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**Noise limit value for household and similar electrical
appliances**

家用和类似用途电器噪声限值

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Noise limit value for household and similar electrical appliances

1 Scope

This document specifies the noise limits and labeling requirements for household and similar electrical appliances. It describes the corresponding test methods.

This document applies to the design, production and inspection of household and similar electrical appliances with a rated voltage not exceeding 250 V for single-phase appliances and 480 V for other appliances.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 4214.1-2017, *Test method for noise of household and similar electrical appliances -- General requirements*

GB/T 4214.2-2020, *Test method for noise of household and similar electrical appliances--Particular requirements for vacuum cleaners*

GB/T 4214.3-2023, *Test method for noise of household and similar electrical appliances -- Particular requirements for dishwashers*

GB/T 4214.4-2020, *Test method for noise of household and similar electrical appliances -- Particular requirements for washing machines and spin extractors*

GB/T 4214.5-2023, *Test method for noise of household and similar electrical appliances -- Particular requirements for electric shavers, hair clippers or trimmers*

GB/T 4214.6-2008, *Household and similar electrical appliances -- Test code for the determination of airborne acoustical noise -- Particular requirements for electric hair care appliances*

GB/T 4214.7-2020, *Test method for noise of household and similar electrical appliances -- Particular requirements for tumble dryers*

GB/T 4214.8-2021, *Test method for noise of household and similar electrical appliances -- Particular requirements for electric cooking ranges, ovens, grills,*

- a) The noise of refrigeration appliances shall comply with the requirements of A.2.1 in GB 44498-2024;
- b) The noise of room air conditioners shall comply with the requirements of A.2.2 in GB 44498-2024;
- c) The noise of washing machines (including dehydrators and the washing part of washing and drying machines) shall comply with the requirements of A.2.3 in GB 44498-2024;
- d) The noise of microwave ovens shall comply with the requirements of A.2.4 in GB 44498-2024;
- e) The noise of range hoods and other cooking fume suction and exhaust devices shall comply with the requirements of A.2.5 in GB 44498-2024;
- f) The noise of electric fans shall comply with the requirements of A.2.6 in GB 44498-2024;
- g) The noise of waste food processors shall comply with the requirements of A.2.7 in GB 44498-2024;
- h) The noise of electric shavers shall comply with the requirements of A.2.8 of GB 44498-2024;
- i) The noise of indoor heaters shall comply with the requirements of A.2.9 of GB 44498-2024;
- j) The noise of humidifiers shall comply with the requirements of A.2.10 of GB 44498-2024;
- k) The noise of air purifiers shall comply with the requirements of A.2.11 of GB 44498-2024;
- l) The noise of vacuum cleaners shall comply with the requirements of A.2.12 of GB 44498-2024;
- m) The noise of dishwashers shall comply with the requirements of A.2.13 of GB 44498-2024;
- n) The noise of drum dryers (including the drying part of drum washing and drying machines) shall comply with the requirements of A.2.14 of GB 44498-2024;
- o) The noise of electric massagers shall comply with the requirements of A.2.15 of GB 44498-2024;
- p) The noise of electric food processing appliances shall comply with the requirements of A.2.16 of GB 44498-2024;

- q) The noise of hair dryers shall comply with the requirements of A.2.17 of GB 44498-2024;
- r) The noise of dry-cleaning robots shall comply with the requirements of A.2.18 of GB 44498-2024;
- s) The noise of drinking water treatment devices shall comply with the requirements of A.2.19 of GB 44498-2024.

5 Test methods

5.1 General requirements

Unless otherwise specified, the noise test of the equipment shall be carried out in accordance with the test method specified in GB/T 4214.1-2017.

5.2 Testing methods for various products

5.2.1 Refrigeration appliances

The noise test of refrigerating appliances shall be carried out in accordance with the method specified in GB/T 4214.14-2021. Notes 101 and 1.101 of 1.2 of GB/T 4214.14-2021 are not applicable.

5.2.2 Room air conditioner

The sound power level noise test of room air conditioners shall be carried out in accordance with the method specified in Annex A.

The sound pressure level noise test of room air conditioners shall be carried out in accordance with the method specified in GB/T 7725-2022.

5.2.3 Washing machines (including dehydrators and the washing part of washing and drying machines)

The noise test of washing machines (including dehydrators and the washing part of washing and drying machines) shall be carried out in accordance with the method specified in GB/T 4214.4-2020. Notes 101 and 1.101 of 1.2 of GB/T 4214.4-2020 are not applicable.

5.2.4 Microwave oven

The noise test of microwave ovens shall be carried out in accordance with the method specified in GB/T 4214.8-2021. Notes 101 and 1.101 of 1.2 of GB/T 4214.8-2021 are not applicable.

5.2.5 Range hoods and other cooking fume extraction devices

5.2.8 Electric shaver

The noise test of electric shavers shall be carried out in accordance with the method specified in GB/T 4214.5-2023. Notes 101 and 1.101 of 1.2 of GB/T 4214.5-2023 are not applicable.

5.2.9 Indoor heater

The noise test of thermal storage indoor heaters shall be carried out in accordance with the method specified in GB/T 4214.15-2021. Notes 103 and 1.101 of 1.2 of GB/T 4214.15-2021 are not applicable.

The noise test method for fan heaters shall be carried out in accordance with the method specified in GB/T 4214.12-2021. Note 3 of 1.2 and 1.101 of GB/T 4214.12-2021 are not applicable.

5.2.10 Humidifier

The noise test of the humidifier shall be carried out in accordance with the method specified in Annex B.

5.2.11 Air purifier

The noise test of the air purifier shall be carried out in accordance with the method specified in 7.5 of GB/T 18801-2022.

5.2.12 Vacuum cleaner

The noise test of vacuum cleaners shall be carried out in accordance with the method specified in GB/T 4214.2-2020. Notes 101 and 1.101 of 1.2 of GB/T 4214.2-2020 are not applicable.

5.2.13 Dishwasher

The noise test of dishwashers shall be carried out in accordance with the method specified in GB/T 4214.3-2023. The tooling for the noise test of sink-type dishwashers shall comply with the requirements of Annex E in QB/T 1520-2023. The load is the load specified in Annex B in GB 38383-2019. Notes 101 and 1.101 of 1.2 in GB/T 4214.3-2023 are not applicable.

5.2.14 Tumble dryer (including the drying part of tumble washer-dryer)

The noise test of tumble dryers (including the drying part of tumble washing and drying machines) shall be carried out in accordance with the method specified in GB/T 4214.7-2020. Notes 101 and 1.101 of 1.2 of GB/T 4214.7-2020 are not applicable.

5.2.15 Electric massager

The noise test of health massage chairs shall be carried out in accordance with the

method specified in 6.4 of GB/T 26182-2022.

The noise test of health massage cushions shall be carried out in accordance with the method specified in 6.5 of GB/T 26254-2023.

The noise test of leg and foot massagers shall be carried out in accordance with the method specified in 6.5 of QB/T 4704-2014.

The noise test of health massage beds shall be carried out in accordance with the method specified in 6.7 of QB/T 4409-2012.

The noise test of handheld electric massagers shall be carried out in accordance with the method specified in 6.4 of QB/T 4412-2012.

The noise test of circular motion massage machines shall be carried out in accordance with the method specified in 6.9 of QB/T 4414-2012.

The noise test of water-injected foot massagers shall be carried out in accordance with the method specified in 6.11 of GB/T 26206-2020.

5.2.16 Electric food processing appliance

The noise test of electric food processing appliances shall be carried out in accordance with the method specified in GB/T 4214.11-2021. The note in 1.2 of GB/T 4214.11-2021 is not applicable.

5.2.17 Hair dryer

The noise test method of the hair dryer shall be carried out in accordance with the method specified in GB/T 4214.6-2008. Among them, the note 1.2 and 1.101 of GB/T 4214.6-2008 are not applicable.

5.2.18 Dry cleaning robot

The noise test of the dry-cleaning robot shall be carried out in accordance with the noise test method on hard floor specified in GB/T 4214.17-2024. Note 1.2 and 1.101 of GB/T 4214.17-2024 are not applicable.

5.2.19 Drinking water treatment equipment

The noise test of drinking water treatment equipment shall be carried out in accordance with the method specified in 6.11 of GB/T 30307-2023.

6 Marks on products

The noise level of the appliance shall be clearly stated on the product label or in the instructions for use.

The air baffle and air guide grille of the air conditioner are adjusted to the maximum air volume. The fan speed of the indoor unit is set to the highest value that the user can set under the corresponding working conditions. The set temperature is set to the lowest (cooling) or highest (heating) temperature allowed by the control device.

NOTE: Try to adjust the air conditioner to the state with the highest noise during normal use.

The air conditioner shall be tested under full load operation conditions, unless the manufacturer provides special instructions or has special test requirements. For air conditioners with health-assisting functions such as purification and sterilization, the manufacturer shall provide corresponding methods to turn off the function during the test.

A.4.5 Positioning and installation of equipment

A.4.5.1 When testing in a rigid wall test room or a dedicated reverberation room, the indoor and outdoor units of floor-standing air conditioners shall be placed directly on the floor of the reverberation room. The minimum distance between any surface of the sample and the nearest wall of the test room is 1.0 m.

When testing in an environment approximately free field above the reflective surface, the indoor unit of the floor-standing air conditioner shall be backed against the vertical reflective surface. The minimum size of the vertical reflective surface shall be larger than the projected size of the measurement surface. The sound absorption coefficient of the vertical reflective surface within the measurement range frequency is less than 0.06. The distance between the back of the device and the vertical reflective surface is $D = 10 \text{ cm} \pm 1 \text{ cm}$. The outdoor unit is installed directly in the center of the floor of the test room. Note that the installation and positioning shall not generate additional noise. The connecting pipes shall not affect the radiation of the indoor and outdoor unit noise. Flexible pipe connections can be used when necessary.

A.4.5.2 When testing in a rigid wall test room or a dedicated reverberation room, the indoor unit of a wall-mounted air conditioner is directly mounted on the wall of the test room. The minimum distance between the bottom edge and the ground and the nearest wall is 1.0 m. The outdoor unit is placed directly on the ground outside the reverberation room. The minimum distance between any surface of the outdoor unit and the nearest wall of the test room is 1.0 m. Connect the indoor and outdoor unit pipes according to the manufacturer's instructions.

When testing in an environment close to the free field above the reflective surface, the indoor unit of the wall-mounted air conditioner shall be installed on a rigid round tube bracket to avoid generating additional noise. The lowest edge of the indoor unit is 1.5 m above the floor of the test room. The indoor unit is installed near the vertical reflective surface. The distance between the back of the device and the vertical reflective surface is $D = 10 \text{ cm} \pm 1 \text{ cm}$. The vertical reflective surface shall not generate additional vibration and noise. The minimum size of the vertical reflective surface shall be larger

than the projected size of the measurement surface. The sound absorption coefficient of the vertical reflective surface within the measurement range frequency is less than 0.06. The outdoor unit is installed directly in the center of the floor of the test room. Care shall be taken to ensure that the installation and positioning do not generate additional noise. The connecting pipes shall not affect the radiation of the noise of the indoor and outdoor units. Flexible pipe connections can be used when necessary.

A.4.5.3 When testing in a rigid-wall test room or a dedicated reverberation room, the apparatus shall be positioned and installed in the following manner.

- Ceiling air conditioners shall be hung inside the test room. The minimum distance between any surface of the prototype and the nearest test room wall is 1.0 m. The minimum distance to the top surface is 1.0 m. The outdoor unit shall be installed on the ground outside the reverberation room. The minimum distance between any surface of the prototype and the nearest test room wall is 1.0 m.
- The window air conditioner is installed in the middle wall hole of the two reverberation rooms. The actual installation state shall be simulated as much as possible. The corresponding accessories shall be installed according to the manufacturer's instructions. The minimum distance between the bottom edge of the installation hole and the ground is 1.0 m.

When testing in an approximately free-field environment above a reflecting surface, the apparatus shall be positioned and mounted as follows.

- The ceiling-mounted air conditioner shall be hung on the inside of the test room by a rigid round tube rack. The minimum distance between the bottom edge of the prototype and the ground is 2.0 m. The outdoor unit is installed directly in the center of the floor of the test room. Attention shall be paid to the installation and positioning so as not to generate additional noise. The connecting pipes shall not affect the radiation of the indoor and outdoor unit noise. Flexible pipe connections can be used when necessary.

For an existing semi-anechoic chamber with a reflective floor, the following method shall be used to obtain the required sound field: a sound absorbing body is laid on the floor of the test room below the ceiling air conditioner to form a local sound absorbing surface. The minimum area of the sound absorbing surface shall not be less than the projection of the test envelope surface on the ground. The area of the sound absorbing body shall be larger than the projection of the test envelope surface on the ground. The vertical incidence sound absorption coefficient of the sound absorbing body shall not be less than the value in Table A.2.

Table A.2 -- Minimum value of sound absorption coefficient of sound absorber at vertical incidence

Annex B

(normative)

Noise test method for humidifier

B.1 Overview

This method is applicable to the sound power level noise test of humidifiers for household and similar purposes.

This method is not applicable to the sound power level noise test of the following appliances:

- Humidifiers designed for industrial use;
- Humidifiers intended for use in special environments where corrosive and explosive gases (such as dust, steam or methane) are often present;
- Humidifiers for medical use.

B.2 Measurement method and acoustic environment

The measurement method and acoustic environment shall comply with the requirements of Chapter 4 of GB/T 4214.1-2017.

B.3 Measuring instruments

Acoustic measurement instruments shall comply with the requirements of 5.1 of GB/T 4214.1-2017. Instruments for measuring operating conditions shall comply with the requirements of 5.3 of GB/T 4214.1-2017.

The temperature is measured with an instrument with an accuracy of $\pm 0.5^{\circ}\text{C}$. The relative humidity is measured with an instrument with an absolute accuracy of $\pm 2\%$.

B.4 Operation and positioning of the device under test

B.4.1 Assembly and pretreatment of equipment

The assembly and pretreatment of the equipment shall comply with the requirements of 6.1 of GB/T 4214.1-2017.

Before the noise test, ensure that the humidifier is operating at rated working conditions. Set the evaporative humidifier to the highest wind speed. Set other types of humidifiers to the maximum humidification state. Allow the humidifier to operate normally for 1 h.

Before each set of noise measurement, fill the equipment with water. Set the evaporative

humidifier to the highest wind speed. Set other types of humidifiers to the maximum humidification state. Allow the humidifier to operate normally for 0.5 h.

B.4.2 Supply of electricity, water and gas

The supply of electricity, water or gas shall comply with the requirements of 6.2 in GB/T 4214.1-2017.

The water used for the instrument test shall comply with the requirements of the product instructions. If there are no requirements in the instructions, it shall be prepared according to the method specified in GB/T 23119-2017. The total hardness of the water shall be (1.5 ± 0.20) mmol/L ($\text{Ca}^{2+}/\text{Mg}^{2+}$).

B.4.3 Environmental conditions

The environmental conditions shall comply with the requirements of 6.2 in GB/T 4214.1-2017.

B.4.4 Loading and operation of the apparatus during testing

The loading and operation of the equipment during the test shall comply with the requirements of 6.4 of GB/T 4214.1-2017.

Refill the appliance with water within 10 minutes after the pre-run ends. Put the humidifier under rated working condition and start the noise test after 5 min of normal operation. Evaporative humidifiers are tested at the highest wind speed. Other types of humidifiers are tested at the maximum humidification working condition.

B.4.5 Positioning and installation of equipment

The positioning and installation of the apparatus shall comply with the requirements of 6.5 of GB/T 4214.1-2017. However, the humidifier shall be placed at the geometric center of the test site floor, on an elastic rubber cushion with a thickness of 5 mm~10 mm.

B.5 Measurement of sound pressure level

B.5.1 Microphone arrangement in a nearly free field above a reflecting surface, measurement surface and position of the reference sound source (RSS)

B.5.1.1 The measurement surface specified in 7.1.1 of GB/T 4214.1-2017 is applicable to floor-standing humidifiers with a reference body side length exceeding 0.7 m.

B.5.1.2 The measurement surface specified in 7.1.2 of GB/T 4214.1-2017 is applicable to wall-mounted humidifiers or embedded humidifiers.

B.5.1.3 The measurement surface specified in 7.1.4 of GB/T 4214.1-2017 is applicable to floor-standing humidifiers or table-top humidifiers with a reference body side length

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