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

GB/T 13670-2010

Replacing GB/T 13670-2000

**Mechanical vibration -- Measurement and analysis of
whole-body vibration to which passengers and crew are
exposed in railway vehicles**

机械振动 铁道车辆内乘客及乘务员暴露于全身振动的测量与分析

(English Translation)

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Foreword

This standard is identical with ISO 10056:2001 "Mechanical vibration of railway vehicles within which passengers and crew are exposed to whole-body vibration measurement and Analysis "(in English).

For ease of use, this standard made the following editorial changes.

- a) Remove the preface to international standards;
- b) use the decimal symbol instead of a decimal point " , " , " ;
- c) on the ISO 10056:2001 and other international standards referenced, has been adopted as the equivalent of a standard, instead of using our standard correspondence International standards, while others direct reference to international standards;
- d) the contents of the 3.2 presentation in tabular form;
- e) in accordance with GB/T 1.1-2000 requirements, after an increase in 7.6 "measurements shall include." content.

This standard replaces GB/T 13670-2000 "Measurement and analysis of railway vehicles of passengers and crew are exposed to vibration." this standard and GB/T 13670-2000 compared to the main changes are as follows.

--- In the scope, increased (0.5 ~ 80) Hz frequency range, the standard only applies to standing and sitting, does not apply to the transfer arm system Vibration system and associated with motion sickness horizontal, vertical and rotational movement of the ELF, do not provide a method for evaluation of vibration effects content;

--- Increased Normative contents of the file;

--- Adds symbols and abbreviations;

--- Railway vibration characteristics of the vehicle, increasing the track level crossing and canceled the acceleration and braking of the content;

--- Increasing the measurement chapter overview, measurement position, the measuring direction entry; supplemented with relevant content measuring apparatus is given the characteristics of the instrument should be compatible sensors and conditioning amplifiers should be considered as a whole; gives a lower limit on the smallest measuring range;

Minimum frequency range of tolerance by the $\pm 0.6\text{dB}$ to $\pm 0.5\text{dB}$; nonlinear positive hysteresis by the more than 0.3% of measured value change Less than or equal to 1%; an increase of more than nominal frequency band and 1/3 octave range to limit the allowable error of $\pm 2\text{dB}$, nominal frequency Octave-band attenuation can be extended to infinite content;

--- In the analysis chapter, an overview of entries increased;

--- In the test report, we are given and detailed evaluation methods;

--- Added Appendix A. Example test report.

Appendix A of this standard is an informative annex.

The standard proposed by the People's Republic of China Ministry of Railways.

The standard by the China Academy of Railway Sciences, Institute of Labor and Health Environmental Control.

This standard drafting unit. China Academy of Railway Sciences, Institute of Labor and Health Environmental Control, Beijing Institute of Technology.

Introduction

This standard specifies the measurement and analysis methods for railway environmental vibration, mechanical vibration must be noted that within the railway vehicle having a special Particularity.

This standard is a supplement to GB/T 13441.1 of. GB/T 13441.1 involves only the people in their daily activities (work, travel, etc.) in the Situations encountered and described the measure and affect the whole body vibration.

Mechanical vibration Railway vehicles within which passengers and crew are exposed to whole body Vibration Measurement and Analysis

1 Scope

This standard specifies the method for measuring and analyzing field trials railway vehicle mechanical vibration.

This standard applies to transferred to the human body, the vibration frequency range of 0.5Hz ~ 80Hz cycle, random and transient. This standard Only for standing and sitting.

This standard does not apply vibration transmitted to arm the system, does not apply to associated with motion sickness ELF horizontal, vertical and rotational motion move.

Evaluation of vibration effects of the process of this standard does not provide. Related content contained in GB/T 13441.1-2007 and on fixed rail transport the standard system of ISO 2631-4.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For

undated reference documents, the latest versions apply to this standard.

GB/T 13441.1-2007 Mechanical vibration and shock of human exposure to whole body vibration evaluation - Part 1. General requirements (ISO 2631-1:1997, IDT) ISO 2041 Vibration and Shock vocabulary ISO 2631-4 Mechanical vibration and impact evaluation of human exposure to whole-body vibration - Part 4. Vibration of fixed and rotary motion Evaluation Guide rail transport systems in passenger and crew comfort Effect ISO 8002 Mechanical vibration land transport method to report the measurement data ISO 10326-2 Mechanical vibration evaluating vehicle seat vibration test methods - Part 2. Application of rail vehicles

3.1 Terms and Definitions

Terms and definitions established by ISO 2041 apply to this standard.

3.2 Symbols, abbreviations

This standard uses symbols and abbreviations in Table 1.

Table 1 Symbols and abbreviations used in standard

Number	symbols and abbreviations	Meaning	Unit
1	a	rms Acceleration	m/s ²
2	a (t)	acceleration processes instantaneous value	m/s ²
3	b	Classification width	m/s ²