



# Accredited Standards Committee C63®

## Electromagnetic Compatibility

### Subcommittee 5: Immunity Testing and Measurements

Chair: [Ed Hare](#)

Vice Chair: **VACANT**

Secretary: [Jerry Ramie](#)

Nov. 19, 2019; 2:45 PM – 4:00 PM - PST

Keysight Technologies, Santa Rosa, CA

#### Approved Minutes

1. **Call to Order: Chair** - The Chair called the meeting to order at 2:45PM-PST.
  - 1.1 **Announcements: Chair's remarks** - Please keep your remarks brief.
  - 1.2 **Meeting logistics announcements: Host**
  - 1.3 **Introductions: Secretary – roll call** (record attending members with their affiliations and guests separately below) **Report any roster errors to the ASC-C63® Secretary** ([SC5 membership roster](#) from the website is shown below) (grayed-out Members were not present)

#### Subcommittee 5 Membership Roster Any errors?

Name	Role within SC	Affiliation
<a href="#">Berger, Stephen</a>	Member	TEM Consulting
<a href="#">Carlton, Ross</a>	Member	ETS - Lindgren
<a href="#">Fanning, Craig</a>	Member	Elite Electronic Engineering
<a href="#">Griffin, Andy</a>	Member	Cisco Systems
<a href="#">Hare, Ed</a>	Chair	ARRL
<a href="#">Heirman, Don</a>	Member	Don HEIRMAN Consultants
<a href="#">Hoolihan, Dan</a>	Member	Hoolihan EMC Consulting
<a href="#">Lombardi, Rick</a>	Member	Visteon Corporation
<a href="#">Long, Randy</a>	Member	ANSI National Accreditation Board (ANAB)
<a href="#">Ramie, Jerry</a>	Secretary	ARC Technical Resources, Inc.
<a href="#">Schaefer, Dave</a>	Member	Element Materials Technology
<a href="#">Silberberg, Jeffrey L</a>	Member	FDA Center for Devices & Radiological Health
<a href="#">Zimmerman, Dave</a>	Member	Spectrum EMC, LLC

**Guests and Observers:** (non-voting) Jeff Evans, Chris Dilay, Marcus Shellman, Michael Duncanson, David Schaefer, Pao Thao, Wally Arceneaux, Janet O'Neil, Ernesto Mendoza

- 1.4 **Quorum: (50% of roster) constitutes a quorum.** (rounding up) (13 roster members / 2 = 6.5 >> 7 (therefore 7 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** - [Minutes of the previous meeting](#) were shown in a line-by-line manner and [approved](#) by acclamation.

2.2 **Review of the [patent slides](#)** - The patent slides were shown and no patent issues were raised. All in attendance agreed to abide by the patent policy 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:**

SC5 Members	Nov 2014	May 2015	Nov 2015	May 2016	Nov-16	May-17	Nov-17	2018Jan	20180306	20180502	20181128	20190501
Stephen Berger	X			x			x			x	x	
Ross Carlton										x	x	x
Craig Fanning					x		x	x	a			
Andy Griffin	X	x	W	x	x				a	x	x	
Ed Hare	X	X	X	x	x	x	x	x		x	x	x
Don Heirman	X	X	X	x	x	x	x	x	x	x	x	x
Dan Hoolihan	X	X	X	x	x		x			x	x	x
Rick Lombardi		W	W	x	x	x	x		x	x	x	x
Randy Long			X	x	x		x			x	x	x
Jerry Ramie	X	X	X	x	x	x	x	x	x	x	x	x
David Schaefer	X	X	W		x				x	x		x
Jeff Silberberg	X	X	X	x	x	x	x	x	x	x	x	x
Dave Zimmerman		X	W	x	x	x	x	x	x		x	

**Members at risk?** These members are at risk: **Craig Fanning** AI-70: Jerry to send a "membership at risk" warning letter to Mr. Fanning.

**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®.

**4.2 Election of Officers** (as required) **Vice Chair** position is open. AI-71: Jerry to remove Vladimir Bazhanov as SC7 Chair on officers roster. Jason Coder to be added as SC7 Chair. Don moved, seconded by Jerry, to accept Ross as SC5 Vice Chair. Ross Carlton was accepted as Vice Chair. AI-72: Jerry to add Ross Carlton as SC5 Vice Chair to officers roster

**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.

**5.1 C63.9 – Office Equipment Immunity - Evans** (insert link to [WG report](#)) Jerry moved, seconded by Don, to accept the [New PINS](#). The new PINS was shown and discussed. We are not required to submit this new PINS to ANSI. As a courtesy, however, we will show it to the Main Committee but their approval is not required.

Date:

This form may be submitted via E-mail to [s.vogel@ieee.org](mailto:s.vogel@ieee.org)

**PINS: PROJECT INITIATION NOTIFICATION SYSTEM FORM** (Effective 01.01.08)

\*NOTE: Adoptions of an ISO or IEC standards require compliance with the ANSI Policy Regarding Rights to Nationally Adopt IEC and ISO Standards or Otherwise Use IEC and ISO Material and with the ANSI Procedures for the Adoption of ISO and IEC Standards as American National Standards.

<b>1. Designation of Proposed Standard:</b>	C63.9
<b>2. Title of Standard:</b>	American National Standard for Laboratory immunity testing of office equipment exposed to RF sources
<b>3. Project Intent:</b> (Check the applicable box below)	<b>3a. Supersedes or Affects:</b> (Specify designation of approved ANS standard(s) to be superseded and/or ISO or IEC standard(s)* to be adopted)
Create new American National Standard (ANS)	
*Adopt identical ISO or IEC standard	
*Adopt modified ISO or IEC standard	
*AND this adoption replaces this current ANS	

The [New PINS](#) was approved unanimously and posted with date as [20190812](#).

**5.1.1 Status Matrix Review:** Verify accuracy of document [status matrix](#) content and report any errors to the ASC-C63<sup>®</sup> Secretary. **Is this information correct? (Yes)** (repeat this verification for all Standards covered by this Subcommittee)

C63.9-2014 <a href="#">Learn more</a>	Laboratory immunity testing of office equipment exposed to RF sources	<a href="#">SC 5</a>	<a href="#">Evans, Jeff</a>	<a href="#">C63.9 PINS</a>	New PINS has been developed.
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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.

## 5.2 C63.15 – Immunity Measurement & Instrumentation - Heirman (no [WG report](#))

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

C63.15-2017 <a href="#">Learn more</a>	Immunity Measurement & Instrumentation	<a href="#">SC 5</a>	<a href="#">Heirman, Don</a>	<a href="#">C63.15 PINS</a>	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:** [Heirman, Don](#) (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 - Worley (no [WG report](#))

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

C63.16-2016 <a href="#">Learn more</a>	ESD Test Methodology	<a href="#">SC 5</a>	<a href="#">Worley, Richard</a>	No active PINS	Current. (published 5/10/16) Working group disbanded
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#### C63.16: C63.16-2016 American National Standard Guide for Electrostatic Discharge Test Methodologies and Criteria for Electronic Equipment

**Contact:** [Worley, Richard](#) (Working Group Vice 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:** Current. Guide was published 10 May 2016. Working group disbanded.

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

### 5.4 C63.24 – In-Situ RF Immunity Evaluation of Electronic Devices and Systems -

**Heirman** (link to [WG report](#)) Consensus ballot of C63.24/D-2.6 at the Main Committee closed 11/7/19. *The vote approved the document. There were comments from voters. These editorial comments were accepted. The one technical comment would need research and hence is cited for consideration for the next edition of the standard. The draft has been sent to IEEE for MEC.* A [new draft C63.24 PINS](#) has been proposed by Don Heirman and Jeff Silberberg. The [C63.24 report](#) was shown:

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ards Committee

C63<sup>®</sup> - EMC

C63.24 (In-situ immunity measurements) Status

Don Heirman

Chair

C63.24 Working Group


November 2019

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## Status

- Work fully decoupled from immunity measurements in a test lab.
- C63.9 took over the test lab immunity application
- Work with IEEE P473 delayed until there is more progress in that update
- Sent to SC5 with motion to send it to C63 for balloting; approved and sent to C63
- PINS in accordance with draft scope




AI-73: Ed to discuss the status of IEEE-473 with Chad Kiger and how to get it back on track with personal contact.

AI-74: Jerry to post the [new draft C63.24 PINS](#) to the status matrix page.

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## Status

- 100 percent approval Ballot in SC to move it to C63 for balloting which has been done.
- Few comments by balloters
  - Comments editorial except for one that wanted a new test procedure for the case when RF ambient is the source of interference;
  - Focus of document was on portable transceivers as interference source but discussed RF ambient as a time varying source
    - WG considered research is needed to handle time varying RF ambient as source
    - WG decided that the RF ambient details be left for next edition
    - All comments resolved and were editorial in nature
- MEC requested to ready for publication



**5.4.1 Status Matrix Review:** Verify accuracy of document [status matrix](#) content and report any errors to the ASC-C63<sup>®</sup> Secretary. **Is this information correct? (No)** (see [AI-74](#) above)

C63.24-draft <a href="#">Learn more</a>	In-Situ RF Immunity Evaluation of Electronic Devices and Systems	<a href="#">SC 5</a>	<a href="#">Heirman, Don</a>	<a href="#">C63.24 PINS</a>	New recommended practice restarted (joint task with IEEE 473); <del>new PINS needed</del>
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## **C63.24-draft: American National Standard Recommended Practice for In-Situ RF Immunity Evaluation of Electronic Devices and Systems**

**Contact:** [Heirman, Don](#) (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:** New recommended practice. Consideration being given to working as a joint project with the revision of EMC Society standard IEEE 473 on RF site survey measurement. ~~PINS will need revision.~~

**Purchase:** Not yet available for sale.

## **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 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 the Subcommittee for approval, the document must be provided to the SC3 Chair for evaluation and coordination of any harmonization effort. There are no other international standards on in-situ immunity.

**AI-75:** Don will provide the C63.24 draft to SC3 for harmonization.

## **7. New Business: Chair**

**7.1 C63.28 Best Practices** - needs text submitted about immunity instrumentation. Volunteers needed. Chris Dilay noted that a section on EMC Test Instrumentation should be broken in half for emissions and immunity equipment. An expert in these two subject areas is being sought.

**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:** The Action Items from this meeting were reviewed with the Members, who agreed that they understand their meaning.

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

**Consolidated Action Items from 5/1/19 Meeting of SC5**

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
<b>AI-62:</b>	Ed Hare to suggest / interview a new Vice Chair for SC5	Ed Hare	<b>Closed</b>	Next meeting	
<b>AI-65:</b>	Ed to ask Main Committee members for additional C63.9 Working Group	Ed Hare	<b>Closed</b>	Next meeting	



	participation				
AI-67:	Jerry to remove Steve Whitesell from the Officer's page. (& change newsletter editor)	Jerry Ramie	Closed	Next meeting	All officers were corrected, Newsletter editor
AI-68:	Jerry to modify C63.9 entry in <a href="#">status matrix</a> as shown	Jerry Ramie	Closed	Next meeting	Corrected 5/18
AI-69:	Jerry to modify C63.24 entry in <a href="#">status matrix</a> and "Learn more" text as shown	Jerry Ramie	Closed	Next meeting	Corrected 5/18

**10. Time and place of next meeting: Chair** - early February, not the 13th. **AI-76:** Jerry to run Doodle Poll for choosing SC5 meeting dates/times in mid-February 2020.

**11. Closing remarks and Adjournment: Chair** - Thanks were expressed to all who volunteered and attended. The Chair adjourned the meeting at 4:00PM-PST.

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

#### Consolidated Action Items from 11/19/19 Meeting of SC5

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
AI-70:	Jerry to send a "membership at risk" warning letter to Mr. Fanning	Jerry Ramie	Closed	Next meeting	Note sent 1/8/20
AI-71:	<del>Jerry to remove Vladimir Bazhanov as SC7 Chair on officers roster. Jason Coder to be added as SC7 Chair</del>	Jerry Ramie	Closed	Next meeting	Posted 11/28
AI-72:	Jerry to add Ross Carlton as SC5 Vice Chair to officers roster	Jerry Ramie	Closed	Next meeting	Posted 11/28
AI-73:	Ed to discuss the status of IEEE-473 with Chad Kiger and how to get it back on track with personal contact.	Ed Hare	Open	Next meeting	
AI-74:	Jerry to post the <a href="#">new draft C63.24 PINS</a> to the <a href="#">status matrix page</a> .	Jerry Ramie	Closed	Next meeting	Posted <a href="#">C63.24 PINS</a> 1/8/19
AI-75:	Don will provide the C63.24 draft to SC3 for harmonization	Don Heirman	Open	Next meeting	
AI-76:	Jerry to run Doodle Poll for choosing SC5 meeting dates/times in mid-February 2020	Jerry Ramie	Closed	Next meeting	Set 1/22 to 2/12/20