2025/2052

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COMMISSION REGULATION (EU) 2025/2052

of 13 October 2025

laying down ecodesign requirements for external power supplies, wireless chargers, wireless charging pads, battery chargers for portable batteries of general use and USB Type-C cables, pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulation (EU) 2019/1782

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

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

Having regard to Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products ([1]), and in particular Article 15(1) thereof,

Whereas:

(1) Pursuant to Article 15 of Directive 2009/125/EC, the Commission is to set ecodesign requirements for energy-related products which account for significant volumes of sales and trade in the Union and have a significant environmental impact and present significant potential for improvement through design in terms of their environmental impact, without entailing excessive costs.

(2) The Ecodesign and Energy Labelling Working Plan 2022-2024 ([2]), which was drawn up by the Commission in accordance with Article 16(1) of Directive 2009/125/EC, sets out the working priorities under the ecodesign and energy labelling framework for the years 2022 to 2024. External Power Supplies (EPS) are one of the prioritised product groups listed in the Ecodesign and Energy Labelling Working Plan 2022-2024.

(3) The measures envisaged by the Ecodesign and Energy Labelling Working Plan 2022-2024 have the potential to deliver an estimated total annual final energy savings in excess of 170 TWh in 2030. This is equivalent to reducing greenhouse gas emissions by approximately 24 million tonnes a year in 2030.

(4) Commission Regulation (EU) 2019/1782 ([3]) established ecodesign requirements for EPS. Its Article 7 requires the Commission to review the Regulation in the light of technological progress.

(5) Pursuant to Article 79, point 1(a)(i), of Regulation (EU) 2024/1781 of the European Parliament and of the Council ([4]), the review of Regulation (EU) 2019/1782 shall be completed under the framework of Directive 2009/125/EC.

(6) The Commission carried out a review and analysed the technical, environmental and economic aspects of EPS. The review was carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established in accordance with Article 18 of Directive 2009/125/EC.

([1]) OJ L 285, 31.10.2009, p. 10, ELI: http://data.europa.eu/eli/dir/2009/125/oj.

([2]) Communication from the Commission Ecodesign and Energy Labelling Working Plan 2022-2024 (OJ C 182, 4.5.2022, p. 1, https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52022XC0504(01)).

([3]) Commission Regulation (EU) 2019/1782 of 1 October 2019 laying down ecodesign requirements for external power supplies pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulation (EC) No 278/2009 (OJ L 272, 25.10.2019, p. 95, ELI: http://data.europa.eu/eli/reg/2019/1782/oj).

([4]) Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC (OJ L, 2024/1781, 28.6.2024, ELI: http://data.europa.eu/eli/reg/2024/1781/oj).

(7) The review confirms that EPS are expected to continue being sold in large numbers. The environmental aspects of EPS identified as significant for the purposes of Article 15 of Directive 2009/125/EC, are the consumption of energy during the use phase, the generation of waste at the end of life, and emissions to air during the production and use phases.

(8) Gross annual energy consumption by EPS subject to Regulation (EU) 2019/1782 is estimated at 69 PJ/year in 2020. In a business-as-usual scenario, that consumption is expected to increase to 75 PJ/year in 2030 and 84 PJ/year in 2040 as a result of an increase in the number of EPS.

(9) The Union circular economy action plan ([5]) and the Ecodesign and Energy Labelling Working Plan 2022-2024 underline the importance of using the ecodesign framework to support the move towards a more resource-efficient and circular economy. It is estimated that the service lifetime of EPS is limited by the shorter lives of the end-use products they power. This Regulation should therefore lay down appropriate requirements that will contribute to achieving circular economy objectives, in particular making as many EPS used with one or more separate consumer products interoperable as is feasible.

(10) The review referred to in recital 5 indicates that there is around a 5 percentage points range in active mode efficiency of EPS. There is also a range of efficiency at 10 % load. Those ranges mean that the minimum threshold for energy efficiency could be raised and that a minimum efficiency at 10 % load could be introduced, taking the life cycle cost into account. If existing ecodesign requirements are updated to remove EPS with low energy efficiency performance from the market, electricity savings of about 0,7 TWh/year could potentially be achieved by 2035.

(11) It is appropriate to include in the scope of this Regulation wireless chargers, wireless charging pads and battery chargers for portable batteries of general use as defined in Regulation (EU) 2023/1542 of the European Parliament and of the Council ([6]), so that their power supply component is normally externalised and therefore covered by the efficiency and interoperability requirements. Wireless chargers and wireless charging pads should also be subject to standby consumption limits. In addition, USB Type-C cables should be subject to ecodesign requirements to ensure that their energy losses remain within the limits set by relevant USB standards and that they are marked on their connectors to inform consumers of the maximum power supported.

(12) The EPS definition should no longer be restricted to those devices with an output power lower than 250 W which are used with a limited subset of household and office products. Instead, it should be aligned with international standards and regulations, broadening the scope of the Regulation for example in relation to EPS powering a wider range of household and office products, including those with higher power. It should also clarify that EPS sold as stand-alone products are subject to ecodesign requirements.

(13) Directive 2014/53/EU of the European Parliament and of the Council ([7]) requires USB Type-C as the common charging receptacle for specific categories of radio equipment including smartphones, tablets or laptops. This has determined that EPS powering these products 'de facto' become USB Type-C EPS. It is appropriate to set a direct and explicit requirement to underpin this relationship, and also to extend this requirement to EPS powering a broader range of products, beyond those covered by the Directive 2014/53/EU in order to maximise interoperability.

([5]) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – 'A new Circular Economy Action Plan. For a cleaner and more competitive Europe' (COM(2020) 98 final) (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2020:98:FIN).

([6]) Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC (OJ L 191, 28.7.2023, p. 1, ELI: http://data.europa.eu/eli/reg/2023/1542/oj).

([7]) Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC (OJ L 153, 22.5.2014, p. 62, ELI: http://data.europa.eu/eli/dir/2014/53/oj).

(14) Information on the relevant interoperability specifications should be provided by means of a 'Common Charger' logo. This should be affixed to corresponding EPS to inform consumers that they are interoperable and that the same EPS can be used for a number of different devices or different generations of the same device. That would reduce the number of EPS required and facilitate their replacement, thus improving the environmental aspects of the product. The 'Common Charger' logo on EPS should complement the label required for powered products under the Directive 2014/53/EU which provides the end-user with the necessary information to select a suitable EPS.

(15) Interoperable EPS should also be marked at their output ports with an indication of the maximum power supported and should not be fitted with hard-wired Type-C cables to avoid premature disposal of EPS due to cable damage.

(16) EPS used for telecommunication applications, such as wireless routers, are normally designed to have a high level of surge protection that should allow them to function also after, for example, a lightning event. Interoperable EPS should be fitted with such protection to be able to be used with those applications and to have in general an improved resistibility to surge events.

(17) Certain EPS should be excluded from the interoperability aspects of this Regulation – in particular for safety reasons – where specific requirements based on sectoral legislation exist (for example for EPS used in wet conditions, EPS for products covered by other specific requirements such as toys, and EPS subject to specific operating conditions such as high levels of electrostatic discharge). In addition, EPS for products permanently installed in fixed building locations, like for example electric roller blinds, wireless internet access points on walls or ceilings, or wall-mounted control panels, should also be exempt from the interoperability requirements due to possible constraints regarding the installation of their power supply cables.

(18) Products that are functionally integrated and designed to be used solely with means of transport for persons or goods are excluded from the scope of the ecodesign framework legislation. Therefore, it is relevant to explicitly mention that the ecodesign requirements set under this Regulation should not apply to EPS designed to be used only with means of transport for persons or goods. However, when reviewing this Regulation under the framework of Regulation (EU) 2024/1781, the appropriateness of setting requirements also for EPS used with light means of transport such as e-bikes and e-scooters should be assessed.

(19) The relevant product parameters should be measured using reliable, accurate and reproducible methods. These methods should be updated, taking into account recognised state-of-the-art measurement methods, including, where available, harmonised standards adopted by the European standardisation organisations listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council ([8]).

(20) EPS are subject to increasing complexity, in particular regarding adaptive devices with multiple voltages available at the same port, and devices with multiple such ports. Test procedures should be updated accordingly and aligned with international state of the art methods, in particular and to the extent feasible with the test procedure of the Department of Energy of the United States of America, laid down in Appendix Z to Subpart B of Part 430 of Title 10, Chapter II, Subchapter D of the Code of Federal Regulations, 87 FR 51221, in its version applicable on 19 August 2022. This test procedure should be therefore included in this Regulation as a transitional test method to be used until corresponding harmonised standards become available.

([8]) 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, ELI: http://data.europa.eu/eli/reg/2012/1025/oj).

(21) USB Type-C EPS are interoperable and can be used with USB cables with different properties that affect their overall energy efficiency to a varying extent. It is therefore important to ensure a level playing field for these EPS by considering a standardised and commonly used test cable with fixed parameters. Applying a correction factor to the results of the testing performed without a cable eliminates the need for such a physical USB cable at the test and reduces measurement uncertainty.

(22) To provide reliable user information and not affect the operation of the powered consumer product, an EPS in active mode should be able to continuously supply the specified nameplate output current without a significant drop in the corresponding nameplate output voltage.

(23) Certain EPS denoted as 'dynamic power supplies' may be designed to be able to supply a maximum power only for a short period of time in the order of several minutes, followed by a lower continuous power, denoted also as guaranteed power. Such an EPS should be tested at conditions based only on the guaranteed power and the information requirements should refer to the guaranteed power, in particular as the EPS may also be used continuously.

(24) Interoperability requirements should take into account established industrial conventions and the terminology used in the following families of standards: USB-PD Specification, USB Cable and Connector Specification, ITU-T Recommendations K.21 and K.44, EN IEC 55035, IEC 60335-1, IEC 61140 and EN 50160.

(25) In accordance with Article 8(2) of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.

(26) To facilitate compliance checks, manufacturers, importers or authorised representatives should provide information in the technical documentation referred to in Annexes IV and V to Directive 2009/125/EC in so far as that such information relates to the requirements laid down in this Regulation.

(27) In accordance with Part 3, point 2, of Annex I to Directive 2009/125/EC, indicative benchmarks for best available technologies should be identified in order to make information on the life-cycle environmental performance of products subject to this Regulation widely available and easily accessible.

(28) This Regulation should be reviewed to assess the appropriateness and effectiveness of its provisions in achieving its goals. The timing of the review should be sufficient to allow all provisions to be implemented and produce an effect on the market while taking account of the evolution of relevant technology.

(29) Regulation (EU) 2019/1782 should be repealed with effect from 14 December 2028, with the exception of its Annexes I, II and III that should remain in application for five years after the date of application of this Regulation. This allows temporarily the placing on the market of spare part EPS which enable the powered device placed on the market before the entry into application of this Regulation to continue to be used. The spare part EPS should in this case comply with the ecodesign requirements applicable at the time of placing on the market of the original EPS. In addition, on grounds of technological novelty, placing on the market of USB-PD EPS with an extended power range higher than 100 W, which comply with the energy efficiency requirements of Regulation (EU) 2019/1782 instead of the energy efficiency requirements of this Regulation, should also be possible for a period of two years after the date of application of this Regulation.

(30) To facilitate an earlier implementation of the measures of this Regulation and reduce the administrative burden of early adopters, an EPS compliant with the requirements of this Regulation and placed on the market after the date of its entry into force and before its entry into application should automatically be considered compliant with Regulation (EU) 2019/1782.

(31) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 19(1) of Directive 2009/125/EC,

HAS ADOPTED THIS REGULATION:

Article 1

Subject matter and scope

1. This Regulation lays down ecodesign requirements for the placing on the market or putting into service of external power supplies (EPS), battery chargers for portable batteries of general use, wireless chargers, wireless charging pads and USB Type-C cables.

2. This Regulation shall not apply to:

(a) uninterruptible power supplies, meaning devices that automatically provide backup power from storage when the electrical power from the mains power source drops to an unacceptable voltage level;

(b) separate control gears, as defined in Article 2, first paragraph, point (3), of Commission Regulation (EU) 2019/2020 ([9]), with the exception of separate control gears in battery-operated products, as referred to in point 2(c) of Annex III to that Regulation and that do not fall under another exemption referred to in Annex III to that Regulation;

(c) separate control gears for luminaires for emergency lighting, as referred to in Annex I to Commission Implementing Decision (EU) 2019/1956 ([10]);

(d) separate control gears for low luminous flux light sources;

(e) EPS designed, tested and marketed to be used exclusively with medical devices, as defined in Article 2(1) of Regulation (EU) 2017/745 ([11]);

(f) docking stations for autonomous appliances, meaning devices in which a battery-operated appliance that executes tasks requiring the appliance to move without any user intervention places itself for charging;

(g) EPS designed, tested and marketed to be used exclusively with means of transport for persons or goods;

(h) consumer products for which the primary load of the converted voltage within the consumer products themselves is not supplied to a separate end-use product.

Article 2

Definitions

For the purposes of this Regulation, the following definitions shall apply:

(1) 'external power supply' (EPS) means a product which is neither a battery charger nor a wireless charger and meets all the following criteria:

  (a) it is designed to convert single-phase alternating current (AC) power input from the mains power source into one or more direct current (DC) or AC power outputs;

  (b) it is capable of being used with one or more separate consumer products that constitute the primary load;

([9]) Commission Regulation (EU) 2019/2020 of 1 October 2019 laying down ecodesign requirements for light sources and separate control gears pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulations (EC) No 244/2009, (EC) No 245/2009 and (EU) No 1194/2012 (OJ L 315, 5.12.2019, p. 209, ELI: http://data.europa.eu/eli/reg/2019/2020/oj).

([10]) Commission Implementing Decision (EU) 2019/1956 of 26 November 2019 on the harmonised standards for electrical equipment designed for use within certain voltage limits and drafted in support of Directive 2014/35/EU of the European Parliament and of the Council (OJ L 306, 27.11.2019, p. 26, ELI: http://data.europa.eu/eli/dec_impl/2019/1956/oj).

([11]) Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (OJ L 117, 5.5.2017, p. 1, ELI: http://data.europa.eu/eli/reg/2017/745/oj).

(c) it is contained in a physical enclosure that is separate from the consumer product or products that constitute the primary load;

(d) it is designed to be connected to the consumer product or products that constitute the primary load with a removable electrical connection, or with hard-wired cables or other wiring;

(e) its nameplate output voltage does not exceed 60 V DC or 42,4 V peak AC;

(f) it is placed on the market with or without the powered consumer product;

(2) 'battery' means a battery as defined in Article 3(1), point (1), of Regulation (EU) 2023/1542;

(3) 'battery charger' means a consumer product that is primarily used to charge the batteries of consumer products, and that contains dedicated circuitry to regulate the charging current and voltage;

(4) 'portable battery of general use' means a type of battery as defined in Article 3(1), point (10) of Regulation (EU) 2023/1542;

(5) 'wireless charger' means a consumer product that meets all of the following criteria:

(a) it is designed to transmit power not exceeding 50 W by inductive coupling;

(b) it contains a power supply integrated into the same unit;

(c) it is capable of being used with one or more separate consumer products that constitute the primary load;

(d) it is contained in a physical enclosure separate from the consumer product or products that constitute the primary load;

(e) it has no electric power source apart from the AC input power;

(6) 'wireless charging pad' means a consumer product that meets the criteria laid down in letters (a), (c), (d) and (e) of point (5) and does not contain a power supply integrated into the same unit;

(7) 'USB Type-C cable' means a cable assembly with USB Type-C plugs and overmoulds at both ends, with a power rating of either 60 W or 240 W, that meets the requirements laid down in the 'Universal Serial Bus Type-C® Cable and Connector Specification, Release 2.4, October 2024', issued by the USB 3.0 Promoter Group and the Universal Serial Bus Implementers Forum (USB-IF);

(8) 'USB Type-C plug' means a plug that meets the requirements laid down in the 'Universal Serial Bus Type-C® Cable and Connector Specification, Release 2.4, October 2024', issued by the USB 3.0 Promoter Group and the USB-IF;

(9) 'separate control gear for low luminous flux light sources' means a separate control gear as defined in Article 2, first paragraph, point (3) of Regulation (EU) 2019/2020 whose light source does not fulfil the requirement laid down in point (1)(c) of the same paragraph, and has instead a luminous flux of less than 60 lumen;

(10) 'mains' means the standard EU electricity supply as specified in standard EN 50160:2022 'Voltage characteristics of electricity supplied by public electricity networks';

(11) 'output' means a physical outlet of the EPS through which electrical power or data is provided to the load connected to it;

(12) 'power output' means any of the outputs of the EPS to which a load can be connected and from which power can be drawn, as opposed to signal connections used for communication through a data output;

(13) 'consumer product' means a product that operates or is designed to operate with electric energy, and is placed on the market, including in the context of providing a service, which is intended for consumers or is likely, under reasonably foreseeable conditions, to be used by consumers even if not intended for them;

(14) ‘hard-wired cable’ means a cable directly fixed to a product without any intermediate connector in such a way that it is not designed or intended to be detached by end-users;

(15) ‘nameplate output voltage’ means any output voltage of the EPS as provided on the EPS nameplate pursuant to point 5(a) of Annex II to this Regulation, or displayed in Table 7, ‘Product information’, pursuant to point 5(g) of the same Annex;

(16) ‘active mode’ means a condition in which the input of an EPS is connected to the mains power source and a power output is connected to a primary load that is in operation;

(17) ‘port’ means a physical, electrical and digital interface of the EPS for the supply of electrical power as well as exchange of data and control signals through a receptacle, and that has one corresponding power output;

(18) ‘nameplate output power’ (P_{out}) means any output power of the EPS as provided on the EPS nameplate pursuant to point 5(a) of Annex II to this Regulation, or displayed in Table 7, ‘Product information’, pursuant to point 5(g) of the same Annex;

(19) ‘low-voltage EPS’ means an EPS with a nameplate output voltage less than 6 V and a nameplate output current greater than or equal to 550 mA;

(20) ‘model identifier’ means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trade mark or the same manufacturer’s, importer’s or authorised representative’s name;

(21) ‘adaptive EPS’ means an AC-DC EPS that can alter the output voltage at one of its ports, denoted as ‘adaptive port’, during the active-mode on the basis of an established digital communication protocol with the end-use application without any user-triggered action;

(22) ‘nameplate output current’ means any output current of the EPS as displayed in Table 7, ‘Product information’, pursuant to point 5(g) of Annex II to this Regulation;

(23) ‘active mode efficiency’ means the ratio of the power supplied by an EPS in active mode to the input power required by the EPS;

(24) ‘receptacle’ means a component of the EPS with an opening to the exterior allowing a plug to be inserted into it and that provides an electro-mechanical connection between the plug and the EPS;

(25) ‘total maximum output power’ means the maximum power that can be supplied by any combination or subset of the power outputs of an EPS operated simultaneously;

(26) ‘USB power delivery (USB-PD) port’ means an adaptive EPS port that meets the requirements laid down in the ‘Universal Serial Bus Power Delivery Specification, Revision 3.2, Version 1.1, 2024-10’ and the ‘Universal Serial Bus Type-C® Cable and Connector Specification, Release 2.4, October 2024’ issued by the USB 3.0 Promoter Group and the USB-IF;

(27) ‘single-voltage EPS’ means an EPS able to convert AC power to only one output voltage at a time which is supplied through one or more power outputs;

(28) ‘declared values’ means the values provided by the manufacturer, importer or authorised representative for the stated, calculated or measured technical parameters in accordance with Article 4, for the verification of compliance by the Member State authorities;

(29) ‘Common Charger logo’ means a logo that meets the requirements set out in Annex III to this Regulation;

(30) ‘spare part EPS’ means an EPS which is not an interoperable EPS and is intended solely to replace an EPS placed on the market before 14 December 2028.

Article 3

Ecodesign requirements

EPS, wireless chargers, wireless charging pads, battery chargers for portable batteries of general use and USB Type-C cables shall meet the ecodesign requirements set out in Annex II and Annex III to this Regulation.

Article 4

Conformity assessment

1. The conformity assessment procedure referred to in Article 8(2) of Directive 2009/125/EC shall be the internal design control system set out in Annex IV to that Directive or the management system set out in Annex V to that Directive.

2. For the purposes of the conformity assessment referred to in Article 8(2) of Directive 2009/125/EC, the technical documentation file shall contain:

(a) the declared values of parameters listed in point 6 of Annex II to this Regulation, as applicable;

(b) the product information provided in accordance with points 2, 3, 4, 5 and 6 of the same Annex; and

(c) the details and results of the calculations carried out in accordance with Annex IV to this Regulation.

3. Where the information included in the technical documentation for a particular model has been obtained by either of the following means, the technical documentation shall include the details of the calculation, the assessment undertaken by the manufacturer to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers:

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

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

4. The technical documentation shall include a list of all equivalent models, including the model identifiers.

Article 5

Verification procedure for market surveillance purposes

Member States' authorities shall apply the verification procedure laid down in Annex V to this Regulation when performing the market surveillance checks referred to in Regulation (EU) 2019/1020 of the European Parliament and of the Council ([12]).

([12]) Regulation (EU) 2019/1020 of the European Parliament and of the Council of 20 June 2019 on market surveillance and compliance of products and amending Directive 2004/42/EC and Regulations (EC) No 765/2008 and (EU) No 305/2011 (OJ L 169, 25.6.2019, p. 1, ELI: http://data.europa.eu/eli/reg/2019/1020/oj).

Article 6

Benchmarks

The benchmarks for the best-performing products and technologies available on the market at the date of entry into force of this Regulation are as set out in Annex VI to this Regulation.

Article 7

Review

The Commission shall review this Regulation in the light of technological progress and shall present the results of this review, including, if appropriate, a draft revision proposal, to the Ecodesign Forum pursuant to Article 19 of Regulation (EU) 2024/1781 by 14 December 2030.

The review shall assess in particular:

(a) the scope of the Regulation and in particular the scope of the interoperability requirements;

(b) the interoperability requirements in light of the evolution of adaptive power supplies;

(c) the usage and effectiveness of the Common Charger logo;

(d) the limit values of the energy efficiency requirements;

(e) the tolerances permitted for setting the load currents;

(f) the appropriateness of additional efficiency requirements considering power factor correction;

(g) the appropriateness of setting up an EPS database with technical information;

(h) the appropriateness of active mode energy efficiency requirements for wireless chargers and wireless charging pads;

(i) whether part pairing is an element of concern for EPS, wireless chargers or wireless charging pads;

(j) the appropriateness of resource efficiency requirements like for example repairability, dismantability or recyclability;

(k) the appropriateness of additional information requirements concerning critical raw materials;

(l) the appropriateness of durability and reliability requirements, for example considering the lifetime and the mean-time-between-failure.

Article 8

Repeal

Regulation (EU) 2019/1782 is repealed with effect from 14 December 2028 except for the provisions laid down in Article 9 of this Regulation.

Article 9

Transitional provisions

1. Annexes I, II and III to Regulation (EU) 2019/1782 shall continue to apply to spare part EPS until 14 December 2033 instead of the requirements set out in Annex I, II, III, IV and V to this Regulation, provided that:

(a) in the range of products offered by the manufacturer, importer or authorised representative, there is no EPS that can be used with the powered product, which is compliant with this Regulation, except for the interoperability requirements, and

(b) the manufacturer, importer or authorised representative clearly indicates on the packaging and the free access website specified in point 2(b) of Annex II to Regulation (EU) 2019/1782 'External power supply to be used exclusively as spare part for', the replaced EPS model, and the powered product(s) they are intended to be used with.

2. Point 1 of Annex II to Regulation (EU) 2019/1782 shall continue to apply to EPS with a USB-PD port with a nameplate output power higher than 100 W until 14 December 2030 instead of the requirements set out in point 1 of Annex II to this Regulation.

3. EPS placed on the market between 14 December 2025 and 14 December 2028 which meet the requirements set out in this Regulation shall be considered to comply with the requirements of Regulation (EU) 2019/1782.

Article 10

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 14 December 2028. However, point 3 of Article 9 shall apply from 14 December 2025.

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

Done at Brussels, 13 October 2025.

For the Commission
The President
Ursula VON DER LEYEN

ANNEX I

DEFINITIONS APPLICABLE FOR THE PURPOSES OF THE ANNEXES

(1) 'no-load condition' means the condition in which the input of an EPS is connected to the mains power source but no power output is connected to any primary load;

(2) 'basic-voltage EPS' means an EPS that is not a low-voltage EPS;

(3) 'low load efficiency' means the active mode efficiency at 10 % of the nameplate output power;

(4) 'average active efficiency' means the average of the active mode efficiencies at 25 %, 50 %, 75 % and 100 % of the nameplate output power;

(5) 'multiple-voltage EPS' means an EPS able to convert AC power from a mains power source to more than one output voltage and provide them simultaneously to more than one power outputs;

(6) 'dynamic EPS' means an EPS designed to be able to supply a maximum power only for a short period of time in the order of several minutes, followed by a lower power that can be indefinitely sustained, denoted also as guaranteed power;

(7) 'guaranteed power' means the lower power provided by a dynamic power supply that can be indefinitely sustained;

(8) 'user-selectable EPS' means a single-voltage EPS that allows users to select more than one output voltage;

(9) 'standby mode' means a condition as defined in Article 2, point (3) of Commission Regulation (EU) 2023/826 ([1]);

(10) 'USB Type-C port' means an EPS port that meets the requirements laid down in the 'Universal Serial Bus Type-C® Cable and Connector Specification, Release 2.4, October 2024', issued by the USB 3.0 Promoter Group and the USB-IF;

(11) 'interoperable EPS' means an AC-DC EPS that meets the requirements set out in point 3(b) of Annex II to this Regulation;

(12) 'electrical enclosure' means a cabinet for electrical or electronic equipment used to prevent electrical shock to end-users and protect the contents from the environment. The equipment can be, for example, fastened on standardised mounting rails. Socket back boxes fitted into walls or similar building structures intended to house electrical outlets, switches, or other similar devices, are not considered electrical enclosures for the purpose of this Regulation;

(13) 'power tool' means an electrical or electronic tool falling within the category provided for in point 6 of Annex II to Directive 2012/19/EU of the European Parliament and of the Council ([2]);

(14) 'charging cradle' means a consumer product which connects by means of conduction, either through direct contact or a fixed connector attached to its main body, to a battery-powered product which is placed in it for the purpose of charging. A charging cradle with the power supply integrated into the same unit and which meets the criteria laid down in point (1) of Article 2 of this Regulation is an EPS;

(15) 'power over Ethernet injector' means an EPS which has one or more Ethernet input and/or one or more Ethernet output ports, and is able to deliver power to one or several consumer products connected to the Ethernet output port(s);

(16) 'peak power demand' means the maximum power higher than the nameplate output power which can be required by the powered consumer product from the EPS for a very short time during normal operation;

([1]) Commission Regulation (EU) 2023/826 of 17 April 2023 laying down ecodesign requirements for off mode, standby mode, and networked standby energy consumption of electrical and electronic household and office equipment pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulations (EC) No 1275/2008 and (EC) No 107/2009 (OJ L 103, 18.4.2023, p. 29, ELI: http://data.europa.eu/eli/reg/2023/826/oj).

([2]) Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (OJ L 197, 24.7.2012, p. 38, ELI: http://data.europa.eu/eli/dir/2012/19/oj).

(17) ‘fixed output voltages’ means a set of defined standard output voltages of an adaptive EPS. The USB-PD fixed voltages are 5 V, 9 V, 15 V, 20 V, 28 V, 36 V and 48 V;

(18) ‘USB Type-C receptacle’ means a receptacle that meets the requirements laid down in the ‘Universal Serial Bus Type-C® Cable and Connector Specification, Release 2.4, October 2024’, issued by the USB 3.0 Promoter Group and the USB-IF;

(19) ‘shared capacity ports’ means the power outputs of an EPS where the sum of their nameplate output power when operated individually is greater than the maximum achievable combined output power when operated simultaneously;

(20) ‘class I interoperable EPS’ means an interoperable EPS with at least one provision for basic protection and a connection to a protective conductor as provision for fault protection, in line with with international standards;

(21) ‘class II interoperable EPS’ means an interoperable EPS with basic insulation as provision for basic protection, and supplementary insulation as provision for fault protection, or in which basic protection and fault protection are provided by reinforced insulation, in line with international standards;

(22) ‘shared capacity USB-PD ports’ means shared capacity ports that meet the requirements laid down in ‘Universal Serial Bus Power Delivery Specification, Revision 3.2, Version 1.1, 2024-10’ issued by the USB 3.0 Promoter Group and the USB-IF;

(23) ‘equivalent model’ means a model which has the same technical characteristics relevant for all aspects of the technical information to be provided, but which is placed on the market or put into service by the same manufacturer, importer or authorised representative as another model with a different model identifier.

ANNEX II

ECODESIGN REQUIREMENTS REFERRED TO IN ARTICLE 3

1. **Energy efficiency requirements**

The following energy efficiency requirements shall apply:

(a) The no-load condition power consumption of EPS shall not exceed the values set out in Table 1.

Table 1

No-load power consumption limit values for EPS

Nameplate output power	Single-voltage AC-DC EPS Basic-Voltage	Single-voltage AC-DC EPS Low-Voltage	Single-voltage AC-AC EPS Basic-Voltage	Single-voltage AC-AC EPS Low-Voltage	Multiple-voltage EPS except adaptive EPS	Multiple-voltage adaptive EPS (1)
$P_{out} \leq 49$ W	0,075 W	0,075 W	0,150 W	0,100 W	0,100 W	0,075 W + (*N*- 1) × 0,025 W
49 W < $P_{out} \leq 250$ W	0,150 W	0,150 W	0,150 W	0,210 W	0,150 W	0,150 W + (*N*- 1) × 0,025 W
$P_{out} > 250$ W	0,150 W	0,150 W	0,300 W	0,500 W	0,150 W	0,150 W + (*N*- 1) × 0,025 W

(1) For multiple-voltage adaptive EPS the no-load power consumption shall not exceed 0,300 W regardless of the number of adaptive ports and unique fixed output voltages supplied through other power outputs. *N* is the sum of the number of adaptive ports and the number of unique fixed output voltages supplied through other power outputs.

(b) The low load efficiency shall not be less than the values set out in Table 2 for EPS with a nameplate output power exceeding 10 W, except for adaptive EPS.

Table 2

Low load efficiency limit values for EPS except for adaptive EPS

Nameplate output power	Single-voltage AC-DC EPS Basic- Voltage	Single-voltage AC-AC EPS Basic-Voltage	Single-voltage EPS Low- Voltage	Multiple-voltage EPS
10 W < $P_{out} \leq 49$ W	0,071 × ln(P_{out}/1 W) – 0,00115 × P_{out}/1 W + 0,61	0,0582 × ln(P_{out}/1 W) – 0,00104 × P_{out}/1 W + 0,667	0,0834 × ln(P_{out}/1 W) – 0,0011 × P_{out}/1 W + 0,549	0,078 × ln(P_{out}/1 W) – 0,0013 × P_{out}/1 W + 0,58
49 W < P_{out}	0,83	0,842	0,82	0,82

(c) The low load efficiency shall not be less than the values set out in Table 3 for adaptive EPS with a nameplate output power exceeding 10 W.

Table 3

Low load efficiency limit values for adaptive EPS

Nameplate output power	Single-voltage adaptive EPS Basic- Voltage	Single-voltage adaptive EPS Low- Voltage	Multiple-voltage adaptive EPS
$10\ W < P_{out} \leq 49\ W$	$0{,}071 \times \ln(P_{out}/1\ W) - 0{,}00115 \times P_{out}/1\ W + 0{,}57$	$0{,}0834 \times \ln(P_{out}/1\ W) - 0{,}0011 \times P_{out}/1\ W + 0{,}509$	$0{,}078 \times \ln(P_{out}/1\ W) - 0{,}0013 \times P_{out}/1\ W + 0{,}54$
$49\ W < P_{out}$	0,79	0,78	0,78

(d) The average active efficiency of EPS shall not be less than the values set out in Table 4.

Table 4

Average active efficiency limit values for EPS

Nameplate output power	Single-voltage AC-DC EPS Basic- Voltage	Single-voltage AC-AC EPS Basic-Voltage	Single-voltage EPS Low- Voltage	Multiple-voltage EPS
$P_{out} \leq 1\ W$	$0{,}5 \times P_{out}/1\ W + 0{,}169$	$0{,}5 \times P_{out}/1\ W + 0{,}169$	$0{,}517 \times P_{out}/1\ W + 0{,}091$	$0{,}497 \times P_{out}/1\ W + 0{,}067$
$1\ W < P_{out} \leq 49\ W$	$0{,}071 \times \ln(P_{out}/1\ W) - 0{,}00115 \times P_{out}/1\ W + 0{,}67$	$0{,}0582 \times \ln(P_{out}/1\ W) - 0{,}00104 \times P_{out}/1\ W + 0{,}727$	$0{,}0834 \times \ln(P_{out}/1\ W) - 0{,}0011 \times P_{out}/1\ W + 0{,}609$	$0{,}078 \times \ln(P_{out}/1\ W) - 0{,}0013 \times P_{out}/1\ W + 0{,}64$
$49\ W < P_{out}$	0,89	0,902	0,88	0,88

(e) The relevant load conditions are set out in Table 5.

Table 5

Load conditions for EPS

Percentage of reference output current [1], [2]	
Load condition 1	100 % ±2 % pp
Load condition 2	75 % ±2 % pp
Load condition 3	50 % ±2 % pp
Load condition 4	25 % ±2 % pp
Load condition 5 (low load condition)	10 % ±1 % pp
Load condition 6 (no-load condition)	0 %

[1] The reference output current shall be the nameplate output current except for USB-PD ports which can supply 3 A at the lowest output voltage for which the reference output current at the lowest output voltage shall be 2 A for load conditions 1 to 4 and 6.

[2] For shared capacity ports, the reference output current shall be derated according to the proportional allocation method.

(f) For EPS with multiple power outputs, the nameplate output power (P_{out}) shall be the sum of the nameplate output power of each power output when providing power at the specified load conditions.

(g) For dynamic EPS, the nameplate output power for the purpose of the energy efficiency requirements (P_{out}) shall be the guaranteed power.

(h) Adaptive EPS, including multiple-voltage adaptive EPS, shall meet the no-load power consumption limit values laid down in point (a) only at the lowest nameplate output voltage. For this purpose, the nameplate output power (P_{out}) shall be the nameplate output power at the lowest nameplate output voltage, with the exception of USB-PD ports of EPS which can supply 3 A at that voltage for which P_{out} shall be the product between that voltage and the reference output current of 2 A.

(i) Adaptive EPS, including multiple-voltage adaptive EPS, shall meet the low load and average active efficiency limit values laid down in points (c) and (d) at both the lowest and highest nameplate output voltage in each case. For the average active efficiency, the nameplate output power (P_{out}) shall be the nameplate output power at the lowest and highest nameplate output voltage respectively, with the exception of USB-PD ports of EPS which can supply 3 A at the lowest output voltage for which P_{out} at that voltage shall be the product between that voltage and the reference output current of 2 A. For low load efficiency, the nameplate output power (P_{out}) shall be the nameplate output power at the lowest and highest nameplate output voltage respectively.

(j) A multiple-voltage EPS shall meet the energy efficiency requirements for multiple-voltage EPS regardless whether any of its power outputs fulfills at any output voltage the criteria for a low-voltage or basic-voltage EPS.

(k) If a single-voltage adaptive EPS fulfils at the lowest output voltage the criteria for a low-voltage EPS, it shall meet at that condition the energy efficiency requirements for low-voltage EPS.

(l) A user-selectable EPS shall meet the energy efficiency requirements at the lowest and highest selectable nameplate output voltage. If at the lowest output voltage it fulfils the criteria for a low-voltage EPS, it shall meet at that condition the energy efficiency requirements for low-voltage EPS, otherwise those for basic-voltage EPS. If at the highest output voltage it fulfils the criteria for a low-voltage EPS, it shall meet at that condition the energy efficiency requirements for low-voltage EPS, otherwise those for basic-voltage EPS.

(m) For EPS fulfilling other main functions in addition to converting mains electricity into DC or AC power, the components that fulfil these other functions may be disconnected or disabled, provided that this does not affect the ability of the product to convert mains electricity into DC or AC power.

(n) The standby mode power consumption of wireless charging pads except for wireless charging pads connected with the EPS by a DC cable hard-wired at both ends, shall not be higher than 0,50 W at the DC input.

(o) The standby mode power consumption of wireless chargers with the power supply integrated into the same unit and wireless charging pads connected with the EPS by a DC cable hard-wired at both ends shall not be higher than 0,80 W at the AC input.

(p) If a wireless charger with the power supply integrated into the same unit or a wireless charging pad fulfils other main functions in addition to transmitting power by inductive coupling, the components of the product that fulfil these functions may be disconnected or disabled before testing so that the test measurements do not include the additional power used by them, as long as disconnecting or disabling such components does not affect the power transmission ability of the product.

2. **Power output performance requirements**

(a) The declared output voltage of EPS as referred to in Table 8 shall not be more than 10 % less than the corresponding nameplate output voltage for power outputs other than those of USB Type-C or USB-PD ports at any of the applicable nameplate output currents.

(b) The declared output voltage as referred to in Table 8 shall not be more than 5 % less than the corresponding nameplate output voltage for the power outputs of USB Type-C or USB-PD ports at any of the applicable nameplate output currents.

(c) For adaptive power supplies points (a) and (b) apply to each fixed output voltage of each port operated individually. For shared capacity ports, they apply also to the applicable 100 % load condition.

3. **Interoperability requirements**

(a) An AC-DC EPS shall be an interoperable EPS that meets all the requirements set out in point (b) unless it fulfils the requirements set out in point (c).

(b) An interoperable EPS shall satisfy all the following requirements:

(1) it shall be fitted with at least one USB Type-C or USB-PD port;

(2) the operation of the USB Type-C and USB-PD ports shall be independent from any power output unless they are shared capacity USB-PD ports which may depend on one another;

(3) the maximum nameplate output power of a single power output shall be supplied at a USB Type-C or USB-PD port;

(4) it shall have no hard-wired output cable at the USB Type-C or USB-PD ports.

(c) An AC-DC EPS is not required to be an interoperable EPS if it satisfies at least one of the following conditions:

(1) it has a nameplate output power greater than 100 W;

(2) it has a nameplate output voltage higher than 48 V;

(3) it has a maximum nameplate output voltage less than or equal to 4,5 V;

(4) it has a nameplate output voltage higher than 20 V combined with a nameplate output power less than 25 W;

(5) it is a user-selectable EPS;

(6) it is a power over Ethernet injector;

(7) it is a charging cradle;

(8) it is designed, tested and marketed to be exclusively installed in an electrical enclosure with a permanent AC mains connection that is not designed to be accessed or detached by end-users;

(9) it is designed, tested and marketed to be used exclusively with any of the following consumer products:

(i) consumer products whose operation requires a DC power supply cable longer than 4 m;

(ii) consumer products designed, tested and marketed to be exclusively installed inside or on a wall, ceiling or similar building structures;

(iii) consumer products designed to be powered in a wet environment which require that the EPS is subject to a liquid ingress protection level of IPX3 or higher as a result of applicable safety, performance or reliability requirements or standards;

(iv) consumer products whose operation require that the EPS withstands electrostatic discharge at test levels greater than 8 kV for contact discharge and 15 kV for air discharge, as a result of applicable safety performance or reliability requirements or standards;

(v) consumer products within the scope of Directive 2009/48/EC of the European Parliament and of the Council [1], including their charging cradles, or with electric model trains and their accessories;

(vi) power tools, including their charging cradles or other accessories, which fulfil one of the following conditions:

— operate with removable batteries;

— operate with integrated batteries with a nominal voltage higher than 7,2 V;

— are designed, tested and marketed for outdoor use;

(vii) audio equipment used primarily for recording, processing or reproducing sound, which has no internal battery charging circuit;

(viii) consumer products with a peak power demand of more than 130 % of their nameplate output power for more than 15 ms, provided that the nameplate output power and the peak power can not be supplied by a USB-PD port at the same fixed output voltage;

(ix) corded phones or base stations for cordless phones which have an analogue line connection.

(d) Each USB Type-C receptacle of EPS shall be associated with a USB Type-C or a USB-PD port.

(e) The following equipment shall be powered by interoperable EPS and fitted at the DC input with a USB Type-C receptacle associated to a USB Type-C or USB-PD port, unless the prongs for insertion into the mains socket form an integral part of the main body of that equipment:

(1) battery chargers for portable batteries of general use, with an input power not exceeding 100 W;

(2) wireless chargers and wireless charging pads which are not intended to be used with the equipment falling under the scope of point 3(c), and which are not fastened to a support or secured in a specific location.

(f) Cables placed on the market with USB Type-C plugs at both ends shall be USB Type-C cables.

4. **Surge resistibility requirements for interoperable EPS**

(a) A Class I or Class II interoperable EPS shall meet the power output performance requirements laid down in point (b) after it is subject to the surge test procedure set out in Annex IV point 3(g).

(b) The EPS shall be able to supply the output voltage as referred to in Table 8 of this Annex at any of the applicable nameplate output currents taking into account the corresponding verification tolerance laid down in Table 9 of Annex V. For adaptive power supplies this applies to each fixed output voltage of each port operated individually. For shared capacity ports, they apply also to the applicable 100 % load condition.

[1] Directive 2009/48/EC of the European Parliament and of the Council of 18 June 2009 on the safety of toys, (OJ L 170, 30.6.2009, p. 1, ELI: http://data.europa.eu/eli/dir/2009/48/oj).

5. **Information requirements**

(a) The nameplate of EPS shall include the applicable information set out in Table 6.

Table 6

Nameplate information requirements for EPS

Nameplate information	Value and precision ([1])	Unit	Notes
Output power	XXX,X	W	The nameplate output power shall be calculated by multiplying the nameplate output voltage and the corresponding nameplate output current provided in Table 7. The nameplate output voltage or, where applicable, the nameplate output voltage range, and the maximum nameplate output power shall be provided for each single power output. For shared capacity ports, the maximum combined nameplate output power shall also be provided. The total maximum nameplate output power shall also be provided. For dynamic EPS, parameters corresponding to the guaranteed output power shall be provided and they shall be denoted accordingly. Where applicable, the nameplate shall display the text 'USB-PD' as part of the information provided for each USB-PD port.
Output voltage AC or Output voltage DC	XX,X	V	
Total maximum output power	XXX,X	W	
Maximum combined output power for shared capacity ports (if applicable)	XXX,X	W	
Guaranteed output power for dynamic EPS (if applicable)	XXX,X	W	
The text 'USB-PD' as part of the information provided for each USB-PD port (where applicable)	—	—	

([1]) The decimal place is optional if its value is 0.

(b) Interoperable EPS shall be affixed with the Common Charger logo as specified in Annex III on their nameplate or enclosure, packaging and in the instruction manual. The logo shall also be displayed in a visible manner in the manufacturer's free acces website referred to in point (g)(2).

(c) The Common Charger logo shall not be affixed on or used in relation to the marketing of other products than interoperable EPS, unless required by Union law.

(d) Interoperable EPS shall be marked at each USB Type-C and USB-PD port with that port's maximum output power. Shared capacity USB-PD ports shall also indicate graphically the maximum combined output power that they share. The font size shall not be less than 2,56 mm in height.

(e) USB Type-C cables shall be marked on the overmoulds of the two plugs with the text '60W' or '240W' in accordance with the maximum supported power. The font size shall not be of less than 1,2 mm in height for the text '60' or '240' and not of less than 0,6 mm in height for the letter 'W'.

(f) The information displayed pursuant to point (a), (b), (d) and (e) shall be clearly visible, legible, and indelible.

(g) For EPS, the information set out in Table 7 shall be published in:

(1) the technical data sheet or user manual supplied with the EPS, unless an internet link or a QR code linking to the free access website referred to in point (2) is supplied with the EPS;

(2) a free access website of the EPS manufacturer, its authorised representative or the importer for a period of at least 10 years after the placing on the market of the last unit of the model concerned.

Table 7

Product information for EPS

Information published	Value and precision (1)	Unit	Notes
Manufacturer's name or trademark, commercial registration number and address	—	—	—
Model identifier	—	—	—
EPS type	— AC/DC EPS — AC/AC EPS — interoperable EPS — single-voltage EPS — multiple-voltage EPS — basic-voltage EPS — low-voltage EPS — adaptive EPS — EPS with shared capacity ports — dynamic EPS — user-selectable EPS — other	—	Select all applicable types.
Number of power outputs	XX	—	—
Input voltage	XXX	V	Value or range. The corresponding values declared in response to the requirements of Directive 2014/35/EU of the European Parliament and of the Council (2) shall be included.
Input AC frequency	XX	Hz	
Nameplate output voltage	XX,X	V	The notes laid down in Table 6 shall apply. In addition, where applicable, the combination of nameplate output power, voltage and current shall be provided for each single power output at each fixed output voltage. For each set of shared capacity ports, the maximum combined nameplate output power shall be provided together with corresponding output voltage and current for each port.
Nameplate output current	XX,X	A	
Nameplate output power	XXX,X	W	

Information published	Value and precision (1)	Unit	Notes
Power delivery standard (if applicable)	—	—	Name and version of all supported standards.
Number of adaptive ports (if applicable)	XX	—	Number of adaptive ports.
Number of unique fixed output voltages supplied by an adaptive EPS through non-adaptive ports (if applicable)	X	—	Number and value of the unique fixed voltages.
Average active efficiency	XX,X	%	Calculated as the arithmetical mean of the 'Active mode efficiency' at load conditions 1 to 4 in Table 5. For adaptive EPS and user-selectable EPS it applies for the lowest and highest output voltage.
Low load efficiency (10 %) (if applicable)	XX,X	%	Value of the 'Active mode efficiency' at load condition 5 in Table 5. For adaptive EPS and user-selectable EPS it applies for the lowest and highest output voltage. EPS with a nameplate output power of 10 W or less shall be exempted from the requirement in this row.
No-load power consumption	X,XXX	W	Value at load condition 6 in Table 5. For adaptive EPS it applies for the lowest output voltage. For user-selectable EPS it applies for the lowest and highest output voltage
Total harmonic distortion of the input voltage	X,X	%	Indicative values at load conditions 1, 3 and 5 (where applicable) in Table 5. For adaptive EPS and user-selectable EPS it applies for the lowest and highest output voltage.
True power factor	X,XX	—	
Total harmonic distortion of the input current	XXX	%	

(1) The decimal place is optional if its value is 0.
(2) Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits, (OJ L 96, 29.3.2014, p. 357, ELI: http://data.europa.eu/eli/dir/2014/35/oj).

6. **Technical documentation**

The technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:

(a) the reference of the standard(s) used for the conformity assessment of the applicable requirement(s);

(b) for EPS:

(1)

Table 8

Technical documentation for EPS

Declared Parameter	Notes
Output currents (mA) ([1])	Declared at load conditions 1 to 5 of Table 5 for EPS with a nameplate output power exceeding 10 W, otherwise at load conditions 1 to 4 of Table 5, and where applicable also at the additional conditions required in Table 6 and Table 7 and Annex IV.
Output voltages (V) ([1])	
Active output powers (W)	Declared at load conditions 1 to 5 of Table 5 for EPS with a nameplate output power exceeding 10 W, otherwise at load conditions 1 to 4 of Table 5, and where applicable also at the additional conditions required in Table 6 and Table 7 and Annex IV. For USB Type-C and USB-PD ports, the following cable correction factor shall be subtracted from each measurement result: $R_{cable} \times I_{out}^2$ Where: I_{out} is the output current, and R_{cable} = 0,130 Ω if the maximum nameplate output current of that port is not higher than 3 A, otherwise R_{cable} = 0,100 Ω. Where applicable, the active output power (W) shall be the sum of the active output power at each power output.
Root mean square input power (W)	Declared at load conditions 1 to 6 of Table 5 for EPS with a nameplate output power exceeding 10 W, otherwise at load conditions 1 to 4 and 6 of Table 5, and where applicable also at the additional conditions required in Table 6 and Table 7 and Annex IV.
Root mean square input voltage (V)	
Active mode efficiency	Calculated by dividing the declared 'Active output power' by the declared 'Root mean square input power' at load conditions 1 to 5 of Table 5 for EPS with a nameplate output power exceeding 10 W, otherwise at load conditions 1 to 4 of Table 5.
Average active efficiency	Calculated as arithmetical mean of the declared 'Active mode efficiency' at load conditions 1 to 4.

([1]) For AC output voltage, these shall be root mean square values.

The relevant load conditions are set out in Table 5.

For adaptive EPS and user-selectable EPS the test conditions laid down in Table 7 apply.

The same precision shall be used as for the corresponding parameters required in Table 7.

(2) the specification of the test cable(s) used, if the EPS is not an interoperable EPS or not supplied with a cable.

(c) for adaptive EPS: specifications of the supported power delivery protocols relevant to the requirements of this Regulation.

(d) for interoperable EPS:

(1) documentation demonstrating compliance with the requirements set out in point 3(b);

(2) documentation demonstrating compliance with the surge resistibility requirements laid down in point 4.

(e) for EPS exempt from the interoperability requirements pursuant to point 3(c):

(1) reference to the relevant sub-point of point 3(c);

(2) supporting documentation, if applicable also concerning the associated powered consumer product(s) referred to in point 3(c)(9), demonstrating that the conditions for the exemption are met.

(f) for EPS fulfilling other main functions in addition to converting mains electricity into DC or AC power: instructions on how to disconnect or disable the components of the product that fulfil these functions, provided that this does not affect the ability of the product to convert mains electricity into DC or AC power.

(g) for wireless chargers with the power supply integrated into the same unit:

(1) the manufacturer's name or trademark, commercial registration number and address;

(2) the model identifier;

(3) declared power consumption in standby mode (W).

(h) for wireless charging pads:

(1) the manufacturer's name or trademark, commercial registration number and address;

(2) the model identifier;

(3) input voltage (V) or input voltage range (if applicable);

(4) specification of the power delivery protocol supported (if applicable);

(5) model identifier of the EPS used for testing (if applicable);

(6) declared power consumption in standby mode (W);

(7) documentation demonstrating compliance with point 3(e)(2) (if applicable).

(i) for battery chargers for portable batteries of general use subject to the requirements laid down in point 3(e)(1):

(1) the manufacturer's name or trademark, commercial registration number and address;

(2) the model identifier;

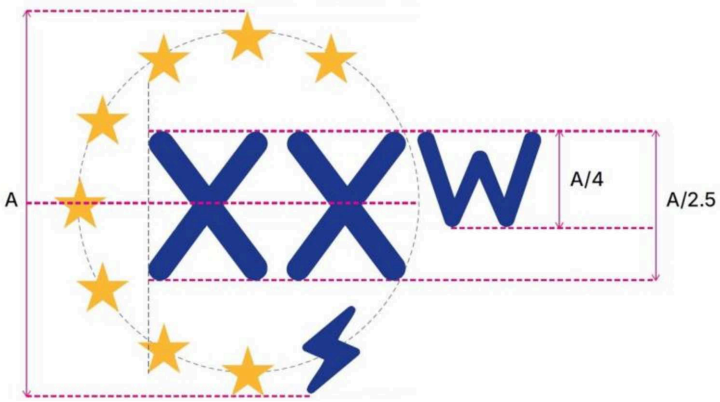
(3) documentation demonstrating compliance with point 3(e)(1).

(j) for USB Type-C cables: documentation demonstrating compliance with the requirements laid down in point 3(f).

ANNEX III

COMMON CHARGER LOGO

1. **Logo design**



Whereby:

(1) The logo shall have a height (A) of at least 5 mm when affixed to the nameplate, or 7 mm when affixed to the enclosure, packaging or the instruction manual. If the logo is enlarged, the proportions set out in the drawings shall be maintained.

(2) The reference colours for the logo shall be blue #25408f and yellow #fdb933. When CMYK colours are used, the reference shall be blue (100 % cyan + 90 % magenta + 10 % yellow + 0 % black) and yellow (0 % cyan + 30 % magenta + 90 % yellow + 0 % black). When RGB colours are used, the reference shall be blue (37 red + 64 green + 143 blue) and yellow (253 red + 185 green + 51 blue).

(3) The font used in the logo shall be Quicksand Bold.

(4) 'XX' shall be replaced by the value of the maximum nameplate output power provided by a single USB Type-C or USB-PD port. For dynamic EPS this value shall be the guaranteed output power.

(5) If the logo is used on a dark background, it may be used in the following design by replacing the blue colour with that dark background colour:

(6) The logo may be used in the following black and white designs or other analogous monochrome designs, if the product nameplate, enclosure, packaging, or instruction manual only use those colours:

ANNEX IV

MEASUREMENTS AND CALCULATIONS

1. For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made either using harmonised standards whose reference numbers have been published for this purpose in the *Official Journal of the European Union* or using other reliable, accurate and reproducible methods that take into account the generally recognised state-of-the-art methods.

2. Where a parameter is declared pursuant to Article 4 its declared value shall be used by the manufacturer, importer or authorised representative for the calculations in this Annex.

3. Without prejudice to point 1 of this Annex, measurements and calculations as part of any reliable, accurate and reproducible method used, shall be made in accordance with the following provisions:

   (a) Output measurements of USB Type-C and USB-PD ports of EPS shall be made at their output receptacles using for each such port a test-fixture with a Type-C plug, regardless of whether or not the EPS is supplied with a cable. A correction factor accounting for a round-trip cable resistance of 0,130 Ω shall be applied if the maximum nameplate output current of that port is not higher than 3 A, otherwise a correction factor accounting for a resistance of 0,100 Ω shall be applied. The resistance of the contact between the output receptacle and the Type-C plug of the test-fixture is included in the correction factors.

   (b) Output measurements of EPS at power outputs other than USB Type-C or USB-PD ports shall be made at the product-load side of the output cable supplied with the EPS by the manufacturer, its authorised representative or the importer. If the EPS is supplied with more than one cable the longest output cable shall be used. If the EPS is not supplied with a cable it must be tested with a 1 m long output copper wire or cable with a conductor cross-sectional area:

      (i) equal to 0,519 mm^2 (AWG 20), if $I \leq 3$ A,

      (ii) equal to 0,653 mm^2 (AWG 19), if $3 A < I \leq 5$ A,

      (iii) not higher than $\frac{I}{7,5}$ mm^2, if $I > 5$ A,

      where *I* is the maximum nameplate output current (A) at that port. For AC/AC EPS *I* represents the root mean square current.

   (c) 'Proportional allocation method' means a set of rules for EPS with shared capacity ports, for determining the load condition of each power output when the sum of the nameplate output power of the individual power outputs is greater than their total maximum combined output power when operated simultaneously, at a specific testing condition. The derating factor is the ratio between the total maximum combined output power and the sum of the nameplate output power of the individual power outputs of the shared capacity ports. The derated output current of each power output is the product between the derating factor and its nameplate output current.

   (d) If an EPS fulfils other main functions in addition to converting mains electricity into DC or AC power, components of the EPS that fulfil these functions may be disconnected or disabled before testing so that the test measurements do not include the additional power used by them, as long as disconnecting or disabling such components does not affect the power conversion ability of the EPS, and as long the housing of the EPS is closed before the test.

   (e) A dynamic EPS shall be tested at load conditions based only on the guaranteed power.

   (f) Regardless of the AC source type, the total harmonic distortion of the supply voltage of an EPS shall not exceed 2 %, up to and including the 13th harmonic.

(g) For the surge test for interoperable EPS:

For a Class I interoperable EPS the surge test consists of 10 alternating ± surges applied at its AC mains power connection between line and line, and line and earth (ground) respectively, in the form of combination waveforms with rise and hold times Tr/Th of 1,2/50 μs for the open circuit voltage and Tr/Th of 8/20 μs for the short circuit current, at a test level of 2,5 kV.

For a Class II interoperable EPS the surge test consists of 10 alternating ± surges applied at its AC mains power connection between line and line, in the form of combination waveforms with rise and hold times Tr/Th of 1,2/50 μs for the open circuit voltage and Tr/Th of 8/20 μs for the short circuit current, at a test level of 2,5 kV.

The test is considered passed if the tested unit complies after the test with the requirements in Annex II point 4. Otherwise the test is considered failed.

(h) The measurement of the standby mode power consumption of wireless chargers with the power supply integrated into the same unit and of wireless charging pads connected with the EPS by a DC cable hard-wired at both ends shall be made in accordance with standardised methods of measurement of electrical power consumption in standby mode(s) for household electrical appliances.

(i) The measurement of the standby mode power consumption of wireless charging pads which are not connected with the EPS by a DC cable hard-wired at both ends, shall be made in accordance with the following requirements regardless whether they are supplied or not with an EPS:

(i) the device shall be measured in the condition as delivered to the end-user (factory setting) without any object placed on it;

(ii) the power consumption shall be determined at the DC input. Depending on the EPS connection the measurement shall be at the receptacle or at the plug of the hard-wired power supply cable;

(iii) the power source shall be able to supply the DC input voltage and power specified for the wireless charging pad;

(iv) if the wireless charging pad can be powered by adaptive EPS at different DC voltages, it shall be powered by such an EPS supporting all specified voltage levels. The measurement shall be at the input voltage set by the wireless charging pad;

(v) the standby mode power consumption shall be the average power determined for a duration of not less than 10 minutes.

(j) If a wireless charger with the power supply integrated into the same unit or a wireless charging pad fulfils other main functions in addition to transmitting power by inductive coupling, components of the product that fulfil these functions may be disconnected or disabled before testing so that the test measurements do not include the additional power used by them, as long as disconnecting or disabling such components does not affect the power transmission ability of the product.

4. Until the publication of the references of the relevant harmonised standards in the Official Journal, use shall be made of the transitional testing methods set out in point 5, or of other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art methods.

5. For adaptive EPS, EPS with multiple power outputs and user-selectable EPS, the test procedure of the Department of Energy of the United States of America, laid down in Appendix Z to Subpart B of Part 430 of Title 10, Chapter II, Subchapter D of the Code of Federal Regulations, 87 FR 51221, in its version applicable on 19 August 2022, may be used as a transitional test method, using mains electricity.

ANNEX V

VERIFICATION PROCEDURE FOR MARKET SURVEILLANCE PURPOSES REFERRED TO IN ARTICLE 5

1. 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 manufacturer, importer or authorised representative 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.

2. Where a model does not comply with the requirements laid down in Article 40 of Regulation (EU) 2024/1781, the model and all equivalent models shall be considered non-compliant.

3. 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:

   (a) the Member State authorities shall verify one single unit of the model;

   (b) the model shall be considered to comply with the requirements set out in this Regulation if all the following conditions are fulfilled:

      (1) the declared values given in the technical documentation pursuant to point 2 of Annex IV to Directive 2009/125/EC and, where applicable, the values used to calculate those values are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out pursuant to point 2(g) of that Annex;

      (2) the declared values meet any requirements laid down in this Regulation and any required product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values;

      (3) when the Member State authorities check the unit of the model, it complies with:

         (i) the interoperability requirements in point 3 of Annex II to this Regulation, and

         (ii) the information requirements in point 5 of Annex II to this Regulation, as applicable;

      (4) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from those measurements) comply with the respective verification tolerances set out in Table 9.

4. Where the conditions set out in points 3(b)(1), (2) or (3) are not met, the model and all equivalent models shall be considered not to comply with this Regulation.

5. If the condition set out in point 3(b)(4) is not met, with the exception of the surge resistibility requirement, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three 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 referred to in point 5, the arithmetical mean of the determined values complies with the respective verification tolerances given in Table 9.

7. If the condition set out in point 3(b)(4) is not met as regards the surge resisibilility requirements, the Member State authorities shall select three additional units of the same model or of an equivalent model for testing. The model and all equivalent models shall be considered not to comply with this Regulation as soon as the test is failed by one of the three additional units. In this case, the other units not yet tested do not need to be tested. The model shall be considered to comply if the test is passed by each of the three additional units.

8. Where the condition set out in points 6 or 7 is not met, the model and all equivalent models shall be considered to be not in compliance with this Regulation.

9. The Member State authorities shall without delay provide all relevant information to the authorities of the other Member States and to the Commission through the information and communication system referred to in Article 34 of Regulation (EU) 2019/1020 after a decision has been taken on the model's non-compliance pursuant to points 2, 4, or 8 of this Annex.

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

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

12. The parameters 'Input voltage' and 'Input AC frequency' of EPS as required in Table 7 of Annex II to this Regulation shall not be subject to compliance verification under this Regulation. The parameters 'Active output power (W)' and 'Root mean square input power (W)' of EPS as required in Table 8 of the same Annex, and 'Input voltage (V) or input voltage range (if applicable)' of wireless charging pads as required in point 6(h)(3) of the same Annex are meant not to be verified.

Table 9

Verification tolerances

Parameter	Verification tolerance
For EPS	
Output voltage (V) ([1])	The determined value ([2]) shall not be lower than the declared value by more than 2 %.
Active mode efficiency at each of the applicable load conditions	The determined value ([2]) shall not be lower than 0,95 times the declared value.
Power consumed (W) at no-load condition	The determined value ([2]) shall not exceed the declared value by more than 0,01 W.
For wireless chargers and wireless charging pads	
Power consumed (W) in standby mode	The determined value ([2]) shall not exceed the declared value by more than 0,01 W.

([1]) For AC output voltage, these shall be root mean square values.
([2]) In the case of the three additional units tested as prescribed in point 5, the determined value means the arithmetical mean of the values determined for those three additional units.

ANNEX VI

BENCHMARKS REFERRED TO IN ARTICLE 6

At the time of entry into force of this Regulation, the best available technologies (BAT) on the market for single voltage AC-DC EPS in terms of their no-load power consumption, low load efficiency and average active efficiency have been identified as follows:

(a) no-load condition:
The lowest identified no-load power consumption of an EPS declared by a manufacturer is:
0,02 W for $P_{out} \leq 250$ W;

(b) low load efficiency (10 %):

(1) for $P_{out} \leq 49$ W, the BAT low load efficiency increases progressively to 89,6 %;

(2) for $P_{out} > 49$ W, the BAT low load efficiency reaches 91,7 %;

(c) average active efficiency:

(1) for $P_{out} \leq 49$ W, the BAT average active efficiency increases progressively to 92,6 %;

(2) for $P_{out} > 49$ W, the BAT average active efficiency reaches 93,2 %.