

ICS 17.140.50
CCS A 59



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

GB/T 3785-1983

Replacing GB/T 3785.1-2010

**Electroacoustics - Sound level meters - Part 1: Specifications
(English Translation)**

Issued on: May 23, 2023

Implemented on: December 1, 2023

Issued by: State Administration for Market Regulation

Table of Contents

Preface
Introduction
1 Scope
2 Normative references
3 Terms and Definitions
4 Reference to environmental conditions
5 Performance Specifications
5.1 Overview
5.2 Adjust 8 at the calibration check frequency
5.3 Amendments to indication levels
5.3.1 Overview
5.3.2 Reflection and diffraction
5.3.3 Windshield
5.3.4 Amended data format
5.3.5 Correction value for period test
5.4 Pointing to Response
5.5 Frequency weighting
5.6-level linearity
5.7 Self-generated noise
5.8 Time weighting F and S
5.9 Tone burst response
5.10 Repeat tone burst response
5.11 Overload indication
5.12 Underrange indication
5.13 C-weighted peak sound level
5.14 Stability during continuous operation
5.15 High sound level stability
5.16 Reset
5.17 Threshold
5.18 Display
5.19 Analog or digital output
5.20 Timing function

5.21 Radio Frequency Emissions and Disturbance to Public Power

5.22 Crosstalk

5.23 Power supply

6 Environmental, electrostatic and radio frequency requirements

6.1 Overview

6.2 Static pressure

6.3 Air temperature

6.4 Humidity

6.5 Electrostatic discharge

6.6 Power frequency and radio frequency fields

6.7 Mechanical vibration

7 Regulations for the use of auxiliary equipment

8 Signs

9 Instruction Manual

9.1 Overview

9.2 Usage information

9.2.1 Overview

9.2.2 Design points

9.2.3 Power supply

9.2.4 Adjust 23 at the calibration check frequency

9.2.5 Modification of indication level

9.2.6 Operation of the sound level meter

9.2.7 Annex

9.2.8 Effects of changing environmental conditions

9.3 Test information

Appendix A (informative) Relationship between tolerance intervals, corresponding acceptance intervals and maximum allowable measurement uncertainties

Appendix B (Normative) Maximum allowable measurement uncertainty

Appendix C (informative) Examples of compliance evaluation of this document

Appendix D (Normative) Fractional Octave Interval Frequency

Appendix E (Normative) Analytical expressions for frequency weighting C, A and Z

Reference

Figure A:1 The relationship between the tolerance interval, the corresponding acceptance interval and the maximum allowable measurement uncertainty

Figure C:1 Conformity Evaluation Example

Table B:1 Contains the maximum allowable measurement uncertainty with a probability of 95%

Table C:1 Conformity Evaluation Example

Table D:1 One-third octave interval frequency

Table D:2 One-sixth octave interval frequency

Table D:3 One-twelfth octave interval frequency

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 the first part of GB/T 3785 "Electroacoustic Sound Level Meter": GB/T 3785 has issued the following parts:

--- Part 1: Specifications;

--- Part 2: Type evaluation test;

--- Part 3: Periodic test:

This document replaces GB/T 3785.1-2010 "Electroacoustic Sound Level Meter Part 1: Specification": Compatible with GB/T 3785.1-2010 in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) Change the criteria for judging conformity (see Introduction and 5.1:21, 5.1:19 of the:2010 edition);
- b) Added relative directional response, directivity factor, directivity index, relative frequency weighted free field response, relative frequency weighted random Terms and definitions such as acoustic incident response, inclusion probability and acceptance limit (see 3.17~3:21, 3:32 and 3:33);
- c) Added the requirement that Class 1 sound level meters should also have C frequency weighting and not limited to type evaluation tests (see 5.1:10);
- d) Added the acceptance limit for the difference between the measured windshield correction value and the corresponding correction value given in the instruction manual (see 5.3:3:5);
- e) Deleted the optional FLAT (flat) frequency response requirements (see 5.4:13 of the:2010 edition);
- f) Changed the design target of the decay rate corresponding to the time-weighted sound level (see 5.8:1, 5:7:2 of the:2010 edition);

- g) The requirements for stability during continuous operation are added (see 5.14);
- h) Added the requirement for high sound level stability (see 5.15);
- i) Changed the test frequency range for immunity to the effects of exposure to radio frequency fields (see 6.6:4 and 6.6:5, 6.6:4 of the:2010 edition);
- j) Increased mechanical vibration requirements (see 6.7);
- k) An explanation of the relationship between the tolerance interval, the corresponding acceptance interval and the maximum allowable measurement uncertainty has been added (see Appendix A);
- l) Deleted the content of AU weighting (see Appendix B of the:2010 edition);
- m) Delete the specification of time weighting I (impulse) (see Appendix C of the:2010 edition);
- n) Added the content of fractional octave interval frequency (see Appendix D):

This document is equivalent to IEC 61672-1:2013 "Electroacoustic Sound Level Meter Part 1: Specification":

Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents:

Introduction

GB/T 3785 "Electroacoustic Sound Level Meter" aims to specify the performance specification of the sound level meter and the verification method for its compliance: It consists of three parts constitute:

--- Part 1: Specifications: The purpose is to standardize the electroacoustic performance of sound level meters:

--- Part 2: Type evaluation test: The aim is to ensure that all laboratories perform type evaluation of sound level meters in a consistent manner:

price test:

--- Part 3: Periodic test: The aim is to ensure that all laboratories perform periodic testing of sound level meters in a consistent manner:

In order to verify compliance with the performance specification, this document uses different criteria from the:2010 edition:

The national standards for sound level meters published during 1983-1997 do not provide any information on the uncertainty of measurement when verifying compliance with the specification: