



IEC Advisory Committee on EMC (ACEC) Meets in South Korea

Don Heirman, IEC/ACEC Chairman

The IEC (International Electrotechnical Commission) hosted the Advisory Committee on EMC (ACEC) in Busan, South Korea in October 2018. Busan is the second largest city and is located in the southern part of the country. The ACEC meeting was part of the IEC annual General Meeting which is replete with many IEC technical committee/subcommittee (TC/SC) meetings including IEC management meetings. Don Heirman, ACEC chairman, led the ACEC meeting which lasted two days. Members from many parts of the world (Europe, US, and Japan) were in attendance at the ACEC meeting where discussions continue on EMC issues across the many IEC TC/SCs that have EMC in their standards.

For background, ACEC works to resolve issues and to advise the IEC Standardization Management Board (SMB), which manages the entire technical operation of the IEC, on actions and issues involving EMC that they should consider or be informed. The SMB also assigns EMC issues to ACEC that come before their committee to seek ACEC's advice.

Membership

As reported previously in the EMC Magazine, the good news for ACEC is that new members continue being considered for ACEC membership representing IEC technical committees and subcommittees that deal with EMC either directly or in their publications. In the past year, new TCs in addition to those already in ACEC have been invited to join ACEC. The importance of this is that there will be more TCs that will follow the lead of ACEC to properly address EMC in their committee standards as identified in IEC Guide 107 (*Electromagnetic Compatibility - Guide to the drafting of electromagnetic compatibility publications*). ACEC is the "owner"



PHOTOS BY GHERY PETTIT

ACEC chairman Don Heirman (right) and his IEC Central Office secretary Andrew Redgate take a break to pose for the camera during the ACEC meeting held in Busan, South Korea.

of the Guide and hence has a keen interest in its being followed, especially the normative requirements in the Guide.

Following is the list of TC/SCs that have been contacted in the past by the ACEC secretary to become ACEC members. Note the wide diversity of topics these TCs address and in some cases the "surprise" in their having EMC in their publications.

- TC8: Systems aspects of electrical energy supply
- TC9: Electrical equipment and systems for railways
- TC45/SC45A: Nuclear instrumentation
- TC47: Semiconductor devices
- TC72: Automatic electrical controls
- TC82: Solar photovoltaic energy systems
- TC88: Wind energy generation systems

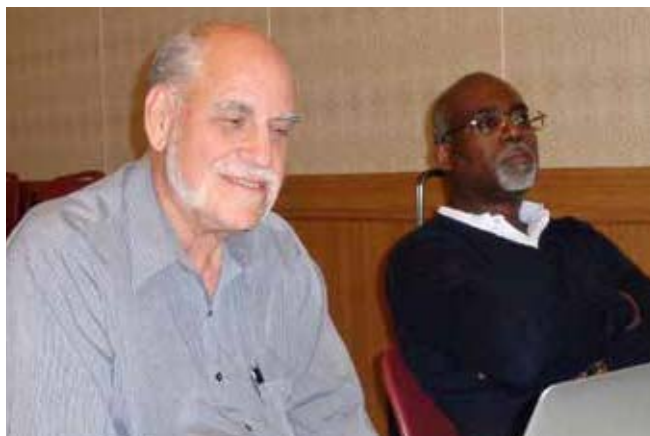
The good news is that at the meeting ACEC welcomed the representatives from TC8 and TC9 as ACEC members.

Reports

At this meeting, as at other meetings, there were many reports presented largely for information but in some cases, there was more discussion. An example will be pointed out later. Following is the list of TCs that presented their activity and that involving EMC:

- a. TC77 (EMC) and its subcommittees: SC77A (low frequency), SC77B (high frequency), and SC77C (high power transients)
- b. CISPR (Radio Interference) and its SC/I (ITE, multimedia, and receivers) and SC/H (Limits for the Protection of Radio Services)
- c. TC13 (Electrical energy measurement and control)
- d. TC22 (Power electronic systems and equipment)
- e. TC46 (Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories)
- f. TC61 (Safety of household and similar electrical appliances)
- g. TC62 (Electrical equipment in medical practice) - report given by the ACEC chair
- h. SC65A (Systems aspect of industrial process measurement, control and automation)
- i. TC69 (Electric road vehicles and electric industrial trucks)
- j. TC106 (Methods for the assessment of electric, magnetic and electromagnetic fields associated with human exposure) - report given by the ACEC chair
- k. TC120 (Electrical Energy Storage (EES) Systems)
- l. SC121A (Low-voltage switchgear and control gear)

As mentioned in earlier articles on ACEC meetings in the EMC Maga-



Bill Radasky (left) presents the CIGRE (International Council on Large Electric Systems) report and Ade Ogunsola provides input on EMC standards activity in Africa at the October 2018 ACEC meeting.



TC77 chairman, Hiroyuki Ohsaki, presents his report to ACEC.

zine, there is continuing special interest in the need for compatibility levels between emissions from products connected to the mains and immunity of power usage meters and power line carriers used for Smart Grid operation. The latest measurement standard is in IEC 61000-2-2 Edition 2 and amendments 1 and 2 covering mains signaling systems in the frequency range of 9 kHz to 150 kHz. A joint ad hoc group was formed between SC77A/WG8 and CISPR/H to determine appropriate limits on radiated emissions from the power line. See the previous report of the ACEC meeting in Paris for more details (IEEE EMC Magazine, 2nd Quarter 2018, Volume 7, Number 2).

Following is a sampling of other reports that requested advice, support or discussion of their work:

CISPR (International Special Committee on Radio Interference) identified activity to work on emission limits up to 40 GHz. In addition, CISPR is determining how to handle emission and immunity measurements of products that are radio-enabled, measurement of emissions from robots, what is defined as a personal mobility device, and any special consideration for taking into account the increasing number of devices and their potential interference impact, revisions to CISPR 32 on emission testing of multimedia equipment, and adherence to Guide 10 on how to introduce EMC into standards.

TC77 (EMC) reviewed standards being updated and active. The SC77B (high frequency) report showed that IEC 61000-4-39 on close proximity electric field immunity testing is stable. Maintenance of 61000-4-2 ESD, 4-4 (fast transients), 4-5 (surge), and 4-6 (conducted disturbances) continues. Work on IEC 61000-4-36 on intentional EMI is at the voting stage.

TC13 (Electrical Energy Measurement and Control) asked ACEC to continue to monitor the work relating to electromagnetic interference in the range 2 kHz-150 kHz and keep this as a high-priority task. ACEC has been treating this issue as a high priority for many meetings (see the discussion above on 9 kHz to 150 kHz).

TC46 (Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories) advised ACEC that WG 5 deals with test methods and limits for the EMC of metallic

cables and other passive components, by the measurement of their electromagnetic coupling with the environment.

TC62 (Electrical Equipment in Medical Practice) is working on an amendment to IEC 60601-1-2 (basic safety and essential performance collateral standard on electromagnetic disturbances - requirements and tests). **There are 16 issues to be addressed in the proposed amendment** which covers correction of ambiguities, update of key standards, and immunity to low frequency magnetic fields (1 kHz to 13.56 MHz).

TC106 (Methods for the assessment of electric, magnetic and electromagnetic fields associated with human exposure) is supporting ACEC's program in attracting Young Professionals to get active on IEC Working Groups. They are looking at human exposure from 5G and millimeter wave technology. The TC is also asking its members to approve moving the draft EMF guide to ACEC for ACEC to administer, but the technical work remains with TC106.

SC 121A (Low-voltage switch gear and control gear) indicated their key standard (IEC 60947-1: Low-voltage switchgear and control gear - general rules) is being updated concerning EMC requirements. This work is being done in their maintenance team 7 (EMC, wireless communication and built-in electronics). Their next ongoing work is to consider the effect of embedded software and cyber security.

An update to the Chinese EMC Standardization Activities was presented that showed the organization of the activities and committees which handle emission matters of CISPR (TC79) and one that covers TC77 matters (TC246). Both committees are under SAC (Standardization Administration of the People's Republic of China). The lists of IEC CISPR and TC77 standards and the corresponding China standards were presented. There was also a list of symposia in China that covered many EMC topics both in the past year and in 2018.

Other reports are invited such as those from the International Telecommunications Union - Radio sector - and the **IEEE EMC Society Standards committee**. **For example, in the IEEE EMC Society presentation, ACEC members were invited to inform their colleagues**

of the new standards work that needs experts to contribute in topics where there are no equivalent EMC standards in the IEC. Both the roles of the Standards Development and Education Committee (SDECom) and the Standards Advisory and Coordination Committee (SACCom) were also presented. The author presents that request at each ACEC meeting stressing that EMC Society standards working groups are open to individual participation and most, if not all work, is done via electronic means with no travel funds required to participate.

Website

Finally, ACEC has completed the updating of the material on the EMC portion of the Technology Sector on the IEC home page. Here is that web site: <http://www.iec.ch/emc/?ref=extfooter>. The site continues to be reviewed noting any updates needed.

The presentations of ACEC members at EMC Symposia around the world is also on this web site. Here is the direct URL: http://www.iec.ch/emc/emc_news/presentations.htm

Next Meeting

The next ACEC meeting will be held in June 2019 in Sendai, Japan.

Summary

ACEC had another successful meeting covering key items needing attention which should be of interest to our EMC Magazine readers. For more information contact the ACEC chair: Don Heirman on d.heirman@ieee.org **EMC**



ANSI C63

ANSI C63

COMPLIANCE TESTING OF WIRELESS DEVICES AND UNINTENTIONAL RADIATORS

(Visit www.c63.org for more information)

This workshop provides an overview of the current proposed changes to the standard C63.10 for unlicensed transmitter testing and the standard C63.26 for licensed transmitter testing. There will be specific emphasis on new procedures. These two standards capture most of the procedures for testing unlicensed and licensed wireless devices to show compliance with FCC requirements. Group discussions will be a highlight of the wireless workshop. A demonstration will supplement the lecture material, time permitting. The instructors are members of ANSI ASC C63®; they have an intimate knowledge of the technology and contributed directly to the development of these procedures.

This one-day workshop will cover many of the traditional and updated procedures in C63.10-201X and in C63.26-201X including:

- Instrumentation requirements
- Average value of pulse emissions
- Antenna requirements
- Test site requirements
- RF output power measurements
- Modulation measurements
- Occupied bandwidth procedures
- Band-edge procedures
- Direct and signal substitution radiated emission measurements
- Frequency stability measurements
- Conducted tests at antenna port
- Smart antenna system tests
- Revised MIMO procedures
- Annexes covering example of OOB masks, consumer booster requirements, ERP/EIRP guidelines, path loss characterization, sample test report, compliance tests versus regulatory requirements and other informative guidance

Who Should Attend

Those responsible for determining compliance with FCC Rules and Regulations, including

- Product managers and developers
- EMC engineers and test technicians
- Regulatory compliance managers
- Test instrumentation developers
- Calibration and measurement accreditation bodies
- Lab quality assessors
- Test instrumentation and chamber manufacturers

Date and Location

Saturday, July 20, 2019
Hilton New Orleans Riverside: Two Poydras Street, New Orleans, LA 70140
Phone: 504-561-0500

IEEE EMC+SPI Symposium Host Hotel: Hilton New Orleans Riverside

See EMC Symposium website for details.

Expert Instructors

Mark Briggs, UL Director, Wireless Certification Program and **Bob DeLisi**, UL Principal Engineer. Speaker bios are available at: www.C63.org/workshop.

Registration Fee Includes

Continental breakfast, lunch and refreshment breaks, and completion certificates. Soft copy of workshop notes only will be provided. (Fee does NOT include draft or published standards.)

Agenda

C63.10/C63.26 Wireless Workshop - All day, Saturday, July 20, 2019
July 20: Registration: 8:30 am - Class: 9:00 am to 5:00 pm

Visit www.c63.org for more information and to register to attend.
Contact Janet O'Neil, j.n.oneil@ieee.org