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Audio, video, and related equipment - Determination of power consumption - Part 3: Television sets (TA 19)

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ICS:

17.220.20	Merjenje električnih in
	magnetnih veličin
33.160.25	Televizijski sprejemniki

Measurement of electrical and magnetic quantities Television receivers

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Germany	Mr Andreas Schneider		
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD:		
	Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.		
FUNCTIONS CONCERNED:			
EMC Servironment	QUALITY ASSURANCE SAFETY		
SUBMITTED FOR CENELEC PARALLEL VOTING	NOT SUBMITTED FOR CENELEC PARALLEL VOTING		
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TITLE:

Audio, video, and related equipment - Determination of power consumption - Part 3: Television sets (TA 19)

PROPOSED STABILITY DATE: 2027

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101		INTERNATIONAL ELECTROTECHNICAL COMMISSION
102		
103		
104		AUDIO, VIDEO, AND RELATED EQUIPMENT –
105		DETERMINATION OF POWER CONSUMPTION –
106		
107		Part 3: Television sets
108		
109		FOREWORD
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142 143 144	IE mi mi	C 62087-3 has been prepared by technical area 19: Environmental and energy aspects for ultimedia systems and equipment, of IEC technical committee 100: Audio, video and ultimedia systems and equipment. It is an International Standard.
145 146	Th Th	his second edition of IEC 62087-3 cancels and replaces the first edition published in 2015. This edition constitutes a technical revision.
147 148	Th ed	nis edition includes the following significant technical changes with respect to the previous lition:
149 150	-	It introduces measuring procedures for the determination of power consumption in the On mode while viewing static metadata HDR video content.
151 152 153	-	All tests for On Mode power determination shall be performed with MDD disabled. If MDD cannot be disabled, the unit must be tested in the brightest selectable preset picture settings.
154	_	Only progressive video signals are used for testing.

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- As light source for illuminating the ABC sensor to achieve specific illuminance levels a
 dimmable LED reflector lamp shall be used.
- For determining the ratio of peak luminance, a dynamic box and outline video signal shall
 be used.
- 159 The text of this standard is based on the following documents:

FDIS	Report on voting
100/xxxx/FDIS	100/xxxx/RVD

160

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

163 The language used for the development of this International Standard is English. A list of all 164 parts in the IEC 62087 series, published under the general title *Audio, video, and related* 165 *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/standardsdev/publications.

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- reconfirmed,
- 174 withdrawn,

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- replaced by a revised edition, or talog/standards/sist/003e399c-f746-47b4-a2e9-
- 176 amended. 260f2de3c408/osist-pren-iec-62087-3-2022
- 177

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INTRODUCTION

This document specifies the determination of the power consumption of television sets for consumer use. It is used in conjunction with IEC/CDV 62087-2:2022 (ED2), which specifies signals and media.

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 standard 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.

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

192 – Part 1: General

- 193 Part 2: Signals and media
- 194 Part 3: Television sets
- 195 Part 4: Video recording equipment DARD PREVIEW
- 196 Part 5: Set top boxes
- 197 Part 6: Audio equipment standards.iten.ai)
- 198 Part 7: Computer monitors
- 199

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

Part 3: Television sets

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207 **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 may include any number of auxiliary batteries.

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

218 2 Normative references standards.iteh.ai)

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/CDV 62087-2:2022, 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

- For the purposes of this document, the terms and definitions given in IEC 62087-1:2015, IEC/CDV 62087-2:2022 and in the following apply.
- ISO and IEC maintain terminological databases for use in standardization at the followingaddresses:
- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

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235 **3.1 Terms and definitions**

236 **3.1.1**

237 television set

238 **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

242 Note 1 to entry: A television set can include additional functions that are not required for its basic operation.

243 **3.1.2**

244 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 may offer the user the option to select either "Normal" / "Home" or
 "Retail" / "Store" configuration.
- 249 Note 2 to entry: See Figure 1.

250 **3.1.3**

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

253 Note 1 to entry: Subclause 4.2.2 describes the selection of normal configuration from the forced menu. This 254 configuration selection is generally named "normal", "home", "standard", or equivalent.

- Note 2 to entry: See Figure 1 and 3.1.16.
- 256 **3.1.4**

257 default configuration

258 manufacturer's recommended configuration for television sets without a forced menu

259 Note 1 to entry: See Figure 1.260f2de3c408/osist-pren-iec-62087-3-2022

260 **3.1.5**

261 retail configuration

²⁶² forced menu selection intended for use in a retail environment

263 Note 1 to entry: Subclause 4.2.3 describes the selection of retail configuration from the forced menu. This 264 configuration selection is generally recommended by the manufacturer for presentation in a public space when the 265 television set is offered for sale and might be named "retail", "store", "shop", or equivalent.

266 Note 2 to entry: See Figure 1.

267 **3.1.6**

268 preset picture setting

- 269 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.

272 **3.1.7**

273 selectable preset picture setting

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

275 Note 1 to entry: See Figure 1.

276 **3.1.8**

277 default picture setting

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

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280 281	Note 1 to entry: See Figure 1. The HDR default p one that the TV enters when HDR video is played f	picture setting (if different than t rom the starting point of the SDF	the default picture setting) is the R default picture setting.
282 283 284 285	3.1.9 brightest selectable preset picture sett user selectable, preset picture setting that or default configuration	ing produces the highest lumi	nance picture in the normal
286	Note 1 to entry: See Figure 1.		
287 288 289 290	3.1.10 overall brightest preset picture setting either the retail picture setting or the br produces the highest luminance picture	ightest selectable preset	picture setting, whichever
291	Note 1 to entry: See Figure 1.		
292 293 294	3.1.11 retail picture setting selectable preset picture setting intended	for use in a retail environr	nent
295	Note 1 to entry: See Figure 1.		
296 297 298 299	3.1.12 motion-based dynamic dimming MDD television feature that adjusts luminance in	response to amount of mo	otion in the displayed image
300 301 302	3.1.13 (Stands) special function function that is related to, but not required	ards.iteh.ai)	f the device
303 304	Note 1 to entry: Examples of special functions in saving functions (e.g. automatic brightness control)	nclude, but are not limited to, s st-pren-iec-62087-3-202	pecial sound processing, power
305	Note 2 to entry: Refer to definition of television se	et (TV) for basic operation.	

306 **3.1.14**

307 conditional access

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

310 **3.1.15**

311 conditional access module

- 312 plug-in module that enables conditional access
- 313 **3.1.16**
- 314 plug-in module
- device that plugs into television sets to provide additional functionality
- 316 **3.1.17**
- 317 point of deployment module
- 318 conditional access module for digital signal reception
- 319 **3.1.18**
- 320 category 5e cable
- 321 twisted pair cable used for computer networks
- 322 Note 1 to entry: See IEC 61156-5 and IEC 61156-6.

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- 323 **3.1.19**
- 324 neutral density filter
- 325 ND filter
- optical device that is designed to reduce the light intensity equally over the range of visible wavelengths
- 328 **3.1.20**
- 329 quick start
- function that reduces the television's resume time from partial on mode to on mode
- 331 Note 1 to entry: Resume time is measured per section 6.6.1.

332	3.2 Abbrev	iations
333	ABC	automatic brightness control
334	AV	audio-visual
335	BD	Blu-ray Disc ^{™ 1}
336	DVD	digital versatile disc
337	DHCP	dynamic host configuration protocol
338	DVI	Digital Visual Interface
339	EMC	electromagnetic compatibility
340	FM	frequency modulation
341	HDD	hard disk drive ANDARD PREVIEW
342	HDMI® ²	High Definition Multimedia Interface
343	HDR	high dynamic range
344	HLG	hybrid log-gamma
345	IP http	internet protocol
346	LAN	local area network 3c408/osist-pren-iec-62087-3-2022
347	LED	light emitting diode
348	LCD	liquid crystal display
349	LMD	luminance measuring device
350	LNB	low noise block
351	MDD	motion-based dynamic dimming
352	NAT	network address translation
353	ND	neutral density
354	OLED	organic light-emitting diode
355	PC	personal computer
356	PQ	perceptual quantizer
357	RF	radio frequency
358	SCR	silicon controlled rectifier
359	SDR	standard dynamic range
360	STB	set top box

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SSID service set identifier 361 TV television set 362 USB³ Universal Serial Bus 363 UUT unit under test 364 VGA Video Graphics Array 365 WAN wide area network 366 WCG wide colour gamut 367 WLAN wireless local area network 368 369 WOL wake-on-LAN WoWLAN wake on wireless LAN 370 WPA Wi-Fi protected access 371 WPA2 Wi-Fi protected access 2 372

373 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

377 procedure. (IEC 62087-1:2015, 5.1.1.1.)

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Table 1 – Operating modes and functions

Power	Mode	Sub-mode	Function(s)	Functional description for TV
0 W	Disconnected	Disconnected	 Disconnected from power source 	The television set is disconnected or galvanically isolated from all external power sources.
≥0 W	Off	Off	– Off	The television set is connected to an external power source and does not produce picture or sound and does not provide any other function that depends on an external power source. The television set 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 onremote controlinternal signal	The television set is connected to an external power source and does not provide picture or sound. The television set can be switched into another mode with the remote control unit or an internal signal, but not with an external signal.
	iTe	Standby- active, low A	 Wake on PRE remote control internal signal external signal external signal 	The television set is connected to an external power source and does not provide picture or sound. The television set can be switched into another mode with the remote control unit or an internal signal and can additionally be switched into another mode with an external signal.
	https://stand	lards.iteh.ai/c 260f2de3c	atalog/standards/sist/003e399 408/osist-pren-iec-62087-3-2	NOTE 1 When in Standby-active, low mode, a television may be able to be switched into the On mode, the Off mode, the Standby- passive, or the Standby-active, high mode.
				NOTE 2 A network-enabled TV is considered to be in Standby- active low when its presence on a local area network can be detected and there is minimal data communication beyond network maintenance.
		Standby- active, high	 Wake on remote control internal signal external signal Data communications 	The television set is connected to an external power source and does not provide picture or sound. The television set can be switched into another mode with the remote control unit, an internal signal, or an external signal. Additionally, the television set is exchanging/ receiving data with/from an external source. Determination of power consumption in this sub-mode is
	On	Operation	– Operation	not specified by this document. The television set is connected to an external power source and provides picture and, if possible, sound.