

APPROVED MINUTES

ANSC C63® SC1: Techniques and Development Webex Meeting and In-Person Meeting

Wednesday, November 9, 2022
Keysight Technologies, Santa Rosa, California

Members Present:

Nicholas Abbondante
Mike Antola
Mark Arthurs
David Chamberlain
Zhong Chen (Chair)
Bob DeLisi
Mac Elliott
Andy Griffin
Tim Harrington (via Webex)
Dan Hoolihan
Steve Jones (via Webex)
Greg Kiemel
Jeff Klinger (via Webex)
Doug Kramer (via Webex)
Victor Kuczynski (via Webex)
Randy Long (via Webex)
Nima Molaei (via Webex)
Jason Nixon (Vice Chair)
Janet O'Neil (Secretary)
Tim Royer (via Webex)
Nate Potts
David Schaefer
Dan Sigouin (via Webex)
Jeff Silberberg (via Webex)
David Zimmerman (via Webex)

Members Absent:

None

Guests:

Steve Anderson
Henry Benitez
Jeremy Cline
Ken Gjerde
Ed Hare
Janneth Marcelo
Megan McConnell
Jerry Ramie

Employer:

Intertek
UL LLC
Sony
ISED Canada
ETS-Lindgren
UL LLC
TUV Sud America
Cisco
FCC
Hoolihan EMC Consulting
FCC
Apple
Cetecom
Apple
Vican Electronics
ANAB
Element Materials Technology
ISED Canada
ETS-Lindgren
Timco
Keysight Technologies
Element Materials Technology
Timco
FDA Center for Devices & Radiological Health
Spectrum EMC, LLC

Employer:

Employer:

ARRL
IEEE EMC Society
Rohde & Schwarz
Starkey
ARRL
NVLAP
A2LA
ARC Technical

1.0 Call to Order: Chair

Chair Zhong Chen called the meeting to order at 3:00 pm CDT.

2.0 Approval of the Consent Agenda: Secretary

Secretary O'Neil presented the consent agenda. This includes the draft meeting agenda for November 9, 2022, the acceptance of the terms contained in the [patent slides](#) by all attendees, and approval of the minutes from the last meeting held on May 18, 2022. The consent agenda was approved as presented. (See Attachment A for the approved agenda. See Attachment B for the Approved Minutes of the May 18, 2022 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). Dan Sigouin's membership is at risk since he has missed three consecutive meetings. He attended the meeting on November 9 so his membership is no longer at risk. Dan Sigouin confirmed that he will stay on as the SC1 Working Group chair for C63.25.1 and C63.25.2. Doug Kramer noted he has changed affiliations to Apple and will remain on SC1 as the C63.5 Working Group Chair; he clarified the Apple Primary and Alternate Reps on the main committee will remain the same. Dan Sigouin clarified that on the main committee, Tim Royer will be the Primary Rep for Timco; Bruno Clavier will be the Alternate Rep for Timco.

3.2 Consideration of New Members – Working Group Rosters

A new membership application was received from Alain Abou-Zied with ISED Canada. He is interested in joining the Working Group for C63.25.3. His Working Group application will be voted on under New Business.

The current Working Group Roster is shown [here](#).

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 confirmed as follows:

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

3.4 Approval of Duty – The list of standards as currently appears on the C63 website, for which SC1 is responsible, were reviewed. **SC1 approved the list of standards, but agreed the list is out of duty.**

ACTION ITEM: Zhong Chen (SC1 Chair) to update the list of standards currently on the C63 website so it aligns with the committee's duty.

4.0 Working Group Reports

C63.2: Field Strength Measuring Instrumentation – 9 kHz to 40 GHz

Chair Zhong Chen reported for Jens Medler, Working Group Chair. Regarding the revision of ANSI C63.2:2016, the final draft of C63.2 (Rev 7) was sent to Jennifer Santulli with IEEE. A ballot invitation for C63.2 was sent out on March 4, 2022; the closing date was April 5, 2022. The work on C63.2 is basically finished.

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 C.) A vote on the latest draft closed on Feb. 21, 2020 and passed (14 yes, 10 no, and 3 abstain). Eight members submitted a total of 122 comments. Since the last SC1 meeting, the working group has had monthly meetings to try and sort out the remaining issues.

Nick asked about the harmonization with the previous edition of CISPR. Andy said there were issues with the antenna heights, especially as we go to higher frequencies. We may need additional information on the antenna angles.

Zhong asked about the boresight debate. Andy said it was discussed at the last meeting. Tilting above 1 GHz doesn't exist in CISPR 16. Nick brought up the MU factor with tilting/non-tilting.

Following is a summary of the next steps:

1. **Site/Antenna Calibration C63.25.2:** Going out for vote, most of the technical issues raised have been fixed. We will then remove the relevant parts from C63.4 if the progress is complete. We still have a dated reference to C63.5, so that will remain. C63.25.2 only includes the process for site attenuation, no normative requirements for size of the ground plane, minimum size of the ellipse (or circle) defining the obstruction-free area etc. If we need some normative requirements then we need to include them in C63.4.
2. **Radiated Emission Test Process:** Basically, we have adopted (but modified) the CISPR 16 process of a minimum number of azimuth during prescans and then to retest the sections at 1 degree increments. Antenna at a minimum of 5cm? step heights. In the formal section, the current requirements are 'vague' and hence need to be updated.
3. **Comments Matrix:** We are reviewing the comments matrix and focusing on the 'Not accepted' ones, plus trying to make sure the response with the 2 dB rules section were correct. From what we have done so far it has been very fruitful.

Andy noted timing is important to align the publication of the next C63.4 with the related C63 documents (C63.25.2 and C63.5) to make sure they are published in concert. The next meeting of the C63.4 Working Group will take place on November 17, 2022.

C63.5: Antenna Calibration

Working Group Chair: Doug Kramer
Status: Current-2017

Doug advised the working group hasn't met since the last SC1 meeting. There will be no real activity until C63.25.2 is ready. Doug said the standard will be ready to issue immediately following the publication of C63.25.2. The Chair asked Doug to update his working group roster since Mits Samoto and Randy Lombardi indicated they can no longer work on C63 activity. Also, Dennis Ward is now with Element.

ACTION ITEM: Doug Kramer to consider adding content on calibrating standard gain horn antennas to C63.5.

C63.7: Construction of Test Sites

Status: Published update on March 9, 2015; working group disbanded. Nothing new to report.
Working Group Chair: None – Candidate Requested

This document needs basic revisions beyond adding chambers. For example, it states a ground plane is not necessary on an OATS. A three-page amendment was suggested to be added to the standard, but a Working Group chair is needed to initiate this work.

The committee supported the idea of keeping C63.7 as a separate standalone document.

ACTION ITEM: Anyone interested in Chairing the WG and drafting a new PINS for revision of C63.7 should contact Zhong Chen.

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: None

SC1 wants to see this standard get updated, but no one is available to work on it. Zhong asked if we really need this document in light of the CISPR standard 16-4-2. Bob said the CISPR document does not reference radios. Victor indicated some of this radio content is covered in the ETSI documents. A Working Group chair is needed to further this effort.

ACTION ITEM: Bob DeLisi and all to see if a member of the Main Committee is interested in being the Chair of a new C63.23 WG.

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 March 2019 – WG Chair: Dan Sigouin
- o C63.25.2 (30 MHz to 1000 MHz) NSA – Work began in January 2019 – WG Chair: Dan Sigouin
- o C63.25.3 (18 GHz – 40 GHz) – Future plan to address NSA above 18 GHz – WG Chair: Nick Abbondante

Dan Sigouin presented his report. (See Attachment D.) Over the last 18 months, numerous comments have been received and addressed. It is harmonized with the CISPR site validation method. GSCF was eliminated from C63.25.2. C63.25.2 is now ready to be sent to IEEE to ballot.

Andy asked about reopening the working group for C63.25.1 to update the document. Both Andy and Zhong have updated for the next version of this standard. Dan said he also received comments on the standard once it was published that he has archived to take into account on the next version.

ACTION ITEM: Dan Sigouin to provide a new PINS on C63.25.1 to SC1.

On C63.25.2, the PINS is current. The committee was reminded that the C63 Steering committee approved the following motion on October 23, 2020:

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 30MHz to 1GHz in C63.4 after the publication of C63.25.2.

Comments from the main committee ballot have been addressed. The Draft Document has been recently sent to the Secretariat for the IEEE ballot (ballot group invitation closed in September). Next MEC will begin a roughly 30 day review, then the ballot will be conducted.

On C63.25.3, Working Group chair Nick Abbondante presented his report. (See Attachment E.) The most active task group is chaired by Martin Wiles. The mode filter demo work is underway. In short, vertical works fine, but horizontal is a problem. The task group is addressing this. A challenge is also some older turntables cannot stop at 1 or 2 degrees so the step size can be a problem. We need to solve the antenna issues and some manufacturers are looking at building customized antennas for this application.

This standard will specify the types of test sites and validation methods for use from 18 to 40 GHz for reference in product specific test method standards. Following is an update on task group activity:

- **SAC/OATS/FAR/FSOATS:** Exploring use of sVSWR, Time Domain sVSWR, and Mode Filtered sVSWR techniques. Martin Wiles is task group chair, they have met monthly since June. The work is being done by group members on demonstrating and refining the mode filtered sVSWR method – challenges include antenna nulls in the horizontal polarity, and turntable accuracy/age. The task group continues to explore antenna options; they are currently using an ETS-Lindgren model 3185 prototype omnidirectional antenna for the demos, but we are starting to find possible leads. The task group is also looking at standard sVSWR (positioner issues) and TDsVSWR. The next meeting will be held on November 15, 2022.
- **Compact Antenna Test Range (CATR):** Nicholas Abbondante is currently filling role of task group chair; an actual chair for this group is needed. Work is currently on hold while text is

being developed. The task group has already reviewed background material sufficiently. Asad Bajwa of Keysight was going to write some text but this has not been forthcoming; Nate Potts has been working to find more expertise. The last meeting was held on March 21, 2022. The date of the next meeting is TBD once text is available

- **Reverberation Chamber:** This task group is chaired by Phil Miller. Meetings were held on June 6, August 22, and October 17. Garth D'Abreu is working on reverb text to supplement IEC 61000-4-21 with considerations for the 18-40 GHz frequency range (loading, chamber size), meetings have been short as text is not yet available. The task group is seeking additional experts to add to the group in order to try to accelerate the process. The next meeting will be held on November 28, 2022.

The main C63.25.3 Working Group is meeting every 2-3 months – last meeting was September 26, 2022, next meeting is December 12, 2022, from 12:00 - 1:30 PM Eastern. Individual Task Groups are meeting monthly. The goal is to develop validation text for the standard, then develop round robins to validate the methods.

In summary, the draft text is currently on hold while the Cylindrical Mode Filter demos/round robin tests are ongoing. The demos of CMF sVSWR continue, which in some cases has contributed to the round robins. Completion of the document is likely at least a year or two away; at this time reverb and CATR test environments may have to wait for the next edition.

Zhong reminded SC1 of the continued coordination needed among the three standards C63.25.2, C63.5, and C63.4 regarding site validation requirements. The C63.25 standards will have the sole responsibility for site validation. New versions of C63.4 and C63.5 are supporting documents on this topic and will defer to C63.25.2 for site related requirements.

5.0 Old Business – Chair

There was no old business to discuss.

6.0 New Business – Chair

6.1 Review of Definitions from SC2: The Chair noted there are 20 new terms that require review. Marcus Shellman will send the list to Zhong to review with Andy and Bob in order to determine if terms need updating.

6.2 C63.25.3 Working Group New Member Application: A vote was taken to approve the application of Alain Abou-Zied with ISED Canada to join the C63.25.3 Working Group. Nick Abbondante moved to approve Alain Abou-Zied's application to join the C63.25.3 working group. Bob DeLisi seconded the motion. SC1 voted to approve the motion.

6.3 Coordination with SC3 for Harmonization: In the past, before any working group draft was submitted to the subcommittee for approval, the document must have been provided to the SC3 chair [Ross Carlton](#) for evaluation and coordination of any harmonization effort. This requirement may change. The activities of SC 3 will be reviewed at a Steering Committee meeting at a future C63 meeting series in order to adapt to current needs.

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

ACTION ITEM: Dan Hoolihan agreed to put a discussion of SC3 on the agenda for the next steering committee meeting in May 2023.

7.0 Review of Interpretation Requests: Zhong Chen reviewed the following interpretation request:

C63.5 (2017) Clause M.4 Uncertainty Contributors from Jeong Hwan Kim, request dated Dec 21, 2021. Task group members included Doug Kramer (Chair), Dennis Ward, Victor Kuczynski, and Nate Potts. Response prepared by task group and sent to SC1 on March 18 for a one week comment period. A vote was planned at the May meeting to be taken in SC1 to approve sending the response to the parent committee. However, SC1 was not ready to vote. *Note: Subsequent to the SC1 meeting, the response was approved by SC1 on November 10, 2022 and sent to Jerry Ramie for review by the parent committee. On December 1, 2022, Mr. Ramie let Mr. Kim know the interpretation response had been posted.*

[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

On behalf of Jerry Ramie, Zhong requested 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 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 November 9, 2022 meeting to the committee.

10.0 Time and Place of Next Meeting: Chair

Zhong Chen advised that SC1 would meet on May 11, 2023 from 3:00 – 5:00 pm at A2LA in Frederick, Maryland.

11.0 Closing Remarks and Adjournment: Chair

With no further business, Zhong Chen adjourned the meeting at 5:00 pm CDT. He thanked everyone for attending the meeting.

Minutes submitted by:

A handwritten signature in black ink that reads "Janet O'Neil". The signature is written in a cursive, flowing style.

Janet O'Neil, Secretary, SC1

ATTACHMENTS

Attachment A: Approved Agenda for November 9, 2022 SC1 Meeting

Attachment B: Approved Minutes from May 18, 2022 SC1 Meeting

Attachment C: Griffin Report on C63.4

Attachment D: Sigouin Report on C63.25.2

Attachment E: Abbondante Report on C63.25.3