

Amendments proposed by France and Belgium.

The document is based on : ACSF-05-16 Consolidated Document after 5th session

The changes are in blue characters and the comments in blue italic characters.

The red characters, the yellow and green highlighted sentences come from the original text according to:

Consolidated document after the 5th meeting (based on ACSF-05-03) with **HOMEWORK**

Modifications to the Regulation are marked in **red bold** and strikethrough characters.

Confirmed by the group

Proposal for amendments to Regulation No. 79 to include ACSF > 10 km/h

The modifications to the Regulation are marked in bold and strikethrough characters.

Amend paragraph 2.3.4.1. to read:

2.3.4.1. "Automatically commanded steering function" (ACSF) means the function within a complex electronic control system where actuation of the steering system can result from automatic evaluation of signals initiated on-board the vehicle, possibly in conjunction with passive infrastructure features, to generate continuous control action in order to assist the driver.

2.3.4.1.1. **Category A ACSF means, a function that operates at a speed no greater than 10 km/h to assist the driver, on demand, in low speed lateral manoeuvring or lateral parking operations. [It may be combined with automatic longitudinal control]**

2.3.4.1.2. [“ACSF Category B means a function which is initiated/activated by the driver and which keeps the vehicle within its lane by influencing the lateral movement of the vehicle.] **[It may be combined with automatic longitudinal control]**

[2.3.4.1.3. **Category C ACSF means, ~~a Category B System including~~ a function which is initiated/activated by the driver and which can perform a single lateral manoeuvre (e.g. lane change,) when commanded by the driver. [It may be combined with a category B-system and with automatic longitudinal control]**

Justification: It should be possible to have basic system operating only on demand to perform a single lateral manoeuvre without support of lane markings but other support (e.g. centimetric positioning system, platooning, etc.)

2.3.4.1.4. **Category D ACSF means, ~~a Category B System including~~ a function which is initiated/activated by the driver and which can indicate the possibility of a single lateral manoeuvre (e.g. lane change) but performs that function only following a confirmation by**

the driver.] [It may be combined with a category B-system and with automatic longitudinal control]

- 2.3.4.1.5. Category E ACSF means, a Category B-System including a function which is [initiated/activated] by the driver and which can continuously determine the possibility of a manoeuvre (e.g. lane change) and complete these manoeuvres for extended periods without further driver command/confirmation. [It shall be combined with automatic longitudinal control]

Insert new paragraph 2.4.8. to read

2.4.8. For Automatically commanded steering functions

2.4.8.2 "Lane" means one of the longitudinal strips into which a roadway is divided.

2.4.8.3 "Visible Lane markings" means delineators intentionally placed on the borderline of the lane that are directly visible by the driver while driving (e.g. not covered by snow, etc.).

2.4.8.4 "Lead vehicle" means a vehicle driving in front of the vehicle equipped with ACSF.

2.4.8.5 "Lane change manoeuvre" means a manoeuvre in which the vehicle changes from its initial lane to an adjacent lane

2.4.8.6 "Specified maximum speed V_{smax} " means the maximum speed up to which an ACSF is designed to operate.

2.4.8.7 "Specified minimum speed V_{smin} " means the minimum speed up to which an ACSF is designed to operate.

2.4.8.xx "Specified maximum lateral acceleration $a_{V_{smax}}$ " means the maximum lateral acceleration up to which an ACSF is designed to ~~work~~ operate.

HOMEWORK: D, J to rework definition considering emergency cases

2.4.8.8 "Transition demand" means an instruction from the ACSF the driver has to take over control of the steering task again.

2.4.8.9 "Transition procedure" means the sequence of providing a transition demand by the system, taking over steering control by the driver and deactivation of the ACSF.

2.4.8.10 "Conditions for operation" mean circumstances like traffic situation, road category, quality of lane markings, vehicle speed, curvature of the road, lighting, sensor capabilities etc. specified by the vehicle manufacturer, where the system is designed to operate.

- [2.4.8.11 **"System boundaries"** mean all circumstances from which on the conditions for operation are not fulfilled anymore.
- 2.4.8.12 **"ACSF status"** means any distinct operational mode of the ACSF like "switched off" "switched on", "available to be activated", "activated" etc.
- 2.4.8.13 **"Driver availability recognition [system/function]"** means a function able to assess driver's physical availability to respond to a transition demand from an ACSF system.
- 2.4.8.14 **"Minimal risk manoeuvre"** means a procedure aimed at minimizing risks in traffic, which is automatically performed by the system, e.g. when the driver does not respond to a transition demand
- 2.4.8.15 **"Emergency Manoeuvre"** is a manoeuvre performed by the system in case of a sudden unexpected event in which the vehicle is in imminent danger to collide with another object, with the purpose to avoid or mitigate a collision.
- 2.4.8.16 **"Protective braking"** means an application of the brakes of the vehicle by the system in order to decelerate the vehicle with the purpose of avoiding or mitigating a collision.
- [2.4.8.17 **" Data Storage System for ACSF (DSSA)"** means a data recording medium to record ACSF system operation data including data of Driver availability Recognition System.]]
REMARK: will be reviewed after disc. Of the specs

amend paragraph 5.1.6.1. to read:

- 5.1.6.1. Whenever an Automatically Commanded Steering function becomes operational, this shall be indicated to the driver. Any termination of control shall produce a warning, **[especially, in case of category E termination of control is described]** in accordance with the requirements of paragraph 5.4.3.

Insert new paragraph 5.4.3. Renumber paragraph 5.4.3. as 5.4.4.

5.4.3. Special Warning Provisions for Automatically Commanded Steering Functions

- 5.4.3.1 Any termination of control initiated by the system ~~other than including that~~ specified in 5.6.1.4.7 shall produce a distinctive driver warning including **visual** warning} and either an acoustic warning or an haptic warning until the driver has resumed steering control.
- [5.5.2. It shall be possible to verify in a simple way the correct operational status of those Complex Electronic Systems, which have control over steering. If special information is needed, this shall be made freely available. It shall be possible to verify the correct operational status of those Electronic Systems by a visible observation of the failure warning signal status, following a "power-ON" and any bulb check.**

In the case of the failure warning signal being in a common space, the common space must be observed to be functional prior to the failure warning signal status check.

[In the case of an ACSF system able to operate at higher speed than 10km/h, it shall be possible to confirm the failure warning signal status via the use of an electronic communication interface.]

5.5.2.1. At the time of Type Approval the means implemented to protect against simple unauthorized modification to the operation of the verification means chosen by the manufacturer (e.g. warning signal) shall be confidentially outlined.

Alternatively this protection requirement is fulfilled when a secondary means of checking the correct operational status is available, e.g. by using an electronic communication interface.]

HOMEWORK: 5.5.2 - D to rework considering the SW-version, whether it was amended

Insert new paragraph 5.6

5.6 Special Provisions for Automatically Commanded Steering Functions

5.6.1. Special Provisions for Category E ACSF

5.6.1.1. General

5.6.1.1.1. The **global** system shall be active (deliver automatic steering) only after a deliberate action of the driver and if the conditions for ~~safe~~ operation of the system are fulfilled (all associated functions – e.g. brakes, accelerator, steering, camera/radar/lidar etc. are working proper).

However safety systems such as emergency lane keeping and/or advanced emergency braking system shall remain “ON” by default.

Justification: ECE- TRANS-WP29-78-r4 (RE.3) annex 5 item 4.2 b

5.6.1.1.2. The vehicle shall be equipped with a means for the driver to activate and deactivate the **global** system. The deactivation shall be possible at any time.

However safety systems such as emergency lane keeping and/or advanced emergency braking system shall remain active.

5.6.1.1.3. If ~~the driver is steering~~ the driver is overriding the **Category E ACSF** by steering or braking manually, ACSF shall be deactivated automatically.

However safety systems such as emergency lane keeping and/or advanced emergency braking system shall remain active.

HOMEWORK: 5.6.1.1.3 – D, UK, OICA to rework

5.6.1.1.X If the vehicle tow a trailer, it shall not be possible to activate the category E ACSF

Comments: System limitations shall be indicated to users in a manual

- 5.6.1.1.3.1 **The specified maximum speed V_{smax} shall not have a value of more than 130 km/h**
- 5.6.1.1.4. The system shall not induce in normal driving situations a lateral acceleration of more than 3 m/s².
- 5.6.1.1.4.1 **The specified maximum lateral acceleration a_{smax} shall not have a value of more than 3 m/s² and of less than 1 m/s².**
- 5.6.1.1.5. ~~The system shall comprise a driver availability recognition system that is active whenever the ACSF system is active.~~
- 5.6.1.1.6. **The activated system shall at any time control the movement of the vehicle in such a way that the vehicle does not induce any safety critical situations and that the movements of the vehicle are clear to other road users.**
- 5.6.1.1.7. ~~The system shall at any time give a noticeable and distinctive signalization to the driver about the system status. This signalization shall be at least a visual signal. Any change in system status shall be indicated by an optical and [, if not initiated by the driver,] either an acoustic or haptic signal.~~

The system status shall be indicated to the driver by a visual signal.

The indication shall [at least] distinguish between the system status **manual stand-by Mode**, active Mode and failure **Mmode**.

The indication shall be present as long as the relevant system status persists.

When the system is **manually** switched off by the driver, the indication of **manual stand-by Mmode** and failure **Mmode** may be suppressed.

Any change in system status shall be indicated by a visual and either an acoustic or haptic signal.

HOMEWORK: OICA provide a definition for “active”, “standby”, “failure” and “OFF” mode

- 5.6.1.1.8. The vehicle shall be equipped with means to ~~detect and classify obstacles and other road users at least 176m in front of the vehicle, 8m at the left and right side of the vehicle and 113m behind the vehicle.~~ monitor, at any times when ACSF is active, that the system perceives any traffic that can affect the safe manoeuvre and calculates speeds and distances in a minimum range to the front (s_{Front}), to the right (s_{side}), ~~and~~ to the left side (s_{side}) and behind (s_{Rear}) the vehicle with the purpose to avoid or to mitigate collisions.

HOMEWORK: NL, SE, OICA to rework considering

obstacles and animals and distance values(?) – if necessary

Comments: minimum obstacle to be detected could be the child pedestrian target used in Euro NCAP AEBS protocol.

It should be clearer to add the figure presented in slide 6 of ACSF 04-05 replacing the values of distances (176m and 113 m) by the formulas of S_{front} and S_{rear} hereafter.

- 5.6.1.1.8.1. The **minimal** range in front (S_{Front}) of the ACSF vehicle shall be calculated according to the following formula:

$$S_{Front} = v_{VUT}^2 / (2 \cdot a_{VUT})$$

where:

S_{Front} = relative distance between the vehicle under test (VUT) equipped with ACSF and the vehicle driving in front, measured in meters from the front **edge end** of the VUT to the rear end the vehicle driving in front.

v_{VUT} = speed of the vehicle under test measured in **m/s**

a_{VUT} = 3,7 m/s² = feasible deceleration under wet conditions

Justification a_{VUT} : ACSF 04-05

HOMEWORK: D to rework considering VUT

- 5.6.1.1.8.2. The range to the rear (S_{Rear}) of the ACSF vehicle shall be calculated according to the following formula:

$$S_{Rear} = d_{reaction, rear} + d_{brake, rear} + d_{safety, rear}$$

with:

$$d_{brake, rear} = \frac{(v_{rear} - v_{VUT})^2}{2 * a_{brake}}$$

$$d_{reaction, rear} = (v_{rear} - v_{VUT}) * t_{reaction}$$

$$d_{safety, rear} = v_{VUT} * t_d$$

where:

S_{Rear} = relative distance between the vehicle under test (VUT) equipped with ACSF and the vehicle behind, measured in meters from the rear **edge-end** of the VUT to the front end of the vehicle behind.

$d_{reaction, rear}$ = relative distance of the vehicle driving behind the VUT caused by the reaction of the driver to brake, measured in meters

$t_{reaction}$ = 1,2 s = reaction time of the driver driving the vehicle behind the VUT needed to execute the braking and to built up the full braking force, measured in seconds

$d_{brake, rear}$ = braking distance of the vehicle driving behind the VUT ,measured in meters

$d_{safety, rear}$ = safety distance between the vehicle under test (VUT) and the vehicle driving behind, measured in meters

t_d = 1,0 s = safety time gap to VUT after braking, measured in seconds

v_{rear} = [36,1 m/s] speed of the vehicle driving behind the vehicle under test (VUT) , measured in m/s.

v_{VUT} = speed of the vehicle under test (VUT), measured in m/s.

a_{brake} = 3 m/s² = admissible deceleration of the vehicle driving behind the vehicle under test (VUT)

5.6.1.1.8.3. The range to the left and to the right (side) shall be at least 7m (measured from the medium longitudinal centerline of the vehicle)

5.6.1.1.9. The vehicle shall fulfil the tests for Category E as specified in Annex 7.

5.6.1.2. Operation of category E ACSF

5.6.1.2.1. Any lane change manoeuvre shall be initiated only if the vehicle detects that:

- ~~the vehicle~~ It is travelling on a ~~motorway as defined in paragraph 2.4.8.~~ road section which is not dedicated to pedestrians or bicyclists and which has a [physical or constructional] separation of traffic moving in opposite directions and which has at least two lanes for the direction the vehicle is driving and

- any traffic that can affect the safe manoeuvre ~~shall be~~ is identified by equipment installed on the vehicle according to § 5.6.1.1.8. and

- the vehicle equipment can analyze speed and distance according to § 5.6.1.1.8 of the identified traffic to ensure a safe manoeuvre (e.g. does not cause a deviation to the flow, ~~or~~ direction of other traffic or considering left- or right-hand traffic).

HOMEWORK: UK to rework considering pedestrians, []

and LHD/RHD traffic. To be moved partly to 5.6.1.1.9/10?

- 5.6.1.2.2. If a lane change manoeuvre is carried out, the correspondent direction indicator lamps shall be automatically activated minimum 3s
- a) prior to the ~~steering operation~~ start of the lane change manoeuvre or
 - b) prior the vehicle has touched the lane markings

HOMEWORK: EC to rework

- 5.6.1.2.3. The lane change manoeuvre shall be completed, except the system detects an imminent critical situation {or the system is overridden by the steering or the braking of the driver}.

HOMEWORK: UK to improve the wording

- 5.6.1.2.4 The activated system shall ~~at any time prior and after a lane change manoeuvre ensure that the vehicle stays in the appropriate lane does not cross any lane marking. ,when tested in the conditions defined in Annex 7, paragraph 3.1.1 (FU1 test) a safe lateral distance to other road users. The vehicle manufacturer shall provide documentation about how such a safe distance is achieved to the technical service.~~
- Justification: No need to make reference to the markings (other technologies may ensure the same goal).*

HOMEWORK: UK to improve the wording

- 5.6.1.2.5. If the activated ACSF detects that due to a sudden unexpected event the vehicle is in imminent danger to collide with ~~another road user an obstacle~~ ahead or beside the vehicle and that the time for a safe transition procedure is too short, an emergency manoeuvre shall be carried out (e.g. by braking the vehicle ~~and/or by steering~~).

HOMEWORK: D to improve the wording (separating lane change /emergency)

- 5.6.1.2.6 Driver availability recognition system
- ~~{If the attention recognition system detects that the driver is inattentive, it shall give a warning to restore attentiveness again. The manufacturer shall provide information to the technical service how the attention recognition systems detects inattentiveness of the driver.}~~
- The system shall comprise a driver availability recognition system that is active whenever the ACSF system is active.

The driver availability recognition system shall detect that the driver is present in the driver seat and ~~his availability~~ that he is available to take over the steering.

When the driver is not present in the driver seat, the system shall provide a distinctive warning and or a transition demand is initiated according to 5.6.1.4.3.

~~When~~ When the driver is not available to take over the steering the system shall provide detects that, e.g. on the monitoring of driver activity or presence in driver's seat it shall

- Initiate a transition demand ~~is initiated~~ according to 5.6.1.4.3. or
- provide a distinctive warning until appropriate actions of the driver are detected (e.g. the driver resumes manual control). ~~When~~ If the system does not detect appropriate actions from the driver ~~for more than [x s]~~, during the distinctive warning with a max. duration of [15 s/5 s] a transition demand shall be initiated according to 5.6.1.4.3.
Comment: The requirements concerning the availability of the driver to take over the steering have to be defined and assessed by the technical service.

HOMEWORK: NL, SE, D, UK to improve the wording considering the "compromise"

~~If the driver does not respond to the transition demand for more than [y s], a minimal risk manoeuvre shall be initiated.~~

~~The manufacturer shall provide information to the technical service how t If the driver does not respond to the transition demand for more than [y s], a minimal risk manoeuvre shall be initiated.~~ he driver availability recognition system detects appropriate driver activities. moved to 5.6.1.3.1.7

- 5.6.1.3. System information data
- 5.6.1.3.1. Following data shall be provided together with the documentation package required in Annex 6 of this regulation to the Technical Service at the time of type approval
- 5.6.1.3.1.1. The values for V_{smax} , V_{smin} and a_{ysmax} .
- 5.6.1.3.1.2. The conditions under which the system can be activated, i. e. when the conditions for operation of the system are fulfilled.
- 5.6.1.3.1.3. Information about system boundaries at which the activated system shall issue a transition demand.
- 5.6.1.3.1.4. The specific values for time according to 5.6.1.54.2 which are foreseen for safe transition to manual steering under different circumstances.

- 5.6.1.3.1.5. Documentation about the chosen strategies regarding the ~~minimum~~ minimal risk manoeuvre which is foreseen depending on the given traffic situation.
- 5.6.1.3.1.6. Documentation about the chosen strategies regarding the emergency manoeuvre which is foreseen in different sudden critical events.
- 5.6.1.3.1.7. [Information about how the driver availability recognition system detects appropriate driver activities.]
Remark: confirmed after Rework 5.6.1.2.6
- 5.6.1.4. Transition demand and system operation during transition
- 5.6.1.4.1. If the system detects that its boundaries are reached or will be reached shortly or in case of a system failure it shall provide a transition demand.
- 5.6.1.4.2. The timing of the transition demand shall be such that sufficient time is provided for a safe transition to manual steering.

5.6.1.4.2.1. In case of normal driving conditions operation a transition demand shall be given not later than 4 s before system boundaries (e.g. motorway ends, exit) are reached.

RE.3 rev.4 wording

5.6.1.4.2.2. In case of a sudden unexpected event with imminent danger of a collision a transition demand shall be given immediately and an emergency manoeuvre shall be initiated.

5.6.1.4.2.3. In case of a sudden unexpected event without imminent danger of a collision a transition demand shall be given immediately and the system shall follow the initial path and shall not cross any lane marking for at least [4 s] after the start of the transition demand, in the following cases

- if the speed of the vehicle with activated ACSF exceeds $v_{smax} + 5 \text{ km/h}$, or a transition demand shall be given immediately and the,
- if the vehicle with activated ACSF reaches a lateral acceleration of more than a_{ysmax} , or 3 m/s^2 a transition demand shall be given.
- if a other system boundary is reached due to a missing lane marking, or
- if a single sensor failure occurs.

Justification: Missing lane marking is too restrictive. Other boundaries shall be included.

To be clarified: FR understands that the four above cases refer to the sudden unexpected event?

5.6.1.4.3. If a driver availability recognition system detects that the driver is to be inattentive not available although a warning to restore attentiveness was provided to the driver and if a transition demand shall be is given, the system vehicle shall stay in its lane not cross any lane marking for at least [4 s] after the start of the transition demand.

Remark: confirmed after Rework 5.6.1.2.6

- 5.6.1.4.4. The system shall provide a transition demand if the driver's seatbelt is unfastened or if the driver's seat is left by the driver. In this case the system shall follow the initial path at least [4 s] after the start of the transition demand.
- 5.6.1.4.5. In case of other failures than a single sensor failure a transition demand shall be given immediately and the system shall initiate the fail-safe strategy [definition ? MRM?] as declared by the manufacturer in Annex 6 of this regulation, as soon as the failure is detected.
- 5.6.1.4.6. In case the vehicle is fitted with a built-in infotainment system, content visible to the driver, which is not relevant for driving, shall be deactivated as long as a transition demand is issued.
- 5.6.1.4.7. The transition demand shall be provided by a visual warning signal and either an acoustic warning signal or by imposing a haptic warning signal. The warning may shall be escalating with time in terms of enlarging the intensity of the warning and/or in terms of adding and/or changing the warning means, or start immediately with the highest intensity level.
- 5.6.1.5. Minimal Risk Manoeuvre
- 5.6.1.5.1. If the system detects that after a transition demand the driver does not take over manual control of the steering vehicle again, the vehicle shall carry out a minimum risk manoeuvre. Alternatively the minimal risk manoeuvre may start begin at the start beginning of the transition demand.

HOMEWORK: D to rework test, including 4s

- 5.6.1.5.2. It shall at any time be possible to override the minimal risk manoeuvre by the driver. System may shall be designed to exclude unintended override.
- 5.6.1.5.3. With the start of the minimal risk manoeuvre the hazard lights shall be activated automatically. Additionally, an acoustic warning device may be permitted to warn the other road users.
- 5.6.1.6. Protective Braking (is it an AEBS?)
- 5.6.1.6.1. Any vehicle equipped with an ACSF of category E shall meet the following requirements for protective braking.
- 5.6.1.6.1.1. If the activated system detects that the distance to other road users in front is less or will shortly be less than the foreseen safety distance a protective braking shall be carried out.
- Question: Is the safety distance = S_{front} calculated from the formulae?
- 5.6.1.6.1.2. If the activated system detects that due to a sudden unexpected event the vehicle is in imminent danger to collide with another road user in front and that the time for a safe transition procedure is too short, a protective braking as emergency manoeuvre shall be

carried out. Alternatively a lane change manoeuvre can be carried out to prevent the collision.

Already in [5.6.1.2.5 : If the activated ACSF detects that due to a sudden unexpected event the vehicle is in imminent danger to collide with ~~another road user~~ an obstacle ahead or beside the vehicle and that the time for a safe transition procedure is too short, an emergency manoeuvre shall be carried out (e.g. by braking the vehicle and/or by steering)].

- 5.6.1.6.1.3. The protective braking must be able to deliver full braking force of the vehicle in order to achieve a maximum deceleration.

HOMEWORK: D, NL, SE to improve the wording considering decelerations other than braking, end of deceleration requirement, lane change “without risk”, should be equipped with prot. Braking, road user and “obstacles”...

✚ 5.6.1.7. Data Storage System for ACSF (DSSA)

✚ 5.6.1.7.1. The DSSA shall record the data for situations of driving, ACSF status, the failure and the driver's operation in order to demonstrate that the ACSF had operated properly in align with the relevant requirements, when a vehicle fitted with Advanced Driver Assistance Steering System having ACSF is involved in a road accident. [A video signal that is monitoring the driver shall be included in the recorded data.]

[5.6.1.7.2. It shall be possible that the drivers may switch off the function of recording video signal by driver's intention.]

5.6.1.7.3. The recorded data shall not be volatilized in the DSSA without any deterioration [for at least [6] month].

5.6.1.7.4 The special tools to get access to recorded data shall be specified by the manufacturer.

5.6.1.7.5 The DSSA shall record at least for [5] seconds prior to and [1] second(s) [after an accident.]

HOMEWORK: every party (esp. contr. Parties) should clarify their position.

5.6.2. Special Provisions for ACSF of Category D

- to be developed based on the requirements for a Category ~~5~~-E system-

5.6.3. Special Provisions for ACSF of Category C

- to be developed based on the requirements for a Category ~~5~~-E system-

5.6.4. Special Provisions for ACSF of Category B

- to be developed based on the requirements for a Category ~~5~~-E system.

5.6.5. Special Provisions for ACSF of Category A

- to be developed based on the requirements for a Category ~~5~~-E system-

Annex 7

~~Text-Test~~ requirements for automatically commanded steering functions

1. General Provisions

Vehicles fitted with ACSF shall fulfill the tests requirements of this annex according to the corresponding category of ACSF specified in Table 1.

2. Test conditions

2.1. The test shall be performed on a flat, dry asphalt or concrete surface delivering good adhesion. The ambient temperature shall be between 0° C and 45° C.

2.2. Lane markings

The lane markings and the width of the lane used in the tests shall be those of one of the Contracting Parties, with the markings being in good condition and of a material conforming to the standard for visible lane markings of that Contracting Party. The lane marking layout used for the testing shall be recorded.

The test shall be performed under visibility conditions that allow safe driving at the required test speed.

~~2.3 Lead vehicle~~

~~The lead vehicle shall be a high volume series production passenger car of category M1 AA saloon or in the case of a soft target an object representative of such a vehicle in terms of its detection characteristics. A soft target is a target that will suffer minimum damage and cause minimum damage to the subject vehicle in the event of a collision.~~

2.3 Tolerances

All vehicle speeds specified in the tests shall be met with a tolerance of ± 2 km/h.

2.4 Target vehicle

The target vehicle shall be a high volume series production passenger car of category M1 AA saloon¹ or in the case of a soft target an object representative of such a vehicle in terms of its detection characteristics. A soft target is a target that will suffer minimum damage and cause minimum damage to the subject vehicle in the event of a collision.

3. Tests

Table 1 specifies which tests have to be fulfilled by each ASCF category.

Test \ ASCF category	A	B	C	D	E
Fu1 Lane keeping		tbd	tbd	tbd	x
Fu2 Abort of Lane change				tbd	x
Fu3 Lane change			tbd	tbd	x
Tr1 Lateral acc.		tbd	tbd	tbd	x
Tr2 Missing marking		tbd	tbd	tbd	x
Tr3 Driver not available		tbd	tbd	tbd	x
Tr4 Failure		tbd	tbd	tbd	x
Tr5 Taking over		tbd	tbd	tbd	x
EM1 Moving target (decel. 6 m/s ²)		tbd	tbd	tbd	x
EM2 Stationary target		tbd	tbd	tbd	x

Table 1

¹ As defined in the Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.2, para. 2

See document: APPROVAL TEST PROCEDURES with amendments from France. Docx

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