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**Technical Requirements and Testing Methods for
Advanced Emergency Braking System of Light-Duty
Vehicles**
轻型汽车自动紧急制动系统技术要求及试验方法

(English Translation)

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FOREWORD

This document is drafted in accordance with the rules given in GB/T 1.1-2020 *“Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents”*.

This document replaces GB/T 39901-2021 *“Performance requirements and test methods for advanced emergency braking system (AEBS) of passenger cars”*. In addition to structural adjustments and editorial modifications, the following significant technical changes have been made with respect to GB/T 39901-2021:

- Modified the Scope (See Clause 1 vs. Clause 1 of GB/T 39901-2021);
- Modified the definitions of terms “advanced emergency braking system (AEBS)” and “time to collision (TTC)” (See 3.1 and 3.10 vs. 3.1 and 3.9 of GB/T 39901-2021);
- Added the terms “collision warning”, “emergency braking”, “active state”, “standby state”, “unavailable state”, “initialization”, “relative collision velocity”, “self-check”, “kerb mass”, “electronic control system”, “unit”, “transmission links”, and “boundary of functional operation” (See 3.2 to 3.9 and 3.11 to 3.15);
- Deleted the terms “subject vehicle”, “target”, “stationary target”, “moving target”, “braking target”, “emergency braking phase” and “common space” (See 3.2 to 3.8 of GB/T 39901-2021);
- Modified the general requirements (See 4.1 vs. 4.3.1 of GB/T 39901-2021);
- Added the self-check requirements (See 4.2);
- Modified the requirements for early warning and warning signal (See 4.3.1 to 4.3.3 vs. 4.2 and 4.4 of GB/T 39901-2021);
- Added the requirements for automatic deactivation (See 4.3.1.2);
- Added the requirements for the system's emergency braking capacity with the collision warning deactivated and for the system's collision warning capacity with the emergency braking deactivated (See 4.3.1.4, 5.5 and 5.6);
- Modified the requirements concerning functional safety (See 4.5, Annex A and Annex C vs. 4.1.3 and Annex A of GB/T 39901-2021);
- Modified the requirements and test methods of the system's collision warning and emergency braking capacity for vehicle target (See 5.1.1, 5.2.1 and 6.5 to 6.7 vs. 4.3.2 to 4.3.4 and 5.3 to 5.5 of GB/T 39901-2021);
- Added the requirements and test methods of the system's collision warning and emergency braking capacity for child pedestrian target, bicycle target and motor-scooter target (See 5.1.2 to 5.1.4 and 5.2.2 to 5.2.4);
- Added the requirements for robustness of the system (See 5.3);
- Modified the requirements for false reaction by the system (See 5.4 vs. 4.7 of GB/T 39901-2021);
- Modified the test vehicle conditions (See 6.1 vs. 5.2 of GB/T 39901-2021);
- Added the requirements for processing test data (See 6.2);
- Added the requirements for test object (See 6.3);
- Modified the test conditions (See 6.4 vs. 5.1 of GB/T 39901-2021);
- Deleted the Warning Signal Detection Test after a System Failure and the Test of Interruption by the Driver (See 5.6 and 5.7 of GB/T 39901-2021);
- Added the tests for collision warning and emergency braking of the system for child pedestrian target, bicycle target and motor-scooter target (See 6.8 to 6.10);
- Added the false reaction test when the vehicle target turns right during vehicle following, the false reaction test when the vehicle goes straight and passes through the adult pedestrian target moving in the same direction, and the false reaction test when the vehicle goes straight and passes through the stationary bicycle target in the opposite direction (See 6.11.1, 6.11.4 and 6.11.5);
- Modified the false reaction test with stationary vehicles in the adjacent lanes and the false reaction test with an iron plate in the driving lane (See 6.11.2 and 6.11.3 vs. 5.8 and 5.9 of GB/T 39901-2021);
- Added the system's emergency braking test with the collision warning deactivated and the system's collision warning test with the emergency braking deactivated (See 6.12 and 6.13);

- Added the simulation test (See 6.14 and Annex B);
- Modified the requirements for operation manual (See Clause 7 vs. 4.2.3 of GB/T 39901-2021);
- Added the criteria for determination of the same type (See Clause 8);
- Added the implementation of this standard (See Clause 9).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The organizations issuing this document shall not be held responsible for identifying any or all such patent rights.

This document was proposed by and is under the jurisdiction of the Ministry of Industry and Information Technology of the People's Republic of China.

This document was firstly emitted in 2021, and this is the first revision.

Technical Requirements and Testing Methods for Advanced Emergency Braking System of Light-Duty Vehicles

1 SCOPE

This document specifies the general requirements, performance requirements and criteria for determination of the same type for advanced emergency braking system of Categories M₁ and N₁ vehicles, and describes the corresponding test methods.

This document is applicable to Categories M₁ and N₁ vehicles.

Note: In order to avoid any confusion, the “advanced emergency braking system” in this document is hereinafter referred to as the “system”.

2 NORMATIVE REFERENCES

The following normative documents contain provisions which, through normative reference in this text, constitute essential provision of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendment) applies.

GB/T 3730.1	Terms and definitions of motor vehicles, trailers and combination vehicle—Part 1: Types
GB/T 34590	Road vehicles—Functional safety
GB 34660	Road vehicles—Requirements and test methods of electromagnetic compatibility
GB/T 39263	Road vehicles—Advanced driver assistance systems—Terms and definitions
ISO 19206-2	Road vehicles — Test devices for target vehicles, vulnerable road users and other objects, for assessment of active safety functions - Part 2: Requirements for pedestrian targets
ISO 19206-3	Road vehicles — Test devices for target vehicles, vulnerable road users and other objects, for assessment of active safety functions - Part 3: Requirements for passenger vehicle 3D targets
ISO 19206-4	Road vehicles — Test devices for target vehicles, vulnerable road users and other objects, for assessment of active safety functions - Part 4: Requirements for bicyclist targets
ISO 19206-5	Road vehicles — Test devices for target vehicles, vulnerable road users and other objects, for assessment of active safety functions - Part 5: Requirements for powered two-wheeler targets

3 TERMS AND DEFINITIONS

For the purpose of this document, the terms and definitions established in GB/T 39263 and GB/T 34590.1 as well as the following apply.

3.1 advanced emergency braking system (AEBS)

a system which monitors the vehicle's forward driving conditions in real time, and emits a warning signal and automatically activates the vehicle's service braking system to decelerate the vehicle when a potential hazard of collision occurs, so as to avoid or mitigate a collision

3.2 collision warning

the system monitors the vehicle's forward driving conditions in real time, and emits a warning signal when a potential hazard of forward collision occurs

3.3 emergency braking

a braking behavior emitted by the system to the service braking system of the vehicle and produced for the braking demand for purposes other than triggering the collision warning (3.2)

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