

APPROVED MINUTES - ANSI ASC C63® SC1: Techniques and Development
WebEx Meeting
Friday, March 5, 2021

Members Present:

Nicholas Abbondante
Mike Antola
Mark Arthurs
David Chamberlain
Zhong Chen (Chair)
Bob DeLisi
Mac Elliott
Andy Griffin
Tim Harrington
Dan Hoolihan
Steve Jones
Greg Kiemel
Jeff Klinger
Doug Kramer
Victor Kuczynski
Rick Lombardi
Randy Long
Nima Molaei
Michael O'Dwyer
Janet O'Neil (Secretary)
Nate Potts
Mits Samoto
David Schaefer
Jeff Silberberg
Dennis Ward
Khairul A. Zainal
David Zimmerman

Members Absent:

Jason Nixon (Vice Chair)
Dan Sigouin

Guests:

Ed Hare
Jens Medler
Horia Popovici

Employer:

Intertek
UL
Sony
ISED Canada
ETS-Lindgren
Underwriters Laboratories Inc. (UL)
TUV Sud America
Cisco
FCC
Hoolihan EMC Consulting
FCC
Apple
Compatible Electronics
ETS-Lindgren
Vican Electronics
Visteon
ANAB
PCTEST
Apple
ETS-Lindgren
Keysight
Liberty Labs Asia
Element Materials Technology
FDA Center for Devices & Radiological Health
PCTEST
Apple
Spectrum EMC, LLC

Employer:

ISED Canada
Timco

Employer:

ARRL
Rohde & Schwarz
ISED Canada

1.0 Call to Order: Chair

Chair Zhong Chen called the meeting to order at 8:00 am PST.

2.0 Approval of the Consent Agenda: Secretary

Secretary O'Neil presented the consent agenda. This includes the draft meeting agenda for March 5, 2021, the acceptance of the terms contained in the [patent slides](#), by all attendees, and approval of the minutes from the last meeting held on December 11, 2020. The consent agenda was approved as presented. (See Attachment A for the approved agenda. See Attachment B for the Approved Minutes of the December 11, 2020 meeting.)

3.0 Review of [Subcommittee Membership](#) and Scope: Secretary

3.1 Review of Membership – Members at Risk. Secretary Janet O'Neil reviewed the Member Attendance Log included in the agenda. (See Attachment A). There are no members at risk. The updated SC1 Membership Roster is included in Attachment C. Khairul A. Zainal noted he has changed employers. The roster will be updated accordingly.

3.2 Consideration of New Members – Working Group Rosters

The secretary advised that there have not been any new membership applications requested for SC 1. The updated Working Group Roster is included in Attachment D.

ACTION ITEM: All Working Group (WG) Chairs need to complete their rosters and indicate their officers (Vice-Chair and Secretary) and submit to SC1 Chair prior to the next meeting.

3.3 The SC1 Scope was revised as follows (replace 'or' with 'and' per yellow highlights):

Subcommittee 1 provides the technical expertise and resources necessary for maintaining existing and newly proposed C63[®] approved standards documents. Subcommittee 1 addresses new ~~or~~ and existing measurement methods, site qualification methods, calibration methods, associated instrumentation, and limits development as assigned by the Main Committee ASC C63[®].

4.0 Working Group Reports

C63.2: Field Strength Measuring Instrumentation – 9 kHz to 40 GHz Working Group Chair Jens Medler presented his report. (See Attachment E.) His Working Group is preparing a revision of ANSI C63.2:2016. He outlined the proposed changes, namely to:

- Update reference to CISPR 16-1-1 from Edition 3.2 (2014) to Edition 5 (2019)
- Identify the changes in CISPR 16-1-1:2015 (Ed.4) and CISPR 16-1-1:2019 (Ed.5)
- Align ANSI C63.2 with CISPR 16-1-1:2019 where applicable, e.g. frequency tuning tolerance of $\pm 2\%$ is in CISPR 16-1-1 now and can be omitted as additional requirement in C63.2, update Tables 1 and 2

Jens noted the motion on the Draft PINS was approved (25+3 Affirmative, 0 Negative, 2 Abs.) and the final PINS was sent to IEEE by January 29, 2021. Dan Hoolihan noted that ANSI published notice that the PINS for C63.2 is under review and people have 30 days to comment. He said this is a good endorsement that the PINS will be formally approved. Jens said he has a strong WG roster of 22 members.

C63.4: Emissions Measurements

Working Group Chair: Andy Griffin

Status: C63.4: Current-2014. New PINS approved by WG, SC1 and C63 in Nov. 2017. The draft was considerably revised in late 2020; latest draft circulated to SC 1 in mid-2021. Publication timing will be dependent upon publication of C63.25.2 to make sure these documents are harmonized.

Andy Griffin presented his report. (See Attachment F.) He showed his list of current working group members and noted Greg Kiemel has joined as the latest member. He summarized the SC1 vote on the last draft circulated in early 2020. Voting ended on Feb. 21, 2020 and passed (14 yes, 10 no, 3 abstain). Eight members submitted a total of 122 comments. Since the last SC1 meeting in December, the working group has held monthly meetings to try and sort out the remaining issues. They have made significant progress developing the 2 dB rule, but there are some minor tweaks still needed.

For next steps, the WG will wait for progress with C63.25-2, and then remove the relevant parts from C63.4. The WG also needs to ensure that correct elements are defined for antenna calibration in regards to the updated C63.5. At the next WG meeting, they will discuss the above 1 GHz test method (add a linear scan) and dated references (need to confirm which ANSI standards should be dated, i.e. C63.5, C63.4, and C63.2). They will also allow time for a thorough review of the document.

Andy noted the document is long at 300 pages so at some point the WG will address breaking it down to a shorter document. For example, content may be covered in C63.5 and C63.25.2 on antenna calibration and site validation that can be referenced in C63.4 to reduce the document length.

C63.5: Antenna Calibration

Working Group Chair: Doug Kramer

Status: Current-2017

Doug Kramer presented his report. (See Attachment G.) He noted the new title of the document removed the frequency range. He promoted iMEET and how easy it is to use. Discussion ensued about calibration of loop antennas below 30 MHz and how this looks for active/passive antennas. Does the size of the loop impact measurement?

He expects the latest version of the document to be ready by late 2021. The WG is updating the document to reference C63.2, C63.25, and C63.4. Coordination of the publication of these documents will be a challenge. They are also tracking the publication of CISPR 16-1-6 which is in the CDV stage. The next meeting of the WG is on 12 March 2021.

C63.7: Construction of Test Sites

Status: Published update on March 9, 2015; working group disbanded

The Chair noted SC1 needs to develop a new PINS with a WG to address the addition of chambers to the document. Khairul Zainal said he was interested in being the WG chair, but he needs to check with his new employer. Victor Kuczynski said he would be interested in joining the WG as did Zhong Chen. Nick Abbondante asked about adding CATRs to the document and being included in the WG. Nate Potts said he'd like to be included as well. Nima Molei asked to be added to the WG.

ACTION: Zhong Chen to create a working group to draft new PINS for revision of C63.7.

C63.22-2004: Guide for Automated EMI Measurements

Status: Published in 2004

Zhong advised that this standard is active, but it has not been revised or reaffirmed since 2004. The listing is shown here from the IEEE SA website: https://standards.ieee.org/standard/C63_22-2004.html. The standard should be reviewed or withdrawn as it is now over 15 years since original publication. Jennifer Santulli with IEEE confirmed the document was set to expire in 2020. Dan Hoolihan advised that was fine and to let the document expire as scheduled. The Secretary was instructed to remove this standard from the next SC1 meeting agenda.

ACTION: Secretary O’Neil to remove standard C63.22 from the next SC1 meeting agenda.

C63.23-2012: Guide for Computations and Treatment of Measurement Uncertainty

Status: Reaffirmed on August 10, 2020; posted to IEEE Xplore in October 2020

Working Group Chair: N/A

Jens Medler will take a look at the CISPR equivalent to this document to see if any future work needs to be done. Janet O’Neil will contact Ross Carlton and cc Jens to make sure SC3 tracks this harmonization effort between the C63 and CISPR documents on measurement uncertainty. Bob DeLisi noted that there were comments on future work required that came up with the latest PINS.

ACTION: Jens Medler to review CISPR equivalent to C63.23 and check the PINS to see the future work mentioned.

ACTION: Secretary O’Neil to contact Ross Carlton, SC3 Chair, to alert him of potential harmonization between the C63 and CISPR documents on measurement uncertainty.

C63.25: Time Domain Applications for Test Site Validation

Working Group Chair: Dan Sigouin

Status: New Standard. Draft being written. PINS approved by SC1 on October 27, 2014

This work addresses the family of C63.25 standards:

- o C63.25.1 (1 GHz to 18 GHz) TDR – Published Dec 2018.
- o C63.25.2 (30 MHz to 1000 MHz) NSA – Work began in January 2019.
- o C63.25.3 (Above 18 GHz) – Future plan to address NSA above 18 GHz.

Zhong Chen presented Dan Sigouin’s report since Dan could not attend the meeting.

C63.25.2 – As a reminder, the steering committee confirmed that the C63.25.2 WG will take sole responsibility to complete the work on site validation between 30 MHz to 1 GHz. Once this work is complete, the C63.25.2 WG will notify the C63.4 WG to remove all site validation references between 30 MHz to 1 GHz in C63.4 after the publication of C63.25.2.

On C63.25.3, Nick Abbondante is the WG chair and will form his working group soon. He will coordinate the efforts with SC 4 so the wireless standards cross reference is up to date. Bob DeLisi will ask Jerry Ramie to contact all members of SC 4 to see if they want to be members of the C63.25.3 WG. Nick expects to formally establish the WG in early May – once the steering/parent committee approves the PINS and IEEE publishes notice of it for the 30 day public comment period.

ACTION: Bob DeLisi to ask Jerry Ramie to contact all members of SC 4 to see if they want to be members of the C63.25.3 WG.

5.0 Old Business – Chair

There was no old business to discuss.

6.0 New Business – Chair

6.1 Coordination with SC3 for Harmonization

Zhong Chen announced Ross Carlton has agreed to be the new SC3 chair, after the passing of former chair Don Heirman. Zhong reminded SC1 that before any Working Group draft may be submitted to SC1 for approval, the document must be provided to the SC3 Chair for evaluation and coordination of any harmonization effort. See the table below for the activity status updated during the meeting.

Reviewer Actions

| RA # | Task | Responsible party | Due Date | Status |
|-------|---|-------------------|----------|--------|
| RA-5 | Compare C63.5 to CISPR 16-1-6 | Nate Potts | 2/1/20 | Open |
| RA-17 | Compare C63.25 to CISPR 16-1-4 (two freq. ranges under C63.25.1 and C63.25.2) | Dan Sigouin | 5/1/19 | Open |

6.2. PINS for ANSI C63.12 – Recommended Practice for Electromagnetic Compatibility Limits and Test Levels: Carlton and Hare

Ed Hare presented information on C63.12. (See Attachment I.) It was originally published in 1984 when commercial EMC requirements were emerging. Since then, it has been revised or reaffirmed in 1988 and 2007 with very minor changes, if any. We should reaffirm, revise, or cancel the standard. The standard includes:

- Overview of Environmental noise.
- Overview of Emissions limits including subsystem allocation.
- Overview of Immunity limits including an unsupported severe environment.

Ed reviewed the scope and purpose of the standard. The Scope states “This recommended practice presents a rationale for developing emission limits and immunity test levels and recommends that these facets are representative of current practice and user needs.” The Purpose states “The main purpose of this recommended practice is to aid manufacturers who might need to modify the emissions their products generate (as long as regulatory limits are met) to meet for example intra-system needs for their products.”

It is not clear who uses this document and if it is needed. The technical content is very weak and needs revision, especially regarding immunity. Ed suggested forming a WG to invest the time needed to create a recommended practice that meets the purpose. However, this work requires leadership - likely from either SC1 or SC5. The revisions are substantial and potentially delve into new territory. Can SC 1 provide a knowledgeable WG with the time and desire to revise this document? Or, should the document be reissued with updated references? This seems a poor choice considering the state of the document.

The other option is to cancel the document. If the first alternative with a new WG cannot be achieved, withdrawing it or allowing it to expire may be the only technically justifiable alternative.

No consensus was achieved on what to do with this document within SC1. Ed will discuss this document with SC5 and come back at the next meeting of SC 1 with a possible motion for moving forward.

ACTION: Ed Hare to present a motion on the next steps for moving forward with C63.12 at the next meeting of SC 1.

6.3 IEEE EMC Symposium Tutorial on ASC C63 Standards (C63.4, C63.5, C63.10, C63.26, C63.30): Hoolihan and O’Neil

Dan Hoolihan and Janet O’Neil will co-chair a tutorial on C63 standards at the 2021 IEEE EMC Virtual Symposium. The tutorial will recognize the contributions of the late Don Hierman. This tutorial is scheduled for Friday, August 6. Topics and speakers include:

- ANSI/IEEE C63.4: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
Dan Hoolihan, Hoolihan EMC Consulting, Chair of the C63-Committee on EMC
- ANSI/IEEE C63.5: EMC – Radiated Emission Measurements in EMI Control - Calibration and Qualification of Antennas
Doug Kramer, ETS-Lindgren, C63.5 Working Group Chair
- ANSI/IEEE C63.10: Procedures for Compliance Testing of Unlicensed Wireless Devices
Jason Nixon, Innovation, Science & Economic Development Canada, C63.10 Working Group Chair
- ANSI/IEEE C63.26: Compliance Testing of Transmitters Used in Licensed Radio Services
Bob DeLisi, UL, Subcommittee 4 Chair (committee responsible for the ANSI/IEEE Wireless Standards)
- ANSI/IEEE C63.30: Compliance Testing of Wireless Power Transfer Products
Travis Thul, 2T2J, Inc., C63.30 Working Group Chair
- Recent Developments in ANSI/IEEE C63.4: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
Andy Griffin, Cisco, C63.4 Working Group Chair

More information on the symposium technical program is available at www.emc2021.org

7.0 Review of Interpretation Requests: Zhong Chen reviewed the following open and/or new interpretation requests received since the last meeting on December 11, 2020.

- a) **C63.4 (2014) Clause 8.2.3 “Measurement Antenna Distance”** from Bill Stumpf, request dated Sept 9, 2020. Task Group members include H. Popovici (Chair), G. Pettit, D. Zimmerman, B. DeLisi, N. Abbondante. Status – Interpretation response sent from SC1 to Jerry Ramie on 12/3/20 to send to parent committee.
- b) **C63.4 (2014) Annex N 1B4 “Antenna Calibration”** from David Waitt, request dated Feb 5, 2021. Task Group members include A. Griffin (Chair), N. Potts, V. Kuczynski, D. Zimmerman, J. Klingler, D. Sigouin, B. DeLisi, N. Abbondante. Status – SC1 approved the response (20 yes, 1 no, 1 abstain) and sent to Jerry Ramie on 3/5/2020 for providing to the the parent committee.

- c) **C63.4 (2014) Clause 4.5.1 “Accredited Antenna Calibration”** from Steve Behm, CKC Laboratories, request dated Feb 26, 2021. The Chair called for volunteers to prepare a response. Andy Griffin (Chair) and the team in 7.b above will address this since the question and response are similar.

[Click here for more information about interpretation request procedures](#) (see pages 12-14).

Dan Hoolihan reminded the committee that responses to interpretation requests are informative, NOT normative, in nature.

8.0 [C63.org](#) Website Use and Updates

Zhong requested on behalf of Jerry Ramie that SC1 members be specific with any requests for postings to the website. Zhong asked SC1 members to be sure to update or confirm with Jerry directly that they are correctly listed on the website.

9.0 Review of the Action Items from Previous Meetings: Secretary

Secretary O’Neil advised that an updated action item list would be distributed to the SC1 members along with the draft minutes from this meeting.

ACTION ITEM: O’Neil to distribute the updated consolidated action items and draft minutes from the March 5, 2021 meeting to the committee.

10.0 Time and Place of Next Meeting: Chair

Zhong Chen advised that SC1 would meet via WebEx on Friday morning, June 11, from 8:00 am – 10:00 am PDT.

11.0 Closing Remarks and Adjournment: Chair

With no further business, Zhong Chen adjourned the meeting at 10:00 am PST. He thanked everyone for attending the meeting.

Minutes submitted by:



Janet O’Neil
Secretary, SC1

ATTACHMENTS

- Attachment A: Approved Agenda for March 5, 2021 SC1 Meeting
- Attachment B: Approved Minutes from December 11, 2020 SC1 Meeting
- Attachment C: SC1 Membership Roster
- Attachment D: SC1 Working Group Roster
- Attachment E: Medler Report on C63.2
- Attachment F: Griffin Report on C63.4
- Attachment G: Kramer Report on C63.5
- Attachment H: Ed Hare Report on C63.12