

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

Electromagnetic Compatibility Subcommittee 4: Wireless and ISM Equipment

Chair: [Abbondante, Nick](#)

Vice Chair: [Nixon, Jason](#)

Secretary: [Jerry Ramie](#)

October 7, 2025
1:00 PM – 4:30 PM - PDT
Qualcomm, San Diego, CA
Web-meeting

Approved Meeting Minutes

1. **Call to Order: Chair** - The meeting was called to order at 1:05 PM-PDT
 - 1.1 **Announcements: Chair's remarks** - Welcome to the meeting!
 - 1.2 **Meeting logistics announcements: Host** - John Forrester
 - 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.

Subcommittee 4 Membership Roster

Name	Role in SC	Affiliation
Abbondante, Nicholas	Chair	Intertek (Primary Rep)
Antola, Michael	Member	UL LLC (Alternate Rep)
Case, David	Member	TIMCO Engineering Inc., an IIA Company (Expert)
Chamberlain, David	Member	ISED Canada (Primary)
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)
Escamilla, Angel	Member	Element Materials Technology (Expert)
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)
Johnson, Nic	Member	Eurofins Product Service, GmbH
Kiemel, Greg	Member	Apple Inc. (Primary)
Klinger, Jeff	Member	Individual
Kramer, Doug	Member	Apple Inc. (Expert)
Lee, Edmund	Member	Apple Inc. (Expert)
Mendoza, Ernesto	Member	Signify
Molaei, Nima	Member	Element Materials Technology (Primary Rep)
Nixon, Jason	Vice Chair	ISED Canada (Expert)
Pino, Dan	Member	Element Materials Technology (Technical Expert)
Royer, Tim	Member	TIMCO Engineering Inc., an IIA Company (Primary)
Salem, Pelin	Member	Cisco Systems, Inc. (Technical Expert)

Shumakov, Denys	Member	ISED Canada (Expert)
Skoglund, Kenth	Member	Ericsson AB (Primary)
Surve, Soham	Member	Amazon Lab 126
Zerman, Kendall	Member	Sony
Zimmerman, Dave	Member	Spectrum EMC, LLC (Individual)

Guests and Observers: (non-voting) Jerry Ramie, Randy Long, Henry Benitez, Janet O'Neil, Vignesh Rajamani, Tom Braxton, Victor Kuczynski, Deanna Zakharia, Ken Gjerde, Richard Reitz, Kirin Kumar, Horia Poppovci, Dave Zimmerman,

1.4 Quorum: (50% of roster) constitutes a quorum. (rounding up) = (30 roster members / 2) = 15 >> 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. ([Approved Previous Minutes](#))

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

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?

20210909	20220215	20220517	20221108	20230510	20231003	20240516	20241003	20250506	SC4 Roster:
x	x	x	x	x	x	x	x	x	Abbondante, Nicholas
x	x	x	x	x	x		x	x	Antola, Michael
x	x	x	x	x			x	x	Case, David
x	x		x	x	x	x	x	x	Chamberlain, David
x	x	x	x	x		x	x		Chen, Zhong
x	x	x	x	x	x	x	x	x	Coder, Jason
x	x	x	x	x	x	x	x	x	DeLisi, Bob
x	x	x	x	x	x	x	x	x	Elliott, William (Mac)
									Escamilla, Angel
x			x	x		x		a	Friden, Jonas
x	x	x		x	x	x	x	x	Graff, William
					x			x	Heckrotte, Mike
		x				x	x		Hodes, Harry
	a	x	x	x		x	x	x	Hoolihan, Dan
	x	x	x	x		x		x	House, Jody
									Johnson, Nic
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	x	x	Kramer, Doug
	x	x		x	x	x	x	x	Lee, Edmund
x	x	x	x	x	x	x	x	x	Mendoza, Ernesto
x	x		x		x		x	x	Molaei, Nima
x	x	x	x	x	x	x	x		Nixon, Jason
			x	x				x	Pino, Dan
			x			x	x	x	Royer, Tim
	x	x	x	x	x	x	a	x	Salem, Pelin
								x	Shumakov, Denys
x	x		x	x	x	x	x	x	Skoglund, Kenth
								x	Zerman, Kendall
x				x				x	Zimmerman, Dave

Any members at risk? **None** are at risk.

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

Bill Kroener - application / resume Endorsements needed. Any objections? (none) No abstentions. **AI:** Bill will be added to the roster pending the endorsements

4. Working Group reviews - Chair - Spring meeting [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 Ed4.0 - Chamberlain - New Member for consideration: **Kiran Kumar** - [application](#) / [CV-resume](#) David Chamberlain asked about his experience. He suggested that Kirin about joining C63.10.DTS.UNII. Dave moved endorse Kirin to join C63.10Ed.4 & C63.10.DTS.UNII Working Groups. Any objections? (none) No abstentions. **AI:** Jerry to add Kirin to C63.10 & C63.10.DTS.UNII WGs.

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/No)**

C63.10-202X Learn more	Procedures for compliance testing of unlicensed wireless devices	SC 4	Chamberlain, David	C63.10 PINS	See Scope of Work in Learn more text below.
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C63.10: C63.10-202X American National Standard for Testing Unlicensed Wireless Devices

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

Scope: This PINS is intended to address the following topics to be incorporated into Edition 4: (a) editorial corrections,

including clarification of terms and removal of subclauses no longer deemed necessary, updating the FCC cross reference matrix and review any standards references; (b) review and clarify as necessary the administrative procedures in Clause 5 of C63.10; (c) Test reduction methods based on emerging technologies (d) Add bandwidth correction methods for when a RBW less than reference BW is used (See C63.26 4.2.3) (e) review and change as necessary Clause 5.6.3 for testing band edge requirements as power levels change (f) review and change as necessary Clause 11 (DTS) for applicability; (g) review and change as necessary procedures for UNII due to changes in FCC Rules, including TPC and antenna elevation mask testing; (h) Measurement guidance for 802.11 technologies using resource units (i) review and include as necessary DFS test procedures; (j) review and change as necessary MIMO procedures: and, (k) review and include as necessary AFC validation procedures (l) Incorporate or revise Test methods based on relevant FCC KDBs (m) Extend the frequency range (n) Radar test methods for 57-71 GHz (o) incorporate changes made in the corrigendum and amendment (p) create antenna gain measurement procedure (q) review and correct any items as necessary

Status: New project. Draft is being written

Purchase: This standard is not yet complete and not available for purchase.

4.2 C63.10 – Amend 1 - Molaei

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? (Yes/No)**

C63.10a-2024 Learn more	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices Amendment 1	SC 4	Molaei, Nima	No active PINS	Amendment to address NFC OBW measurements, guidance for absorber use for UWB, update frequency stability and add 6GHz NII information
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C63.10a: C63.10 AMD-1 202X American National Standard for Testing Unlicensed Wireless Devices

Contact: [Molaei, Nima](#)

Scope: Amend standard to update procedures for bandwidth, UWB, frequency stability and NII.

Status: Corrections for bandwidth measurement procedures, frequency stability, and UWB and added NII 6GH procedures based on FCC KDBs and ISED RSS-248.

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

4.3 C63.26 – Licensed transmitters - Elliott - [draft Standard](#) / [C63.26 comment form](#)

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? (Yes/No)**

C63.26-202X Learn more	Procedures for compliance testing of licensed transmitters	SC 4	Elliott, William	C63.26 PINS	2015 edition under revision. Approved PINS for Reaffirmation Ballot of ANSI C63.26 in January 2025.
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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: Draft is being written.

Purchase: Not yet available for sale

4.4 C63.29 – Lighting equipment - Mendoza

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? (Yes/No)**

C63.29-202X Learn more	Lighting products	SC 4	Mendoza, Ernesto	C63.29 PINS	Draft is being written.
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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: Draft is being written.

Purchase: Not yet available for sale. - C63.29-2022 is available for sale. [Search IEEE Standards](#) Enter C63 Standard number then Search (Enter) - Click on the version you want - Click on Purchase

4.5 C63.30 – Wireless Power Transfer equipment - Popovici - review new [draft PINS](#)

Review [Boyer application](#) / [resume](#) Mr. Boyer will be added to the C63.30 roster.

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? (Yes/No)**

C63.30-202X Learn more	American National Standard for Methods of Measurements of Radio-Frequency Emissions from Wireless Power Transfer Equipment	SC 4	Popovici, Horia	C63.30 PINS	Edition 2 Standard under development
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C63.30-2021: American National Standard of procedures for compliance testing of Wireless Power Transfer products

Contact: [Popovici, Horia](#) (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: Edition 2 Draft in progress

Purchase C63.30:2021: [Search IEEE Standards](#) - Enter C63 Standard number then Search (Enter) - Click on the version you want - Click on Purchase

4.6 C63.31 – ISM equipment - Abbondante

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/No)**

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.

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 - a [report](#) was given

C63.10 DTS-UNII - a [Report](#) was shown

C63.10 Amd1 -

C63.26 - a report was shown [that I don't have](#) **AI:** Send reminder on Nov 30 due date for the C63.26 draft circulation. There was discussion of the draft. Mac noted that the holdup is the radiated emissions task group. Nick noted that they are not writing text so we can't go to ballot. He said "the text needs to be written." Mac noted that Ryan will write the verbiage. He suggested that we mandate this "linear scan" text before the Spring meeting.

C63.29 - Ernesto showed a report. **AI:** Ernesto will ask [Bill Zotter](#) to send JR an app & resume for SC4 approval

C63.30 - a [C63.30 report](#) was shown. [Ky Sealy](#) membership application/resume was shown. Horia moved to approve Ky's application, seconded by Gill Graff. No objections or abstentions. **Approved.** [Kevin Grant](#) application & resume were shown. Horia moved, seconded by Bob DeLisi to approve. No objections or abstentions.

Approved. [Rich Boyer](#) application & resume were shown. Horia moved, seconded by Ernesto to approve. No objections or abstentions. **Approved.** **AI:** Jerry to add [Sealy, Grant & Boyer](#) to C63.30 roster & Webex.

C63.31 - Nick noted they haven't met since last October. He had an Action Item for in-situ testing of ISM equipment. They want to have a meeting next week. Chad (FCC) felt that the document needed more info on loading for worst case testing.

Massive MIMO Study - [MIMO White Paper](#) is posted.

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.

5.2 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 – Chair - David Chamberlain wanted to bring up referencing issues at this meeting. Nick wanted to point to C63.10 with undated references in C63.10.DTS.UNII. However, they couldn't use clause numbers as they were not stable over new editions. They had to use "vague" language instead of clause numbers. David noted that if they took out "child" standards, they would end up with a generic C63.10 that probably wouldn't need maintenance very often. We could insert clause references in the "child" Standards. Dave Zimmerman thought that using undated references was problematic, with transition periods required. Bob suggested that C63.10 will only point to other methods. Is there a need to keep C63.10 at all? He suggested assembling a group to design the end-state for this family of Standards. Nick noted that our Standards are getting too large. We don't have to take "everything" out. Bob liked the idea of a "road map" as new people will join and not understand our vision. If we put the vision out, it can be passed on to the next generations of C63 Members. Mike Heckrotte thought it wasn't too early to start on a road map. Nick disagreed and thought it was too early. Let's get DTS.UNII out first. If we write a road map, it will need several revisions. Nick wanted to return to David's point of using undated references. Horia thought you could call out C63.10 sections by a generic name in other .10 family Standards. David preferred using footnotes and call out a dated version of C63.10. Jason N. thought an Informative annex could be used and changed in the future.

6.2 - Review of open Interpretation Requests - Chair - No SC4 Interpretation Requests.

6.3 - Review Scope, Duties and Membership - Chair - **(Spring meeting only)**

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®.

Duties

C63.10 -

C63.10 DTS-UNII

C63.10 Amd1

C63.26 -

C63.29 -

C63.30 -

C63.31 -

[MIMO White Paper](#) is posted.

Subcommittee 4 Membership Roster

Name	Role in SC	Affiliation
Abbondante, Nicholas	Chair	Intertek (Primary Rep)
Antola, Michael	Member	UL LLC (Alternate Rep)
Case, David	Member	TIMCO Engineering Inc., an IIA Company (Expert)
Chamberlain, David	Member	ISED Canada (Primary)
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)
Escamilla, Angel	Member	Element Materials Technology (Expert)
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)
Johnson, Nic	Member	Eurofins Product Service, GmbH
Kiemel, Greg	Member	Apple Inc. (Primary)
Klinger, Jeff	Member	Individual
Kramer, Doug	Member	Apple Inc. (Expert)
Lee, Edmund	Member	Apple Inc. (Expert)
Mendoza, Ernesto	Member	Signify
Molaei, Nima	Member	Element Materials Technology (Primary Rep)
Nixon, Jason	Vice Chair	ISED Canada (Expert)
Pino, Dan	Member	Element Materials Technology (Technical Expert)
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Salem, Pelin	Member	Cisco Systems, Inc. (Technical Expert)
Shumakov, Denys	Member	ISED Canada (Expert)
Skoglund, Kenth	Member	Ericsson AB (Primary)
Surve, Soham	Member	Amazon Lab 126
Zerman, Kendall	Member	Sony
Zimmerman, Dave	Member	Spectrum EMC, LLC (Individual)

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 5/6/25 Meeting of SC4

Action Item #	Subject	Responsible Person(s)	Status	Delivery Date	Comments
AI-76:	Jerry to remove Mr. Mahn from all rosters	Jerry Ramie	Closed	Next meeting	Removed 5/6
AI-77:	Jerry to add Mr. Johnson to the SC4 roster and webex invitation list	Jerry Ramie	Closed	Next meeting	Added 5/6
AI-78:	Jerry to add Josh Gordon and Grace Lin to the C63.10 and C63.10.DTS.UNII Working Groups	Jerry Ramie	Closed	Next meeting	Added 5/6
AI-79:	Jerry to implement same roster in C63.10.DTS.UNII as in C63.10	Jerry Ramie	Closed	Next meeting	No one was removed from DTS.UNII; but members added from C63.10
AI-80:	Jerry to send completed C63.10 Interpretation to Nick for presentation at the Main meeting	Jerry Ramie	Closed	Next meeting	Sent 5/6
AI-81:	Jerry to send completed C63.26 Interpretation to Nick for presentation at the Main meeting	Jerry Ramie	Closed	Next meeting	Sent 5/6

9. Time and place of next meeting: Chair - Week of May 5, 2026 at NIST / Boulder

10. Closing remarks and Adjournment: Chair - Thanks for your participation and discussion. The meeting was adjourned at 3:33 PM-EDT.

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