



# Accredited Standards Committee C63®

## Electromagnetic Compatibility

### Subcommittee 4: Wireless and ISM Equipment

**Chair: Bob Delisi**

**Vice Chair: Dave Case**

**Secretary: Jerry Ramie**

May 1, 2019; 10:00 AM – 12:00 PM - EDT

UL - LLC, Research Triangle Park, NC

### Approved Minutes

1. **Call to Order: Chair** - The Chair called the meeting to order at 10:10AM-EDT.
  - 1.1 **Announcements: Chair's remarks** - Do not share the door lock code with anyone. We will review our web content and SC reports.
  - 1.2 **Meeting logistics announcements: Host** - logistics of the facility were covered.
  - 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** Mike Howard has been removed from the roster. (2/12)

### Subcommittee 4 Membership Roster

Name	Role in SC	Affiliation
<a href="#">Antola, Mike</a>	Member	Resideo
<a href="#">Case, David</a>	Vice Chair	Cisco Systems
<a href="#">Chen, Zhong</a>	Member	ETS-Lindgren
<a href="#">DeLisi, Bob</a>	Chair	UL LLC
<a href="#">Dickten, Thomas</a>	Member	GC Consulting
<a href="#">Elliott, William (Mac)</a>	Member	TÜV SÜD America, Inc.
<a href="#">Friden, Jonas</a>	Member	Ericsson AB
<a href="#">Graff, William</a>	Member	TÜV Rheinland of North America
<a href="#">Hodes, Harry</a>	Member	Bay Area Compliance Laboratories Corp.
<a href="#">Hoolihan, Dan</a>	Member	Hoolihan EMC Consulting
<a href="#">Jones, Steve</a>	Member	FCC Laboratory
<a href="#">Kiemel, Greg</a>	Member	Element Materials Technology
<a href="#">Klinger, Jeff</a>	Member	Compatible Electronics
<a href="#">Kramer, Doug</a>	Member	ETS-Lindgren
<a href="#">Lee, Edmund</a>	Member	Apple Inc.
<a href="#">Mansergh, Dan</a>	Member	Apple Inc.
<a href="#">Mendoza, Ernesto</a>	Member	Signify
<a href="#">Moongilan, Dheena</a>	Member	Nokia Bell Labs
<a href="#">Nixon, Jason</a>	Member	Innovation, Science and Economic Development Canada
<a href="#">Pino, Dan</a>	Member	PCTEST Engineering Laboratory
<a href="#">Schaefer, Werner</a>	Member	Schaefer Associates
<a href="#">Siqouin, Dan</a>	Member	DHS-EMC
<a href="#">Skoglund, Kenth</a>	Member	Ericsson AB
<a href="#">Terrien, Mark</a>	Member	Keysight Technologies
<a href="#">Waite, David</a>	Member	Consultant
<a href="#">Wall, Art</a>	Member	Radio Regulatory Consultants

<a href="#">Ward, Dennis</a>	Member	PCTEST Engineering Laboratory
<a href="#">Zimmerman, Dave</a>	Member	Spectrum EMC, LLC

**Guests and Observers:** (non-voting) Don Heirman, Jerry Ramie, Ed Hare, David Chamberlain, Chris Harvey, Victor Kuczynski, Aurelian Bria, Deanna Zakharia, Henry Benitez, Ross Carlton, J.C. Chen, Allen Crumm, Lisa Ward, John Norgard, Ross Quan

**1.4 Quorum: (50% of roster + 1) constitutes a quorum.** (rounding down) (Calculation: 28 roster members / 2 = 14 + 1 = 15 people are required for a quorum. **Was quorum achieved? (Yes) 19 members attended.** 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)

**1.5 Review of the [patent slides](#) - Secretary** - The patent slides were shown and no potentially essential patents were declared.

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

**2.1 Approval of the previous Minutes - [20181128](#)** The previous Minutes were [approved](#) by acclamation.

**3. Review of [Subcommittee Membership](#): Secretary** - Report any errors to the ASC-C63<sup>®</sup> Secretary

**3.1 Review of Membership Guidelines –**

**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.

**Member Attendance Log:** Any errors in the log?

SC4 Roster:	20160511	20161109	20170510	20171108	20180502	20181128
<a href="#">Antola, Mike</a>				x	x	x
<a href="#">Case, David</a>	x			x	x	x
<a href="#">Chen, Zhong</a>		x	x	x		
<a href="#">DeLisi, Bob</a>	x	x	x	x	x	x
<a href="#">Dickten, Thomas</a>		x	x			
<a href="#">Elliott, William</a>	x	x	x	x		x
<a href="#">Friden, Jonas</a>						
<a href="#">Graff, William</a>					x	x
<a href="#">Hodes, Harry</a>	x	x	x		x	
<a href="#">Hoolihan, Dan</a>	x	x	x	x	x	x
<a href="#">Jones, Steve</a>	x	x	x	x	x	x
<a href="#">Kiemel, Greg</a>				x	x	
<a href="#">Klinger, Jeff</a>		x	x	x	x	
<a href="#">Kramer, Doug</a>				x	x	x
<a href="#">Lee, Edmund</a>						
<a href="#">Mansergh, Dan</a>						
<a href="#">Mendoza, Ernesto</a>					a	x
<a href="#">Moongilan, Dheena</a>	x	x	x	x	x	x
<a href="#">Nixon, Jason</a>	x	x	x	x	x	x

<a href="#">Pino, Dan</a>					p	
<a href="#">Schaefer, Werner</a>						
<a href="#">Sigouin, Dan</a>	x	x	x	x	x	x
<a href="#">Skoglund, Kenth</a>					x	x
<a href="#">Terrien, Mark</a>						x
<a href="#">Waitt, David</a>		x	x			
<a href="#">Wall, Art</a>	x	x	x	x	x	
<a href="#">Ward, Dennis</a>	x			x	x	x
<a href="#">Zimmerman, Dave</a>	x			x	x	

**Any members at risk?** These members are at risk: **Thomas Dickten, Werner Schaefer & David Waitt** (send a letter to each member at risk) **AI-16:** Remove Art Wall & Werner Schaefer from the roster. Dickten and Waitt to receive letter notifications.

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

#### 3.2.1 – New members added via E-mail votes:

Jonas Friden (added 12/14)  
 Edmund Lee (added 12/29)  
 Dan Mansergh (added 4/1)

#### 3.2.2 – New members for approval

**1. Bruce Fagley (WG membership, C63.31) [Application](#) , [Resume/CV](#)** The application and resume of Mr. Fagley was shown. Hoolihan moved, seconded by Graff to accept his membership in C63.31. The motion carried unanimously.

**2. John Repella (SC4 membership) [Application](#), [Resume/CV](#)** The application and resume of Mr. Repella was shown. Ward moved, seconded by Elliott to accept his membership in SC4. The motion carried unanimously. He also applied for membership in C63.26. There were no objections. The motion carried.

**3. Guangqi Zhu (WG membership, C63.30) [Application](#), [Resume/CV](#)** - The application and resume of Dr. Zhu was shown. Hoolihan moved, seconded by Ward to accept his membership in C63.30. The motion carried unanimously.

**3.3 Approval of Membership (Spring meeting only) **AI-17:**** Jerry to add Bruce Fagley, John Repella and Guangqui Zhu to the appropriate rosters. Hoolihan moved, Chen seconded, to accept the new SC4 Roster.

**4. Approval of [Scope and Duties](#): Chair - (Spring meeting only)** (Report approval or any changes to the Main Committee) Ward moved, seconded by Graff to accept the Scope & Duties. The motion carried unanimously to accept the current Scope and Duties.

### Scope

Subcommittee 4 is responsible for writing and maintaining existing and proposed C63® standards for wireless and ISM devices (e.g. lighting, wireless power transfer, Industrial and dielectric heaters, and similar equipment), as assigned by the Main Committee ASC-63®.

### Duties

Duties include maintaining and managing working groups. (C63.10, C63.26, C63.29, C63.30 and C63.31)

#### 4.1 Election of Officers (as required) N/A

**5. Working Group reviews - Chair -** [More information about each standard](#) is available on the Standards Status Matrix page of the [C63@ web site](#). This information must be reviewed for accuracy at each Spring Subcommittee meeting.

There was discussion of pulling **C63.17** on unlicensed PCS services away from SC7 and placing it under SC4. It is being re-affirmed under SC7. **AI-18:** DeLisi & Case to review and discuss C63.17 to see if it fits under SC4.

**5.1 C63.10 – Unlicensed transmitters - Nixon** ([WG report](#)) We will re-circulate the ballot comments and their resolutions to SC4 with the updated draft.

**5.11 Status Matrix Review (Spring meeting only)** 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)

C63.10-2013 <a href="#">Learn more</a>	Procedures for compliance testing of unlicensed wireless devices	<a href="#">SC 4</a>	<a href="#">Nixon, Jason</a>	<a href="#">C63.10 PINS</a>	Current. (published 9/15/2013)
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**C63.10: C63.10-2013 American National Standard for Testing Unlicensed Wireless Devices**

**Contact:** [Nixon, Jason](#) (Working Group Chair)

**Scope:** This standard is intended to cover procedures for testing the compliance of a wide variety of unlicensed wireless devices (also called unlicensed intentional radiators) including but not limited to: remote control and security unlicensed wireless devices, frequency hopping and direct sequence spread spectrum devices, anti-pilferage devices, cordless telephones, wireless medical unlicensed wireless devices, Unlicensed National Information Infrastructure devices, intrusion detectors, unlicensed wireless devices operating on frequencies below 30 MHz, automatic vehicle identification systems, and other unlicensed wireless devices authorized by a radio regulatory authority.

**Status:** Current.

**Purchase:** [IEEE Store](#). To purchase individual standards, go to the IEEE store and search on the standard number. Draft revisions are not yet available for sale.

**5.2 C63.26 – Licensed transmitters - Jones** ([WG report](#))

**5.21 Status Matrix Review (Spring meeting only)** Verify accuracy of document [status matrix](#) content and report any errors to the ASC-C63<sup>®</sup> Secretary. **Is this information correct? (No)** **AI-19:** Jerry to correct C63.26 status matrix text as shown.

C63.26-2015 <a href="#">Learn more</a>	Procedures for compliance testing of licensed transmitters	<a href="#">SC 4</a>	<a href="#">Jones, Steve</a>	<a href="#">C63.26 PINS</a>	2015 edition <del>not</del> under revision
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**C63.26-2015: American National Standard of procedures for compliance testing of transmitters used in licensed radio services**

**Contact:** [Jones, Steve](#) (Working Group Chair)

**Scope:** This standard covers the procedures for testing a wide variety of licensed transmitters; including but not limited to transmitters operating under Parts 22, 24, 25, 27, 90, 95 and 101 of the FCC Rules, transmitters subject to the general procedures in Part 2 of the FCC Rules and procedures for transmitters not covered in the FCC Rules. The standard also addresses specific topics; e.g., ERP/EIRP, average power measurements and instrumentation requirements.

**Status:** New Standard published 1/15/16. New work is pending.

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

**5.3 C63.29 – Lighting equipment - Mendoza** (no WG report)

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

C63.29-draft <a href="#">Learn more</a>	Lighting products	<a href="#">SC 4</a>	<a href="#">Mendoza, Ernesto</a>	<a href="#">C63.29 PINS</a>	New standard. Draft being written.
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**C63.29-draft: American National Standard of procedures for compliance testing of lighting products**

**Contact:** [Mendoza, Ernesto](#) (Working Group Chair)

**Scope:** This standard is intended to include procedures for compliance testing of general illumination lighting products with applicable radio regulatory requirements. This standard encompasses various technologies, from traditional lighting like fluorescent or HID, as well as novel technologies like LED and others. Related national and international standards (e.g., CISPR 15, ANSI C63.4) will be reviewed and used to the extent possible.

**Status:** New standard. Draft being written.

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

Mr. Jones noted that the FCC is receiving complaints about large outdoor LED sign arrays. We may want to take this up at the next working group meeting. Are they displays (C63.4) or lighting? (C63.29)

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

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

C63.30-draft <a href="#">Learn more</a>	Wireless Power Transfer Products	<a href="#">SC 4</a>	<a href="#">Thul, Travis</a>	<a href="#">C63.30 PINS</a>	New standard. Draft being written.
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**C63.30-draft: American National Standard of procedures for compliance testing of Wireless Power Transfer products**

**Contact:** [Thul, Travis](#) (Working Group Chair)

**Scope:** This standard is intended to include procedures for compliance testing of several different types of Wireless Power Transfer (WPT) products with applicable electromagnetic compatibility (EMC) and radio regulatory requirements. Test procedures will focus on radiated field and conducted measurements and may reference established standards. WPT RF exposure compliance procedures will not be included, although standards pertaining to laboratory EMF safety may be referenced. WPT testing methods may consider, but are not limited to, large in-situ installations, charging systems for electric vehicles (including impact of host on electromagnetic fields), house-hold appliances, and desktop chargers. Consideration will also be given to appropriate testing distances and test locations (such as Semi-Anechoic Chambers, Open Area Test Sites, ground plane, and earth sites). Related national and international standards (e.g., CISPR, SAE, etc.) will be reviewed and used to the extent possible.

**Status:** New standard. Draft being written.

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

**5.5 C63.31 – ISM equipment - Walton ([WG report](#))**

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

C63.31-draft <a href="#">Learn more</a>	ISM equipment (MP-5)	<a href="#">SC 4</a>	<a href="#">Walton, Derek</a>	<a href="#">C63.31 PINS</a>	New standard. Draft being written.
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**C63.31-draft: American National Standard for compliance testing of Industrial, Scientific and Medical (ISM) Equipment**

**Contact:** [Walton, Derek](#) (Working Group Chair)

**Scope:** This standard is intended to include procedures for compliance testing of traditional ISM equipment (industrial heaters, dielectric heaters, food tempering equipment, microwave ovens, medical diathermy equipment, etc.) with applicable EMC and radio regulatory requirements. Related national (FCC/OET MP-5) and international standards (e.g., CISPR, IEEE) will be reviewed and used to the extent possible.

Status: New standard. Draft being written.

Purchase: Not yet available for sale.

**6. Old Business: Chair**

**6.1 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.

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

**7. New Business: Chair**

**7.1 Discussion on removal of QP measurements in unlicensed wireless device Standards. Potential recommendation to FCC and ISED Canada.** - Removal of QP detection would cause new rules to be issued from the FCC and ISED Canada. Mr. Case noted that transmitters are measured in Peak or Average, so removal of QP would not impact the radio people much. Mr. Jones noted that QP isn't relevant for broadband emissions. How many devices might fail if we moved from QP to Peak? The levels usually fall between peak and average. Mr. Hare felt that the penalty of moving to Peak were about 10dB higher emissions. Mr. Case felt that this idea was not ready for consideration yet. Mr. DeLisi asked if there was interest in forming a task group and making measurements. ISED, Dave Chamberlain and Ed Hare agreed to help if asked. They would be asked to use a vector generator to present various modulations and resulting results. **AI-20:** ISED, Chamberlain and Hare to generate vector waveforms representing wireless modulations and record their variance with QP detection in radiated only. Ed will evaluate products with Peak, Avg. and QP detection and report the differences.

**8. C63.org website use and updates: Secretary** - We normally post documents to the [SC4 protected area](#). If any SC or 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:** (insert consolidated Action Item table from the previous meeting Minutes below)

**Consolidated Action Items from 11/28/18 Meeting of SC4**

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
<b>AI-14:</b>	Jerry to add Jonas Friden to the roster & WebEx	Jerry Ramie	Closed	Next meeting	Added 12/14
<b>AI-15:</b>	Jerry to run a two-week ballot at the Main Committee level upon receiving Edmund Lee's application	Jerry Ramie	Closed	Next meeting	Received 12/4 Balloted 12/14

**10. Time and place of next meeting: Chair - Week of Nov. 18 in Santa Rosa, CA.** Nate Potts of Keysight is hosting our meeting.

**11. Closing remarks and Adjournment: Chair** - The Chair thanked the WG chairs and members for their contributions and adjourned the meeting at 12:00PM-EDT.

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

**Consolidated Action Items from 5/1/19 Meeting of SC4**

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
<b>AI-16:</b>	Remove Art Wall & Werner Schaefer	Jerry Ramie	Closed	11/20/19	Removed 5/18

	from the roster. Dickten and Waitt to receive letter notifications.				Note sent 5/18
AI-17:	Jerry to add Bruce Fagley, John Repella and Guangqui Zhu to the appropriate rosters	Jerry Ramie	Closed	11/20/19	Added 5/18
AI-18:	DeLisi & Case to review and discuss C63.17 to see if it fits under SC4	Bob DeLisi Dave Case	Open	11/20/19	
AI-19:	Jerry to correct C63.26 status matrix text as shown	Jerry Ramie	Closed	11/20/19	Corrected 5/18
AI-20:	ISED, Chamberlain to generate vector waveforms representing wireless modulations and record their variance with QP detection in radiated only. Hare will evaluate products with Peak, Avg. and QP detection and report the differences.	Jason Nixon David Chamberlain Ed Hare	Open	11/20/19	