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[...](2018) **XXX** draft

COMMISSION REGULATION (EU) .../...

of **XXX**

**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

(Text with EEA relevance)

COMMISSION REGULATION (EU) .../...

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(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to Article 114 of 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 products¹, and in particular Article 15(1) thereof,

Whereas:

- (1) Pursuant to Directive 2009/125/EC the Commission should set ecodesign requirements for energy-related products which account for significant volumes of sales and trade in the Union and which 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 Working Plan 2016-2019 established by the Commission in application of Article 16(1) of Directive 2009/125/EC sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The Working Plan identifies the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measures, as well as the review of the current regulations.
- (3) Measures from the Working Plan have an estimated potential to deliver by 2030 annual final energy savings in excess of 260 TWh, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes. External power supplies are one of the product groups listed in the Working Plan.
- (4) The Commission established ecodesign requirements for external power supplies in Commission Regulation (EC) No 278/2009². Pursuant to this Regulation the Commission should review it in the light of technological progress.
- (5) The Commission has reviewed Regulation (EC) No 278/2009 and analysed the technical, environmental and economic aspects of external power supplies as well as real-life user behaviour. The review was carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of

¹ OJ L 285, 31.10.2009, p. 10.

² Commission Regulation (EC) No 278/2009 of 6 April 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for no-load condition electric power consumption and average active efficiency of external power supplies (OJ L 93, 7.4.2009, p. 3).

the review were made public and presented to the Consultation Forum established by Article 18 of Directive 2009/125/EC.

- (6) The review study shows that external power supplies are placed on the Union market in large quantities, and outlines the benefits of updating the ecodesign requirements and adapting them to the technological progress.
- (7) Multiple voltage output external power supplies, which are not covered by Regulation (EC) No 278/2009, are being placed on the Union market in increasing numbers. They should therefore be included in the scope of the Regulation to ensure further energy savings and provide a level playing field.
- (8) Ecodesign requirements should harmonise the energy consumption of external power supplies, thus contributing to the functioning of the internal market. They should also improve the environmental performance of external power supplies. Potential annual final energy savings of 4,3 TWh by 2030, corresponding to 1,45 million tonnes of CO₂ equivalent, were estimated compared with the situation where no further measures are taken.
- (9) The relevant product parameters should be measured 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 organisations, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council³.
- (10) In accordance with Article 8 of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.
- (11) To facilitate compliance checks, manufacturers should provide information in the technical documentation referred to in Annexes IV and V to Directive 2009/125/EC in so far as that information relates to the requirements laid down in this Regulation.
- (12) In addition to the legally binding requirements laid down in this Regulation, indicative benchmarks for best available technologies should be identified to make information on products' environmental performance over their life cycle subject to this Regulation widely available and easily accessible, in accordance with Directive 2009/125/EC, Annex 1, part 3, point (2).
- (13) A review of this Regulation should assess the appropriateness and effectiveness of its provisions in achieving its goals. The timing of the review should be sufficient for all provisions to be implemented and show an effect on the market.
- (14) Regulation (EC) No 278/2009 should therefore be repealed.
- (15) 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,

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).

HAS ADOPTED THIS REGULATION:

Article 1

Subject matter and scope

1. This Regulation establishes ecodesign requirements for placing external power supplies on the market and putting them into service.
2. This Regulation shall not apply to:
 - (a) voltage converters;
 - (b) uninterruptible power supplies;
 - (c) battery chargers;
 - (d) lighting converters;
 - (e) external power supplies for medical devices;
 - (f) active power over Ethernet injectors;
 - (g) external power supplies placed on the market by **30 June 2025** as a service part or spare part for an identical external power supply placed on the market by **1 April 2021** at the latest, under the condition that the service part or spare part, or its packaging, clearly indicates the primary load product(s) the spare part or service part is intended to be used with.

Article 2

Definitions

For the purpose of this Regulation the following definitions shall apply.

- (1) 'external power supply' means a device which meets all of the following criteria:
 - (a) it is designed to convert alternating current (AC) power input from the mains power source input into lower voltage direct current (DC) or AC output;
 - (b) it is intended to be used with one or more separate devices that constitute the primary load;
 - (c) it is contained in a physical enclosure separate from the device or devices that constitute the primary load;
 - (d) it is connected to the device or devices that constitute the primary load with removable or hard-wired male/female electrical connections, cables, cords or other wirings;
 - (e) it has nameplate output power not exceeding 250 watts; and
 - (f) it is intended for use with electrical and electronic household and office equipment.
- (2) 'low voltage external power supply' means an external power supply with a nameplate output voltage of less than 6 volts and a nameplate output current greater than or equal to 550 milliamperes.
- (3) 'multiple voltage output external power supply' means an external power supply able to convert AC power input from the mains power source into more than one simultaneous output at lower DC or AC voltage.

- (4) ‘voltage converter’ means a device converting 230 volts mains power source input to 110 volts power output with characteristics similar to mains power source input characteristics.
- (5) ‘uninterruptible power supply’ means a device that automatically provides backup power when the electrical power from the mains power source drops to an unacceptable voltage level.
- (6) ‘battery charger’ means a device that connects directly to a removable battery at its output interface.
- (7) ‘lighting converter’ means an external power supply used with extra low voltage light sources.
- (8) ‘active power over Ethernet injector’ means a device that converts the 230 volts mains power source input to a lower DC voltage output, has one or more Ethernet input and one or more Ethernet output ports, delivers power to one or several devices connected to the Ethernet output port(s), and provides the rated voltage at the output ports(s) only when compatible devices are detected following a standardised process.
- (9) ‘nameplate output power’ (P_O) means the output power as specified by the manufacturer.
- (10) ‘no-load condition’ means the condition in which the input of an external power supply is connected to the mains power source, but the output is not connected to any primary load.
- (11) ‘active mode’ means a condition in which the input of an external power supply is connected to the mains power source and the output is connected to a load.
- (12) ‘active mode efficiency’ means the ratio of the power produced by an external power supply in active mode to the input power required to produce it.
- (13) ‘average active efficiency’ means the average of the active mode efficiencies at 25 %, 50 %, 75 % and 100 % of the nameplate output power.

Article 3

Ecodesign requirements

External power supplies shall comply with the ecodesign requirements set out in Annex I.

Article 4

Conformity assessment

1. The conformity assessment procedure referred to in Article 8 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. Where the information included in the technical documentation for a particular model has been obtained by calculation on the basis of design, or extrapolation from another model, or both, the documentation shall include details of such calculations or extrapolations, or both, and of tests carried out by manufacturers to verify the accuracy of the calculations undertaken.

Article 5

Verification procedure for market surveillance purposes

Member States' authorities shall apply the verification procedure set out in Annex II to this Regulation when performing the market surveillance checks referred to in Article 3(2) of Directive 2009/125/EC.

Article 6

Indicative benchmarks

The indicative benchmarks for the best-performing products and technologies available on the market at the time of adopting this Regulation are set out in Annex III.

Article 7

Review

The Commission shall review this Regulation in the light of technological progress and present the results of this review, including, if appropriate, a draft revision proposal, to the Consultation Forum no later than [OP – please insert date - four years after its entry into force].

The review shall assess in particular: the feasibility of setting a requirement regarding minimum energy efficiency at 10 % load; options for including wireless chargers and active power over Ethernet injectors within the scope of the Regulation; and options for including requirements in support of circular economy objectives.

Article 8

Repeal

Regulation (EC) No 278/2009 shall be repealed with effect from **1 April 2020**.

Article 9

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 **1 April 2020**.

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

Done at Brussels,

For the Commission
Jean-Claude JUNCKER
The President



Brussels, **XXX**
[...](2018) **XXX** draft

ANNEXES 1 to 3

ANNEXES

to the

COMMISSION REGULATION

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ANNEX I

Ecodesign requirements for external power supplies

1. Energy efficiency requirements

- (a) From **1 April 2020**, the no-load condition power consumption shall not exceed the following limits:

	AC-AC external power supplies, except low voltage and multiple voltage output external power supplies	AC-DC external power supplies, except low voltage and multiple voltage output external power supplies	Low voltage external power supplies	Multiple voltage output external power supplies
$P_O \leq 49,0 \text{ W}$	0,210 W	0,100 W	0,100 W	0,300 W
$P_O > 49,0 \text{ W}$	0,210 W	0,210 W	0,210 W	0,300 W

- (b) From **1 April 2020**, the average active efficiency shall be not less than the following limits:

	AC-AC external power supplies, except low voltage and multiple voltage output external power supplies	AC-DC external power supplies, except low voltage and multiple voltage output external power supplies	Low voltage external power supplies	Multiple voltage output external power supplies
$P_O \leq 1,0 \text{ W}$	$0,5 \cdot P_O + 0,160$	$0,5 \cdot P_O + 0,160$	$0,517 \cdot P_O + 0,087$	$0,497 \cdot P_O + 0,067$
$1 \text{ W} < P_O \leq 49,0 \text{ W}$	$0,071 \cdot \ln(P_O) - 0,0014 \cdot P_O + 0,67$	$0,071 \cdot \ln(P_O) - 0,0014 \cdot P_O + 0,67$	$0,0834 \cdot \ln(P_O) - 0,0014 \cdot P_O + 0,609$	$0,075 \cdot \ln(P_O) + 0,561$
$P_O > 49,0 \text{ W}$	0,880	0,880	0,870	0,860

2. Information requirements

- (a) From **1 April 2020**, instruction manuals for end-users (where applicable), and free access websites of manufacturers, their authorised representatives and importers shall include the following information, in the order as set out below:

Information published	Description
Nameplate output power (W)	Declared by the manufacturer.
Root mean square (Rms) input voltage (V)	Declared by the manufacturer. Could be a value or a range.
Input AC frequency	Specified by the manufacturer. Could be a value or a range.
Rms output voltage (V)	Declared by the manufacturer for load condition 1. In case of multiple values the pairs of possible combinations Rms output voltage – Rms output current shall be provided.
Rms output current (mA)	Declared by the manufacturer for load condition 1. In case of multiple values the pairs of possible combinations Rms output voltage – Rms output current shall be provided.
Average active efficiency	Arithmetic average of efficiency calculated at load conditions 1-4.
Efficiency at low load (10%)	Calculated at load condition 5.
No-load power consumption (W)	Declared by the manufacturer for load condition 6.

The relevant load conditions are as follows:

Percentage of nameplate output current	
Load condition 1	100 % ± 2 %
Load condition 2	75 % ± 2 %
Load condition 3	50 % ± 2 %
Load condition 4	25 % ± 2 %
Load condition 5	10 % ± 1 %
Load condition 6	0 % (no-load condition)

- (b) From **1 April 2020**, the technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:

Reported Quantity	Description
Root mean square (Rms) output current (mA)	Measured at load conditions 1-5
Rms output voltage (V)	
Active output power (W)	
Rms input voltage (V)	Measured at load conditions 1-6
Rms input power (W)	
Total harmonic distortion (THD)	
True power factor	
Power consumed (W)	Calculated at load conditions 1-5, measured at load condition 6
Efficiency	Calculated at load conditions 1-5
Average active efficiency	Arithmetic average of efficiency at load conditions 1-4

The relevant load conditions are set out in point 2(a).

3. Measurements and calculations

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 for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible methods, which take into account the generally recognised state of the art.

ANNEX II

Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification of the measured parameters by Member State authorities and shall not be used by the manufacturer or importer as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

When verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to Article 3(2) of Directive 2009/125/EC, for the requirements referred to in this Annex, the authorities of the Member States shall apply the following procedure:

1. The Member State authorities shall verify one single unit of the model.
2. The model shall be considered to comply with the applicable requirements if
 - (a) the values given in the technical documentation pursuant to point 2 of Annex IV to Directive 2009/125/EC (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer or importer than the results of the corresponding measurements carried out pursuant to paragraph (g) thereof; and
 - (b) the declared values meet any requirements laid down in this Regulation, and any required product information published by the manufacturer or importer does not contain values that are more favourable for the manufacturer or importer than the declared values; and
 - (c) 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 these measurements) comply with the respective verification tolerances as given in the table on verification tolerances.
3. If the results referred to in point 2(a) or (b) are not achieved, the model 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.
5. The model shall be considered to comply with the applicable requirements if, for these three units, the arithmetical mean of the determined values complies with the respective verification tolerances given in the table on verification tolerances.
6. If the result referred to in point 5 is not achieved, the model shall be considered not to comply with this Regulation.
7. The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision is taken on non-compliance of the model according to points 3 and 6.

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

The Member State authorities shall only apply the verification tolerances that are set out in the table on verification tolerances and shall only use the procedure described in points 1 to 7 for the requirements referred to in this Annex. No other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

Verification tolerances	
<i>Parameters</i>	<i>Verification tolerances</i>
No-load condition	The determined value shall not exceed the declared value by more than 0,01 W.
Arithmetical mean of efficiency at load conditions 1-4 as defined in Annex I	The determined value shall not be lower than the declared value by more than 5 %.

ANNEX III

Benchmarks

The best available technology on the market, at the time of entry into force of this Regulation, for the environmental aspects that were considered significant and are quantifiable is indicated below.

At the time of entry into force of this Regulation, the best available technology on the market for external power supplies in terms of their no-load energy consumption and average active efficiency was identified as follows.

(a) No-load condition

The lowest available no-load condition energy consumption of external power supplies can be approximated as:

- 0,002 watt, for $P_O \leq 49,0$ watts;
- 0,010 watt, for $P_O > 49,0$ watts.

(b) Average active efficiency

The best available active average efficiency of external power supplies according to most recent available data (status March 2015) can be approximated as:

- 0,767, for $P_O \leq 1,0$ watt;
- 0,905, for $1,0 \text{ watt} < P_O \leq 49,0$ watts;
- 0,962, for $P_O > 49,0$ watts.