

ICS 43.080.20

CCS T42



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

GB/T 25982-2024

Replacing GB/T 25982-2010

Limits and measurement methods for bus interior noise

客车车内噪声限值及测量方法

Issued on: December 31, 2024

Implemented on: July 1, 2025

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

Table of Contents

1 Scope
2 Normative References
3 Terms and Definitions
4 Noise Limits
5 Measurement Instruments
5.1 Acoustic Measurement Instruments
6 Measurement Conditions
7 Vehicle Conditions
7.1 Powertrain
7.2 Tires
7.4 Sunroofs, Windows, Air Inlets (outlets), Auxiliary Devices and Adjustable Seats
8 Measurement Method
8.1 Selection of Measurement Points
8.2 Microphone Placement

1 Scope

GB/T 25982-2024 is the Chinese national standard on limits and measurement methods for bus interior noise, in the field of road vehicles engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 31 December 2024 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 July 2025. Classification: ICS 43.080.20, CCS T42. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the limits, measurement instruments, measurement conditions, vehicle conditions, measurement methods and test reports for bus interior noise. This document applies to Category-M2 and Category-M3 vehicles.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document

through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 3241-2010 Electroacoustics - Octave-band and Fractional-octave-band Filters

GB/T 3730.1 Terms and Definitions of Motor Vehicles, Trailers and Combination Vehicle - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 3730.1, GB/T 3947, GB/T 15089 and GB/T 19596, and the following terms and definitions are applicable to this document.

3.1 steady noise During steady operation, continuous noise generated by a mixture of tire noise, airflow noise, vehicle body vibration noise, powertrain, transmission system, or component operating noise.

3.2 background noise Noise emitted by all noise sources other than the noise source being measured. NOTE. background noise includes airborne sound, noise from structural vibration and electrical noise in the instrument.

3.3 loudness The property of the auditory sense that determines the intensity of a sound. NOTE. loudness depends primarily on the sound pressure that triggers the auditory sense, but it is also related to the frequency and waveform of the sound. The unit is sone. [Source: GB/T 3947-1996, 9.7, modified]

3.4 sharpness An auditory sensation that describes the sharpness or harshness of a sound's timbre. NOTE. sharpness is a psychological indicator that measures the amount of high-frequency components in a sound that reflects the ratio of high-frequency energy to the total energy in the sound. The unit is acum. 1 acum is the sharpness produced by a 60 dB narrowband noise with a center frequency of 1 kHz and a bandwidth of 160 Hz.

3.5 state of charge; SOC The percentage of the capacity that can be released in the current battery under specified discharge conditions in relation to the available capacity. [Source: GB/T 19596-2017, 3.3.3.2.5]

4 Noise Limits

4.1 The sound pressure level and loudness of interior noise of internal combustion engine buses and hybrid electric buses shall not exceed the limits specified in Table 1.

4.2 The sound pressure level, loudness and sharpness of interior noise of pure electric buses and buses with pure electric mode shall not exceed the limits specified in Table 2.

5.1 Acoustic Measurement Instruments

5.1.1 The sound level meter or other equivalent measurement equipment used for measurement shall meet the requirements for Class 1 sound level meter as specified in GB/T 3785.1-2023. Measurements shall use the "A" frequency weighting characteristic and the "F" time weighting characteristic. If the sound level meter or other equivalent measurement equipment is capable of automatically sampling and measuring the A-weighted sound level, then, the time interval of reading shall not exceed 30 ms. The microphone shall be an omnidirectional microphone.

5.1.2 The loudness and sharpness measurement system shall meet the relevant requirements for Class 1 filters in GB/T 3241-2010. The measurement equipment shall be capable of at least 24-bit quantization. The sampling rate, measuring range and dynamic range of the equipment shall be appropriate for the signal being measured.

5.1.3 Before and after measurement, the entire measurement equipment shall be calibrated using an acoustic calibrator with Class 1 accuracy and meeting the provisions of GB/T 15173-2010. Without further adjustments, if the difference between the last calibration reading and the previous calibration reading exceeds

0.5 dB(A), then, the measurement result after the previous calibration is considered invalid.

5.2 Engine Speed and Vehicle Speed Measurement Instruments An engine speed measurement instrument with an accuracy of at least 2% shall be used for speed measurement, and a vehicle speed measurement instrument with an accuracy of at least 1% shall be used for vehicle speed measurement. Data from the bus's own speedometer, tachometer, on-board diagnostics (OBD), or similar systems shall not be used.

6 Measurement Conditions

6.1 The measurement location shall meet the following conditions. noise radiated from the bus can only become part of the interior noise through reflection from the road surface and cannot become part of the interior noise through reflection from buildings, walls, or other objects. During measurement, the distance between the bus and other objects shall be greater than 50 m.

6.2 The test section shall be a clean, dry, flat, unfrozen asphalt or concrete pavement with no joints, uneven surfaces, or similar surface structures. The test route in the test section shall be straight.

6.3 The wind speed at a height of (1.2 ± 0.05) m along the measurement route shall not exceed 5 m/s. The temperature range shall be 5 °C ~ 40 °C.

6.4 The measured noise shall be 10 dB(A) higher than the background noise. When the measured noise differs from the background noise by 10 dB(A) ~ 15 dB(A), the

corresponding correction value in Table 3 shall be subtracted from the measurement equipment reading to obtain the measurement result.

7.1 Powertrain

7.1.1 Before measurement, all powertrain operating conditions, such as fuel, lubricating oil, ignition timing or injection time, shall comply with the manufacturer's specifications. The powertrain shall be stable within the normal operating temperature range, and the powertrain cooling system shall be normally functioning.

7.1.2 Before measurement, the technical condition of the vehicle under test shall meet the technical conditions of the vehicle model, with particular attention paid to its acceleration performance and maximum vehicle speed.

7.1.3 Before test, the state of charge (SOC) of the power battery of pure electric buses shall be no less than 60%. The SOC of the power battery of fuel cell buses or hybrid buses shall be within the normal range specified by the bus manufacturer.

7.2 Tires

7.2.1 The tires used on the vehicle under test shall conform to the model specified by the manufacturing enterprise, and the tire inflation pressure shall comply with the manufacturing enterprise's specifications.

7.2.2 The tread depth of the steering wheel shall be no less than 3.2 mm, and the tread depth of all other tires shall be no less than

7.2.3 Tire model and inflation pressure shall be recorded in the test report.

7.3 Vehicle Mass Status The vehicle shall be unloaded during the noise test. No other loads shall be present except for the driver, necessary measurement personnel and test equipment.

7.4 Sunroofs, Windows, Air Inlets (outlets), Auxiliary Devices and Adjustable Seats

7.4.1 All sunroofs, windows and cover plates shall be closed; for vehicles with closable air inlets and outlets, they shall all be closed.

7.4.2 Auxiliary devices, such as the air compressor, windshield wipers, heater, fan, air conditioner, low-speed warning sound device and interior audio system shall not operate during the measurement and test. If a certain auxiliary device automatically operates and has a significant impact on the bus interior noise, it shall remain in automatic operation throughout the measurement period, and the operating conditions shall be stated in the test report.