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

GB/T 43499-2023

**Testing methods for the software of motor vehicle inspection
system**

机动车检测系统软件测试方法

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Foreword

This document was issued on 28 December 2023 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 July 2024.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

1 Scope

GB/T 43499-2023 covers the testing of the software that runs a motor vehicle inspection system - the test content, the test methods used to exercise it, and the test document set, which follows GB/T 25000.51-2016 and gathers the test plan, the test cases and the records showing what was actually run. Informative annexes list the defects that typically surface when the software is examined from the tester's point of view, and provide forms for registering the software version and for reporting the results; terms are taken from GB/T 42685. Testing this particular software is worth a document of its own because it sits between the measuring equipment in the inspection lane and the roadworthiness decision: it collects the readings the lane equipment produces, applies the pass or fail criteria, and issues the record the vehicle is then registered on. Software that mishandles a reading, accepts a value entered by hand, or runs in a version nobody logged lets an unsafe or over-polluting vehicle through while leaving a clean paper trail behind it. Written for inspection agencies, the developers who supply their systems, and the authorities that accredit and supervise them.

This document specifies the test content, test methods, and test document set of the motor vehicle inspection agency's inspection system software.

This document is applicable to the testing of inspection system software of motor vehicle inspection agencies.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, for dated reference documents, only the version corresponding to the date applies to this document; for undated reference documents, the latest version (including all amendments) applies to this document.

GB/T 25000.51-2016 Systems and software engineering - Systems and software Quality Requirements and Evaluation (SQuaRE) - Part 51: Requirements for quality of Ready to Use Software Product (RUSP) and instructions for testing

GB/T 26765 Specifications for motor vehicle safety inspection business information system and networking

GB/T 38634.4-2020 Systems and software engineering - Software testing - Part 4: Test techniques

GB/T 42685 Terminology of power-driven vehicle inspection

HJ 1238 Technical specification for data collection and transmission of vehicles periodic emissions inspection

3 Terms and definitions

The terms and definitions defined in GB/T 42685 and the following apply to this document.

3.1

Vehicle inspection institution

Test the extent to which an activity or event can be proven and undeniable after it has occurred. Data non-repudiation testing includes the following:

a) Function to provide evidence to the data originator: Test whether the software has

the function to provide evidence of the origin of the data to the data originator upon request;

b) Function to provide evidence to the data recipients: Test whether the software has the function of providing data recipients with evidence of data receipt upon request.

4.2.2.3 Data verifiability

Test the extent to which an entity's activities can be uniquely traced to that entity. Data verifiability testing includes the following:

a) User process association and traceability: Test whether the software can associate the user process with the owner user, so that the behavior of the user process can be traced back to the owner user of the process;

b) Process dynamic association and traceability: Test whether the software can associate the system process dynamics with the current service requester user, so that the behavior of the system process can be traced back to the current service requester user.

4.2.2.4 Data authenticity

Test the extent to which the identity of a test object or resource can be verified to be consistent with its claims. Data authenticity testing includes the following:

a) User list and configuration table: Test whether the software has the user list and configuration table of the current system;

b) Access login record: Test whether the access login record of the software is complete in the system's access history database;

c) Historical logs and log management: Test whether the software has historical logs and log management functions for users to use the system;

d) Simulated intrusion log records: Test whether the software log content has relevant records when the software is invaded by a simulated attack event;

e) Virus detection records: Test whether the records of software users' access to systems and data include "virus detection records" to prevent viruses.

4.2.2.5 Data transmission security

Test how well data is protected during transmission and processing. Data transmission security testing includes the following:

- a) Verification: Test whether the data verification code algorithm is used, generate the verification code of the source data, verify the integrity of important data during transmission and processing to prevent key data from being illegally tampered with;
- b) Data encryption: Test whether encryption technology is used to encrypt important data and private information to protect data confidentiality and prevent information leakage;
- c) Network transmission security: Test whether measures are taken to ensure the security of data transmission between different networks.

4.2.3 Source code standardization

Check the program and discover possible exceptions in the program. Source code testing includes but is not limited to the following:

- a) Statement label does not exist: Test whether there is a statement label that redirects to a statement label that does not exist;
- b) Unused statement labels: Test whether there are unused statement labels;
- c) Unused subroutine definitions: Test whether there are unused subroutine definitions;
- d) Subroutine does not exist: Test whether to call a subroutine that does not exist;
- e) Unreachable statements: Test whether there are statements that cannot be reached after entering from the program entrance;
- f) Statements that cannot reach the stop statement: Test whether there are statements that cannot reach the stop statement;
- g) Special trigger pop-up window: Test whether there are special trigger conditions and a pop-up window will appear.

4.2.4 Others