

Energy Efficiency of Games Consoles

Self-Regulatory Initiative to further improve the
energy efficiency of Games Consoles

Version 4.0 –

Sony Interactive Entertainment Inc.
Microsoft Corporation
Nintendo Co., Ltd.

Revision History

Revision #	Revision Date	Description of Change
1.0	22/04/2015	Initial document
1.1	05/10/2016	Grammatical corrections and elimination of redundant text
2.1	27/06/2017	2017 revision Steering Committee mtg. draft
2.2	01/07/2017	Addition of standby reporting
2.3	02/10/2017	Streamlining the reporting process
2.4	06/10/2017	Adding suggested changes from the Independent Inspector
2.5	13/10/2017	Sony edits
2.6	05/06/2018	Clarification of ambiguous text in section 3.2
2.6.1	14/08/2018	Section 5.1 and Annex C revision of console status definitions
2.6.2	21/08/2018	Section 5.1 further revision, Annex B alignment with PCR
2.6.3	11/10/2018	Section 3.4, Annex A-1, Annex A-2 revisions
2.7	18/11/2019	Separation of Definition and Scope, etc.
3.0	24/03/2020	Clarification of requirements and guidance; changes to reflect response to 2019 Consultation Forum stakeholder feedback
3.1	24/08/2020	Initial draft revision for 2020
3.2	29/09/2020	Update of draft with feedback from all Signatories
3.9	16/10/2020	Formatting adjustments
3.9.1	22/10/2020	Adjustment of Annex A-1
3.9.2	23/10/2020	Formatting adjustments to power cap table and main text
3.9.3	30/10/2020	Adjustments to Section 3.2
3.9.4	09/11/2020	Pre-2020 Consultation Forum draft for review
4.0	03/05/2021	Revisions in response to post 2020 Consultation Forum stakeholder feedback

Table of Contents

1	INTRODUCTION: SCOPE OF THE SELF-REGULATORY INITIATIVE	5
1.1	MAPPING THE STRUCTURE OF THE GAMES CONSOLES SELF-REGULATION WITH THE GUIDELINES ON SELF-REGULATION MEASURES	5
2	DEFINITIONS AND SCOPE	7
2.1	DEFINITION OF A GAMES CONSOLE	7
2.2	SCOPE	7
2.3	GENERAL DEFINITIONS	7
2.4	OPERATIONAL MODES	8
3	COMMITMENTS AND REQUIREMENTS	10
3.1	ENERGY EFFICIENCY REQUIREMENTS	10
3.2	RESOURCE EFFICIENCY REQUIREMENTS	15
3.3	OTHER COMMITMENTS	18
4	ORGANISATION OF THE SELF-REGULATORY INITIATIVE	19
4.1	NATURE OF SELF-REGULATORY INITIATIVE	19
4.2	SIGNATORIES AND MARKET COVERAGE	19
4.3	GOVERNANCE	19
4.4	ADMINISTRATION OF THE SELF-REGULATORY INITIATIVE	20
5	REPORTING ON COMPLIANCE WITH THE SELF-REGULATORY INITIATIVE	22
5.1	REPORTING OF INFORMATION BY SIGNATORIES	22
5.2	TRANSPARENCY OF THE SELF-REGULATORY INITIATIVE	23
5.3	COMPLIANCE AND REPORTING PERIODS	23
5.4	NON-COMPLIANCE	24
6	MONITORING OF THE SELF-REGULATORY INITIATIVE	26
7	REVISION OF THE SELF-REGULATORY INITIATIVE	27
7.1	REVIEW OF SELF-REGULATORY INITIATIVE	27
7.2	DECISIONS TO AMEND THE SELF-REGULATORY INITIATIVE	27
8	VOLUNTARY WITHDRAWAL OR DISSOLUTION OF THE SELF-REGULATORY INITIATIVE	29
	ANNEX A-1 – TEST & VERIFICATION PROCEDURES	30
1.	SCOPE	30
2.	TESTING REQUIREMENTS	30
3.	EQUIPMENT UNIT UNDER TEST (UUT) PREPARATION	31
4.	POWER CONSUMPTION MEASUREMENT AND AUTO-POWER DOWN VERIFICATION TEST METHOD	32
	ANNEX A-2: VERIFICATION OF NON-ENERGY REQUIREMENTS AND ENERGY EFFICIENCY INFORMATION	36
	ANNEX B – PRODUCT COMPLIANCE REPORTING	40
	ANNEX C - METHOD OF DATA COLLECTION AND PROCESSING BY INDEPENDENT INSPECTOR	42
	PRODUCT REPORTING TEMPLATE	42
	DATA COLLECTION AND PROCESSING	42
	THE ANNUAL COMPLIANCE REPORT	42

COMPLIANCE INVESTIGATIONS	43
ON-SITE INSPECTIONS/ 3RD PARTY TEST REPORT INSPECTION	45
ACCESS TO DATA	45
ANNEX D – MEMBERSHIP FORM	46
ANNEX E - COMPLIANCE WITH THE SELF-REGULATION CRITERIA (ANNEX VIII)	47
ANNEX F – ESTIMATED ELECTRICITY SAVINGS	49

1 Introduction: The Self-Regulatory Initiative

This Self-Regulatory Initiative (SRI) establishes a voluntary agreement, under the terms of EU Directive 2009/125/EC on energy-related products, for improved energy and resource efficiency, and end-of-life treatment and recycling of Games Consoles.

The objective of this SRI is to reduce the environmental impacts of Games Consoles over their life-cycle and the achievement of energy savings through better design. Information on how this SRI meets the principles and criteria laid out in Annex VIII of EU Directive 2009/125/EC and its associated guidelines are provided in Annex E.

This document is intended to supplement, but does not replace, applicable laws, directives and implementing measures currently in effect. Manufacturers are responsible for complying with the regulations and other legal requirements that apply to their products.

Compliance with this document shall be demonstrated and confirmed through the tests and verification processes described in Annexes A-1 and A-2. Unless otherwise specified, the tests shall be conducted with retail software written specifically for the Games Console under test and certified by the Console manufacturer.

The commitments of this SRI are limited to Games Consoles placed on the EU market by the Signatories that are within the scope of the SRI.

1.1 Mapping the Structure of the Games Consoles Self-regulation with the Guidelines on self-regulation measures

Guidelines on the self-regulation measures concluded by industry under the Ecodesign Directive 2009/125/EC (30 November 2016)	Self-Regulatory Initiative to further improve the energy efficiency of Games Consoles
3.1 Openness of Participation	Title page 4.2 Signatories and Market Coverage 8 Voluntary Withdrawal or Dissolution of the Self-Regulatory Initiative Annex D Membership Form Annex E Compliance with the Self- Regulation Criteria (Annex VIII)
3.2 Added Value	4.3 Governance 7.2 Decisions to Amend the Self- Regulatory Initiative Annex E Compliance with the Self-Regulation Criteria (Annex VIII) Annex F Estimated electricity savings

3.3 Representativeness	<p>4.2 Signatories and Market Coverage</p> <p>5.3 Compliance and Reporting Periods</p> <p>Annex B Product Compliance Reporting</p>
3.4 Quantified and staged objectives	<p>1 Introduction: The Self-Regulatory Initiative</p> <p>2 Definitions and Scope</p> <p>3 Commitments and Requirements</p> <p>Annex A-1 Test & Verification Procedures</p> <p>Annex A-2 Verification of non-energy requirements and energy efficiency information</p>
3.5 Involvement of civil society	<p>3.3 Other Commitments</p> <p>4.3 Governance</p> <p>5.2 Transparency of the Self-Regulatory Initiative</p> <p>7.2 Decisions to Amend the Self-Regulatory Initiative</p> <p>Annex C – Method of Data Collection and Processing by Independent Inspector</p>
3.6 Monitoring and reporting	<p>4.4 Administration of the Self-Regulatory Initiative</p> <p>5 Reporting on Compliance with the Self-Regulatory Initiative</p> <p>5.3 Compliance and Reporting Periods</p> <p>5.4 Non-compliance</p> <p>Annex A-1 Test & Verification Procedures</p> <p>Annex B The Product Compliance Reporting Annex C Method of Data Collection and Processing by Independent Inspector</p>
3.7 Cost-effectiveness of administering a self-regulatory initiative	<p>3 Commitments and Requirements</p> <p>4.3 Governance</p>
3.8 Sustainability	<p>1 Introduction: Scope of the Self-Regulatory Initiative</p> <p>Annex E Compliance with the Self-Regulation Criteria (Annex VIII)</p>
3.9 Incentive compatibility	<i>Compliant</i>

Table 1: Mapping of Games Consoles SRI versus Commission Guidelines for self-regulatory measures

2 Definitions and Scope

2.1 Definition of a Games Console

A Games Console is a computing device whose primary function is to play video games. Games Consoles may share many of the hardware architecture features and components found in general personal computers (e.g. central processing unit(s), system memory, video architecture, optical drives and/or hard drives or other forms of internal memory) and may include other secondary features such as optical disc player, digital video and picture viewing, digital music playback, etc..

2.2 Scope

The “Games Consoles” covered by this SRI are mains powered devices that:

- Utilise either dedicated handheld or other interactive controllers designed to enable game playing (rather than the mouse and keyboard used by personal computers);
- Are equipped with audio-visual outputs for use with external televisions as the primary display;
- Use dedicated Console operating systems (rather than using a conventional PC operating system); and
- Use either internal or dedicated external power supply units.

Unless otherwise specified, accessories or other devices that may be used with the console (e.g. external power supplies¹, controllers or other input peripherals², including those supplied with Games Consoles, docking stations³, etc.), external connecting cables (e.g. HDMI, USB, etc.) and game software are not included in the scope of this SRI.

2.3 General Definitions

- A. **8K Definition Capable Consoles:** Games Consoles having potential of rendering video output with resolutions greater or equal to 8K (7680 pixels × 4320 lines) in addition to capability defined for Ultra-High-Definition Consoles
- B. **Ultra-High-Definition Console:** Game Consoles having potential of rendering video output with resolutions greater or equal to 4K (3840 pixels x 2160 lines) in addition to

¹ Commission Regulation (EU) 2019/1782 already covers the ecodesign requirements for external power supplies.

² Input peripherals generally connect wirelessly to the main unit of the games console and are typically battery or USB-powered.

³ ‘Docking station’ means a discrete product designed to be connected to a games console in order to perform functions such as expanding connectivity or consolidating connections to peripheral devices. Docking stations may also facilitate charging of internal batteries in the connected console or other peripherals.

capability defined for High Definition Console. Ultra-High-Definition (UHD) Consoles are further divided into two subgroups based on whether they are capable of UHD video resolutions for media and for gaming, but excluding 8K Definition Capable Consoles.

- a. **UHD media capable Console:** Game Consoles having potential of rendering video output with resolutions greater or equal to 4K (3840 pixels x 2160 lines) in addition to capability defined for High Definition Consoles in media mode only.
 - b. **UHD gaming capable Console:** Game Consoles having potential of rendering video output with resolutions greater or equal to 4K (3840 pixels x 2160 lines) in addition to capability defined for High Definition Consoles in media and gaming mode.
- C. **High Definition Console:** Game Consoles capable of rendering High Definition (HD) video output with resolutions greater or equal to 720p (1280 pixels x 720 lines), 1080i (1920 pixels x 1080 lines) or 1080p (1920 x 1080 lines) via HDMI, but excluding Ultra High Definition Game Consoles as defined .
- D. **Standard Definition Console:** Support for video output with resolutions of less than 720p (1280 pixels x 720 lines) or 1080i (1920 pixels x 1080 lines).
- E. **Gesture and Speech Recognition Natural User Interface (NUI):** Functionality which allows the user to interact with the Games Console without the need for a game pad, external controller or other external device. This is accomplished by sensing and recognition of physical gestures and/or voice commands.

2.4 Operational Modes

The principal operational modes applicable to Games Consoles are defined below. It is understood that not all Games Consoles operate in all defined modes, and some Games Consoles may operate in modes that are not defined. In the future, Games Consoles may operate in new modes that are currently not defined.

- A. **Active Gaming:** Mode in which the Games Console is actively performing its primary function of game playing.
- B. **Media Playback:** Mode in which there is decoding and playing of video files and codecs up to UHD content, on the Games Console's own optical discs, and streaming media players.
- C. **Navigation:** Mode in which no other mode is engaged and the Games Console is displaying a menu of functions (the "Home Menu").
- D. **Off, Standby, Networked Standby mode or another equivalent condition** (as defined in EU Regulation (EU) No 1275/2008 as amended by EU Regulation (EU) No 801/2013; hereinafter "regulatory standby mode(s)");

The Games Console may enter an Off, Standby, Networked Standby mode or another condition which does not exceed the applicable power consumption from any other mode after:

- i. The Games Console receives a notification from the user to enter the regulatory standby mode(s), or
- ii. The Games Console initiates an automatic power down ('auto-power down' or 'APD') to the regulatory standby mode(s).

The Games Console may exit the regulatory standby mode(s) in order to carry out any maintenance activity (as defined in 3.1.1). After the maintenance activity is complete, the Games Console shall return to the previous regulatory standby mode(s).

3 Commitments and Requirements

Signatories agree to comply with the SRI requirements and commitments in this Section 3, and use reasonable endeavours to:

- a. Reduce the power consumption of Games Consoles to the minimum necessary to meet their operational specification while not limiting the industry's ability to improve functionality and to innovate;
- b. Ensure that the energy and material efficiency requirements set out in Section 3.1 and 3.2 are met. In particular:
 - i. The requirements of this SRI, detailed in Section 3, shall apply to at least 90% of Games Console units placed on the market and/or put into service by each Signatory;
 - Should a Signatory comply with any subsequent power consumption targets of the SRI as set out in Section 3.1 (Power Caps) before the entry into force of those targets, then that Signatory is entitled to make that achievement public.
- c. Ensure that Games Consoles do not automatically alter their performance in test conditions with the objective of reaching a more favourable level for any of the parameters specified in this SRI;
- d. Foster open communication and active engagement with the European Commission, Member States and other relevant stakeholders regarding the energy and material efficiency of Games Consoles. This includes sharing expertise, experience, information, and best practice with the signatories of other ecodesign self-regulation measures.

3.1 Energy Efficiency Requirements

3.1.1 Auto-Power Down (APD)

Games Consoles subject to this SRI consuming more than 20 W in Active Gaming mode shall have an APD function activated as default prior to placing on the EU market⁴.

The APD function shall power the Games Console down to a low power state according to the parameters outlined below:

⁴ The game consoles, whether in scope for the energy efficiency requirements or not, would conform with COMMISSION REGULATION (EU) No 801/2013 of 22 August 2013 amending Regulation (EC) No 1275/2008 with regard to ecodesign requirements for standby, off mode electric power consumption of electrical and electronic household and office equipment, and amending Regulation (EC) No 642/2009, including amendments, with regard to ecodesign requirements for televisions

- For operational modes other than Media Playback, the period of inactivity required to trigger APD shall be set at 1 hour or less from the time of the last user input when powering down to the regulatory standby mode(s)⁵;
- In Media Playback mode, APD shall be triggered within 4 hours of starting any audio or video media playback or within 1 hour or less of user inactivity after termination of video media content;
- The user may have the option to:
 - Disable APD for all modes; and
 - Change the time settings for the APD function from within the system settings menu options, e.g. for retail display purposes or for heavy game users;
- In limited circumstances, users may be prompted to suspend APD temporarily to allow certain types of games or software applications to run without user input, e.g. simulation games and video streaming which run without user input for periods longer than 1 hour. Once selected, the APD suspension may remain enabled for replay of such game or media content upon restart of the Games Consoles;
- APD may be suspended temporarily to allow for the uninterrupted performance of any system update, system maintenance, software installation, content download/upload or data transfer, and may not occur during the display of an error message to users in the event of a system error;
- After an automatic wake event, Games Consoles shall power down automatically within 5 minutes after performing required system maintenance and downloads, or other functions that may require an automatic wake-up;
- Some software published for current or previous-generation Games Consoles may not necessarily be compatible with the APD functions described in this SRI. Games Console manufacturers shall use reasonable efforts to work with the video game software industry to incorporate these APD functions when publishing software for Games Consoles covered by this SRI.

Individual Games Console manufacturers may introduce new and innovative approaches to APD when the same or better energy savings are possible along with improved consumer experiences. This SRI will be updated at regular intervals, as required, to reflect any such significant innovations.

⁵ For equipment defined as “networked equipment” under Commission Regulation (EU) No 801/2013, if networked standby mode is enabled by default, the default period of time after which the power management function, or a similar function, switches the equipment automatically into a condition providing networked standby shall not exceed 20 minutes.

3.1.2 Power Caps

The SRI uses modal power caps to further enhance energy efficiency of Games Consoles. These modal power caps, as shown below in Tables 2 and 3, are applicable to Games Consoles consuming more than 20 W in Active Gaming mode.

In cases where additional functionality, as defined in this document, is provided by a Games Console, the corresponding function-specific power cap shall be added in a separate Additional Power Cap Allowances Table. The power caps defined in this SRI are based on adoption of best available technologies embodying substantial energy savings (such as system on a chip, power scaling, and efficient power supplies). These requirements are based upon a number of studies as explained in Annex F. To date, there is no final Energy Star specification published on Games Consoles.

These power caps are set at a level to allow tolerance of variability of power consumption of different samples.

3.1.2.1 Power Cap Requirements for Games Consoles

Navigation Mode

	High Definition Consoles	Ultra-High Definition Consoles		8K-capable Consoles
Tier 1 Effective from 1st January 2014	90 W ⁶	90 W ⁷		-
Tier 2 Effective from 1st January 2016	-	-		-
Tier 3 Effective from 1st January 2017	70 W ⁶	70 W ⁷		
Tier 4 Effective from 1st January 2019	High Definition Consoles	UHD Media Capable Consoles	UHD Gaming Capable Consoles	8K-capable Consoles
	50 W ⁶	50 W ⁷	70 W ⁷	-

⁶ Measured at HD video resolutions.

⁷ Measured at HD and UHD video resolutions.

Tier 5 Effective from 1st January 2020	-	-	65 W ⁶	70 W ⁸	-
Tier 6 Effective from 1st January 2021	-	-	-	-	70 W ⁷

Table 2: Navigation Mode power caps

Media Playback Mode

	High Definition Consoles	Ultra-High Definition Consoles		8K-capable Consoles
Tier 1 Effective from 1st January 2014	90 W ⁶	-		-
Tier 2 Effective from 1st January 2016	-	90 W ⁷		-
Tier 3 Effective from 1st January 2017	70 W ⁶	-		-
Tier 4 Effective from 1st January 2019	High Definition Consoles	UHD Media Capable Consoles	UHD Gaming Capable Consoles	8K-capable Consoles
	60 W ⁶	60 W ⁷	70 W ⁶	-
			110 W ⁸	-
Tier 5 Effective from 1st January 2020 ⁹	-	-	-	-

⁸ Measured at UHD video resolutions.

⁹ No change was implemented for Tier 5 for the Media Playback Mode. The Tier is added to align with the Navigation mode caps.

Tier 6 Effective from 1st January 2021	-	-	-	70 W ⁶
			-	100 W ⁸

Table 3: Media Playback mode power caps

3.1.3 Other Energy Efficiency Requirements for Games Consoles consuming more than 20 W in Active Gaming mode

- Software downloads to Games Consoles shall not increase the power consumption of the console above the initial power cap for Media Playback and Navigation (according to test procedures as specified in Annex A-1 –Test & Verification Procedures).
- Whilst adhering to the general principle of designing products to reduce power consumption, Games Consoles manufacturers and software providers are constantly innovating their products as new service concepts and technologies develop. To avoid stifling such innovation, any unanticipated additional secondary or new functionality which contributes to an incremental increase in power consumption, but which is not listed in this document, should be deactivated during the measurement process. This new functionality shall be considered during the next review of the SRI. However, in the event that such deactivation is either inappropriate or unnecessary, then this requirement shall not be compulsory. The test results shall explicitly list any functions that were deactivated during the measurement process.

3.1.4 Energy Efficiency - Information Requirements

Signatories of Games Consoles consuming more than 20 W in Active Gaming mode will provide end-users with information on the power consumption of navigation, media play, gaming, regulatory standby mode(s) and other user-enabled low power conditions (also described in Annex B). Requirements for reporting default networked standby power consumption are specified separately under EU regulation 801/2013 and are not in the scope of this SRI.

As specified in Annex B (Product Compliance Reporting), each Signatory will provide energy efficiency information for end-users within console operating instructions either provided with the console itself, onscreen or hardcopy, or online. Instructions for use provided to end-users with their consoles will be neutrally worded so as not encourage end-users to disable power-saving features.

From 1 January 2022, the energy efficiency information requirements shall apply to Signatories of Games Consoles within the scope of this SRI that consume less than 20 W in Active Gaming mode.

The Signatories will keep under review the possibility of further reductions in power consumption and will take this into account when the SRI is reviewed, as set forth in Section 7.2.

3.2 Resource Efficiency Requirements

3.2.1 Resource Efficiency Requirements to Promote Repair and Recyclability

Games Consoles subject to this SRI, consuming more than 20 W in Active Gaming Mode, and placed on the market within each reporting period, shall also comply with the following resource efficiency requirements. From 1 January 2021, these requirements shall extend to Games Consoles within the scope of this SRI that consume less than 20 W in Active Gaming mode.

- A refurbishment or out-of-warranty repair service for each Games Console shall be made available, and supported by the following requirements:
 - **From 1 January 2022**, Signatories shall ensure that the following components¹⁰ (where applicable) are made available to professional repairers and end-users for a period of two years after placing the last unit of the Games Console on the market:
 - Hard disk drive
 - External power supply
 - From 1 January 2022, key components (i.e. optical drive, motherboard, hard disk drive, internal power supply.) relevant for each Games Console that are required for repair by authorised¹¹ repair or refurbishment centres shall be made available to them for a minimum period of two years after placing the last unit of a games console on the market. Since these components are either proprietary and/or part of a secure, encrypted system, repairs using such components must be performed in a specialised repair environment in order to ensure that they satisfy the levels of product safety and quality guaranteed by the Signatories
 - To improve both recycling and reuse at end-of-life, maintenance and refurbishment of each Games Console shall be possible by non-destructive

¹⁰Signatories have identified these components in the Games Consoles based on the following criteria, considering all safety and security concerns relevant to each component. Likelihood of the need to replace or upgrade parts

- Suitability of parts for reuse
- Ease of removability

¹¹ 'authorised' meaning selected and used by each Signatory for the repair of their specific product[s]

disassembly of the following key components: the motherboard, hard disk drive, optical drive, and internal power supply.

- In addition, Signatories shall ensure that joining or sealing techniques do not prevent the removal of the components, applicable to Games Consoles, listed in point 1 of Annex VII of Directive 2012/19/EU, when present. Exemptions apply where non-removable joining and sealing techniques may be used to ensure either user safety necessary to comply with safety-related EU legislation or product quality necessary to avoid wear and tear that would otherwise shorten the product's useful life.¹²
- To improve recycling at end-of-life, console plastics parts >25 g will be marked specifying the type of resin (in accordance with ISO 11469), with the following exceptions:
 - The part has <1cm² level surface available for marking
 - The performance or function of a part is compromised e.g. buttons with tactile surface, plastic lenses, or display screens.
 - External transparent or translucent parts
 - Marking is not technically possible due to the specific production method of the plastics used in the part e.g. extrusion moulding.
- Signatories will ensure that any external plastic enclosure components >100 g are removable using tools commercially available to recyclers.
- **From 1 January 2022**, to improve the end-of-life recyclability of Games Consoles, external plastic enclosure parts >25 g shall not contain halogenated flame retardants >0.1 % by weight.

3.2.2 Resource Efficiency – Information Requirements

- To support product life extension, the following information shall be provided to end-users (either provided with the console itself, onscreen, in hardcopy, or online):
 - Explanation on how to keep the consoles in good working condition (examples could include, where applicable: how to keep the product dust free, how to install system updates, how to remove trapped disks, etc.)
 - Explanation on how to delete personal data (e.g. if the consumer wishes to send the console for reuse).
 - Options available (if any) to end-users to upgrade the performance of their consoles (e.g. installing a bigger hard drive).

¹² For batteries, exemptions in the Battery Directive 2006/66/EC amended by Directive 2013/56/EU apply.

- A refurbishment or out-of-warranty repair service for each Games Console shall be made available and supported by the following requirements:
 - Technical documentation (relevant for repair) shall be made available to authorised repair centres to enable repair or refurbishment of each Games Console.
 - End-users will be informed of end-of-life processing, refurbishment, and out-of-warranty repair options available within the operating instructions of each Games Console (with instructions provided with the console itself, onscreen or hardcopy, or online)
 - Clear and consistent information (such as the examples below) based on CENELEC standards (e.g. EN 45554:2019) regarding the reparability of consoles shall be made available to end-users (provided with the console itself, onscreen, in hardcopy, or online).
 - Examples:
 - Whether repair is possible with tools commercially available to repairers or specialized proprietary tools;
 - If diagnostics for repair can be undertaken by any repairers or only authorised experts using a proprietary interface;
 - If spare parts are available to all repairers or only manufacturer-authorized repair service providers;
 - Stating that an out-of-warranty repair service is provided.
- The following information shall be included within product disassembly instructions provided to repair and recycling operations, or alternatively marked on the plastic parts themselves to improve end-of-life recyclability.
 - Whether external plastic enclosure parts >25 g contain any halogenated flame retardants >0,1 % by weight
 - * with the following exceptions:
 - The part has <1 cm² level surface available for marking
 - The performance or function of a part is compromised e.g. buttons with tactile surface, plastic lenses, or display screens.
 - External transparent or translucent parts
 - Marking is not technically possible due to the specific production method of the plastics used in the part e.g. extrusion moulding.
- The following information shall be included within product disassembly instructions provided to repair and recycling operations:

- Accessing the key components specified in section 3.2.1 and those listed in point 1 of Annex VII of Directive 2012/19/EU, when present, shall be enabled by documenting the dismantling operations needed to access the targeted components¹³, including for each of these operations: type of operation, type of fastening technique(s) to be undone, and tool(s) required.

3.3 Other Commitments

- Each Signatory shall include details about the technical specifications and features of each Games Console, as well as any related environmental information specified in the product compliance report, which will be made available on the dedicated SRI website.
- To publicise and disseminate information about this SRI, the website should at least include the following:
 - the most recent and previous versions of the self-regulation measure;
 - an up-to-date list of Signatories and information on recent withdrawals and exclusions of Signatories;
 - confirmation of the overall market coverage of the self-regulatory agreement (without disclosure of individual Signatories' commercial or confidential data);
 - up-to-date list of products declared compliant by the Signatories (products found to be non-compliant by the Independent Inspector shall not be included);
 - the most recent version of the Product Compliance Report template;
 - the compliance reports produced by the Independent Inspector;
 - an up-to-date list of non-compliant Signatories;
 - for every Steering Committee meeting: invitations, draft agendas, meeting documents and meeting minutes;
 - information on the Independent Inspector, including its contact details;
 - a facility for visitors to submit questions about the SRI to the Signatories and to the Independent Inspector. Questions shall be replied to within one month;
 - **From 1 January 2022**, information on the power consumption of navigation, media play, gaming, regulatory standby mode(s), and other user-enabled low power conditions.

¹³ Components, applicable to Games Consoles, listed in point 1 of Annex VII of Directive 2012/19/EU.

4 Organisation of the Self-Regulatory Initiative

4.1 Nature of Self-Regulatory Initiative

This SRI, to further improve the energy efficiency of Games Consoles, is a self-regulation mechanism¹⁴ offered as a unilateral commitment by the Signatories. As such, it is neither legally binding nor co-regulation¹⁵.

4.2 Signatories and Market Coverage

Any manufacturer of Games Consoles falling within the scope of this agreement may join the SRI as a Signatory. Each Signatory joins this SRI on its own behalf. In aggregate, the Signatories to this SRI account for more than 80% of the unit sales of Games Consoles in the EU for the relevant Reporting Period. Signatories will provide data from independent 3rd party to the Commission to prove market coverage within three months following a change in Signatories and will reconfirm market coverage every two years during the operation of the SRI.

This SRI shall not give rise to any commercial expectations or liabilities between the Signatories in respect of the fulfilment of their individual commitments. Each Signatory shall share the costs necessary to maintain and administer the SRI.

All Signatories shall be treated equally. There shall be no special arrangements for individual Signatories.

4.3 Governance

The SRI is governed by the Steering Committee. The Steering Committee shall be comprised of Signatories, a representative of the European Commission and a Chairperson. The purpose of the Steering Committee is to facilitate the Signatories' compliance with the requirements of this SRI with the aim to further improve the energy efficiency of Games Consoles that are placed on the EU market.

Each Signatory shall be represented in the Steering Committee by an appointed Representative, who may be accompanied and supported by additional experts.

The Steering Committee shall be responsible for:

- a. The overall direction of the SRI;
- b. The targets, co-ordination, priority setting and management of the SRI, including monitoring and reporting;

¹⁴ DIRECTIVE 2009/125/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 October 2009 establishing a framework for the setting of eco-design requirements for energy-related products

¹⁵ COM(2002) 278 final, COMMUNICATION FROM THE COMMISSION of 5 June 2002 Action plan "Simplifying and improving the regulatory environment"

- c. Reviewing progress under the SRI and making any amendments that may be required;
- d. Electing a Chair, from amongst the Signatories, who shall hold office for two years and who may be re-elected once;
- e. Establishing a budget and apportioning accordingly the costs among the Signatories. The costs of the SRI Administrator are to be shared equally per Signatory, whereas the costs of the Independent Inspector will be paid per Product Compliance Report submitted by each Signatory (see Section 4.4);
- f. Appointing an Administrator and Independent Inspector;
- g. Setting up a SRI website

The Chair of the Steering Committee shall be elected by the Signatories and shall act as an ex-officio individual without voting rights. The Chair shall have no executive or representative function unless this is delegated by vote of the Steering Committee.

The Chair of the Steering Committee is responsible for convening physical and teleconference meetings of the Steering Committee at regular intervals. Any member of the Steering Committee may request the Chair to convene a meeting. There shall be at least two meetings every Reporting Period, at least one of which shall be a physical meeting, unless otherwise agreed by the Steering Committee. Physical meetings shall be held in Brussels. The Chair, the representative of the European Commission and delegate to record the meeting minutes shall be present physically.

The Steering Committee may decide to delegate powers, where it deems it to be necessary, to specific individuals or to sub-committees, subject to the agreement of all Signatories.

Other relevant stakeholders shall be provided information about the meetings of the Steering Committee via the SRI website. They may participate as observers, without voting rights, and comment during the meeting. These stakeholders may include representatives of the EU Member States, environmental and consumer Non-Governmental Organisations (NGOs), the Independent Inspector, as well as any other person or entity the Steering Committee considers to be a legitimate stakeholder.

All decisions of the Steering Committee must be taken by consensus (at least 90% of all members). However, if despite reasonable efforts, no consensus can be reached then a decision can be taken by a two-thirds majority.

4.4 Administration of the Self-Regulatory Initiative

The Signatories may choose to appoint a third-party Administrator to assist with shared activities such as organising meetings and minutes, maintaining the SRI website, responding to questions on the SRI, and other tasks that may be agreed from time to time by the Steering Committee.

The Signatories shall, in addition, carry out the process of procuring an Independent Inspector. The role of the Independent Inspector is to verify that each Signatory complies with the SRI annual reporting requirements and to prepare an Annual Compliance Report, and carry out any verification testing investigations (as detailed in Annex C), when required, to check against the SRI performance, consumer information provision and non-energy (resource efficiency) requirements. Signatories shall carry out a public tender in order to find candidates to serve as the Independent Inspector. The European Commission shall be consulted on their selection of the Independent Inspector and ratifies the final choice. The final draft of the contract between the Signatories and the Independent Inspector shall be provided to the members of the Steering Committee for comment before the contract is finalised. The final and ratified choice of Independent Inspector shall be made public via the SRI website within 30 days of its appointment. The Independent Inspector shall be an independent third party with expertise in product testing and compliance verification who is tasked with, and responsible for, the collection and processing of information supplied by Signatories and determining each Signatory's compliance with the SRI. The Independent Inspector shall be free of any conflicts of interest, and it shall agree not to engage in any activity that would endanger its impartiality in fulfilling its role.

The cost of the Independent Inspector shall be borne by the Signatories, who shall each enter into a contract with the selected candidate. The final draft of the contract between the Signatories and the Independent Inspector shall be provided to all members of the Steering Committee for comment before the contract is finalised.

The Signatories shall engage the services of the Administrator and Independent Inspector upon terms and conditions that shall require undertakings of confidentiality from the Administrator and Independent Inspector, and which shall also set out any requirements or applicable mechanisms for a process of appeal, should this be necessary.

Signatories shall complete a Product Compliance Report in accordance with the requirements in Annex B for each of their Games Consoles covered by the SRI. Based on the Product Compliance Reports, the Independent Inspector shall prepare an Annual Compliance Report to be submitted to the Steering Committee within 4 months following the end of each Reporting Period. The production of the Annual Compliance Report will be the responsibility of the Independent Inspector.

5 Reporting on Compliance with the Self-Regulatory Initiative

5.1 Reporting of Information by Signatories

- For each Reporting Period, each Signatory shall submit to the Independent Inspector a completed Product Compliance Report for each model of Games Console that falls within the scope of this SRI by 28 February of the year following the end of the relevant reporting period. In their reporting, each Signatory shall indicate whether the console in question is a new games console¹⁶, a revised model of an existing games console¹⁷, or an existing Games Console model¹⁸ and whether at least 90 percent of the products placed on the market are compliant with the applicable SRI requirements. When placing a new games console on the EU market, the Signatory shall fully complete the Product Compliance Report.
- For existing Games Console models, the Signatory should refer to the previously submitted full Product Compliance Report.

This shall be carried out for each Games Console covered by the SRI it places on the EU market showing the applicable content defined in Annex B, in the format of the most recent version of the Product Compliance Report template available on the SRI website, and in compliance with the relevant provisions of Annex A-1 (Test & Verification Procedures) and Annex A-2 (Verification of non-energy requirements and energy efficiency information). In addition, each Signatory shall report to the Independent Inspector the percentage of units placed on the EU market that fall within the scope of this SRI but which fail to comply.

Additionally, each Signatory shall complete and then provide to the Independent Inspector, if necessary, any supporting technical documentation (e.g. test reports, instruction manuals, etc.) for use in preparing the Annual Compliance Reports and statement as set out in this document.

Before finalising the Annual Compliance Report, the Independent Inspector shall submit a draft copy of the Annual Compliance Report to the Steering Committee. After comments from the Steering Committee are received and taken into account by the Independent Inspector, the final Annual Compliance Report shall be published on the SRI website.

¹⁶ A games console is 'new' due to substantial differences from predecessor consoles, for example, in terms of external design, product name, operating system, functions, or performance.

¹⁷ A "revised model of an existing games console" is one where the change effected caused an increase in power consumption as compared to the original (initial) version of the console.

¹⁸ "Existing" Games Consoles are ones that have been already placed on the market and reported in previous year(s). They include revisions of an existing model, which affect style, colour or are an RF or memory storage size change, whereas these revisions do not increase the power consumption of the console compared to the original (initial) version of the console.

Since the Signatories regard each other as competitors, they have a legitimate interest in keeping commercially sensitive information confidential. To satisfy the reporting requirements under this SRI, Signatories are not required to disclose information about their Games Consoles to the extent that such information is commercially sensitive. The information to be provided by the Signatories necessary to comply with their reporting obligations under the SRI, however, is not generally considered commercially sensitive. Signatory reporting shall be proportionate to the need for transparency so that commercially sensitive information may be disclosed provided that adequate, contractual protections to safeguard the confidentiality of such information are put into place. Public sources of sales data will be used from independent third parties only, and the Signatories will not exchange their data on sales.

5.2 Transparency of the Self-Regulatory Initiative

The Chair must prepare the draft agenda and an invitation to the planned Steering Committee meeting must be sent to all members of the Steering Committee and the observers. An announcement of the meeting, including the provisional agenda, shall also be posted on the SRI website at least one month in advance of the meeting.

Documents to be presented at the Steering Committee meeting must be circulated to all members of the Steering Committee and observers, and posted on the SRI website no later than one week in advance of the meeting.

Minutes must be prepared by the Chair and sent to all members of the Steering Committee and observers and posted on the SRI website within one month of the Steering Committee meeting. Members and observers must have at least two weeks to submit comments on the minutes before final publication.

5.3 Compliance and Reporting Periods

Signatory compliance with the SRI can be assessed by any interested party at any time through the Independent Inspector's Annual Compliance Report. Further information can also be found in the Product Compliance Reports that will be published online by each Signatory for each of their Games Consoles covered by the SRI.

"Reporting Period" means the calendar year running from 1 January to 31 December of 2015 and each subsequent calendar year, corresponding to each Tier as referenced in section 3.2 (Power Caps). Product compliance shall be assessed over that period and recorded in the Product Compliance Report, which shall be submitted to the Independent Inspector no later than 2 months after the end of the relevant Reporting Period.

The deadlines for submission and publication of the Signatories' Product Compliance Reports and the Independent Inspector's Annual Compliance Report are specified in the table below:

Requirement	Deadline (year following the end of Reporting Period)
Submission of Product Compliance Reports by Signatories to Independent Inspector	28 February
Non-compliance notification (individual reports) given to the affected Signatory by the Independent Inspector	31 March
Draft Annual Compliance Report submitted to the Signatories	15 April
Comments on the draft Annual Compliance Report and any final revisions to Product Compliance Reports to the Independent Inspector	1 May
Final Annual Compliance Report submitted to the Steering Committee and Administrator by the Independent Inspector	22 May
Online publication of Product Compliance Reports and final Annual Compliance Report	31 May

Table 4: Deadlines for Compliance Report submission and publication

If a new Signatory joins the SRI after the start of a Reporting Period, the new Signatory may choose one of the following reporting timelines:

- First Reporting Period runs from the date of signature until the end of that Reporting Period so that the Reporting Period for this Signatory is less than 12 months in the first year; or
- First Reporting Period commences at the start of the next Reporting Period and the new Signatory postdates its commitment.

5.4 Non-compliance

5.4.1 Annual Reporting

A Signatory shall be considered to be non-compliant with the SRI annual reporting requirements if either of the following applies:

- The Signatory has not provided a completed Product Compliance Report for any Games Consoles covered by the SRI they placed in the EU market within the previous compliance period by the 28 February deadline.
- The Signatory has provided a completed Product Compliance Report which indicates that more than 10% of the Games Consoles covered by the SRI that it has placed on the

EU market during the applicable Reporting Period do not comply with the commitments of the SRI as set out in Section 3.

The Independent Inspector shall contact any Signatory whom it considers to be non-compliant by 31 March of each Reporting Period to seek to redress the cause of the non-compliance. Opportunities should be provided to discuss the circumstances of the case and, if possible, to resolve the cause of non-compliance.

A Signatory who fails to submit its Product Compliance Report to the Independent Inspector shall be subject to an investigation by the Independent Inspector in the year following the reporting period concerned. The Signatory's repeated failure to submit its compliance documentation shall lead to its exclusion from the self-regulation measure.

5.4.2 Non-compliance following a verification investigation

If a Signatory has a compliance issue arising from the Independent Inspector's compliance verification process and can comply before the Annual Compliance Report is finalised, then that report should reflect that the Signatory took necessary action to be in compliance with SRI requirements.

A Signatory who remains non-compliant twelve months after the publication of the Independent Inspector's Annual Compliance Report or relevant investigation report shall forfeit its status as a Signatory of the SRI. The Chair shall inform the Steering Committee in writing of the exclusion of any non-compliant Signatory within one week of receiving notice from the Independent Inspector that a condition of exclusion has been met. This event shall be recorded in the Steering Committee meeting minutes and shall be made public via the SRI website within seven days of the meeting taking place.

Within 30 days of the exclusion of a non-compliant Signatory, remaining Signatories must commission a report proving coverage of at least 80% of products placed on the market.

6 Monitoring of the Self-Regulatory Initiative

Compliance of individual Signatories with the SRI can be assessed by any interested party from the Independent Inspector's Annual Compliance Report published online via the SRI website by 31 May of the year following each Reporting Period. The report contains a summary of compliance against the reporting commitments and any outcome of a verification investigation carried out in the previous reporting period. The text of the SRI and contact details for inquiries about the SRI shall be published on the SRI website. Stakeholders, including Member State representatives, industry, environmental NGOs and consumers associations may send comments about the implementation of the SRI through the website via a dedicated email contact address to the SRI or to the individual Signatories.

The Steering Committee shall monitor regularly the overall effectiveness of the SRI and consider whether any revision is required in order to allow it to better achieve its objectives.

More detailed information on the Independent Inspector's method for data collection, processing and analysis is provided in Annex C.

7 Revision of the Self-Regulatory Initiative

7.1 Review of Self-Regulatory Initiative

The SRI Steering Committee shall hold at least two meetings every Reporting Period, in order to:

- Evaluate the effectiveness of the SRI in achieving its energy and resource efficiency objectives;
- Evaluate current and future developments that may influence Games Consoles power consumption with a view toward revising the SRI, if warranted; and
- Set future targets, as appropriate, to increase Games Consoles energy savings.

The time and place of each meeting are subject to agreement by all Signatories. The meeting date(s), venue and agenda will be published on the SRI website at least one month before the meeting date.

7.2 Decisions to Amend the Self-Regulatory Initiative

The SRI shall be reviewed next in 2022 or earlier if any Signatory announces specifications for a new console with significantly improved computing performance (e.g. improved GPU performance), requiring a new category of console and new requirements to be defined and determined. In either case, the review process should be concluded within one year, including any revisions to this SRI agreement (if any revisions are necessary following review).

The review shall assess the essential elements of the SRI and whether a new version needs to be prepared. For example, if an energy using functionality which is not listed in the body of the SRI is added to a Games Console after the SRI effective date, the review may consider appropriate revisions to the SRI to include an appropriate requirements and test methodology for this functionality.

If higher performing consoles (those either with improved graphical output or with higher performing technical specifications for components such as CPU, GPU, and memory, compared to those presently defined in the SRI) are under review, the SRI requirements shall not apply to such consoles until the review and any agreed revisions are completed.

The Signatories shall complete the review, taking into consideration views of relevant stakeholders, and present this together with any proposed amendments to the SRI to the European Commission. The conclusions of the review process, including revision of any essential elements, shall also be presented to the Consultation Forum. The review report shall include necessary documentation and evidence supporting the proposed amendments of the SRI and be made publicly available on the SRI website. The SRI can only be amended with full agreement of each Signatory, in consultation with the European

Commission. The new version of the SRI, as amended, shall be submitted to the European Commission for endorsement.

8 Voluntary Withdrawal or Dissolution of the Self-Regulatory Initiative

- A Signatory may voluntarily terminate its Signatory status by giving thirty days' written notice to the Chair of the Steering Committee. In the case the Chair is from the Signatory terminating its status, the Chair will give thirty days written notice directly to each other Signatory.
- The Chair must inform the Steering Committee within seven days of receipt of the written termination notice from the Signatory.
- Information of the withdrawal must be recorded in the minutes of the following Steering Committee meeting and posted on the SRI website.
- A Steering Committee meeting must be convened within 30 days whenever any of the conditions justifying the dissolution of the SRI occur.
- The SRI may be dissolved by a decision of the Steering Committee.
- The Signatories may choose to maintain the SRI regardless of the Commissions' withdrawal of recognition; however, this does not prevent the Commission from adopting Ecodesign and energy labelling regulations.
- In the event of dissolution, any residual assets, after payment of all outstanding liabilities, shall be returned to the Signatories of the SRI.

Annex A-1 – Test & Verification Procedures

1. Scope

The purpose of this test method is two-fold:

- Measure Games Console power consumption in the major operating modes and verify compliance with power caps of this SRI; and
- Verify compliance with the auto-power down requirements of this SRI.

This test procedure covers the Games Console major operating modes listed below. It is understood that not all Games Consoles provide all the operational modes listed.

1. Active Gaming
2. Navigation
3. Media Playback
 - i. DVD
 - ii. Blu-ray Disc
 - iii. Media Streaming

2. Testing Requirements

Game and Media Selection

Game titles: The tests shall be conducted with retail software (with up to 3 game titles), written specifically for the Games Console under test, selected by the Games Console manufacturer. Each manufacturer must also select media from content available for use on their Games Console. The game and media titles used for testing must be listed in the Product Compliance Report, and the same titles must be used for any comparative benchmarks or testing.

Number and selection of units to be tested

Compliance testing shall be performed using a randomly selected unit of the relevant model of Games Console. The model is deemed to have passed if, for each SRI requirement set out in the Product Compliance Report, the test results show that the power limit values are not exceeded by more than 10% or 0.1 W, whichever is the greater. If all SRI requirements are passed on this basis, then the model is considered to be compliant and no further testing is required. If this is not the case, then three more randomly selected units shall be tested. For each SRI requirement, the model is deemed to have passed if the average of the results of these latter three tests do not exceed the power limit values by more than 10% or 0.1 W, whichever is the greater. If all SRI requirements are passed on this basis, then the model is considered to be compliant, otherwise it is considered to be non-compliant.

If the variation in results between sample units of the same model is found to be so large that it is not possible to obtain consistent results by using the compliance testing methodology defined above, any uncertainty shall be resolved by further testing using a statistically significant sample size.

Approved meters, testing accuracy and test conditions

[An update to the test method will be included at a later time as a technical amendment.]

The unit, when tested under the below test procedure, must be operated in the manner it is intended to be used by end-users; specifically, it must be operated in accordance with set-up and usage instructions provided to end-users.

3. Equipment Unit Under Test (UUT) Preparation

1. Record the manufacturer and model name of the UUT on the test sheet.
2. Connect through HDMI connection to either an HD display (to prevent the console upscaling HD content to UHD) without HDR or to a UHD display (to ensure that the console can output UHD content) without HDR.
 - The digital HD capable input of the display used shall accept the following HD video formats (according to the “HD Ready 1080p” standard specification):
 - i. 1280x720 @ 50 Hz and 60 Hz progressive (720p)
 - ii. 1920x1080 @ 50 Hz and 60 Hz interlaced (1080i)
 - iii. 1920x1080 @ 24 Hz, 50 Hz and 60 Hz progressive (1080p)
 - Or up to the following UHD video format: i.
 - 3840x2160 @ 60 Hz
3. Power the UUT on.
4. Peripherals: Configure all UUT to peripherals connections (e.g., Infra-Red, Bluetooth) as shipped.
5. Network connection: For Games Consoles with wireless capability, power to a wireless LAN radio (e.g. IEEE 802.11) shall remain on during testing and must maintain a live wireless connection to a wireless router or network access point, for the duration of testing. For Games Consoles without wireless capability, the Ethernet connection shall be enabled if included and must maintain a live internet connection for the duration of testing
6. Remove any disc (media or game) from UUT.
7. Apart from above settings, ensure that the UUT is configured as shipped including all peripherals (and motion sensor bar if available) connected, APD and software configured as shipped with default settings. For wireless controllers and peripherals requiring integral batteries, ensure batteries are fully charged prior to the next step.

8. Ensure the latest firmware is installed on the console prior to testing (check the updates menu and allow the installation if required).
9. Power the UUT off.
10. Connect an approved meter capable of measuring true power to an AC line voltage source set to the appropriate voltage/frequency combination for the test.
11. Plug the UUT into the measurement power outlet on the meter. No power strips or UPS units shall be connected between the meter and the UUT. For a valid test to take place the meter shall remain in place until power data is recorded for all modes.
12. Record the AC voltage and frequency.
13. Power the UUT on.

4. Power Consumption Measurement and Auto-Power Down Verification Test Method

The following modes, if provided in the UUT, shall be tested as indicated below:

4.1 Stabilisation method for measuring power consumption of active use modes

For the measurement of power consumption in active use modes (except for active gaming, 4.3) use one of the three following methods to determine if power has stabilised:

- a. Linear regression method:
 - i. Conduct linear regression analysis over the 10-minute measurement period to test stability.
 - ii. If the slope of the regression line is less than 1% (W/h) of the average, then the measurement is considered stable and test is complete. If the slope of the regression is greater than 1% of the average, then repeat 10-minute measurement.
- b. 5-minute average method:
 - i. Measure the average (Arithmetic mean) power for a 10-minute period. Measure the average power for an additional 5-minute period immediately following the initial 10-minute measurement. If the second measurement is within 5% of the first, power stability has been reached and the initial value may be used.
 - ii. If the 5-minute average differs from the initial measurement by more than 5%, take a second 5-minute average. If the two 5-minute averages are within 5% of each other, stability has been reached.
 - iii. If the second 5-minute average differs from the first by more than 5%, the console may be exhibiting cyclical behaviour with a cycle time of more than 5 minutes. Accumulate power values for an additional 30 minutes and use that value.

c. 30-minute average method:

- i. Accumulate power values for a total of 30 minutes and use the average (arithmetic mean) value observed during that period.

4.2 Navigation

1. Disable all auto power down.
2. Go to the Home Menu and wait for 15 minutes.
3. Set the meter to begin accumulating true power values at an interval of less than or equal to 1 reading per second. Accumulate power values for 10 minutes (or longer depending on stabilisation method used) and record the average (arithmetic mean).
4. Follow the stabilisation method chosen in 4.1.

4.3 Active Gaming

5. Insert selected game into the Games Console.
6. Ensure that the game is fully loaded and updated to the latest version.
7. Select offline single-player option if available. If not available, follow user instructions to start normal expected method of game play.
8. Start game and move beyond any introductory section. Play the game for 30 minutes.
9. Set the meter to begin accumulating true power values at an interval of less than or equal to 1 reading per second. Continue to play the game and accumulate power values for the following 5 minutes, or longer if so specified by the Signatory for stabilisation, of the game and record the average (arithmetic mean) value observed during that period.
10. Close the game application and eject the game.
11. Repeat test for all three games.

4.4 Media Playback DVD

12. Insert the test DVD movie.
13. Navigate through DVD menu and play the video for 15 minutes.
14. Set the meter to begin accumulating true power values at an interval of less than or equal to 1 reading per second. Accumulate power values for the following 10 minutes (or longer depending on the stabilisation method used) and record the average (arithmetic mean) value observed during that period.
15. Follow the stabilisation method chosen in 4.1.
16. Eject the DVD.

4.5 Media Playback Blu-ray Disc (HD/UHD)

17. Insert the test Blu-ray Disc (BD) movie. Depending on the test requirements, select an HD or a UHD BD.
18. Navigate through BD menu and play the video for 15 minutes.
19. Set the meter to begin accumulating true power values at an interval of less than or equal to 1 reading per second. Accumulate power values for the following 10 minutes (or longer depending on the stabilisation method used) and record the average (arithmetic mean) value observed during that period.
20. Follow the stabilisation method chosen in 4.1.
21. Eject the BD.

4.6 Media Streaming

22. Enter the Games Console's own online movie service and access the test movie (ensuring that the test content is in correct resolution for test; 1080p for HD and 2160p for UHD).
23. Play the movie for 15 minutes.
24. Set the meter to begin accumulating true power values at an interval of less than or equal to 1 reading per second. Accumulate power values for the following 10 minutes (or longer depending on the stabilisation method used) and record the average (arithmetic mean) value observed during that period.
25. Follow the stabilisation method chosen in 4.1.
26. Exit video streaming mode, go back to Home Menu.

4.7 Navigation APD

27. Enable all power management as default.
28. Wait until the operating system has fully loaded, and the Home Menu is displayed and stable. Start the timer.
29. Wait for 65 minutes and do not perform any interaction with the Games Console or controller so as not to delay APD.
30. Note the time when the Games Console Auto Power Down process is initiated.
31. Power the UUT back on.

4.8 Active Gaming APD

32. Wait until the operating system has fully loaded, and the Home Menu is displayed and stable.

33. Insert disc into Games Console
34. Start game, move beyond any introduction section, play game regularly for at least 5 minutes
35. Start the timer
36. Wait for 65 minutes and do not perform any interaction with the Games Console or controller so as not to delay APD.
37. Note the time when the Games Console Auto Power Down process is initiated.
38. Power the UUT back on by pushing a button/key on the controller or Games Console and eject the disc

4.9 Disc-Based Media Playback APD

39. Wait until the operating system has fully loaded, and the Home Menu is displayed and stable.
40. Insert movie test title into Games Console
41. Start the movie, move beyond movie menu
42. Once movie is playing, start timer
43. Wait for 245 minutes and do not perform any interaction with the Games Console or controller so as not to delay APD.
44. Note the time when the Games Console Auto Power Down process is initiated.
45. Power the UUT back on and eject the disc

4.10 Media Streaming Playback APD

46. Wait until the operating system has fully loaded, and the Home Menu is displayed and stable.
47. Locate test movie title on the Games Console's own online movie service
48. Start the movie, move beyond movie menu
49. Once movie is playing, start timer
50. Wait for 245 minutes and do not perform any interaction with the Games Console or controller so as not to delay APD.
51. Note the time when the Games Console Auto Power Down process is initiated.
52. Power the UUT back on

End of test procedure.

Annex A-2: Verification of non-energy requirements and energy efficiency information

If compliance with requirements in Section 3.3 is questioned, the signatories can provide the following means of verification to confirm compliance for each console.

Resource Efficiency Requirement	Means of verification
<p>A refurbishment or out-of-warranty repair service shall be made available.</p>	<p>A letter signed by a representative of one of the Signatories' authorised repair or refurbishment centres confirming that they undertake repair on behalf of the Signatory for their out-of-warranty consoles.</p>
<p><i>From 1 January 2022:</i> Key components (where applicable) listed in Section 3.2.1 "Resource Efficiency Requirements to Promote Repair and Recyclability" that are required for repair by authorised repairers, shall be made available to authorised repair or refurbishment centres for each games console, for a minimum period of 2 years after placing the last unit of a games console on the market.</p>	<p>A letter signed by a representative of one of the Signatories' authorised repair or refurbishment centres confirming that the Signatory has made spare parts available for repair of their consoles.</p>
<p><i>From 1 January 2022:</i> Components (where applicable) listed in Section 3.2.1 "Resource Efficiency Requirements to Promote Repair and Recyclability" shall be made available to professional repairers and end-users, for a period of two years after placing the last unit of a games console on the market.</p>	<p>Information demonstrating where professional repairers and end-users may obtain the listed components.</p>

<p>Maintenance and refurbishment of each games console shall also be possible by non-destructive disassembly, of the following key components: mother board, hard disk drive, optical drive, and internal power supply unit. In addition, to improve both recycling and reuse at end-of-life, maintenance and refurbishment of each games console, Signatories shall ensure that joining or sealing techniques do not prevent the removal of the spare parts, applicable to Games Consoles, listed in point 1 of Annex VII of Directive 2012/19/EU, when present. Exemptions apply where non-removable joining and sealing techniques may be used to ensure either end-user safety necessary to comply with safety-related EU legislation or product quality necessary to avoid wear and tear that would otherwise shorten the product's useful life. For batteries, exemptions in the Battery Directive 2006/66/EC amended by Directive 2013/EC/EU apply.</p>	<p>A letter signed by a representative of one of the Signatories' authorised repair, refurbishment centres or recycling companies confirming that removal of affected components is possible and not prevented by joining or sealing techniques.</p>
<p>Console plastics parts >25 g will be marked indicating their material composition (in accordance with ISO 11469), apart from exceptions listed in Section 3.3.</p>	<p>A sample product for inspection of parts OR letter signed by a representative of one of the Signatories' authorised repair, refurbishment centres or recycling company or Producer Recycling Organisation confirming that plastic parts are marked in accordance with SRI requirements.</p>
<p>Signatories will ensure that any external plastic enclosure components >100 g are removable using tools commercially available to recyclers.</p>	<p>A sample product for inspection of parts OR letter signed by a representative of one of the Signatories' authorised repair, refurbishment centres or recycling company or Producer Recycling Organisation confirming that external plastic enclosure components >100g are removable using tools commercially available to recyclers.</p>
<p><i>From 1 January 2022:</i> Signatories shall ensure that external plastic enclosure parts >25g shall not contain halogenated flame retardants >0.1% by weight.</p>	<p><i>Verification methods to be confirmed once requirement comes into force.</i></p>
<p>Resource Efficiency – Information Requirements</p>	<p>Means of verification</p>
<p>Information to support product life extension, including explanation on how to keep the consoles in good working condition, how to delete personal data, or on options available (if any) to upgrade the performance of their consoles shall be provided to end-users (either provided with the console itself, onscreen, in hardcopy, or online).</p>	<p>Copy of the hardcopy information to end-users, link to the online location of the information or explanation on how to access the onscreen version of the information.</p>

<p>Technical documentation (relevant to the level of repair conducted at the specific repair centre) shall be made available to authorised repair or refurbishment centres to enable repair or refurbishment of each games console.</p>	<p>A letter signed by a representative of one of the Signatories' authorised repair, refurbishment centres confirming that the Signatory has made technical documentation available for repair of their consoles.</p>
<p>End-users will be informed of end-of-life processing, refurbishment, and out-of-warranty repair options available within the operating instructions of each games console (with instructions either provided with the console itself, onscreen or hardcopy, or online).</p>	<p>Copy of the hardcopy information to end-users, link to the online location of the information or explanation on how to access the onscreen version of the information.</p>
<p>The following information shall be included within product disassembly instructions provided to repair and recycling operations, or alternatively marked on the plastic parts themselves to improve end-of-life recyclability.</p> <ul style="list-style-type: none"> - Whether external plastic enclosure parts >25 g contain any halogenated flame retardants >0.1% by weight. 	<p>A letter signed by a representative of one of the Signatories' authorised repair, refurbishment centres or recycling company or Producer Recycling Organisation confirming that information on whether external plastic enclosure parts >25 g contain flame retardants is available in the provided disassembly instructions or are marked on the plastic parts themselves.</p>
<p>Clear and consistent information based on CENELEC standards (e.g. EN 45554:2019) regarding the reparability of consoles will be made available to end-users within product instructions.</p>	<p>Copy of the hardcopy information to end-users, link to the online location of the information or explanation on how to access the onscreen version of the information.</p>
<p>Accessing components shall be enabled by documenting the dismantling operations needed to access the targeted components, including for each of these operations: type of operation, type of fastening technique(s) to be undone, and tool(s) required.</p>	<p>Copy of the required information on dismantling operations, type of operation, type of fastening technique, and tool(s) .</p>
<p>Energy Efficiency – Information Requirements</p>	<p>Means of verification</p>
<p>As specified in Annex B, each Signatory of a Games Console within scope consuming more than 20 W in Active Gaming mode will provide energy efficiency information to end-users within the console's operating instructions (with instructions either provided with the console itself, onscreen or hard copy, or online). Instructions for use provided to end-users with their consoles will be neutrally worded so as not encourage end-users to disable power-saving features.</p>	<p>Copy or link to instructions for use.</p>

<p>Signatories of Games Consoles consuming more than 20 W in Active Gaming mode will provide end-users with information on the power consumption of navigation, media play, and gaming modes, regulatory standby, and additional other end-user-enabled low power mode capabilities/condition/functions.</p> <p>Each Signatory will provide such energy efficiency information for end-users within console operating instructions either provided with the console itself, onscreen or hardcopy, or online. Instructions for use provided to end-users with their consoles will be neutrally worded so as not encourage end-users to disable power-saving features.</p>	<p>Copy of the hardcopy information to end-users, link to the online location of the information or explanation on how to access the onscreen version of the information.</p>
--	---

Table 5: Means of compliance verification

Annex B – Product Compliance Reporting

For each Reporting Period, each Signatory shall provide a completed Product Compliance Report for each model of Games Console that falls within the scope of this SRI which that Signatory places on the EU market.

The goal of compliance testing is to determine whether the average power consumed in the applicable operational modes for the Games Consoles covered by the SRI comply with the modal power caps set out in Section 3.1 of this SRI.

In order to report the power values, Annex A-1 of the SRI shall be followed for the modes applicable to Game Consoles defined in Section 2. The equipment shall be selected according to Annex A-1, Section 2 (Testing Requirements) and prepared according to Annex A-1, Section 3 (Equipment Unit Under Test (UUT) Preparation), procedure 1 to 13.

Signatories shall provide details of where the following information (as per the requirements in Section 3.1 and 3.2) can be found (e.g. URL to the online source; page number of the print or PDF reference) in the Product Compliance Report:

- the energy-saving potential of power management, including a statement that automatic power-down could help save energy by reducing the amount of time the Games Console remains on, but not in use;
- the default regulatory standby mode(s) when the Games Console is powered-down;
- the default auto power-down time settings for Media Playback and other modes;
- how to change time settings for auto power-down;
- reference to further information on other available low power conditions;
- console power consumption in active modes (based on a test sample) in the following modes:
 - Navigation
 - Navigation UHD
 - Blu-Ray playback
 - Blu-Ray UHD playback
 - DVD playback
 - HD streaming
 - UHD streaming
 - Active gameplay
- console power consumption in regulatory standby mode(s) (based on a test sample), along with:
 - additional user-enabled low power conditions (if applicable)
- availability of end-of-life processing, refurbishment, out-of-warranty services and information to support product life extension.

The Signatories shall develop a Product Compliance Report template in consultation with and with the support of the Independent Inspector. This must include a statement declaring that (a) 100% of the products sold comply with the SRI requirements, (b) at least 90% of the products sold comply, or (c) compliance is less than 90%. The Signatories shall make the latest version of the Product Compliance Report template available on the SRI website.

Unless otherwise specified in the SRI, the format for information and data submission to the Independent Inspector shall adhere to this template and be the same for all Signatories.

Market coverage and unit sales

If a Signatory has provided a completed Product Compliance Report which indicates that less than 90 percent of the Games Consoles covered by the SRI that it has placed on the EU market during the applicable Reporting Period comply with the commitments of the SRI, as set out in Section 3, then the Signatory should provide sales information from an independent third party source.

If more than one model of each console is sold within any month, and public data on the proportion of sales between models is not available, the sales per model must be estimated based on an assumed equal split of sales per day between each model.¹⁹

¹⁹ As an example: if hypothetical models 'A' and 'B' were both on sale throughout July in a given year, and model 'C' launched on 15th July, and 3,100 consoles were sold in July in total (an average of 100 units per day):

- Model A estimated sales = $(14 * 100 / 2) + (17 * 100 / 3) = 700 + 567 = 1,267$ units
- Model B estimated sales = $(14 * 100 / 2) + (17 * 100 / 3) = 700 + 567 = 1,267$ units
- Model C estimated sales = $(17 * 100 / 3) = 567$ units

Annex C - Method of Data Collection and Processing by Independent Inspector

Product reporting template

The information submitted must conform with the Product Compliance Report template available on the SRI website and shall provide the details on where the information described in Annex B is located (e.g. online, etc.).

Data collection and processing

The deadline for submitting completed Product Compliance Reports by the Signatories to the Independent Inspector is 28 February (see Section 5.3) following each Reporting Period. The Report shall be submitted electronically via email by the Signatories to the Independent Inspector.

Following the data collection and initial processing, the Independent Inspector may request additional information from any Signatory. Justifications for requiring further information may include:

- The Report is missing information;
- Submitted information requires clarification.

Signatories shall use reasonable endeavours to answer any questions from the Independent Inspector within one week of receiving the request. Such a request shall be made in writing, via letter or email.

The Annual Compliance Report

The Annual Compliance Report shall reflect solely the information sent by the Signatories. The precise format of the Annual Compliance Report shall be determined by the Signatories of the SRI in consultation with the Independent Inspector and shall cover all Signatories.

The Independent Inspector's role is to:

- Collect the Product Compliance Report from each Signatory and check whether it is complete and complies with SRI obligations.
- Prepare for each Signatory a report of its findings and conclusions covering that Signatory's individual compliance and send the individual report to the Signatory concerned (by 31 March, deadline for Non-compliance notification) and subsequently to the Commission pending feedback from such Signatory (by 22 May, deadline for submission of the Final Annual Compliance Report).
- Formulate findings and conclusions of the compliance review in aggregate form (covering all Signatories) in the Annual Compliance Report, including the status of any outstanding non-compliance issues or investigation results from the preceding period.

- Include market coverage and unit sales yearly figures within the Annual Compliance Report for Games Consoles that are in scope of the SRI, provided from publicly available data.
- Present findings and conclusions of the Annual Compliance Report to the Steering Committee.

The final Annual Compliance Report shall be published no later than 31 May (Section 5.3) of the year following the Reporting Period.

Compliance investigations

Depending on the circumstances, it may be necessary for the Independent Inspector to perform an investigation in order to verify a Signatory's compliance with the requirements in section 3.1 and 3.2 of the SRI.

There are three circumstances that shall trigger an investigation by the Independent Inspector:

1. Signatory fails to submit its Product Compliance Report

A Signatory who fails to submit its Product Compliance Report to the Independent Inspector by 28 February shall be subject to investigation by the Independent Inspector to determine the reasons for delay and if any further product testing/checks and documentation checks are necessary.

2. Launch of a new games console or a revised model of an existing games console on the market

The Independent Inspector may conduct product testing and checks (pursuant to the methods in Annex A-1 and A-2) on any new games console or a revised model of an existing games console after it is first placed on the market by a Signatory. The Independent Inspector may test the new console or revised model once to ensure it is compliant, subsequent to the Signatory's submission of the Product Compliance Report covering this console.

If the Independent Inspector's investigation finds discrepancies with the information declared by the Signatory in the Product Compliance Report, the Independent Inspector may request that the Signatory provide technical documentation in support of its declarations.

If the Independent Inspector is dissatisfied with the additional documentation and explanations provided, it can either conduct further investigations pursuant to the dispute resolution procedure as agreed between the Signatories and the Independent Inspector or conclude that the product does not meet the requirements of the SRI.

3. Allegation of non-compliance

The Independent Inspector may carry out an investigation if any results of its Annual Compliance Report are questioned by the European Commission or other stakeholders in

order to verify such results. Any stakeholder can submit, free of charge, evidence of possible Signatory non-compliance to the Independent Inspector. Upon receiving an allegation of non-compliance, the Independent Inspector shall check whether the information submitted to substantiate the allegation conforms with requirements prescribed in the SRI to constitute a non-compliance. If this is the case, the Independent Inspector shall forward the allegation to the Signatory concerned and allow the Signatory to respond. If the Independent Inspector accepts the concerned Signatory's case for compliance, it shall explain to the source of the allegation that the Signatory is compliant. If the Independent Inspector disagrees with the concerned Signatory's response, it may perform product testing and checks (pursuant to the methods in Annex A1 and A2) to verify Signatory compliance. If the allegation is made shortly before the routine testing and checking of a new product by the Independent Inspector, the procedure will not change but the testing will be performed just once for both purposes. The Independent Inspector shall alert the source of the allegation that its concerns will be taken into account in the upcoming compliance investigation.

The investigation shall consist of performing compliance measurements following the test procedure in Annex A-1; confirming whether the console conforms with the non-energy requirements as specified in Annex A-2; or verifying the information has been provided as required in the 'Further information' section of the Signatory's Product Compliance Report(s). The Independent Inspector can carry out compliance measurements at its own testing facilities, if available, or arrange to have compliance measurements conducted at an independent 3rd party's testing facilities. In either case, the Independent Inspector shall select and purchase the required samples of products from retailers located in the European Union. The Independent Inspector shall ensure that the same games selected by the Signatory for its own testing are used for testing. The Signatory may be present at such testing. The cost of the investigation, including sample purchasing costs, shall be borne by the manufacturer of the product in question. The Independent Inspector shall inform the Signatory of the results based on testing the first sample, and if this does not meet the requirements and no procedural or testing methodology issues are identified, then three additional samples shall be tested as specified in Annex A-1, 2.2.

After performing an investigation, the Independent Inspector shall draft an investigation report and send a draft of it to the Signatory in question within 30 days, after which the Signatory has two weeks to comment. If the Signatory disputes any of the results or findings, both the Independent Inspector and Signatory shall work together to investigate and resolve the issue, following a dispute resolution process set out between the Signatories and the Independent Inspector. The Independent Inspector must then modify its investigation report accordingly and submit it within two weeks to the Signatory and the Commission. The Independent Inspector shall present a summary of its findings at the next Steering Committee meeting following finalisation of the investigation report. The summary shall not disclose any commercially sensitive information.

The Independent Inspector shall also at each Steering Committee meeting provide an overview of all allegations submitted since the last meeting and, if it has not investigated any of them, provide its reasons for this.

On-site inspections/ 3rd party test report inspection

Where a Signatory uses its own on-site facilities to test its consoles, and the Signatory's own test results are inconsistent with the Independent Inspector's or a stakeholder's test results, the Independent Inspector may conduct an on-site inspection of that Signatory's test facilities. The Independent Inspector shall give the Signatory 1 week notice of the inspection. Where a Signatory's test results are generated by an independent 3rd party testing facility, and those test results are inconsistent with the Independent Inspector's or a stakeholder's test results, the Signatory shall provide a copy of the 3rd party test report to the Independent Inspector for inspection. If necessary, the Independent Inspector may contact the 3rd party testing facility directly to try to resolve any remaining uncertainties regarding the test procedure used and shall provide the Signatory at least 1 week notice of its intent to do so. The Independent Inspector shall not disclose any information included in the test report or obtained through its communication with the 3rd party testing facility that the Signatory regards as confidential. The purpose of such inspections is to confirm that testing requirements have been properly met and testing properly conducted. The inspection shall be limited to the Signatory's power testing facilities.

The Independent Inspector shall prepare a follow-up report of its onsite inspections, following the same procedure as described above for the investigation report.

Any costs associated with such inspections shall be borne by the Signatory under review. The Independent Inspector shall keep such costs to a minimum.

Access to data

Signatories shall provide test reports and other documentation to the Independent Inspector for compliance verification if requested to do so by Member State market surveillance authorities.

Annex D – Membership Form

Industry Self-Regulatory Initiative to further improve the energy efficiency of Games Consoles

Name of Signatory (Company Name):

signs this Self-Regulatory Initiative and commits itself to the overall objective of improving the energy and resource efficiency of Games Consoles as set out herein.

For each Reporting Period, the Signatory agrees to comply with the requirements of the Self-Regulatory Initiative.

For the Signatory:

Date:

Name of Authorised Representative:

Title of Authorised Representative:

Address of Signatory:

.....

Email:

Signature:

Please send a duly signed and completed Membership Form to the following email address:

information@efficientgaming.eu

A copy of this signed form will be forwarded to the European Commission without delay.

Annex E - Compliance with the Self-Regulation Criteria (Annex VIII)

1. Openness of participation

This SRI has been concluded by the 3 major manufacturers of Games Consoles currently active on the global market. Any manufacturer of Games Consoles falling within the scope of this agreement may join the SRI as a Signatory, subject to approval by the Steering Committee and to full compliance with the provisions herein.

2. Added value

Annex F demonstrates the value added achieved by this SRI over the business as usual case. Industry estimates, based on publicly available data, suggest that over 6.1 TWh/yr of electricity use was avoided in 2020 from UHD capable consoles, due to compliance with this agreement.

In addition, a full impact assessment²⁰ of the SRI by the European Commission in 2015 concluded that the SRI would achieve the policy objectives more quickly and at lesser expense than mandatory requirements. This impact assessment was also subject to a stakeholder consultation in the course of the Ecodesign Consultation Forum established under Article 18 of the Ecodesign Directive.

3. Representativeness

In aggregate, the Signatories to this SRI account for more than 80% of the unit sales of Games Consoles in the EU.

4. Quantified and staged objectives

The SRI is structured around quantified power cap limits for key operational modes in staged tiers, as well as detailed APD requirements to be implemented from the date of adoption of the agreement. The SRI also includes a full test methodology in Annex A-1 to measure the levels of energy performance achieved.

5. Involvement of civil society

Throughout the development process of this SRI, the Signatories met with Member States representatives, NGOs and other interested industry associations to gather input which was taken on board in the SRI process. To publicize and disseminate information about this SRI, a dedicated website has been established. A current version of the SRI, information relating to its Steering Committee discussions, manufacturer compliance reports covering each product within scope as well as the Annual Compliance Report of the Independent Inspector can be accessed via this website. During the operation of the SRI, stakeholders, including Member State representatives, industry, environmental NGOs and consumers'

²⁰ [REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL on the voluntary ecodesign scheme for games consoles](#)

associations may send comments about the implementation of the SRI through the website via a dedicated email contact address to the SRI or to the individual Signatories of the SRI.

6. Monitoring and reporting

A detailed monitoring and reporting system and governance structure that defines the responsibilities of the Signatories, the Administrator and the Independent Inspector are outlined in Sections 4, 5 and 6 of the SRI. The Commission is invited to participate in meetings of the Steering Committee as a member and to monitor the achievement of the objectives. Compliance can be assessed by any interested party from the Independent Inspector's Annual Compliance Report and Product Compliance Reports published on the SRI website.

7. Cost-effectiveness of administering a Self-Regulatory Initiative

This SRI represents the most efficient and cost-effective way of achieving its stated objectives. Since the cost of administering this SRI is fully assumed and shared by all Signatories, there is a built-in incentive for each Signatory to keep the administrative costs low and thereby avoid that they become burdensome.

8. Sustainability

This SRI responds to the policy objectives of EU Directive 2009/125/EC by establishing an integrated approach that sets limits on Games Console energy consumption to deliver significant, long-term energy and cost savings that, in turn, serves the aims of environmental protection and the interests of consumers. It is also a balanced approach that takes into account the need to allow for continued development and innovation in the Games Consoles industry.

9. Incentive compatibility

This SRI complements other factors which also favour energy efficient Games Console design such as market demand, end-user experience, technological development and other parallel energy efficiency debates around the world.

Annex F – Estimated electricity savings

Within the European Union it is estimated that the SRI for Games Consoles will result in electricity savings of 6.1 TWh in 2020 for Ultra High-Definition capable Xbox One, Xbox One S, Xbox One X, PlayStation®4 and PlayStation®4 Pro Games Consoles. Energy savings are achieved by adopting specific rules for power management of consoles, and also power caps for some modes that lead to the adoption of best available technologies (for example, system on a chip, power scaling, efficient power supplies, and die-shrink). These technologies result in a reduction of power consumption of consoles across all modes. As a result, an estimated 42.1 TWh of energy use will be avoided over the lifetime of these consoles. For 8K definition consoles it is estimated that further improvements in energy efficiency, when compared to UHD capable consoles, will result in 46.4 TWh of avoided energy use over their lifetime.

Further electricity savings are expected from additional efficiency improvements made by Games Console manufacturers. These additional improvements are not included in the SRI as they cannot be harmonised across all Games Consoles due to the variability in hardware specifications and performance, and the functions and features available on each device.

The basis of these savings and the effectiveness of efficiency requirements are derived from a number of detailed studies. For a comprehensive analysis of the available literature relevant to this agreement (covering 270 publications), please refer to Webb (2014). Additional information on the calculation of energy savings with relation to this agreement can be found in the following references:

- EU Commission. 2014. Lot 3 Sound and Imaging Equipment Impact Assessment for Games Consoles.
- Microsoft, Nintendo, Sony. 2017. *Report on the 2017 review of the Game Console Self-regulatory Initiative*, July 5, 2017.
- Microsoft, Nintendo, Sony. 2019. *Report on the 2019 Review of the Game Console Self Regulatory Initiative*, October 2019.
- Webb, A. 2014. *Evaluating Games Console Electricity Use: Technologies and Policy Options to Improve Energy Efficiency*. Doctoral Thesis submitted to the University of Surrey, Guildford, UK.
- VGChartz. 2020. Console sales data. <<http://www.vgchartz.com/>>. Accessed November 2020.
- A. Webb, K. Mayers, C. France, J. Koomey. Estimating the energy use of high definition games consoles. *Energy Policy*. Vol. 61, Oct. 2013, pp 1412–1421