

# C63<sup>®</sup> American National Standards Committee C63<sup>®</sup>

## Electromagnetic Compatibility Subcommittee 4: Wireless and ISM Equipment

Chair: Bob Delisi

Vice Chair: Dave Case

Secretary: Jerry Ramie

May 10, 2023  
3:00 PM – 5:00 PM - EDT  
A2LA, Frederick, MD / Web-meeting

### Approved Minutes

1. **Call to Order: Chair** - The Chair called the meeting to order at 3:00PM-EDT
  - 1.1 **Announcements: Chair's remarks** - Thanks for attending!
  - 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<sup>®</sup> Secretary** ([SC4 membership roster](#) from the website is shown below) Note **absences**, **excused absences** and **errors** below.

### Subcommittee 4 Membership Roster

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

<a href="#">Salem, Pelin</a>	Member	Cisco Systems, Inc. (Technical Expert)
<a href="#">Sigouin, Dan</a>	Member	TIMCO ENGINEERING, INC. (Technical Expert)
<a href="#">Skoglund, Kenth</a>	Member	Ericsson AB (Primary)
<a href="#">Zimmerman, Dave</a>	Member	Spectrum EMC, LLC (Individual)

**Guests and Observers:** (non-voting) Jerry Ramie, Randy Long, Wally Arceneau, Alain Abou-Zeid, Victor Kuczynski, Henry Benitez, William Elliott, Aurelian Bria, Zhong Chen, Janet O'Neil

**1.4 Quorum: (50% of roster) constitutes a quorum.** (rounding up) (28 roster members / 2 = 14 >> therefore **14 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)

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

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

**2.1 Approval of the previous Minutes - [20221108](#)** The previous Minutes were reviewed in a line-by-line manner and [approved](#) by acclamation.

**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?

20190501	20191120	20200602	20200924	20210225	20210527	20210909	20220215	20220517	20221108	SC4 Roster:
		x	x	x	x	x	x	x	x	<a href="#">Abbondante, Nicholas</a>
				x	x	x	x	x	x	<a href="#">Antola, Michael</a>
x	x	x	x	x	x	x	x	x	x	<a href="#">Case, David</a>
x	x	x	x	x	x	x	x		x	<a href="#">Chamberlain, David</a>
x	x			x	x	x	x	x	x	<a href="#">Chen, Zhong</a>
				x	x	x	x	x	x	<a href="#">Coder, Jason</a>
x	x	x	x	x	x	x	x	x	x	<a href="#">DeLisi, Bob</a>
x	x	x	x	x	x	x	x	x	x	<a href="#">Elliott, William (Mac)</a>
x		x				x			x	<a href="#">Friden, Jonas</a>
x	x			x		x	x	x		<a href="#">Graff, William</a>
								x		<a href="#">Hodes, Harry</a>
x	x	x	x	x	x		a	x	x	<a href="#">Hoolihan, Dan</a>
							x	x	x	<a href="#">House, Jody</a>
x	x	x	x	x	x		x	x	x	<a href="#">Jones, Steve</a>
	x	x	x	x	x	x		x	x	<a href="#">Kiemel, Greg</a>
x	x	x		x	x	x	x	x	x	<a href="#">Klinger, Jeff</a>
x	x	x	x			x	x	x		<a href="#">Kramer, Doug</a>
x	x		x	x	x		x	x		<a href="#">Lee, Edmund</a>
		x			x				a	<a href="#">Mahn, Terry</a>
		x	x	x	x	x	x	x	x	<a href="#">Mendoza, Ernesto</a>
	x	x	x	x	x	x	x	x	x	<a href="#">Molaei, Nima</a>
x	x	x	x	a		x	x	x	x	<a href="#">Nixon, Jason</a>
x				x					x	<a href="#">Pino, Dan</a>
									x	<a href="#">Royer, Tim</a>
							x	x	x	<a href="#">Salem, Pelin</a>
	x		x		x	a				<a href="#">Sigouin, Dan</a>
x	x	x	x		x	x	x		x	<a href="#">Skoglund, Kenth</a>
	x	x		x	x	x				<a href="#">Zimmerman, Dave</a>

**Any members at risk?** [Dan Sigouin](#) & [Dave Zimmerman](#) are at risk. Dave attended today and is no longer at risk. **AI-55:** Jerry to send a letter to Dan Sigouin regarding attendance.

### 3.2 Consideration of new SC4 members? [Application for C63® Subcommittee Membership](#)

**Mike Heckrotte:** [Application](#) [CV/Resume](#) Dave Case moved, seconded by Nick Abbondante, to accept his application for SC4 membership; he was accepted unanimously.

**Tom Ekiert:** [Application](#) [Resume](#) Nick moved, seconded by Mike Heckrotte, to accept his application for C63.10 Amd membership; he was accepted unanimously

**AI-56:** Jerry to add Mike Heckrotte to SC4 roster & Tom Ekiert to the C63.10 Amd. roster.

**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](#).

#### 4.1 C63.10 Unlicensed transmitters - Nixon

**4.11 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 <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>	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

**4.21 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 Corr1-202X <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 Corr1 PINS</a>	Corrigendum to fix errors in the standard. Draft with IEEE for publication.
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### C63.10: C63.10 CORR-1 202X 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. Draft with IEEE for recirculation ballot.

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

## 4.3 C63.10 –Amend 1 - Molaei

**4.31 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- 202X Amend 1 <a href="#">Learn more</a>	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	<a href="#">SC 4</a>	<a href="#">Molaei, Nima</a>	<a href="#">C63.10 Amend 1 PINS</a>	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: C63.10 AMD-1 202X American National Standard for Testing Unlicensed Wireless Devices

**Contact:** TBD

**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 to be developed.

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

## 4.4 C63.26 – Licensed transmitters - Elliott

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

C63.26- 2015 <a href="#">Learn more</a>	Procedures for compliance testing of licensed transmitters	<a href="#">SC 4</a>	<a href="#">Elliott, William</a>	<a href="#">C63.26 PINS</a>	2015 edition 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:** [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. New work is pending.

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

## 4.5 C63.29 – Lighting equipment - Mendoza

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

C63.29-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. Sent to IEEE for publication.
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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. Sent to IEEE for publication.

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

## 4.6 C63.30 – Wireless Power Transfer equipment - Thul

**4.61 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 <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>	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

**4.71 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 <a href="#">Learn more</a>	ISM equipment (MP-5)	<a href="#">SC 4</a>	<a href="#">Abbondante, Nicholas</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:** [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 - 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? (Yes)**

C63.xx (pending) <a href="#">Learn more</a>	Massive MIMO Test Distance Study	<a href="#">SC 4</a>	<a href="#">Case, David</a>	<a href="#">C63.xx PINS-C*</a>	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: 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 Amd** - a [Presentation](#) was shown

**C63.26** - a [Presentation](#) was shown

**C63.29** - with IEEE for publication

**C63.30** - published

**C63.31** - a [Presentation](#) was shown

**Massive MIMO Distance Study** - a [Presentation](#) was shown. [new draft from Pelin](#) Bob suggested publishing the paper "somewhere." Nick stated that it could be published on our site or ask the FCC to publish it. We could submit it to the IEEE as a symposium paper or publish in IEEE Xplore. Dave wanted us to make sure we retain access to the content even if it's published. (EMC Europe) We could do a Presentation on the content without publishing it. SC4 should come up with a recommendation for the Main Committee. Bob asked the SC if we should publish to our website. Nick asked what our obligation to IEEE is regarding this paper? Jason Coder asked if we can drive traffic to our site? Dan H. reviewed the contract with IEEE. All draft Standards are jointly copyrighted. We can ask Mr. Mahn what text to include to avoid a conflict or if we need to self-copyright. Mike H asked who the audience would be? Janet suggested a LinkedIn account. Nick suggested speaking at Symposia. Pelin offered to help with LinkedIn.

**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. SC2 met today and asked if you have any definitions, please work with them to get definitions to them as you develop the Standard. Otherwise, it will take at least 45 days to review.

**5.2 Coordination with SC3 for harmonization** – Are there any documents that need to be brought to SC3 for harmonization? WG chairs to provide input to the Subcommittee.

## 6. New Business: Chair -

**6.1 - ET Docket No. 21-363 – C63.10:2020, C63.4a and C63.25.1** - FCC has adopted these Standards C63.10 has a 2-year transition period. **AI-57:** Bob to send SC4 the info on the FCC R&O:

FCC UPDATES EQUIPMENT AUTHORIZATION RULES TO INCORPORATE NEW AND REVISED INDUSTRY STANDARDS. We update our rules to incorporate four new and updated standards that are integral to equipment testing. . (Dkt No 21-363). Action by: The Commission. Adopted: 2023-03-10 by R&O. (FCC No. 23-14). OET.

[FCC-23-14A1.docx](#)

[FCC-23-14A1.pdf](#)

[FCC-23-14A1.txt](#)

March 14, 2023 - Report and Order

[FCC Updates Equipment Authorization Standards](#)

**6.2 - PINS for C63.10** - David Chamberlain moved, seconded by Dave Case to accept the modified PINS. The [modified PINS](#) were accepted.

**6.3 - Review Scope, Duties and Membership - DeLisi** - Dan H. moved, seconded by Dave Z. to accept the Scope, Duties and Membership in SC4. These were adopted unanimously. **AI-58:** Jerry to remove [Ed Hare](#) from the C63.29 & C63.31 rosters.

## 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®.

## Subcommittee 4 Membership Roster

Name	Role in SC	Affiliation
<a href="#">Abbondante, Nicholas</a>	Member	Intertek (Primary Rep)
<a href="#">Antola, Michael</a>	Member	UL LLC (Alternate Rep)
<a href="#">Case, Dave</a>	Vice Chair	Consultant (Individual)
<a href="#">Chamberlain, David</a>	Member	Innovation, Science & Economic Development Canada (Expert)
<a href="#">Chen, Zhong</a>	Member	ETS-Lindgren (Primary)
<a href="#">Coder, Jason</a>	Member	NIST (Primary)
<a href="#">DeLisi, Bob</a>	Chair	UL LLC (Primary)
<a href="#">Elliott, William (Mac)</a>	Member	TÜV SÜD America, Inc. (Primary)
<a href="#">Friden, Jonas</a>	Member	Ericsson AB (Expert)
<a href="#">Graff, William</a>	Member	TÜV Rheinland of North America (Primary)
<a href="#">Heckrotte, Mike</a>	Member	UL LLC (Expert)
<a href="#">Hodes, Harry</a>	Member	Consultant (Individual)
<a href="#">Hoolihan, Dan</a>	Member	Hoolihan EMC Consulting (Individual)
<a href="#">House, Jody</a>	Member	Element Materials Technology (Alternate)
<a href="#">Jones, Steve</a>	Member	FCC Laboratory (Primary)
<a href="#">Kiemel, Greg</a>	Member	Apple Inc. (Primary)
<a href="#">Klinger, Jeff</a>	Member	Cetecom, Inc.
<a href="#">Kramer, Doug</a>	Member	Apple Inc. (Expert)
<a href="#">Lee, Edmund</a>	Member	Apple Inc. (Expert)

<a href="#">Mahn, Terry</a>	Member	Fish & Richardson P.C.
<a href="#">Mendoza, Ernesto</a>	Member	Signify
<a href="#">Molaei, Nima</a>	Member	Element Materials Technology Washington DC LLC (Alternate Rep)
<a href="#">Nixon, Jason</a>	Member	Innovation, Science & Economic Development Canada (Primary Rep)
<a href="#">Pino, Dan</a>	Member	Element Materials Technology Washington DC LLC (Technical Expert)
<a href="#">Royer, Tim</a>	Member	TIMCO Engineering Inc., an IIA Company (Primary)
<a href="#">Salem, Pelin</a>	Member	Cisco Systems, Inc. (Technical Expert)
<a href="#">Sigouin, Dan</a>	Member	TIMCO Engineering Inc., an IIA Company (Technical Expert)
<a href="#">Skoglund, Kenth</a>	Member	Ericsson AB (Primary)
<a href="#">Zimmerman, Dave</a>	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
<a href="#">Abbondante, Nicholas</a>	Member	Intertek (Primary Rep)
<a href="#">Abou-Zeid, Alain</a>	Member	Innovation, Science & Economic Development Canada (Technical Expert)
<a href="#">Antola, Michael</a>	Member	UL LLC (Alternate)
<a href="#">Bartko, Hendrik</a>	Member	Rohde & Schwarz (Expert)
<a href="#">Chamberlain, David</a>	Member	Innovation, Science & Economic Development Canada (Expert)
<a href="#">DeLisi, Bob</a>	Member	UL LLC (Primary)
<a href="#">Graff, William</a>	Member	TÜV Rheinland of North America (Primary)
<a href="#">Jones, Steve</a>	Member	FCC Laboratory (Primary)
<a href="#">Kiemel, Greg</a>	Member	Apple Inc. (Primary)
<a href="#">Koebele, Johannes</a>	Member	Rohde & Schwarz (Expert)
<a href="#">Manacorda, Guido</a>	Member	Euro - GPR
<a href="#">Molaei, Nima</a>	Chair	Element Materials Technology Washington DC LLC (Alternate)
<a href="#">McGann, Ryan</a>	Member	Bureau Veritas Consumer Product Services, Inc.
<a href="#">Nixon, Jason</a>	Member	Innovation, Science & Economic Development Canada (Primary)
<a href="#">Patel, Ronak</a>	Member	Cisco Systems (Expert)
<a href="#">Paxman, Robert</a>	Vice Chair	Intel
<a href="#">Ramie, Jerry</a> (non-voting)	Secretary	ARC Technical Resources (ANSC-C63 Secretary)
<a href="#">Schaefer, David</a>	Member	Element Materials Technology (Primary)
<a href="#">Sellergren, Sean</a>	Member	TÜV SÜD America, Inc. (Expert)
<a href="#">Zainal, Khairul</a>	Member	Apple, Inc. (Expert)



<a href="#">Zhao, Yujuan</a>	Member	Intel
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## C63.26 (Licensed wireless) Working Group Roster

Name	Role in WG	Affiliation
<a href="#">Elliott, William (Mac)</a>	Chair	TÜV SÜD America, Inc. (Primary)
<a href="#">Case, Dave</a>	Vice Chair	Consultant (Individual)
<a href="#">Zakharia, Deanna</a>	Secretary	Motorola Solutions (Primary)
<a href="#">Abbondante, Nicholas</a>	Member	Intertek ETL SEMKO (Primary)
<a href="#">Abou-Zeid, Alain</a>	Member	Innovation, Science & Economic Development Canada (Expert)
<a href="#">Arthurs, Mark</a>	Member	Sony
<a href="#">Bria, Aurelian</a>	Member	Ericsson AB (Alternate)
<a href="#">Briggs, Mark</a>	Member	UL Verification Services Inc.
<a href="#">Carlton, Ross</a>	Member	Gibbs & Cox (ARRL Expert)
<a href="#">Chamberlain, David</a>	Member	Innovation, Science & Economic Development Canada (Expert)
<a href="#">Crumm, Allen</a>	Member	SSC Labs
<a href="#">DeLisi, Bob</a>	Member	UL LLC (Primary)
<a href="#">Demirci, Deniz</a>	Member	National Technical Systems - Silicon Valley
<a href="#">Forester, John</a>	Member	Qualcomm Technologies, Inc. (Primary Rep)
<a href="#">Fridén, Jonas</a>	Member	Ericsson AB (Expert)
<a href="#">Graff, William</a>	Member	TÜV Rheinland of North America (Primary)
<a href="#">Harrington, Tim</a>	Member	FCC (Expert)
<a href="#">Ho, Alexander</a>	Member	Sporton
<a href="#">House, Jody</a>	Member	Element Materials Technology (Alternate Rep)
<a href="#">Haynberg, Sean</a>	Member	V-Comm, LLC
<a href="#">Heckrotte, Michael</a>	Member	UL Verification Services Inc.
<a href="#">Jones, Steve</a>	Member	FCC (Primary)
<a href="#">Kiemel, Greg</a>	Member	Apple Inc. (Primary)
<a href="#">Kuczynski, Victor</a>	Member	Vican Electronics
<a href="#">Klinger, Jeff</a>	Member	Cetecom, Inc.
<a href="#">Lee, Edmund</a>	Member	Apple Inc. (Expert)
<a href="#">Li, C.K.</a>	Member	Nextivity, Inc.
<a href="#">Lin, Grace</a>	Member	HYTORC
<a href="#">Mahn, Terry</a>	Member	Fish & Richardson P.C.
<a href="#">McGann, Ryan</a>	Member	Bureau Veritas Consumer Product Services, Inc.
<a href="#">McMillen, Shawn</a>	Member	Compliance Testing, LLC
<a href="#">Mellberg, Hans</a>	Member	Consultant
<a href="#">Molaei, Nima</a>	Member	Element Materials Technology Washington DC LLC (Alternate Rep)
<a href="#">Nixon, Jason</a>	Member	Innovation, Science & Economic Development Canada (Primary Rep)
<a href="#">Parikh, Hemish</a>	Member	Qualcomm Technologies, Inc. (Expert)
<a href="#">Parry, Mikel</a>	Member	Wilson Electronics
<a href="#">Paxman, Robert</a>	Member	Intel Corporation
<a href="#">Pino, Dan</a>	Member	Element Materials Technology Washington DC LLC (Expert)
<a href="#">Rapella, John</a>	Member	Washington Laboratories, Ltd.
<a href="#">Roman, John</a>	Member	Intel Corporation
<a href="#">Royer, Tim</a>	Member	TIMCO Engineering Inc., an IIA Company (Primary)
<a href="#">Salinas, Daniel</a>	Member	Microsoft

<a href="#">Schramm, David</a>	Member	SGS North America, Inc.
<a href="#">Shumakov, Denys</a>	Member	Innovation, Science & Economic Development Canada (Expert)
<a href="#">Sigouin, Dan</a>	Member	TIMCO Engineering Inc., an IIA Company (Expert)
<a href="#">Stumpf, Bill</a>	Member	D.L.S. Electronic Systems
<a href="#">Sze Khian, Ho</a>	Member	Motorola Solutions (Alternate Rep)
<a href="#">Terrien, Mark</a>	Member	Consultant
<a href="#">Vagenas, Tom</a>	Member	Mobile Communications, Inc.
<a href="#">Wong, Eddie</a>	Member	CKC Laboratories, Inc.
<a href="#">Zainal, Khairul</a>	Member	Apple Inc. (Expert)
<a href="#">Zhan, Hongtao</a>	Member	SureCall Inc.
<a href="#">Zhao, Yujuan</a>	Member	Intel

### C63.29 (Lighting products) Working Group Roster

Name	Role in WG	Affiliation
<a href="#">Mendoza, Ernesto</a>	Chair	Signify
<a href="#">Spehalski, Bob</a>	Vice Chair	Lutron Electronics Co., Inc.
<a href="#">Crumm, Allen</a> (non-voting)	Secretary	SSC Labs
<a href="#">Abbondante, Nicholas</a>	Member	Intertek (Primary Rep)
<a href="#">Beattie, Chad</a>	Member	FCC Lab (Expert)
<a href="#">Bloomfield, Carl</a>	Member	Intertek (Expert)
<a href="#">Case, Dave</a>	Member	Consultant (Expert)
<a href="#">DeLisi, Bob</a>	Member	UL LLC (Primary Rep)
<a href="#">Hare, Ed</a>	Member	ARRL (Primary Rep)
<a href="#">Klinger, Jeff</a>	Member	Cetecom, Inc.
<a href="#">Lin, Grace</a>	Member	HYTORC
<a href="#">Newman, Bob</a>	Member	Lutron Electronics Co., Inc.
<a href="#">O'Steen, Steve</a>	Member	TÜV SÜD America, Inc. (Expert)
<a href="#">Parisella, Joe</a>	Member	OSRAM
<a href="#">Popovici, Horia</a>	Member	Innovation, Science & Economic Development Canada (Alternate Rep)

### C63.30 (Wireless Power Transfer) Working Group Roster

Name	Role in WG	Affiliation
<b>Working Group disbanded</b>	ANSI-63.30-2021 will be published soon	<b>Purchase:</b> <a href="#">IEEE Store</a> . 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
<a href="#">Abbondante, Nicholas</a>	Chair	Intertek (Primary Rep)
<a href="#">Walton, Derek</a>	Vice Chair	LF Research
<a href="#">Crumm, Allen</a>	Secretary	SSC Labs
<a href="#">Beattie, Chad</a>	Member	FCC Lab (Expert)
<a href="#">Briggs, Mark</a>	Member	UL Verification Services Inc.

<a href="#">DeLisi, Bob</a>	Member	UL LLC (Primary)
<a href="#">Frierson, Steven</a>	Member	SGS North America, Inc.
<a href="#">Granger, Jason</a>	Member	Electrolux
<a href="#">Hare, Ed</a>	Member	ARRL (Primary Rep)
<a href="#">Heckrotte, Michael</a>	Member	UL Verification Services Inc.
<a href="#">Kiemel, Greg</a>	Member	Apple Inc. (Primary Rep)
<a href="#">Klinger, Jeff</a>	Member	Cetecom, Inc.
<a href="#">House, Jody</a>	Member	Element Materials Technology (Alternate)
<a href="#">Krueger, Joe</a>	Member	Miller Electric Mfg. LLC
<a href="#">Lin, Grace</a>	Member	HYTORC
<a href="#">Manning, Billy</a>	Member	Energous Corporation
<a href="#">Mellberg, Hans</a>	Member	Consultant
<a href="#">Molaei, Nima</a>	Member	Element Materials Technology Washington DC LLC (Alternate Rep)
<a href="#">O'Steen, Steve</a>	Member	TÜV SÜD America, Inc. (Expert)
<a href="#">Popovici, Horia</a>	Member	Innovation, Science & Economic Development Canada (Alternate Rep)
<a href="#">Royer, Tim</a>	Member	TIMCO Engineering Inc., an IIA Company (Primary)
<a href="#">Sigouin, Dan</a>	Member	TIMCO Engineering Inc., an IIA Company (Expert)
<a href="#">Thul, Travis</a>	Member	Minnesota State College Southeast
<a href="#">Wilhelm, Johann</a>	Member	Consultant

## Massive MIMO Distance Study Project

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

**6.5 - SC4 Leadership** - Bob will step down in October. Is anyone interested in being the SC4 Chair? Dave Case will remain in SC4 but will also resign as Vice Chair in October. (he will remain in SC4 as a Member) Nick has volunteered to become SC4 Chair, subject to approval from his management.

7. [C63.org](http://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:** The Action Items from this meeting were reviewed and understood by those involved.

**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 11/8/22 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	Open	Next meeting	Horia will do the comparison
AI-53:	Bob to find a WG Chair for the C63.10 Amendment WG	Bob DeLisi	Closed	Next meeting	Nima Molaei
AI-54:	Jason Nixon and David Chamberlain wish to be added to the C63.10 Amend. roster	Jerry Ramie	Closed	Next meeting	Chamberlain added 11/18

9. Time and place of next meeting: **Chair - Week of Oct. 2-6, 2023 (Google Mtn. View)**

10. Closing remarks and Adjournment: **Chair** - The Chair thanked the group and adjourned the meeting at 5:01PM-EDT.

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

**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	Open	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