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**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**

(Text with EEA relevance)

(OJ L 93, 7.4.2009, p. 3)

Amended by:

		Official Journal		
		No	page	date
► <b><u>M1</u></b>	Commission Regulation (EU) No 617/2013 of 26 June 2013	L 175	13	27.6.2013
► <b><u>M2</u></b>	Commission Regulation (EU) 2016/2282 of 30 November 2016	L 346	51	20.12.2016

**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****(Text with EEA relevance)***Article 1***Subject matter and scope**

1. This Regulation establishes ecodesign requirements related to electric power consumption in no-load condition and average active efficiency of external power supplies.
2. This Regulation shall not apply to:
  - (a) voltage converters;
  - (b) uninterruptible power supplies;
  - (c) battery chargers;
  - (d) halogen lighting converters;
  - (e) external power supplies for medical devices;
  - (f) external power supplies placed on the market no later than 30 June 2015 as a service part or spare part for an identical external power supply which was placed on the market not later than one year after this Regulation has come into force, under the condition that the service part or spare part, or its packaging, clearly indicates the primary load product(s) for which the spare part or service part is intended to be used with.

*Article 2***Definitions**

For the purposes of this Regulation, the definitions set out in Directive 2005/32/EC shall apply.

The following definitions shall also 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 able to convert to only one DC or AC output voltage at a time;
  - (c) it is intended to be used with a separate device that constitutes the primary load;

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- (d) it is contained in a physical enclosure separate from the device that constitutes the primary load;
- (e) it is connected to the device that constitutes the primary load via a removable or hard-wired male/female electrical connection, cable, cord or other wiring;
- (f) it has nameplate output power not exceeding 250 Watts;

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- (g) it is intended for use with electrical and electronic household and office equipment as referred to in Article 2(1) of Regulation (EC) No 1275/2008 or with computers as defined in Commission Regulation (EU) No 617/2013 <sup>(1)</sup>;

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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. 'halogen lighting converter' means an external power supply used with extra low voltage tungsten halogen lamps;
4. 'uninterruptible power supply' means a device providing automatically backup power when the electrical power from the mains power source drops to an unacceptable voltage level;
5. 'battery charger' means a device which connects directly to a removable battery at its output interface;
6. 'voltage converter' means a device converting 230 V mains power source output to 110 V power output with characteristics similar to mains power source output characteristics;
7. 'nameplate output power' ( $P_O$ ) means the output power as specified by the manufacturer;
8. '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;
9. '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;
10. '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;
11. 'average active efficiency' means the average of the active mode efficiencies at 25 %, 50 %, 75 % and 100 % of the nameplate output power.

<sup>(1)</sup> OJ L 175, 27.6.2013, p. 13.

**▼B***Article 3***Ecodesign requirements**

The ecodesign requirements related to no-load electric power consumption and average active efficiency of external power supplies placed on the market are set out in Annex I.

*Article 4***Conformity assessment**

The procedure for assessing conformity referred to in Article 8 of Directive 2005/32/EC shall be the internal design control system set out in Annex IV of Directive 2005/32/EC or the management system for assessing conformity set out in Annex V of Directive 2005/32/EC.

*Article 5***Verification procedure for market surveillance purposes**

Surveillance checks shall be carried out in accordance with the verification procedure set out in Annex II.

*Article 6***Indicative benchmarks**

The indicative benchmarks for best-performing products and technology currently available on the market are identified in Annex III.

*Article 7***Revision**

No later than four years after the entry into force of this Regulation the Commission shall review it in the light of technological progress and present the result of this review to the consultation forum.

*Article 8***Amendments to Regulation (EC) No 1275/2008**

Regulation (EC) No 1275/2008 is amended as follows:

1. The following second paragraph is added to Article 1:

‘This Regulation shall not apply to electrical and electronic household and office equipment placed on the market with a low voltage external power supply.’

2. The following point 9 is added to Article 2:

‘9. “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.’

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*Article 9*

**Entry into force**

This Regulation shall enter into force on the 20th day following its publication in the *Official Journal of the European Union*.

Point 1(a) of Annex I shall apply as from one year after the date referred to in the first paragraph.

Point 1(b) of Annex I shall apply as from two years after the date referred to in the first paragraph.

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

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## ANNEX I

**ECODESIGN REQUIREMENTS****1. NO-LOAD POWER CONSUMPTION AND AVERAGE ACTIVE EFFICIENCY****(a) One year** after this Regulation has come into force:

The no-load condition power consumption shall not exceed 0,50 W.

The average active efficiency shall be not less than:

$0,500 \cdot P_O$ , for  $P_O < 1,0$  W;

$0,090 \cdot \ln(P_O) + 0,500$ , for  $1,0$  W  $\leq P_O \leq 51,0$  W;

0,850, for  $P_O > 51,0$  W.

**(b) Two years** after this Regulation has come into force:

The no-load condition power consumption shall not exceed the following limits:

	AC-AC external power supplies, except low voltage external power supplies	AC-DC external power supplies except low voltage external power supplies	Low voltage external power supplies
$P_O \leq 51,0$ W	0,50 W	0,30 W	0,30 W
$P_O > 51,0$ W	0,50 W	0,50 W	n/a

The average active efficiency shall be not less than the following limits:

	AC-AC and AC-DC external power supplies, except low voltage external power supplies	Low voltage external power supplies
$P_O \leq 1,0$ W	$0,480 \cdot P_O + 0,140$	$0,497 \cdot P_O + 0,067$
$1,0$ W $< P_O \leq 51,0$ W	$0,063 \cdot \ln(P_O) + 0,622$	$0,075 \cdot \ln(P_O) + 0,561$
$P_O > 51,0$ W	0,870	0,860

**2. MEASUREMENTS**

The no-load condition power consumption and the average active efficiency referred to in point 1 shall be established by a reliable, accurate and reproducible measurement procedure, which takes into account the generally recognised state of the art.

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## 3. INFORMATION TO BE PROVIDED BY MANUFACTURERS

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

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

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	0 % (no-load condition)

**▼ M2***ANNEX II***Product compliance verification by market surveillance authorities**

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 below.
- (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 below.
- (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 being taken on the 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.



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The Member State authorities shall only apply the verification tolerances that are set out in the table below 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**

Parameters	Verification tolerances
No-load condition	The determined value shall not exceed the declared value by more than 0,10 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 %.

**▼B***ANNEX III***INDICATIVE BENCHMARKS REFERRED TO IN ARTICLE 6****(a) No-load condition**

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

- 0,1 W or less, for  $P_O \leq 90$  W,
- 0,2 W or less, for  $90$  W  $< P_O \leq 150$  W,
- 0,4 W or less, for  $150$  W  $< P_O \leq 180$  W,
- 0,5 W or less, for  $P_O > 180$  W.

**(b) Average active efficiency**

The best available active average efficiency of external power supplies according to most recent available data (status January 2008) can be approximated by:

- $0,090 \cdot \ln(P_O) + 0,680$ , for  $1,0$  W  $\leq P_O \leq 10,0$  W,
- 0,890, for  $P_O > 10,0$  W.