IEC 62087-6

Edition 1.0 2015-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Audio, video and related equipment – Determination of power consumption – Part 6: Audio equipment

Appareils audio, vidéo et matériel connexe – Détermination de la consommation de puissance – Partie 6: Matériel audio

IEC 62087-6:2015-06(en-fr)

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CONTENTS

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AUDIO, VIDEO AND RELATED EQUIPMENT – DETERMINATION OF POWER CONSUMPTION –

Part 6: Audio equipment

FOREWORD

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International Standard IEC 62087-6 has been prepared by technical area 12: AV energy efficiency and smart grid applications, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

This first edition of IEC 62087-6 cancels and replaces Clause 9 of IEC 62087:2011. This standard together with IEC 62087-1 to IEC 62087-5 cancels and replaces IEC 62087:2011. This International Standard constitutes a technical revision.

This edition includes the following significant technical changes with respect to Clause 9 of IEC 62087:2011.

– The definition of the input signal is changed.
– The output power measurement of amplifiers is changed.
– The measurement method for compact audio systems including loudspeakers is added.
– Methods for measuring On-decoding, idle and auto power down functions are added.
– Portions of the document related to general measuring conditions and procedures are now contained in IEC 62087-1:2015.

– Portions of the document related to signals and media are now in IEC 62087-2:2015.
– The titles have changed in order to comply with the current directives and to accommodate the new multipart structure of IEC 62087.

The text of this standard is based on the following documents:

FDIS	Report on voting
100/2471/FDIS	100/2501/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

A list of all parts in the IEC 62087 series, published under the general title *Audio, video, and related equipment – Determination of power consumption*, can be found on the IEC website.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

This part of IEC 62087 specifies methods of measurements for the power consumption of audio equipment for consumer use. It is used in conjunction with IEC 62087-2, which specifies signals and media. This International Standard includes measurements in the On mode (operation), which was previously identified as “On (average) mode” and adds methods for measuring power consumption in the On-play, On-decoding, and idle sub-modes. These methods consider the effects of the auto power down function. Additionally, this standard includes determination of power consumption in the Partial On mode.

This standard has been divided into multiple parts. At the time of publication of this part, the following parts are planned or published.

– Part 1: General
– Part 2: Signals and media
– Part 3: Television sets
– Part 4: Video recording equipment
– Part 5: Set-top boxes (STB)
– Part 6: Audio equipment

AUDIO, VIDEO AND RELATED EQUIPMENT – DETERMINATION OF POWER CONSUMPTION –

Part 6: Audio equipment

1 Scope

This part of IEC 62087 specifies the determination of the power consumption of audio equipment for consumer use.

The various modes of operation which are relevant for measuring power consumption are defined.

This standard is limited to audio equipment which can be connected to the mains. Audio equipment that includes a non-removable, main battery is not covered by this standard. Audio equipment may include any number of auxiliary batteries.

The measuring conditions in this standard represent the normal use of the equipment and may differ from other specific conditions, for example as specified in safety standards.

2 Normative references

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

IEC 60268-5:2003, *Sound system equipment – Part 5: Loudspeakers*
IEC 60268-5:2003/AMD1:2007

IEC 62087-1:2015, *Audio, video, and related equipment – Determination of power consumption – Part 1: General*

IEC 62087-2:2015, *Audio, video, and related equipment – Determination of power consumption – Part 2: Signals and media*

IEC 62301:2011, *Household electrical appliances □ Measurement of standby power*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions in IEC 62087-1:2015, IEC 62087-2:2015, and the following apply.

3.1.1
additional functions
functions that are not required for the basic operation of the device

Note 1 to entry: Functions other than a main function.

3.1.2
audio equipment
appliance which has the main function of reproducing analogue and/or digital audio signals

3.1.3
audio systems
audio equipment of separable or non-separable components for one or more audio functions

3.1.4
compact audio systems including loudspeakers
amplifier and one or more audio sources in a single enclosure, which might also contain the loudspeakers

Note 1 to entry: The loudspeakers can be attached to, and separable from, the main enclosure.

3.1.5
free-field conditions
environment, such as an anechoic room, in which the sound pressure decreases by a factor of 2 with the doubling of the distance from a point source

3.1.6
main function
function, specified by the manufacturer, which produces sound from loudspeaker(s) and/or output terminal(s)

3.1.7
mass storage device
non-removable, non-volatile storage for the recording of audio signals

3.1.8
multi-channel
two or more channels

3.1.9
non-clipped power
sine-wave power dissipated in the rated load impedance, measured at 1 000 Hz or the frequency of the peak response, if the operation at 1 kHz is not intended, at the onset of clipping at either one or both peaks

3.1.10
rated load impedance
impedance specified by the manufacturer and assumed to be a constant pure resistance measured at the output terminals of an amplifier

3.1.11
separate components
standalone audio equipment that provides one or more audio functions

3.1.12
sound pressure level
SPL
logarithm of the ratio of a given sound pressure to the reference sound pressure

Note 1 to entry: Unless otherwise specified, the reference sound pressure is 20 μPa for airborne sound.

Note 2 to entry: Unless otherwise specified, the sound pressures are understood to be expressed in root-mean-square values.

Note 3 to entry: Sound pressure level in decibels is 20 times the logarithm to the base ten of the ratio.

3.1.13
surround sound equipment
multi-channel audio equipment that includes front and rear channel capabilities

EXAMPLE Home theatre in a box, integrated surround sound amplifier.

3.2 Abbreviations

′ Prime
PS Power Supply unit
SPL Sound Pressure Level
SW Switch unit
UUT Unit Under Test

4 Specification of operating modes and functions

Table 1 describes the various operating modes and functions for audio equipment.

For all modes, main batteries, if any, shall be removed for the duration of the measurement procedure. (See IEC 62087-1:2015, 5.1.1.1)

Table 1 – Operating modes and functions

Power	Mode	Sub-mode	Function(s)	Description
0 W	Disconnected	Disconnected	– Disconnected from the main power source	The audio equipment is disconnected or galvanically isolated from all external power sources.
≥0 W	Off	Off	– Off	The audio equipment is connected to an external power source and provides no functions that depend on an external power source. The equipment cannot be switched into any other mode with the remote control unit, or an external or internal signal. Note that some power may be consumed if an EMC filter or other components exist on the source side of the power switch.
≥0 W	Partial on	Standby-passive	– Wake on • remote control • internal signal	The audio equipment is connected to an external power source and does not provide its main functions. The equipment can be switched into another mode with the remote control unit or an internal signal, but not with an external signal.
		Standby-active, low	– Wake on • remote control • internal signal • external signal	The audio equipment is connected to an external power source and does not provide its main functions. The equipment can be switched into another mode with the remote control unit, an internal signal, or an external signal.
		Standby-active, high	– Wake on • remote control • internal signal • external signal Data communications	The audio equipment is connected to an external power source and does not provide its main functions. The equipment can be switched into another mode with the remote control unit, an internal signal, or an external signal. Additionally, the equipment is exchanging/receiving data with/from an external source.
>0 W	On	Idle	Idle	Form of On mode during which the equipment is capable of performing its main function(s) but is not doing so.
		On-play	Operation	The audio equipment is performing its main functions.
		On-decoding	Operation	The audio equipment is decoding compressed audio from a mass storage device or external input.
		On-record	Operation	The audio equipment is recording a single programme and may or may not provide the audio outputs of the programme being recorded.
The terms 'standby mode' or 'sleep mode' also describe the Partial On mode.				

5 Measurement conditions

5.1 General

The measurement conditions clause specifies requirements that are independent of the equipment to be measured. When setting up a test laboratory, these requirements shall be taken into account.

The requirements in this clause apply to the measurement methods specified in Clause 6.

5.2 Power source

Defined in IEC 62087-1:2015, 5.1.1.

5.3 Environmental conditions

Defined in IEC 62087-1:2015, 5.1.2.

5.4 Acoustical environment

SPL measurements shall be made under the free-field conditions specified in IEC 60268-5:2003, 5.2.

5.5 Adjustment of controls

The controls not specifically mentioned in this standard shall be in the position adjusted by the manufacturer for shipment to the end user. These controls shall remain in this state for the duration of the test.

5.6 Power measurement instrument

Defined in IEC 62087-1:2015, 5.1.1.

5.7 Signal generation

Defined in IEC 62087-2:2015, Clause 6.

5.8 Quantities to be specified and their accuracy

Unless otherwise stated, the values of voltage, current, sound pressure, etc., mentioned in this standard are assumed to be r.m.s. quantities. For most purposes, it is sufficient to measure electrical quantities with an accuracy of ± 0,15 dB and acoustical quantities with an accuracy of ± 1 dB. Unless otherwise stated, it is assumed that the distance between a measurement point and its reference point is determined with an accuracy of ±0,01 m. The accuracy of measurement required depends only on the purpose for which the results are to be used.

5.9 Loading of terminals

All loudspeaker terminals should be terminated with the minimum impedance as specified by the manufacturer.

5.10 Output level

5.10.1 General

In the case of surround sound equipment, only the front left and front right speaker terminals shall be loaded.

5.10.2 Output level at 1 W

The volume control shall be adjusted to obtain 1 W at the loudspeaker terminals.

5.10.3 Output level at one-eighth of non-clipped power

If the maximum non-clipped power is less than 8 W, the volume control shall be adjusted to obtain one-eighth of non-clipped power at the loudspeaker terminals.