

Accredited Standards Committee C63®
Electromagnetic Compatibility
Subcommittee 5 - Immunity Testing and Measurements
Approved Minutes

Chair: [Ed Hare](#)Vice Chair: [Steve Whitesell](#)Secretary: [Jerry Ramie](#)

Date: 09 May 2017
Time: 1:00 PM – 3:00 PM - EDT
Location: A2LA Headquarters
 5202 Presidents Court #220
 Frederick, MD 21703

1. **Call to Order: Chair** - The meeting was called to order at 1:00PM-EDT
 - 1.1 **Opening remarks and announcements: Chair** – Steve Whitesell received a Certificate of Appreciation for his efforts as the previous Chair of SC5.
 - 1.2 **Introductions and attendance: Secretary** - Jerry Ramie, Ed Hare, Steve Whitesell, Don Heirman, Dave Zimmerman, John Becker, Mac Elliott, Jeff Silberberg, Rick Lombardi
2. **Approval of the [Agenda](#): Chair** - The agenda was approved by acclamation.
3. **Presentation of [patent slides](#): Chair** - The patent slides were shown and no patent issues were raised.
4. **Approval of [minutes of previous meeting](#): Chair - 20161108** - The 20161108 draft Minutes were [approved](#) by acclamation.
5. **Review of [Subcommittee Membership](#): Chair** - SC5 Membership roster from website:

Subcommittee 5 Membership Roster

Name	Role within SC	Affiliation
Berger, Stephen	Member	TEM Consulting
Fanning, Craig	Member	Elite Electronic Engineering
Griffin, Andy	Member	Cisco Systems
Hare, Ed	Chair	ARRL
Heirman, Don	Member	Don HEIRMAN Consultants
Hoolihan, Dan	Member	Hoolihan EMC Consulting
Lombardi, Rick	Member	Visteon Corporation
Long, Randy	Member	ANSI-ASQ National Accreditation Board dba L-A-B
Ramie, Jerry	Secretary	ARC Technical Resources, Inc.
Schaefer, Dave	Member	TUV SÜD America
Silberberg, Jeffrey L	Member	FDA Center for Devices & Radiological Health
Whitesell, Steve	Vice Chair	Whitesell Consulting
Zimmerman, Dave	Member	Spectrum EMC

The membership roster was [approved to be presented to ASC-C63® Main Committee for their final approval](#)..

5.1 Review of Membership Guidelines: Chair - Any members at risk?

Membership Guidelines for 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.

Attendance Log

Name	Apr 2014	Nov 2014	May 2015	Nov 2015	May 2016	Nov 2016
Stephen Berger	X	X			x	
Craig Fanning						x
Andy Griffin	X	X	X	W	x	x
Ed Hare	X	X	X	X	x	x
Don Heirman	X	X	X	X	x	x
Dan Hoolihan	X	X	X	X	x	x
Rick Lombardi	X		W	W	x	x
Randy Long				X	x	x
Jerry Ramie	X	X	X	X	x	x
David Schaefer		X	X	W		x
Jeff Silberberg	X	X	X	X	x	x
Steve Whitesell	X	X	X	X	x	x
Dave Zimmerman	X		X	W	x	x

Members at risk: none

5.2 Consideration of new members? none

6. Review of Subcommittee Scope: Chair

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®

The Scope was approved to be presented to the ASC-C63® Main Committee for their final approval.

7. Review of Subcommittee Responsibilities: Working Group Reports.

7.1 C63.9: Immunity of Audio Office Equipment

Working Group Chair: Andy Griffin

Status: A PINS for revising the document was approved at the May 2016 meeting. A small WG (3 people) has been formed but additional members are needed and welcome. The WG needs to begin making progress on the revision. The previous SC5 Chair (Mr. Whitesell) suggested the use of regular WebEx meetings be considered. The current Chair (Mr. Hare) suggested that a webinar be set up to discuss how to generate interest in joining the Working Group and to begin making progress. Mr. Griffin took this as an Action Item. **AI-37:** Griffin to select date for Jerry to set up a webinar for starting the work on C63.9. (Jerry to be initial WG Secretary) Griffin to supply invitation list for said webinar.

Mr. Heirman reported that this document was requested from a Wall Street firm to develop a test method for assessing the immunity of an audio device in an office environment. **AI-38:** Ed Hare to look for a CD of AWG waveforms to be used in radiated immunity testing,

possibly from Mr. Berger. C63.9 mandated radiated electric field immunity test levels up to 30 V/m. **AI-39:** The existing members, Heirman, Griffin and Hare, are to decide if we want to move forward to a new version.

7.2 C63.15: Immunity Measurement of Electrical and Electronic Equipment

Working Group Chair: [Don Heirman](#)

Status: The revised C63.15 document was circulated via email to the Main Committee membership following the November C63 meeting. Some editorial comments were received, but the document was approved to go out for ballot. The ballot closed on May 5, 2017. Don indicated that this is the first time he can recall a 100 percent approval of any C63 document. Many thanks to Don Heirman and the WG for their efforts on this document.

A [Presentation](#) was shown. The ballot received 100% approval. We had comments to resolve, all were reviewed and all suggested changes were editorial in nature, which did not require a recirculation ballot. BSR-8 is being prepared for 45-day public review at ANSI using the newest, final draft. Our intent is to disband the WG when the document is published.

7.3 C63.16: ESD Testing Guide

Former Working Group Chair: [Steve Whitesell](#)

Status: Document published May 2016. No current activity. The Working group has been dissolved. However, unique material in this document, particularly the information in Chapter 7 on charged peripheral and charged EUT testing, is to be submitted to the US National Committee (SC77B) to present to SC77B of the IEC for consideration of inclusion in the next version of IEC 61000-4-2. This is an SC3 effort being led by Mike Cibulka, with input from Richard Worley and Steve Whitesell. Jeff Silberberg has noted that our C63.16 document recently received recognition from the FDA. Our next step would be to put together an amendment to IEC 61000-4-2. **AI-40:** Ed Hare to offer such an amended version of IEC 61000-4-2, with C63.16 content inserted, for submission to TC77B from SC3. **AI-41:** Mr. Hoolihan to acquire a new version of IEC 61000-4-2 for our use in this effort.

7.4 C63.24: Generic In-Situ Immunity Evaluation

Working Group Chair: [Don Heirman](#)

Status: Don Heirman has proposed that this long-dormant project be worked on jointly with the EMC Society's revision of IEEE 473 (Site EM survey) chaired by Chad Kiger. A new WG was formed for the C63.24 portion of the proposed joint project with Don, David Schaefer, Jeff Silberberg, Jerry Ramie and Ed Hare as the initial members. Additional participants are welcome. The need to take into account in C63.24 new radio technologies has been noted. One of the items coming out of email exchanges between Don and Chad is the subject of having the same or very similar [test setups](#) and constraints that can be included in both documents. Don submitted [text for both C63.24 and IEEE-P473](#), probably for insertion into clause 5.2 of P473.

A C63.24 Status Report [Presentation](#) was shown: A [proposal for a joint effort between C63 and the IEEE](#) was shown:



AI-42: Don Heirman to put together a proposal for a clause identifying the position for a test and if possible the required instrumentation for the test for the November meeting and to have Chad review it as well. Jeff Silberberg wanted to harmonize this with C63.18, which was not supported by Mr. Schaefer. He felt that C63.24 needed to be more rigorous and not as ad hoc as C63.18. For background, here is information on IEEE 473: <http://standards.ieee.org/develop/project/473.html>

[More information about each standard](#) is available on the Standards Status section of the [C63® web site](#). (These entries need to be reviewed at each meeting in the future and are to be in our next Generic Agenda)

8. Other Old Business: Chair - none

9. New business: Chair - none

10. **C63.org website use and updates: Web Content Manager (Jerry Ramie)** - AI-43: All Subcommittee members to review the [Status of Standards](#) matrix (also in 7.4 above) and check all [SC5 listings](#) in the table and related "Learn more" text for accuracy. (SC5 content is reproduced below, send corrections to Jerry)

C63.9-2014 Learn more	Office equipment immunity	SC 5	Griffin, Andy	C63.9 PINS	Revision in process.
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C63.9: C63.9-2008 American National Standard for RF Immunity of Audio Office Equipment to General Use Transmitting Devices with Transmitter Power Levels up to 8 Watts

Contact: [Andy Griffin](#)

Scope: This standard provides recommended test methods and limits for assuring the RF immunity of office equipment to general use transmitters with transmitter power up to 8 watts

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.

C63.15-2010 Learn more	Immunity Measurement & Instrumentation	SC 5	Heirman, Don	C63.15 PINS	Revision in process.
C63.16-2016 Learn more	ESD Test Methodology	SC 5	Whitesell, Steve	No active PINS	Current. (published 5/10/16)

C63.15: C63.15-2010 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 2010. Revision currently underway to update references and add test methods covering automotive immunity, quasi-static fields, proximity fields, and fields from overhead power lines.

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

C63.16: C63.16-1993 American National Standard Guide for Electrostatic Discharge Test Methodologies and Criteria for Electronic Equipment

Contact: [Whitesell, Steve](#) (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: Current. Guide was published 10 May 2016.

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

C63.24-draft Learn more	On-Site Generic Immunity testing	SC 5	Heirman, Don	C63.24 PINS	New standard. Consideration being given to working as a joint project with the revision of EMC Society standard IEEE 473 on RF site survey measurement. PINS may need revision.
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C63.24-draft: American National Standard Recommended Practice for In-Situ RF Immunity Evaluation of Products, Instrumentation, and Control Systems in High Reliability Installations

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 standard 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 proposed recommended practice. Originally envisioned as an extension of the C63.18 recommended practice for on-site immunity testing of medical devices, progress had come to a standstill in the development of this document. Don Heirman has volunteered to lead a renewed effort and has identified interest from the EMC Society in working on this as a joint project with the revision of their IEEE 473 recommended practice on RF site survey measurements..

Purchase: Not yet available for sale.

11. Action Items

Consolidated Action Items for SC5 meeting 20161108

AI #	Task	Responsible Party	Due Date
AI-30:	Steve to contact Poul Andersen and Masud Attayi and ask if they will participate in the future.	Steve Whitesell	Closed
AI-31:	Jerry to update affiliation for Randy Long	Jerry Ramie	CLOSED 11/17/16
AI-32:	Jerry to update Officer's page and public/private rosters to show SC5 officers correctly	Jerry Ramie	CLOSED 11/17/16
AI-33:	Andy to set up a webinar to discuss how to generate interest in joining the C63.9 Working Group and beginning making progress.	Andy Griffin	Next meeting
AI-34:	Don to add an Overview to C63.15 draft noting that extracted text from SAE cannot be changed during any future amendments without permission from SAE	Don Heirman	Closed
AI-35:	Jerry to send the finished C63.15 draft (after overview comments are inserted) to Main Committee members for consideration	Jerry Ramie Don Heirman	CLOSED sent 12/12/16
AI-36:	The future Chair of SC5 (Ed Hare) to ensure that there	Ed Hare	Closed

	is strong representation of SC5 in SC3		
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11.1 Review of items from previous meeting(s): Chair (above)

11.2 New items from this meeting: Secretary - The Action Items from this meeting were shown and agreed upon.

12. Time and place of next meeting: Chair - (November, 2017 @ ETS-Lindgren, Cedar Park, TX)

13. Closing remarks and Adjournment: Chair - The Chair thanked the group for their efforts and the meeting was adjourned at 3:33PM-EDT

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

Consolidated Action Items from SC5 meeting 20170509

AI #	Task	Responsible Party	Due Date
AI-33:	Andy to set up a webinar to discuss how to generate interest in joining the C63.9 Working Group and beginning making progress.	Andy Griffin	August 2017
AI-37:	Select date for Jerry to set up a webinar for starting the work on C63.9. (Jerry to be initial WG Secretary) Griffin to supply invitation list for said webinar.	Andy Griffin Jerry Ramie	August 2017
AI-38:	Ed Hare to look for a CD of AWG waveforms to be used in radiated immunity testing in C63.9, possibly from Mr. Berger.	Ed Hare	August 2017
AI-39:	Decide to move forward to a new version of C63.9.	Heirman, Griffin and Hare	Next meeting
AI-40:	Ed Hare to offer such an amended version of IEC 61000-4-2, with C63.16 content inserted, for submission to TC77B from SC3.	Ed Hare	Early October 2017
AI-41:	Mr. Hoolihan to acquire a new version of IEC 61000-4-2 for our use in this effort.in AI-39	Dan Hoolihan	Early October 2017
AI-42:	Put together a proposal for a clause identifying the position for a test and the required instrumentation for the test for the November meeting.	Don Heirman	End of June 2017
AI-43:	All Subcommittee members to review the Status of Standards matrix (also in 7.4 above) and check all SC5 listings in the table and related " Learn more " text for accuracy	All SC5 Members	Next meeting