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Economic Commission for Europe**Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on Lighting and Light-Signalling****Seventy-second session**

Geneva, 20–22 October 2014

Item 4 (i) (iv) of the provisional agenda

1958 Agreement - Regulations**Other business – Any other business****Proposal for a Supplement to the 01 series of amendments to Regulation No. 123 (Adaptive front lighting systems (AFS))****Submitted by the expert from France***

The text reproduced below was prepared by the expert from France in order to delete a design restrictive requirement which is not clearly justified in the Regulation. The proposal is based upon document GRE-71-10 amended in order to take into account the comments at the seventy-first session of GRE (ECE/TRANS/WP.29/GRE/71, para. 67). The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, 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 5.14., to be deleted

~~"5.14. In the case of the basic passing beam in the neutral state being produced exclusively by LED modules, the total objective luminous flux of these LED modules shall be equal or greater than 1,000 lumen per side, when measured as described in paragraph 5. of Annex 11."~~

Paragraph 5.15., renumber as 5.14.

Add a new paragraph 6.2.9., to read:

"6.2.9. When the system is at its neutral state, along the horizontal line between 25LL and 25RR, the luminous intensity shall not be less than 1180 Cd;

and

The luminous flux in the rectangular forward field: horizontally (30°L 30°R) – vertically (10°D - 0°) shall be not less than 250 Lm."

Add a new paragraph 9.7., to read:

"9.7 The measurement of the luminous flux from paragraph 6.2.9. of this Regulation is disregarded."

II. Justification

1. Currently, the luminous flux of light emitting diodes (LEDs) contributing to the main low beam must be greater than or equal to 1,000 Lm according to paragraph 5.3.2.3., while filament light sources lamps used for low beam have a reference flux at 13.2V which is from 800 Lm (H8) to 2,100 Lm (H9).
2. The optical systems adapted to the LEDs have an efficiency which is roughly 50 – 60 per cent while the classic reflectors adapted to filament bulbs have an efficiency of roughly 35 per cent. This constraint of 1,000 Lm is designed restrictive and not “performance oriented”. Requirements have to be focused on the performances and not on how to reach these performances. The main criterion in which has to achieve LED headlamp is the output luminous intensity at the voltage defined by the Regulations. So, the minimum luminous flux of LEDs should be removed from this Regulation. The most relevant criteria are the photometric points of the grid.
3. Allowing the use of LEDs, whose luminous flux is less than 1,000 Lm, is the cheapest solution which can be used for energy saving vehicles (e.g., electrical urban vehicles) while having at least the same luminous intensity as other sources. For instance, in the case of LED headlamp having the same performances as a H4 headlamp, the CO₂ saving is about 1.0g CO₂/km (based on the Technical Guidelines of the European Commission).
4. Furthermore, as LEDs are more reliable than filament light sources, there will be fewer “blind in one eye” vehicles on the roads.
5. During examination of informal document GRE-71-10, some experts mentioned that the reduction of flux of the LED light source may have an influence on the light distribution of the beam pattern. Such concern may also be applicable to other types of light sources. Consequently, the proposal was amended so as to check that the illumination along the line 25LL -25RR is above a lower limit.

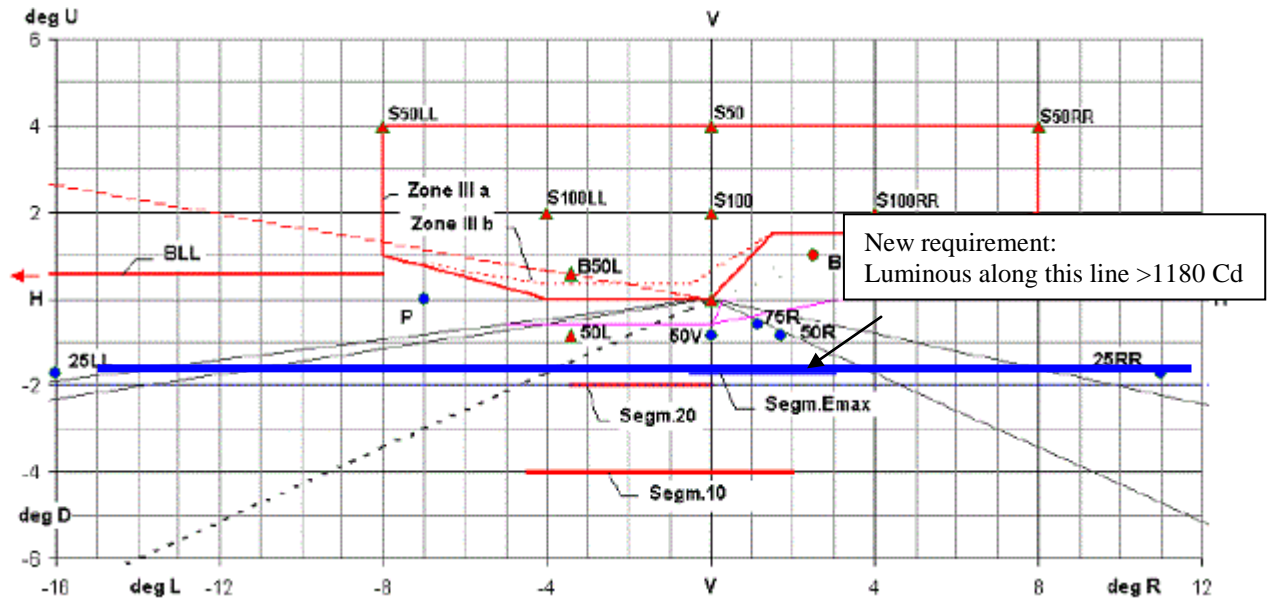


Figure 1. Light distribution

6. Additionally, to ensure a safe luminous output, we add a new request for the luminous flux of the headlamp in the forward field, so that the optical performances are at least at the level of a standard H4 low beam (see picture below).

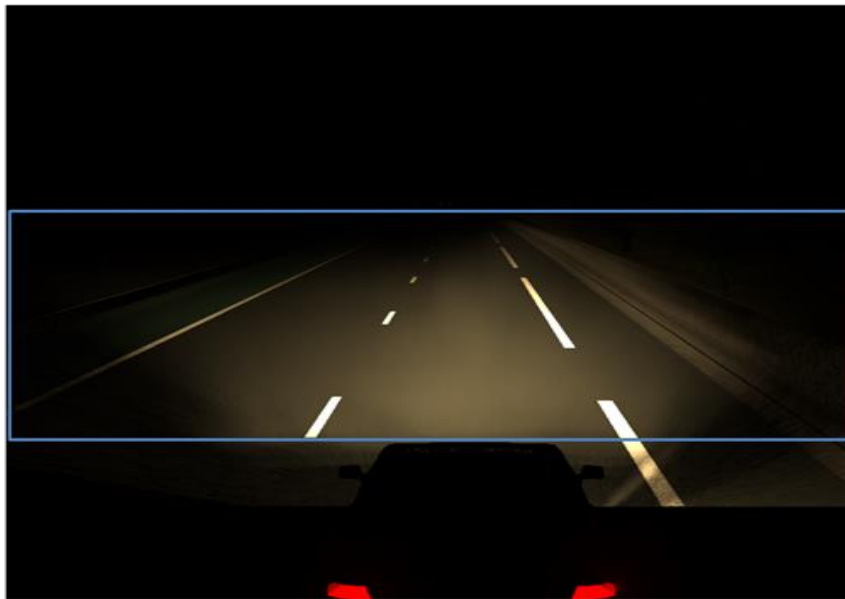


Figure 2. Luminous flux in the field: 265 Lm.