

# Notes from the 9<sup>th</sup> IWG ACPE meeting in Seoul, 19.06. – 21.06.2024

## Day 1

### 1. Welcome and Introduction

### 2. Chair presented the agenda

- At the request of the host (KOTSA) the end of the IWG#9 for Friday was changed from 2:00 pm to 12 noon.
- No other comments to the presented agenda.

### 3. Agenda no. 3

#### Adoption of the notes of the 8<sup>th</sup> meeting of the Informal Working Group

- Adoption of the notes from the last IWG#8 (no questions, no comments).

### 4. Agenda no. 4

#### Status report of 19<sup>th</sup> GRVA

- Chair reported about ACPE related topic of the 19<sup>th</sup> GRVA in May 2024:  
This IWG has the mandate to deliver the 01 series for the GRVA in January 2025.  
Extension of the TOR was decided.  
Chair presented the main points of TOR.

### 5. Agenda no. 5

#### Set of parameters and discussion on parameters

- INDUSTRY presents the ACPE-09-03 document (traffic accidents result):  
Concerns for vehicle category N1.  
Traffic accidents results shows more M1 accidents.  
Mileage based accidents rate data shows that M1 accidents are 5.5 times higher than N1 accidents.  
→ INDUSTRY suggests excluding the N1 vehicles. National authorities could include N1, but not mandatory within UNECE.

Comments:

*Korea:*

A stepwise approach was discussed in the past, hence N1 vehicles should be included in this stage.

*Germany:*

supports Korea.

*UK:*

no fix position. Generally, the accidents situation or political situation should not make a difference. In favor of GER and Korea.

*INDUSTRY:*

ACPE is widespread only in Japan, but not for N1 vehicles. Technical implementation for N1 is unknown. Are the discussed performance requirements appropriate for N1? We don't know. The group should investigate for N1 before setting requirements for N1.

*Chair:*

Two options possible:

- a. Ask for guidance in GRVA
- b. Adopting the introduction and scope so that CP can decide whether N1 should be mandatory.

*INDUSTRY:*

prefers b. (N1 looks similar to M1 but technically different architecture)  
Chair presents two proposals:

## 1. Scope

1.1. This UN Regulation applies to the type approval of vehicles of Category M1<sup>1</sup> and N1 equipped with automatic transmission with regard to their Acceleration Control for Pedal Error systems (ACPE).

1.2. At the request of the manufacturer, vehicles of other categories may be approved under this Regulation.

Alternative:

1.1. This UN Regulation applies to the type approval of vehicles of Category M1<sup>2</sup> equipped with automatic transmission with regard to their Acceleration Control for Pedal Error systems (ACPE).

1.2. At the request of the manufacturer, vehicles of N1 and other categories may be approved under this Regulation.

*INDUSTRY:*

Prefer the alternative and adopting the introduction.

If there is a "if fitted", the regulation has to be fulfilled when the system is in the vehicle.

Therefore, the OEM could have a problem with the requirements and then ban the system of the vehicles. No benefits for the Chairurity.

*GER:*

What is in the guidance of 18<sup>th</sup> GRVA?

→ consider dealing N1.

*Chair:*

There are arguments for both sides. Discussion ongoing.

Chair presents a proposal:

Put N1 in brackets to be reviewed/brackets removed by GRVA. Industry can justify the requirements and give guidance towards mandatory application in the introduction of the regulation. Text to be proposed by Industry in the next meeting. No more N1 discussion in this meeting.

Comments:

*Japan:*

We consider including N1, but not sure about the requirements. Reopen discussion in next IWG meeting.

*INDUSTRY:*

Clarification is needed at this point: We can't contribute much to N1 due to a missing experience with ACPE in N1 and can't assume that the M1 requirements could be carried over to N1. Further discussion should focus on M1.

*INDUSTRY's proposal from now on, the discussions relate to M1 was accepted.*

Introduction paragraph for N1 mandatory application is homework for next IWG meeting.

- INDUSTRY presents the ACPE-09-04 document (pedestrian application):  
Issues with robust operation with pedestrian target.  
Sonar reflection data show big difference in reflection intensity of a wall to a pedestrian/child.  
Camera has blind spot (especially for child).  
--> Development time needed. Transitional time should not be too short.

*Chair proposal to reopen the topic after talking about the requirements was accepted.*

## 6. Agenda no 6.

### Discussion about testability:

- Japan presents 09-02 (another vehicle tested with creeping scenario)  
Discussion started after pointing out that it is not clear if AEB or ACPE carried out the braking control (slide 34).

*UK:*

Was there testing with creeping but without pedal misapplication, to see the difference of AEBs and ACPE behavior?

*Japan:* no

Slide 35 shows lower performance with pedestrian/child in low distance.

*Chair:*

Generally, is it relevant which systems avoids the collision?

*INDUSTRY:*

How to deal situations like on slide 16, when pedal application is a driver wish to override the AEB? (no answer)

Which system generally doesn't matter but be careful when creating ACPE requirements to keep AEBs in mind. INDUSTRY has no solution for cases like in page 16.

- INDUSTRY presents 09-05 document (Industry Test procedure):  
Accidents rate in parking lots situations is higher than in other traffic situations.  
Accidents rate in starting up and moving straight situations is much higher.  
*Industry:*  
We are assuming accident scenarios in parking situations are most relevant.  
Therefore, we would propose a "moving off" test procedure.  
Therefore, long time creeping is an unlikely use case.  
Summary:
  1. Test procedure recommendation: "moving off" test  
Vehicle starts moving and the driver promptly operates a pedal misapplication.
  2. Creeping test procedure: It seemed to be inappropriate to evaluate ACPE function.  
Unlikely use case and ancillary, creeping run test could have interactions with low speed AEB systems. It seemed to be inappropriate to evaluate ACPE function.

*UK:*

This describes a test avoiding to speed up over 3km/h (red line, page 8). What would be the proposed boundary conditions?

*INDUSTRY:* 4km/h

INDUSTRY presented additional document (uploaded as 09-08 document) that shows AEBs suppression and interruption examples which could be a conflict with ACPE.

Further discussions needed.

## 7. Agenda no 7.

### Discussion for draft 01 series proposal:

- UK presents 09-06 document (Proposal for 01 series):  
*Industry:*  
Question to 5.1.5.: ...the center of the wall... What if the wall is 10m width?  
*UK:*  
We will check this.

First discussion about chapter 5 started:

UK proposal move 1 to 1,5m to (d).

More discussion needed.

Conclusion: Going under a lower limit could be impossible to operate with sonar sensors.

*Chair:*

In general, can we keep the "...1 and 1,5m..."?

--> **no objections.**

Speed range should be added somewhere. Which value need to be discussed.

--> **no objections**

Maybe a time should be better?

*UK:*

Time seems to be a good approach.

*GER:*

Need to close the gap between ACPE and AEBS operation speed.

*INDUSTRY:*

Time x or speed y whatever first.

*Chair:*

Discuss this tomorrow

Proposal (ii) and (iii)

*INDUSTRY:*

What is the intention of the changes?

*UK:*

Make the system robust for a wider range of use cases.

*INDUSTRY:*

Need to be discussed within industry.

*Chair:*

Come back in the next IWG meeting to this points

(iv)

What is a silhouette?

*Industry:*

Need to be discussed within industry.

*Chair:*

Come back in the next IWG meeting to this points

5.1.6.

Chair asked, do we need to review?

*Industry:*

Need to be discussed within industry.

*Chair:*

Come back in the next IWG meeting to this point.

JAMA will conduct tests and try to consider the spec. requirements and provide them to the next IWG Meeting.

Proposal to Art. 6:

UK proposed child dummy as target.

*INDUSTRY:*

Wording is not clear.

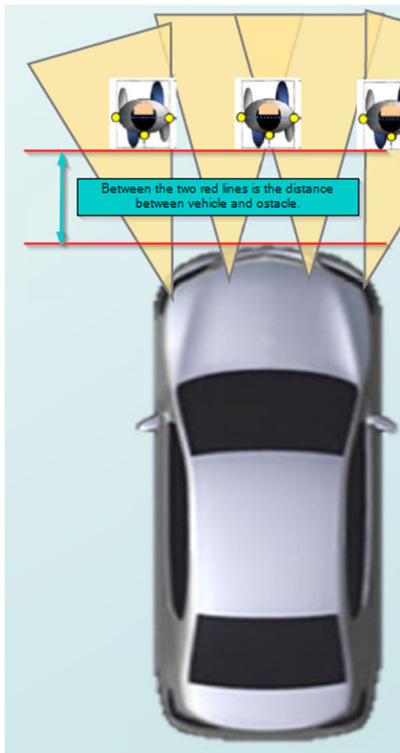
*Chair:*

NCAP wording is clearer. Will be copied from there.

6.5.1. measuring the distance between vehicle and pedestrian is not clear.

*Chair:*

Copy wording from R159. See the [clarification](#) in the figure:



6.5.2. and 6.5.3.

Come back to this point when boundary conditions are discussed.

6.6.1.

Column 4 with lateral tolerances can be deleted. Tolerances are in the text.

6.7. Test procedure creeping vehicle

Should be redefined in the next IWG meeting after discussing the boundary conditions and when test data are available.

Deleting the last sentence in 6.7.4.1. (pretest condition, "...20m to the start position...").

Chair ask if there are any objections?

*Industry:*

New test procedure and no experience with sensor behavior (e.g. self-calibration of camera after engine start).

*UK:*

General preconditioning of vehicle is ok. This seem like specific preconditioning for every test run and should be deleted.

*Chair:*

Lead time of approx. 6 years should be enough the develop robust systems. The preconditioning was in 00 series to be align with JNCAP.

Reopen the discussion tomorrow.

## Day 2

- Discussion about the pretest conditions in 6.7.4.1. continued:

*Industry:*

Time to initialize the systems (see R158 - 6 Chair) for readiness needed.  
Particularly vision systems with only camera solution: camera needs time after starting up to identify objects and detects them robust.  
Some systems need to approach to an object to identify it.

*Chair:*

Before every test run?

*INDUSTRY:*

Vehicle and its systems should be ready for testing.

*UK:*

Reasonable approach.

*Chair:*

No further objections or comments. Deleting the last sentence. Create a proposal.

Put in boundary conditions the readiness requirement and in test section that the system should be operating.

See new 5.1.4.1.

*INDUSTRY:*

Need to consider the camera start up in the testing. Industry shared a proposal for test section. Chair copied the proposal to the test section as a first draft under 6.3.1.

*UK:*

Is this needed for stationary or creeping?

*INDUSTRY:*

Depends on the test which is not defined.

*Chair:*

Transfer to 6.3.2. Concept ok, rewording maybe needed, all parties to check till next IWG meeting.

Discussion about the Maximum speed topic reopened:

*GER:*

Proposal with 10 km/h and which considers a low speed AEB system to close the gap up to 10 km/h.

*INDUSTRY:*

Proposal with creeping for 2 Chair and below 4 km/h to consider the use cases from accident data 09-03 and avoid interaction between ACPE and AEB systems.

*Chair:*

Open the discussion.

*UK:*

Fine with time concept.

*INDUSTRY:*

ACPE and AEB have two different goals and how to deal a kick down? AEB follows the driver intention with the kick down as interruption of AEB action. Please don't create interconnectedness between ACPE regulation and R152.

Hard discussion about interaction AEB and ACPE.

Chair suggests to write different proposal for 5.1.4..

BaSt will try to conduct test and deliver test data how low speed AEBS operate till next IWG meeting.

*INDUSTRY:*

Don't have an overlap of AEB and ACPE operating speed. We are considered and safety margin at the speed limits needed.

We have no proof that an ACPE function operating in the speed range of a low speed AEB outweighs the benefits of an low speed AEB. The driver must also have clear vehicle behavior.

According to Geneva conventions, he should have control over the vehicle. Suppressing the conscious wish to drive is contrary to Geneva convention.

*UK Proposal:*

ACPE operation is permitted when AEBS is operating.

*JAPAN:*

In next IWG meeting the test procedure will be discussed again based on data and then we should consider.

Japan shows page 24. ABES flag before misapplication. How should the vehicle behave in such a situation?

Different proposals discussed.

*INDUSTRY:*

Please clarify that under 5.1.4. the industry position is 3 or 4 km/h.

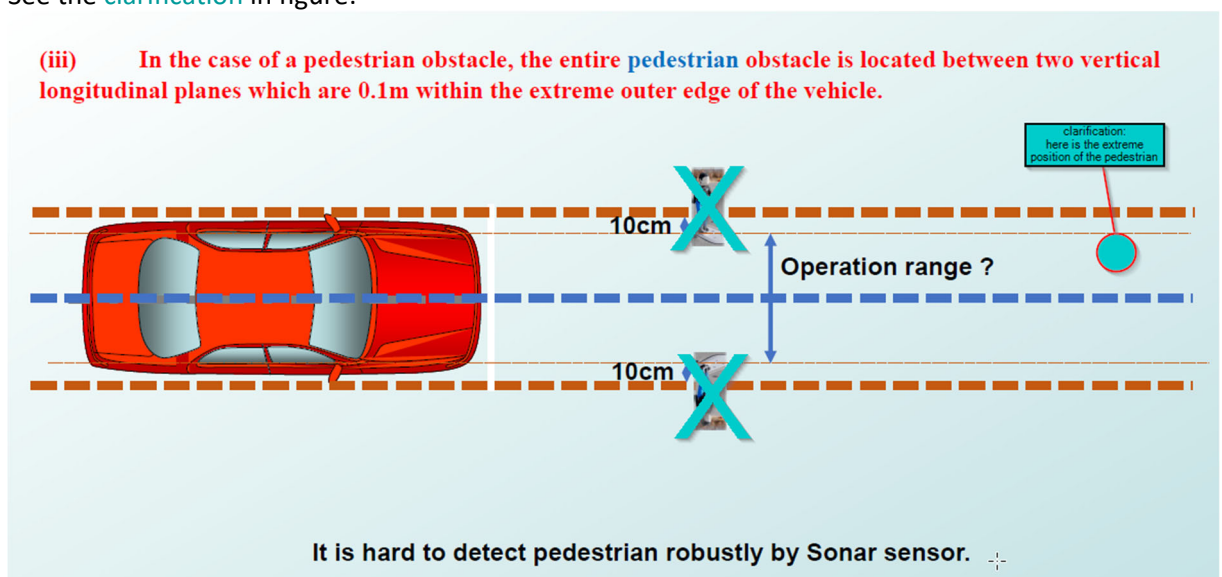
*Chair:*

Proposals for 5.1.4. should be discussed in the next meeting.

- INDUSTRY presents 09-07 document (concerns and clarification to 09-06 document):  
Clarification to UK proposal 5.1.5. (ii):  
How to deal two parallel next to the other placed vehicles? How to deal a wider wall than in the definition described?  
UK will review the wording.

Clarification to UK proposal 5.1.5. (iii):

See the [clarification](#) in figure:



Clarification to test procedure 6.5.1 and 6.5.2.: how and who chose the test area?

Clarification 6.5.2.

...wall and vehicle...

UK answered that "wall" is a mistake. Test is only conducted with vehicle.

Clarification 6.7.

*UK:*

Steady state creeping speed was the intention. Confusion happens likely when a driver did not operate a pedal for longer time.

*INDUSTRY:*

Repeatability for steady state not possible even with the same car (see SAE paper. It shows for the same car different creeping speed behaviors).

*UK:*

Now we see the need to use a time limit.

*Chair:*

Is there a good value as guidance?

*UK:*

Depends on 5.1.4.

*INDUSTRY:*

Accident data showed yesterday showed most accidents in parking situations.

Clarification 6.7.2.5.

*UK:*

First the proposals in 5.1.4. need to be discussed.

Clarification to 6.7.3.

*UK:*

6.7.2.4 is to get a speed graph without obstacle as reference. Afterward test with obstacle. But this part is maybe needed to be modified. Maybe order fits better, first with and after that without obstacle to get the speed when pedal misapplication happens.

- Chair presents transitional provisions for 00 and 01 series (document 09-10):  
00 series enforcement in June 2025  
01 series enforcement NT in Jan 2028, AT Jan 2030 (propose to publish in Jun 25 in WP29)

	00 series	01 series
Activity	Working document to May 2024 Deadline: Feb. 2024	Working document to Jan. 2025 Deadline: Nov. 2024
Category	M1	M1, [N1]
Target	Vehicle, Wall (only requirement)	Vehicle, Wall, Pedestrian (Adult and Child) *: Request to take into account of a transitional provisions
Requirements	Stationary	Stationary and Moving off
Test procedure	Stand still (JNCAP test)	Creeping test (Discussion parameters)
Transitional Provisions	Agreement of 00 series in May 2024 session of GRVA-19 Propose to November 2024 session of WP29 00 series - Enforcement in June 2025	Amendment of 01 series in January 2025 session of GRVA-21 Propose to June 2025 session of WP29 01 series - Enforcement in [January 2028] for new type of vehicle 01 series - Enforcement in [January 2030] for existing type of vehicle
Speed	0 km/h (tolerance 0.5 km/h)	0 km/h - Creeping speed

*INDUSTRY:*

How are the enforcement data calculated?

*Chair:*

Regular process related to the planned meeting dates of GRVA and WP29.

Could be later, but not earlier.

*INDUSTRY:*

Short timeline to develop a new system till 2028. Maybe NT 2030 is better because test procedure and requirements are still not specified.

*Chair:*

Any reactions. Requirements should be the base not the test procedure.

*GER:*

The stepwise approach was agreed in the meetings before. The timeline seems to be good.

*INDUSTRY:*

Will the timeline apply to M1 and N1?



*CHAIR:*

N1 could be time-shifted.

*INDUSTRY:*

Question to the CP, what are the plans for the two series?

*GER:*

Cannot decide by their own. ACPE could be a candidate for the next GSR (not before 2030).

GER has the same problem with the aging population.

*UK:*

No current plan to apply this regulation. The GSR is not adopted yet.

*JAPAN:*

Will consider the timing, no concrete plans.

*Korea:*

Not yet decided, but pedal misapplication is a popular topic.

*CHAIR:*

Industry should consider the child for the following discussions at the next IWG meeting.

*UK:*

Two phase introduction could be possible, cause accidents are much more without pedestrian (including the child)

- Chair presents the draft document and comment it with the participants:  
Industry should provide introduction.

1.1. N1 in brackets: final confirmation in next IWG meeting.

*Industry:*

The CP should make a conscious decision of mandating N1.

2.10. Copy definition from e.g. R48

2.13. fix next IWG meeting

Everything from on is agreed if there is no comment in the draft document.

5.1.5.

Moving the "1,0 to 1,5 m" to (d)?

No need to speed up. Reopen discussion in next IWG meeting.

(ii) and (iii)

*INDUSTRY:*

prefers reference to the vehicle center.

*UK:*

When you want to cover the vehicle edge, seem to be more reasonable to refer to the outer limits. Review this in the next IWG meeting.

6.5.4. added, orientation of pedestrian.

6.5.5. added, the orientation of the vehicle target added.

Reopening next IWG meeting. Maybe deleting.

Reference to ISO.

6.6.

*CHAIR:*

Should we keep both test scenarios?

*INDUSTRY:*

For avoiding efforts maybe one only procedure.

*UK:*

Prefers to test both.

Test procedure need to be agreed next IWG.

We think the test procedure differs a lot depending on the 3 to be discussed proposals of 5.1.4. at the next IWG meeting.

Transitional provision proposal needs to be added.

*CHAIR:*

Current version of the document with the comments will be uploaded to ACPE wiki with the title ACPE-09-09r1.

Timeline for submitting the document to GRVA presented.

Start the last day with discussion on the three alternatives in 5.1.4.

## Day 3

- Approval marking and scope

*Chair:*

Marking and scope didn't match:

Chair proposal for the scope to match the approval marking.

a (wall), b (vehicle) and c (pedestrian)

*UK:*

a+b together and c is enough.

No other comments.

UK will provide a text for marking.

- The 5.1.4. alternatives:

*INDUSTRY:*

Blue is no option. Both functions must be developed together. Not feasible for implementation.

Yellow we highly appreciate. But rewording needed. But we think this will create issues in practice. What will AEB activation mean? AEB have no wall or standing pedestrian scenario.

Space for discussion while type approval process for e.g. with a technical service.

Margin should be needed. No experience with ACPE till 10 km/h. Concerns about false positive.

What is the handling of future AEB when it is active below 4 km/h?

Pink has problems with different creeping speeds and with repeatability (see SEA paper). Use case with long creeping is not realistic. Therefore, this could lead to inhibit further AEB development to lower speed.

*Chair:*

Comments?

*UK:*

Doesn't really understand the challenge for the blue option (see 09-08 page 3). Technical solution doesn't seem that difficult.

*INDUSTRY:*

Development and design doesn't work that easy. You have to develop that together with interfaces, etc. We do not want to develop the functions together.

*Japan:*

Interference with AEBS is a big topic. For the time being we should avoid interference because there is no experience. No conclusion possible and wait for data.

*GER:*

Wait for more data and decide then if the blue option is maybe still good.

*Chair:*

There is not much interaction

*INDUSTRY:*

Blue is no way. We didn't hear objections to pink one.

*GER:*

The issue is the 4km/h we could not follow.

*INDUSTRY:*

No data/experience available for no side effects from a vehicle with ACPE till creeping speed. We are here to develop (and to further develop the 00 series) a regulation that is not only working for stationary use cases A robust system is needed to cover more use cases in real world. Creeping for longer time is artificial.

*Chair:*

Discuss the values of pink maybe is more efficient. Space for compromise?

Comments/suggestions of CPs?

Would it be easier for CP and industry to only accept a time? What time?

*INDUSTRY:*

What is the position in the room? What value do the CP wants?

*GER:*

Way forward to discuss the seconds.

*UK:*

Similar. Original 5 sec. We would like to combine with blue. 2 sec seems to be very short.

*Korea:*

Flexible position. Point is, to avoid conflict of AEB override with ACPE function. We don't have solution. How to clarify the overlapping operation area? We will talk to industry. Start with 4 km/h could be fine.

*INDUSTRY:*

Combined functions AEB and ACPE is a no go. We need to take home to get data from vehicles in development.

We appreciate that CPs hear our issues.

*Japan:*

Understand the need to distinguish between ACPE and AEB. Maybe combination pink and blue could be an idea.

*UK:*

The Korean EDR data shows a need of more than 2 seconds.

*INDUSTRY:*

These accidents are not avoidable with current systems. Technical not feasible. Stepwise approach for performance requirement.

*Chair:*

Discus, how to get to a solution in next meeting?

New proposal is for 5.1.4 + creeping off:

Clarification: if AEBS operates before the Creeping time (3,5s), no need for ACPE.

What does "As defined by manufacturer" mean? Misuse problem?

*INDUSTRY:*

No experience with overlapping the both operation area ACPE and AEB and no experience with ACPE operating in higher speed.

Do not jeopardize AEBS Benefits.

*GER:*

Now not clear which benefits at low speed we have with AEB and would have with ACPE.

*INDUSTRY:*

Does the Korean EDR data show, if the vehicle in the accidents had a AEB?

Korea:

We will check till next IWG meeting.

*Chair:*

5.1.4. proposals stays and our all homework: check till next IWG meeting by consulting type approval authorities and technical services.

Industry will make long time creeping tests with Japan market cars.

But this test reflects only Japan market, not the UNECE market.

*Chair:*

Please verify testability.

INDUSTRY:

We will try. But reproducibility of target position could be a problem.

Why 3,5 sec?

*Chair:*

Compromise between 2 and 5 sec, as starting point.

Agreed of 3 Chair in brackets.

- Chair presents positions table:

5.1.4.

*GER:*

Combination of pink and blue with creeping 5 sec or 10 km/h. alternative the yellow with 10 km/h and between 4 and 10km/h.

*UK:*

not yet convinced that there must be a hard line between the ACPE and AEB. The blue option should be feasible with enough implementation time of few years.

*Korea:*

No concrete position, but combination of pink and blue. Values need to be delivered next IWG meeting.

*Japan:*

Combination of pink and blue. Values need to be studied till next IWG meeting.

*Industry:*

Pink with 2 sec and 4 km/h:

The ACPE shall control acceleration when the vehicle is accelerated from both standstill and while creeping [off].

“Creeping [off]” means the state of motion which the vehicle is in [for two seconds] after releasing the brakes, with the vehicle powertrain operating at idle, when there is no input to the acceleration control from the driver, the drivetrain(s) or power transmission system is engaged [ and the vehicle speed is below 4 km/h].

This position table will be uploaded as Chair document 09-11.

	Positions about a relationship between AEBS and ACPE
<b>Germany</b>	Option 1 Combination of the below text. The ACPE shall control acceleration when the vehicle is accelerated from both standstill, and while creeping off [5s or 10 km h]. [An ACPE intervention shall not be required when there is an AEB warning as defined in Regulation (UN) No. 152 in any series of amendments]  Option 2 ACPE shall operate up to 10 km/h, unless an AEBS is active (as defined by the manufacturer) at a speed between 4 and 10 km/h. In that case the ACPE shall operate up to that speed.
<b>UK</b>	Addition of the below text for the relationship between the AEBS and the ACPE. [An ACPE intervention shall not be required when there is an AEB warning as defined in Regulation (UN) No. 152 in any series of amendments]
<b>Korea</b>	Option 1 (Confirm until the next meeting for [5s or 10 km h]) Combination of the below text. The ACPE shall control acceleration when the vehicle is accelerated from both standstill, and while creeping off. [An ACPE intervention shall not be required when there is an AEB warning as defined in Regulation (UN) No. 152 in any series of amendments]
<b>Japan</b>	Option 1 (Confirm until the next meeting for [5s or 10 km h]) Combination of the below text. The ACPE shall control acceleration when the vehicle is accelerated from both standstill, and while creeping off. [An ACPE intervention shall not be required when there is an AEB warning as defined in Regulation (UN) No. 152 in any series of amendments]
<b>Industry</b>	The ACPE shall control acceleration when the vehicle is accelerated from both standstill, and while creeping off.  "Creeping off" means the state of motion which the vehicle is in for two seconds after releasing the brakes, with the vehicle powertrain operating at idle, when there is no input to the acceleration control from the driver, and the drivetrain(s) or power transmission system is engaged, and the vehicle speed is below 4 km/h.

- AOB:

*INDUSTRY:*

We see the need to separate ACPE and AEBS application areas to avoid a negative effect on AEBS benefits.

UK completely agrees. Hopefully the data in future will show how to deal the problem.

- Homework summary for next IWG meeting in September:

All: Provide test data for creeping scenario.

INDUSTRY will try to provide test data for creeping test with Japan market vehicles.

GER will try to conduct test and deliver test data how low speed AEB operate in creeping speed scenario.

All: review 5.1. performance requirements

All: review 5.1.4.

Proposals stays and check till next IWG meeting by consulting type approval authorities and technical services.

What does AEB activation mean in the yellow alternative?

How to prevent concrete AEB tests and requirements in the ACPE regulation while still preventing misuse such as simply stating a low AEB operation speed without showing any activity?

All: review 6.3.2.

Prior to any testing, it shall be ensured that the ACPE is switched on and ready to function.

During the conduct of the test the T.S. need to ensure that the boundary conditions of the ACPE - as defined by the manufacturer - wrt. to the detection of the test target are taken into account (e.g. avoid blocking of a sonar system used, ensure that a vision system used can properly identify the pedestrian test target used as a human by making it fully visible to the camera system before testing, etc.) - Text from a drafting break. Needs further thoughts – all please review until next IWG.

Industry to provide introduction text by next IWG meeting (Industry position: Regulation written for M1, and should be mandated by CPs individually for N1 only as conscious decision).

Industry to deliver data that prove the justification for 5.1.6.1.

(As agreed in the previous meeting, however we would like to see further investigation on this to obtain an evidence-based decision on the 15%)

UK will propose the approval section text for marking/different options to be delivered for next IWG meeting.

Test procedure and some minor items after test data becomes available.

- Sharing information about the next meeting in Germany at BAST and closing the IWG#9 meeting