

## **Proposal for Supplement 1 to the 01 series of amendments to Regulation No. 138**

The proposed amendments are marked in bold for new or strikethrough for deleted characters.

### **I. Proposal**

*Paragraph 1., add footnote, amend to read:*

- “1. Scope  
This Regulation applies to electrified vehicles of categories M and N<sup>1</sup> which can be propelled in the normal mode, in reverse or at least one forward drive gear, without an internal combustion engine operating<sup>2</sup> in respect to their audibility<sup>3</sup>.”

**Footnote 3: See paragraph 5.1.1. for more detailed specifications on the application.”**

*Add new Paragraph 5.1.1., amend to read:*

- “**5.1.1. In case of hybrid vehicles, equipped with an internal combustion engine: If the manufacturer can demonstrate to the Type Approval Authority that the vehicle cannot be assessed according to the provisions of the regulation because the internal combustion engine used for direct propulsion will be operational during the specified tests within this regulation, this regulation shall be deemed not to be applicable to this vehicle.**”

*Paragraph 6.1., amend to read:*

- “6.2. Acoustics characteristics  
The sound emitted by the vehicle type submitted for approval shall be measured by the methods described in Annex 3 to this Regulation. ~~The speed range for operation is the range of greater than 0 km/h up to and inclusive 20 km/h.~~  
**The specifications of this Regulation are applicable for the speed range of greater than 0 km/h up to and inclusive 20 km/h. Operation of an AVAS is permitted at vehicle speeds outside the specification range. AVAS may be operational independent of the operation of an internal combustion engine.**  
If the vehicle that is not equipped with an AVAS fulfils the overall levels as specified in Table 2 below with a margin of +3 dB(A), the specification for one-third octave bands and the frequency shift do not apply.”

*Add new Paragraph 6.2.6., amend to read:*

- “**6.2.6. AVAS Sound Level Variation**  
**If fitted, an AVAS may operate at different sound levels either automatically managed by the control unit or manually selected by the driver. Each selected sound level shall be in compliance with the**

**specifications outlined in paragraphs 6.2.1. to 6.2.3. and paragraphs 6.2.8. and 6.2.9.”**

*Renumber the existing paragraphs after this new paragraph 6.2.6 accordingly.*

*Annex 3, paragraph 2.2., amend to read:*

“2.2. Meteorological conditions

**2.2.1 For outdoor facilities**

Meteorological conditions are specified to provide a range of normal operating temperatures and to prevent abnormal readings due to extreme environmental conditions.

**The meteorological instrumentation shall deliver data representative for the test site and shall be positioned adjacent to the test area at a height representative of the height of the measuring microphone.**

A value representative of temperature, **wind speed**, relative humidity, and barometric pressure shall be recorded during the measurement interval.

~~**The meteorological instrumentation shall deliver data representative for the test site and shall be positioned adjacent to the test area at a height representative of the height of the measuring microphone.**~~

The measurements shall be made when the ambient air temperature is within the range from 5 °C to 40 °C.

The ambient temperature may of necessity be restricted to a narrower temperature range such that all key vehicle functionalities that can reduce vehicle noise emissions (e.g. start/stop, hybrid propulsion, battery propulsion, fuel-cell stack operation) are enabled according to manufacturer's specifications.

The tests shall not be carried out if the wind speed, including gusts, at microphone height exceeds 5 m/s, during the measurement interval.

**2.2.2 For indoor facilities**

**Meteorological conditions are specified to provide a range of normal operating temperatures and to prevent abnormal readings due to extreme environmental conditions.**

**The meteorological instrumentation shall deliver data representative for the test site and values of temperature, relative humidity, and barometric pressure shall be recorded during the measurement interval.**

**The measurements shall be made when the ambient air temperature is within the range from 5 °C to 40 °C.**

**The ambient temperature may of necessity be restricted to a narrower temperature range such that all key vehicle functionalities that can reduce vehicle noise emissions (e.g. start/stop, hybrid propulsion, battery propulsion, fuel-cell stack operation) are enabled according to manufacturer's specifications.”**

*Appendix to Annex 3 Figure 4, amend to read:*

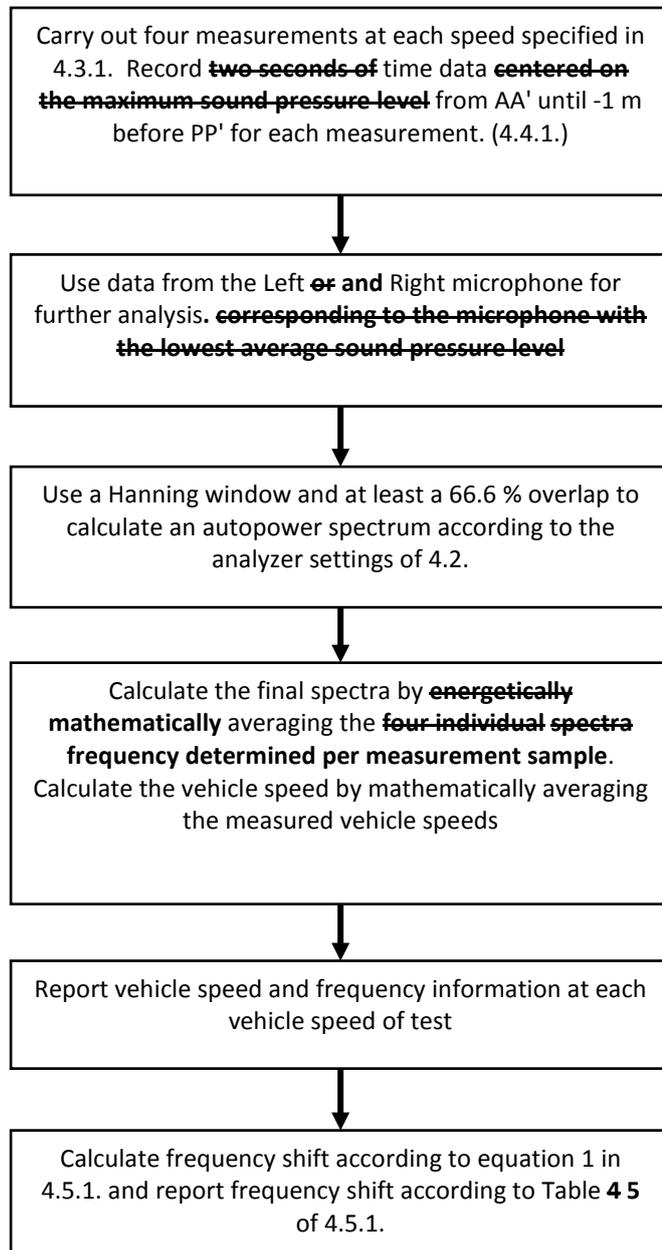
“Figure 4

**~~Determination of the range of background noise~~ Background Noise Parameter”**

Appendix to Annex 3 Figure 7b, amend to read:

“Figure 7b

Figure 7b Test procedures for measurement of frequency shift, Method A

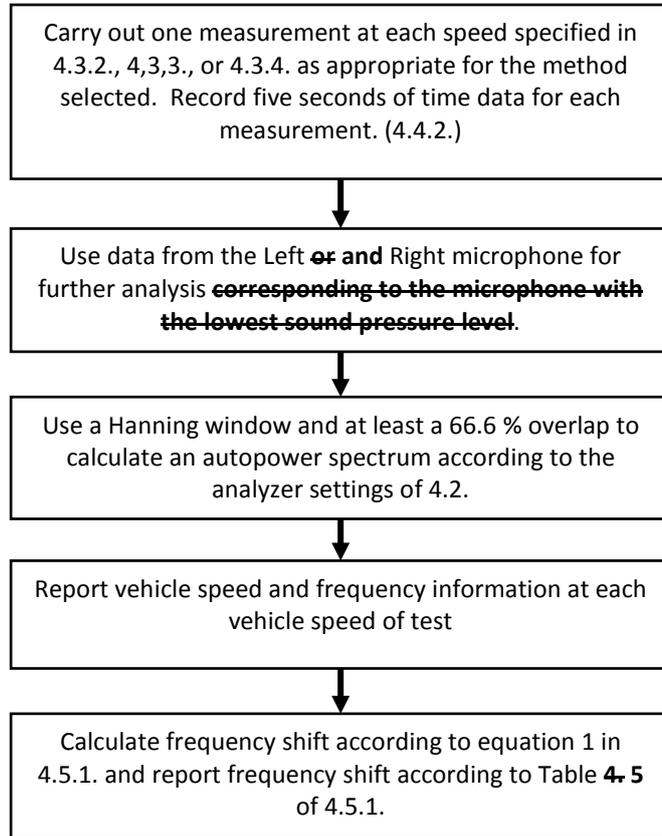


”

Appendix to Annex 3 Figure 7c, amend to read:

“Figure 7c

Test procedures for measurement of frequency shift, Methods B, C, D, and E



## II. Justification

1. A footnote has been added to the scope to make reference to the specifications for exemption from the application of this Regulation in paragraph 5.1.1.

5.1.1 According to the scope, this Regulation is applicable to all vehicles, which can be propelled fully electrically without an internal combustion engine operating. However, it may happen that vehicles will provide no valid test results, because the ICE was operational during all specified test conditions. Shall approval be granted on a vehicle, for which no test results are available? By the proposed wording such vehicles are exempted from this Regulation.

6.2 The current text created ambiguities in the application. The proposed wording provides clarification according to the original intention.

AVAS may be operational outside the specified speed ranges. This was especially made to enable harmonized components for other market, e.g. the USA where the specification are up to a speed range to 30 km/h.

The maximum sound is then covered by UN R51.03 where sound enhancement systems are addressed under ASEP with Supplement 3 to UN R51.03.

AVAS may be operational even if the ICE is running. This was always considered to be the case but not explicitly specified. This provides conflicts to EU Regulation 540/2014 where the AVAS shall be shut down, whenever the ICE is running. However, such kind of permanent turning “on” and “off” of the system is irritating to driver and pedestrians.

6.2.6. The Regulation does not provide any specifications about a potential attenuation of an AVAS. A manufacturer may wish to install an attenuation to enable the system to operate at different sound levels. This is already today implicit in customer selectable sounds. However, it is suggested to provide here clarity.

A3 2.2. The current wording mandates a weather station in an indoor facility. It is not necessary to mandate a weather station as the room is controlled with regard to the ambient conditions. Wind noise is covered by the background noise.

Therefore, the paragraph 2.2. was split into two parts, one for outdoor and one for indoor. The outdoor paragraph was amended for better understanding.

A3 App. The flowcharts have been amended to reflect the regulation text.

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