C63® American National Standards Committee C63®

Electromagnetic Compatibility

Subcommittee 5: Immunity Testing and Measurements

Chair: Tom Braxton **Vice Chair:** Dave Schaefer **Secretary:** Jerry Ramie

May 5, 2025; 1:30 PM – 3:00 PM - EDT
TÜV Rheinland of North America Inc., Boxborough, MA - Web-meeting

Approved Minutes

1. Call to Order: Chair - The Chair called the meeting to order at 1:42 PM-EDT.

1.1 Announcements: Chair's remarks - Thanks for attending!

1.2 Meeting logistics announcements: Host

1.3 Introductions: Secretary – roll call (record attending members with their affiliations and guests separately below) (SC5 membership roster from the website is shown below) Absences, excused absences and errors are shown below; (revised May 5, 2025)

Subcommittee 5 Membership Roster **Report any roster errors to the ASC-C63® Secretary**

Name	Role within SC	Affiliation
Braxton, Tom	Chair	ARRL (Expert)
DeLisi, Bob	Member	UL LLC (Primary Rep)
Fanning, Craig	Member	Elite Electronic Engineering (Primary Rep)
Griffin, Andy	Member	Cisco Systems (Primary Rep)
Hoolihan, Dan	Member	Hoolihan EMC Consulting (Individual)
Long, Randy	Member	ANSI National Accreditation Board (Primary Rep)
Ramie, Jerry	Secretary	Consultant (ARRL Technical Expert)
Schaefer, Dave	Vice Chair	Element Materials Technology / Primary
Silberberg, Jeffrey L	~~Member~~ Not applied yet	Member Emeritus
Zimmerman, Dave	Member	Spectrum EMC, LLC (Individual)

Guests and Observers: (non-voting) Bob Mitchell, Ken Gjerde, Bill Graff, Richard Reitz, Randy Long, Vignesh Rajamani, David Chamberlain, Grace Lin, Victor Kuczynski, Henry Benitez, Chuck Patterson, Jeff Evans, Pao Thao, Steve Anderson,

1.4 Quorum: (50% of roster) constitutes a quorum. (rounding up) (10 roster members / 2 = 5 >> (therefore 5 people are required for a quorum) **Was quorum achieved? (Yes)** If not, any actions taken are subject to confirmation by electronic ballot or at a future meeting. (Quorum is not required for Working Group meetings) AI-119: Jeff S. to apply for membership in SC5

2. Approval of the Consent Agenda (includes Agenda & Previous Minutes): Secretary - The consent agenda was approved by acclamation.

2.1 Review of the patent slides - The patent slides were shown and all agreed to abide by the policies.

3. Review of Subcommittee Membership: Secretary - Report any errors in Item 1.3 above to the ASC-C63® Secretary

3.1 Review of Membership Guidelines – any members at risk?

Subcommittees:
For an individual to remain a voting member of a Subcommittee, active participation in Subcommittee meetings and regular responses to Subcommittee email votes is required. Should a member fail to attend at least one of three consecutive scheduled meetings (in person or remotely via web conference (when used)) or respond to at least one of every two consecutive Subcommittee email votes, their membership in that Subcommittee may be at risk.

Note: Abstentions shall be treated the same as a "yes" or "no" vote regarding the requirement to respond to email votes.

Working Groups:
For an individual to remain a member of a Working Group, active participation is required. Should a member fail to attend at least one of three consecutive scheduled meetings (in person or via web conference (when used)) their membership in that Working Group may be at risk. Individual Working Groups may establish additional participation criteria and/or modify this requirement.

Member Attendance Log:

20210908	20220113	20220518	20221109	20230119	20230316	20230511	20231004	20240516	20241002	SC5 Members
					x	x	x	x	x	Tom Braxton
x	x	x	x	x	x	x	x	x	x	Bob DeLisi
x	x	x	x	x	x		x	x	x	Craig Fanning
a	x	x		x	x		x		x	Andy Griffin
	x	x	x			x	x	x	x	Dan Hoolihan
x		x	x	x	x	x	x	x	x	Randy Long
x	x	x	x	x	x	x	x	x	x	Jerry Ramie
a	x	x	x				x	x		David Schaefer
x	x	x	x	x	x	x	x	x	x	Jeff Silberberg
x	a			x		x	x		x	Dave Zimmerman

Members at risk? None are at risk:

3.2 Consideration of new members? Application for C63® Subcommittee Membership Jeff S. will apply for membership (see AI-119) Application CV/resume

3.3 Approval of Membership (Spring meeting only)

4. Approval of Scope and Duties: Chair - (Spring meeting only) (Report approval or any changes to the Main Committee)

4.1 Scope - *Subcommittee 5 is responsible for developing and maintaining new and existing ANSC C63® standards for immunity testing techniques and associated instrumentation as requested by the Main Committee ANSC C63®.*

Duties - *C63.9; C63.15, C63.16, C63.24*

Randy moved, seconded by Bob D. to accept Scope, Duties and Membership roster (above) The Motion was approved by acclamation.

4.2 ~~Election of Officers~~ (as required) Officer's terms end 12/31/2026

5. Working Group reports - Chair - More information about each standard is available on the Standards Status Matrix page of the C63® web site. This information will be reviewed for accuracy at each Spring Subcommittee meeting. WG reports shall be made using either the C63_ PowerPoint template or the C63_PowerPoint_template_wide.

5.1 C63.9 – Office Equipment Immunity - Evans (insert link to WG report) Jeff reported that we're almost done with C63.9. They had edits that we accepted at our recent meeting in April. No word yet... we asked for the final WORD file but we have not received it yet.

5.1.1 Status Matrix Review: Verify accuracy of document status matrix content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (No)** (repeat this verification for all Standards covered by this Subcommittee)

C63.9-2014 2025 Learn more	American National Standard for Laboratory Immunity Testing of Multimedia Equipment Exposed to RF Sources	SC 5	Evans, Jeff	C63.9 PINS	New PINS posted 9/2/21, draft is ~~in ballot~~ complete.

C63.9: C63.9-2014~~14~~25 American National Standard for Laboratory Immunity Testing of Multimedia Equipment Exposed to RF Sources
Contact: Evans, Jeff
Scope: This standard provides recommended test methods and limits for assuring the RF immunity of multimedia equipment to a wide variety of common and ubiquitous RF sources from mobile phones to licensed transmitters.
Status: Revision currently underway to update references, add coverage for interference threats from newer technologies such as LTE, consider latest test instrumentation and techniques, and clarify alternative test methods.
Purchase: Not available

5.2 C63.15 – Immunity Measurement & Instrumentation - None (no WG report)

5.2.1 Status Matrix Review: Verify accuracy of document status matrix content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (Yes)**

Discussion: Do we want to re-open this effort? Should we re-affirm it? The consensus was to re-affirm this document. Does this satisfy current readers? (30 Hz - 10 GHz) We would require a PINS to re-affirm this Standard. Some may want changes. We would have to satisfy the commenter. Reaffirmation buys us time. We would need a volunteer to write the PINS. Richard thought that new modulation schemes will make this older document need some work. AI-120: Bob will ask Jennifer about the sales of this Standard. The consensus was to re-affirm the document while we open it to see if it needs work. AI-121: Tom to form a small Task Group to generate a C63.15 re-affirmation PINS and list of possible changes. (Tom, Jerry, Richard, Andy) Jerry will look for the previous version in SC5 records.

C63.15-2017 Learn more	Immunity Measurement & Instrumentation	SC 5	None	No active PINS	Published 2017 Working group disbanded

C63.15: C63.15-2017 American National Standard Recommended Practice for the Immunity Measurement of Electrical and Electronic Equipment
Contact: None (Working Group Chair)
Scope: This immunity measurement and measurement instrumentation recommended practice document complements the emission measurement procedures specified in ANSI C63.4 noting that C63.15 is a recommendation while C63.4 is a standard. The immunity methods are of use to manufacturers who want to produce a reliable product working in the customer location RF environment to reduce customer complaints. This document generally covers the frequency range of 30 Hz to 10 GHz. The test instrumentation needed to replicate the RF environment is also identified that will support the immunity testing.
Status: Published in 2017. Working group disbanded.
Purchase: Search IEEE Standards - Enter C63 Standard number then Search (Enter) - Click on the version you want - Click on Purchase

5.3 C63.16 – ESD Test Methodology - Crumm (insert link to WG report)

5.3.1 Status Matrix Review: Verify accuracy of document status matrix content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (No)** AI-122: Bob to ask Jennifer what the status of C63.16 is. AI-123: Tom Braxton will ask Rich Worley if he can become C63.16 Chair. IEC 61000-4-2 was recently published this year.

C63.16-2025 Learn more	ESD Test Methodology	SC 5	~~Allen Crumm~~	C63.16 PINS	Draft awaiting ballot.

C63.16: C63.16-2016 American National Standard Guide for Electrostatic Discharge Test Methodologies and Criteria for Electronic Equipment
Contact: ~~Allen Crumm~~ (Working Group Chair)
Scope: This guide provides electrostatic discharge (ESD) test considerations that a manufacturer should use in assessing the expected ESD effects on products in a wide range of environments and customer use. The focus is well beyond that used to simply show that a product complies with a local, regional, or international standard or regulation. The guide includes unique new material on testing of charged peripherals being connected to a system and system components being placed in a docking station. It also includes information on the use of preliminary investigatory testing to identify test points, methods for visually documenting the location of those test points, and the use of a stepped approach in ratcheting up the test voltage to determine failure thresholds. The annexes include test plan and data sheet examples along with more background on air and contact discharge for those who want to further understand the differences in these methods.
Status: Draft awaiting ballot.
Purchase: Not available for purchase

5.4 C63.24 – In-Situ RF Immunity Evaluation of Electronic Devices and Systems - Schaefer (insert link to WG report) The C63.24 roster was de-populated. (disbanded)

5.4.1 Status Matrix Review: Verify accuracy of document status matrix content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (Yes)**

C63.24-2021 Learn more	In-Situ RF Immunity Evaluation of Electronic Devices and Systems	SC 5	Schaefer, Dave	C63.24 PINS	Published 3/31/2021. Working group disbanded.

C63.24-draft: American National Standard Recommended Practice for In-Situ RF Immunity Evaluation of Electronic Devices and Systems
Contact: Schaefer, Dave (Working Group Chair)
Scope: This recommended practice provides an in-situ EMC immunity qualification test for products, instrumentation, and control systems in their installed environment. The recommended practice will focus on installation environments that require a high level of confidence that these products and systems have a high level of EMC immunity. This project will provide a generic method for evaluating the RF immunity of electronic products, instrumentation, and control systems, as and where installed or operated. A particular focus is on immunity to RF sources that may enter the environment, intentionally or unintentionally or be integrated into the operating environment. The characteristics of RF sources in the environment will be used to establish the levels and test methods.
Status: Published 3/31/2021 Working group disbanded.
Purchase: Search IEEE Standards - Enter C63 Standard number then Search (Enter) - Click on the version you want - Click on Purchase

6. Other Old Business: Chair

6.1 Written reports - Written reports of this Subcommittee meeting shall be presented by the Subcommittee Chair at the Main Committee meeting. These reports shall be made using either the C63_ PowerPoint template or the C63_PowerPoint_template_wide. Prior to the Main Committee meeting, the SC report and approved previous SC meeting minutes shall be provided to the projectionist for showing on the screen at the Main meeting. The Presentation and any written report shall also be sent by the Subcommittee Chair to the ANSC-C63® Newsletter editor.

6.2 Coordination with SC2 for definitions - Before any Working Group draft can be submitted to a Subcommittee for approval, the document must be provided to the SC2 Chair for evaluation and coordination of the definitions used. C63.9 draft has been reviewed by SC2. C63.16 draft was reviewed by SC2.

6.3 Coordination with SC3 for harmonization - Only a Subcommittee can submit a Working Group draft for evaluation and coordination of any harmonization effort. C63.9 draft has been reviewed by SC3 and did not warrant harmonization. C63.16 draft was submitted to SC3 by SC5 and the harmonization goals were rejected by TC77 on 1/24/23.

7. New Business: Chair

7.1 Review of C63.9 Draft 23-3_2024 - Evans - This Working Group has finished addressing MEC-editing by the IEEE. Awaiting publication by the IEEE.

7.2 Review C63 16_rev_D04_20240202 - Crumm - This Working Group has finished addressing MEC-editing by the IEEE. Allen was to submit text and graphics. Requires copyright release from IEC.

7.3 Immunity testing of lighting products? - Mendoza - do lighting products require immunity tests?

7.4 Where is SC5 going? - Braxton - This was discussed at the last meeting. Tom showed an Immunity Test Guidance presentation on immunity needs in other industries. See AI-117: Tom to produce a draft letter and list of trade associations for mailing re/ immunity testing.

Discussion: Consider offering a Presentation at their meetings. We could offer new documents if they require them. Victor suggested using "No fault found" reports as guidance for where to look for problems.

7.5 C63.24 being re-opened? - Schaefer - The **C63.24 (In Situ Immunity Testing) Working Group Roster** was restored from 11/18/2019:

C63.24 (In Situ Immunity Testing – Generic) Working Group Roster

Name	Role in WG	Affiliation
Schaefer, Dave	Chair	Element Materials Technology
Ramie, Jerry	Secretary	Consultant (non-voting)
Fanning, Craig	Member	Elite Electronic Engineering
Harrington, Tim	Member	FCC
Kiger, Chad	Member	AMS Corporation
Silberberg, Jeffrey L	Member	FDA Center for Devices & Radiological Health
Walton, Derek	Member	LF Research
IEEE-473 Liaison Members		
Name	Role in WG	Affiliation
Benitez, Henry	Member	Electromagnetic Investigations
Duffy, Alistair	Member	De Montfort University
Dyberg, Karen	Member	Raytheon
Hiltz, Greg	Member	Dept. of National Defense, Canada
McRae, Kingsley	Member	EMC Society Australia
Sze, Kin	Member	Dept. of National Defense, Canada
Williams, Kimball	Member	IEEE - EMC Society

Discussion: Not to be confused with "On site" testing.

7.6 Resilience testing - Braxton - IEC dictionary definition of Resilience:

Resilience: *the ability of an item to return to functional capability, within an acceptable time period, after having been affected by inputs or conditions when subjected to circumstances that are outside those specified or intended*

Discussion: Resilience could be viewed as another form of immunity, to be "resilient" to interference. (multiple phenomena, poor management, etc.) Immunity testing cannot predict if a product performs well in the field. A medical Std. IEC 60601-4-6, similar to IEC 61000-1-2, assumes you can't test for electromagnetic safety of a product. (similar to software with many variables)

8. C63.org website use and updates: Secretary - We normally post documents to the SC5 protected area. If any WG needs help with this posting, a ***Technical Secretary*** is available to assist.

9. Review of the Action Items: Secretary

9.1 Review of Action Items from this meeting: (read Action Items to Members, who must agree that they understand their meaning)

9.2 Review of Action Items from previous meeting: The consolidated Action Items table from the previous meeting Minutes is shown below:

Consolidated Action Items from 10/2/24 Meeting of SC5

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
AI-117:	Tom to produce a draft letter and list of trade associations for mailing re/ immunity. Discuss w/ Dave re/ C63.24 being re-opened	Tom Braxton	Closed	Next meeting	
AI-119:					

10. Time and place of next meeting: Chair - West coast likely.. (week of October 5)

11. Closing remarks and Adjournment: Chair - The chair thanked the group and adjourned the meeting at 3:08.

********** End of Meeting **********

Consolidated Action Items from 5/5/25 Meeting of SC5

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
AI-119:	Jeff S. to submit Application for C63® Subcommittee Membership in SC5	J. Silberberg	Open	Next meeting	
AI-120:	Bob will ask Jennifer about the sales of this C63.15 Standard.	Bob DeLisi	Open	Next meeting	The consensus was to re-affirm the document while we open it to see if it needs work.
AI-121:	Tom to form a small Task Group to generate a C63.15 re-affirmation PINS and list of possible changes. (Tom, Jerry, Richard W., Andy G.)	T. Braxton	Open	Next meeting	Jerry will look for the previous version of C63.15 PINS in SC5 records.
AI-122:	Bob to ask Jennifer what the status of C63.16 is now.	Bob DeLisi	Open	Next meeting	
AI-123:	Tom Braxton will ask Rich Worley if he can become C63.16 Chair.	T. Braxton	Open	Next meeting	IEC 61000-4-2 was recently published this year.