

ICS 43.040
CCS T 40



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

GB/T 47341-2026

**Intelligent and connected vehicles - Technical requirements and
test methods for vehicle operating systems**

智能网联汽车 车载操作系统技术要求及试验方法

Issued on: March 31, 2026

Implemented on: July 1, 2026

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

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1 Scope

GB/T 47341-2026 is the Chinese national standard covering the operating system in a car - the real-time and safety partitions alongside the infotainment, the isolation between them, the update mechanism, the security and the resource and timing guarantees a vehicle function depends on. China is building domestic vehicle operating systems, and this is the specification they will be measured against. At 24,000 words, first edition, in force since 1 July 2026. It was issued on 31 March 2026 and has been in force since 1 July 2026, as a first edition. The document is under the responsibility of the Ministry of Industry and Information Technology. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This Document specifies the technical requirements for vehicle-info operating systems and describes the corresponding test methods. This Document applies to Category M and N vehicles equipped with vehicle-info operating systems; other vehicle types shall refer to this Document for reference.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in 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) is applicable to this Document.

GB/T 41388-2022 Information security technology - Trusted execution environment - Basic security specification

GB/T 44464-2024 General requirements of vehicle data

GB 44495-2024 Technical requirements for vehicle cybersecurity

GB 44496-2024 General technical requirements for software update of vehicles

3 Terms and Definitions

For the purposes of this Document, the following terms and definitions apply.

3.1 Vehicle-info operating system Running on the on-board information interactive system and instrument hardware, it manages and controls the in-vehicle software and hardware resources of intelligent connected vehicles, providing software collection of services for intelligent connected vehicles beyond the implementation of driving automation functions. [Source: GB/T 44373-2024, 5.15.2] accounts, and guest accounts. NOTE

1.Owner account. Each vehicle is uniquely associated with one owner account. Users log in to the vehicle's on-board system through this account, which grants complete control over vehicle settings and functions. NOTE

2.Non-owner account. An authorized account, authorized by the owner account and also revoked by the owner account. For security reasons, there is an upper limit to the number of non-owner accounts that an owner account can authorize to prevent abuse and security risks. NOTE

3.Guest account. When a user is not logged in with their owner or non-owner account, they can log in with a guest account to access basic functions of the vehicle-info operating system, such as vehicle control, settings, and map services, ensuring that users can use the vehicle's basic functions even when not logged in.

3.9 System account number Vehicle-info operating system accounts that provide services such as access authorization and local resource management, etc.

3.10 Cloud application account number Vehicle-info operating system accounts that provide services such as third-party account binding and multi-account management, etc.

4 Abbreviated Terms

The following abbreviated terms apply to this Document. API. Application Programming Interface ASIL. Automotive Safety Integration Level CA. Client Application CAN. Controller Area Network DMS. Driver Monitoring System ETC. Electronic Toll Collection GNSS. Global Navigation Satellite System IC. Integrated Circuit MCU. Microcontroller Unit OBD. On-Board Diagnostics OBU. On-Board Unit OMS. Occupancy Monitoring System OTA. Over the Air PAN. Privileged Access Never PXN. Privileged Execute Never REE. Rich Execution Environment SE. Security Element TA. Trust Application TEE. Trusted Execution Environment VLAN. Virtual Local Area Network V2X. Vehicle-to-Everything

5 Technical Requirements for Vehicle-Info Operating System

5.1 General requirements The architecture and functional modules of the vehicle-info operating system are detailed in Appendix A. The functional modules supported by the three types of vehicle-info operating systems (central control operating system, dashboard operating system, and T-box operating system), and the optional supported functional modules, shall meet the requirements of Appendix B. The vehicle-info operating system shall be tested according to at least two general test methods in

6.1 to test all the functional modules of the vehicle-info operating system. The test methods applicable to each functional module of the vehicle-info operating system are detailed in Appendix C.

5.2 Kernel of the vehicle-info operating system The kernel of the vehicle-info operating system is divided into a microkernel and a monolithic kernel. According to the test methods in 6.2, the microkernel shall meet the following conditions

- a) ~ i); and the monolithic kernel shall meet all conditions except f).
- a) Processes shall complete their entire lifecycle, from startup to termination, and release all occupied resources after termination.
- b) For process groups with the same priority, it shall be ensured that each process receives a CPU time slice.
- c) For process groups with different priorities, ensure that high-priority processes execute before low-priority processes.
- d) The kernel shall support memory allocation, reclamation, isolation, and sharing.
- e) Timeliness of inter-process communication shall be ensured, guaranteeing that data transmission is timely and conforms to design specifications.
- f) User-space driver crashes shall not cause kernel crashes or affect the normal operation of other processes.
- g) User-space application crashes shall not affect the normal operation of other processes or cause kernel crashes.
- h) The kernel shall support the instruction set of at least one chip.
- i) It shall provide scalable support for the underlying protocols of USB storage devices.
- j) The operating system monolithic kernel shall provide a device driver framework and device driver access control functions for the Hardware Abstraction Layer (HAL).

5.3 Resource abstraction

5.3.1 Hardware abstraction The hardware abstraction shall meet the following

requirements, following Subclause 6.3.1.

- a) Support resource abstraction for chips and test the functions of each abstract interface;
- b) Support the sensing and execution resource abstraction of devices such as screens, cameras, speakers, and microphones, etc.;
- c) Support resource abstraction for peripheral ICs (such as Bluetooth, WLAN, GNSS, FM, etc.);
- d) Support resource abstraction for peripheral storage devices (such as USB storage devices).

5.3.2 Resource abstraction of the entire vehicle service Following the test according to 6.3.2, the resource abstraction of the entire vehicle service shall provide APIs for various basic services and upper-layer applications. For example, it shall provide APIs to implement services such as adjusting and displaying results for air conditioning, seats, etc.

5.4 Basic library Following the test according to 6.4, the basic library shall at least provide inter-process communication libraries, network transmission libraries, secure communication libraries, image libraries, and C/C++ libraries for the vehicle-info operating system applications. It should provide language engine libraries, cryptographic algorithms, or encapsulated interfaces for hardware encryption and decryption.

5.5 Basic services

5.5.1 Connected service The connected service shall be tested according to

6.5.1 and shall meet the following requirements.

- a) Support connectivity with in-vehicle devices such as T-Box, OBD, Tuner, V2X-OBUs, and ETC;
- b) Support information exchange and communication with smart terminals and the cloud via wireless (e.g., WLAN, Bluetooth) or wired (e.g., USB) methods to realize entertainment and intelligent services, auxiliary control services, etc.;
- c) Support at least one network protocol (e.g., TCP/IP, HTTPS, MQTT, etc.).

5.5.2 Map and location service The test shall be conducted according to 6.5.2. The map and location service shall meet the following requirements.

- a) The map and location services shall provide location-related APIs for various applications, including maps, etc.;
- b) The map and location services shall be able to combine GNSS, various sensor, and vehicle signal data to solve for location information;
- c) The map and location services shall be able to upload location data to the cloud in real