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**World Forum for Harmonization of Vehicle Regulations****Working Party on Lighting and Light-Signalling****Seventieth session**

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Item 11 of the provisional agenda

**Regulation No. 65 (Special warning lamps)****Proposal for Supplement 09 to the 00 Series of Regulation  
No. 65 (Special warning lamps)****Submitted jointly by the experts from the Society of Automotive  
Engineers International and from the International Automotive  
Lighting and Light Signalling Expert Group (GTB) \***

The text reproduced below was prepared by the experts from the Society of Automotive Engineers (SAE) and from the International Automotive Lighting and Light-Signalling Expert Group (GTB) to clarify the requirements for the special warning lamp while allowing for harmonization with the requirements for emergency warning lamps as prescribed by SAE. The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106, ECE/TRANS/2010/8, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

## I. Proposal

Paragraph 1.2.1., amend to read:

- "1.2.1 The trade name or ~~make~~ **mark**;
- (a) **lamps bearing the same trade name or mark but produced by different manufacturers are considered as being of different types.**
- (b) **Lamps produced by the same manufacturer differing only by the trade name or mark may be considered to be of the same type;"**

Paragraph 1.6., completely replace the existing text to read:

- "1.6. the "*effective intensity*"  $J_e$  in a fixed direction for both rotating and stationary flashing type is given by:

$$J_e = \frac{J_m}{1 + \frac{C}{FT}}$$

**Where:**

**$J_m$ : peak intensity (cd)**

**C: time constant, C = 0.2 sec**

**F: form factor  $F = \frac{\int_0^T J dt}{J_m T}$**

**T: time of period**

**J: instantaneous intensity (cd)"**

Paragraph 1.7., amend to read:

- "1.7. "*reference centre of the special warning lamp*" means:
- (a) for a rotating or stationary flashing lamp (Category T), ~~the centre of the light source, and for a directional flashing lamp (Category X), the intersection of the axis of reference with the exterior light-emitting surface: it is specified by the manufacturer of the special warning lamp. In the absence of such specification, it means~~
- (i) **the optical centre of the light source; or**
- (ii) **the geometric centre of the external optical surface; or**
- (iii) **in case of an array of light sources in the optical system, the geometric centre of the array;**
- shall be considered as the reference centre.**
- (b) ~~for a directional flashing lamp (Category X), the intersection of the axis of reference with the exterior light emitting surface; it is specified by the manufacturer of the special warning lamp. In the absence of such specification, it means the centre of the light source."~~

Insert a new paragraph 1.9.1.2, to read:

**"1.9.1.2. in cones, the generating lines of which produce with the above-mentioned horizontal plane angles, starting at a point where the effective intensity is minimum, the values of which are indicated in the table in annex 5 to this Regulation."**

*Paragraph 1.9.1.2. (former), renumber as paragraph 1.9.1.3.*

*Paragraph 2.2.2., amend to read:*

"2.2.2. a brief technical description stating in particular the light source provided by the manufacturer of the special warning lamp and including, where applicable, the electronic control unit(s), the ballast(s) or the light control gear(s) or the light source module and the light source module specific identification code. **In case the light source is a Light Emitting Diode (LED), trade name and the type name.**"

*Paragraph 2.2.6., amend to read:*

"2.2.6. two samples of the **outer lens cover**, provided that the construction of the special warning lamp with exception of the colour of the **outer lens cover** remains unchanged and the approval may be extended simultaneously or subsequently for special warning lamps of another colour. In this case, it is sufficient to carry out the photometric and colorimetric tests."

*Insert a new paragraph 2.4. to read:*

**"2. 4. In the case of a type of lamp differing only by the trade name or mark from a type that has already been approved it shall be sufficient to submit:**

**2. 4. 1. A declaration by the lamp manufacturer that the type submitted is identical (except in the trade name or mark) with and has been produced by the same manufacturer as the type already approved, the latter being identified by its approval code;**

**2. 4. 2. Two samples bearing the new trade name or mark or equivalent documentation."**

*Paragraph 5.1. amend to read:*

"5.1. The special warning lamps must be so designed and constructed that in normal conditions of use, and notwithstanding the vibrations to which they may be subjected in such use, their satisfactory operation remains assured and they retain the characteristics prescribed by this Regulation.

The special warning lamps must be so designed and constructed that the relevant requirements with regard to **internal** voltage higher than **60 V DC** are fulfilled; **[e.g. by marking of the device corresponding to the requirements of paragraph 5.1.1.5. in Regulation 100.]"**

*Paragraph 5.6., amend to read:*

"5.6. The frequency  $f$ , the "on" time  $t_H$  and the "off" time  $t_D$  shall correspond to the values indicated in the table in Annex 5 to this Regulation. They shall be measured at an ambient temperature of  $+ 23^\circ \text{C} \pm 5^\circ \text{C}$  and with voltages at the terminals of the device which are between 90 per cent and 115 per cent of the rated voltage. Moreover, starting and correct functioning of the special warning lamp shall remain assured at temperatures between  $- 20^\circ \text{C}$  and  $+ 50^\circ \text{C}$  or if the special warning lamp is exposed to heavy rain, in accordance with the procedure described in Annex 4 to this Regulation. Under those

conditions, one minute after a voltage equal to 90 per cent of the rated voltage has been applied; the frequency shall remain between 2.0 and 4.0 Hz."

*Insert a new paragraph 5.8., to read:*

**"5.8 A rotating or flashing special warning lamp device of Category T may emit light of several colours.**

**In this case all the requirements shall be met for each colour separately over the full angular range specified.**

**The activation of more than one colour at the same time shall be prohibited.**

**The lamp manufacturer shall supply mounting information, for correct mounting on a vehicle, to ensure that only one colour of the special warning lamp is activated at the same time."**

*Insert a new paragraph 5.9., to read:*

**"5.9. In the case of special warning lamps approved under this Regulation, it shall be not possible for the user to activate groups of several flashes (flash patterns), which do not conform to the requirements in paragraph 6 of Annex 5."**

*Annex 3., amend to read (the title remains unchanged), including the deletion of the footnote<sup>1</sup>:*

"Under the conditions of paragraph 7 of this Regulation, the trichromatic coordinates of light emitted through the ~~filters~~ **lens(es)** used for special warning lamps shall lie within the following boundaries:

1. Amber<sup>±</sup>
  - limit towards green :  $y \leq x - 0.120$
  - limit towards red :  $y \geq 0.390$
  - limit towards white :  $y \geq 0.790 - 0.670 x$
2. Blue
  - limit towards green :  $y = 0.065 + 0.805 x$
  - limit towards white :  $y = 0.400 - x$
  - limit towards purple :  $y = 1.667x - 0.222$
3. Red
  - limit towards purple :  $y \geq 0.980 - x$
  - limit towards yellow :  ~~$y \leq 0.335$~~   **$y \leq 0.335$**

**Colorimetric data shall be measured in the steady state condition."**

*Annex 4, amend to read (the title remains unchanged):*

"A ~~simple~~ **sample** of the special warning lamp, fitted in its normal operating position, with all the drainage apertures open if they exist, shall be subjected

<sup>±</sup>—Corresponds to a specific part of the "yellow" zone of the triangle of CIE colours.

to a precipitation of 2.5 mm of water per minute, the water being directed at an angle of 45° and from a **single** nozzle producing a full conical jet.

During the test, the device shall turn on its vertical axis at a rate of 4 turns per minute. **However, if the water is simultaneously directed to the device under test from all directions in the horizontal plane using a multitude of nozzles, there is no need to rotate the device during the test. In this latter case the water flow specified above shall be adjusted accordingly to achieve even distribution and the correct precipitation.**

The test shall last for 12 hours continuously after which the water jet shall be stopped.

One hour later, the sample shall be examined and shall be regarded as having passed the test if the accumulated volume of water does not exceed 2 cm<sup>3</sup>."

*Annex 5, paragraphs 1. and 2., amend to read:*

- "1. Measurements of the photometric characteristics shall be taken at a distance of at least 25 m.

The angular diameter of the photoelectric receiver as seen from the special warning lamp shall be 10 minutes ~~of~~ arc maximum.

**However, the distance of the sensor from the special warning lamp should be adjusted to a longer distance, such that the aperture through which the sensor is receiving the light allows full view of the special warning lamp for the sensor.**

The response time of the photometric system shall be adequate to the rising time of the signal to be measured.

2. For special warning lamps having one level of intensity (class 1), the "by night" level shall apply.

For special warning lamps having two levels of intensity (class 2) measurements shall be carried out for each of the two levels.

The effective luminous intensities in various directions shall be as specified in the ~~table~~ **tables** below, **and shall be measured after the light output from the special warning lamp has reached photometric stability as specified in paragraph 5 below"**

*Annex 5, paragraph 5., amend to read:*

5. "For any lamp ~~equipped with non filament light source(s),~~ the luminous intensities measured after one minute and after ~~30 minutes of operation~~ **the light output from the special warning lamp has reached photometric stability (deviation of less than ±5 percent in the last 15 minutes of operation)** shall comply with the minimum and maximum requirements. The luminous intensity distribution after one minute of operation can be calculated by applying the ratio achieved at HV between one minute and ~~30 minutes of operation~~ **at photometric stability."**

*Annex 5, paragraph 7.1., amend to read:*

- "7.1. The frequency, the "ON" time and the "OFF" time shall be as specified in the table below

		Colour blue or amber
		rotating system or flash light sources (category T and X)
Frequency $f$ (Hz)	max.	<b>4 4.0</b>
	min.	<b>≥ 2.0</b>
"ON" time $t_H$ (s)	max.	0.4/f
"OFF" time $t_D$ (s)	min.	0.1

Annex 5, Paragraph 7.3., amend to read:

"7.3. The effective luminous intensities in the reference axis for a directional flashing lamp (Category X) shall be as specified in the table below:

Category X					
			Colour		
			blue	amber	red
Minimum value of the effective luminous intensity $J_e$ on the reference axis	H = 0° V = 0°	by day	200	400	200
		by night	100	200	100
Maximum value of the effective luminous intensity $J_e$	inside H = ±10° V = ±4°	by day	3,000	<b>3,000</b>	3,000
		by night	1,500	<b>1,500</b>	1,500
	inside H = ±20° V = ±8°	by day	1,500	1,500	1,500
		by night	600	600	600
	outside the above areas	by day	1,000	1,000	1,000
		by night	300	300	300

Annex 5, paragraph 8.2., amend to read:

"8.2. If a special warning lamp contains two or more optical systems, all the optical systems shall work in phase **within**. ~~This applies only to~~ each half of a complete "bar" which is designed to extend on the width of the vehicle. **In such a case, for the purpose of measurement of effective intensity, only one half of the "bar" shall be energized so that the light emission from the side not being measured is not added into the side being measured. The timing measurements as described in paragraph 6.1 of this Annex 5 apply to the operating half of the "bar".**"

Annex 6, amend the title to read:

**"XENON RELATIVE ~~SPECIAL~~ SPECTRAL DISTRIBUTION"**

Annex 7, Paragraph 2.5., amend to read:

"2.5. Criteria governing acceptability

The manufacturer is responsible for carrying out a statistical study of the test results and for defining, in agreement with the competent authority, criteria governing the acceptability of his product in ~~other~~ order to meet the specifications laid down for verification of conformity of products in paragraph 9.1. of this Regulation.

**The criteria governing the acceptability shall be such that, with a confidence level of 95 per cent, the minimum probability of passing a spot check in accordance with Annex 8 (first sampling) would be 0.95."**

*Annex 8, Paragraph 2.3.*, amend to read:

"2.3. Approval withdrawn

**Conformity shall be contested and paragraph 10 applied if, following the sampling procedure in Figure 1 of this Annex, the deviations of the measured values of the ~~headlamps~~ special warning lamp are:**

2.3.1. Sample A....."

## II. Justification

1. At the sixty-sixth session of GRE, a proposal for amendments to UN Regulation No. 65 (ECE/TRANS/WP.29/GRE/2011/48) was introduced by the expert from the SAE. These amendments intended to clarify the execution of the design and test requirements for the special warning lamp, while allowing for harmonization with the requirements for emergency warning lamps as prescribed by SAE. Following an initial exchange of views, GRE noted that the experts from SAE and GTB would work together to resolve the comments received.

2. The proposal in this document is the result of the joint work of GTB and SAE and replaces the content of ECE/TRANS/WP.29/GRE/2011/48. In addition to addressing the proposals from SAE, the opportunity was also taken to introduce further improvements that have been identified by the GTB Photometry Working Group. The complete package presented here was agreed upon during the GTB meeting in Stockholm in May 2013, with the participation of the SAE representatives.

3. In the proposed amendment to paragraph 5.1, a reference is made to paragraph 5.1.1.5 of Regulation No.100 and the text is shown as "[e.g. by marking of the device corresponding to the requirements of paragraph 5.1.1.5. in Regulation 100.]". This is the simplest means of dealing with the "high voltage" requirements, but the advice of GRE is sought on including a reference to a specific paragraph in another regulation.

4. Incorporating these proposed amendments into the UN Regulation and the associated SAE emergency warning lamp Standards will result in harmonized requirements, based on experience of real life applications, technical progress and scientific data.