



# American National Standards Committee C63®

## Electromagnetic Compatibility Subcommittee 4: Wireless and ISM Equipment

Chair: Bob Delisi

Vice Chair: Dave Case

Secretary: Jerry Ramie

May 17, 2022  
3:00 PM – 5:00 PM - CDT

Webinar

### Approved Minutes

1. **Call to Order: Chair** - The Chair called the meeting to order at 3:04PM-CDT
  - 1.1 **Announcements: Chair's remarks** - There will be a presentation on reverb testing.
  - 1.2 **Meeting logistics announcements:** 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.

### Subcommittee 4 Membership Roster

Name	Role in SC	Affiliation
<a href="#">Abbondante, Nicholas</a>	Member	Intertek
<a href="#">Antola, Michael</a>	Member	UL LLC
<a href="#">Case, David</a>	Vice Chair	Consultant
<a href="#">Chamberlain, David</a>	Member	Innovation, Science & Economic Development Canada
<a href="#">Chen, Zhong</a>	Member	ETS-Lindgren
<a href="#">Coder, Jason</a>	Member	NIST
<a href="#">DeLisi, Bob</a>	Chair	UL LLC
<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="#">Hoolihan, Dan</a>	Member	Hoolihan EMC Consulting
<a href="#">House, Jody</a>	Member	Element Materials Technology
<a href="#">Jones, Steve</a>	Member	FCC Laboratory
<a href="#">Kiemel, Greg</a>	Member	Apple Inc.
<a href="#">Klinger, Jeff</a>	Member	Cetecom, Inc.
<a href="#">Kramer, Doug</a>	Member	ETS-Lindgren
<a href="#">Lee, Edmund</a>	Member	Apple Inc.
<a href="#">Mahn, Terry</a>	Member	Fish & Richardson P.C.
<a href="#">Mansergh, Dan</a>	Member	Apple Inc.
<a href="#">Mendoza, Ernesto</a>	Member	Signify
<a href="#">Molaei, Nima</a>	Member	Element Materials Technology Washington DC LLC
<a href="#">Nixon, Jason</a>	Member	Innovation, Science and Economic Development Canada
<a href="#">Pino, Dan</a>	Member	Element Materials Technology Washington DC LLC
<a href="#">Salem, Pelin</a>	Member	Cisco Systems, Inc. <b>(Technical Expert)</b>
<a href="#">Sigouin, Dan</a>	Member	TIMCO ENGINEERING, INC. (Primary)
<a href="#">Skoglund, Kenth</a>	Member	Ericsson AB
<a href="#">Ward, Dennis</a>	Member	Element Materials Technology <b>– Technical Expert</b>

Zimmerman, Dave	Member	Spectrum EMC, LLC
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**Guests and Observers:** (non-voting) Jerry Ramie, Craig Fanning, Pao Thao, Ken Gjerde, Aurelian Bria, David Schaefer, Steven Frierson, Jon Kanter, John Norgard, Harry Hodes, Andy Griffin, Jeremy Cline, Wally Arceneaux, Jens Medler, Janet O'Neil

**1.4 Quorum: (50% of roster) constitutes a quorum.** (rounding up) (27 roster members / 2 = 13.5 >> 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 - 20210215** 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 ASC-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?

20180502	20181128	20190501	20191120	20200602	20200924	20210225	20210527	20210909	20220215	SC4 Roster:
				x	x	x	x	x	x	<a href="#">Abbondante, Nicholas</a>
						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	x	<a href="#">Chamberlain, David</a>
		x	x			x	x	x	x	<a href="#">Chen, Zhong</a>
						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	<a href="#">Elliott, William (Mac)</a>
		x		x				x		<a href="#">Friden, Jonas</a>
x	x	x	x			x		x	x	<a href="#">Graff, William</a>
x	x	x	x	x	x	x	x		a	<a href="#">Hoolihan, Dan</a>
									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		<a href="#">Kiemel, Greg</a>
x		x	x	x		x	x	x	x	<a href="#">Klinger, Jeff</a>
x	x	x	x	x	x			x	x	<a href="#">Kramer, Doug</a>
		x	x		x	x	x		x	<a href="#">Lee, Edmund</a>
				x			x			<a href="#">Mahn, Terry</a>
		x		x			x	x	x	<a href="#">Mansergh, Dan</a>
a	x			x	x	x	x	x	x	<a href="#">Mendoza, Ernesto</a>
			x	x	x	x	x	x	x	<a href="#">Molaei, Nima</a>
x	x	x	x	x	x	a		x	x	<a href="#">Nixon, Jason</a>
p		x				x				<a href="#">Pino, Dan</a>
									x	<a href="#">Salem, Pelin</a>
x	x		x		x		x	a		<a href="#">Sigouin, Dan</a>
x	x	x	x	x	x		x	x	x	<a href="#">Skoglund, Kenth</a>
x	x	x	x	x	x	x	x		x	<a href="#">Ward, Dennis</a>
x			x	x		x	x	x		<a href="#">Zimmerman, Dave</a>

**Any members at risk?** [Dan Pino](#) is at risk. **AI-50:** Jerry to send out new letter to Dan regarding attendance.

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

**Harry Hodes:** [Application](#) [CV/resume](#)  
 Bill G. moved, seconded by D. Case to accept his application. Discussion ensued. Any objections? Harry was accepted for membership. **AI-51:** Jerry to add Harry to the SC4 roster.

**3.3 Review and approval of SC4 scope, membership, and duties - Spring Meeting**

**3.3.1 - Scope & Duties** - 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®.

[C63.10](#)

[C63.26](#)

[C63.29](#)

[C63.30](#)

[C63.31](#)

**[Massive MIMO Distance Study](#)**

Bob asked for discussion. None. Hoolihan moved, seconded by Abbondante to approve the Scope and Duties as shown above. The Scope & Duties were approved. The roster was shown and corrected. Dan H. moved, seconded by W. Graff to accept the roster, the Roster was accepted.

**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** (no [WG report](#))

**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** (no [WG report](#))

**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? (No)** **AI-52:** Jerry to correct C63.10 corr. matrix and "Learn more" text as shown.

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. <b>Draft with IEEE for final ballot.</b>
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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 is being written. Draft with IEEE for final ballot.**

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

### 4.3 C63.26 – Licensed transmitters - Elliott ([WG report](#))

**4.31 Status Matrix Review** Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-C63<sup>®</sup> 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

### 4.4 C63.29 – Lighting equipment - Mendoza (no [WG report](#))

**4.41 Status Matrix Review** Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-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 under final review.
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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 under final review.

Purchase: Not yet available for sale.

### 4.5 C63.30 – Wireless Power Transfer equipment - Thul (no [WG report](#))

**4.51 Status Matrix Review** Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-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>	Published. WG disbanded.
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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:** 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

#### 4.6 C63.31 – ISM equipment - Abbondante ([WG report](#))

**4.61 Status Matrix Review** Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-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="#">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.

#### 4.7 C63.xx - Massive MIMO - PINS-C Project - Case ([TG Report](#))

**4.71 Status Matrix Review** Verify accuracy of document [status matrix](#) content and report any errors to the ANSC-C63<sup>®</sup> 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<sup>®</sup> [Newsletter editor](#)

**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. C63.29 has already been sent.

**5.3 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.

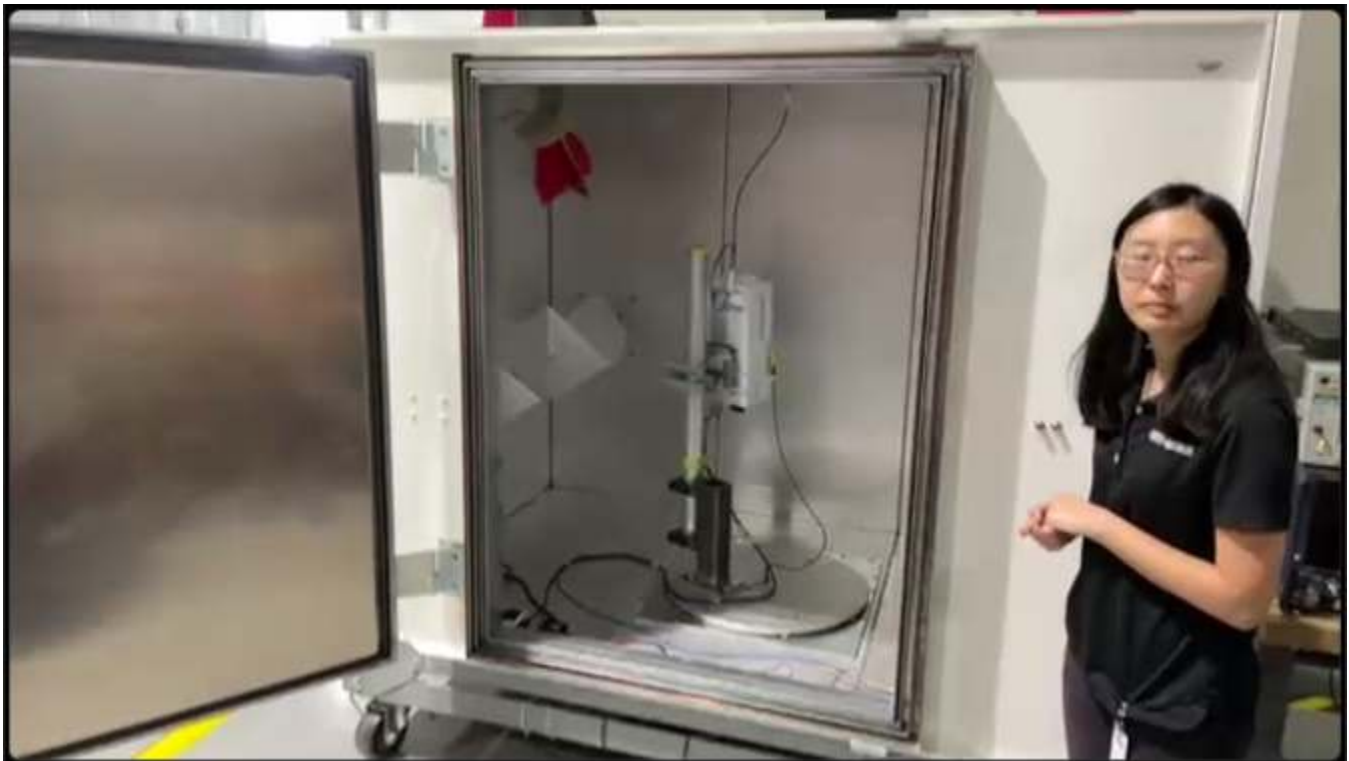
## 6. New Business: Chair

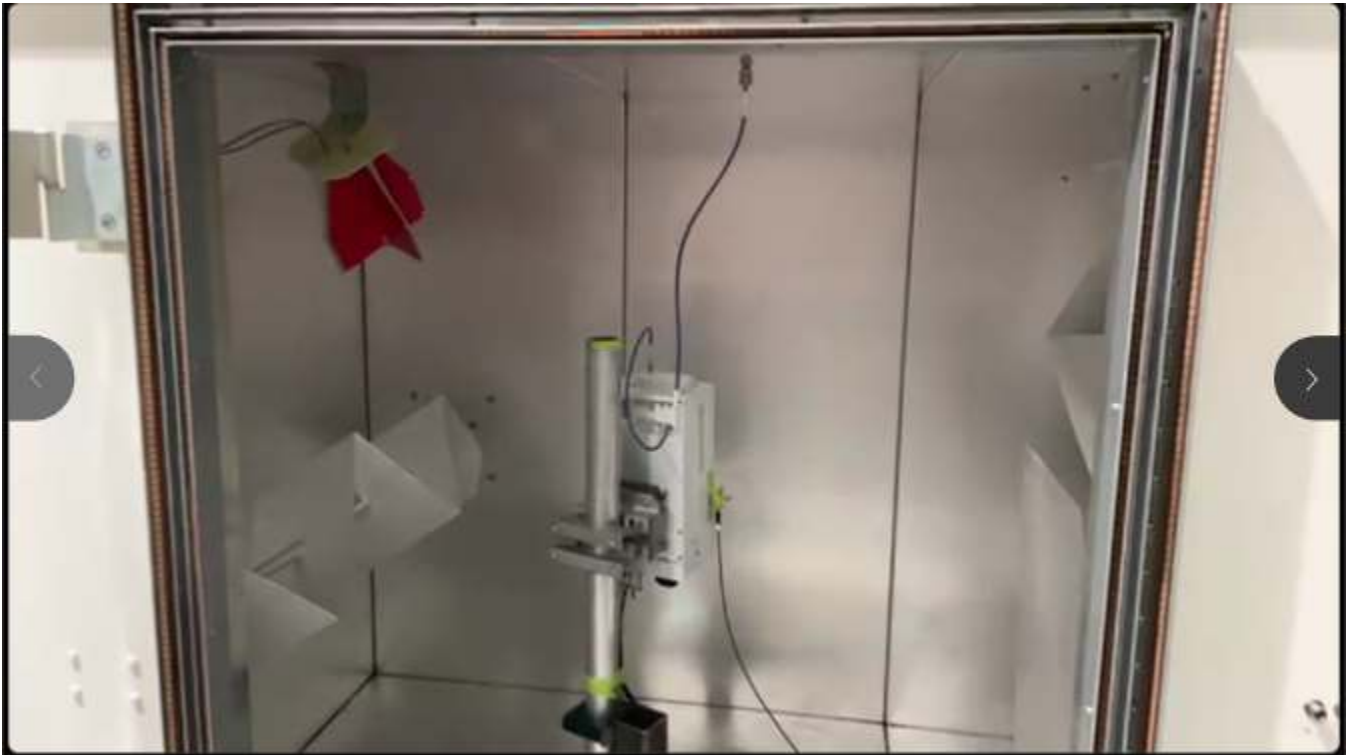
**6.1 – C63.30 FCC Petition** – ([Petition for Rulemaking ASC C63.30-2021 9-14-2021 \(fcc.gov\)](#)) [ECFS Confirmation](#) - We submitted a petition to FCC for C63.30.

**6.2 - Notice of Proposed Rulemaking, ET Docket Nos. 21-363 and 19-48 (C63.10:2020 & C63.25.1)**

**6.3 – C63.10 Amendment (interpretation request on BW measurement, UWB test site (absorbers/sand), others?)** [AI-53](#): Bob to find a WG Chair for the C63.10 Amendment WG.

**6.4 – Base Station testing in a Reverb Chamber Presentation and Demo- Patrik Hellstrom** [Patrik Hellstrom](#) of Ericsson showed a [Presentation](#) on base station testing. Bob went into the lab and showed a live demonstration of a reverb chamber making measurements: (below)





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 shown 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 2/15/22 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	Open	Next meeting	Horia will do the comparison
AI-44:	Jerry to notify Dr. Salem of her acceptance in SC4 and add her to the roster	Jerry Ramie	Closed	Next meeting	Also added to Webex invitation list
AI-45:	Jerry to ask Shannon to change the SC4 landing page Scope/Duties text to read: ANSC-C63@	Jerry Ramie	Closed	Next meeting	Request sent 2/15
AI-46:	Jerry to notify Deniz Demirci of his acceptance and add him to the C63.26 roster.	Jerry Ramie	Closed	Next meeting	Added 2/15 A. Crumm to add to Webex list
AI-47:	Jerry to update the C63.30 status matrix text as shown below.	Jerry Ramie	Closed	Next meeting	Updated 2/15
AI-48:	SC members should submit ideas for an amendment to C63.10 before March 15th.	All SC Members	Closed	3/15/22	mmW section may need clarification about distances. Should we allow for different heights? Any other ideas need amendments? Are they warranted? Jason Nixon asked about the UWB content on anechoic material. It should be included.
AI-49:	Jerry to send a Doodle poll to the SC4 Members regarding their attendance in Texas. (yes/no)	Jerry Ramie	Closed	Next meeting	Sent 2/15 Poll closes 2/25 @ 5:00PM-PST

**9. Time and place of next meeting: Chair - Week of Nov. 7-11 @ Keysight (Santa Rosa)**

**10. Closing remarks and Adjournment: Chair -** The Chair thanked the group and adjourned the meeting at 5:11PM-CDT

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

**Consolidated Action Items from 5/17/22 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	Open	Next meeting	Horia will do the comparison
AI-50:	Jerry to send out new letter to Dan regarding attendance.	Jerry Ramie	Closed	Next meeting	Sent 5/17
AI-51:	Jerry to add Harry to the SC4 roster	Jerry Ramie	Closed	Next meeting	Added 5/17
AI-52:	Jerry to correct C63.10 corr. matrix	Jerry Ramie	Closed	Next	Corrected 5/17



	and "Learn more" text as shown			meeting	
AI-53:	Bob to find a WG Chair for the C63.10 Amendment WG	Bob DeLisi	Open	Next meeting	