

ICS 43.02
CCS T40



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

GB/T 44173-2024

**Performance requirements and testing methods for the door
open warning systems of passenger cars**

乘用车车门开启预警系统性能要求及试验方法

Issued on: July 24, 2024

Implemented on: July 24, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

Foreword...	3
1 Scope...	4
2 Normative references...	4
3 Terms and definitions...	4
4 General requirements...	6
4.1 Functionality...	6
4.2 Self-check...	6
4.3 DOWS status prompt...	7
4.4 Warning messages...	7
4.5 Fault response...	7
4.6 Electromagnetic compatibility...	7
5 Performance requirements...	7
5.1 Left side alarm...	7
5.2 Right side alarm...	8
5.3 Delayed shutdown...	9
6 Test methods...	9
6.1 DOWS settings of the subject vehicle...	9
6.2 Test equipment...	9
6.3 Test environment...	10
6.4 DOWS alarm boundary test...	10
6.5 Test of a target straight-line overtaking the subject vehicle...	12
6.6 Test of a target changing lane and overtaking the subject vehicle...	12

1 Scope

China's national performance requirements and test methods for door open warning systems on passenger cars. The system detects a vehicle or cyclist approaching from behind as an occupant is about to open a door, and warns them. It addresses the collision the cycling world calls dooring, which in a country with China's volume of electric two-wheeler traffic is a frequent and serious event: a rider travelling at twenty-five kilometres an hour has no chance of avoiding a door opened a metre in front of them, and the injuries are severe because the rider is thrown into the traffic lane. The requirements have to cover detection of the vehicles that matter - which includes the electric bicycles and

scooters that a radar tuned for cars may not see well - the timing of the warning relative to the door handle being pulled, and the escalation from warning to actively resisting the door's opening.

This document specifies the general and performance requirements for door open warning systems of passenger cars and describes the test methods. This document applies to M1 vehicles equipped with a door open warning system.

2 Normative references

The provisions of the following documents constitute the essential clauses of this document through normative references in this text. Among them, for referenced documents with dates, only the versions corresponding to the dates are applicable to this document; for referenced documents without dates, the latest versions (including all amendments) are applicable to this document.

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

The terms and definitions defined in GB/T 39263 and the following apply to this document.

3.1 door open warning system; DOWS When the vehicle is parked and a door is about to be opened, the system that monitors other road users to the side and rear of the vehicle and issues a warning message if there is a risk of collision due to the door being opened.

3.2 subject vehicle The passenger car under test, which is equipped with a door open warning system (3.1) and test equipment. functions:

- a) Check whether the relevant electrical components are operating normally;
- b) Check whether the relevant sensor components are operating normally.

4.3 DOWS status prompt For DOWS that can be actively opened and closed by the driver, an optical prompt message shall be issued when the driver actively closes the DOWS.

4.4 Warning messages When DOWS detects that the vehicle door is open and there is a risk of collision with a target, it shall issue a warning message in a way that is easily perceived by the driver and passengers. The warning message:

- a) shall be issued by at least one of the optical, acoustic and tactile methods, and clearly indicate that the target is on the left or right side of the subject vehicle;
- b) shall be clearly distinguished from other DOWS prompts.

4.5 Fault response If a fault occurs during DOWS self-check and operation, DOWS shall

issue a fault indication message. The fault indication message shall be in at least one of the optical, acoustic and tactile ways, and shall be clearly distinguished from the DOWS warning message and other fault indication messages of the vehicle.

4.6 Electromagnetic compatibility DOWS electromagnetic compatibility shall comply with the requirements of GB 34660.

5 Performance requirements

5.1 Left side alarm As shown in Figure 3, the test is carried out according to 6.4,

6.5 and 6.6. When all the following conditions are met, the DOWS shall continuously issue the left warning message. The TTC when the warning message is issued shall not be less than

1.5 seconds. The warning message shall meet the requirements of 4.4: Line C -- parallel to the center line of the subject vehicle and located at the outermost edge of the left side of the subject vehicle body (excluding the exterior rear-view mirror); Line D -- parallel to the center line of the subject vehicle and located at the outermost edge of the right side of the subject vehicle body (excluding the exterior rear-view mirror); Line E -- parallel to the center line of the subject vehicle and located to the right of the rightmost edge of the subject vehicle body and

1.5 m away from the rightmost edge of the subject vehicle body (excluding the exterior rear-view mirror). Figure 3 -- Alarm reference line schematic diagram

5.3 Delayed shutdown When tested according to 6.7, DOWS shall meet the following requirements:

- a) For subject vehicles equipped with a power-off switch, the DOWS shall continue to work for at least 3 minutes after power-off and issue a warning message when the alarm conditions are met;
- b) For subject vehicles without a power-off switch, the DOWS shall continue to work for at least 3 minutes when stationary and issue a warning message when the alarm conditions are met.

6 Test methods

6.1 DOWS settings of the subject vehicle For DOWS with adjustable alarm thresholds, the test shall be conducted at the DOWS latest alarm threshold setting. The DOWS setting shall not be changed after the test begins.

6.2 Test equipment

6.2.1 The test equipment shall be completely independent of the subject vehicle. The

accuracy of the test equipment shall meet the following requirements:

- a) The distance measurement accuracy is at least 0.05 m;
- b) The time measurement accuracy is at least 30 ms;
- c) The speed measurement accuracy is at least 0.1 km/h.

6.2.2 The test targets shall meet the following requirements:

- a) A common mass-produced M1 vehicle or a flexible target whose characterization parameters can represent an M1 vehicle shall be selected as the target vehicle;
- b) A common mass-produced bicycle or a flexible target whose characterization parameters can represent a bicycle shall be selected as the target bicycle. The length of the bicycle is (1.8 ± 0.2) m, the width (including an adult rider) is (0.5 ± 0.2) m, and the height (including an adult rider) is (1.7 ± 0.2) m. NOTE: Flexible target refers to a target that can reduce the collision damage of the subject vehicle during the test.

6.3 Test environment The test environment shall meet the following requirements:

- a) The light intensity is not less than 500 lx;
- b) The temperature range is $-20\text{ }^{\circ}\text{C} \sim +45\text{ }^{\circ}\text{C}$;
- c) The horizontal visibility is greater than 1 km.

6.4 DOWS alarm boundary test As shown in Figure 4, the target overtakes the stationary subject vehicle in a straight line at the speed and lateral distance shown in Table 1, parallel to the subject vehicle. When the target enters the adjacent area of the subject vehicle with a longitudinal distance being the corresponding value in Table 1, and the test side door of the subject vehicle is opened and stationary with an angle between the door and the body being as small as possible, the test begins. When the target overtakes line A of the subject vehicle (3 ± 0.5) m, the test ends. The test includes the following: