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

GB/T 44719-2024

**Intelligent and connected vehicle - Methods and requirements
of road test for automated driving functions**

智能网联汽车 自动驾驶功能道路试验方法及要求

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Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and definitions
- 4 Test conditions...
- 4.3 Test personnel and equipment
- 4.3.1 Test personnel
- 4.3.2 Test equipment
- 4.4 Test time
- 5.2 Test pass requirements
- 5.2.1 Function activation
- 5.2.2 Performing dynamic driving tasks
- 5.2.3 Dynamic driving mission backup

1 Scope

GB/T 44719-2024 sets the road test methods and requirements for the automated driving functions of intelligent and connected vehicles. It is the document that turns a system's declared capability into evidence: a manufacturer states an operational design domain and a set of functions, and this standard says how those claims are exercised on a road, in what scenarios, under what conditions and against what pass criteria. It sets the general requirements on the vehicle under test, on the test site and route, on the test personnel and on the instrumentation and data recording, then the test scenarios and the procedure for each, covering lane keeping and lane changing, following and cut-in, response to vulnerable road users, to stationary obstacles and to traffic control, the behaviour at intersections and merges, the takeover request and the minimal risk manoeuvre, and the behaviour at the boundaries of the operational design domain, together with the evaluation criteria and the test report. It took effect on 29 September 2024.

This document specifies the road test conditions and requirements for the autonomous driving function of intelligent connected vehicles and describes the test methods. This document is applicable to M and N vehicles with autonomous driving functions. Other types of vehicles shall refer to it as reference.

2 Normative references

The following referenced documents are indispensable for the application of this document.

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 12534, Motor vehicles. General rules of road test method

GB/T 40429-2021, Taxonomy of driving automation for vehicles

GB/T 41798-2022, Intelligent and connected vehicles -- Track testing methods and requirements for automated driving functions

GB/T 44373, Intelligent and connected vehicle -- Terms and definitions GA/T 115-2020, Evaluation methods for road traffic congestion levels

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 12534, GB/T 40429-2021, GB/T 41798-2022, GB/T 44373 as well as the followings apply.

3.1 total effective test duration The total time spent testing a specific road environment with the automated driving function activated.

3.2 single continuous test A test in which the vehicle under test is conducted continuously for a specific period of time.

4.2.2 The software and hardware related to the autonomous driving function shall not be changed during the test.

4.3.1 Test personnel

4.3.1.1 During the test, the test operation staff and on-board test staff shall not cause the system to issue an intervention request due to their personal behavior.

4.3.1.2 During the test, the test operation staff monitors the vehicle under test for safety and takes over immediately when the system issues an intervention request, and immediately intervenes in the vehicle's driving when the system executes the minimum risk strategy.

4.3.1.3 During the test, the on-board test staff shall record whether the vehicle meets the test requirements based on the test results, and record the moment when the vehicle under test fails to meet the relevant requirements of

5.2 through the test equipment.

4.3.2 Test equipment

4.3.2.1 Event time record The test equipment shall support the on-board test staff to record test operation staff intervention, test operation staff takeover, vehicle under test intervention requests, minimum risk strategy status display, and the time when the vehicle under test does not meet the test pass requirements.

4.3.2.2 Test record contents The test equipment shall be able to record at least the following during the test.

- a) Control mode of the vehicle under test, such as manual driving mode, automatic driving mode, etc.
- b) Video information of traffic conditions around the vehicle under test.
- c) Motion state parameters of the vehicle under test: 1) Test timeline; 2) Location information of vehicle under test; 3) Longitudinal speed of vehicle under test; 4) Lateral velocity of the vehicle under test; 5) Longitudinal acceleration of vehicle under test; 6) Lateral acceleration of vehicle under test; 7) Yaw velocity of vehicle under test.
- d) Video and voice monitoring information of the test operation staff and human-machine interaction status (test operation staff's face, instrument panel, steering wheel, central control screen, pedals, etc.).
- e) Test mileage and duration: 1) Record the test mileage of the vehicle under test in different road environments; 2) Record the test duration of the vehicle under test in different road environments.

4.3.2.3 Test equipment accuracy The test equipment shall meet the following requirements:

- a) The frequency of motion state acquisition and storage is not less than
- b) The resolution of the video acquisition device is not less than (1920x1080) pixels. The video sampling frame rate is not less than 30 f/s;
- c) The speed acquisition accuracy is not greater than
0.1 km/h;
- d) The distance acquisition accuracy is not greater than
0.1 m;

4.4 Test time

4.4.1 The test shall be conducted in road environments where the autonomous driving function of the vehicle under test can be activated. The total effective test duration between different types of road environments shall be recorded independently.

4.4.2 If the autonomous driving function of the vehicle under test can be activated under illumination conditions below 50 lx, night tests shall be carried out. NOTE: The daytime test period is the period from sunrise to sunset. The nighttime test period is the period from sunset to sunrise the next day. The sunrise and sunset times are subject to the information released by the local meteorological bureau.

4.4.3 The total effective test duration accumulated after several single continuous tests shall

be at least 72 h. One of the following conditions shall be met: setting plan. NOTE: The set plan refers to the test plan set according to the autonomous driving function of the vehicle under test and the test road in a single continuous test.

5.2.1 Function activation

5.2.1.1 Except when the engine starts and stops automatically, the vehicle under test shall meet one of the following requirements after each ignition (power-on):

- a) The autonomous driving function is not activated;
- b) The autonomous driving function is in a ready state under conditions that comply with its autonomous driving function description materials. NOTE: Materials describing the autonomous driving function include but are not limited to design and operating condition description documents, autonomous driving system operation manuals, and other materials.

5.2.1.2 The vehicle under test shall have a dedicated control method to activate the automatic driving function. When the test operation staff activates the automatic driving function through a dedicated control method, the vehicle under test shall meet the following requirements:

- a) If the autonomous driving function of the vehicle under test is in an inactivated state where it can be activated, the autonomous driving function is activated;
- b) If the autonomous driving function of the vehicle under test is in an inactivated state and cannot be activated, the autonomous driving function will not be activated.

5.2.2 Performing dynamic driving tasks

5.2.2.1 The autonomous driving function of the vehicle under test is activated, and no traffic accidents for which the vehicle under test is responsible shall occur when performing dynamic driving tasks.

5.2.2.2 The autonomous driving function of the vehicle under test is activated and the following requirements shall be met when performing dynamic driving tasks:

- a) Do not cause trial operators to perform non-strategic interventions; NOTE: Strategic intervention refers to the test operation staff's intervention in the driving of the vehicle under test due to reasons such as itinerary planning and destination selection.
- b) Except when changing lanes, do not ride or run over the lane dividing line or lane edge line;
- c) When encountering a stop signal, the outline of the vehicle under test does not stop beyond the stop line;
- d) The speed does not exceed the speed limit;