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

GB/T 20243.2-2025

**Acoustics - Measurement of the influence of road surfaces on
traffic noise - Part 2: The close-proximity method**

声学道路表面对交通噪声影响的测量第2部分：近距法

(English Translation)

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 2 of GB/T 20243 "Measurement of the influence of acoustic road surfaces on traffic noise". GB/T 20243 has been the following parts were published.

--- Part 1: Statistical adoption method;

--- Part 2: Close-range method.

This document is modified to adopt ISO 11819-2:2017 "Acoustic road surface measurement of the impact of traffic noise Part 2: Close-range method".

The technical differences between this document and ISO 11819-2:2017 and their reasons are as follows.

--- IEC 61260-1 (see 6.2) is replaced by the normative reference GB/T 3241 to adapt to the technical conditions of my country;

--- ISO 5725-2 (see Chapter 13) was replaced by the normative reference GB/T 6379.2 to adapt to my country's technical conditions;

--- IEC 60942 (see 6.3, 6.9) is replaced by the normative reference GB/T 15173 to adapt to the technical conditions of my country;

--- ISO 11819-1 (see A.5.2) was replaced by the normative reference GB/T 20243.1 to adapt to my country's technical conditions;

--- The normative reference GB/T 27418 replaces ISO/IEC Guide 98-3 (see Chapter 12) to adapt to my country's technology condition;

--- Added normative reference GB/T 22157 (see A.3.3.3) to adapt to my country's technical conditions;

---Change the satellite positioning system from GPS to Beidou and other positioning systems, and change the maximum allowable positioning error to $\pm 2\text{m}$ (see 6.5).

In line with the current status of my country's technological development;

---Change the satellite positioning system from GPS to BeiDou and other satellite navigation systems (see G.8) to conform to the current technological development status of my country.

The following editorial changes were made to this document.

- To improve the explanation of the calculation steps, the calculation steps of the acoustic signal average are added, and Appendix B (see 11.1) is referenced;
- Delete formula (1), formula (2), formula (8), formula (C.1), formula (C.3), formula (C.4), formula (C.7), formula (C.9), Units in formula (C.11) (see 11.2, 11.3, Appendix C).
- Modify the test report examples to typical test cases in my country (see Appendix O) to verify their effectiveness.

Introduction

The radiation and propagation of road traffic noise depends largely on the road surface characteristics, especially texture, flow resistance and sound absorption. These characteristics Affects the generation of tire/road noise. In addition, sound absorption can affect sound propagation, especially when propagating close to the road surface.

Tire/road noise and powertrain noise are usually generated at a higher altitude from the road surface and may also be affected by gaps in the road surface during transmission.

These effects can lead to differences in sound pressure levels, which may occur on different road surfaces under certain traffic flow and traffic composition.

The difference in sound pressure level can be as high as 15dB, which has a significant impact on the environmental quality along the road.

GB/T 20243 provides a method for objectively evaluating road characteristics, which is intended to consist of three parts.

--- Part 1: Statistical method. The purpose is to compare the traffic noise of different road surfaces under different traffic flow compositions.

Influence.

--- Part 2: Close-range method. The purpose is to evaluate the impact of different road surfaces on traffic noise when tire/road noise is dominant.

--- Part 3: Reference tires. The purpose is to provide two reference tires for close-range testing.

"Measurement of the impact of acoustic road surfaces on traffic noise Part 1: Statistical method" (GB/T 20243.1) provides the above There are two main situations in which the statistical pass-through method (SPB) is applicable. First, the method According to the impact on traffic noise, the road surface is divided into two categories. typical and good; secondly, regardless of the road surface condition and road age, the specific scene can be evaluated.

However, due to the strict requirements of the acoustic environment at the measurement

site, this method is generally not applicable to new or modified roads.

In addition, the SPB method has some other practical limitations as described in Appendix D.

The method specified in this document, together with ISO/T S11819-3, serves as a supplement to the SPB method which has limitations.

Measurement of the impact of acoustic road surfaces on traffic noise Part 2: Close-range method

1 Scope

This document specifies a method for evaluating the impact of different road surfaces on traffic noise when tire/road noise is dominant.

For free flow traffic on a flat road at a constant speed of not less than 40 km/h, tire/road noise plays a major role (in some heavy vehicles on roads with a high proportion of vehicles, tire/road noise at 40 km/h may not play a dominant role).

In driving conditions, such as at intersections or during sudden acceleration, in traffic jams, when the longitudinal slope is steep and when there are a large number of heavy vehicles, the road the effect of the surface on noise is more complex.

Standards for comparing road surface characteristics provide road and environmental authorities with a tool for using road surfaces that meet noise limit standards.

However, the development of such noise limit standards is beyond the scope of this document.

GB/T 20243.1 defines another method. the statistical pass method (SPB). The close distance method (CPX) given in this document is different from the statistical pass method (SPB).

The main purpose of the law is the same, but it is a useful supplement to the statistical law, for example.

- Check whether the road noise characteristics at most locations meet the road pavement specification requirements (a Examples of product conformity);
- Check the acoustic impact of maintenance conditions, such as pavement wear, as well as clogging and cleaning effects on porous pavements;
- Check the lateral and longitudinal uniformity of the road section;
- Develop low-noise pavement and study tire/pavement interaction.

Note: This document does not describe the application conditions for measuring targets using the CPX method. Such conditions are specified in other standards and specifications. However,