

## **Proposal for amendments to Regulation No. 48 and draft Regulation No. XXX regarding the activation of Class E (motorway) mode**

Proposal by the Expert from GTB-AFS

### **A) PURPOSE**

At the 5<sup>th</sup> session of the GRE Informal Group on AFS difficulties were encountered regarding the conditions for activation of Class E (motorway) mode, as defined in paragraph 6.20.7.4.3. of Regulation No. 48. The main reason for divergent opinions in this matter is the fact that different motorway speed limits are mandated in different countries.

In order to resolve this problem, GTB/AFS would like to suggest an approach which is based on a correlation between vehicle speed and Class E mode passing beam photometric values. As a higher range of the passing beam at higher speeds is an element of active safety, the proposal would provide a stepwise activation of higher light intensities as a function of speed in the range between 80 and 110 km/h. It would require the insertion of a new Table 6 in Annex 3 of Regulation No. XXX and a corresponding additional item in the Approval document/communication.

The proposal would also be suitable for the actual speed profile in many countries where there is a more or less pronounced overlap between effective speeds on motorways and on other "normal" roads which are designed, maintained and classified for higher speeds

### **B) PROPOSAL**

#### 1.) Regulation 48 Draft amendment on AFS paragraph 6.20.7.4.3. amend to read.

"6.20.7.4.3. *The class E mode(s) of the passing beam shall not operate unless one or more of the following conditions is/are automatically detected.*

- (a) *The road characteristics correspond to motorway conditions 1/ and/ or the vehicle's speed exceeds 110 km/h (E-signal applies).*
- (b) *In case of a class E mode of the passing beam which, according to the system's Approval documents /communication sheet, complies with a 'data set' of table 6 of annex 3 of Regulation No. XXX, only.*

*Data set E1: the vehicle's speed exceeds 100 km/h (E1-signal applies);*

*Data set E2: the vehicle's speed exceeds 90 km/h (E2-signal applies);*

*Data set E3: the vehicle's speed exceeds 80 km/h (E3-signal applies).*

*1/ Traffic directions being separated by means of road construction, or, a corresponding lateral distance of opposing traffic is identified. "*

#### 2.) Draft Regulation No. XXX, insert a new item 2.2.2. (d-bis) after paragraph 2.2.2.(d)

*"(d-bis) which additional data set(s) of class E passing beam provisions according to table 6 of annex 3 of this Regulation apply, if any;"*

#### 3.) Draft Regulation No. XXX, annex 3, insert a new table 6 and amend tables 1 and 2 to read:

(see next two pages; new text is displayed in bold characters, amendments in red characters)

Table 1: Passing beam photometric requirements

tabled requirements expressed in lux @ 25m		Position /deg			passing beam							
		horizontal		vertical	class C		class V		class E		class W	
No.	Element	at/ from	to	at	min	max	min	max	min	max	min	max
Part A	1 B50L <u>4/</u>	L 3.43		U 0.57		0.4		0.4		0.7 <u>8/</u>		0.7
	2 HV <u>4/</u>	V		H		0.7		0.7				
	3 BR <u>4/</u>	R 2.5		U 1	0.2	2	0.1	1	0.2	2	0.2	3
	4 Segment BRR <u>4/</u>	R 8	R 20	U 0.57		4		1		4		6
	5 Segment BLL <u>4/</u>	L 8	L 20	U 0.57		0.7		1		1		1
	6 P	L 7		H	0.1						0.1	
	7 Zone III (as specified by Table 3 of this annex)					0.7		0.7		1		1
	8a S50, S50LL, S50RR <u>5/</u>			U 4	0.1 <u>7/</u>				0.1 <u>7/</u>		0.1 <u>7/</u>	
	9a S100, S100LL, S100RR <u>5/</u>			U 2	0.2 <u>7/</u>				0.2 <u>7/</u>		0.2 <u>7/</u>	
	10 50 R	R 1.72		D 0.86				6				
	11 75 R	R 1.15		D 0.57	12				18		24	
	12 50 V	V		D 0.86	6		6		12		12	
	13 50 L	L 3.43		D 0.86	4.2	[20]	4.2	[20]	8		8	[35]
	14 25 LL	L 16		D 1.72	1.4		1		1.4		4	
	15 25 RR	R 11		D 1.72	1.4		1		1.4		4	
	16 Segment 20 and below it	L 3.5	V	D 2								20 <u>2/</u>
	17 Segment 10 and below it	L 4.5	R 2.0	D 4		14 <u>1/</u>		14 <u>1/</u>		14 <u>1/</u>		8 <u>2/</u>
	18 Emax <u>3/</u>				20	50	10	50	20	90 <u>8/</u>	35	80 <u>2/</u>

Part B (bending modes): Table 1 Part A applies, however with the lines No. 1, 2, 7, 13 and 18 being replaced by those listed hereunder

Part B	1 B50L <u>4/</u>	L 3.43		U 0.57		0.6		0.6				0.9
	2 HV <u>4/</u>					1		1				
	7 Zone III (as specified by Table 3 of this annex)					1		1		1		1
	13 50L	L 3.43		D 0.86	2		2		4		4	
	18 Emax <u>6/</u>				12	50	6	50	12	90 <u>8/</u>	24	80 <u>2/</u>

1/ max 18 lx, if the system is designed to provide also a class W passing beam

2/ requirements according to the provisions indicated in Table 4 below apply in addition the contribution of each side of the system, when measured according to the provisions of 4/ Annex 9 to this Regulation shall not be less than 0,1 lx

3/ Position requirements according to the provisions of Table 2 below ("Segment Emax")

6/ Position requirements as indicated in paragraph 6.2.6.2. of this Regulation

5/ Position requirements according to the provisions of Table 5 below

7/ One 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

8/ Requirements according to the provisions indicated in Table 6 below apply in addition.

**Table 2: Passing beam elements angular position/extend, additional requirements**

No.	angular position / extend in deg beam part designation and requirement	Class C passing beam		Class V passing beam		Class E passing beam		Class W passing beam	
		horizontal	vertical	horizontal	vertical	horizontal	vertical	horizontal	vertical
2.1.	<i>E<sub>max</sub></i> shall not be positioned outside of the rectangle extending (above "Segment A1")	0.5L to 3R	0.3D to 1.72D		0.3D to 1.72D	0.5L to 3R	0.1D to 1.72D	0.5L to 3R	0.3D to 1.72D
2.2.	the "cut-off" and part(s) of shall: - comply with the requirements of paragraph 1. of Annex 8 to this Regulation and be positioned with its "kink" at V-V and								
	- be positioned with its "flat horizontal part"		at V = 0.57 D		not above 0.57D not below 1.3D		not above 0.23D <b>8/</b> not below 0.57D		not above 0.23D not below 0.57D

**8/** Requirements according to the provisions indicated in Table 6 below apply in addition.

**Table 6: Additional provisions for class E passing beam**

[Alternative/ Additional Set of Requirements for *E<sub>max</sub>*, *EB50L* and the cut-off's flat part upmost vertical position, being applicable if the system according to the Applicants specification according to paragraphs 2.2.2.(b) of this Regulation is intended to be installed on a vehicle providing E-signals compliant with paragraph 6.20.7.4.3. (b) of Regulation No. 48. ]

Table 1 Part A or B and Table 2 above apply, however with the lines No.1 and 18 of Table 1 and item 2.2. of Table 2 being replaced as indicated hereunder				
Item No.	Data Set	Line 1 of Table 1 above, Part A or B <i>EB50L</i> in lx@25m	Line 18 of Table 1 above, Part A or B <i>E<sub>max</sub></i> in lx@25m	Item 2.2 of Table 2 above cut-off flat part aimed in deg
		max	max	not above
6.1.	<i>E1</i>	0,6	80	0,34 D
6.2.	<i>E2</i>	0,5	70	0,45 D
6.3.	<i>E3</i>	0,4	60	0,57 D