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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Performance requirements and test procedures for advanced
emergency braking system of commercial vehicle
(English Translation)**

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1 Scope

This standard specifies the general requirements, functional requirements, environmental adaptability requirements, test procedures for advanced emergency braking systems of commercial vehicles.

The standard applies to advanced emergency braking systems installed on commercial vehicles, where the test procedures are applicable to the normative testing of advanced emergency braking systems in a closed field test environment.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

GB/T 19951-2005 Road vehicles - Test methods for electrical disturbances from electrostatic discharge

GB/T 21437.2-2008 Road vehicles - Electrical disturbances from conduction and coupling - Part 2. Electrical transient conduction along supply lines only

GB/T 21437.3-2012 Road vehicles - Electrical disturbances from conduction and coupling - Part 3. Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines

GB/T 28046.1-2011 Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 1. General

GB/T 28046.2-2011 Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 2.Electrical load

GB/T 28046.3-2011 Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 3.Mechanical load

JT/T 794 GNSS system for operating vehicles - Technical specification for vehicle terminals

3.1 Terms and definitions

The following terms and definitions apply to this document.

3.1.1 Advanced emergency braking system

A system which automatically detect target vehicles or obstacles, detect potential forward collision hazards, issue early warning signals to alert the driver, activate the vehicle's brake system, reduce the speed to avoid or mitigate collision.

3.1.2

Subject vehicle

A vehicle equipped with an advanced emergency braking system as defined in this standard.

3.1.3

Forward vehicle

A vehicle located in front of the subject vehicle.

3.1.4

Target vehicle

On the trajectory line in front of the subject vehicle, the forward vehicle which is closest to the subject vehicle. It is the object of the advanced emergency braking system.

3.1.5

Collision warning

The AEBS alerts the driver of a collision hazard.

3.1.6

Visibility

The length of path as travelled by the non-diffused light emitted by an incandescent lamp which has a color temperature of 2700 K when its illuminance is reduced to 5% of the initial value.

[GB/T 33577-2017, definition 3.14]

4.1 AEBS composition

The AEBS shall include an environment awareness module, a control decision module, a bottom-layer execution module, a human-machine interaction module, a data communication interface. It may include a data storage module and a wireless communication module, the above modules are not limited to independent or integrated forms.

4.2 AEBS classification

According to the functions available, AEBS is divided into two categories, as shown in Table 1. Each row represents a different system type. The collision warning in the Table shall meet the requirements of 5.3. The emergency braking shall comply with the requirements of 5.4.

4.3 AEBS-adapted vehicle

AEBS shall be installed on commercial vehicles which are equipped with an anti-lock brake, an electronic stability control system, disc brakes on all wheels.

4.4 Target obstacle type

Target obstacles that AEBS can detect shall include motor vehicles and pedestrians traveling on public roads.

4.6 Driver control and human-machine interface

The AEBS shall provide the driver with a human-machine interface to interact with the driver. Provides warning information including at least two of audible, visual, or tactile, braking information, operation, cessation, or fault state information of the AEBS. The displayed information shall be clearly displayed in direct sunlight and at night.

4.11 Data backup

4.11.1

For AEBS trigger event data, it shall perform local data backup and remote data backup. The most recent storage time for local data backup shall be not less than 48 h; the remote storage time shall be not less than 60 d.

4.11.2

AEBS trigger event data shall include at least the following information.

4.12 Installation and use requirements

The AEBS system shall be installed and used in accordance with the manufacturer's instructions for use, including AEBS calibration, minimum starting speed, and applicable and non-applicable conditions.

5.1 Running speed

The AEBS shall operate normally at least within the range from a running speed of 15 km/h to the maximum design speed under all load states of the vehicle.

5.2 Target detection area

5.2.1

The minimum detection distance of AEBS shall be not more than 2 m. The maximum detection distance to the target vehicle shall be not less than 150 m.

The maximum detection distance to the pedestrians shall be not less than 60 m.

5.2.3

AEBS shall be capable of detecting the target vehicle on a bend which has a radius of curvature not more than 250 m.

5.3.1 Warning time

If the TTC or ETTC is more than 4.4 s, the AEBS shall not issue a collision warning.

5.3.2 Warning mode

When the AEBS detects a possible collision with a forward vehicle or pedestrian, it shall be able to output an alarm of not less than two different levels. The level-

1 collision warnings shall be generated 1.4 s before the emergency braking phase. The level-2 collision warnings shall be generated 0.8 s before the emergency braking phase.

5.3.3 Speed reduction in the warning phase

In the warning phase, any speed reduction of the subject vehicle shall not exceed 15 km/h or 30% of total deceleration, whichever is larger.

5.4.1 Start of emergency braking

The emergency braking phase shall not begin before the TTC or ETTC is more than or equal to 3 s.