

Reference

§ 2.32.1 and annex 19 § 6.1.1

Current redaction

A vehicle stability function may include one or both of the following:

- directional control
- roll-over control

Proposal:

add

+ for power-driven driven vehicles, the vehicle stability function may include directional control or directional control and roll-over control

add:

2.32.2.1 In the direction intended by the driver *within the physical limits of the vehicle*.

Comments / justification:

we think that we can't have only roll-over control and call it stability function.

Reference

Annex 21 § 2.1.1

Current redaction

"...the function shall have the ability to automatically control individual wheel speeds ..."

Proposal :

This redaction should be clarified to make it clear if all wheels (or group of wheels) are controlled or if the control of only two wheels of one axle is authorised.

Comments / justification:

An existing comment (OICA) about this redaction is :

"This is acceptable for 2 axles vehicles (and necessary) but not for more than 2 axles vehicles, e.g. 6x4 ... It is sufficient for stability function to control 4 wheel groups: FL, FR, RL, RR. This is state of the art. "

And the proposal for the new redaction is : "... the function shall have the ability to control independently left and right wheels of each group of axle."

Reference

annex 21 § 2.1.2

Current redaction

To realise the functionality defined above a vehicle stability function shall include, in addition to selective braking and/or automatically commanded braking, at least the following:

- The ability to regulate engine power output.

Proposal:

The ability to control engine power output.

comments:

it is semantics: the verb "control" imposes that the vehicle stability function controls the engine power during the ESC actions, but doesn't oblige to have an accurate regulation as an ASR is.

Reference

annex 21 § 2.1.2

Current redaction

In the case of directional control: The determination of vehicle behaviour from values of yaw rate, lateral acceleration and wheel speeds and from the driver's control input to the braking system, to the steering system, and to the engine. Only on-board generated information shall be used for this purpose. If these values are not directly measured, the evidence of the appropriate correlation with directly measured values under all driving conditions (shall be shown to the technical service at the time of type approval..

Proposal:

\$ None for yaw rate correlation

\$ Only on-board generated information shall be used : this sentence should only apply to yaw rate and lateral acceleration

comments:

We know yaw rate is

- the key value for main part of regulations
- the major part of the cost between ESC and ABS

But the reference (desired) yaw rate is also a key value for regulations. *Given this fact, during the meeting of January 26th, we will try to see if it possible and/or necessary to define a test procedure to check the accuracy of the measured or estimated car actual yaw rate.*

At this time we have no proposal and some ACEA member's do not want modification in the text. Still to be clarified within ACEA TF ESC

Outside information such as coefficient of friction and / or weather condition may be available in the future. We should accept this opportunity.

Reference

annex 21 § 2.1.3

Current redaction

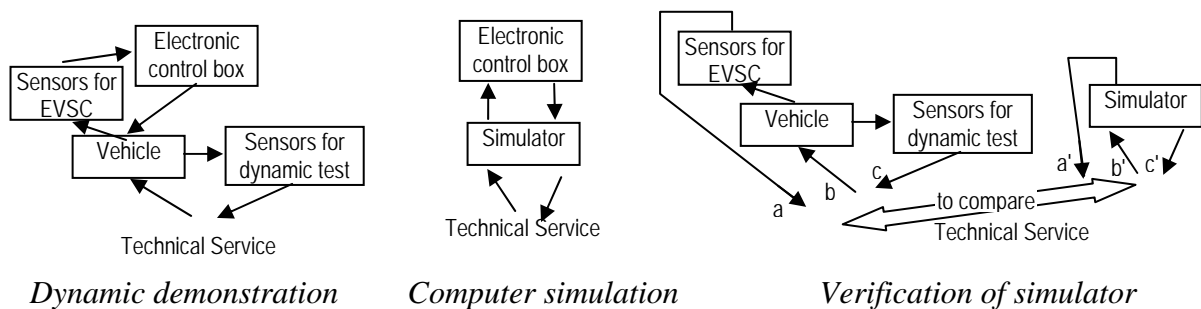
A dynamic demonstration on one vehicle configuration and submission of test results and a computer simulation for other vehicle configurations under the condition that these vehicles are equipped with the same vehicle stability function as the one fitted on the vehicle which has been used for the dynamic demonstration together with data which verifies the simulation model against a practical vehicle test. The specification and functionality of the simulator is defined in Appendix 1 to this Annex

Proposal:

simulation model against a practical test the real vehicle behaviour and the real sensor characteristics

comments:

Reason for the proposed change : In the case of a computer simulation, not only the electronic control box but also the performance of the sensors used by the stability system have to be considered (figure 1) in real world the values used by ESC are not the exact ones but the values measured by the sensors.



Verification of simulator means that for a given input $b=b'$, the differences $\Delta a=a'-a$ and $\Delta c=c'-c$ are below a given threshold (see §4.2 of Appendix 1).

Figure 1

Reference

annex 21 § 2.1.3

Current redaction

A dynamic demonstration on one vehicle configuration and submission of test results or a computer simulation for other vehicle types

Proposal:

To clarify what is a vehicle configuration. JAMA proposal deals with this issue.

Comments

For brake homologation, on a given platform there is only one vehicle configuration including sedan, coupe and station wagon as long as they are equipped with the same “hardware”.

Is this also the case for stability control or do we define one vehicle configuration (sedan) and the other one as other configurations.

This point will be discuss during the meeting of 26th January.

Reference

annex 21 § 2.1.3

Current redaction

and shall include the critical conditions of roll-over and directional control as appropriate to the vehicle stability function installed

Proposal:

\$ For cars only The sine dwell manoeuvre should be accepted as appropriate over steer manoeuvre.

Foot note including the sine with dwell manoeuvre for cars and other test procedures for trucks (e.g.: JAMA proposal) recommended

Comments

Make world wide harmonization easier.

Reference

annex 21 Appendix 1 § 1.1.1

Current redaction

the model shall include at least the following vehicle parameters ..."

Proposal

The correlation between simulation and real data has to be verified (car manufacturer should show curves and measured values) for (and only for) dynamic test to be used for demonstration.

Delete all paragraphs dealing with technical details, physical characteristics et. al.

Comments/ justification

This is an alternative to the existing comment of OICA document :

“And correlation between real ESC and simulation shall be verified if SIL is used
This is too stringent. If one wants to mandate a list of parameters to be used in the simulation, then a parameter sensitivity analysis is needed to select primary parameters and leave secondary ones, the same way it was done for R111. However, this is a huge work, where vehicle manufacturers are probably not ready to share information too deeply with their competitors/other parties (as this is core knowledge of manufacturers).

Until we have such an analysis, and more experience about simulation for the purpose of homologation, the parameter list and the simulator description should only give general hints and examples, the same way it was in the previous revision 4 of the document ("This appendix defines an example of a simulator that may be used ...")”

Remarks about simulation

Reference and remark	Justification
<p>Appendix 1 Paragraph 4.1.1</p> <p>Such a test(s) may include one or more of the following... Or test of appendix n</p>	Coherence with dynamic tests allowed for real verification
<p>Appendix 1 Paragraph 4.1.1</p> <p>Amend the last paragraph, to read: "During the test(s) the following motion variables as appropriate shall be recorded or calculated in coherence with ISO 15037 Road vehicles -- Vehicle dynamics test methods -- Part 1: General conditions for passenger cars or Part 2: General conditions for heavy vehicles and buses (depending on the vehicle category):"</p>	The precision of the recorded or calculated values has to be specified

Proposal:

More general description for validation of simulation model recommended. E.g.: The simulation model has to be verified in an appropriate way that has to be agreed between Manufacture and Technical Service.