COMMISSION DELEGATED REGULATION (EU) 2023/1669

of 16 June 2023

supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to the energy labelling of smartphones and slate tablets

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU ([1]), and in particular Article 16(1) thereof,

Whereas:

(1) Regulation (EU) 2017/1369 empowers the Commission to adopt delegated acts as regards the labelling or re-scaling of the labelling of product groups representing significant potential for energy savings and, where relevant, other resources.

(2) The Commission has carried out a preparatory study to analyse the technical, environmental and economic aspects of mobile phones, smartphones and slate tablets. The study was conducted in close cooperation with stakeholders and interested parties in the Union and third countries, and the results have been made publicly available.

(3) The preparatory study concluded that the scope for reducing the energy consumption of smartphones and slate tablets is substantial. It also concluded that the battery lifetime and consequently the product lifetime of smartphones and slate tablets can significantly be improved by means of an energy labelling scheme. Smartphones and slate tablets should therefore be covered by energy labelling requirements. An energy label is however currently not seen as appropriate for cordless phones and feature phones, given the moderate spread in the energy efficiency of products available on the market.

(4) In total, smartphones and slate tablets consumed 36,1 TWh of primary energy in 2020, including all life cycle phases. The preparatory study showed that, without regulatory action, these values are likely to increase to 36,5 TWh of primary energy in 2030. The combined effect of this Regulation and Commission Regulation (EU) 2023/1670 ([2]) is expected to limit the energy consumption of smartphones and slate tablets in 2030 to 23,3 TWh, meaning 35 % of primary energy consumption is saved compared to what would happen if no measures were taken.

([1]) OJ L 198, 28.7.2017, p. 1.

([2]) Commission Regulation (EU) 2023/1670 of 16 June 2023 laying down ecodesign requirements for smartphones, mobile phones other than smartphones, cordless phones and slate tablets pursuant to Directive 2009/125/EC of the European Parliament and of the Council and amending Commission Regulation (EU) 2023/826 (see page 47 of this Official Journal).

(5) Smartphones and slate tablets that are displayed at trade fairs should bear the energy label if the first unit of the model has already been placed on the market or is placed on the market at the trade fair.

(6) The relevant product parameters should be measured or calculated using reliable, accurate and reproducible methods. Those methods should take into account recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council ([3]).

(7) The energy efficiency index of a smartphone or a slate tablet should be calculated with the operating system version installed on the product model at the date of placement on the market. Until the date of end of placement on the market, if an updated version of the operating system is installed on the same product model, the energy efficiency index should be recalculated and, where applicable, the value of any other parameter of the label and of the product information sheet should be reassessed. Any change in the energy efficiency index, or where applicable in any other parameter value part of the label and of the product information sheet, should be considered relevant in respect to Article 4(4) of Regulation (EU) 2017/1369, in particular when this change is detrimental for the end users.

(8) To facilitate compliance checks, the content of the technical documentation referred to in Annex VI should be sufficient to allow market surveillance authorities to check the values published on the label and in the product information sheet. In accordance with Article 12 of Regulation (EU) 2017/1369, values for the measured and calculated parameters of the model should be entered into the product database.

(9) Recognising the growth of sales of energy-related products through providers of online platforms, as defined in Regulation (EU) 2022/2065 of the European Parliament and of the Council ([4]), rather than directly from suppliers' websites, it should be clarified that such providers of online platforms should enable traders to provide information concerning the labelling of the product concerned, in compliance with Article 31(2) of Regulation (EU) 2022/2065. The 'information concerning the labelling and marking' referred to in Article 31(2), point (c) of Regulation (EU) 2022/2065 should, in the context of this Regulation, be understood as encompassing both the energy label and the product information sheet. In line with Article 6 of Regulation (EU) 2022/2065, providers of online platforms are not liable for products sold through their interfaces on the condition that they do not have actual knowledge of the illegality of such products and upon receiving knowledge on the illegality of the products they act expeditiously to remove them from their interfaces. A supplier selling directly to end-users via its own website is covered by dealers' distance selling obligations referred to in Article 5 of Regulation (EU) 2017/1369.

(10) In order to ensure coherence with existing industry norms, references in this Regulation related to fasteners and connectors, tools, working environment and skill level, in the context of calculating the repairability score, are consistent with the terminology used in standard EN 45554, which provides general methods for the assessment of the ability to repair, reuse and upgrade energy-related products.

(11) The requirements set out in this Regulation should apply from 21 months after its entry into force.

(12) The measures provided for in this Regulation were discussed by the Consultation Forum established pursuant to Article 14(1) of Regulation (EU) 2017/1369 and with the Member States experts in accordance with Article 17 of Regulation (EU) 2017/1369,

([3]) Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

([4]) Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market For Digital Services and amending Directive 2000/31/EC (Digital Services Act) (OJ L 277, 27.10.2022, p. 1).

HAS ADOPTED THIS REGULATION:

Article 1

Subject matter and scope

This Regulation establishes requirements for the labelling of smartphones and slate tablets, and the provision of supplementary product information on smartphones and slate tablets.

This Regulation does not apply to the following products:

(a) mobile phones and tablets with a flexible main display which the user can unroll and roll up partly or fully;

(b) smartphones for high security communication.

Article 2

Definitions

1. For the purpose of this Regulation, the following definitions shall apply:

(1) 'mobile phone' means a cordless handheld electronic device, which has the following characteristics:

(a) it is designed for long-range voice communication over either a cellular telecommunications network or a satellite-based telecommunications network, requiring a SIM card, eSIM or similar means to identify the connected parties;

(b) it is designed for battery mode usage, and connection to mains via an external power supply and/or wireless power transmission is mainly for battery charging purposes;

(c) it is not designed to be worn on the wrist;

(2) 'smartphone' means a mobile phone, which has the following characteristics:

(a) it is characterised by wireless network connection, mobile use of internet services, an operating system optimised for handheld use and the ability to accept original and third-party software applications;

(b) it has an integrated touch screen display with a viewable diagonal size of 10,16 centimetres (or 4,0 inches) or more, but less than 17,78 centimetres (or 7,0 inches);

(c) where the device has a foldable display or has more than one display, at least one of the displays falls into the size range in either opened or closed mode;

(3) 'smartphone for high security communication' means a smartphone, which has the following characteristics:

(a) it is accredited, or otherwise approved by the designated authority in a Member State or is in the process of accreditation or other approval to transmit, process or store classified information;

(b) it is intended for professional users only;

(c) it is capable of detecting physical intrusion to the hardware, including for intrusion detection at least a controller, related wiring, flexible printed circuit board circuitry for drill protection integrated to the device chassis and integrated tamper loops on the main printed circuit board;

(4) 'professional user' means any natural or legal person, to whom a product has been made available for use in the course of their industrial or professional activities;

(5) 'slate tablet' means a device that is designed for portability and has the following characteristics:

(a) it has an integrated touch-sensitive display with a viewable diagonal size greater than or equal to 17,78 centimetres (or 7,0 inches) and less than 44,20 centimetres (or 17,4 inches);

(b) it does not have an integrated, physically attached keyboard in its designed configuration;

(c) it primarily relies on a wireless network connection;

(d) it is powered by an internal battery and is not intended to work without battery; and

(e) it is placed on the market with an operating system designed for mobile platforms, identical or analogous to smartphones;

(6) 'point of sale' means a location where smartphone or slate tablet units are displayed or offered for sale, hire or hire-purchase.

2. For the purposes of Annexes II to IX, the definitions set out in Annex I shall apply.

Article 3

Obligations of suppliers

1. Suppliers shall ensure that:

(a) each smartphone or slate tablet is supplied with a printed label in the format as set out in Annex III;

(b) the values of the parameters of the product information sheet, as set out in Annex V, are entered into the public part of the product database;

(c) where specifically requested by the dealer, the product information sheet is made available in printed form;

(d) the content of the technical documentation, as set out in Annex VI, is entered into the product database;

(e) any visual advertisement for a specific model of smartphones or slate tablets contains the energy efficiency class and the range of energy efficiency classes available on the label in accordance with Annexes VII and VIII;

(f) any technical promotional material concerning a specific model of smartphones or slate tablets, including technical promotional material on the internet, which describes its specific technical parameters includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII;

(g) an electronic label in the format and containing the information, as set out in Annex III, is made available to dealers for each smartphone and slate tablet model;

(h) an electronic product information sheet, as set out in Annex V, is made available to dealers for each smartphone and slate tablet model.

2. The energy efficiency class and the repeated free fall reliability class as set out in Annex II shall be calculated in accordance with Annex IV.

Article 4

Obligations of dealers

Dealers shall ensure that:

(a) each smartphone and slate tablet, at the point of sale, including at trade fairs, bears the label provided by suppliers in accordance with point (a) of Article 3(1) displayed in proximity to the product or hung on it or placed in such a way as to be clearly visible and unequivocally associated to the specific model;

(b) in the event of distance selling, the label and product information sheet are provided in accordance with Annexes VII and VIII;

(c) any visual advertisement for a specific model of smartphones or slate tablets, including on the internet, contains the energy efficiency class and the range of energy efficiency classes available on the label, in accordance with Annex VII;

(d) any technical promotional material concerning a specific model of smartphone or slate tablet, including technical promotional material on the internet, which describes its specific technical parameters includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII.

Article 5

Measurement methods

The information to be provided pursuant to Articles 3 and 4 shall be obtained by reliable, accurate and reproducible measurement and calculation methods, which take into account the recognised state-of-the-art measurement and calculation methods, as set out in Annex IV.

Article 6

Verification procedure for market surveillance purposes

Member States shall apply the verification procedure laid down in Annex IX when performing the market surveillance checks referred to in Article 8(3) of Regulation (EU) 2017/1369.

Article 7

Review

The Commission shall review this Regulation in the light of technological progress and present the results of this assessment including, if appropriate, a draft revision proposal, to the Consultation Forum established pursuant to Article 14(1) of Regulation (EU) 2017/1369, no later than 20 September 2027.

The review shall in particular assess the appropriateness of:

(a) revising the test methods to reflect changes in typical end-user behaviour and new functionalities;

(b) adding environmental footprint information on the label;

(c) revising the verification tolerances set out in Annex IX;

(d) revising the repairability index, including additional aspects and the prices of spare parts.

Article 8

Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

It shall apply from 20 June 2025.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 16 June 2023.

For the Commission
The President
Ursula VON DER LEYEN

ANNEX I

Definitions applicable to the Annexes

(1) 'declared values' means the values provided by the supplier for the stated, calculated or measured technical parameters in the technical documentation pursuant to Article 3(3) of Regulation (EU) 2017/1369 and in accordance with Article 3(1), point (d), and Annex VI of this Regulation, for the verification of compliance by the Member State authorities;

(2) 'battery endurance per cycle' means the time a smartphone or slate tablet can operate running a defined test scenario with an initially fully charged battery, before the device shuts off automatically due to a drained battery, expressed in hours (h);

(3) 'rated capacity' means the amount of electricity declared by the manufacturer that a battery can deliver during a 5-hour period when measured under specified conditions, expressed in milliampere-hours (mAh);

(4) 'remaining capacity' of a battery means the capacity with the battery keeping normal peak performance and measured relative to when the product was new;

(5) 'battery endurance in cycles' means the number of charge/discharge cycles a battery can withstand until its usable electrical capacity has reached 80 % of its rated capacity, expressed in cycles;

(6) 'END_{device} [h]' means the battery endurance per cycle calculated as a weighted value based on the measured endurance for defined functions, including standby, expressed in hours;

(7) 'C' means a measure of the rate at which a battery is charged relative to its capacity, defined as the charge current divided by the capacity, expressed in 1/h;

(8) 'nominal voltage' means the voltage of a battery measured at the mid point between fully charged and fully discharged based on a 0,2 C discharge rate;

(9) 'final voltage for battery endurance in cycles test' means the specified closed circuit voltage at which a discharge of a battery is terminated, during test;

(10) 'energy efficiency index' means the ratio between the battery endurance per cycle (END_{device}) and the nominal voltage of the battery multiplied by the rated capacity of the battery;

(11) 'ingress protection rating' means the extent of protection provided by an enclosure against ingress of solid foreign objects and/or against ingress of water, measured according to standardised test methods and expressed with a coding system to indicate the degree of such protection;

(12) 'fully extended state' means a state of the device whereby movable parts as intended for use, such as displays and keyboards, are unfolded, flipped open or similarly extended in a way that the projected area of length times width is maximised;

(13) 'guarantee' means any undertaking by the retailer or supplier to the consumer to do any of the following:

(a) reimburse the price paid;

(b) replace, repair or handle the smartphone or slate tablet in any way if it does not meet the specifications set out in the guarantee statement or in the relevant advertising;

(14) 'spare part' means a separate part that can replace a part with the same or similar function in a smartphone or slate tablet. The functionality of the smartphone or slate tablet is restored or upgraded when the part is replaced by a spare part. Spare parts may be used parts;

(15) 'disassembly' means a process whereby a product is separated into its parts and/or components in such a way that it could subsequently be reassembled and made operational;

(16) 'fastener' means a hardware device or substance that mechanically, magnetically or by other means connects or fixes two or more objects, parts or pieces. A hardware device which in addition serves an electrical function shall also be considered a fastener;

(17) 'reusable fastener' means a fastener that can be completely reused in the reassembly for the same purpose and that does no damage either to the product or to the fastener itself during the disassembly or reassembly process in a way that makes their multiple reuse impossible;

(18) 'resupplied fastener' means a removable fastener that is supplied at no additional cost with the spare part which it is intended to connect or fix; adhesives shall be considered resupplied fasteners if they are supplied with the spare part in a quantity that is sufficient for the reassembly, at no additional cost;

(19) 'removable fastener' means a fastener that is not a reusable fastener, but whose removal does not damage the product, or leave residue, which precludes reassembly;

(20) 'step' means an operation that finishes with the removal of a part (or bundle) or with a change of tool; any placement of a part away from its initial location, even if that entails partial disconnection or unplugging, shall also be considered as removal;

(21) 'security update' means an operating system update, including security patches, if relevant for a given device, whose main purpose is to provide enhanced security for the device;

(22) 'corrective update' means an operating system update, including corrective patches, whose purpose is to provide corrections to bugs, errors or malfunctions in the operating system;

(23) 'functionality update' means an operating system update whose main purpose is to implement new functionalities;

(24) 'battery' means any part consisting of one or several battery cells, including, as relevant to the product model, an electronic circuitry with battery-related sensors for battery management, housing(s), battery tray, brackets, shieldings, thermal interface materials, and electric connections to other assemblies of the device;

(25) 'back cover' or 'back cover assembly' means the main backside housing, including one or more of the following elements, as relevant to the product model: the frame, a backside cover layer attached to the main back cover body, rear-facing camera lens covers, printed antennas, brackets, shieldings, gaskets, electric connections to other assemblies of the device and thermal interface materials;

(26) 'auxiliary microphone' means a microphone that is not essential for user's voice signals, but provides secondary functions, such as, but not limited to, ambient noise reduction;

(27) 'front-facing camera assembly' means any part consisting of one or several cameras oriented towards the user of the device, including, as relevant to the product model:

(a) camera components and related sensors;

(b) flashlight components;

(c) optical components;

(d) mechanical components needed for functions such as image stabilisation and focus;

(e) module housing(s);

(f) brackets;

(g) shieldings;

(h) signal lights;

(i) auxiliary microphones;

(j) electric connections to other assemblies of the device;

(28) 'rear-facing camera assembly' means any part consisting of one or several cameras oriented to the rear side of the device, including, as relevant to the product model:

(a) camera components and related sensors;

(b) flashlight components;

(c) optical components;

(d) mechanical components needed for functions such as image stabilisation and focus;

(e) module housing(s);

(f) brackets;

(g) shieldings;

(h) auxiliary microphones;

(i) electric connections to other assemblies of the device;

(29) 'external audio connector' means a connector for audio signals to connect to a headset or external loudspeakers or similar audio device, including, as relevant to the product model, brackets, gaskets and electric connections to other assemblies of the device;

(30) 'external charging port' means a port for wired battery charging, possibly also used for data exchange and reverse charging of another device, which is composed of a USB-C receptacle and a related housing and including, as relevant to the product model, brackets, gaskets and electric connections to other assemblies of the device;

(31) 'mechanical button' means a mechanical switch or an assembly of mechanical switches that can be depressed or a slider button which can be mechanically moved to switch on or off functions such as volume, triggering the camera, or switching on or off the device and including, as relevant to the product model, brackets, gaskets and electric connections to other assemblies of the device;

(32) 'main microphone(s)' means the microphone(s) intended for the user's voice signals including, as relevant to the product model, gaskets and electric connections to other assemblies of the device;

(33) 'speaker' means all loudspeakers and mechanical parts to generate sound, including, as relevant to the product model, module housing(s), gaskets and electric connections to other assemblies of the device;

(34) 'hinge assembly' means a part that allows a device to be folded while preserving its operational integrity including, where relevant, module housings;

(35) 'mechanical display folding mechanism' means a part that allows a device, including its display, to be folded while preserving its operational integrity;

(36) 'charger' means an external power supply to charge the battery of and provide electrical power to a battery-powered mobile phone, cordless phone or slate tablet;

(37) 'display assembly' means the assembly of display unit and where relevant front panel digitiser unit, including, as relevant to the product model:

(a) backplate;

(b) shielding;

(c) display frame;

(d) backlight units;

(e) electronics circuitry including:

(i) display driver but excluding the main graphics processing unit functionality;

(ii) row and column controllers;

(iii) touch signal circuitry;

(iv) electric connections to other assemblies of the device;

(38) 'professional repairer' means an operator or undertaking which performs repair and professional maintenance of smartphones or slate tablets, either as a service or with a view to the subsequent resale of the repaired device;

(39) 'repair and maintenance information' means the repair and maintenance information as from Annex II, point B 1.1 (2)e of Regulation (EU) 2023/1670, for smartphones, and as from Annex II, point D 1.1 (2)e of Regulation (EU) 2023/1670, for slate tablets, that manufacturers, importers or authorised representatives are required to provide access to in relation to the relevant product;

(40) 'date of placement on the market' means the date of placing on the market of the first unit of a product model;

(41) 'date of end of placement on the market' means the date of placing on the market of the last unit of a product model;

(42) 'proprietary tool' means a tool that is not available for purchase by the general public or for which any applicable patents are not available to licence under fair, reasonable and non-discriminatory terms;

(43) 'basic tools' means a screwdriver for slotted heads, a screwdriver for cross recess screws, a screwdriver for hexalobular recess heads, a hexagon socket key, a combination wrench, combination pliers, combination pliers for wire stripping and terminal crimping, half round nose pliers, diagonal cutters, multigrip pliers, locking pliers, a prying lever, tweezers, magnifying glass, a spudger and a pick;

(44) 'commercially available tool' means a tool that is available for purchase by the general public and is neither a basic tool nor a proprietary tool;

(45) 'separate protective cover' means a protective cover which may be shipped with a smartphone or slate tablet, but does not serve as a required part of the housing and is not considered an integral part of the product.

ANNEX II

Energy efficiency classes

A. The energy efficiency class of a smartphone or a slate tablet shall be determined on the basis of its Energy Efficiency Index (EEI) as set out in Table 1 for smartphones and table 2 for slate tablets. The EEI of a smartphone or a slate tablet shall be determined in accordance with Annex IV, point 1.

Table 1

Energy efficiency classes of smartphones

Energy Efficiency Class	Energy Efficiency Index (EEI)
A (most efficient)	EEI > 2,70
B	2,30 < EEI ≤ 2,70
C	1,95 < EEI ≤ 2,30
D	1,66 < EEI ≤ 1,95
E	1,41 < EEI ≤ 1,66
F	1,20 < EEI ≤ 1,41
G (least efficient)	EEI ≤ 1,20

Table 2

Energy efficiency classes of slate tablets

Energy Efficiency Class	Energy Efficiency Index (EEI)
A (most efficient)	EEI > 7,90
B	6,32 < EEI ≤ 7,90
C	5,06 < EEI ≤ 6,32
D	4,04 < EEI ≤ 5,06
E	3,24 < EEI ≤ 4,04
F	2,59 < EEI ≤ 3,24
G (least efficient)	EEI ≤ 2,59

B. The repeated free fall reliability class of a smartphone or a slate tablet shall be determined on the basis of the number of falls without defect as set out in Table 3. The number of falls without defect shall be determined in accordance with Annex IV, point 4.

Table 3

Repeated free fall reliability classes of smartphones and slate tablets

	Falls without defect			
Repeated Free Fall Reliability Class	Non-foldable smartphone	Non-foldable slate tablet	Foldable smartphone	Foldable slate tablet
A (most robust)	n ≥ 270	n ≥ 208	n ≥ 210 (in un-extended state) and n ≥ 45 (in fully extended state)	n ≥ 182 (in un-extended state) and n ≥ 20 (in fully extended state)

B	180 ≤ n < 270	156 ≤ n < 208	140 ≤ n < 210 (in un-extended state) and 35 ≤ n < 45 (in fully extended state)	130 ≤ n < 182 (in un-extended state) and 15 ≤ n < 20 (in fully extended state)
C	90 ≤ n < 180	104 ≤ n < 156	70 ≤ n < 140 (in un-extended state) and 25 ≤ n < 35 (in fully extended state)	78 ≤ n < 130 (in un-extended state) and 10 ≤ n < 15 (in fully extended state)
D	45 ≤ n < 90	52 ≤ n < 104	35 ≤ n < 70 (in un-extended state) and 15 ≤ n < 25 (in fully extended state)	52 ≤ n < 78 (in un-extended state) and 5 ≤ n < 10 (in fully extended state)
E (least robust)	-	n < 52	-	n < 52 (in un-extended state) and n < 5 (in fully extended state)

C. The repairability class of a smartphone or a slate tablet shall be determined on the basis of the repairability index as set out in Table 4. The repairability index shall be determined in accordance with Annex IV, point 5.

Table 4

Repairability classes of smartphones and slate tablets

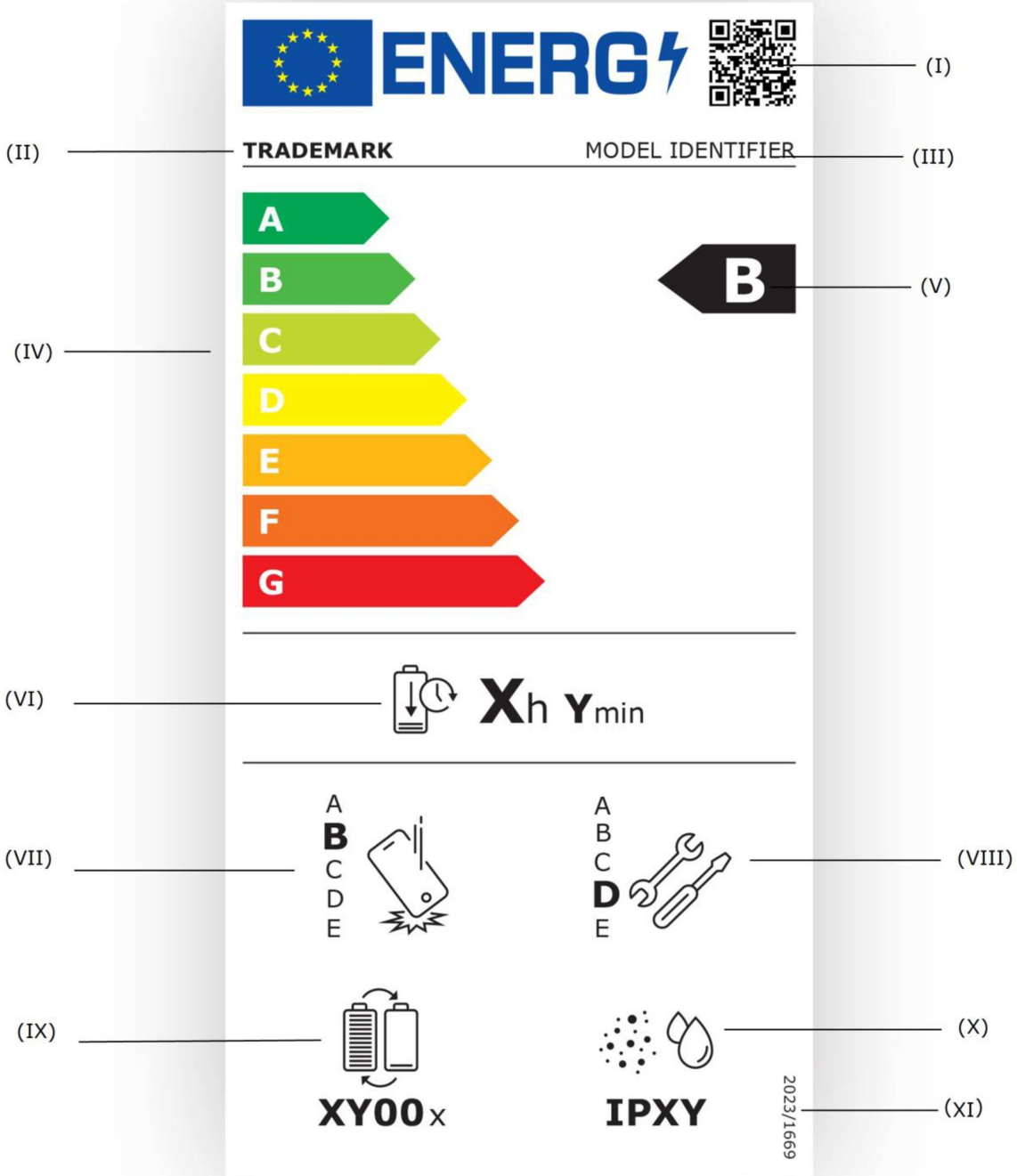
Repairability Class	Repairability Index (R)
A (most repairable)	R ≥ 4,00
B	4,00 > R ≥ 3,35
C	3,35 > R ≥ 2,55
D	2,55 > R ≥ 1,75
E (least repairable)	1,75 > R ≥ 1,00

ANNEX III

Label for smartphones and slate tablets

1. LABEL FOR SMARTPHONES AND SLATE TABLETS

Label:



The following information shall be included in the label for smartphones and slate tablets:

(I) a QR code;

(II) the trade mark;

(III) the supplier's model identifier;

(IV) the scale of energy efficiency classes from A to G;

(V) the energy efficiency class determined in accordance with Annex II;

(VI) the battery endurance per cycle (END_{Device}), in hours and minutes per full battery charge, in accordance with Annex IV, point 1;

(VII) repeated free fall reliability class determined in accordance with Annex II;

(VIII) repairability class determined in accordance with Annex II;

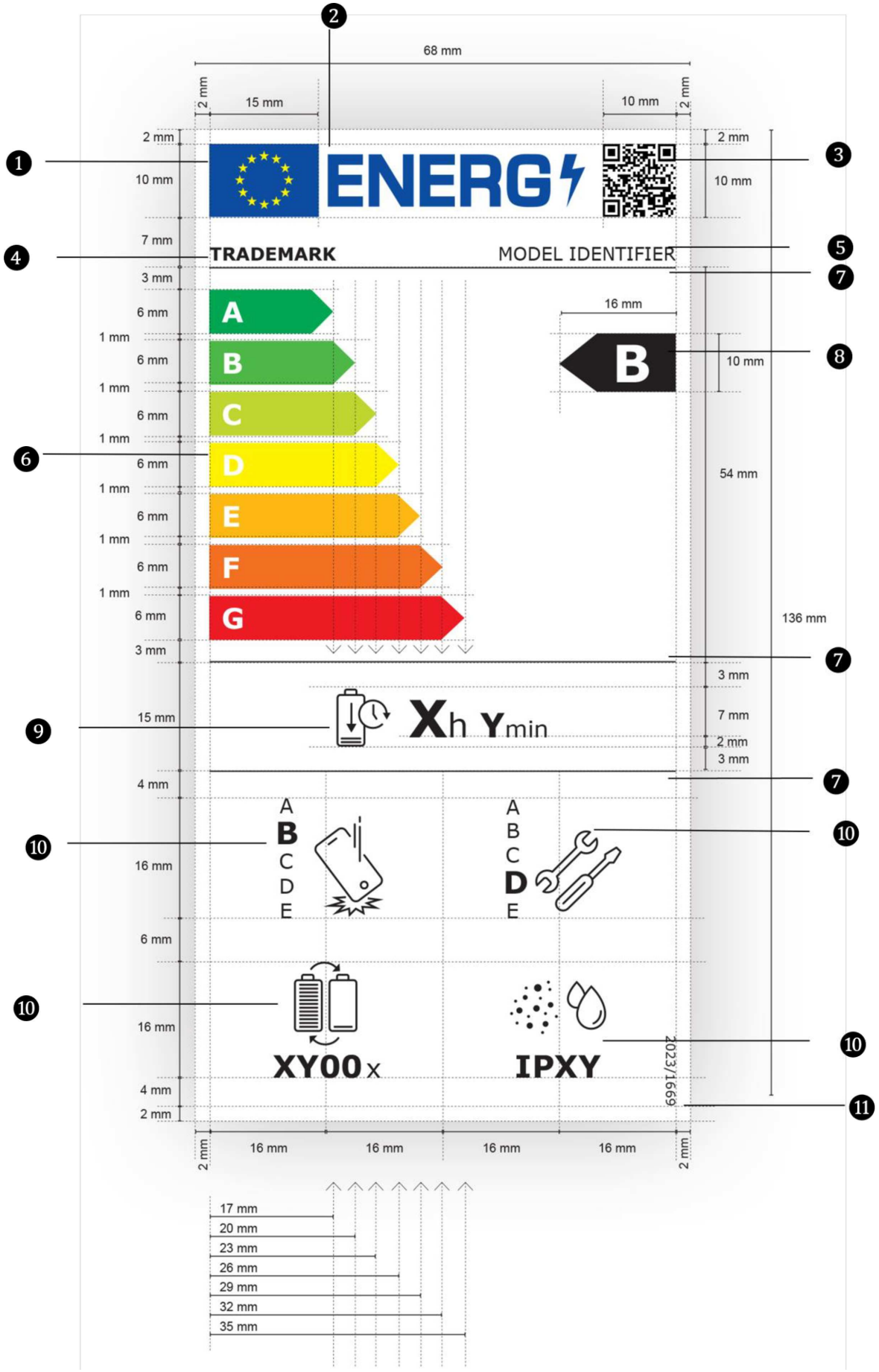
(IX) battery endurance in cycles, in cycles, in accordance with Annex IV, point 2;

(X) ingress protection rating in accordance with Annex IV, point 3;

(XI) the number of this Regulation, that is ' 2023/1669'.

2. LABEL DESIGN FOR SMARTPHONES AND SLATE TABLETS

2.1. The design of the label for smartphones and slate tablets shall be as in the figure below.


68 mm
2 mm
15 mm
10 mm
2 mm
ENERG
TRADEMARK
MODEL IDENTIFIER
A
B
C
D
E
F
G
16 mm
B
10 mm
54 mm
136 mm
Xh Ymin
A
B
C
D
E
A
B
C
D
E
XY00 x
IPXY
2023/1669
17 mm
20 mm
23 mm
26 mm
29 mm
32 mm
35 mm

2.2. The label for smartphones and slate tablets shall fulfil the following specifications:

(a) The label shall be at least 68 mm wide and 136 mm high. Where the label is printed in a larger format, its content shall nevertheless remain proportionate to those specifications above. If necessary to fit the label into the product packaging, the label can be printed scaled down, but not less than 70 % of the above specified width and height; its content shall nevertheless be proportionate to the specifications above and the QR code still readable by a commonly available QR reader, such as those integrated in a smartphone;

(b) The background of the label shall be 100 % white;

(c) The typeface shall be Verdana;

(d) The dimensions and specifications of the elements constituting the label shall be as indicated in the label design;

(e) Colours shall be CMYK – cyan, magenta, yellow and black, following this example: 0,70,100,0: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black;

(f) The label shall fulfil all of the following requirements (numbers refer to the figures above):

❶ the colours of the EU logo shall be as follows:

— the background: 100,80,0,0;

— the stars: 0,0,100,0;

❷ the colour of the energy logo shall be: 100,80,0,0;

❸ the QR code shall be 100 % black;

❹ the trade mark shall be 100 % black and in Bold, 7 pt;

❺ the model identifier shall be 100 % black and in Regular 7 pt;

❻ the A to G scale shall be as follows:

— the letters of the energy efficiency scale shall be 100 % white and in Bold 11 pt; the letters shall be centred on an axis at 4 mm from the left side of the arrows;

— the colours of the A to G scale arrows shall be as follows:

— A-class: 100,0,100,0;

— B-class: 70,0,100,0;

— C-class: 30,0,100,0;

— D-class: 0,0,100,0;

— E-class: 0,30,100,0;

— F-class: 0,70,100,0;

— G-class: 0,100,100,0;

❼ the internal dividers shall have a weight of 0,5 pt and the colour shall be 100 % black;

❽ the letter of the energy efficiency class shall be 100 % white and in Bold 20 pt. The energy efficiency class arrow and the corresponding arrow in the A to G scale shall be positioned in such a way that their tips are aligned. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow which shall be 100 % black;

❾ the number of hours of the value of the battery endurance per cycle shall be in Bold 20 pt; 'h' shall be in Regular 13 pt; the number of minutes of the value of the battery endurance per cycle shall be in Bold 13 pt; 'min' shall be in Regular 9 pt; the text shall be centred and 100 % black;

❿ the pictograms shall be as shown as in the label design and as follows:

— the pictograms' lines shall have a weight of 1 pt and they and the texts (numbers and units) shall be 100 % black;

— repeated free fall reliability class pictogram: the range of repeated free fall reliability classes (A to E for slate tablets, A to D for smartphones) shall be aligned on a vertical axis on the left side of the icon, with the letter of the applicable repeated free fall reliability class in Bold 12 pt and the other letters of the repeated free fall reliability classes in Regular 8 pt;

— repairability class pictogram: the range of repairability classes (A to E) shall be aligned on a vertical axis on the left side of the icon, with the letter of the applicable repairability class in Bold 12 pt and the other letters of the repairability classes in Regular 8 pt;

— battery endurance in cycles pictogram: the value of the battery endurance in cycles shall be in Bold 12 pt; 'x' shall be in Regular 10 pt; the text shall be centred under the pictogram;

— ingress protection rating pictogram: the text under the pictogram shall be in Bold 12 pt, and it shall be centred under the pictogram;

⓫ the number of the regulation shall be 100 % black and in Regular 5 pt.

ANNEX IV

Measurement and calculation methods

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards, the reference numbers of which have been published in the *Official Journal of the European Union* or using other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art methods and are in line with the provisions set out below.

In the absence of relevant standards and until the publication of the references of the relevant harmonised standards in the *Official Journal of the European Union*, the transitional testing methods set out in Annex IVa, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art methods, shall be used.

Where a parameter is declared pursuant to Article 3(3) of Regulation (EU) 2017/1369 and in accordance with Table 9 of Annex VI to this Regulation, its declared value shall be used by the supplier for the calculations in this Annex.

1. CALCULATION OF THE ENERGY EFFICIENCY INDEX

Smartphones and slate tablets shall be tested for battery endurance per cycle with the following test settings, starting the test with a fully charged battery:

1.1. **General device settings and configuration**

— an application shall be installed on the device to embed the test scenario and the needed contents used during the testing;

— all applications shall be closed (except required system applications);

— no specific user account (e.g. Google or Apple ID) shall be needed to perform the test;

— the web browser used during the testing shall be the native OS browser of the device;

— power saving features shall be disabled before starting the testing;

— no accessory shall be connected to the device;

— for Dual-SIM devices, only one SIM card shall be inserted; for Dual-SIM devices with eSIM, eSIM shall be switched off; for devices with eSIM only, eSIM shall be used;

— brightness shall be set at 200cd/m^2 using an external equipment to ensure this setting;

— auto brightness shall be switched off and the refresh rate shall be set at the default value;

— darkmode shall be disabled;

— all audio volumes (call and media) shall be set at 75 dBa at a defined distance using an external equipment to ensure this setting. The audio volume shall be set using a sound level meter at 20 cm from the front (screen) of the device;

— speaker to be used during video shall be the one set in the default setting of the device;

— during the call, the application shall ensure that the screen is off, no specific simulation of the proximity sensor shall be required;

— any network simulator may be used, if capable of supporting the required settings; the specific contents (video, web pages, files) shall be uploaded on the simulator.

1.2. **Test sequence**

1.2.1. *Test sequence for smartphones*

From 100 % battery charge level to power off: repeat a cycle of:

— Phone call (4 min);

— Idle (30 min);

— Web browsing (9 min);

— Idle (30 min);

— Video streaming (4 min);

— Gaming (1 min);

— Idle (30 min);

— Data transfer: http upload and download (8 min);

— Idle (30 min);

— Video playback (4 min);

When device powers off: Terminate test.

1.2.2. *Test sequence for slate tablets*

From 100 % battery charge level to power off: repeat a cycle of:

— Gaming (5 min);

— Idle (66 min);

— Web browsing (11 min);

— Idle (66 min);

— Video streaming (6 min);

— Idle (66 min);

— Data transfer: http upload and download (2 min);

— Idle (66 min);

— Video playback (6 min);

— Idle (66 min);

When device powers off: Terminate test.

1.3. **Calculation**

The battery endurance (END_{device}) in hours equals to the execution time of the specified test sequence:

$END_{device} = END_{test}$

where END_{test} is the run-time of the test in hours, rounded to two decimal places.

The energy efficiency index (EEI) of a smartphone or slate tablet shall be calculated using the following equation and rounded to two decimal places:

$$EEI = \frac{END_{Device}}{U_{nom} \times C_{rated}} \times 1000$$

Where:

— EEI is the Energy Efficiency Index in 1/W;

— U_{nom} is the nominal voltage in V;

— C_{rated} is the rated battery capacity in mAh.

The EEI shall be calculated with the operating system version installed on the product model at the date of placement on the market.

2. MEASUREMENT OF THE BATTERY ENDURANCE IN CYCLES

Batteries of smartphones and slate tablets shall be tested for battery endurance in cycles until the battery has, in a fully charged state, a remaining capacity of at least 80 % of the rated capacity; the battery shall be tested according to the default charging algorithms implemented by the manufacturer.

The resulting number of cycles shall be rounded down to full hundreds as '≥ x00' and stated in ranges as ≥ 800, ≥ 900, ≥ 1 000, ≥ 1 100, ≥ 1 200, ≥ 1 300, ≥ 1 400.

The battery endurance in cycles shall be calculated with the operating system version installed on the product model at the date of placement on the market.

3. MEASUREMENT OF THE INGRESS PROTECTION

Ingress protection against particle and moisture ingress shall be stated as an IP code, corresponding to the levels listed in Table 5. Tests shall be performed without protective cover.

Table 5

Ingress protection rating levels

Rating level	Ingress of solid foreign objects	Ingress of water with harmful effects
	Object size	Protection against
0	no protection	no protection
1	≥ 50 mm	vertical water dripping
2	protected from touch by fingers and ≥ 12 mm	water spray less than 15 degrees from vertical
3	≥ 2,5 mm	water spray less than 60 degrees from vertical
4	≥ 1 mm	splashing of water
5	dust-protected	jetting of water
6	dust-tight	powerful jetting of water
7	n.a.	temporary immersion, 1 m depth
8	n.a.	continuous immersion, 1 m or more depth

4. RESISTANCE TO ACCIDENTAL DROPS OR REPEATED FREE FALL RELIABILITY

Resistance to accidental drops or repeated free fall reliability is measured through the number of falls without defect in the repeated free fall test. The repeated free fall tests shall be performed with five units of each model for each of the applicable test cases. The resistance to accidental drops is the number of falls which have been passed by at least four out of the five units under test. The number of falls per unit shall be determined with the following test conditions:

(a) without protective foils and separate protective cover, if any, for non-foldable devices;

(b) with a protective foil on the display for foldable devices, first in the un-extended state and then in the fully extended state on the same unit under test in line with tables 6 and 7;

(c) fall height 1 m;

(d) after a defined number of falls corresponding to the intervals specified in tables 6 and 7, the unit under test has to be functional without defect, with particular reference to the following functionalities, where applicable:

(i) integrity of screen;

(ii) display with less than 10 pixel defects or similar malfunctions;

(iii) all cameras, tested for still images and videos;

(iv) mobile communication;

(v) Bluetooth connectivity;

(vi) WiFi connectivity;

(vii) battery charging: wired and wireless;

(viii) display touch sensitivity;

(ix) responsive buttons and switches;

(x) vibration alarm;

(xi) main microphone(s);

(xii) loudspeaker;

(xiii) headset audio.

(e) cracks of the frame or backside shall not be considered a defect as long as full functionality and safe use of the unit under test is given;

(f) cracks of the touchscreen and of any other cover layers of a display shall not be considered a defect as long as full functionality and safe use of the unit under test is given;

(g) in case of no determined defect the test shall be continued;

(h) in case of a determined defect and in any case after the maximum number of falls specified in tables 6 and 7, the test of the unit shall be terminated.

Table 6

Test intervals for determining if the smartphone unit is defective

Falls per unit	Non-foldable device	Foldable device
45	1st check for defects	not applicable
35 un-extended state + 15 additional falls in fully extended state	not applicable	1st check for defects
90	2nd check for defects	not applicable
70 un-extended state + 25 additional falls in fully extended state	not applicable	2nd check for defects

180	3rd check for defects	not applicable
140 un-extended state + 35 additional falls in fully extended state	not applicable	3rd check for defects
270	4th check for defects	not applicable
210 un-extended state + 45 additional falls in fully extended state	not applicable	4th check for defects

Table 7

Test intervals for determining if the slate tablet unit is defective

Falls per unit	Non-foldable device	Foldable device
52	1st check for defects	not applicable
52 un-extended state + 5 additional falls in fully extended state	not applicable	1st check for defects
104	2nd check for defects	not applicable
78 un-extended state + 10 additional falls in fully extended state	not applicable	2nd check for defects
156	3rd check for defects	not applicable
130 un-extended state + 15 additional falls in fully extended state	not applicable	3rd check for defects
208	4th check for defects	not applicable
182 un-extended state + 20 additional falls in fully extended state	not applicable	4th check for defects

5. METHOD FOR THE CALCULATION OF THE REPAIRABILITY INDEX OF SMARTPHONES AND SLATE TABLETS

The Repairability Index is an aggregated and normalised score, as a calculated value derived from six scoring parameters where:

— S_{DD} is the 'Disassembly Depth' score.

— S_F is the 'Fasteners (type)' score.

— S_T is the 'Tools (type)' score.

— S_{SP} is the 'Spare Parts' score.

— S_{SU} is the 'Software Updates (duration)' score.

— S_{RI} is the 'Repair Information' score.

The same scoring methodology shall apply to both smartphones and slate tablets. The Repairability Index (R) shall be calculated as follows:

$$R = (S_{DD}*0,25)+(S_F*0,15)+ (S_T*0,15)+ (S_{SP}*0,15)+(S_{SU}*0,15)+(S_{RI}*0,15)$$

The 'Disassembly Depth' (S_{DD}), 'Fasteners (type)' (S_F) and 'Tools (type)' (S_T) scores are based on the aggregation of the following priority part level scores:

— BAT is the battery.

— DA is the display assembly.

— BC is the back cover or back cover assembly.

— FFC is the front-facing camera assembly.

— RFC is the rear-facing camera assembly.

— EC is the external charging port.

— BUT is the mechanical button.

— MIC is the main microphone(s).

— SPK is the speaker.

— FM is the hinge assembly or the mechanical display folding mechanism.

If any of the priority parts listed above is present in a product more than once, only the one which delivers the lowest score shall be considered in the calculation of the 'Disassembly Depth' (S_{DD}), 'Fasteners (type)' (S_F) and 'Tools (type)' (S_T) scores. If a priority part is not present in the product, the highest point level for each score shall be considered for this part.

The 'Disassembly Depth' (S_{DD}) score shall be calculated as follows:

(a) if the hinge assembly or the mechanical display folding mechanism are not present in the product, the following formula shall be used:

$$S_{DD} = (DD_{BAT}*0,30)+ (DD_{DA}*0,30)+ (DD_{BC}*0,10)+(DD_{FFC}*0,05)+(DD_{RFC}*0,05)+(DD_{EC} *0,05)+(DD_{BUT}*0,05) +(DD_{MIC}*0,05)+(DD_{SPK} *0,05)$$

(b) if the hinge assembly or the mechanical display folding mechanism are present, the following formula shall be used:

$$S_{DD} = (DD_{BAT}*0,25)+ (DD_{DA}*0,25)+ (DD_{BC}*0,09)+(DD_{FFC}*0,04)+(DD_{RFC}*0,04)+(DD_{EC} *0,04)+(DD_{BUT}*0,04) +(DD_{MIC}*0,04)+(DD_{SPK} *0,04)+ (DD_{FM}*0,17).$$

Disassembly Depth (DD) assessment at part level

The Disassembly Depth score (DD_i) for each priority part *i* (DD_{BAT}; DD_{DA}, DD_{BC}, DD_{FFC}, $DD_{RFC,}$ $DD_{EC,}$ DD_{BUT}, DD_{MIC}, $DD_{SPK,}$ DD_{FM}) shall be calculated based on the number of steps required to remove a part from a product, without damaging the product. The counting of the steps for each part starts from the product fully assembled, with the charger disconnected and any SIM card installed. Points ranging from 1 to 5 are assigned as follows:

— $DD_i \leq 2$ steps = 5 pt.

— 5 steps $\geq DD_i > 2$ steps = 4 pt.

— 10 steps $\geq DD_i > 5$ steps = 3 pt.

— 15 steps $\geq DD_i > 10$ steps = 2 pt.

— $DD_i > 15$ steps = 1 pt.

For the calculation of disassembly steps, the following rules shall apply:

— the disassembly depth count is completed when the target part is separated and individually accessible.

— where multiple tools need to be used simultaneously, the use of each tool counts as a separate step.

— operations related to cleaning, removing traces or heating are counted as steps.

— the disassembly depth shall be calculated on the basis of the repair and maintenance information, and of the description of the disassembly steps for each priority part given in the technical documentation;

— where remote notification or authorisation of serial numbers is necessary for the full functionality of the spare part and the device, each of these actions is counted as five additional disassembly steps.

The **'Fasteners (type)'** (S_F) score is calculated as follow:

(a) for smartphones or slate tablets, except foldable ones, the following formula shall be used:

$$S_F=(F_{BAT}*0,30)+(F_{DA}*0,30)+(F_{BC}*0,10)+(F_{FFC}*0,05)+(F_{RFC}*0,05)+(F_{EC}*0,05)+(F_{BUT}*0,05)+(F_{MIC}*0,05)+(F_{SPK}*0,05)$$

(b) for foldable smartphones or foldable slate tablets, the following formula shall be used:

$$S_F=(F_{BAT}*0,25)+(F_{DA}*0,25)+(F_{BC}*0,09)+(F_{FFC}*0,04)+(F_{RFC}*0,04)+(F_{EC}*0,04)+(F_{BUT}*0,04)+(F_{MIC}*0,04)+(F_{SPK}*0,04)+(F_{FM}*0,17)$$

Fasteners (type) (F) assessment at part level:

The 'Fasteners (type)' scores (F_i) for each priority part *i* (F_{BAT}, F_{DA}, F_{BC}, F_{FFC}, $F_{RFC,}$ $F_{EC,}$ F_{BUT}, F_{MIC}, $F_{SPK,}$ F_{FM}) are assigned according to the level of removability and reusability of the fasteners used in the device assembly. Points ranging from 1 to 5 are assigned as follows:

— Reusable Fasteners = 5 pt.

— Resupplied Fasteners = 3 pt.

— Removable Fasteners = 1 pt.

The assessment of the type of fasteners is based on the disassembly process to remove the specific priority part, starting from the previous priority part in disassembly sequence already removed.

In case different types of fasteners are encountered in the disassembly of a priority part, the worst score shall be considered.

The F_i scores shall be calculated on the basis of the repair and maintenance information, and of the description of the fasteners for each priority part given in the technical documentation.

The **'Tools (type)'** (S_T) score shall be calculated as follows:

(a) for smartphones or slate tablets, except foldable ones, the following formula shall be used:

$$S_T=(T_{BAT}*0,30)+(T_{SCR}*0,30)+(T_{BC}*0,10)+(T_{FFC}*0,05)+(T_{RFC}*0,05)+(T_{EC}*0,05)+(T_{BUT}*0,05)+(T_{MIC}*0,05)+(T_{SPK}*0,05)$$

(b) for foldable smartphones or foldable slate tablets, the following formula shall be used:

$$S_T=(T_{BAT}*0,25)+(T_{SCR}*0,25)+(T_{BC}*0,09)+(T_{FFC}*0,04)+(T_{RFC}*0,04)+(T_{EC}*0,04)+(T_{BUT}*0,04)+(T_{MIC}*0,04)+(T_{SPK}*0,04)+(T_{FM}*0,17)$$

Tools (type) (T) assessment at part level

The 'Tools (type)' scores (T_i) for each priority part *i* (T_{BAT}, T_{DA}, T_{BC}, T_{FFC}, T_{RFC}, T_{EC}, T_{BUT}, T_{MIC}, T_{SPK} and T_{FM}) are assigned according to the complexity and availability of the tools needed for its replacement. Points ranging from 1 to 5 are assigned as follows:

— No tools = 5 pt;

— Basic tools = 4 pt.

— A set of tools that is supplied (or offered to be supplied at no additional cost) with the spare part = 3 pt.

— A set of tools that is supplied (or offered to be supplied at no additional cost) with the product = 2 pt.

— Commercially available tools = 1 pt.

The assessment of the type of tools is based on the disassembly process to remove the specific priority part, starting from the previous priority part in disassembly sequence already removed.

Where different types of tools are needed for the disassembly of a priority part, the lowest score shall be considered.

The T_i scores shall be calculated on the basis of the repair and maintenance information, and of the description of the tools for each priority part given in the technical documentation.

Spare parts

The **'Spare Parts' (S_{SP})** score shall be calculated at product level as follows:

— Spare parts for all priority parts are available to end users and professional repairers = 5 pt;

— Spare parts for display assembly, battery, back cover (or back cover assembly) and cameras are available to end users and professional repairers; spare parts for all other parts are available to professional repairers = 4 pt;

— Spare parts for display assembly, battery and back cover (or back cover assembly) are available to end users and professional repairers; spare parts for all other parts are available to professional repairers = 3 pt;

— Spare parts for display assembly and battery are available to end users and professional repairers; spare parts for all other parts are available to professional repairers = 2 pt;

— Spare parts for display assembly are available to end users and professional repairers; spare parts for all other parts are available to professional repairers = 1 pt;

— Spare parts for the hinge assembly, mechanical display folding mechanism are to be available only in case of foldable smartphones.

Software Updates (duration)

The **'Software Updates (duration)' (S_{SU})** score shall be calculated at product level as follows:

— Minimum guaranteed availability of security updates, corrective updates and functionality updates to the operating system for at least 7 years = 5 pt.

— Minimum guaranteed availability of security updates, corrective updates and functionality updates to the operating system for 6 years = 3 pt.

— Minimum guaranteed availability of security updates, corrective updates and functionality updates to the operating system for 5 years = 1 pt.

— The above durations refer to years from the date of end of placement on the market of the product model.

Repair Information

The **Repair Information (S_{RI})** score shall be calculated at product level as follows:

— Public availability of repair and maintenance information, except electronic board diagrams, at no cost for end users and availability of repair and maintenance information, including electronic board diagrams, at no cost for professional repairers = 5 pt.

— Availability of repair and maintenance information at no cost for professional repairers = 3 pt.

— Availability of repair and maintenance information with a reasonable and proportionate fee for professional repairers = 1 pt.

— A fee shall be considered reasonable if it does not discourage access by failing to take into account the extent to which the professional repairer uses the information.

ANNEX Iva

Transitional Methods

References and qualifying notes for smartphones and slate tablets

Parameter	Source	Reference Test Method/Title	Notes
Fasteners (type) score (S_F) and Tools (type) score (S_T)	CEN	EN 45554:2020	Fasteners and connectors: please refer to Table A.1 of the standard, unless differently specified in this Regulation. Tools: please refer to Table A.2 of the standard, unless differently specified in this Regulation.
EEI	European Commission	EEI test specifications	https://ec.europa.eu/docsroom/documents/50214
Protection against particles and water	IEC	IEC 60529:1989/AMD2:2013/COR1:2019	dust tight and protected against immersion in water up to 1 meter depth: IP67; protected against the ingress of solid foreign objects of size bigger than 1millimeter and splashing of water: IP44.
Rated capacity and battery endurance in cycles	Cenelec	IEC EN 61960-3:2017	Battery endurance in cycles shall be measured with the following test sequence: 1) one cycle at 0,2 C discharge rate and measure capacity; 2) cycles 2-499 at 0,5 C discharge rate; 3) repeat step 1. To determine the number of cycles beyond 500 cycles, one should then continue with step 4 4) 99 cycles at 0,5 C discharge rate 5) repeat step 1 6) repeat steps 4 and 5 until measured capacity is below 80 %. Tests shall be performed with an external power source, which does not limit the power draw of the battery and leaves it to the specified default charging algorithm to regulate the charging rate.
Scratch hardness	CEN	EN 15771:2010	Scratch hardness shall be tested on the visible display area, without protective cover on the display

Battery endurance test ambient conditions	ECMA	ECMA 383	Ambient temperature (23 ± 5) °C, relative humidity 10 % to 80 %, ambient light (250 ± 50) Lux
Resistance to accidental drops or repeated free fall reliability	IEC	IEC 60068-2-31, Free fall repeated – Procedure 2	Smartphones shall be tested for resistance to accidental drops, fall height 1 meter; the test has to be performed with 5 units consecutively and is passed, if at least 4 units pass the test. The free fall test shall be interrupted as set out in Table 6 to verify, if full functionality of the device is still given. In case of no determined defect the test shall be continued placing the unit under test, in case of smartphones, in the tumble tester in the same orientation the device was found when the test was interrupted. The number of falls passed by at least 4 out of 5 units is the value to be stated in the product information sheet as set out in Annex V.
		IEC 60068-2-31, Free fall – Procedure 1	Slate tablets shall be tested for resistance to accidental drops, fall height 1 meter on 3 mm steel plate backed by 10-19 mm thick hardwood (deviation from procedure 1); 26 controlled orientations with drop on each face, edge and corner, as specified in the test sequence below; the test has to be performed with 5 units consecutively and is passed, if at least 4 units pass the test. In fully extended state, drop the slate tablet consecutively in the following orientations, until the required number of drops is reached. Designations of edges, corners, faces are defined with the largest display facing to the front, in landscape orientation, with the front-facing camera next to the top edge, or, if this does not define the designation unambiguously, with the front-facing camera next to the left edge, approximating the device with a cuboid geometry. Drop on: 1. display face 2. lower left front corner 3. lower backside edge 4. front right edge 5. left face 6. lower right backside corner 7. lower right front corner 8. bottom face 9. backside face 10. front left edge 11. top left backside corner 12. backside right edge

			13. top right front corner 14. lower left edge 15. top right edge 16. top left front corner 17. lower right edge 18. top face 19. front lower edge 20. lower left backside corner 21. top left edge 22. front top edge 23. top right backside corner 24. backside left edge 25. right face 26. top backside edge. After a number of falls as set out in Table 7 full functionality of the device shall be verified. In case of no determined defect the test shall be continued: i. with free fall tests in case of non-foldable slate tablets in all 26 orientations twice; ii. with free fall tests in case of foldable slate tablets: (1) after the first check for defects first in all 26 orientations once in un-extended state, then continue with falls in fully extended state in orientations no. 6 to 10; (2) after the second check for defects first in all 26 orientations twice in un-extended state, then continue with falls in fully extended state in orientations no. 11 to 15; (3) after the third check for defects first in all 26 orientations twice in un-extended state, then continue with falls in fully extended state in orientations no. 16 to 20. The number of falls passed by at least 4 out of 5 units is the value to be stated in the product information sheet as set out in Annex V.

ANNEX V

Product information sheet

Pursuant to Article 3(1), point (b), the supplier shall enter into the product database the information as set out in Table 8.

The user manual or other literature provided with the product shall clearly indicate the link to the model in the product database as a human-readable Uniform Resource Locator (URL) or as QR code or by providing the product registration number.

Table 8

Product information sheet

1. **Trade mark** ([a]) ([b])		
2. **Model identifier** ([b])		
3. **General product parameters:**		
Parameter		Value
4. Device type		[smartphone/tablet]
5. Operating system		[Android/iOS/other]
6. Energy efficiency class		[A/B/C/D/E/F/G][b]
7. Battery user-replaceable ([c])		[yes/no]
8. Battery endurance per cycle (END_{device} [h])		x
9. Battery endurance in cycles – default settings [cycles]		≥x00
10. Rated battery capacity (C_{rated} [mAh])		x
11. Shipped with protective cover		[yes/no]
12. Repeated free fall reliability test – falls without defect [n]		[≥ x]
13. Repeated free fall reliability test – falls without defect, tested in fully extended state [n]		[≥ x/n.a.]
14. Repeated free fall reliability class		[A/B/C/D/E][b]
15. Ingress protection rating		IPxx
16. Specified immersion depth in water, in case of IPx8 [m]		[x,xx/n.a.]
17. Screen scratch resistance on Mohs hardness scale		x
18. Charger	Required output power [W]	x
	Receptacle type (at device end)	[USB-A/USB-Micro B/USB-C/other]
Repairability information:		
19. Minimum guaranteed availability of operating system security updates, corrective updates and functionality updates ([a]) ([b]) (years)		x

20. Repairability Class (based on the index below)	[A/B/C/D/E][b]
21. Repairability Index ([b])	x,xx/5
21a. Disassembly Depth (S_{DD}) score ([b])	x,xx/5
21b. Fasteners (type) score (S_F) ([b])	x,xx/5
21c. Tools (type) score (S_T) ([b])	x,xx/5
21d. Spare Part score (S_{SP}) ([b])	x,xx/5
21e. Software Updates (duration) score (S_{SU}) ([b])	x,xx/5
21f. Repair Information score (S_{RI}) ([b])	x,xx/5
22. Weblink to information on spare parts availability for professional repairers and end users ([a]) ([b]) ([d])	https://xxx
23. Weblink to repair instructions for end-users ([a]) ([b]) ([e])	https://xxx
24. Weblink to indicative pre-tax prices ([a]) ([b]) ([f])	https://xxx
Additional information:	
25. Minimum duration of the guarantee offered by the supplier ([a]) ([b]) [months]	x
Supplier's address ([a]) ([b]) ([g])	

([a]) Changes to these items shall not be considered relevant for the purposes of Article 4(4) of Regulation (EU) 2017/1369.

([b]) This item shall not be considered relevant for the purposes of Article 2(6) of Regulation (EU) 2017/1369.

([c]) The process for battery replacement meets the following criteria:
- fasteners shall be resupplied or reusable;
- the process for replacement shall be feasible with no tool, a tool or set of tools that is supplied with the product or spare part, or basic tools;
- the process for replacement shall be able to be carried out in a use environment;
- the process for replacement shall be able to be carried out by a layman.

([d]) The suppliers' obligation is to include the weblink to the website where the relevant information will be available. Effective access to the website is nevertheless to be granted in accordance to the timeline and provisions laid down in Annex II, point B 1.1 (1) d of Regulation (EU) 2023/1670, for smartphones, and in Annex II, point D 1.1 (1) d of Regulation (EU) 2023/1670, for slate tablets.

([e]) The suppliers' obligation is to include the weblink to the website where the relevant information will be available. Effective access to the website is nevertheless to be granted in accordance to the timeline and provisions laid down in the last paragraph of Annex II, point B 1.1 (2) of Regulation (EU) 2023/1670, for smartphones, and in the last paragraph of Annex II, point D 1.1 (2) of Regulation (EU) 2023/1670, for slate tablets.

([f]) The suppliers' obligation is to include the weblink to the website where the relevant information will be available. Effective access to the website is nevertheless to be granted in accordance to the timeline and provisions laid down in Annex II, point B 1.1 (4) of Regulation (EU) 2023/1670, for smartphones, and in Annex II, point D 1.1 (4) of Regulation (EU) 2023/1670, for slate tablets.

([g]) The supplier shall not enter these data for each model if automatically provided by the database.

ANNEX VI

Technical documentation

1. The technical documentation referred to in Article 3(1), point (d), shall include:

   (a) a general description of the model allowing it to be unequivocally and easily identified;

   (b) references to the harmonised standards applied or other measurement standards used;

   (c) a description of the disassembly steps for each priority part of Annex IV, point 5, including the tool(s) and fastener(s) needed at each step, if any;

   (d) specific precautions to be taken when the model is assembled, installed, maintained or tested;

   (e) the values for the technical parameters set out in Table 9; those values are considered as the declared values for the purpose of the verification procedure set out in Annex IX;

   (f) the details and the results of calculations performed in accordance with Annex IV;

   (g) measurement or testing conditions if not described sufficiently in point (b), including battery charging algorithms for the default charging procedure, if applicable;

   (h) parameters of the initial test procedure for the energy efficiency index, if not described sufficiently under the settings of Annex IV, point 1, and of Annex IVa.

2. These elements shall also constitute the mandatory specific parts of the technical documentation that the supplier shall enter into the database, pursuant to Article 12(5) of Regulation (EU) 2017/1369.

Table 9

Technical parameters of the model and their declared values

	Parameter	Parameter value and precision	Unit
1	Trade mark		TEXT
2	Model identifier		TEXT
3	battery endurance per cycle (END_{device})	x,xx	[h]
4	battery endurance in cycles – default settings	≥x00	[hundreds of cycles]
5	rated battery capacity (C_{rated})	x	[mAh]
6	nominal voltage	x,xx	[V]
7	final voltage for battery endurance in cycles test [V]	x,xx	[V]
8	Energy Efficiency Index (EEI)	x,xx	[n]
9	shipped with protective cover	[yes/no]	-
10	repeated free fall reliability test – falls without defect	[≥ x/n.a.]	[n]
11	repeated free fall reliability test – falls without defect, tested in fully extended state	[≥ x/n.a.]	[n]
12	ingress protection rating	IPxx	

13	specified immersion depth in water, in case of IPx8	[x,x/n.a.]	[m]
14	screen scratch resistance	x	Mohs hardness scale
15	Minimum guaranteed availability of operating system security updates, corrective updates and functionality updates	x	[years]
16	Repairability Class	[A/B/C/D/E]	[A/B/C/D/E]
17	Repairability index (as calculated from the values below)	x,xx	[n]
18	Disassembly Depth (S_{DD})	x,xx	[n]
19	Fasteners (type) score (S_F)	x,xx	[n]
20	Tools (type) score (S_T)	x,xx	[n]
21	Spare Part score (SS_P)	x,xx	[n]
22	Software Updates (duration) score (S_{SU})	x,xx	[n]
23	Repair Information score (S_{RI})	x,xx	[n]
24	Operating system	[Android/iOS/other]	-
25	Operating system version		TEXT

3. Where the information included in the technical documentation for a smartphone or slate tablet model has been obtained by any of the following methods, or both:

   (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different supplier,

   (b) by calculation on the basis of design or extrapolation from another model of the same or a different supplier,

the technical documentation shall include the details of such calculation, the assessment undertaken by suppliers to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different suppliers.

ANNEX VII

Information to be provided in visual advertisements, in technical promotional material and in distance selling, except distance selling on the internet

1. In visual advertisements, for the purposes of ensuring conformity with the requirements laid down in Article 3(1), point (e), and in Article 4(1), point (c), the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.

2. In technical promotional material, for the purposes of ensuring conformity with the requirements laid down in Article 3(1), point (f), and in Article 4(1), point (d), the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.

3. In the case of paper-based distance selling, the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.

4. In the cases referred to in points 1, 2 and 3, the energy efficiency class and the range of energy efficiency classes shall be shown, as indicated in Figure 1, in accordance with the following specifications:

   (a) an arrow shall be used, containing the letter of the energy efficiency class in 100 % white, Calibri Bold and in a font size at least equivalent to that of the price, when the price is shown;

   (b) the colour of the arrow shall match the colour of the energy efficiency class;

   (c) the range of available energy efficiency classes shall be in 100 % black;

   (d) the size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0,5 pt in 100 % black placed around the arrow and the letter of the energy efficiency class.

   By way of derogation, if the visual advertisement, technical promotional material or paper-based distance selling is printed in monochrome, the arrow may be in monochrome in that visual advertisement, technical promotional material or paper-based distance selling.

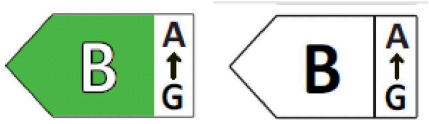


Figure 1: Coloured/monochrome left arrow, with range of energy efficiency classes indicated

5. Telemarketing-based distance selling shall specifically inform the customer of the energy efficiency class of the product and of the range of energy efficiency classes available on the label, and the customer shall be given the possibility to access the full label and the product information sheet through a free access website, or by requesting a printed copy.

6. For all the situations mentioned in points 1, 2, 3 and 5, it shall be possible for the customer to obtain, on request, a printed copy of the label and the product information sheet.

ANNEX VIII

Information to be provided in the case of distance selling through the internet

1. The appropriate label made available by suppliers in accordance with Article 3(1), point (g), shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in Annex III. The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in point 2 of this Annex. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.

2. The image used for accessing the label in the case of nested display, as indicated in Figure 2, shall:

   (a) be an arrow in the colour corresponding to the energy efficiency class of the product on the label;

   (b) indicate the energy efficiency class of the product on the arrow in 100 % white, Calibri Bold and in a font size equivalent to that of the price;

   (c) have the range of available energy efficiency classes in 100 % black;

   (d) have the following format, and its size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a visible border in 100 % black placed around the arrow and the letter of the energy efficiency class:



Figure 2: Coloured left arrow, with range of energy efficiency classes indicated

3. In the case of a nested display, the sequence of display of the label shall be as follows:

   (a) the image referred to in point 2 of this Annex shall be shown on the display mechanism in proximity to the price of the product;

   (b) the image shall link to the label set out in Annex III;

   (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;

   (d) the label shall be displayed by pop up, new tab, new page or inset screen display;

   (e) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;

   (f) the label shall cease to be displayed by means of a close option or other standard closing mechanism;

   (g) the alternative text for the graphic, to be displayed on failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price.

4. The electronic product information sheet made available by the supplier in accordance with Article 3(1), point (h) shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the product information sheet is clearly visible and legible. The product information sheet may be displayed using a nested display or by referring to the product database, in which case the link used for accessing the product information sheet shall clearly and legibly indicate 'Product information sheet'. If a nested display is used, the product information sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

ANNEX IX

Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification by Member State authorities of the declared values and shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation or in interpreting those values with a view to achieving compliance or to communicate better performance by any means. The values and classes published on the label or in the product information sheet shall not be more favourable for the supplier than the values declared in the technical documentation.

Where a model has been designed to be able to detect it is being tested (e.g. by recognizing the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

The EEI, the battery endurance in cycles and the battery endurance per cycle for compliance verification shall be calculated with the operating system version installed on the unit(s) at the date of their placing on the market.

As part of verifying the compliance of a product model with the requirements laid down in this Regulation, the authorities of the Member States shall apply the following procedure:

(1) The Member State authorities shall verify one single unit of the model pursuant to points 2(a), (b) and (c), except for repeated free fall reliability tests, where five units of a model shall be verified pursuant to point 2(d), and except for battery endurance in cycles tests, where five units of a model shall be verified pursuant to point 2(e).

(2) The model shall be considered to comply with the applicable requirements if:

(a) the values given in the technical documentation pursuant to Article 3(3) of Regulation (EU) 2017/1369 (declared values), and, where applicable, the values used to calculate those values, are not more favourable for the supplier than the corresponding values given in the test reports;

(b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values, and the indicated energy efficiency class, the repeated free fall reliability class and the repairability class are not more favourable for the supplier than the class determined by the declared values;

(c) when the Member State authorities test the unit of the model, the determined values (that is the values of the relevant parameters as measured in testing and the values calculated from those measurements) comply with the respective verification tolerances as given in Table 10;

(d) when the Member State authorities test five units of the model for the repeated free fall reliability, the determined values (that is the values of the relevant parameters as measured in testing and the values calculated from those measurements) comply with the respective pass rate as given in Table 11;

(e) when the Member State authorities test five units of the model for the battery endurance in cycles, the arithmetic mean of the determined values (that is the values of the relevant parameters as measured in testing and the values calculated from those measurements) comply with the respective verification tolerances as given in Table 10.

(3) If the results referred to in points 2(a), (b) and (e) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.

(4) If the result referred to in point 2(c) is not achieved, the Member State authorities shall select three additional units of the same model for testing, except for the result of the repairability index. As an alternative, the three additional units selected may be of one or more equivalent models. Concerning the repairability index, if the result referred to in point 2(c) is not achieved, the Member State authorities shall select one additional unit of the same model for testing.

(5) If the result referred to in point 2(d) is not achieved, the Member State authorities shall select five additional units of the same model for testing. As an alternative, the five additional units selected may be of one or more equivalent models.

(6) The model shall be considered to comply with the applicable requirements if for the three units tested pursuant to point 4, where applicable, the arithmetic mean of the determined values complies with the respective tolerances given in Table 10, except for the result of the repairability index, where the model shall be considered to comply with the applicable requirements if the determined value complies with the respective tolerance given in Table 10.

(7) The model shall be considered to comply with the applicable requirements if for the five units tested pursuant to point 5, where applicable, the pass rate complies with the respective values given in Table 11.

(8) If the results referred to in points 6 or 7 are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation, except for the result of the repairability index, where the model shall be considered not to comply with this Regulation.

(9) The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay once a decision has been taken on the non-compliance of the model according to points 3 or 8 or the second paragraph of this Annex.

The Member State authorities shall use the measurement and calculation methods set out in Annex IV.

The Member State authorities shall only apply the verification tolerances set out in Table 10 and the pass rate set out in Table 11 and shall only use the procedure set out in points 1 to 9 for the requirements referred to in this Annex. For the parameters in Table 10, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

Table 10

Verification tolerances for measured parameters

Parameters	Verification tolerances
battery endurance per cycle (END_{device} [h])	The determined value ([a]) shall not be more than 3 % lower than the declared value.
battery endurance in cycles – default settings [cycles]	The determined value ([a]) shall not be more than 20 cycles lower than the declared value.
rated battery capacity (C_{rated} [mAh])	The determined value ([a]) shall not be more than 10 % higher than the declared value.
nominal voltage [V]	The determined value ([a]) shall not be more than 2 % higher than the declared value.
final voltage for battery endurance in cycles test [V]	The determined value ([a]) shall not be more than 2 % higher than the declared value.
repairability index (R)	The determined value shall not be more than 4 % lower than the declared value.

([a]) in the case of three additional units tested as prescribed in the fourth paragraph, point 4, the determined value means the arithmetic mean of the values determined for these three additional units.

Table 11

Pass rates for resistance to accidental drops

Parameters	Pass rate tolerances
resistance to accidental drops	The determined value corresponding to the declared value shall be met by at least 80 % of the tested units.