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Item 5(b) of the provisional agenda

COLLECTIVE AMENDMENTS

Collective amendments on colour specifications

Amendments to Regulations Nos. 5, 6, 7, 19, 23, 31, 37, 38, 48, 50, 53,
74, 77, 86, 87, 91, 98, 99, 112, 113, 119, and 123

Submitted by the expert from the United Kingdom

The text reproduced below was prepared by the expert from the United Kingdom in order to introduce into the Regulations collective amendments regarding colour specifications. It is based on ECE/TRANS/WP.29/GRE/2006/25 and on informal document GRE-57-12, distributed without an official symbol during the fifty-seventh GRE session (see report ECE/TRANS/WP.29/GRE/57, para. 39). The modifications to the current texts of the Regulations are marked in **bold**.

A.1. PROPOSAL

REGULATION No. 5 – (Sealed beam headlamps)

(The following text is based upon Supplement 6 to the 02 series of amendments)

Insert a new paragraph 2.5., to read:

"2.5. **"Colour of the light emitted from the device."** The definitions of the colour of the light emitted given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation."

A.2. PROPOSAL

REGULATION No. 6 – (Direction indicators)

(The following text is based upon Supplement 15 to the 01 series of amendments)

Paragraph 8., amend to read:

"8. COLOUR OF LIGHT EMITTED

The colour of the light emitted inside the field of the light distribution grid defined in paragraph 2. of Annex 4 shall be **amber**. For testing see Annex 5 to this Regulation. Outside this field,"

Annex 5, amend to read (all colour coordinates should be deleted):

"Annex 5

COLOUR OF AMBER LIGHTS: **CHROMATICITY COORDINATES**

For checking **the** colorimetric characteristics "

Annex 6, paragraph 2.4., amend to read:

"2.4. Measured and recorded photometric characteristics

The sampled **lamp** shall be subjected to photometric measurements for the minimum values at the points listed in Annex 4, and the chromaticity coordinates, **provided for in the Regulation.**"

A.3. PROPOSAL

REGULATION No. 7 – (Front and rear position lamps, stop-lamps and end-outline marker lamps). (The following text is based upon Supplement 12 to the 02 series of amendments)

Paragraph 8., amend to read:

"8. COLOUR OF LIGHT EMITTED

The colour of the light emitted inside the field of the light distribution grid defined in paragraph 2 of Annex 4 shall be **red or white**. **For testing see** Annex 5 to this Regulation. Outside this field,"

Annex 5, amend to read (all colour coordinates to be deleted):

"Annex 5

COLOURS OF LIGHTS: CHROMATICITY COORDINATES

For checking **the** colorimetric characteristics "

Annex 6, paragraph 2.4., amend to read:

"2.4. Measured and recorded photometric characteristics

The sampled lamp shall be subjected to photometric measurements for the minimum values at the points listed in Annex 4 and the chromaticity **coordinates, provided** for in the Regulation."

A.4.a. PROPOSAL

REGULATION No. 19 – (Front fog lamps)
(The following text is based upon Supplement 12 to the 02 series of amendments)

Insert a new paragraph 1.5., to read:

"1.5. **"Colour of the light emitted from the device."** The definitions of the colour of the light emitted, given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation."

Paragraph 7., amend to read (all colour coordinates and pertaining sentence should be deleted):

"7. COLOUR

Approval may be obtained for a type of front fog lamp emitting either white or selective yellow light. The colouring, if any, of the beam may be obtained either through the filament lamp bulb or through the lens of the front fog lamp or by any other suitable means."

8. DETERMINATION OF....."

A.4.b. PROPOSAL

REGULATION No. 19 – (Front fog lamps, cat B and F3)

(The following text is based upon draft Revision 4 to the 02 series of amendments, ECE/TRANS/WP.29/GRE/2006/19 and Corr. 1).

Insert a new paragraph 1.5., to read:

"1.5. "Colour of the light emitted from the device." The definitions of the colour of the light emitted given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation."

Paragraph 7., amend to read (all colour coordinates and pertaining paragraphs 7.1.1 and 7.1.2 should be deleted):

"7. COLOUR

The colour of the light emitted by the front foglamp shall be either white or selective yellow by choice of the applicant. The selective yellow colour, if any, of the beam may be obtained either by the colour of the light source or by the lens of the front foglamp or by any other suitable means.

7.1. The colorimetric characteristics of the front foglamp shall be measured with voltages as defined in paragraphs 6.3. and 6.4."

A.5. PROPOSAL

REGULATION No. 23 – (Reversing lamps)

(The following text is based upon Supplement 13 to the Regulation)

Paragraph 8., amend to read:

"8. COLOUR OF LIGHT EMITTED

The colour of the light emitted inside the field of the light distribution grid defined at paragraph 2. of Annex 3 shall be white. **For testing see** Annex 4 to this Regulation. Outside this field no sharp variation of colour shall be observed."

Annex 4, amend to read (all colour coordinates to be deleted):

"Annex 4

COLOUR OF WHITE LIGHT: **CHROMATICITY** COORDINATES

For checking **the** colorimetric characteristics "

Annex 5, paragraph 2.4., amend to read:

"2.4. Measured and recorded photometric characteristics

The sampled lamp shall be subjected to photometric measurements for the minimum values at the points listed in Annex 3 and the chromaticity **coordinates, provided** for in the Regulation."

A.6. PROPOSAL

REGULATION No. 31 – (Halogen sealed-beam headlamps)
(The following text is based upon Supplement 6 of the 02 series of amendments)

Insert a new paragraph 2.5., to read:

"2.5. **"Colour of the light emitted from the device."** The definitions of the colour of the light emitted given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation."

A.7. PROPOSAL

REGULATION No. 37 – (Filament lamps)
(The following text is based upon draft Supplement 28 to the 03 series of amendments)

Paragraph 3.6.2., amend to read:

"3.6.2. **The definitions of the colour of the light emitted, given in Regulation No. 48 and its series of amendments in force at the time of application for type approval, shall apply to this Regulation.**"

A.8. PROPOSAL

REGULATION No. 38 – (Rear fog lamps)
(The following text is based upon Supplement 12 to the Regulation)

Paragraph 9., amend to read (all colour coordinates to be deleted):

"9. COLOUR OF LIGHT EMITTED

The colour of the light emitted inside the field of the light distribution grid defined at paragraph 3. of Annex 3, which shall be measured under conditions described in paragraph 7. above, **shall be red. Outside** this field..."

Annex 4, paragraph 2.4., amend to read:

"2.4. Measured and recorded photometric characteristics

The sampled lamp shall be subjected to photometric measurements for the minimum values at the points listed in Annex 3 and for the chromaticity coordinates provided **for in the** Regulation."

A.9. PROPOSAL

REGULATION No. 48 – (Installation of lighting and light-signalling devices)
(The following text is based upon Supplement 03 to the 03 series of amendments)

Insert a new paragraph 2.28. and footnote 3/, to read:

"2.28. Colour of the light emitted from a device

2.28.1. "White" means the chromaticity coordinates (x,y) 3/ of the light emitted that lie inside the chromaticity areas defined by the boundaries:

W ₁₂	green boundary:	$y = 0.150 + 0.640 x$
W ₂₃	yellowish green boundary:	$y = 0.440$
W ₃₄	yellow boundary:	$x = 0.500$
W ₄₅	reddish purple boundary:	$y = 0.382$
W ₅₆	purple boundary:	$y = 0.050 + 0.750 x$
W ₆₁	blue boundary:	$x = 0.310$

with intersection points:

	x	y
W ₁ :	0.310	0.348
W ₂ :	0.453	0.440
W ₃ :	0.500	0.440
W ₄ :	0.500	0.382
W ₅ :	0.443	0.382
W ₆ :	0.310	0.283

2.28.2. "Selective-yellow" means the chromaticity coordinates (x,y) 3/ of the light emitted that lie inside the chromaticity areas defined by the boundaries:

SY ₁₂	green boundary:	$y = 1.290 x - 0.100$
SY ₂₃	the spectral locus	
SY ₃₄	red boundary:	$y = 0.138 + 0.580 x$
SY ₄₅	yellowish white boundary:	$y = 0.440$
SY ₅₁	white boundary:	$y = 0.940 - x$

with intersection points:

	x	y
SY₁:	0.454	0.486
SY₂:	0.480	0.519
SY₃:	0.545	0.454
SY₄:	0.521	0.440
SY₅:	0.500	0.440

2.28.3. "**Amber**" means the chromaticity coordinates (x,y) 3/ of the light emitted that lie inside the chromaticity areas defined by the boundaries:

A₁₂	green boundary:	y = x - 0.120
A₂₃	the spectral locus	
A₃₄	red boundary:	y = 0.390
A₄₁	white boundary:	y = 0.790 - 0.670 x

with intersection points:

	x	y
A₁:	0.545	0.425
A₂:	0.557	0.442
A₃:	0.609	0.390
A₄:	0.597	0.390

2.28.4. "**Red**" means the chromaticity coordinates (x,y) 3/ of the light emitted that lie inside the chromaticity areas defined by the boundaries:

R₁₂	yellow boundary:	y = 0.335
R₂₃	the spectral locus	
R₃₄	the purple line	(its linear extension across the purple range of colours between the red and the blue extremities of the spectral locus).
R₄₁	purple boundary:	y = 0.980 - x

with intersection points:

	x	y
R₁:	0.645	0.335
R₂:	0.665	0.335
R₃:	0.735	0.265
R₄:	0.721	0.259

3/ CIE Publication 15.2, 1986, Colorimetry, the CIE 1931 standard colorimetric observer."

Paragraph 5.15, insert footnote 5/, to read:

"5. 15. The colours of the light emitted by the lamps 5/ are the following:

main-beam headlamp: white.....

5/ Measurement of the chromaticity coordinates of the light emitted by the lamps is not part of this regulation"

Note by the secretariat: The reference(s) to further footnote(s) will be renumbered accordingly.

A.10. PROPOSAL

ECE REGULATION No. 50 – (Position, stop and direction indicator lamps for mopeds and motorcycles). (The following text is based upon Supplement 9 to the Regulation)

Insert a new paragraph 2.3., to read:

"2.3. The definitions of the colour of the light emitted, given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation."

Paragraph 9., amend to read:

"9. COLOUR OF LIGHT EMITTED

Stop lamps and rear position lamps shall emit red light, front position lamps shall emit white light, direction indicators shall emit amber light. The colour of the light emitted inside the field of the light distribution grid defined at paragraph 2. of Annex 4, **shall be measured using a light source having a colour temperature of 2,856 K, 3/ in accordance with Annex 5** to this Regulation. Outside this field no sharp variation of colour shall be observed.

However, for lamps equipped with non-replaceable light sources, the colorimetric characteristics should be verified with the light sources present in the lamps at a voltage of 6.75 V, 13.5 V or 28.0 V."

Annex 5, amend to read (all colour coordinates to be deleted):

"Annex 5

COLOURS OF LAMPS: CHROMATICITY COORDINATES

For **checking the colorimetric characteristics of lamps** a source of light "

A.11. PROPOSAL

REGULATION No. 53 – (Installation of lighting and light-signalling devices for L₃ category vehicles). (The following text is based upon Supplement 7 of the 01 series of amendments)

Insert a new paragraph 2.21., to read:

"2.21. "Colour of the light emitted from the device". The definitions of the colour of the light emitted given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation."

Paragraph 5.13., insert a footnote 3/, to read:

"5. 13. Colours of the lights 3/

....

3/ Measurement of the chromaticity coordinates of the light emitted by the lamps is not part of this regulation."

Note by the secretariat: The reference(s) to further footnote(s) will be renumbered accordingly.

A.12. PROPOSAL

REGULATION No. 74 – (Installation of lighting and light-signalling devices for mopeds)
(The following text is based upon Supplement 4 to the 01 series of amendments)

Insert a new paragraph 2.21., to read:

"2.21. "Colour of the light emitted from the device". The definitions of the colour of the light emitted given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation."

Paragraph 5.13., insert a footnote 3/, to read:

"5. 13. Colours of the lights 3/

The colours of the lights referred to in this Regulation shall be as follows:
driving beam headlamp: white

...

3/ Measurement of the chromaticity coordinates of the light emitted by the lamps is not part of this regulation."

Note by the secretariat: The reference(s) to further footnote(s) will be renumbered accordingly.

A.13. PROPOSAL

REGULATION No. 77 – (Parking lamps)
(The following text is based upon Supplement 10 to the Regulation)

Paragraph 9., amend to read:

"9. COLOUR OF LIGHT EMITTED

The colour of the light emitted inside the field of the light distribution grid defined at paragraph 2. of Annex 4, measured by using a source of light with a colour temperature of 2,856 K, corresponding to illuminant A of the International Commission on Illumination (CIE), shall be **red, white or amber**. **For testing see Annex 5** to this Regulation. Outside this field no sharp variation of colour shall be observed.

However, for lamps equipped with non-replaceable light sources (filament lamps and other), the colorimetric characteristics should be verified with the light sources present in the lamp, in accordance with paragraph 8.1. of this Regulation."

Annex 5, amend to read (all colour coordinates to be deleted):

"Annex 5

COLOUR OF LIGHT EMITTED: **CHROMATICITY COORDINATES**

For checking **the** colorimetric characteristics "

Annex 6, paragraph 2.4., amend to read:

"2.4. Measured and recorded photometric characteristics

The sampled lamp shall be subjected to photometric measurements for the minimum values at the points listed in Annex 4 and the chromaticity **coordinates, provided** for in the Regulation."

A.14. PROPOSAL

REGULATION No. 86 – (Installation of lighting and light-signalling devices for agricultural tractors). (The following text is based upon Supplement 3 to the Regulation)

Insert a new paragraph 2.19., to read:

"2.19. **"Colour of the light emitted from the device."** The definitions of the colour of the light emitted given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation."

Paragraph 5.15, insert footnote 3/, to read:

"5. 15. The colours of the lamps 3/ referred to in this Regulation shall be as follows:
...

2/ Measurement of the chromaticity coordinates of the light emitted by the lamps is not part of this regulation."

Note by the secretariat: The reference(s) to further footnote(s) will be renumbered accordingly.

A.15. PROPOSAL

REGULATION No. 87 – (Daytime running lamps)
(The following text is based upon Supplement 10 to the Regulation)

Contents, "Annexes", Annex 4 to be deleted.

Paragraph 9., amend to read:

"9. COLOUR OF LIGHT

The colour of the light shall be white. It shall be measured under the conditions as prescribed in paragraph 10 below.

~~The colour must be within the limits of the trichromatic co-ordinates prescribed in Annex 4 to this Regulation."~~

Annex 4, to be deleted.

Annex 5, paragraph 2.4., amend to read:

"2.4. Measured and recorded photometric characteristics

The sampled lamp shall be subjected to photometric measurements for the minimum values at the points listed in Annex 3 and the chromaticity **coordinates, provided** for in the Regulation."

A.16. PROPOSAL

REGULATION No. 91 – (Side marker lamps)
(The following text is based upon Supplement 9 to the Regulation)

Paragraph 8.2., amend to read:

"8.2. The colour of the light emitted inside the field of the light distribution grid defined at paragraph 2. of Annex 4 must be within the limits of the trichromatic co-ordinates prescribed for the colour in question **when measured in accordance with** Annex 5

to this Regulation. Outside this field no sharp variation of colour shall be observed."

Annex 5, amend to read (all colour coordinates to be deleted):

"Annex 5

COLOUR OF LIGHT EMITTED: LIGHTS FOR **CHROMATICITY COORDINATES**

For checking **the colorimetric** characteristics "

Annex 6, paragraph 2.4., amend to read:

"2.4. Measured and recorded photometric characteristics

The sampled **lamp** shall be subjected to photometric measurements for the minimum values at the points listed in Annex 4 and the chromaticity **coordinates, provided** for in the Regulation."

A.17. PROPOSAL

REGULATION No. 98 – (Headlamps with gas-discharge light sources)
(The following text is based upon Supplement 8 to the Regulation)

Paragraph 6.1.6., amend to read:

"6.1.6. **The colour** of the light of the beams emitted by headlamps using gas-discharge light sources **shall be white.**"

Annex 8, paragraph 1.4., amend to read:

"1.4. The chromaticity **coordinates shall** be complied with."

Annex 9, paragraph 1.4., amend to read:

"1.4. The chromaticity **coordinates shall** be complied with."

A.18. PROPOSAL

REGULATION No. 99 – (Gas-discharge light sources)
(The following text is based upon Supplement 3 to the Regulation)

Paragraph 3.9.1., amend to read:

"3.9.1. The colour of the light emitted shall be white. **Moreover the colorimetric characteristics, expressed in CIE chromaticity coordinates, shall lie within the boundaries given** on the relevant data sheet."

Paragraph 3.9.2., amend to read:

"3.9.2. The definitions of the colour of the light emitted, given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation."

Annex 1, sheets DxR/4 and DxS/4, amend the bottom part of the both tables to read:

" ...

Luminous flux
Chromaticity coordinates	Objective		$x = 0.375$	$y = 0.375$
	Tolerance area <u>3/</u>	Boundaries	$x = 0.345$	$y = 0.150 + 0.640 x$
			$x = 0.405$	$y = 0.050 + 0.750 x$
			Intersection points	
			$x = 0.345$	$y = 0.371$
			$x = 0.405$	$y = 0.409$
			$x = 0.405$	$y = 0.354$
			$x = 0.345$	$y = 0.309$
Hot-restrike switch-off time

..."

A.19. PROPOSAL

REGULATION No. 112 – (Headlamps emitting an asymmetrical passing beam)
(The following text is based upon Supplement 7 to the Regulation)

Part B, paragraph 7.1., amend to read:

"7.1. The colour of the light emitted shall be **white**."

A.20. PROPOSAL

REGULATION No. 113 – (Headlamps emitting a symmetrical passing beam)
(The following text is based upon Supplement 5 to the Regulation)

Insert a new paragraph 1.5., to read:

"1.5. "Colour of the light emitted from the device." The definitions of the colour of the light emitted given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation."

Part B, paragraph 7.1., amend to read:

"7.1. The colour of the light emitted shall be **white**."

A.21. PROPOSAL

REGULATION No. 119 – (Cornering lamps)
(The following text is based upon Supplement 1 to the Regulation)

Insert a new paragraph 1.3., to read:

"1.3. **The definitions of the colour of the light emitted given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation.**"

Paragraphs 8. to 8.2., amend to read:

"8. COLOUR OF LIGHT EMITTED

8.1. The colour of the light emitted inside the field of the light distribution grid defined in paragraph 2. of Annex 3 shall be **white**. **For testing see Annex 4 to this Regulation.** Outside this field, no sharp variation of colour shall be observed."

Annex 4, amend to read (all colour coordinates to be deleted):

"Annex 4

COLOUR OF WHITE LIGHT

(**Chromaticity** coordinates)

1) For checking **the** colorimetric characteristics "

Annex 5, paragraph 2.4., amend to read:

"2.4. Measured and recorded photometric characteristics

The sampled lamp shall be subjected to photometric measurements for the minimum values at the points listed in Annex 4 and the chromaticity **coordinates, provided** for in the Regulation."

A.22. PROPOSAL

REGULATION 123 -- ADAPTIVE FRONT-LIGHTING SYSTEMS (AFS)

(The following text is based upon TRANS/WP.29/2005/31 and Add.1 and Corr.1 to this document)

Paragraph 7.1., amend to read:

"7.1. The colour of the light emitted shall be **white**."

Annex 5, paragraph 1.4., amend to read:

"1.4. The chromaticity **co-ordinates shall be** conformed to."

B. JUSTIFICATION

In many Regulations colour boundaries are specified for the same colours of light emitted by lighting and light signalling devices. This proposal is to define colour boundaries at "one" place. Reflective devices are not included since the colour boundaries for these devices are different and already specified in a similar manner as proposed here.

This proposal is based upon existing references in component Regulations to definitions in the installation regulations. In case where those references were missing, this proposal is introducing a reference in these component regulations to the colour definitions only since not all definitions in the installation regulations may apply to the respective component regulations.

This proposal introduces:

- (a) Colour definition references from Regulations Nos. 113 and 119 to Regulation No. 48 have been inserted.
- (b) A colour definition reference from Regulation No. 50 to Regulation No. 48 was inserted.
- (c) Since in this way all component regulations refer to the colour definitions in Regulation No. 48, a reference from Regulations Nos. 53, 74 and 86 is helpful though not strictly necessary.
- (d) A footnote to Regulation No. 48 has been added to emphasise that colour testing of the light emitted by lamps is not part of this regulation (similar footnotes have been added to Regulations No. 53, 74 and 86).
- (e) Editorial improvements have been made like alignment of annexes to the regulations and updates based on more recently adopted supplements to the regulations.
- (f) An alternative proposal was added to cover the GRE adopted proposal concerning "New Front Fog lamps" introducing cat. F3 lamps.

