IEC 62087-3

Edition 2.0 2023-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Audio, video, and related equipment – Determination of power consumption – Part 3: Television sets

Appareils audio, vidéo et matériel connexe – Détermination de la consommation de puissance –
Partie 3: Téléviseurs



IEC 62087-3:2023-02(en-fr)



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 3: Television sets

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IEC 62087-3 has been prepared by technical area 19: Environmental and energy aspects for multimedia systems and equipment, of IEC technical committee 100: Audio, video and multimedia systems and equipment. It is an International Standard.

This second edition cancels and replaces the first edition published in 2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) it introduces measuring procedures for the determination of power consumption in the On mode while viewing static metadata HDR video content;
b) all tests for On mode power determination are performed with MDD disabled;
c) only progressive video signals are used for testing;
d) a dimmable LED reflector lamp is used as a light source for illuminating the ABC sensor to achieve specific illuminance levels;

e) a dynamic box and outline video signal is used for determining the ratio of peak luminance.

The text of this International Standard is based on the following documents:

Draft	Report on voting
100/3772/CDV	100/3849/RVC

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

The language used for the development of this International Standard is English.

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 document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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

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

INTRODUCTION

This document specifies the determination of the power consumption of television sets for consumer use.

This document includes measuring procedures for the determination of power consumption in the On (operation) mode, which was identified as "On (average) mode" in previous editions of IEC 62087. Additionally, it specifies measuring procedures for the determination of power consumption in the Off mode and Partial On mode. This document also defines the determination of the peak luminance ratio for use associated with television set power consumption evaluation as well as the power factor. It also defines measuring procedures for the determination of power consumption in the On mode while viewing representative static metadata HDR video content.

A verification procedure to assess product compliance is described in Annex A of IEC 62087-1:2015.

The IEC 62087 series consists of the following planned or published parts:

– Part 1: General
– Part 2: Signals and media
– Part 3: Television sets
– Part 4: Video recording equipment
– Part 5: Set-top boxes
– Part 6: Audio equipment
– Part 7: Computer monitors

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

Part 3: Television sets

1 Scope

This part of IEC 62087 specifies the determination of the power consumption and related characteristics of television sets. Television sets include, but are not limited to, those with LCD, OLED, or projection technologies.

The operating modes and functions, as they specifically apply to television sets, are defined in detail in this part of IEC 62087.

This document is limited to television sets that can be connected to an external power source. Television sets that include a non-removable, main battery are not covered by this document. Television sets can include any number of auxiliary batteries.

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

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

IEC 62087-2:2023, *Audio, video, and related equipment – Determination of power consumption – Part 2: Signals and media*

IEC 62301, *Household electrical appliances – Measurement of standby power*

3 Terms, definitions, and abbreviated terms

For the purposes of this document, the terms and definitions given in IEC 62087-1:2015, IEC 62087-2:2023 and in the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

3.1 Terms and definitions

3.1.1
television set
TV
equipment for the reception and display of television broadcast and similar services for terrestrial, cable, satellite and broadband network transmission of analogue and/or digital signals

Note 1 to entry: A television set can include additional functions that are not required for its primary function.

3.1.2
forced menu
on-screen menu that requires the user to choose a configuration option when a television set is first setup or after a factory reset

Note 1 to entry: For example, a forced menu can offer the user the option to select either "Normal"/"Home" or "Retail"/"Store" configuration.

Note 2 to entry: See Figure 1.

3.1.3
normal configuration
setting intended to be chosen for home use from the forced menu

Note 1 to entry: Subclause 4.2.2 describes the selection of normal configuration from the forced menu. This configuration selection is generally named "normal", "home", "standard", or equivalent.

Note 2 to entry: See Figure 1 and 3.1.16.

3.1.4
default configuration
manufacturer’s preset configuration for television sets without a forced menu

Note 1 to entry: See Figure 1.

3.1.5
retail configuration
forced menu selection intended for use in a retail environment

Note 1 to entry: Subclause 4.2.3 describes the selection of retail configuration from the forced menu. This configuration selection is generally recommended by the manufacturer for presentation in a public space when the television set is offered for sale and might be named "retail", "store", "shop", or equivalent.

Note 2 to entry: See Figure 1.

3.1.6
preset picture setting
common set of manufacturer-defined parameters which differ in their settings

Note 1 to entry: Examples of paraments of preset picture settings are brightness, contrast, colour space, chroma control.

3.1.7
selectable preset picture setting
TV picture setting that is selectable by a user from a set of manufacturer-defined picture settings

Note 1 to entry: See Figure 1.

3.1.8
default picture setting
picture setting for television sets in the normal or default configuration that is highlighted, or if none is highlighted, the picture setting first available for user selection

Note 1 to entry: See Figure 1. The HDR default picture setting (if different than the default picture setting) is the one that the TV enters when HDR video is played from the starting point of the SDR default picture setting.

3.1.9
brightest selectable preset picture setting
user selectable, preset picture setting that produces the highest luminance picture in the normal or default configuration

Note 1 to entry: See Figure 1.

3.1.10
overall brightest preset picture setting
retail picture setting or the brightest selectable preset picture setting, whichever produces the highest luminance picture

Note 1 to entry: See Figure 1.

3.1.11
retail picture setting
selectable preset picture setting intended for use in a retail environment

Note 1 to entry: See Figure 1.

3.1.12
motion-based dynamic dimming
MDD
television feature that adjusts luminance in response to amount of motion in the displayed image

3.1.13
special function
function that is related to, but not required for, the primary function of the device

Note 1 to entry: Examples of special functions include, but are not limited to, special sound processing and power-saving functions (e.g. automatic brightness control).

Note 2 to entry: Refer to the definition of television set (TV) (3.1.1) for primary function.

3.1.14
conditional access
encryption, decryption, and authorization techniques employed to protect content from unauthorized viewing

3.1.15
conditional access module
plug-in module that enables conditional access

3.1.16
plug-in module
device that plugs into television sets to provide additional functionality

3.1.17
point of deployment module
conditional access module for digital signal reception

3.1.18
CAT5e
category 5e cable
twisted pair cable used for computer networks

Note 1 to entry: See IEC 61156-5 and IEC 61156-6.

3.1.19
neutral density filter
ND filter
optical device that is designed to reduce the light intensity equally over the range of visible wavelengths

3.1.20
quick-start
function that reduces the television set's resume time from Partial On mode to On mode

Note 1 to entry: Resume time is measured in accordance with 6.6.1.

3.1.21
colour rendering index
CRI
measure of the degree to which the psychophysical colour of an object illuminated by the test illuminant conforms to that of the same object illuminated by the reference illuminant, suitable allowance having been made for the state of chromatic adaptation

Note 1 to entry: See also CIE 13, Method of Measuring and Specifying Colour Rendering of Light Sources.

[SOURCE: IEV 845-22-109, modified – Note 2 to entry and Note 3 to entry removed]

3.2 Abbreviated terms

ABC	automatic brightness control
AV	audio-visual
BD	Blu-ray Disc™[1]
DVD	digital versatile disc
DHCP	dynamic host configuration protocol
DVI	Digital Visual Interface
EMC	electromagnetic compatibility
FM	frequency modulation
HDD	hard disk drive
HDMI®[2]	High Definition Multimedia Interface
HDR	high dynamic range
HLG	hybrid log-gamma
IP	internet protocol
LAN	local area network
LED	light-emitting diode
LCD	liquid-crystal display
LMD	light measuring device
LNB	low-noise block
MDD	motion-based dynamic dimming
NAT	network address translation

[1] Blu-ray Disc™ is a trade mark of the Blu-ray Disc Association. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

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ND	neutral density
OLED	organic light-emitting diode
PC	personal computer
PQ	perceptual quantizer
RF	radio frequency
SCR	silicon-controlled rectifier
SDR	standard dynamic range
STB	set-top box
SSID	service set identifier
TV	television set
USB[3]	Universal Serial Bus
UUT	unit under test
VGA	Video Graphics Array
WAN	wide area network
WCG	wide colour gamut
WLAN	wireless local area network
WOL	wake-on-LAN
WoWLAN	wake on wireless LAN
WPA	Wi-Fi protected access
WPA2	Wi-Fi protected access 2

4 Specification of operating modes and functions

4.1 Table of operating modes and functions

Table 1 describes the various operating modes and functions for television sets.

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.)

[3] USB Implementers Forum, Inc. takes the position that the terms "USB" and "Universal Serial Bus" are generic terms. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.