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Working Party on Lighting and Light-Signalling

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Item 5(g) of the provisional agenda

COLLECTIVE AMENDMENTS

Regulations Nos. 19, 98, 112, 113 and 123

Proposal for supplements to Regulations Nos. 19, 98, 112, 113 and 123

Submitted by the expert from the Working Party "Brussels 1952" */

The text reproduced below was prepared by the expert from the Working Party "Brussels 1952" (GTB) in order to simplify the heat test procedure and make it independent of light source technologies. The modifications to the current text of Regulations Nos. 19, 98, 112, 113 and 123 are marked in bold or strikethrough characters.

*/ In accordance with the programme of work of the Inland Transport Committee for 2006-2010 (ECE/TRANS/166/Add.1, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance performance of vehicles. The present document is submitted in conformity with that mandate.

A. PROPOSAL

A.1. PROPOSAL TO AMEND REGULATION No. 19 - (Front fog lamps) (The following text is based upon the current text of the Regulation until Supplement 1 to the 03 series of amendments to the Regulation)

Annex 5,

The introductory paragraph, amend to read:

"TESTS FOR STABILITY OF ... FOG LAMPS

Once the photometric ... its thermal dissipation.

The tests shall be carried out:

- (a) **in a dry and still atmosphere at an ambient temperature of $23\text{ °C} \pm 5\text{ °C}$, the test sample being mounted on a base representing the correct installation on the vehicle;**
- (b) **in case of replaceable light sources: using mass production filament light sources, which have been aged for at least one hour, or mass production gas-discharge light sources, which have been aged for at least 15 hours or mass production LED modules which has been aged for at least 48 hours and cooled down to ambient temperature before starting the tests as specified in this Regulation. The LED modules supplied by the applicant shall be used.**

The measuring equipment shall be equivalent to that used during headlamp type-approval tests.

The test sample shall be operated without being dismantled from or readjusted in relation to its test fixture. The light source used shall be a light source of the category specified for that front fog lamp."

Paragraph 1, amend to read:

"1. TEST FOR STABILITY OF PHOTOMETRIC PERFORMANCE

~~The tests shall be carried out in a dry and still atmosphere at an ambient temperature of $23\text{ °C} \pm 5\text{ °C}$, the complete front fog lamp being mounted on a base representing the correct installation on the vehicle."~~

Paragraphs 1.1.2. to 1.1.2.4., amend to read:

"1.1.2. Test voltage

The voltage shall be applied to the terminals of the test sample as follows:

- (a) In case of replaceable filament light source(s) operated directly under vehicle voltage system conditions: The test shall be performed at 6.3 V, 13.2 V or 28.0 V as applicable except if the applicant specifies that the test sample may be used at a different voltage. In this case, the test shall be carried out with the filament light source operated at the highest voltage that can be used.**
- (b) In case of replaceable gas discharge light source(s): the test voltage for the electronic light source control-gear is 13.2 ± 0.1 volts for 12 V vehicle voltage system, or otherwise specified in the application for approval.**
- (c) In the case of non-replaceable light source operated directly under vehicle voltage system conditions: all measurements on lighting units equipped with non-replaceable light sources (filament light sources and/ or others) shall be made at 6.3 V, 13.2 V or 28.0 V or at other voltages according to the vehicle voltage system as specified by the applicant respectively.**
- (d) In the case of light sources, replaceable or non-replaceable, being operated independently from vehicle supply voltage and fully controlled by the system, or, in the case of light sources supplied by a supply and operating device, the test voltages as specified above shall be applied to the input terminals of that device. The test laboratory may require from the manufacturer the supply and operating device or a special power supply needed to supply the light source(s).**
- (e) LED module(s) shall be measured at 6.75 V, 13.2 V or 28.0 V respectively, if not otherwise specified within this Regulation. LED module(s) operated by an electronic light source control gear, shall be measured as specified by the applicant.**
- (f) Where additional signalling lamps are grouped, combined or reciprocally incorporated into the test sample and operating at voltages other than the nominal rated voltages of 6 V, 12 V or 24 V respectively, the voltage shall be adjusted as declared by the manufacturer for the correct photometric functioning of that lamp."**

Paragraph 1.2.1.3., to be deleted.

- A.2. PROPOSAL TO AMEND REGULATION No. 98 - (Headlamps with gas-discharge light sources). (The following text is based upon the current text of the Regulation until Supplement 11 to the Regulation)

Paragraph 6.3.2., amend to read:

- "6.3.2. It is possible to use several light sources for the driving beam, these light sources being listed in either Regulation No. 37 (in this case the filament lamps shall be operated at their reference luminous flux) or Regulation No. 99.
It is also possible that a part of the driving beam produced by one of these light sources will be used exclusively for short time signals (flash to pass) as declared by the applicant. This shall be indicated in the relevant drawing and a remark shall be made in the communication form."

Annex 4.

The introductory paragraph, amend to read:

"TESTS FOR STABILITY OF ... OPERATION

TEST ON COMPLETE HEADLAMPS

Once the photometric ... its thermal dissipation.

The tests shall be carried out:

- (a) **in a dry and still atmosphere at an ambient temperature of $23\text{ °C} \pm 5\text{ °C}$, the test sample being mounted on a base representing the correct installation on the vehicle;**
- (b) **in case of replaceable light sources: using mass production filament light sources, which have been aged for at least one hour, or mass production gas-discharge light sources, which have been aged for at least 15 hours or mass production LED modules which have been aged for at least 48 hours and cooled down to ambient temperature before starting the tests as specified in this Regulation. The LED modules supplied by the applicant shall be used**

The measuring equipment shall be equivalent to that used during headlamp type-approval tests.

The test sample shall be operated without being dismantled from or readjusted in relation to its test fixture. The light source used shall be a light source of the category specified for that headlamp."

Paragraph 1, amend to read:

"1. TEST FOR STABILITY OF PHOTOMETRIC PERFORMANCE

~~The tests shall be carried out in a dry and still atmosphere at an ambient temperature of $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$, the complete front fog lamp being mounted on a base representing the correct installation on the vehicle."~~

Paragraph 1.1.1.1., amend to read:

- "1.1.1.1. (a) ...
(b) ...
(c) ...
(d) ...
(e) **In the case that the driving beam uses several light sources in accordance with paragraph 6.3.2. and if the applicant declares that a part of the driving beam (one of these additional light sources) will be used exclusively for short time signals (flash to pass), the test shall be carried out without this part of the driving beam. "**

Paragraph 1.1.1.2., amend to read:

"1.1.1.2. Test voltage

The voltage shall be applied to the terminals of the test sample as follows:

- (a) **In case of replaceable filament light source(s) operated directly under vehicle voltage system conditions:**

The test shall be performed at 6.3 V, 13.2 V or 28.0 V as applicable except if the applicant specifies that the test sample may be used at a different voltage. In this case, the test shall be carried out with the filament light source operated at the highest voltage that can be used.

- (b) **In case of replaceable gas discharge light source(s): The test voltage for the electronic light source control-gear is 13.2 ± 0.1 volts for 12 V vehicle voltage system, or otherwise specified in the application for approval.**
- (c) **In the case of non-replaceable light source operated directly under vehicle voltage system conditions: All measurements on lighting units equipped with non-replaceable light sources (filament light sources and/ or others) shall be made at 6.3 V, 13.2 V or 28.0 V or at other voltages according to the vehicle voltage system as specified by the applicant respectively.**
- (d) **In the case of light sources, replaceable or non-replaceable, being operated independently from vehicle supply voltage and fully controlled by the system, or, in the case of light sources supplied by a supply and operating**

device, the test voltages as specified above shall be applied to the input terminals of that device. The test laboratory may require from the manufacturer the supply and operating device or a special power supply needed to supply the light source(s).

- (e) LED module(s) shall be measured at 6.75 V, 13.2 V or 28.0 V respectively, if not otherwise specified within this Regulation. LED module(s) operated by an electronic light source control gear shall be measured as specified by the applicant.
- (f) Where additional signalling lamps are grouped, combined or reciprocally incorporated into the test sample and operating at voltages other than the nominal rated voltages of 6 V, 12 V or 24 V respectively, the voltage shall be adjusted as declared by the manufacturer for the correct photometric functioning of that lamp."

Paragraph 1.2.1.3., to be deleted.

A.3. REGULATION No. 112 - (Headlamps emitting an asymmetrical passing beam) (The following text is based upon the current text of the Regulation until Supplement 10 to the Regulation)

Annex 4.

The introductory paragraph, amend to read:

"TESTS FOR STABILITY OF ...OPERATION

TESTS ON COMPLETE HEADLAMPS

Once the photometric ... its thermal dissipation.

The tests shall be carried out:

- (a) in a dry and still atmosphere at an ambient temperature of $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$, the test sample being mounted on a base representing the correct installation on the vehicle;
- (b) in case of replaceable light sources: using mass production filament light sources, which have been aged for at least one hour, or mass production gas-discharge light sources, which have been aged for at least 15 hours or mass production LED modules which have been aged for at least 48 hours and cooled down to ambient temperature before starting the tests as specified in this Regulation. The LED modules supplied by the applicant shall be used

The measuring equipment shall be equivalent to that used during headlamp type-approval tests.

The test sample shall be operated without being dismantled from or readjusted in relation to its test fixture. The light source used shall be a light source of the category specified for that headlamp."

Paragraph 1, amend to read:

"1. TEST FOR STABILITY OF PHOTOMETRIC PERFORMANCE

~~The tests shall be carried out in a dry and still atmosphere at an ambient temperature of $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$, the complete front fog lamp being mounted on a base representing the correct installation on the vehicle."~~

Paragraph 1.1.1.2., amend to read:

"1.1.1.2. Test voltage

The voltage shall be applied to the terminals of the test sample as follows:

(a) In case of replaceable filament light source(s) operated directly under vehicle voltage system conditions:

The test shall be performed at 6.3 V, 13.2 V or 28.0 V as applicable except if the applicant specifies that the test sample may be used at a different voltage. In this case, the test shall be carried out with the filament light source operated at the highest voltage that can be used.

(b) In case of replaceable gas discharge light source(s): The test voltage for the electronic light source control-gear is 13.2 ± 0.1 volts for 12 V vehicle voltage system, or otherwise specified in the application for approval.

(c) In the case of non-replaceable light source operated directly under vehicle voltage system conditions: All measurements on lighting units equipped with non-replaceable light sources (filament light sources and/ or others) shall be made at 6.3 V, 13.2 V or 28.0 V or at other voltages according to the vehicle voltage system as specified by the applicant respectively.

(d) In the case of light sources, replaceable or non-replaceable, being operated independently from vehicle supply voltage and fully controlled by the system, or, in the case of light sources supplied by a supply and operating device, the test voltages as specified above shall be applied to the input terminals of that device. The test laboratory may require from the manufacturer the supply and operating device or a special power supply needed to supply the light source(s).

- (e) **LED module(s) shall be measured at 6.75 V, 13.2 V or 28.0 V respectively, if not otherwise specified within this Regulation. LED module(s) operated by an electronic light source control gear, shall be measured as specified by the applicant.**
- (f) **Where additional signalling lamps are grouped, combined or reciprocally incorporated into the test sample and operating at voltages other than the nominal rated voltages of 6 V, 12 V or 24 V respectively, the voltage shall be adjusted as declared by the manufacturer for the correct photometric functioning of that lamp."**

Paragraph 1.2.1.3., to be deleted

A.4. REGULATION No. 113 - (Headlamps emitting an symmetrical beams) (The following text is based upon ECE/TRANS/WP.29/GRE/2009/27)

Annex 4.

The introductory paragraph, amend to read:

"TESTS FOR STABILITY OF ...OPERATION

TESTS ON COMPLETE CLASS B, C, D AND E HEADLAMPS

Once the photometric ... its thermal dissipation.

The tests shall be carried out:

- (a) **in a dry and still atmosphere at an ambient temperature of $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$, the test sample being mounted on a base representing the correct installation on the vehicle;**
- (b) **in case of replaceable light sources: using mass production filament light sources, which have been aged for at least one hour, or mass production gas-discharge light sources, which have been aged for at least 15 hours or mass production LED modules which have been aged for at least 48 hours and cooled down to ambient temperature before starting the tests as specified in this Regulation. The LED modules supplied by the applicant shall be used.**

The measuring equipment shall be equivalent to that used during headlamp type-approval tests.

The test sample shall be operated without being dismantled from or readjusted in relation to its test fixture. The light source used shall be a light source of the category specified for that headlamp."

Paragraph 1, amend to read:

"1. TEST FOR STABILITY OF PHOTOMETRIC PERFORMANCE

~~The tests shall be carried out in a dry and still atmosphere at an ambient temperature of $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$, the complete front fog lamp being mounted on a base representing the correct installation on the vehicle."~~

Paragraph 1.1.1.2., amend to read:

"1.1.1.2. Test voltage

The voltage shall be applied to the terminals of the test sample as follows:

- (a) **In case of replaceable filament light source(s) operated directly under vehicle voltage system conditions:**

The test shall be performed at 6.3 V, 13.2 V or 28.0 V as applicable except if the applicant specifies that the test sample may be used at a different voltage. In this case, the test shall be carried out with the filament light source operated at the highest voltage that can be used.

- (b) **In case of replaceable gas discharge light source(s): The test voltage for the electronic light source control-gear is 13.2 ± 0.1 volts for 12 V vehicle voltage system, or otherwise specified in the application for approval.**

- (c) **In the case of non-replaceable light sources operated directly under vehicle voltage system conditions: All measurements on lighting units equipped with non-replaceable light sources (filament light sources and/or others) shall be made at 6.3 V, 13.2 V or 28.0 V or at other voltages according to the vehicle voltage system as specified by the applicant respectively.**

- (d) **In the case of light sources, replaceable or non-replaceable, being operated independently from vehicle supply voltage and fully controlled by the system, or, in the case of light sources supplied by a supply and operating device, the test voltages as specified above shall be applied to the input terminals of that device. The test laboratory may require from the manufacturer the supply and operating device or a special power supply needed to supply the light source(s).**

- (e) **LED module(s) shall be measured at 6.75 V, 13.2 V or 28.0 V respectively, if not otherwise specified within this Regulation. LED module(s) operated by an electronic light source control gear, shall be measured as specified by the applicant.**

- (f) **Where additional signalling lamps are grouped, combined or reciprocally incorporated into the test sample and operating at voltages other than the nominal rated voltages of 6 V, 12 V or 24 V respectively, the voltage shall be adjusted as declared by the manufacturer for the correct photometric functioning of that lamp."**

Paragraph 1.2.1.3., to be deleted

A.3. REGULATION No. 123 - (Adaptive front-lighting systems(AFS)) (The following text is based upon the current text of the Regulation until Supplement 3 to the Regulation)

Annex 4,

The introductory paragraphs, amend to read:

"TESTS FOR STABILITY....OPERATION

TESTS ON COMPLETE SYSTEMS

Once the photometric values have been measured ... shall be tested for stability of photometric performance in operation.

- (a) ...
- (b) ...
- (c) ...

The tests shall be carried out:

- (a) ...
- (b) in case of replaceable light sources: using a mass production filament light source, which has been aged for at least one hour, or a mass production gas-discharge light source, which has been aged for at least 15 hours or a mass production LED module which has been aged for at least 48 hours **and cooled down to ambient temperature before starting the tests as specified in this Regulation. The LED modules supplied by the applicant shall be used**

The measuring equipment shall be equivalent to that used during ~~system approval tests.~~ **type approval tests of the test samples of the system.** The system or part(s) of shall, prior to the subsequent tests, be set to the neutral state.

The test sample shall be operated on passing beam without being dismantled from or readjusted in relation to its test fixture. The light source used shall be a light source of the category specified for that headlamp."

Paragraph 1.1.1.2; amend to read:

"1.1.1.2. Test voltage

The voltage shall be applied to the terminals of the test sample as follows:

- (a) In case of replaceable filament light source(s) operated directly under vehicle voltage system conditions:

~~The voltage shall be adjusted so as to supply 90 per cent of the maximum wattage specified in Regulation No. 37 for the filament light source(s) used. The applied wattage shall in all cases comply with the corresponding value of a filament light source of 12 V rated voltage,~~ **the test shall be performed at 6.3 V, 13.2 V or 28.0 V as applicable**, except if the applicant specifies that the test sample may be used at a different voltage. In this case, the test shall be carried out with the filament light source operated at the highest voltage that can be used.

- (b) In case of replaceable gas discharge light source(s):

The test voltage for the electronic light source control-gear is 13.2 ± 0.1 volts for 12 V vehicle voltage system, or otherwise specified in the application for approval.

- (c) In the case of non-replaceable light source operated directly under vehicle voltage system conditions:

All measurements on lighting units equipped with non-replaceable light sources (filament light sources and/ or others) shall be made at 6.3 V, 13.2 V or 28.0 V or at other voltages according to the vehicle voltage system as specified by the applicant respectively.

- (d) ...

- (e) LED module(s) shall be measured at 6.75 V, 13.2 V or 28.0 V respectively, if not otherwise specified within this Regulation. LED module(s) operated by an electronic light source control gear, shall be measured as specified by the applicant.

- (f) **Where additional signalling lamps are grouped, combined or reciprocally incorporated into the test sample and operating at voltages other than the nominal rated voltages of 6 V, 12 V or 24 V respectively, the voltage shall be adjusted as declared by the manufacturer for the correct photometric functioning of that lamp."**

B. JUSTIFICATION

The test requirements in Regulations Nos. 19, 98, 112, 113 and 123 to confirm photometric performance stability have been traditionally based upon operation of the lighting devices at 90 per cent of the maximum wattage of their light sources. This requires various operating voltages, dependent upon the light sources used, to be accurately maintained during the test cycles. In simple devices having one light source, this procedure is adequate but with the evolution of headlamps and front fog lamps that are grouped, combined or reciprocally incorporated with other devices, it causes problems because each device must be operated at a different supply voltage. This results in the requirement for multiple power supplies with resulting testing times and costs.

This proposed amendment overcomes the testing difficulties by specifying a common supply voltage that is independent of light source technology and provides a common text that removes the current inconsistencies between the regulations. In developing these amendments, care has been taken to ensure that the test voltages are representative of those that will be in operation on the vehicle.

Whilst formulating this proposal, opportunity has been taken to update the provisions of Regulation No. 98 to allow a separate "flash to pass" function and clarify how this should be taken into consideration during the heat testing.
