

C63[®]

**United States National Committee
C63[®] - EMC**

The “C63 Committee”

A status report

**Daniel D. Hoolihan
Chair – USNC C63 on EMC**

September – 2022

C63 Standards

- USNC C63[®] (The C63 Committee) has been in existence since **1934**
- **It has been closely associated with ANSI for its entire existence**
- **ANSI = American National Standards Institute**
- **USNC = United States National Committee**
- **C63 = Number of the Committee**
 - **C63[®] - indicates that “C63” is a Trademark owned by “The C63 Committee”**

C63 Standards

- The “C” preceding the “63” represents an electrical engineering field of interest
- This nomenclature goes back to 1934 when the American Standards Association was active. It was the predecessor to ANSI.
- In 1934, an “A” Committee was a Civil Engineering committee and a “B” Committee was a Mechanical Engineering committee.

C63 Committee

- **The C63 Committee is comprised of 34 organizations and 7 individuals (experienced EMC Consultants)**
 - **A2LA, ACIL, ANAB, Apple, ARRL, CISCO Systems, Element Materials Technology, Ericsson AB, ETS-Lindgren, FCC, FDA, Google, Hearing Industries Association, ISED, Information Technology Industry, IEEE-EMC Society, Keysight Technologies, Laird Technologies, Motorola Solutions, NIST, PCTEST Engineering Laboratory, Qualcomm Technologies, SPAWAR- US Navy, TCB Council, TUV Rheinland of North America, TUV SUD America, UL, and US Department of Defense – Joint Spectrum Center.**
 - **Individuals – Stephen Berger, Dan Hoolihan, John Lichtig, Werner Schaefer, Dan Sigouin, Harry Hodes, and Dave Zimmerman**

C63 Committee

- **C63 Subcommittees**
 - **C63 Committee has 8 Subcommittees**
- **C63 Working Groups**
 - **The C63 Committee has approximately 20 Working Groups**
 - **Each Working Group is developing an EMC standard**

C63 Committee = The Main Committee

- **The Main Committee is organized in a top-down fashion**
 - **The standards development is actually done by the lowest-level (working group) and then approved by higher levels of the Committee's organization.**
- **The highest level is the Main Committee**
- **Currently Chaired by Dan Hoolihan;**
 - **Vice-Chair is Dan Sigouin**
 - **Treasurer is Mike Windler**
 - **Secretary is Jerry Ramie.**

C63 Subcommittees

- The eight subcommittees and their respective chairpersons are:
 - SC1 – EMC Techniques and Development Zhong Chen
 - SC2 – E3 Terminology Definitions/Best Practices-Marcus Shellman
 - SC3 – International Standardization Ross Carlton
 - SC4 – Wireless and ISM Equipment Measurements - Bob DeLisi
 - SC5 – Immunity Testing and Measurements Ed Hare
 - SC6 – Laboratory Accreditation Randy Long
 - SC7 – Wireless Coexistence Jason Coder
 - SC8 – Medical Device EMC Test Methods Stephen Berger

C63 Committee

- Each Subcommittee usually has several working groups reporting to it and each working group has responsibility for one Standard.
- The standards that are developed are considered to be American National Standards.
- They imply a consensus of those parties concerned with its scope and provisions.
- An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public.

C63 Committee

- The procedures of ANSI require that action be taken to reaffirm, revise, or withdraw standards no later than five years from their date of publication.
- One of our Main Committee's Goals is to develop new standards as appropriate.
- In 2022, ANSI published C63.27
- In 2021, ANSI published C63.10, C63.24, and C63.30
- In 2020, ANSI published C63.17 and C63.23

C63.27

- **C63.27 – 2021 – American National Standard for Evaluation of Wireless Coexistence**
 - **Approved in November of 2021**
 - **Published in May – 2022**
 - **Supersedes ANSI C63.27-2017**
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- **IEEE Standards Association edits and publishes C63 Standards**

C63.10

- **C63.10 – 2020 – American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices**
- **Approved in September - 2020**
- **Published 29 January 2021**
- **A Revision of ANSI C63.10-2013**
- **A major update to the C63.10-2013 standard!!!**

- **IEEE Standards Association edits and publishes C63 Standards**

C63.24

- **C63.24 – 2021 – American National Standard – Recommended Practice for in Situ RF Immunity Evaluation of Electronic Devices and Systems**
- **Approved in January - 2021**
- **Published 24 March 2021**
- **New IMMUNITY Standard for C63**

- **IEEE Standards Association edits and publishes C63 Standards**

C63.30

- **C63.30 – 2021 – American National Standard for Methods of Measurement of Radio-Frequency Emissions from Wireless Power Transfer Equipment**
 - **Approved in March - 2021**
 - **Published 15 July 2021**
 - **NEW Standard for C63**
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- **IEEE Standards Association edits and publishes C63 Standards**

New C63 Standards

- **C63.30 – continued**
- **WPT testing methods 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 is also 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.) are reviewed and used to the extent possible.**

C63.17

- **C63.17 – R2020 – American National Standard – Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communication Services (UPCS) Devices**
- **Reaffirmed 11/30/2020**
- **Published 4 December 2020**
- **A reaffirmation of ANSI/IEEE C63.17-2013**

C63.23

- **C63.23 – R2020 – American National Standard – Guide for Electromagnetic Compatibility – Computations and Treatment of Measurement Uncertainty**
- **Reaffirmed 8/10/2020**
- **Published 14 August 2020**
- **A reaffirmation of ANSI/IEEE C63.23-2012**

C63.25.1

• **C63.25.1 – 2018 – American National Standard Validation Methods for Radiated Emission Test Sites, 1 GHz to 18 GHz**

• **“C63.25.1” was:**

• **approved in December 2018 and**

• **published in March 2019 and**

• **it is a NEW standard for the C63-Committee.**

– It is the first time that the C63 Committee has subdivided a standard into a “0.1” listing

C63.25.1

- This standard **introduces** a time-domain method of qualifying sites in the 1 to 18 GHz range.
- It requires less time than the present SVSWR method
- **It gives an indication of where the OATS or chamber is deficient (allowing use of corrective measures to bring it into compliance)**
- **The SVSWR approach (as outlined in CISPR 16-1-4:2017) is included by reference in C63.25.1**
- **The document allows the user the option of selecting one of the two techniques – Time Domain or SVSWR**

C63.25.2

- C63.25.2 – Under Development - American National Standard Validation Methods for Radiated Emission Test Sites, 30 MHz to 1000 MHz (1 GHz)
- Approval expected fourth quarter 2022
- It will be a NEW standard for the C63-Committee.

C63.25.3

- C63.25.3 – Under Development - American National Standard Validation Methods for Radiated Emission Test Sites, 18 GHz to 40 GHz
- Approval expected third quarter 2023
- It will be a NEW standard for the C63-Committee.

C63 Standards – Under Development

- **C63.4 – DRAFT - American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz**
- **Under Development**
- **Expected approval is fourth quarter 2022 and it must be approved after C63.25.2 is approved because the site validation section of C63.4 is moving to C63.25.2.**
- **A number of changes in the standard**
- **See last year's 2021 presentation on C63.4 for the MN EMC Event**

C63 Standards – Under Development

- **C63.5 – DRAFT - American National Standard for Electromagnetic Compatibility – Radiated Emission Measurements in Electromagnetic Interference (EMI) Control – Calibration and Qualification of Antennas (9 kHz to 40 GHz)**
- **Under Development**
- **It is waiting for international developments as well as C63.25.2 to be completed**
- **Expected approval is third quarter 2023**

Revised C63 Standards – Under Development

- **C63.26 – Second Edition** - American National Standard for Compliance Testing of Transmitters used in Licensed Radio Services
 - Covers a wide variety of transmitters designed to operate in licensed radio services.
 - Test methods are provided for measurement of radiated and conducted emissions, RF power, out-of-band emissions, frequency stability and other regulatory requirements for a variety of devices.
- **Revising the 2015 version of this standard**
- **ANSI approval expected in 2023**

New C63 Standards – Under Development

- **C63.2-xxxx – American National Standard for Specifications of Electromagnetic Interference and Field Strength Measuring Instrumentation in the Frequency Range 9 kHz to 40 GHz**
- **This standard will supersede ANSI C63.2-2016**
- **It will be closely aligned with CISPR 16-1-1: 2019**
- **It is expected to be approved by ANSI in the fourth quarter of 2022**

New C63 Standards – Under Development

- **C63.14-xxxx – American National Standard Dictionary of Electromagnetic Compatibility (EMC) including Electromagnetic Environmental Effects (E3)**
- **This standard is a revision of ANSI C63.14-2014**
- **It is expected to be approved by ANSI in the fourth quarter of 2022**

C63 Standards – Referenced by the FCC

- **C63.10: 2020 and C63.25.1:2018**
- **FCC Notice of Proposed Rulemaking,
ET Docket Nos. 21-363 and 19-48**
- **Released in Mid-March – 2022**
- **The FCC is proposing to adopt C63.10:2020 and C63.25.1:2018
and incorporate them into the FCC Rules**
- **Comments from industry are due 18 April 2022**
- **Reply comments from C63 and others are due 17 May 2022**
- **Five comments were received from industry by 18 April 2022;
they were mostly favorable**
- **The C63 Committee submitted reply comments to the FCC on
May 17th.**
- **We are waiting for further action from the FCC.**

Conclusions

- **The United States National Committee C63[®] on EMC has been in existence for over 80 years and has been contributing to national and international EMC technical issues for that extended period of time.**
- **Initially the Committee was focused on specifying parameters for Radio-Frequency receivers such as C63.1, C63.2, and C63.3.**
- **Overtime the committee's emphasis switched to EMC testing methods and EMC testing environments and how to determine and characterize both of those technical issues.**
- **More recently, C63 has become very active in wireless device testing both licensed and unlicensed devices.**