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UN Regulation No. 138 (Quiet road transport vehicles)

Proposal for Supplement 3 to the 01 series of amendments to UN Regulation No. 138

Submitted by the experts from France*

The text reproduced below was prepared by the expert from France. This document aims to clarify interpretation of the requirements concerning variation of sound emitted proportionally with the vehicle speed. The modifications to the current text of the Regulation are marked in bold for new or strikethrough for deleted characters.

I. Proposal

Paragraph 6.2.3.2., amend to read:

"6.2.3.2. When tested under the conditions of Annex 3 paragraph 4, at least one tone within the frequency range as specified in paragraph 6.2.8. emitted by the vehicle shall vary proportionally with speed within each individual gear ratio by an average ~~of at least 0.8 %~~ **≥ 0.80 %** per 1 km/h in the speed range from 5 km/h to 20 km/h inclusive when driving in forward direction. In case more than one frequency is shifted, only one frequency shift needs to fulfil the requirements."

Annex 3, paragraph 4.5.1., amend to read:

"4.5.1. Data compilation and reported results

The frequency intended to be shifted shall be used for the further calculation. The frequency of the lowest reported test speed rounded to the nearest integer is taken as the reference frequency f_{ref}.

For the other vehicle speeds, the corresponding shifted frequencies f_{speed} rounded to the nearest integer shall be taken from the spectra analysis. Calculate del f, the frequency shift of the signal according to equation (1):

$$del\ f = \{[(f_{speed} - f_{ref})/(v_{test} - v_{ref})]/f_{ref}\} \cdot 100 \qquad \text{equation (1)}$$

where

f_{speed} is the frequency at a given speed value;

f_{ref} is the frequency at the reference speed of 5 km/h or the lowest reported speed;

v_{test} is the vehicle speed, actual or simulated, corresponding to the frequency f_{speed};

v_{ref} is the vehicle speed, actual or simulated, corresponding to the frequency f_{ref};

del f   **shall be rounded to the second decimal place;**

… "

II. Justification

The purpose of this amendment is to clarify the calculation of the frequency shift of the signal named del f to avoid different interpretations. It is proposed to specify that the result del f, in the paragraph 4.5.1. shall be rounded, to compare it to the requirement described in the paragraph 6.2.3.2. Concerning this requirement, it is also suggested to replace the wording "at least" by the symbol "≥" to add more clarity.

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