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

GB/T 44433-2024

**Performance requirements and test methods for intelligent
speed limiting systems of motor vehicles**

汽车智能限速系统性能要求及试验方法

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1 Scope

GB/T 44433-2024 sets the performance requirements and test methods for intelligent speed limiting systems: the function that reads the speed limit from traffic signs and from map data and either warns the driver or limits the vehicle to it. It is mandatory on new vehicles in Europe and it is being adopted in China, which is what this standard exists for. The document specifies the functional requirements, the accuracy with which the applicable speed limit must be determined and the handling of conditional limits, of variable message signs and of conflicting sources, the warning strategy and its escalation, the requirements on the speed limitation function itself and on the driver's ability to override it, the behaviour on failure and where the limit cannot be determined, and the human-machine interface. It then gives the test methods, the road and track scenarios covering sign recognition, map-based determination, the transition between limits and the override, and the pass criteria for each. For a carmaker or a supplier bringing such a system to China, this is the governing text.

This document specifies the general requirements and performance requirements for intelligent speed limit system of vehicles and describes the corresponding test methods. This document applies to category-M and category-N vehicles equipped with intelligent speed limit system. The technical requirements and test methods related to the intelligent speed limit control function applies to category-M1 vehicles, and as a reference to other types of vehicles.

Note: Where no confusion is caused, the "intelligent speed limit system of vehicles" in this document is referred to as the "system".

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB 5768.2-2022, Road traffic signs and markings - Part 2: Road traffic signs

GB 5768.5, Road traffic signs and markings - Part 5: Speed limit

GB 21670, Technical requirements and testing methods for passenger car braking systems

GB 34660, Road vehicles - Requirements and test methods of electromagnetic compatibility

GB/T 39263, Road vehicles - Advanced driver assistance systems - Terms and definitions

3 Terms and definitions

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

3.1 After the system obtains the road speed limit information and determines that this information is valid, the shortest driving distance within which the vehicle continues to display the speed limit information in this lane.

3.4 stabilized speed The average driving speed of the vehicle when it is in a stable driving state under the intelligent speed limit control function.

3.5 control activated The system meets the technical conditions specified by the manufacturer and performs intelligent speed limit control.

3.6 intervention The behavior that the driver actively influences the intelligent speed limit system to perform the speed limit control function in an effective manner specified by the manufacturer.

4.1 Functional requirements

4.1.1 The system shall be able to at least identify the speed limit signs and speed limit removal signs specified in

5.37 of GB 5768.2-2022.

4.1.2 The system shall have the functions of intelligent speed limit display and intelligent

speed limit information, and can also have the function of intelligent speed limit control at the same time.

4.1.3 The system shall automatically obtain the speed limit information that the vehicle shall comply with under the current conditions or in the lane ahead and display the speed limit information optically. When there is no perceptible speed limit, the system shall still issue optical display information, which shall not be digits but may be displayed as "- ", "?", etc.

4.1.4 The system shall automatically obtain the speed limit information that the vehicle shall comply with under the current conditions and monitor the vehicle's speed in real time. When the vehicle's speed exceeds the speed limit, it shall issue a prompt message.

4.1.5 A system with intelligent speed limit control function shall assist the driver to control the vehicle speed within the speed limit after the vehicle speed exceeds the speed limit. The control activated method shall meet one of the following conditions:

- a) When the vehicle speed exceeds the speed limit, the control is automatically activated;
- b) When the vehicle speed exceeds the speed limit, a speed limit control request signal is sent to the driver, and the control is activated after the driver agrees.

4.1.6 The system shall terminate the current intelligent speed limit information signal when the following conditions are met:

- a) The vehicle is travelling at a speed lower than the speed limit;
- b) A new speed limit sign appears, and the speed limit is greater than the current vehicle speed;
- c) A speed limit removal sign appears.

4.1.7 A system with intelligent speed limit control function should terminate the current speed limit control when the following conditions are met:

- a) A new speed limit sign appears, and the speed limit is greater than the current vehicle speed;

4.4 On and off

4.4.1 The system shall automatically turn on the intelligent speed limit display and intelligent speed limit information functions after the vehicle is powered on.

5.3 Intelligent speed limit control When testing in accordance with 6.6, the system with intelligent speed limit control function shall meet the following requirements in the speed limit area:

- a) Activate control or send out intelligent speed limit control request signal within 1.5 seconds when the displayed speed exceeds the speed limit displayed on the vehicle;

- b) The vehicle deceleration during control activated is not greater than
- c) Assist the driver to control the vehicle speed within the speed limit within 30 seconds after control activated, after which the displayed speed shall not exceed the speed limit and shall not be less than the speed limit by more than 5 km/h;
- d) When achieving stabilized speed control, the change in vehicle speed shall not exceed 4% of the stabilized speed or 2 km/h, whichever is greater, and the rate of speed change shall not exceed
0.2 m/s² within any measurement period of not less than
0.5 s. The stabilized speed is the average speed measured over a time interval of at least 20 s after 10 s when the displayed speed first reaches the speed limit.

6 Test methods

6.1 Test environment conditions The test environment conditions shall meet the following requirements: -- Horizontal visibility greater than 1 000 m; -- Ambient temperature at -20 °C ~ 45 °C; -- Average wind speed at least 1 m above the ground not more than 5 m/s, and the maximum wind speed not more than 10 m/s; -- Test carried out on a level, dry concrete or asphalt pavement with good adhesion; -- Speed limit sign located on the side of the road or above the lane and meeting the requirements of

5.36 in GB 5768.2-2022; -- Size, shape, color and installation of speed limit signs meeting the requirements of GB 5768.2-2022 and GB 5768.5.

6.2 Test vehicle requirements

6.2.1 Vehicle load The test shall be carried out in the state of the total mass of the test vehicle's complete vehicle kerb mass plus the driver and test equipment. The total mass of the driver and test equipment shall not exceed 150 kg. The load state of the test vehicle shall not be changed after the test starts.

6.2.2 Tires The tires used in the test shall be run-in to a normal state, and the tire pressure shall be the cold-state inflation pressure recommended by the vehicle manufacturer.

6.2.3 Brakes Before the intelligent speed limit control test, the brakes of the test vehicle shall be run- in in accordance with the provisions of GB 21670.

6.3 Requirements for test equipment The test data collection and recording instruments shall at least meet the following accuracy requirements:

- a) The requirement for speed accuracy is
0.1 km/h;
- b) The requirement for acceleration accuracy is