

I. Proposal to amend UN-R48.09

Add new paragraph 2.3.3.7., to read:

"2.3.3.7. Of components for ADS (e.g. sensors, etc.)"

Paragraph 2.3.8., amend to read:

"2.3.8. *"Movable components"* of the vehicle mean those body panels or other vehicle parts the position(s) of which can be changed by tilting, rotating or sliding without the use of tools. They do not include tiltable ~~driver~~ cabs of trucks."

Add new paragraphs 2.3.12. to 2.3.12.5., to read:

"2.3.12. Terms and definitions related to automated driving

2.3.12.1. *"Dynamic Driving Task (DDT)"* means the real-time operational and tactical functions required to operate the vehicle.

2.3.12.2. *"Automated Driving System (ADS)"* means the hardware and software that are collectively capable of performing the entire DDT on a sustained basis.

2.3.12.3. *"Driver"* means a human user who performs in real time part or all of the DDT and/or DDT fallback for a particular vehicle."

2.3.12.4. *"Operational Design Domain (ODD)"* means the operating conditions under which an ADS feature is specifically designed to function.

2.3.12.5. *"ADS feature"* means an application of an ADS designed specifically for use within an Operational Design Domain (ODD)."

Paragraph 2.5.3., amend to read:

"2.5.3. *"Direction-indicator lamp"* means the lamp used to indicate to other road-users that the driver **or ADS feature** intends to change direction to the right or to the left. A direction-indicator lamp or lamps may also be used according to the provisions of UN Regulations Nos. 97, 116, 162 or 163."

Paragraph 2.7.4.7., amend to read:

"2.7.4.7. *"Adaptive main-beam"* means a main-beam of the AFS that adapts its beam pattern to the presence of oncoming and preceding vehicles in order to improve the long-range **illumination visibility ahead of the vehicle** ~~for the driver~~ without causing discomfort, distraction or glare to other road users."

Paragraphs 2.7.6.1., 2.7.6.2., 2.7.6.3. and 2.7.6.4., amend to read:

"2.7.6.1. *"Switch ON"* means to manually, ~~or~~ automatically **or through the action of an ADS**, operate an illuminating or signalling function to effectively emit light, irrespective of whether the function is operating correctly or not."

2.7.6.2. *"Switch OFF"* means to manually, ~~or~~ automatically **or through the action of an ADS** operate an illuminating or signalling function to stop emitting light, irrespective of whether the function is operating correctly or not.

2.7.6.3. *"Activate"* means to manually, ~~or~~ automatically **or through the action of an ADS**, enable an illuminating or signalling function, irrespective of whether light is emitted or not (e.g. enable stand-by mode).

2.7.6.4. *"Deactivate"* means to manually, ~~or~~ automatically **or through the action of an ADS**, disable an illuminating or signalling function, irrespective of whether light is emitted or not (e.g. disable stand-by mode)."

Add a new paragraph 3.2.8. to read:

"3.2.8. If a driver's seat is fitted but it is not the front seat nearest to the opposing traffic, the applicant shall specify this seating position. "

[Paragraph 4.2., amend to read:

"4.2. An approval number shall be assigned to each type approved. Its first two digits (at present **09**, corresponding to the 09 series of amendments) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party shall not assign this number to another vehicle type or to the same vehicle type submitted with equipment not specified in the list referred to in paragraph 3.2.2. above, subject to the provisions of paragraph 7. of this Regulation."]

Paragraph 5.2.1., amend to read:

"5.2.1. "In the case of headlamps fitted with measures to prevent discomfort to other road-users in a country where traffic operates on the side of the road opposite to that of the country for which the headlamp was designed, such measures shall be achieved automatically or by the vehicle user with the vehicle in the park condition without the need for special tools (other than those provided with the vehicle¹). Detailed instructions shall be provided by the vehicle manufacturer with the vehicle.

If the vehicle is equipped with an ADS and the ODD of that ADS includes the change between traffic on both sides of the road, the ADS shall be able to activate the measures when the direction of traffic changes."

Paragraph 5.14.4., amend to read:

"5.14.4. It shall not be possible deliberately, **from the inside of the vehicle or by the ADS** ~~from the driver's seat~~, to stop the movement of switched ON lamps before they reach the position of use. If there is a danger of dazzling other road users by the movement of the lamps, they may light up only when they have reached their position of use."

Paragraph 5.26.4., amend to read:

"5.26.4. No sharp variation of intensity shall be observed during transition.
It may be possible ~~for the driver~~ to set the functions above to static luminous intensities."

Add new paragraph 5.35.12. to read:

"5.35.12. Driver Assistance Projections, which are intended to support the driver only, shall not be activated if the ADS is active."

¹ This does not apply to dedicated objects that may be added to the exterior of the headlamp.

Add new paragraphs 5.36. to 5.41. to read:

- "5.36. Automatic lighting functions, as defined in this Regulation, shall not be considered an ADS feature. These functions may be used by an ADS feature when it is active, provided that all related requirements in this Regulation are met, and the ADS feature monitors the environment and controls the automatic lighting function.**
- 5.37. Whilst an ADS feature is active, any information, warning or tell tale specified in paragraphs 5 and 6 of this UN Regulation shall be transmitted to the ADS.**
- 5.38. If not otherwise specified, all Requirements to this Regulation related to the "driver" or "manual operation", assume that no "ADS feature" is active.**
- 5.39. If an ADS feature is active [and unless specified otherwise], all lighting and light signalling functions prescribed in this Regulation shall be taken over by the ADS.**
- 5. 40. In the case of vehicles of categories X and Y, if not otherwise specified, disregard requirements related to:**
- the presence of a driver [and the related specifications];**
 - visible or audible tell tales or warnings;**
 - any manual controls (e.g. switches, etc.).**
- Additionally for vehicles of Category Y disregard requirements related to the presence of any occupant.**
- [5.41. To verify, whether, according to this Regulation, the active ADS operation of all lighting functions does not cause any discomfort, the technical service shall perform a test drive which comprises any situation relevant to the system control on the basis of the applicants description and in accordance with Regulation GRVA; it shall be notified whether all modes are activated, performing and de-activated according to the applicant's description; obvious malfunctioning, if any, shall be contested (e.g. excessive angular movement or flicker).]"**

Paragraph 6.1.1., amend to read:

- 6.1.1. Presence**
- Mandatory on motor vehicles**
with the exception of the categories X and Y
 - Optional for the categories X and Y**
 - Prohibited on trailers.**

Paragraph 6.1.4.3., amend to read:

- "6.1.4.3. In length: At the front of the vehicle. This requirement shall be deemed to be satisfied if the light emitted does not cause discomfort to the driver either directly or indirectly through the devices for indirect vision and/or other reflecting surfaces of the vehicle. **Additionally, for vehicles equipped with an ADS, if the light emitted does not influence negatively the performance of the ADS feature either directly or indirectly through the devices for indirect vision and/or other reflecting surfaces of the vehicle.**

Add a new paragraph 6.1.7.2.1., to read:

- "6.1.7.2.1. **In the case that the vehicle is controlled by an ADS feature, either:**
- **the applicant shall prove to the satisfaction of the Type-Approval Authority that the automatic main-beam operation is controlled by the ADS feature to avoid causing discomfort, distraction or glare to other road users; or**
 - **the main-beam headlamps shall be switched OFF while the ADS feature is active."**

Paragraph 6.1.7.3., amend to read

- "6.1.7.3. It shall always be possible **for a driver** to switch the main-beam headlamps ON and OFF manually and to manually ~~deactivate~~ **switch off** the automatic control of the main-beam headlamps.

Moreover, the switching OFF of the main-beam headlamps and ~~the deactivation~~ of their automatic control shall be by means of a simple and immediate manual operation; the use of sub-menus is not allowed."

Paragraph 6.1.8.1., amend to read

- « 6.1.8.1. If the control of the main-beam headlamps is automatic as described in paragraph 6.1.7.2. above an indication shall be provided to ~~the a~~ driver that the automatic control of the main-beam function is activated. This information shall remain displayed as long as the automatic operation is activated. »

Paragraph 6.2.4.3., amend to read:

- "6.2.4.3. In length: at the front of the vehicle. This requirement shall be deemed to be satisfied if the light emitted does not cause discomfort to the driver either directly, or indirectly through the devices for indirect vision and/or other reflecting surfaces of the vehicle. **Additionally, for vehicles equipped with an ADS, if the light emitted does not influence negatively the performance of the ADS feature either directly, or indirectly through the devices for indirect vision and/or other reflecting surfaces of the vehicle."**

Paragraph 6.2.6.1.1., amend to read:

- "6.2.6.1.1. Initial downward inclination
- The initial downward inclination of the cut-off of the passing-beam shall be:
- set in the unladen vehicle state with one person in the ~~driver's seat~~ **front seat, nearest to the opposing traffic**, and
 - specified within an accuracy of 0.1 per cent by the manufacturer and
 - within the range defined in paragraph 6.2.6.1.2.

The value of this specified initial downward inclination shall be indicated in a clearly legible and indelible manner on each vehicle close to either headlamp or the manufacturer's plate by the symbol shown in Annex 7.

Different values of the initial downward inclination for different variants/versions of the same vehicle type may be specified, within the range defined in paragraph 6.2.6.1.2., provided that only the pertinent value is indicated on each variant/version."

Paragraph 6.2.6.2.2., amend to read:

"6.2.6.2.2. However, **with the exception of an active ADS feature** devices which are adjusted manually, shall only be permitted for vehicles of categories M₂G, M₃G, N₂G, N₃G, provided they have a stop position at which the lamps can be returned to the initial inclination defined in paragraph 6.2.6.1.1. by means of the usual adjusting screws or similar means.

These manually adjustable devices shall be easily visible, reachable and identifiable by the driver in accordance with the requirements of UN Regulation No. 121.

The number of positions on devices to adjust the dipped-beam headlamps shall be such as to ensure compliance with the range of values prescribed in paragraph 6.2.6.1.2. in all the loading conditions defined in Annex 5.

Requirements of controls for the headlamps leveling devices are specified in Annex 8.

The different positions to adjust the dipped-beam headlamps shall be explained in the owner's handbook.

Paragraph 6.2.7.6., amend to read:

"6.2.7.6. Irrespective of the requirements of paragraph 6.2.7.5. **and with the exception of an active ADS feature**, it shall always be possible to switch the dipped beam headlamps ON manually.

Paragraph 6.2.7.7., amend to read:

"6.2.7.7. The driver **or the ADS** shall at all times be able to engage the automatic operation."

Paragraph 6.3.4.3., amend to read:

"6.3.4.3. In length: at the front of the vehicle. This requirement shall be deemed to be satisfied if the light emitted does not cause discomfort to the driver either directly, or indirectly through the devices for indirect vision and/or other reflecting surfaces of the vehicle. **Additionally, for vehicles equipped with an ADS, if the light emitted does not influence negatively the performance of the ADS feature either directly, or indirectly through the devices for indirect vision and/or other reflecting surfaces of the vehicle.**"

Paragraph 6.3.6.1.1.1., amend to read:

"6.3.6.1.1.1. The vertical inclination of the cut-off to be set in the unladen vehicle state with one person in the ~~driver's seat~~ **front seat, nearest to the opposing traffic**, shall be – 1.0 per cent or lower."

Paragraph 6.3.6.1.2.2., amend to read:

"6.3.6.1.2.2. The initial downward inclination of the cut-off to be set in the unladen vehicle state with one person in the ~~driver's seat~~ **front seat, nearest to the opposing traffic**, shall be specified within an accuracy of one decimal place by the manufacturer and indicated in a clearly legible and indelible manner on each vehicle close to either the front fog lamp or the manufacturer's plate or in combination with the indication referred to in paragraph 6.2.6.1.1. by the symbol shown in Annex 7 to this Regulation. The value of this indicated downward inclination shall be defined in accordance with paragraph 6.3.6.1.2.1."

Paragraph 6.3.9., amend to read:

"6.3.9. Other requirements

In the case where there is a positive indication in the communication form under item "*Luminous intensity is variable*" of Annex 1 to UN Regulations No. 19 or 149, the alignment and the luminous intensities of the front fog beam may be automatically adapted in relation to the prevailing ambient conditions. Any variations of the luminous intensities or alignment shall be performed automatically and in such a way that no discomfort, neither for ~~the a~~ driver nor to other road users, is caused."

Paragraph 6.4.7.2., amend to read:

"6.4.7.2. Moreover, the electrical connections of the two optional devices mentioned in paragraph 6.4.2.2. shall be such that these devices cannot be switched ON unless the lamps referred to in paragraph 5.11. are switched ON.

The devices fitted on the side of the vehicle may be switched ON for slow manoeuvres in forward motion of the vehicle up to a maximum speed of 15 km/h, provided that the following conditions are fulfilled:

- (a) The devices shall be switched ON and OFF manually by a separate control **or may be switched ON and OFF by an ADS**;
- (b) If so switched ON, they may remain ON after reverse gear is disengaged;
- (c) They shall be automatically switched OFF if the forward speed of the vehicle exceeds 15 km/h, regardless of the position of the separate control; in this case they shall remain switched OFF until deliberately being switched ON again."

Paragraph 6.5.7., amend to read:

"6.5.7. Electrical connections

Direction-indicator lamps shall switch ON independently of the other lamps. All direction-indicator lamps on one side of a vehicle shall be switched ON and OFF **by the ADS or** by means of one control and shall flash in phase.

On M₁ and N₁ vehicles less than 6 m in length, with an arrangement complying with paragraph 6.5.5.2. above, the amber side-marker lamps, when mounted, shall also flash at the same frequency (in phase) with the direction-indicator lamps.

A direction indicator capable of being activated in different modes (static or sequential), shall not switch between both modes once activated.

If two optional lamps (category 2a or 2b) are installed on vehicles in categories M₂, M₃, N₂, N₃, they shall be operated in the same mode as the other mandatory rear direction indicator lamps (category 2a or 2b); i.e. static or sequential."

Paragraph 6.6.7.1., amend to read:

"6.6.7.1. The signal shall be operated by means of a separate manual control **or by the ADS feature whilst ADS feature is active**, enabling all the direction-indicator lamps to flash in phase."

Paragraph 6.7.9.2.1., amend to read:

"6.7.9.2.1. In the case where it is installed inside the vehicle:

The light emitted shall not cause discomfort to ~~the~~ a driver through the devices for indirect vision and/or other surfaces of the vehicle (i.e. rear window)."

Paragraph 6.13.4.2., amend to read:

"6.13.4.2. In height:

Front: Motor vehicles - the horizontal plane tangential to the upper edge of the apparent surface in the direction of the reference axis of the device shall not be lower than the horizontal plane tangential to the upper edge of the transparent zone of the wind-screen. **On vehicles equipped with an ADS and not fitted with a windscreen, at the maximum height compatible with the requirements relating to the width, design and operational requirements of the vehicle and to the symmetry of the lamps.**

..."

Paragraph 6.19.4.3., amend to read:

"6.19.4.3. In length: at the front of the vehicle. This requirement shall be deemed to be satisfied if the light emitted does not cause discomfort to ~~the~~ a driver either directly or indirectly through the devices for indirect vision and/or other reflecting surfaces of the vehicle. »

Paragraph 6.19.7.2., amend to read:

"6.19.7.2. Irrespective of the requirements of paragraphs 6.19.7.1. and 6.19.7.5., under conditions requiring the daytime running lamps to be switched ON, the daytime running lamps may remain OFF or, once automatically switched ON, may be switched OFF manually and remain OFF while at least one of the following conditions exists:

- (a) The automatic transmission control is in the park position;
- (b) The parking brake is in the locked position;
- (c) Prior to the vehicle being set in motion for the first time after each ~~manual~~ activation of the device, which starts and/or stops the propulsion system.
- (d) The vehicle speed does not exceed 15 km/h."

Paragraph 6.20.7.2., amend to read:

"6.20.7.2. When the reversing lamp is switched ON, both cornering lamps may be switched ON simultaneously, independently from the steering ~~angle wheel position~~ or direction-indicator **activation position**.

If so switched ON, both cornering lamps shall be switched OFF either:

- (a) When the reversing lamp is switched OFF; or
- (b) When the forward speed of the vehicle exceeds 15 km/h."

Paragraph 6.22.4.2., amend to read:

"6.22.4.2. In length:

All lighting units of an AFS shall be mounted at the front. This requirement is deemed to be satisfied if the light emitted does not cause discomfort to the driver either directly or indirectly through the devices for indirect vision and/or other reflecting surfaces of the vehicle. **Additionally, for vehicles equipped with an ADS, if the light emitted does not influence negatively the performance of the ADS feature either directly, or indirectly through the devices for indirect vision and/or other reflecting surfaces of the vehicle.**"

Paragraph 6.22.6.1.1., amend to read:

"6.22.6.1.1. The initial downward inclination of the cut-off of the basic passing-beam to be set in the unladen vehicle state with one person in the ~~driver's seat~~ **front seat, nearest to the opposing traffic**, shall be specified within an accuracy of 0.1 per cent by the manufacturer and indicated in a clearly legible and indelible manner on each vehicle, close to either the front lighting system or the manufacturer's plate, by the symbol shown in Annex 7.

Where differing initial downward inclinations are specified by the manufacturer for different lighting units that provide or contribute to the cut-off of the basic passing-beam, these values of downward inclination shall be specified within an accuracy of 0.1 per cent by the manufacturer and indicated in a clearly legible and indelible manner on each vehicle, close to either the relevant lighting units or on the manufacturers plate, by the symbol shown in Annex 7 in such a way that all the lighting units concerned can be unambiguously identified.

The value(s) of this (these) indicated initial downward inclination(s) shall be specified by the vehicle manufacturer within the range defined in paragraph 6.2.6.1.2. in relation to the mounting height of the lighting units that provide or contribute to the cut-off of the basic passing-beam.

Different values of the initial downward inclination for different variants/versions of the same vehicle type may be specified, within the range defined in paragraph 6.2.6.1.2., provided that only the pertinent value is indicated on each variant/version."

Add a new paragraph 6.22.7.1.2.1., to read:

"6.22.7.1.2.1. In the case that the vehicle is controlled by an ADS, either:

- **the applicant shall prove to the satisfaction of the Type-Approval Authority that the adaptive main-beam operation is controlled by the ADS to avoid causing discomfort, distraction or glare to other road users; or**
- **the main-beam headlamps shall be deactivated while the ADS is active."**

Paragraph 6.22.7.1.3. amend to read:

"6.22.7.1.3. **With the exception of an active ADS**, it shall always be possible to switch the main-beam headlamps, adaptive or non-adaptive, ON and OFF manually and to manually switch OFF the automatic control.

Moreover, the switching OFF, of the main-beam headlamps and of their automatic control, shall be by means of a simple and immediate manual operation; the use of sub-menus is not allowed."

Paragraph 6.22.7.4., amend to read:

"6.22.7.4. Automatic operation of the AFS

The changes within and between the provided classes and their modes of the AFS lighting functions as specified below, shall be performed automatically without causing discomfort, distraction or glare, neither for ~~the a~~ driver nor for other road users.

The following conditions apply for the activation of the classes and their modes of the passing-beam and, where applicable, of the main-beam and/or the adaptation of the main-beam."

Paragraph 6.22.7.5., amend to read:

"6.22.7.5. It shall always be possible for the driver **or ADS** to set the AFS to the neutral state and to return it to its automatic operation."

Paragraph 6.22.8.3. amend to read:

"6.22.8.3. If the main-beam is adaptive, a visual tell-tale shall be provided to indicate to ~~the a~~ driver that the adaptation of the main beam is activated. This information shall remain displayed as long as the adaptation is activated. »

Paragraph 6.22.8.4., amend to read:

"6.22.8.4. A tell-tale to indicate that the driver **or the ADS** has set the system into a state according to paragraph 5.8. of UN Regulation No. 123 or paragraph 4.12. of UN Regulation No. 149 is optional."

Paragraph 6.22.9.3.2., amend to read:

"6.22.9.3.2. To verify, whether, according to the paragraph 6.22.7.4., the AFS automatic operation of the passing-beam functions does not cause any discomfort, the technical service shall perform a test drive which comprises any situation relevant to the system control on the basis of the applicants description; it shall be notified whether all modes are activated, performing and de-activated according to the applicant's description; obvious malfunctioning, if any, shall be contested (e.g. excessive angular movement or flicker). **For vehicles equipped with an ADS, the test drive of the vehicle with the ADS feature active shall be limited to the ODD.**

..."

Paragraph 6.22.9.3.4., amend to read:

"6.22.9.3.4. To verify that the adaptation of the main beam, including Driver Assistance Projection, does not cause any discomfort, distraction or glare, neither to the driver nor to oncoming and preceding vehicles, the technical service shall perform a test drive according to paragraph 2. in Annex 12. This shall include any situation relevant to the system control on the basis of the applicant's description. The performance of the adaptation of the main beam shall be documented and checked against the applicant's description. Any obvious malfunctioning shall be contested (e.g. excessive angular movement or flicker). **For vehicles equipped with an ADS, the test drive of the vehicle with the ADS feature active shall be limited to the ODD.**"

Paragraph 6.26.7., amend to read:

"6.26.7. Electrical Connections

Motor vehicles: Manoeuvring lamps shall be so connected that they cannot be switched ON unless the main-beam headlamps or the dipped-beam headlamps of the motor vehicle are switched ON at the same time.

The manoeuvring lamp(s) shall be switched ON automatically for slow manoeuvres up to 15 km/h provided that one of the following conditions is fulfilled:

- (a) Prior to the vehicle being set in motion for the first time after each ~~manual~~-activation of the propulsion system; or
- (b) Reverse gear is engaged; or
- (c) A camera-based system which assists parking manoeuvres is operating.

The manoeuvring lamps shall be automatically switched OFF if the forward speed of the vehicle exceeds 15 km/h and they shall remain switched OFF until the switch ON conditions are met again.

Trailers: Manoeuvring lamps shall be so connected that they cannot be activated unless the position lamps of the trailer are switched ON at the same time and shall take their input speed directly from the trailer.

The manoeuvring lamp(s) shall be switched ON automatically for slow manoeuvres up to 15 km/h provided that one of the following conditions is fulfilled:

- (a) Prior to the trailer being set in motion for the first time after each ~~manual~~-activation of the vehicle propulsion system; or
- (b) The reverse lamp is switched ON; or
- (c) A camera-based system which assists parking manoeuvres is operating.

The manoeuvring lamps shall be automatically switched OFF if the forward speed of the trailer exceeds 15 km/h and they shall remain switched OFF until the switch ON conditions are met again."

Annex 1,

Add a new item 9.32., to read:

"9.32. Automated Driving System (ADS): yes/no²....."

Add a new item 10.10., to read:

"10.10. A driver's seat is fitted: yes/no²"

The driver's seat is the front seat nearest to the opposing traffic: yes/no².....

If not, to be specified."

Annex 5,

Paragraph 2., amend to read:

"2. Loading conditions for different types of vehicles:

For this paragraph the front seat nearest to the opposing traffic (formerly known as the “driver’s seat”) is referred to as “seating position 1”.

If the seating position 1 is not located on the front seat nearest to the opposing traffic, due to the design or the operational conditions of the vehicle, the manufacturer shall specify the seating position 1.

- **For vehicles of category Y the test shall be done without occupants. For vehicles of category X the test shall be done without a driver.**
- **For vehicles designed to travel with occupants the following loading conditions shall apply, whereas also in addition for vehicles, where ADS features can be activated, the cases without occupants and seat position 1 is not occupied shall be determined:**

... "

Paragraphs 2.1.1.1. to 2.4.2.2., amend to read:

"2.1.1.1. One person in ~~the driver’s seat~~ **seating position 1;**

2.1.1.2. ~~The driver~~ **One person in seating position 1**, plus one ~~passenger~~ **person** in the front seat farthest from ~~the driver~~ **the person in seating position 1;**

2.1.1.3. ~~The driver~~ **One person in seating position 1**, one ~~passenger~~ **person** in the front seat farthest from ~~the driver~~ **the person in seating position 1**, all the seats farthest to the rear occupied;

2.1.1.4. All the seats occupied;

2.1.1.5. All the seats occupied, plus an evenly distributed load in the luggage boot, in order to obtain the permissible load on the rear axle or on the front axle if the boot is at the front. If the vehicle has a front and a rear boot, the additional load shall be appropriately distributed in order to obtain the permissible axle loads. However, if the maximum permissible laden mass is obtained before the permissible load on one of the axles, the loading of the boot(s) shall be limited to the figure which enables that mass to be reached;

2.1.1.6. ~~Driver~~ **One person in seating position 1**, plus an evenly distributed load in the boot, in order to obtain the permissible load on the corresponding axle.

However, if the maximum permissible laden mass is obtained before the permissible load on the axle, the loading of the boot(s) shall be limited to the figure which enables that mass to be reached.

2.1.2. In determining the above loading conditions, account shall be taken of any loading restrictions laid down by the manufacturer.

2.2. Vehicles in categories M₂ and M₃¹;

The angle of the light beam from the dipped-beam headlamps shall be determined under the following loading conditions:

2.2.1. Vehicle unladen and one person in ~~the driver’s seat~~ **seating position 1;**

2.2.2. Vehicles laden such that each axle carries its maximum technically permissible load or until the maximum permissible mass of the vehicle is attained by loading the front and rear axles proportionally to their maximum technically permissible loads, whichever occurs first.

- 2.3. Vehicles in category N with load surfaces:
 - 2.3.1. The angle of the light beam from the dipped-beam headlamps shall be determined under the following loading conditions:
 - 2.3.1.1. Vehicle unladen and one person in ~~the driver's seat~~ **seating position 1**;
 - 2.3.1.2. ~~Driver~~ **One person in seating position 1**, plus a load so distributed as to give the maximum technically permissible load on the rear axle or axles, or the maximum permissible mass of the vehicle, whichever occurs first, without exceeding a front axle load calculated as the sum of the front axle load of the unladen vehicle plus 25 per cent of the maximum permissible payload on the front axle. Conversely, the front axle is so considered when the load platform is at the front.
- 2.4. Vehicles in category N without a load surface:
 - 2.4.1. Drawing vehicles for semi-trailers:
 - 2.4.1.1. Unladen vehicle without a load on the coupling attachment and one person in ~~the driver's seat~~ **seating position 1**;
 - 2.4.1.2. One person in ~~the driver's seat~~ **seating position 1**: technically permissible load on the coupling attachment in the position of the attachment corresponding to the highest load on the rear axle.
 - 2.4.2. Drawing vehicles for trailers:
 - 2.4.2.1. Vehicle unladen and one person in ~~the driver's seat~~ **seating position 1**;
 - 2.4.2.2. One person in ~~the driver's seat~~ **seating position 1**, all the other places in the driving cabin being occupied."

Annex 12

Insert a new item 1.7. to read:

- "1.7. For vehicles equipped with an ADS, the test drive for the vehicle with an ADS feature active shall be limited to those conditions that fall within the ODD of the ADS feature."**

Insert a new item 2.9. to read

- "2.9. For vehicles equipped with an ADS, the test drive for the vehicle with an ADS feature active shall be limited to those conditions that fall within the ODD of the ADS feature."**

II. Justification

1. This proposal to amend UN Regulation No. 48 (Installation of lighting and light-signalling devices) is submitted by the expert from TF AVSR with the aim to introduce vehicles with a driving system, which controls its operation or may be operated by driver support features or automated driving features or by an Automated Driving System (ADS). In particular, it is based on the discussions at the TF AVSR online meeting on 16 October 2023.
2. The discussion on this document started with the first TF AVSR meeting on 15 June 2022 in Stockholm. Until now we have had 24 meetings.
3. The main amendments are:
 - adding of the necessary definitions for ADS vehicles for terms which are used in this Regulation, with the goal to replace them by a reference to RE3, if the relevant amendments for RE3 are in force.
 - The term drivers' seat is replaced by **"the front seat nearest to the opposing traffic"** With the addition of an alternative procedure if this is not the case.
 - Adding of general paragraphs to clarify when the driver is active or manual actions by a driver is required or the application of ADS features or handling of information etc.
- "5.36. **Automatic lighting functions, as defined in this Regulation, shall not be considered an ADS feature. These functions may be used by an ADS feature when it is active, provided that all related requirements in this Regulation are met, and the ADS feature monitors the environment and controls the automatic lighting function.**
- 5.37. **Whilst an ADS feature is active, any information, warning or tell tale specified in paragraphs 5 and 6 of this UN Regulation shall be transmitted to the ADS.**
- 5.38. **If not otherwise specified, all Requirements to this Regulation related to the "driver" or "manual operation", assume that no "ADS feature" is active.**
- 5.39. **If an ADS feature is active [and unless specified otherwise], all lighting and light signalling functions prescribed in this Regulation shall be taken over by the ADS.**
5. 40. **In the case of vehicles of categories X and Y, if not otherwise specified, disregard requirements related to:**
 - the presence of a driver [and the related specifications];
 - visible or audible tell tales or warnings;
 - any manual controls (e.g. switches, etc.).**Additionally for vehicles of Category Y disregard requirements related to the presence of any occupant."**
- [5.41. **To verify, whether, according to this Regulation, the active ADS operation of all lighting functions does not cause any discomfort, the technical service shall perform a test drive which comprises any situation relevant to the system control on the basis of the applicants description and in accordance with Regulation GRVA; it shall be notified whether all modes are activated, performing and de-activated according to the applicant's description; obvious malfunctioning, if any, shall be contested (e.g. excessive angular movement or flicker).]"**

This amendments simplify the amendments for ADS vehicles in general.

- The presence for main beam in the case for vehicles of the categories X and Y are set to optional.
- Introduction of safety relevant procedures for vehicles if an ADS feature is active.
 - Amendments for the loading conditions specified in Annex 5 for vehicles where ADS features can be activated as well for vehicles of the categories X and Y and for vehicles **where ADS features can be activated, the cases without occupants and seat position 1 is not occupied shall be in addition to be determined:**
- Handling of test drive procedures even for vehicles when an ADS feature can be activated.

