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World Forum for Harmonization of Vehicle Regulations**Working Party on Lighting and Light-Signalling****Eighty-eighth session**

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Item 6 (a) of the provisional agenda

Installation UN Regulations:**UN Regulation No. 48 (Installation of Lighting and Light-Signalling Devices)****Proposal for a new series of amendments to UN Regulation
No. 48****Submitted by the expert from the Special Interest Group on the 09
series of amendments to UN Regulation No. 48***

The text reproduced below was prepared by the expert from Special Interest Group (SIG) on the 09 series of amendments to UN Regulation No. 48 with the aim to add the park conditions of a vehicle in the scope of UN Regulation No. 48 and to minimise hazards, such as glare and distraction, to other road users. The proposed modifications to the current text of the UN Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2023 as outlined in proposed programme budget for 2023 (A/77/6 (Sect. 20), table 20.6), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.



I. Proposal

Paragraph 2.5.18., amend to read:

"2.5.18. *“Exterior courtesy lamp”* means a lamp used to provide supplementary illumination to assist the ~~entry and exit of the vehicle driver and passenger or in loading operations;~~ **vehicle user to approach or depart; enter or exit; load or unload the vehicle.**"

Paragraph 2.5.20., amend to read:

"2.5.20. *“External status indicator”* means an optical signal mounted on the outside of the vehicle to indicate the status or the change of the status for Vehicle Alarm System (VAS), Alarm System (AS) and immobilizer of UN Regulations Nos. 97, ~~and 116,~~ **162 and 163**, when the vehicle is parked."

Insert a new paragraph 2.5.21. to read:

"2.5.21. *“Energy indicator”* means an optical signal used to inform the vehicle user about the energy level, and/or the condition of the energy transfer system and/or the status of energy transfer of the vehicle."

Insert a new paragraph 2.6.4. to read:

"2.6.4. *“Answer-back signal”* means a signal used to assist the vehicle user to identify and find his/her car under the park conditions of a vehicle."

Insert a new paragraph 2.7.10., to read:

"2.7.10. *“Lamp test mode”* means a system or mode which enables the vehicle user to perform a [visual] function check of the vehicle’s lighting and light signalling devices and their associated systems."

Insert a new paragraph 2.11.5., to read:

"2.11.5. **Colour of the light emitted other than from a device**

2.11.5.1. *“Indicator Blue”* means the chromaticity coordinates (x,y)⁴ of the light emitted that lie inside the chromaticity areas defined by the boundaries:

B ₁₂	green boundary	y = 0.28
B ₂₃	white boundary	y = -1.548x - 0.528
B ₃₄	purple boundary	x = 0.133 + 0.60y
B ₄₁	the spectral locus	

With intersection points:

	x	y
B ₁	0.049	0.28
B ₂	0.16	0.2
B ₃	0.233	0.167
B ₄	0.148	0.026

2.11.5.2. *“Indicator Green”* means the chromaticity coordinates (x,y)⁴ of the light emitted that lie inside the chromaticity areas defined by the boundaries:

G ₁₂	blue boundary	y = 0.5 - 0.5x
G ₂₃	white boundary	y = 0.093 + 1.444x
G ₃₄	yellow boundary	y = -2.235 + 8.5x
G ₄₁	the spectral locus	

With intersection points:

	x	y
G ₁	0.013	0.494
G ₂	0.209	0.39
G ₃	0.330	0.57
G ₄	0.340	0.656"

Insert a new paragraph 3.2.10., to read:

"3.2.10. Where the vehicle is equipped with lamps that are used under the park conditions as specified in 5.36., except for subparagraph (a) in 5.36.:

3.2.10.1. A list of the lamps used.

3.2.10.2. A detailed description providing the following information:

- **the conditions for the lamps to be switched ON and OFF;**
- **the activation condition(s) of the energy indicator and the colour(s) emitted;**
- **if the lamps are flashing: the flashing frequency;**
- **if the lamps are varying their intensity and/or apparent surface: the luminous intensity range and/or the changes in apparent surface.**

This information may be provided by the applicant by sufficient documentation (e.g. including line graphs clearly showing flash and/or vary in luminous intensity and/or apparent surface of the underlying regulations) or by other means accepted by the Type Approval Authority."

Insert a new paragraph 5.9.4., to read:

"5.9.4. Under the park condition, Energy indicator, Answer-back signal and Lamp test mode may flash and/or vary in luminous intensity and/or apparent surface.

These lamps shall operate according to the conditions specified in general specifications and/or in dedicated paragraphs 6.27., 6.28. and 6.29."

Paragraph 5.11.1., amend to read:

"5.11.1. This requirement does not apply while one or more of the following conditions exist:

- (a) Front and rear position lamps, as well as side-marker lamps when combined or reciprocally incorporated with said lamps are switched ON as parking lamps;
- (b) Side-marker lamps flash in conjunction with direction indicators;
- (c) Daytime running lamps are switched ON;
- (d) Front position lamps function is substituted under the provisions of paragraph 5.12.1. below.
- (e) **Lamps are operating under the provisions of paragraphs 6.24., 6.27., 6.28. and 6.29."**

Paragraph 5.15., amend to read:

"5.15. The colours of the light emitted by the lamps¹⁰ are the following:

...

Manoeuvring lamp:

White

Energy indicator:

White, selective-yellow, amber, red, indicator blue or indicator green.

The colour of energy indicator may be different according to (or 'following') the conditions."

Insert a new paragraph 5.36., to read:

"5.36. Lamps that may be switched ON under the park condition of a vehicle are as follows:

- (a) **Lamps in this UN Regulation as long as they are operated in the same manner as under the normal condition of use of a vehicle;**
- (b) **Parking lamps;**
- (c) **Exterior courtesy lamps;**
- (d) **External status indicator;**
- (e) **Energy indicator;**
- (f) **Answer-back signal; and**
- (g) **Lamp test mode."**

Paragraphs 6.24. to 6.24.3., amend to read:

"6.24. Exterior courtesy lamp

6.24.1. Presence

Optional on motor vehicles

6.24.2. Number

One or two, however further exterior courtesy lamps to illuminate steps and/or door handles, **and/or the area around the vehicle** are permitted. Each door handle or step shall be illuminated by not more than one lamp.

6.24.3. Arrangement

No special requirement, however, the requirements of paragraph 6.24.9.3. apply."

Paragraphs 6.24.9., amend to read:

"6.24.9. Other requirements

6.24.9.1. The exterior courtesy lamp(s) shall not be switched ON unless the vehicle is stationary and one or more of the following conditions is satisfied:

- (a) The propulsion system is stopped; or
- (b) A driver or passenger door is opened **or after being closed**; or
- (c) A load compartment door is opened **or after being closed**.

~~The provisions of paragraph 5.10. shall be met in all fixed positions of use.~~

6.24.9.1.1. The exterior courtesy lamps may be switched ON and/or switched OFF manually or automatically.

6.24.9.1.2. The exterior courtesy lamp or lamps may vary in luminous intensity and/or apparent surface. The photometric characteristics of the exterior courtesy lamp(s) may vary in relation to the position of vehicle users. No sharp variation of intensity shall be observed during transition.

6.24.9.1.3. The exterior courtesy lamp(s) shall not flash.

6.24.9.1.4. At the discretion of the manufacturer the exterior courtesy lamp(s) may operate in any combination.

6.24.9.2. Approved lamps emitting white light with the exception of main beam head lamps, daytime running lamps and reversing lamps may be switched ON as exterior courtesy lamp(s)-~~function~~. **In addition, rear position lamps, the parking lamps, the side marker lamps and the end-outline marker lamps may be switched ON. They may also be switched ON together with the**

~~exterior courtesy lamps and the conditions of paragraph 5.11. and 5.12. above may not apply.~~

6.24.9.3. The technical service shall, to the satisfaction of the Type Approval Authority, perform a visual test to verify that there is no direct visibility of the apparent surface of the exterior courtesy lamps, if viewed by an observer moving on the boundary of a zone on a transverse plane 10 m from the front of the vehicle, a transverse plane 10 m from the rear of the vehicle, and two longitudinal planes 10 m from each side of the vehicle; these four planes to extend from 1 m to 3 m above and perpendicular to the ground as shown in Annex 14.

6.24.9.4. At the request of the applicant and with the consent of the Technical Service ~~this requirement~~ **the requirements of 6.24.9.3. may be verified by a drawing or simulation or deemed be satisfactory if the applicant can prove that the luminous intensity visible during the observation test described in Annex 14 is less than [0.5] cd per lamp. No account shall be taken of the influence of the vehicle body."**

Insert a new paragraph 6.27., to read:

"6.27. Answer-back signal

6.27.1. Presence

Optional.

6.27.2. Number

In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal. However, it may be less than or equal to the individual specifications applicable to the specific lamp.

6.27.3. Arrangement

In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal. However, it may be less than or equal to the individual specifications applicable to the specific lamp.

6.27.4. Position

6.27.4.1. In width: In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal. However, it may be less than or equal to the individual specifications applicable to the specific lamp.

6.27.4.2. In height: in accordance with the individual specifications applicable to the specific lamp used for the answer-back signal.

However, if the height changes depending on the operating conditions of the propulsion system, it shall be less than or equal to the individual specifications applicable to the specific lamp.

6.27.4.3. In length: In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal. However, it may be less than or equal to the individual specifications applicable to the specific lamp.

6.27.5. Geometric visibility

In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal. However, it may be less than or equal to the individual specifications applicable to the specific lamp.

6.27.6. Orientation

In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal.

6.27.7. Electrical connections

- 6.27.7.1.** The answer-back signal shall only operate under the park condition of a vehicle.
- 6.27.7.2.** If the answer-back signal flashes, the frequency shall not exceed [2.0] Hz.
- 6.27.7.3.** The lamps may operate in combination.
- 6.27.7.4.** Individual specific requirements for electrical connections and the conditions of paragraphs 5.11. and 5.12. may not apply to the lamps used for the answer-back signal.
- 6.27.8.** Tell-tale
No special requirement.
- 6.27.9.** Other requirements
- 6.27.9.1.** The answer-back signal shall be provided by approved lighting and light-signalling devices and exterior courtesy lamps where in all these cases, the maximum luminous intensity per lamp does not exceed 700 cd on or above the HH line. However, front fog lamps, rear fog lamps and stop lamps are not permitted to be used.
- 6.27.9.2.** The answer-back signal may only be activated automatically in conjunction with the locking and unlocking of the door(s) and/or the detection of the vehicle user approaching the vehicle.
- 6.27.9.3.** The answer back signal may flash and/or vary in luminous intensity and/or apparent surface.
- 6.27.9.4.** The duration of the optical indication of the answer-back signal shall not exceed 3 seconds.
- 6.27.9.5.** Compliance with the requirements of paragraphs 6.27.9.1. to 6.27.9.4. shall be demonstrated by the applicant, using test reports or other means of verification accepted by the Type Approval Authority. The information shall be indicated in the communication form."

Insert a new paragraph 6.28., to read:

- "6.28. Energy indicator**
- 6.28.1. Presence**
Optional.
- 6.28.2. Number**
[One or two]
- 6.28.3. Arrangement**
No special requirement.
- 6.28.4. Position**
[Maximum height 1,500mm, however always 100mm lower than highest point (roof) of the vehicle.]
- 6.28.5. Geometric visibility**
No special requirement.
- 6.28.6. Orientation**
No special requirement.
- 6.28.7. Electrical connections**
No special requirement.
- 6.28.8. Tell-tale**

No special requirement.

6.28.9. Other requirements

6.28.9.1. The energy indicator shall not be switched ON unless the vehicle is stationary and one or more of the following conditions exist:

- (a) when the vehicle is connected to the energy grid; or
- (b) the energy indicator is switched ON manually by the vehicle user; or
- (c) a movable component to access the connection to the energy grid is in an open position; or
- (d) the vehicle user approaching the vehicle is detected.

6.28.9.2. The luminous intensity of the energy indicator shall not exceed [3 cd].

Compliance with this requirement shall be demonstrated by the applicant, using a test report or other means of verification accepted by the Type Approval Authority. The information shall be indicated in the communication form.

6.28.9.3. The emitted colour(s), flashing and/or variation in intensity and/or apparent surface and their associated conditions shall be explained in the owner's handbook.

[6.28.9.4. Energy indicator may flash red when a failure related to the energy transfer is detected. However, the duration of this flashing red failure indication shall not exceed 10 seconds.]"

Insert a new paragraph 6.29., to read:

"6.29. Lamp test mode

Where not otherwise specified in this paragraph and its sub-paragraphs, the individual requirements for the lamps used for lamp test mode do not apply.

6.29.1. Presence

Optional.

6.29.2. Number

No special requirement.

However, if approved lamps are used then the number shall be in accordance with or less than the individual specifications applicable to the specific lamp.

6.29.3. Arrangement

No special requirements.

However, if approved lamps are used then the arrangement shall be in accordance with or less than the individual specifications applicable to the specific lamp.

6.29.4. Position

No special requirements.

However, if approved lamps are used then the position shall be in accordance with the individual specifications applicable to the specific lamp.

However, if the height changes depending on the operating conditions of the propulsion system, it shall be less than or equal to the individual specifications applicable to the specific lamp.

- 6.29.5. Geometric visibility**
No special requirements
However, if approved lamps are used then the geometric visibility shall be in accordance with or less than the individual specifications applicable to the specific lamp.
- 6.29.6. Orientation**
No special requirements
However, if approved lamps are used then the orientation shall be in accordance with the individual specifications applicable to the specific lamp.
- 6.29.7. Electrical connections**
No more than one function should be switched ON at the same time. However, approved lamps permitted to be switched ON under the normal condition of use of a vehicle may be switched ON at the same time.
Individual specific requirements for electrical connections and the conditions of paragraphs 5.11. and 5.12. may not apply to the lamps used for the lamp test mode.
- 6.29.8. Tell-tale**
No special requirement.
- 6.29.9. Other Requirements.**
- 6.29.9.1. The lamp test mode may be switched ON [when the vehicle is stationary];**
(a) manually by the vehicle user and/or
(b) automatically.
If automatic, activation shall only be possible where a key is detected.
- 6.29.9.2. Each function/lamp tested shall be switched ON and remain switched ON for a minimum of 0.5 seconds.**
- 6.29.9.3. The duration of Lamp test mode shall not exceed [180] seconds. The lamp test mode may be manually re-initiated by the vehicle user. However, it shall always be switched OFF automatically when the vehicle is in the normal condition of use.**
- 6.29.9.4. The lamp test mode shall be provided by approved lighting and light-signalling devices and exterior courtesy lamps, if applicable"**

Annex 1, insert new items 9.31.and 9.32. to read:

"9.31. Lamps allowed to be used under park condition:

- 9.31.1. Answer-back signal: yes/no².....**
- 9.31.1.1. Maximum luminous intensity on or above the H-H line (cd)**
.....
- 9.31.2. Lamp test mode: yes/no².....**
- 9.31.3. Energy indicator: yes/no².....**
- [9.31.3.1. Colour N°... yes/no².....**
- 9.31.3.2. Luminous intensity:]"**

II. Justification

1. This proposal aims to require that lighting and light-signalling devices be turned on in compliance with the requirements of UN Regulation No. 48 even when a vehicle is under the park condition by adding “park condition” to the scope of UN Regulation No. 48, as is the case with the current provisions for lamps under the normal condition of use of a vehicle.

2. Japan made proposals of ECE/TRANS/WP.29/GRE/2021/2, GRE-84-29 and GRE-84-30 at the eighty-fourth session of the Working Party on Lighting and Light-Signalling (GRE) and insisted that it would be necessary to formulate regulations for lamps under the park condition. This resulted in the establishment of a Special Interest Group (SIG) on the 09 series of amendments to UN Regulation No. 48 as a meeting structure under GRE. These proposals are reflecting the results of deliberations at SIG since July 2021. At the eighty-sixth session of GRE, a two-step approach was approved with Step1 being the establishment of the framework of the regulation of the lamps under the park condition and the regulation of the existing lamps by the series amendments, and Step 2 being the Supplement amendments that will add upcoming lamps. This proposal is the legal text for Step 1, based on the policy decided by SIG.

3. Several Contracting Parties viewed it as a problem that the lamps not subject to the provisions under the park condition in the current UN Regulation No. 48 have been put at the market and that for the Type Approval Authorities it would be difficult to restrict those lamps safely under the park condition provisions in the current UN Regulation No. 48. This proposal is intended to arrange comprehensively the requirements for the lamps under the park condition and to promote the unified operation and international standard harmonization of UN Regulation No. 48.

4. Meanwhile, to increase user convenience, some manufacturers have produced vehicles with a function that allows lights to flash in conjunction with locking/unlocking of the doors, charging electric vehicles (EV), etc., while a vehicle is under the park condition. We believe that such functions can be permitted to the extent that they do not impair traffic safety.

5. Therefore, we would like to (1) propose prescribing general requirements with a view to clarifying lamps permitted under the park condition and (2) define the “answer-back signal” as lighting and light-signalling functions that assist the user of the vehicle to locate his vehicle by operating in conjunction with the locking or unlocking of the doors and the detection of the vehicle user approaching with the key under the park condition. It also defines (3) the energy indicator to display the EV's state of charge, etc. and (4) the lamp test mode to perform pre-operational checks of each lamp function of the vehicle.

Paragraphs 2.11.1.5. and 2.11.1.6. – new colours are defined.

6. Indicator blue and indicator green colours have been defined for use with the Energy indicator as these colours are already implemented in many of today's electric vehicles. Their respective chromaticity co-ordinates have been specified inside UN Regulation No. 48 as they do not currently exist elsewhere in UN Regulations. The chromaticity co-ordinates for ‘blue’ specified within UN Regulation No. 65 for Special Warning Lamps is unique for this application and is different from the indicator blue that has been defined here. The specification for white, selective yellow, amber and red are already present in UN Regulation No. 48 (paragraphs 2.11.1.2. to 2.11.1.4.) and corresponds to the colours already used for Energy indicator on current vehicles.

Paragraph 2.5.18. “Exterior courtesy lamp (ECL)”

7. The exterior courtesy lamp definition is modified to include the ‘follow me home’ function and additional functions present on vehicles that are registered today. The scope addresses the illumination of the area around the vehicle on approach or depart. This is in addition to the illumination of doorsteps or handles as addressed by the current ECL function.

Paragraph 2.5.20.

8. Editorial modifications: addition of the latest UN Regulation Nos for Vehicle Alarm System (VAS), Alarm System (AS) and immobilizer.

Paragraph 2.5.21. “Energy indicator”

9. A new definition is introduced for an Energy indicator to inform the vehicle user about the energy level, and/or the condition of the energy transfer system and/or the status of energy transfer of the vehicle. This type of lamp is already implemented on current production vehicles available today. The concept is to introduce a low-intensity tell-tale independent from other defined devices which does not require a separate approval. If the vehicle manufacturer chooses to indicate the energy status with colour coded responses, the output shall follow the principle for colours specified.

Paragraph 2.6.4.

10. The answer-back signal is defined in paragraph 2.6.4. This type of signal is also already implemented on current production vehicles available today.

Paragraph 2.7.10. “Lamp test mode”

11. A new definition is introduced for a “Lamp test mode” to enable the vehicle user to perform a visual function check of the vehicle’s lighting and light signalling devices and their associated systems. This lamp test mode is already implemented on current production vehicles available today. This function is especially useful on trucks and other large commercial vehicles. Today this mode toggles the function of installed lamps in a pre-defined sequence for a set time limit to enable the vehicle user to inspect each lamp around the vehicle without the assistance of another person. Without including this function in step 1, this important safety feature would have to be removed from existing vehicles to the detriment of road safety.

Paragraphs 3.2.10. and 5.36.

12. Paragraph 5.36. prescribes that “Lamps that may be switched ON under the park condition of a vehicle are as follows: (a) Lamps in this UN Regulation as long as they are operated in the same manner as under the normal condition of use of a vehicle; (b) Parking lamps; (c) Exterior courtesy lamps; (d) External status indicators of anti-theft alarm systems; (e) Energy indicator; (f) Answer-back signal; and (g) Lamp test mode.” By prescribing “(a) Lamps in this UN Regulation as long as they are operated in the same manner as under the normal condition of use of a vehicle,” those that have already been permitted to be switched on under the park condition (e.g. hazard warning lamp) and lamps that must be switched on, based on the occupant’s judgment, under the park condition, such as in case of emergency at night time, during tests, etc., will be subject to this provision and this makes it permissible to use them under the park condition.

13. In addition, a document describing the type of lamps to be switched on under the park condition, the trigger and the timing of switching ON, (especially Energy indicator) Colours and the status indicated by those colours and each lighting scenario, except for (a) in 5.36., shall be required in paragraph 3.2.10.

14. By prescribing these paragraphs 3.2.10. and 5.36., the use of various lamps, etc. that can be switched on manually under the current regulations is permitted, taking into consideration the operation at the time of the approval test and the importance, etc. of lamps when the engine stalls, in addition to a comprehensive arrangement and regulation for lamps under the park condition in UN Regulation No. 48.

Paragraph 5.9.4.

15. It is proposed that the following functions may flash and/or vary in their luminous intensity:

- Energy indicator,
- Answer-back signal and
- Lamp test mode.

Paragraph 5.11.1.

16. Extension of the exemption for simultaneous switching of the position, end outline marker and registration plate lamps for the new functions when in the park condition.

Paragraph 5.15. "Colours of light emitted by lamps"

17. Addition of the colours permitted to be used for an Energy indicator. If the vehicle manufacturer chooses to indicate the energy status with colour coded responses, the output shall follow the principle for colours specified by this paragraph.

6.24.2. "Exterior courtesy lamp"

18. Extension of the scope of the exterior courtesy lamp (ECL) in order to integrate the existing 'follow-me-home' function. The number was changed to 'one or two' to cover the case where only one exterior courtesy lamp may be illuminated. A use case could be to solely illuminate the boot or bonnet area with only one lamp. In step 2, the number may be further evaluated. SIG agreed to integrate 'follow-me-home' function into ECL. In this case, requirements for ECL need to be modified to cover what is done for the 'follow-me-home' feature on vehicles on the market already.

Paragraph 6.24.9.1.

19. Adding 'or after closing' adds provides flexibility to the triggering moment. Consider the elderly exiting a vehicle or a chauffer driven vehicle.

Paragraphs 6.24.9.1.3. and 6.24.9.1.4.

20. Not to cause unnecessary distraction, SIG proposes to permit the grouping of exterior courtesy lamps in different patterns. Permitting fade in/fade out illumination following the position of a vehicle user with grouping of exterior courtesy lamps is beneficial for traffic safety as it avoids any sharp variations in intensity. Additionally, the restrictions in Annex 14 avoid illuminating areas or aspects that are not beneficial to the vehicle user.

Paragraph 6.24.9.2.

21. The rear position lamp, the parking lamps, the end-outline lamps have been added to the list of the lamps allowed to be switched ON as ECL function. This measure is to include the requirements for the follow-me-home light that have already been introduced in Europe into ECL. SIG discussions revealed that the 'wake-up/shut-down light function' on the market encompasses two functions: ECL and the new answer-back signal. SIG has worked out the definitions and requirements for the two functions to draw a clear line and organise the above.

Table

Principal differences in requirements between ECL and answer-back signal

	<i>Wake-up/shut-down light function</i>	
	<i>ECL</i>	<i>Answer-back signal</i>
Definitions	A lamp used to provide supplementary illumination to assist the vehicle user to approach or depart; enter or exit; load or unload the vehicle	A signal used to assist the vehicle user to identify and find his/her car under the park condition of a vehicle
Requirements for illumination	Shall not flash, however, varying in luminous intensity and/or apparent surface is permitted depending on the position of the vehicle user	Flashing and/or varying in luminous intensity and/or apparent surface
Duration	-	Not to exceed 3 seconds

Paragraph 6.24.9.3.

22. There are existing examples of ECL illumination that occurs in the park condition that would be prohibited by the new requirements. By permitting the applicant to demonstrate these such illumination is negligible i.e., less than 0.5cd, these features can continue to be installed.

Paragraph 6.27. "Answer-back signal"

23. The requirements for the answer-back signal are prescribed in paragraph 6.27. in connection with the duration of illumination as well as the kind and function of lamps that can be used.

Duration of their optical indication

24. The duration of the optical indication of the answer-back signal shall not exceed 3 seconds in the same manner as the external status indicator of immobilisers. This provision that the duration of the optical indication of the immobiliser shall not exceed 3 seconds has not been revised since 1995 to the present. This can be considered a proof that there have been no safety issues. Therefore, the duration of 3 seconds is incorporated as a requirement for answer-back signal from the standpoint of safety for the surroundings. Moreover, as a reference for this matter, Japan has investigated the history of this provision that the duration of flashing of direction indicator lamps was specified as 3 seconds in connection with the external status indicator in UN Regulation No. 97. This discussion, that was carefully examined by the three meeting structures of GRE, the Working Party on General Safety Provisions (GRSG) and the World Forum (WP.29) from 1994 to 1995, was indicated in the official reports and related documents. According to the history that was clearly indicated, initially there was a proposal to allow only 2 flashes, then a provision to allow flashing for 2 seconds was proposed, and finally a provision to allow flashing for 3 seconds was decided. This provision of three-second flashing has been adopted without any relaxation to the present day. It is evident from this history that there was great concern about flashing for more than 3 seconds.

Types of lighting or light-signalling functions that can be used

25. Paragraph 6.27.1. prescribes reciprocally incorporated lamps for the answer-back signal. The answer-back signal shall be provided by approved lighting and light-signalling and exterior courtesy lamps where in all these cases, the maximum luminous intensity does not exceed 700 cd on or above the HH line. However, front fog lamps, rear fog lamps and stop lamps are not permitted to be used.

Maximum intensity and colour

26. With regard to the maximum intensity, colour, etc. of the answer-back signal, each lamp shall comply with the requirements prescribed in the individual specifications in paragraph 6. However, lamps with the specifications equal to or less than the individual specifications applicable to the particular lamp are permitted.

Answer-back light is allowed to flash

27. Paragraph 5.9.4. prescribes that the answer-back signal can flash and vary in luminous intensity and/or apparent surface. Moreover, paragraph 6.27.7.2. prescribes that the flashing frequency be restricted to 2.0 Hz or less. This is prescribed based on the flashing frequency of direction indicator lamps.

Energy indicator (paragraphs 6.28.1. to 6.28.9.)

28. Individual specifications explained:

- Number: energy indicators are already commonplace on all electric vehicles. Therefore, the International Organization of Motor Vehicle Manufacturers (OICA) insists to keep this as part of step 1.
- Position: in order to avoid a flashing signal on the roof of the vehicle, the energy indicator must be mounted at least 100mm lower than highest point (roof) of the vehicle.

Paragraph 6.28.9.1.

29. To limit the number of situations when the energy indicator may be illuminated OICA has proposed 3 scenarios: (i) when the vehicle is connected to the energy grid, (ii) when the energy indicator is switched ON manually by the vehicle user and (iii) to be able to provide illumination to the charging port/socket in the case where a flap or other moveable component covers the optical signal.

Paragraph 6.28.9.2. and 6.28.9.3.

30. If the vehicle manufacturer develops a unique/dedicated energy indicator, then the luminous intensity shall not exceed [3 cd] (maximum intensity will be defined by OICA). As these luminous intensity values are not part of the approved lamp measurement requirements, compliance with the given values will need to be demonstrated to the Type Approval Authority. The luminous intensity values measured shall be noted in the communication form.

Paragraph 6.28.9.5.

31. In case of a failure related to the energy transfer, it is beneficial for a warning to be given to the vehicle user. The duration of this red failure indicator is limited to 10 seconds.

Lamp test mode, paragraphs 6.29.2 to 6.29.6.

32. The requirements for number, arrangement, position, geometric visibility and orientation follows the logic that ‘if approved lamps are used then the number shall not exceed the individual specifications applicable to the specific lamp.’

Paragraph 6.29.7.

33. As this is regulating the parked condition only, the electrical connections requirements for switching the front and rear position lamps, the end-outline marker lamps, if they exist, the side-marker lamps, if they exist, and the rear registration plate lamp (paragraph 5.11.) and for main-beam and dipped-beam headlamps (paragraph 5.12.) should not apply.

Paragraph 6.29.9.1.

34. The lamp test mode may be activated manually and/or automatically. The inclusion of a lamp test mode is of critical importance, especially for drivers of commercial vehicles. In the United Kingdom of Great Britain and Northern Ireland, drivers of heavy goods vehicles (HGV) are responsible for ensuring their vehicle is safe to drive. To ensure this, they must do a daily walkaround check before a vehicle is taken out on the road. The following extracts are taken from the United Kingdom HGV walkaround check:¹

“You’re responsible for making sure your vehicle is safe to drive.

Carry out a walkaround check of the vehicle before your journey to make sure it’s safe. Report any defects in writing to the person in charge of sorting out vehicle defects in your organisation.

The police and Driver and Vehicle Standards Agency (DVSA) officers can stop you to do checks on your vehicles.

10. Lights and indicators

Check that:

- *all lights and indicators work correctly*
- *all lenses are fitted, clean and the right colour*
- *stop lamps come on when you apply the service brake and go out when you release it*
- *marker lights are fitted and work.”*

35. Manual operation today is typically activated by a button on the key-fob, but other manual solutions could be offered by the vehicle manufacturer. It is proposed that enable automatic operation under conditions where a key is detected, and the vehicle is in a geofenced location such a bus or depot. Alternatively, in accordance with conditions similar to this as stated by the manufacturer and accepted by the Technical Service.

Paragraph 6.29.9.2.

¹ <https://www.gov.uk/guidance/carry-out-daily-heavy-goods-vehicle-hgv-walkaround-checks>

36. To avoid excessive flashing that would adversely affect other road users, each lamp/function shall be switched ON and remain switched ON for a minimum of 0.5 second. It also imposes the restriction "No more than one function should be switched ON at the same time" to ensure that the ramp test mode does not cause disturbance to other road users. This is a measure to reduce the impact on other road users due to more functions being switched ON than necessary at one time.

Paragraph 6.29.9.3.

37. The lamp test mode will cycle through the switching ON and OFF of each function while the vehicle user walks around their vehicle. SIG believes three minutes is sufficient time for a vehicle user to walk all the way around a long heavy goods vehicle. If additional time for the lamp test mode is needed, the vehicle user can manually re-initiate to the lamp test sequence. The lamp test mode shall always be switched OFF automatically if the vehicle is put in the normal condition of use.

Paragraph 6.29.9.4.

38. Regulate that the lamp test mode shall be provided by approved lighting and light-signalling devices and exterior courtesy lamps, if applicable.

Paragraph 9.31.

39. Additional details were added to the communication form to enable the applicant to indicate which lamps/functions are installed and record their compliance within the requirements where applicable.
