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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-sixth session**

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Item 7 (h) of the provisional agenda

Other Regulations: Regulation No. 123 (Adaptive front-lighting systems (AFS))**Proposal for Supplement 8 to the 01 series of amendments to
Regulation No. 123 (Adaptive front lighting systems (AFS))****Submitted by the expert from the International Automotive Lighting
and Light Signalling Expert Group (GTB)***

The text reproduced below was prepared by the expert from GTB to align the conformity of production procedures with the other headlamp regulations and to simplify the AFS test methods and requirements relating to conformity of production. 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 2014–2018 (ECE/TRANS/240, para. 105 and ECE/TRANS/2014/26, 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

Contents, Annexes, insert a reference to a new appendix 1 to Annex 5:

"Appendix 1 – Photometric requirements for Conformity of Production"

Insert a new paragraph 1.22., to read:

"1.22. "Functional unit" means a part of a lighting unit providing a specific light distribution which may be used for different modes or classes. If used for the bending mode its light distribution may vary as a function of the T-signal (turn-radius); however, the light distribution shall be identical for a given T-signal (turn-radius) in all modes or classes."

Paragraphs 9.1. to 9.4., amend to read:

~~9.1. A system approved under this Regulation shall be so manufactured as to conform to the type approved by meeting the requirements set forth in paragraphs 6. and 7. above.~~

~~9.2. The minimum requirements for conformity of production control procedures set forth in Annex 5 to this Regulation shall be complied with.~~

~~9.3. The minimum requirements for sampling by an inspector set forth in Annex 7 to this Regulation shall be complied with.~~

~~9.4. The Type Approval Authority which has granted type approval may at any time verify the conformity control methods applied in each production facility. The normal frequency of these verifications shall be once every two years.~~

9.1. A system shall be so manufactured as to conform to the type approved under this Regulation.

The compliance with the requirements set forth in paragraphs 6 and 7 above shall be verified as follows:

The minimum requirements for Conformity of Production control procedures set forth in Annex 5 to this Regulation shall be complied with.

The minimum requirements for sampling by an inspector set forth in Annex 7 to this Regulation shall be complied with.

9.2. The authority which has granted type approval may at any time verify the conformity control methods applied in each production facility. The normal frequency of these verifications shall be once every two years.

9.3. Systems or part(s) thereof with apparent defects are disregarded.

9.4. The reference mark is disregarded."

Paragraphs 9.5 and 9.6. should be deleted.

Annex 5,

Paragraph 1.2.1., amend to read:

"1.2.1. No value corrected according to the prescriptions of paragraph 2. of Annex 9 to this Regulation and measured as per paragraph 1., 2. and 3. of Annex 5,

Appendix 1, deviates unfavourably from the value prescribed in column B of Annex 5, Appendix 1, if applicable."

Paragraphs 1.2.1.1. to 1.2.1.2. should be deleted.

Paragraph 1.2.2., amend to read:

"1.2.2. If the results of the test described above do not meet the requirements, the alignment of the system may be changed **in each class**, provided that the axis of the beam is not displaced laterally by more than 0.5 degree to the right or left and not by more than 0.2 degree up and down, each independently and with respect to the first aiming.

These provisions do not apply to lighting units as indicated under paragraph 6.3.1.1. of this Regulation."

Paragraph 1.3., amend to read:

"1.3. **Change of the vertical position of the cut-off line for passing beam**

With respect to the verification of the change in vertical position of the cut-off line for passing beam under the influence of heat, the following procedure shall be applied:

One of the sampled systems shall be tested according to the procedure described in paragraph 2.1. of Annex 4 after being subjected three consecutive times to the cycle described in paragraph 2.2.2. of Annex 4.

The system shall be considered as acceptable if Δr does not exceed 1.5 m rad **upwards and does not exceed 2.5 mrad downwards.**

If this value exceeds 1.5 mrad but is not more than 2.0 mrad **upwards or exceeds 2.5 mrad but is not more than 3.0 mrad downwards**, a second system ~~of sample A~~ shall be subjected to the test after which the mean of the absolute values recorded on both samples shall not exceed 1.5 m rad **upwards and shall not exceed 2.5 mrad downwards.**

However, if this value of 1.5 mrad upwards and 2.5 mrad downwards on these two systems is not complied with, another two systems shall be subjected to the same procedure and the value of Δr for each of them shall not exceed 1.5 mrad upwards and shall not exceed 2.5 mrad downwards."

Annex 5, add a new Appendix 1 to read:

"Annex 5 - Appendix 1

Photometric requirements for conformity of production

1. General

In this Appendix the photometric requirements for the Conformity of Production tests according to Annex 5 and Annex 7 are laid down. The requirements in the table below apply only for the entire system and apply to half of the sum of the respective measured values from all lighting units of the system applied for this function or mode, or, from all lighting units as indicated in the respective requirement.

As an alternative to the re-alignment procedure as described in Annex 5, paragraph 1.2.2. the intensity requirement of column A, B or C of

If not, the system shall be tested according to table 15.

3.2. Adaptive Driving Beam—if applicable:

During adaptation, the driving-beam function shall meet the requirements for all the cases of Right-Hand and/or Left-Hand traffic specified in Part A of Table 16.

If the system uses the same functional units for the adaptation of the driving beam only Part A -Line 1 and Line 4 of Table 16 have to be measured.

In the case where the passing beam, which meets the requirements of Annex 5, paragraph 2.1., is continuously operated in conjunction with the adaptation of the driving beam, the photometric requirements in Part B Table 16 shall not be applied.

Table 1
Class C – Neutral State – System Requirements

Class C – non-bending mode		Position/deg				Column A		Column B		Column C		
Tabled requirements expressed in cd.		horizontal			vertical		±0% CoP		±20% CoP		±30% CoP	
No	Element	at/	from	to	at	min	max	min	max	min	max	
1	B50L	L	3.43		U 0.57	50	350	25	520	10	605	
3	BR	R	2.5		U 1	50	1750	25	2100	10	2275	
4	Point BRR	R	8		U 0.57	50	3550	25	4260	10	4615	
5	Point BLL	L	8		U 0.57	50	625	25	880	10	1005	
7	Line III	L	4	V V	H		625		880		1005	
8a	S50+S50LL+S50RR ³				U 4	190 ²	1875	95 ²	2250	45 ²	2440	
9a	S100+S100LL+S100RR ³				U 2	375 ²	1875	185 ²	2250	90 ²	2440	
10	50 R	R	1.72		D 0.86		44100		52920		57330	
11	75 R	R	1.15		D 0.57	10100	44100	8080	52920	7070	57330	
12	50 V	V			D 0.86	5100	44100	4080	52920	3570	57330	
13	50 L	L	3.43		D 0.86	3550	13200 ⁴	2840	15840 ⁴	2485	17160 ⁴	
14	25 LL	L	16		D 1.72	1180	44100	944	52920	826	57330	
15	25 RR	R	11		D 1.72	1180	44100	944	52920	826	57330	
17	Line 10	L	4.5	R 2.0	D 4		12300 ¹		14760 ¹		15990 ¹	

Notes:

¹ Shall be multiplied by 1.3, if the system is designed to provide also a class W passing beam.

² On pair of position lamps, being incorporated with the system or being intended to be installed together with the system may be activated according to the indications of the applicant.

³ Position requirements according to the provisions of Annex 3, Table 5.

⁴ The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.

Table 2
Class C – Bendlight – Category 1 – System Requirements

<i>Class C – Bendlight Cat. 1</i>		<i>Position/deg</i>						<i>Column A</i>		<i>Column B</i>		<i>Column C</i>	
<i>Tabled requirements expressed in cd</i>		<i>horizontal</i>				<i>vertical</i>		$\triangleq 0\% \text{ CoP}$		$\triangleq 20\% \text{ CoP}$		$\triangleq 30\% \text{ CoP}$	
<i>No</i>	<i>Element</i>	<i>at/</i>	<i>from</i>	<i>to</i>		<i>at</i>		<i>min</i>	<i>max</i>	<i>min</i>	<i>max</i>	<i>min</i>	<i>max</i>
1	B50L	L	3.43			U	0.57		530		700		785
3	BR	R	2.5			U	1		1750		2100		2275
4	Point BRR	R	8			U	0.57		3550		4260		4615
5	Point BLL	L	8			U	0.57		625		880		1005
7	Line III	L	4	V	V	H			880		1135		1260
10	50 R	R	1.72			D	0.86		44100		52920		57330
11	75 R	R	1.15			D	0.57	10100	44100	8080	52920	7070	57330
12	50 V	V				D	0.86	5100	44100	4080	52920	3570	57330
13	50 L	L	3.43			D	0.86	1700	13200 ¹	2840	15840 ¹	2485	17160 ¹

¹ The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.

Table 3
Class C – Bendlight – Category 2 – System Requirements

<i>Class C – Bendlight Cat. 2</i>		<i>Position/deg</i>						<i>Column A</i>		<i>Column B</i>		<i>Column C</i>	
<i>Tabled requirements expressed in cd</i>		<i>horizontal</i>				<i>vertical</i>		$\triangleq 0\% \text{ CoP}$		$\triangleq 20\% \text{ CoP}$		$\triangleq 30\% \text{ CoP}$	
<i>No</i>	<i>Element</i>	<i>at/</i>	<i>from</i>	<i>to</i>		<i>at</i>		<i>min</i>	<i>max</i>	<i>min</i>	<i>max</i>	<i>min</i>	<i>max</i>
1	B50L	L	3.43			U	0.57		530		700		785
3	BR	R	2.5			U	1		1750		2100		2275
4	Line BRR	R	8	R	20	U	0.57		3550		4260		4615
5	Line BLL	L	8	L	20	U	0.57		625		880		1005
7	Line III	L	4	V	V	H			880		1135		1260

Table 4
Class V – non-bending mode – System Requirements

<i>Class V – non-bending mode</i>		<i>Position/deg</i>						<i>Column A</i>		<i>Column B</i>		<i>Column C</i>	
<i>Tabled requirements expressed in cd</i>		<i>horizontal</i>				<i>vertical</i>		$\triangleq 0\% \text{ CoP}$		$\triangleq 20\% \text{ CoP}$		$\triangleq 30\% \text{ CoP}$	
<i>No</i>	<i>Element</i>	<i>at/</i>	<i>from</i>	<i>to</i>		<i>at</i>		<i>min</i>	<i>max</i>	<i>min</i>	<i>max</i>	<i>min</i>	<i>max</i>
1	B50L	L	3.43			U	0.57		350		520		605
3	BR	R	2.5			U	1		880		1135		1260
4	Point BRR	R	8			U	0.57		880		1135		1260
5	Point BLL	L	8			U	0.57		880		1135		1260

Class V -non-bending mode		Position/deg						Column A		Column B		Column C	
Tabled requirements expressed in cd		horizontal				vertical		$\pm 0\%$ CoP		$\pm 20\%$ CoP		$\pm 30\%$ CoP	
No	Element	at/	from	to		at		min	max	min	max	min	max
7	Line III	L	4	V	V	H			625		880		1005
10	50 R	R	1.72			D	0.86	5100	44100	4080	52920	3570	57330
13	50 L	L	3.43			D	0.86	3550	13200 ¹	2840	15840 ¹	2485	17160 ¹

¹ The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.

Table 5
Class V – Bendlight – Category 1 – System Requirements

Class V – Bendlight Cat. 1		Position/deg						Column A		Column B		Column C	
Tabled requirements expressed in cd		horizontal				vertical		$\pm 0\%$ CoP		$\pm 20\%$ CoP		$\pm 30\%$ CoP	
No	Element	at/	from	to		at		min	max	min	max	min	max
1	B50L	L	3.43			U	0.57		530		700		785
3	BR	R	2.5			U	1		880		1135		1260
4	Point BRR	R	8			U	0.57		880		1135		1260
5	Point BLL	L	8			U	0.57		880		1135		1260
7	Line III	L	4	V	V	H			880		1135		1260
10	50 R	R	1.72			D	0.86	5100	44100	4080	52920	3570	57330
13	50 L	L	3.43			D	0.86	1700	13200 ¹	2840	15840 ¹	2485	17160 ¹

¹ The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, of the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.

Table 6
Class V – Bendlight – Category 2 – System Requirements

Class V – Bendlight Cat. 2		Position/deg						Column A		Column B		Column C	
Tabled requirements expressed in cd		horizontal				vertical		$\pm 0\%$ CoP		$\pm 20\%$ CoP		$\pm 30\%$ CoP	
No	Element	at/	from	to		at		min	max	min	max	min	max
1	B50L	L	3.43			U	0.57		530		700		785
3	BR	R	2.5			U	1		880		1135		1260
4	Line BRR	R	8	R	20	U	0.57		880		1135		1260
5	Line BLL	L	8	L	20	U	0.57		880		1135		1260
7	Line III	L	4	V	V	H			880		1135		1260

Table 7
Class W – Non-bending mode – System Requirements

Class W – non-bending mode		Position/deg						Column A		Column B		Column C	
Tabled requirements expressed in cd		horizontal			vertical			± 0% CoP		± 20% CoP		± 30% CoP	
No	Element	at/	from	to		at		min	max	min	max	min	max
1	B50L	L	3.43			U	0.57		625		880		1005
3	BR	R	2.5			U	1		2650		3180		3445
4	Point BRR	R	8			U	0.57		5300		6360		6890
5	Point BLL	L	8			U	0.57		880		1135		1260
7	Line III b	L	4	L	0.5	U	0.34		880		1135		1260
11	75 R	R	1.15			D	0.57	20300	70500 ¹	16240	84600 ¹	14210	91650 ¹
13	50 L	L	3.43			D	0.86	6800	26400 ²	5440	31680 ²	4760	34320 ²
14	25 LL	L	16			D	1.72	3400	70500 ¹	2720	84600 ¹	2380	91650 ¹
15	25 RR	R	11			D	1.72	3400	70500 ¹	2720	84600 ¹	2380	91650 ¹
16	Segment 20	L	3.5	V		D	2		17600 ¹		21120 ¹		22880 ¹
17	Segment 10	L	4.5	R	2.0	D	4		12300 ¹		14760 ¹		15990 ¹
	Line E	L	20	R	20	U	10		175		260		300

¹ If, according to the applicants specification according to paragraph 2.2.2. (e) of this Regulation a class W passing beam is designed to produce on segment 20 and below it not more than 8,800 cd (10,560 cd corresponds to 20% CoP, 11,440 cd corresponds to 30% CoP) and on segment 10 and below it not more than 3,550 cd (4,260 cd corresponds to 20% CoP and 4,615 cd corresponds to 30% CoP), the design value for I_{max} of that beam shall not exceed 88,100 cd (105,720 corresponds to 20% CoP, 114,530 cd corresponds to 30% CoP).

² The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.

Table 8
Class W – Bendlight – Category 1 – System Requirements

Class W – Bendlight Cat. 1		Position/deg						Column A		Column B		Column C	
Tabled requirements expressed in cd		horizontal			vertical			± 0% CoP		± 20% CoP		± 30% CoP	
No	Element	at/	from	to		at		min	max	min	max	min	max
1	B50L	L	3.43			U	0.57		790		960		1045
3	BR	R	2.5			U	1		2650		3180		3445
4	Point BRR	R	8			U	0.57		5300		6360		6890
5	Point BLL	L	8			U	0.57		880		1135		1260
7	Line III b	L	4	L	0.5	U	0.34		880		1135		1260
11	75 R	R	1.15			D	0.57	20300	70500 ¹	16240	84600 ¹	14210	91650 ¹
13	50 L	L	3.43			D	0.86	3400	13200 ²	2720	15840 ²	2380	17160 ²

¹ If, according to the applicants specification according to paragraph 2.2.2. (e) of this Regulation a class W passing beam is designed to produce on segment 20 and below it not more

Class W – Bendlight Cat. 1		Position/deg						Column A		Column B		Column C	
Tabled requirements expressed in cd		horizontal			vertical			± 0% CoP		± 20% CoP		± 30% CoP	
No	Element	at/	from	to		at		min	max	min	max	min	max

than 8,800 cd (10,560 cd corresponds to 20% CoP, 11,440 cd corresponds to 30% CoP) and on segment 10 and below it not more than 3,550 cd (4,260 cd corresponds to 20% CoP and 4,615 cd corresponds to 30% CoP), the design value for I_{max} of that beam shall not exceed 88,100 cd (105,720 corresponds to 20% CoP, 114,530 cd corresponds to 30% CoP).

² The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.

Table 9
Class W – Bendlight – Category 2 – System Requirements

Class W – Bendlight Cat. 2		Position/deg						Column A		Column B		Column C	
Tabled requirements expressed in cd		horizontal			vertical			± 0% CoP		± 20% CoP		± 30% CoP	
No	Element	at/	from	to		at		min	max	min	max	min	max
1	B50L	L	3.43			U	0.57		790		960		1045
3	BR	R	2.5			U	1		2650		3180		3445
4	Line BRR	R	8	R	20	U	0.57		5300		6360		6890
5	Line BLL	L	8	L	20	U	0.57		880		1135		1260
7	Line III b	L	4	L	0.5	U	0.34		880		1135		1260

Table 10
Class E – Non-bending mode

Class E - non-bending mode		Position/deg						Column A		Column B		Column C	
Tabled requirements expressed in cd		horizontal			vertical			± 0% CoP		± 20% CoP		± 30% CoP	
No	Element	at/	from	to		at		min	max	min	max	min	max
1	B50L	L	3.43			U	0.57		625		880		1005
3	BR	R	2.5			U	1		1750		2100		2275
4	Point BRR	R	8			U	0.57		3550		2100		2275
5	Point BLL	L	8			U	0.57		880		1135		1260
7	Line III b	L	4	L	0.5	U	0.34		880		1135		1260
11	75 R	R	1.15			D	0.57	15200	79300	12160	95160	10640	103090
12	50 V	V				D	0.86	10100	79300	8080	95160	7070	103090
13	50 L	L	3.43			D	0.86	6800	79300 ¹	5440	95160 ¹	4760	103090 ¹

¹ The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.

Table 11
Class E1 – Non-bending mode State

Class E1 – non-bending mode		Position/deg						Column A		Column B		Column C	
Tabled requirements expressed in cd		horizontal			vertical			± 0% CoP		± 20% CoP		± 30% CoP	
No	Element	at/	from	to		at		min	max	min	max	min	max
1	B50L	L	3.43			U	0.57		530		700		785
3	BR	R	2.5			U	1		1750		2100		2275
4	Point BRR	R	8			U	0.57		3550		2100		2275
5	Point BLL	L	8			U	0.57		880		1135		1260
7	Line III b	L	4	L	0.5	U	0.34		880		1135		1260
11	75 R	R	1.15			D	0.57	15200	70500	12160	84600	10640	91650
12	50 V	V				D	0.86	10100	70500	8080	84600	7070	91650
13	50 L	L	3.43			D	0.86	6800	70500 ¹	5440	84600 ¹	4760	91650 ¹

¹ The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.

Table 12
Class E2 – Non-bending mode

Class E2 – non-bending mode		Position/deg						Column A		Column B		Column C	
Tabled requirements expressed in cd		horizontal			vertical			± 0% CoP		± 20% CoP		± 30% CoP	
No	Element	at/	from	to		at		min	max	min	max	min	max
1	B50L	L	3.43			U	0.57		440		610		695
3	BR	R	2.5			U	1		1750		2100		2275
4	Point BRR	R	8			U	0.57		3550		2100		2275
5	Point BLL	L	8			U	0.57		880		1135		1260
7	Line III b	L	4	L	0.5	U	0.34		880		1135		1260
11	75 R	R	1.15			D	0.57	15200	61700	12160	74040	10640	80210
12	50 V	V				D	0.86	10100	61700	8080	74040	7070	80210
13	50 L	L	3.43			D	0.86	6800	61700 ¹	5440	74040 ¹	4760	80210 ¹

¹ The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.

Table 13
Class E3 – Non-bending mode

Class E3 - non-bending mode		Position/deg						Column A		Column B		Column C	
Tabled requirements expressed in cd		horizontal			vertical			$\pm 0\%$ CoP		$\pm 20\%$ CoP		$\pm 30\%$ CoP	
No	Element	at/	from	to		at		min	max	min	max	min	max
1	B50L	L	3.43			U	0.57		350		520		605
3	BR	R	2.5			U	1		1750		2100		2275
4	Point BRR	R	8			U	0.57		3550		2100		2275
5	Point BLL	L	8			U	0.57		880		1135		1260
7	Line III b	L	4	L	0.5	U	0.34		880		1135		1260
11	75 R	R	1.15			D	0.57	15200	52900	12160	63480	10640	68770
12	50 V	V				D	0.86	10100	52900	8080	63480	7070	68770
13	50 L	L	3.43			D	0.86	6800	52900 ¹	5440	63480 ¹	4760	68770 ¹

¹ The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.

Table 14
Class R – Driving – Neutral State – System Requirements

Driving Beam Straight Ahead Test Point	Angular Coordinates (degrees)	Column A		Column B		Column C	
		Required luminous intensity (cd) $\pm 0\%$ CoP		Required luminous intensity (cd) $\pm 20\%$ CoP		Required luminous intensity (cd) $\pm 30\%$ CoP	
		Min	Max	Min	Max	Min	Max
HV	H,V	32,400	215,000	26,000	258,000	23,000	279,500
H-5L	0.0, 5.0 L	5,100	215,000	4,080	258,000	3,570	279,500
H-2.5L	0.0, 2.5 L	20,300	215,000	16,240	258,000	14,210	279,500
H-2.5R	0.0, 2.5 R	20,300	215,000	16,240	258,000	14,210	279,500
H-5R	0.0, 5.0 R	5,100	215,000	4,080	258,000	3,570	279,500

Table 15
Class R – Driving Beam Bendlight – System Requirements

		Column A		Column B		Column C	
<i>Driving Beam Bendlight Test Point</i>	<i>Angular Coordinates (degrees)</i>	<i>Required luminous intensity (cd) \triangleq 0% CoP</i>		<i>Required luminous intensity (cd) \triangleq 20% CoP</i>		<i>Required luminous intensity (cd) \triangleq 30% CoP</i>	
		<i>Min</i>	<i>Max</i>	<i>Min</i>	<i>Max</i>	<i>Min</i>	<i>Max</i>
HV	H,V	32,400	215,000	26,000	258,000	23,000	279,500
H-5L	0.0, 5.0 L	4,080	215,000	3,264	258,000	2,856	279,500
H-2.5L	0.0, 2.5 L	16,240	215,000	12,992	258,000	11,368	279,500
H-2.5R	0.0, 2.5 R	16,240	215,000	12,992	258,000	11,368	279,500
H-5R	0.0, 5.0 R	4,080	215,000	3,264	258,000	2,856	279,500

Table 16
Class R – Adaptive Driving Beam – COP Values

	<i>Test Point</i>	<i>Position/Deg.</i>		<i>Column A Max. Intensity** \triangleq 0% CoP</i>	<i>Column B Max. Intensity** \triangleq 20% CoP</i>	<i>Column C Max. Intensity** \triangleq 30% CoP</i>
		<i>Horizontal</i>	<i>Vertical</i>	<i>(cd)</i>	<i>(cd)</i>	<i>(cd)</i>
Part A	Line 1 Left Oncoming vehicle at 50 m in the case of Right-Hand Traffic	4.8°L to 2°L	0.57°Up	625	880	1003
	Line 1 Right Oncoming vehicle at 50 m in the case of Left-Hand Traffic	2°R to 4.8°R	0.57°Up	625	880	1003
	Line 2 Left Oncoming vehicle at 100 m in the case of Right-Hand Traffic	2.4°L to 1°L	0.3°Up	1750	2100	2275
	Line 2 Right Oncoming vehicle at 100 m in the case of Left-Hand Traffic	1°R to 2.4°R	0.3°Up	1750	2100	2275
	Line 3 Left Oncoming vehicle at 200 m in the case of Right-Hand Traffic	1.2°L to 0.5°L	0.15°Up	5450	6540	7085
	Line 3 Right Oncoming vehicle at 200 m in the case of Left-Hand Traffic	0.5°R to 1.2°R	0.15°Up	5450	6540	7085
	Line 4 Preceding vehicle at 50 m in the case of Right-Hand Traffic	1.7°L to 1.0°R	0.3°Up	1850	2220	2405
		>1.0°R to 1.7°R		2500	3000	3250

Part A	Test Point	Position/Deg.		Column A Max. Intensity** ±0% CoP	Column B Max. Intensity** ±20% CoP	Column C Max. Intensity** ±30% CoP
		Horizontal	Vertical	(cd)	(cd)	(cd)
Line 4 Preceding vehicle at 50 m in the case of Left-Hand Traffic	1.7°R to 1.0°L	0.15°Up		1850	2220	2405
	>1.0°L to 1.7°L			2500	3000	3250
Line 5 Preceding vehicle at 100 m in the case of Right-Hand Traffic	0.9°L to 0.5°R	0.15°Up		5300	6360	6890
	>0.5°R to 0.9°R			7000	8400	9100
Line 5 Preceding vehicle at 100 m in the case of Left-Hand Traffic	0.9°R to 0.5°L	0.15°Up		5300	6360	6890
	>0.5°L to 0.9°L			7000	8400	9100
Line 6 Preceding vehicle at 200 m in the case of Left-Hand Traffic and Right-Hand Traffic	0.45°L to 0.45°R	0.1°Up		16000	19200	20800

Part B	Test Point	Position /degrees*		Column A Min. Intensity**± 0% CoP	Column B Min. Intensity** ± 20% CoP	Column C Min. Intensity** ± 30% CoP
		Horizontal	Vertical	(cd)	(cd)	(cd)
50R	1.72 R	D 0.86		5 100	4080	3570
50V	V	D 0.86		5 100	4080	3570
50L	3.43 L	D 0.86		2 550	2040	1785
25LL	16 L	D 1.72		1 180	944	826
25RR	11 R	D 1.72		1 180	944	826

* Angular positions are indicated for right-hand traffic.

** The photometric requirements for each single measuring point (angular position) of this lighting function apply to half of the sum of the respective measured values from all lighting units of the system applied for this function.

Each of the lines defined in part A of table 16, in conjunction with the test points as prescribed in part B of table 16 shall be measured individually corresponding to the signal provided by the signal generator.

In the case where the passing beam, which meets the requirements of Annex 5, paragraph 2.1., is continuously operated in conjunction with the adaptation of the driving beam, the photometric requirements in Part B of table 16 shall not be applied.

Annex 7,

Paragraph 1.2.1., amend to read:

"1.2.1. ~~No value deviates unfavourably by more than 20 per cent from the value prescribed in this Regulation;~~ **No value corrected according to the prescriptions of paragraph 2. of Annex 9 to this Regulation and measured as per paragraph 1., 2. and 3. of Annex 5, Appendix 1, deviates unfavourably from the value prescribed in column B of Annex 5, Appendix 1, if applicable.**"

Paragraphs 1.2.1.1. to 1.2.1.2., should be deleted.

Paragraph 1.2.2., amend to read:

"1.2.2. If the results of the test described above do not meet the requirements, the alignment of the system may be changed **in each class**, provided that the axis of the beam is not displaced laterally by more than 0.5 degree to the right or left and not by more than 0.2 degree up and down, **each independently and with respect to the first aiming.**

These provisions do not apply to lighting units as indicated under paragraph 6.3.1.1. of this Regulation."

Paragraphs 2. to 6., replace to read:¹

"2. First sampling

In the first sampling four systems are selected at random. The first sample of two is marked A, the second sample of two is marked B.

2.1. The conformity of mass-produced systems shall not be contested if the deviation of any specimen of samples A and B (all four systems) is not more than 20 per cent.

In the case, that the deviation of both systems of sample A is not more than 0 per cent, the measurement can be closed.

2.2. The conformity of mass-produced systems shall be contested if the deviation of at least one specimen of samples A or B is more than 20 per cent.

The manufacturer shall be requested to bring his production in line with the requirements (alignment) and a repeated sampling according to paragraph 3. below shall be carried out within two months' time after the notification. The samples A and B shall be retained by the Technical Service until the entire COP process is finished.

3. First repeated sampling

A sample of four systems is selected at random from stock manufactured after alignment.

The first sample of two is marked C, the second sample of two is marked D.

¹ Editorial remark: The content of paragraph 1.2.2 has been taken from ECE/TRANS/WP.29/GRE/2013/37. The terms "lamp" and "headlamp" have been changed to "system" and the new provisions for stability of cut-off in paragraph 6. have been included from ECE/TRANS/WP.29/GRE/2013/10.

- 3.1.** The conformity of mass-produced systems shall not be contested if the deviation of any specimen of samples C and D (all four systems) is not more than 20 per cent.
- In the case, that the deviation of both systems of sample C is not more than 0 per cent, the measurement can be closed.
- 3.2.** The conformity of mass-produced systems shall be contested if the deviation of at least
- 3.2.1.** One specimen of samples C or D is more than 20 per cent but the deviation of all specimen of these samples is not more than 30 per cent.
- The manufacturer shall be requested again to bring his production in line with the requirements (alignment).
- A second repeated sampling according to paragraph 4. below shall be carried out within two months' time after the notification. The samples C and D shall be retained by the Technical Service until the entire COP process is finished.
- 3.2.2.** One specimen of samples C and D is more than 30 per cent.
- In this case the approval shall be withdrawn and paragraph 5 below shall be applied.
- 4.** Second repeated sampling
- A sample of four systems is selected at random from stock manufactured after alignment.
- The first sample of two is marked E, the second sample of two is marked F.
- 4.1.** The conformity of mass-produced systems shall not be contested if the deviation of any specimen of samples E and F (all four systems) is not more than 20 per cent.
- In the case, that the deviation of both systems of sample E is not more than 0 per cent, the measurement can be closed.
- 4.2.** The conformity of mass-produced systems shall be contested if the deviation of at least one specimen of samples E or F is more than 20 per cent.
- In this case the approval shall be withdrawn and paragraph 5 below shall be applied.
- 5.** Approval withdrawn
- Approval shall be withdrawn according to paragraph 11. of this Regulation.
- 6.** Change of the vertical position of the cut-off line for passing beam
- With respect to the verification of the change in vertical position of the cut-off line for passing beam under the influence of heat, the following procedure shall be applied:
- One of the systems of sample A after sampling procedure in Figure 1 of this annex shall be tested according to the procedure described in paragraph 2.1. of Annex 4 after being subjected three consecutive times to the cycle described in paragraph 2.2.2. of Annex 4.

The system shall be considered as acceptable if Δr does not exceed 1.5 mrad upwards and does not exceed 2.5 mrad downwards.

If this value exceeds 1.5 mrad but is not more than 2.0 mrad upwards or exceeds 2.5 mrad but is not more than 3.0 mrad downwards, a second system of sample A shall be subjected to the test after which the mean of the absolute values recorded on both samples shall not exceed 1.5 mrad upwards and shall not exceed 2.5 mrad downwards.

However, if this value of 1.5 mrad upwards and 2.5 mrad downwards on sample A is not complied with, another two systems of sample B shall be subjected to the same procedure and the value of Δr for each of them shall not exceed 1.5 mrad upwards and shall not exceed 2.5 mrad downwards."

Annex 7, Figure 1 and the Note thereof, should be deleted.

II. Justification

1. At its sixty-ninth session, GRE adopted proposals to update the Conformity of Production (CoP) procedures for lighting and light-signalling devices (e.g., for Regulation No. 112 in ECE/TRANS/WP.29/GRE/2013/37), but deliberately did not consider Regulation No. 123 and chose to wait for the outcome of a GTB taskforce that was working to simplify the complicated CoP provisions for AFS systems.
2. Since 2012, on average fifteen experts from the industry and test houses have participated in the GTB taskforce. Progress reports were presented to GRE, and informal documents (GRE-72-29, GRE-69-40) were submitted to the sixty-ninth and seventy-second sessions of GRE. The motivation for the group was to align the CoP procedures in Regulation No. 123 with the other headlamp Regulations and to simplify the AFS test methods and requirements for CoP.
3. Recently, with the progress of the Informal Working Group "Simplification of Lighting and Light-Signalling Regulations" (IWG SLR), it has become clear that unified CoP procedures for all headlamps are an important basis for the work of IWG SLR. Therefore, an alignment of Regulation No. 123 with the other headlamp Regulations is needed.
4. In this proposal the methods and requirements for the "initial" type approval have been left untouched. However, it was decided that CoP procedures similar to those agreed for Regulation No.112 (ECE/TRANS/WP.29/GRE/2013/37) should be used as a basis to create simplified photometric CoP tables for each class (C, V, W, E, R, RADB) with its applicable 0/20/30 per cent limits. Furthermore, the taskforce clarified which tests are necessary for CoP testing and which are necessary only for type approval testing.
5. The result of the work of the taskforce is simplified CoP tests and requirements that respect the main characteristics of the applicable AFS classes or modes.
6. A good overview of the AFS main characteristics can be found in GRE informal documents GRE-48-28 and GRE-48-30.