

Report to SC-1

ANSI C63.4

Methods of measurement of emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz

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Working group for ANSI C63.4 Chair

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Accredited Standards Committee C63® - EMC

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1) SC1 vote

Vote ended Feb. 21st 2020 and passed (14 yes, 10 no, 3 abstain)

8 members submitted a total of 122 comments

2) In trim comments period...

After completing the major part of the document, we sent version PC63.4/D2.3, February 2024 to members of SC1 and the Task Force members for a six-week comment period that ended 3/20/24. This was extended further due to "popular demand," to 4/5/24

ANSI C63.4

3) Comment matrix

We received comments from

Mark Arthurs

Andy Griffin

Apple

UL

Harry Hodes

David Zimmerman

Randy Long

Around 50 comments were received.

ANSI C63.4**3) Comment matrix**

We have held monthly meetings (mostly) to fix the issues. Of the approximate 50 comments around 18 comments were not accepted.

Harry Hodes requested that titling (or bore-sighting) be put back in the draft. This was not agreed but it was agreed to include an annex explaining the rationale behind the method proposed to replacing the current text in C63.4 about aiming the antenna at the source of the emission.

We agreed to use current process back in early 2022. There is no support for having multiple methods within the document.

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3) Comment matrix, power requirements...

We agreed some fixing of the power requirements, but then the FCC published a KDB 174176. Then it was agreed to add the 5% back in. One of the reasons was safety?

<https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?id=34866&switch=P>

So we have removed..

Alternatively, any lower ac mains voltage is acceptable as it is expected to result in worst-case emissions from the EUT.

ANSI C63.4

Q4. When performing ac power line conducted emission measurements, which public utility ac power line voltages and frequencies must be used for a Part 15 or Part 18 device?

Devices subject to Part 15 must be tested for all available U.S. low voltage distribution (identified below) for utilization equipment and frequencies as defined in ANSI C84.1 and in the NFPA 70 National Electric Code (NEC) for +5% allowable service voltage tolerance around nominal 120 Vac, 208 Vac, 240 Vac, 277 Vac, 480 and 600 Vac at 60 Hz for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies. Intentional radiators must be tested according to the test procedures in ANSI C63.10-2020, unintentional radiators must be tested according to ANSI C63.4-2014, and Part 18 devices must be tested according to measurement procedure MP-5:1986.

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1. *So two results are the same, so for the US, you have to both 50 Hz and 60 Hz testing? But the US does not have a 50 Hz supply?*

But there is no 1 Hz supply :) 50/60Hz.

2. *What about products cover by :*

ANSI C63.26

ANSI C63.29

ANSI C63.30

ANSI C63.4

3) Comment matrix, Informative annex about the above 1GHz test method

This was developed and we are still discussing it... but the summary of the annex is as follows.

We got consensus back in 2022 (everybody is equally unhappy) and we have been discussing it

1. All methods have problems (many methods and many problems).
2. Only the fixed height matches site validation method
3. We did not want multiple methods
4. We don't want to develop another validation method.
5. Existing text is very vague and allows too much variance.
6. Balance between test / cost and achieving reasonable results is important
7. Simple EUT setup and access to it during testing is also important

ANSI C63.4

8. overcomplicated , the reproducibility and repeatability suffer as it increases the chances that test laboratories do not perform the measurement the same way; standardization is important

9. alignment with other relevant international, national and regional standards is desirable.

However, the FCC now want, *how does the proposed method compare to the existing requirements?* So, we need to restructure the annex.

and from the discussion in C63.26 Radiated Emissions TG - AI 24.. They kind of want to start from scratch?

Current Method

Above
1GHz

Place the ...antenna away from each **area** of the EUT determined to be a **source of emissions** at the specified measurement distance, while keeping the ... antenna **aimed at the source of emissions** at each frequency of significant emissions, with polarization oriented for **maximum** response. .. The ... antenna may .. higher or lower than the EUT, **depending on the radiation pattern** of the emission and staying **aimed at the emission source** for receiving the maximum signal. The final .. antenna elevation shall be that which maximizes the emissions. .. antenna elevation for maximum emissions **shall be restricted to a range of heights of from 1 m to 4 m...**

?????
?????
?????
?????
?????
?????
?????
?????

1. Text assumes a manual measurement ?
2. How accurately do you have to aim ?
3. What is a source, how big is the area ?
4. 1 m to 4 m is a limitation, not required to scan ?
5. Could just do 2 heights 1 m and 4 m ?
6. Amplitude goes up then down, it's a maximum ?
7. What is the radiation pattern of the emission ?