Summary of VRU-Proxi IWG Reversing Motion Task Force

Discussions

2019.11.26

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JAPAN
Around 20 attendee for every TF web meeting.

Thank you for cooperation!!
## Key discussion points

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Extracted from GRSG-117-34 and added some issues.
#1 Exemption from the scope

1.4. The following vehicles of category M and N shall be exempted from this Regulation:
- Vehicles where installation of any device for reversing safety is incompatible with their on-road use may be partly or fully exempted from this Regulation, subject to the decision of the Type Approval Authority.
[- Tractor unit can be exempted if reversing alarm equipped.]
[- Vehicles intended to be used with a semi-trailer shall be exempted from this Regulation.]

* Updated using R73 description

Not discussed in TF due to no proposal.

Open.
#2 System response time after start (Rear-View Camera system latency)

OICA proposal.

- Application of pressure to the accelerator pedal (or activation of an equivalent control) or release of the brake system will cause the powertrain to move the vehicle.
- The powertrain moves the vehicle, on release of the brake system AND in some cases by application of pressure to the accelerator pedal (or activation of an equivalent control).
- All the systems and components are fully Booted Up & Active.

12.9 “Active vehicle mode” means the vehicle mode when:

16.1.2.1. Response time Device readiness (system availability)
The rear-view image meeting the requirements described in 15.2. shall be displayed within 2.0 seconds after start of the backing event, when tested according to Annex XX when the backing event starts.

- Annex XX: Testing procedure for the determination of the “Response time”.
  Test procedure conditions
  - The vehicle shall be left in a parked status until it is ensured that all electronic systems are de-activated; or for a minimum of 30 minutes. The test may start with the door opening or with
  - it is permissible for the test person or equipment to be already situated within the vehicle; if the driver door had been opened the door shall be closed again.
  - Ensure the vehicle gear selector is in neutral or forward gear.
  - The test may start with opening the driver door. Once the door is opened, it shall be closed again.

Test procedure
- Put the vehicle into the active vehicle mode. This action shall initiate/start the first timer.
- Wait for a minimum of 6 sec
- Start the backing event by selecting the reverse gear. If it is not possible to put the vehicle into reversing mode 6 sec after being put into active vehicle mode, the backing event shall be started as soon as technically possible. Initiate/start the second timer.
- Record the response time on second timer until the rear view is completely visible on the display.

Agreed with attendee.
#3 Overlays, Screen change

OICA proposal.

Overlay requirements within the minimum required field of vision.
Overlays shall display only rearward driving-related visual information or safety-related information. Overlays for other purposes of information in the minimum required field of vision are not allowed. shall be considered as an obstruction—regardless of their transparency.

Agreed with attendee.
#4 Deactivation

OICA proposal

Deactivation

Deactivation of the required field of vision
The rear-view image shall remain visible during the backing event until either, the driver modifies the view, or the vehicle direction selector is removed from the reverse position.

- A manual change of view is allowed: for instance, a trailer hitch view (see VRU-Proxi-10-11 (OICA) 190425_Arguments_Overlays - CoV.pdf)
- A complete deactivation is under discussion
- Trailer hitch view example (already shared – see VRU-Proxi-10-11)
  - If driver wants to couple vehicle with a trailer BMW offers the trailer hitch view.
  - Trailer hitch view show driver in which direction he has to steer in order to couple with the trailer

Information update: EC confirmed NHTSA definition.

Allow all driver’s modifications include image quality adjustments, other screens (include all black) and views.

1) Deactivation or switching off, change other purpose screen (erase rear view)
2) Change rear camera view to selected camera view for safe reversing such as front view etc.

Agreed with attendee.
#5 Direct view by turning around of the driver and including vehicle with or without (additional) Close-proximity rear view mirror.

OICA proposal.

OICA comment: How to keep normal driver behavior (looking back and check surroundings).

Open.

**New requirement to be added**

15.2.1 When tested under the conditions defined in Annex 9 the requirement for close-proximity rear-view field of vision shall be considered to be satisfied if the defined field of vision can be seen:

- via the direct view from the driver’s looking back ocular points; or

15.2.1.2 via the direct view from the driver’s looking back ocular points combined with a close-proximity rear-view mirror installed at the rear end of the vehicle supporting this direct view; or

...  

15.2.1.6 The options 15.2.1.1 and 15.2.1.2 only apply to the vehicle categories M1 and N1.

CLEPA (Brigate) comment: How to handle about driver’s usage? Driver can use rear mirror with inside-mirror (periscope). Object size on the mirror shall be defined.
#6 Image quality or object size

OICA proposal.

Object size

- Requirements to be added in section 16:
  16.XXX When the rearview image is measured in accordance with the procedure XXX, the calculated visual angle subtended by the horizontal width of:
  (a) All three test objects at the last row specified in 15.2 shall average not less than 5 minutes of arc; and
  (b) Each individual test object shall not be less than 3 minutes of arc.

- Annex XX to be created to detail Procedure XXX

Agreed with attendee.
#7 Impact Test and radius requirements of devices

Gather CPs’ opinion for the needs of the Impact test. How to secure requirements for safe impact such as radius etc?

Canada: Need FMVSS requirements.
CLEPA (Brigate): 6.3.2 to be kept even if 6.3 removed.

Open.
#8 Test procedure (Not reviewed in IWG after Chap.17)

OICA proposal.

Requirements for detection systems

17.2. Driver interface and information presentation strategy

17.2.1. [The system shall have at least two kinds of information signal selected from audible, optical, and haptics.]

17.2.1. The system shall have both audible and optical—information.

Agreed with attendee.
Japan agreed it was removal miss.
#8 Test procedure (Not reviewed in IWG after Chap.17)

OICA proposal.

Requirements for detection systems

17.3. Dynamic-performance of object detection system
17.34.1. Detection latency

The detection latency, for at least one of the information signals as defined in 17.2.1, as measured according to paragraph 2.2. of Annex 10, shall not exceed 0.6 s, when measured according to paragraph 1.2 of Annex 10.

17.4.2. Response time

The signal meeting the requirements of Annex 10 of this Regulation shall be given to the driver within 2.0 seconds when the backing event starts.

Agreed with attendee.
Japan agreed.

Regarding detection system, it is enough for requirement about detection latency.
Test Methods for Detection Systems

1.2. Test conditions preparation

The testing environment and test object shall be as per paragraph 23 of this annex. One test object shall be used. The distance from the rear edge to the test object and the position of the test object are selected by the manufacturer to ensure the detection of the test object. The test object shall be located in the detectable grids within the rear horizontal area in paragraph 25 of this annex. The test vehicle in the initial state shall be with the detection system in the activated state, which is declared [by the manufacturer OR in the owner's manual] and shall be in the parking condition. Here, the parking condition means that the P (park) position is selected in the case of vehicles equipped with automatic transmissions, whereas it means the neutral gear being selected and the parking brake being engaged in the case of vehicles equipped with manual transmissions.

Agreed with attendee.
Japan agreed it was removal miss.
#8 Test procedure (Not reviewed in IWG after Chap.17)

OICA proposal.

Close Proximity Rear-View Field of Vision requirement

§ 1.3 from Annex 9 to be moved to 15.2

Annex 9

1.3. Requirements

(a) for the test objects in the first row (Test objects A, B, and C):
A 0.15 m x 0.15 m area or the top of the test object shall be visible at at least one position on each test object.

(b) for the test objects in the second row (Test objects D, E, and F) and the third row (Test objects G, H, and I);
The whole height of the test object shall be seen.

Agreed with attendee.
Japan agreed it is common understanding.
#8 Test procedure (Not reviewed in IWG after Chap.17)

OICA proposal.

Detection system requirement

- New § to be inserted
  17.2.1. [The system shall have at least two kinds of information signal selected from audible, optical, and haptics.]
  17.2.1.1 One of the information signals may be deactivated manually by the driver.

Agreed with attendee.

Japan comment: [ ] of 17.2.1. can be removed for past agreement.
#8 Test procedure (Not reviewed in IWG after Chap.17)

OICA proposal.

Detection system requirement

➢ New § to be inserted

17.2.4 Optical information
If the optical information is selected, it shall be always visible to the driver.
In the case optical information is placed on a monitor used for other information such as meter cluster display or other displays, overlay is allowed and shall comply with the overlay requirements of the RVC in 16.1.1.3. of this regulation.

Agreed with attendee.

Japan agreed.
Annex 9

1.2. Test object locations and orientations

Place the test objects at the locations specified in (a) to (h) and illustrated in Figure B. Measure the distances shown in Figure B from a test object to another test object or other object from the cylindrical centre (axis) of the test object as viewed from above. Each test object shall be oriented so that its axis is vertical.

(a) Place test objects A, B, and C so that their centres are in a transverse vertical plane that is 0.3 m to the rear of a transverse vertical plane tangential to the rearmost surface of the rear bumper.

(b) Place test object B so that its centre is in a longitudinal vertical plane passing through the vehicle's longitudinal centreline.

(c) Place test objects D, E, and F so that their centres are in a transverse vertical plane that is 1.5 m to the rear of a transverse vertical plane tangential to the rearmost surface of the rear bumper.

(d) Place test object E so that its centre is in a longitudinal vertical plane passing through the vehicle's longitudinal centreline.

(e) Place test objects G, H, and I so that their centres are in a transverse vertical plane that is 3.5 m to the rear of a transverse vertical plane tangential to the rearmost surface of the rear bumper.

(f) Place test object H so that its centre is in a longitudinal vertical plane passing through the vehicle's longitudinal centreline.

(g) Place test objects A, D, and G so that their outermosts are in a longitudinal vertical plane tangential to the left-side outermost surface of the vehicle.

(h) Place test objects C, F, and I so that their outermosts are in a longitudinal vertical plane tangential to the right-side outermost surface of the vehicle.

Test object locations can be added between A to I by the Technical Service.

Agreed with attendee.
Japan agreed it was removal miss.
# New proposal

OICA proposal.

![New Proposal](image)

**Backing event**

**Definition update**

15.1.1 Backing event starts when the vehicle is in Active vehicle mode and the vehicle's direction selector is placed from forward or neutral in reverse by the driver or a system, and ends at the manufacturer's choosing, when the vehicle forward motion reaches:

- (a) the vehicle forward motion reaches a speed of maximum 16 km/h, or
- (b) the vehicle forward motion reaches a distance of maximum 10 meters travelled, or
- (c) the vehicle forward motion reaches a continuous duration of maximum 10 seconds, or
- (d) the vehicle's direction selector is not placed in reverse.

Agreed with attendee.

Japan comment: Is it ok for not the same requirements as FMVSS111?
OICA raised new subject for discussion about aftersales user modification. It conflicts camera or detection system.

Japan comment: To be discussed with CPs in IWG.
#8 Test procedure (Not reviewed in IWG after Chap.17)

**CLEPA proposal**

CLEPA raised 5 discussion points for detection system.

1) Current system based on passenger vehicle ISO.
2) ISO based on sonar.
3) Test object is not VRU.
4) Detection range not suitable for commercial vehicles.
5) No consideration for crossing scenario.
#8 Test procedure (Not reviewed in IWG after Chap.17)

CLEPA raised 5 discussion points for detection system.

1) Current system based on passenger vehicle ISO.
2) ISO based on sonar.
3) Test object is not VRU.
4) Detection range not suitable for commercial vehicles.
5) No consideration for crossing scenario.

Discussed comments.

1), 2), 4)
- Just a little bit late proposal. If proposal was earlier, we can consider these things.
- Proposed 2m detection brings more false warnings.
- Current detection system requirements based on camera compatibility secured ISO fitted sonar. If new requirements to be proposed, need to indicate compatibility with current requirements.

3)
- Dummy test results is not stable for detection.

5)
- This regulation is based on provision of indirect vision. Camera does not detect anything.
- Crossing scenario is another aspects to be discussed on second phase.
Modification of draft proposal from CLEPA (Brigate)

CLEPA proposal.

- “Rear View Camera” -> “Rear View Camera Monitoring System”
  Original purpose was word differentiation between RVC and CMS from OICA.

- “Monitoring area” -> “Field of detection”
  OICA proposal part.
  But I can be accepted.

- Part of impact test seems to be remained.
  To be discussed in IWG (Topic #7)

- Back sunlight requirement to be come back.
  OICA proposed deletion and no objection in last IWG.

- “Backing event” -> “Reversing motion event”
  OICA proposed harmonization of the word with FMVSS111.
Thank you for cooperation about making reversing regulation.