



Accredited Standards Committee C63[®]

Electromagnetic Compatibility

Subcommittee 4: Wireless and ISM Equipment

Chair: Art Wall

Vice Chair: Bob DeLisi

Secretary: Jerry Ramie

Nov. 9, 2016; 8:30 AM – 12:00 PM - PDT

Hilton Orange County
Costa Mesa, CA, 92626

Approved Meeting Minutes

1. **Call to Order: Chair** - The meeting was called to order at 8:32AM-PST
 - 1.1 **Announcements: Chair**
 - 1.2 **Meeting logistics announcements: Host**
 - 1.3 **Introductions: (roll call) Secretary** – Jerry Ramie, Art Wall, Jason Nixon, Harry Hodes, Jeff Klinger, Vladimir Bazhanov, Marcus Shellman, Deanna Zakharia, Aurelia Bria, David Wait, Mac Elliott, Thomas Dickten, Xiong Yufei, Dheena Moongilan, John Forester, Zhong Chen, Ed Hare, Mits Samoto, Bob DeLisi, Steve Jones, Travis Thul, Jeff Silberberg, Dan Hoolihan, Bob Spehalski, Dan Sigouin
2. **Approval of the Agenda: Secretary** - The agenda was shown and approved by acclamation
3. **Presentation of [patent slides](#): Secretary**
4. **Approval of [minutes of previous meeting](#)**: 5/11/16 Secretary - The minutes were [approved](#) by acclamation.
5. **Review of [Subcommittee Membership](#): Chair**

Subcommittee 4 Membership Roster

Name	Role within SC	Affiliation
Attayi, Masud	Member	Blackberry Corporation
Case, David	Member	Cisco Systems
Chen, Zhong	Member	ETS-Lindgren
DeLisi, Bob	Vice Chair	UL LLC
Dickten, Thomas	Member	GC Consulting
Elliott, William (Mac)	Member	Advanced Compliance Solutions, Inc.
Hodes, Harry	Member	Bay Area Compliance Laboratories Corp.
Hoolihan, Dan	Member	Hoolihan EMC Consulting
Howard, Mike	Member	Liberty Labs
Jones, Steve	Member	FCC Laboratory
Kiemel, Greg	Member	Northwest EMC
Ernesto Mendoza	Member	Philips Lighting Electronics NA
Moongilan, Dheena	Member	Nokia
Nixon, Jason	Member	Innovation, Science & Economic Development Canada
Pino, Dan	Member	PCTEST Engineering Laboratory, Inc.
Schaefer, Werner	Member	Schaefer Associates
Sigouin, Dan	Member	DHS-EMC
Waite, David	Member	Consultant
Wall, Art	Chair	Radio Regulatory Consultants

Ward, Dennis	Member	PCTEST Engineering Laboratory
Whitesell, Steve	Member	Whitesell Consulting, LLC

5.1 Review of Membership Guidelines – members at risk? (none)

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.

5.2 Consideration of new members - AI-3: Jerry to add Jeff Klinger to the roster & WebEx for SC4

6. Working Group reports - Chair [More information about each standard](#) is available on the Standards Status section of the [C63® web site](#).

Each WG chair shall present a written report at the Subcommittee meeting. Written reports of the Subcommittee meeting shall be presented by the Subcommittee Chair ([Art Wall](#)) at the Main Committee meeting. These reports shall be made using the [PowerPoint template](#). The [SC4 report](#) becomes an attachment to the Main Committee minutes.

Prior to the Main Committee meeting, the Subcommittee reports shall be provided to the projectionist ([Ed Hare](#)) for showing on the projector screen at the Main meeting. The SC reports will be added as an attachment to the meeting minutes. The presentation and any written reports shall also be sent by the Subcommittee Chair ([Art Wall](#)) to the C63® [Newsletter](#) editor, [Dave Zimmerman](#).

6.1 [C63.10 report](#) – Unlicensed transmitters - Nixon

C63[®] Accredited Standards Committee
C63[®] - EMC

C63.10 WG Meeting

Jason Nixon
C63.10 WG Chair
November 9, 2016

1

C63[®] Accredited Standards Committee
C63[®] - EMC

Meeting Attendance

Meeting attendees
13 attendees

WebEx attendees
7 attendees

Review of Draft and comments

- The comments received from working group members were reviewed
- During comment review the concept of testing all emissions at 1.5m table height was discussed (currently below 1 GHz is tested at 80cm)
 - The support for this changed was low since this would make C63.10 different from all other test standards
 - The working group decided not to take action on this unless someone was to provide the working group with comparison data to support changing the table height.
- During comment review there was a comment about testing average levels with a reduced VBW. Following discussion it was decided that a task group would evaluate the rules and remove the reduced VBW measurement method.

2

Meeting Attendance**Meeting attendees**

13 attendees

WebEx attendees

7 attendees

Review of Draft and comments

- The comments received from working group members were reviewed
- During comment review the concept of testing all emissions at 1.5m table height was discussed (currently below 1 GHz is tested at 80cm)
 - The support for this changed was low since this would make C63.10 different from all other test standards
 - The working group decided not to take action on this unless someone was to provide the working group with comparison data to support changing the table height.
- During comment review there was a comment about testing average levels with a reduced VBW. Following discussion it was decided that a task group would evaluate the rules and remove the reduced VBW ² measurement method.

There was discussion of using video averaging of peak readings instead of average detection. There is an action item on this topic in this working group.

Review of Draft FCC KDB 587485

- The working group reviewed the concepts of test report reduction and test reduction
- There was support to only require tabular data supported by worst-case plots

Discussion on modules

- Steve Jones asked the group about modules
- Issues outstanding are test reduction, multicarrier installations, intermods and limits
- This issue was discussed as a joint item between C63.10 and C63.26

Motions

No motions were made at this meeting for SC4 approval

C63[®] Accredited Standards Committee C63[®] - EMC

Conclusions

Action Items

- Jason Nixon to edit the draft standard with the remaining comments from Mike Heckrotte
- Jason Nixon to monitor the open ballot regarding the use of dated or undated standard references and update the draft as required
- Jason Nixon to send an email to the working group to solicit members to participate on two new task groups: 1) Removal of VBW averaging, 2) update the FCC cross reference tables in Annex A
- Dheena Moongilan to send a copy of an FCC KDB regarding peak emissions of UNII devices for the task group to review

5

C63[®] Accredited Standards Committee C63[®] - EMC

Conclusions

Action Items

- Dave Case to review with the DTS task group the text contained in a comment in the draft standard regarding the testing of bandedge on adjacent channels when the edge channel is at a lower output power
- Jason Nixon to distribute the MIMO clause as modified by Tim Harrington to the working group

They should be reviewing new content at their next meeting. (by the end of 2017)

6.2 [C63.26 report](#) – Licensed transmitters - Jones

C63[®] Accredited Standards Committee
C63[®] - EMC

Venue and Participants

Meeting Date and Time

Hilton Orange County
Fountain Terrace
November 7th, 1300-1700

15 in-person
5 on Webinar

Participants

15 in-person

5 on Webinar

Large spike of attendees that did not get recorded for one presentation

November 9th, 2016

1

C63[®] Accredited Standards Committee
C63[®] - EMC

Venue and Participants

Meeting Date and Time

Hilton Orange County
Fountain Terrace

November 7th, 1300-1700

Participants

15 in-person

5 on Webinar

Large spike of attendees that did not get recorded for one presentation

Discussion**First Edition of C63.26 published in January 2016**

Not yet adopted in FCC rules

FCC Lab exploring other avenues for permitting its use

Likely to be via KDB publication

No feedback yet from user community (i.e., no interpretation requests to consider)

PINS for Second Edition

Approval received for PINS agreed to at May meeting

Primarily intended to expand scope to include other licensed operations

Focus on recent rulemaking to accommodate 5G proposals³

Task Group Work**Radiated Emissions Task Group**

Chaired by Ryan McGann

Several meetings held since May

Ongoing round robin testing to assess guidance

Performed research in attempt to possibly harmonize with International standards

Millimeter Wave Joint Task Group

Chaired by Robert Paxman

5 meetings held since May

Developing short term compliance procedures for immediate use for anticipated 5G products while long-term solution is⁴ under development

C63[®] Accredited Standards Committee C63[®] - EMC

Presentations

Presentation from mmWave TG member Mike Heckrotte

Entitled *Millimeter-Wave Measurements*

Focus on potentially applicable existing standards, instrumentation challenges and potential measurement procedures

Presentation from mmWave TG member John Forrester

Entitled *mmW TRP Measurement Strategy*

Focus on short-term (bridge) strategy to accommodate compliance measurements on forthcoming 5G devices

C63[®] Accredited Standards Committee C63[®] - EMC

Conclusions

FCC will explore short-term methods for authorizing use of new standard

Work will continue in the various task groups, towards publication of a second edition

Request for help at WG level, particularly a Secretary

Deanna Zakharia volunteered to become the C63.26 WG secretary. **AI-4:** Jerry to set up training webinar on file uploading with FileZilla & WebEx hosting. (Zakharia, Wall, Crumm)

6.3 [C63.29 report](#) – Lighting equipment - Mendoza

C63.29 Oct 2016 Progress Report

Ernesto Mendoza

I

C63.29 Chair

C63.29 Oct 2016 Progress Report

The C63.29 standard aims to describe the RF lighting devices testing methods. It is based in ANSI C63.4 and supplemented with other documents (like ANSI C82, CISPR 15, and other) when it make sense.

A first rough draft was developed integrating contributions from various members. It was circulated late May 2016. Various comments were received, reviewed, and agreed upon its revision in multiple web meetings. The comments resolution calls ended in October 2016. A new seed draft has been prepared using the IEEE template. This second draft is to be revised and organized by the editorial ad hoc members before circulation.

C63.29 had a face to face meeting November 7, 2016. One critical decision was to enhance the second draft to become a self-contained document; thus, the second draft will include test methods described in ANSI C63.4 when applicable to lighting. RF lighting devices ANSI C82 setups and stabilization information will be added to ensure harmonized testing practices among users. Additional explanations about test setups will be included to assist standard's user to prepare the proper setups.

6.4 [C63.30 report](#) – Wireless Power Transfer equipment - Thul

C63[®] Accredited Standards Committee C63[®] - EMC

C63.30 Mission

- To develop EMC test procedures for Wireless Power Transfer Technology First edition will focus on < 30 MHz systems
- RF Exposure limits will not be provided, although the topic will be discussed in an informative fashion
- EMC limits will not be prescribed, although an extrapolation factor or methodology will be included
 - Only applicable when limits are specified beyond a reasonable test distance
- See PINS for more info

C63[®] Accredited Standards Committee C63[®] - EMC

Members

Name	Affiliation
Nicholas Abbondante	Intertek
Umer Anwer	Hevo
Mark Arthurs	Sony Corporation
Cif Barber	Power Matters Compliance
Vladimir Bazhanov	Ericsson AB
Jack Black	DLS Electronic Systems
Mark Briggs	UL LLC
Richard (Barney) Carlson	Idaho National Labs
David A. Case	Cisco Systems Inc.
Indira Chaterjee	University of Nevada - Reno
J.C. Chen	Apple
Randy Clerk	CKC Laboratories, Inc.
Daniel E. Crowder	Elite Electronics
Allen Crumm	Consultant
Bob DeLisi	UL LLC
Deniz Demirci	National Technical Systems
Kate A. Doubleday	University of Colorado Boulder
Max Dreher	World Cal/Liberty Labs
Todd Hagan	University of Nevada - Reno
Fang Han	Qualcomm
Ed Hare	ARRL
Michael Heckrotte	Underwriters Laboratories
Harry Hodes	Bay Area Compliance Laboratories Corp.
Dan Hoolihan	Hoolihan EMC Consultants

Name	Affiliation
Mike Howard	Liberty Labs
Richard Kautz	Ford Motor Co.
Mark Klerer	Qualcomm
Jeff Klinger	Compatible Electronics
C.K. Li	Nextivity, Inc.
Bruce Long	Momentum Dynamics
Hans Melberg	Energous Corporation
Daniel Mikat	Toyota
Hughes Nappert	ISED Canada
Michael O'Dwyer	Apple Corporation
Robert Paxman	Intel Corporation
Thanh Pham	Charge Point
Daniel Pino	PCTEST Engineering Lab
Horia Popovici	ISED Canada
John Roman	Intel Corporation
Peter Schrafel	Momentum Dynamics
Raj Shah	Clarisonic
John Sirota	WITricity
Bill Stumpf	D.L.S. Electronic Systems, Inc.
Travis Thul	Minnesota State College Southeast
Art Wall	Telecommunications Certification Body
Derek Walton	LF Research
Rene Zada	Motorola Solutions

Mariusz Bojarski (Pins) and Larry Juang (NI) no longer with C63.30

C63[®] Accredited Standards Committee C63[®] - EMC

Current status

- Team established approximately 18 months ago
- Existing draft is approximately 85% complete
- Test determinations based on extensive testing
 - A4WP, Qi, PMA, vehicle systems
 - Tested across chambers, OATS w/ ground plane, OATS w/o ground plane
 - Van Veen tests

C63[®] Accredited Standards Committee C63[®] - EMC

Current direction standard is moving in

- Van Veen testing for small EUTs
 - Temporary loophole for 60 cm loop test for labs w/o VV system
- Alignment with SAE J2954 dummy test procedure for vehicle system testing
- In-situ testing consistent with Part 15 or MP5 (still under consideration)
- Conducted EMC testing to be consistent with C63.4

GTEM! is not being considered at these low frequencies, possibly in a future version. Harry wanted the WG to consider TEM devices in general. Art discussed having each of these documents be self-contained. Art volunteered to submit text by the end of the year for each working group on self-containment. The other issue is the loop antenna; no one had a description of the antenna. Art submitted a PINS to the Main Committee for exploring the 60cm loop used by the FCC.

6.5 [C63.31 report](#) – ISM equipment - Walton

ANSI C63.31 WG Status



Derek Walton

Chair

Nov 8th 2016

1



Slide Title

Meeting Attendance

On-site Attendees: 15
WebEx Attendees: 3



Meeting Highlights

Review starting Draft Document

A starting draft document has been prepared that utilized the format of current C63.* documents.

MP-5 was converted to word and integrated into the new structure

A draft scope was prepared, but didn't include the last comments from the FCC members: the scope is being used to keep the focus of why C63.31 is being written

The purpose of C63.31 is to provide test methodology for CFR47 Part 18 ISM devices except for those specifically excluded: it will differ from CISPR 11 in several areas, though where practical the documents will adopt common ground

2



Slide Title

Meeting Highlights- Review starting Draft Document Cont....

The consensus was that:

- the MP-5 outline will be retained for the short term
- C63.31 will be a stand alone document with text pulled from other ANSI documents rather than cross referenced. This was driven by the need to make adjustments for ISM equipment subtleties and also referenced document change concerns.
- C63.31 will add a discussion on limits including extrapolation when appropriate
- C63.31 will remove ambiguity for test techniques, particularly from 9 kHz to 30MHz: significant reuse of new material from the other working groups will be utilized.
- C63.31 will address measurement instrumentation, including frequencies over 18 GHz.
- C63.31 will address the need to measure both on a test site and in-situ

Art noted that ISM is more than traditional equipment, including consumer devices like microwave ovens, induction cooking ranges, lasers and diathermy equipment. MP5 was written by Melt Mobley of the FCC in 1985. The commission asked us to replace MP5, separating wireless and WPT products. It's difficult to apply to all appropriate devices now. Measuring in the near field is controversial and consensus has not been achieved to date on the required distance extrapolation calculation.

7. Other Old Business: Chair - none

8. New Business: Chair - none

9. C63.org website use and updates: Working Group Chairs normally post their own documents to the [SC4 protected area](#). If there are problems with posting, contact Jerry Ramie for credentials or training.

10. Review of the action items: Secretary

Consolidated Action Items from 05/11/16 Meeting of SC4

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
AI-1:	Jerry to add Bob Sephalski as C63.29WG Vice Chair on the SC4 roster page	Jerry Ramie	Closed	11/9/16	Added before 8/24
AI-2:	Jerry to have new Scope and Duties placed on SC4 landing page	Jerry Ramie	Closed	11/9/16	Text sent 5/29

Action Items from this meeting were also shown.

11. Time and place of next meeting: Chair - **May 8-11, 2017 in Frederick, MD.**

12. Closing remarks and Adjournment: Chair - The Chair thanked the WG chairs and members for their contributions and adjourned the meeting at 10:18AM-PST.

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

Consolidated Action Items from 11/09/16 Meeting of SC4

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
AI-3:	Jerry to add Jeff Klinger to the roster & WebEx for SC4	Jerry Ramie	Closed	11/31/16	Added 11/20
AI-4:	Jerry to set up training webinar on file uploading with FileZilla & WebEx hosting. (Zakharia, Wall, Crumm)	Jerry Ramie	Closed	11/31/16	Training offered 12/16/15