Specification of thresholds for the deceleration demand of an ALKS

What is an Emergency Manoeuvre?

Once the deceleration exceeds a certain threshold, this maneuver should be considered an Emergency Manoeuvre, requiring indication to the driver.

What is a suitable threshold value for a distinction between a comfort and an Emergency Manoeuvre?

Industry proposes **5m/s²** as the threshold value for the deceleration demand, above which a maneuver has to be considered an Emergency Maneuver due to a risk of an imminent collision.

Justification:

- **5m/s²** deceleration demand are used in **UN-R152 (AEBS M1/N1)** as a **threshold for Emergency Braking**
- At low speeds **ISO 15622 (ACC)** specifies **average decelerations up to 5m/s² as the cruise control operating range = comfort operation**
- **6m/s²** is the threshold value for **activation of the Emergency Stop signal** according to UN-R13H.
- **Road adhesion** can be expected to allow **at least 5m/s²** deceleration, so a maneuver requirering less than that will most likely be successfully handled by the system.

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Limiting the max. allowed deceleration in certain scenarios

Current draft proposal:

Limit the allowed deceleration to [3,7/4/5] m/s^2 for some types of scenarios when

a) there is an uncritical cut-in scenario in front

b) the ALKS approaches an unobstructed stationary obstacle (vehicle, road user or blocked lane of travel)

What is the problem?

- Never exceeding a limited deceleration cannot be ensured for ALL types and scenarios of stationary obstacle, the parameters would need to be very strictly defined
  - e.g. lying motorcyclist compared to a standing pedestrian,
  - small pylones starting a workzone where relevant signalling is missing compared to a fully blocked lane
- During the transition phase or during an MRM these arbitrary limits might no longer be possible to meet, e.g. when a sensor is already affected by inclement wheather causing a transition demand. While collision avoidance will still be ensured, detection capabilities might be degraded, delaying the system reaction.
- The system needs the freedom to react to unforseen situations without any restrictions in order to ensure safety.

Conclusion:

Don‘t limit the deceleration applied by the system, because not causing unnessary harsh braking is part of the safety strategie of the system anyhow, and is assessed according to Annex CEL.