



**Accredited Standards Committee C63®
Electromagnetic Compatibility**

Chair: [Dan Hoolihan](#)
Vice Chair: Vacant
Secretary: [Jerry Ramie](#)

October 4, 2012 – 8:30 am to 5:30 pm
Hilton Orange County/Costa Mesa
3050 Bristol St.
Costa Mesa, CA 92626
Tel: (714) 540-7000

Approved Meeting Minutes

1. **Call to Order -Chair** – The meeting was called to order at 8:38AM-PDT.

1.1. **Introductions (roll call)- Secretary**

MEMBER	PRIMARY	ALTERNATE
ACIL	Hodes, Harry	
Alcatel – Lucent		Vacant
Apple, Inc.		
ARRL – The Nat’l. Assoc. for Amateur Radio	Hare, Ed	
Bureau Veritas		
CISCO Systems	Griffin, Andy	
Dell Inc.	Worley, Richard	Vacant
ETS – Lindgren	Chen, Zhong	
Federal Communications Commission		Vacant
Food and Drug Administration	Silberberg, Jeffrey L	
Info. Tech. Industry Council – ITIC	Hirvela, John	
Inst. Elect. and Electronics Engrs.- IEEE	Heirman, Don	Vacant
Inst. Elect. and Electronics Engrs. EMCS	Drozd, Andy	
Motorola Mobility		Vacant
Motorola Solutions	Elliott, William [Mac]	
National Institute Standards & Tech.- NIST	Camell, Dennis	Vacant
Northwest EMC	Ghizzone, Dean	
PCTEST Engineering Laboratory		Coston, Steve
Research in Motion (RIM)		
Samsung Telecommunications		
Society of Automotive Engineers	Andersen, Poul	
Sony Ericsson Mobile Communications		

SPAWAR - US Navy	Dilay, Chris	Southworth, Dave
TIA - Telecomm. Industry Association	Whitesell, Stephen	Vacant
Telecomm. Certif. Body (TCB) Council	Wall, Art	
TÜV SÜD America, Inc.		
UL LLC	DeLisi, Bob	
US Dep't. Defense - Joint Spectrum Ctr.		Duncanson, Mike
Individual Members:		
INDIVIDUAL Member	Hoolihan, Daniel	None
INDIVIDUAL Member		None
INDIVIDUAL Member	Schaefer, Werner	None
INDIVIDUAL Member	Showers, Ralph	None
INDIVIDUAL Member		None
Emeritus Members:		
MEMBER EMERITUS		None
MEMBER EMERITUS		None
MEMBER EMERITUS		None

Observers: Dan Sigouin, Adam Gouker, Pat Roder, Beth Hackett, Randy Long, Victor Kuczynski, John Repella, Jeff Klinger and Janet O'Neil.

Quorum: 28 organizations + 5 individual members = 33 total. A quorum is 50%; which is 17 or more members in attendance. Quorum was achieved. (22 members attended this meeting).

1.2. Announcements – Chair – The Chair recognized Dean Ghizzone of Northwest EMC and Janet O'Neil of ETS-Lindgren for their contributions to these meetings. Cisco and Sony were also recognized for their donations of projection equipment. Our next meeting will be May 6-9 in Piscataway, NJ. The Embassy Suites will be the venue hotel.

1.3. Electronic Motions since last meeting – Chair - A majority of the Steering Committee voted affirmative to increase the IEEE budget for 2012:

- (a) Secretarial tasks increased from "not to exceed \$25,000" to "not to exceed \$55,000."
- (b) Pat Roder will be funded to attend the October Meeting - "Not to exceed \$5,000."

2. Approval of the Agenda

2.1 Approval of Agenda- Chair – Mr. Hare showed the **DRAFT** Agenda. Amendments were added by Mr. Hodes and Mr. Hirvela. Mr. Heirman moved to approve the modified Agenda, seconded by Mr. Hare and carried by voice vote.

2.2 Presentation of patent slides – Mr. Hare showed the [patent slides](#).

3. Membership Report – Hoolihan – We have a new member that was accepted into several Subcommittees from Compatible Electronics, [Jeff Klinger](#).

4. **Subcommittee reports** (Brief written reports to include membership approval, actions needed by C63®, and items of particular interest during SC meetings; meeting summary to be sent to C63® Newsletter Editor after this meeting)

Note: Reports should be provided on Power Point slide(s) to be used as attachments to the Minutes and input to the Newsletter editor

- 4.1. **SC1: Measurement and Instrumentation** – Mr. Heirman moved to add Mr. Klinger to the SC1 membership, the motion was seconded, discussed, and carried unanimously by voice vote. Mr. Camell announced that the Subcommittee had elected Mr. Chen as the new SC1 chair effective 1 January 2013. There were eight Interpretation requests since the last meeting, seven for C63.5 and one for C63.4. One interpretation is still open. Mr. Schaefer moved to accept the PINS to amend C63.2 as shown (and attached to these Minutes), the Motion was seconded and discussion ensued. Text was amended in the Explanation section regarding specifications as “references.” Mr. Wall thought that title changes should be made now, rather than later. The word “Noise” was replaced with “Emission” in the title. The amended PINS document was approved unanimously by voice vote.

Mr. Heirman moved to amend the PINS title for C63.5-2006. The Motion was seconded and discussion began. The words “and Qualification” were added where “Qualification” referred to Annex N content. The motion carried unanimously by voice vote, with ITIC abstaining. Further discussion of the frequency range was undertaken without a motion. Mr. Griffin moved to delete the frequency range in the title, seconded by Mr. Schaefer. Discussion ensued, followed by voting: 7 for the motion, 8 against with 4 abstentions. The motion failed.

AI-50: Working group chairs to look at deleting the frequency ranges in their Standards titles and place it in the scope and report back to Mr. Heirman’s Task Force (on frequency ranges in titles of standards) by e-mail.

- 4.2. **SC2: Definitions – Dilay** – SC2 scope was un-changed. Working Group 1 schedule was shown as a Gant chart. Definitions of “in-situ” and “on-site” testing were to be considered. Mr. Dilay moved to add Mr. Southworth as an alternate for SPAWAR at the Main Committee level and a member of SC2. The motion was seconded and carried unanimously by voice vote. The membership roster was shown. Mr. Heirman noted their outstanding process and the Gant chart as being very professional.

AI-51: Mr. Ramie to amend the C63® PowerPoint template to add Title of SC, Name of Standard, Gant chart example and Flow-chart example from [SC2 report](#).

- 4.3. **SC3: International Standardization – Andersen** – Attendance and leadership succession were shown. Mr. Andersen moved to add Jeff Klinger to the membership of SC3, the motion was seconded, discussed briefly, and passed unanimously by voice vote. Mr. Andersen announced that he had

been elected for a second term as Chair of SC3.

- 4.4. **SC5: Immunity testing – Whitesell** – Mr. Whitesell reported that progress on C63.16 (ESD) is delayed. Mr. Worley will provide documents that require new illustrations be made from company-confidential photos. C63.20 on Nuclear Power plant immunity may be withdrawn without further industry support. A smart grid task group was formed to write a white paper for the community.
- 4.5. **AI-52:** Mr. Ramie to develop a presentation on the five gaps that will be reported out of the NIST-SGIP EMI Issues working group. Mr. Heirman asked the Committee if other members are involved in Smart Grid work. Please let him know by email if you have interest in this work.
- 4.6. **AI-53:** Main Members to provide input to Mr. Heirman on their smart grid efforts.
- 4.7. **SC6: Laboratory Accreditation – Kuczynski** – Attendance figures were shown. Mr. Kuczynski announced that Adam Gouker was elected as the next Chairman, Randy Long as Vice-Chair and Dave Zimmerman will continue as Secretary. Mr. Kuczynski moved to have the main committee approve the new Chair & Vice-Chair, no second was needed since it came from a subcommittee, and no discussion ensued. The motion was approved unanimously by voice vote. Mr. Kuczynski reported that the Subcommittee wanted to approve Mr. Klinger as a new member of SC6; since the motion came from a subcommittee it needed no second, and there was no discussion. The Motion was carried unanimously by voice vote. It was noted that the Scope of SC6 is being changed, that new wording is being developed to be submitted within the next few weeks.
- 4.8. **SC7: Unlicensed Personal Comm. Services – Berger** – Mr. Hoolihan showed Mr. Berger's slides. Mr. Heirman moved to approve the C63.17 revision for sponsor ballot, the Motion was seconded, and discussion ensued. The 9/24 e-mail from Ms. Roder asked the Main Committee to consider the document for balloting.
- 4.9. **AI-54:** Mr. Berger to provide a list of C63.17 changes to the Main committee. Mr. Heirman moved to table the discussion, seconded by Mr. Hare. The motion carried by voice vote; Mr. Hodes and Mr. Silberberg abstained.

The Title of C63.27 and its status were shown.

- 4.10. **SC8: Medical Equipment Testing – DeLisi** – Three members were removed at the SC meeting. Mr. DeLisi moved to remove Don Bowen, Dave Chapman and Jim Turner from SC8, the motion was seconded, no discussion was held, and the motion was approved unanimously by voice vote. Mr. DeLisi then reported that the Subcommittee had elected him for another three-year term as Chairman. The Motion to approve his Chairmanship for another three years came from the subcommittee; no second was needed, there was no discussion and the motion was approved unanimously by voice vote.

5. **FCC Matters focusing on relation to C63® activity – Hurst** - no report was received. Mr. Heirman noted that we have petitioned the Commission to accept the 2009 editions of C63.4 and C63.10. **AI-55:** Mr. Heirman to inquire as to the status of our request to the FCC to accept the 2009 editions of C63.4 and C63.10. Mr. Hodes expressed his disappointment with the FCC delay.

6. New Business

- 6.1. **Interpretations – Clause 11 – Hoolihan** – We have made changes to Clause 11 that were [shown](#). Comments were received, now up to the fifth revision. These changes have been approved by the task group. Ms. Roder noted that these changes are at ANSI for public comment. After a 30 day review, it goes up for final approval by ANSI. (submitted 9/28/12) Approval is expected in mid-November.
- 6.2. **Vu-Spec – Heirman** – Vu-Spec shows a [collection of EMC Standards](#) published by the IEEE. It contains C63® Standards up to 2011 and is available for sale on CD. http://www.techstreet.com/cgi-bin/basket?action=add&item_id=4801433
- 6.3. **Discussion of changes to procedures – Hodes** – Mr. Hodes reported that we routinely issue Interpretation/Explanations, usually requested from laboratories. Some labs repeatedly ask the same question or threaten to sue. He noted that Interpretations/Explanations could be made normative, but that is not allowed by the IEEE. Amendments could be a solution. He Moved to form a task group to review our current procedures to allow errata/corrigenda and/or amendments to be appended to existing Standards. (Seconded by Mr. Hare). Discussion ensued. Mr. Hare asserted that we are not governed by IEEE procedures; rather we are governed by ANSI procedures. Mr. Hodes disagreed, noting that IEEE will remove references to errata or amendments as non-compliant with their rules. Mr. Heirman volunteered for the task force. Other issues can be taken up by this group as well. Mr. Hoolihan volunteered, along with Mr. Griffin, Mr. Hare, Mr. Hodes, (who will act as Chair) Mr. Hirvela, Mr. Sigouin, Mr. Gouker and Ms. Hackett. The motion was approved unanimously by voice vote.

7. Administrative Matters

- 7.1. **Approval of [previous meeting minutes](#)** – ARRL (Mr. Hare) moved to approve Mr. Schaefer's editorial changes, ACIL (Mr. Hodes) seconded, Cisco (Mr. Griffin) objected, but the motion to approve was carried by voice vote.
- 7.2. **IEEE Secretariat – Pat Roder** – A list of our Standards and their aging was [shown](#).
- 7.3. **Status of active PINS – Pat Roder** – A list of active PINS was [shown](#).
- 7.4. **Status of active PINS-C – Pat Roder – AI-56:** A list of old PINS-C will be cleaned by Mr. Hare and Mr. Heirman, a list of active ones will be attached to these Minutes of the meeting.
- 7.5. **[Status of C63® published standards](#) – Secretariat**

7.5.1 Fourth Anniversary standards – C63.12 (2007) is still being used by SAE, Mr. Andersen asked for help forming a task group to consider renewal of the Standard.

7.5.2 Ten-years or older standards - none

7.6 Any other administrative matters - fee structure for 2013 -

The steering committee agreed to drop the fees for working group members to zero. They would still have a vote at the working group level. Payments for membership need to be received by the Treasurer by March 31, 2013 or they will be removed from the committee. Invoices will be sent by December 1, 2012

7.7 Awards – Mr. Heirman showed a June 2010 supplement to our newsletter describing how awards recipients are nominated. The awards decision is made by the Steering Committee. **AI-57:** Mr. Hoffman to revise this newsletter text and re-submit text to the newsletter editor (Mr. Kesselman). **AI-58:** Mr. Hare to list award citations on the website to avoid duplication.

7.8 US National Committee fees – Hirvela – He proposed that some C63[®] funds be made available for the US National Committee Technical Advisory Groups (TAGs). Mr. Hirvela moved that \$20k be transferred to the US National Committee, seconded by Mr. Worley. Discussion ensued. The motion carried with Mr. Schaefer opposed. , NIST (Mr. Camell) and the IEEE (Mr. Heirman) abstained. ARRL (Mr. Hare) moved that we communicate with the TAGs that they should become more self-sufficient in the future; seconded by IEEE (Mr. Heirman). Discussion ensued. The Chair requested that this wording be made more “appropriate” in editing. The motion was carried, with ITI, FDA and ACIL in opposition. (Motorola Solutions & Dr. Showers abstained)

8. Other Business

8.1 Future Seminars and Workshops – Heirman – A [presentation](#) was shown for educational considerations in 2013. C63.10 and C63.23 are being considered for presentation before the IEEE-EMC Symposium in Denver next summer.

8.2 Newsletter report – Kesselman:

“The latest Newsletter, #33 dated June 2012, was distributed on May 26, 2012 to the C63R reflector, the EMC Society Board reflector, the EMC Standards Development Committee reflector and 10 individuals. All issues of the Newsletter are available on the C63 web site.”

The next issue is scheduled to be completed and distributed by 15 November. Mr. Kesselman has requested that all inputs for that issue be sent to him by 1 November, 2012.

8.3. Next meeting – Chair – May 6-9 in Piscataway, NJ. Cisco (Mr. Griffin) noted that some meetings ran short this time. The Chair responded that we may want to run overlapping meetings offset by an hour. Another suggestion from the Steering Committee was to leave the start times flexible.

9. Old Business

9.1 Mr. Silberberg moved to put the motion back on the table relative to C63.17, seconded by Mr. Heirman. The motion passed by voice vote. In an e-mail, Mr. Berger stated that it was important to move this document forward. There were hundreds of edits [shown](#). We received a clean copy on September 25. Mr. Hodes moved to call the motion, seconded by Mr. Hare. The Motion to “Call the Motion,” was voted on and passed unanimously. The motion to move C63.17 forward passed by voice vote; with eight abstentions.

9.2 Mr. Hare moved to send C63.12 from the Steering Committee over to SC3, seconded by Mr. Heirman. Discussion ensued. The motion was carried unanimously by voice vote. (Andersen, Heirman, Showers, Repella to work on document)

9.3 Action item review on items not covered elsewhere on Agenda – Secretary

Consolidated Action Items from Main Committee Meeting 4/19/12¹

Action Item #	Subject	Responsible Person	Status	Delivery Date	Comments
AI-10:	Ed Hare to modify PINS form currently on the site to become a PINS-C form. Mr. Hare should also install a separate website button to access the list of PINS-C forms on file in the public area.	<u>Ed Hare</u>	Open	Next meeting of C63 [®]	
AI-11:	Secretary to post trademark booklet to our web site.	<u>Ed Hare</u>	Open	Next meeting of C63 [®]	
AI-13:	Secretary and Chair to review PINS-C and remove inactive listings from http://www.c63.org/pw/c63/pinsc/	<u>Ramie,</u> <u>Heirman,</u> <u>Hare</u>	Open	Next meeting of C63 [®]	There is no information posted on the public website on PINS-C
AI-17:	Mr. Berger to write a letter about C63.19 for distribution to accrediting bodies and forward the text to Mr. Heirman.	<u>Mr. Berger</u>	Open	Next meeting of C63 [®]	
AI-18:	All SC Chairs to submit their	<u>All SC Chairs</u>	Open	Next	Done at SC8 May

¹ Consolidated (re-numbered) action items are included here for reference, but are not a part of the minutes.

	<i>definitions to Mr. Shellman in SC2 for review.</i>			meeting of C63 [®]	meeting
AI-26:	SC Chairs to look at the WG membership requirements to see if they are applicable to their work.	<u>All SC Chairs</u>	Open	Next meeting of C63 [®]	
AI-38:	Mr. Hare to remove the News and Workshops sections to blank pages while awaiting new material. Mr. Chen suggested that new interpretations / explanations be linked on the "Breaking News" page.	<u>Mr. Hare</u>	Open	Next meeting of C63 [®]	Half-done, new mechanism.
AI-42:	Mr. Hodes to formally ask the Chair to submit a request to the IEEE for LISN and current probe calibration procedures.	<u>Mr. Hodes</u>	Open	6/1/11	
NEW ACTION ITEMS:					
AI-45:	Mr. Heirman to report on C63.7 & C63.12 to ascertain if they should be administratively withdrawn.	<u>Mr. Heirman</u>	Closed	Next meeting of C63 [®]	
AI-46:	Mr Berger to fill his officer positions on SC7.	<u>Mr. Berger</u>	Open	Next meeting of C63 [®]	
AI-47:	Each member to pass on the workshop bulletin from our website to others in their organizations.	<u>All members</u>	Closed	Next meeting of C63 [®]	
AI-48:	Mr. Camell to write up a report on our special session this meeting.	<u>Mr. Camell</u>	Closed	5/19/12	
AI-49:	Mr. Heirman will send a message to the Gov't. showing the front page of our Stds..	<u>Mr. Heirman</u> <u>Mr. Hoolihan</u>	Open	Next meeting of C63 [®]	

10. Adjournment

The meeting was adjourned at 2:15PM-PDT.

***** END OF MEETING *****

Consolidated Action Items from Main Committee Meeting 10/04/12²

Action Item #	Subject	Responsible Person	Status	Delivery Date	Comments
AI-10:	Ed Hare to modify PINS form currently on the site to	<u>Ed Hare</u>	Open	Next meeting	

² Consolidated (re-numbered) action items are included here for reference, but are not a part of the minutes.

	become a PINS-C form. Mr. Hare should also install a separate website button to access the list of PINS-C forms on file in the public area.			of C63 [®]	
AI-11:	Secretary to post trademark booklet to our web site.	<u>Ed Hare</u>	Open	Next meeting of C63 [®]	
AI-13:	Secretary and Chair to review PINS-C and remove inactive listings from http://www.c63.org/pw/c63/pinsc/	<u>Ramie,</u> <u>Heirman,</u> <u>Hare</u>	Open	Next meeting of C63 [®]	There is no information posted on the public website on PINS-C
AI-17:	Mr. Berger to write a letter about C63.19 for distribution to accrediting bodies and forward the text to Mr. Heirman.	<u>Mr. Berger</u>	Open	Next meeting of C63 [®]	
AI-18:	All SC Chairs to submit their definitions to Mr. Shellman in SC2 for review.	<u>All SC Chairs</u>	Open	Next meeting of C63 [®]	Done at SC8 May meeting
AI-26:	SC Chairs to look at the WG membership requirements to see if they are applicable to their work.	<u>All SC Chairs</u>	Open	Next meeting of C63 [®]	
AI-38:	Mr. Hare to remove the News and Workshops sections to blank pages while awaiting new material. Mr. Chen suggested that new interpretations / explanations be linked on the "Breaking News" page.	<u>Mr Hare</u>	Open	Next meeting of C63 [®]	Half-done, new mechanism.
AI-42:	Mr. Hodes to formally ask the Chair to submit a request to the IEEE for LISN and current probe calibration procedures.	<u>Mr. Hodes</u>	Open	6/1/11	
AI-46:	Mr Berger to fill his officer positions on SC7.	<u>Mr. Berger</u>	Open	Next meeting of C63 [®]	
AI-49:	Mr. Heirman will send a message to the Gov't. showing the front page of our Stds..	<u>Mr. Heirman</u> <u>Mr. Hoolihan</u>	Open	Next meeting of C63 [®]	

NEW ACTION ITEMS:					
AI-50:	Working group chairs to look at deleting the frequency ranges in their Standards titles and place it in the scope and report back to Mr. Heirman's working group by e-mail.	<u>All WG Chairs</u>	Open	Next meeting of C63 [®]	
AI-51:	Mr. Ramie to amend the C63 [®] PowerPoint template to add Title of SC, Name of Standard, Gant chart example and Flow-chart example from SC2 report.	<u>Mr. Ramie</u>	Closed	Next meeting of C63 [®]	12/9/12
AI-52:	Mr. Ramie to develop a presentation on the five gaps that will be reported out of the NIST-SGIP EMI Issues working group.	<u>Mr. Ramie</u>	Closed	Next meeting of C63 [®]	11/1/2012
AI-53:	Main Members to provide input to Mr. Heirman on their smart grid efforts.	<u>All members</u> vmc63@ieee.org	Open	Next meeting of C63 [®]	
AI-54:	Mr. Berger to provide a list of C63.17 changes to the Main committee.	<u>Mr. Berger</u>	Open	Next meeting of C63 [®]	
AI-55:	Mr. Heirman to inquire as to the status of our request to the FCC to accept the 2009 editions of C63.4 7 C63.10	<u>Mr. Heirman</u> <u>Mr. Hurst</u>	Open	Next meeting of C63 [®]	
AI-56:	Old PINS-C will be cleaned by Mr. Hare and Mr. Heirman, a list of active ones will be attached to these Minutes of the meeting	<u>Mr. Hare</u> <u>Mr. Heirman</u>	Open	Next meeting of C63 [®]	
AI-57:	Mr. Hoffman to revise this newsletter text and re-submit text to the newsletter editor	<u>Mr. Heirman</u> <u>Mr. Hoffman</u>	Open	November 1, 2012	
AI-58:	Mr. Hare to list award citations on the website to avoid duplication.	<u>Mr. Hare</u>	Open	Next meeting of C63 [®]	

Attachments from Main Committee Meeting 10/4/2012³

Agenda Item #	Description	Filename
2.2	Patent Slides	https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.ppt
4.1	SC1 Report	http://www.c63.org/documents/misc/minutes/October2012/SC1/SC1_2012_Oct_report.pdf
4.2	SC2 Report	http://www.c63.org/documents/misc/minutes/October2012/SC2/SC2_2012_Oct_report.pdf
4.3	SC3 Report	http://www.c63.org/documents/misc/minutes/October2012/SC3/SC3_2012_Oct_report.pdf

³ Attachments are not a part of the meeting minutes. They may be downloaded from the [Minutes section of the C63.org web page](#).

4.4	SC5 Report	http://www.c63.org/documents/misc/minutes/October2012/SC5/SC5_2012_Oct_report.pdf
4.5	SC6 Report	http://www.c63.org/documents/misc/minutes/October2012/SC6/SC6_2012_Oct_report.pdf
4.6	SC7 Report	http://www.c63.org/documents/misc/minutes/October2012/SC7/SC7_2012_Oct_report.pdf
4.6	C63.17 revision	http://www.c63.org/documents/misc/minutes/October2012/Main/ANSI_C63_17Draft_v0_4.pdf
4.6	List of C63.17 changes	http://www.c63.org/documents/misc/minutes/October2012/Main/ANSI_C63.17Draft%20_v0_6Compared.pdf
4.7	SC8 Report	http://www.c63.org/documents/misc/minutes/October2012/SC8/SC8_2012_Oct_report.pdf
6.1	Proposed changes to Clause 11	http://www.c63.org/documents/misc/minutes/October2012/Main/Clause%20_11_Rev2.pdf
6.1	VuSpec collection of Standards	http://www.techstreet.com/cgi-bin/basket?action=add&item_id=4801433
7.1	Previous minutes (approved)	http://www.c63.org/documents/misc/minutes/October2012/Main/2012_April_C63R_Approved_Main_Minutes.pdf
7.2	IEEE Secretariat report	http://www.c63.org/documents/misc/minutes/October2012/Secretariat/IEEE_2012_Oct_report.pdf
7.3	Status of active PINS	http://www.c63.org/documents/misc/minutes/October2012/Secretariat/IEEE_2012_Oct_report.pdf
7.5	Status of Published Standards	http://www.c63.org/documents/misc/minutes/October2012/Secretariat/IEEE_2012_Oct_report.pdf
8.1	Future Seminars and Workshops	http://www.c63.org/documents/misc/minutes/October2012/Main/C63_2013proposed_education.pdf
9.1	C63.17 edits	http://www.c63.org/documents/misc/minutes/October2012/Main/ANSI_C63_17Draft_v0_4.pdf