



Accredited Standards Committee C63®
Electromagnetic Compatibility
Subcommittee 5: Immunity Testing and Measurements

Chair: [Ed Hare](#)

Vice Chair: [Ross Carlton](#)

Secretary: [Jerry Ramie](#)

June 3, 2021; 2:00 PM – 4:00 PM - EDT
Webinar

Approved Minutes

1. Call to Order: Chair - The Chair called the meeting to order at 2:01PM-EDT.

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

1.2 Meeting logistics announcements: Host - N/A

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) (grayed-out Members were not present)

Subcommittee 5 Membership Roster Report any roster errors to the ASC-C63® Secretary
AI-96: Jerry to implement SC5 roster changes (below) from the 6/3 meeting of SC5.

Name	Role in SC	Affiliation
Carlton, Ross	Vice Chair	ETS - Lindgren / Technical Expert
Fanning, Craig	Member	Elite Electronic Engineering / SAE Technical Expert
Griffin, Andy	Member	Cisco Systems / Primary
Hare, Ed	Chair	ARRL / Primary
Hoolihan, Dan	Member	Hoolihan EMC Consulting
Lombardi, Rick	Member	Visteon / SAE Alternate
Long, Randy	Member	ANSI National Accreditation Board (ANAB) / Primary
Ramie, Jerry	Secretary	ARC Technical Resources / ARRL Technical Expert
Schaefer, Dave	Member	Element Materials Technology
Silberberg, Jeffrey L	Member	FDA - CDRH / Primary
Zimmerman, Dave	Member	Spectrum EMC, LLC

Guests and Observers: (non-voting) Pao Thao, Jeff Evans,

1.4 Quorum: (50% of roster) constitutes a quorum. (rounding up) (11 roster members / 2 = 5.5 >> (therefore 6 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)

2. Approval of the Agenda: Secretary - The [Agenda](#) was approved by acclamation.

2.1 Approval of the previous Minutes - 20210310 The previous Minutes were shown in a line-by-line manner and [approved](#) by acclamation.

2.2 Review of the [patent slides](#) - The patent slides were reviewed and all agreed to abide by the policies shown.

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:

May-17	Nov-17	2018Jan	20180306	20180502	20181128	20190501	20191119	20200521	20200916	20201209	20210310	SC5 Members
				x	x	x	x	x	x	x	x	Ross Carlton
	x	x	a					x	x	x	x	Craig Fanning
			a	x	x			x	x			Andy Griffin
x	x	x		x	x	x	x	x	x	x	x	Ed Hare
	x			x	x	x		x	a	x	x	Dan Hoolihan
x	x		x	x	x	x			x	x		Rick Lombardi
	x			x	x	x		x	x	x	x	Randy Long
x	x	x	x	x	x	x	x	x	x	x	x	Jerry Ramie
			x	x		x	x	x		x	x	David Schaefer
x	x	x	x	x	x	x	x	x	x	x	x	Jeff Silberberg
x	x	x	x		x		x	x	x	x	x	Dave Zimmerman

Members at risk? None are at risk:

3.2 Consideration of new members? [Application for C63® Subcommittee Membership](#)

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 standards for immunity testing techniques and associated instrumentation as requested by the Main Committee **ANSI ASC C63®**.

ANSI no longer accredits Standards Committees. We're looking at other options for names with 6-7 candidates. The consensus was to leave the Scope statement alone for now until the matter is decided.

4.2 Election of Officers (as required) Ed Hare's second term ends 12/31/22

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 ([WG report](#))

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

C63.9-2014	Laboratory immunity testing of office equipment exposed to	SC 5	Evans, Jeff	C63.9 PINS	New PINS approved 6/3/21, draft is being written.
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Learn more	RF sources				
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C63.9: C63.9-2014 American National Standard for laboratory Immunity testing of Office Equipment exposed to RF sources

Contact: [Evans, Jeff](#)

Scope: This standard provides recommended test methods and limits for assuring the RF immunity of office equipment to a wide variety of common and ubiquitous RF sources from mobile phones to licensed transmitters.

Status: Reaffirmed in 2014. 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: [IEEE Store](#). To purchase individual standards, go to the IEEE store and search on the standard number.

5.1.2 [C63.9 existing PINS](#) - Evans - Discussion of Scope statement in the existing PINS -

Current Scope:

This standard provides test methods for testing the immunity of office equipment in a controlled EMC test lab environment. It will identify test equipment, test setups, and any special application of a signal replicating RF sources present in an office environment.

Proposed new C63.9 PINS -

New proposed scope:

This standard provides test methods for testing the immunity of MME in a controlled EMC test lab environment.

It will identify test equipment, test setups, and any special application of a signal replicating RF sources present in the environment.

We modified the draft PINS and reviewed the wording. Jerry moved to accept the modified PINS as shown, seconded by Craig Fanning. Discussion? Dave Z. moved to amend the motion to add Accreditation Bodies to the list of stakeholders. Seconded by Jeff Silberberg. Randy disagreed that we need to add ABs. There was discussion. The PINS for C63.4 were shown, which included accreditation bodies. We voted on the motion to amend. Randy voted against the amendment. The motion to amend carried. We voted on the amended motion, including accreditation bodies. The motion carried. We reviewed several other Standards which call out accreditation bodies. We voted on modifying the stakeholders to include accreditation bodies:

Name	Role within SC	Vote
Carlton, Ross	Vice Chair	Yes
Fanning, Craig	Member	Yes
Griffin, Andy	Member	-----
Hare, Ed	Chair	Abstain
Hoolihan, Dan	Member	Yes
Lombardi, Rick	Member	Yes
Long, Randy	Member	No
Ramie, Jerry	Secretary	Abstain
Schaefer, Dave	Member	Yes
Silberberg, Jeffrey L	Member	Yes
Zimmerman, Dave	Member	Yes

The motion carried. We will include accreditation bodies in the list of stakeholders. ([approved C63.9 PINS](#)) **AI-97:** Jerry to post [approved C63.9 PINS](#) in Status matrix. We reviewed the [application](#) from Nick Garinger. Craig moved to accept his [application](#), Ross seconded. Any discussion? No objections, the motion carried. Mr. Garinger is accepted for membership in C63.9. **AI-98:** Jerry to add Nick Garinger to the C63.9 roster.

5.2 C63.15 – Immunity Measurement & Instrumentation - None (insert link to [WG report](#))

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

C63.15-2017 Learn more	Immunity Measurement & Instrumentation	SC 5	None	No active PINS	Published 2017 Working group disbanded
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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: [IEEE Store](#). To purchase individual standards, go to the IEEE store and search on the standard number.

5.3 C63.16 – ESD Test Methodology - Ramie (verbal [WG report](#))

5.3.1 Status Matrix Review: Verify accuracy of document [status matrix](#) content and report any errors to the ASC-C63[®] Secretary. **Is this information correct? (No)**

C63.16-2016 Learn more	ESD Test Methodology	SC 5	None	C63.16 PINS	Current. (published 5/10/16) Working group re-forming .
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C63.16: C63.16-2016 American National Standard Guide for Electrostatic Discharge Test Methodologies and Criteria for Electronic Equipment

Contact: None

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: Current. Guide was published 10 May 2016. Working group **re-forming**.

Purchase: [IEEE Store](#). To purchase individual standards, go to the IEEE store and search on the standard number.

5.3.2 [Review of 77B 873e Q ballot](#) on maintenance of IEC 61000-4-2 - Silberberg - *"Do you officially support the maintenance on the project IEC 61000-4-2 (Electrostatic discharge immunity test)? (Yes)*

During the 4/5 meeting of the C63.16 Task Group, we agreed on four problems in IEC 61000-4-2:

- 1) Rich Worley expressed concern that 60% RH is "ridiculous." (too high) Consider dropping RH to 30% max.
- 2) Rich Worley thought we should encourage the maintenance group to address our annexes on direct pin injection and charge peripheral insertion.
- 3) Jeff Silberberg pointed out previous problems with an IEC document, noting that there is no harm in submitting comments.
- 4) Allen Crumm felt that asking the IEC to merely mention our C63.16 annex would be useful. Can we attach our existing C63.16 document to a ballot? (Jennifer affirmed and the existing document was provided to the IEC)

5.3.3 [Steve Whitesell contribution to IEC 61000-4-2 Rev2](#) - Silberberg - Jeff Silberberg, after much searching, found an e-mail from Stephen Whitesell dated May 3, 2018, with an attachment containing proposed changes to IEC 61000-4-2 that had been developed by Subcommittee 5 based on C63.16-2016. The text of that e-mail read:

Attached is a slightly revised version of the text for proposed changes to IEC 61000-4-2. The draft that was circulated in early April was discussed in yesterday's SC5 meeting and minor changes were made as a result of the discussion. SC5 voted to forward the document to SC3 to be considered for submission to the US National Committee.

The two changes were as follows:

1. In clause G.2.3.3, revise first sentence as follows: "An ESD simulator with a fast rise time ~~discharge tip and~~ contact discharge tip is recommended for connector shell contact discharge testing."
2. In clause H.2, make the last sentence of the existing single paragraph into a new second paragraph and add the following sentence to the end of the remaining text for the first paragraph: "Such high voltage testing will be most effective when performed at very low relative humidity levels (2-5 % RH)."

- Steve Whitesell

Do we need approval from SC5 again? We can add supplemental material including additional problems identified by the Task Group. Can a Subcommittee submit comments to the IEC? Mr. Hoolihan thought that this Subcommittee can make comments to the IEC. **AI-99:** Jerry will circulate to SC5 the [Silberberg](#) comments to a questionnaire as to whether IEC 61000-4-2 should be revised. These included a slightly edited version of the SC5 recommendations for IEC 61000-4-2, [Steve Whitesell Rev2](#), which were drafted by Steve Whitesell and approved by SC5 in 2018. Jerry will also circulate a draft of 10 additional recommendations developed by the C63.16 Task Group and a C63.16 PINS. [C63.16 PINS & Problems](#) Silberberg will include the updated SC5 recommendations in his comments to the US TAG for SC77B on the CD of IEC 61000-4-2, which are due 16 July 2021. **AI-100:** Jeff S. to put the [Silberberg submission](#) into the IEC comment form for submission to the IEC.

5.3.4 - [C63.16 PINS & Problems](#) - Ramie - Presentation on the 10 problems the Task Group found in the current IEC 61000-4-2 and a [draft PINS for C63.16](#) - Craig moved to accept the PINS, seconded by Dave Z. Any discussion. None opposed. The [Motion to approve PINS](#) and [form a Working Group](#) carried. The Main Committee will consider the [draft PINS for C63.16](#) and working group formation. [C63.16 PINS](#)

5.4 C63.24 – In-Situ RF Immunity Evaluation of Electronic Devices and Systems - Schaefer (no [WG report](#))

5.4.1 Status Matrix Review: Verify accuracy of document [status matrix](#) content and report any errors to the ASC-C63® Secretary. **Is this information correct? (No)**

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

Purchase: [IEEE Store](#). To purchase individual standards, go to the IEEE store and search on the standard number.

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 ASC-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.

6.3 Coordination with SC3 for harmonization - Before any Working Group draft can be submitted to a Subcommittee for approval, the document must be provided to the SC3 Chair for evaluation and coordination of any harmonization effort.

7. New Business: Chair - none

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 3/10/21 Meeting of SC5

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
AI-93:	Jerry to solicit previous C63.16WG members (and others like Zimm, Phetit & Silberberg) to review the previous Std. and look for any needed changes in content and/or references	Jerry Ramie	Closed	Next meeting	Doodle Poll created 3/10
AI-94:	Jerry to correct C63.24 listing in Status Matrix and Learn More text	Jerry Ramie	Closed	Next meeting	Corrected 3/10
AI-95:	Jerry to run a Doodle Poll (2PM, 3PM or 4PM-EDT) for June 1, 2 or 3 meeting dates for SC5	Jerry Ramie	Closed	Next meeting	Doodle Poll created 3/10

10. Time and place of next meeting: Chair - September 8, 2021 @ 2:00PM-EDT (3 hours)

11. Closing remarks and Adjournment: Chair - The Chair thanked the group for attending! The meeting was adjourned at 4:07PM-EDT.

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

Consolidated Action Items from 6/3/21 Meeting of SC5

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
AI-96:	Jerry to implement SC5 roster changes (below) from the 6/3 meeting of SC5.	Jerry Ramie	Closed	9/8/21	Edits implemented 6/3
AI-97:	Jerry to post approved C63.9 PINS in Status matrix	Jerry Ramie	Closed	9/8/21	Posted 6/3
AI-98:	Jerry to add Nick Garinger to the	Jerry Ramie	Closed	9/8/21	Added 6/3

	C63.9 roster				
AI-99:	AI-99: Jerry will circulate to SC5 the Silberberg comments to a questionnaire as to whether IEC 61000-4-2 should be revised. These included a slightly edited version of the SC5 recommendations for IEC 61000-4-2, Steve Whitesell Rev2 , which were drafted by Steve Whitesell and approved by SC5 in 2018. Jerry will also circulate a draft of 10 additional recommendations developed by the C63.16 Task Group and a C63.16 PINS. C63.16 PINS & Problems Silberberg will include the updated SC5 recommendations in his comments to the US TAG for SC77B on the CD of IEC 61000-4-2, which are due 16 July 2021.	Jerry Ramie	Closed	9/8/21	Mailed 6/8
AI-100:	Jeff S. to put the Silberberg submission into the IEC comment form for submission to the IEC.	Jeff Silberberg	Open	9/8/21	