



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

GB/T 37471-2019

**Intelligent transportation systems - Lane change decision aid
systems - Performance requirements and test procedures**

Issued on: May 10, 2019

Implemented on: December 1, 2019

Issued by: SAMR; SAC

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1 Scope

This standard specifies the classification, function and performance requirements and test requirements of the lane change decision aid system (LCDAS).

This standard applies to the lane change decision aid system installed in category M (including category M1, M2, M3) and N (including category N1, N2, N3) vehicles under forward driving conditions. It is not applicable to the similar systems installed in category O (including category O1, O2, O3, O4) and L (including category L1, L2, L3, L4, L5) vehicles.

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 7258-2012 Safety specifications for power-driven vehicles operating on roads

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Subject vehicle A vehicle equipped with a lane change decision aid system.

3.2 Target vehicle All vehicles closing the subject vehicle from behind or in the adjacent zones of the subject vehicle.

3.3 Coverage zones The entire zone that can be monitored by the lane change decision aid system; the target vehicle in the coverage zone can be detected by the system.

Note. The coverage zone includes the left adjacent zone, the right adjacent zone, the left rear zone, the right rear zone. The location description of warning requirements is as shown in Figure 10.

3.4 Adjacent zones The area located on the left and right sides of the subject vehicle, as shown in Figure 2.

4.1.1 Classification basis

LCDAS is classified according to the minimum limit of the required coverage range, as shown in Table 1.

4.1.2 Type I system

Type I system only provides blind spot warning function. This type of system reminds the driver to pay attention to the target vehicle in the adjacent zone.

Such systems do not require warnings for target vehicles closing the target vehicle from the rear zone.

4.1.4 Type III system

Type III system provides blind spot warning function and closing vehicle warning function. The purpose of this type of system is to remind the driver to pay attention to the target vehicle in the adjacent zone and the target vehicle closing the vehicle from behind.

4.2.1 Classification basis

Type II and Type III LCDAS are classified by the maximum closing speed and minimum curve radius of the target vehicle, as shown in Table 2.

4.2.3 Category B system

For a given category B system, the minimum performance range required by the radius of the curve and the closing speed of the target vehicle is as shown in Figure 8. This type of system has the ability to work on smaller curve radius conditions.

For a given category C system, the minimum performance range required by the radius of the curve and the closing speed of the target vehicle is as shown in Figure 9. This type of system has the ability to work on smaller curve radius conditions.

4.3 Other requirements

The following content shall be declared in the accompanying document.

5.1.1 Inactive working state and basic functions

LCDAS will not provide any warning to the driver when it is inactive. The system in the inactive state can enter the standby mode. At this time, the system can still monitor the target vehicle. Because it is in the inactive state, it will not provide any warning to the driver. The system in the inactive state can also be turned off directly without entering the standby mode.

5.1.3.1 No-warning state

The non-warning state means that the system is working; the system shall be able to automatically detect the target vehicle; meanwhile the warning conditions are not met.

5.1.3.2 Warning state

The warning state is that the system is working; the system shall be able to automatically detect the target vehicle and meet the warning conditions.

5.2.1 Location description of warning requirements

In order to describe the blind spot warning requirements and closing vehicle warning requirements, it respectively defines several straight-lines, left adjacent zone, right adjacent zone, left rear zone, right rear zone. The lane markings in the Figure are for reference only for illustration, as shown in Figure 10.

Description.

5.2.3.2 Suppression of blind spot warning

In the case of the subject vehicle overtaking the target vehicle, if the target vehicle enters the adjacent zone from the front of the subject vehicle at this time, the blind spot warning can have a warning suppression for up to 2 s after the warning condition is met for the first time; during the warning suppression period, it does not provide the blind spot warning as caused by this target vehicle to the driver. This function is optional.

5.2.6 System response time

The response time of the entire system, from the time the target meets the warning requirements to the effective warning indication, shall not exceed 300 ms.

5.3.2 LCDAS active state indication

The LCDAS active state indicator can be used to tell the driver of the subject vehicle that LCDAS is in working state (see 5.1). If the driver can activate or deactivate the system manually, the system shall contain both the system inactive state indicator and the active

state indicator. The device that activates the system is a switch, so that the driver can activate or deactivate the system manually.

5.3.4 LCDAS fault indication

When LCDAS detects a system fault through the self-check function (see 5.4), the system shall notify the driver through the fault indication function.

The LCDAS fault indication shall clearly indicate the failure of the driver's system by means of vision, hearing or a combination of vision and hearing.

5.4 Self-check requirements of subject vehicle

After the system is activated, the system shall at least provide the following self-check functions.

6.1 Requirements for target vehicles for testing

For the test in this standard, the target vehicle used for the test shall be a manned motorcycle. The target vehicle shall meet the following size requirements.

6.2 Environmental requirements

The environmental requirements are as follows.

6.3.1.2 For all test processes, the test measurement system has the following accuracy.

6.3.2.3 False warning test

The purpose of this test is to detect that the blind spot warning system does not issue a warning when the test target vehicle is in a lane outside the adjacent lane.

6.3.2.4 Lateral movement of target vehicle

For the false warning test of the target vehicle's lateral movement, the definition of the straight-line is as shown in Figure 13 and 5.2.1. The test provisions and test requirements are as follows.

6.5.2.2 Subject vehicle overtaking target vehicle

The purpose of this test is to detect when the subject vehicle overtakes the target vehicle, the lane change warning system gives the required warning. This test shall be carried out in accordance with 6.3.2.2.