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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-third session**

Geneva, 14 – 17 April 2015

Item 7 (j) of the provisional agenda

Other Regulations – Regulation No. 112 (Headlamps emitting an asymmetrical passing-beam)**Proposal for a Supplement to the 01 series of amendments to Regulation No. 112 (Headlamps emitting an asymmetrical passing-beam)****Submitted by the expert from France***

The text reproduced below was prepared by the expert from France to delete a design restrictive requirement which is not clearly justified in the Regulation. The proposal is based upon document ECE/TRANS/WP.29/GRE/2014/36 amended in order to take into account the comments of the seventy-second session of GRE (ECE/TRANS/WP.29/GRE/72, para. 43). 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 5.3.2.3., to be deleted:

~~“5.3.2.3. The total objective luminous flux of all LED modules producing the principal passing beam and measured as described in paragraph 5. of Annex 10 shall be equal or greater than 1,000 lumens.”~~

Paragraph 5.3.2.4., renumber as 5.3.2.3.

Add a new paragraph 6.2.9., to read:

6.2.9. Along the horizontal line between 25L and 25R (1.72D – 9L to 9R), the luminous intensity shall not be less than 1,700 Cd.

and

The total luminous flux in “Zone I” shall be not less than 140 Lm.

Paragraph 10.7., amend to read:

"10.7. The measuring points 1 to 8 from paragraph 6.2.4. of this Regulation **and the measurement of the luminous flux from paragraph 6.2.9. of this Regulation** are 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 efficiency of optical systems adapted to the LEDs is higher than per cent while the classic reflectors adapted to filament bulbs are roughly 35 per cent efficient. This 1,000 Lm constraint is design-restrictive and not performance-oriented. Requirements need to be focused on the performance, not on how to achieve these performances. The main criterion of a LED headlamp is the output of luminous intensity at the voltage defined in the Regulations. Thus, the minimum luminous flux of LEDs should be removed from the Regulation. The most relevant criteria are the photometric points of the grid which should be achieved.

3. The use of LEDs of a luminous flux less than 1,000 Lm is an inexpensive solution which can be used for energy saving vehicles (e.g. the electrical urban vehicles), while giving at least the same luminous intensity as other light sources. For a LED headlamp of the same performance as a H4 headlamp, the CO₂ saving is about 1.0 g CO₂/km (based on the Technical Guidelines of the European Commission).

4. Furthermore, as LEDs are more durable than filament light sources, there will be fewer “blind in one eye” vehicles on the roads.

5. At the previous sessions of GRE, some experts pointed out that this modification could lead to marginal headlamps despite the fact that they achieve the current requirements of the Regulation. The current prescriptions of Regulation No. 112 ensure that the headlamp provides 50 m of good visibility ahead of the vehicle (75R, 50R and V50), a good illumination of the road between 25 and 50 m ahead the vehicle (Zone IV) and a good width of the light distribution (25L and 25R).

6. To complete the prescription and to ensure that there is enough light on the road, we propose to add a prescription along the line segment (1.72D - 9L to 9R) and a minimum luminous flux inside Zone I, corresponding to a distance comprised between 8.5 and 25.0 m ahead the vehicle (see the figures below).

Figure 1. Light distribution

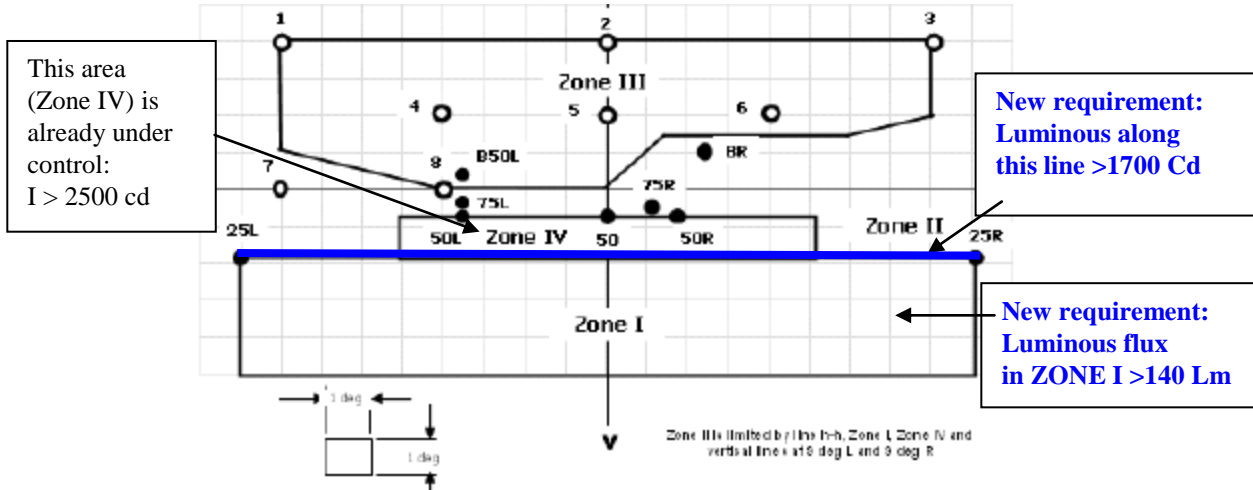


Figure 2. Prescriptions projected on the Road

In green : Current prescriptions for visibility distance, 25- 50m area and width of the beam pattern.

In blue : Proposed new prescriptions.

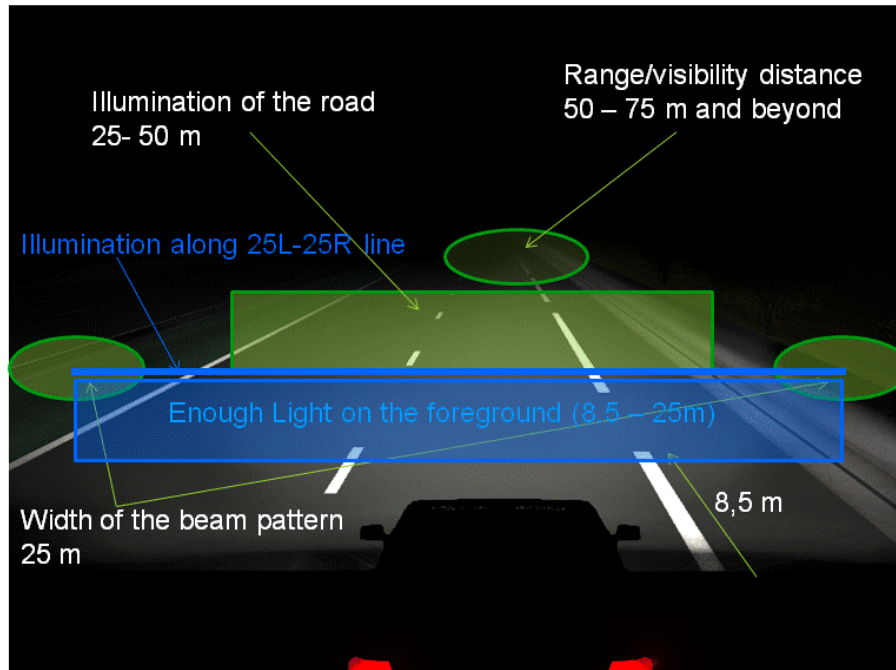


Figure 3. Visual aspect of a low beam producing 140 Lumen in Zone I