



**NATIONAL STANDARD OF THE
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**Performance requirements and test methods for driver
attention monitoring system**

驾驶员注意力监测系统 性能要求及试验方法

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Foreword

This document was 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.

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1 Scope

This document specifies the general requirements, performance requirements and test methods for driver attention monitoring system (hereinafter referred to as the "system").

This document applies to M and N vehicles which are equipped with a driver attention monitoring system based on image recognition technology. It can be used as a reference for the implementation of other systems with the same function.

2 Normative references

The following documents are normatively referenced in this document and are indispensable for its application. 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.

3 Terms and definitions

Terms and definitions determined by GB/T 39263 and the following ones are applicable to this document.

3.1 Driver attention monitoring system; DAMS

3.2 Distraction

The state in which the driver is unable to concentrate on performing the driving task due to fatigue driving, interference from the external environment, or actions unrelated to driving while driving the vehicle.

3.3 Abnormal head pose

The behavior where the front-back tilt angle and horizontal rotation angle of the head exceed the normal range when the driver raises the head, lowers the head, or shakes the head left and right.

3.4 Accuracy rate

The ratio of the number of correct detections of a behavior to the number of detection events (number of correct detections + number of false detections).

3.5 Detection rate

The ratio of the number of correct detections of a behavior to the number of real events (number of correct detections + number of missed detections).

3.6 Humanoid robot

A robot, with the appearance of human, which is programmed to mimic human movements.

4 General requirements

4.1 Functional requirements

4.2 Self-inspection

The system shall perform self-inspection after power-on and shall have at least the following self-inspection functions:

- Check whether the relevant electrical components are in normal operation;
- Check whether the relevant sensing elements are in normal operation.

4.3 System state transition and information prompt requirements

When the system is fault-free, the following requirements shall be met:

provided. When the driver turns off the system actively, the system shall send out an optical prompt message and display it continuously;

after the activation condition is satisfied, and the activation condition shall be at least one of the following methods:

- Direct activation: the system is automatically activated after entering the standby state;
- Minimum speed activation: the system is automatically activated when the vehicle speed reaches the minimum activation speed designed by the system;
- d) When the system, which is activated, detects that the driver is distracted, it shall send a prompt message to the driver in at least two ways of optics, acoustics and haptics, which shall be distinguished from other prompt messages;
- e) When the activation condition is not met, the system shall exit from the activation state to the standby state;
- f) When the system is in the standby and off state, no prompt message shall be sent to the driver.

4.4 Fault indication

In case of malfunction of the system, the system shall have a fault indication function and shall at least continuously send an indication to the driver in an optical manner. The indication shall be distinguished from other prompts in the system and shall be visible.

4.5 Electromagnetic compatibility

The electromagnetic compatibility of the system shall meet the requirements of GB 34660.

5 Performance requirements

5.1 Requirements for driver identification ability

Carry out the test according to 6.2. When the behavior of the test targets meets the prompt message conditions in Table 1, the number of people, whose behaviors are all correctly identified by the system and to whom a prompt message meeting the requirements of 4.3 d) is sent out, shall not be less than 2/3 of the total number of test personnel. Among all behaviors of the test personnel whose behaviors are not fully identified, there shall be at least 1 time when the system identifies the corresponding behavior and sends out a prompt message.

If the system can send out a prompt message when the driver yawns or smokes, carry out