BS EN 62087-6:2015

BSI Standards Publication

Audio, video and related equipment — Determination of power consumption

Part 6: Audio equipment

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National foreword

This British Standard is the UK implementation of EN 62087-6:2015. It is identical to IEC 62087-6:2015. Together with BS EN 62087-1, BS EN 62087-2, BS EN 62087-3, BS EN 62087-4 and BS EN 62087-5 it supersedes BS EN 62087:2012 which will be withdrawn on 10 July 2018.

The UK participation in its preparation was entrusted to Technical Committee EPL/100, Audio, video and multimedia systems and equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Messverfahren für die Leistungsaufnahme von Audio-, Video- und verwandten Geräten - Teil 6: Audiogeräte (IEC 62087-6:2015)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

The text of document 100/2471/FDIS, future edition 1 of IEC 62087-6, prepared by Technical Area 12 "AV energy efficiency and smart grid applications" of IEC/TC 100 "Audio, video and multimedia systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62087-6:2015.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2016-04-10
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2018-07-10

This document supersedes EN 62087:2012 (partially).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62087-6:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60065:2014	NOTE	Harmonized as EN 60065:2014 (modified).
IEC 60268-1:1985+A1:1988	NOTE	Harmonized as HD 483.1 S2:1989 (not modified).
IEC 60268-2:1987+A1:1991	NOTE	Harmonized as HD 483.2 S2:1993 (not modified).
IEC 60268-3:2013	NOTE	Harmonized as EN 60268-3:2013 (not modified).
IEC 60958-1:2008	NOTE	Harmonized as EN 60958-1:2008 (not modified).
IEC 60958-1:2008/A1:2014	NOTE	Harmonized as EN 60958-1:2008/A1:2014 (not modified).
IEC 61672 Series	NOTE	Harmonized as EN 61672 Series.
IEC 61938:2013	NOTE	Harmonized as EN 61938:2013 (not modified).
IEC 62087 Series	NOTE	Harmonized as EN 62087 Series.
IEC 62301:2011	NOTE	Harmonized as EN 50564:2011 (modified).
IEC 62368-1:2014	NOTE	Harmonized as EN 62368-1:2014 (modified).
IEC 62542:2013	NOTE	Harmonized as EN 62542:2013 (modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu

Publication	Year	Title	EN/HD	Year
IEC 60268-5	2003	Sound system equipment - Part 5: Loudspeakers	EN 60268-5	2003
+A1	2007		+A1	2009
IEC 62087-1	2015	Audio, video, and related equipment - Determination of power consumption - Part 1: General	EN 62087-1 [1)]	-
IEC 62087-2	2015	Audio, video, and related equipment - Determination of power consumption - Part 2: Signals and media	EN 62087-2 [2)]	-
IEC 62301 (mod)	2011	Household electrical appliances - Measurement of standby power	EN 50564	2011

[1)] At draft stage.

[2)] To be published.

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 6: Audio equipment

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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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.

A bilingual version of this publication may be issued at a later date.

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.

Where the non-clipped power cannot be obtained using any audio test signal, the maximum attainable output power is taken.

5.11 Sound level adjustments

The volume control shall be set to a level at which a SPL of 60 dB is measured 1 m from the loudspeaker.

NOTE An SPL of 60 dB is not necessarily the same output level as 1 W at the loudspeaker terminals.

5.12 Sound pressure level meter

Measurements in free-field condition shall be made using a sound pressure level meter having a known calibration.

NOTE Class 1 certified meter, specified in IEC 61672, with A-weighting, specified in IEC 60268-1.

5.13 Additional functions

Additional functions shall be turned off during the measurement process in the cases that those functions can be turned on and off by the end user.

5.14 Operating modes

5.14.1 General

Audio equipment can operate in many modes.

5.14.2 On modes

5.14.2.1 On-play

The audio equipment is performing the main function.

5.14.2.2 On-decoding

The audio equipment is decoding compressed audio from a mass storage device or external input.

5.14.2.3 Idle

A form of On mode during which the equipment is capable of performing its main function(s) but is not doing so.

EXAMPLE 1 Audio equipment that is in “On-play” status, but does not currently provide an audio output sound signal.

EXAMPLE 2 An optical disc player that is in “On-play” status, but is not currently playing a disc.

5.14.2.4 On-record

The audio equipment is recording a single programme and may or may not provide the audio outputs of the programme being recorded.

5.14.3 Partial On modes

5.14.3.1 Standby-active, high

The audio equipment is placed in a mode where it

a) does not provide its main functions,

b) can be switched into another mode with the remote control unit, an internal signal, or an external signal,

c) exchanges/receives data with/from an external source.

The data exchanged with an external source may provide information for functions such as:

- conditional access keys management,
- firmware upgrade.

This mode may not be available in all audio equipment.

5.14.3.2 Standby-active, low

The audio equipment is placed in a mode where it

a) does not provide its main functions,

b) can be switched into another mode with an internal or external signal, and

c) does not exchange/receive data with/from an external source.

This mode may not be available in all audio equipment.

5.14.3.3 Standby-passive

The audio equipment is placed in a mode where it

a) does not provide its main functions, and

b) can only be switched into another mode with the remote control unit or an internal signal.

The audio equipment is performing no useful function other than monitoring for a command to switch to another mode. This command could come from a remote control or an internal signal.

This mode may not be available in all audio equipment.

5.14.4 Off mode

The audio equipment is connected to a power source, fulfills no function, and it cannot be switched into any other mode with a remote control, an internal or an external signal.

This mode may not be available in all audio equipment.

5.14.5 Auto power down function

An auto power down feature may be implemented in audio equipment to power the equipment down into a Partial On mode after a predetermined time. This feature is referred to as auto power down.

6 Measurement procedure

6.1 Order of measurements

This document recommends the following order for the measurement procedure:

– Setup

  a) Power consumption measurement, Off mode

  b) Power consumption measurement, Partial On mode

  c) Power consumption measurement, Idle mode

d) Power consumption measurement, On mode

e) Power consumption measurement, auto power down

The above order is chosen to ensure proper stabilization prior to taking of each measurement. The technician performing the test may vary the order as needed. However, the stabilization prior to the taking of each measurement shall effectively be the same as if the recommended order had been followed. (See Figure 1.)

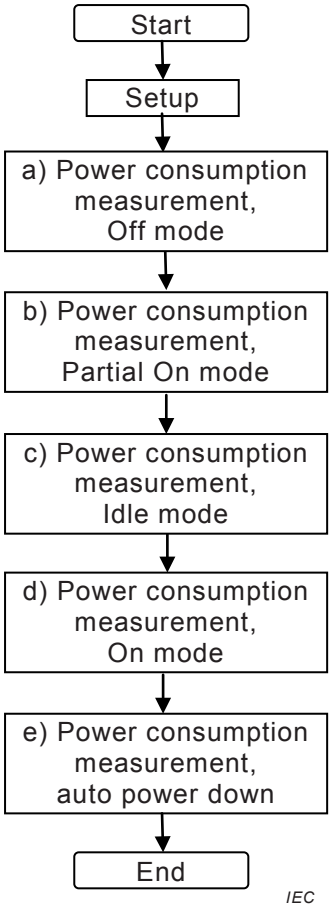

Figure 1 – Order of measurements

6.2 Setup

6.2.1 General

The UUT should be set up in a manner to simulate a normal operating environment. Optional peripheral devices shall not be connected to the UUT for the duration of the measurement procedure.

Main batteries, if any, shall be removed from UUT for the duration of the measurement procedure.

Possible configurations of audio equipment connected to the mains are shown in Figure 2, Figure 3, Figure 4 and Figure 5.

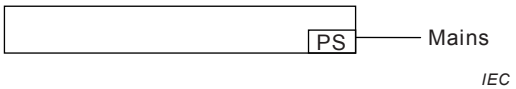

Figure 2 – Separate components

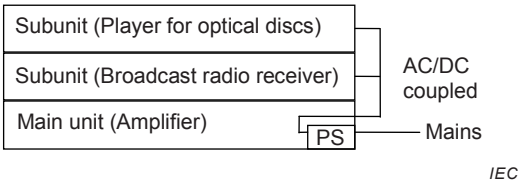

Figure 3 – Audio systems (non separable components)

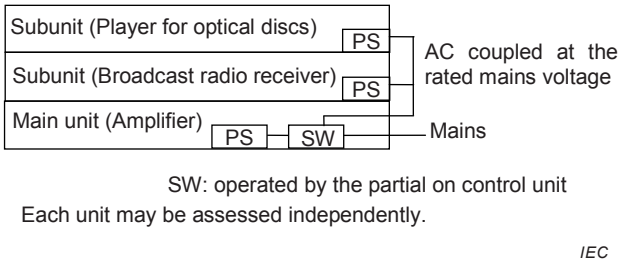

Figure 4 – Audio systems (separable conponents)

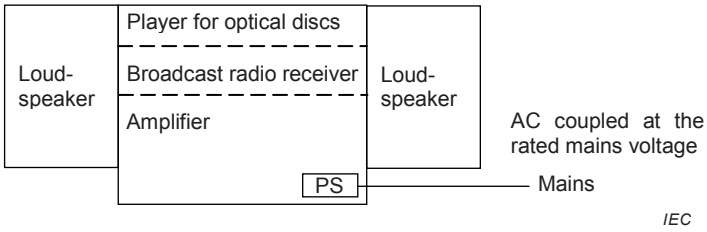

Figure 5 – Compact audio system including loudspeaker

6.2.2 Audio equipment terminals and settings

The output terminals of the UUT, if any, shall be terminated with the rated load impedance.

The terminals which are not used during the measurement shall be terminated, if necessary, as specified by the manufacturer. In the case of equipment with surround sound capabilities, only the front L and front R speaker terminals shall be loaded.

The settings of the UUT shall be as follows.

a) The tone controls, if any, shall be set to the nominal or neutral position to provide the frequency response as specified by the manufacturer.

NOTE 1 This is typically flat frequency response.

b) The balance control(s), if any, shall be set to the mechanical central position.

c) The surround sound function, if any, shall be set to a neutral setting that does not alter the frequency response or add delay to the channels, if such a setting is available. If not available, the default setting shall be used.

NOTE 2 The neutral setting is often labelled “stereo”.

d) If the UUT has video output(s), it shall be set to provide a video output signal.

A sine wave signal (IEC 62087-2: 2015, 4.3.1) shall be connected to the audio input terminals of the UUT. If the UUT does not have any input terminals, the signal may be provided via an RF audio signal input or reproduced from tape, disc or mass storage device.

6.2.3 Compact audio system including loudspeaker

If the UUT is a compact audio system that includes an internal loudspeaker that cannot be replaced by the rated load impedance, then the sound pressure level may be measured as follows.

a) The UUT shall be set up in an anechoic environment.

b) The SPL is measured 1 m from the loud speaker by a sound level meter.

EXAMPLE A possible UUT location is shown in Annex A.

c) The simulated programme signal according to IEC 62087-2:2015, 4.3.1.2 shall be used as test signal.

d) The tone controls, if any, shall be set to the nominal or neutral position to provide the frequency response as specified by the manufacturer.

NOTE 1 This is typically a flat frequency response.

e) The balance control(s), if any, shall be set to the mechanical central position.

f) The surround sound function, if any, shall be set to a neutral setting that does not alter the frequency response or add delay to the channels, if such a setting is available. If not available, the default setting shall be used.

NOTE 2 The neutral setting is often labelled “stereo”.

g) If the UUT has video output(s), it shall be set to provide a video output signal.

A sine wave signal (IEC 62087-2:2015, 4.3.1.1) shall be connected to the audio input terminals of the UUT. If the UUT does not have any input terminals, the signal may be provided via an RF audio signal input or reproduced from a tape, disc, or mass storage device.

The test report shall indicate which method was used for the power measurement.

6.3 Power measurement

6.3.1 General

The audio equipment under test shall be measured in each applicable mode as specified below.

6.3.2 Off and Partial On modes

6.3.2.1 General

Power consumption in the off and standby-passive sub-mode shall be measured as specified in IEC 62301:2011. If the audio equipment supports the standby-active, low and standby-active, high sub-modes, power consumption in those sub-modes may also be measured using IEC 62301:2011.

6.3.2.2 Off

Power consumption in the Off mode (P_{OFF}) shall be measured as specified in IEC 62087-1:2015.

6.3.2.3 Standby-active, high

If possible, activate a download mode from the primary service and measure the average power consumed for at least 2 min. This measurement may require information from the manufacturer and/or service provider to ensure the transport stream contains a suitable download and instructions on how to set the audio equipment to receive the download. Report this value as P_{SAH}. Report the time used to measure the average power.

NOTE It might not be possible to place the audio equipment into this mode. If this is the case and the value is still required it could only be provided by manufacturer's declaration.

6.3.2.4 Standby-active, low

To ensure that the audio equipment is in standby-active, low and is not performing any downloading or recording functions, the following procedure should be used:

a) put the audio equipment into On mode;

b) after 5 min in On mode, press the standby or off button on the remote control;

c) stabilize the audio equipment for 30 min or until higher power mode maintenance activities within the UUT have been completed.

Measure the average power consumed for at least 2 min. Report this as P_{SAL}. Report the time used to measure the average power. Report the time taken to switch to standby-active, low.

6.3.2.5 Standby-passive

To ensure that the audio equipment is in the standby-passive sub-mode, the following procedure should be used:

a) put the audio equipment into the On mode;

b) after 5 min in this mode, press the standby or off button on the remote control;

c) stabilize the audio equipment for 30 min or until higher power mode maintenance activities within the UUT activities have been completed.

Measure the average power consumed for at least 2 min. Report this as P_{SP}. Report the time used to measure the average power. Report the time taken to switch to standby-passive.

6.3.3 On modes

6.3.3.1 On-play

6.3.3.1.1 Measurement of the power consumption during reproduction of the test signal to the loudspeaker terminals

With the UUT providing the test signal to the loudspeaker terminals, measure the average power consumed for at least 2 min. Report this as P_{ON}. Report the time used to measure the average power.

6.3.3.1.2 Measurement for compact audio system including loudspeaker

With the UUT playing the simulated programme signal, measure the average power consumed for at least 2 min. Report this as P_{SPL_ON}. Report the time used to measure the average power.

6.3.3.1.3 Measurement for audio equipment without amplifier

With the UUT playing back a previously recorded programme, measure the average power consumed for at least 2 min. Report this as P_{PL}. Report the time used to measure the average power.

6.3.3.2 On-decoding

With the UUT playing back a previously recorded programme from a compressed audio format, measure the average power consumed for at least 2 min. Report this as P_{AV_ON}. Report the time used to measure the decoding power.

6.3.3.3 Idle

The UUT shall be set in the On mode with its volume control adjusted to the minimum setting such that the unit does not provide any audio output. The UUT shall be set in such a manner that it does not perform any other function. With the UUT in this condition, measure the average power consumed for at least 2 min. Report this as P_{IDLE}. Report the time used to measure the average power.

6.3.3.4 On-record

Start or schedule a recording. With the UUT recording the simulated programme signal according to IEC 62087-2, measure the average power consumed for at least 2 min. Report this as P_{REC_ON}. Report the time used to measure the average power.

6.3.4 Auto power down

If the UUT includes an auto power down feature, use the following procedure to determine the auto power down interval and the power consumption after auto power down is completed. (See Figure 6.)

a) Place the UUT in the On mode with the auto power down function enabled. The auto power down interval is specified by the manufacturer. The auto power down interval should be reported.

b) Stop any main functions of the UUT and start a timer to determine the auto power down interval.

c) Allow the UUT to automatically power down.

d) Monitor the power consumption of the UUT until the power consumption stabilizes.

e) Stop the timer and report the auto power down interval.

f) Measure the average power consumed for a two minute period. Report this as P_{APD}.

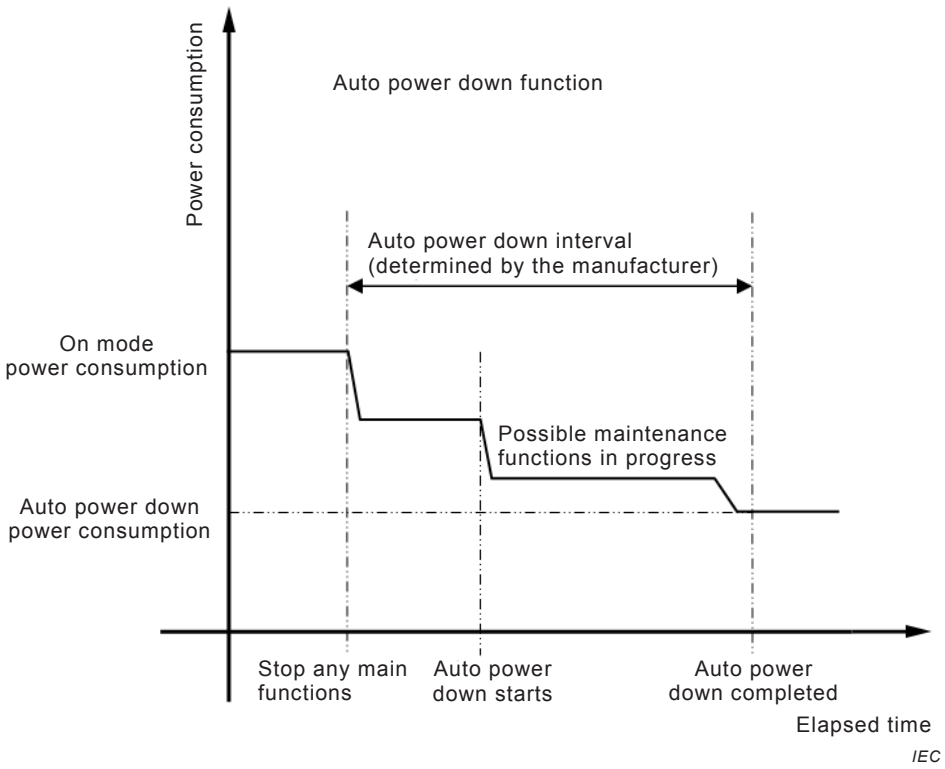

Figure 6 – Auto power down function

Annex A
(informative)

Location for sound pressure test

A.1 General

Measurement location (sound meter placement): 1 m in front of the primary sound radiating surface plane of unit under test.

A.2 Example test locations

Figure A.1 shows a possible test location for the loudspeaker of the UUT and the sound meter.

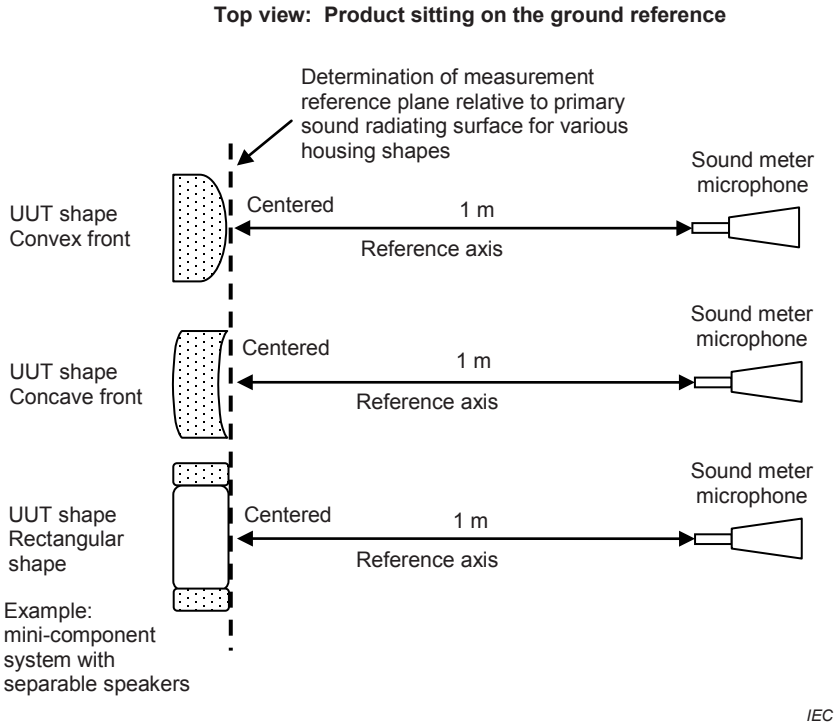

Figure A.1 – Top view

Figure A.2 and Figure A.3 show possible configurations and placements of the sound meter for UUTs of various shapes.

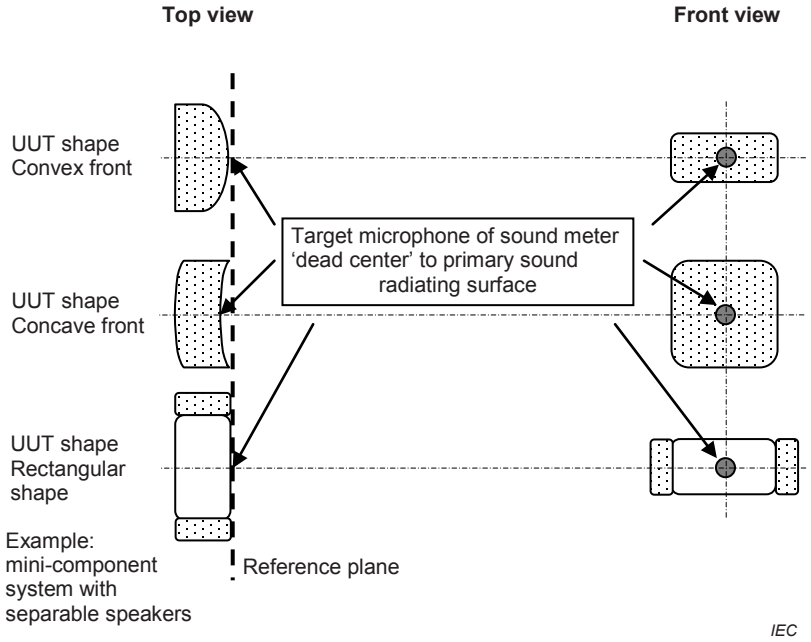

Figure A.2 – Top and front view

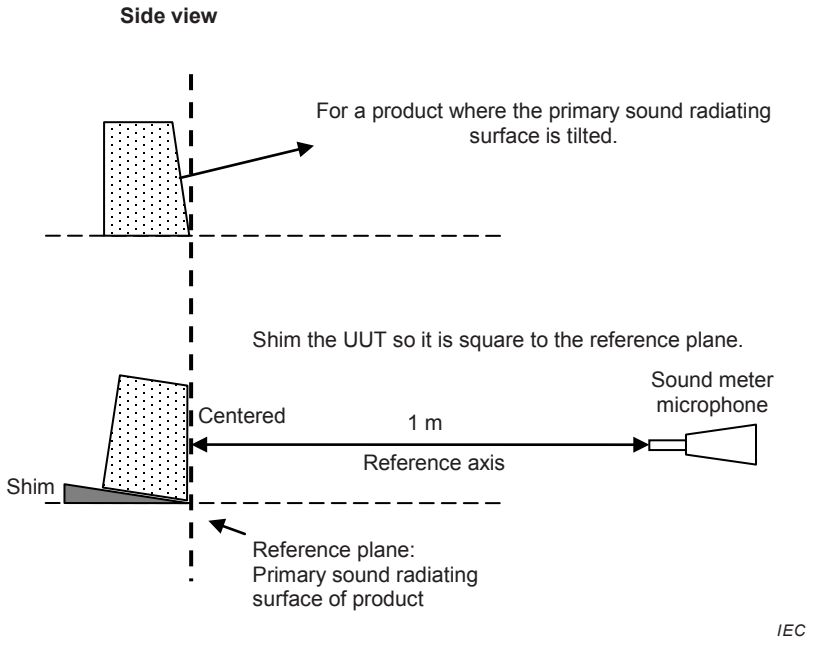

Figure A.3 – Side view

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