


**Economic Commission for Europe**
**Inland Transport Committee**
**World Forum for Harmonization of Vehicle Regulations**
**Working Party on Lighting and Light-Signalling**
**Seventy-sixth session**

Geneva, 25 – 28 October 2016

**Report of the Working Party on Lighting and Light-Signalling on its seventy-sixth session**
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## **I. Attendance**

1. The Working Party on Lighting and Light-Signalling (GRE) held its seventy-sixth session from 25 to 28 October 2016 in Geneva. Experts from the following countries participated in the work according to Rule 1 (a) of the Rules of Procedure of the World Forum for Harmonization of Vehicle Regulations (WP.29) (TRANS/WP.29/690, ECE/TRANS/WP.29/690/Amends. 1 and 2): Austria; China; Czech Republic; Finland; France; Germany; Hungary; India; Italy; Japan; Latvia; Luxemburg; Netherlands; Norway; Poland; Republic of Korea; Russian Federation; Spain and the United Kingdom of Great Britain and Northern Ireland (UK). An expert from the European Commission (EC) participated. Experts from the following non-governmental organizations also took part in the session: European Association of Automotive Suppliers (CLEPA); International Automotive Lighting and Light Signalling Expert Group (GTB); International Electrotechnical Commission (IEC); International Motorcycle Manufacturers Association (IMMA); International Organization of Motor Vehicle Manufacturers (OICA); Society of Automotive Engineers (SAE).

2. GRE was informed that Mr. M. Loccufier (Belgium), Chair, could not attend the session for medical reasons. GRE noted that Mr. D. Rovers (Netherlands), Vice-Chair, would take over, pursuant to the Rules of Procedures of WP.29. GRE wished Mr. Loccufier a fast recovery.

## **II. Adoption of the agenda (agenda item 1)**

*Documentation:* ECE/TRANS/WP.29/GRE/2016/19,  
Informal documents GRE-76-01-Rev.1 and GRE-76-02

3. GRE considered and adopted the agenda proposed for the seventy-sixth session (ECE/TRANS/WP.29/GRE/2016/19), as reproduced in GRE-76-01-Rev.1 together with the informal documents distributed during the session.

4. The list of informal documents is contained in Annex I to the report. The list of GRE informal groups is reproduced in Annex VI to the report.

5. GRE took note of the highlights of the June 2016 session of WP.29 and the official document submission deadline of 9 January 2017 for the April 2017 session of GRE (GRE-76-02).

## **III. 1998 Agreement - Global Technical Regulations: Development (agenda item 2)**

*Documentation:* ECE/TRANS/WP.29/GRE/71, para. 5

6. No proposals were introduced under this agenda item.

## **IV. 1997 Agreement – Rules: Development (agenda item 3)**

7. No new information was reported under this agenda item.

## V. Simplification of lighting and light-signalling Regulations (agenda item 4)

*Documentation:* ECE/TRANS/WP.29/2013/68, ECE/TRANS/WP.29/2013/69, ECE/TRANS/WP.29/2013/71, ECE/TRANS/WP.29/2013/72, ECE/TRANS/WP.29/2013/75, ECE/TRANS/WP.29/2013/76, ECE/TRANS/WP.29/2013/79, ECE/TRANS/WP.29/2013/83, ECE/TRANS/WP.29/2013/85, ECE/TRANS/WP.29/2013/86, ECE/TRANS/WP.29/2013/87, ECE/TRANS/WP.29/2013/88, ECE/TRANS/WP.29/2013/89, ECE/TRANS/WP.29/2013/90, ECE/TRANS/WP.29/2013/92, ECE/TRANS/WP.29/2013/93, ECE/TRANS/WP.29/2013/94, ECE/TRANS/WP.29/2014/31, ECE/TRANS/WP.29/2014/32, ECE/TRANS/WP.29/GRE/2013/55/Rev.1, ECE/TRANS/WP.29/GRE/2014/3, ECE/TRANS/WP.29/GRE/2015/7, ECE/TRANS/WP.29/GRE/2015/16, ECE/TRANS/WP.29/GRE/2015/23, ECE/TRANS/WP.29/GRE/2016/11, ECE/TRANS/WP.29/GRE/2016/14, Annex IV to ECE/TRANS/WP.29/GRE/75, ECE/TRANS/WP.29/GRE/2016/25, ECE/TRANS/WP.29/GRE/2016/30, ECE/TRANS/WP.29/GRE/2016/31, ECE/TRANS/WP.29/GRE/2016/32, ECE/TRANS/WP.29/GRE/2016/34, Informal documents GRE-75-06, GRE-76-07, GRE-76-11, GRE-76-13, GRE-76-22-Rev.1, GRE-76-23 and GRE-76-24-Rev.1

8. GRE recalled the phased approach to simplifying the lighting and light-signalling Regulations (ECE/TRANS/WP.29/GRE/75, paras. 9-12) and noted that the United Nations Office for Legal Affairs (OLA) had not identified any problems with this approach and that WP.29 had endorsed it at the June 2016 session (ECE/TRANS/WP.29/1123, para. 44 and GRE-76-11).

9. On behalf of the Informal Working Group ‘Simplification of the Lighting and Light-Signalling Regulations’ (IWG SLR), the expert from GTB reported on the progress and schedule of IWG SLR (GRE-76-23).

10. GRE reviewed and unanimously adopted the pending amendment proposals so as to consolidate the existing Regulations before they are frozen and superseded by three new Regulations that are in drafting: ECE/TRANS/WP.29/2013/68, ECE/TRANS/WP.29/2013/69, ECE/TRANS/WP.29/2013/71, ECE/TRANS/WP.29/2013/72, ECE/TRANS/WP.29/2013/75<sup>1</sup>, ECE/TRANS/WP.29/2013/76, ECE/TRANS/WP.29/2013/79, ECE/TRANS/WP.29/2013/83, ECE/TRANS/WP.29/2013/85, ECE/TRANS/WP.29/2013/86, ECE/TRANS/WP.29/2013/87, ECE/TRANS/WP.29/2013/88, ECE/TRANS/WP.29/2013/89, ECE/TRANS/WP.29/2013/90<sup>2</sup>, ECE/TRANS/WP.29/

<sup>1</sup> Except for the part which was already adopted by WP.29 as ECE/TRANS/WP.29/2013/75/Rev.1 and Add.1 (note by the secretariat).

<sup>2</sup> Except for the part which was already adopted by WP.29 as ECE/TRANS/WP.29/2013/90/Rev.1 (note by the secretariat).

2013/92<sup>3</sup>, ECE/TRANS/WP.29/2013/93<sup>4</sup>, ECE/TRANS/WP.29/2013/94, ECE/TRANS/WP.29/2014/31, ECE/TRANS/WP.29/2014/32, ECE/TRANS/WP.29/GRE/2013/55/Rev.1, ECE/TRANS/WP.29/GRE/2014/3, ECE/TRANS/WP.29/GRE/2015/7, ECE/TRANS/WP.29/GRE/2015/16, ECE/TRANS/WP.29/GRE/2015/23, ECE/TRANS/WP.29/GRE/2016/11, ECE/TRANS/WP.29/GRE/2016/14<sup>5</sup> and Annex IV to ECE/TRANS/WP.29/GRE/75. The secretariat was requested to consolidate these proposals, according to the principle 'one WP.29 document per Regulation', and to submit them to WP.29 and the Administrative Committee of the 1958 Agreement (AC.1) for consideration and vote at their March 2017 sessions. The experts from GTB, IEC and SAE volunteered to assist the secretariat by verifying the consolidated amendment proposals.

11. GRE had a first exchange of views on the need to streamline approval markings of lighting and light-signalling devices as part of the SLR process. The expert from GTB reported on their participation in the WP.29 Informal Working Group on the Database for the Exchange of Type Approval (IWG DETA) and the future application of the Unique Identifier (UI) and DETA in accordance with Schedule 5 of the revised 1958 Agreement (GRE-76-24-Rev.1). GRE was of the view that UI and DETA would be indispensable for the purposes of SLR and called for their introduction without delay. At the same time, GRE experts pointed out that the application of UI for new series of amendments and for extensions of existing type approvals should be clarified. GRE noted that IWG DETA would soon publish guidelines (a 'questions and answers' document) which should address these issues.

12. The expert of GTB introduced a proposal for amendments to Regulations Nos. 98, 112 and 123 to delete the measurement at the HV point during the test for stability of photometric performance of the passing beam (ECE/TRANS/WP.29/GRE/2016/25). GRE adopted the proposals as draft supplements and decided to submit them to WP.29 and AC.1 for consideration and vote at their March 2017 sessions as part of the consolidated amendment proposals (see para. 10 above).

13. The expert of GTB presented a proposal for amendments to Regulations Nos. 4, 6, 7, 23, 38, 50, 77, 87, 91 and 119 to harmonize the requirement for the marking of wattage for signal lighting functions with the requirement for lighting functions (ECE/TRANS/WP.29/GRE/2016/30). GRE adopted the proposals and decided to submit them to WP.29 and AC.1 for consideration and vote at their March 2017 sessions as part of the consolidated amendment proposals (see para. 10 above). During the adoption, the expert from the UK questioned the urgency of the proposal.

14. The expert of GTB proposed to update the requirements on light source failure in lamps equipped with multiple light sources in Regulations Nos. 7, 23, 38, 48, 77, 91 and 119 (ECE/TRANS/WP.29/GRE/2016/31, GRE-76-07 and GRE-76-22-Rev.1). The proposal received comments from the experts of Italy, UK and OICA. GRE agreed to take out the amendment proposal to Regulation No. 48 and to consider it separately at the next GRE session. GRE adopted the remaining proposals, as amended by Annex II to the report, and requested the secretariat to submit them to WP.29 and AC.1 for consideration and vote at their March 2017 sessions as part of the consolidated amendment proposals (see para. 10 above).

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<sup>3</sup> Except for the part which was already adopted by WP.29 as ECE/TRANS/WP.29/2013/92/Rev.1 (note by the secretariat).

<sup>4</sup> Except for the part which was already adopted by WP.29 as ECE/TRANS/WP.29/2013/93/Rev.1 (note by the secretariat).

<sup>5</sup> Except for Section B on Regulation No. 45 which was already submitted to WP.29 as ECE/TRANS/WP.29/2016/77 (note by the secretariat).

15. The expert from GTB proposed to clarify the heat test cycle relating to the movement of the passing beam cut-off in Regulations Nos. 19, 98, 112, 113 and 123 (ECE/TRANS/WP.29/GRE/2016/32). The experts from EC and UK expressed concerns that the proposals would modify the performance requirements and might have safety implications. Therefore, these experts felt that the proposals should be formulated in the form of new series of amendments to the above Regulations, rather than supplements. The experts from Finland, France, Germany, Japan, GTB and OICA advocated for supplements and pointed out that the proposed amendments would neither raise the required level of stringency nor have safety implications. Finally, GRE adopted the proposals and requested the secretariat to include them into the package for submission to WP.29 and AC.1 for consideration and vote at their March 2017 sessions (see para. 10 above).

16. The expert from GTB proposed to introduce into Regulations Nos. 19, 98, 112, 113 and 123, provisions for standardized replaceable light emitting diode (LED) light sources approved according to Regulation No. 128 (ECE/TRANS/WP.29/GRE/2016/34). He also outlined the upcoming amendment proposals to Regulation No. 128, including the introduction of 'thermal grade' as a new characteristic of LED light sources (GRE-76-13). The experts from France, Germany, Italy and UK indicated the far-reaching character and scale of the proposed amendments, and the need to study them in detail. They also expressed a preference for considering the proposed amendments simultaneously with proposals for amendments to Regulation No. 128. Some experts pointed out that the thermal behaviour of LEDs could depend on their installation and the temperature in the engine compartment, and were of the view that the provisions of Regulations Nos. 48 and 85 should be taken into account as well. GRE invited experts to consider these issues before the next session.

## **VI. Regulation Nos. 37 (Filament lamps), 99 (Gas discharge light sources) and 128 (Light emitting diodes light sources) (agenda item 5)**

*Documentation:* ECE/TRANS/WP.29/GRE/2016/26

17. The expert from GTB proposed to clarify provisions in Regulation No. 99 for testing of the run-up of dual level gas-discharge light sources (ECE/TRANS/WP.29/GRE/2016/26). GRE adopted the proposal and requested the secretariat to submit it to WP.29 and AC.1 for consideration and vote at their March 2017 sessions.

## **VII. Regulation No. 48 (Installation of lighting and light-signalling devices) (agenda item 6)**

### **A. Proposals for amendments to the 05 and 06 series of amendments**

*Documentation:* ECE/TRANS/WP.29/GRE/2016/24,  
ECE/TRANS/WP.29/GRE/2016/33,  
Informal documents GRE-76-12 and GRE-76-17

18. The experts from Germany and OICA proposed to define and describe the operation of the external status indicator for vehicle alarm systems, alarm systems and immobilizers, as contained in Regulations Nos. 97 and 116 (ECE/TRANS/WP.29/GRE/2016/33 and GRE-76-17). Some experts raised technical concerns about the size and colour of the external indicator as well as legal doubts on whether Regulation No. 48 could include

provisions on devices which do not fall into its scope. GRE agreed to revert to this issue at the next session and invited the authors to prepare a revised proposal.

19. The expert from Spain invited GRE to provide guidance on the possible use of a rear registration plate the digits of which emit the light themselves by means of light-emitting diodes (LED) (GRE-76-12). He recalled that this issue had been already raised in 2004, when GRE agreed that such a light-emitting rear registration plate was not a lamp and, therefore, did not fall within the scope of Regulation No. 48. GRE reconfirmed its position of 2004 and was of the view that requests for application of such light-emitting rear registration plates should be addressed under the national legislation of Contracting Parties. In this context, the experts from Italy and the Netherlands pointed out that light-emitting rear registration plates are prohibited in their countries.

20. Due to lack of time, GRE agreed to postpone consideration of ECE/TRANS/WP.29/GRE/2016/24 to the next session.

## **B. Other proposals for amendments to Regulation No. 48**

*Documentation:* Informal documents GRE-76-19 and GRE-76-20-Rev.1

21. The expert from Poland, in his capacity of Chair of the Informal Working Group on Visibility, Glare and Levelling (IWG VGL), reported on the IWG activities (GRE-76-19). The expert from OICA, Secretary to IWG VGL, proposed to modify the Terms of Reference (ToR) of IWG VGL (GRE-76-20-Rev.1). GRE adopted the revised ToR, as laid down in Annex III to the report.

## **VIII. Other Regulations (agenda item 7)**

### **A. Regulation No. 6 (Direction indicators)**

*Documentation:* ECE/TRANS/WP.29/GRE/2016/20,  
ECE/TRANS/WP.29/GRE/2016/21,  
Informal documents GRE-76-05, GRE-76-09, GRE-76-10 and GRE-76-16

22. On behalf of the Task Force on Sequential Activation (TF-SA), the expert from Finland reported on its activities and proposed to clarify the requirements for direction indicators with sequential activation in Regulations Nos. 6 and 50 (ECE/TRANS/WP.29/GRE/2016/20 and GRE-76-10). The proposals received written comments from the experts of France, India and OICA (GRE-76-05, GRE-76-09 and GRE-76-16). Following an extensive discussion, GRE adopted the amended proposals, as laid down in Annex IV. At the same time, GRE was not in a position to reach consensus on whether or not the proposals would require a new series of amendments and/or transitional provisions. GRE decided to come back to this issue at the next session in April 2017. Meanwhile, the secretariat was requested to issue the adopted text (Annex IV) as a document for the June 2017 session of WP.29, upon the understanding that any possible amendments, to be decided by GRE in April 2017, could exceptionally be submitted to WP.29 as a corrigendum or addendum to this document.

23. The expert from GTB proposed to make a direct reference to Regulation No. 48 on the categories of direction indicators and to align the maximum luminous intensity values for the different categories (ECE/TRANS/WP.29/GRE/2016/21). Following comments by the experts of EC, Germany, Japan, Italy and UK, the expert from GTB withdrew the proposal for revision.

**B. Regulation No. 7 (Position, stop and end-outline lamps)**

*Documentation:* ECE/TRANS/WP.29/GRE/2016/22,  
ECE/TRANS/WP.29/GRE/2016/23

24. The expert of GTB proposed editorial corrections to Regulation No. 7 (ECE/TRANS/WP.29/GRE/2016/22 and ECE/TRANS/WP.29/GRE/2016/23). GRE adopted the proposals and requested the secretariat to include them into the package for submission to WP.29 and AC.1 for consideration and vote at their March 2017 sessions (see para. 10 above).

**C. Regulation No. 10 (Electromagnetic compatibility)**

*Documentation:* Informal document GRE-76-18

25. On behalf of the Task Force on Electromagnetic Compatibility (TF EMC), the expert from OICA reported on the activities of TF EMC (GRE-76-18). According to the expert, TF EMC would submit an informal document with a draft supplement to the 05 series of amendments to Regulation No. 10 to the next GRE session in April 2017. The experts from EC and OICA also proposed to clarify the transitional provisions for the 04 series of amendments. GRE noted that TF EMC mainly consisted of technical experts who could not necessarily address legal issues, such as transitional provisions, and called for wider participation of Contracting Parties in the activities of the Task Force.

**D. Regulation No. 50 (Position, stop, direction indicators lamps for mopeds and motorcycles)**

*Documentation:* ECE/TRANS/WP.29/GRE/2016/20, Informal document GRE-76-15

26. GRE noted that the proposal to clarify the requirements for direction indicators with sequential activation (ECE/TRANS/WP.29/GRE/2016/20) was considered in conjunction with Regulation No. 6 (para. 22 above).

27. The expert from IMMA proposed to introduce specific requirements for failure detection in case of direction indicators with multiple light sources (GRE-76-15). The experts of Italy, Japan and UK supported the proposal. GRE agreed to postpone the submission of this proposal to WP.29 and to forward it to IWG SLR for inclusion into the new consolidated Regulations.

**E. Regulation No. 53 (Installation of lighting and light-signalling devices for L<sub>3</sub> vehicles)**

*Documentation:* ECE/TRANS/WP.29/GRE/2016/35,  
Informal documents GRE-76-03 and GRE-76-06

28. The expert from Japan introduced a proposal for the 03 series of amendments to Regulation No. 53 with a new requirement for automatic switching from the daytime running lamp (DRL) to the headlamp (ECE/TRANS/WP.29/GRE/2016/35, Informal document GRE-76-03). The experts of Finland, Germany and EC supported the proposal. The experts of France, Italy and UK identified technical issues which would need further attention. GRE agreed to revert to this issue at the next session. GRE also noted proposals by the expert from India (GRE-76-06). GRE invited experts to review these proposals and to send their comments to the author before the next session.



## **F. Regulation No. 112 (Headlamps emitting an asymmetrical passing-beam)**

*Documentation:* ECE/TRANS/WP.29/GRE/2016/18, Informal documents GRE-76-04-Rev.1, GRE-76-21, GRE-76-25, GRE-76-26

29. The expert from Poland introduced a slightly revised proposal for a new optional 'Class B1' headlamp (ECE/TRANS/WP.29/GRE/2016/18 and GRE-76-26). The expert of CLEPA expressed a number of concerns over the proposal and pointed out that more time would be needed to analyse it in detail. The expert of IEC pointed out that the proposed measurement procedures should be clarified and that the proposal could benefit from editorial improvements. The expert of SAE supported the performance-based approach of the Polish proposal and offered to work with the expert from Poland on alternative requirements and evaluation methods for headlamps. GRE agreed that this issue should be dealt with by IWG SLR (stage 2 of the simplification process to introduce technologically-neutral and performance-based requirements), possibly through the establishment of a task force.

30. The expert of GTB presented the results of their study of minimum levels of flux projected in critical zones of the passing beam distribution of a H4 halogen reflector headlamp and a representative LED headlamp (GRE-76-25). Based on these results, he proposed to remove the design-specific requirement of a minimum objective flux (1,000 lm) for LED and halogen light sources and to replace it with a technology-neutral and performance-based requirement (GRE-76-04-Rev.1). The proposal received comments by the experts from France, Germany, Italy, Poland, UK, EC, OICA. As there was no unequivocal support to the proposal, GRE decided to keep it on the agenda of the next session and to pass it to IWG SLR at a later stage.

## **G. Regulation No. 119 (Cornering lamps)**

*Documentation:* ECE/TRANS/WP.29/GRE/2016/27

31. GRE adopted a proposal by the expert from GTB to delete a redundant paragraph (ECE/TRANS/WP.29/GRE/2016/27) and requested the secretariat to include it into the package for submission to WP.29 and AC.1 for consideration and vote at their March 2017 sessions (see para. 10 above).

## **H. Regulation No. 123 (Adaptive front-lighting systems (AFS))**

*Documentation:* ECE/TRANS/WP.29/GRE/2016/28, ECE/TRANS/WP.29/GRE/2016/29, Informal documents GRE-76-14-Rev.1 and GRE-75-15

32. The expert from GTB proposed to align the conformity of production procedures in Regulation No. 123 with the other headlamp Regulations and to simplify the AFS test methods and requirements relating to conformity of production (ECE/TRANS/WP.29/GRE/2016/28 and GRE-75-15). Given the significant volume of the proposed amendment, the experts from UK and EC requested more time to study it. GRE invited experts to send their comments to GTB and agreed to revert to the proposal at the next session upon understanding that, if adopted, it would become part of the new front-lighting Regulation.

33. The expert from GTB proposed to correct inconsistencies and to allow for adapting of the passing-beam class C to foggy weather conditions

(ECE/TRANS/WP.29/GRE/2016/29, GRE-76-14-Rev.1). The experts from UK and EC were of the view that the proposed amendments for foggy conditions would change performance requirements and, thus, should be introduced by a new series of amendments. The experts of Austria, Finland, Italy, Japan and OICA felt that a new supplement would be sufficient. The expert from France pointed out that the definition of the passing-beam class W for use in adverse weather conditions should be clarified to indicate that it includes only rainy, rather than foggy, conditions. The experts of Germany and OICA stated that foggy conditions would need a separate solution at a later stage. GRE agreed to take out the fog-related provisions from the amendment proposals and to address them at the next session. GRE adopted the remaining proposals, as amended by Annex V to the report, and requested the secretariat to submit them to WP.29 and AC.1 for consideration and vote at their March 2017 sessions as part of the consolidated amendment proposals (see para. 10 above). GRE also agreed to consider in detail, at its next session, the issue of supplements, new series of amendments and transitional provisions.

## **IX. Pending amendment proposals (agenda item 8)**

34. GRE addressed this issue in conjunction with agenda item 4 (para. 10 above).

## **X. Other business (agenda item 9)**

### **A. Amendments to the Convention on Road Traffic (Vienna 1968)**

35. The secretariat informed GRE that the Working Party on Road Traffic Safety (WP.1), at its September 2016 session, had started discussing document ECE/TRANS/WP.1/2015/2/Rev.3 prepared by France, Italy and Laser Europe and containing amendment proposals to Article 32 and Chapter II of Annex 5 on lighting and light-signalling. At its next session, WP.1 would continue its considerations of ECE/TRANS/WP.1/2015/2/Rev.3.

### **B. Decade of action for road safety 2011-2020**

36. GRE took note that, in April 2016, the United Nations General Assembly had adopted a Resolution 'Improving global road safety' (A/70/L.44). The Resolution had requested the United Nations Secretary-General to establish a Road Safety Trust Fund to support Member States to halve the global number of deaths and injuries from traffic accidents by 2020, as set out in target 3.6 of the 2030 Agenda for Sustainable Development.

37. GRE was informed that the 2017 Global Road Safety Film Festival, coorganized by the UNECE Sustainable Transport Division and Laser International Foundation Europe, would take place on 20 and 21 February 2017 at the Palais des Nations in Geneva, in conjunction with the seventieth anniversary of the Inland Transport Committee. The Festival's jury would be chaired by Mr. Jean Todt, United Nations Secretary-General's Special Envoy for Road Safety. More information is available on the film festival's website at [www.roadsafetyfilmfestival.org](http://www.roadsafetyfilmfestival.org).

### **C. Development of an International Whole Vehicle Type Approval (IWVTA)**

38. GRE was informed that WP.29, at its June 2016 session, had noted no objection to Revision 3 of the 1958 Agreement from the Contracting Parties and that the European Union had offered to formally transmit the revised Agreement (ECE/TRANS/WP.29/2016/2) to the United Nations Office for Legal Affairs (OLA). The secretariat also briefed GRE on the recent activities of the WP.29 Subgroup on UN Regulation No. 0 (IWVTA) and about the development of an electronic database for the exchange of type approval documentation (DETA).

39. The GRE Ambassador to IWVTA (EC) informed GRE about two questions on lighting and light-signalling Regulations that had been addressed to GRE by the WP.29 Subgroup on UN Regulation No. 0 (IWVTA):

- (1) Does Regulation No. 48 require all lighting and light-signalling devices within its scope to be type approved pursuant to relevant UN Regulations?
- (2) Does each of UN Regulations on lighting devices require light sources to be type approved pursuant to relevant UN Regulations?

40. For question (1), the experts from OICA, Italy and France indicated that, in principle, the answer should be 'yes'; however, cosmetic changes to Regulation No. 48 would be needed to fully confirm this reply in legal terms. For question (2), the expert of IEC pointed out that this requirement exists in case of replaceable light sources. GRE invited the IWVTA Ambassador to pass these replies to the Subgroup on UN Regulation No. 0 (IWVTA).

#### **D. Phantom light and colour washout**

41. GRE noted that the progress report on this topic would be provided at the next session.

### **XI. New business and late submissions (agenda item 10)**

*Documentation:* Informal documents WP.29-168-15, WP.29-169-13 and GRE-76-08

42. GRE was informed that WP.29, at its March and June 2016 sessions, had had a discussion on the performance of automotive systems, in particular the ones relying on software, in conditions other than those tested during the type approval test procedures (WP.29-168-15 and WP.29-169-13). WP.29 had requested its subsidiary Working Parties to give feedback on the issue. GRE invited its experts to provide comments and decided to revert to this matter at the next session.

43. The expert of SAE informed GRE about the Fifth International Forum on Automotive Lighting (IFAL) that would take place in China in March 2017 (GRE-76-08).

44. GRE took note that Mr. Christian Pichon (France) would no longer attend its sessions, due to retirement. GRE thanked him for his extensive contributions to the GRE work over many years and wished him a happy retirement.

45. GRE was informed that Mr. Pierre Laurent (CLEPA) would retire and no longer attend its sessions. GRE acknowledged his contributions and wished him a happy retirement.

## **XII. Direction of future work of GRE (agenda item 11)**

46. GRE noted that the status reports of the GTB Working Groups would be presented at the next session.

## **XIII. Provisional agenda for the next session (agenda item 12)**

47. GRE decided to keep the same structure of the provisional agenda for the next session. Under agenda item 9 (c) 'Development of an International Whole Vehicle Type Approval (IWVTA)', GRE decided to consider the use of the Unique Identifier (see para. 11 above) and the issue of supplements, new series of amendments and transitional provisions (para. 33 above).

## **XIV. Election of officers (agenda item 13)**

48. In compliance with Rule 37 of the Rules of Procedure (TRANS/WP.29/690 and ECE/TRANS/WP.29/690/Amend.1), GRE called for the election of officers. The representatives of the Contracting Parties, present and voting, elected unanimously Mr. Michel Loccufier (Belgium) as Chair and Mr. Derwin Rovers (Netherlands) as Vice-Chair for the sessions of GRE scheduled in the year 2017.

## Annex I

## List of informal documents considered during the session

Informal documents GRE-76-...

<i>No.</i>	<i>(Author) Title</i>	<i>Follow-up</i>
1-Rev.1	(Secretariat) Updated provisional agenda for the seventy-sixth session of GRE	b
2	(Secretariat) - General information and WP.29 highlights	f
3	(Japan) - Analysis of glare given to oncoming vehicles by motorcycles DRLs at night	d
4-Rev.1	(GTB) - Proposal for Supplement 7 to the 01 series of amendments to Regulation No. 112	d
5	(India) - Comments on document ECE/TRANS/WP.29/2016/21	b
6	(India) - Proposal for draft amendments to Regulation No. 53	d
7	(GTB) - Correction to ECE/TRANS/WP.29/GRE/2016/31	b
8	(SAE) - The Fifth International Forum on Automotive Lighting (IFAL)	f
9	(France) - Proposal for amendments to ECE/TRANS/WP.29/GRE/2016/20	b
10	(TF-SA) - Additional justification to ECE/TRANS/WP.29/GRE/2016/20	f
11	(Secretariat) - Exchange of communications between the secretariat and OLA	f
12	(Spain) - Rear registration plates with LEDs	f
13	(GTB) - Upcoming changes to Regulation No. 128 related to LED Light Sources for Forward Lighting Applications	d
14-Rev.1	(GTB) - Revision of ECE/TRANS/WP.29/GRE/2016/29	b
15	(IMMA) - Proposal for Supplement 18 to Regulation No. 50	d
16	(OICA) - Proposal for amendments to ECE/TRANS/WP.29/GRE/2016/20	b
17	(OICA) - Proposal for amendments to ECE/TRANS/WP.29/GRE/2016/33	e
18	(TF EMC) - Status report of TF EMC	f
19	(IWG VGL) - Status report of IWG VGL	f
20-Rev.1	(IWG VGL) - Updated Terms of Reference and Rules of Procedure of IWG VGL	b
21	(CLEPA) - Analysis of the Polish proposal ECE/TRANS/WP.29/GRE/2016/18	d
22-Rev.1	(GTB) - Revision of document ECE/TRANS/WP.29/GRE/2016/31	b
23	(IWG SLR) - Simplification of Lighting and Light-Signalling Regulations: status update and next steps	f
24-Rev.1	(GTB) - Simplification of Lighting and Light-Signalling Regulations: application of the Unique Identifier (UI)	d
25	(GTB) - Night demonstration: H4 Halogen Reflector headlamp versus representative LED headlamp	d
26	(Poland) - Explanations to ECE/TRANS/WP.29/GRE/2016/18	d

Notes:

- (a) Endorsed or adopted without amendment;
- (b) Endorsed or adopted with amendments;
- (c) Resume consideration on the basis of a document with an official symbol;
- (d) Kept as reference document/continue consideration;
- (e) Revised proposal for the next session;
- (f) Consideration completed or to be superseded;
- (g) Withdrawn.

## Annex II

### Adopted amendments to ECE/TRANS/WP.29/GRE/2016/31

Page 4, part D "Supplement 11 to the 05 series of amendments and Supplement 9 to the 06 series of amendments to Regulation No. 48", to be deleted.

Page 10, part F "Supplement 5 to the 01 series of amendments to Regulation No. 119", subparagraph 6.5.2. (b), amend to read:

"6.5.2. ...

- (b) **A signal for activation of a tell-tale indicating failure, as indicated in paragraph 6.20.8. of Regulation No. 48, is produced, provided that the luminous intensity at 2.5°D 45°L for a left-side lamp (the L angle should be substituted for the R angle for a right-side lamp) is at least 50 per cent of the minimum intensity required. In this case a note in the communication form states that the lamp is only for use on a vehicle fitted with a tell-tale indicating failure."**

## Annex III

### **Revised Terms of Reference and Rules of Procedure for the ‘Informal Working Group on Visibility, Glare and Levelling (IWG VGL)’**

#### **I. Introduction**

1. At its sixty-fifth session, GRE considered ECE/TRANS/WP.29/GRE/2011/27, introducing mandatory automatic levelling for headlamps (superseding ECE/TRANS/WP.29/GRE/2011/2 and ECE/TRANS/WP.29/GRE/2011/22). The proposal received comments from the experts of GTB (GRE-65-03 and GRE-65-17) and OICA (GRE-65-16) among others. The expert from Poland presented ‘Analysis of the influence of aiming, on visibility distance and glare’ (GRE-65-30) concerning important aspects of present state of aiming/levelling in Regulation No. 48.

2. GRE adopted ECE/TRANS/WP.29/GRE/2011/27, as amended by Annex IV to this report. GRE agreed that this adoption was subject to the development of a further proposal to be prepared by the expert from GTB who would lead a comprehensive study of the whole issue of glare and visibility during night-time driving. Accordingly, it was agreed in case the results of the study revealed alternatives to the adopted mandatory requirements for automatic levelling and cleaning, the provisions of Regulation No. 48 would be re-examined at any time during the 90-month transitional period provided by ECE/TRANS/WP.29/GRE/2011/27. It was further agreed that, while the study would be managed by a dedicated working group based on the GTB structure, participation would be open to any GRE expert wishing to contribute. The secretariat was requested to submit ECE/TRANS/WP.29/GRE/2011/27 to WP.29 and AC.1 at their November 2011 sessions as draft [06] series of amendments to Regulation No. 48 (ECE/TRANS/WP.29/GRE/65, para. 17).

3. At its 155th session, WP.29 agreed to defer consideration of document ECE/TRANS/WP.29/2011/99 and Corr.1 to its June 2012 session, subject to a final review by GRE at its March 2012 session (ECE/TRANS/WP.29/1093, para. 55).

4. At its 156th session, WP.29 agreed to defer consideration of the amendments to Regulations under agenda items 4.16.1 to 4.16.3 to the next session of WP.29 (ECE/TRANS/WP.29/1093, para. 79).

5. At its 157th session, WP.29 also agreed to refer back the documents of agenda item 4.14.2 to GRE for its further consideration. In this respect, the EU requested a cost/benefit analysis (ECE/TRANS/WP.29/1097, para. 55).

6. In conjunction with the further consideration in GRE, GTB (Groupe de Travail “Bruxelles 1952”) established a Task Force on Coordination of Automotive Visibility and Glare Studies (TF CAVGS). The tasks of TF CAVGS were defined as follows: project management and quality control of activities by GTB working groups in relation to automotive visibility and glare studies; informal communication with GRE, OICA and CLEPA through liaisons in this TF, optional collaboration with SAE and CIE through liaisons; communication via GTB to GRE and to a publicly-accessible section on the GTB web site.

7. In the meantime, the expert from Poland prepared for all consecutive GRE sessions, formal and informal documents with proposals based on the basic analysis of photometry



and geometry with explanations according GRE comments and suggestions (ECE/TRANS/WP.29/GRE/2011/32 (initial Polish proposal for aiming/levelling tolerance connected with objective road illumination distance of 75m +/- 25 m), GRE-66-17, ECE/TRANS/WP.29/GRE/2012/21, GRE-67-33, GRE-67-37, ECE/TRANS/WP.29/GRE/2012/27, GRE-68-31, GRE-68-32, GRE-68-34, ECE/TRANS/WP.29/GRE/2013/15, GRE-70-41, ECE/TRANS/WP.29/GRE/2013/57 and ECE/TRANS/WP.29/GRE/2014/11 (coming back to the values in the initial Polish proposal)). The Polish proposals aimed to guarantee the minimum range of illuminated road while ensuring the avoidance of glare regardless of the historical requirements oriented to the design.

8. At the seventy-first session of GRE, the experts from GTB presented the outcome of a study on visibility and glare of automotive low beam headlamps (GRE-71-32). The study concentrated on levelling in relation to load. The major objectives of the study were to improve the understanding of different factors that influence visibility and glare and to identify results of the study that might reveal alternatives for automatic static levelling. According to the GRE suggestion, it also included the studies done by Poland (GRE-71-32). The resulting proposal for amendments to Regulation No. 48 based on this study was presented to the seventy-second session of GRE (GRE-72-07).

9. At its seventy-third session, GRE considered a joint proposal by the experts from the International Organization of Motor Vehicle Manufacturers (OICA) and GTB to introduce new criteria on the automatic levelling of headlamps based on the GTB glare and visibility studies (ECE/TRANS/WP.29/GRE/2015/5). The expert from Poland suggested further modifications to this proposal (GRE-73-18 and GRE-73-28). The experts from Germany and Japan proposed to impose automatic levelling in all cases, in order to reduce glare problems for drivers (GRE-73-17). Following an in-depth exchange of views on these three documents, GRE realized that no consensus could be found as long as there was no single proposal.

10. To proceed with this issue and prepare an encompassing proposal, GRE decided to establish an Informal Working Group with a draft title 'on Visibility, Glare and Levelling' (IWG VGL), for which the experts from Germany and Poland agreed to act as Chair and Secretary, respectively. GRE requested IWG VGL to submit its terms of reference for consideration at the next session of GRE and mandated the Chair to obtain, in June 2015, the consent of WP.29 for the establishment of this IWG (ECE/TRANS/WP.29/GRE/73, paras. 17 and 18).

11. During the 166th session of WP.29, AC.2 considered the possibility of establishing an IWG. Germany expressed its interest to chair the group, Poland to be Vice-Chair and OICA the secretary. WP.29 was requested to provide advice on this issue (ECE/TRANS/WP.29/1116, para. 12). WP.29 noted that, to prepare a consolidated proposal on new criteria for the automatic levelling of headlamps, GRE decided to establish a new Informal Working Group on Visibility, Glare and Levelling (IWG VGL). WP.29 gave its consent for establishing this IWG (ECE/TRANS/WP.29/1116, para. 25).

12. At the same session of WP.29, the representative of France proposed to delete a design restrictive requirement in Regulation No. 48 for auto-levelling of headlamps equipped with any Light Emitting Diodes (LED) light sources (ECE/TRANS/WP.29/GRE/2015/21, ECE/TRANS/WP.29/GRE/73 and WP.29-166-23). The representative explained that, if LEDs were treated the same way as other light sources, more LED headlamps would be fitted on new vehicles, and thus improving road safety and reducing CO<sub>2</sub> emissions. WP.29 noted that recent studies indicate that the type of light source does not seem to be a major factor of headlamp glare, and that GRE had established an IWG to review all levelling requirements in Regulation No. 48. The EU representative stressed that for this subject OLA should also be involved to provide their analysis and preferred option.

13. WP.29 stressed that, in line with the text and spirit of the 1958 Agreement, Regulations should be technologically neutral and performance based. Therefore, WP.29 advocated the French proposal and invited GRE to adopt it and to submit it to WP.29 for consideration. WP.29 also pointed out the importance of the newly established IWG for finding a general solution for glare and visibility issues. WP.29 also instructed IWG and GRE to verify, as a matter of priority, that LED headlamps do not produce more glare compared to other light sources, to review all levelling requirements and to report back to WP.29 (ECE/TRANS/WP.29/1116, paras. 50 and 51).

14. At its seventy-fourth session, GRE reverted to the proposal by the expert from France to delete a design restrictive requirement in Regulation No. 48 for an auto-levelling device for low beam produced by light emitting diodes (LED) light sources (ECE/TRANS/WP.29/GRE/2015/21 and ECE/TRANS/WP.29/GRE/73, para. 20). The secretariat informed GRE about the discussion on this issue at the June 2015 session of WP.29. The World Forum had stressed that Regulations should be technologically neutral and invited GRE to adopt the French proposal and to submit it to WP.29 for consideration (ECE/TRANS/WP.29/1116, paras. 50 and 51).

15. GRE was not in a position to reach a consensus on this matter. The experts from Germany and Japan did not support the French proposal and suggested that it first be referred to the Informal Working Group on Visibility, Glare and Levelling (IWG VGL) and considered in one package with various other proposals. The experts from Belgium, Finland, France, Italy, Spain, EU, CLEPA and OICA supported the French proposal and called for its adoption independent of the IWG VGL activities. The experts from Austria and Poland reserved their positions. Finally, in view of the WP.29 guidance, GRE agreed to adopt the proposal in ECE/TRANS/WP.29/GRE/2015/21 and to submit it to the March 2016 session of WP.29 for a final decision. The Chair was also requested to brief WP.29 on the different views expressed by experts in GRE (ECE/TRANS/WP.29/GRE/74, paras. 14 and 15).

16. WP.29 and AC.1, at their March 2016 sessions, adopted the GRE proposals for amendment to Regulation No. 48 to introduce the same 2,000 lm criterion for all light source, including LED, for deciding which type of levelling device has to be installed on the vehicle (Supplement 16 to the 04 series of amendments, Supplement 9 to the 05 series of amendments and Supplement 7 to the 06 series of amendments; documents ECE/TRANS/WP.29/2016/20, ECE/TRANS/WP.29/2016/19 and ECE/TRANS/WP.29/2016/18, respectively). However, other amendments to Regulation No. 48 on headlamp levelling still need to be considered. For instance, the limit value of 2,000 lm for light source luminous flux is currently used to determine the need for automatic levelling.

17. The Terms of Reference of IWG VGL were adopted at the March 2016 session of WP.29 (Annex 3 to ECE/TRANS/WP.29/GRE/74). In view of the above, after two meetings, IWG VGL deems necessary to update its Terms of Reference, including the work plan and time schedule.

## II. Objectives

18. The following Terms of Reference describe the principle tasks of the new IWG focusing at the development of proposals for the amendment to UN Regulations to reduce and possibly solve the visibility and glare concerns deriving from vehicles and headlamps characteristics and performances.

19. IWG VGL shall:

- (a) As a first step, define a provisional solution for visibility and glare issues, by means of an amendment to Regulation No. 48 for vehicles of categories M and N for the headlamp levelling requirements;
  - (b) Develop suitable criteria and a test procedure to evaluate the headlamp levelling performances;
  - (c) Consider a cost/benefit analysis and an impact assessment on the proposed requirements;
  - (d) Define suitable transitional provisions for the introduction of the proposed requirements.
20. The amendment shall be prepared mainly taking into account the proposals and studies on this specific matter already presented in GRE.
21. For preparation of the proposals, the following issues influencing visibility and glare shall be taken into consideration:
- (a) The relevant general data such as roads characteristics, standard use of vehicles, etc. explaining the different situations of glaring and the critically situations with regard to visibility (including the amount of light projected in the area where the eyes of an oncoming vehicle's driver are located);
  - (b) The relevant parameters for installation of headlamps with regard to visibility and glare, such as:
    - (i) initial aiming of the headlamps;
    - (ii) levelling of the passing beam based on the cut-off position;
    - (iii) mounting height of the headlamps, with a clear definition of the reference condition;
    - (iv) ergonomic aspects such as accessibility of manual levelling device, etc.;
    - (v) other parameters.
22. According to the discussions and results of this phase, additional research and studies related to visibility and glare issues could be found necessary for taking into consideration:
- (a) Categories of vehicles;
  - (b) Headlamp beam pattern and related distribution of the light/illumination intensity;
  - (c) Future technologies for illuminating systems (new light sources, adaptation of the light distribution, etc.);
  - (d) Future technologies for vehicles (levelling systems, automatic lights control, autonomous driving, etc.);
  - (e) Any other, if needed.

### **III. Rules of Procedure**

23. The Informal Working Group on Visibility, Glare and Levelling (IWG VGL) is a subgroup of GRE and is open to all participants of GRE, including Contracting Parties to the 1958 and 1998 Agreements and non-governmental organizations. However, it is recommended that a maximum of three technical experts per country and organization participate in this group.

24. IWG will be chaired by Poland. OICA will act as Secretary.
25. The official language of the group will be English.
26. An agenda and related documents shall be made available on the dedicated UNECE website ([www2.unece.org/wiki/pages/viewpage.action?pageId=26903055](http://www2.unece.org/wiki/pages/viewpage.action?pageId=26903055)) by the Secretary of the group in advance of all scheduled meetings.
27. All documents and/or proposals shall be submitted to the Secretary of the group in a suitable electronic format in advance of the meetings. The group may postpone discussing any item or proposal which has not been circulated five working days in advance of the scheduled meeting.
28. The Secretary of the group shall distribute the draft meeting minutes to the informal group members within fifteen working days after the meeting of the group. The draft minutes shall be considered and adopted at the next session of IWG. The adopted minutes shall be submitted to GRE and will be used by the IWG Chair as a basis for reporting to GRE about the activities of the IWG.
29. IWG shall develop its opinions and draft proposals by consensus, and submit these to GRE for further consideration and decision. If IWG cannot reach common agreement on particular items or proposals, the Chair shall present the issue to the GRE and/or to WP.29 for resolution. The IWG Chair may seek guidance from GRE as appropriate.
30. Sessions shall be held in agreement with the majority of the participants after the group has been established in a constitutional meeting. Sessions may be in person or virtual using web-based technology.
31. A provisional agenda shall be drawn up by the Secretary in accordance with the proposals and requests received from the members of the group and with the agreement of the Chair. The first item upon the provisional agenda for each session shall be the adoption of the agenda.
32. The second item on the provisional agenda shall be the discussion on matters arising and adoption of the minutes of the previous session.
33. IWG shall provide GRE with status reports at each GRE session.

#### **IV. Work plan and time schedule**

34. IWG VGL will present to GRE informal documents for consideration at the seventy-sixth session in October 2016 and at the seventy-seventh session in April 2017.
35. According to the guidelines of GRE, IWG VGL will present a formal proposal for consideration at the seventy-eighth session of GRE in October 2017 and then for consideration at the 174th session of WP.29 in March 2018.
36. The timeline for future work, if needed, shall be proposed at the seventy-seventh session of GRE in April 2017.
37. Meetings of the group shall be scheduled to meet the above timeline.

## Annex IV

### Adopted amendments to Regulations Nos. 6 and 50 (based on ECE/TRANS/WP.29/GRE/2016/20)

#### A. Proposal for Supplement 27 to the 01 series of amendments to Regulation No. 6 (Direction indicators)

*Paragraph 1.3.*, amend to read:

"1.3. "Direction indicators of different types" means lamps which differ in such essential respects as:

- (a) The trade name or mark;
- (b) The characteristics of the optical system (levels of intensity, light distribution angles, category of light source, light source module, etc.);
- (c) The category of direction indicator lamps;
- (d) The variable intensity control, if any;
- (e) The sequential activation of light sources, if any.

Nevertheless, direction indicators capable of being activated in different modes (sequential or not) without any modification of the optical characteristics of the lamp do not constitute "Direction indicators of different types".

A change of the colour of the light source or the colour of any filter does not constitute a change of type."

*Paragraph 5.6.*, amend to read:

"5.6. For direction indicator lamps of categories 1, 1a, 1b, 2a or 2b the flash may be produced by sequential activation of their light sources if the following conditions are met:

- (a) Each light source, after its activation, shall remain lit until the end of the ON cycle;
- (b) The sequence of activation of the light sources shall produce a signal which proceeds in a uniform progressive manner from inboard towards the outboard edge of the light emitting surface when fitted on the vehicle;
- (c) It shall be one signal with no interruption and no vertical oscillations (e.g. not more than one change of direction along the vertical axis). The distance between two adjacent/tangential distinct parts of the light emitting surface of the sequential direction indicator shall not exceed 50 mm, when measured perpendicularly to the reference axis, instead of the values defined in paragraph 5.7.2. of Regulation No. 48. These interruptions of the signal shall not create any overlap in the vertical axis between the different parts, from inboard towards the outboard of the vehicle, and shall not be used for any other lighting or light signalling functions;

- (d) The variation shall finish no more than 200 ms after the beginning of the ON cycle;
- (e) The orthogonal projection of the light emitting surfaces of the direction indicator in the direction of the axis of reference shall be circumscribed by a rectangle on a plane normal to the axis of reference and having its longer sides parallel to the H-plane. The ratio of the horizontal to the vertical sides shall not be less than 1.7;
- (f) A direction indicator capable of being activated in different modes (sequential or not) shall not mix both signals simultaneously. The front or the rear direction indicators installed on the same side of the vehicle shall not operate in different modes.

Compliance to the conditions mentioned above shall be verified in flashing mode."

**B. Proposal for Supplement 19 to the original series of amendments to Regulation No. 50 (Position, stop, direction indicator lamps for mopeds and motorcycles)**

*Paragraph 6.8., amend to read:*

"6.8. For direction indicator lamps of categories 11, 11a, 11b, 11c or 12 the flash may be produced by sequential activation of their light sources if the following conditions are met:

- (a) Each light source, after its activation, shall remain lit until the end of the ON cycle;
- (b) The sequence of activation of the light sources shall produce a signal which proceeds in a uniform progressive manner from inboard towards the outboard edge of the light emitting surface when fitted on the vehicle;
- (c) It shall be one signal with no interruption and no vertical oscillations (e.g. not more than one change of direction along the vertical axis). The distance between two adjacent/tangential distinct parts of the light emitting surface of the sequential direction indicator shall not exceed 50 mm, when measured perpendicularly to the reference axis, instead of the values defined in paragraph 5.6.2. of Regulation No. 53. These interruptions of the signal shall not create any overlap in the vertical axis between the different parts, from inboard towards the outboard of the vehicle, and shall not be used for any other lighting or light signalling functions;
- (d) The variation shall finish no more than 200 ms after the beginning of the ON cycle;
- (e) The orthogonal projection of the light emitting surfaces of the direction indicator in the direction of the axis of reference shall be circumscribed by a rectangle on a plane normal to the axis of reference and having its longer sides parallel to the H-plane. The ratio of the horizontal to the vertical sides shall not be less than 1.7;
- (f) A direction indicator capable of being activated in different modes (sequential or not) shall not mix both signals simultaneously. The

front or the rear direction indicators installed on the same side of the vehicle shall not operate in different modes.

Compliance to the conditions mentioned above shall be verified in flashing mode."

## Annex V

## Adopted amendments to ECE/TRANS/WP.29/GRE/2016/29

Page 4, Annex 3, Table 2, amend to read:

**"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.	<b>Angular position / extend in deg for segment I<sub>max</sub></b> E <sub>max</sub> shall not be positioned outside of the rectangle extending (above "segment E <sub>max</sub> ") <b>The maximum luminous intensity in "Segment I<sub>max</sub>" as indicated in this table shall be within the limits as prescribed in Table 1, Line No. 18.</b>	0.5 L to 3 R	0.3 D to 1.72D		0.3 D to 1.72D	0.5 L to 3 R	0.1 D to 1.72D	0.5 L to 3 R	0.3 D to 1.72D
2.2.	The "cut-off" and part(s) of shall:								
	(a) comply with the requirements of paragraph 1. of Annex 8 to this Regulation and								
	(b) be positioned with its "flat horizontal part"		at V = 0.57 D		not above 0.57D not below 1.3D		not above 0.23D <sup>8</sup> not below 0.57D		not above 0.23D not below 0.57D

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



## Annex VI

### GRE informal groups

<i>Informal group</i>	<i>Chair(s)</i>	<i>Secretary</i>
Simplification of the Lighting and Light-Signalling Regulations (SLR)	Mr. Michel Loccufier (Belgium) Phone: +32 474 989 023 E-mail: michel.loccufier@mobilite.fgov.be	Mr. Davide Puglisi (GTB) Phone: +39 011 562 11 49 Fax: +39 011 53 21 43 E-mail: secretary@gtb-lighting.org
Visibility, Glare and Levelling (VGL)	Mr. Tomasz Targosinski (Poland) Phone: +48 22 4385 157 Fax: + 48 22 4385 401 E-mail: tomasz.targosinski@its.waw.pl	Mrs. Françoise Silvani (OICA) Fax: +33 1 76 86 92 89 E-mail: francoise.silvani@renault.com