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American National Standards

Committee C63®

Electromagnetic Compatibility

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NEWSLETTER

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MESSAGE FROM THE CHAIR

Bob DeLisi, Chairman ANSC C63®

In the fall of 2024, C63 Main Committee and Subcommittees met in Coppell, TX at Rohde and Schwartz. During this series of meetings, working group meetings for C63.4, C63.10, C63.26, C63.29 and C63.31 were also held.

This past spring, our meeting series were held at TÜV Rheinland North America in Boxborough, MA. Members of C63 were also invited to participate in the local EMC Society Chapter meeting where Art Wall, former FCC Representative, Zhong Chen, ETS-Lindgren and Vice Chair of C63, Nick Abbondante, Intertek and Chair of C63 Subcommittee 4, Bob Mitchell, Director: Technology and Innovation at TÜV Rheinland North America gave presentations to the chapter on the subject of radiated emissions test methods above 1 GHz related to antenna positioning. After the presentations, Bob provided attendees with a demonstration based on the presentations given.

C63 operating procedures have been revised. The new operating procedures were reviewed by IEEE and ANSI and any concerns and comments were addressed and sent back to IEEE for formal adoption. Once we get the final approval, they will be available on the C63 website.

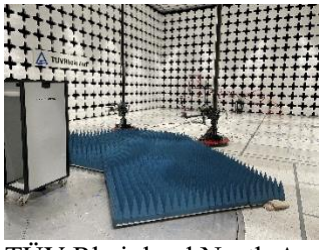
C63 held a two-day workshop prior to the 2024 EMC Symposium on August 2-3 with topics covering C63.4, the C63.25 series (C63.25.1, C63.25.2 and C63.25.3 (draft in progress)) and C63.2. The workshop instructors were Zhong Chen, Andy Griffin and Jens Melder which was held at Compliance Testing in Mesa, AZ just prior to the EMC symposium in Phoenix, AZ.

Since our last newsletter, ANSI has approved the following standards:

- C63.9 - Laboratory immunity testing of multimedia equipment exposed to RF sources
- C63.10:2020 Amendment 1 - American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

Reminder that C63 has a live LinkedIn page, https://www.linkedin.com/groups/14275875/. Information related to upcoming standards in development, published standards and other C63 items of interest is posted here. I invite you to join and share with your colleagues.

The next C63 meeting series will be held at Qualcomm in San Diego, CA the week of October 5, 2025. Subcommittees will meet both in-person and virtually and it is planned for the Main Committee to meet face-to-face.



TÜV Rheinland North America in Boxborough, MA

Subcommittee 1 Techniques and Development

Andy Griffin (Cisco Systems), Chair.

Subcommittee 1 has many updates from the working groups on techniques and new developments.

C63.4 on emission measurements is dealing with comments from the SC1 task force and has requested an informative annex for selecting the above 1 GHz test method. They are currently working on changing the AC supply tolerance from 5% to 10%. Because of the number of changes the committee does acknowledge that it may take several years to implement the revisions once they are approved.

Work on C63.5 for Antenna Calibration has restarted on the document again because C63.25.2 has been published. They are working through how to deal with standard gain horn antennas and any loss with the waveguide to the coaxial adaptor. To do this, they would like C63.4 to refer to the new version of C63.5. In regard to the timing perspective on the standard, the committee will refer to C63.5:2025 in C63.4 and then explain the specs in an informative Annex focused on what the updates are to C63.5. Other work on the standards removed the frequency range over which symmetry needs to be performed thereby defining this at 200 MHz.

In all the changes to C63.5 include:

- No GSCF's tables for bicons or LPA's will be used apart from G1 table to convert bicon ACF to free space.
- VSWR, return loss, impedance section for general S-parameters measurements of antennas.
- Added SCM procedure to obtain Site Insertion Loss (SIL) similar to RSM in CISPR16-1-5
- More details in separating SSM over the ground plane below 1GHz and TAM in free space above 1GHz.
- RAM, not only for calculable dipoles but other antennas, can also be "standards" if calibrated to SSM or TAM. All other antennas besides dipoles will have a new section for SAM (Standard Antenna Method).
- Added Annex for 1m antenna calibrations used for automotive testing, mirrored new edition of SAE ARP 958 2021.
- Section added for connector care specific to Type N connectors typically used for antennas 30MHz to 18GHz. Construction of Type N connectors causes more issues than other connectors due to the "shoulder" on the male pin that can bind against the female pin and damage one or both connectors.

In other work within SC1, C63.25.1 on site validation has started. The committee is waiting for PINS approval.

The working group for C63.25.3: Site Validation: 18 GHz - 40 GHz shared that their working groups are dealing with the following:

Group1 SAC/OATS/FAR/FSOATS
Group 1 is exploring use of sVSWR, Time Domain sVSWR, and Mode Filtered sVSWR techniques.

Group 2 is focused on RVC (Reverb Chambers).

Group3 will work on Compact Antenna Test Range (CATR) and on extending the range above 40 GHz for RVC and CATR (231 GHz).

Under new leadership from Martin Wiles, the SAC TG shared that they are focusing on transmit antennas and are getting more solutions. Likewise, Reverb and CATR groups are making good progress on text completion of initial wording and should hopefully have it completed early next year, CATR and Reverb look to be back on track to be included in first edition. The timeline to accomplish the tasks will be dependent on the time it takes to perform a round robin, as appropriate. For a chamber that meets the 1-18 GHz requirements, the committee still need to fully prove FSOATS needs additional calibration above 18 GHz. A number of antenna manufacturers are now participating – ETS Lindgren, Steatite, Schwarzbeck - Mess-Elektronik, and Seibersdorf.

The initial design of the Alfords Loop antenna is now available and has been demonstrated. At this time, round robin testing of multiple antennas in one chamber is being discussed, also demonstrating a chamber that passes below 18 but fails above 18 GHz.

Highlights from the CATR group, led by Robert Paxman, focused on their hard work in subcommittees and the active discussions occurring resulting in edits for a complete first draft.

Reports from the Reverberation Chamber task group, chaired by Phil Miller, cited that the group is finalizing text methodically – directivity is one of the major topics. The committee's goal is to have the first draft of text in the next few months. The working groups are focused on getting first drafts of validation text for the standard. They need to ensure they have the basic antenna requirements for SAC. After that they will develop round robins to validate the methods and cross correlate results across chamber types.

Subcommittee 2 Definitions

Robert Channas (DISA-PSEO Spectrum) Chair.

WG 1, chaired by Mike Duncanson, is focused on C63.14-2023 which was published on 7 June 2024. A draft for Pins

has been developed and approved by theSC2 Committee. The work surrounding ANSC C63® Draft Standard Definitions Development, which provides procedures for C63 SCs and WGs definition development and for requesting copyright approval, focused on adding the document to the C63 website under the 'Standards Development' tab for members use.

C63.28 is currently tabled as the chair position is vacant. There were meetings up to April 2021and had shown steady progress in its current revision 1.38. SC2 is currently coordinating with SC3 on international standards comparisons to C63 standards.

Subcommittee 3 International Harmonization

Ernesto Mendoza (Signify), Chair

Subcommittee 3 has focused on three harmonization goals at recent meetings. The first relates to the ESO guide, C63.16 or IEC 61000-4-2, which proposed Annex H 16-2016 Clause 7, but it was rejected by TC77. C63.9 on High-field Radiated Immunity needs smaller UFA to harmonize and action is waiting on SC5 recommendation on harmonization with IEC 610004-3. The final work for SC3 has been focused on C63.29 relating to High-power dimmers in CISPR-15. Proposals have been presented and need further follow-up.

Subcommittee 4 Wireless and ISM Equipment Measurements

Nicholas Abbondante (Intertek), Chair

SC4 reported work on C63.10 Testing Unlicensed Wireless Devices. C63.10:2020 also has a published corrigendum and amendment. The amendment covers testing for Emission BW/99% OBW where a signals modulation components are more than 20dBc. It also addresses UWB guidance on anechoic material, and includes emission mask procedures for UNII 5.9GHz and 6E mission masks. A new PINS was previously approved for work on the next edition of C63.10 and for a new standard, C63.10.DTS.UNII. Work is currently underway and the working group chair is David Chamberlain with vice chair Nicholas Abbondante. Under the leadership, the task groups are starting to meet to consolidate comments from the 3rd edition, Amendment 1, and closed most of them.

The working group on C63.26, procedures for compliance testing of transmitters used in licensed radio services, have been meeting more often to complete the comments received from a small editing group. Outstanding items are still under discussion and it is the goal of the working group chair to circulate a draft to the full working group and subcommittee later this year.

Updates on C63.30:2021 for the American National Standard for Methods of Measurements of Radio-Frequency Emissions from Wireless Power Transfer Equipment Accredited include its publication. A petition to FCC to adopt it has been submitted. It is still pending but has been allowed in KDB680106. Work on the 2nd edition of C63.30 will begin soon. The chair of the working group is Horia Popovici.

A call for experts was circulated in SC4 and the main committee in regards to work on the next edition of C63.29 on procedures for compliance testing of lighting products, published June 2023. A PINS for the next edition was approved previously, and work is underway.

C63.31 focuses on compliance testing of Industrial, Scientific and Medical (ISM) Equipment met on October 1st, 2024. The WG completed reviewing figures and associated guidance on antenna E and H plane beam width, as relevant to testing in the field – illumination area. Editing of non-standard test site text for radiated emissions is currently underway. The group also finalized how to handle ambients above the limit during off site testing when testing at a non-standard test site. A decision to leverage CISPR 16-4-2 noise floor proximity to provide a method to evaluate whether the EUT is emitting a signal below the limit at an ambient, 10 dB range over limit is now discussed in a NOTE within the document.

The Massive MIMO Working Group for the Special Project Developing a Paper on the Test Distance for Active Antennas discussed methodology on how to evaluate active antennas in near and far field measurements. Conditions may not be at specific 3- or 10-meter distances. It is currently published on IEEE Xplore and can be accessed through the C63 website (https://ieeexplore.ieee.org/document/10416984).

Subcommittee 5 Immunity Testing

Tom Braxton (SBC Global), Chair

ANSC 63 Subcommittee SC5 on immunity testing met May 4-8 in Boxborough, Massachusetts. A review of pending standards actions and publication was the central topic. The affected standards include:

- The status of C63.9 (Lab Immunity Testing of Multimedia Equipment), which is awaiting its publication schedule.
- Also discussed was the possibility of reconvening C63.15 (Recommended Practice for Immunity Measurement), as it has aged and may be worthy of a review.
- C63.16 (Guide for ESD Test Methodologies) has

completed its working-group revision and needs to complete its publication process; it currently is going through copyright release for several figures used in the documen

- C63.24 (Recommended Practice for In Situ Immunity Evaluation) should consider reaffirmation in the next year.

A long-range topic for development is a practical document on EMC resilience, which includes risk analysis, as opposed to immunity testing to a numerical standard. The risk-analysis approach is gaining acceptance in the industry, and SC5 will need to address that.

Subcommittee 6 Laboratory Accreditation/ Conformity Assessment

Doug Kramer (Apple Inc.) Chair

Subcommittee 6 reported that WG3 had been working on a draft for Inter-lab comparison of EMC testing but it has been suspended, however, Harry Hodes is developing a new PINS to restart this effort with a focus on Inter- and Intra-laboratory comparisons rather than Proficiency Testing.. Working Group 4, however, is drafting a guide for Calibration of EMC Test Equipment. The WG chair of C63.34 plans to send the document to the subcommittee for review and comment.

The subcommittee received presentations from A2LA, ANAB, and NVLAP. ACIL/ACE-PT also presented on the state of their program and measurements. ISED provided a verbal report via Jason Nixon and was able to answer group questions. ABs is going to formulate a method to gain assessor feedback on nonconformities appearing to be related to confusing or unclear language in standards. This will ensure that the information related to C63 standards can be brought to SC6 for dissemination to other Subcommittees.

The SC6 chair plans to relay the information from AB feedback to SC1 to review wording around LISN usage. In other action items, the subcommittee plans to investigate how many CABs SCC accredits to our standards in consideration of inviting them to participate

Subcommittee 7 Spectrum Etiquette

Jason Coder, (NIST) Chair

Subcommittee 7 is proud to announce the new members that have joined the group. The members are Justin Rison (FCC), David Schaefer (Element), Vignesh Rajamani (Rohde and Schwarz), Richard Jankovics (UL). These new members are welcomed as Allen Crumm, Steve Berger and Omar Al-Kalaa all recently resigned from the committee. The working group on C63.17-2020 reported that future versions may need coordination/collaboration with ETSI. They are currently seeking a new liaison to serve in that role. C63.27-2021 discussed topics and contributors for next revision. They have PINS for revisions that were presented as well. meeting. C63.27 Corrigendum made updates to reference signals including adding this black box notice.


NOTICE

This annex is not an exhaustive list of technologies that can be tested for wireless coexistence using this standard. Any wireless communications technology can be evaluated using the methods described in the body of this standard.

These are being sent to the larger subcommittee for discussion. Subcommittee 7 future work includes developing PINS for a new standard on TPC methods.

Subcommittee 8 Medical Equipment Testing

David Schaefer (Element), Chair

SC8 would like to start with an acknowledgement of the passing of Stephen Berger, a long-time contributor to C63 and chair of SC8. There is a nice article in the Completed Careers section of the EMC Society magazine about his impact on the field of EMC.

SC8 elected David Schaefer as chair of the Subcommittee, and David appointed Jeff Silberberg to be vice chair. David is EMC Technical Manager for Element Materials Technology, and Jeff is recently retired from a distinguished career with FDA.

C63.33 - Recommended Practice for Evaluating Immunity of Electronic Medical Devices to Electronic Article Surveillance Systems and Metal Detectors was circulated to the main committee in August of 2024, and the working group is nearing completion of resolving all the comments. Once that work has been finished it will be recirculated to the committee for voting, with the potential for publication in the first half of 2026.
A PINS is being developed to launch a new revision of C63.18 On-Site Medical Radiated RF Immunity testing. The standard was originally written to address cellular phone use in medical environments, and updates are needed to address current and future technology.

The subcommittee discussed if a revision of C63.19 is needed due to a dated reference to TIA5050. The subcommittee decided to take no action at this time.

The subcommittee discussed creation of a new standard to cover EMC testing for medical specific RF threats – for example electrosurgical signals, electro cautery signals, etc. A PINS or PINS-C will be created for this effort.

ANSI ASC C63® 2024 OFFICERS

Bob DeLisi, Chairman (b.delisi@ieee.org)
Dan Hoolihan, Immediate Past Chair (danhoolihanemc@aol.com)
Zhong Chen, Vice Chair (zhong.chen@ets-lindgren.com)
Jerry Ramie, Secretary (jramie@arctechnical.com)
Jennifer Santulli, Secretariat (j.santulli@ieee.org)
Andy Griffin, Chair SC1 Techniques and Development (agriffin@cisco.com)
Robert Channas, Chair SC2 Terms and Definitions (robert.j.channas.civ@mail.mil)
Ernesto Mendoza, Chair SC3 International Standardization (ernesto.mendoza@signify.com)
Nicholas Abbondante, Chair SC4 Wireless and ISM Equipment Measurements (nicholas.abbondante@intertek.com)
Tom Braxton, Chair SC5 Immunity Testing and Measurements (tbraxton@sbcglobal.net)
Doug Kramer, Chair SC6 Accreditation/Conformity Assessment (dkramer2@apple.com)
Jason Coder, Chair SC7 Unlicensed Personal Communications Services Devices (j.coder@ieee.org)
David Schaefer, Chair SC8 Medical Device EMC Test Methods (david.schaefer@element.com)