

**COLLECTION OF THE CTL DECISIONS  
DECISION SHEET**

<b>Standard(s):</b> IEC 60065:1998 6 <sup>th</sup> edition.	<b>Sub clause(s):</b> 4.2.4	<b>Sheet No.</b> 438
<b>Subject:</b> Determination of voltage at loudspeaker terminals	<b>Key words:</b> <ul style="list-style-type: none"> <li>- Terminals</li> <li>- Loudspeakers</li> <li>- Non-clipped output power</li> </ul>	<b>Decision taken at the 39<sup>th</sup> meeting 2002</b>

**Question:**

Is the apparatus to be operated in a way as to deliver one-eighth of the NON-CLIPPED OUTPUT POWER to the RATED LOAD IMPEDANCE also for the alternative test method described in paragraph 3 of clause 4.2.4(a)?

**Rationale:**

The first paragraph of clause 4.2.4(a) requires the apparatus to be operated as to deliver one-eighth of the NON-CLIPPED OUTPUT POWER to the RATED LOAD IMPEDANCE.

WHEN determining whether a part or terminal contact is hazardous live acc. to 9.1.1 and 11.1, at the manufacturer's option the apparatus may also be operated in such a way as to deliver the NON-CLIPPED OUTPUT POWER to the RATED LOAD IMPEDANCE using a 1 kHz signal

In the 6th edition, the use of sine waves as an alternative for noise signals was introduced, for the purpose of output voltage measurement, because the NON-CLIPPED output power was already defined in terms of a 1 kHz sine wave. The intent was to permit easy and reproducible measurement of the output voltage , without switching to the noise signal.

Also, it was intended to permit use of the sine wave for the Heating Test, where results would be equivalent to use of noise.

However, in case of doubt, the noise signal was to be used as the reference method.

The TC introduced the sine wave alternative in the 4th paragraph for measuring the output voltage, but did not intend to change the voltage limit from

- a) 35V pk (25Vrms) at 1/8 max output in the 5th edition, to
- b) 35V pk at max output.

Therefore, it is quite sure that the 4th paragraph should have included the 1/8 factor which was omitted by error. If we follow the 6th edition as written, it means that any amplifier with 25Vrms output must have insulated output terminals marked with the "lightning flash" symbol. Clearly, this has not happened in the audio industry.

Because of the confusion introduced in the 6th edition text, this clause together with 9.1.1.1a) was rewritten in the 7th edition to permit 71Vrms output on uninsulated terminals in household amplifiers at maximum output (equivalent to 35Vpk or 25Vrms at 1/8 max output in the 5th edition). Also, Cl. 11.1 was rewritten to not permit higher audio output voltages under fault conditions.

**Decision:**

When determining whether a part or terminal is hazardous live acc. to 9.1.1 and 11.1 at the manufacturer's option the apparatus may also be operated in such a way as to deliver one-eighth of the NON-CLIPPED OUTPUT POWER for requirements of 9.1.1 and the maximum NON-CLIPPED OUTPUT POWER for requirements of 11.1 to the RATED LOAD IMPEDANCE using a 1 kHz signal.