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Accredited Standards Committee C63®
Electromagnetic Compatibility
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Secretariat: Institute of Electrical and Electronics Engineers, Inc.

NEWSLETTER

Issue 34 Nov 2012

MESSAGE FROM THE CHAIR

The Committee and all its Subcommittees met at the Orange County Hilton hotel about 5 minutes from the John Wayne Airport in California. The meeting venue was excellent with large rooms for meetings and excellent food for lunch and a variety of morning and afternoon snacks. Two major working groups also had meetings early in the week; Art Wall's Working groups on C63.10 and C63.26 as well as Steve Berger's working group on C63.7.

Tuesday night a special demonstration was held at Northwest EMC's laboratory located at 41 Tesla Avenue in Irvine, California. The meeting was held in conjunction with the Los Angeles, Orange County, and San Diego EMC chapters of the IEEE. The evening began with some modest libations, social interaction, and was followed by excellent food served in a casual fashion.

The technical presentation of the evening was "Expediting EMC Measurements using Hybrid Antennas." The presentations were demonstrated in the labs by NW EMC lab personnel and a Power Point presentation was given in parallel by Dean Ghizzone, the President of NW EMC lab. The advantages of using hybrid antennas were demonstrated both experimentally and theoretically. it was an excellent evening and very enjoyable from both a social perspective and a technical perspective.

There were two personnel changes at the meeting; Zhong Chen will be the new Subcommittee 1 Chair and Adam Gouker will be the new Subcommittee 6 Chair effective 1 January 2013. Dennis Camell and Victor Kuczynski, the previous chairs of the SC1 and SC6, respectively, will be going on to other activities in the C63 umbrella of committees, subcommittees, and working groups. I would like to thank Dennis and Victor for their leadership and contributions to their Subcommittees.

The next meeting of C63 will be at the IEEE Operations Center in Piscataway, New Jersey. The meeting dates will be May 6-9, 2013. The meeting format will be similar to the Fall-2012 meeting with Working Group meeting s on Monday afternoon and Tuesday morning and the Subcommittee meetings will follow on Tuesday afternoon and all-day Wednesday. Thursday will be devoted to the Main Committee meeting.

Daniel D. Hoolihan, Chairman ANSI-ASC C63®

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PAST VICE CHAIRMAN OF C63® PASSES AWAY

EDWIN L. BRONAUGH

Ed Bronaugh passed away on October 18, 2012. Ed was past Vice-Chairman of C63® and he also chaired Subcommittee 1 for many years. He was a major contributor to many key standards including C63.2 on measurement instrumentation

specifications, C63.4 on test methods, and C63.19 on EMC of hearing aids. His career was filled with accolades and accomplishments for his work in many organizations. He was a Life Fellow of the IEEE, an Honorary Life Member of the EMC Society, and a Life Member of the IEEE Standards Association. He was a past president of the IEEE EMC Society (19909-1991) and had served on the EMC Society Board of Directors for many years. He also served as a distinguished lecturer on EMC topics for the EMC Society. He was a long-time member of the EMC Society Standards Committee. He was awarded numerous awards including the EMC Society Certificate of Appreciation in 1979, the Certificate of Achievement in 1983, the Certificate of Acknowledgement in 1985, the Richard R. Stoddart Award in 1985, the Laurence G. Cumming Award and the Standards Medallion in 1992, a Standards Development Certificate in 1993 and the IEEE Third Millennium Medal in 2000. He was also the recipient of a IEEE Electromagnetic Compatibility (EMC) Society Hall of Fame award in 2009.

But he will be best known for being a gentleman who influenced many careers in EMC. Past EMC Society president, Kim Williams, summed up Ed's contribution by stating "he remembers all the people Ed helped and coached along the way, and how much we all benefited from his wisdom and insight. It was an honor to have had him in our lives."

BIOGRAPHICAL SKETCH

Edwin (Ed) Lee Bronaugh was born in in 1932, He received a BA degree in Physics and Mathematics (with an arts minor in music and language) from Texas A&M University -, Commerce (1955) and did graduate work in Physics until entering the U.S. Air Force. In the Air Force, he worked in flight operations as a transport pilot and as a rescue coordinator, and in communications and electronics as a base communications officer and a command control communications director. He advanced to become a Captain on active duty in 1961 and a Major in the US Air force Reserve in 1968. He was awarded the Bronze Star Medal and the Air Force Commendation Medal during his service in the U.S. Air Force.

He was a member of the U.S. Technical Advisory Groups for CISPR, CISPR/A, and CISPR/I. He co-authored a book on EMI measurements (Electromagnetic Interference Test Methodology and Procedures-Volume 6) which was part of "A Handbook Series on Electromagnetic Interference and Compatibility." He authored over 150 papers for professional meetings and publications. He was a member of the EMI Standards and Test Methods Technical Committee, the Electromagnetic Radiation Technical Committee and the Aerospace EMC Committee of the SAE. He was a senior member of the International Association for Radio, Telecommunications and Electromagnetics (iNARTE-Certified EMC Engineer). He is listed in Who's Who in America, Who's Who in the World, Who's Who in Science and Engineering, Who's Who in the South and Southwest, and Men of Achievement. As a member of the Association of Old Crows, he was President of the Billy Mitchell Club from 1976-78.

He did work in characterization of automotive ignition interference to satellite communications and the hazards of high-strength electromagnetic fields to automotive electronics. He developed specialized EMC instrumentation applying isolated electromagnetic field probes to produce accurate field measurements inside shielded enclosures. He developed optical communications systems using fiber-optic links in specialized EMC instrumentation and applied fiber-optic links to the solution of EMC problems. He developed one of the early automated EMC data acquisition systems with associated computerized data reduction system. He designed radio and telemetry receivers and transmitters and developed solid-state miniaturized multiplex radio relay and repeater systems for remote, unattended operation. He participated in research in the bio-effects of electromagnetic radiation.

In the final years of his life, Ed was the Founder and Principal of EdB EMC Consultants, an independent EMC consulting firm. Previously, he was Lead Engineer for Hardware Design Assurance at Siemens Communication Devices, Austin, Texas; Vice President for Engineering at the Electro-Mechanics Company; Technical Director of Electro-Metrics and Manager of EMC Research at Southwest Research Institute. His hobbies were music, amateur radio experimentation, camping, and automobile mechanics, model railroads, engineering history, and learning additional languages.

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Subcommittee 1 Techniques and Development

Dennis Camell, Chair

This subcommittee (SC1) consists of technical members in the EMC field and has a total of twenty-nine members. Changes in the membership consist of one newly approved member and one that was removed which resulted in the total number remaining the same. SC1 provides the technical expertise for incorporating new or existing measurement techniques and associated instrumentation, measurement methods related to EMC into C63® documents. This subcommittee is responsible for maintaining six active standards and developing three new standards (C63.23, C63.25 and C63.26). Of the active standards; one is current (C63.7), one is starting its revision (C63.2), one is being reaffirmed (C63.22), and three are in the revision process (C63.4, C63.5 and C63.10). At the meeting in October, a new chair was appointed since the present chair's term is expiring.

Eight interpretation requests were received since the April 2012 meeting. Two standards documents were involved (C63.4-2009 and C63.5-2006). Seven of these requests have been resolved and the other one is being investigated. All resolved interpretations are posted on the website with their titles listed below.

- C63.5-May 2012-response date
- C63.5-May 2012-RAM Schwarzbeck dipole 3
- C63.5-June 2012-SACS Requirement-V2
- C63.4-June 2012-GP around turntable
- C63.5-July 2012-SA reqs above 1 GHz
- C63.5-July 2012-SACS reqs above 1 GHz
  C63.5-Sept 2012-SSM AUC location

Here is the status of the current working groups. Any interested parties wishing to join a working group are encouraged to contact the SC1 chair or the appropriate working group chair as shown below.

Project on EM Noise & Field Strength Instrumentation, C63.2
Chair: TBD

This is an active standard that was published in 2009. A new PINS was issued at the October 2012 meeting. The new PINS states that the revision of ANSI C63.2 will eliminate all outdated receiver specifications and add updated requirements in close correlation with CISPR 16-1-1. Also that the standard will utilize test equipment specifications that are common in the industry today which will allow for easier selection and review of commercially available test equipment. A working group has been formed and will begin working on the revision.

Project on Emissions Measurements, C63.4
Chair: Don Heirman

This is an active standard that was published in 2009. There is a working group that has prepared a draft for a re-circulation ballot. The draft is now out for recirculation ballot. The previous ballot had 5 negative votes and multiple comments. Resolution of the comments was by consensus. The main changes in the ballot were as follows:

- Tables 1-3 which shows which antennas are to be used for general measurements, NSA measurements, and compliance testing measurements is amended:
  - To indicate any constraints in the use of hybrid antennas as identified in Annex N which has been slightly updated based on comments
  - To combine frequency ranges where there is the same specifications
  - To continue to not allow hybrid antenna NSA use
- Application to digital electronics and digital control of devices that are transmitters
- Align receiver specifications with current CISPR 16-1-1
- Need for preselector with spectrum analyzer use now a recommendation per 16-1-1
- Use of resolution bandwidth and shapes (masks) clarified
- Clearly state linear average detector use
- Maintain that LISN phase angle not needed
- Further discussion needed for paralleling LISNs to accommodate high EUT currents
- Continue to not use terms that relate only to C63.10 such as intentional transmitters
- Continue to suggest measuring LISN impedance first, then insertion loss
- Effect of table top material required and uncertainty of measurements determined
- Sites used to measure emissions only above 1 GHz need only meet site validation above 1 GHz.
- Site validation option to use absorber pattern on ground plane with absorber requirements continues
- Not accept minimum 1 meter spacing between EUT and antenna and the absorber tips
- Cable length when unknown remains at 1 meter but longer length allowed if needed
- Direct plugging of power packs postponed for later edition
- Continue that C63.4 only addresses AC conducted emissions
- Use typical support material for overhead cable racks
- Rack mounted EUTs shall be tested in rack
- Emission maximization during prescan emphasized
- Various suggested changes to measurement procedures above 1 GHz not accepted and should be proposed for next edition of C63.4
- Measurement "system" or path is included in determining noise floor
- Clarifies how to measure digital control and processing emissions and not the transmitter energy
- NSA figure amended to show better placement of transmitting antennas during NSA measurements
- Added requirement of characteristic of TEMs/GTEMs
- Annex N on acceptable use and required specifications of hybrids remain normative

Project on Antenna Calibration, C63.5
Chair: Dennis Camell

This is an active standard that was published in 2006. A new draft document is still expected for balloting before the next meeting. The previous topics have been incorporated into the draft. A new title is proposed requiring a change in the PINS, "American National Standard for Electromagnetic Compatibility—Radiated Emission Measurements in Electromagnetic Interference (EMI) Control—Calibration *and Qualification* of Antennas (9 kHz to 40 GHz)". Several new changes were proposed and are being addressed by the WG.

Topics discussed

- Change above 1 GHz SSM H vs V validation to +/- 0.75 dB, and distance of 1.5m from walls.
- Allow use of chamber above 1 GHz
- Allow only use of OATS below 1 GHz
- RAM, use only dipoles
- Use nomenclature ACS_{lo} and ACS_{hi}
- Reword temperature requirement in annex L to be like C63.4, clause 4.7.6 but with 5°C limit
- Use r (radius) and not R (diameter) in figure L.2 with r=1.5m always, and have separate figures for d=3m and d=10m
- Reduce annex B to equations

Project on Standard for Testing Unlicensed Wireless Devices, C63.10
Chair: Art Wall

This is an active standard that was published in 2009. The WG meets with the bi-annual C63® meeting. The last meeting had 32 members present with 11 more participating online. The last ballot had two negative votes and 113 comments. The major concerns were instrumentation, measurements abelow 30 MHz and DTS procedures. Resolution of these comments is being addressed and a new draft document is expected for re-circulation before the next meeting.

Project on Guide for Automated EMI Measurements, C63.22
Chair: none

This is an active guide that was published in 2004. There was one negative vote from the last reaffirmation ballot that was addressed. The BSR 8 process has been started for this draft.

Project on Guide for EMC - Computations and Treatment of Measurement Uncertainty, C63.23
Chair: Bob DeLisi

This is a draft standard with an active PINS. The draft of this new standard has gone out for re-circulation balloting in August. There were no negative votes. The BSR 8 process has been started for this draft.

Project on Validation Methods for EMC Radiated Emissions Test Sites, C63.25
Chair: Dennis Camell

This is a draft standard with an active PINS. This project was approved for the development of site requirements for both above and below 1 GHz. The working group is copying the requirements below 1 GHz (NSA) from C63.4 and adding requirements above 1 GHz. Measurements are in process to correlate the TDR method to the sVSWR method up to 18 GHz. A draft to SC1 is being developed.

Project on Standard for Compliance Testing of Licensed Transmitters, C63.26
Chair: Art Wall

This is a draft standard with an active PINS. The working group meets with the C63.10 working group. The fifth draft was recently reviewed within the WG. Continued efforts are pursued to better organize and focus the task groups.

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Subcommittee 2 – E3 Terms and Definitions

Marcus Shellman, Chair

SC2 WG1 continued efforts focused on developing and documenting new and emerging definitions and terminology for use by the ASC C63® Committee, its subcommittees, and EMC standards developers within the DoD. A C63.14 publication schedule was presented to SC2 members to meet the 5 year review cycle for document publication in August 2014. SC2 WG1 presented a review of military EMC standards published in the past 5 years for terms/definitions for possible inclusion into C63.14 Standard for SC2 member discussion at the next meeting. Actions provided to all SC Chairs to provide new terms/definitions in published C63 Standards from 2009 on and draft C63 Standards in revision and expected for publication by Fall 2014.

Members:
Marcus Shellman SC2 Chair,(DISA/Joint Spectrum Center)
Janet O'Neil SC2 Vice-Chair, (ETS-Lindgren)
Michael Duncanson SC2 Secretary, (URS)
Chris Dilay SC2 Web Coor.,(SPAWAR SYSCEN)
Dan Hoolihan C63® Chair, (Hoolihan EMC Consulting)
Don Heirman C63® Member, (Don Heirman Consultants)
Ed Hare C63® Web Master, (ARRL)
Dennis Camell, SC1 Chair (NIST)
Poul Andersen, SC3 Chair (Poul Andersen Consulting)
Steve Whitesell,SC5 Chair (TIA)
Victor Kuczynski, SC6 Chair (VICAN Electronics)
Stephen Berger, SC7 Chair (TEM Consulting)
Bob DeLisi, SC8 Chair (Underwriters Laboratory)
Bob Hofmann, Member (Consultant)
Harry Hodes, Member (ACIL)
Steve Koster, Member (Washington Laboratories)
Dave Schaefer, Member (TUV America)
Ralph Showers, Member Emeritus (Univ. of Pennsylvania)
Joseph Snyder, Member(Consultant)

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Subcommittee 3 International Standardization

Poul Andersen, Chair

The subcommittee met on October 3 with 11 of 15 voting members and 18 observers present.

Poul Andersen was nominated to serve a second three year term as SC 3 Chairman.

The SC3 scope was reviewed and no changes were recommended.

9 documents were reviewed. It was recommended that review of C63.18 be closed out as the Review Leader does not anticipate that the document would be adopted in part or total by an international standards body. Recommendations for action on 3 additional documents are anticipated for the Spring 2013 meeting.

Future Work: The topic of the Smart Grid has been added to the agenda for the Spring 2013 meeting. Also, recommendations for action on 3 additional documents are anticipated for the Spring meeting.

At the main committee meeting, C63.12 - "EMC Limit Setting" - was reassigned from the main committee to SC3 and a Working Group was formed in SC3 to review the document and determine whether it should be reaffirmed, revised, or withdrawn. The WG currently has seven members. Any other person who is interested should contact Poul Andersen for further information about the WG and the document.

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Subcommittee 5 Immunity Testing

Steve Whitesell, Chair

Subcommittee 5 met on October 2nd with 12 of its 17 members in attendance along with 4 observers. Jerry Ramie (ARC Technical Resources) has agreed to take on the role of Secretary for the Subcommittee.

Work on the C63.16 ESD testing guide has not progressed as rapidly as hoped. Working Group Chair Richard Worley (Dell) has created an ESD testing procedure that he is in the process of de-bugging within his company. Material from this internal procedure will be made available for use by the WG in the C63.16 document once the debugging process is complete. A technical illustrator may be needed to convert photos of company specific products to general equipment diagrams demonstrating the techniques to be used.

There has been difficulty getting participants from the nuclear power industry for the work on C63.20, Immunity of Equipment for Use in Nuclear Power Stations. Working Group Chair Stephen Berger (TEM Consulting) plans to make a presentation at a December meeting of the EPRI nuclear EMC group in Washington, DC to emphasize the need for industry participation. If such participation does not come forward, it may be necessary to cancel this project.

Mr. Burger also chairs the Working Group for C63.24, In Situ Immunity Evaluation. This document will provide recommended practices for EMC immunity qualification testing of products, instrumentation, and control systems in their installed environment. Its focus is on systems that require a very high degree of reliability over their operational life. The draft document is nearly complete and should be submitted for ballot prior to or at the next C63® meeting.

C63.9, Immunity of Audio Office Equipment, is due for its 5-year review in 2013. The general feeling is that the document should be reaffirmed, but a recommendation will be made to the parent committee at the next meeting.

A task group to be chaired by Don Heirman was formed to create a white paper pointing out how various C63® immunity standards can be applied to smart grid equipment. A list of relevant standards was created about three meetings ago and will serve as the starting point for the white paper. Ed Hare and Jerry Ramie agreed to participate on the task group. Mr. Ramie indicated that a NIST-EMI Issues working group has identified five gaps between European and American requirements for utility equipment connected to the Smart Grid. He will make information on those identified gaps available to the task group in case they may have relevance to the recommendations in the white paper.

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Subcommittee 6 Laboratory Accreditation/ Conformity Assessment

Victor Kuczynski, Chair

Oct. 2, 2012 Meeting summary:

16 members and 2 guests were present

Adam Gouker was elected as Chair of SC6 and Randy Long as V-Chair

WG3 C63® C63.11™/D1.0 Draft Standard-American National Standard for Inter-lab Comparison EMC Testing.

Harry Hodes become Chair and Randy Long V-chair, of this working group, Werner Schafer, Zhong Chen, Bob Delisi, Dennis Camell, victor Kuczynski, Philip Keebler, Stephen Berger and Nich Hooper
are the members.

Proficiency testing updates and the PT program run by ACIL were discussed.

WG4 C63® C63.8™/D1.0 Draft Guide-Guidance on specifying requirements for the calibrations and verifications of EMC test equipment.

Victor Kuczynski Chair, Bob DeLisi, Dean Ghizzone, Dan Hoolihan, Werner Schaeffer, Randy Long V-chair, Zhong Cheng, Colin Brench, Denise Camell, Philip Keebler, Stephen Berger, Nich Hooper, Dheena Moongilan, Harry Hodes, Adam Gouker, David Zimmerman, Marc Elliot and Brad More.
Progress was discussed as well a need for definitions to be in line with ISO, VIM, and other widely recognized international standard.

SC 6 discussed the scope change.

The proposed revised scope is: *Subcommittee 6 develops and maintains ASC C63® documents on accreditation-related activities of EMC test and calibration laboratories.*

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Subcommittee 8 Medical Equipment Testing

Bob DeLisi, Chair

Subcommittee 8 currently has 28 members. At the current time SC8 is responsible for C63.18, On-site Immunity Testing of Medical Equipment, and C63.19, Hearing Aid Compatibility. In addition the Subcommittee also voted to have the current Subcommittee Chair serve for a 2nd three year term. This was approved by the Parent Committee.

Currently C63.18 is undergoing editorial review after the ballot. In addition one negative comment from 2008 needed to be resolved. The current timeline includes a recirculation ballot in at the end of the first quarter of 2013 and publication later in the year.

The second edition of C63.19 was published in 2011. On April 9, 2012, the FCC issued a 3rd Report and Order that adopted the 2011 edition. The Report and Order can be found at

http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0409/DA-12-550A1.pdf.

As a result 4 interpretation requests were received and addressed. A summary of the interpretation requests are as follows:

1. **MIF and operating mode for LTE**
    1. Explains that worst case mode to be determined from specified call states and modulations from the 3GPP standard and the MIF (Modulation Interference Factor)
2. **T coil audio levels for LTE**
    1. Audio signal levels defined in 3GGP and ITU-T Recommendation P.50, P.501 and P.79 are used to apply the applicable levels.
3. **Concurrent transmitters**
    1. Process for evaluation per ANSI C63.19 to determine worst case operation mode to be used.
4. **Simultaneous transmitters**
    1. Current standard calls for transmitters to be evaluated individually

The complete interpretations can be found at http://www.c63.org/documents/misc/posting/new_interpretations.htm.

Liaison reports were provided by AAMI, Association for the Advancement of Medical Instrumentation, The FDA, Food and Drug Administration, and IEC SC62A MT23. All three parties are heavlily involved in the 4th Edition revision to

IEC 60601-1-2. The FDA is also 1orking with the Association for Automatic Identification and Mobility (AIM Global) RFID Experts Group (REG) to draft and validate protocols for testing immunity of medical devices to RFID systems. The FDA is also holding discussions with the FCC related to takeback of the lower WMTS (Wireless Medical Telemetry Service) band (Channel 37) and Human body communication (HBC).

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First 2013 ANSI ASC C63® MEETING SERIES

The first 2013 meeting series is planned to be held at the IEEE Operations Center, Piscataway, N.J. on May 6-9, 2013.The Main Committee meeting is on Thursday May 9th. Please check schedule on C63®'s website: **www.c63.org** "C63® main committee", "Upcoming meeting schedule & logistics

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