Disclaimer:
This is a working document supporting the revision of COMMISSION REGULATION (EU) 2019/1782 of 1 October 2019 laying down ecodesign requirements for external power supplies. It sets out an initial draft of the revised legal text to support the stakeholders' consultation process, in particular the Consultation Forum meeting of 8 December 2022.
Please note that while this draft document has been prepared by DG ENER staff and its consultants, it is by no means an official document endorsed by the European Commission.

Working document

supporting the Revision of

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

Draft ANNEX

ANNEX I

List of electrical and electronic equipment

1. Household appliances:

– Appliances for cooking and other processing of food preparing beverages, opening or sealing containers or packages, cleaning, and maintenance of clothes;

– Appliances for personal hygiene, hair cutting, hair drying, hair treatment, tooth brushing, shaving, massage, body care

– Electric knives;

– Scales;

– Vacuum cleaners

– Clocks, watches and equipment for the purpose of measuring, indicating or registering time;

– Other household appliances.

2. Information technology equipment, intended primarily for use in the domestic and office environment:

– Products referred to in Annex Ia of Directive (EU) 2022/… of the European Parliament and of the Council amending Directive 2014/53/EU on the harmonisation of the laws of the Member states relating to the making available on the market of radio equipment;

– Basestations for cordless phones;

– Routers and other home network equipment;

– Smartwatches, fitness trackers and other wearable devices with rechargeable batteries;
– Smart home assistants with voice recognition;
– Webcams and security cameras;
– Weather stations;
– Air quality monitors and sensors;
– Mass storage devices, multiple card readers, active USB hubs;
– Copying and printing equipment;
– Monitors;
– Set-top boxes;
– Power over Ethernet injectors;
– Computers;
– Docking stations;
– Other information technology equipment.

3. Consumer electronics equipment:

– Radio sets;
– Video cameras;
– Video recorders;
– Hi-fi recorders;
– Audio amplifiers;
– Home theatre systems;
– Televisions;
– Musical instruments;
– Equipment for the purpose of recording or reproducing sound or images, including signals or other technologies for the distribution of sound and image other than by telecommunications.
– Other consumer electronics equipment

4. Electrical and electronic toys, leisure and sports equipment

– Electric trains or car racing sets;
– Game consoles, including hand-held game consoles;
– Sports equipment with electric or electronic components;
– Drones
– Other toys, leisure and sports equipment ;

5. Power tools and gardening tools
6. Electric bicycles with a maximum continuous rated power of 250 Watts.
7. Lighting equipment:

– Table-top LED lighting equipment;
– Lighting equipment with rechargeable batteries for use in household environments.

8. Battery charging equipment:

- Battery Chargers
- Charging Stations
- Docking Stations for autonomous appliances
- Wireless charging pads
- Battery powered charging devices (‘powerbanks’);

ANNEX II

Ecodesign requirements for external power supplies

1. Energy efficiency requirements:

(a) From dd.mm 202x, the no-load condition power consumption shall not exceed the following values:

Table 1

	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
$P_O \leq 49{,}0$ W	0,21 W	0,10 W	0,10 W	0,30 W
$P_O > 49{,}0$ W	0,21 W	0,21 W	0,21 W	0,30 W

(b) From dd.mm 202x, the average active efficiency shall be not less than the following values:

Table 2

	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
$P_O \leq 1{,}0$ W	$0{,}5 \times P_O/1W + 0{,}160$	$0{,}5 \times P_O/1W + 0{,}160$	$0{,}517 \times P_O/1W + 0{,}087$	$0{,}497 \times P_O/1W + 0{,}067$
1 W $< P_O \leq$ 49,0 W	$0{,}071 \times \ln(P_O/1W) - 0{,}0014 \times P_O/1W + 0{,}67$	$0{,}071 \times \ln(P_O/1W) - 0{,}0014 \times P_O/1W + 0{,}67$	$0{,}0834 \times \ln(P_O/1W) - 0{,}0014 \times Po/1W + 0{,}609$	$0{,}075 \times \ln(P_O/1W) + 0{,}561$
$P_O > 49{,}0$ W	0,880	0,880	0,870	0,860

For adaptive external power supplies the requirement on average active efficiency applies to all output voltages. The idle no-load condition (i.e. with idle load connected) power consumption shall not exceed 0,XX W).

(c) From [18 months after after entry into force] , the efficiency at low load (10 %) shall be not less than the following values:

	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
$P_O \leq 1{,}0$ W	$0{,}5 \times P_O/1W + 0{,}060$	$0{,}5 \times P_O/1W + 0{,}060$	$0{,}517 \times P_O/1W - 0{,}013$	$0{,}497 \times P_O/1W - 0{,}033$
1 W $< P_O \leq$ 49,0 W	$0{,}071 \times \ln(P_O/1W) - 0{,}0014 \times P_O/1W + 0{,}57$	$0{,}071 \times \ln(P_O/1W) - 0{,}0014 \times P_O/1W + 0{,}57$	$0{,}0834 \times \ln(P_O/1W) - 0{,}0014 \times Po/1W + 0{,}509$	$0{,}075 \times \ln(P_O/1W) + 0{,}461$
$P_O >$ 49,0 W	0,780	0,780	0,770	0,760

For adaptive external power supplies the requirement on efficiency at low load (10%) applies to all fixed output voltages.

2. Design requirements:

(a) from [24/40/xx months after after entry into force], AC/DC external power supplies for products listed in Annex I shall not be equipped with a non-detachable cable on the DC output

(b) from x xxx 202x, AC/DC external power supplies for products listed in Annex I with an input power of up to 15 Watts and 5V shall be equipped with either the USB Type-A receptacle, as described in the [standard EN IEC 62680-1-2:2022 "Universal serial bus interfaces for data and power - Part 1-2: Common components - USB Power Delivery specification" / "USB 3.1 Legacy Connector and Cable Specification"], or with the USB Type-C receptacle, as described in the standard EN IEC 62680-1-3:2022 "Universal serial bus interfaces for data and power - Part 1-3: Common components - USB Type-C® Cable and Connector Specification", or both, and that receptacle shall remain accessible and operational at all times;

(c) from x xxx 202x, AC/DC external power supplies, for products listed in Annex I with an input power above 15 Watts or above 5 Volts, and up to 100 Watts and an input voltage up to 20 Volts, shall be equipped with the USB Type-C receptacle, as described in the standard EN IEC 62680-1-3:2022 "Universal serial bus interfaces for data and power - Part 1-3: Common components - USB Type-C® Cable and Connector Specification", and that receptacle shall remain accessible and operational at all times;

(d) from x xxx 202x, AC/DC external power supplies for products listed in Annex I with an input power up to 240 Watts and voltages higher than 20 Volts and up to 48 Volts, according to EN IEC 62680-1-2:2022 "Universal serial bus interfaces for data and power - Part 1-2: Common components - USB Power Delivery specification" shall be equipped with the USB Type-C receptacle, as described in the standard EN IEC 62680-1-3:2022 "Universal serial bus interfaces for data and power - Part 1-3: Common

components - USB Type-C® Cable and Connector Specification", and that receptacle shall remain accessible and operational at all times;

(e) from x xxx 202x, AC/DC external power supplies with the USB Type-C receptacle, as described in the standard EN IEC 62680-1-3:2022 "Universal serial bus interfaces for data and power - Part 1-3: Common components - USB Type-C® Cable and Connector Specification" shall be compatible with cables which comply with the standard EN IEC 62680-1-3:2022 "Universal serial bus interfaces for data and power - Part 1-3: Common components - USB Type-C® Cable and Connector Specification";

i. (f) from x xxx 202x, AC/DC external power supplies for products listed in Annex I and which are capable of being recharged or operated by means of a wired connection at voltages higher than 5 Volts and up to 20 Volts, currents higher than 3 Amperes or powers higher than 15 Watts and up to 100 Watts shall be compliant with EN IEC 62680-1-2:2022 "Universal serial bus interfaces for data and power - Part 1-2: Common components - USB Power Delivery specification" and EN IEC 63002:2021 "Interoperability specifications and communication method for external power supplies used with computing and consumer electronics devices",

ii. ensure that any additional charging protocol allows for the full functionality of the USB Power Delivery referred to in point 2 (f) i;

(g) from x xxx 202x, AC/DC external power supplies for products listed in Annex I and which are capable of being recharged or operated by means of a wired connection at voltages higher than 20 Volts and up to 48 Volts, according to EN IEC 62680-1-2:2022 "Universal serial bus interfaces for data and power - Part 1-2: Common components - USB Power Delivery specification", and up to 240 Watts shall

i. be compliant with EN IEC 62680-1-2:2022 "Universal serial bus interfaces for data and power - Part 1-2: Common components - USB Power Delivery specification" and EN IEC 63002:2021 "Interoperability specifications and communication method for external power supplies used with computing and consumer electronics devices",

ii. ensure that any additional charging protocol allows for the full functionality of the USB Power Delivery referred to in point 2 (g) i;

(h) from dd.mm.202x, the following charging equipment shall be compatible with an external power supply referred to in point 2 (b) or (c).

i. wireless charging pads

ii. battery chargers which cannot be connected to the AC mains power source with an integrated non-detachable cordless AC power plug

iii. charging stations

iv. docking stations for autonomous appliances

2. Information requirements:

(a) from dd.mm April 202x, the nameplate shall include, for all external power supplies excepting the adaptive power supplies, the following information:

Nameplate information	Value and precision	Unit	Notes
Output power	X,X	W	In cases where more than one physical output or more than one output voltage at load condition 1 are measured, the sets of available Output voltage - Output current – Output power shall be given.
Output voltage	X,X	V	In cases where more than one physical output or more than one output voltage at load condition 1 are measured, the sets of available Output voltage - Output current – Output power shall be given.
Output current	X,X	A	In cases where more than one physical output or more than one output voltage at load condition 1 are measured, the sets of available Output voltage - Output current – Output power shall be given.

(b) from dd.mm April 202x, the nameplate of adaptive power supplies shall include the output power and the maximum output voltage.

(c) from dd.mm 202x, the nameplate of any external power supply shall display the following information:

Nameplate information	Value and precision	Unit	Notes
Efficiency	XX	%	Efficiency means the average active efficiency. For adaptive power supplies it means the lowest average active efficiency at any of the fixed output voltages supported.

(d) from x xxx 202x, any USB output power port on an external power supply shall be marked with the maximum output power of this port in Watts, and whether USB-PD is supported. The pictogram shall be clearly visible, durable, legible and indelible.

i. USB-Type C ports supporting USB-PD:

USB PD XXX W

ii. USB-Type A ports:

X W

The letters “X” shall be replaced by the figure corresponding to the maximum power the external power supply supplies. The abbreviation “PD” (USB Power Delivery) shall be displayed if the external power supply supports that charging communication protocol. Minimum font size is 2,56 mm height.

(d) from dd.mm April 202x, instruction manuals for end-users (where applicable), and free access websites of manufacturers, importers or authorised representatives shall include the following information, in the order as set out below:

Information published	Value and precision	Unit	Notes
Manufacturer’s name or trade mark, commercial registration number and address	-	-	-
Model identifier	-	-	-
Input voltage	X	V	Specified by the manufacturer. Shall be a value or a range.
Input AC frequency	X	Hz	Specified by the manufacturer. Shall be a value or a range.
Output voltage	X,X	V	Nameplate output voltage. Shall indicate whether is AC or DC. In cases where more than one physical output or more than one output voltage at load condition 1 are measured, the sets of available Output voltage - Output current – Output power shall be published.
Output current	X,X	A	Nameplate output current. In cases where more than one physical output or more than one output voltage at load condition 1 are measured, the sets of available Output voltage - Output current – Output power shall be published.
Output power	X,X	W	Nameplate output power. In cases where more than one physical output or more than one output voltage at load condition 1 are measured, the sets of available Output voltage - Output

			current – Output power shall be published.
Average active efficiency	X,X	%	Declared by the manufacturer based on the value calculated as arithmetical mean of efficiency at load conditions 1-4. In cases where multiple average active efficiencies are declared for multiple output voltages available at load condition 1, the value published shall be the average active efficiency declared for the lowest output voltage.
Efficiency at low load (10 %)	X,X	%	Declared by the manufacturer based on the value calculated at load condition 5. External power supplies with a nameplate output power of 10 W or less shall be exempted from this requirement. In cases where multiple average active efficiencies are declared for multiple output voltages available at load condition 1, the value published shall be the value declared for the lowest output voltage.
No-load power consumption	X,XX	W	Declared by the manufacturer based on the value measured 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)

(e) from dd.mm202x, the technical documentation for the purposes of conformity assessment pursuant to, in the order and as set out in Article 4 shall contain the following elements:

(1) for external power supplies with a nameplate output power greater than xx watts:

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

In cases where more than one physical output or more than one output voltage at load condition 1 are measured, the relevant reported quantities shall be specified for each measurement.

The relevant load conditions are set out in point 2(b);

(2) for external power supplies with a nameplate output power of 10 watts or less:

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

In cases where more than one physical output or more than one output voltage at load condition 1 are measured, the relevant reported quantities shall be specified for each measurement.

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

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.

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.

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

ANNEX III

Transitional test methods

Test Measurement for Adaptive External Power Supplies:

(1) Active-Mode

(i) Place in the "on" position any built-in switch in the unit under test (UUT) controlling power flow to the AC input and note the existence of such a switch in the final test report.

(ii) Operate the UUT at 100 percent of nameplate output current for at least 30 minutes immediately prior to conducting efficiency measurements. After this warm-up period, monitor AC input power for a period of 5 minutes to assess the stability of the UUT. If the power level does not drift by more than 5 percent from the maximum value observed, the UUT is considered stable. If the UUT is stable, record the measurements obtained at the end of this 5-minute period. Measure subsequent loading conditions under the same 5-minute stability parameters. Note that only one warm-up period of 30 minutes is required for each UUT at the beginning of the test procedure. If the AC input power is not stable over a 5-minute period, follow the guidelines established by Section 5.3.3 of IEC 62301 for measuring average power or accumulated energy over time for both input and output.

(iii) Test the UUT at the nameplate output voltage(s) at the loading conditions listed in Table 1, derated per the proportional allocation method presented further below. Adaptive external power supplies must be tested at each nameplate output voltage as described in the following sections.

(A) At all nameplate output voltages except for the lowest output voltage, test adaptive external power supplies in sequence from Loading Condition 1 to Loading Condition 4, as indicated in Table 1.

(B) At the lowest nameplate output voltage, with the exception of USB-PD EPSs, test all adaptive external power supplies in sequence from Loading Condition 1 to Loading Condition 4, as indicated in Table 1. For USB-PD adaptive external power supplies, at the lowest nameplate output voltage, test the external power supply such that for Loading Conditions 1, 2, 3, and 4, all adaptive ports are loaded to 2 amperes, 1.5 amperes, 1 ampere, and 0.5 amperes, respectively. All non-adaptive ports will continue to be loaded as indicated in Table 1.

Table 1—Loading Conditions for a Single-Voltage Adaptive External Power Supply

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 % ± 2 %

The 2 percent allowance pertains to nameplate output current, not the calculated current value. For example, a UUT at Loading Condition 3 may be tested in a range from 48 percent to 52 percent of the derated output current.

(C) Where the external power supply lists both an instantaneous and continuous output current, test the external power supply at the continuous condition only.

(D) If an external power supply has both adaptive and non-adaptive ports, and these ports operate simultaneously at multiple voltages, ensure that testing is performed with all ports active at all nameplate output voltages.

(E) If an external power supply cannot sustain output at one or more of the Loading Conditions 1–4 as specified in Table 1, test the external power supply only at the loading conditions for which it can sustain output.

(iv) Use the following proportional allocation method to provide consistent loading conditions for single-voltage adaptive external power supplies with multiple-output busses.

(A) Consider a power supply with N output busses, each with the same nameplate output voltages V1, * * *, VN, corresponding output current ratings I1, * * *, IN, and a maximum output power P as specified on the manufacturer's label on the power supply housing, or, if absent from the housing, as specified in the documentation provided with the unit by the manufacturer. Calculate the derating factor D by dividing the power supply maximum output power P by the sum of the maximum output powers of the individual output busses, equal to the product of port nameplate output voltage and current I_iV_i, as follows:

$$D = \frac{P}{\sum_{i=1}^{N} V_i I_i}$$

For USB-PD adaptive external power supplies, at the lowest nameplate output voltage, limit the contribution from each port to 10W when calculating the derating factor.

(B) If D ≥1, then loading every port to its nameplate output current does not exceed the overall maximum output power for the power supply. In this case, load each output bus to the percentages of its nameplate output current listed in Table 1.
However, if D <1, it is an indication that loading each port to its nameplate output current will exceed the overall maximum output power for the power supply. In this case, and at each loading condition, each output bus will be loaded to the appropriate percentage of its nameplate output current listed in Table 1, multiplied by the derating factor D.

(v) Minimum output current requirements. Depending on their application, some multiple-voltage adaptive external power supplies may require a minimum output current for each output bus of the power supply for correct operation. In these cases, ensure that the load current for each output at Loading Condition 4 in Table 1 is greater than the minimum output current requirement. Thus, if the test method's calculated load current for a given voltage bus is smaller than the minimum output current requirement, use the minimum output current to load the bus. Record this load current in any test report.

(v) Efficiency calculation. Calculate and record the efficiency at each loading point by dividing the UUT's measured active output power at that loading condition by the active AC input power measured at that loading condition.

(A) Calculate and record average efficiency of the UUT as the arithmetic mean of the efficiency values calculated at Loading Conditions 1, 2, 3, and 4 in Table 1.

(B) If, when tested, a UUT cannot sustain the output current at one or more of the loading conditions as specified in Table 1, the average active-mode efficiency is calculated as the average of the loading conditions for which it can sustain output.

(C) If the UUT can only sustain one output current at any of the output busses, test it at the loading condition that allows for the maximum output power on that bus (i.e., the highest output current possible at the highest output voltage on that bus).

(2) Low Load (10%)

Efficiency at low load (10%) has to be measured following the same test procedure as for average active efficiency, but with measurements only at Loading Condition 5 as specified in Table 5. For USB-PD adaptive external power supplies, at the lowest nameplate output

voltage, test the external power supply such that for Loading Condition 5 all adaptive ports are loaded to 0,2 amperes.

ANNEX IV

Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification by Member State authorities of the declared values and shall not be used by the manufacturer, importer or authorised representative 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.

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

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

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, importer or authorised representative 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, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values; and

   (c) when the Member States authorities check the unit of the model, they find that the manufacturer, importer or authorised representative has put in place a system that complies with the requirements in the second paragraph of Article 6; and

(d) when the Member States authorities check the unit of the model, it complies with the requirements in the third paragraph of Article 6, the resource efficiency in point 2 of Annex II and the information requirements in point 3 of Annex II; and the design requirements in point 2 of Annex II; 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 Table 2; and

   (d) when the Member State authorities check the unit of the model, it complies with the information requirements in point 2 of Annex II.

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

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

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 Table 2.

6. If the result referred to in point 5 is not achieved, the model and all equivalent models 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 or 6.

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

The Member State authorities shall only apply the verification tolerances that are set out in Table 2 and shall use only the procedure described in points 1 to 7 for the requirements referred to in this Annex. For the parameters in Table 2, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied. For the declared parameters other than the parameters in Table 2, the implicit verification tolerance is zero.

Table 2 – Verification tolerances

Parameters	*Verification tolerances*
No-load condition	The determined value* shall not exceed the declared value by more than 0,01 W.
Active mode efficiency at each of the applicable load conditions	The determined value* shall not be lower than the declared value by more than 2 %.
Average active efficiency	The determined value* shall not be lower than the declared value by more than 2 %.
Efficiency at low load (10%)	The determined value* shall not be lower than the declared value by more than 2 %.

*In the case of three additional units tested as prescribed in point 4, the determined value means the arithmetical mean of the values determined for these three additional units.

ANNEX V

Benchmarks

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 power consumption and average active efficiency was identified as follows:

(a) No-load condition:

The lowest available no-load condition power 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 can be approximated as:

– 0,767, for $P_O \leq 1{,}0$ watt;

– 0,905, for 1,0 watt $< P_O \leq 49{,}0$ watts;

– 0,962, for $P_O > 49{,}0$ watts.