

## **Proposal for a Supplement to the 03, 04 and 05 series of amendments to UN Regulation No. 48 (Installation of lighting and light-signalling devices)**

The text reproduced below was prepared by IWG SLR with the aim to introduce into the 03, 04 and 05 series of amendments to UN Regulation No. 48 references to the headlamp Classes in the 01 series of amendments to UN Regulation No. 149. Additionally, a performance-oriented criterion has been introduced in order to evaluate the visibility of red light to the front and white light to the rear of the vehicle.

The modifications to the existing text of UN Regulation No. 48 are marked in bold for new or strikethrough for deleted characters.

### **I. Proposal - UN R48.03, R48.04 and R.48.05**

*Paragraph 5.10. and related sub-paragraphs, amend to read:*

“5.10. ~~No red light which could give rise to confusion shall be emitted from a lamp as defined in paragraph 2.1.5. in a forward direction and no white light which could give rise to confusion, shall be emitted from a lamp as defined in paragraph 2.1.5. in a rearward direction. No account shall be taken of lighting devices fitted for the interior lighting of the vehicle. In case of doubt, this requirement shall be verified as follows:~~

**Provisions regarding light which could give rise to confusion:**

5.10.1. ~~For the visibility of red light towards the front of a vehicle, with the exception of a red rearmost side marker lamp, there shall be no direct visibility of the apparent surface of a red lamp if viewed by an observer moving within Zone 1 in a transverse plane situated 25 m in front of the vehicle (see Annex 4);~~

**Red light emitted by a lamp fitted on the rear of the vehicle (as defined in paragraph 2.1.5) shall not be visible from the front of the vehicle.**

5.10.2. ~~For the visibility of white light towards the rear of a vehicle, with the exception of reversing lamps and white side conspicuity markings, there shall be no direct visibility of the apparent surface of a white lamp if viewed by an observer moving within Zone 2 in a transverse plane situated 25 m behind the vehicle (see Annex 4);~~

**White light emitted by a lamp fitted on the front of the vehicle (as defined in paragraph 2.1.5) shall not be visible from the rear of the vehicle.**

5.10.3. ~~In their respective planes, the zones 1 and 2 explored by the eye of the observer are bounded:~~

**No account shall be taken of light emitted by devices for the interior lighting of the vehicle.**

~~5.10.3.1. In height, by two horizontal planes 1 m and 2.2 m respectively above the ground;~~

~~5.10.3.2. In width, by two vertical planes which, forming to the front and to the rear respectively an angle of 15° outwards from the vehicle's median longitudinal plane, pass through the point or points of contact of vertical planes parallel to the vehicle's median longitudinal plane delimiting the vehicle's overall width;~~

~~if there are several points of contact, the foremost shall correspond to the forward plane and the rearmost to the rearward plane.~~

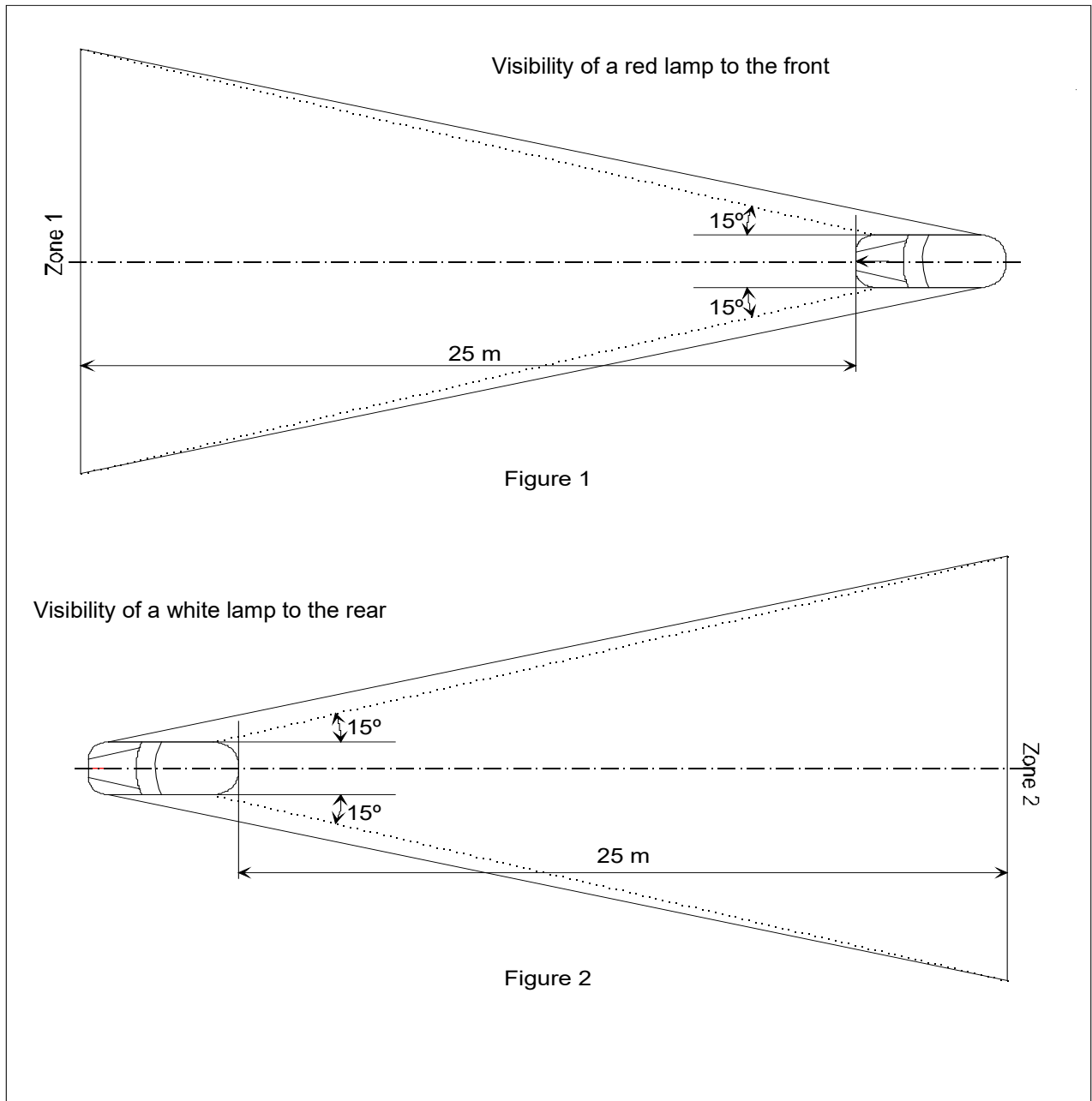
- 5.10.4. To verify paragraphs 5.10.1 and 5.10.2:**
- 5.10.4.1. For the visibility of red light towards the front of a vehicle, with the exception of a red rearmost side-marker lamp, there shall be no direct visibility of the apparent surface of a red lamp if viewed by an observer moving within Zone 1 in a transverse plane situated 25 m in front of the vehicle (see Annex 4);**
- 5.10.4.2. For the visibility of white light towards the rear of a vehicle, with the exception of reversing lamps and white side conspicuity markings, there shall be no direct visibility of the apparent surface of a white lamp if viewed by an observer moving within Zone 2 in a transverse plane situated 25 m behind the vehicle (see Annex 4);**
- 5.10.4.3. In case of doubt, the requirement above shall be deemed fulfilled if the luminous intensity of the red light emitted to the front and/or the white light emitted to the rear, as verified during type approval of the lamps, is less than 0.25 cd per lamp taking into account the influence of the vehicle body if applicable.”**

Annex 4, amend to read:

## “Annex 4

### Visibility of a red lamp to the front and visibility of a white lamp to the rear

(See paragraphs 5.10.1. and 5.10.2. 5.10.4. of this Regulation)



In their respective planes, the zones 1 and 2 explored by the eye of the observer are bounded:

- In height, by two horizontal planes 1 m and 2.2 m respectively above the ground;
- In width, by two vertical planes which, forming to the front and to the rear respectively an angle of 15° outwards from the vehicle's median longitudinal plane, pass through the point or points of contact of vertical planes parallel to the vehicle's median longitudinal plane delimiting the vehicle's overall width; if there are several points of contact, the foremost shall correspond to the forward plane and the rearmost to the rearward plane.”

## II. Proposal – UN R48.03

*Paragraph 6.1.2., amend to read:*

“6.1.2. Number

Two ~~or four~~, type approved according to:

- UN Regulation No. 98,  
or
- Class B of UN Regulation No. 112 of class B only,  
or
- Classes B or D of the 00 series of amendments to UN Regulation No. 149,  
or
- Class B of the 01 and subsequent series of amendments series to UN Regulation No. 149.

Optionally, one or more additional pair(s) type approved according to:

- UN Regulation No. 98,  
and/or
- Classes A and/or B of UN Regulation No. 112,  
and/or
- Classes A and/or B of UN Regulation No. 149.

~~For vehicles of the category N3: Two extra main beam headlamps may be installed.~~

~~Where a vehicle is fitted with four concealable headlamps the installation of two additional headlamps shall only be authorized for the purpose of light signalling, consisting of intermittent illumination, at short intervals (see paragraph 5.12. above) in daylight. ”~~

*Paragraph 6.1.9.2., amend to read:*

“6.1.9.2. This maximum intensity shall be obtained by adding together the individual reference marks which are indicated on the several headlamps. ~~The reference mark "10" shall be given to each of the headlamps marked "R" or "CR". ”~~

*Paragraph 6.2.2., amend to read:*

“6.2.2. Number

Two, type approved according to:

- UN Regulations Nos. 98 or 112, excluding Class A,  
or
- Classes B or D of the 00 series of amendments to UN Regulation No. 149,  
or
- Class C of the 01 and subsequent series of amendments to UN Regulation No. 149.”

*Paragraph 6.3.9.*, amend to read:

"6.3.9. Other requirements

In the case where there is a positive indication in the communication form in **item 10.9. of Annex 1 of Regulation No. 19 or item 9.5.8. in of Annex 1 of Regulation No. [RID] 149** the alignment and the luminous intensities of the class "F3" front fog beam may be automatically adapted in relation to the prevailing ambient conditions. Any variations of the luminous intensities or alignment shall be performed automatically and in such a way that no discomfort, neither ..."

*Paragraph 6.22.6.1.2.1.*, amend to read:

"6.22.6.1.2.1. In case the passing-beam is generated by several beams from different lighting units, the provisions according to paragraph 6.22.6.1.2. above apply to each said beam's "cut-off" (if any), which is designed to project into the angular zone, as indicated under item ~~9.3~~ **9.4.** of the communication form conforming to the model in Annex 1 to Regulations Nos. 123 or ~~item 9.3.3. in Annex 1 to UN Regulation No. [RID] 149.~~"

*Paragraph 6.22.9.1.*, amend to read:

"6.22.9.1. An AFS shall be permitted only in conjunction with the installation of headlamp cleaning device(s) according to Regulation No. 45<sup>22</sup> for at least those lighting units, which are indicated under item 9.2.3. of the communication form conforming to the model in Annex 1 to Regulation No. 123 or under item ~~9.3.2.3.~~ **9.3.3.** in Annex 1 to Regulation No. [RID] 149, if the total objective luminous flux of the light sources of these units exceeds 2,000 lm per side, and which..."

### III. Proposal - UN R48.04

*Paragraph 6.1.2.*, amend to read:

“6.1.2. Number

Two ~~or four~~, type approved according to:

~~(a) Regulations Nos. 98 or 112, excluding Class A headlamp~~

~~or~~

~~(b) UN Regulation [RID], Classes B and D headlamps only~~

- **UN Regulation No. 98,**

**or**

- **Class B of UN Regulation No. 112,**

**or**

- **Classes B or D of the 00 series of amendments to UN Regulation No. 149,**

**or**

- **Class B of the 01 and subsequent series of amendments to UN Regulation No. 149.**

**Optionally, one or more additional pair(s) type approved according to:**

- **UN Regulation No. 98,**

**and/or**

- **Classes A and/or B of UN Regulation No. 112,**

**and/or**

- **Classes A and/or B of UN Regulation No. 149.**

~~For vehicles of the category N3: Two extra main beam headlamps may be installed.~~

~~Where a vehicle is fitted with four concealable headlamps the installation of two additional headlamps shall only be authorized for the purpose of light signalling, consisting of intermittent illumination, at short intervals (see paragraph 5.12. above) in daylight.”~~

*Paragraph 6.1.9.2.*, amend to read:

“6.1.9.2. This maximum intensity shall be obtained by adding together the individual reference marks which are indicated on the several headlamps. ~~The reference mark "10" shall be given to each of the headlamps marked "R" or "CR".~~”

*Paragraph 6.2.2.*, amend to read:

“6.2.2. Number

Two, type approved according to:

~~(a) UN Regulation No. 98 or 112, excluding Class A headlamp,~~

~~or~~

~~(b) UN Regulation [RID], Classes B and D headlamps only.~~

- **UN Regulations Nos. 98 or 112, excluding Class A,**

**or**

- **Classes B or D of the 00 series of amendments to UN Regulation No. 149,**
- or**
- **Class C of the 01 and subsequent series of amendments to UN Regulation No. 149.”**

*Paragraph 6.3.9., amend to read:*

"6.3.9. Other requirements

In the case where there is a positive indication in the communication form in **item 10.9. of** Annex 1 of Regulation No. 19 or **item 9.5.8. in** Annex 1 of Regulation No. [RID] 149 the alignment and the luminous intensities of the class "F3" front fog beam may be automatically adapted in relation to the prevailing ambient conditions. Any variations of the luminous intensities or alignment shall be performed automatically and in such a way that no discomfort, neither ...”

*Paragraph 6.22.6.1.2.1., amend to read:*

"6.22.6.1.2.1. In case the passing-beam is generated by several beams from different lighting units, the provisions according to paragraph 6.22.6.1.2. above apply to each said beam's "cut-off" (if any), which is designed to project into the angular zone, as indicated under item ~~9.3~~ **9.4.** of the communication form conforming to the model in Annex 1 to Regulations Nos. 123 or ~~item 9.3.3. in Annex 1 to UN Regulation No. [RID] 149.~~"

*Paragraph 6.22.9.1., amend to read:*

"6.22.9.1. An AFS shall be permitted only in conjunction with the installation of headlamp cleaning device(s) according to Regulation No. 45<sup>19</sup> for at least those lighting units, which are indicated under item 9.2.3. of the communication form conforming to the model in Annex 1 to Regulation No. 123 or under item ~~9.3.2.3.~~ **9.3.3.** in Annex 1 to Regulation No. [RID] 149, if the total objective luminous flux of the light sources of these units exceeds 2,000 lm per side, and which...”

## IV. Proposal - UN R48.05

Paragraph 6.1.2., amend to read:

“6.1.2. Number

Two ~~or four~~, type approved according to:

~~(a) Regulations Nos. 98 or 112, excluding Class A headlamp~~

~~or~~

~~(b) UN Regulation [RID], Classes B and D headlamps only~~

- **UN Regulation No. 98,**

**or**

- **Class B of UN Regulation No. 112,**

**or**

- **Classes B or D of the 00 series of amendments to UN Regulation No. 149,**

**or**

- **Class B of the 01 and subsequent series of amendments to UN Regulation No. 149.**

**Optionally, one or more additional pair(s) type approved according to:**

- **UN Regulation No. 98,**

**and/or**

- **Classes A and/or B of UN Regulation No. 112,**

**and/or**

- **Classes A and/or B of UN Regulation No. 149.**

~~For vehicles of the category N3: Two extra main beam headlamps may be installed.~~

~~Where a vehicle is fitted with four concealable headlamps the installation of two additional headlamps shall only be authorized for the purpose of light signalling, consisting of intermittent illumination, at short intervals (see paragraph 5.12. above) in daylight.”~~

Paragraph 6.1.7.4., amend to read:

“6.1.7.4. The main-beam headlamps may be switched ~~on~~ **ON** either simultaneously or in pairs. ~~In case the extra two main beam headlamps are installed, as permitted under paragraph 6.1.2. for vehicles of the category N3 only, no more than two pairs may be simultaneously lit.~~

For changing over from the dipped to the main beam at least one pair of main-beam headlamps shall be switched ~~on~~ **ON**. For changing over from the main-beam to the dipped-beam all main-beam headlamps shall be switched ~~off~~ **OFF** simultaneously.”



*Paragraph 6.1.9.2., amend to read:*

"6.1.9.2. This maximum intensity shall be obtained by adding together the individual reference marks which are indicated on the several headlamps. ~~The reference mark "10" shall be given to each of the headlamps marked "R" or "CR".~~ "

*Paragraph 6.2.2., amend to read:*

"6.2.2. Number

Two, type approved according to:

(a) ~~UN Regulation No. 98 or 112, excluding Class A headlamp,~~

~~or~~

(b) ~~UN Regulation [RID], Classes B and D headlamps only.~~

- **UN Regulations Nos. 98 or 112, excluding Class A,**

**or**

- **Class B or D of the 00 series of amendments to UN Regulation No. 149,**

**or**

- **Class C of the 01 and subsequent series of amendments to UN Regulation No. 149."**

*Paragraph 6.3.9., amend to read:*

"6.3.9. Other requirements

In the case where there is a positive indication in the communication form in **item 10.9. of Annex 1 of Regulation No. 19 or item 9.5.8. in of Annex 1 of Regulation No. [RID] 149** the alignment and the luminous intensities of the class "F3" front fog beam may be automatically adapted in relation to the prevailing ambient conditions. Any variations of the luminous intensities or alignment shall be performed automatically and in such a way that no discomfort, neither ..."

*Paragraph 6.22.6.1.2.1., amend to read:*

"6.22.6.1.2.1. In case the passing-beam is generated by several beams from different lighting units, the provisions according to paragraph 6.22.6.1.2. above apply to each said beam's "cut-off" (if any), which is designed to project into the angular zone, as indicated under ~~item 9.3~~ **9.4.** of the communication form conforming to the model in Annex 1 to Regulations Nos. 123 or ~~item 9.3.3. in Annex 1 to UN Regulation No. [RID] 149.~~"

*Paragraph 6.22.9.1., amend to read:*

"6.22.9.1. An AFS shall be permitted only in conjunction with the installation of headlamp cleaning device(s) according to Regulation No. 45<sup>19</sup> for at least those lighting units, which are indicated under ~~item 9.2.3.~~ of the communication form conforming to the model in Annex 1 to Regulation No. 123 or under ~~item 9.3.2.3.~~ **9.3.3.** in Annex 1 to Regulation No. [RID] 149, if the total objective luminous flux of the light sources of these units exceeds 2,000 lm per side, and which..."

## V. Justification

1. SLR wishes to clarify the requirement in paragraph 5.10. that can be difficult for the applicant or the type approval authority to verify in cases where the lighting device and/or the vehicle has a complex shape.
2. The existing method is not performance oriented. It does not relate to visible red or white light but to the apparent surface of the function which can cause confusion. The Annex 4 zones have on some occasions been used to determine visible light, not visibility of the apparent surface.
3. The SLR proposal is based on simple performance-oriented criteria, to add an objective value to define the visibility of the red light towards the front and white light towards the rear of the vehicle. Indeed, in some cases, due to the complex shape of some vehicles, it is not easy to confirm if we see the apparent surfaces of red light to the front or the apparent surfaces of white light to the rear. In these cases, we propose an alternative solution to measure the light output, instead of only a subjective approval.
4. In case of doubt, or if the applicant wants to be sure that they will respect the requirement during design phase, SLR proposes an objective criterion, based on optical measurement (that can be simulated during design phase). This measurement may be done by technical services during UN Regulations Nos. 148 and 149 approval.
5. SLR has defined the maximum accepted value at 0.25 cd. This value is also the maximum value in UN Regulation No. 148 for the side marker lamp from 60 to 90 degree in horizontal direction and  $\pm 0^\circ$  in vertical direction towards the front of the vehicle. This 0.25 cd threshold is consistent between UN Regulations Nos. 148, 149 and UN Regulation No. 48.
6. the requirement specified in paragraph 5.10.4. of UN Regulation No. 48 shall be deemed fulfilled if the luminous intensity of the red light emitted to the front and/or the white light emitted to the rear, as verified during type approval of the lamps, is less than 0.25 cd per lamp. In that case, we believe it shall be clearly communicated whether or not this additional test was conducted at the lamp type approval in the communication form of UN Regulations Nos. 148 and 149. Therefore, we propose to make it a rule to note whether the additional test was conducted or not in the communication form of Annex 1 of UN Regulations Nos. 148 and 149.
7. Conformity of Production testing according to paragraph 4.18. of UN Regulation No. 149 and to paragraph 4.8.3.1.1. of UN Regulation No. 148 is disregarded. In contrast to current measurements, the visibility of white light to the rear / red light to the front, in most cases depends on car body which is not in the responsibility of the lamp manufacturer.
8. Since the introduction of Supplement 13 to the 05 Series of amendment to UN Regulation No. 48 (and Supplement 18 to the 04 series and Supplement 6 to the 03 series), references to the new device UN Regulations Nos. 148, 149 and 150 have been included into UN Regulation No. 48.
9. With the entry into force of the new (01) series of amendments to UN Regulation No. 149 produced by IWG SLR, it is necessary to introduce alternative references to UN Regulation No. 48. This amendment deals with such additional references for the 03, 04 and 05 series of amendments to UN Regulation No. 48.