27 January 2011

Agreement

Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions*

(Revision 2, including the amendments which entered into force on 16 October 1995)

Addendum 97: Regulation No. 98

Revision 2 – Amendment 3

01 series of amendments - Date of entry into force: 9 December 2010

Uniform provisions concerning the approval of motor vehicle headlamps equipped with gas-discharge light sources

UNITED NATIONS

* Former title of the Agreement: Agreement Concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958.

The list of Annexes, amend to read:

"3 The Spherical Coordinate Measuring System and Test Point Locations"

In the whole text of the Regulation, replace all the references to *the original version of the Regulation* by *the 01 series of amendments.*

Paragraph 4.1.4., amend to read:

"4.1.4. An approval number shall be assigned to each type approved. Its first two digits–shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party may not assign the same number to another type of headlamp covered by this Regulation. However, the matched pair is considered to be one type."

Paragraph 4.2.3.1., amend to read:

"4.2.3.1. On headlamps meeting the requirements of this Regulation which are so designed that the passing beam shall not be lit simultaneously with that of any other lighting function with which it may be reciprocally incorporated: an oblique stroke (/) shall be placed behind symbol indicating the headlamp producing the passing beam in the approval mark."

Paragraph 4.2.4., amend to read:

"4.2.4. The two digits of the approval number which indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval and, if necessary, the required arrow may be marked close to the above additional symbols."

Paragraph 5.4.2., amend to read:

"5.4.2. Following the application of this (these) measure(s) the following requirements regarding the luminous intensity of the headlamp shall be met with the adjustment left unchanged compared to that for the original traffic direction:

5.4.2.1. Passing beam designed for right-hand traffic and adapted to left-hand traffic:

at 0.86D-1.72L at least 2500 cd

at 0.57U-3.43R not more than 880 cd

5.4.2.2. Passing beam designed for left-hand traffic and adapted to right-hand traffic:

at 0.86D-1.72R at least 2500 cd

at 0.57U-3.43L not more than 880 cd"

Paragraph 5.5.2., amend to read:

"5.5.2. In the case of failure the the luminous intensity of the headlamp above the line H-H shall not exceed the values of a passing beam according to paragraph 6.2.6.; in addition, on headlamps designed to provide a passing and/or a driving beam to become a bend lighting, a luminous intensity of at least 2500 cd shall be fulfilled in test point 25 V (VV line, 1.72 D)."

Paragraph 6.1.2., amend to read:

"6.1.2. The luminous intensity produced by the headlamp shall be measured at 25 m distance by means of a photoelectric cell having a useful area comprised within a square of 65 mm side. The point HV is the centre-point of the coordinate system with a vertical polar axis. Line h is the horizontal through HV (see Annex 3 to this Regulation)."

Paragraph 6.1.3., amend to read:

"6.1.3. The headlamp …of Regulation No. 99.

Where the gas-discharge …Regulation No. 99. In this case, the luminous intensities shall be corrected accordingly.

…

...."

Paragraphs 6.1.7.1. and 6.1.7.2., amend to read:

"6.1.7.1. At least 37500 cd shall be attained at point HV, for a headlamp producing driving beam only.

6.1.7.2. At least 6250 cd shall be attained at point 50V for headlamps producing passing beam only or alternately passing and driving beam functions as described in paragraph 5.4. of this Regulation."

Paragraph 6.2.2., amend to read:

"6.2.2. The headlamp shall be visually aimed by means of the "cut-off" (see figure 1) as follows. The aiming shall be carried out using a flat vertical screen set up at a distance of 10 m or 25 m (as indicated in section 9 of Annex 1) forward of the headlamp and at right angles to the H-V axis as shown in Annex 3 to this Regulation. The screen shall be sufficiently wide to allow examination and adjustment of the "cut-off" of the passing beam over at least 5° on either side of the V-V line."

Paragraph 6.2.2.1., amend to read:

"6.2.2.1. For vertical adjustment: the horizontal part of the "cut-off" is moved upward from below line B and adjusted to its nominal position one per cent (0.57 degrees) below the H-H line;

…"

Paragraph 6.2.2.2., amend to read:

"6.2.2.2. …

(c) The kink of the "elbow" is basically located within +/- 0.5 degrees to the left or right of the V-V line; …."

Paragraph 6.2.3., amend to read:

"6.2.3. When so aimed, the headlamp needs, if its approval is sought solely for a passing beam, to comply only with the requirements referred to in paragraphs 6.2.4. and 6.2.5. below; if it is intended to provide both a passing beam and a driving beam, it shall comply with the requirements set out in paragraphs 6.2.4. to 6.2.6."

Paragraph 6.2.4.4., amend to read:

"6.2.4.4. The voltage applied to the terminals of the ballast(s) is:

either: 13.2 V ± 0.1 for 12 V systems
or: otherwise specified (See Annex 7)"

Paragraph 6.2.5. and the table, amend to read:

"6.2.5. After more than 10 minutes after ignition the luminous intensities at the test points referred to in the table below and in Annex 3 figure B (or mirrored about the VV line for left-hand traffic) shall meet the following requirements:

Points or segments	*Designation* **	*Luminous Intensity (cd)*		*Horizontal Angle (Degrees)*	*Vertical Angle (Degrees)*
		Max	*Min*		
Any point in zone A (bounded by the following coordinates in degrees) 8L 8L 8R 8R 6R 1.5R V-V 4L 1U 4U 4U 2U 1.5U 1.5U H-H H-H		*625*			
1	HV	625		0	0
2	B 50 L	350		3.43 L	0.57 U
3	75 R		12,500	1.15 R	0.57 D
4	50 L	12,500		3.43 L	0.86 D
5	25 L1	18,800		3.43 L	1.72 D
6	50 V		7,500	0	0.86 D
7	50 R		12,500	1.72 R	0.86 D
8	25 L2		2,500	9 L	1.72 D
9	25 R1		2,500	9 R	1.72 D
10	25 L3		1,250	15 L	1.72 D
11	25 R2		1,250	15 R	1.72 D
12	15 L		625	20L	2.86 D
13	15 R		625	20R	2.86 D
14			*	8L	4 U
15			*	0	4 U
16			*	8 R	4 U
17			*	4 L	2 U
18			*	0	2 U
19			*	4 R	2 U
20			65	8 L	0
21			125	4 L	0
A to B	Segment I		3,750	5.15 L to 5.15 R	0.86 D
C - D		1,750		2.5 R	1 U
E to F	Segment III and under	12,500		9.37 L to 8.53 R	4.29 D
	E max R	43,800		Right of VV line	Above 1.72 D
	E max L	31,300		Left of VV line	

Note: In the table:
Letter L means that the point or segment is located on the left of VV line.
Letter R means that the point or segment is located on the right of VV line.
Letter U means the point or segment is located above HH line.
Letter D means the point or segment is located below HH line
* The luminous intensities at points 14 through 19 shall be such that:
$14 + 15 + 16 \geq 190$ cd and
$17 + 18 + 19 \geq 375$ cd
** For left-hand traffic, the letter R shall be replaced by letter L and vice versa.

Paragraph 6.3.1., amend to read:

"6.3.1. In the case of a headlamp designed to provide a driving beam and a passing beam, measurements of the luminous intensity of the driving beam shall be taken with the same headlamp alignment as for measurements under paragraph 6.2.5. above; in the case of a headlamp providing a driving beam only, it shall be so adjusted that the area of maximum luminous intensity is centred on the point of intersection of lines H-H and V-V; such a headlamp needs meet only the requirements referred to in paragraph 6.3. Test voltages are the same as in paragraph 6.2.4.4."

Paragraphs 6.3.3. to 6.3.3.2., amend to read:

"6.3.3. Referring to Annex 3 Figure C, and the table below, the luminous intensity distribution of the driving beam shall meet the following requirements.

Test Point	*Angular Coordinates Degrees*	*Required luminous intensity cd*
		Min
H-5L	0.0 , 5.0 L	6,250
H-2.5L	0.0 , 2.5 L	25,000
H-2.5R	0.0 , 2.5 R	25,000
H-5R	0.0 , 5.0 R	6,250

6.3.3.1. The point of intersection (HV) of lines HH and VV shall be situated within the isolux representing 80 per cent of maximum luminous intensity. This maximum value (I_M) shall not be less than 43,800 cd.

6.3.3.2 The maximum value (I_M) shall in no circumstances exceed 215,000 cd."

Paragraph 6.3.3.3., shall be deleted.

Insert a new paragraph 6.3.4., to read:

"6.3.4. The reference mark (I'_M) of the maximum luminous intensity, referred to in paragraph 6.3.3.2. above, shall be obtained by the ratio:

$I'_M = I_M/4{,}300$

This value shall be rounded off to the value 7.5 - 10 - 12.5 - 17.5 - 20 - 25 - 27.5 - 30 - 37.5 - 40 - 45 - 50."

Paragraph 6.4., shall be deleted.

Paragraphs 6.5. and 6.5.1.(former), renumber as paragraph 6.4. and 6.4.1.

Paragraph 6.5.2.(former), renumber as paragraph 6.4.2. and amend to read:

"6.4.2. Additional tests are made after the reflector has been tilted vertically upwards by the angle quoted in paragraph 2.1.4. or 2 degrees, whichever is smaller, by means of the headlamp aiming devices. The headlamp is then re-aimed downwards (by means of the goniometer), and the photometric specifications must be met at the following points:

Principal passing beam : HV and 75 R (75 L respectively);

Driving beam : I_M and point HV (percentage of I_M).

If the aiming devices do not allow a continuous movement, the position nearest to 2 degrees is chosen."

Paragraph 6.5.3.(former), renumber as paragraph 6.4.3.

Paragraphs 13. to 13.4., amend to read:

"**13. Transitional provisions**

13.1. From the date of entry into force of the 01 series of amendments to this Regulation no Contracting Party applying it shall refuse to grant approvals under this Regulation as amended by the 01 series of amendments.

13.2. As from 60 months after the date of entry into force of the 01 series of amendments, Contracting Parties applying this Regulation shall grant approvals only if the headlamp meets the requirements of this Regulation as amended by the 01 series of amendments.

13.3. Existing approvals for headlamps already granted under this Regulation before the date of entry into force of the 01 series of amendments shall remain valid indefinitely.

13.4. Contracting Parties applying this Regulation shall not refuse to grant extensions of approvals to the preceding series to this Regulation."

Paragraph 13.5. shall be deleted.

Annex 2,

The first paragraph, amend to read:

"The headlamp …

The figure 30 indicates that the maximum luminous intensity of the driving beam is between 123,625 and 145,125 candelas.

..."

Figure 11, the note, amend to read:

"*Note:* The four examples shown above correspond to a lighting device bearing an approval mark relating to:

…

A headlamp with a gas discharge passing beam designed for right-hand and left-hand traffic and a gas discharge driving beam with a maximum intensity comprised between 123,625 and 145,125 (as indicated by the number 30), approved in accordance with this Regulation in its original form and incorporating a lens of plastic material;

..."

Figure 12, the text of example 1, amend to read:

"The above example …

Either:

A headlamp with a passing beam designed for both traffic systems and a driving beam with a maximum luminous intensity comprised between 80,625 and 96,750 candelas…

…

or:

A headlamp with a gas discharge passing beam and a driving beam with a maximum luminous intensity comprised between 123,625 and 145,125 candelas … as above,

or:

Even either of the above-mentioned headlamps approved as a single lamp."

Figure 12, the text of example 2, amend to read:

"The above example corresponds to the marking of a lens of plastic material and used in an assembly of two headlamps approved in the Netherlands (E4) under approval number 81151, consisting of:

…

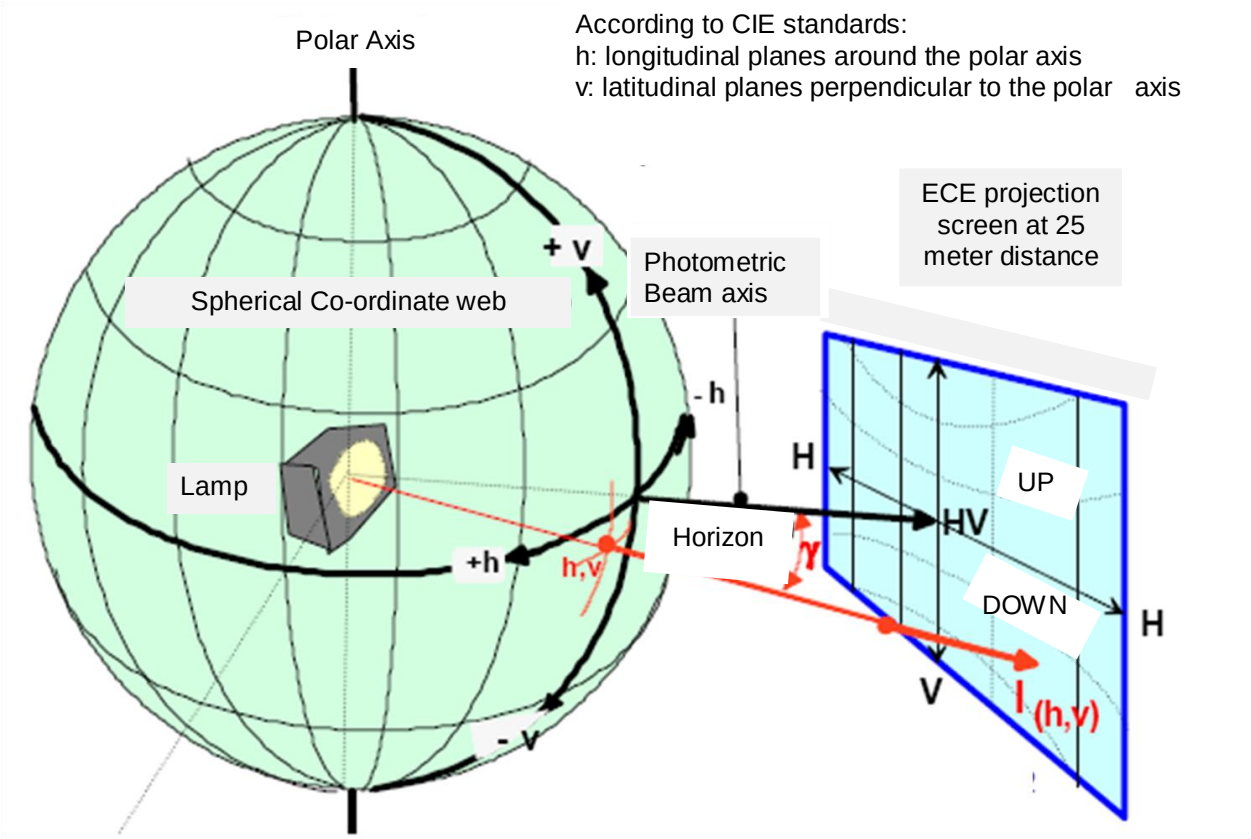
… comprised between 123,625 and 145,125 candelas as shown by the number 30."

Annex 3, amend to read:

"Annex 3

Spherical coordinate measuring system and test point locations

Figure A
Spherical coordinate measuring system



$E_{25m} = I_{(h,v)} \times \cos \gamma / r^2$

Figure B
Passing beam for right-hand traffic

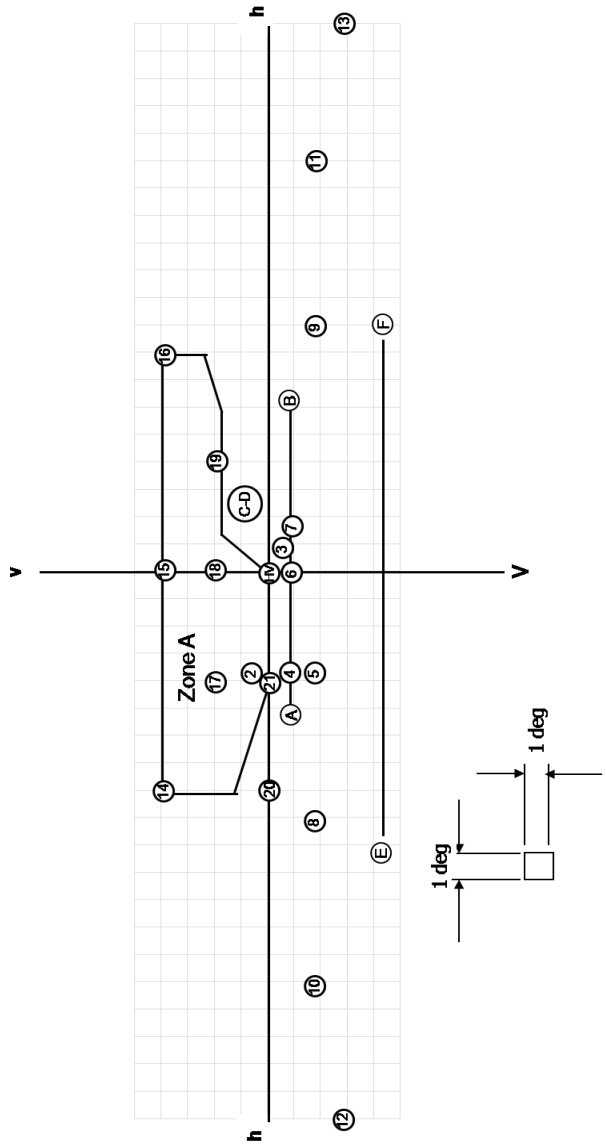
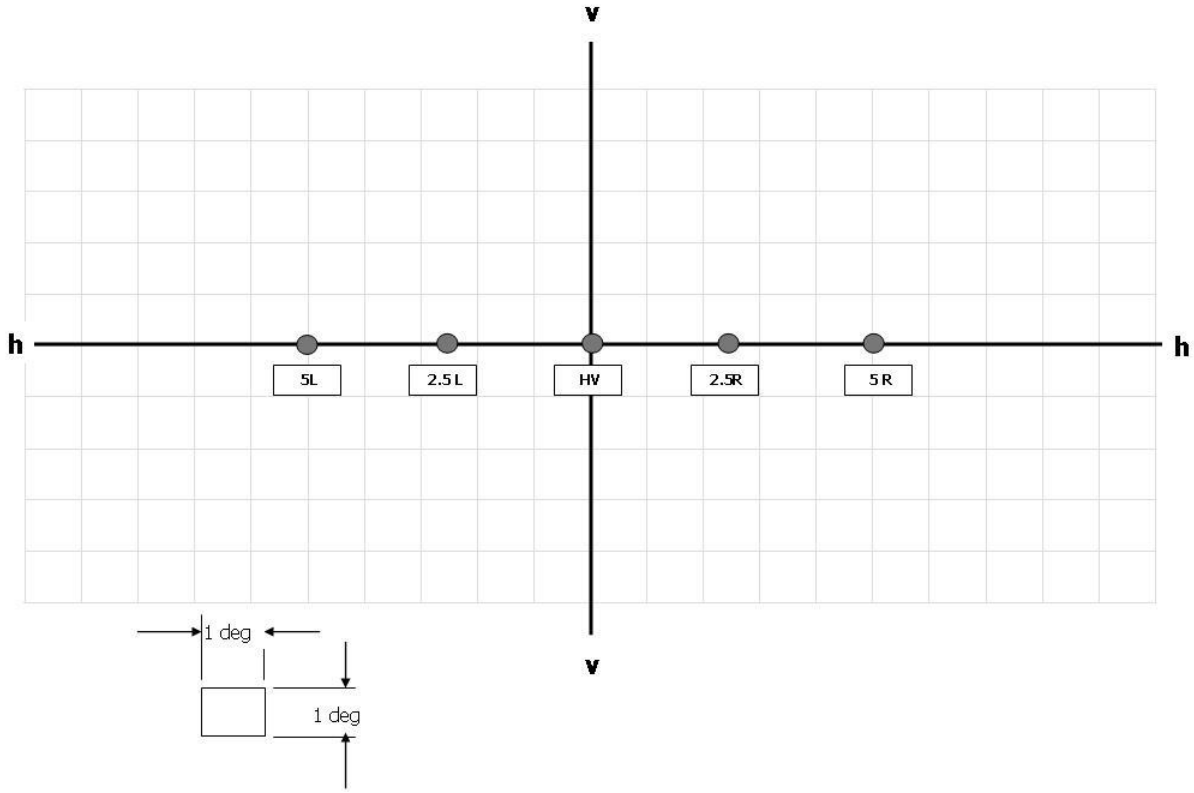


Figure C
Driving beam test points



h-h = horizontal plane , v-v = vertical plane passing through the optical axis of the headlamp"

Annex 4,

First paragraph, amend to read:

"Tests for stability …in operation

Test on complete headlamps

Once the photometric values have been measured according to the prescriptions of this Regulation, in the point for I_{max} for driving beam …

…."

Paragraph 1.1.2.2., amend to read:

"1.1.2.2. Photometric test:

…

Driving beam: Point I_{max}

…

A 10 per cent discrepancy between the photometric characteristics and the values measured prior to the test is permissible including the tolerances of the photometric procedure."

Paragraph 1.2.1.2., amend to read:

"1.2.1.2. Application of the test mixture to the headlamp:

…

Point of E_{max} in passing beam/driving beam and in driving beam only,

50 R and 50 V[1] for a headlamp producing only a passing beam, designed for right-hand traffic,

50 L and 50 V[6] for a headlamp producing only a passing beam, designed for left-hand traffic."

Paragraph 2., amend to read:

"2. Test for change in vertical position of the cut-off line under the influence of heat

This test consists of verifying that the vertical drift of the cut-off line under the influence of heat does not exceed a specified value for an operating headlamp producing a passing beam.

…

If the headlamp has a moving reflector, only the position closest to the average vertical angular stroke is chosen for this test."

Annex 5,

Paragraph 2.1.2.1., amend to read:

"2.1.2.1. Method

Photometric measurements shall be carried out on the samples before and after the test.

…;

I_{max} for the driving beam"

Annex 8,

Paragraph 1.2., amend to read:

"1.2. With respect to photometric performance, the conformity of mass-produced headlamps shall not be contested if, when testing photometric performance of any headlamp chosen at random and measured at 13.2 V ± 0.1 V or as otherwise specified and:"

Paragraph 1.2.1., amend to read:

"1.2.1. no illuminance value, if measured and corrected according to paragraph 1.2. above, deviates unfavourably by more than 20 per cent from the values prescribed in this Regulation. For values B 50 L (or R) and in Zone A, the maximum unfavourable deviation may be respectively:

B 50 L (or R)[1]:	170 cd equivalent 20 per cent
	255 cd equivalent 30 per cent
Zone A	255 cd equivalent 20 per cent
	380 cd equivalent 30 per cent"

Paragraph 1.2.2.1., amend to read:

"1.2.2.1. For the passing beam, the values prescribed in this Regulation are met at HV (with a tolerance of +170 cd) and related to that aiming at one point within a circle of 0.35 degrees around points B 50 L (or R)[1] (with a tolerance of 85 cd), 75 R (or L), 50 V, 25 R1, 25 L2, and on segment I;"

Paragraph 1.2.2.2., amend to read:

"1.2.2.2. and if, for the driving beam, HV being situated within the isolux line 0.75 I_{max}, a tolerance of +20 per cent for…"

Paragraph 2.4. and footnote 3, amend to read:

"2.4. Measured and recorded photometric characteristics

The sampled headlamps shall be subjected to photometric measurements at the points provided for in the Regulation, the reading being limited to points I_{max}, HV[2], HL, HR[3] in the case of the driving beam, and to points B 50 L (or R)[1], HV, 50 V, 75 R (or L) and 25 L2 (or R2) in the case of the passing beam (see figure in Annex 3).

_____

…

[3] HL and HR: points on "hh" located at 2.5 degrees to the left and to the right of point HV respectively."

Annex 9,

Paragraph.1.2., amend to read:

"1.2. With respect to photometric performance, the conformity of mass-produced headlamps shall not be contested if, when testing photometric performance of any headlamp chosen at random and measured at 13.2 V ± 0.1 V or as otherwise specified and:

…"

Paragraph 1.2.1., amend to read:

"1.2.1. No measured value deviates unfavourably by more than 20 per cent from the values prescribed in this Regulation.

In the glare zone the maximum deviation may be respectively:

B 50 L (or R)[1]:	170 cd equivalent 20 per cent
	255 cd equivalent 30 per cent
Zone A	255 cd equivalent 20 per cent
	380 cd equivalent 30 per cent"

Paragraph 1.2.2.1., amend to read:

"1.2.2.1. For the passing beam, the values prescribed in this Regulation are met at HV (with a tolerance of +170 cd) and related to that aiming at one point within a circle of 0.35 degrees around points B 50 L (or R)[1] (with a tolerance of 85 cd), 75 R (or L), 50 V, 25 R1, 25 L2, and on segment I;"

Paragraph 1.2.2.2., amend to read:

"1.2.2.2. And if, for the driving beam, HV being situated within the isolux line 0.75 I_{max}, a tolerance of + 20 per cent for maximum values and -20 per cent for minimum values is observed for the photometric values at any measuring point specified in paragraph 6.3. of this Regulation. The reference mark is disregarded."