

C63[®] American National Standards Committee C63[®]

Electromagnetic Compatibility Subcommittee 4: Wireless and ISM Equipment

Chair: Nicholas Abbondante

Vice Chair: **Dave Case**

Secretary: Jerry Ramie

Oct. 3, 2023
3:00 PM – 5:00 PM - PDT
Google, Mtn. View, CA / Web-meeting

Approved Minutes

1. **Call to Order: Chair** - The meeting was called to order at 3:02PM-PDT
 - 1.1 **Announcements: Chair's remarks** - Welcome to the meeting!
 - 1.2 **Meeting logistics announcements: Host** - (N/A)
 - 1.3 **Introductions: Secretary – roll call** (record attending members with their affiliations and guests separately below) **Report any roster errors to the C63[®] Secretary** ([SC4 membership roster](#) from the website is shown below) Note **absences**, **excused absences** and **errors** below. **(See 6.2 for roster edits)**

Subcommittee 4 Membership Roster

Name	Role in SC	Affiliation
Abbondante, Nicholas	Chair	Intertek (Primary Rep)
Antola, Michael	Member	UL LLC (Alternate Rep)
Case, David	Vice Chair	Consultant (Individual)
Chamberlain, David	Member	Innovation, Science & Economic Development Canada (Expert)
Chen, Zhong	Member	ETS-Lindgren (Primary)
Coder, Jason	Member	NIST (Primary)
DeLisi, Bob	Member	UL LLC (Primary)
Elliott, William (Mac)	Member	TÜV SÜD America, Inc. (Primary)
Friden, Jonas	Member	Ericsson AB (Expert)
Graff, William	Member	TCB Council, Inc. (Primary)
Heckrotte, Mike	Member	UL LLC (Expert)
Hodes, Harry	Member	Consultant (Individual)
Hoolihan, Dan	Member	Hoolihan EMC Consulting (Individual)
House, Jody	Member	Element Materials Technology (Alternate)
Jones, Steve	Member	FCC Laboratory (Primary)
Kiemel, Greg	Member	Apple Inc. (Primary)
Klinger, Jeff	Member	Cetecom, Inc.
Kramer, Doug	Member	Apple Inc. (Expert)
Lee, Edmund	Member	Apple Inc. (Expert)
Mahn, Terry	Member	Fish & Richardson P.C.
Mendoza, Ernesto	Member	Signify
Molaei, Nima	Member	Element Materials Technology Washington DC LLC (Primary)
Nixon, Jason	Member	Innovation, Science and Economic Development Canada (Primary)
Pino, Dan	Member	Element Materials Technology Washington DC LLC (Expert)

Royer, Tim	Member	TIMCO ENGINEERING, INC. (Primary)
Salem, Pelin	Member	Cisco Systems, Inc. (Technical Expert)
Sigouin, Dan	Member	TIMCO ENGINEERING, INC. (Technical Expert)
Skoglund, Kenth	Member	Ericsson AB (Primary)
Zimmerman, Dave	Member	Spectrum EMC, LLC (Individual)

Guests and Observers: (non-voting) Jerry Ramie, Mark Arthurs, Steve Anderson, Deanna Zakharia, Randy Long, Henry Benitez, Bo Li, Victor Kuczynski, Ken Gjerde, Warwick Wong

1.4 Quorum: (50% of roster) constitutes a quorum. (rounding up) (29 roster members / 2 = 14.5 >> therefore **15 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 Consent Agenda (includes [Agenda](#) & [previous Minutes](#)): Secretary - The Consent Agenda was approved by acclamation. ([Previous Approved Minutes](#))

2.1 Review of the [patent slides](#) - The patent slides were reviewed and all agreed to abide by the policies shown.

3. Review of [Subcommittee Membership](#): Secretary - Report any errors to the ANSC-C63® 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?

20191120	20200602	20200924	20210225	20210527	20210909	20220215	20220517	20221108	20230510	SC4 Roster:
	x	x	x	x	x	x	x	x	x	Abbondante, Nicholas
			x	x	x	x	x	x	x	Antola, Michael
x	x	x	x	x	x	x	x	x	x	Case, David
x	x	x	x	x	x	x	x	x	x	Chamberlain, David
x			x	x	x	x	x	x	x	Chen, Zhong
			x	x	x	x	x	x	x	Coder, Jason
x	x	x	x	x	x	x	x	x	x	DeLisi, Bob
x	x	x	x	x	x	x	x	x	x	Elliott, William (Mac)
	x				x			x	x	Friden, Jonas
x			x		x	x	x		x	Graff, William
										Heckrotte, Mike
							x			Hodes, Harry
x	x	x	x	x		a	x	x	x	Hoolihan, Dan
						x	x	x	x	House, Jody
x	x	x	x	x		x	x	x	x	Jones, Steve
x	x	x	x	x	x		x	x	x	Kiemel, Greg
x	x		x	x	x	x	x	x		Klinger, Jeff
x		x			x	x	x		x	Kramer, Doug
x		x	x	x		x	x		x	Lee, Edmund
	x			x				a		Mahn, Terry
	x	x	x	x	x	x	x	x	x	Mendoza, Ernesto
x	x	x	x	x	x	x		x		Molaei, Nima
x	x	x	a		x	x	x	x	x	Nixon, Jason
			x					x	x	Pino, Dan
								x		Royer, Tim
						x	x	x	x	Salem, Pelin
x		x		x	a					Sigouin, Dan
x	x	x		x	x	x		x	x	Skoglund, Kenth
x	x		x	x	x				x	Zimmerman, Dave

Any members at risk? [Dan Sigouin](#) is at risk.

3.2 Consideration of new SC4 members? [Application for C63® Subcommittee Membership](#) Mike Heckrotte was accepted for Membership at our last meeting.

4. Working Group reviews - 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. The WG reports shall be made using either the [C63 PowerPoint template](#) or the [C63 PowerPoint template wide](#). **(IMPLEMENTED below on 10/11)**

4.1 C63.10 Unlicensed transmitters - Nixon

4.1.1 Status Matrix Review Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (Yes)**

C63.10-2020 Learn more	Procedures for compliance testing of unlicensed wireless devices	SC 4	Nixon, Jason	C63.10 PINS	Published 1/29/2021. No further work scheduled on the document. WG disbanded.
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C63.10: C63.10-2020 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: Published 1/29/2021. No further work scheduled on the document. WG disbanded.

Purchase: [Search IEEE Standards](#) - Enter C63 Standard number then Search (Enter) - Click on the version you want - Click on Purchase

4.2 C63.10 – draft Corrigendum v1 - Nixon - Approved by IEEE; into Pubs

4.2.1 Status Matrix Review Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (No)**

C63.10 Corr1-2023 Learn more	Procedures for compliance testing of unlicensed wireless devices	SC 4	Nixon, Jason	C63.10 Corr1 PINS	Corrigendum to fix errors in the standard. Published.
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C63.10-2020 ~~C63.10~~ CORR-1 2023 American National Standard for Testing Unlicensed Wireless Devices

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

Scope: This corrigendum of C63.10:2020 Standard for American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices, will correct an error in the UWB -10 dB bandwidth, correct an error in the pulsed desensitization formula, clarify for WPT devices are tested to ASC C63.30 for the WPT functions and harmonize clause 6.2.2 related to the use of an extension cord between the EUT and the LISN.

Status: New Corrigendum. **Published.**

Purchase: [Search IEEE Standards](#) - Enter C63 Standard number then Search (Enter) - Click on the version you want - Click on Purchase

4.3 C63.10 –Amend 1 - Molaei

4.3.1 Status Matrix Review Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (No)**

C63.10- 202X Amend 1 Learn more	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	SC 4	Molaei, Nima	C63.10 Amend 1 PINS	Amendment to address NFC OBW measurements, guidance for absorber use for UWB ground penetrating radar, other items as deemed necessary
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C63.10-2020 ~~C63.10~~ AMD-1 202X American National Standard for Testing Unlicensed Wireless Devices

Contact: [Nima Molaei](#)

Scope: This amendment of C63.10:2020 Standard for American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices, will add bandwidth (Relative and Occupied) measurement procedures for device that exhibit fundamental emissions above the modulation signals. It will also address guidance for use of absorber material, in lieu of sand, as a load for ground penetrating radar and will update NII procedures for newly introduced emission mask requirements based on updated FCC and ISED rules.

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

Purchase: This Amendment is not yet complete and not available for purchase

4.4 C63.26 – Licensed transmitters - Elliott

4.4.1 Status Matrix Review Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (No)**

C63.26- 202x Learn more	Procedures for compliance testing of licensed transmitters	SC 4	Elliott, William	C63.26 PINS	2015 edition under revision
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C63.26-202X: American National Standard of procedures for compliance testing of transmitters used in licensed radio services

Contact: [Elliott, William](#) (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. Draft is being written.**

Purchase: **This Draft is not yet complete and not available for purchase**

4.5 C63.29 – Lighting equipment - Mendoza AI-59: Bob to send copies of C63.29 to the working group members.

4.5.1 Status Matrix Review Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (No)**

C63.29-2022 Learn more	Lighting products	SC 4	Mendoza, Ernesto	C63.29 PINS	Published 12/1/22.
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C63.29-2022: 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: Published 12/1/22

Purchase: [Search IEEE Standards](#) - Enter C63 Standard number then Search (Enter) - Click on the version you want - Click on Purchase

4.6 C63.30 – Wireless Power Transfer equipment - Thul

4.6.1 Status Matrix Review Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (Yes)**

C63.30-2021 Learn more	Wireless Power Transfer Products	SC 4	Thul, Travis	C63.30 PINS	Published. WG disbanded.
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C63.30-2021: 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: Balloting complete – document passed. WG disbanded.

Purchase: [Search IEEE Standards](#) - Enter C63 Standard number then Search (Enter) - Click on the version you want - Click on Purchase

4.7 C63.31 – ISM equipment - Abbondante

4.7.1 Status Matrix Review Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (Yes)**

C63.31-draft Learn more	ISM equipment (MP-5)	SC 4	Abbondante, Nicholas	C63.31 PINS	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: [Abbondante, Nicholas](#) (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.

4.8 **C63.xx White Paper** - Massive MIMO - PINS-C Project - Case

4.81 Status Matrix Review Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-C63® Secretary. **Is this information correct? (No)**

C63.xx White Paper (pending) Learn more	Massive MIMO Test Distance Study	SC 4	Case, David	C63.xx PINS-C*	Develop a White paper on testing issues to consider in regards to Near / Far field issues when measuring active antennas
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~~C63.xx~~-pending: **White Paper - Massive MIMO Test Distance Study**

Contact: [Case, David](#) (Working Group Chair)

Scope: This working group will study how to provide guidance in measurements when the required separation distance is larger than that available due to the minimum wavelength as determined by the antenna design.

Status: Study project

Purchase: Not yet available for sale.

5. Old Business: Chair

5.1 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](#)

WG Reports:

C63.10 - [Working group report from Nima](#) was shown

C63.26 - [Working group report from William](#) (Mac) was shown

C63.29 - Completed and published. **AI-60:** Ernesto to create a new PINS for the next version of C63.29. Include all items you want changed, such as Multi-channel lamps; grow lamps/luminaires; tunable lamps / human benefit; generic text from C63.4 to be removed and just cite the Standard. Li-Fi communications; burglar-alarm sensors in lighting (non-radio portion).

C63.30 - no report, Bob noted that we petitioned the FCC two years ago and it isn't adopted there yet. **AI-61:** Nick to contact Travis Thul re/ next edition of C63.30, discuss a new PINS

C63.31 - [Working group report from Nicholas](#) was shown.

Massive MIMO Distance Study - no report

5.2 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.

5.3 Coordination with SC3 for harmonization – Are there any documents that need to be brought to SC3 for harmonization? WG chairs to provide input:

6. New Business: Chair

6.1 - New work items? – open discussion for SC4 - Abbondante - New PINS for C63.29 and C63.30. The C63.10 new PINS has been posted and David Chamberlain is Chair and Nick is the new Vice Chair for the 4th edition of C63.10. **AI-62:** Jerry to circulate a request for C63.10 Ed.4 members (and the previous WG roster & Main & SC4) to join existing C63.10 Amd WG roster. Discuss Secretary role at Steering Committee.

6.2 - Review Scope, Duties and Membership - Abbondante -

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 ANSC-C63®. **(IMPLEMENTED below 10/11)**

Subcommittee 4 Membership Roster

Name	Role in SC	Affiliation
Abbondante, Nicholas	Chair	Intertek (Primary Rep)
Antola, Michael	Member	UL LLC (Alternate Rep)
Case, Dave	Vice Chair Member	Consultant (Individual)
Chamberlain, David	Member	Innovation, Science & Economic Development Canada (Expert)
Chen, Zhong	Member	ETS-Lindgren (Primary)
Coder, Jason	Member	NIST (Primary)
DeLisi, Bob	Member	UL LLC (Primary)
Elliott, William (Mac)	Member	TÜV SÜD America, Inc. (Primary)
Friden, Jonas	Member	Ericsson AB (Expert)
Graff, William	Member	TCB Council, Inc. (Primary)
Heckrotte, Mike	Member	UL LLC (Expert)
Hodes, Harry	Member	Consultant (Individual)
Hoolihan, Dan	Member	Hoolihan EMC Consulting (Individual)
House, Jody	Member	Element Materials Technology (Expert)
Jones, Steve	Member	FCC Laboratory (Primary)
Kiemel, Greg	Member	Apple Inc. (Primary)
Klinger, Jeff	Member	Cetecom, Inc.
Kramer, Doug	Member	Apple Inc. (Expert)
Lee, Edmund	Member	Apple Inc. (Expert)
Mahn, Terry	Member	Fish & Richardson P.C.
Mendoza, Ernesto	Member	Signify
Molaei, Nima	Member	Element Materials Technology Washington DC LLC (Primary Rep)
Nixon, Jason	Member Vice Chair	Innovation, Science & Economic Development Canada (Primary Rep)
Pino, Dan	Member	Element Materials Technology Washington DC LLC (Technical Expert)
Royer, Tim	Member	TIMCO Engineering Inc., an IIA Company (Primary)
Salem, Pelin	Member	Cisco Systems, Inc. (Technical Expert)
Sigouin, Dan	Member	TIMCO Engineering Inc., an IIA Company (Technical Expert)
Skoglund, Kenth	Member	Ericsson AB (Primary)
Zimmerman, Dave	Member	Spectrum EMC, LLC (Individual)

Subcommittee 4 Working Groups

Membership Guidelines for 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.

C63.10 Amend. (Unlicensed wireless) Working Group Roster

Name	Role in WG	Affiliation
Abbondante, Nicholas	Member	Intertek (Primary Rep)
Antola, Michael	Member	UL LLC (Alternate)
Bartko, Hendrik	Member	Rohde & Schwarz (Expert)
Chamberlain, David	Member	Innovation, Science & Economic Development Canada (Expert)
DeLisi, Bob	Member	UL LLC (Primary)
Ekiert, Tom	Member	Bosch Security Systems, LLC
Graff, William	Member	TCB Council, Inc. (Primary)
Jones, Steve	Member	FCC Laboratory (Primary)
Kiemel, Greg	Member	Apple Inc. (Primary)
Koebele, Johannes	Member	Rohde & Schwarz (Expert)
Manacorda, Guido	Member	Euro - GPR
Molaei, Nima	Chair	Element Materials Technology Washington DC LLC (Alternate)
McGann, Ryan	Member	Bureau Veritas Consumer Product Services, Inc.
Nixon, Jason	Member	Innovation, Science & Economic Development Canada (Primary)
Patel, Ronak	Member	Cisco Systems (Expert)
Paxman, Robert	Vice Chair	Intel
Ramie, Jerry (non-voting)	Secretary	ARC Technical Resources (ANSC-C63 Secretary)
Schaefer, David	Member	Element Materials Technology (Primary)
Sellergren, Sean	Member	TÜV SÜD America, Inc. (Expert)
Zainal, Khairul	Member	Apple, Inc. (Expert)
Zhao, Yujuan	Member	Intel

C63.26 (Licensed wireless) Working Group Roster

Name	Role in WG	Affiliation
Elliott, William (Mac)	Chair	TÜV SÜD America, Inc. (Primary)
Case, Dave	Vice Chair	Consultant (Individual)
Zakharia, Deanna	Secretary	Motorola Solutions (Primary)
Abbondante, Nicholas	Member	Intertek ETL SEMKO (Primary)
Arthurs, Mark	Member	Sony
Bria, Aurelian	Member	Ericsson AB (Alternate)
Briggs, Mark	Member	UL Verification Services Inc.
Carlton, Ross	Member	Gibbs & Cox (ARRL Expert)
Chamberlain, David	Member	Innovation, Science & Economic Development Canada (Expert)
Crumm, Allen	Member	SSC Labs
DeLisi, Bob	Member	UL LLC (Primary)
Demirci, Deniz	Member	National Technical Systems - Silicon Valley
Forrester, John	Member	Qualcomm Technologies, Inc. (Primary Rep)
Fridén, Jonas	Member	Ericsson AB (Expert)
Graff, William	Member	TCB Council, Inc. (Primary)

Harrington, Tim	Member	FCC (Expert)
Ho, Alexander	Member	Sporton
House, Jody	Member	Element Materials Technology (Alternate Rep)
Haynberg, Sean	Member	V-Comm, LLC
Heckrotte, Michael	Member	UL Verification Services Inc.
Jones, Steve	Member	FCC (Primary)
Kiemel, Greg	Member	Apple Inc. (Primary)
Kuczynski, Victor	Member	Vican Electronics
Klinger, Jeff	Member	Cetecom, Inc.
Lee, Edmund	Member	Apple Inc. (Expert)
Li, C.K.	Member	Nextivity, Inc.
Lin, Grace	Member	HYTORC
Mahn, Terry	Member	Fish & Richardson P.C.
McGann, Ryan	Member	Bureau Veritas Consumer Product Services, Inc.
McMillen, Shawn	Member	Compliance Testing, LLC
Mellberg, Hans	Member	Consultant
Molaei, Nima	Member	Element Materials Technology Washington DC LLC (Alternate Rep)
Nixon, Jason	Member	Innovation, Science & Economic Development Canada (Primary Rep)
Parikh, Hemish	Member	Qualcomm Technologies, Inc. (Expert)
Parry, Mikel	Member	Wilson Electronics
Paxman, Robert	Member	Intel Corporation
Pino, Dan	Member	Element Materials Technology Washington DC LLC (Expert)
Rapella, John	Member	Washington Laboratories, Ltd.
Roman, John	Member	Intel Corporation
Royer, Tim	Member	TIMCO Engineering Inc., an IIA Company (Primary)
Salinas, Daniel	Member	Microsoft
Schramm, David	Member	SGS North America, Inc.
Shumakov, Denys	Member	Innovation, Science & Economic Development Canada (Expert)
Sigouin, Dan	Member	TIMCO Engineering Inc., an IIA Company (Expert)
Stumpf, Bill	Member	D.L.S. Electronic Systems
Ho, Sze Khian	Member	Motorola Solutions (Alternate Rep)
Terrien, Mark	Member	Consultant
Vagenas, Tom	Member	Mobile Communications, Inc.
Wong, Eddie	Member	CKC Laboratories, Inc.
Zainal, Khairul	Member	Apple Inc. (Expert)
Zhan, Hongtao	Member	SureCall Inc.
Zhao, Yujuan	Member	Intel

C63.29 (Lighting products) Working Group Roster

Name	Role in WG	Affiliation
Mendoza, Ernesto	Chair	Signify
Spehalski, Bob	Vice Chair	Lutron Electronics Co., Inc.
Crumm, Allen (non-voting)	Secretary	SSC Labs
Abbondante, Nicholas	Member	Intertek (Primary Rep)
Beattie, Chad	Member	FCC Lab (Expert)

Bloomfield, Carl	Member	Intertek (Expert)
Case, Dave	Member	Consultant (Expert)
DeLisi, Bob	Member	UL LLC (Primary Rep)
Klinger, Jeff	Member	Cetecom, Inc.
Lin, Grace	Member	HYTORC
Newman, Bob	Member	Lutron Electronics Co., Inc.
O'Steen, Steve	Member	TÜV SÜD America, Inc. (Expert)
Parisella, Joe	Member	OSRAM
Popovici, Horia	Member	Innovation, Science & Economic Development Canada (Alternate Rep)

C63.30 (Wireless Power Transfer) Working Group Roster

Name	Role in WG	Affiliation
Working Group disbanded	ANSI-63.30-2021 will be published soon	Purchase: IEEE Store . To purchase individual standards, go to the IEEE store and search on the standard number.

C63.31 (ISM Equipment) Working Group Roster

Name	Role in WG	Affiliation
Abbondante, Nicholas	Chair	Intertek
Walton, Derek	Vice Chair	LF Research
Crumm, Allen	Secretary	SSC Labs
Beattie, Chad	Member	FCC Lab
Briggs, Mark	Member	UL Verification Services Inc.
DeLisi, Bob	Member	UL LLC
Frierson, Steven	Member	SGS North America, Inc.
Granger, Jason	Member	Electrolux
Heckrotte, Michael	Member	UL Verification Services Inc.
Hoolihan, Dan	Member	Hoolihan EMC Consultants, Inc.
House, Jody	Member	Element Materials Technology
Kiemel, Greg	Member	Apple Inc. (Primary Rep)
Klinger, Jeff	Member	Cetecom, Inc.
Krueger, Joe	Member	Miller Electric Mfg. LLC
Lin, Grace	Member	HYTORC
Manning, Billy	Member	Energous Corporation
Mellberg, Hans	Member	Consultant
Molaei, Nima	Member	Element Materials Technology Washington DC LLC
O'Steen, Steve	Member	TÜV SÜD America, Inc.
Popovici, Horia	Member	Innovation, Science and Economic Development Canada
Royer, Tim	Member	TIMCO Engineering Inc., an IIA Company (Primary)
Sigouin, Dan	Member	TIMCO Engineering Inc., an IIA Company (Expert)
Thul, Travis	Member	Minnesota State College Southeast
Wilhelm, Johann	Member	Wilhelm Consulting

Massive MIMO Distance Study Project

Name	Role in WG	Affiliation
Case, Dave	Chair	Consultant (Individual)
Jerry Ramie (non-voting)	Secretary	ARC Technical Resources (ANSC C63 Secretary)
Abbondante, Nicholas	Member	Intertek (Primary Rep)
Bria, Aurelian	Member	Ericsson AB (Alternate Rep)
Chamberlain, David	Member	Innovation, Science & Economic Development Canada
Coder, Jason	Member	NIST (Primary Rep)
DeLisi, Bob	Member	UL LLC (Primary Rep)
Derat, Benoit	Vice Chair	Rohde & Schwarz (Expert)
Fridén, Jonas	Member	Ericsson AB (Expert)
Graff, William	Member	TCB Council, Inc. (Primary)
Heckrotte, Michael	Member	UL Verification Services Inc.
Jones, Steve	Member	FCC (Primary Rep)
Lin, Grace	Member	HYTORC
Nixon, Jason	Member	Innovation, Science & Economic Development Canada (Primary Rep)
Paxman, Robert	Member	Intel
Razavi, Aidin	Member	Ericsson AB (Expert)
Salem, Pelin	Member	Cisco Systems, Inc. (Expert)
Shumakov, Denys	Member	Innovation, Science & Economic Development Canada (Expert)
Terrien, Mark	Member	Consultant

7. **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.

8. Review of the Action Items: Secretary

8.1 Review of Action Items from this meeting: (read Action Items to Members, who must agree that they understand their meaning)

8.2 Review of Action Items from previous meeting: Consolidated Action Item table from the previous meeting Minutes is shown below:

Consolidated Action Items from 05/10/22 Meeting of SC4

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
AI-42:	Bob & Travis to provide a comparison report on C63.30 to SC3.	Bob DeLisi Travis Thul Horia Popovici	Closed	Next meeting	Horia will do the comparison
AI-55:	Jerry to send a letter to Dan Sigouin regarding attendance	Jerry Ramie	Closed	Next meeting	Sent 5/10
AI-56:	Jerry to add Mike Heckrotte to SC4 roster & Tom Ekiert to the C63.10 Amd. roster	Jerry Ramie	Closed	Next meeting	Added 5/10
AI-57:	Bob to send SC4 the info on the FCC R&O	Bob DeLisi	Closed	Next meeting	Received 5/10
AI-58:	Jerry to remove Ed Hare from the C63.29 & C63.31 rosters	Jerry Ramie	Closed	Next meeting	Removed 5/10

9. **Time and place of next meeting: Chair - TBD** (Week of May 12 in RTP)

10. Closing remarks and Adjournment: Chair - The Chair thanked the group and adjourned the meeting at 4:46PM-PDT.

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

Consolidated Action Items from 10/03/22 Meeting of SC4

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
AI-59:	Bob to send copies of C63.29 to the working group members	Bob DeLisi	Open	Next meeting	
AI-60:	Ernesto to create a new PINS for the next version of C63.29. Include all items you want changed, such as Multi-channel lamps; grow lamps/luminaires; tunable lamps / human benefit; generic text from C63.4 to be removed and just cite the Standard. Li-Fi communications; burglar-alarm sensors in lighting (non-radio portion)	E. Mendoza	Open	Next meeting	
AI-61:	Nick to contact Travis Thul re/ next edition of C63.30, discuss a new PINS	N. Abbondante	Open	Next meeting	
AI-62:	Jerry to circulate a request for C63.10 Ed.4 members (and the previous WG roster & Main & SC4) to join existing C63.10 Amd WG roster.	Jerry Ramie	Closed	Next meeting	Mailed 10/12