7. Close

A well received discussion supported organizing several

EMC Standards workshops/tutorials with the Society's Education and Student Activity Committee (ESAC) and to set up an IEEE EMC Standards booth in the exhibit area at future EMC symposia. In addition, SETCom will continue to organize EMC Standards workshops/tutorials or special sessions during future EMC symposia, and publish dedicated articles in the EMC Newsletter. Membership will continue to be developed and producing a SETCom operation procedures document is contemplated. Good suggestions and advice were received from among the attendees including EMC Society Board members, SDCOM and SACCOM members. It is firmly believed that SETCom's future activities will continue to receive support from them.

SETCom's Chair and Vice-Chair found time during the symposium to discuss and reach agreement on some common issues. They both attended the ESAC meeting and chapter chair meeting. At the ESAC meeting, Qiubo reviewed the joint effort between the two committees and attendees discussed future collaboration. At the chapter chair meeting, Qiubo delivered a presentation to make awareness of SETCom's objectives and promoted having standards related activities in the local EMC chapters.

### SACCOM Activity

*Dave Guzman, Chairman*

The SACCOM annual business meeting was held during the Detroit EMC Symposium immediately following the SETCom meeting. The committee continues to seek new representatives for standards working groups with EMC activity outside the EMCS. The highlight of the meeting was the decision to proceed with nominations and elections of a new Chair, Vice-Chair and Secretary.

Those nominated were the following:

Chair:	Erik J. Borgstrom
Vice-Chair:	Noel B. Sargent
Secretary:	David Guzman

A vote was taken and this slate of officers was approved. A brief bio of Erik follows below. With this new leadership, the SACCOM will be in a position to further advance its role in coordinating EMC standards activity from a vast array of external EMC standards developers and that of our Society. At present the coordination is in the form of brief reports presented by the SACCOM members at the annual symposium and brief updates presented to the EMCS Board of Directors by Don Heirman, VP for Standards, at the three to four meetings of the Board throughout the year. Following the SACCOM meeting, the members were invited to the annual SACCOM/Representative Advisory Committee (RAC) luncheon held to update the EMCS Board on the many activities of these two committees. During the meeting slides and short talks were presented to the Board on these activities to allow the Board to ask questions. This year there continued to be a good turnout with around 25 in attendance.

### Biography of the New Chairman

*Erik Borgstrom has worked in the electromagnetic compatibility testing field for more than 21 years. As the EMC Operations Manager for Environ Laboratories, LLC, he specializes in EMC*

testing for the defense and aerospace industries. Mr. Borgstrom is an active member of the IEEE, where he serves as the EMC Society's liaison to the RTCA as a member of the Standards Advisory and Communication Committee. He is also an active member of the SAE committees AE2 Lightning and AE4-HIRF. Mr. Borgstrom is Environ Laboratories' representative to the RTCA, where he is an active member of Special Committee 135, serving as the Change Coordinator for RTCA/DO-160, Section 25 - Electrostatic Discharge. Mr. Borgstrom has written several articles dealing with aerospace EMC topics and has presented several papers at the IEEE EMC Symposia as well as other at conferences.

## Annual ANSI ASC C63® Workshops Draw Big Crowd

Don Heirman, Chairman, Accredited Standards Committee C63® (EMC)

As has been done for virtually every EMC Symposium since 1990, ASC C63® held this year two workshops the weekend before the start of the symposium at the same venue. Twenty-nine attended the two days of workshops. The first day and a half, Don Heirman (Don HEIRMAN Consultants), Bill Hurst (FCC Labs) and Bob Hofmann (Hofmann EMC Engineering) presented the changes that were approved in the balloting of the next edition of ANSI C63.4 which is now scheduled to be published in early 2009. The attendees were especially interested in the changes from the 2003 edition as summarized below:

## Draft of Next edition of ANSI C63.4

### ANSI C63.4/D3.00

#### Draft Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

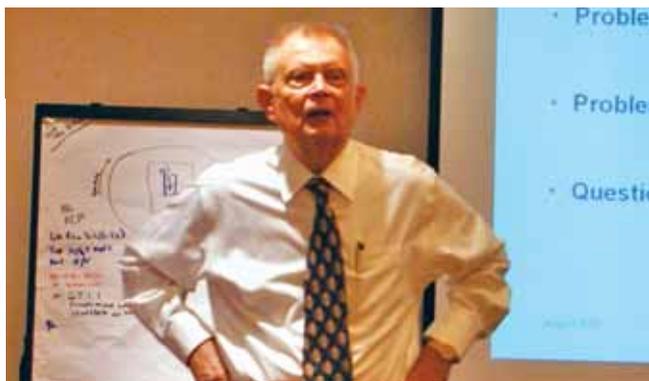
- a) Adding tables of LISN impedances (in addition to the plots in the 2003 edition) with and without the use of extension cords between the EUT power connection of the LISN and the end of the extension cord where the EUT connects its power plug;
- b) Clarify and expand the information and criteria to be used for selecting what must appear on video displays during emission testing;
- c) Updating the signal levels used in receiver testing in Clause 12;
- d) Clarify in Annex B the LISN calibration process;
- e) Accommodate the concern for the variation in antenna cable loss as a function of significant temperature variation at the test site;
- f) Precautions that are needed in using spectrum analyzers, appearing in 4.2.2 and Annex H;
- g) The informative annexes for step-by-step testing have been omitted, in that those were mostly duplicative of the normative procedures in the main text;
- h) In several clauses, figures were placed at the end of the respective clause to avoid breaking the flow of the text itself;
- i) Ensure that the standards not under the control of ASC C63® are dated to ensure the acceptance of the versions that are referenced, while the ASC C63® standards are undated as ASC C63® would be voting their acceptance;



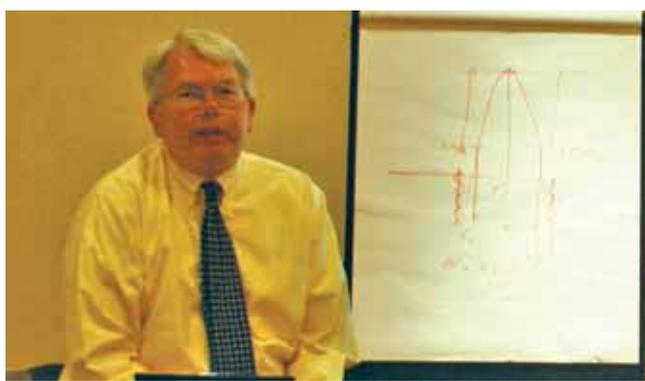
Presenter Don Heirman (Don HEIRMAN Consultants) speaks with Harry Hodes (Acme Testing) during a break in the ANSI C63.4 workshop.



Bob Hofmann (Hofmann EMC Engineering) presents data on the Line Impedance Stabilization Network.



Don Heirman introduces the students to the problem solving session.



Bill Hurst (FCC) discusses the unintentional radiator section of the ANSI C63.4 standard.

- j) Added information on the effects of materials used to construct EUT support tables and antenna masts;
- k) Condensed the information about absorbing clamp calibration and use, and the artificial hand, as these continue to be in limited use;
- l) Retain the Clause 13 requirements for emission measurements of intentional radiators because other C63® standards are not published;
- m) Introduced site validation specifications above 1 GHz from CISPR 16-1-4:2007, while still allowing use of absorber material on the ground plane for OATS and semi-anechoic chambers without any further site validation measurements;
- n) For measurement methods above 1 GHz, there remains international standards activity as to the final outcome about how such measurements are to be made; meanwhile this edition of ANSI C63.4 retains provisions of ANSI C63.4-2003 with no change.

This workshop was then followed by a half day workshop on the work of ASC C63® in measurement uncertainty as it will apply to the measurement standards maintained by ASC C63®.

**Measurement Uncertainty  
ANSI C63.23™/D11 Draft Standard for American National Guide for Electromagnetic Compatibility- Calculations (Computations) and Treatment of Measurement Uncertainty**

This half day workshop on the Saturday preceding the start of the symposium was given by Don Heirman, Mike Windler (Underwriters Lab) and Bob DeLisi (also of UL).

Twenty-six people attended the well-received event which focused on what will be contained in ANSI C63.23 currently being drafted. In particular, the following is planned to be in the document:

- a) Introduction to measurement uncertainty for EMC measurements;
  - b) Application of uncertainty values in conformity assessment;
  - c) Measurement uncertainty for radiated and conducted emission testing;
  - d) Measurement uncertainty in performing antenna calibration.
- The annexes cover such topics as the following:
- a) Statistics in the computation of measurement uncertainty;
  - b) Relationship of log-normal and normal distributions;
  - c) How to disclose measurement uncertainty;
  - d) Necessary definitions (in addition to those in the main text);
  - e) Introduction of more emphasis on Type A (repeat measurement) uncertainty.

The workshop also presented an Excel spreadsheet approach to enter necessary measurement uncertainty contributions which will be part of the published electronic copy of the standard. This was done to make it much easier for the tester to enter the uncertainties and to see using the computational feature of Excel the effects of lowering the uncertainty of certain components as well as increasing the uncertainty. The attendees especially liked that idea as there is no other publication available that comes with an electronic spreadsheet obviating the need for the tester to produce his/her own.

The next step is to ensure that the standard covers the needs of the various ASC C63® standards on emission, antenna, hear-



*Workshop presenters lead the question and answer session.*



*The large attendance pays particular attention to a workshop presentation.*



*Janet O'Neil (ETS-Lindgren), workshop registrar, joins speakers Bill Hurst, Bob Hofmann and Don Heirman (from left) in celebrating the conclusion of the ANSI C63.4 workshop.*

ing aid compatibility, and the compendium of FCC rules for transmitters. It is hoped that this document will be balloted in the first quarter of 2009.

## Conclusion

So in summary, I wish to thank the contributors to this col-

umn. As you can see, the symposium meetings clearly reap the benefit of the opportunity to meet with standards colleagues and to discuss the plans for the coming year. Good luck to all that are leading our standards work as well as to those in the “trenches” who do the heavy lifting with technical inputs. If you have questions or comments, I may be reached at [d.heirman@ieee.org](mailto:d.heirman@ieee.org).  
EMC



*At the ANSI workshop on measurement uncertainty, speaker Mike Windler (UL) presents artificial mains uncertainty values from CISPR 16-4-2.*



*Mike discusses with Walt Anderson (Motorola) the Type A uncertainty details during a break in the workshop.*



*Bob DeLisi (UL) presents examples of uncertainty calculations and the use of the Excel spreadsheet approach.*



*The speakers pose for the camera at the end of the ANSI measurement uncertainty workshop.*



*Mac Elliott of Motorola, Bill Hurst, Don Heirman and Stephane Proulx of Industry Canada attended the ANSI C63.4 workshop held before the Symposium.*

## Save the Date!

A workshop will be held on ANSI C63.5 - Antenna Calibration - on Saturday, August 15, 2009, just prior to the 2009 IEEE International Symposium on EMC in Austin, Texas. Held at ETS-Lindgren in nearby Cedar Park, the workshop will consist of lectures by Don Heirman of Don HEIRMAN Consultants, Chair of ANSI ASC C63®, Mike Windler of UL, Chair of ANSI ASC C63 Subcommittee 1 on “Techniques and Development” and Dennis Camell of NIST, Chair of the Working Group addressing revisions to ANSI C63.5. Attendees will have the opportunity to apply what they learn via problem solving and performing an antenna calibration using ETS-Lindgren’s expansive ISO 17205 certified open area test site and A2LA-accredited calibration lab. Registration information will be available on [www.c63.org](http://www.c63.org) and [www.emc2009.org](http://www.emc2009.org) after January 1, 2009.