Simplification of the UN Lighting and Light-signalling Regulations

Progress report on the Stage 2 / Step 1
Workload and meeting pace

33 meetings held until now:

I.  11 September 2014 in Brussels (BE)
II. 23 October 2014 in Geneva (CH)
III. 14 January 2015 in Brussels (BE)
IV. 13 April 2015 in Geneva (CH)
V.  13 October 2015 in Brussels (BE)
VI.  5-6 November 2015 in Brussels (BE)
VII. 15-16 December 2015 in Brussels (BE)
VIII. 13-14 January 2016 in Brussels (BE)
IX.  29 February & 1 March 2016 in Brussels (BE)
X.  14-15 April 2016 in Brussels (BE)
XI.  9-10 June 2016 in Brussels (BE)
XII. 5-7 September 2016 in Brussels (BE)
XIII. 5-7 October 2016 in Brussels (BE)
XIV.  5-7 December 2016 in Brussels (BE)
XV.  21-23 February 2017 in Brussels (BE)
XVI. 22-24 March 2017 in Brussels (BE)
XVII. 16-18 May 2017 in Tokyo (JP)
XVIII. 13-15 June 2017 in Brussels (BE)
XIX.  12-14 July 2017 in Brussels (BE)
XX.  4-6 October 2017 in Brussels (BE)
XXI. 18-21 December 2017 in Brussels (BE)

XXII. 29 Jan / 1 Feb 2018 in Shenzhen (CN)
XXIII. 4-6 April 2018 in Brussels (BE)
XXIV. 30 May / 1 June 2018 in Brussels (BE)
XXV.  3-5 July 2018 in Brussels (BE)
XXVI. 24-26 September 2018 in Brussels (BE)
XXVII. 10-12 December 2018 in Brussels (BE)
XXVIII. 25-27 February 2019 in Brussels (BE)
XXIX. 27-29 March 2019 in Brussels (BE)
XXX. 22-24 May 2019 in Brussels (BE)
XXXI. 3-5 July 2019 in Brussels (BE)
XXXII. 3-5 September 2019 in Tokyo (JP)
XXXIII. 9-11 October 2019 in Brussels (BE)

Next meetings:
SLR-34 on 4-6 November 2019 in Brussels (BE)
SLR-35 on 11-13 December 2019 in Brussels (BE)
SLR-36 on 8-10 January 2020 in Brussels (BE)
SLR-37 on 2-4 March 2020 in Brussels (BE)
# Entry into Force of Stage 1

**Amendments to existing UN Regulations:**  
15 October 2019  

**New UN Regulations:**  
15 November 2019

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### 1958 Agreement

**Adopted Proposals 46 Amendments, 7 Corrigenda and 4 New UN Regulations & Situation of Their Entry into Force**

**177th Session – March 2019** (see the report of the session ECE/TRANS/WP.20/1145, para. 146)

**Situation at 21 June 2019**

<table>
<thead>
<tr>
<th>UN Regulation No.</th>
<th>Subject of the UN Regulation</th>
<th>Document: ECE/TRANS/WP.20/</th>
<th>Document status</th>
<th>Situation of Entry into Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>International Whole Vehicle Type Approval (IWVTA)</td>
<td>2018/02</td>
<td>01 series</td>
<td>UNECE/TRANS/2019/05 15.10.2019</td>
</tr>
</tbody>
</table>

**Informal document WP.29.178-15**
178th WP.29, 25-28 June 2019, Agenda item 8.4

---

Note by the secretariat
## Work plan and time schedule for “Stage 2”

### STAGE 2 = SIMPLIFIED REGULATIONS with technology neutral and performance based requirements

<table>
<thead>
<tr>
<th>STAGE 2 STEP 1</th>
<th>The overarching objective is to update and harmonize the technical requirements for lighting and light-signalling to be suitable for global implementation under the 1958 and 1998 Agreements.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>STAGE 2 STEP 1</strong></th>
<th><strong>Revise the technical requirements of the new LSD, RID and RRD UN Regulations</strong>, to become technology neutral with performance-based and objective test requirements taking into account glare and visibility.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amendments will also be required to the installation UN Regulations taking into account the work of IWG-VGL.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal submission to the eighty-second session of GRE</td>
<td>October 2019</td>
</tr>
<tr>
<td>Final consideration at the eighty-third session of GRE</td>
<td>April 2020</td>
</tr>
<tr>
<td>Adoption by WP.29</td>
<td>November 2020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STAGE 2 STEP 2</th>
<th>Simplify and update the technical requirements of the UN installation Regulations (Nos. 48, 53, 74, 86), to become technology neutral with performance-based and objective test requirements</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal submission to the eighty-sixth session of GRE</td>
<td>October 2021</td>
</tr>
<tr>
<td>Final consideration at the eighty-seventh session of GRE</td>
<td>April 2022</td>
</tr>
<tr>
<td>Adoption by WP.29</td>
<td>November 2022</td>
</tr>
</tbody>
</table>
UN Regulation No. 148

LIGHT SIGNALLING
DEVICES (LSD)
Stage II – Regulation No. 148

Stage I
“Editorial” simplification

Merge to one single Regulation
R-148

Stage II
“Real” simplification

technology independent
performance based
objective test-methods

Reg. 4 License plate illuminating devices
Reg. 6 Direction indicator
Reg. 7 Position, Stop, End-outline marker
Reg. 23 Reversing
Reg. 38 Rear fog
Reg. 50 Position, stop, direction indicator (Vehicles Class L)
Reg. 77 Parking
Reg. 87 Daytime running
Reg. 91 Side marker
## Stage II – Regulation No. 148

**Main progress made**

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>MAIN IMPROVEMENTS</th>
<th>PARAGRAPHS MAINLY AFFECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rearrangement of requirements</td>
<td>• Harmonised requirements’ structure for different functions</td>
<td>Par. 5.</td>
</tr>
<tr>
<td></td>
<td>• Empty requirements are marked as empty</td>
<td></td>
</tr>
<tr>
<td>Error correction</td>
<td>• Avoid errors</td>
<td>Table 1, Table A2-1, Par. 3.3.5.4.</td>
</tr>
<tr>
<td></td>
<td>• Light source module marking</td>
<td></td>
</tr>
<tr>
<td>Alignment</td>
<td>• Max intensities direction indicator</td>
<td>Table 8</td>
</tr>
<tr>
<td>CoP</td>
<td>• Restructuring and streamlining of the requirements</td>
<td>Par. 3.5., New Par. 6.</td>
</tr>
<tr>
<td>Light Sources</td>
<td>• Technology neutral</td>
<td>Par. 3 + Annex (new)</td>
</tr>
<tr>
<td></td>
<td>• Reduced need for amendments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Suitable for future technology</td>
<td></td>
</tr>
</tbody>
</table>

This topic will be addressed by SLR depending on the GRE-82 decision concerning the approach proposed for R-149.
Stage II – Regulation No. 148
Main progress made

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>Proposals within SLR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rearrangement of requirements</td>
<td>SLR-32-02/Rev.1</td>
</tr>
<tr>
<td>Error corrections</td>
<td>SLR-32-01/Rev.1</td>
</tr>
<tr>
<td>Max. intensities of DI</td>
<td>SLR-33-02</td>
</tr>
<tr>
<td>CoP</td>
<td>SLR-32-21/Rev.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>Proposals originated by SLR and now on GRE or WP.29 agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error corrections</td>
<td>WP29/2019/81 + GRE-82-05</td>
</tr>
<tr>
<td>Substitute light sources</td>
<td></td>
</tr>
<tr>
<td>Low intensity DRL</td>
<td></td>
</tr>
<tr>
<td>Error corrections</td>
<td>GRE/2019/25</td>
</tr>
<tr>
<td>Sequential activation of DI for motorcycles and agricultural vehicles</td>
<td>GRE-82-27</td>
</tr>
<tr>
<td>Light source module marking</td>
<td>GRE-82-28</td>
</tr>
</tbody>
</table>

GRE-82-30
LATEST DRAFT CONSOLIDATION

SLR-33-04/Rev.1
UN Regulation No. 149

ROAD ILLUMINATION DEVICES (RID)
Stage II – Regulation No. 149

YESTERDAY

R112 Class A
Class B
Class AR
Class BR
R98 Class DC
Class DR
R123 Class C
Class E
Class V
Class W
Class XR
ADB
R113 Class AS
Class BS
Class CS
Class DS
Class ES
Class R-BS
Class R-CS
Class R-DS
Class R-ES
R19 Class B-F3
R119 Class K

TODAY (RID “Stage 1”)  TOMORROW (RID “Stage 2”)

Class A
Class B
Class AR
Class BR
Class DC
Class DR
Class C
Class E
Class V
Class W
Class XR
ADB
Class AS
Class BS
Class CS
Class DS
Class ES
Class R-BS
Class R-CS
Class R-DS
Class R-ES
Class F3
Class K

Basic "/"C” Passing beam
Low speed "/"V” Passing beam
Motorway/”E” Passing beam
Adverse weather/”W” passing beam
Basic Driving beam
Low speed Driving beam
ADB
AS, BS for mopeds
CS, DS for motorbikes
Secondary driving beams (2 wheelers)
Auxiliary driving beam
Fog beam
Cornering beam

6 Regulations
24 Beam patterns

TC4-45 SAE J2829
Expertise of Optical engineers

1 Regulation
16 Beam patterns

1 Regulation
23 Beam patterns

23 Beam patterns

1 Regulation
24 Beam patterns

Stage II
–
Regulation
No. 149

WP.29/2018/158/Rev.1

Basic /”C” Passing beam
Low speed /”V” Passing beam
Motorway/”E” Passing beam
Adverse weather/”W” passing beam
Basic Driving beam
Low speed Driving beam
ADB
AS, BS for mopeds
CS, DS for motorbikes
Secondary driving beams (2 wheelers)
Auxiliary driving beam
Fog beam
Cornering beam

1 Regulation
16 Beam patterns

1 Regulation
23 Beam patterns

TC4-45 SAE J2829
Expertise of Optical engineers

6 Regulations
24 Beam patterns
Stage II – Regulation No. 149
Main progress made

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>MAIN IMPROVEMENTS</th>
<th>PARAGRAPHS MAINLY AFFECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Fog Lamp &amp;</td>
<td>• Alignment of type approval and CoP requirements (FFL)</td>
<td>Par. 5.5 and 5.6.</td>
</tr>
<tr>
<td>Cornering Lamps</td>
<td>• Increase of the minimum performance (CL)</td>
<td></td>
</tr>
<tr>
<td>Passing beams</td>
<td>• Reduction of the number of beams</td>
<td>Par. 5.2. and 5.3.</td>
</tr>
<tr>
<td>Symm. passing beam</td>
<td>• Improvement of performance requirements</td>
<td>Par. 5.4.</td>
</tr>
<tr>
<td>Driving beams</td>
<td>• Technology neutral</td>
<td>Par. 5.1.</td>
</tr>
<tr>
<td>CoP</td>
<td>• Restructuring and streamlining of the requirements</td>
<td>Par. 3.5., 6., 7. + A4, A5</td>
</tr>
<tr>
<td>Annexes 5 and 6</td>
<td>• Visual adjustment requirements harmonised in Annex 5</td>
<td>Par. 5. + A5, A6</td>
</tr>
<tr>
<td>Light Sources</td>
<td>• Technology neutral</td>
<td>Par. 4.5., 4.6. + A15 (new)</td>
</tr>
<tr>
<td></td>
<td>• Reduced need for amendments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Suitable for future technology</td>
<td></td>
</tr>
</tbody>
</table>
# Stage II – Regulation No. 149
Main progress made

<table>
<thead>
<tr>
<th>Passing beams</th>
<th>Symmetrical passing beam</th>
<th>Driving beams</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reduction of the number of beams</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Improvement of performance requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Technology neutral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• System approach</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Par. 5.2. and 5.3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Par. 5.4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Par. 5.1.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Focus on performance and Technology neutral
- Same requirements for any light source category
- Performances are independent from the light source technology
- Same requirements for passing beam / AFS class C

Similar glare values as currently in R123

**Significant improvement for basic/ “C” passing beam**
- Width of the light on the road +70% → 20 m instead of 11.6 m
- Illumination projected on the road +20% → 2,1 lux instead of 1,8 at 75m

**Significant improvement for motorway/ “E” passing beam**
- Width of the light on the road +70% → 20 m instead of 11.6 m
- Same illumination at 75m + Minimum requirement of 0,75 lux at 125m

Better coverage of the road surface in front of the vehicle
4.5. Light sources

4.5.1. Restrictions on light sources

The lamps shall only be equipped with UN approved replaceable light source(s), provided that no restriction on the use is made at the time of application for type approval, and/or light source module(s), and/or non-replaceable light source(s).

[Where more than one light source is used to provide a beam, the correlated colour temperatures …]

Additional light sources may be used inside the “passing beam headlamp” to contribute to bend lighting … Where more than one light source is used to provide the driving beam, these light sources shall be …

4.5.2. General requirements for light sources (e.g. fixation, 2000lm limit, …)

4.5.3. Specific requirements for light sources (e.g. minimum source flux, …)

4.6. Testing of the lamp with respect to light sources

Depending on the light source used, the following conditions shall apply.

Tests shall be carried out according to Annex 15.

4.7. Testing of light transmitting components …

4.8. Testing of cut-off …

4.9. Tests for stability of photometric performance …

See SLR-32-06/Rev.1
**Stage II – Regulation No. 149**

**Main progress made**

| Light Sources | • Technology neutral  
|               | • Reduced need for amendments  
|               | • Suitable for future technology | Par. 4.5., 4.6. + A15 (new) |

**NEW Annex 15 - Testing procedures [with respect to light sources]**

**In case of filament [incandescence] technology**
- A lamp (function) is deemed to comply with the corresponding minimum and maximum intensity requirements at all points in time, if the values measured after photometric stability are compliant.

**In case of gas-discharge technology**
- A lamp (function) is deemed to comply with the corresponding minimum and maximum intensity requirements at all points in time, if the values according to Table x of this Annex and the values measured after photometric stability are compliant.

**In case of LED technology**
- A lamp (function) is deemed to comply with the corresponding minimum and maximum intensity requirements at all points in time, if the values measured at [1] minute after activation and after photometric stability are compliant.

**In case of any other technology or in case of doubts**
- The corresponding minimum and maximum intensity requirements of a lamp (function) are tested and checked for compliance at all points in time starting at the corresponding point in time listed in Table x of this Annex and ending when photometric stability is reached.
Stage II – Regulation No. 149
Main progress made

<table>
<thead>
<tr>
<th>Topic</th>
<th>Proposals within SLR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Fog Lamp &amp; Cornering Lamps</td>
<td>SLR-32-13/Rev.1</td>
</tr>
<tr>
<td>Passing beams</td>
<td>SLR-32-14</td>
</tr>
<tr>
<td>Symmetrical passing beam</td>
<td>SLR-32-15</td>
</tr>
<tr>
<td>Driving beams</td>
<td>SLR-32-16</td>
</tr>
<tr>
<td>CoP</td>
<td>SLR-31-05/Rev.1</td>
</tr>
<tr>
<td>Annexes 5 and 6</td>
<td>SLR-32-07/Rev.2</td>
</tr>
<tr>
<td>Light Sources</td>
<td>SLR-33-05/Rev.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Topic</th>
<th>Proposal from TF-SR</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED substitute</td>
<td>GRE/2019/19</td>
</tr>
</tbody>
</table>

TOPIC

LATEST DRAFT
CONSOLIDATION

<table>
<thead>
<tr>
<th>Topic</th>
<th>Proposals originated by SLR and now on GRE or WP.29 agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve and clarify (Par. 2.1. and Annex 2)</td>
<td>WP29/2019/82</td>
</tr>
<tr>
<td>Error corrections (Table 8 and 13)</td>
<td>WP29/2019/125 (=GRE-82-02)</td>
</tr>
<tr>
<td>Error corrections (Reintroduce the run-up provisions for HID)</td>
<td>GRE/2019/24</td>
</tr>
</tbody>
</table>
UN Regulation No. 150

RETRO REFLECTIVE DEVICES (RRD)
Stage II – Regulation No. 150

Stage I “Editorial” simplification

Stage II “Real” simplification

WP.29/2018/159/Rev.1

Reg 3
Retroreflectors
IA
IB
IIA
IIIB
IVA

Reg 27
Advance Warning Triangle
Type 1
Type 2

Reg 69
Slow Moving Vehicle Plate
Class 1
Class 2

Reg 70
Rear marking Plate for long and heavy vehicles
Class 1
Class 2
Class 3
Class 4
Class 5

Reg 104
Conspicuity Marking for long and heavy vehicles
Class C
Class D
Class E
Class F

Merge to one single Regulation
R-150

System of classes
technology independent
performance based
objective test-methods
# Stage II – Regulation No. 150

## Main progress made

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>MAIN IMPROVEMENTS</th>
<th>PARAGRAPHS MAINLY AFFECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merging of requirements and tables</td>
<td>• Restructuring and streamlining of the requirements</td>
<td>• Par. 5.1. to 5.3. merged into (new) 5.1., which derives from R3</td>
</tr>
<tr>
<td></td>
<td>• Significant reduction of pages by avoid repetition of text</td>
<td>• Par. 5.4. to 5.8. merged into (new) 5.2., which derives from R69, R70, R104</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Par. 5.9. is now 5.3. (new), which is a stand-alone from R27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>Proposals originated by SLR and now on GRE or WP.29 agenda</th>
<th>GRE-82-26 LATEST DRAFT CONSOLIDATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error corrections</td>
<td>WP29/2019/83</td>
<td></td>
</tr>
<tr>
<td>Error corrections</td>
<td>GRE/2019/26</td>
<td></td>
</tr>
</tbody>
</table>

| TOPIC                        | Proposals within SLR                                                              |                                                                                        |
|------------------------------|----------------------------------------------------------------------------------|                                                                                        |
| Merging of requirements and tables | SLR-33-14                                                                       |                                                                                        |
UN Regulation No. 48

HEADLAMP LEVELLING
Revised proposal
10. The expert from IWG SLR presented a proposal for a new 07 series of amendments to UN Regulation No. 48 (ECE/TRANS/WP.29/GRE/2019/3). The expert from Poland commented on the proposal (GRE-81-13 and GRE-81-16). GRE focused its discussion on the aiming diagram in paragraph 6.2.6.1.2. Following an in-depth consideration, GRE agreed on a modified diagram (GRE-81-21 and Annex II) and requested IWG SLR to prepare, on the basis of the new diagram, a revised proposal for consideration at the next session. The experts from Germany and Poland made study reservations. The expert from Germany also pointed out that, at the next session, he would present the outcome of a research project on the issue.