

ISO TC204/WG14 FVCMS Operation Performance, and Verification Requirements

9, December 2008
WG14 Expert Member of Japan

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Current status

The work item leader of FVCMS is the USA.

The current stage is PWI(Preliminary Work Item)
Now we are considering the requirement of the
operational performance. The validation method is the
next step.

The main part of requirement are the Mitigation Brake
initiation timing and deceleration value.

There are many opinion from each country, Now we are
discussing and adjusting.

We would like to explain the outline of the requirements.
However these are not final decision.

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FVCMS(Forward Vehicle Collision Mitigation System)

Introduction and Scope

Forward Vehicle Collision Mitigation Systems (FVCMS) reduce the severity of collisions with forward vehicles that cannot be avoided, and may reduce the likelihood of colliding with forward vehicles.

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While not required, this Standard permits collision avoidance to be attempted by a system that conforms to FVCMS.

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Collision Types

FVCMS shall function in rear-end collision scenarios with respect to all target vehicle.

Countermeasures

Type1: Collision warning + MB

Type2: Collision warning + SRB+MB

Type3: Collision warning + SRB

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Requirement Light Vehicles

Mitigation Brake(MB) shall generate a deceleration at least 5.0 m/s² for a duration chosen to achieve a minimum speed reduction of at least 2.0 m/s. This requirement does not constrain the time when mitigation braking is activated.

Requirement Heavy Vehicles

Mitigation Brake(MB) shall generate a deceleration at least 3.3 m/s² (0.34 g) for at least 0.30 s within the last 0.80 s before a collision. This requirement does not constrain the time when mitigation braking is triggered.

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Speed reduction Brake(SRB)

SRB shall be initiated for TTC between 1.8s and 4.0s.
The activation point shall be decided by the manufacturer.

The average deceleration generated by SRB when active shall not exceed 3.5 m/s² (averaged over 2s) when the Subject Vehicle(SV) speed is 20 m/s or faster.

The average deceleration generated by SRB when active shall not exceed 5.0 m/s² (averaged over 2s) when the SV speed is 5.0 m/s or slower.

The average deceleration generated by SRB when active shall not exceed the line $dSV = 5.0 - 0.1 * vSV$ (averaged over 2s) for any SV speed between 5.0 m/s and 20 m/s; where dSV is the deceleration of the SV, and vSV is the speed of the SV, and $dSV = -aSV$.

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Collision Warning

The collision warnings shall follow the requirements of ISO 15623.

Emergency Event preparation

FVCMS shall provide at least one means to prepare the occupants for mitigation braking. This preparation may take the form of a collision warning, SRB activation, or occupant physical protection preparations. If the collision warning or warning braking is initiated within 1.4 s of the start of MB, then a separate emergency event preparation is not required.

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END

Thank you for your attention

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