

Technical Regulation of the Eurasian Economic Union "About requirements to the energy efficiency of energy-consuming devices" (TR EAEU 048/2019)

I. Field of application

1. This technical regulation is designed to ensure energy efficiency and resource conservation in the framework of the Eurasian Economic Union (hereinafter - the Union), as well as in order to prevent action, introducing to mislead consumers in relation to the energy efficiency of energy-consuming devices.

2. This technical regulation applies to energy-consuming devices put into circulation on the territory of the Union, according to the list in accordance with Appendix No. 1 (hereinafter referred to as devices).

3. This technical regulation establishes mandatory for application and enforcement in the territory of the Union requirements for the devices in the part relating to their energy efficiency and labeling.

4. If other technical regulations of the Union (technical regulations of the Customs Union) are adopted in relation to devices, establishing requirements for them, the devices must comply with the requirements of all technical regulations of the Union (technical regulations of the Customs Union), which apply to them.

II. Basic concepts

5. For the purposes of this technical regulation, concepts are used that mean the following:

"nominal value" - the value specified by the manufacturer of the device in the operating documents for the device (for example, volume, supply voltage, etc.);

"Device party" set of units of one denomination and (or) the designation produced during a certain time interval in one and the same production conditions and accompanied by a shipping document;

"energy efficiency indicator" - the absolute, specific or relative amount of consumption or losses of energy resources of the device;

"intended use of the device" - the use of the device in accordance with the purpose indicated by the manufacturer of the device on this device and (or) in the operating documents;

"own test laboratory of the manufacturer" - registered in the established laws of the State - a member of the Union of the procedure on its territory a legal person carrying out the study (testing) and measurement and located in the property of the manufacturer, or a structural unit of the legal person acting on its behalf;

"technical sheet" - a document containing information on the functional characteristics and features of the device related to its energy efficiency;

"fuel and energy resources" - a set of natural and produced energy carriers, the stored energy of which is available for use in economic activities at the current level of development of technology and technology ;

"label" - a document containing information about the class, the main indicators of energy efficiency and consumer characteristics of the device.

Other concepts used in the present technical regulation, are applied to the values defined by the Protocol of technical regulation in the framework of the Eurasian Economic Union ([Annex N 9 to the Treaty on the Eurasian Economic Union on May 29, 2014](#)) and the [typical conformity assessment schemes](#) , approved by [resolution of the Board of the Eurasian Economic Commission of 18 on April 2018 city of N 44](#) .

III. Device identification rules

6. For the purposes of classification of the unit to the objects of technical regulation, in respect of which applies the present technical regulation, and identifikatsiya device carried by the applicant bodies g osudarstvennogo control (supervision) states - members of the Union (hereinafter - Member States), the conformity assessment bodies of the States members, as well as interested parties by determining the conformity of the name and characteristics of the device to the parameters established in the requirements in accordance with Appendices N 2-19 and specified in the operational documents attached to the device and intended for the consumer (user) (hereinafter - operational documents).

IV. Rules for handling devices on the territory of the Union

7. The apparatus put into circulation in the Union when accordance requirements hereof as well as the requirements of other technical regulations Union (technical regulations Customs Union), the action of which on it is distributed, and if the condition that it has passed the procedure evaluation of compliance under Section VII these technical regulations, and also according to other technical regulations Union (technical regulations Customs Union), the action of which on it is distributed.

8. Devices whose compliance with the requirements of this technical regulation, as well as other technical regulations of the Union (technical regulations of the Customs Union), which apply to them , is not confirmed, are not marked with a single product circulation mark on the Union market and are not allowed to be released into circulation on the territory of the Union.

V. Requirements for the energy efficiency of devices, as well as for their labeling and operational documents

9. The apparatus designed and manufactured in such a manner that when applying it on purpose this device corresponds to the requirements for energy efficiency, mounted in respective annex to the present technical regulations.

10. Marking apparatus must contain the name and (or) the designation device (type, brand, model) its basic parameters name and (or) trade mark (if any) of the manufacturer, the name of the country for site which manufactured the device. The specified information is applied to the device and indicated in the operating documents attached to it .

Name and (or) trade mark (if any) the manufacturer's name and (or) the designation of the device (type, make, model) are applied to the packaging device.

11. If the information provided for in paragraph 10 of this technical regulation cannot be applied to the device, they are indicated only in the operating documents attached to this device.

12. The marking devices shall be legible, easy to read and applied to the device in a place accessible for inspection without disassembling with the use of the tool, on the Russian language, and with the presence of the relevant requirements in the legislation of the Member States on the state language (state language) of the Member State on territory of which the device is being implemented. Units of measurement, letter trade marks (if any), the names of their own, the names of inhabited settlements can be drawn on other languages.

13. Operational documents must contain:

a) the information provided for in clause 10 of this technical regulation;

b) information about the purpose of the device;

c) the rules and conditions for installation of the device, its connection to the network and other necessary for the use of the device at the destination sources of fuel and energy resources, start-up, regulation and administration in operation (in the case, if compliance with these rules and conditions is required to ensure compliance with device requirements of this technical regulation);

d) the characteristics and parameters, in that those established in the respective annex to the present technical regulations;

e) the name and the place of finding the manufacturer (authorized manufacturer person), the importer, the information for communication with them;

f) month and year of manufacture of the device and (or) information about the place of application or the method of determining this information;

g) label and technical sheet (if the requirement for their availability is established by the corresponding appendix to this technical regulation).

14. The content of technical sheets and labels, as well as the energy efficiency classes of devices are established in the annexes to this technical regulation.

Forms of labels and the rules for their design must comply with the requirements (hereinafter in this section - requirements), approved by the Council of the Eurasian Economic Commission (hereinafter - the Commission).

The manufacturer (manufacturer's authorized person) or importer determines the energy efficiency class of the device and its energy efficiency in accordance with the requirements.

Information about the class of energy efficiency and on energy efficiency of the device is placed by the manufacturer (authorized by the manufacturer of the person), the importer on the label intended for marking demonstration samples of devices coming to the market.

The manufacturer (authorized by the manufacturer of the face), an importer provides the presence of the label, in fact including for labeling demonstration samples of devices coming in sale and maintenance of documents in accordance with the requirements.

The vendor applies a label to the sample device at the point of sale. Labels should be placed in a conspicuous place, be easy to read, and formatted in accordance with the requirements.

If the device is sold remotely by the seller, information on energy efficiency indicators is provided to the consumer prior to concluding the sales contract .

The technical sheet and the label (if the requirement for their availability for the device is established by the corresponding appendix to this technical regulation) must include the following information:

name and trade mark (if any) manufacturer's designation model;

information on the energy efficiency class of the

device; energy efficiency indicators and their nominal values; other information

established by the requirements for certain types devices.

The presence of a technical sheet and a label (if the requirement for their presence in relation to the device is established by the corresponding appendix to this technical regulation) is a prerequisite for the circulation of the device in the territory of the Union.

The technical sheet and the label are drawn up by the manufacturer (the person authorized by the manufacturer) or the importer.

Technical sheet filled in the Russian language and in the case of the presence of the appropriate requirements in the legislation of the Member State in the national language (state language) of the Member State in the territory of which the realized device. Name and trade mark (if any) of the manufacturer, as well as other information regarding the registered trademark sign (if available) or industrial sample model designation may be indicated by using the letters of the Latin alphabet.

15. Operational documents are drawn up in Russian and in the presence of relevant requirements in the legislation of the Member States in the official language (official languages) of the Member State on the territory of which the device is being implemented . Units of measurement, alphabetic trademarks (if any), proper names, names of settlements in operating documents may be given in other languages.

Operational documents are drawn up in the form of documents on paper carriers. For it may be accompanied by operational documents in electronic format. Operational documents, with the exception of the technical sheets and labels, in respect of the device non-domestic purpose can be applied only to the electronic media.

If the amount of information specified in clause 13 of this technical regulation allows, then it is allowed not to draw up operational documents, but place the relevant information on the device or its packaging.

Vi. Ensuring compliance of devices with the requirements of technical regulations

16. Compliance of the device with the requirements of this technical regulation is ensured by fulfilling its requirements.

Methods of research (tests) and measurements of the device are set in the standards included in the list of international and regional (interstate) standards, and in their absence - the national (state) standards containing rules and methods of researches (tests) and measurements, in that those rules selection of samples required for the application and performance requirements of the technical regulations and conformity assessment of the device.

Vii. Conformity assessment

17. Before being released into circulation on the territory of the Union, the device is subject to an assessment of compliance with the requirements of this technical regulation, as well as the requirements of other technical regulations of the Union (technical regulations of the Customs Union), which apply to it.

18. Assessment of conformity of the device requirements of this technical regulation is conducted in accordance with the present section and the [typical conformity assessment schemes](#), approved by [resolution of the Board of the Eurasian Economic Commission dated April 18, 2018 N 44](#), in the form of confirmation of conformity.

19. Upon confirmation of compliance device by the applicants are registered in the territory of a Member State in accordance with its legislation a legal entity or natural person to an individual entrepreneur, are the manufacturer, the authorized manufacturer of the person by the seller (importer).

20. Confirmation matching device in the form of certification of suschestvyaetsya of schemes 1c, 3c and 4c, in the form of a declaration of compliance - according to schemes 1d, 2d, 3d, 4d and 6d. Confirmation of conformity of certain types of devices is carried out in the forms provided for by Appendix No. 1 to this technical regulation.

The choice of the scheme for declaring the conformity of devices in respect of which the confirmation of conformity is carried out in the form of a declaration of conformity is carried out by the applicant.

By the decision of the applicant, instead of declaring the conformity of devices in respect of which confirmation of conformity is carried out in the form of a declaration of conformity, certification may be carried out according to the schemes provided for by this technical regulation.

21. Certification of a serially produced device is carried out according to scheme 1c, a batch of devices - according to scheme 3c, a single device - according to scheme 4c.

When certifying a device, the applicant is:

for scheme 1c - the manufacturer (a person authorized by the manufacturer);

for schemes 3c and 4c - the manufacturer (the person authorized by the manufacturer) or the seller (importer).

22. Certification of the device is carried out by an accredited body for certification of devices of a Member State, contained in a single register of bodies for the assessment of conformity of the Union (hereinafter - body of certification).

Studies (tests) and measurements of samples (standard samples) device in order to certification are conducted in an accredited testing laboratory (center) (in fact including in their own manufacturer's testing laboratory) included in the single register of bodies for the assessment of conformity of the Union (hereinafter - the testing laboratory (center)).

The manufacturer takes the necessary measures to ensure the stability of the production process and the compliance of the manufactured devices with the requirements of this technical regulation, and also carries out production control (for scheme 1c).

23. When certifying a device, the applicant:

a) submit to the certification body a request to carry out works on certification and a set of documents, which includes in itself:

copy of the document in accordance with which the manufactured device (standard organization standard specifications or other document) (if any);

copies of operational documents;

copies of the contract (supply agreement) and shipping documents identifying the batch of devices, including its size, or a single device (for schemes 3c and 4c);

a copy of the contract with the manufacturer (in fact those with the foreign manufacturer), based on which to act on behalf of the manufacturer during the assessment of compliance and release into circulation of products in the territory of the Union (for the manufacturer authorized person) (for 1s scheme);

copy issued by the authority for the certification of systems of management of the certificate of conformity of the system of management, the action of which extends to the production of the device and which confirms the compliance introduced by the manufacturer of the system management requirements of the relevant standard (if available);

a copy of the report on an earlier analysis of the state of production of devices (an act of analysis of the state of production carried out by certification bodies as part of certification or periodic assessment of certified devices for compliance with the requirements of [technical regulations of the Customs Union "On the safety of low - voltage equipment" \(TR CU 004/2011\)](#) and (or) ["Electromagnetic compatibility of technical means" \(TR CU 020/2011\)](#)) if no more than 3 years have passed since the date of the analysis ;

a copy of the protocol of studies (tests) of the sample (type sample) of the device, carried out in order to confirm the compliance of its characteristics and parameters with the values established in the corresponding appendix to this technical regulation, in the event that no more than 5 years have passed since the date of the studies (tests) and in the construction of the device has not been modified, which might have influence on the parameters of energy efficiency (if any);

information about the registration or account (individual, identification) number of the applicant assigned during the state registration of a legal entity or an individual as an individual entrepreneur in accordance with the legislation of the Member States;

other documents specified in the corresponding Appendix to the present t of the Technical Regulations (in the case if the demand for their presence in getting the application to the present technical regulations);

other documents on the choice of the applicant, presented in as proof of compliance with the device requirements of the present technical regulations (if any);

b) concludes with the authority of the certification contract for carrying out certification or certification of studies (tests) and measurements (if there is no agreement, signed earlier);

c) ensures that the device is marked with a single mark of product circulation on the Union market after the certification procedure is completed ;

d) carries out the formation and storage after the completion of the certification procedure, a set of the following documents:

documents provided for in subparagraph "a" of this paragraph;

protocol (protocols) of studies (tests) and measurements of samples (type samples) of the device in the testing laboratory (center), confirming the compliance of the device with the requirements of this technical regulation;

production status analysis report (for scheme 1c);

certificate of conformity of the device to the requirements of this technical regulation (hereinafter - certificate of conformity)

24. When the certification device body for certification:

a) carries out the consideration and analysis of the application and the documents specified in subparagraph "a" of paragraph 23 of the Technical Regulations, decides to hold a certificate and shall inform the applicant of its decision;

b) carries out the identification of the device in accordance with Section III of this technical regulation by establishing the compliance of its characteristics with the parameters established in the corresponding annex to this technical regulation and specified in the operational documents;

c) performs selection of the samples (standard samples) device in the applicant for carrying out research (test) and measurements;

g) organizes conducting research (test) and measurement samples (standard samples) device in the test laboratory (center);

e) analyzes the state of production at the manufacturer (for scheme 1c);

e) summarizes the results presented by the applicant documents conducted research (test) and measurement samples (standard samples) device and the results of analysis of production conditions (for 1c circuit);

g) in case of positive results of the analysis of the documents submitted by the applicant, research (testing) and measurements of samples (typical samples) of the device and analysis of the state of production at the manufacturer (for scheme 1c), makes a decision to issue a certificate of conformity, draws up a certificate of conformity in accordance with a unified form and rules, approved by the Commission, and issues a certificate of conformity to the applicant;

h) enter information on the issued certificate of conformity in the unified register of issued certificates of conformity and registered declarations of conformity;

i) carries out the formation and storage of a set of evidentiary materials confirming the compliance of the device with the requirements of this technical regulation;

j) conducts a periodic assessment (inspection control) of a certified device once every 12 months during the entire validity period of the certificate of conformity by means of identification, research (testing) and measurements of samples (typical samples) of the device in the testing laboratory (center) and (or) analysis of the state production (for scheme 1c).

25. The term of validity of the certificate of conformity of devices, manufactured in series, is set taking into account the timing of the action to the requirements of energy efficiency, established in the respective annex to the present technical regulation, but does not have to exceed 5 years.

For a batch of devices (a single device), the validity period of the certificate of conformity is not established.

26. Declaration of conformity of a serially produced device is carried out according to schemes 1d, 3d and 6d, a batch of devices (a single device) - according to schemes 2d and 4d.

When declaring the conformity of a device, the applicant is:

for schemes 1d, 3d and 6d - the manufacturer (the person authorized by the manufacturer); for schemes 2d and 4d -

the manufacturer (a person authorized by the manufacturer), seller (importer).

27. Declaration of conformity of the device according to schemes 1d and 2d is carried out by the applicant on the basis of his own evidence.

Research (testing) and measurements of samples (typical samples) of the device are carried out at the choice of the applicant in the manufacturer's own testing laboratory or in the testing laboratory (center).

The declaration of conformity of the device according to the schemes 3d, 4d and 6d is carried out by the applicant based on his own evidence and evidence obtained from the results of research (tests) and measurements carried out in the testing laboratory (center).

Manufacturer:

carries out production control (for schemes 1d, 3d and 6d); takes

the necessary measures to ensure that the production process ensured the compliance of the device with the requirements of this technical regulation (for schemes 1d and 3d);

takes the necessary measures to ensure the stability of the implemented and certified management system and production conditions for the manufacture of devices that meet the requirements of this technical regulation (for scheme 6e).

28. When declaring the conformity of the device according to schemes 1d and 2d, the applicant:

a) forming a set of documents that served as the basis for the declaration of conformity, which includes in itself:

copy of the document in accordance with which the manufactured device (standard organization standard specifications or other document) (if any);

copies of operational documents;

protocol (protocols) of studies (tests) and measurements of a sample (type sample) of the device carried out in the manufacturer's own testing laboratory or in a testing laboratory (center), if no more than 5 years have passed since the date of the research (tests) and measurements and in the construction of the device is not amended, which could have an impact on the performance of energy efficiency;

copies of the contract (supply agreement) and shipping documents identifying the batch of devices, including its size, or a single device (for scheme 2e);

a copy of the contract with the manufacturer (in fact those with the foreign manufacturer), based on which to act on behalf of the manufacturer during the assessment of compliance and release into circulation of products in the territory of the Union (for the manufacturer authorized person) (for 1d scheme);

other documents specified in the corresponding Appendix to the present technical regulations (in case if the demand for them there is set the application to the present technical regulations);

other documents at the choice of the applicant, which served as the basis for the adoption of the declaration of conformity (if any);

b) carries out identification of the device in accordance with Section III of this technical regulation, as well as taking samples (type samples) of the device. On behalf of the applicant's identification and selection of samples (standard samples) devices can be carried out in the body of the certification, or in the test laboratory (center), either in their own laboratories of the manufacturer;

c) provides conduct research (test) and measurement of selected samples (standard samples) device in the test laboratory (center) or in self test laboratory manufacturer;

d) accepts a declaration of conformity of the device with the requirements of this technical regulation in accordance with a unified form and rules approved by the Commission, registers it in the unified register of issued certificates of conformity and registered declarations of conformity;

e) ensures that the device is labeled with a single product circulation mark on the Union market ;

f) carries out the formation and storage of a set of evidentiary materials that served as the basis for the adoption of a declaration of conformity and confirming the compliance of products with the requirements of this technical regulation, which includes the documents specified in subparagraph "a" of this paragraph, protocols of studies (tests) and measurements and declaration of conformity.

29. When declaring the conformity of the device according to schemes 3d, 4d and 6d, the applicant:

a) forming a set of documents, which includes in itself:

copy of the document in accordance with which the manufactured device (standard organization standard specifications or other document) (if any);

copies of operational documents;

copies of the contract (supply agreement) and shipping documents identifying the batch of devices, including its size, or a single device (for scheme 4e);

issued by the certification of management systems certificate of conformity of the system management, operation which extends to the production of the device and confirming compliance introduced by the manufacturer of the system management requirements of the relevant standard (copy of certificate) (for circuit 6d);

a copy of the protocol of studies (tests) of the sample (type sample) of the device, carried out in order to confirm the compliance of its characteristics and parameters with the values established in the corresponding annex to this technical regulation, if no more than 5 years have passed since the date of the studies (tests) and in the construction of the device has not been modified, which could have influence on the performance of energy efficiency;

information about registration or the accounting (individual, identification) number of the applicant, is assigned when the state registration of the legal entity or natural person in an individual entrepreneur in accordance with the legislation of the Member State;

other documents specified in the corresponding Appendix to the present technical regulations (in case if the demand for them there is set the application to the present technical regulations);

other documents at the choice of the applicant, which served as the basis for the adoption of the declaration of conformity (if any);

b) carries out identification of the device in accordance with Section III of this technical regulation, as well as taking samples (type samples) of the device. On behalf of the applicant, identification and selection of samples (type samples) of the device can be carried out in the certification body , or the testing laboratory (center), or in the manufacturer's own testing laboratory ;

c) provides conduct research (test) and measurement of selected samples (standard samples) device in the test laboratory (center);

d) carries out production control and takes the necessary measures to ensure that the production process ensures the compliance of the device with the requirements of this technical regulation (for schemes 3d and 6d), as well as to ensure the stability of the functioning of the management system (for scheme 6e);

e) accepts a declaration of conformity of the device to the requirements of this technical regulation in accordance with a unified form and rules approved by the Commission, registers it in the unified register of issued certificates of conformity and registered declarations of conformity;

f) ensures device marking with a single product circulation mark on the Union market ;

g) carries out the formation and storage of a set of evidentiary materials that served as the basis for the adoption of a declaration of conformity and confirming the compliance of products with the requirements of this technical regulation, which includes the documents specified in subparagraph "a" of this paragraph, the protocol (protocols) of the studies (tests) and measurements and a declaration of conformity.

30. The declaration of conformity is subject to registration in the manner approved by the Commission.

31. The term of the declaration of conformity of devices, manufactured in series, is set taking into account the timing of the commencement of the requirements for energy efficiency, established in the respective annex to the present technical regulation, but does not have to exceed 5 years.

For a batch of devices (single device), the validity period of the declaration of conformity is not established.

32. The set of documents generated after confirmation of compliance for the requirements of this technical regulation, stored in the applicant in during the following periods:

a) for serially produced devices - at least 10 years from the date of termination of the declaration of conformity or certificate of conformity;

b) for a batch of devices - at least 10 years from the date of sale of the last device from the batch;

c) on a single device - in for no less than 10 years from the date of implementation of this device.

33. State control (supervision) over compliance with the requirements of this technical regulation in relation to devices is carried out in accordance with the legislation of the Member States.

Permissible deviations of parameters of energy efficiency devices in research (tests) and measurements after release them into circulation in the territory of the Union, provided applications N 2-19 to these Technical Regulations shall not be used by the applicants and the bodies of certification in quality criteria when confirmation matching device requirements of this technical regulation.

VIII. Labeling of devices with a single mark of product circulation on the Union market

34. A device that meets the requirements of this technical regulation, as well as the requirements of other technical regulations of the Union (technical regulations of the Customs Union), which apply to it, and has passed the conformity confirmation procedure, is marked with a single product circulation mark on the Union market .

35. Marking with a unified mark of product circulation on the Union market is carried out before the device is released into circulation on this market.



36. A single sign of products on the market of the Union is applied to each device in any way, providing a clearer and clearer picture in during the entire period of service of the device, and also provided in the attached operating documents.

It is allowed to apply a single sign of products on the market of the Union in the packaging device in case of impossibility of its application directly on the device.

Annex N 1. List of energy-consuming devices to which are covered by the technical regulations of the Eurasian economic union "On the requirements for energy efficiency energy-consuming

devices " (TR EAEU 048/2019)

Appendix N 1
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

1. Refrigerating appliances specified in clause 1 of Appendix No. 2 to the technical regulation of the Eurasian Economic Union "On requirements for the energy efficiency of energy - consuming devices" (TR EAEU 048/2019) (hereinafter - the technical regulation)

declaration of conformity

2. Electric asynchronous motors specified in paragraph 1 of Appendix N 3 to the technical regulation

declaration of conformity

3. Television sets specified in paragraph 1 of Appendix No. 4 to the technical regulation



declaration of conformity

4. Household and office electrical equipment in standby and shutdown mode specified in paragraph 1 of Appendix No. 5 to the technical regulation

declaration of conformity

5. Household washing machines specified in paragraph 1 of Appendix No. 6 to the technical regulation

declaration of conformity

6. Household dishwashing machines specified in paragraph 1 applications N 7 to the Technical Regulations

declaration of conformity

7. TV set-top boxes specified in paragraph 1 of Appendix No. 8 to the technical regulation

declaration of conformity

8. Electric lamps specified in paragraph 1 of Appendix N 9 to the technical regulation

certification

9. External power supplies specified in paragraph 1 of Appendix N 10 to the technical regulation

declaration of conformity

10. Circulation pumps specified in paragraph 1 of Appendix N 11 to the technical regulation

declaration of conformity

11. Fans with an electric drive specified in paragraph 1 of Appendix No. 12 to the technical regulation

declaration of conformity

12. Fluorescent lamps without integrated ballast apparatus, discharge of high pressure lamps, ballasts devices and fixtures for such lamps specified in paragraph 1 Application N 13 to the technical regulations

certification

13. Lamps directional light, LED lamps , and associated with them equipment specified in paragraph 1 Application N 14 to the technical regulations

certification

14. Drum- type drying machines specified in paragraph 1 of Appendix No. 15 to the technical regulation

declaration of conformity

15. Vacuum cleaners specified in paragraph 1 of Appendix N 16 to the technical regulation

declaration of conformity

16. Computers and servers specified in paragraph 1 of Appendix No. 17 to the technical regulation

certification

17. Pumps for water specified in paragraph 1 of Appendix N 18 to the technical regulation

declaration of conformity

18. Air conditioners and room fans specified in paragraph 1 of Appendix N 19 to the technical regulation

declaration of conformity

Appendix N 2. Requirements for energy efficiency of refrigerating appliances

Appendix N 2
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These Requirements apply to refrigeration appliances for household use (refrigerators, freezers and their combinations) put into circulation in the customs territory of the Eurasian Economic Union (hereinafter - the Union), which can be used for commercial purposes (in production, in the field of trade and services), are powered from an alternating current network with a rated voltage of up to 250 V (inclusive) and have a useful volume of chilled and (or) frozen food and (or) other products not exceeding 1500 liters, with the exception of refrigerating appliances:

which operate by electric batteries and (or) the battery and which can be connected to the network nominal voltage up to 250 (inclusive), with the help of an external (not embedded in these devices) the source of electrical power (inverter DC (AC) AC);

do not require electrical energy for their work ;

made to order and not available on the market to other consumers (users), in addition to customers;

used in the field of trade and services and having an electronic device that responds to the extraction of chilled food and (or) other products, with the function of automatic transmission through a network connection by means of a remote control system of information for keeping records;

whose function is not to store chilled and (or) frozen food and (or) other products, but only to cool drinks (dispensers of chilled drinks) or receive and store ice (ice-making machines).

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"quick freeze" -

reversing (switchable) function, when implementing a user in accordance with instructions of the manufacturer decreases the temperature of the freezer or the freezer compartment to ensure a more rapid freezing unfrozen food products;

"Built-in refrigeration appliance" -

a stationary refrigeration appliance intended for installation in furniture, wall niche or other specially adapted place;

"other compartment" -

a compartment, different from the compartment for storing wine, and intended for storing specific food products at temperatures above + 14 ° C;

"chamber for storing frozen food " -

a chamber with one or more compartments for storing frozen food ;

"chamber for storing frozen food products without transformation" - a chamber for storing frozen food products, all compartments of which are defrosting automatically with automatic removal of melt water and which is cooled by the system without frost formation;

"freezer" - a

refrigerating appliance, having one or several compartments for freezing food products by temperature ambient environment until the temperature of minus 18 ° C and for storage of frozen food products in conditions corresponding mode "****";

"freezer without frost formation" - a freezer, all compartments of which are defrosting automatically with automatic removal of melt water and at least one compartment of which is cooled by the system without frost formation;

"freezing compartment", "separation with markings " **** " - compartment for freezing food products to a temperature not higher than minus 18 ° C and storage of frozen food products in a corresponding mode " *** " (inside the compartment allowed area and (or) branch with marked "****");

"total amount of gross" - the volume bounded by internal bulkheads refrigeration appliance or separation from the outer door, without internal components accessories with closed doors or lids of the device;

"compartment for chilled food products" - a compartment for storing perishable food products;

"compartment for making ice" - a low-temperature compartment for making and storing ice;

"wine storage compartment" - separation created directly for the storage of wine and having a constant temperature storage in the range from plus 5 ° C to plus 20 ° C, a variable with the passage of time less than at 0.5 K for each declared value temperature environment environments of the appropriate climatic class for household refrigeration appliances, active or passive control of the compartment humidity in the range from 50% to 80% and a structure that reduces the propagation of vibration from the refrigerator compressor or from any other external source;

"compartment for storing frozen food " - a low-temperature compartment for storing frozen food ;

"compartment for storing fresh food products" - a compartment for storing unfrozen food products, which can be divided into several sections;

"compartment marked" * " - compartment for storing frozen food products, the temperature in which is not higher than minus 6 ° C;

"compartment marked" ** " - compartment for storing frozen food products, the temperature in which is not higher than minus 12 ° C;

"compartment marked" *** " - compartment for storing frozen food products, the temperature in which is not higher than minus 18 ° C;

"compartment with moderate temperature" - compartment for storing food products or beverages at a higher temperature than in the compartment for the storage of fresh food products;

"usable area of the storage" - the sum of the areas of horizontal surfaces for the storage of food products in the range of useful volume, including shelf doors and the bottom of each compartment;

"usable volume" - the difference between the total gross volume of each compartment and the volume of elements and space not used for storing food ;

"shelf" - horizontal surface (lattice partition, etc.) on which the food products can be placed and which consists of one or more fixed or removable elements arranged beside each with the other;

"consumption energy " - a parameter characterizing the amount of energy consumed by the refrigeration appliance in for 24 hours;

"section with marked " ** " - section of the freezer compartment or chamber with the marking " *** ", which does not have a single door or a lid and the temperature at which not above minus 12 ° C;

"system without ineeobrazovaniya" - the system of automatic starting, warning permanent formation of frost and provides cooling by forced air circulation with automatic defrosting of the evaporator and removing the melt water;

"refrigerator" - a refrigerating device intended for storing food products, one or more compartments of which are designed to accommodate fresh food products;

"refrigerator without ineeobrazovaniya" - refrigerating appliance with automatic defrost and removing the melt water from all branches, having at least two compartments, at least one of which is cooled system without ineeobrazovaniya and at least one of which is intended for the storage of frozen food products (even under the presence of systems without frost formation, a refrigerator with one compartment does not meet this definition);

"refrigerator-freezer" - a refrigerator having at least two compartments, at least one of which is intended for the storage of fresh food products (compartment for storing fresh food products) and how at least one (freezer compartment) - for the freezing of fresh food products and storage of frozen food products under conditions corresponding to the "****" regime ;

"refrigerator-freezer without frost formation" - a refrigerator in which at least 1 compartment is cooled by a system without frost formation with automatic defrosting and removal of melt water from it;

"refrigerator-cooler" - a refrigerator in which there is at least 1 compartment for storing fresh food products and a compartment for cooling, but there are no compartments for storing frozen food products;

"refrigeration device" - a factory- made heat - insulated chamber with 1 or more compartments, the cooling of which is provided by 1 or more refrigeration units, natural convection and (or) a system without frost formation;

"refrigeration appliance absorption- type" - the refrigeration appliance hladoobrazovanie in which carried out the method of absorption with the use of heat as a source of energy;

"refrigerating appliance for storing wine", " wine cabinet ", "wine cellar" - a refrigerating appliance consisting of one or more compartments for storing wine and not having any other compartments;

"refrigeration appliance compression- type" - the refrigeration appliance hladoobrazovanie in which carried out a compression refrigerating machine;

"Chest - type refrigeration appliance " - a refrigeration appliance, access to the compartment (s) of which is carried out from above;

" cabinet- type refrigeration appliance " - a refrigeration appliance, access to the compartment (s) of which is carried out from the front;

"equivalent refrigeration appliance" - a model of a refrigeration appliance with the same total gross volume and useful volume, having the same technical, productive and operational characteristics and types of compartments as that of another refrigeration appliance of the same manufacturer, released into circulation in the customs territory of the Union under another trade designation.

III. Requirements for the energy efficiency of refrigeration devices and the specifics of determining energy efficiency indicators

3. In respect of refrigeration appliances are carried out appropriate tests and determined the values of the indices of energy efficiency (EEI).

The EEI of a refrigeration appliance is calculated using the following formula:

,

Where:

- annual energy consumption (rounded to 2 decimal places);

- standard annual energy consumption .

calculated in kWh / year using the following formula:

= ,

def -
energy consumption , calculated in kWh per 24 hours (rounded to 3 decimal places).

calculated in kWh using
the following formula (rounded to 2 decimal places):

= ,

Where:

- the equivalent volume of the refrigerating device (in liters);

CH - a value equal to 50 kWh / year for refrigeration devices with
a useful compartment volume for chilled food products of at least 15 liters;

M and N are correction factors, the values of which for refrigerating appliances
of various types are given in Table 1 (regardless of the number
of doors or drawers).

**Table 1. Classification
of refrigerating appliances and corresponding compartment design**

Table 1

Refrigeration appliance description		The presence and the combination of compartments (cells) in the refrigeration apparatus										Classical fication refrigerators			
Nominal temperature storage (when calculating EEI) (° C)	+14 and above (distributed chet-Naja T)	+12	+12	+5	0	0						- 1	- 2	- 1	n devices of the M value ; N
Branch type	Other	for hrane-Ni a guilt	wine cellar	for hrane-Niya fresh food product ive tions	for cooling De nia	for half cheniya ice						"	"	"	

Equipment category	Branch design										
Fridge	-	-	-	+	-	-	-	-	-	-	type 1 0.233; 2 45
Refrigerated device for storing wine (cabinet for wine, a wine cellar)	±	±	±	+	-	-	-	-	-	-	type 2
	±	±	+	-	-	-	-	-	-	-	0.233; 2 45
	-	+	-	-	-	-	-	-	-	-	
Fridge- cooler and refrigerator without c ompartments with markings	±	±	±	+	+	±	-	-	-	-	type 3
	±	±	±	+	±	+	-	-	-	-	0.233; 2 45
Refrigerator with compartments marked "**"	±	±	±	+	±	±	-	-	-	-	type 4 0.643; 1 91
Refrigerator with compartments with marked "****"	±	±	±	+	±	±	±	+	-	-	type 5 0.450; 2 45
Refrigerator with compartments with marked "*****"	±	±	±	+	±	±	±	±	+	-	type 6 0.777; 3 03

Refrigerator- freezer	±	±	±	+	±	±	±	±	±	+	type 7 0.777; 303
Refrigeration appliance type "cabinet"	-	-	-	-	-	-	-	±	+	+	type 8 0.539; 315
Refrigeration appliance type "chest"	-	-	-	-	-	-	-	±	-	+	type 9 0.472; 286

Refrigeration appliances for universal and other	±	±	±	±	±	±	±	±	±	±	type 10
application											

"+" - available, "-" - absent; "±" - at the discretion of the

manufacturer. Storage temperature in

the chamber or compartment () from + 5 ° C to + 20 ° C. from + 8 ° C to +

14 ° C.

from 0 ° C to + 8 ° C, average +

4 ° C. from -2 ° C to + 3 ° C.

from 0 ° C and below.

Compartment

marked "**". Compartment

marked "***". Compartment

marked "****". Branch with marked "

****".

In fact those cabinets for storage of frozen food products with
the label "****".

Correction factors M and N for type 10 are selected from the values
indicated for types 1-9, based on the lowest storage temperature (types 7-9) or
the presence of compartments marked with the maximum
number of "stars" (types 1-6) set by the manufacturer.

The refrigeration appliance must simultaneously maintain
the required storage temperature in different compartments within
the permissible deviations (during the defrost cycle) indicated in table 2 for
different types of refrigeration appliances and for the respective climate classes.

Multifunctional appliances and / or compartments should be capable
of maintaining storage temperatures for various types of compartments
where these temperatures can be set by the user in accordance
with the manufacturer's instructions .

Table 2. Storage temperature (° C)

Table 2

Other branch		> +14
--------------	--	-------

Compartment for storing wine		+5 +20
Temperature separation with moderate		+8 +14
Compartment for storage of fresh food products	, , ,	0 , , +8 +4
Compartment for perishable food products		-2 +3
Branch with marking "one star"	t *	-6
Branch with marking "two stars"	t **	-12
Freezer (chamber) with an and compartment marked "three asterisk "	t ***	-eighteen

Note:

- storage temperature of the other compartment;
- storage temperature of the wine storage compartment with an error of 0.5 K;
- storage temperature of the compartment with moderate temperature;
- , , - the temperature of the storage compartment for fresh food products;
- average temperature of the storage compartment for fresh food products;

calculated by the formula:

Where:

n is the number of branches;

- internal useful volume of the compartment (in liters);

- nominal compartment temperature (in ° C);

- thermodynamic correction factor for separation

(chamber) equal to the ratio of the difference between the nominal temperature separating and temperature ambient environment at standard conditions of testing (25 ° C) and the difference of these temperatures in the storage of fresh food products at a temperature of 5 ° C, the values given in table 3;

, and - correction factors, the values of which are given in Table 4.

Table 3. Thermodynamic correction factors for refrigerating appliance compartments

Table 3

View branch	Nominal temperature (° C)	(25 -) / 20
Other branch	Design temperature	
Branch to moderate temperature / compartment for storing wine	+12	0.65
Compartment for storage of fresh food products	+5	1.00
Branch for Perishable food products	0	1.25

Branch to produce ice and separating labeled "0 stars"	0	1.25
--	---	------

Compartment marked "one star"	-6	1.55
Branch with marking "two stars"	-12	1.85
Compartment marked "three stars"	-eighteen	2.15
Freezing branch (Branch with marking "four stars")	-eighteen	2.15
<p>Note 1</p> <p>For multifunctional compartments, the thermodynamic correction factor is determined at the nominal temperature (table 1) of the coldest compartment set by the user for continuous operation in accordance with the manufacturer's instructions .</p>		
<p>Note 2</p> <p>For any section with marking "two stars" (in the freezer)</p> <p>thermodynamic correction factor is determined at = - 12 ° C</p>		
<p>Note 3</p> <p>For other compartments, the thermodynamic correction factor is determined at the lowest design temperature set by the user for continuous operation in accordance with the manufacturer's instructions .</p>		

Table 4. Values of correction factors for various refrigerating appliances in various compartments of refrigerating appliances

Table 4

Correction factor	Value	Coefficient application
<i>FF</i> (no frost formation)	1,2	compartments (chambers) for storing frozen food products of a refrigeration device without frost formation
	one	other refrigerating appliances and compartments (chambers) of refrigerating appliances

SS (climatic version)	1,2	Refrigerating devices intended for use in tropical climates with an average temperature of the surrounding environment from + 16 ° C to + 43 ° C (version T)
	1.1	Refrigerating devices intended for operation in subtropical climates with an average temperature of the surrounding environment from + 16 ° C to + 38 ° C (execution ST)
	one	Refrigerating devices intended for operation in a moderately cold and temperate climates with an average temperature of the surrounding environment from + 10 ° C to + 32 ° C (version SN) and from + 16 ° C to + 32 ° C (version N), respectively
BI	1,2	embedded cooling devices width is not more than 580 mm
(built-in)	one	other refrigerating appliances

4. Refrigeration apparatus (with the exception of cabinets for wine refrigerating appliances having a useful volume less than 10 liters) should have a value of energy efficiency index (EEI) less than 42 for cooling devices and less compression-type refrigerating appliances 110 to the absorption type.

5. The cooling device with a function of quick -frozen , or a similar function, implemented by modifying the control settings in freezers and freezer compartments, once the user has set in motion in accordance with the operational documents should automatically return to the previous normal temperature conditions of storage not later than by 72 hours.

This requirement does not apply to refrigerator-freezers with one thermostat and one compressor, which are equipped with an electromechanical control system.

Refrigerators and freezers with one thermostat and one compressor are equipped with electronic panel control and according to the operating instruments may be used at temperature ambient environment below + 16 ° C, should have a special setting switch on the function of "winter mode" or a similar function, which automatically sets the correct storage temperature of frozen food products in accordance with the ambient temperature.

Refrigerating devices with a useful amount of at least 10 l should automatically switch to the working mode with a consumed power 0.00 W not later than after 1 hour of operation in the empty state. The presence of a switch that disconnects the device from the power supply is not a sufficient condition to fulfill this requirement.

6. Tests (measurements) of refrigeration devices are carried out taking into account the following features:

a) if the refrigerating appliance contains anti-condensation heaters that the end user can turn on and off, when testing (measuring) energy consumption, they must be turned on and, if adjusted, set to maximum heating;

b) if the composition of the refrigerating device are devices, access to which is provided through a special door (e.g., machine for supplying ice or refrigerated drinks) and that the end user can include and off, when carrying out tests (measurements) of consumption of energy, they must be included, but must not function;

c) for the purpose of refrigerating units and branches temperature storage during the test (measurement) energy consumption must correspond to the nominal temperature separation of cold type, existing in a part of the refrigeration unit;

d) energy consumption is determined in the coldest configuration in accordance with operating documents for continuous normal use;

e) when conducting tests (measurements), the following parameters are determined :

overall dimensions (accurate to mm);

total gross volume (rounded to the nearest whole number in cubic

dm³ or l); usable volume (useful volumes) and total usable volume (full useful volumes) for storage (rounded to the nearest whole number in cubic dm³ or l);

defrosting

type; storage temperatur

e ;

energy consumption (kWh

/ 24h) (rounded to 3 decimal places); freezing performance (in kg per 24 hour

s);

power consumption (W) (rounded to 2 decimal places);

humidity compartment for storage of wine (%) (with rounded to whole numbers).

7. The operational documents attached to refrigeration devices, provided for by paragraph 13 of the technical regulation of the Eurasian Economic Union "On requirements for the energy efficiency of energy-consuming devices" (TR EAEU 048/2019) (hereinafter referred to as the technical regulation), must contain the following information about their characteristics and parameters:

a) Information on the combination of sections sliding drawers and shelves, providing the most efficient consumption of energy;

b) information on how to ensure minimum energy consumption ;

c) for a refrigeration appliance for storing wine - information about its purpose exclusively for storing wine.

IV. Permissible deviations energy parameters of efficiency of refrigerating appliances when conducting tests (measurements) after release them into circulation

8. In the case of tests (measurements) of refrigeration devices after their release into circulation in the customs territory of the Union, tests (measurements) of one sample of each model of a refrigeration device are carried out.

Refrigerating appliance considered relevant sample present Requirements, if the obtained values of the parameters and characteristics of the refrigeration appliance correspond section III of these requirements and the nominal values declared by the manufacturer, in the range of allowable deviation, indicated in Table 5.

Table 5. Possible deviations

Table 5

Measured parameter	Permissible deviation
Total gross volume	value not should be less than the nominal value more than at 3% or 1 liter depending on which of these quantities greater
Useful volume	value not should be less than the nominal value more than at 3% or 1 liter depending on which of these is greater (if volume compartment with moderate temperature and a compartment for the storage of fresh food products the user can modify each relative to another, the measurements are carried out in a configuration where the moderate temperature compartment is adjusted to the minimum volume)
Freezing ability	the value should not be less than the nominal value by more than 10%
Energy consumption ()	value not should exceed the nominal value more than on 10%
Energy consumption of refrigeration appliances with a usable volume of less than 10 liters	value not should exceed the limit values specified in paragraph fourth paragraph 5 of these requirements, more than at 0.10 W with the degree of reliability of 95%

Relative humidity in the closet for the wine	value should not exceed a nominal value more than on 10% in any direction, i.e., $\pm 10\%$.
Corrected sound power level	the measured value must not be greater than the declared value

If the obtained values of the parameters and characteristics of the sample (standard sample) the refrigerating appliance does not correspond to the values of a into account permissible (declination, specified in Table 5, the test should hold in respect of three additional samples refrigeration appliance.

The average values of the parameters and characteristics of 3 additional samples of the refrigeration device must correspond to the values indicated in table 3.

Otherwise, this model and other equivalent refrigeration devices should be considered as not complying with the requirements of the technical regulations.

V. Contents of the label and technical sheet of refrigeration appliances

9. The label of refrigerating appliances must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. energy efficiency class ;

IV. annual energy consumption (kWh / year) (rounded to the nearest whole number);

V. total useful compartment volume for chilled food products with temperatures above -6 ° C (rounded to the nearest whole number);

VI. total useful storage compartment for frozen foodstuffs with a temperature not exceeding -6 ° C (rounded to the nearest whole number). If the household refrigeration appliance does not have a freezer compartment, then the column is left empty.

If the refrigeration appliance is used for storing wine, then items V and VI are modified to indicate the number of standard bottles that can be placed in the appliance in accordance with the manufacturer's instructions .

Vii. corrected sound power level expressed in dB (A) relative to 1 pW (rounded to the nearest whole number) (indicated in dB).

10. The technical sheet included in the operational documents of refrigeration devices must contain the following information:

a) the name or trademark (if any) of the

manufacturer; b) model designation ;

c) the category of the model in accordance with

the classification in table 1; d) energy efficiency class ;

d) the annual energy consumption (kWh / year) (rounded to the nearest integer) in the form of the following entries: "Consumption of energy, based on the results of standard tests carried out for 24 hours, is" XYZ " kWh / year. The actual consumption of energy depends on the fact, how to use the refrigeration unit, and where it is set ";

f) the useful volume of each compartment and the number of "stars" in the marking (if any);

g) design temperature "other compartments". For compartments for storing wine is indicated very low temperature storage, pre- installed in the office or set by the user in accordance with the guidance on the operation;

- h) record "without frost formation" for the corresponding department
- (s); i) nominal time increasing the temperature of food products in freezer compartment (in hours);
- j) freezing capacity (in kg per day);
- k) climate class in the form of the following entry: "Climate class: W [climate class]. This appliance is intended for use at an ambient temperature between " X " [lower temperature] ° C to " X " [upper temperature] ° C";
- m) corrected sound power level expressed in dB (A) relative to 1 pW (rounded to the nearest whole number) (indicated in dB).
- m) a corresponding entry is made for the built-in refrigeration appliance ;
- o) for a wine cabinet the following entry: "This appliance is exclusively intended for storing wine." This entry is not specified in relation to refrigeration appliances, which are specifically not intended for the storage of wine, but can be used for this purpose, and in relation to refrigeration appliances, in which there is a compartment for the storage of wine, combined with the other branch.

11. In one technical sheet it is permissible to indicate information about several refrigerating devices of the same manufacturer.

12. The information contained in the technical sheet of refrigerating appliances can be provided in the form of a color or black and white copy of the label. In such a situation, the information specified in point 10 and not shown on the label must also be provided .

Vi. Energy efficiency class of refrigeration appliances

13. To indicate the energy efficiency of refrigeration devices , depending on the energy efficiency index, there are 7 classes (in descending order), shown in Table 6.

Table 6.

Table 6

Energy efficiency class	Energy efficiency index
A +++	EEI < 22

A ++	22 EEI < 33
A +	33 EEI < 42
A	42 EEI < 55
IN	55 EEI < 75

FROM	75 EEI < 95
D (least efficient)	95 EEI < 110

Appendix N 3. Requirements for the energy efficiency of electric asynchronous motors

Appendix N 3
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These requirements apply to put into circulation in the customs territory of the Eurasian Economic Union , single speed, three-phase motors , electric , asynchronous (induction) (in fact including embedded in other products) with a squirrel-cage rotor, the number of poles from 2 to 6, rated voltage up to 1000 V, rated frequency 50 or 50/60 Hz and a nominal capacity of from 0.75 to 375 kW, intended for operation in a continuous mode (hereinafter - engines) for excluding engines:

designed for operation at full immersion in liquid; fully integrated into other pro

ducts (e.g. gearboxes, pumps, fans and compressors) such a way that the consumption of energy can not be tested separately from this product;

designed for operation in various braking modes (for example, motors with regenerative braking function);

designed exclusively for use:

at an

altitude exceeding 4000 m above sea level; at ambient

temperatures above 60 ° C;

at a maximum operating temperature above 400 ° C;

at an ambient temperature below minus 30 ° C for any engine or below 0 ° C for a water - cooled engine;

when the coolant temperature at the engine inlet is below 0 ° C or above 32 ° C;

in potentially explosive environments.

II. Basic concepts

2. For the purposes of applying these Requirements , concepts are used that mean the following:

"motor with squirrel- cage" - the engine without moving contacts, collectors, contact rings or electrical contacts attached to the rotor;

"permissible deviation" - the maximum permissible deviation of the values of the engine parameters obtained as a result of tests in comparison with the values indicated on the nameplate or in the operating documents;

"nominal coefficient useful action ()" - coefficient useful action value which is set by the manufacturer and is equal to

value normalized coefficient useful action () or exceeds it;

"normalized coefficient useful action ()" - ratio of useful actions value which ensures matching engine specific class of energy efficiency;

"continuous operation" - the ability of a motor with an integrated cooling system to operate at rated load without interruption, without reaching the rated maximum temperature;

"average efficiency" - efficiency , having an average value for a set of engines of the same design and with the same technical characteristics;

"brake motor" - a motor with an electromechanical braking device , directly (without coupling connections) acting on the motor shaft ;

"frequency converter for speed control" - an electrical energy converter that continuously controls the electrical energy supplied to the motor in order to convert it into mechanical energy in accordance with a given speed characteristic of the load torque by changing the frequency of the alternating current of the supply network.

III. Requirements for the energy efficiency of engines and the specifics of determining energy efficiency indicators

3. From 1 September 2021 g. value normalized coefficient useful action () must not be less than the values specified for the IE2 energy efficiency class in Table 1.

Table 1. Values normalized coefficient useful action () for class energy efficiency IE2 when power engines from the network alternating current frequency of 50 Hz

Table 1

Nominal power, kW	Number of poles		
	2	four	6
0.75	77.4	79.6	75.9
1.1	79.6	81.4	78.1

1.5	81.3	82.8	79.8
2.2	83.2	84.3	81.8
3	84.6	85.5	83.3
four	85.8	86.6	84.6
5.5	87.0	87.7	86.0
7.5	88.1	88.7	87.2
eleven	89.4	89.8	88.7
15	90.3	90.6	89.7
18.5	90.9	91.2	90.4
22	91.3	91.6	90.9
thirty	92.0	92.3	91.7
37	92.5	92.7	92.2
45	92.9	93.1	92.7
55	93.2	93.5	93.1
75	93.8	94.0	93,7
90	94.1	94.2	94.0
110	94.3	94.5	94.3
132	94.6	94.7	94.6
160	94.8	94.9	94.8
201-375	95.0	95.1	95.0

action () for motors with a rated power of 7.5 to 375 kW must not be less than the values specified for energy efficiency class IE3 in table 2, or must correspond to the class energy efficiency IE2 for motors equipped with frequency converters for speed control .

Table 2. Values normalized coefficient useful action () for class energy efficiency IE3 during power engines from the network alternating current frequency of 50 Hz

Table 2

Nominal power, kW	Number of poles		
	2	four	6
0.75	80,7	82.5	78.9
1.1	82.7	84.1	81.0
1.5	84.2	85.3	82.5
2.2	85.9	86.7	84.3
3	87.1	87.7	85.6
four	88.1	88.6	86.8
5.5	89.2	89.6	88.0
7.5	90.1	90.4	89.1
eleven	91.2	91.4	90.3
15	91.9	92.1	91.2
18.5	92.4	92.6	91.7
22	92.7	93.0	92.2
thirty	93.3	93.6	92.9
37	93,7	93.9	93.3

45	94.0	94.2	93,7
55	94.3	94.6	94.1
75	94.7	95.0	94.6
90	95.0	95.2	94.9
110	95.2	95.4	95.1
132	95.4	95.6	95.4
160	95.6	95.8	95.6
201-375	95.8	96.0	95.8

5. From 1 September 2025 g. value normalized coefficient useful action () for motors with a nominal power of 0.75 to 375 kW must not be less than the values specified for the energy efficiency class IE3, or must correspond to the energy class efficiency IE2 for motors equipped with frequency converters for speed control .

6. The value of the normalized coefficient useful action () is determined at nominal output power (), the rated voltage () and a nominal frequency () specified by the manufacturer.

7. The operational documents attached to the engines , provided for in paragraph 13 of the technical regulation of the Eurasian Economic Union "On the requirements for the energy efficiency of energy-consuming devices" (TR EAEU 048/2019) (hereinafter - the technical regulation), must contain the following information about their characteristics and parameters:

- a) The nominal coefficient useful action () at full power, 75% and 50% of the nominal load and voltage ();
- b) energy efficiency class (IE2 or IE3); c) the number of poles;
- d) rated output power or range of values of rated output power (kW);
- e) rated frequency (Hz);
- f) rated voltage or range of values of rated voltage of the motor (V);
- g) the par rate or range of values of the nominal speed of rotation (revolutions / min.);
- h) information on disassembly, processing and disposal of engines;
- i) information about the operating conditions for the application in which the engine is designed:

height above the level of the sea, temperature of the external environment (in fact including for engines with water cooling);

the temperature of the cooling fluid at the inlet to the engine; maximum engine operating

temperature; potentially explosive environment.

8. The information specified in subparagraphs "a" and "b" of paragraph 7 of these Requirements, as well as the year of manufacture of the engine, are applied to the engine nameplate or next to it.

In case, if the size of the rating plate of the engine does not allow you to apply specified information on the nameplate applied only

information about the rated efficiency () at full rated load and rated voltage ().

Information on the compulsory use of a frequency converter regulating the speed of rotation together with a smaller motor the energy efficiency class, in accordance with paragraphs 4 and 5 of these requirements have to be specified in the technical documentation and (or) on the nameplate. The technical documentation must be shown the information about any particular measures of safety, which should be taken, if the engine is equipped with, or used in conjunction with a frequency converter regulating the speed of rotation.

IV. Permissible deviations of the parameters of the energy efficiency of engines during tests (measurements) after their release into circulation

9. In the case of tests (measurements) of engines after their release into circulation in the customs territory of the Eurasian Economic Union, tests (measurements) of one sample of each engine model are carried out .

A sample engine is deemed to comply with these Requirements,

if the obtained values of losses (1-) do not exceed the values of losses (1-

), corresponding to the values of the normalized efficiency factor established in Tables 1 and 2 of these Requirements (

) More than on 15% (for motors with a nominal power of from 0.75 to 150 kW) and more than 10% (for motors with a rated power of 150 to 375 kW).

If the obtained values do not correspond to the specified values, tests (measurements) should be carried out on 3 additional samples of the engine of this model. An engine model is considered to comply with these Requirements if the average loss values (1-

) for 3 tested engines do not exceed the values specified in the second paragraph of this clause.

In other cases, this engine model should be considered as not complying with the requirements of the technical regulations.

Appendix N 4. Requirements for the energy efficiency of TVs

Appendix N 4
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -

I. Field of application

1. These Requirements apply to TV sets put into circulation in the customs territory of the Eurasian Economic Union (hereinafter referred to as the Union), powered by an electrical network with a rated voltage of up to 250 V (inclusive) and intended for use in residential and office premises.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"home mode" - the state of the TV set recommended by the manufacturer for home use;

"menu with preset picture mode settings" - a set of TV settings preset by the manufacturer, from which the user, after turning on the TV, can select the picture mode setting ;

"full HD-resolution" - a screen resolution with a total number of physical pixels of at least 1920 x 1080;

"operating mode" - the state of the TV, in which it is connected to a power source and reproduces sound and images;

"off mode" - the state of the TV, in which it is connected to a power source, is not in operating or standby mode, and ensures that the requirements for electromagnetic compatibility are met (regardless of the presence or absence of the off mode indication function);

"standby mode" - the state of TV in which it is connected to a source of power and unlimited time carries out the function of reactivation (in fact those with the indication of the ability (readiness) to reactivation) and (or) function to inform or display condition;

"television monitor" - a television with a built-in screen designed to reproduce audiovisual signals transmitted from one or more external devices connected via a wired (RCA, SCART, HDMI, etc.) and (or) wireless standard interface (excluding non-standard DVI video signals and SDI) transmission of audiovisual signals, and does not have built-in means for receiving and playing back TV and radio broadcasting signals ;

"television receiver" - television, for receiving and playback of audiovisual signals into circulation in the customs area Union in a machine or system and consists of a display and one or more tuners (receivers), and also with the necessity of additional devices with functions of recording and reproducing (DVD-player storage on the hard magnetic disk, VCR and others.) in a machine (of a single combined device) or a system consisting of multiple devices;

"television" - a television receiver or television monitor; "function of informing or displaying the status" - a function, ensuring the provision of information or display status TV set on its screen, including time indication ;

"reactivation function" - a function that provides, by means of remote control devices, timers, the ability to switch from standby mode to operating mode, in which additional functions are activated .

III. Requirements for the energy efficiency of televisions and the specifics of determining energy efficiency indicators

3. The TV must have at least one of the following types of power control device (s) :

a) the automatic control device, connected to the sending network TV of time not more than 4 hours following for the last actions by user (for example, switching channels , and the like), a mode of standby or shutdown mode or any other mode where the permissible consumption power does not exceed the values established for the mode standby or mode off;

b) the mechanical control means located on the front panel is connected to the network TV or to other visually observable and accessible place on the TV in the manual mode switching TV to mode with consumed power not more than 0.01 watts.

4. Before switching the TV by means of the automatic control device from the operating mode to another mode, a warning message about this must be displayed on its screen .

5. The power consumption of the TV in operating mode with the brightness of its screen at least 65% of the maximum possible should not exceed the values indicated in table 1.

Table 1. Power consumption of the TV in operating mode

Table 1

View TV	Power consumption
TV receiver	16 W + Ah 3.4579 W / dm
TV monitor	12 W + Ah 3.4579 W / dm

Note. A is the area of the visible area of the image on the screen (in sq. Dm).

6. The consumption power of the TV in the mode standby not should exceed the values specified in Table 2.

Table 2. The consumption power of the TV in the mode standby

Table 2

The functions performed in the mode standby	Consumed (W), no more	pow er
---	--------------------------	-----------

Function reactivation (in the display 's ability reactivation)	including those with (ready) to	0.50
Information or status reactivation function	and display function	1.00

7. consumption power of the TV in the mode off not should exceed the values specified in Table 3.

Table 3. Power consumption of the TV in off mode

Table 3

Type of device management mode power supply	Power consumption (W), no more
Automatic control device	0.30
Mechanical control device (located on the front panel is connected to the television network, or other visually observable and easily accessible place on the TV in the manual mode switching TV to mode with consumed power not more than 0.01 watts)	0.50

8. The television monitors and separately supplied additional units of TV receivers must comply with the consumption of power specified in paragraphs 6 and 7 of these requirements.

9. When the initial activation of televisions, with a menu with preset settings mode image, should ensure functioning in the home mode, which should be installed by default.

If the user selects a mode other than home mode, it should be possible to confirm the mode.

10. Measurement of the power consumption of TVs in operating mode is carried out under the following conditions:

a) for TVs that do not have a menu with preset picture mode settings, the brightness and contrast controls are set in accordance with subparagraph "c" of paragraph 11 of these Requirements;

b) for TVs with menus with preset picture mode settings, the measurement mode is set in accordance with subparagraph "b" of paragraph 11 of these Requirements;

c) the television monitor must be connected to an appropriate tuner, the power consumption of which must not be taken into account when measuring the power consumption of the television monitor;

g) for audio input TV monitor is supplied a signal sound frequency of 1000 Hz voltage of 0.5 V the volume control of TV monitor set at the terminals of loudspeakers voltage corresponding power 50 mW;

d) when measuring consumed power regulator volume of the TV should be in the prescribed position;

f) measurements should be carried out:

at an ambient temperature of $23 \pm 5^\circ \text{C}$;

when a dynamic television signal of broadcast television is fed to the TV input ;

when the regulators of brightness, contrast, volume of the TV are in the position in accordance with subparagraphs "a", "b", "d" - "f" of this paragraph;

g) average power consumption should be measured within 10 minutes:

After that, as the TV was in the mode of expectation is not less than 1 hour and then at least 1 hour in operation. Measurements should be taken before the TV is in operation for no more than 3 hours. At the time of finding the TV in the operating mode on the screen must be displayed fed television signal. For televisions, the time of stabilization are less than 1 hour duration measuring power consumption can be reduced if the obtained values of the results of measurements not be different from the values of the results of the measurements obtained according to said method, more than 2%;

without activating the function of automatic adjustment of brightness (at its presence). If such a function is provided and cannot be turned off, measurements are carried out with an external light source turned on, which creates an illumination level of at least 300 lux directly on the ambient light sensor . The average value of the consumed power should not exceed the values established by paragraph 5 of these Requirements, taking into account the permissible deviation.

a) To determine the maximum brightness value in the "User" mode , a "white field" video signal is input to the TV input . The TV contrast and brightness controls are set to maximum. The luminance gauge measures the brightness at the center of the TV screen . The value measured in this way will be the maximum brightness of the TV;

b) for TVs that have menus with preset picture mode settings, a mode should be selected in which the brightness in the center of the TV screen will be at least 65% of the maximum brightness. This mode must be set when measuring the power consumption;

c) for TVs that do not have a menu with preset picture mode settings , brightness and contrast controls set the brightness in the center of their screens to at least 65% of the maximum brightness.

12. The Energy Efficiency Index (EEI) of TVs is calculated using the following formula:

,

Where:

$$= + A \times 4.3224 \text{ W / dm ;}$$

= 20 W for TVs with one tuner / receiver and no hard disk;

= 24 Watts for TVs with rigid (these) plate (s);

= 24 W for TVs with two or more tuners / receivers;

= 28 W for TVs with hard drive (s) and two or more tuners / receivers;

= 15 W for television monitors;

P is the power consumption of the TV in operating mode, in W, (rounded to 1 decimal place);

A = visible area of the screen, dm².

13. Annual energy consumption in operating mode (E), kWh, is calculated as $E = 1.46 \times P$.

14. Televisions with automatic brightness control .

In order to calculate the index of energy efficiency and the annual consumption of energy in the operating mode specified in paragraphs 12 and 13 of these requirements, the power consumption in the operation mode set in accordance with the procedure outlined in paragraph 17 of these Claims, reduced to 5%, if executed following conditions when the TV is delivered to the market:

- brightness of the TV in the home mode, or in terms of the working mode set by the manufacturer is automatically reduced between the ambient light intensity by at least at 20 lux and 0 lux;

- Automatic adjustment of brightness is activated in the home environment or in the operating mode of the TV, set by the manufacturer.

15. The operational documents attached to televisions , provided for in paragraph 13 of the technical regulation of the Eurasian Economic Union "On requirements for the energy efficiency of energy-consuming devices" (TR EAEU 048/2019) (hereinafter referred to as the technical regulation), must also contain information about their characteristics and parameters:

a) the value of the power consumption in operating mode (in W) (rounded to 1 decimal place for a power not exceeding 100 W or to an integer number for a power exceeding 100 W);

b) the value of the power consumption in standby mode and in off mode (in W) (rounded to 2 decimal places).

16. The set of documents to TVs, said with a view of the selected applicant scheme declaration of conformity in subparagraph "a" of paragraph 28 or paragraph "a" of paragraph 29 technical regulations for televisions in addition should be included the following information:

a) of the

following controlled during tests (measurements) parameters: temperature

of the surrounding medium (in ° C);

test voltage (in V) and frequency (in

Hz); distortion coefficient of sinusoidal voltage curve ;

conditions for connecting sources of test audio and video signals;

information (documentation) about used during testing (measuring) equipment, information about the conduct of the test (measurement) and on the circuit connections when carrying out measurements;

b) information about the parameters in standby and off mode: the value of consumed power in the mode standby and in operation shutdown power consumption (in W) (rounded to 2 decimal places) signs);

a description of the method for selecting or programming the operating mode of the TV;

sequence of steps to achieve a mode in which the TV automatically changes mode.

c) the following parameters in the TV operation: the value of consumed power (in Watts) (to rounding

up to 1 decimal place for power consumption no more than 100 W or up to an integer number for power consumption more than 100 W);

characteristics of the dynamic television signal of broadcast television;

sequence of actions to ensure a stable state in relation to power consumption;

for TVs with menus with preset picture mode settings - the ratio of the screen brightness in home mode to its maximum brightness (in%);

for television monitors - description of relevant characteristics of the tuner, used when carrying out the test (measurement);

d) about the following parameters of the TV in standby and off mode :

used a method of measurement;

the duration of the working mode after the last action of the user before the TV automatically switches to the mode of waiting, or mode is turned off, or the other mode, if that has not exceeded the limit value of the consumed power.

IV. Permissible deviations energy parameters efficiency televisions when conducting tests (measurements) after release them into circulation

17. In the case of tests (measurements) of TV sets after their release into circulation in the customs territory of the Union , tests (measurements) of one sample of each TV model are carried out .

A sample TV is deemed to comply with these Requirements if the following results are obtained:

TV power consumption during operation should not more than to 7% higher than the value specified in Table 1 of this claim;

consumption power of the TV in the mode of waiting and mode off not should exceed more than at 0.10 W values indicated in Tables 2 and 3 present Requirements respectively;

the brightness should not be less than 60% of the maximum brightness of the

TV. If the obtained values do not correspond to the specified values, testing (measuring) should hold in relation to 3 additional TV samples .

A TV model is considered to meet the requirements of these Requirements if the average parameter values for 3 additional samples of this TV model comply with these Requirements.

In other cases, this TV model should be considered as not complying with the requirements of the technical regulations.

V. content label energy efficiency and technical sheet t elevisions

18. The energy efficiency label of televisions must contain the following information:

I. name or trade mark (if any) of the manufacturer; P. designation of the model;

III. energy efficiency class . Symbol energy efficiency is at that same level, that and an arrow corresponding to the class of energy efficiency;

IV. power consumption of the TV in operating mode, W, rounded to the nearest whole number;

V. annual energy consumption in operation , kWh / year, rounded to the nearest whole number;

Vi. visible diagonal of the screen in inches and centimeters;

Vii. icon displays for TVs with visible switch in the mode of waiting.

19. The technical sheet included in the operational documents of televisions must contain the following information:

a) The name or trade mark (if any) of the manufacturer;

b) identification number of models of the manufacturer, where the model identification number means the code, as the usually alpha-numeric, which distinguishes a particular model of the TV from the other models of the same trade mark or the manufacturer with this same name;

c) energy efficiency class ;

d) the visible diagonal of the screen in inches and centimeters;

e) power consumption of the TV in operating mode, W, rounded to the nearest whole number;

f) annual energy consumption in operation , kWh / year, rounded to the nearest whole number;

g) the mode of expectation and the power consumption in the off state or and then, and more;

h) resolution of the screen to the physical horizontal and vertical calculation pixels.

20. In a technical sheet of the television can affect a number of television models supplied by one and the same manufacturer.

21. The information contained in the technical sheet of televisions can be provided in the form of a color or black and white copy of the label. In such a situation, the information specified in clause 19 and not shown on the label must also be provided .

Vi. Determination of energy efficiency classes of televisions

22. The energy efficiency class of TVs is determined in accordance with its annual energy consumption in accordance with table 4.

Table 4. Classes of energy efficiency of TVs

Table 4

Energy efficiency class	Efficiency Index (EEI) energy
A +++	EEI ≤ 0.10
A ++	0.10 < EEI ≤ 0.16
A +	0.16 < EEI ≤ 0.23
A	0.23 < EEI ≤ 0.30
IN	0.30 < EEI ≤ 0.42
FROM	0.42 < EEI ≤ 0.60

D	0.60 < EEI ≤ 0.80
E	0.80 < EEI ≤ 0.90
F	0.90 < EEI ≤ 1.00
G	EEI > 1.00

Annex N 5. Requirements for the energy efficiency of domestic and office electric equipment in operation standby and mode off

Appendix N 5
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These requirements apply to manufactured in circulation in the territory of the Eurasian Economic Union - the customs (the Union), the following equipment intended for use in the home or in the

office (in fact those outside the premises) do not have special training of users, working directly on the electrical network with rated voltage up to 250 V (inclusive) (hereinafter - equipment):

a) washing machines, tumble dryers and other equipment for processing (washing, ironing, drying, cleaning) linen, clothes and shoes;

b) dishwashers ;

c) electric ovens, electric stoves ; d) microwave ovens;

e) toasters, deep fryers, electric knives, coffee grinders, coffee machines and other appliances for cooking and processing food;

e) devices for shearing hair dryers, razors, tooth brushes, massage equipment , and other equipment for the care of the body;

g) equipment for opening and closing vessels and packages; h) scales;

i)

terminal communication equipment ;

j) printers;

k)

scanners; m)

monitors;

n) active acoustic system with power from the AC

power; o) multimedia projectors;

o) radio receivers;

p) video tape

recorders; c) video

cameras;

r) sound recording

equipment; y) sound amplifiers;

t) home theaters;

x) electric musical instruments ;

v) other equipment for recording and reproducing images and sound, including equipment for transmitting images and sound in other ways than through telecommunication channels, by means of signals or in another way (except for televisions);

h) toys, equipment for carrying out of leisure and training activities, including electric miniature rail road and racing tracks, hand-held console for video games, sports equipment with electrical and electronic components, other toys and fitness equipment.

II. Basic concepts

2. For the purposes of applying these Requirements , concepts are used that mean the following:

"operating mode" - the state of the equipment in which it is connected to the power source and, in accordance with its intended purpose, performs at least one of its main functions;

"mode off" - state of the equipment, at which it is connected to the source of supply is not located in a working mode or a mode of expectation and can perform only the functions of ensuring the implementation of requirements for electromagnetic compatibility and (or) display mode off;

"standby mode" - a condition where the equipment is connected to a source of power, and at the same unlimited time carries out the function of reactivation (in fact those with the indication of the ability (readiness) to reactivation) and (or) function to inform or display condition;

"function to inform or display the state" - feature, which provides the provision of information or a map to display the state of the equipment, including an indication of the time;

"reactivation function" - a function that provides, by means of remote control devices, internal sensors or time delay regulators, the ability to switch from standby mode to operating mode, in which the main and (or) additional functions of the equipment are activated.

III. Requirements for the energy efficiency of equipment in standby and shutdown mode and the specifics of determining energy efficiency indicators

3. The equipment must have a power supply mode control device (device) of at least one of the following types:

a) an automatic control device that, in the shortest possible time, transfers equipment connected to the network, but not performing the main operating functions and not associated with other equipment, into standby mode or off mode, if this function does not interfere with its intended use;

b) mechanical control device located on the front panel is connected to the network and installed in the operating position of the equipment or in other visually observable and easily accessible location in the equipment manual switching equipment in mode standby or mode off.

4. Equipment must be mode off and (or) Mode Standby (with the exception of cases, when it is impractical to the point of destination of equipment).

The power consumption of the equipment in standby mode should not exceed the values shown in Table 1.

Table 1. Consumption power equipment in the mode standby

Table 1

Type of device management mode power supply	Functions performed	Power consumption (W), no more
On 1 September 2021 the year		
Automatic control	reactivation function (including those with a display capacity (readiness) to reactivation)	0.50

device	function of informing or displaying the status (regardless of the presence or absence of the reactivation function)	1.00
Mechanical	reactivation function	0.10
control device	reactivation function with indication of ability (readiness) for reactivation	0.30

5. Consumable power equipment in mode off not should exceed the values specified in Table 2.

Table 2. Power consumption of equipment in the mode

shutdown

Table 2

Type of device management mode power supply	Power consumption (W), no more
On 1 September 2021 the year	
Mechanical control device	0.30
Automatic control device	1.00
On 1 September 2022 the year	
Automatic control device	0.50

6. Attached to the equipment operating documents provided by paragraph 13 of the technical rules of the Union "About requirements to the energy performance of energy-consuming devices" (EAEC TR 048/2019) (hereinafter - the Technical Regulation) should contain information on its characteristics and parameters in the mode of expectation and mode shutdown:

- a) consumption power (in W) with rounded to 1 decimal mark;
- b) the time during which the equipment automatically switches to standby and (or) off mode .

7. The set of documents to the equipment, specified with the view of the selected applicant scheme declaration of conformity in subparagraph "a" of paragraph 28 or paragraph "a" of paragraph 29 of the Technical Regulations for the equipment in addition must be included the following information:

a) The following controlled during tests (measurements)

parameters: temperature of the surrounding medium (in ° C);

test voltage (in V) and frequency (in Hz);

total ratio of harmonic distortion in the system power supply;

the availability of information (documentation) about the used during the test (measurement) equipment, information about the conduct of the test (measurement) and circuit connections;

b) the following parameters of the equipment in standby mode and off mode :

used a method of measurement;

characteristics of devices with which the sample is checked for compliance with the provisions of paragraphs 4 and (or) 5 of these Requirements, and the time for which the sample is automatically switched to the mode of waiting mode is turned off or another mode, which does not exceed the value of

the consumed power, consumption power (in W) with rounded to 2 decimal digits;

description of the method for selecting or programming the operating mode of the equipment;

the sequence of actions to achieve a mode in which the equipment automatically changes the operating mode ;

information about the equipment operation .

IV. Permissible deviations energy parameters efficiency equipment when conducting tests (measurements) after release it in circulation

8. In the case of tests (measurements) of equipment after its release into circulation in the customs territory of the Union , tests (measurements) of one sample of each model of equipment are carried out for compliance with its provisions of paragraphs 4 and 5 of these Requirements.

Sample equipment is considered relevant to the present requirements, if the obtained values do not exceed the limit values more than on 10% or 0.10 W to control consumption of power, whose magnitude is respectively greater than or not greater than 1.00 watts.

If the obtained values do not correspond to the specified values, tests (measurements) should be carried out on 3 additional samples of each equipment model .

The equipment model is considered to be in compliance with these Requirements if the average parameter values for 3 samples of this model meet the requirements specified in the second paragraph of this clause.

In other cases, this model of equipment should be considered as not complying with the requirements of technical regulations.

Appendix No. 6. Requirements for the energy efficiency of household automatic washing machines

Appendix N 6
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -

I. Field of application

1. These requirements apply to put into circulation in the customs territory of the Eurasian Economic Union (hereinafter - Union) household automatic washing machines (hereinafter - the washing machine), which can be used and in commercial purposes (to manufacture, in trade and sphere of services), powered from the network of alternating current with a nominal voltage up to 250 in the (inclusive), washing machines, which, along with the power of the network can operate on electric batteries (rechargeable batteries), as well as built-in washing machine, for the exception of the combined washing and drying machines.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"automatic washing machine" - a washing machine in which all operations and their control when washing textiles are completely carried out by the machine, no user intervention at any stage of the program before its completion is required;

"household washing machine" - automatic washing machine, intended for washing and rinsing of textile products with the use of water, which also includes in itself the function of spin and is the main way for the non-professional use;

"program execution time" - the time from the start of the program start (except for the delay set by the user) to its end;

"plug- washing machine" - household automatic washing machine designed for installation in a prepared recess in a wall or another similar place in the cabinet or other furniture;

"combined washer-dryer" - Domestic washing machine, which includes the function of squeezing and drying textile articles by means of heat treatment and the rotation of the drum;

"nominal capacity" - the maximum established by the manufacturer of the mass of dry textile goods in kilograms, which can be processed by the selected program;

"program" - a series of operations that are predefined in the washing machine and are used to wash certain types of textiles ;

"mode" off "- state, when the washing machine is switched off by the user with assistance means controls to display or switch to achieve the mode of the smallest power consumption that can be saved for an unlimited time when connected to the main power source and is used in accordance with the instruction manual. The lack of controls available to the user means a state in which the washing machine itself goes into a steady state of power consumption;

"Mode " is left enabled " - mode is the lowest consumption of electricity, lasting in for unlimited time after the completion of the installed user program without further intervention the user;

"residual moisture content" - an indicator that determines the amount of residual moisture that is contained in the base load after the end of the spin function ;

"cycle" - the complete process of the washing machine in accordance with the selected program, consisting of a series of different operations (washing, rinsing, spinning , etc.);

"partial load" - half of the nominal capacity of the washing machine for a given program;

"equivalent washing machine" - a model of the washing machine with the parameters (rated capacity, technical and performance characteristics, the consumption of electricity, consumption of water, the value of acoustic noise) during the wash and spin, the same indicators of another model of the washing machine of the same manufacturer, released in circulation by other trade designation.

III. Requirements for the energy efficiency of washing machines and the specifics of determining energy efficiency indicators

3. In relation to the washing machine, appropriate tests (measurements) must be carried out and the following indicators must be determined :

energy efficiency index (EEI); washing efficiency

index ();

water consumption ();

content of residual moisture (D).

Calculations with the necessary tests (measurements) are made in accordance with paragraphs 5-7 of these Requirements.

To calculate energy consumption and determine other characteristics of washing machines, measurements should be made for full cycles, during which cotton textiles with standard pollution are processed at a nominal washing temperature of 60 ° C and 40 ° C (hereinafter, respectively, the standard washing program "Cotton 60 ° C" and the standard wash program "Cottons 40 ° C"). These standard program must be marked on the device for selecting a program, and (or) on the display of the washing machine (if any) as the standard program washing "Cotton 60 ° C" and a standard program washing "Cotton 40 ° C".

"The standard washing program" Cotton 60 ° C "and the routine washing "Cotton 40 ° C" can be also designated by the arrows on the device for selecting the program or to display:

for the Cotton 60 ° C program :

;

for the Cottons 40 ° C program :

;

for the standard Cotton program in a household washing machine, where the program selection is separate from the temperature selection :

...

4. Energy efficiency index is calculated according to the following formula (rounded to 1 decimal place):

,

Where:

- the annual consumption of electrical energy by the washing machine;

- standard annual consumption of electrical energy by the washing machine.

calculated (in kWh / year) using the following formula (rounded to 2 decimal places):

$$= 47.0 \times s + 51.7,$$

where c is the nominal capacity (in kg) for the standard 60 ° C cotton wash program at full load or for the 40 ° C cotton standard wash program at full load, in which the lower of both values is decisive .

The annual electrical energy consumption of the washing machine () (in kWh / year) is calculated using the following formula (rounded to 2 decimal places):

,

Where:

- average energy consumption (in kWh) (rounded to 3 decimal places);

-

average power consumption in off mode (in W) (rounded to 2 decimal places);

-

average power consumption in the "left on" mode (in W) (rounded to 2 decimal places);

- average program duration in minutes (rounded to the nearest whole value);

220 is the conditionally expected number of standard washing cycles per year.

If the washing machine is equipped with a control system that at the end of the program automatically converts the washing machine in operation

"off", then calculated with taking into account the duration of the regime "is left switched on" by the following formula:

,

Where

- the time the washing machine has been in the "left on" mode (in minutes) (rounded to the nearest whole value).

Average power consumption for one cycle wash () (in kWh) is calculated by the following formula (rounded off to three decimal digits):

,

Where:

- energy consumption (in kW) for the standard washing program "Cotton 60 ° C" at full load (rounded to 3 decimal places);

- power consumption (in kW) for the standard 60 ° C cotton program at partial load (rounded to 3 decimal places);

- energy consumption (in kW) for the standard 40 ° C cotton program at partial load (rounded to 3 decimal places).

The average power consumption in off mode () in W is calculated using the following formula (rounded to 2 decimal places):

,

Where:

- power consumption in the "off" mode (in W) for the standard washing program "Cotton 60 ° C" at full load (rounded to 2 decimal places);

- power consumption in off mode (in W) for the standard 60 ° C cotton wash program at partial load (rounded to 2 decimal places);

- power consumption in off mode (in W) for the standard 40 ° C cotton wash program at partial load (rounded to 2 decimal places).

The average power consumption in "left on" mode () (in W) is calculated using the following formula (rounded to 2 decimal places):

,

Where:

- power consumption in the "left on" mode (in W) for the standard wash program "Cotton 60 ° C" at full load;

- power consumption in the "left on" mode (in W) for the standard wash program "Cotton 60 ° C" at partial load;

- consumption of power in the mode of "left enabled" (in watts) for a standard program washing "Cotton 40 ° C" at partial loads.

9 Average duration of execution of the program () in minutes calculated by the following formula (with rounding to integer values):

,

Where:

- the time of the standard washing program "Cotton 60 ° C" in minutes with a full load;

- while performing standard wash program "Cotton 60 ° C" (in minutes) at partial loading;

- running time of the standard 40 ° C cotton program (in minutes) at partial load.

The time the washing machine has been in the "left on" mode () in minutes is calculated using the following formula (rounded to the nearest whole value):

,

Where:

- time in the "left on" mode (in minutes) for the standard wash program "Cotton 60 ° C" at the nominal load;

- time in the "left on" mode (in minutes) for the standard wash program "Cotton 60 ° C" at partial load;

- time to time "is left switched on" (in minutes) for the standard program washing "Cotton 40 ° C" at partial load.

5. To calculate the washing efficiency index (), the washing efficiency of the test washing machine is compared with the washing efficiency reference the washing machine when the work on the standard program, washing the "Cotton 60 ° C" with the full and at part- load , and when the work on the standard program, washing the "Cotton 40 ° C" at partial load.

The washing efficiency index () is calculated using the following formula (rounded to 3 decimal places):

Where:

- washing efficiency index for the standard washing program "Cotton 60 ° C" at full load;

- washing efficiency index for the standard washing program "Cotton 60 ° C" at partial load;

- washing efficiency index for the standard wash program "Cotton 40 ° C" at partial load.

Washing efficiency index for each standard wash program

cotton textiles () is calculated using the following formula:

,

Where:

- efficiency of washing with the test washing machine in during one cycle (cycle i) (rounded up to 3 decimal digits);

- the average washing efficiency of

the reference washing machine; n is

the number of test cycles , which should be:

at least 3 for the standard 60 ° C cotton wash program at full load;

not less than 2 for standard programs washing "Cotton 60 ° C" at partial loading;

not less than 2 for standard programs washing "Cotton 40 ° C" at partial loads.

The washing efficiency (W) is the average value determined from the test strip after completion of the corresponding test cycle .

6. Annual water consumption () is calculated according to the following formula (rounded to the nearest whole number):

$$= x 220,$$

Where:

- average water consumption ;

220 is the total number of standard wash cycles per year.

Average water consumption () is calculated (in liters) (rounded to the nearest whole number) using the following formula:

,

Where:

- water consumption for the standard washing program "Cotton 60 ° C" at full load;

- water consumption for the standard wash program "Cotton 40 ° C" at partial load;

- consumption of water for the standard program washing "Cotton 40 ° C" at partial load.

7. The residual moisture content (D) for each program is calculated (in%) (rounded to the nearest whole value) using the following formula:

,

Where:

- residual moisture content for the standard 60 ° C cotton wash program at full load;

- the content of the residual moisture to a standard program washing "Cotton 60 ° C" at partial loading;

- the content of the residual moisture to a standard washing program "Cotton 40 ° C" at partial loads.

8. Washing machines from September 1, 2021 must meet the following requirements:

the energy efficiency index (*EEI*) of washing machines with a nominal capacity of 4 kg or more should be less than 59, and washing machines with a nominal capacity of less than 4 kg - less than 68;

washing efficiency index () of washing machines with a nominal capacity of more than 3 kg should be more than 1.03, and washing machines with a nominal capacity of not more than 3 kg - more than 1.00;

in washing machines, it must be possible to wash at a temperature of 20 ° C with the designation of the corresponding program on the device for selecting the program and / or on the display of the washing machine (if any);

the water consumption () of the washing machine (in liters) must correspond to the following inequality:

,

where e is the lower of the nominal capacity of the washing machine for the standard washing program "Cotton 60 ° C" at partial load of the standard washing program and "Cotton 40 ° C" at partial load loading.

The water consumption () is taken equal to the water consumption when washing by

standard program "Cotton 60 ° C" at full load (, 60) and is calculated using the following formula (rounded to 1 decimal sign): = , 60.

9. Operational documents attached to washing machines, provided for in paragraph 13 of the technical regulation of the Eurasian Economic Union "On requirements for the energy efficiency of energy-consuming devices" (TR EAEU 048/2019), (hereinafter referred to as the technical regulation), must contain the following information:

a) information about the standard programs for washing cottons at 60 ° C and 40 ° C, called the standard washing program "Cotton 60 ° C" and the standard washing program "Cotton 40 ° C" (it must be indicated that they are suitable for washing usually soiled cotton products are the most efficient programs

in terms of energy consumption and water consumption for washing cotton fabrics, and it should also be noted that 14 the actual water temperature may differ from the declared temperature for a given cycle);

b) information on the amount of electricity consumption in the "off" mode and in the "left on" mode ;

c) information on the duration of the washing machine cycle, residual moisture, energy consumption and water consumption when using the main washing programs at full or partial load or for both load volumes ;

d) recommendations regarding the choice of the type of detergent for washing at different temperatures.

IV. Acceptable deviation parameters of energy efficiency washing machine when carrying out

tests (measurements) after their release into circulation

10. In the case of tests (measurements) of washing machines after their release into circulation in the customs territory of the Union , tests (measurements) of one type sample of each model of the washing machine are carried out .

Model washing machine deemed appropriate by this requirement if the parameter values resulting from the test (measurement) and the characteristics of the washing machine section III correspond to these Requirements and nominal values declared by the manufacturer, to within the tolerances specified in Table 1.

Table 1. Possible deviations

Table 1

Measured parameter	permissible deviations
Annual electricity consumption	Measured value not should exceed the nominal value more than on 10%
Measured parameter	permissible deviations

Washing efficiency index	The measured value is not must be less than the nominal values more than on 4%
Electricity consumption	Measured value not should exceed the nominal value more than on 10%
Time work program	The measured value is not be greater than the set value more than on 10%
consumption of water	Measured value not should exceed the nominal value more than on 10%
The consumption of electricity in the mode "off" and in operation "is left enabled"	If the values and higher than 1.00 W, that they do not have to exceed the nominal value of more than to 10%. If the values and no more than 1.00 W, they should not exceed the set value more than at 0.10 W
Duration of stay in the "left on" mode	Measured value not should exceed the nominal value more than on 10%

The nominal value means the value declared by the manufacturer.

In other cases, tests (measurements) should be carried out on 3 additional copies of each model of the washing machine. A washing machine model is considered to comply with these Requirements if the average values of the measurement results of these 3 additional copies of washing machines comply with the requirements specified in Section III of these Requirements and the declared nominal values within the permissible deviations specified in Table 1, with the exception of value of consumption power (), the value of which does not should exceed the claimed manufacturer value more than at 6%.

Otherwise, this model and all other equivalent washing machines should be considered as not complying with the requirements of the technical regulation.

V. Contents of the label and technical sheet of the washing machine

11. The washing machine label must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. energy efficiency class . Symbol energy efficiency and an arrow corresponding class energy efficiency must be located on the same level;

IV. annual electricity consumption () (kWh / year) (rounded to the nearest whole number);

V. annual water consumption () (in l / year) (rounded to the nearest whole number);

Vi. nominal capacity (in kg) for the standard wash program "Cotton 60 ° C" when fully loaded or standard program washing "Cotton 40 ° C" when fully loaded;

Vii. spin efficiency class ;

Viii. corrected sound power level with corresponding pictograms for washing and spinning modes for the standard 60 ° C cotton program (in dB (A) relative to 1 pW) (rounded to the nearest whole number).

12. The technical sheet included in the operational documents for washing machines must contain the following information:

a) The name or trade mark (if any) of the manufacturer;

b) the identification number of the model of the washing machine (usually an alphanumeric code that distinguishes a particular model of the washing machine from other models of the same brand or manufacturer with the same name);

c) nominal capacity (in kg) for the standard 60 ° C Cotton program at full load or the standard 40 ° C Cotton program at full load (the lower of the two values is decisive);

d) energy efficiency class ;

e) annual electricity consumption () (in kWh / year). It is indicated as follows: "Energy consumption" X ", kWh / year, calculated for 220 standard washing cycles of the Cottons 60 ° C and Cottons 40 ° C

programs at

full and partial load, "off" and "left on" modes . The

actual electricity consumption depends on the intensity and operating modes of the washing machine ", where X is the value of the annual electricity consumption (rounded to an integer);

e) the consumption of electricity , , for standard programs "Cotton 60 ° C" at full and partial loading, but also the standard program "Cotton 40 ° C" at partial loading (in kWh);

g) power consumption in the "off" mode (in W) and in the "left on" mode (in W);

h) annual water consumption () (in l / year). It is indicated as follows: "Water consumption" X ", l / year, calculated for 220 standard working cycles of washing programs " Cotton 60 ° C ", " Cotton 40 ° C " at full and partial loading. The actual water consumption depends on the operating conditions ", where X is the value of the annual water consumption (rounded to the nearest whole number);

i) spin efficiency class . Indicated as follows: " Class " X " spin efficiency on a scale from G (lowest efficiency) to A (highest efficiency)."

If the information in the technical sheet is presented in the form of a table, it is allowed to make a record of the spin efficiency class in a different form, indicating the class gradation from G (lowest efficiency) to A (highest efficiency);

k) the maximum frequency of rotation of the drum at the time of operation of the washing machine according to a standard program washing "Cotton 60 ° C" when fully loaded and the standard wash program "Cotton 40 ° C" at partial

load, where the determining factor is the lesser of the two values, and the content of residual moisture during the time of operation of the washing machine according to a standard program washing "Cotton 60 ° C" when fully loaded and the standard program washing "Cotton 40 ° C" at partial load, where the determining factor is the greatest value;

k) an indication that the standard washing programs "Cotton 60 ° C", "Cotton 40 ° C", to which the information on the label and in the technical sheet refers, are intended for washing normally soiled cotton linen and are most efficient in terms of energy consumption and water consumption;

m) the average value of the execution time of the standard washing programs "Cotton 60 ° C" at full and partial load and "Cotton 40 ° C" at partial load (in minutes) (rounded to the nearest whole number);

m) the duration of the "left on" mode, if the household washing machine is equipped with a power control system in minutes;

o) Corrected sound power level with corresponding pictograms for washing and spinning modes for the standard 60 ° C Cotton program (in dB (A) relative to 1 pW) (rounded to the nearest whole number).

o) if necessary, an indication that the household washing machine is built-in.

13. In a technical sheet of the washing machine may reflect information about the number of washing machines, supplied by one and the same manufacturer.

14. The information contained in the technical sheet of the washing machine can be provided in the form of a color or black and white copy of the label. In this case, the information specified in paragraph 12, but not indicated on the label, must also be provided.

Vi. Determination of energy efficiency and spin efficiency classes for washing machines

15. The energy efficiency class of a washing machine is determined in accordance with its energy efficiency index (*EEI*) in accordance with table 2.

Table 2. Energy efficiency class of the washing machine

Table 2

Energy efficiency class	Energy efficiency index
A +++ (most effective)	$EEI < 46$
A ++	$46 \leq EEI < 52$
A +	$52 \leq EEI < 59$
A	$59 \leq EEI < 68$
B	$68 \leq EEI < 71$

C	11 EEI <87
D (least efficient)	EEI 87

16. The spin efficiency class of the washing machine is determined in accordance with the residual moisture content (D) in accordance with table 3.

Table 3. Classes of efficiency of a spin of the washing machine

Table 3

Class of efficiency Spin	The content of residual moisture (D)
A (most effective)	D < 45

IN	45 D < 54
FROM	54 D < 63
D	63 D < 72
E	72 D < 81
F	81 D < 90
G (least efficient)	D 90

Annex N 7. Requirements for the energy efficiency of domestic dishwashing machines

Appendix N 7
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These requirements apply to put into circulation in the customs territory of the Eurasian Economic Union (hereinafter - union), powered by AC mains with rated

voltage up to 230 V in household dishwashing machines (hereinafter - dishwashing machine), in that including:

a) used for non-domestic purposes;

b) capable of operating also from electric batteries (accumulators); c) built-in.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"Built- dishwashing machine" - washing machine, designed for installation in furniture, in a specially prepared openings, recesses, niches in the cell walls, panels, windows, shelves, and etc .;

"a set of dishes" - a set of dishes and dining equipment, intended for one person;

"rated capacity" - the maximum specified by the manufacturer number of sets of settings, which can be processed in a dishwashing machine in accordance with the selected program;

"dishwasher" - designed primarily not for professional use dishwashing machine, which carries out cleaning, washing, rinsing and drying of ceramic, glass, metal, plastic and other dishes, canteens appliances and kitchen equipment by mechanical, thermal, electrical and chemical influences;

"program" - a series of pre- established and declared by the manufacturer of operations for processing dishes at a certain degree and (or) type of contamination, together forming a complete cycle;

"duration of the program" - a period of time from the beginning of startup of the program to its end without taking into account the delays defined (programmable) by the user;

"mode off" - state of the dishwasher is connected to a power source and used in accordance with the operating instruments with which it is switched off with the help of available user control device or switch with a view to achieve the mode of minimum consumption of energy, which can continue for an unlimited time, or condition, at which the dish- washer itself proceeds in the mode of minimum power consumption during the absence of user resources management;

"mode left on" - the mode of minimum consumption of electrical energy, which without additional user intervention (except for operations to unload the dishwasher) can continue for an unlimited time after the end of the cycle;

"loop" - complete process operation dishwashing machine in accordance with the selected program, consisting of a series of different operations (cleaning, washing, rinsing, drying and others.);

"equivalent washing machine" - model of dishwasher machines with performance (rated capacity, technical and performance characteristics, the consumption of electric energy consumption of water, adjusted sound pressure level), similar indicators other model dishwashing machines of the same manufacturer, released in circulation on the customs territory of the Union under another trade designation (name).

III. Requirements for energy efficiency of dish washing machines and especially the definition of indicators of energy efficiency

3. In respect of the dish machine must be carried out appropriate tests (measurements) and identified the following parameters:

energy efficiency index (EEI); washing efficienc

y index ();

drying efficiency index ().

Appropriate calculations with the necessary tests (measurements) are made in accordance with paragraphs 4-6 of these Requirements.

To calculate the consumption of electric energy and to determine other characteristics of the dishwashers must make measurements for a complete cycle in for which is performed processing of the maximum nominal capacity with standard pollution (hereinafter - standard program washing). This cycle must be set on the dishwasher and / or on the display of the dishwasher, if available, in the standard program. On dishwashers with automatic program selection or automatic feature selection or maintenance of the selected program, this cycle should be installed in a standard used by the program.

4. The Energy Efficiency Index (EEI) is calculated using the following formula (rounded to 1 decimal place):

Where:

by car;

,

- annual consumption of electrical energy of the dishwasher

- the standard annual consumption of electrical energy dishwashing machine.

calculated (in kWh / year) using the following formula (rounded to 2 decimal places):

Where:

- consumption of electrical energy for a standard cycle (in kWh) (rounded to 3 decimal places);

- power consumption in "off" mode (in W) (rounded to 2 decimal places);

- power consumption in the "left on" mode (in W) (rounded to 2 decimal places);

- the running time of the program for the standard wash cycle (in minutes) (rounded to the nearest whole number).

If the dishwasher machine is equipped with a system of regulation of energy consumption, which is after the time 71 by the end of the program automatically converts the dishwashing machine in the mode "off", then

calculated (in kWh / year) using the following formula (rounded to 2 decimal places):

,

Where:

- time in the on state (in the "left on" mode) for a standard wash cycle (in minutes) (rounded to the nearest whole minute);

280 is the total number of standard wash cycles in 1 year.

Standard annual consumption of electric energy is calculated (in kWh / year) (with rounded to 2 decimal digits) by the following formulas:

for dishwashing machines with a nominal capacity (ps) is not less than 10 sets of dishes , and a width of not more than 50 cm:

$$= 7.0 \times ps + 378,$$

for dishwashing machines with a nominal capacity (ps) is not more than 9 sets dishes and a width not more than 50 cm:

$$= 25.2 \times ps + 126,$$

Where:

ps is the nominal capacity.

5. To calculate the index of efficiency of washing test dishwashing machines are compared with the efficiency of its cleaning efficiency washing standard dishwasher machine.

Washing efficiency index () is calculated using the following formula (rounded to 2 decimal places):

,

Where:

-

efficiency washing test dishwasher machine during testing in for one cycle (cycle i);

-

efficiency washing reference dishwashing machine during testing in for one cycle (cycle i);

n - number of cycles (must be at least 5).

Efficacy sink (C) is the average value of the degree of contamination for each object set dishes loaded in the dishwasher machine after completion of the standard cycle sink defined in points according to Table 1.

Table 1. Assessment of the degree of pollution

Table 1

Number of pollution points (n)	Total contamination area () (mm)	Assessment of the degree of pollution
n = 0	= 0	5 (maximum efficiency)
0 < n < 4	0 < 4	four
4 < n < 10	0 < 4	3

10 < n	4 < 50	2
not considered	50 < 200	one
not considered	200 <	0 (minimum efficiency)

6. To calculate the drying efficiency index () of the test dishwasher , compare the drying efficiency with the drying efficiency of the reference dishwasher .

calculated using the following formula (rounded to 2 decimal places):

,

Where:

- the efficiency of drying the test dishwasher machine during testing in for one cycle (cycle i);

- efficiency of drying reference dishwashing machine during testing in for one cycle (cycle i);

n - number of cycles (must be at least 5).

Efficacy washing (D) is the average value which characterizes the presence of moisture at each loaded into the dishwasher dining instrument after completion of the standard cycle sink defined in points according to Table 2.

Table 2. Estimation of moisture level

Table 2

Units moisture subvolume of points () and kov ()	The total area of wet areas ()(mm)	The rating level of humidity
= 0 and = 0	not considered	2 (maximum efficiency)
1 < 2 or = 1	< 50	one
2 < 2 or 1 and / or = = 1 and =	> 50	0 (minimum efficiency)

7. Annual water consumption () is calculated (in l) according to the following formula (rounded to the nearest whole number):

$$= x 280,$$

Where:

- water consumption for a standard wash cycle .

8. Dishwashing machine must meet the following requirements:

a) *EEI* dishwashing machines with a nominal capacity of 11 and more sets of dishes, as well as dish washing machines with a rated capacity of not more than 10 sets of dishes and width more than 45 cm should be less than 63;

b) *EEI* dishwashing machines with a nominal capacity of 8 and 9 sets of dishes, as well as dish washing machines with a rated capacity of 10 sets of dishes , and a width of not more than 45 cm should be less than 63;

c) must be more than 1.12;

g) dishwashing machines with a nominal capacity of more than 7 sets dishes must be more than 1.08;

e) dishwashers with a nominal capacity of no more than 7 sets of dishes must be more than 0.86.

9. Operational documents provided for in clause 13 of the technical regulation of the Eurasian Economic Union "On requirements for the energy efficiency of energy - consuming devices" (TR EAEU 048/2019) (hereinafter referred to as the technical regulation) must contain the following information on the characteristics and parameters of dishwashers :

a) information on the standard program, washing (it should be pointed out that the dishwasher is suitable for washing crockery and cutlery of conventional pollution and is the most effective program to the point of view of the consumption of electric energy and the consumption of water);

b) power consumption in the on state (in the "left on" mode) and in the "off" mode ;

c) information on the duration of the dishwasher cycle and the water consumption when using the main washing program .

IV. Permissible deviations of the parameters of the energy efficiency of dishwashers during tests (measurements) after their release into circulation

10. In the case of tests (measurements) of dishwashers after their release into circulation in the customs territory of the Union , tests (measurements) of one typical copy of each model of the dishwasher are carried out .

Model dishwashing machines deemed appropriate by this requirement if the parameter values and characteristics of the dishwasher machine comply with section III of these requirements and the nominal values declared by the manufacturer, in the range of allowable deviation, indicated in Table 3.

Table 3. Possible deviations

Table 3

Measured parameter	permissible deviations
The annual consumption of electric energy	measured value not should exceed nominal value more than on 10%
Index efficiency sinks	measured value should n't be less than nominal meaning more than at 10%
Measured parameter	permissible deviations
Index efficiency drying	measured value should n't be less than nominal meaning more than at 19%

The consumption of electric energy	measured value not should exceed the nominal value more than on 10%
Duration of the program	measured value not should exceed the nominal value more than on 10%
consumption of water	measured value not should exceed the nominal value more than on 10%
Consumption in power mode 'off' and mode 'is left switched on "	if the values and greater than 1.00 W, then they do not need to exceed the nominal value more than to 10%. If the values and no more than 1.00 W, they will not need to exceed the nominal value more than at 0.10 W
Duration of stay in the "left on" mode	measured value not should exceed the nominal value of 7} more than 10%

The nominal value means the value declared by the manufacturer.

In other cases, tests (measurements) should be carried out on 3 additional copies of each dishwasher model. Model dishwashing machines deemed appropriate the present Requirements, if the average values of the measured parameters of 3 additional copies dishwashing machines meet the requirements specified in Table 3 of these Claims, for excluding the consumption of electric energy measured value which is not exceeds the nominal values more than at 6%.

In other cases, the model of the dishwasher and all other equivalent dishwashing machine should be considered as a not appropriate requirements of technical regulations.

V. content label and technical sheet dishwashing machine

11. Label dishwashing machines must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. energy efficiency class ;

IV. annual electricity consumption () (in kWh / year) (rounded to the nearest whole number);

V. annual water consumption () (in l / year) (rounded to the nearest whole number);

VI. drying efficiency class ;

Vii. nominal capacity with standard sets of dishes for a standard washing cycle ;

Viii. corrected sound power level (in dB (A) relative to 1 pW) (rounded to the nearest whole number).

12. The technical sheet, which is part of the operational documents for dishwashers , must contain the following information:

a) The name or trade mark (if any) of the manufacturer;

b) identification number of model dishwashing machine manufacturer (as usually alphanumeric, which distinguishes a particular model of dishwasher machines from other models of the same trade mark or the manufacturer with this same name);

c) nominal capacity for a standard wash cycle in canteen sets;

d) energy efficiency class ;

e) annual electricity consumption () (in kWh / year). Indicated as follows: "Power X, kWh / year, 280 defined for the standard working cycles with the use

of cold water under conditions with low power consumption. Actual energy consumption depends on the intensity and modes of device use ", where X is the annual energy consumption (rounded to an integer);

f) energy consumption () (in kWh) for a standard duty cycle;

h) annual water consumption () (in l / year). It is indicated as follows: "Water flow rate X, l / year, determined for 280 standard operating cycles. Actual water flow rate depends on intensity and modes device use ", where X is the value of the annual water consumption (rounded to the nearest whole number);

i) drying efficiency class . Indicated as follows: "Class X drying efficiency on a scale from G (lowest efficiency) to A (highest efficiency)." If the information in the technical sheet is presented in the form of a table, it is allowed to record the drying efficiency class in a different form, indicating the class gradation from G (lowest efficiency) to A (highest efficiency);

j) an indication of the program, which is a standard operating cycle suitable for removing the usual degree of soiling of dishes with the best combination of energy and water consumption ;

k) execution time of the program of the standard work cycle (in minutes) (rounded to the nearest whole number);

m) the duration of the mode power saving () (in minutes), if the household washing machine is equipped with a system of regulation of power;

m) corrected sound power level (in dB (A) relative to 1 pW) (rounded to the nearest whole number);

a) an indication to the fact that the washing machine is built-in (if necessary).

13. A single dishwasher data sheet may contain information on a number of dishwashers supplied by the same manufacturer.

14. The information contained in the technical data sheet of dishwashers can be presented in the form of a color or black and white copy of the label of this dishwasher. In this case, the information specified in point 12 and missing on the label must also be indicated.

Vi. Determination of classes of energy efficiency of dish washing machines

15. Class energy efficiency dishwashing machines is determined in accordance with an index of energy efficiency

(EEI) in accordance with table 4.

Table 4. Classes of energy efficiency of dish washing machines

Table 4

Energy efficiency class	Energy efficiency index
A +++ (most effective)	EEI < 50
A ++	50 EEI < 56

A +	56 EEI < 63
AND	63 EEI < 71
IN	71 EEI < 80
FROM	80 EEI < 90
D (least efficient)	EEI 90

16. Class efficiency drying dish washing machine is determined on the basis of the residual content of moisture in accordance with table 5.

Table 5. Classes efficiency drying dish washing machines

Table 5

Energy efficiency class	The residual content of moisture (%)
-------------------------	--------------------------------------

A (most effective)	> 1.08
B	1.08 > 0.86
C	0.86 > 0.69
D	0.69 > 0.55
E	0.55 > 0.44
F	0.44 > 0.33
G (least efficient)	0.33

Appendix N 8. Requirements for the energy efficiency of set - top boxes

Appendix N 8
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These requirements apply to put into circulation in the customs territory of the Eurasian Economic Union (hereinafter - Union) autonomous (non- built-in receivers of television and (or) radio broadcasting) subscriber television set-top boxes (hereinafter - set-top boxes) for the conversion of open uncoded digital television and (or) broadcasting standard , and (or) the high-definition signals corresponding to the analog television and (or) radio, which does not have the function of "conditional access" and functions recording to removable media information in a standard format, but may be:

- a) the function of background recording of the broadcast program on the built-in storage device (hard disk) with the possibility of its subsequent viewing with a time shift ;
- b) the function of converting the received signals of high definition television broadcasting into a video signal of high or standard definition;
- c) second tuner.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"automatic decrease power" - function which switches the TV set-top box from the active mode of operation in mode standby operation after a certain time interval in the awake mode from the time the last intervention of the user, and (or) the change channel;

"active (working) mode" - a state when the equipment is connected to a power source and, in accordance with its purpose, performs at least 1 of the main working functions;

"second tuner" - a component part (node) TV consoles, which can be used to record programs of TV and (or) broadcast at the same time viewing a different broadcasting program;

"mode off" - state, at which the equipment is connected to the source of power, but not located in the active (working) mode, or the mode of waiting, and can perform only the functions of ensuring electromagnetic compatibility and (or) display mode off;

"Mode Standby" - a state at which the electrical equipment is connected to the source of supply and to within an unlimited time performs reactivation function (including the ability indication (ready) to reactivation) and (or) function to inform or display condition;

"conditional access" - a provider-controlled system for restricting access to paid TV and (or) radio broadcasting programs ;

"function to inform or display the state" - feature, which provides the provision of information or a map to display the state of the equipment, including an indication of the time;

"feature reactivation" - function provides through devices remote control, internal sensors or controllers holding time ability to transition from standby mode to active (working) mode at which there is activation of performing principal or main and additional functions of the equipment.

III. Requirements for energy efficiency

set - top boxes and the specifics of determining energy efficiency indicators

3. Power TV consoles not be exceed the limit values specified in the table.

Table. Energy limit values

Table

Product, optional component or function	Limit values of power consumption (W), no more	
	in the mode standby	in active (working) mode
TV set-top box, which provides performing only basic functions	0.50	5.00
Increased power consumption when available function information or the display state	+0.50	-

The increase in power consumption when there is the built-in storage of information (hard disk)	-	+6.00
Increased power consumption with a second tuner	-	+1.00
Increased power consumption when available functions of decoding signals of high -definition	-	+ 1.00

4. The television set-top boxes should be implemented mode expectations.

5. Set-top boxes must be equipped with automatic power saving or a similar function, taking into account the following requirements:

a) the set - top box must automatically switch from the active (operating) mode to the standby mode after no more than 3 hours of operation in the active (operating) mode from the moment of the last interaction with the user and (or) changing the channel with a warning signal within 2 minutes before switching into standby mode ;

b) The automatic power down function should be enabled by default.

6. Operational documents attached to set - top boxes provided for in clause 13 of the technical regulation of the Eurasian Economic Union "On requirements for the energy efficiency of energy - consuming devices" (TR EAEU 048/2019) (hereinafter - technical regulations) must contain the following information:

a) active and standby power consumption (in watts) (rounded to 2 decimal places), including power consumption for various optional functions and / or components;

b) a description of the selection or programming of the operating mode of the product;

c) the required sequence of actions (events) to achieve a state in which the product automatically changes the operating mode ;

d) RF input signals (for digital terrestrial broadcasting) and intermediate frequency input signals (for satellite broadcasting);

e) other information describing the operation of the product.

7. The set of documents to a TV set-top boxes, indicated with the view of the selected applicant scheme declaration of conformity in subparagraph "a" of paragraph 28 and paragraph "a" of paragraph 29 technical regulations for television set-top boxes in addition should be included the following information:

used test methods (measurements) of energy consumption; dates of tests (measurements); parameters controlled when conducting the test (measurement) temperature ambient environment; test voltage (in V) and frequency (in Hz); total coefficient of harmonic components of the network power supply; fluctuation of power supply voltage during tests (measurements); information about measuring instruments , settings and schemes used when conducting the test (measurement); test audio and video signals corresponding to the MPEG-2 transport stream ; location of controls.

It is not required to include in the specified set of documents documents concerning the requirements for the power consumed by such peripheral devices connected to a set-top box for receiving television and (or) radio broadcasting, such as an active antenna for receiving terrestrial broadcasting, a satellite low-noise monoblock converter, any cable or telecommunication modem.

IV. Valid Parameter deviations energy efficiency of television set-top boxes with carrying out tests (measurements) after their release into circulation

8. In case of tests (measurements) of set-top boxes after their release into circulation in the customs territory of the Union, tests (measurements) of one typical copy of each model of a set-top box are carried out.

Model TV consoles deemed appropriate the present Requirements, if the results of the test (measurement) does not exceed the limit values more than on 10% or 0.10 W for monitoring power consumption, the value of which exceeds or respectively does not exceed 1.00 watts.

In another case, checked more 3 typical instance of the model of television set-top boxes. A model of a set-top box is considered to be in compliance with these Requirements if the average value of the measurement results of these 3 typical copies of a set-top box does not exceed the limit values by more than the value specified in the second paragraph of this clause.

In other cases, this model of a set-top box should be considered as not complying with the requirements of technical regulations.

Appendix N 9. Requirements for the energy efficiency of electric lamps

Appendix N 9
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These requirements apply to put into circulation in the customs territory of the Eurasian Economic Union (hereinafter - Union) electric lamps omnidirectional light household and similar purpose, which can also be used for purposes other than lighting or incorporated into other electrical energy consuming devices (hereinafter - electric lamps), for the exception of lamps:

a) with the following chromaticity coordinates x and y :
 $x < 0.200$ or $x > 0.600$;

$y < -2.3172x + 2.3653x - 0.2800$ or $y > -2.3172x + 2.3653x - 0.1000$;

b) with directional light emission;

c) with a luminous flux of less

than 60 lumens or over 12,000 lumens; d) in which:

at least 6% of the total radiation in the range of 250-780 nm is between 250 and 400 nm;

the emission peak is between 315 and 400 nm (UVA) or 280 and 315 nm

(UVB); e) fluorescent lamps without a built-in ballast; f) high pressure gas

discharge ;

g) the lamp bulb a socket E14 / E27 / B22 / B15 for operating voltage 60 in or less, without embedded transformer;

h) special (baseless lamps, spotlights, mechanically durable lamps, lamps with a focusing base, series switching lamps, decorative lamps, light guide lamps, subminiature lamps, miniature lamps, small lamps, medium-sized lamps, large lamps, double-capped miniature lamps, projector lamps a specular reflector, pulsed lamps, lamps mixed light bulbs fluorescent light bulbs Moore, bactericidal lamps, spot lamps, ultraviolet lamps, belt lamps, electroluminescent lamps, infrared lamps, spectral lamps, lamps for household appliances (refrigerators, ovens and so on. etc.)).

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"Unit Power" - a device adapted for converting the supply network voltage AC current into voltage DC current or to another voltage alternating current;

"household lamp" - a lamp designed to illuminate the space in everyday life and is not a special lamp;

"outer shell lamps" - the second (outer) shell of the lamp, which is not required for the generation of light (e.g., the outer bulb, which must ensure the optimal conditions of operation of the burner, prevent the output of ultraviolet radiation and (or) scatter light and prevent from entering the mercury and glass in surrounding environment when breaking the burner);

"tungsten halogen lamp filament" - lamp filament yarn filament which consists of tungsten and is surrounded by a shell filled with halogens or halogen compounds;

"ignition time" - the time required for complete ignition and further burning of the lamp after it is connected to the network;

"time buildup" - time to for which achieved 60% of the nominal luminous flux after switching the lamp in the network;

"discharge lamp" - discharge lamp, in which the optical radiation occurs in the result of electric discharge in the gas;

"high pressure gas discharge lamp" - a gas discharge lamp in which a light emitting electric arc is stabilized by temperature

burner walls and the heat load on the flask walls exceeds $3 \text{ W} / \text{cm}$; "color

rendering index (Ra)" - a measure of the correspondence of visual perception a colored object illuminated by the investigated and standard light sources under certain observation conditions;

"compact fluorescent lamp" - fluorescent lamp, in which its ignition and stable operation provides a built-in socket ballast apparatus and other additional elements;

"correlated color temperature ($T_c [K]$)" - temperature radiator Plank (blackbody) perceived whose color most closely resembles the one which has given stimulus at the same brightness and under specified conditions of view;

"power factor" - the ratio of active (useful) power to total power when operating on alternating current;

"Lamp Luminous Flux Conservation Factor (LLMF)" is the ratio of the luminous flux of a lamp at a given moment of its service life (life cycle) to the initial luminous flux of this lamp (measured after 100 hours of operation);

"coefficient term service lamp (LSF)" - fraction still operating at the moment under certain conditions and at certain frequency switching (switching) lamps by total number of lamps;

"lamp" - a source of optical radiation created as a result of the conversion of electrical energy;

"incandescent lamp" - a lamp with a sealed bulb in which light is emitted by a body (filament) of incandescence when an electric current passes through it in a vacuum or an inert gas atmosphere;

"lamp directional light" - lamp, which radiates both at least 80% of their luminous flux in the range solid angle of 3.14 steradian (corresponding to a cone with an angle at the top of 120 °);

"non-directional lamp" means a lamp which is not a directional lamp;

"opaque lamp" means a lamp that does not meet the criteria for transparent bulb lamps, including compact fluorescent lamps";

"lamp with a transparent bulb" - a lamp (excluding compact fluorescent lamps), the brightness of which at a luminous flux of less than 2000

lm than 25000 cd / m, and at a high light flux than

100000 cd / m, the bulb which is transparent and yarn filament which, the light emitting diode or a gas discharge tube can be seen;

"fluorescent lamp" - a low- pressure mercury lamp in which light is emitted by one or more layers of phosphor, excited by ultraviolet radiation from an electrical discharge. Fluorescent lamps are supplied with a built-in ballast apparatus or without

him;

"model" - products of one type and one manufacturer;

"nominal value" - a quantitative value of a parameter under specified operating conditions, used to designate or identify a product and indicated by the manufacturer in the operating documents;

"cartridge" - a device into which, depending on the purpose, a lamp base or a starter is inserted for their fastening and connection to the electrical network;

"premature failure" - failure of the lamp before the expiration of the service life specified in the operating documents for the lamp;

"ballast" means a device, connected between the mains and one or more discharge lamps, which, by means of inductance, capacitance, or a combination thereof, mainly ensures the limitation of the lamp current to the required value. Control gears (hereinafter - ballast) can consist of one or more blocks. Ballast may also comprise means for transforming the mains voltage and the device, to help ensure the voltage for ignition lamp, preventing cold ignition decrease stroboscopic effect correction coefficient power and (or) the suppression of network interference. The ballast can be built into the lamp or be separate from it;

"discharge lamp" - a lamp in which optical radiation occurs as a result of an electrical discharge in gases, vapors of metals, halides or their mixture;

"calculated value" - a quantitative value of a parameter under certain (given) conditions. Values and conditions are given in the relevant standards or reported by the manufacturer (supplier). Unless otherwise stated, all requirements are expressed as calculated values. The calculated value is obtained by calculation, that is, not experimentally;

"luminous efficiency ()" - the ratio of the luminous flux emitted by the light source to the power consumed by it, expressed in lumens per watt (lm /

W). Luminous efficiency is an indicator of efficiency and efficiency of light sources and is calculated by the formula:

$$= \Phi / P,$$

Where:

Φ - luminous flux emitted by the light source; P - power consumed by it.

Additional devices, such as, e.g., ballasts, transformers and blocks power to consumption power of the lamp (F), is not taken into account;

"luminous flux (F)" - the energy of visible radiation transferred by the radiation flux per unit time (in lm), measured after 100 hours of lamp operation;

"light-emitting diode (LED)" - a semiconductor device with a p-n junction that emits incoherent visible radiation when an electric voltage is applied to it;

"LED lamp (LED lamp)" - a lamp containing 1 or more LED assemblies. The LED lamp can be supplied with a base;

"special lamp" - a lamp that, on the basis of its technical characteristics or according to the operating documentation attached to it, is not suitable for lighting the space in everyday life;

"shelf life lamp" - time of operation, after which the proportion of operating lamps of the total number of lamps under certain conditions and at certain frequency switching (switching) corresponds to the coefficient of the term of service of the lamp;

"chromaticity" - a characteristic of the color quality of the lamp, determined by its chromaticity coordinates;

"color rendering" - the influence of the spectral composition of the lamp radiation on the visual perception of objects illuminated by it, characterized by the color rendering index;

"switching cycle" - a sequence of switching on and off the lamp at regular intervals;

"base" - a part of an electric lamp, which serves to fix it in the socket and provides connection to the mains;

"brightness" - the amount of light reflected or emitted from a surface on one of the visible area in the range solid angle (cd / m).

III. Requirements for energy efficiency and operational documents of electric lamps

3. For electric lamps, appropriate tests (measurements) must be carried out and the following values determined:

- a) light output ();
- b) power consumption ();
- c) lamp luminous flux conservation factor (LLMF); d) the coefficient term service lamp (LSF);
- d) the term of service lamps; f) chromaticity;
- g) luminous flux (F);
- h) correlated color temperature (Tc [K]); i) color rendering index (Ra);
- j) the effectiveness of ultraviolet radiation; l) ignition time ;
- m) burn-up time ;
- n) power factor; o) brightness.

4. Nominal value of consumption power not be greater than maximum allowable values (), defined in dependence on the light flux (F) according to Table 1.

Table 1. Maximum permissible energy consumption values

Table 1

The effective date of these Requirements	The maximum allowable value consumed power () (in Watts) in dependence on the light flux (F) (in lumens) for lamps	
	with transparent flask	with an opaque bulb
On 1 September 2021 the year	$0.8 H (0.88 v C + 0.049 C)$	$0.24 v C + 0.0103 C$
On 1 September 2023 the year	$0.6 H (0.88 v C + 0.049 C)$	$0.24 v C + 0.0103 C$

Exceptions to the maximum permissible values specified in Table 1, are shown in Table 2.

Table 2. Exceptions to the maximum allowable value of power consumption *

Table 2

* Features of circulation in the customs territory of the Eurasian Economic Union lamp bulb in depending on the maximum allowable values of energy are established by the legislation states - members of the Eurasian Economic Union.

Term of entry of the requirements of this document	Lamps, falling under the exception	Maximum permissible value of consumed power () (in W) depending on Φ (in lm)
On 1 September 2021 the year	with a transparent flask and luminous flux: 60 lm Φ 725 lm	1.1 (0.88 vC + 0.049 Ts)
On 1 September 2022 the year	with a transparent flask and luminous flux: 60 lm Φ 450 lm	1.1 (0.88 vC + 0.049 Ts)

On 1 September 2024 the year	with a transparent flask and base G9 and R7s	0.8 (0.88 vC + 0.049 Ts)
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The values of the correction factors (K) for the calculated value of the maximum power consumption are given in Table 3.

Table 3. Correction factors

Table 3

Lamp type	Coefficient (K)
Lamp bulbs with external unit power	/ 1.06
Discharge lamp with GX53 socket	/ 0.75
Lamp with an opaque bulb with a color rendering index of 90 and $P \ 0.5 \times (0.88 \ vF + 0.049 \ F)$	/ 0.85
Discharge lamp with coefficient color of 90 and a color temperature $T_c \ 5000K$	/ 0.76
Lamp with an opaque bulb with a second shell and $P \ 0.5 \ (0.88 \ v \ \Phi + 0.049 \ \Phi)$	/ 0.95
LED-lamp with an external unit power	/ 1.1

5. The requirements to the performance characteristics of compact fluorescent lamps are shown in Table 4. For lamps that differ from the compact fluorescent lamps, LED-lamps, the requirements given in Table 5.

Table 4. Requirements for operational characteristics of compact fluorescent lamps

Table 4

Characteristic	Enter into force from 1 September 2022 the year	Enter into force from 1 September 2024 the year
Coefficient term service lamp with 6000 hours of operation	0.50	0.70
Lamp luminous flux stability	at 2000 h 85% (80% for lamps with a second cladding)	at 2000 h 88% (83% for lamps with a second cladding) at 6000 h 70%

The number of cycles of the switching to the exit of the system	half the lamp life in hours 10000 if ignition time > 0.3 s	life service lamp in hours; 30,000 if ignition time > 0.3 s
Ignition time	<2.0 s	< 1.5 s if P < 10 W < 1.0 s if P 10 W
Burn- up time until reaching 60% of luminous flux (F)	<60 s; < 120 s for lamps that contain mercury amalgam	<40 s or <100 s for lamps that contain mercury amalgam
The frequency of premature release of system	2.0% after 200 h	2.0% after 400 h
UVA + UVB radiation	2.0 mW / klm	2.0 mW / klm
UVC radiation	0.01 mW / klm	0.01 mW / klm
The coefficient of power lamps	0.50 if P < 25 W 0.90 if P 25 W	0.55 if P < 25 W 0.90 if P 25 W
Color rendering index (Ra)	80	80

Table 5. Requirements to the performance characteristics of lamps, different from compact fluorescent lamps and LED- lamps

Table 5

Lamp luminous flux stability	85% at 75- percentage of indicated average service life	85% at 75- percentage of indicated average service life
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Number of switching cycles	4 times higher than the estimated period of service in hours	4 times higher than the estimated period of service in hours
Ignition time	<2.0 s	<2.0 s
Burn- up time until reaching 60% of luminous flux (F)	1.0 s	1.0 s
The frequency of premature release of system	5.0% after 100 h	5.0% after 200 h
The coefficient of power lamps	0.95	0.95

6. The Energy Efficiency Index (EEI) of an electric lamp model is calculated by comparing its power consumption, corrected for possible ballast losses, with its rated power consumption. The rated power consumption is the derivative of the useful luminous flux (

), which is the total luminous flux for lamps with non - directional light emission and the luminous flux in a cone with an angle of 90 ° or 120 ° for lamps with directional light emission.

The EEI is calculated as follows (rounded to two decimal places):

,

Where:

- measured value of power consumption () for models lamps without external control gear and measured value consumed power () corrected in mind the possible loss according to Table 6 for models lamp with external ballast

apparatus. measured at nominal lamp input voltage ; - the calculated value of the power consumption, which

calculated based on the following formulas:

For models < 1300 lm: = 0.88 + 0.049

For 1300 lm models : = 0.07341

Table 6.

Table 6

Lamp type	Power consumption, corrected for possible losses on the control gear apparatus ()
Lamps, which are operated with external ballast apparatus	1.06
Lamps, which are operated with external ballast apparatus for LED lamps	1.10
Fluorescent lamp with a diameter of 16 mm (T5 lamps) and single-ended fluorescent lamp with four terminals, which are operated with external ballast devices for fluorescent lamps	1.10
Other lamps, which are operated with external ballast devices for fluorescent lamps	
Lamps, which are operated with external ballast apparatus for gas discharge lamps of high pressure	1.10
Lamps, which are operated with external ballast apparatus for sodium discharge lamps of low pressure	1.15

The useful luminous flux is determined in accordance with table 7.

Table 7.

Table 7

Model	Useful luminous flux ()
Lamps with non-directional light	Total nominal luminous flux (F)

Directional lamps with a 90 ° beam angle , excluding incandescent lamps, the packaging of which contains a warning in text or graphic form that they are not suitable for directional lighting / illumination	Measured luminous flux in a cone with an angle 120 ° ()
Other lamps from directed light emission	Measured light flow in a 90 ° cone ()

Weighted energy consumption () is calculated in kWh / 1000h as follows (rounded to two decimal places):

...

7. In addition to the requirements specified in Section V of the Technical Regulations of the Eurasian Economic Union "On Requirements for the Energy Efficiency of Energy Consuming Devices" (TR EAEU 048/2019) (hereinafter referred to as the technical regulations), packaging or operating documents must contain the following information for household lamps non-directional light:

the number of switching cycles before premature failure; burn-up time until reaching 60% of the total luminous flux (if it is time is less than 1 s, then you can specify "instant ignition"); corresponding note if the regulation of the luminous flux of the lamp impossible or possible only with the help of a certain type of regulation; corresponding indication when the lamp is intended for operation in a special, non-standard conditions (e.g., temperature of the surrounding

medium 25 ° C);

rated power consumption (if the rated power consumption the lamp power is indicated separately from the energy label, the luminous flux should also be indicated separately, namely print, which both at least in 2 times more than the font used to indicate the nominal consumed power);

color temperature (as a numerical value in degrees Kelvin); lamp life in hours (no more than the design

life); dimensions (length and diameter) in millimeters;

where equivalence to a conventional filament lamp is indicated on the package , the equivalent wattage (rounded to the nearest whole number) shall be indicated which, according to table 8, corresponds to the luminous flux of the lamp contained in the package.

Table 8. Estimated luminous flux and power consumption of an equivalent incandescent lamp

Table 8

Estimated luminous flux (F) for various types of lamps, lm	Power consumption

compact fluorescent	halogen incandescent	LED and other	equivalent incandescent lamp (in W)
125	119	136	15
229	217	249	25
432	410	470	40
741	702	806	60
970	920	1055	75
1398	1326	1521	one hundred
2253	2137	2452	150
3172	3009	3452	200

Intermediate values for the luminous flux and the consumed power equivalent to the lamp filament (rounded to whole numbers) should identify by linear interpolation between adjacent values. The designation "energy saving lamp" or similar designation promotional nature in relation to the energy efficiency of the lamp is permissible only if the lamp meets the requirements for energy efficiency, applicable to the lamps with the bulb of an opaque glass

stage 1 shown in table 1.

If the lamp contains mercury, it should be specified following additional information:
instructions for cleaning the room in case of damage (destruction) of the lamp;
recommendations on recycling lamps.

8. In addition to the above in paragraph 7 of the present Requirements information to the set of documents must be accompanied by the following information, which is also provided in any convenient for the manufacturer's form (in fact including through the "Internet"):

power consumption (accurate to 0.1 W); luminous flux;
the period of service; coefficient of power;
the stability of the luminous flux of the lamp at the end of the nominal life ;
ignition time (in seconds);
color rendering index .

IV. Permissible deviations of the parameters of energy efficiency lamps electric when conducting tests (measurements) after their release into circulation

9. In the case of tests (measurements) of electric lamps after their release into circulation in the customs territory of the Union, tests (measurements) of a batch consisting of at least 20 samples of one model and one manufacturer are carried out. The measured value of the consumed power should not be greater than the nominal (claimed) values of more than 10%, and the measured value of the light flux not should be less than the nominal (declared) value more than at 10%.

In other cases, this model of an electric lamp should be considered as not complying with the requirements of technical regulations.

V. Contents of energy efficiency label and technical sheet of electric lamps

10. The energy efficiency label of electric lamps must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. energy efficiency class .

Symbol energy efficiency is on the same level as that and an arrow corresponding to the class of energy efficiency;

IV.- the estimated consumption of electricity in kW * h for 1000 hours of lamp operation (rounded up to an integer).

11.

The technical sheet included in the operational documentation of electric lamps must contain a list of the characteristics provided for in paragraph 10 of these Requirements.

Vi. Determination of classes of energy efficiency lamps electric

12. Class energy efficiency lamps electric determined according to the index of the energy efficiency (EEI) in accordance with the table 9.

Table 9. Classes of energy efficiency of electric lamps

Table 9

Energy efficiency class	Energy efficiency index
	For lamps (light sources) of non-directional light
A ++	EEI 0.11
A +	0.11 < EEI 0.17

AND	$0.17 < EEI \leq 0.24$
IN	$0.24 < EEI \leq 0.60$
FROM	$0.60 < EEI \leq 0.80$
D	$0.80 < EEI \leq 0.95$
E (least efficient)	$EEI > 0.95$

Application N 10. The requirements for energy efficiency of external sources of supply

Appendix N 10
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These Requirements apply to external power sources put into circulation in the customs territory of the Eurasian Economic Union (hereinafter - the Union) , with the exception of:

- a) voltage converters ;
- b) sources of uninterruptible power supply;
- c) charging device for rechargeable batteries; d) converters for halogen lamps;
- e) external power supplies for medical equipment;
- f) external power supplies with more than one output with independent voltage conversion for each output;
- g) external sources of supply, issued in circulation on the customs territory of the Union in within 2 years from the date of entry into force of the technical regulations of the Union "About requirements to the energy efficiency of energy-consuming devices" (EAEU TR 048/2019) (hereinafter - the Technical Regulation) in the form of spare parts for equipment, issued in circulation in the territory of the Union to the technical regulations coming into force, with the proviso that in the operational documents to an external source of power identified equipment to work with that are referred to sources of supply.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"active mode" - a mode in which the input of the external power supply is connected to the mains power supply, and the output is connected to the load;

"external power supply" means a device that meets all of the following conditions:

designed to convert the input AC voltage from a power source in the network into a lower output voltage;

able to carry out the conversion of the input voltage to the output voltage of the DC or AC power (external power supply DC or AC current);

intended for use with separate from it powered electrical equipment, playing the role of the main load;

enclosed in a physical enclosure (housing) separated from the main load equipment to be fed ;

connected to the supplied equipment using a removable or rigidly fixed plug-and-socket electrical connection, cable, cord, wire or other connecting device;

has a rated output power of no more than 250 W;

intended for use with household and office electrical equipment included in the scope of Appendices NN 5 and 17 to the technical regulation;

"battery charger" - a device which at its output interface is directly connected with the poles of a removable rechargeable battery;

"uninterruptible power supply" - a device that automatically provides backup power supply, in case if the voltage in the network falls to critically low levels;

"efficiency of an external power supply in active mode (Efficiency)" is the ratio of the power provided by an external power supply in active mode to the input power consumed in an active mode by an external power supply;

"low-voltage external power supply" - an external power supply with a rated output voltage of less than 6 V and a rated output current of at least 550 mA;

"rated output power ()" is the output power set by the manufacturer;

"converter for halogen lamps" means an external power supply used with ultra-low voltage tungsten halogen lamps;

"inverter voltage" - a device that converts the output voltage of the network with nominal values of 220 In to 240 The alternating current in the output voltage from the rated values from 110 V to 127 V of alternating current with characteristics similar to the output characteristics of the network;

"idle mode" - a mode in which the input of the external power supply is connected to the mains power supply, and the load is not connected to the output ;

"average value of efficiency of external power supply" - average value of efficiency of external power supply at 25%, 50%, 75%, and 100% of rated output power.

III. Requirements for the energy efficiency of external sources of supply , and especially the definition of indicators of energy efficiency

3. The power consumption of the external power source in the idle mode move not be exceed the limit values specified in Table 1.

Table 1. The maximum allowable value of power consumption in the mode of the idle stroke

Table 1

Rated output power of external power supply	Power consumption in operation idle stroke	
	external sources of supply, for the exception of the low-voltage source power	low voltage external power supplies

	alternating current	direct current	
51.0 W	0.50 W	0.30 W	0.30 W
> 51,0 W	0.50 W	0.50 W	no requirements

4. The average value of the efficiency of the external power supply should not be lower than the limit values indicated in Table 2.

Table 2. Minimum permissible average values of efficiency

Table 2

The nominal capacity of the external power supply	Average value efficiency	
	external power supplies, for excluding low voltage	low voltage external power supplies
1.0 watts	0.480 + 0.140	0.497 + 0.067
1.0W < 51.0 W	0.063 $\ln () + 0.622$	0.075 $\ln () + 0.561$
> 51,0 W	0.870	0.860

5. Power measurements equal to or greater than 0.50 W should be made with an uncertainty of less than or equal to 2% at a 95% confidence level .

6. Power measurements less than 0.50 W should be made with an uncertainty less than or equal to 0.01 W at a 95% confidence level .

7. Operational documents attached to external power sources , provided for in paragraph 13 of the technical regulation, must contain the following information about their characteristics and parameters:

- a) rated output voltage (in V);
- b) a symbol that shows the output voltage (AC or DC);
- c) rated output current (in A for currents of 1 A and in mA for currents < 1 A); d) rated output power (in W) as an alternative to marking rated output current.

8. The set of documents attached to the external power sources specified in subparagraph "a" of paragraph 28 or subparagraph "a" of paragraph 29 of the technical regulation (taking into account the scheme of declaration of conformity chosen by the applicant) shall additionally include the following information:

- a) the methods used for testing (measuring) energy consumption;
- b) rms values of the output current (in mA) and output voltage (in V) for $(25 \pm 2)\%$, $(50 \pm 2)\%$, $(75 \pm 2)\%$ and $(100 \pm 2)\%$ of the rated output current;
- c) values of output power and power consumption in active mode at $(25 \pm 2)\%$, $(50 \pm 2)\%$, $(75 \pm 2)\%$ and $(100 \pm 2)\%$ of the rated output current;
- d) rms values of input voltage (in V) and input power (in W) at 0% (no load), $(25 \pm 2)\%$, $(50 \pm 2)\%$, $(75 \pm 2)\%$, and $(100 \pm 2)\%$ of rated output current;
- d) overall coefficient of harmonic components of the network power supply and the true coefficient of power at 0% (no load), $(25 \pm 2)\%$, $(50 \pm 2)\%$, $(75 \pm 2)\%$ and $(100 \pm 2)\%$ of rated output current.

IV. Permissible deviations parameters of the energy efficiency of external sources of power when conducting the test (measurement) after their release into circulation

9. In the case of tests (measurements) of external power supplies after their release into circulation in the customs territory of the Union, tests (measurements) of one standard sample (copy) of each model of an external power supply are carried out.

Model external source of power deemed appropriate the present Requirements, if the power consumption mode in the idle stroke does not exceed more than at 0.10 W permissible limit values specified in paragraph 3 of these Claims, and the mean value of the efficiency - is not lower more than to 5% the permissible limit value established by paragraph 4 of these Requirements.

In case if the obtained value does not correspond to the specified values, the test (measurement) should carry out in respect of additional samples external source of power of the model. Model external source of power deemed appropriate the present Requirements, in case when the average value of the results of measurements of the three samples does not exceed the limit values specified in the second paragraph of this paragraph.

In other cases, this model of an external power source should be considered as not complying with the requirements of technical regulations.

Appendix N 11. Requirements for energy efficiency

circulation pumps

Appendix N 11
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These Requirements apply to hermetic circulation pumps, autonomous and integrated (built into other equipment), put into circulation in the customs territory of the Eurasian Economic Union (hereinafter - the Union), with the exception of the following circulation pumps:

a) for drinking water have on the packaging and in the operating documents to him an indication on the fact that the circulation pump is used only for drinking water;

b) put into circulation in the customs territory of the Eurasian Economic Union in over 5 years from the date of entry into force of the technical regulations of the Union "About requirements to the energy efficiency of energy-consuming devices" (EAEC TR 048/2019) (hereinafter - the Technical Regulation) in as spare parts for replacing the circulating pumps embedded in other equipment, issued in circulation on the customs territory of the Eurasian economic Union before the entry into force of the technical regulations, with the proviso that in the operational documents on such an integrated circulation pump specified equipment for embedding in which are data pumps.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

- "autonomous circulation pump" - a circulation pump operating independently of the equipment;
- "built-in circulation pump equipment" - circulation pump, designed to work as part of the equipment, when this is the place for at least one of the structural features:
 - the pump body is adapted for installation and use as part of equipment;
 - circulator pump is designed for use in the composition of the equipment, regulating its speed;
 - the circulation pump has safety features that are not suitable for stand-alone operation (IP protection class);
 - the circulation pump is considered as part of the equipment that is subject to confirmation of conformity;
- "sealed circulation pump" - a circulation pump, the impeller of which is directly connected to the shaft of the motor immersed in the pumped medium;
- "housing pump" - part of the vane pump, designed for a compound with the pipe system of heating or the secondary circuit of the distribution system cooling;
- "equipment" - a device that generates and / or transfers heat;
- "circulation pump" - a vane pump with or without a casing housing, calculated on the nominal hydraulic power of 1 W to 2 500 W and is intended for use in the systems of heating , or in secondary circuits of distribution systems of cooling;
- "drinking water circulation pump" is a circulation pump specially designed for use in a water recirculation system intended for human consumption .

III. Requirements for the energy efficiency of circulation pumps and the specifics of determining energy efficiency indicators

3. The manufacturer must be produced calculation index energy efficiency (EEI) of the circulation pump with appropriate tests (measurements).

4. The calculation of the energy efficiency index (EEI) of circulation pumps (except for circulation pumps built into equipment intended for use in the primary circuits of a solar heating system and in heat pumps) is carried out in the following order.

If the circulation pump can operate at 2 or more operating characteristics, which are the dependence of the head () on the flow (

), then the measurement must be performed on a characteristic that ensures the achievement of the maximum values of the product .

Head () is the height of the water column in meters, generated by the circulation pump at the specified operating point. Delivery () means the volumetric flow rate of water passing through

circulation pump in m / h.

Find the point at which the product has the maximum value, and determine the flow and pressure at this point as:

and .

Calculate the hydraulic power () at this point.

Hydraulic power () is the arithmetic product of flow (), head (N) and a constant.

" " is the hydraulic power (in W) transmitted by the circulation pump of the liquid pumped at a certain operating point.

Calculate the reference power () for a hydraulic power range of 1 W 2500 W using the following formula:

$$= 1.7 + 17 (1 -),$$

where is the control power (in W) of the circulation pump.

The control power is the ratio between hydraulic power and power consumption of the circulation pump, with taking into account dependence of efficiency of the circulation pump of its size.

Determine the reference control line as a straight line between points (,) and (,), as shown in Figure 1.

Fig. 1. Reference control line of the circulation pump

Selected setting of the circulation pump ensures that for

the circulation pump, the product on the selected line reaches its maximum. For a circulation pump built into the equipment, it is necessary to follow the reference control line

by adjusting the system curve and the circulation pump speed .

The system curve is a graphical dependence of the head on

supplying ($Q = f(H)$) in the result of friction in the system of heating and distribution system of cooling, both shown in Figure 2.

Fig. 2. Integrated system circulation pump curve is

measured and at feed

rates , 0.75 , 0.5 and 0.25

, where is the electrical power (in W) consumed by the circulation pump at a certain operating point.

Calculate the compensating input power (P_{comp}) as follows:

, If ;

= , If > ,

Where:

- pressure on the reference control line at different feeds;

- measured electrical power;

- measured head.

The measured values and the graph shown in Figure 3 are used.

load profile for calculating the average compensating power (P_{avg}):

Feed (%)	Time (%)
one hundred	6

75	15
fifty	35
25	44

Fig. 3. Load profile

The average compensating power () is calculated using the following formula:

$$= 0.06 H + 0.15 H + 0.35 H + 0.44 H ,$$

The Energy Efficiency Index (EEI) is calculated using the following formula:

$$,$$

Where:

$$= 0.49.$$

Cxx% denotes a correction factor, which ensures that at the time of determination of the correction factor, only XX% of the circulation pumps of a given type have an EEI of 0.20.

5. The index of energy efficiency (EEI) circulators, embedded in equipment designed for use in the primary circuits of the system of heating, using solar energy and to heat pumps is calculated by the

following formula:

Where:

- coefficient of speed of the circulation pump in revolutions per minute (rpm), calculated according to the following formula:

z e d - the frequency of rotation of the circulation pump in rev / min, determined at and .

6. Tests (measurements) of indicators are carried out under the following conditions:

- a) the self-contained circulation pump in the casing shall be tested as a whole;
- b) a self-contained circulation pump without a casing shall be tested with a casing identical to the pump casing intended for use with the pump;
- c) the integrated circulation pump must be removed from the product and the energy efficiency index (EEI) measured with a standard pump casing ;
- d) a circulating pump without a casing intended for integration into a product must be tested with a standard pump casing .

7. The energy efficiency index (EEI) of autonomous and integrated circulation pumps should be no more than 0.23.

8. Operational documents attached to circulation pumps, provided for in clause 13 of the technical regulation, must contain: the following information about their characteristics and parameters:

- a) energy efficiency index (EEI) of circulation pumps indicated in the pump marking , on its packaging and in operating documents in the form "EEI 0, [XX]";
- b) for autonomous circulation pumps, the entry: "The criterion of conformity of the most efficient circulation pumps EEI 0.20;
- c) for circulation pumps intended for drinking water, information on the purpose: "This circulation pump is intended only for drinking water." This information is also indicated on the packaging of the circulation pump;
- g) information concerning disassembly, re- use and recycling pump.

IV. Permissible deviations of the parameters of the energy

efficiency circulation pumps when conducting tests (measurements) after their release into circulation

9. In the case of tests (measurements) of circulation pumps after their release into circulation in the customs territory of the Union , tests (measurements) of one standard copy of each model of the circulation pump are carried out .

Circulation pump model is considered relevant this requirement, if the energy efficiency index (EEI) standard model instance of the circulation pump does not exceed the values specified for this model circulation pump according to paragraph 7, this Claims more than at 7%.

In other cases, 3 randomly selected circulation pumps of a given model are subjected to tests (measurements) . The model of the circulation pump is

considered to be in compliance with these Requirements if the average value of the energy efficiency index (EEI) of these 3 typical copies of the circulation pump does not exceed the value specified in the second paragraph of this clause.

In other cases, this model of the circulation pump should be considered as not complying with the requirements of technical regulations.

Appendix No. 12. Requirements for the energy efficiency of fans with an electric drive

Appendix N 12
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These Requirements apply to the fans with an electric drive, autonomous and built into other equipment, put into circulation in the customs territory of the Eurasian Economic Union (hereinafter referred to as the Union), with a power of 125 W (inclusive) to 500 kW (inclusive) and a supply voltage of up to 1000 V (inclusive) AC and up to 1500 V (inclusive) DC, except for room fans and fans designed for:

- a) working in hazardous, toxic, causing corrosion and containing abrasive dust environments;
- b) operation at a temperature of moving gases above 100 ° C;
- c) operation at the operating temperature of the environment surrounding the fan electric motor, over 65 ° C;
- d) operation at an average annual temperature of mobile gases and (or) an average annual temperature surrounding the fan electric motor below minus 40 ° C;
- e) only short-term work in emergency, emergency and emergency cases;
- f) embedding:
 - into equipment with one electric motor with a power of not more than 3 kW, driving a fan and serving to perform other functions that are basic for this equipment;
 - in clothes dryers and washer-dryers with a rated power consumption of no more than 3 kW;
 - in kitchen hoods and air cleaners with a rated power consumption of less than 280 W.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"fan" means a machine with rotating blades used to maintain a continuous flow of gas (usually air) passing through it, whose work per unit mass does not exceed 25 kJ / kg and which:

designed for use with integrated motor or has built- motor for rotating the impeller at its optimum energy efficiency;

It is an axial fan, a radial fan, a diametrical fan or diagonal fan;
can be with or without the motor when placed on the market or entering into service;

"inlet guide device" - located in front of the impeller guide device designed for gas flow in the impeller, with the possibility of adjusting or without such capabilities;

"inlet volumetric flow (q)" - the volume of gas passing through

fan per unit of time (m^3 / s), calculated by dividing the mass of gas displaced by the fan (kg / s) by the density of this gas at the inlet

fan (kg / m^3);

"high efficiency drive" - a drive mechanism with using belt width is more than three times greater than its thickness, the toothed belt or wheel;

"exhaust fan" - a fan not used in the following energy-consuming products: clothes dryers and washer-dryers with a maximum electrical power consumption of over 3 kW;

air conditioners with a maximum output power of not more than 12 kW;

electronic computing machines and other equipment of information technology;

"exit guiding device" - arranged after the impeller the guide device designed for the direction of flow of the gas from the impeller, with the possibility of adjusting or without such capabilities;

"ready for operation" - a fan ready or prepared at the site of operation, which contains all

the structural elements necessary for converting electrical energy into energy of a gas stream, which does not require other structural elements or components;

"pressure braking" - pressure, measured at the point of the flow of gas if the least it was in a state of dormancy during the isentropic process;

"diagonal fan" - a fan in which the gas passes through the impeller along a path located between the gas paths in radial and axial fans;

"crossflow fan" - fan, in which the direction of movement of gas through the impeller in substantially extends perpendicularly to the axis of the impeller at its circumference at the inlet and outlet;

"dynamic pressure" is the pressure calculated from the mass flow rate, average gas density at the outlet and in the area around the fan outlet;

"category measurements" - test, measurement, or the order of operation, which determine parameters of the flow entering and leaving the test ventilator;

"measurement category A" - the order in which measurements are carried out on the fan under conditions of free inlet and outlet;

"category measurement B" - order, at which the measurements are carried out on the ventilator in terms of free entrance and a duct to the outlet;

"measurement category C" - the order in which measurements are carried out on the fan in conditions with an air duct at the inlet and free outlet;

"measurement category D" - the order in which measurements are carried out on a fan with air ducts at the inlet and outlet;

"Efficiency" - formed at the outlet of the fan energy gas used for determining the energy efficiency of the fan, but also for determining the static coefficient of useful actions or total ratio of useful actions;

"ring attachment" - a ring-shaped part, in which is

a fan, which makes it possible to mount it in supply and exhaust structures;

"casing" - a shell around the impeller, which directs gas to the impeller, passes through the impeller and removes it from the fan;

"compressibility" - a dimensionless quantity, which determines the value of the compression ratio, which is exposed to the flow of gas in the course of the test (measurement), calculated as the ratio of the formed fan mechanical work on the gas in the work, which is performed to over non compressible liquid with same mass flow rate, inlet density and the ratio of the pressure of the fan (at fact that pressure

the fan is the total pressure (P_t) or static pressure (P_s); "short - term operating mode" -

operating mode of the fan motor

at constant load for a time that is not enough to achieve thermal equilibrium;

"impeller (fan wheel)" - the part of the fan that transfers energy to the gas flow;

"not ready for operation" - a fan that is assembled from several component parts containing at least an impeller, but which must be

supplemented with one or more components to create the possibility of converting electrical energy into energy of a gas stream;

"low-efficiency drive" - a drive mechanism using a belt width which is less than three times greater than its thickness, or with the use of another embodiment of a drive mechanism, not being highly drive;

"overall coefficient of useful action ()" - static efficiency or total efficiency of action in dependence on the fact that applies to a specific case;

"axial fan" - fan, displacing the gas in the direction of the axis of rotation of the impeller (impeller) with the formation of the impeller (impeller) of the vortex moving on tangent flow (axial fan may be a cylindrical housing or without it, with an input or an output guiding device, a plate, or ring mount);

"plate mount" - a plate with a hole in which the fan is fixed, which makes it possible to mount the fan in the supply and exhaust structures;

"total pressure ()" - compressibility factor for calculating the total power of the fan gas flow ;

"total pressure generated by the fan ()" - the difference between the braking pressure at the fan outlet and the braking pressure at the fan inlet ;

"actuating mechanism" - view of the drive for the fan (eg, a belt, gear or friction gear), which is not a direct drive;

"direct drive" - a fan drive configuration in which the impeller is fixed to the motor shaft either directly or by means of a flexible shaft and the impeller speed is equal to the motor speed ;

"calculated energy efficiency ()" - the minimum energy efficiency that a fan must provide in order to comply with the requirements of the technical regulation

of the Eurasian

economic union "About requirements to the energy efficiency of energy-consuming devices" (EAEC TR 048/2019) (hereinafter - the Technical Regulation), determined on the basis of consumption of their electrical power in conditions of optimum energy efficiency;

"static coefficient of useful action ()" - the energy efficiency of fans on the basis of the measured static pressure created by the fan;

"static pressure ()" - coefficient of compressibility for calculating the static power of the fan gas flow ;

"static pressure generated by the fan ()" - total pressure generated by a fan (), for minus created fan dynamic pressure multiplied for the number of Mach;

"compression ratio" is the ratio of the static pressure measured at the fan outlet to the measured static pressure at the fan inlet when the fan is operating at optimal energy efficiency;

"overall coefficient of useful action ()" - the energy efficiency of the fan on the basis of the measured full pressure produced by the fan;

"Mach number" is a correction factor applied to the dynamic pressure at a point, defined as the braking pressure reduced by the value of the pressure exerted at a point relatively stationary to the surrounding gas compared to absolute zero pressure, and divided by the value of the dynamic pressure;

"performance level (N)" - a parameter used in the calculation of the estimated energy efficiency of the fan with a specific consumption of electric power in conditions of optimum energy efficiency;

"device adjusting the frequency of revolution" - converter built- in electric motor, or operating as a single system, the motor fan, which continuously convert electrical energy from a powered motor, with the aim of the control value given up motor mechanical power in accordance with the magnitude of the measurement function of the torque in depending on the speed of

the electric motor, with the exception of voltage control devices, which only change the supply voltage of the electric motor.



III. Requirements for energy efficiency and features of determining the energy efficiency indicators of fans

3. The value of the overall energy efficiency of the fan, defined as the total ratio of useful actions of the fan (), calculated according to the rules of calculation, given in paragraphs 4-8 of this section should be equal to or greater than the value calculated

energy efficiency () given in table 1.
Requirements for the energy efficiency of fans are not apply to fans which are designed to operate:
with optimum energy efficiency provided when the frequency of rotation of not less than 8000 revolutions in min;
under conditions in which the compression ratio exceeds 1.11;
in a transport fan to move the non-gaseous substances.
For dual-use fans intended for use both in normal conditions and in emergency situations in short-term operation, taking into account the requirements of fire protection, energy efficiency levels less than those indicated in table 1 are acceptable :
by 5% for all types of fans.

Table 1. Estimated energy efficiency for different types of fans

Table 1

Fan type	Measurement Category (AD)	Static or total efficiency	The range of power (P), kW	Estimated energy efficiency () *
Axial fan	A, C	static	$0.125 P_{ten}$	$= 2.74 \ln P - 6.33 + N$
			$10 < P < 500$	$= 0.78 \ln P - 1.88 + N$
	B, D	total	$0.125 P_{ten}$	$= 2.74 \ln P - 6.33 + N$
			$10 < P < 500$	$= 0.78 \ln P - 1.88 + N$
Radial fan with	A, C	static	$0.125 P_{ten}$	$= 2.74 \ln P - 6.33 + N$

curved forward blades and with straight radial blades			10 <P 500	$= 0.78$ $\text{ChInP} - 1.88 + N$
	B, D	total	0.125 P ten	$= 2.74$ $\text{ChInP} - 6.33 + N$
			10 <P 500	$= 0.78$ $\text{ChInP} - 1.88 + N$
Radial fan with curved back blades without housing	A, C	static	0.125 P ten	$= 4.56 \text{ H InP} - 10.5 + N$
			10 <P 500	$= 1.1 \text{ ChInP} - 2.6 + N$
Radial fan with backward curved blades i n	A, C	static	0.125 P ten	$= 4.56 \text{ H InP} - 10.5 + N$
			10 <P 500	$= 1.1 \text{ ChInP} - 2.6 + N$

housing	B, D	total	0.125 P ten	$= 4.56 \text{ H InP} - 10.5 + N$
			10 <P 500	$= 1.1 \text{ ChInP} - 2.6 + N$
Diagonal fan	A, C	static	0.125 P ten	$= 4.56 \text{ H InP} - 10.5 + N$
			10 <P 500	$= 1.1 \text{ ChInP} - 2.6 + N$
	B, D	total	0.125 P ten	$= 4.56 \text{ H InP} - 10.5 + N$
			10 <P 500	$= 1.1 \text{ ChInP} - 2.6 + N$

Cross flow fan	B, D	total	0.125 P ten	$= 1.14$ $\text{ChInP} - 2.6 + N$
			10 < P 500	$= N$

* Values of the efficiency level (N) are given in table 2.

Table 2. Efficiency level (N) of fans

Table 2

Fan type	Measurement Category (AD)	Efficiency level (N)
		from 1 September 2022 the year
Axial fan	A, C	40
	B, D	58
Radial fan with curved forward	A, C	44

bladed and radial fan with straight radial blades	B, D	49
Radial fan with backward curved blades without casing	A, C	62
Radial fan with curved back blades in the body	A, C	61
	B, D	64
Diagonal fan	A, C	fifty
	B, D	62
Cross flow fan	B, D	21

4. The rules for calculating the parameters of the energy efficiency of the fan are based on the relationship between the power of the gas flow of the fan and the consumed electric power of the electric motor, while the power of the gas flow of the fan is the product of the gas flow rate and the pressure difference between the fan inlet and outlet. The pressure is a static pressure or total pressure which is a sum of the static and dynamic pressures in dependence on the category of measurement and the level of efficiency.

5. If the fan is supplied ready for operation, then the gas flow rate of the fan and the consumed electric power of the electric motor should be measured under conditions of optimum energy efficiency:

a) for the fans without adjusting the frequency of rotation of the overall ratio of useful action is calculated according to the following formula:

$$\eta = \frac{P_g}{P_e}$$

Where:

- general efficiency factor ;

- the power of the gas flow of the fan, determined in accordance with paragraph 7 of these Requirements, when the fan is operating under conditions of optimal energy efficiency;

- consumed electric power of the electric motor, measured at the terminals of the electric motor when the fan is operating under conditions of optimal energy efficiency;

b) for fans with adjustable frequency of rotation common factor useful action is calculated according to the following formula:

$$\eta = \frac{P_g}{P_e} \cdot K$$

Where:

- general efficiency factor ;

- the power of the gas flow of the fan, determined in accordance with paragraph 7 of these Requirements, when the fan is operating under conditions of optimal energy efficiency;

- the consumed electric power of the electric motor, measured at the terminals of the rotation speed regulator , when the fan is operating under conditions of optimal energy efficiency;

is the partial load correction factor calculated using the following formula:

$$K = -0.03 \times \ln(\lambda) + 1.088, \text{ at } <5 \text{ kW},$$

$$K = 1.04 \text{ at } 5 \text{ kW}.$$

6. If the fan is not supplied ready for operation, then the overall efficiency under conditions of optimal energy efficiency of the impeller is calculated using the following formula:

$$\eta = \frac{P_g}{P_e}$$

Where:

- general efficiency factor ;

is the efficiency of the impeller corresponding to / , where:

- power of the gas flow of the fan, determined under conditions of optimal energy efficiency of the impeller in accordance with paragraph 7 of these Requirements;

- power of the gas flow of the fan under conditions of optimal energy efficiency of the impeller;

- the nominal efficiency of the electric motor included in the kit , provided for in Appendix No. 3 to the technical regulation. If the engine is not included in the area of application of said application or is not included in the delivery of the fan, then

the rated efficiency () of the motor is determined based on the following values:

If the recommended consumption of electric power

electric motor 0.75 kW, the rated efficiency is calculated using the following formula:

$$= 0.000278 (x) - 0.019247 (x) + 0.104395 x + 0.809761,$$

Where:

$$x = \lg ();$$

- consumed electric power of the electric motor, measured at the terminals of the electric motor when the fan is operating under conditions of optimal energy efficiency;

If the recommended consumption of electric power

motor < 0.75 kW, the rated efficiency is calculated using the following formula:

$$= 0.1462 \ln () + 0.8381,$$

Where:

- consumed electric power of the electric motor, measured at the motor terminals when the fan is operating at optimum energy efficiency. At the same time consumed

the electric power of the electric motor () recommended by the fan manufacturer must be sufficient for the fan

to reach its optimum energy efficiency (at necessary , taking into account the losses caused by the drive);

is the efficiency of the drive mechanism for which the following ratings are used:

with direct drive: = 1.0;

if the drive mechanism is a low efficiency drive, then:

for 5 kW - = 0.96;

for 1 kW < <5 kW - = 0.0175 + 0.8725;

for 1 kW - = 0.89;

if the drive mechanism is a highly efficient drive, then:

for 5 kW - = 0.98;

for 1 kW << 5 kW - = 0.01 + 0.93;

for 1 kW - = 0.94;

- a correction factor that takes into account the coordination of the components , equal to 0.9;

- partial load correction factor equal to:

if the electric motor is without speed control - = 1.0; if the electric motor with adjustable frequency of rotation and 5kW - = 1.04;

if the electric motor is with speed control and < 5 kW - = - 0.03 ln () + 1.088.

7. The fan gas flow rate in kW is calculated according to the manufacturer's selected control method for the measurement category :

a) if measurements on the fan were carried out according to measurement category A or C, then the static power of the gas flow of the fan is applied , calculated according to the following formula:

= ;

b) if measurements on the fan were carried out according to measurement category B or D, then the total gas flow rate of the fan is applied , calculated according to the following formula:

= .

8. Apply the following methods determine the estimated energy efficiency in dependence on the design of the fan:

a) for axial fans, radial fans with forward curved blades and radial fans with straight radial blades (with a built-in axial fan), the calculated energy efficiency is calculated using the following formulas:

$$= 2.74 \times \ln (P) - 6.33 + N -$$

for powers P from 0.125 kW to 10 kW; = 0.78 x ln (P) - 1.88 + N -

for powers P from 10 kW to 500 kW; where: P - consumed electric power of the electric motor ;

N is an integer of the required level of energy efficiency;

b) for radial fans with backward curved blades without a casing, radial fans with backward curved blades with casing and diagonal fans, the calculated energy efficiency is calculated using the following formulas:

$$= 4.56 \ln (P) - 10.5 + N - \text{for powers } P \text{ from } 0.125 \text{ kW to } 10 \text{ kW};$$

$$= 1.1 \ln (P) - 2.6 + N - \text{for powers } P \text{ from } 10 \text{ kW to } 500 \text{ kW};$$

Where:

P - consumed electric power of the electric motor ; N is an integer of

the required level of energy efficiency;

c) for cross - flow fans, the calculated energy efficiency is calculated using the following formulas:

$$= 1.14 \cdot \ln (P) - 2,6 + N - \text{for capacities } P \text{ from } 0,125 \text{ kW to } 10 \text{ kW};$$

= N - for powers P from 10 kW to 500 kW;

Where:

P - consumed electric power of the electric motor ; N is an integer of

the required level of energy efficiency.

9. The marking of the fan, provided for in paragraph 10 of the technical regulation, must contain the following parameters and characteristics of its energy efficiency:

value of the total energy efficiency (η) (rounded to 1 decimal place);
measurement category (AD) used to determine energy efficiency;
category energy efficiency (total or static coefficient useful action);
when presence adjustment speed recording "Together with the fan should be mounted speed control device" or write "The fan integrated device adjusting the frequency of revolution".

10. Operational documents attached to the fans, provided for in clause 13 of the technical regulation, must contain the following information about their characteristics and parameters:

a) the value of the total energy efficiency (η) (rounded to 1 decimal place);

b) measurement category (A-D) used to determine energy efficiency;

c) category of power efficiency (total or static coefficient useful action);

g) when the presence of the adjustment speed recording "Together with the fan should be mounted speed control device" or write "The fan integrated device adjusting the frequency of rotation";

f) the number of revolutions per minute under conditions of optimal energy efficiency;

g) information on the rated power (s) consumed (s) of the engine in kW, productivity (capacities) and pressure (pressures) under conditions of optimal energy efficiency;

h) the value of the compression ratio;

i) information necessary to ensure optimal service life of fans at their installation, operation and technical maintenance;

j) information on disassembling, recycling, disposal of fans and minimizing their impact on the environment.

11. The set of documents to the fans, said with light of the selected claimant circuit declaration of compliance in paragraph "a" of paragraph 28 or paragraph "a" of 29 technical regulations for fans additionally must be included information about those used when determining the energy efficiency detail fans and parts of the equipment, like air ducts, which are not listed in the category of measurement and does not come with a fan.

IV. Permissible deviations energy parameters efficiency fans when conducting tests (measurements) after their release into circulation

12. In the case of tests (measurements) of fans after their release into circulation in the customs territory of the Union , tests (measurements) of one typical copy of each fan model are carried out .

The fan model is considered to comply with this

Requirements if the overall efficiency coefficient of action (η) of the fan is as a minimum of 90% of the calculated energy efficiency, determined according to points 3-8 present Claims under appropriate levels of performance.

In other cases:

for fans that are manufactured in an amount of less than 5 pieces per year, it is considered that the fan model does not meet the requirements of the technical regulation;

for the fans, which are produced in an amount of 5 or more than 5 in the year, subjected to the tests (measurements) 3 more randomly selected model instance of each pattern.

Fan Model considered to meet present Requirements, if the average value of the results of measurements of the total coefficient

the effective action () of these 3 typical copies (samples) of the fan is not less than the value specified in the second paragraph of this paragraph.

Otherwise, this fan model should be considered as not complying with the requirements of the technical regulations.

Appendix No. 13. Requirements for the energy efficiency of fluorescent lamps without built-in ballasts, high- pressure gas-discharge lamps , ballasts and lamps for such lamps

Appendix N 13

to the technical regulation of the Eurasian Economic Union "On requirements for the energy efficiency of energy - consuming devices" (TR EAEU 048/2019)

I. Field of application

1. These Requirements apply to luminescent lamps without built-in ballasts , high- pressure gas discharge lamps , ballasts and lamps for such lamps put into circulation in the customs territory of the Eurasian Economic Union (hereinafter referred to as the Union) , also if they are built into other energy-consuming products, for exception:

a) the lamps (except sodium lamps of high pressure), which not are sources of white light;

b) sodium lamps for lighting greenhouses; c)

directional lamps ;

g) gas discharge lamps of high pressure mixed light in which:

of the total radiation in the range between 250 and 780 nm, at least 6% is in the range between 250 and 400 nm;

of the total radiation in the range between 250 and 780 nm, at least 11% is in the range between 630 and 780 nm;

of the total radiation in the range between 250 and 780 nm, at least 5% is in the range between 640 and 700 nm;

peak radiation is in the range between 315 and 400 nm (UVA - ultraviolet radiation type A) or 280 and 315 nm (UVB - ultraviolet radiation type B);

e) double-capped fluorescent lamps with the following characteristics: diameter no more than 7 mm (T2);

diameter 16 mm (T5) and lamp power 13 W or > 80 W;

diameter 38 mm (T12), G-13-two-pin base, limit values of the color filter ± 5 m (+ magenta , -

green), color coordinates $x = 0.330$, $y = 0.335$ and $x = 0.415$, $y = 0.377$;

diameter 38 mm (T12) and outer strips;

f) single-capped fluorescent lamps with the following characteristics:

diameter 16 mm (T5), four-pin base 2G11, = 5500 K,

chromaticity coordinates $x = 0.330$ and $y = 0.335$ and = 3200 with chromaticity coordinates $x = 0.415$ and $y = 0.377$;

g) high pressure gas-discharge lamps with a color temperature > 7000 K;

h) The discharge lamps of high pressure from the power $UV > 2 \text{ mW / klm}$;

i) high pressure discharge lamps with a cap different from the caps E27, E40 or PGZ12;

j) lamps used in computers, photocopiers, tanning equipment, terrarium lighting and similar lamps ;

k) products that are not intended for general lighting or intended for use with lamps specified in subparagraphs "c" - "e" of this paragraph, and which are built into other products not intended for general lighting;

m) lamps for emergency lighting , and light fixtures, which are used in a signal;

m) control gears, which are intended for use with the luminaires specified in subparagraph "m" of this paragraph and are designed for operation with lamps in emergency situations.

II. Basic concepts

2. For the purposes of applying these Requirements , the following concepts are used, which mean the following:

"outer shell lamps" - the second (outer) shell of the lamp, which is not required for the generation of light (e.g., the outer bulb, which must ensure the optimal conditions of operation of the burner, prevent the output of ultraviolet radiation and (or) scatter light and prevent from entering the mercury and glass in surrounding environment when breaking the burner);

"discharge lamp" - discharge lamp, in which the optical radiation occurs in the result of electric discharge in the gas;

" high pressure gas discharge lamp " - a gas discharge lamp in which a light emitting electric arc is stabilized by temperature

burner walls and the heat load on the flask walls exceeds 3 W / cm ; "excess light" is

the part of the light of a lighting device that is not

It is set goals, and namely:

light that illuminates an area that does not require

lighting; diffused light in the vicinity of the lighting device;

sky glow, which means illumination of the night sky based on direct or indirect reflection (visible and invisible) radiation scattered by the constituent components of the atmosphere (gas molecules , aerosols and particles) in the direction of observation;

" color rendering index (Ra)" - a measure of the correspondence of visual perceptions of a colored object illuminated by the investigated and standard light sources under certain observation conditions ;

" white light source " - a light source whose chromaticity coordinates meet the following requirements:

$0.270 < x < 0.530$;

$- 2.3172 x + 2.3653 x - 0.2199 < y < - 2.3172 x + 2.3653 x - 0.1595$;

"correlated color temperature ([the K])" - temperature radiator Planckian (black body), the perceived color which most closely resembles the

one that has given stimulus at

the same brightness and under certain viewing conditions ;

"Lamp Luminous Flux Conservation Factor (LLMF)" is the ratio of the luminous flux of a lamp at a given moment of its service life (life cycle) to the initial luminous flux of this lamp;

"coefficient term service lamp (LSF)" - fraction still operating at the moment under certain conditions and at certain frequency switching (switching) lamps by total number of lamps;

"Efficiency ballast unit (η)" - the ratio of consumed power of the lamp (output power of the ballast unit) to the input power of the electrical circuit of

the ballast apparatus, with

This possible touch sensors, network connections and other additional users should be disconnected;

"lamp directional light" - lamp, which radiates both at least 80% of their luminous flux in the range solid angle of 3.14 steradian (corresponding to a cone with an angle at the top of 120°);

"non-directional lamp" means a lamp that is not a directional light emitting lamp;

"Lamp with a transparent bulb" - a discharge lamp of high pressure with a clear outer bulb or outer tube, which is visible light emitting electric arc tube (e.g., a transparent glass bulb);

"mixed light lamp" - a lamp which, in one bulb, contains a mercury lamp and a spiral filament connected in series;

"fluorescent lamp" - a low pressure mercury lamp in which light is emitted by one or more phosphor layers excited by ultraviolet radiation from an electric discharge;

"metal halide lamp" - lamp, the light in which emits a mixture of vapor metal halide compounds of metals and products of decomposition of halogen compounds;

"high pressure sodium lamp" - a lamp in which light is emitted by sodium vapor, the partial pressure of which at steady state reaches 10 kPa (75 mm Hg);

"nominal value" - the quantitative value of a parameter under specified operating conditions, used to indicate or

product identification and indicated by the manufacturer in the operating documents;

"general lighting" - in largely uniform illumination area without taking into account specific local needs;

"power consumption" - power consumed at nominal supply voltage and maximum load;

"ballast" means a device, connected between the mains and one or more discharge lamps, which, by means of inductance, capacitance, or a combination thereof, mainly ensures the limitation of the lamp current to the required value. Ballast apparatus (hereinafter -

PRA) can consist of one or several blocks. Ballast may also comprise means for transforming the mains voltage and the device, to help ensure the voltage for ignition lamp, preventing cold ignition decrease stroboscopic effect correction coefficient power and (or) the suppression of network interference. The ballast can be built into the lamp or be separated from it;

"calculated value" - a quantitative value of a parameter under certain (given) conditions. Values and conditions are given in the relevant standards or reported by the manufacturer (supplier). Unless otherwise stated, all requirements are expressed as design values. The calculated value is obtained by calculation, that is, non-experimental way;

"regulating apparatus power light" - one or several structural elements between the power unit and one or more light sources that can be used to convert the supply voltage, limited power lamp up to the desired value for driving in the state

of readiness voltage ignition and current at the preliminary heating, to prevent cold start, power factor correction or reduce radio interference. Regulating devices the source of light, for example, are ballasts apparatus, converters and transformers for halogen lamps, as well as drivers for light emitting diodes (LED);

"adjustment (dimmable) ballast apparatus" - ballast apparatus provides adjustment of the light flux of lamps for obtaining the necessary illuminance;

"a mercury lamp of high pressure" - lamp, the partial pressure of the vapor

mercury in which, at steady state conditions, from 3×10^{-4} to

to 10 Pa (from 225 to 7500 mm Hg);

"Light" - apparatus which distributes, filters or transforms light emitted by one or more lamps and which includes in itself all the parts necessary for retention, fixing and protection of lamps, and if necessary, auxiliary circuits, along with means for connecting the power supply;

"luminous efficiency (η)" - the ratio of the luminous flux emitted by the light source to the power consumed by it, expressed in lumens per watt (lm /

W). Luminous efficiency is an indicator of efficiency and efficiency of light sources and is calculated by the formula:

$$\eta = \Phi / P,$$

Where:

Φ - luminous flux emitted by the light source ; P -

power consumed by it .

Additional devices, such as, e.g., ballasts, transformers and blocks power to consumption power of the lamp (F), is not taken into account;

"light pollution" is the sum of all negative effects of artificial light on the environment, including exposure to excess light;

"luminous flux (F)" - the energy of visible radiation, carried by the radiation flux per unit of time;

"dimmer" - a device designed to regulate the brightness of the glow of lamps;

"Efficiency of the basic control gear (EBb)" - the ratio of the calculated

lamp power (P_{Lamp}) to the efficiency of the control gear. Mapped efficiency ballast device for single-ended and double-

ended fluorescent lamps with ballast unit is calculated by following scheme:

...

If $P_{\text{Lamp}} \leq 5 \text{ W}$ - value = 0.71.

When $5 \text{ W} < P_{\text{Lamp}} \leq 100 \text{ W}$ - value = . If $P_{\text{Lamp}} > 100 \text{ W}$ -

value = 0.91;

" lamp life " is the operating time after which the functioning lamps from the total number of lamps under certain conditions and at a certain frequency of switching on (switching) corresponds to the coefficient of lamp life ;

"chromaticity" - a characteristic of the color quality of the lamp, determined by its chromaticity coordinates ;

" UV radiation efficiency" - the effective power of the UV radiation of the lamp relative to its luminous flux (in mW / klm);

"Electronic or high frequency ballast apparatus" - working from the electrical network unit power alternating current, including stabilizing elements inclusions to work normally high, one or several tubular fluorescent lamps.

III. Requirements for energy efficiency and rules for determining energy efficiency indicators

1. Requirements for the energy efficiency of lamps

3. The double-capped fluorescent lamps with a diameter 16 and 26 mm (T5 and T8) at a temperature of 25 °C should have calculated values of light recoil not less presented in Table 1.

If the rated wattage differs from that indicated in table 1, then the lamps must achieve the luminous efficacy specified for the lamps of the nearest rated wattage, with the exception of T8 lamps with a power of more than 50 W, which must achieve a luminous efficacy of 83 lm / W. If the rated wattage falls exactly halfway between the two values given in Table 1, then the corresponding lamp shall correspond to the higher of the luminous efficacy values. If the rated wattage of the lamp exceeds the maximum wattage specified in Table 1, then the corresponding lamp shall have a luminous efficacy value for that maximum wattage.

Table 1. The calculated values of the light recoil tubes T8 and T5

T8 (diameter 26 mm)		T5 (diameter 16 mm) high efficiency		T5 (diameter 16 mm) high capacity	
Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation	Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation	Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation
15	63	14	86	24	73
eighteen	75	21	90	39	79
25	76	28	93	49	88
thirty	80	35	94	54	82
36	93	-	-	80	77
38	87	-	-	-	-
58	90	-	-	-	-
70	89	-	-	-	-

When calculating lm / W is allowed to rounding tenths of the whole in a large way.

These requirements for fluorescent double-capped lamps with G13 cap shall apply from 1 September 2021.

Single-ended fluorescent lamps at a temperature of 25 °C should have calculated values of the light recoil not less presented in Table 2.

If the rated wattage or shape of the lamp deviates from the wattage or shape of the lamps given in Tables 2-5, the lamps shall achieve the luminous efficacy of the closest rated wattage or shape. If the rated wattage falls exactly halfway between the two values in the table, then the corresponding lamp must match the higher of the luminous efficacy values. If the nominal power exceeds the maximum specified in Table

2 capacity, the corresponding lamp should have a value of the light returns to said maximum capacity.



Coiled double-ended fluorescent lamps of all diameters equal to or greater than 16 mm shall comply with the requirements for T9 circular lamps from table 5.

Table 2. The calculated values of the luminous efficacy of single-ended fluorescent lamps working with electromagnetic and electronic ballast apparatus

Table 2

One parallel tube, G23 (2-pin) or 2G7 (4- pin) base		Two parallel tubes, G24d (2-pin) or G24q (4- pin) base		Three parallel tubes, GX24d (2-pin) and GX24q (4- pin) base	
Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation	Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation	Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation
five	48	ten	60	thirteen	62
7	57	thirteen	69	eighteen	67
9	67	eighteen	67	26	66
eleven	76	26	66		
Four tubes in one plane, 2G10 base (4 pins)		One parallel tube, base, 2G11 (4 pins)			

Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation	Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation	
eighteen	61	eighteen	67	
24	71	24	75	

When calculating lm / W permissible rounding tenths parts to the whole in a large way.

Table 3. Estimated value of the luminous efficacy of single-ended fluorescent lamps, working only with the electronic control unit

Table 3

Three parallel tubes, GX24q base (4-pin)		Four parallel tubes, GX24q base (4 pins)		One parallel tube, 2G11 base (4-pin)	
Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation	Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation	Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation
32	75	57	75	40	83
42	74	70	74	55	82
57	75	-	-	80	75

70	74	-	-	-	-
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When calculating lm / W permissible rounding tenths parts to the whole in a large way.

Table 4. Calculated values of luminous efficacy of single-capped fluorescent lamps of pretzel shape or high rated power

Table 4

One tube in the form of a square, socket GR8 (2 pins), cap GR10q (4 pin) and socket GRY10 q3 (4 pins)		Four parallel 2G8 tubes (4 pins)	
Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation	Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation
ten	65	60	67
16	66	82	75
21	64	85	71
28	73	120	75
38	71		
55	71		

When calculating lm / W permissible rounding tenths parts to the whole in a large way.

Table 5. Estimated values of the minimum light recoil annular lamps T9 and T5

Table 5

T9 ring tube with a diameter of 29 mm, G10q base	T5 ring tube with a diameter of 29 mm, 2GX13 base

Rated power, W	Estimated luminous efficacy (lm / W), after 100 h exploitation	Rated power, W	Estimated luminous efficacy (lm / W) after 100 hours of operation
22	52	22	77
32	64	40	78
40	70	55	75
60	60	60	80

When calculating lm / W is allowed to rounding tenths of the whole in a large way.

For single-ended and double-ended fluorescent lamps with specific parameters may be reduced the calculated values of minimum light output. The luminous efficacy may be lower for lamps with the parameters specified in table 6.

Table 6. Permissible reduction of minimum luminous efficacy values of fluorescent lamps with high color temperature, high CRI, second cladding or long service life

Table 6

Lamp parameters	Permissible decrease in luminous efficacy at 25 ° C
Tc 5000 K	-ten%
95 RK > 90	-20%
Ra > 95	-thirty%
With a second shell	-ten%

Coefficient term service lamp 0.50 after 40,000 hours exploitation	-five%
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The indicated allowable reductions (in %) are summed up.

Single-ended and double-ended fluorescent lamps, the optimum temperature for which is different from 25 ° C must meet requirements to the light returns in accordance with tables 1-6 also at their optimum temperature for operation.

High-pressure discharge lamp with a Tc of 5000 K or a second cladding should meet the requirements to light impact, given in Tables 7-9, at least at 90%.

Sodium lamp high pressure with Ra 60 should have calculated values of light recoil not less presented in Table 7.

Table 7. Calculated luminous efficacy values of high pressure sodium lamps with Ra 60

Table 7

Nominal lamp power , W, Bt	Estimated luminous efficacy of a lamp with a transparent bulb, lm / W	Estimated luminous efficiency of a lamp with an opaque bulb, lm / W
W 45	60	60
45 < W 55	80	70
55 < W 75	90	80
75 < W 105	one hundred	95
105 < W 155	110	105
155 < W 255	125	115
255 < W 605	135	130

For sodium lamps of high pressure operating requirements, given in Table 7.

For sodium lamps for direct replacement of mercury lamps (powered by ballasts for mercury lamps) these requirements shall apply from 1 September 2023 .

Metal halide lamps with Ra 80 and high pressure sodium lamps with Ra> 60 must have a design luminous efficacy of at least those given in table 8.

Table 8. Calculated minimum luminous efficacy values for metal halide lamps with Ra 80 and high pressure sodium lamps with Ra > 60

Table 8

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Nominal lamp power , W, W	Estimated luminous efficacy of a lamp with a transparent bulb, lm / W	Estimated luminous efficiency of a lamp with an opaque bulb, lm / W
W 55	60	60
55 < W 75	75	70
75 < W 105	80	75
105 < W 155	80	75
155 < W 255	80	75
255 < W 405	85	75

Other high pressure discharge lamps must have a design luminous efficacy of at least those shown in Table 9. These requirements must apply from 1 September 2023 .

Table 9. Estimated values of the minimum luminous efficacy of other high pressure gas discharge lamps

Table 9

Nominal lamp power , W, W	Estimated luminous efficacy, lm / W
W 40	fifty
40 < W 50	55
50 < W 70	65
70 < W 125	70
125 < W	75

From September 1 , 2023 :
the operation of fluorescent lamps should be provided without a built-in ballast with ballasts of energy efficiency class A2 or with more efficient ballasts. Also it

Lamp type	Operating time , h			
	2000	4000	8000	16000

	Lamp luminous flux conservation factor			

Double-capped fluorescent lamps operated with non-electronic ballasts	0.95	0.92	0.90	-
T8-double-ended fluorescent lamps, operated with non-electronic ballasts with preliminary heating electrodes	0.96	0.92	0.91	0.90
Other double-capped fluorescent lamps operated with electronic ballast unit from running in a heated state	0.95	0.92	0.90	0.90
Ring-shaped single - ended fluorescent lamps, operated with a non-electronic ballast, U- shaped T8 double-capped fluorescent lamps and helical double-capped fluorescent lamps (T5) with a diameter of 16 mm or more	0.80	0.74	-	-
	0.72 at 5000 hours of operation			
Ring-shaped single - ended fluorescent lamps, operated with electronic ballast devices	0.85	0.83	0.80	-
	0.75 at 12000 hours of operation			
Other single capped fluorescent lamps, operated with non-electronic ballasts	0.85	0.78	0.75	-
Other single-capped fluorescent lamps operated with electronic ballasts with pre-heated electrodes	0.90	0.84	0.81	0.78

To the values indicated in Table 11, the allowable reductions for the requirements for the luminous flux retention factor of fluorescent lamps, given in Table 12, apply .

Table 12. Indicators of permissible reduction for the requirements for the coefficient of conservation of the luminous flux of fluorescent lamps

Lamp parameters	Allowable reduction of requirements for the coefficient of conservation of luminous flux of the lamp
Lamps with 95 Ra > 90	operation 8000 h - 5% operation > 8000 h - 10%
Lamps with Ra > 95	operation 4000 h - 10% operation > 4000 h - 15%
Lamps with a color temperature of 5000 K	-ten%

Fluorescent lamps without integrated ballast must have a value of the coefficient term service lamp not below listed in Table 13. These requirements must be applied with 1 September 2021 g.

Table 13. Odds lifetimes for single-ended and double-ended fluorescent lamps

Table 13

Lamp type	Operating time , h			
	2000	4000	8000	16000
	The coefficient of the term of service of the lamp			
Double capped fluorescent lamps, operated with non-electronic ballast devices	0.99	0.97	0.90	-
Double capped fluorescent lamps operated with electronic ballast device with the launch in a heated state	0.99	0.97	0.92	0.90
Ring-shaped single - ended fluorescent lamps,	0.98	0.77	-	-

operated with a non-electronic ballast , U- shaped T8 double-capped fluorescent lamps and helical double-capped fluorescent lamps (T5) with a diameter of 16 mm or more	0.50 at 5 000 h of operation			
Ring-shaped single - ended fluorescent lamps, operated with electronic ballast devices	0.99	0.97	0.85	-
	0.50 at 12 000 hours of operation			
Other single capped fluorescent lamps, operated with non-electronic ballast devices	0.98	0.90	0.50	-
Other single-capped fluorescent lamps operated with electronic control gear unit with pre-heated electrodes	0.99	0.98	0.88	-

Sodium lamp high pressure should have values coefficient lumen maintenance and lamp life coefficient service lamp not below listed in Table 14.

Table 14. The values of the coefficient preserving luminous flux lamp and the coefficient of the term of the service lamp to sodium lamps of high pressure

Table 14

High pressure sodium lamp category		Lamp luminous flux conservation factor	The coefficient of the term of service of the lamp
75 watts LLMF and LSF,	Ra 60	> 0.80	> 0.90
	Ra> 60	> 0.75	> 0.75

measured at 12000 h exploitation	all upgraded lamps, designed to operate with ballasts devices for high pressure mercury lamps	> 0.75	> 0.80
> 75 W	Ra 60	> 0.85	> 0.90
LLMF and LSF,	Ra> 60	> 0.70	> 0.65
measured at 16000 hours of operation	all upgraded lamps, designed to operate with ballasts devices for high pressure mercury lamps	> 0.75	> 0.55

Metal halide lamp should have values of coefficient conservation luminous flux lamp and the coefficient of the term of service of the lamp is not below listed in Table 15.

These requirements should apply from September 1 , 2022 .

Table 15. Values of lamp luminous flux retention factor and life factor for metal halide lamps with a ceramic burner

Table 15

Operating time , h	Lamp luminous flux conservation factor	The coefficient of the term of service of the lamp
12000	> 0.80	> 0.80

3. Requirements for non-built-in ballasts for fluorescent lamps and high- pressure discharge lamps

5. Wide-range ballasts (allowing operation with lamps of different powers) must meet the requirements for each of the powers at which they can be operated.

It is prohibited to market electromagnetic ballasts for single-ended and double-ended fluorescent lamps of energy efficiency class D from September 1 , 2021 .

Start control apparatus provided in Table 16 should have energy efficiency class not less than B2, ballasts apparatuses provided in table 17 - not below class A3, ballasts are provided in Table 18 - not lower class A1.

When 25% of the light power operated lamp input power () chain ballast apparatus not should be more than:

< 50% ,

Where:

- for the calculated value of the lamp power ;

- for the lower limit value of the energy efficiency of the respective class.

Consumption ballasts for
fluorescent lamps not be exceed 1.0 watts if operated lamp at normal conditions
of operation do not emit any light ,
and possible others connected structural elements (network connections, sensor
s etc.) are disconnected. If disconnection is not possible, then their power should
be measured and subtracted from the result.

Ballasts for high-pressure discharge lamps must have efficiency
values not lower than those given in table 19.

Table 16. Index of energy efficiency unregulated ballasts devices for fluorescent lamps

Table 16

Technical characteristics of the lamp					Efficiency ballast unit ()				
					unregulated				
Lamp type	Nominal power	ILCOS code	Rated / standard power		A2 WAT	A2	A3	B1	B2
			50 Hz	HF					
	W		W	W					
T8	15	FD-15-E-G13-26/450	15	13.5	87.8%	84.4%	75.0%	67.9%	62.0%

T8	eighteen	FD-18-E-G13-26/600	eighteen	16	87.7%	84.2%	76.2%	71.3%	65.8%
T8	thirty	FD-30-E-G13-26/900	thirty	24	82.1%	77.4%	72.7%	79.2%	75.0%
T8	36	FD-36-E-G13-26/1200	36	32	91.4%	88.9%	84.2%	83.4%	79.5%

T8	38	FD-38-E-G13-26/1050	38.5	32	87.7%	84.2%	80.0%	84.1%	80.4%
T8	58	FD-58-E-G13-26/1500	58	fifty	93.0%	90.9%	84.7%	86.1%	82.2%
T8	70	FD-70-E-G13-26/1800	69.5	60	90.9%	88.2%	83.3%	86.3%	83.1%
TC-L	eighteen	FSD-18-E-2G11	eighteen	16	87.7%	84.2%	76.2%	71.3%	65.8%
TC-L	24	FSD-24-E-2G11	24	22	90.7%	88.0%	81.5%	76.0%	71.3%
TC-L	36	FSD-36-E-2G11	36	32	91.4%	88.9%	84.2%	83.4%	79.5%
TCF	eighteen	FSS-18-E-2G10	eighteen	16	87.7%	84.2%	76.2%	71.3%	65.8%
TCF	24	FSS-24-E-2G10	24	22	90.7%	88.0%	81.5%	76.0%	71.3%
TCF	36	FSS-36-E-2G10	36	32	91.4%	88.9%	84.2%	83.4%	79.5%
TC-D / DE	ten	FSQ-10-E-G24q = 1 FSQ-10-I-G24d = 1	ten	9.5	89.4%	86.4%	73.1%	67.9%	59.4%

TC-D / DE	thirteen	FSQ-13-E-G24q = 1 FSQ-13-I-G24d = 1	thirteen	12.5	91.7%	89.3%	78.1%	72.6%	65.0%
TC-D / DE	eighteen	FSQ-18-E-G24q = 2 FSQ-18-I-G24d = 2	eighteen	16.5	89.8%	86.8%	78.6%	71.3%	65.8%
TC-D / DE	26	FSQ-26-E-G24q = 3 FSQ-26-I-G24d = 3	26	24	91.4%	88.9%	82.8%	77.2%	72.6%

TC-T / TE	thirteen	FSM-13-E-GX24q = 1 FSM-13-I-GX24d = 1	thirteen	12.5	91.7%	89.3%	78.1%	72.6%	65.0%
TC-T / TE	eighteen	FSM-18-E-GX24q = 2 FSM-18-I-GX24d = 2	eighteen	16.5	89.8%	86.8%	78.6%	71.3%	65.8%
TC-T / TC-TE	26	FSM-26-E-GX24q = 3 FSM-26-I-GX24d = 3	26.5	24	91.4%	88.9%	82.8%	77.5%	73.0%
TC-DD / DDE	ten	FSS-10-E-GR10q FSS-10-L / P / H-GR10q	10.5	9.5	86.4%	82.6%	70.4%	68.8%	60.5%
TC-DD / DDE	16	FSS-16-E-GR10q FSS-16-I-GR8 FSS-16-L / P / H-GR10q	16	15	87.0%	83.3%	75.0%	72.4%	66.1%
TC-DD / DDE	21	FSS-21-E-GR10q FSS-21-L / P / H-GR10q	21	19.5	89.7%	86.7%	78.0%	73.9%	68.8%

TC-DD / DDE	28	FSS-28-E-GR10q FSS-28-I-GR8 FSS-28-L / P / H-GR10q	28	24.5	89.1%	86.0%	80.3%	78.2%	73.9%
TC-DD / DDE	38	FSS-38-E-GR10q FSS-38-L / P / H-GR10q	38.5	34.5	92.0%	89.6%	85.2%	84.1%	80.4%
TC	five	FSD-5-I-G23 FSD-5-E-2G7	5.4	five	72.7%	66.7%	58.8%	49.3%	41.4%

TC	7	FSD-7-I- G23 FSD-7-E- 2G7	7.1	6.5	77.6%	72.2%	65.0%	55.7%	47.8%
TC	9	FSD-9-I- G23 FSD-9-E- 2G7	8.7	8	78.0%	72.7%	66.7%	60.3%	52.6%
TC	eleven	FSD-11-I- G23 FSD-11-E- 2G7	11.8	eleven	83.0%	78.6%	73.3%	66.7%	59.6%
T5	four	FD-4-E- G5- 16 / 150	4.5	3.6	64.9%	58.1%	50.0%	45.0%	37.2%
T5	6	FD-6-E- G5- 16 / 225	6	5.4	71.3%	65.1%	58.1%	51.8%	43.8%
T5	8	FD-8-E- G5- 16 / 300	7.1	7.5	69.9%	63.6%	58.6%	48.9%	42.7%
T5	thirteen	FD-13-E- G5-16 / 525	thirteen	12.8	84.2%	80.0%	75.3%	72.6%	65.0%
T9-C	22	FSC-22-E- G10q- 29/200	22	19	89.4%	86.4%	79.2%	74.6%	69.7%

T9-C	32	FSC-32-E- G10q- 29/300	32	thirty	88.9%	85.7%	81.1%	80.0%	76.0%
T9-C	40	FSC-40-E- G10q- 29/400	40	32	89.5%	86.5%	82.1%	82.6%	79.2%
T2	6	FDH-6-L / P- W4,3x8,5d- 7/220	-	five	72.7%	66.7%	58.8%	-	-
T2	8	FDH-8-L / P- W4,3x8,5d- 7/320	-	7.8	76.5%	70.9%	65.0%	-	-

T2	eleven	FDH-11- L / P- W4,3x8,5d- 7/420	-	10.8	81.8%	77.1%	72.0%	-	-
T2	thirteen	FDH-13- L / P- W4,3x8,5d- 7/520	-	13.3	84.7%	80.6%	76.0%	-	-
T2	21	FDH-21- L / P- W4,3x8,5d- 7 /	-	21	88.9%	85.7%	79.2%	-	-
T2	23	FDH-23- L / P- W4,3x8,5d- 7 /	-	23	89.8%	86.8%	80.7%	-	-
T5-E	14	FDH-14- G5-L / P- 16/550	-	13,7	84.7%	80.6%	72.1%	-	-
T5-E	21	FDH-21- G5-L / P- 16/850	-	20,7	89.3%	86.3%	79.6%	-	-
T5-E	24	FDH-24- G5-L / P- 16/550	-	22.5	89.6%	86.5%	80.4%	-	-
T5-E	28	FDH-28- G5-L / P- 16/1150	-	27.8	89.8%	86.9%	81.8%	-	-

T5-E	35	FDH-35- G5-L / P- 16/1450	-	34,7	91.5%	89.0%	82.6%	-	-
T5-E	39	FDH-39- G5-L / P- 16/850	-	38	91.0%	88.4%	82.6%	-	-
T5-E	49	FDH-49- G5-L / P- 16/1450	-	49.3	91.6%	89.2%	84.6%	-	-

T5-E	54	FDH-54-G5-L / P-16/1150	-	53.8	92.0%	89.7%	85.4%	-	-
T5-E	80	FDH-80-G5-L / P-16/1150	-	80	93.0%	90.9%	87.0%	-	-
T5-E	95	FDH-95-G5-L / P-16/1150	-	95	92.7%	90.5%	84.1%	-	-
T5-E	120	FDH-120-G5-L / P-16/1450	-	120	92.5%	90.2%	84.5%	-	-
T5-C	22	FSCH-22-L / P-2GX13-16/225	-	22.3	88.1%	84.8%	78.8%	-	-
T5-C	40	FSCH-40-L / P-2GX13-16/300	-	39.9	91.4%	88.9%	83.3%	-	-
T5-C	55	FSCH-55-L / P-2GX13-16/300	-	55	92.4%	90.2%	84.6%	-	-
T5-C	60	FSCH-60-L / P-2GX13-16/375	-	60	93.0%	90.9%	85.7%	-	-
TC-LE	40	FSDH-40-L / P-2G11	-	40	91.4%	88.9%	83.3%	-	-

TC-LE	55	FSDH-55-L / P-2G11	-	55	92.4%	90.2%	84.6%	-	-
TC-LE	80	FSDH-80-L / P-2G11	-	80	93.0%	90.9%	87.0%	-	-
TS-TE	32	FSMH-32- L / P-2GX24q = 3	-	32	91.4%	88.9%	82.1%	-	-

TC-TE	42	FSMH-42- L / P- 2GX24q = 4	-	43	93.5%	91.5%	86.0%	-	-
TC-TE	57	FSM6H-57- L / P- 2GX24q = 5 FSM8H- 57- L / P- 2GX24q = 5	-	56	91.4%	88.9%	83.6%	-	-
TC-TE	70	FSM6H-70- L / P- 2GX24q = 6 FSM8H- 70- L / P- 2GX24q = 6	-	70	93.0%	90.9%	85.4%	-	-
TC-TE	60	FSM6H-60- L / P-2G8 = 1	-	63	92.3%	90.0%	84.0%	-	-
TS-TE	62	FSM8H-62- L / P-2G8 = 2	-	62	92.2%	89.9%	83.8%	-	-
TS-TE	82	FSM8H-82- L / P-2G8 = 2	-	82	92.4%	90.1%	83.7%	-	-
TS-TE	85	FSM6H-85- L / P-2G8 = 1	-	87	92.8%	90.6%	84.5%	-	-
TS-TE	120	FSM6H- 120-L / P- 2G8 = 1 FSM8H- 120-L / P- 2G8 = 1	-	122	92.6%	90.4%	84.7%	-	-
TC-DD	55	FSSH-55- L / P- GRY10q3	-	55	92.4%	90.2%	84.6%	-	-

Table 17. Energy efficiency index of unregulated ballasts for fluorescent lamps not listed in table 16

Table 17

	Energy efficiency index
--	-------------------------

0.94	A3
	A2
1-0.75 (1-)	A2 BAT

Table 18. Index energy efficiency adjustable ballasts devices for fluorescent lamps

Table 18

Class achieved at 100% luminous power	Energy Index the effectiveness of controlled ballasts devices
A3	A1
A2	A1 BAT

Table 19. The efficiency ballasts devices for gas-discharge lamps of high pressure

Table 19

Lamp power consumption (), W	Minimum efficiency ballast unit (), %
thirty	65

30 < 75	75
75 < ? 105	80
105 < P 405	85
> 405	90

Consumption ballasts for use with fluorescent lamps not be exceed 0.5 watts if operated lamp at normal conditions of operation are not emitting any light. This requirement applies to control gears if other possibly connected structural elements (network connections, sensors , etc.) are disconnected. If disconnection is not possible, then their power should be measured and subtracted from the result.

These requirements should apply from September 1 , 2021 .

Control gears for high-pressure discharge lamps must have efficiency values not lower than those given in Table 20. This requirement must be applied from September 1 , 2021 .

Table 20. The efficiency ballasts devices for gas-discharge lamps of high pressure

Table 20

Lamp power consumption (), W	Minimum efficiency ballast unit (), %
thirty	78
30 < 75	85
75 < 105	87
105 < 405	90
> 405	92

The index of energy efficiency (EEI) means a system of classification of electronic control devices for fluorescent lamps without built-in ballast apparatus in accordance with the limits of efficiency. Classes for non-regulated ballasts are A2 BAT, A2, A3, B1 and B2 (classified in descending order according to efficiency), and for variable ballasts - A1 BAT and A1.

In Table 16 shows the indexes of energy efficiency ballasts for use with said lamps or other lamps calculated for operation with the same ballast devices (lamps with identical data reference ballast apparatus).

Additional requirements to unregulated ballast devices, not indicated in table 16, are given in Table 17.

Dimmable ballasts for fluorescent lamps according to the class that the ballast would fall into in operation with 100% luminous efficacy are classified according to the energy efficiency index in accordance with Table 18.

Switchable ballasts apparatuses are classified in accordance with the lowest (worst Top) or efficiency for each operated lamp specified class.

6. The Energy Efficiency Index (EEI) of an electric lamp model is calculated by comparing its power consumption, corrected for possible ballast losses , with its rated power consumption. The rated power consumption is the derivative of the useful luminous flux (

), which is the total luminous flux for lamps with non - directional light emission and the luminous flux in a cone with an angle of 90 ° or 120 ° for lamps with directional light emission.

The EEI is calculated as follows (rounded to two decimal places):

,

Where:

- measured value of power consumption () for models
lamps without external control gear and measured value
consumed power () corrected in view of the possible loss according
to Table 6 for models lamp with external ballast
apparatus. measured at nominal lamp input voltage ; - the calculated value of
the power consumption, which

calculated based on the following formulas:

For models < 1300 lm: = 0.88 + 0.049

For 1300 lm models : = 0.07341

Table 21.

Table 21

Lamp type	Consumption power adjusted in possible loss on ballast apparatus ()	view	of the

Lamps, which are operated with external ballast apparatus	1.06
Lamps, which are operated with external ballast apparatus for LED lamps	1.10
Fluorescent lamps with a diameter of 16 mm (T5 lamps) and single-capped fluorescent lamps with four leads, which are operated with external ballasts for fluorescent lamps	1.10

Other lamps, which are operated with external ballast devices for fluorescent lamps	
Lamps, which are operated with external ballast apparatus for gas discharge lamps of high pressure	1.10
Lamps, which are operated with external ballast apparatus for sodium discharge lamps of low pressure	1.15

The useful luminous flux is determined in accordance with table 7.

Table 22.

Table 22

Model	Useful luminous flux ()
Lamps with non-directional light	Total nominal luminous flux (F)

Lamps with directional light emission with an angle of solution beam 90 °, for excluding lamp filament on the package which is booked in textual or graphical form according to which they are not suitable for directional lighting / illumination	The measured light output in a cone with an angle of 120 ° ()
Other lamps with directional light emission	The measured light output in a cone with an angle of 90 ° ()

Weighted energy consumption () is calculated in kWh / 1000h as follows (rounded to two decimal places):

...

7. Power fixtures for fluorescent lamps without built ballast unit and fixtures for gas discharge lamps of high pressure should not exceed the total power

consumption of the built ballasts, if the lamp at normal operating conditions do not emit any light and the other connected structural elements (network connections, sensors and so on. are disconnected. If disconnection is not possible, then their power should be measured and subtracted from the result.

Luminaires for fluorescent lamps without built-in ballast apparatus and for discharge lamps High-pressure must be compatible with the ballast devices, which comply with the requirements applicable to such devices. This requirement should apply from September 1, 2021.

8. In addition to the requirements specified in Section IV of the Union's technical regulations "On requirements for the energy efficiency of energy-consuming devices" (TR EAEU 048/2019) (hereinafter - technical regulations), packaging or operational documents must contain the following information:

a) the requirements for the technical description of lamps in operational documents:

nominal and calculated value of lamp power; nominal and calculated value of the luminous flux of the lamp;
the calculated value of the luminous efficacy of the lamp after 100 hours of operation under standard conditions (operating temperature 25 °C, for T5 lamps - 35 °C);

for fluorescent lamps, if the measured luminous flux is the same in all cases, for operation at high frequency (> 50 Hz), the calibration current of the test conditions and / or the rated voltage of the high-frequency generator with resistance should be indicated. It should also be specified that the value of power consumption of the light source is not included loss of power in the result of the use of such auxiliary devices as the ballasts apparatus;

the estimated coefficient saving light bulbs flow for 2000 4000, 6000, 8000, 12000, 16000 and 20000 hours of operation (up to 8000 hours - only for new lamps on the market, the data for which is still there), with the indication, a mode of operation of lamps used for testing if possible operation both at a frequency of 50 Hz, so and at high frequency;

settlement rate term life lamps for 2000, 4000, 6000, 8000, 12000, 16000 and 20000 hours of operation (up to 8000 hours - only for new lamps on the market, the data for which is still there), with the indication, a mode of operation of lamps used for the tests if the operation is possible both at the frequency of 50 Hz, so and at high frequency;

the ambient temperature in the luminaire at which the lamp was designed to maximize its luminous flux. If the temperature is 0 °C or less, or 50 °C or more, then it should be indicated that the lamp is not suitable for indoor use at standard temperatures;

for lamps containing mercury, instructions for cleaning the room in case of damage (destruction) of the lamp are indicated, as well as recommendations for the disposal of the lamp;

color rendering index (Ra) of the lamp; lamp color temperature;

for fluorescent lamps without built-in ballast device class ballasts devices, with which the lamp can be operated;

b) requirements for the technical description of control gear in operational documents:

for each model of control gear for fluorescent lamps, the energy efficiency class must be indicated (shown in a clearly visible and durable form on the control gear);

for each model of the ballast unit for gas discharge lamps of high pressure must be specified efficiency (given a distinctly visible and durable form on the ballast unit);

c) the requirements for technical description fixtures in operational documents for each model lamp for fluorescent lamps without built ballast unit with a

common light flux more than 2000 lumens and fixtures for discharge lamps of high intensity common light flux of lamps over 2000 lumens:

if the lamp is supplied with a ballast device, the specified information about the efficiency of the ballast unit in accordance with the data of the manufacturer;

if the luminaire is supplied with a lamp, the luminous efficacy of the lamp (lm / W) is indicated according to the manufacturer's data ;

if the ballast unit or lamp does not come together with the lamp, the information about compatible with luminaire types of lamps and ballasts devices should provide in catalogs of manufacturers (for example, an international system of notation lamps ILCOS); management of technical maintenance lamp to ensure the conservation of its original quality in during the entire period

service;

Guide for dismantling;

for discharge lamps of high intensity must be indicated, that they are designed for lamps with a bulb of transparent glass and (or) lamps with coating.

9. The set of documents specified in subparagraph "a" of paragraph 23 of the technical regulation shall additionally include the following information:

a) for lamps:

the calculated value of the lamp power ; the calculated value of the luminous flux of the lamp;

for fluorescent lamps, if the measured luminous flux is the same in all cases, for operation at high frequency (> 50 Hz), the calibration current of the test conditions and / or the rated voltage of the high-frequency generator with resistance should be indicated . It should also be specified that the value of power consumption of the light source is not included loss of power in the result of the use of such auxiliary devices as the ballasts apparatus;

the calculated value of the coefficient of retention of the luminous flux of the lamp at 2000 h, 4000 h, 6000 h, 8000 h, 12000 h, 16000 h and 20,000 h (for new lamps for which there is no information, only up to 8000 h), while for lamps that can be operated at a frequency of 50 Hz or more , the operating frequency should be indicated ;

the estimated value of the coefficient of the term of service lamp with 2000 hours, 4000 hours, 6000 hours, 8000 hours, 12,000 hours, 16,000 hours and 20,000 hours (for a new lamp, for which there is no information, just to 8000 h) with this for the lamps, which can be operated both at a frequency of 50 Hz and at a higher frequency, the operating frequency should be indicated ;

the temperature of the surrounding environment, with which the lamp in the luminaire should create a maximum luminous flow. If the temperature is less than 0 ° C or over 50 ° C, it should indicate that the lamp is not suitable for use in smokers;

b) for lamps:

if the ballast unit or lamp does not come together with the lamp, the information about compatible with luminaire types of lamps and ballasts devices should provide in catalogs of manufacturers (for example, an international system of notation lamps ILCOS); management of technical maintenance lamp to ensure the conservation of its original quality in during the entire period

service;

Guide for installation;

of all luminaires for gas discharge lamps of high -pressure information on whether they are designed for use with a lamp having a flask of transparent and (or) an opaque glass.

IV. Permissible deviations of the parameters of the energy efficiency of fluorescent lamps without built-in

ballast apparatus, gas discharge lamps of high pressure ballasts devices and fixtures for such lamps when conducting tests (measurements) after their release in to circulation

10. In

the case of tests (measurements) of electric lamps after their release into circulation in the customs territory of the Union, tests (measurements) of a batch consisting of at least 20 samples of one model and one manufacturer are carried out. The measured value of the consumed power should not be greater than the nominal (claimed) values of more than 10%, and the measured value of the light flux not should be less than the nominal (declared) value more than at 10%.

In other cases, this model of an electric lamp should be considered as not complying with the requirements of technical regulations.

11. In case of tests (measurements) of ballasts and lamps after their release into circulation in the customs territory of the Union, tests (measurements) of one sample of a model of one manufacturer are carried out. The measured values of the parameters and characteristics of the sample must correspond to the nominal values declared by the manufacturer.

In other cases, this model of electronic control devices and lamps should not be considered as meeting the requirements of the technical regulations in this case checked three other sample this model. If the values of the parameters and characteristics of the samples correspond to the nominal values declared by the manufacturer, then it is considered that this model complies with the requirements of the technical regulation.

V. Contents of energy efficiency label and technical sheet of electric lamps

12. The energy efficiency label of electric lamps must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. energy efficiency class ;

IV. E_c is the estimated power consumption in kWh for 1000 hours of lamp operation (rounded up to an integer).

13. The energy efficiency label of the luminaires must contain the following information:

I. name or trade mark (if any) of the manufacturer.

II. model designation .

III. information about the luminaire (type, version, compatibility);

IV. energy efficiency class .

Icon Energy efficiency is at the same level, that and the arrow corresponding to the class of energy efficiency.

V. information in accordance with one of the following versions :

1) the luminaire is designed to work with lamps of the specified energy efficiency classes . The field indicates the class of the lamp included in the delivery set . If the lamp is not included in the delivery set of the luminaire , the field remains empty

2) the luminaire has built-in LED modules (light sources) without the possibility of their replacement by the end user;

3) the luminaire is designed to work with lamps of the specified energy efficiency classes and contains built-in LED modules (light sources), without the possibility of replacement by the end user. The field indicates the class of the lamp included in the delivery set. If the lamp in the complete supply lamp is not included, the field remains empty.

15.

The technical sheet included in the operational documentation of electric lamps and luminaires must contain a list of the characteristics provided for in paragraphs 13 and 14 of these Requirements, respectively.

VI. Determination of classes of energy efficiency lamps electric

16. Class energy efficiency lamps electric determined according to the index of the energy efficiency (EEI) in accordance with Table 23.

Table 23. Classes of energy efficiency of electric lamps

Table 23

Energy efficiency class	Energy efficiency index
	For lamps (non-directional light sources Sveta)
A ++	EEI 0.11
A +	$0.11 < EEI \leq 0.17$
AND	$0.17 < EEI \leq 0.24$
IN	$0.24 < EEI \leq 0.60$
FROM	$0.60 < EEI \leq 0.80$
D	$0.80 < EEI \leq 0.95$
E (least efficient)	$EEI > 0.95$

Application N 14. The requirements for energy efficiency lamps directional light, LED lamps , and associated with them equipment

Appendix N 14
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These requirements apply to put into circulation in the customs territory of the Eurasian Economic Union - (hereinafter the Union) as a separate, well and integrated into other products lamps directional light, LED lamps, (LED-lamp) and is also associated with them equipment designed for installations between the power supply and lamps, including ballasts (hereinafter referred to as ballasts) lamps, control devices and lamps, with the exception of:

- a) lamps for special purposes, not intended for lighting;
- b) control gear and luminaires for fluorescent lamps and high intensity discharge lamps ;
- c) LED modules declared as part of luminaires with a batch size of no more than 200 units per year.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"anti-glare screen" - a mechanical or optical reflective or non-reflective opaque partition designed to block direct visible radiation, a light source, i.e. lamps directional action, which allows to prevent temporary blindness (glare disability), if the observer looks directly at the source of light. To it does not apply the coating surface of the source of light in the lamp directional light;

"Ballast" - ballasts connected between the electrical source and one or more discharge lamps, which via inductance capacitance or a combination of inductance and capacitance is used to mainly to limit current lamps (lamps) up to the desired value;

"external ballast" means a non - integral ballast that is intended to be installed outside the lamp or luminaire housing, or which can be removed from the housing without significantly damaging the lamp or luminaire;

"tungsten halogen lamp filament" - lamp filament yarn filament which consists of tungsten and is surrounded by a shell filled with halogens or halogen compounds;

" ignition time " - the time required for complete ignition and further burning of the lamp after it is connected to the network;

"time buildup" - time to for which achieved 60% of the nominal luminous flux after switching the lamp in the network;

" color rendering index " (Ra) - a measure of the correspondence of visual perceptions of a colored object illuminated by the investigated and standard light sources under certain observation conditions ;

"light source" means a surface or object primarily intended for visible optical radiation resulting from energy conversion . The concept of "visible" refers to the lengths of waves 380-780 nm;

"compact fluorescent lamp" - a fluorescent lamp in which its ignition and stable operation provide a built-in socket ballast apparatus and other additional elements;

"correlated color temperature" (Tc [K]) - the temperature of the Planck (black body) emitter , the perceived color of which most closely resembles that which the given stimulus has at the same brightness and under certain viewing conditions ;

"power factor" - the ratio of active (useful) power to total power when operating on alternating current;

"Lamp Luminous Flux Conservation Factor" (LLMF) is the ratio of the luminous flux of a lamp at a given point in its service life (life cycle) to the initial luminous flux of that lamp;

"lamp life factor" (LSF) - the proportion of lamps still functioning at a given moment under certain conditions and at a certain frequency of switching on (switching) of lamps from the total number of lamps;

"lamp" - a source of optical radiation created as a result of the conversion of electrical energy;

"incandescent lamp" - a lamp with a sealed bulb in which light is emitted by a body (filament) of incandescence when an electric current passes through it in a vacuum or an inert gas atmosphere ;

"lamp directional light" - lamp, which radiates both at least 80% of their luminous flux in the range solid angle of 3.14 steradian (corresponding to a cone with an angle at the top of 120 °);

"non-directional lamp" means a lamp that is not a directional light emitting lamp ;

"fluorescent lamp" - a low- pressure mercury lamp in which light is emitted by one or more layers of phosphor, excited by ultraviolet radiation from an electrical discharge. Fluorescent lamps are supplied with or without built-in ballast ;

"fluorescent lamp without built-in ballast" - a single- or double - ended fluorescent lamp without built-in ballast;

"standby power" - power consumed by ballast in standby mode; "idle power" - power consumed by ballast in the mode idle ;

"initial luminous flux" - the luminous flux of the lamp after

short period of operation;

"nominal value" - a quantitative value of a parameter under specified operating conditions, used to designate or identify a product and indicated by the manufacturer in the operating documents;

"color uniformity" - the maximum deviation of the chromaticity coordinates (x and y) of the lamp sample from the chromaticity center (cx and cy), expressed in units of the size (discrete) of the MacAdam ellipse , built around the chromaticity center (cx and cy);

"lighting" - the application of light to a place, an object and the space around them so that they can be seen by people;

"cartridge" - a device into which , depending on the purpose, a lamp or a starter is inserted for their fastening and connection to the electrical network;

"backlighting" - a type of lighting when light is directed in such a way as to highlight an object or part of an area;

"useful luminous flux" () - the part of the luminous flux of the lamp entering the cone used to calculate the energy efficiency of

the lamp in paragraph 4 of these Requirements;

"premature failure" - failure of the lamp before the expiration of the service life specified in the operating documents for the lamp;

"ballast (ballast)" - a device connected between the network and one or more lamps, which by means of inductance, capacitance or a combination thereof, mainly ensures the limitation of the lamp current at the required value. The ballast can consist of one or more blocks. Ballast may also comprise means for transforming voltage network and the device, to help ensure the voltage for igniting the lamp, preventing cold ignition decrease stroboscopic effect correction coefficient power and (or) network interference suppression. The ballast can be built into the lamp or separated from it;

"Ballast Halogen lamp" - gear, which converts the voltage network to the extra-low voltage for the supply of halogen lamps;

"discharge lamp" - a lamp in which optical radiation occurs as a result of an electrical discharge in gas, metal vapors , halides and their mixture;

"High Intensity Discharge Lamp" - an electric discharge lamp in which the light-emitting arc is stabilized by the wall temperature and for this arc the cylinder wall load is more than 3 W per square centimeter;

"calculated value" - a quantitative value of a parameter under certain (given) conditions. Values and conditions are given in the relevant standards or reported by the manufacturer (supplier). Unless

otherwise stated, all requirements are expressed as calculated values. The calculated value is obtained by calculation, that is, non-experimental way;

"idle mode" - the state of the ballast, in which it is connected to a power source, and when its output is disconnected during normal operation from all primary loads by a switch designed for this purpose (failure or absence of a lamp or disconnection of the load when the emergency switch is activated does not apply to normal operation);

"standby mode" - control gear mode when the lamp is switched off by means of a control signal under normal operating conditions. The term refers to a ballast with an integrated switching function, which is permanently connected to the power supply under normal operating conditions;

"mercury-containing lamp" - lamp containing mercury;

"Light" - apparatus which distributes, filters or transforms light emitted by one or more lamps and which includes in itself all the parts necessary for retention, fixing and protecting the lamp and if necessary, auxiliary circuits, along with means for connecting the power supply;

"luminous flux" (F) - the energy of visible radiation, carried by the radiation flux per unit of time;

"light-emitting diode" (LED) - a semiconductor device with a p-n junction,

emitting incoherent visible radiation when an electric voltage is applied to it;

"LED assembly" - a set of one or more LEDs. The assembly may include a self optical element and thermal, mechanical and electrical components;

"LED lamp (LED lamp)" - a lamp containing one or more LED assemblies. The lamp can be fitted with a base;

"LED module" - a kit that does not have a cover and contains one or more LED assemblies on a printed circuit board. Kit can comprise in itself electric, optical, mechanical and thermal components, interfaces, and device management;

"power light" (candela or cd) - the ratio of the light flux emitted by the source in a certain solid angle in advance a certain direction to the magnitude of the solid angle;

"Compatibility" - means that if the device is intended for insertion into one equipment installed in another device or is connected to it via a physical connector, or through wireless connections, then:

it is possible to carry out installation, embedding or connection;

immediately after the start of their sharing, users will not find a defect in any of the devices;

security devices sharing at least when those same devices for individually used together with other devices;

"special lamp" - a lamp that, on the basis of its technical characteristics or according to the operating documentation attached to it, is not suitable for lighting the space in everyday life;

"lamp life" - the duration of operation after which part of the total number of lamps that continue to function meets the criterion for lamp life under certain conditions and switching frequency. For LED lamps lamp life means the time of operation between the start of use and the moment when the left function only 50% of the total number of lamps or when the average luminous flux in lamps batch falls below 70%, depending on what happens earlier;

"beam angle" - the angle between two imaginary lines in a plane passing through the optical axis of the beam, these lines pass through the center of the front side of the lamp and the points at which the light intensity is 50% of the light intensity at the center of the beam, where the light intensity is in the center beam is the value measured on the optical axis of the beam;

"control signal" - an analog or digital signal transmitted to the control gear via a wireless or wired communication line or by modulating the voltage in separate control cables or using a modulated signal superimposed on the mains voltage;

"device control" - an electronic or mechanical device for the control and regulation of the light flux lamp with the help of other means than energy conversion, such as time switches, sensors, presence sensors are light and device regulatory fluorescent light. In addition, phase-cut dimmers should also be considered as control devices;

"chromaticity" - a characteristic of the color quality of the lamp, determined by its chromaticity coordinates ;

"switching cycle" - a sequence of switching on and off the lamp at regular intervals ;

"base" - a part of an electric lamp, which serves to fix it in the socket and provides connection to the mains ;

"electric motors product" - a product constructed for use in an electrical equipment , and intended for use in order to lighting.

III. Requirements for energy efficiency and rules for determining energy efficiency indicators

3. Directional lamps, LED lamps and related equipment must have a calculated value of the energy efficiency index , the energy efficiency of the ballast and the characteristics in accordance with tables 2, 3, 4 of these Requirements.

The terms of the stages of introduction of requirements are given in clause 10 of these Requirements.

1. The calculation of the index of energy efficiency lamps directional light

4. The energy efficiency index (EEI) of a lamp is calculated using the following formula (rounded to two decimal places):

,

Where:

- measured value of power consumption () for models lamps without external control gear and measured value consumed power () corrected in view of the possible loss according to Table 16 for models lamp with external ballast apparatus. measured at nominal lamp input voltage ;

Table 1. Correction factors

Table 1

Lamp type	Consumption power adjusted in view of the possible loss on ballast apparatus ()
Lamp operated with external control gear for halogen lamps	1.06
Lamp operated with external control gear for LED lamps	1.10

Fluorescent lamp with a diameter of 16 mm (T5 lamp) and a 4-pin single-ended fluorescent lamp, working with an external control gear for fluorescent lamps	1.10
Other lamps working with external control gear for fluorescent lamps	
Lamp operated with external control gear for high intensity discharge lamps	1.10

Compact fluorescent lamp with index color 90	0.85
Lamp with anti-glare screen	0.80

- the estimated value of power consumption, which is calculated based on the following formulas:

For models < 1300 lm: = 0.88 + 0.049

For 1300 lumen models : = 0.07341 is

determined as follows:

for lamps directional light with an angle of dispersion of the beam 90 ° apart lamps bulbs and lamps, with a warning on the packaging in accordance with paragraphs of the fourteenth and eighteenth paragraph "a" of paragraph 11

of these Requirements, - nominal luminous flux in a 120

° cone (); for other lamps directional light - current light flow in cone

90 ° ().

2. Requirements for the energy efficiency of lamps directional light

5. The maximum EEI values of directional lamps are given in Table 2. The timing of the stages introduction is set in paragraph 10 of these Requirements.

Table 2. Maximum values of the energy efficiency index (EEI)

Table 2

Stages	Maximum Energy Efficiency Index (EEI)
--------	---------------------------------------

	lamp bulbs, running on a network	other incandescent lamps	high intensity discharge lamps	other lamps
--	----------------------------------	--------------------------	--------------------------------	-------------

Stage 1 0.50 0.50

3. Requirements for energy efficiency of ballast

6. Starting with step 2, power idle running gear, designed for use between an electric network and a switch to turn on (off) of the lamp, not should exceed 1.0 watts.

Beginning with step 3, this limit should be equal to 0.50 watts.

For ballasts of lamps with an output power (P) of more than 250 W, the no - load power limits shall be multiplied by the $P / 250 \text{ W}$ factor .

Beginning with step 3, the steady power ballast lamps not should exceed 0.50 watts.

Beginning with step 2, the efficiency ballasts halogen lamp must be not less than 0.91 at 100% load.

4. Requirements for the characteristics of lamps

7. Requirements for the characteristics of directional lamps , other than LED lamps.

The requirements to the characteristics of the lamp are shown in Table 3 for compact fluorescent lamps direct light and in Table 4 for lamps directional light, except for compact fluorescent lamps, LED lamps and discharge lamps of high intensity.

Table 3. Requirements for the characteristics of compact fluorescent lamps directional light

Table 3

Characteristic	Stage 1	Stage 3
----------------	---------	---------

Usable lamp ratio after 6000 h	0.50	0.70
Luminous flux stability coefficient	at 2000 h: 0.80%	at 2000 h: 0.83% at 6000 h: 0.70%
Number of switchings to failure	half life service lamp in hours 10000 if lamp ignition time > 0.3 s	term service lamp (in hours) 30,000 if lamp ignition time > 0.3 s
Ignition time	<2.0 s	< 1.5 s if P < 10 W < 1.0 s if P 10 W
Time 60%, F flare-ups before	< 40.0 s or < 100 s for lamps, containing mercury in the form of an amalgam	< 40 s or < 100 s for lamps containing mercury in amalgam form
The frequency of premature failures	5.0% at 500 h	5.0% at 1000 h

The coefficient of power lamps for lamps with in tegrated control gear	0.50 if P < 25 W 0.90 if P 25 W	0.55, if P < 25 W 0.90 if P 25 W
Color rendering index (Ra)	80 65 if the lamp is intended for out door lighting or for industrial ap plications	80 65 if the lamp is intended for outdoor or industrial use

If the cap lamp refers to the standard type and is used as a lamp bulb, then, starting with step 2, the lamp must comply with the modern level of requirements for compatibility with equipment designed for installation between the network and incandescent lamps.

Table 4. Requirements for performance of other directional lamps (excluding LED lamps, CFLs and high intensity discharge lamps)

Table 4

Characteristic	Stages 1 and 2	Stage 3
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Nominal life service lamp when the coefficient of suitable lamps 50%	1000 h (2000 h at stage 2) 2000 h for extra-low voltage lamps not meeting the requirements of stage 3 for the efficiency of incandescent lamps in in accordance with table 2 of these Requirements	2000 h 4000 h for extra low voltage lamps
Luminous flux stability coefficient	80% at 75% of rated average life of service lamp	80% at 75% of rated average life of service lamp
Number of switching cycles	four times the nominal life service lamp (in hours)	four times the nominal life service lamp (in hours)
Ignition time	<0.2 s	<0.2 s
Lamp burn - up time up to 60%, C	1.0 s	1.0 s

The frequency of premature failures	5.0% at 100 h	5.0% at 200 hr
Coefficient lamp power built-in ballast with	power > 25 W: 0.9 power 25 W: 0.5	power > 25 W: 0.9 power 25 W: 0.5

8. Requirements for the characteristics of LED lamps of non-directional and directional light.

Requirements for the technical characteristics of LED lamps for omnidirectional and directional light are given in table 5.

Table 5. Requirements for the characteristics of LED lamps with omnidirectional and directional light

Table 5

Characteristic	Requirements for step 1
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Usable lamp ratio after 6000 h	0.90
Luminous flux stability coefficient at 6000 hours of operation	0.80
Number of switchings to failure	15000, if the nominal life service lamp 30000 h, then no less than half of the nominal period of life (in hours)
Ignition time	<0.5s
Lamp burning time up to 95%, F	<2s
The frequency of premature failures	5% at 1000 h
Color rendering index (Ra)	80 65, if the lamp is used for outdoor or for industrial use
Color uniformity	Changing the coordinate of chromaticity in the borders of six units ellipse MacAdam or less

Lamp Power Factor (PF) for lamps with integrated control gear	$P < 2 \text{ W}$: no requirement $2 \text{ W} < P \leq 5 \text{ W}$: PF > 0.4 $5 \text{ W} < P \leq 25 \text{ W}$: PF > 0.5 $P > 25 \text{ W}$: PF > 0.9
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If the cap lamp refers to the standard type and is used as a lamp bulb, then, starting with step 2, the lamp must comply with the modern level of requirements for compatibility with equipment designed for installation between the network and incandescent lamps.

9. Requirements for the characteristics of equipment intended to be installed between the network and lamps.

Beginning with step 2, the equipment intended for installation between the network and the lamps should meet modern level requirements for compatibility with lamps, in which the index of efficiency (calculated for spotlights and lamps omnidirectional light in accordance with the method specified in paragraph 4 present Claims), but no more:

0.24 - for lamps omnidirectional light (it is assumed that = the total nominal luminous flux);

0.40 - for directional lamps.

If the device adjusting brightness is set in the position of minimum brightness at which the operating lamp still consumes energy, the operating lamp should emit at least 1% of their luminous flux at full power.

If the luminaire is intended for use by the user and its design allows for the replacement of lamps by the user, then the lamps compatible with this luminaire must belong to one of the 2 higher energy efficiency index classes .

10. The timing of the introduction of the EEI value milestones should be as follows:

- stage 1 - from September 1 , 2021 ;
- stage 2 - from September 1 , 2022 ;
- stage 3 - from September 1 , 2023 .

If the requirement is not to be replaced or not stated otherwise, is they are performed together with the other requirements introduced at a later stage.

11. In addition to the requirements specified in section V of the technical regulation of the Eurasian Economic Union "On requirements for the energy efficiency of energy-consuming devices" (TR EAEU 048/2019), packaging or operational documents must contain the following information:

a) Product information requirements for directional lamps. Requirements do not apply to:
incandescent lamps that do not meet the energy efficiency requirements of stage 2;

LED modules, delivered as a part of the lamp, for which they are not intended to replace the user.

From step 1, the following information shall be provided (unless otherwise specified) and the term "energy saving lamp" can be used if the lamp energy efficiency index (calculated in accordance with the method set out in Section III of these Requirements) is equal to or below 0.40:

information applied to the lamp surface (other than high intensity discharge lamps) in legible print - the value and unit of measurement ("lm", "K" and "°") of the nominal useful luminous flux, color temperature and nominal angle of dispersion, if after application of the information related to safety, such as wattage and voltage, there is sufficient space on the lamp without excessive shading of the light emitted from the lamp .

If there is sufficient space for only one of the 3 values, the nominal useful luminous flux must be indicated . If space is available for 2 values, the nominal useful luminous flux and color temperature must be indicated .

information applied to the package - product information must be understandable and clear and does not necessarily have to contain the exact wording from the specified list, it can be displayed in the form of graphs, pictures or symbols:

nominal useful luminous flux, the displayed font of at least twice larger than the font used to display the nominal power of the lamp;

nominal lamp life in hours (no more than design life);

color temperature expressed in degrees Kelvin, and also graphically or words

; number of switching cycles before premature failure;
burn- up time up to 60% of total luminous flux (can be referred to as "instant full light" if it is less than 1 second);

warning if the light does not allow control of brightness , or to control the brightness of only permissible specific dimmers; (in the latter case, with an indication of the list of dimmers must be provided on the manufacturer's (supplier's) page in the information and telecommunications network "Internet");

if the lamp is designed for optimal use in non-standard conditions (for example, at an ambient temperature T_a 25 ° C or special temperature control required) -

information about these conditions;

dimensions of the lamp in mm (length and largest diameter); nominal angle of dispersion of the beam in degrees;

if angle scattering beam lamp is 90 ° and its useful luminous flux, determined in accordance with subsection 1 of this section, must be measured in a cone of 120 °, that provides a warning indication that the lamp is not suitable for directional lighting;

if the cap lamp refers to a standardized type used as incandescent, and if the lamp dimensions different from the dimensions lamp filament, which is designed for replacement, - drawing the comparative size of the lamp and a replaceable lamp bulb;

information on the type to which the lamp belongs, indicated in the first column of Table 6, is given in the case when the luminous flux of the lamp is in the cone

90 ° () is not lower than the reference luminous flux specified in Table 6 to the lamp the minimum power among lights corresponding type.

The reference luminous flux must be multiplied by the correction factor given in table 7, for LED lamps it must be additionally multiplied by the correction factor shown in table 8;

Information about equivalence, which includes in itself the power lamp

PR type - just in case, if the lamp refers to the type specified

in table 6, and if the luminous flux of the lamp in a 90 ° cone () is not lower than the corresponding reference luminous flux specified in table 6.

The reference luminous flux must be multiplied by the correction factor from Table 7. For LED lamps it must be additionally multiplied by the correction factor from Table 8. The intermediate values of the luminous flux and the declared equivalent lamp wattage (rounded to the nearest 1 W) are calculated by linear interpolation between 2 adjacent values.

Table 6. Reference luminous flux for declaration of equivalence

Table 6

Lamp type	Power, W	Standard , lm
Extra -low voltage reflector lamp		
MR11 GU4	20	160
	35	300
MR16 GU 5.3	20	180
	35	300
	fifty	540
AR111	35	250
	fifty	390
	75	640

	one hundred	785
Reflector lamp on voltage network with blown glass bulb		
R50 / NR50	25	90
	40	170
R63 / NR63	40	180

	60	300
R80 / NR80	60	300
	75	350
	one hundred	580
R95 / NR95	75	350
	one hundred	540
R125	one hundred	580
	150	1000
Reflector lamp on voltage networks with bulb from pressed glass		
PAR16	20	90
	25	125
	35	200
	fifty	300
PAR20	35	200
	fifty	300

	75	500
PAR25	fifty	350
	75	550
PAR30S	fifty	350
	75	550

	one hundred	750
PAR36	fifty	350
	75	550
	one hundred	720
PAR38	60	400
	75	555
	80	600
	one hundred	760
	120	900

Table 7. Correction factors for luminous flux stability

Table 7

Halogen lamp 1

Compact fluorescent lamp 1.08

LED lamp $1 + 0.5 \times (1 - \text{LLMF})$, where

Table 8. Correction factors for LED lamps

Table 8

Angle scattering beam LED lamp	Correction factor for luminous flux
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dispersion angle 20° 1

15° dispersion angle $< 20^\circ$ 0.9

10° dispersion angle $< 25^\circ$ 0.85

scattering angle $< 10^\circ$ 0.80

spectral power distribution in the range of 180-800 nm; information that should be in technical documentation: information specified in paragraphs eighth - twenty- second subparagraph

"a" of this paragraph;

rated power (accurate to 0.1 W); nominal useful

luminous flux; nominal lamp life; ratio power lamp;

coefficient of stability of the light flux at the end of the nominal period of the

service (for excluding lamp filament);

ignition time (in the form

of X, X s); color rendering index;

uniformity of color (only for LED lamps); nominal peak luminous

intensity in candelas (cd); nominal angle of dispersion of the

beam;

information on the purpose of

the lamp for outdoor lighting or for industrial use (if any);

if the lamp contains mercury:

instructions for cleaning the room in case of damage (destruction) of

the lamp, as well as recommendations for the disposal of the lamp;

b) additional information for LED products replacing fluorescent lamps without built-in ballast:

Information about the fact that the total energy efficiency and light distribution of a device which uses such a lamp, determined design device (indicated by the manufacturer);

information that an LED lamp replaces a fluorescent lamp without a built-in ballast of a certain power is acceptable if:

power of light in any direction around the axis of the tube does not deviate more than on 25% of the average power of light around the tube;

the luminous flux of the LED lamp is not lower than the luminous flux of the rated power fluorescent lamp . The luminous flux of a fluorescent lamp is obtained by multiplying the declared power by the minimum value of the efficiency of the corresponding fluorescent lamp;

the power of the LED lamp is not higher than the power of the fluorescent lamp declared for replacement.

The technical documentation must contain information confirming the fulfillment of these requirements;

c) the requirements for information about the product for the equipment, except for lamps, designed for installation between the network and the lamps: starting from step 2, the manufacturer applied the warning information about hardware compatibility with energy-saving lamps, if the equipment does not ensure compatibility with all of the energy-saving lamps;

g) requirements to information about products Ballast: starting with step 2, provides information about the fact that the device is intended for use as ballast and ballast that may operate in the idle mode move (if any);

e) to the product information requirements for special purposes: for the entire production of special purpose must be specified warning information about the target appointment, but also warning information about that, that the production of special -purpose not intended for use in other purposes.

f) other information provided for in the relevant technical regulations of the Union (Customs Union).

IV. Permissible deviations of the parameters of energy efficiency directional light lamps, LED lamps and associated with them equipment when conducting tests (measurements) after release them into circulation

12. In the case of testing (measuring) lamps directional light, LED lamps , and associated with their equipment after their release into circulation on the customs territory of the Union carried out tests (measurements) at least 20 samples of lamps and equipment, and one of the same model and the same and that the same manufacturer. The measured values of the parameters and characteristics of the specified lamps and equipment must comply with these Requirements and the nominal values declared by the manufacturer, within the permitted tolerances specified in table 9.

Products should be considered as meeting the requirements specified in this document if:

the lamps in the batch are accompanied by the necessary and correct information;

testing of the batch parameters specified in Table 9 did not reveal non-compliance for any of the parameters within the limits of tolerances .

Table 9. Possible deviations

Table 9

Measured parameter	permissible deviations
Factor term services lamps through 6000 hours (for LED lamps)	a maximum of 2 out of 20 lamps in a test batch may fail up to the required number of hours
Number of switches before the onset of failure	19 of 20 Party lights must not go out from the system, after reaching the desired number of cycles of switching

Ignition time	the measured values are not must exceed the nominal value by more than 10% and no one party in the lamp should not have a value more than a 2 -fold excess of the desired

Lamp burn - up time up to 60%, F	the measured value must not exceed the rated value by more than 10% and no lamp in the batch must have a value more than 1.5 times the required
The frequency of premature failures	in dependence on the fact that occurs before the test is completed, if: achieved the required number of hours, more than 1 lamp out of order. Compliance: A maximum of 1 in 20 lamps of the test batch fails before the required number of hours
Color rendering index (Ra)	the measured values are not to be lower than the nominal value by more than three points and none of the lamp should not have a value Ra more than to 3.9 points below the desired
Light stream in the late period of service and the nominal period of service (for LED lights)	Under the "end of life service" refers to a point of time when presumably remain in operation only 50% of lamps or when the average value of the stability of the light flux batch falls below 70%, in dependence on the fact that occurs earlier. Value: lumen in the late period of service and on its length, obtained by the extrapolation coefficient lamp life and the average value of the stability of the light flux of lamps in the inspected batch and equal to 6000 hours, should be not lower than, respectively, the values of the luminous flux stability and the nominal values during the service life declared by the manufacturer of the product, minus 10%. Non-compliance: in other cases,

Equivalence of lamps (in accordance with paragraph twenty one of subparagraph "a" of paragraph 11 of these Requirements)	Check 10 lamp samples . The measured values does the nominal values and the values in more than on 10% values of the not deviate from established limiting

Angle scattering beam	average results lamps test batch deviate no more than to 25% of said angle beam scattering and a value for the angle of scattering of the beam of each individual lamp test batch deviate no more than to 25% of the measured values
Maximum intensity	the measured value of each individual lamp in the test batch shall not be less than 75% of the measured intensity
Other parameters (in fact including an index of energy efficiency)	values of the measured values do not have to deviate from the nominal values more than on 10%

13. Procedure for checking LED modules not intended to be removed from the luminaire by the user.

In the case of tests (measurements) of LED modules that are not intended to be removed from the luminaire by the user, after their release into circulation in the customs territory of the Union, tests (measurements) are carried out in the following order:

- the number of samples (LED modules or luminaires) of one model and one manufacturer is selected, if possible, in equal proportions from several sources by random sampling. For sub 13.1, 13.3 and 13.4 , paragraph 13 of the present Requirements the number of sources must be not less than 4, if it is possible;

- For paragraph of sub-clause 13.2 of clause 13 of these Requirements, the number of sources should be at least 4, if possible, and if the number of luminaires, it is necessary to extract from them 20 LED modules 1 and of the same model at least 4, in other cases the number of sources is taken equal the number of fixtures required .

Tests (measurements) are carried out in the following order.

Under the concept of "light" refers to light, comprising a light-emitting diode modules, and under the concept of "testing" - refers to the procedure described in paragraph 7 of this requirement. If the technical documentation provides for testing in accordance with subparagraphs 13.1 and 13.2 of clause 13 of these Requirements, it is allowed to choose the most suitable method.

13.1. If the technical documentation for the luminaire provides for the test of the luminaire as a whole as a lamp, then 20 luminaires must be tested . If the model lamp corresponds to the present Requirements, then consider that the LED modules of this model correspond to them.

13.2. In other cases, if the technical documentation for the luminaire provides for the removal of LED modules from it for testing, then it is necessary to select a sufficient number of luminaires to obtain 20 samples of LED modules. When it is necessary to follow the instructions of the technical documentation for dismantling fixtures and conduct the test each LED module in isolation.

13.3. In other cases, if in accordance with the technical documentation on the lamp manufacturer manufactures LED modules in a single product, you need to select 20 samples for testing of LED modules of this model and to test each LED module in isolation.

13.4. If the tests in accordance with subparagraphs "a" - "c" of paragraph 7 of these Requirements section is impossible, that is, the LED modules are not can be removed from the lamp to check for separately, it should be checked cycles of switching, premature failure, the ignition time and burn-up time for compliance with the requirements of Table 5 for 1 luminaire. If the results of tests different from the limit values by more than 10%, or lamp went out prematurely fail, they must be further tested further 3 lamp. If the average results of subsequent tests of 3 samples and (except for those that prematurely failed) do not differ from the limit values by more than 10%, and none of the luminaires has failed, then the LED modules of this model are considered to comply with these Requirements.

14. Procedures for checking equipment intended to be installed between mains and lamps.

In addition to the compatibility requirement gear should be checked as to compliance with the requirements of energy efficiency in accordance with paragraph 4 of these Requirements. Tests are carried out on 1 control gear sample, even if the model is designed to work together with other control gear in the equipment. PRA model should be considered as corresponding to the requirements, if the test results do not deviate from the limit values of more than to 2.5%.

If the results deviate from the limit values of more than to 2.5%, it must be tested further 3 sample. The model is considered as an appropriate present Requirements, if the average value of the results of tests of three samples do not differ from the limit values of more than to 2.5%.

15. Luminaires should also be checked for lamps in their packaging. The model is considered compliant if the lamps are not present or if the lamps that are present have an energy efficiency index required in accordance with paragraph 3.2 of these Requirements.

16. In addition, should be tested device control brightness in complete with lamps incandescent, if this device control is in the position of minimum brightness. A model is considered compliant if, when installed in accordance with the manufacturer's instructions, the lamps provide at least 1% of their luminous flux at full load.

V. Contents of energy efficiency label and technical sheet of electric lamps

17. The energy efficiency label of electric lamps must contain the following information:

I. name or trade mark (if any) of the manufacturer.

II. model designation .

III. energy efficiency class .

Icon Energy efficiency is at the same level, that and the arrow corresponding to the class of energy efficiency.

IV.- the estimated consumption of electricity in kW * h for 1000 hours of lamp operation (rounded up to an integer).

18. The energy efficiency label of the luminaires must contain the following information:

I.name or trade mark (if any) of the manufacturer;

II.model designation ;

III.information about the luminaire (type, version, compatibility);

IV.energy efficiency class ;

V.information in accordance with one of the following versions :

1) the luminaire is designed to work with lamps of the specified energy efficiency classes . The field indicates the class of the lamp included in the delivery set . If the lamp is not included in the delivery set of the luminaire , the field remains empty

2) the luminaire has built-in LED modules (light sources) without the possibility of their replacement by the end user;

3) the luminaire is designed to work with lamps of the specified energy efficiency classes and contains built-in LED modules (light sources), without the possibility of replacement by the end user. The field indicates the class of the lamp included in the delivery set. If the lamp in the complete supply lamp is not included, the field remains empty.

19.

The technical sheet included in the operational documentation of electric lamps and luminaires must contain a list of the characteristics provided for in paragraphs 17 and 18 of these Requirements, respectively.

VI.Determination of classes of energy efficiency lamps electric

20. Class energy efficiency lamps electric determined according to the index of the energy efficiency (EEI) in accordance with Table 1.

Table 1. Classes of energy efficiency of electric lamps

Table 1 *

* Numbering corresponds to the original. - Base manufacturer's note data.

Energy efficiency class	Energy efficiency index	
	For lamps (light sources) of non-directional light	For lamps (light sources) directional light

A ++	EEI 0.11	EEI 0.13
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A +	$0.11 < \text{EEI} \leq 0.17$	$0.13 < \text{EEI} \leq 0.18$
AND	$0.17 < \text{EEI} \leq 0.24$	$0.18 < \text{EEI} \leq 0.4$
IN	$0.24 < \text{EEI} \leq 0.60$	$0.4 < \text{EEI} \leq 0.95$
FROM	$0.60 < \text{EEI} \leq 0.80$	$0.95 < \text{EEI} \leq 1.20$
D	$0.80 < \text{EEI} \leq 0.95$	$1.20 < \text{EEI} \leq 1.75$
E (least effective)	$\text{EEI} > 0.95$	$\text{EEI} > 1.75$

Application N 15. The requirements for energy efficiency machines drying drum type

Appendix N 15
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These Requirements apply to household drum-type drying machines for textiles (hereinafter referred to as drying machines), which are put into circulation in the customs territory of the Eurasian Economic Union (hereinafter referred to as the Union), powered from the AC mains, which can also be used for commercial purposes (in production in trade and services), with electrical or gas heating air, in fact including embedded machine drying drum type of excluding centrifuges and machine drying, included in the composition of the combined machine washing and drying.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"automatic machine tumble drum type" - machine dryer drum type, in which the process of drying off automatic device when reaching a certain moisture (e.g., with the help of the sensor conduction or sensor temperature);

"household combined washer washer-dryer" - bytovaya washing machine, which combines the function of washing and spinning of textile products in the centrifuge with the function of drying with heating;

"household drying machine drum type" - Domestic appliance destination, which is intended for drying textile articles in a rotating drum with passage of heated air;

"Components centrifuge" - a device domestic use, in which water is removed from the textiles under the action of centrifugal force in a rotating drum and then pumped automatic pump;

"built-in drum-type household tumble dryer" - a drum-type household tumble dryer designed to be installed in a cupboard, other furniture, a special niche or in another similar place with a decorative coating (screen);

"Condensation drying machine" - machine drying with the device removing moisture from being used for drying air by its condensation;

"washer dryer drum type with air ventilation" - machine drying drum inside which said surrounding fed air passes then through the textile articles and the escaping into the room or of its limits;

"non-automatic machine tumble drum type" - machine dryer drum type, in which the process of drying off at the expiry of predetermined certain period of time, usually controlled timer, but which also may be turned off manually;

"nominal capacity" - the maximum weight of the dry textile products specified type in kilograms with a pitch of 0.5 kg, which is specified in the instructions of the manufacturer and which can be downloaded in household machine drying with the selected program;

"program" - set of operations, which pre-set by the manufacturer and which are claimed as suitable for drying certain types of textile products;

"program duration" - the duration of the range of time from the beginning of the program to its end, excluding any delay in the work of the program entered by the user;

"mode " off " - state, at which the washer dryer drum type off with aid device control or switch accessible to the user during normal operation, to achieve low power consumption, and which may persist for a long time until the pores, while household machine dryer drum type connected to a power source and used in accordance with the manufacturer's instructions ;

"Mode" is left enabled "- mode and the lowest amount of electricity that can be stored in for an indefinite time after completion of the program without the need for intervention of the user, except for the discharge of textile products from the drying machine;

"routine" Cotton "- textile drying cycle of cotton after washing with an initial moisture content in the product up to 60% of the residual content of moisture in them about 0%;

"cycle" is the complete drying process set for the respective program;

"partial load" - half the nominal load of household drying machine at a given program;

"efficiency condensation" - the ratio of the mass of moisture condensed in the condenser machine dryer drum type, to the weight of the moisture extracted from the garments in during cycle.

III. Requirements for the energy efficiency of drying machines and the specifics of determining energy efficiency indicators

3. For the drying machines should be conducted related tests (measurements) and the determined value of the index of energy efficiency (EEI) and the efficiency of condensation.

The standard Cottons program must be used to calculate the electricity consumption and other parameters of tumble dryers. This program must be specified in the device (s) selection program machine drying, on its display (if available) , or in both places, one of the characters , or a combination of characters and must be installed by default in an operating cycle of the drying machine, equipped with automatic selection of the program or any function for automatic selection of drying programs or maintaining program selection . If the drying machine is automatic, a standard program "Cotton" also should be automatic.

4. The index of energy efficiency of the machine drying is calculated by the following formula (rounded to 1 decimal digits):

,

Where:

- annual electricity consumption of the dryer ;

- standard annual electricity consumption of the dryer machine.

calculated (in kWh / year) as follows (rounded result to 2 decimal places):

for drying cars without air ventilation:

= 140 ,

for dryers with air ventilation:

= 140 - 30 ,

Where:

with - nominal loading drying machines for standard programs "Cotton";

- Program duration for the standard Cotton program .

The annual consumption of electricity () (in kWh / year) is calculated by the following formula (with rounding the result up to two decimals):

,

Where:

- weighted electricity consumption (in kWh) (rounded to 2 decimal places);

- power value (in watts) in off mode for the standard Cotton program at full load (rounded to 2 decimal places);

- the value of the power consumption (in W) in the "left on" mode for the standard Cotton program at full load (rounded to 2 decimal places);

- weighted program duration in minutes (rounded to the nearest whole value);

160 is the total number of drying cycles per year.

In case if the machine dryer is equipped with a system of control power to the function of the automatic return machine dryer in the mode "off" after the end of the program, the weighted annual energy consumption (AEC) is calculated using the effective duration of the regime "is left switched on" by the following formula:

,

where is the duration of the "left on" mode in minutes for the standard "Cotton" program at full load (rounded to the nearest whole value).

The program duration for the standard Cotton program is calculated using the following formula (rounded to the nearest whole number):

Where:

,

- the running time of the standard Cotton program at full

download in minutes (rounded to the nearest whole value);

- time performance of the standard program "cotton" at partial load in minutes (with rounding to whole values).

Weighted consumption of electricity () (in kWh) for drying vehicles is calculated by the following formula (with rounding to two decimal digits):

Where:

,

- Energy consumption for the standard Cotton program at

full load (in kWh) (rounded to 2 decimal places);

- Energy consumption for the standard Cotton program at partial load (in kWh) (rounded to 2 decimal places).

For machine drying with the electrical device heated air energy consumption and is measured directly as consumed electrical energy. To drying machines with the device heating air, operating on gaseous fuel, the power consumption

and is calculated using

the following formulas (in kWh) (rounded to 2 decimal places):

;

Where:

- consumption of heating energy of gas (in kWh) for standard Cotton program at full load (rounded to 2 decimal places);

- consumption of calorific energy gas (in kWh) for the standard program "cotton" at partial loading (with rounded to 2 decimal digits);

- additional (auxiliary) electricity consumption (in kWh) for the standard Cotton program at full load (rounded to 2 decimal places);

- additional (auxiliary) electricity consumption (in kWh) for the standard Cotton program at partial load (rounded to 2 decimal places);

= 2.5.

For gas drying machines power gas () (in

kWh) for the standard Cotton program at full and partial load is calculated using the following formula (rounded to 2 decimal places):

...

For gas drying machines consumption of electricity (

) (in kWh) for the standard Cotton program at full and partial load is calculated using the following formula (rounded to 2 decimal places):

$$= 160 (3 + 4) / 7 + (+ [525600 ? -]) / 60 \cdot 1000.$$

5. To calculate the condensation efficiency , determine the average condensing efficiency for a standard cotton program at full and partial load.

Condensation efficiency () is calculated as a percentage using the following formula (rounded to the nearest whole value):

$$= (3 + 4) / 7,$$

Where:

- average condensation efficiency for a standard cotton program at full load;

- average condensation efficiency for the standard cotton program at partial load.

The average condensation efficiency (C) is calculated from the results of determining the condensation efficiency in test cycles and is expressed as a percentage:

Where:

n - the number of cycles of testing, comprising in itself on at least 4 actual test cycle for the selected program;

j is the number of the test cycle ;

- the mass of water collected in the condenser at the time of the test j; is the mass of the wet test load before drying;
is the mass of the test load after drying.

6. Drying machines must meet the following requirements:

a) the energy efficiency index (EEI) of drying machines , calculated in accordance with paragraph 4 of these Requirements, must be less than 85;

b) for condensing dryers :
energy efficiency index (EEI) calculated in accordance with paragraph 4 of these Requirements must be less than 76;

the condensation efficiency determined in accordance with paragraph 5 of these Requirements must be at least 70%.

7. Operational documents attached to drying machines provided for in clause 13 of the technical regulation of the Eurasian Economic Union "On requirements for the energy efficiency of energy-consuming devices" (TR EAEU 048/2019) (hereinafter - technical regulations) must contain the following information about their characteristics and parameters :

a) the value of the energy efficiency index (EEI);

b) the value of the condensation efficiency for condensation dryers ;

c) information on the standard Cotton program and an indication that it is suitable for drying after washing cotton textiles with standard humidity and is the most efficient program in terms of energy consumption ;

d) information on electricity consumption in the "off" mode and in the "left on" mode ;

d) information about the estimated duration of the program and the cost of electricity to the main program of drying both when fully loaded, so and at partial loads.

IV. Permissible deviations energy parameters efficiency machine drying with conducting test (measurement) after release them into circulation

8. In the case of tests (measurements) of drying machines after their release into circulation in the customs territory of the Union , tests (measurements) of 1 standard sample (copy) of each model of the drying machine are carried out .

Model drying machines deemed appropriate the present Requirements, if the measured values of the parameters and characteristics typical instance (sample) drying machines correspond to the requirements of section III of these requirements and the nominal values declared by the manufacturer, in the range of allowable deviation, indicated in Table 1.

Table 1. Possible deviations

Table 1

Measured parameter	permissible deviations
Weighted annual energy consumption	measured value not should exceed the nominal value for greater than at 6%

Weighted power consumption	measured value not should exceed the nominal value for greater than at 6%
Weighted condensation efficiency	the measured value must not be less than the nominal value for longer than at 6%
Weighted program duration	the measured value should not exceed the rated value for longer than at 6%
Consumption power in the mode "off" and in operation "is left enabled"	measured values of consumed power and should not exceed the rated values by more than 6% or 0.10 W to control the consumed power, the value of which, respectively, exceeds or does not exceed 1.00 W
Duration of the "left on" mode	the measured value should not exceed the rated value for more than at 6%

The nominal value means the value declared by the manufacturer.

In other cases, the measurement should be spend on 3 additional copies of each model of the drying machine. Model drying machine is considered to be appropriate by the present Requirements, if the average value of the results of the measurements of these 3 additional copies of the drying machines meet the requirements specified in section III of the present Requirements.

In other cases, this model drying machines should be considered as a not appropriate requirements of technical regulations.

V. Contents of label and technical sheet of drying machines

9. The label of drying machines must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. energy efficiency class ;

IV. annual energy consumption () (in kWh / year) (rounded to the nearest whole number);

V. type of dryer;

Vi. cycle time corresponding to the standard Cotton program at full load (in minutes) (rounded to the nearest whole number);

Vii. nominal capacity for the standard cotton program at full load (in kg);

VIII. Audible noise value (weighted average value) to a standard mode of drying cotton under full loading (in dB) rounded to whole numbers.

IX. condensation efficiency class (for condensing dryers).

10. The technical sheet, which is part of operational documents for drying machines, must contain the following information:

a) The name or trade mark (if any) of the manufacturer;

b) identification number of models of the manufacturer (as usually alpha-numeric code that distinguishes the particular model of the tumble dryer from the other models of the same trade mark or the manufacturer with this same name);

c) nominal capacity for the standard cotton program at full load (in kg);

d) type of drying machine (with supply and exhaust ventilation, condensing or gas);

e) energy efficiency class ;

e) for the drying machines, running from the mains:

- annual energy consumption (), rounded to the first decimal place . Indicated as follows: "Energy consumption " X "in kWh / year, based on 160 cycles for the standard Cotton program at full and partial load, and power consumption in the "left on" mode. Actual energy consumption per cycle depends on how the drying machine is used ";

g) for a gas dryer :

- annual energy consumption by gas () (rounded to 1 decimal place). Indicated as follows: "Energy consumption " X "in kWh gas / year, based on 160 cycles for the standard program "Cotton" at full and partial load. The actual consumption of energy per cycle depends on the fact what way the drying machine is used ";

- annual consumption of electricity () (with rounded to 1 decimal digits). Indicated as follows: "Energy consumption " X " , kWh / year, based on 160 cycles for standard Cotton programs at full and partial load, and energy consumption in the "left on" mode . Actual energy consumption per cycle depends on the fact how way machine dryer is used ";

h) automatic or non-automatic drying machine;

and) power , , , , for the standard program "cotton" at full and partial load;

a) consumption of power in the mode "off" () , and in the mode "left on" () for the standard Cotton program at full load;

l) the duration of the regime "is left enabled" if the drying machine is equipped with a system of regulation of power;

m) an indication that the standard program "cotton" at full and partial loading is a standard program drying, to which applies the information on the label and in the technical sheet that this program is suitable for drying the washed cotton goods normal humidity and that is most efficient program in terms of energy consumption for drying cotton products;

n) while performing a standard program "cotton" at full and partial load () (in minutes) (with rounding to whole numbers), as well as

time performance of the standard program "cotton" at full load () and the running time of the standard cotton program with partial

loading (), (in minutes) (rounded to the nearest whole number);

a) for the condensation drying machine - class efficiency condensing. Indicated as follows: "Condensing efficiency class " X "on a scale from G (least efficient) to A (most efficient)"; can be expressed in other ways, provided that the scale starts at G (least effective) and ends at A (most effective);

n) for a condensing dryer , it is necessary to indicate the condensation efficiency for the standard cotton program at full

and partial load (), () and condensation efficiency for

standard program "Cotton" at full and partial load () (in %) (rounded to the nearest whole number);

p) acoustic noise value (measured average value ()) for the standard Cotton program at full load (in dB) (rounded to the nearest whole number);

c) an indication of the fact that the machine dryer is designed for embedding (when necessary).

11. One technical sheet of a tumble dryer may contain information on a number of models of tumble dryers supplied by the same manufacturer.

12. The information contained in the technical sheet of the dryer can be provided in the form of a color or black and white copy of the label. In this case, the information provided for in paragraph 10 of these Requirements and which is absent on the label must also be indicated .

Vi. Determination of energy efficiency classes of drying machines

13. Class energy efficiency of the machine drying is determined in accordance with its energy efficiency index (EEI) in accordance with Table 2.

Table 2. Class of energy efficiency of machine dryer

Table 2

Energy efficiency class	Energy efficiency index
-------------------------	-------------------------

A +++ (most effective)	EEI < 24
------------------------	----------

A ++	24 EEI < 32
A +	32 EEI < 42
AND	42 EEI < 65
IN	65 EEI < 76
FROM	76 EEI < 85
D (least efficient)	EEI 85

12. Efficiency class condensation drying machine is determined on the basis of the weighted average efficiency of condensation in accordance with table 3.

Table 3. Classes efficiency condensation household drying machine

Table 3

Class efficiency condensation	The residual content of moisture (%)
A (most effective)	> 90
IN	80 < 90
FROM	70 < 80
D	60 < 70
E	50 < 60
F	40 < fifty
G (least efficient)	40

Appendix N 16. Requirements for the energy efficiency of vacuum cleaners

Appendix N 16
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These Requirements apply to household vacuum cleaners (hereinafter referred to as vacuum cleaners) put into circulation in the customs territory of the Eurasian Economic Union (hereinafter referred to as the Union), which can be used for commercial purposes (in production, in trade and services), powered by an alternating current with a rated voltage of up to 250 V (inclusive), or hybrid, for excluding Vacuum:

- a) for wet cleaning;
- b) for wet and dry cleaning;
- c) powered by electric batteries and (or) accumulators; d) robot vacuum cleaners;
- e) industrial or central; f) floor polishers;
- g) intended for application outside the premises.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"active nozzle-brush, working from the battery (active nasadka-brush)" - cleaning nozzle fitted with a powered from batteries and (or) the battery device for lifting the pile (moving brush), contributing to the removal of pollution;

"household vacuum cleaner" - vacuum cleaner designed for household or domestic use, and claimed by the manufacturer in as such;

"secondary emission of dust" - the ratio, expressed in percentage with an accuracy of up to 2 decimal digits, the total number of particles of dust in size from 0.3 microns to 10 microns ejected vacuum to the total number of particles of

dust such as size, trapped suction device at receipt in a specified amount of dust with specified particle sizes, including dust measured at the outlet of the vacuum cleaner and dust emitted due to any leaks and produced by the vacuum cleaner itself;

"Hybrid vacuum" - a vacuum cleaner, which can be shown to effect both from the mains, so and by electric batteries and (or) the battery;

"double pass" - 1 motion of the cleaning nozzle forward and one in the parallel direction back, performed with a test speed passage when a predetermined length of the test passage;

"the passage length of the test" - the length of the test area in meters, including the distance traveled by the center of the cleaning nozzle to the acceleration of the relevant zones before and after the test zone;

"test carpet" - test appropriate number of cycles of cleaning the test carpet Wilton, wherein the cleaning nozzle running at the maximum power of the vacuum cleaner, runs portion corresponding test zone length with a width equal to the width of the cleaning nozzle by which a uniformly distributed and appropriate manner is embedded test dust of

the appropriate composition, with the measurement and recording of the elapsed time, the position of the center of the cleaning head relative to the test area, electricity consumption and an increase in the mass of the dust collector at the end of each cleaning cycle ;

"Test on a hard floor" - Test 2 cycles of cleaning in which the cleaning nozzle of the vacuum cleaner, operating at maximum power, passes on a wooden test plate provided with a diagonal (at an angle of 45 °) test groove portion of the test zone of appropriate length with a width equal to the width cleaning head, with changing and fixing the elapsed time, the position of the center of the cleaning head relative to the test area, power consumption and weight reduction of the test groove at the end of each cleaning cycle ;

"test speed of passage" - the speed of movement of the cleaning nozzle in m / h under test, is preferably implemented with the use of an electromechanical actuator (in relation to the vacuum cleaner with a self-propelled cleaning nozzle must ensure that its velocity is both close to the corresponding test speed, although deviations are permissible, in case if they are clearly marked in the operating documents);

"test groove" - a removable U-shaped insert of appropriate dimensions, filled at the beginning of the cleaning cycle with the corresponding artificial dust;

"rated power consumption" - power consumption in watts, stated by the manufacturer (for devices designed to perform along with the function of the vacuum cleaner and other features adopted in the calculation only the electric power consumed in the vacuum cleaning);

"a full-size vacuum cleaner is powered by batteries" - a vacuum cleaner with power from the battery, capable of when fully charged, and without additional charging clear 15 m floor with the use of two double stroke of the entire cleaned surface;

"polisher" - an electrical device designed to protect, smoothing and (or) a particular type floor polish is generally operated using a polishing means, the deposition apparatus to the surface of the floor, and capable of normally perform and function of the vacuum cleaner;

"industrial cleaner" - commercial vacuum cleaner with a nozzle having a width of more than 0.50 m, a vacuum cleaner, designed as a part of the manufacturing process, machine or tool designed to remove hazardous materials, heavy construction dust, industrial dust on equipment casting, mining, food and other industries;

"vacuum" - a device adapted to remove debris from the cleaned surface with the help of an air stream occurring over the expense of reduced pressure formed in this device;

"vacuum cleaner for wet and dry cleaning" - vacuum cleaner designed for removal of liquid volume over 2.5 liters and able also to perform the function of the vacuum cleaner for dry cleaning;

"vacuum cleaner for wet cleaning" - a device which removes the dry and (or) wet waste and pollution, with application at this to subject cleaning surface cleaning agent to the water -based , or by exposure to steam to remove the formed water with trash air stream arising for the account of the reduced pressure generated in the device (including types of devices commonly known as washing vacuum cleaners);

"vacuum cleaner for commercial use" - a vacuum cleaner intended for use by non-specialists (cleaners or other staff) in the conditions of an office, store, hospital and hotel, declared by the manufacturer in as such;

"cleaner for use is Improvement" - a device which is intended for use outdoors for garbage collection (e.g., tapered grasses and leaves) in the manifold via an air stream generated for expense vacuum generated in this device, and may comprise means for shredding and perform the function of a blower;

"dry vacuum cleaner" - a vacuum cleaner designed to remove debris that is mostly dry (dust, fibers, threads), including a vacuum cleaner equipped with a battery - powered active brush head;

"vacuum cleaner for hard floors" - a vacuum cleaner equipped with a fixed brush head designed specifically for cleaning hard surfaces, or equipped with 1 or more removable nozzles designed for cleaning hard floors;

"vacuum cleaner for cleaning carpet" - a vacuum cleaner equipped with a fixed brush attachment, designed specifically for cleaning carpets or can be combined one or more detachable nozzles designed for cleaning carpets;

"cleaner general purpose" - vacuum cleaner can be combined fixed one detachable attachment or more for cleaning carpets and hard floors, or be combined with removable nozzles, of which at least one nozzle is specifically designed for cleaning carpets and at least one - for cleaning hard floors;

"vacuum cleaner-robot" - a vacuum cleaner powered by electric batteries and (or) accumulators, capable of functioning without human intervention within a certain space, consisting of a movable part, a docking station and (or) other accessories that ensure its functioning;

"vacuum cleaner with a water filter" - a vacuum cleaner in which more than 0.5 liters of water is used as the main filtering material, through which sucked air is passed in order to capture dust;

"vacuum cleaner powered by electric batteries and (or) accumulators" - a vacuum cleaner operating only from electric batteries and (or) accumulators;

"level of sound power" - level of the emitted acoustic noise, expressed in dB (A) at 1 pW and rounded to a whole number;

"central vacuum cleaner" - a vacuum cleaner with a stationary (non-mobile) location of the low pressure source and hose connections located at fixed locations in the room;

"cleaning cycle" - a sequence of 5 double passes of the vacuum cleaner for a specific test area on carpet or hard floor;

"brush head width" is the maximum outer width of the brush head, in meters, with an accuracy of 3 decimal places;

"reference vacuum cleaner system" - laboratory electrical equipment used to measure calibrated and reference dust absorption

on carpet surfaces with defined parameters of air to improve the reproducibility of the results of tests;

"dust collection efficiency" - calculated after several cycles of double passes of the brush head, rounded to 3 decimal places, the ratio of the mass of extracted artificial dust, determined for carpet based on the increase in the mass of the dust container, and for hard floors - based on the reduction in the mass of the test groove to the mass of artificial dust, originally placed in the test zone, with correction for the specific conditions of the test for the mat and on the length and location of the test slot to the solid floor.

III. Requirements for the energy efficiency of vacuum cleaners and the specifics of determining energy efficiency indicators

3. For the vacuum cleaner, appropriate tests (measurements) must be carried out and the values of the following indicators must be determined :

a) annual energy consumption (AE);

b) rated power consumption; c)

the efficiency of collecting dust on

the carpet;

d) the efficiency of collecting dust on

a hard floor; e) secondary emission of dust;

f) durability of

the flexible hose (if any); g) sound power level ;

h) resource of the electric motor.

4. The calculation of the annual electricity consumption (AE) (in kWh / year) (rounded to 1 decimal place) is made according to the following formulas for vacuum cleaners:
for carpets:

for hard floors

general purpose:

Where:

,

- average specific energy consumption (in Wh / m) during tests

vacuum cleaner for carpets;

- the average specific energy consumption (in Wh / m) when testing

a vacuum cleaner for hard floors;

- the efficiency of dust collection on the carpet;

- efficiency of dust collection on hard floors;

50 is the standard number of one-hour vacuum cleaning per year;

87 - a standard surface to be cleaned residential premises in m ;

4 - the standard number of passes of the vacuum cleaner nozzle through each point on the floor (2 double passes);

0.001 - coefficient of conversion of Wh in kWh;

1 - standard dust collection efficiency ;

0.20 is

the standard difference between dust collection efficiency after 5 and after 2 double passes.

5. Average specific energy consumption during tests on carpet and on hard floor is defined as the average specific energy consumption SE over the number of cleaning cycles that make up the carpet test and

test on the floor , respectively. and calculated

general- purpose vacuum cleaners using the following general formula (in Wh / m) (rounded to 3 decimal places):

Where:

P is the average power during the cleaning cycle when the center of the brush head moves across the test zone (in watts) (rounded to 2 decimal places);

NP is the average equivalent power of the active brush head powered by electric batteries and (or) accumulators (in W) (rounded to 2 decimal places);

t - total time cycle of cleaning, in for which the center of the cleaning nozzle, i.e. at the point halfway between the leading and trailing edges of the cleaning nozzle moves through the test area (in hours) (with rounding to 4 decimal digits);

A - surface area, which covers the cleaning nozzle for cycle cleaning of calculating the 10-times product - width nozzle to

the corresponding length of the test area (in m) (rounded to 3 decimal places) If the cleaning head of a household vacuum cleaner has a width of more than 0.320 m, then the width of the cleaning head for this calculation is replaced by 0.320.

For tests on a solid floor in said formula should be used index "hf" denote parameters and , , and . To test for the mat in the said formula should be used

the index "c" and the designation of the parameters , , , and .

Average equivalent power of the brush head supplied from

batteries, NP with a corresponding index belonging to the vacuum cleaner for carpet and hard floor for general purpose, is calculated by the following formula (in W) (with precision to 2 decimal digits):

,

6. Efficiency of collecting dust on a solid floor should be defined as the average value of the results of 2 cycles of cleaning with test on the floor.

7. The dust collection efficiency on carpet should be determined as the average of 2 cleaning cycles when tested on carpet. To correct deviations from the original properties of the test carpet

calculated using
the following formula:

,

Where:

- the efficiency of dust collection with a vacuum cleaner;
- the efficiency of dust collection by the reference vacuum cleaner system ,
measured with the test carpet in its original condition;
- efficiency of dust collection by the reference system of the vacuum cleaner.

8. Secondary dust emission is determined when the vacuum cleaner is operating at maximum air flow.

9. The sound power level is determined when working on a carpet.

10. When the test (measurement) of the flexible hose it is subjected to bending with a force supplied via the load weighing 2.5 kg.

11. When the test (measurement) resource electric vacuum cleaner should operate with a half- filled with the dust collector when run with disconnection at 30 seconds after every 14 minutes and 30 seconds of operation. The dust container and filters must be replaced at appropriate intervals . The test can be stopped after 500 hours and should be stopped after 600 hours of operation. The efficiency of the motor is controlled by changes in during each operating interval of values of air flow, degree of dilution and consumption power.

12. For hybrid vacuum cleaners, all tests (measurements) are carried out when the vacuum cleaner is powered from the mains, with the exception of the active brush head (if any), powered by an electric battery.

13. Vacuum cleaners must meet the following requirements:

- a) the annual energy consumption AE should be no more than 43.0 kWh / year;
- b) the rated power consumption should be no more than 900 W;
- c) the efficiency of dust collection on the carpet () must be at least 0.75 (the requirement does not apply to vacuum cleaners for hard floors);
- g) the efficiency of collecting dust on a solid floor () should be not less than 0.98 (the requirement does not apply to a vacuum cleaner for carpet);
- e) secondary dust emission should be no more than 1.00%;
- e) the level of sound power does not have to be higher than 80 dB (A);
- g) a flexible hose (if any) should stay suitable for operating after 40,000 bending;
- h) the resource of the electric motor of the vacuum cleaner must be at least 500 hours.

14. Operational documents attached to vacuum cleaners provided for in clause 13 of the technical regulation of the Eurasian Economic Union "On requirements for the energy efficiency of energy-consuming devices" (TR EAEU 048/2019) (hereinafter referred to as

the technical regulation) must also contain the following information about the characteristics and parameters of vacuum cleaners :

b) for a vacuum cleaner intended for cleaning hard floors, it must be indicated that with the supplied attachments it is not suitable for cleaning carpets;

c) for a vacuum cleaner intended for cleaning carpets, it must be indicated that with the supplied attachments it is not suitable for cleaning hard floors;

d) for a device capable of performing other functions along with the function of a vacuum cleaner , the electrical power consumed during operation as a vacuum cleaner should be indicated , if it is lower than the rated power consumption of the device;

e) it should be indicated to which of the following 3 groups the vacuum cleaner should be assigned during testing: a general-purpose vacuum cleaner, a vacuum cleaner for a hard floor or a vacuum cleaner for a carpet;

f) a short name or reference to the measurement and calculation methods used to establish compliance with these Requirements.

15. The set of documents attached to the vacuum cleaner, indicated in paragraph "a" of paragraph 28 or paragraph "a" item 29 Technical Regulations with account schema chosen by the applicant conformity declaration for vacuum cleaners additionally must be enabled following information:

a) values of , , , and (or) , , and for each of the cycles of cleaning, defined at test medium specific consumption of electric power in accordance with paragraph 5 of these requirements;

b) the values for each of the cleaning cycles , and , determined by testing the dust collection efficiency on the carpet in accordance with paragraph 7 of these Requirements;

c) total running time , measured air flow, degree of vacuum and power consumption when testing the life of an electric motor in accordance with paragraph 11 of these Requirements.

Vi. Permissible deviations of the parameters of the energy efficiency of vacuum cleaners during tests (measurements) after their release into circulation

16. In the case of tests (measurements) of vacuum cleaners after their release into circulation in the customs territory of the Union , tests (measurements) of one standard sample (copy) of each model of the vacuum cleaner are carried out .

Model cleaner deemed appropriate the present Requirements, in case if the measured parameter values and vacuum characteristics correspond to the requirements of section III of these requirements and the nominal values declared by the manufacturer, within the allowed tolerances specified in the table.

Table 1. Possible deviations

Table 1

Measured parameter	Permissible deviations *
Annual electricity consumption	value measured quantities not should exceed the nominal value of AE more than on 10%
Dust collection efficiency on carpet	value measured quantities not should be less than the nominal value more than at 0.03
Dust collection efficiency on hard floors	value measured quantities not should be less than the nominal value more than at 0.03
Secondary dust emission	value measured quantities not should exceed the nominal value more than on 15%
Sound power level	value measured quantities not should exceed the nominal value
Electric motor resource	value measured quantities not should be less than the nominal values more than to 5%

The nominal value means the value declared by the manufacturer
 In other cases, tests (measurements) should be carried out on three additional copies of a vacuum cleaner of this model. The model of the vacuum cleaner is considered to be in compliance with these Requirements if the average values of the measured parameters of these three additional copies of the vacuum cleaner meet the requirements specified in the first paragraph of this clause.

In other cases, this model of a vacuum cleaner should be considered as not complying with the requirements of technical regulations.

Vii. Contents of the label and technical sheet of vacuum cleaners

17. The label of the vacuum cleaner must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. energy efficiency class ;

IV. average annual energy consumption (in kWh / year);

V. class of efficiency of secondary filtration;

VI. carpet cleaning efficiency class ;

If the vacuum cleaner is designed for cleaning the floor, then displays the sign exception;

Vii. floor cleaning efficiency class ;

If the vacuum cleaner is designed for carpet cleaning, an exclusion mark is displayed ;

VIII. corrected sound power level expressed in dB (A) relative to 1 pW (rounded to the nearest whole number) (indicated in dB). Determined when working on a carpet.

18. The technical sheet, which is part of the operating documents of the vacuum cleaner, must contain the following information:

a) The name or trade mark (if any) of the manufacturer;

b) identification number of models of the manufacturer (as usually alphanumeric code that distinguishes a particular model of a vacuum cleaner from the other models of the same trade mark or the manufacturer with this same name);

c) energy efficiency class ;

d) average annual energy consumption (in kWh / year) (rounded to 1 decimal place). Actual energy consumption will depend on how the vacuum cleaner is used ;

e) secondary filtration efficiency

class; f) efficiency class of carpet cleaning ;

g) if the vacuum cleaner is intended for cleaning the floor, an exclusion sign is displayed ;

h) class of floor cleaning efficiency ;

i) if the vacuum cleaner is intended for carpet cleaning, an exclusion sign is displayed ;

j) corrected sound power level expressed in dB (A) relative to 1 pW (rounded to the nearest whole number) (indicated in dB). Determined when working on a carpet;

l) rated power consumption.

19. In a technical sheet of the vacuum cleaner can affect a number of some models of vacuum cleaners, supplied by one and the same manufacturer.

20. The information contained in the technical sheet of the vacuum cleaner can be presented in the form of a color or black and white copy of the label. In this case , the information specified in clause 18 of these Requirements and not on the label must also be provided .

VIII. Determination of energy efficiency classes , cleaning efficiency and secondary filtration of dust from vacuum cleaners

21. The energy efficiency class of vacuum cleaners is determined in accordance with its annual energy consumption (AE) in accordance with table 2.

Table 2. Classes of energy efficiency of vacuum cleaners

Table 2

Energy efficiency class	Annual energy consumption , kWh / year

A +++	10.0
A ++	10.0 < 16.0
A +	16.0 < 22.0
AND	22.0 < 28.0
IN	28.0 < 34.0
FROM	34.0 < 40.0
D	> 40.0

22. The cleaning efficiency class of the vacuum cleaner is determined in accordance with table 3.

Table 3. Classes of cleaning efficiency of vacuum cleaners

Table 3

Cleaning efficiency class	Carpet cleaning efficiency index		Floor cleaning efficiency index	
A	≥ 0.91		1.11	
B	0.87	< 0.91	1.08	< 1.11
C	0.83	< 0.87	1.05	< 1.08
D	0.79	< 0.83	1.02	< 1.05
E	0.75	< 0.79	0.99	< 1.02
F	0.71	< 0.75	0.96	< 0.99
G	< 0.71		< 0.96	

23. The secondary filtration efficiency class will be determined in accordance with Table 4.



Table 4. Classes of efficiency of secondary filtration of dust of vacuum cleaners

Table 4

Secondary filtration efficiency class	Secondary dust emission ,%
A	0.02
B	0.02 < 0.08
C	0.08 < 0.20
D	0.20 < 0.35
E	0.35 < 0.60
F	0.60 < 1.00
G	> 1.00

Appendix N 17. Requirements for the energy efficiency of computers and servers

Appendix N 17
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These requirements apply to put into circulation in the customs territory of the Eurasian Economic Union (hereinafter - Union) computers and servers, designed to power directly from the AC line (hereinafter - computers and servers) in that number through an external or internal source of supply:

- a) desktop computers;
- b) monoblock desktop computers;

c) laptops (in fact including tablet computers, compact tablet computers and mobile "thin clients");

d) desktop

"thin clients"; e) workstations ;

f) mobile workstations ; g) small s

ervers;

h) computer servers.

These Requirements do not apply to the following types of products:

a) blade

systems and their components; b) ap

plication servers ;

c) multi-node servers;

d) computer-

servers with more than 4 processor sockets; e) game consoles;

f) docking stations.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"activation" - an event initiated by the user, an external event or exposure, or what is happening on a schedule that causes a computer to go from sleep mode , or the mode is turned off in the active operating mode. The "activation" event includes (but is not limited to) the following events:

mouse movement ;

pressing a key on

the keyboard; controller input ;

event at the clock real- time; pressing

a button on the case;

external events triggered the signals transmitted by remote control remote control, network or modem;

Wake on Local Area Network (WOL) is a function by which a computer is turned on by command over a local Ethernet network from sleep or shutdown mode (or other similar low power mode);

"active mode" - a state in which the computer, as a result of preliminary or simultaneous input of data by the user, or as a result of preliminary or simultaneous command input via the network, performs useful work in response . This condition involves himself actively processing, retrieval of data on disk, in memory or cache memory, in fact including time of inactivity in the idle state in anticipation of entering the user data prior to the transition to the regime of reduced energy consumption;

"audio card (sound card)" - a discrete internal component that processes the input and output audio signals of the computer;

system consisting of a casing (blade - "blade system and components" chassis), in which are installed a variety of types of blade drives and servers and provides the general resources of which depends job servers and devices of storage. Blade system designed as a scalable solution for combining several kompyuterov-servers or multiple device storage in one housing and are intended to provide the possibility of quickly adding device (e.g., server blades) , or to replace them (with hot replacement);

"external power supply" means a device that meets all of the following conditions:

designed to convert the input AC voltage of the supply network into a lower output voltage;
 able to carry out the conversion of the input voltage to the output voltage of the DC or AC power (external power supply DC or AC current);
 intended for use with separate from it powered electrical equipment, playing the role of the main load;
 enclosed in a physical enclosure (housing) separate from the main load powered equipment;
 connected to powered equipment with the help of detachable or fixedly secured shtekkerno-nested electrical connection cable, cord, wire or other connecting device;
 rated output power does not exceed 250 W;
 is included in the scope of Appendix No. 10 to the technical regulations of the Eurasian Economic Union "On requirements for the energy efficiency of energy - consuming devices" (TR EAEU 048/2019) (hereinafter - technical regulations);
 "internal storage apparatus" - component of a computer, which provides nonvolatile storage of data;
 "built-in power supply" - a device for converting a voltage of alternating current from the network to the voltage of DC power for the purpose of computer or a computer server, and having the following characteristics:
 placed inside the case of a computer or server computer, but separate from the main components of the computer or server computer;
 It connects to the network with the help of one of the cable without intermediate circuits between a source of power and electrical network;
 all power circuits from the power supply to the computer components, or

the server computer, with the exception of the DC link to the display in the all - in-one desktop computer, are located inside the computer case; internal converters of type "constant current - constant current", used for converting voltage DC current from an external source of power in some voltage used in computer or computer-server is not considered integrated power supply; "hypervisor" - the program provides or allows simultaneous parallel operation on a computer several operating systems;

"annual consumption of electricity ()" - the amount of electricity consumed by the device in for predetermined periods of time in certain conditions and states of energy;

"two-node server" - a multi - node configuration server consisting of 2 server nodes;

"discrete graphics card" (dGfx) is a discrete internal computer component containing 1 or more graphics processing units (GPUs) with a local memory controller interface and local graphics memory, falling into one of the following categories:

- G1 (FB_BW 16);
- G2 (16 <FB_BW 32);
- G3 (32 <FB_BW 64);
- G 4 (64 <FB_BW 96);
- G5 (96 <FB_BW 128);
- G6 (FB_BW > 128 (data bus width <192 bits));
- G7 (FB_BW > 128 (192- bit data bus));

where
 "FB_BW" - the throughput capacity of the frame buffer (GB / s), i.e., the amount of data that is processed per second by all GPUs of 1 discrete graphics card (dGfx), calculated using the following formula:

Where:

data transfer rate - effective memory frequency, in MHz; bit width
of the data bus - bit width of the frame memory buffer data , in

bits (b);

"8" - coefficient of conversion into bytes;

"1000" - coefficient of conversion of megabytes to gigabytes;

"docking station" - a device adapted for connection to a computer to perform such functions as the increasing number of port connections, association compounds with peripheral devices , and charging the internal rechargeable batteries in the connected computer;

"additional internal storage " means all internal storage devices, including hard disk drives (HDDs), solid state drives (SSDs), and hybrid hard drives (HHDs), included with the computer in addition to the primary (first, basic) storage device;

"game console" is a self-contained, mains-powered device designed to provide video games as its primary function. The game console is designed to output signals to an external display, which serves as the main game screen. Game

consoles typically include in themselves central processor, system memory and a graphics processor (CPU) (GPU), and also may include hard discs or other internal storage device and the device reading. The primary input devices for game consoles are typically handheld remote controls or interactive controllers, rather than an external keyboard or mouse. Game consoles do not have the traditional operational systems of the personal computer, and are equipped with their own operating systems for game consoles. Portable gaming devices with built-in display as the main game screen, which operate in essentially by the internal battery or other portable power supply, and is not connected directly to the AC mains, also considered to belong to gaming consoles;

"Display status (information on the state)" - Continuous function of providing information about the condition or indication of the state of the computer to the display, in that number, with indication of the precise time;

"compact tablet computer" - a type of laptop that has a built-in touchscreen display and does not have a built-in physical keyboard;

"PC" - a device which performs logical operations and processing of the data can use the device input and output information on the display, and typically includes a central processing unit (CPU) for operations. If there is no central processing unit, then the device must function as a " client gateway " to the computer server, which acts as a computing processing unit ;

"server computer" - a computing device that manages network resources and provides services to client devices (desktop computers, laptops, desktops , "thin clients", the IP-phones or other server computer) that is designed, as a rule, to be used in the centers of processing data or corporate environments available in basically through a communication network, instead of using direct input device type keyboard or the mouse and having the following characteristics:

designed to support server operating systems (OS) and (or) hypervisors, as well as to run corporate applications installed by the user ;

supports error correction code (ECC) and (or) a buffer memory, in including the buffered memory modules with two-sided arrangement of the contacts (the DIMM) and configurations with built-in buffer (BOB);

is completed with 1 or more power supplies of alternating (direct) current;

all processors have access to shared system memory and are independently visible in the same OS or hypervisor;

"server computer equipped with more than 4 processor sockets"

- the server computer, containing a 4 interfaces are intended for installation of the processor;

"Small Server" - the type of computer that uses the usual ingredients desktop in the desktop version, but intended in the first place to perform functions for other computers (for example, the provision of services of network infrastructure and data storage), which has the following features:

arranged in the housing of the "tower" or in another form, similar to a desktop computer for the implementation of the processing, storage and network interactions in one block;

designed for round-the-clock operation 7 days a week;

in the first place designed for operation in synchronous multi-user environment serving several users through networked client module;

if supplied with an installed operating system, then this operating system is intended for a home server or simple server applications;

Supplied with a discrete video card (dGfx) only of category G1; "multi-node server" - a system consisting of a corpus containing 2

or more independent server computers (or nodes), which is used together one or several sources of power. The total power consumption of all nodes is provided by a common (common) power supply source (s). Multinode server configured in a single body and are not designed for hot replacement;

"mobile workstation" - a high-performance personal computer, is used in mainly for the graphics in the system of computer-aided design, to develop software support, financial and scientific applications and other demanding tasks, for the exception of games developed in a portable device capable of operating for a long time with or without direct connection to an AC power source. Mobile workstations use an integrated display and are capable of operating from an internal battery or other portable power source. Most mobile working stations use an external source of power, and most of them have a built-in keyboard and pointing device. A mobile workstation has the following characteristics:

has a mean time between failures (MTBF) of at least 13,000 hours; has at least 1 discrete graphics card (dGfx) that satisfies categories G3 (data bus width more than 128 bits), G4, G5, G6 or G7 according to the classification of video cards;

Supports connecting three or more internal memory devices; supports of at least 32 GB of system memory;

"mobile thin client" - a kind of notebook, not having embedded drive information from the rotating disk, which is connected to the remote computing resources (e.g., computer servers, remote workstations) where the main processing data;

"all-in-one desktop computer" - a computer in which the system unit and the monitor are made in the form of a single unit, receiving power through a common cable belonging to 1 of 2 possible types:

a device in which a display and a computer are physically combined into a single unit;

device, wherein the display is separate from the computer but is connected to the system unit with the help of the cord supply a constant current;

"desktop computer" - a computer, not intended for carrying a main unit for stationary placement, used with an external display and such external peripheral devices as a keyboard and mouse;

"desktop computer or one-piece desktop computer category A" - a desktop computer or a one-piece desktop computer, which does not fall under the definition of category B, C and D;

"desktop computer or all-in-one desktop computer category B" - a desktop computer or all-in-one desktop computer that is equipped with 2 physical cores in a processor and at least 2 gigabytes of RAM;

"desktop computer or one-piece desktop computer

category C" - a desktop computer or all-in-one desktop computer that is equipped with at least 3 physical cores in the processor and whose configuration includes one of the following elements: at least 2 gigabytes of RAM and (or) a discrete graphics card (dGfx);

"desktop computer or all-in-one desktop computer category D" - a desktop computer or all-in-one desktop computer that is equipped with at least 4 physical cores in the processor and the configuration includes one of the following elements: at least 4 gigabytes of RAM and / or a discrete graphics card (dGfx), satisfying categories G3 (data bus width > 128 bit), G4, G5, G6 or G7 according to the classification of video cards;

"desktop thin client" - the computer, which is to provide the basic functional capabilities is connected to the remote computing resources (eg, computer servers, remote working places), do not have built-in rotary media information is intended for permanent installation (for example, on the table, and not in as a mobile device), and is capable of displaying information on the outer or on the built-in display (if any);

"laptop" - a portable computer with a single-piece display with a diagonal screen size of not less than 22.86 cm (9 inches), intended to work in for long periods of time from the embedded battery or other portable power supply having a direct connection to the AC mains (devices corresponding featured laptop, but having a consumption electric power in the mode, waiting less than 6 W, not refer to laptops and not included in the area of application of technical regulations);

"laptop category A" means a laptop that does not fall within the definition of categories B and C;

"Category B laptop" means a laptop that is equipped with at least 1 discrete graphics card (dGfx);

"laptop category C" - notebook, which is equipped with two or more physical cores in a processor, not less than 2 GB of RAM memory and a discrete graphics card (dGfx), satisfying the category G3 (data bus width > 128 bits), G4, G5, G6 or G7 according to the classification of video cards;

"tablet computer" - a type of laptop that includes a touchscreen display and a built-in keyboard;

"workstation" - a high-performance personal computer is used for processing graphics data in system - aided design, to develop software support, financial and scientific applications and other demanding tasks, which is characterized by the following properties:

has a mean time between failures (MTBF) of at least 15,000 hours; has an error correction code (ECC) and / or

buffered memory; meets on at least three of the

following five characteristics: has

the additional power to support

high performance video card (i.e., an additional 6-pin connector type PCI / PCI-E for connecting peripheral power supply 12, B);

mother board has dissolved slot x4 PCI-E in addition to the graphics slots and / or PCI-X support ;

Does not support Uniform Memory Access (UMA)

graphics; includes a self -five or more slots, PCI, PCI-E or PCI-X;

It is capable of supporting multiprocessor operation for two or more central processors (CPU) (necessary presence of physical processor sockets under several CPU, and not only under a multicore processor);

"shutdown mode" means a low power state that can not be turned off by the user other than actuation of a mechanical switch and that can last indefinitely as long as the device is connected to a power source and used in accordance with the manufacturer's instructions . According to the standard management configuration and power (ACPI) , this condition usually corresponds to the level of the G2 / the S5 ("program is off") of the system ACPI;

"application server" - a computer-server complete with a pre-installed operating system and application software

software that is used to perform a specific function or set of functions, provides services through one or more networks and is controlled via the Internet or a control interface line . The application server and software configuration are customized by the manufacturer to perform a specific task, including networking or storage, and are not intended to run custom application programs;

" low power state " - the state of the minimum power consumption of the computer, achieved by turning off the power to the computer by a mechanical switch or by an automatic means;

"a state of inactivity (state of rest)" - the state of the computer, with which the operating system and other software have completed loading, was established profile user, the computer is not located in the hibernation mode, and its activity is limited to those basic applications that the operating system starts by default;

"sleep mode" - mode of low power consumption, in which the computer can move automatically after a certain period of inactivity or by manual selection. In this mode, the computer is able to react to alarming events. There, where applicable standard control configuration and power (ACPI), sleep mode generally corresponds to the level of G2 / S3 (with conservation in RAM) system ACPI;

"sleep mode display" - mode energy, in which proceeds device display after addition, like it has received a signal from the connected device, or the internal signal (e.g., timer or presence sensor). This mode can also be set by user command. The display should be activated when receiving a signal from the connected device network, remote remote control and (or) the internal signals. While the device is in this mode, the picture is not reproduced, except for functions such as the information about the device or the display state or the state of the functional probe;

"TV tuner (TV tuner)" - a discrete internal component that allows a computer to receive television signals;

" device type " - desktop , all-in-one desktop , laptop, desktop thin client, workstation , mobile workstation , small server, server computer, blade system and components, multi-node server, application server , game console, dock -station, internal power supply unit or external power supply; The "central processing unit (CPU)" is a component in a computer that controls decoding and execution of instructions. A central processing unit (CPU) can contain 1 or more physical processors known as "execution cores". An execution core means a processor that is physically present . Additional "virtual" or "logic" processors, formed from one or more execution cores, not are physical cores. A physical processor that occupies a single processor socket can contain multiple cores. The total number of execution cores in the central processing unit (CPU) is the sum of the execution cores of all devices connected to the processor connectors;

"The UMA (Uniform the Memory the Access)" - uniform access to memory.

III. Requirements for energy efficiency and specifics of determining indicators of energy efficiency of computers and servers

3. For computers and servers , appropriate tests (measurements) must be carried out and the values of the following parameters and characteristics must be determined :

a) annual electricity consumption () ;

b) power consumption in sleep mode () ;

c) power consumption in the state of minimum power consumption;

d) power consumption in shutdown mode () ; e) efficiency of the internal power supply.

4. The annual consumption of electricity () (in kWh / year) a desktop computer and a monobloc desktop computer not be more than:
for category A - 94.00; for category B - 112.00; for category C - 134.00; for category D - 150.00.

The annual consumption of electricity () a desktop computer and a monobloc desktop computer calculated according to the following formula (in kWh / year) (rounded to 2 decimal places):

Where:

$$= (8760/1000) (0.55 + 0.05 + 0.40),$$

- power consumption in shutdown mode (in W);

- power consumption in sleep mode (in W);

- power consumption in idle state (in W).

For computers that do not have a sleep mode, in which the consumption of power in a state of inactivity does not exceed 10.00 watts, instead of power

sleep mode () power can be used in the state

downtime (). The annual electricity consumption () in this case is calculated according to the following formula (in kWh / year) (rounded to 2 decimal places):

$$= (8760/1000) (0.55 + 0.45)$$

When measuring , and, the following values

of power consumption for computer components are applied :

Operational memory - 1 kWh / year for each gigabyte (GB) over the base a volume of 2 GB for computers category A, B and C and 4GB computers category D;

additional internal storage device - 25 kWh / year; discrete TV tuner -

15 kWh / year;

discrete sound card - 15 kWh / year;

Annual consumption for the first discrete graphics card (dGfx) and each additional discrete graphics card (dGfx) is shown in Table 1.

The power consumption values shown in Table 1 for discrete graphics cards (dGfx), discrete TV tuners and discrete sound cards are valid only for cards and tuners that are activated during testing of desktop computers or all-in-one desktops .

Table 1. Annual power consumption for video cards

Table 1

Video cards	DGfx Category	Consumption per year (kWh / year)
First discrete graphics card (dGfx)	G1	eighteen
	G2	thirty
	G3	38
	G4	54

	G5	72
	G6	90
	G7	122
Each additional discrete video card (dGfx)	G1	eleven
	G2	17
	G3	22
	G4	32
	G5	42
	G6	53
	G7	72

Given in Table 1 allowable value of consumption of electricity to cards not apply to desktop computers and monobloc desktops category D, having the following technical specifications:

- at least 6 physical cores in a central processing unit (CPU);
- discrete video card (dGfx) provides a general throughput capacity buffer frame above 320 GB / s;
- system memory is at least 16 GB;
- the power supply has a rated output power of at least 1000 W.

5. The annual energy consumption of the laptop () (in kWh / year) should not exceed:

- for category A - 27.00;
- for category B - 36.00;
- for category C - 60.50.

The annual electricity consumption (ETEC) of a laptop is calculated using the following formula (rounded to 2 decimal places):

$$= (8760/1000) H (0.60 + 0.10 + 0.30).$$

When measuring , and,

the following energy consumption values for laptop components apply :

- Operational memory - 0.4 kWh / year for each gigabyte (GB) over the base volume, constituting the 4 GB for notebooks;
- additional internal memory - 3 kWh / year;
- discrete TV tuner - 2.1 kWh / year;

consumption for the first discrete video card (dGfx) and each additional discrete video card (dGfx) is shown in Table 2 (stage

I). The power consumption values shown in Table 2 for discrete graphics cards (dGfx) and discrete TV tuners apply only to graphics cards and tuners that are used during the test.

laptops.

Table 2. Annual electricity consumption for laptop video cards

Table 2

Video cards	DGfx Category	Consumption per year (kWh / year)
The first discrete graphics card (dGfx)	G1	7
	G2	eleven
	G3	thirteen
	G4	20
	G5	27
	G6	33
	G7	61
Each additional discrete graphics card (dGfx)	G1	four
	G2	6

	G3	8
	G4	12
	G5	16
	G6	20
	G7	36

In Table 2, the allowable value of consumption power is not distributed on laptops category C with the following technical characteristics:
 at least 4 physical cores in a central processing unit (CPU);
 discrete video card (dGfx) provides
 a general throughput capacity buffer frame above 225 GB / s;
 system memory is at least 16 GB.

6. The computer must provide a sleep mode and (or) another condition, which provides the functionality of hibernation in which the allowable consumption power does not exceed the requirements for the sleep mode, in that including:

a) consumption of power in the sleep mode does not should exceed 5.00 W in desktop computers and monobloc desktop computers and 3.00 W in notebooks;

b) desktop computers and all-in- one desktop computers with a power consumption less than or equal to 10.00 W are not required to have a sleep mode;

c) if the computer is equipped with the WOL function in sleep mode,

then:

an additive to the permissible standard of 0.70 W can be applied ; the computer must be checked with the function enabled and disabled

WOL and must comply with these Requirements in both cases;

d) if the computer does not support the local Ethernet network , then it should be tested without the WOL function enabled .

7. Desktop , All-in- One and Notebook PCs must not consume more than 0.50 watts in their minimum power state .

The computer must provide status or mode of consumption at which the allowable power consumption is not must exceed the requirements for the state of minimum energy consumption, when it is connected to the network supply.

If in the composition of the computer includes an information display or the status indicator, it may be an additive used to acceptable norm to 0.50 watts.

8. Desktop computer -piece desktop computer and a laptop should ensure the implementation of these requirements to the mode off:

a) consumption power in the off state not should exceed 1.00 W;

b) the computer must provide a mode off and (or) other conditions under which the allowable power should be no higher power requirements in shutdown mode when it is connected to a source of power;

c) if the computer is equipped with the WOL function in shutdown mode , then:
an additive to the permissible standard of 0.70 W can be applied ; the computer must be checked with the function enabled and disabled
WOL and must comply with these Requirements in both cases;

d) if the computer does not support the local Ethernet network , then it should be tested without the WOL function enabled .

9. All internal sources of supply desktop computer monoblock desktop computer, desktop , "thin client" workstations and small servers must have a good ratio of action (hereinafter - CAP) and the coefficient of capacity not less than the following values:

Efficiency 85% - at an output power of 50% of the nominal value;

Efficiency 82% - with an output power of 20% and 100% of the nominal value;
ratio power 0.9 - when the output power at 100% of nominal value.

On the internal sources of power at maximum rated output power less than 75 watts requirements on the magnitude ratio power is not distributed.

10. For units and power supplies of the server computer, the following energy efficiency requirements must be met :

- a) all blocks power to multiple output voltages (type AC- DC) must have:
Efficiency not less:
85% - at an output power of 50% of the nominal value;
82% - at an output power of 20% and 100% of the nominal value; coefficient capacity not less than:
0.8 - at an output power of 20% of the nominal value; 0.9 - at an output power of 50% of the nominal value; 0.95 - at an output power of 100% of the nominal value;
- b) all power supplies with one output (AC-DC type) and rated power no more than 500 W must have an efficiency of at least:
70% - at an output power of 10% of the nominal value; 82% - at an output power of 20% of the nominal value; 89% - at an output power of 50% of the nominal value; 85% - at an output power of 100% of the nominal value;
- c) all power supplies with one output (AC-DC type) and rated power not exceeding 500 W must have a power factor of at least:
0.8 - at an output power of 20% of the nominal value; 0.9 - at an output power of 50% of the nominal value; 0.95 - at an output power of 100% of the nominal value;
- d) all power supplies with one output type (AC-DC) and a rated power of more than 500 W, but not more than 1000 W must have an efficiency of at least:
75% - at an output power of 10% of the nominal value;
85% - at an output power of 20% and 100% of the nominal value; 89% - at an output power of 50% of the nominal value;
- e) all power supplies with one output (AC-DC type) and a rated power of more than 500 W, but not more than 1000 W must have a power factor of at least:
0.65 - at an output power of 10% of the nominal value; 0.8 - at an output power of 20% of the nominal value; 0.9 - at an output power of 50% of the nominal value; 0.95 - at an output power of 100% of the nominal value;
- f) all power supplies with one output (AC-DC type) and a rated power of more than 1000 W must have an efficiency of at least:
80% - at an output power of 10% of the nominal value;
88% - at an output power of 20% and 100% of the nominal value; 92% - at an output power of 50% of the nominal value;
- g) all power supplies with one output (AC-DC type) and a rated power of more than 1000 W must have a power factor of at least:
0.8 - at an output power of 10% of the nominal value;
0.9 - at an output power of 20% and 50% of the nominal value; 0.95 - at an output power of 100% of the nominal value.

11. The desktop computer, all-in-one desktop computer and laptop must have a power management function or similar function that, when the computer is not performing its primary function or when other power - consuming devices are not dependent on it , automatically switches the computer to a mode with a lower power consumption than hibernation mode, in fact including:

- a) A computer with the WOL function must reduce the speed of all network connections to 1 gigabit per second (Gbps) when it goes into sleep mode or shutdown mode over a local Ethernet network ;
- b) in the sleep mode, the reaction to the "activation" command after it is received through network connections or user interface devices should occur with a delay of no more than 5 seconds from the beginning of the command to the moment when the system becomes fully ready for operation, including the display;
- c) if the computer is equipped with a display, the transition of the display in the sleep mode should be carried on after 10 minutes of inactivity user;
- d) computer with support for local network Ethernet should have the opportunity to enable and disable the function of WOL

(when available) for sleep mode. A computer with an Ethernet should have the opportunity to enable and disable the function of WOL for mode off, if in operation shutdown supported feature WOL;

e) If the computer has the ability to enter hibernation mode or another state that provides hibernation functionality, then this mode must be configured to turn on after 30 minutes of user inactivity. This power management feature must be installed by the manufacturer prior to shipment;

e) users should be able to enable or disable wireless network connections, and they should be provided with clear information about the characters, the light display or equivalent signals, showing the network including wireless connections, or disabled.

12. Operational documents attached to computers and servers, provided for in clause 13 of the technical regulation, must contain the following information about their characteristics and parameters:

a) for desktop computers, one-piece desktop computers and laptops:
product category (A, B, C or D) determined in accordance with paragraphs 4 and 5 of these Requirements;

the value (in kWh) and the amount of power consumption when all discrete video cards (dGfx) are disabled and the system operates with the UMA that controls the display disabled in this state ;

value (in kWh) and the value of power consumption, when all the digital video (dGfx) included;

consumed power in the state of the idle (in watts); power consumption in sleep mode (in W);

Power Consumption in WOL-enabled Sleep Mode (W) (if applicable)

power consumption in shutdown mode (in W);

Power consumption in shutdown mode with WOL support (in W) (if applicable);

The efficiency of the internal power supply at a consumption of 10%, 20%, 50% and 100% of the rated output power;

Efficiency of an external power supply;

the corrected sound power level of the computer, expressed in dB (A) relative to 1 pW (rounded to the nearest whole number) (indicated in dB);

the minimum number of cycles of charging, which can withstand the batteries (only for laptops);

sequence of steps to achieve stable energy consumption;

a description of the procedure for selecting the programming of the sleep mode and / or the shutdown mode ;

the sequence of events required to achieve a mode in which the equipment automatically enters sleep mode and / or shutdown mode ;

the duration of an idle (rest) state before the computer automatically enters sleep mode or another state in which the power consumption does not exceed the required power consumption in sleep mode;

period of time of inactivity the user on expiry of which the computer automatically goes to mode power supply which has a lower power consumption than the sleep mode;

time to transition into the sleep mode after a period of inactivity user;

information intended for the user of the potential energy saving system control power supply;

information intended for the user, on the functional capabilities of the control power supply;

b) for laptops powered by one or more batteries that cannot be replaced by non-professional users, in addition to the information specified in subparagraph "a" of this paragraph, the following entry must be present in the operating documents and on the outer packaging of the laptop : "Battery of this devices can not be easily replaced by the user himself ";

c) for workstations, mobile workstations, desktop "thin clients", small servers and server computers:
 Efficiency of internal (external) power supply; maximum power consumption (in W); idle power consumption (in watts); power consumption in sleep mode (in W); power consumption in shutdown mode (in W);
 the corrected sound power level of the computer, expressed in dB (A) relative to 1 pW (rounded to the nearest whole number) (indicated in dB);

13. If the model of a computer and (or) server has several configurations, then operational documents may contain the information specified in clause 12 of these Requirements, only for the most complex configuration in this category of computers and (or) servers. In this case, all configurations of a given model of a computer and (or) server to which the specified information applies should be listed.

14. The set of documents to computers and (or) server specified in subparagraph "a" of paragraph 23 of the Technical Regulations for computers and (or) servers additionally should include information:

a) for desktop computers, one-piece desktop computers and laptops:
 the measurement technique used to determine the information specified in paragraphs 2-12 of subparagraph "a" of paragraph 12 of these Requirements;
 test parameter values during measurements; value of the test voltage (in V) and frequency (in Hz);
 the values of total harmonic distortion in the power supply system; information about measuring instruments and test equipment, used to conduct electrical tests;

b) for workstations, mobile workstations, desktop "thin clients", small servers and server computers:
 test parameter values during measurements; value of the test voltage (in V) and frequency (in Hz);
 the values of total harmonic distortion in the power supply system; documentation for devices, installations and diagrams used for carrying out electrical testing;
 the measurement technique used to determine the information specified in subparagraph "c" of paragraph 12 of these Requirements.

V. The permissible deviations of parameters energy efficiency of computers and servers when conducting tests (measurements) after their release into circulation

15. In the case of tests (measurements) of computers and servers after their release into circulation in the customs territory of the Union, tests (measurements) of one standard sample (copy) of each model (configuration) of a computer or server are carried out.

A model (configuration) of a computer or server is considered to meet the requirements of these Requirements if for the list of requirements applicable to it:

a) the measured consumption power for the parameters specified in paragraphs 4-7 and subparagraph "b" of 8 of these requirements, it does not exceed the maximum allowable value more than at 7%;

b) the measured consumption power for the parameters listed in subparagraphs "a" and "c" point 8 of these Claims, with the additive to acceptable standards when enabled WOL function and without such additives when disabled function WOL, does not exceed the maximum permissible values more than on 7%;

c) the measured consumption power for the parameters specified in the paragraph of the first and third of these requirements of paragraph 9, with the addition to the admissible norm when presence information of the display or indicator state, not exceed the maximum allowable value more than at 0.10 W;

g) the measured consumption power for the parameters specified in the first paragraph of item 9 and the third of these requirements with the addition to the admissible norm when presence information of the display or indicator status not exceed the maximum allowable value more than at 0.10 W;

d) the measured consumption power for the parameters specified in the paragraphs "a" and "to" points 12 these Requirements with additive to acceptable standards in the case of activated WOL and without such additives when disabled function WOL not exceed the maximum allowable value more than at 0, 10 watts;

e) the average value of the measured energy parameter blocks and source power, indicated at points 9 and 10 these Claims, not below the maximum permissible values more than at 2% for efficiency and more than on 10 % for the ratio of power;

f) reducing the speed of all the network connections up to 1 gigabit per second (Gb / s) at the transition to sleep mode or turned off by the local network Ethernet and the value of time intervals transition to sleep mode and return to the working mode, as well as other parameters of the activating power control meet the requirements specified in clause 11 of these Requirements.

16. If the model (configuration) of the computer or server does not meet the requirements specified in paragraph 15 of these Requirements, then check 3 randomly selected samples of the same model (configuration) of the computer or server.

A computer or server model is considered to be in compliance with these Requirements if the average value of the measurement results of these 3 samples meets the requirements specified in subparagraphs "a" - "g" of paragraph 15 of these Requirements.

In other cases, this model (configuration) of a computer or server should be considered as not complying with the requirements of technical regulations.

Appendix N 18. Requirements for the energy efficiency of pumps for water

Appendix N 18
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I.Scope of application

1. These Requirements apply to autonomous and integrated (built into other equipment) pumps, released into circulation in the customs territory of the Eurasian Economic Union (hereinafter referred to as the Union), intended for pumping clean water (hereinafter referred to as water pumps), with the exception of:

a) pumps designed exclusively for fire extinguishing purposes ;

b) pumps, especially intended for pumping water at a temperature below minus 10 ° C or above 120 ° C, with the proviso that it

is provided for operating the documents referred to in paragraph 7 of these requirements;

c) positive displacement pumps;

g) self-priming pumps for water.

II. Basic concepts

2. For the purposes of applying these Requirements, concepts are used that mean the following:

"Cantilever monobloc water pump (ESCC)" means an axial inlet water pump in which an extended motor shaft serves as the pump shaft ;

"cantilever pump for water" - single-stage centrifugal pump for water with a dry actuated and an axial inlet, which is designed for use at pressures up to 16 bar with a reduced speed rotation from 6

up to 80 rev / min and at whose nominal pitch is not less than 6 m / h

(1.667 x 10 m / s), maximum power to the shaft - 150 kW, maximum pressure at a nominal speed of rotation of 1450 rev / min - 90 m and the

maximum pressure at the rated speed of rotation of 2900 rev / min - 140

m;

"cantilever pump for water (ESOB)" - Pump for water with an axial inlet and its own bearing assembly;

"constant C" is a constant for certain types of water pumps that quantifies the differences in the efficiency of these types of pumps;

"coefficient useful action (CPA), a pump for water ()" - the ratio of mechanical energy to transmit fluid when passing it through the pump to the mechanical power on the shaft of the pump;

"linear cantilever monoblock pump for water (ESCCi)" - console monoblock water pump, wherein the inlet and outlet tubes are arranged along the one axis;

"minimum energy efficiency index (MEI)" is a dimensionless value that characterizes the efficiency of pumps for water at the optimum point, at partial load and overload;

"multistage vertical pump (MS-V)" - a multistage ($i > 1$) centrifugal pump with an insulated drive, in which the impellers are mounted on a vertically located shaft, designed for pressures up to 25 bar at a nominal speed of 2900 rpm and

maximum feed water 100 m / h (27,78h10 m / s);

"multistage submersible pump (MSS)" - multistage ($i > 1$)

Centrifugal pump with a

nominal outer diameter, constituting 4 inches (10.16 cm) or 6 inches (15.24 cm), which is intended for use in a well at the operating temperatures of from 0 ° C to 90 ° C and the rated speed of rotation of 2900 revolutions / min;

"pump with an isolated drive" - a pump in which the impeller cavity and the drive are isolated from each other, while the contact of the drive with the pumped liquid is excluded ;

"partial load (PL)" - working point for the water pump, wherein the feed is 75% by feeding in an optimal point;

"rated power" means the power installed by the manufacturer under normal supply conditions and a given head;

"volumetric pump for water" - a pump for water, in which clean water moves to the pump outlet in certain portions;

"overload (OL)" is the operating point of the water pump, at which the flow is 110% of the flow at the optimum point;

"full size working wheel" - working wheel maximum diameter to pump a certain size;

"reduced rotational speed (specific speed ratio)" - the value determined by the dimensions and shape of the impeller at predetermined values of pressure, flow and speed of the shaft:

Where:

head (N) - hydraulic energy of water, acquired under the action of the pump (in meters of water column);
rotation frequency (n) is the number of revolutions per minute of the pump shaft ;
supply () - volumetric flow of water flowing through the pump (in m / s); number of stages (i) - number of impellers in the pump;
the optimum point (BEP) - working point of the pump for the water, in which when pumping clean cold water reached the highest value of the efficiency of the pump;
"impeller" - a rotating part of a centrifugal pump that transmits energy to the pumped liquid;
"self-priming pump for water" - pump, which is able to function with partial filling with water;
"centrifugal pump for water" - a pump designed to pump clean water through the action of hydrodynamic forces on it ;
"pure water" - water in which the content of free undissolved

solid particles does not exceed 0.25 kg / m and the content of dissolved solid substances is not more than 50 kg / m under the proviso that the total gas content of the water does not exceed the saturation volume (additives for preventing freezing of water to a temperature minus 10 ° C do not taken into account);
"clean cold water" - clean water with maximum kinematic viscosity 1.5x10 m / s, maximum density 1050 kg / m and maximum temperature 40 ° C, used when testing the pump.

III.Requirements for energy efficiency and features of determining indicators of energy efficiency of pumps for water

3. For pumps for water should be carried out corresponding tests (measurements) and defined value of minimum index Energy (MEI) with the full diameter of the working wheel when pumping pure cold water supply pressure and the optimal point (BEP), when underload (PL) , and overload (OL).

4. The minimum required efficiency at the optimum point (BEP) is calculated using the following formula:

$$= 88.59 x + 13.46 y - 11.48 x - 0.85 y - 0.38 x y -$$

Where:

$$x = \ln ();$$

$$Y = \ln ();$$

- reduced speed of rotation (in min); -

feed (in m / h);

ln is the sign of the natural logarithm;

- the values of the constants C for the type of pump (Pump Type), the speed of rotation (in revolutions / min (rpm)) and the minimum index Energy (MEI) are shown in the table.

Table. Minimum codes energy (MEI) and corresponding to them the constants C in dependence on the type of pump and its speed

Table

C value for MEI	MEI = 0.10	MEI = 0.40
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(pump type , rpm)		
C (ESOB, 1450)	132.58	128.07
C (ESOB, 2900)	135,60	130.27
C (ESCC, 1450)	132.74	128.46
C (ESCC, 2900)	135.93	130.77
C (ESCC , 1450)	136.67	132.30
C (ESCC , 2900)	139.45	133.69
C (MS-V, 2900)	138.19	133.95
C (MSS, 2900)	134.31	128.79

The minimum required efficiency in terms underload (PL) and overload (OL) in relation to requirements at 100% feed () is calculated using the following formulas:

$$= 0.947 * ;$$

$$= 0.985 * .$$

All efficiency values refer to the nominal or full (without correction or undercutting) impeller diameter. The multistage vertical pump for water (MS-V) must be tested for the three-step embodiment (i = 3). A multistage submersible pump (MSS) must be tested for a 9-stage version (i = 9). If the pump can not have the specified number of stages, then the pump with the closest number of stages is selected .

5. Pumps for water must comply with the following requirements for energy efficiency:

a) efficiency at the optimum point (BEP) when measured in accordance with paragraph 4 of these Requirements with a C value for MEI = 0.4 not lower values ;

b) efficiency at partial load (PL) when measured in accordance with paragraph 4 of these Requirements with a C value for MEI = 0.4 not lower

values ;

c) efficiency at overload (OL) when measured in accordance with paragraph 4 of these Requirements with a C value for MEI = 0.4 not lower than the value

...

6. Labeling of pumps for water must contain the following information about their characteristics:

a) the minimum energy efficiency index (MEI) in the form of the following entry: "MEI [x, xx]";

b) the efficiency of the hydraulic pump to the water (in%) at the corrected diameter of the working wheel [xx, x].

7. Operational documents attached to pumps for water, and provided for by paragraph 13 of the technical regulations of the Union "On the requirements for the energy efficiency of energy - consuming devices" (TR EAEU 048/2019) (hereinafter - technical regulations), must contain the information provided for in paragraph 6 of these Requirements, as well as the following information about the characteristics and parameters of pumps for water:

a) one of the following records: "reference value MEI water pump with the best efficiency of 0.70" or "reference value MEI 0.70";

b) operating characteristics of the pump, in that among the characteristics of energy efficiency;

c) information on disassembly, re-use and recycling pump;

g) entry: "The energy efficiency of the pump from the corrected work wheel generally lower than in a standard pump with a full diameter of the impeller means of compensation (trimming) of the working. Wheel pump is adapted to function in a given operating point with a reduced consumption of energy. The minimum index Energy (MEI) relates to the full diameter of the working wheel";

d) entry: "The action of this pump the water in the different periods of work can be efficiently and economically, if it is under the control of (e.g., by adjusting the speed of the pump in the system)";

f) for pumps specially designed only for pumping clean water at temperatures below minus 10 ° C, the entry: "Only for use at temperatures below minus 10 ° C";

g) for pumps specially designed only for pumping clean water at temperatures above 120 ° C, the entry: "Only for use at temperatures above 120 ° C";

h) for pumps designed for pumping clean water at a temperature below minus 10 ° C or above 120 ° C, specified relevant technical parameters and characteristics.

IV. Tolerances Parameter

energy efficiency pumps for water when carrying out tests (measurements) after their release into circulation

8. In the case of tests (measurements) of pumps for water after their release into circulation in the customs territory of the Union, tests (measurements) of 1 standard sample (copy) of each model of a pump for water are carried out.

Model pump for water deemed appropriate the present Requirements, in case if measured at the optimal point at underload

and when an overload energy efficiency of the pump to water (,

and) not lower than the values specified in paragraph 5 of these Claims, more than to 5%.

If the model of the pump to water is considered not corresponding to the present candidate meets specified in paragraph first present paragraph, then checked 3 more sample (specimen) to the water pump. The pump model for water is considered to comply with these Requirements if the average value

test results (measurements) , and these 3 samples (copies) not lower than the values specified in the second paragraph of this clause.

In other cases, this model of a water pump should be considered as not complying with the requirements of the technical regulation.

Annex 19. Requirements for the energy efficiency of air conditioners and room fans

Appendix 19
to the technical regulation of
the Eurasian Economic Union "On
requirements for the energy efficiency
of energy -
consuming devices" (TR EAEU 048/20
19)

I. Field of application

1. These Requirements apply to air conditioners, which are put into circulation in the customs territory of the Eurasian Economic Union (hereinafter referred to as the Union), powered from the electric network , with a nominal capacity for cooling and (or) for heating no more than 12 kW (hereinafter referred to as air conditioners), as well as room fans rated consumed power not more than 125 W (hereinafter - fans) for excluding:

a) air conditioners, in which the evaporator and (or) a condenser in a heat transfer medium is not used air;

b) air conditioners and fans, working through the use of other types of energy apart from electricity.

II. Basic concepts

2. For the purposes of applying these Requirements , concepts are used that mean the following:

"active mode" - an operating mode of an air conditioner operating for cooling or heating, in which the air conditioner can be switched on and off to provide the required air temperature in the room; "Fan" - a device that mainly way intended to create an air stream blowing human body or its parts in order to cooling, including fans, having additional functions (e.g., lighting and (or) lights, remote control, detector presence timer delay shutdown, humidity sensor , humidifier and / or air ionizer , swing function

(tilt) air flow , etc.);

"time of operation in mode off ()" - time, depending on the respective season and a predetermined function, which is the total period of operation in hours in the year (h / year) in for which the power - consuming device is in shutdown mode ;

"time of operation in mode waiting ()" - time, depending on the respective season and a predetermined function, which is the total period of operation in hours in the year (h / year) in for which the power - consuming device is in standby mode ;

"time of operation in mode with off thermostat ()" - time, depending on the respective season and a predetermined function, which is the total period of operation in hours in the year (h / year) in for which air-conditioner is in the mode of operation with off thermostat;

"time of operation in mode a crankcase heater ()" - which depends on the respective season and predetermined functions total work period of hours in a year (h / year) in during which air conditioning is in operation work with the compressor crankcase heater turned on ;

"while working fan in the active mode ()" - time, depending on the respective season and a given function, which is presumably the expected total period of work in the hours in a year (h / year) in over which a fan provides the creation of the maximum flow of air;

"annual electricity consumption for heating ()" - electricity consumption of the air conditioner (in kWh / year) to provide a reference the annual consumption of energy for heating in for a particular heating season, equal to the sum of:
annual reference energy consumption for heating divided by seasonal energy efficiency in active heating mode (

);

electricity consumption during the heating season in operating mode with the thermostat turned off , in standby and shutdown modes , as well as in operating mode with a crankcase heater;

"annual energy consumption for cooling ()" is the electricity consumption of the air conditioner (in kWh / year) to provide the reference annual energy consumption for cooling, equal to the sum of:
annual reference cooling energy consumption divided by the seasonal energy efficiency in active cooling mode (

);

electricity consumption during the cooling season in the operating mode with the thermostat turned off , in standby and off modes , as well as in the operating mode with the crankcase heater;

"dual air conditioner" - air-conditioning, fully Placed inside the conditioned space near the wall, in which air blows the warm air condenser or an evaporator in the time of cooling or heating is supplied from the outside through a channel and is output outside the room through the other channel;

"duration Bina" - the number of hours during the season when the temperature and the time interval (bin) predominates temperature

outside air ;

"declared power" - the power indicated by the manufacturer

air

conditioner in kW consumed to ensure operation

vapor compression cycle in cooling or heating mode

at a temperature of the outdoor air and the temperature of the air in the

room ;

"declared energy efficiency in heating mode (

) " - the manufacturer's specified energy efficiency of the air conditioner in heating mode for a limited number of temperature-time intervals (bins) with index j , corresponding

temperatures outdoor air ;

"declared energy efficiency in cooling mode (

) " - the manufacturer's specified energy efficiency of the air conditioner in cooling mode for a limited number of temperature-time intervals (bins) with index j , corresponding

temperatures outdoor air ;

"air conditioner" - a device for cooling and (or) heating air in indoors by utilizing vapor compression heat cycle pump, actuated by an electric compressor, including air conditioners, having such additional functions as the ventilation, reduction in moisture and cleaning of air, additional air heating by an electric heater and air conditioning, which can evaporate in the condenser water (condensed on the evaporator or supplied from the outside), if at the same time they are able to work only with air without additional water supply ;

"power factor" - the ratio of the manufacturer's declared total power during cooling and (or) heating under standard nominal conditions for all operated units and devices of the indoor unit of the air conditioner to the same declared power for all units and devices of the outdoor unit of the air conditioner;

"efficiency loss factor" - the amount of efficiency loss due to cyclic operation (switching on (off) the compressor in

active mode), which is defined for the cooling mode () and (or) heating mode () or by default is assumed equal to 0.25;

"coefficient partial load (pl ())" - the ratio of the temperature of outdoor air for minus 16 ° C to BENCHMARK-calculated temperature for modes of cooling or heating of minus 16 ° C;

"maximum air flow (F)" - the air flow generated by fan in m / min at maximum power setting , measured from the flow outlet side with the turning (tilting) mechanism off (if any);

"Mechanism of rotation (tilt)" - a device for automatically changing the fan direction of flow of air during the time of operation of the fan;

"power at cyclic (intermittent) operation" - the average value of the declared power, weighted in time, in the cyclic test interval of the air conditioner (at cyclic loads due to

turning the compressor on and off) in cooling () or heating () mode ;

"rated input power in heating mode ()" -

electrical input power consumption of the air conditioner (in kW) in heating mode at standard nominal conditions;

"rated input power in cooling mode ()" - electrical input power consumption of the air

conditioner (in kW) in cooling mode under standard nominal conditions;

"rated power ()" - cooling or heating capacity of the vapor compression cycle of the air conditioner at standard rated

conditions;

"rated energy efficiency in cooling mode (

) " - the ratio of the declared cooling power of the air conditioner (in kW) to the rated power consumption in cooling mode (in kW) at standard rated conditions;

"nominal energy efficiency in heating mode () " - the ratio of the declared heating power of the air conditioner (in kW) to rated power consumption in heating mode (in kW) at standard rated conditions;

"nominal flow of air" - the flow of air (in m³ / h), measured at output from the internal or external (when available) block the air conditioner at the

standard nominal conditions in the mode of cooling (or a mode heating if the air conditioner does not have a cooling function);

"Single-channel air conditioner" - air-conditioning, in which at the time of cooling or heating the air, blow out the condenser or evaporator, is fed from the room in which the air conditioner, and output of the limits of the premises;

"Global Warming Potential (GWP)" - coefficient that determines the degree of exposure of one kilogram of matter in the portion of its promoting greenhouse effect (global warming) in over 100 years, is numerically equal to the equivalent mass of carbon dioxide in kg creating such as the greenhouse effect for 100 years (= 1), which was introduced in accordance with the Kyoto Protocol on 11 December 1997 to the United Nations Framework Convention on changing the climate of 9 on May 1992 the year and official publications

(reports) of the Intergovernmental Panel on Climate Change IPCC in the framework of the implementation of the Program of the United Nations on environmental environment UNEP;

"power consumption in shutdown mode ()" - power (in kW) consumed by an electric power - consuming device in shutdown mode ;

"power consumption in standby mode ()" - power (in kW) consumed by an electric power-consuming device in standby mode ;

"consumed power in the mode of operation with a crankcase heater ()" - power (in kW) consumed by an electric power - consuming device in the mode of operation with a crankcase heater;

"power consumption in the mode with the thermostat off ()" - power (in kW) consumed by an electric power - consuming device in the operating mode with the thermostat turned off;

"limit value of the working temperature ()" - specified by the manufacturer minimum value of the temperature of external air (in ° C), at which the air conditioner is able to operate in heating mode (below this temperature, the declared heating power is zero);

"design (rated) power (load)" - the manufacturer's specified power (load) (in kW) at the reference-design temperature in the mode

cooling (equal to power in cooling mode at =) and / or heating (equal

to partial load in heating mode at =);

"reversible air conditioner" - an air conditioner designed for cooling and heating air;

" power control " - the ability of the device to change its power by changing the amount of air flow (devices are designated as "fixed set" - if the flow is not regulated, "stepped" - if two power settings are possible , and "adjustable" - if the air flow varies in within three or more steps);

"mode off" - state, at which the electrical connected to a power source, but is not in active (operation) mode, or the mode of waiting, and must comply with the requirements of the electromagnetic compatibility and (or) display mode off;

"standby mode " - a state in which electrical equipment is connected to a power source and at the same time performs the function of reactivation for an unlimited time (including with indication of the ability (readiness) for reactivation) and (or) the function of informing or displaying the state;

" operating mode with the thermostat turned off " - operating mode of an air conditioner with a compressor operating for cooling or heating, without feedback

from the air temperature in the conditioned room (depending on the outside air temperature);

" operating mode with crankcase heater" - the operating mode of the air conditioner during the heating season, in which the electric heater is activated , preventing the ingress of liquid

refrigerant into the compressor in order to avoid breakdowns due to solidification of the lubricant and boiling of the refrigerant in the compressor crankcase when it is turned on;

"standby electrical power for additional heating [elbu (

)] " - consumed when heating power (in kW) of actual or alleged electrical heating device with an equivalent energy efficiency in the operation of heating COP = 1, which is

is added to the rated consumed power in the mode of heating () to achieve part load for heating (Tj), if () is less than () at a certain temperature of the outdoor air ;

"seasonal energy efficiency in active heating mode (

) " - the average value of the energy efficiency of the air conditioner in active heating mode during a certain heating season, which is calculated from the partial load, the power of the backup electric heater for additional heating (if required) and the energy efficiency at all temperature-time intervals

, correlated with the duration of these temperature-time intervals (bins);

"seasonal energy efficiency in active cooling mode (

) " is the average value of the energy efficiency of the air conditioner in active cooling mode , which is calculated from the partial load and energy efficiency at all temperature-time

intervals (), correlated with the duration of these temperature-time intervals (bins);

"seasonal energy efficiency in the operation of cooling ()" - is representative for the whole cooling season mean value of the coefficient of useful actions conditioner equal respect reference annual energy consumption in cooling the annual measured consumption of electricity in the mode of cooling;

"seasonal energy efficiency in the heating mode (SCOP)" - is representative for the respective heating season the average value of the coefficient of useful actions conditioner equal respect reference annual consumption of energy for heating to the annual consumption of electricity for heating;

"Seasons" - 4 sets of operating conditions, corresponding to four periods in the year (season cooling and 3 heating season - average, a cold (colder) and warmer (warmer)), each of which is accepted partition on the temperature-time intervals (bins),

measured in hours , when the predominant temperature .

"standard nominal conditions" - a combination of temperatures in

indoor and outdoor air , which set the operating conditions for determining the sound power level , rated power, rated air flow , rat

ed energy efficiency in

cooling mode and / or nominal energy efficiency in heating mode ;

"Temperature of air in the room ()" - temperature of the air in the room dry bulb temperature in ° C with the indication (if necessary) the information about the relative humidity by means of actuation in parentheses

corresponding to the temperature of the wet bulb temperature;

"temperature of double (backup) heating ()" - specified by the manufacturer, the outdoor temperature in ° C in the heating mode of the air conditioner, at which the declared power corresponds to the partial load, and at a lower temperature it must additionally be switched on backup electric heater;

"Temperature of the outer air" () - temperature of the outdoor air by the dry bulb temperature in ° C with the indication (if necessary) the information about the relative humidity by means of actuation in parentheses corresponding to the temperature of the wet bulb temperature;

"temperature-time interval j (bin with index j)" - a combination of the outside air temperature and the duration of its predominance in hours ;

"level of sound power conditioner" - level of sound power, corrected by the characteristic of A in dB (A), measured in a room or outside the room at the standard nominal conditions of operation the air conditioner in cooling (or heating, if the air conditioner has the function of cooling);

"level of sound power of the fan ()" - level of sound power, corrected by the characteristic of A in dB (A), as measured at the maximum rated flow of air from the side of the outgoing flow;

"function to inform or display the state" - feature, which provides the provision of information or a map to display the state of the equipment, including an indication of the time;

"feature reactivation" - function provides through devices remote control, internal sensors or controls exposure time (Timer) the ability to transition from a mode waiting in the working mode, when there is activation of performing principal or main and additional functions of the equipment;

"partial load" - power in cooling mode () or heating () (in kW) at a certain temperature, the outdoor air , which is equal to the product of the design (nominal) capacity (load) on partial load factor pl () ;

"equivalent period of heating in the active mode ()" - calculated (estimated) annual duration (in hours / year) working air conditioner on

design (nominal) power (load) in heating mode (), required to ensure the reference annual energy consumption in heating mode ;

"equivalent period of cooling in the active mode ()" - the calculated (estimated) annual duration (in hours / year) operation of conditioner on

the design (nominal) power (load) in cooling mode () required to provide the reference annual energy consumption in cooling mode ;

"Service Index (SV)" - the ratio of the maximum flow air in m / min and power consumption in W of the fan, expressed in (m / min) / W;

"power consumption of the fan ()" - power in watts, consumed by the fan, measured at a nominal maximum speed of the air stream generated by a fan, with the enabled function rotation (tilt) (if available);

"power consumption of one- and two-channel devices (respectively

and) "- power one- and two-channel air conditioners in the mode of cooling and (or) the heating in dependence on the presence of functions (for single-channel devices in kWh / h, for the two-channel - in kWh / year);

"energy efficiency in heating mode for the temperature-time interval [()]" - specific energy

the efficiency of the air conditioner in heating mode in temperature-time range (bin) j at a temperature of the outdoor air , calculated with considering a partial load, nominal power and nominal

energy efficiency in the operation of heating () for individual temperature-time intervals (bins) j, capacity and energy efficiency, obtained by extrapolation to other temperature-time intervals (bins), with the application (if necessary) the coefficient of loss of energy efficiency;

"energy efficiency in cooling mode for temperature time interval ()" - specific energy efficiency of the air conditioner in cooling mode in temperature

time interval (bin) j at a temperature of the outdoor air , calculated with considering a partial load, rated power and

nominal energy efficiency in cooling mode () for individual temperature-time intervals (bins) j and power and energy efficiency obtained by extrapolation for other temperature-time intervals (bins), using the efficiency loss factor, if necessary ;

"energy efficiency in cyclic (intermittent) mode heating ()" - average energy efficiency of the air conditioner in the cyclic test interval (measurement) in the heating mode, equal relative total consumption in cyclic interval power in kWh to the input electric power consumed for the same interval in Wh;

"energy efficiency in cyclic (intermittent) mode cooling ()" - the average energy efficiency of the air conditioner in the cyclic test (measurement) interval in the cooling mode , equal to the ratio of the total consumed in the cyclic power interval in kWh to the input electric power consumed during the same interval in Wh;

"reference annual energy consumption in heating mode ()" - energy consumption in heating mode in kWh / year used to calculate the SCOP and obtained by multiplying the design (nominal)

power (load) in heating mode () for the number of hours of operation the air conditioner is in active heating mode () during a certain heating season;

"reference annual energy consumption in cooling mode " () - energy consumption in cooling mode (in kWh / year) used to calculate SEER and obtained by multiplying the design (nominal)

power (load) in cooling mode () for the number of hours of equivalent cooling period in active mode () ;

"BENCHMARK-calculated temperature" - temperature of the outdoor air in ° C

when the air conditioner in operation cooling () or a mode heating () at which the ratio of the partial load is equal to unity and which is selected for a particular season, in dependence on that works whether conditioner in mode of cooling or heating;

"reference design conditions" - a combination of requirements in terms of reference design temperature, maximum temperature of double (backup) heating and maximum operating temperature limit value .



III. Requirements for energy efficiency and specifics of determining the energy efficiency indicators of air conditioners and fans

3. Seasonal energy efficiency in cooling mode (SEER), seasonal energy efficiency in heating mode (SCOP),

rated energy efficiency in the operation of cooling (), rated energy efficiency in the mode of heating (), consumption of power in the mode of standby (), consumption of power in shutdown mode () and design features of air conditioners and fans must comply with the

requirements given in Tables 1-3.

Requirements to the parameters of the energy efficiency of air conditioners, except for single and two-channel air conditioners are installed for etalonno- settlement conditions with the use of (if necessary) conditions the average heating season.

Energy efficiency requirements for single and dual channel air conditioners are based on standard nominal conditions.

Table 1. Requirements for the minimum permissible energy efficiency levels of air conditioners

Table 1

kW ,	GWP refrigerant	air conditioners, except for one- and two-channel		single-channel air conditioners		two-channel air conditioners	
		SEER	SCOP for medium otopy-tion season				
less than 6	more than 150	4.60	3.80	2.60	2.04	2.60	2.60
	no more than 150	4.14	3.42	2.34	1.84	2.34	2.34
6 12	more than 150	4.30	3.80	2.60	2.04	2.60	2.60
	no more than 150	3.87	3.42	2.34	1.84	2.34	2.34

Table 2. Requirements for the maximum permissible sound power level of air conditioners

Table 2

6 kw		6 KW < 12 KW	
inside the room	outside the premises	inside the room	outside the premises
60	65	65	70

Table 3. Requirements for consumption power in the modes off and waiting for one- and two-channel air conditioners and ventilators

Table 3

Modes	Requirements
Shutdown mode	consumed power in mode off not should exceed 0.50 watts.
mode standby	consumed power in the state, when provided only perform function reactivation with display or no display capabilities (standby) for reactivation, not should exceed 0.50 W
	consumed power in the state, when provided perform only the function information or the display state or perform reactivation function combined with the function information or the display state, not should exceed 1.00 W
Presence Mode Standby and (or) shutdown	for except in cases where it is impractical due to the characteristics of the intended use for other purposes, shall be provided the opportunity to transition connected to the network device in the mode standby and (or) off, and (or) in a different mode, in which not exceeded the limit value of power consumption standby and / or shutdown modes

Control regime power supply	<p>the device must have a control function mode power supply, which on expiration of minimum time sufficient for intended use ,</p> <p>automatically translates connected to the network the device is in standby and / or off mode , or in another mode, at which not exceeded power consumption level for standby modes and off, with the condition that the device is not performs its main functions and other energy-consuming products are independent of its work for exception cases</p> <p>inexpediency due to peculiarities intended use .</p> <p>Function management mode power supply must be activated before placing the device on market</p>
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4. When determining the energy consumption and seasonal energy efficiency of air conditioners in SEER cooling and SCOP heating modes, it is necessary to take into account:

the cooling season and (or) heating seasons of temperature-time intervals (bins), shown in Table 4;

reference design conditions given in table 5; power consumption for different operating modes of air conditioners, calculated depending on the operating time specified in table 6;

the loss of efficiency due to the cycles on / off switch (if applicable) in dependence on the type of regulatory power in the mode of cooling and (or) heating;

adjustment seasonally conditioned coefficients output in mode heating under conditions in which power for heating is not enough to provide the required heating load;

contribution (share) of backup heating (if applicable) when calculating the seasonal energy efficiency of the air conditioner in heating mode .

Table 4. Time-temperature- intervals (bins) in the mode of cooling and heating (j - bin index, hj - clock throughout the year for each bin, Tj - temperature of outdoor air by the dry -bulb temperature)

Table 4

Cooling season			Heating seasons				
bin index , j	° C	h / year	bin index , j	° C	, h / year		
					middle	warmer	colder
one	17	205	1 8	- thirty - 23	0	0	0
2	eighteen	227	9	-22	0	0	one

3	19	225	ten	-21	0	0	6
four	20	225	eleven	-20	0	0	thirteen
five	21	216	12	-19	0	0	17
6	22	215	thirteen	- eighteen	0	0	19
7	23	218	14	-17	0	0	26
8	24	197	15	-16	0	0	39
9	25	178	16	-15	0	0	41
ten	26	158	17	-14	0	0	35
eleven	27	137	eighteen	-thirteen	0	0	52
12	28	109	19	-12	0	0	37
thirteen	29	88	20	-eleven	0	0	41
14	thirty	63	21	-ten	one	0	43
15	31	39	22	-9	25	0	54
16	32	31	23	-8	23	0	90
17	33	24	24	-7	24	0	125
eighteen	34	17	25	-6	27	0	169
19	35	thirteen	26	-five	68	0	195
20	36	9	27	-four	91	0	278
21	37	four	28	-3	89	0	306
22	38	3	29	-2	165	0	454

23	39	one	thirty	-one	173	0	385
24	40	0	31	0	240	0	490
TOTAL:		2602	32	one	280	0	533
			33	2	320	3	380
			34	3	357	22	228
			35	four	356	63	261
			36	five	303	63	279
			37	6	330	175	229
			38	7	326	162	269
			39	8	348	259	233
			40	9	335	360	230
			41	ten	315	428	243
			42	eleven	215	430	191
			43	12	169	503	146
			44	thirteen	151	444	150
			45	14	105	384	97
			46	15	74	294	61
			TOTAL:		4910	3590	6446

Table 5. BENCHMARK-calculated conditions (temperature of the dry bulb; in brackets the temperature of wet bulb)

Table 5

Nominal seasonal energy efficiency in operation

Table 6. Operating times for each type of air conditioner and functions used to calculate energy consumption

Air conditioner type / function (if equipped)	Single, meas.	Warm up, season	Active mode, and				
one	2	3	four	five	6	7	8
I. Air conditioners (except for one and two channel air conditioners)							

Cooling mode	h / 60 min		one	-	-	-	-

mode heating	h / 60 min		one	-	-	-	-
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- Cooling mode .
- Heating mode ;
- Standby mode .
- Off mode .
- Mode with switched off thermostat.
- Mode with crankcase heating.

Table 7. Standard nominal conditions (temperature of dry bulb temperature in parentheses wet bulb)

Table 7

Device	Function	The temperature of the air in the room, °C	The temperature of the outdoor air, °C
Air conditioners air, (for exception single-channel)	cooling	27 (19)	35 (24)
	heating	20 (max 15)	7 (6)
Single channel conditioners	cooling	35 (24) *	35 (24) *
	heating	20 (12) *	20 (12) *

* In single-channel air conditioners, a condenser or an evaporator (at cooling or heating, respectively) is blown not by the outside air, but by the air from the room.

The energy efficiency of fans is determined based on the ratio of the rated air flow generated by the fan to the rated power input.

5. To the set of documents for air conditioners and fans, specified taking into account the scheme of conformity declaration chosen by the applicant in subparagraph "a" of paragraph 28 or subparagraph "a" of paragraph 29 of the technical regulation "On requirements for the energy efficiency of energy-consuming devices" (TR EAEU 048/2019) (hereinafter referred to as

the technical regulations), for air conditioners and fans , the information given in tables 8-10 must additionally be included .

Table 8. Information about the fans, must be listed in the operational documents in dependence on the availability of functions

Table 8

Parameter	Designation	Value	Measurement units
Maximum air flow	F	x, x	m / min
Power consumption	P	x, x	W
Performance indicator	SV	x, x	(m / min) / W
Consumption power in the mode standby		x, x	W
Fan sound power level		(x)	DB (A)
Maximum air flow rate	c	x, x	m / s

* the number of decimal places "x" in the table cells corresponds to required data accuracy .

Table 9. Information on air conditioners to be indicated in operating documents (except for one- and two-channel air conditioners)

Table 9

FUNCTION (if absent , "no" is indicated)				FOR HEATING FUNCTION (if available, medium mode is required)			
parameter	char.	value	unit.	parameter	symbol	value	unit.
Design (nominal) power				Seasonal energy efficiency			
cooling		x, x	kW	cooling	SEER	x, x	-

heating / medium		x, x	kW	heating / medium		x, x	-
heating / warmer		x, x	kW	heating / warmer		x, x	-

heating / colder		x, x	kW	heating / colder		x, x	-
Declared power * in cooling mode at = 27 (19) ° C for the following				Declared energy efficiency * in cooling mode at = 27 (19) ° C for the following			
= 35eC		x, x	kW	= 35eC		x, x	-
j = 30eC		x, x	kW	j = 30eC		x, x	-
= 25eC		x, x	kW	= 25eC		x, x	-
= 20eC		x, x	kW	= 20eC		x, x	-
Declared power * in heating mode for an average heating season at = 20 ° C for the following				Declared energy efficiency in heating mode for an average heating season at = 20 ° C for the following			
= - 7eC		x, x	kW	= - 7eC		x, x	-
= 2eC		x, x	kW	= 2eC		x, x	-
= 7eC		x, x	kW	= 7eC		x, x	-
= 12eC		x, x	kW	= 12eC		x, x	-
=		x, x	kW	=		x, x	-
=		x, x	kW	=		x, x	-
Declared power * in heating mode for a warmer heating season (warmer) at				Declared energy efficiency in heating mode for a warmer heating season (warmer) at = 20 ° C for the following			

= 20 ° C for the following							
= 2eC		x, x	kW	= 2eC		x, x	-
= 7eC		x, x	kW	= 7eC		x, x	-

= 12eC		x, x	kW	= 12eC		x, x	-
=		x, x	kW	=		x, x	-
=		x, x	kW	=		x, x	-
Declared power * in heating mode for the heating season "colder" at = 20 ° C for the following .				The declared energy efficiency in heating mode for the heating season is "colder" at = 20 ° C for the following			
= -7eC		x, x	kW	= -7eC		x, x	-
= 2eC		x, x	kW	= 2eC		x, x	-
= 7eC		x, x	kW	= 7eC		x, x	-
= 12eC		x, x	kW	= 12eC		x, x	-
=		x, x	kW	=		x, x	-
=		x, x	kW	=		x, x	-
= -15eC		x, x	kW	= -15eC		x, x	-
Double (standby) heating temperature				The limit value of the working temperature			
heating / medium		X	° C	heating / medium		x	° C

heating / warmer		X	° C	heating / warmer		x	° C
heating / colder		X	° C	heating / colder		x	° C
Power at cyclic (intermittent) mode of operation				Energy cyclic (n	ekaya efficiency at reryvistom) mode		
in mode cooling		x, x	kW	In cooling mode		x, x	-

in mode heating		x, x	kW	In heating mode		x, x	-
Ratio of loss of efficiency of cooling		x, x	-	Coefficient of loss of efficiency of the heating		x, x	-
Consumption power in various modes, other than from the active mode				Annual energy consumption			
Shutdown mode		x, x	kW	cooling		x	kWh / year
mode standby		x, x	kW	heating / medium		x	kWh / year
Mode with by turning off the thermostat		x, x	kW	heating / warmer		x	
Mode with crankcase heating		x, x	kW	heating / colder		x	kWh / year
Power regulation (one of three is indicated)				Other			
Fixed	yes / no			Sound power level (***)		x, x / x, x	dB (A)
Stepped	yes / no			Global warming potential	GWP	x	kgCO

Adjustable	yes / no	Rated air flow	-	x / x	m / h
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Note:

The number of decimal places "x" in the table cells corresponds to the required data precision .

* For devices with stepwise power regulation , in each column of the "Declared power" and "Declared energy efficiency" section , the EER and (or) COP values should be indicated , separated by the "/" sign for each of the two power regulation steps .

** If the default is = 0.25, then cycling tests (and their results) are not required. Otherwise required to specify the values for the cyclic test in mode cooling and (or) heating.

*** Sound power level inside / outside.

Table 10. Information about one- and two-channel air conditioners (depending on the availability of functions)

Table 10

Parameter	Designation	Parameter value	Measurement units
Rated power in cooling mode	in cooling mode	x, x	kW
Rated power in heating mode	in heating mode	x, x	kW
Rated input power in cooling mode		x, x	kW
Rated input power in heating mode		x, x	kW
Rated energy efficiency in cooling mode		x, x	-
Rated energy efficiency in heating mode		x, x	-

Power consumption in the mode with the thermostat off		x, x	W
Consumption power in the mode standby		x, x	W

Energy consumption of one- and two-channel (SD and DD) air conditioners in cooling and heating mode	for DD: for SD:	for DD: x for SD: xx	for DD: kWh / year for SD: kWh / h
Sound power level		X	DB (A)
Global warming potential		X	kg CO

Single-channel air conditioners are labeled as " local air conditioners ".

6. If the information for a specific air conditioner model, consisting of a combination of indoor and outdoor units, was obtained by calculations based on the structural type and (or) extrapolation of other combinations, then the set of documents specified in paragraph 5 of these Requirements must additionally include detailed information on calculations and (or) extrapolations, as well as test reports to verify the correctness of calculations (exact data for the mathematical model for calculating the power of such combinations and for measurements carried out to verify the correctness of this model).

IV. Permissible deviations parameters of the energy efficiency of air conditioners and ventilators when conducting tests (measurements) after their release into circulation

7. In case of tests (measurements) of the energy efficiency parameters of air conditioners after their release into circulation in the customs territory of the Union, tests (measurements) of one sample (copy) of the air conditioner model are carried out.

A model of an air conditioner, with the exception of one- and two-channel air conditioners, is considered to be in compliance with these Requirements if the value of the seasonal energy efficiency obtained as a result of measurements in the SEER cooling and (or) SCOP heating modes (if any) is not less than the value declared by the manufacturer at the specified power conditioner for minus 8%.

Model one- and two-channel air conditioner deemed appropriate the present Requirements, if obtained in result of the measurement values of power consumption in modes standby and shutdown does not exceed the maximum permissible levels of more than to 10%, and if the nominal

energy efficiency in cooling modes and (or)

heating (if any) is not less than claimed by the manufacturer value of minus 10%.

Model conditioner deemed appropriate by this requirement if the maximum sound pressure level exceeds the declared value of not more than to 2 dB (A).

8. If the result specified in paragraph 7 of these Requirements is not achieved, then check 3 randomly selected samples of this model of air conditioner.

Model conditioner for excluding one- and two-channel air conditioners, is considered responsible accordingly this requirement if the average over 3 samples tested value seasonal energy efficiency in the cooling and heating modes SEER SCOP (if any) is not less than the stated value when said power conditioner for minus 8%.

In other cases, the air conditioner model should be considered as not complying with the requirements of the technical regulations.

Model one- and two-channel air conditioner deemed appropriate the present Requirements, if the average of three tested samples values of energy consumption in modes standby and shutdown does not exceed the maximum permissible values more than on 10% , and if the mean value

nominal energy efficiency in cooling modes

and heating (if any) is not less than claimed by the

manufacturer value of minus 10%.

In other cases, the air conditioner model should be considered as not complying with the requirements of the technical regulations.

Model conditioner deemed appropriate the present Requirements, if the average value of the maximum level of sound power exceeds 3 samples tested claimed manufacturer value of not more than to 2 dB (A).

In other cases, this model of the air conditioner should be considered as not complying with the requirements of the technical regulations.

9. In the case of tests (measurements) of the parameters of the energy efficiency of fans after their release into circulation in the customs territory of the Union , tests (measurements) of one sample (copy) of the fan model are carried out .

Model fan deemed appropriate by this requirement if the resulting measurement settings and fan sample characteristics indicated in Table 3 of the present Claims, does not differ from the stated manufacturer's nominal values more than to 15%.

In other cases, checked more 3 sample fan. The fan model is considered to comply with these Requirements if the average value of the measurement results of these 3 samples meets the requirements specified in the previous paragraph two of this clause.

Otherwise, this fan model should be considered as not complying with the requirements of the technical regulations.

V. Contents of label and technical sheet of air conditioners

Energy efficiency label content for air conditioners excluding single and dual channel air conditioners

10. The energy efficiency label of reversible air conditioners must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. the text " cooling mode " and the "blue fan" icon are characteristics for the cooling mode .

text " heating mode " and pictogram "red fan" - characteristics for heating mode ;

IV. energy efficiency class for cooling and heating mode .

Icon Energy efficiency is at the same level, that and the arrow corresponding to the class of energy efficiency.

The energy efficiency for cooling and for heating should also be stated . With regard to heating, it is imperative to state the energy efficiency for the average heating period. Note energy efficiency for a warm and a cold period is arbitrary;

V. rated power in cooling and heating mode (in kW) (rounded to one decimal place);

Vi. seasonal energy efficiency in cooling and heating mode (rounded to one decimal place);

Vii. annual energy consumption in cooling and heating mode (in kWh / year) (rounded to the nearest whole number);

VIII. corrected sound power level for indoor and outdoor units, expressed in dB (A) with respect to 1 pW (rounded to the nearest whole number) (indicated in dB).

11. The energy efficiency label for air conditioners must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. the text " cooling mode " and the icon "blue fan" - characteristics for the cooling mode and designation of the air wave;

IV. energy efficiency class ;

V. rated power (in kW) (rounded to one decimal sign decimal digits);

Vi. nominal energy efficiency (rounded to one decimal sign decimal digits);

Vii. annual energy consumption (in kWh / year) for cooling, (rounded to the nearest whole number);

VIII. corrected sound power level for indoor and outdoor units, expressed in dB (A) with respect to 1 pW (rounded to the nearest whole number) (indicated in dB).

12. Label the energy efficiency of air conditioning heating air must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. the text " heating mode " and the icon "red fan" - characteristics for the heating mode by the designation of the air wave;

IV. energy efficiency class ;

V. rated power (in kW) (rounded to one decimal place);

Vi. seasonal energy efficiency (rounded to one decimal place);

Vii. annual energy consumption (in kWh / year) (rounded to the nearest whole number);

VIII. corrected sound power level for indoor and outdoor units, expressed in dB (A) with respect to 1 pW (rounded to the nearest whole number) (indicated in dB).

Contents of energy efficiency label of one and two channel air conditioners

13. The energy efficiency label of the air conditioner must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. the text " cooling mode " and the "blue fan" icon - characteristics for the cooling mode and the designation of the air wave;
text " heating mode " and pictogram "red fan" - characteristics for heating mode ;

IV. energy efficiency classes for cooling and heating modes ;

V. rated power in cooling and heating mode (in kW) (rounded to one decimal place);

VI. nominal energy efficiency for cooling and heating mode (rounded to one decimal place);

Vii. hourly consumption of energy (in kWh / h) for cooling and heating (with rounding to one decimal mark for single-channel air conditioners or with rounding up to a whole number of two-channel air conditioners);

VIII. corrected sound power level for indoor and outdoor units, expressed in dB (A) with respect to 1 pW (rounded to the nearest whole number) (indicated in dB).

14. The energy efficiency label of the air conditioner must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. the text " cooling mode " and the "blue fan" icon - characteristics for the cooling mode ;

IV. energy efficiency class ;

V. rated power (in kW) (rounded to one decimal place);

VI. nominal energy efficiency in cooling mode (rounded to one decimal place);

Vii. hourly consumption of energy (in kWh / year) for cooling (with rounding to one decimal mark for single-channel air conditioners or with rounding to the nearest whole number for dual air conditioners);

VIII. corrected sound power level for indoor and outdoor units, expressed in dB (A) with respect to 1 pW (rounded to the nearest whole number) (indicated in dB).

15. Label the energy efficiency of air conditioning heating air must contain the following information:

I. name or trade mark (if any) of the manufacturer;

II. model designation ;

III. text " heating mode " and pictogram "red fan" - characteristics for heating mode ;

IV. energy efficiency class ;

V. rated power (in kW) (rounded to one decimal place);

VI. nominal energy efficiency (rounded to one decimal place)

Vii. hourly energy consumption (in kWh / year) (rounded to the nearest whole number);

VIII. corrected sound power level for indoor and outdoor units, expressed in dB (A) with respect to 1 pW (rounded to the nearest whole number) (indicated in dB).

16. The technical sheet included in the operational documentation of air conditioners and fans must contain the following information:

- a) The name or trade mark (if any) of the manufacturer;
- b) identification number of models of the manufacturer, where the model identification number means the code, as the usually alpha-numeric, which distinguishes the particular model of the air conditioner from the other models of the same trade mark or the manufacturer with this same name;
- c) corrected sound power level for indoor and outdoor units, expressed in dB (A) relative to 1 pW (rounded to the nearest whole number) (indicated in dB);
- g) the name and the global warming potential (GWP) used refrigerant, but also the following wording: "The leak of refrigerant influences on the change of climate. The refrigerant with a low potential of global warming (GWP) will impact on global warming of less than a refrigerant with a high GWP, if it will occur leak into the atmosphere. This device comprises a refrigerant GWP equal to [xxx]. This means that 1 kg of the refrigerant will fall in the atmosphere, and its impact on the global Warming is in [xxx] times higher than 1 kg CO₂ in over 100 years. Never try to change the refrigerant circuit yourself or disassemble the product yourself. Always contact a specialist professionals";
- e) If efficiency is claimed on the basis of SEER, the following information on the cooling mode must also be entered in the technical sheet of air conditioners :
- SEER and energy efficiency class of the model (device model or instrument cluster) for cooling mode, as well as class restrictions ;
 - annual energy consumption for cooling () (in kWh / year) during the cooling period . Indicated as follows: "Energy consumption " XYZ " kWh per year, based on the results of standard tests. The actual power consumption depends on the fact how the appliance is used and where it is located. "
 - calculated load of the device () kW, in cooling mode ;
- f) If efficiency is declared on the basis of SCOP, the following information on heating mode must also be entered in the technical sheet of air conditioners :
- SCOP and energy efficiency class of the model (device model or combination of devices) in heating mode , as well as with class restrictions ;
 - annual energy consumption for the average heating period () .It is indicated as follows: "Energy consumption " XYZ " per year, by based on the results of standard tests. The actual consumption of electricity depends on the fact how the device is used and where it is located; "
 - other certain periods of heating, for which the device is stated, as a charge intended purpose, with the options of a warm (arbitrary) or more cold (arbitrary) periods;
 - calculated load of the device () (in kW) in heating mode;
 - the declared power and an indication of the reserve heating power adopted to calculate SCOP under standard design conditions;
- g) If the efficiency is declared on the basis of EER or COP in the technical sheet conditioners air also must be entered following information:
- energy efficiency class of the model, as well as class restrictions ;
 - for air conditioners with two air ducts, indicative energy consumption () (in kWh / h). Indicated as follows: "Energy consumption " X, Y " kWh / h, based on the results of standard

tests. Actual power consumption depends on the fact, how the device is used and which is located ";

- for air conditioners with one duct, indicative

energy consumption () (in kWh / h). Indicated as follows: "Energy consumption " X, Y

" kWh / h, based on the results of standard

tests. Actual power consumption depends on the fact, how the device is used and where it is located; "

- device cooling power (), kW.

- heating power (), kW.

18. In one technical sheet may reflect a number of models supplied by one and the same manufacturer.

19. The information contained in the technical sheet can be provided in the form of a color or black and white copy of the label. In this case also must be provided information specified in paragraphs 10 to 15 of these Requirements and absent on the label.

Vi. Determination of energy efficiency classes of air conditioners

17. The energy efficiency class of air conditioners with the exception of one and two channel air conditioners is determined in accordance with table 11.

Table 11. Classes of energy efficiency of air conditioners

Table 11

Energy efficiency class	Energy efficiency in cooling mode	Energy efficiency in heating mode
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A +++	SEER 8.50	SCOP 5.10
A ++	6.10 SEER < 8.50	4.60 SCOP < 5.10
A +	5.60 SEER < 6.10	4.00 SCOP < 4.60
A	5.10 SEER < 5.60	3.40 SCOP < 4.00
B	4.60 SEER < 5.10	3.10 SCOP < 3.40
C	4.10 SEER < 4.60	2.80 SCOP < 3.10
D	3.60 SEER < 4.10	2.50 SCOP < 2.80
E	3.10 SEER < 3.60	2.20 SCOP < 2.50

F	2.60 <i>SEER</i> < 3.10	1.90 <i>SCOP</i> < 2.20
G	<i>SEER</i> < 2.60	<i>SCOP</i> < 1.90

18. The energy efficiency class of single-channel air conditioners is determined in accordance with table 12.

Table 12. Classes of energy efficiency of single-channel air conditioners

Table 12

Energy efficiency class	Rated energy efficiency in cooling mode	Rated energy efficiency in heating mode
A +++	<i>EER</i> 4.10	<i>COP</i> 3.60
A ++	3.60 <i>EER</i> < 4.10	3.10 <i>COP</i> < 3.60
A +	3.10 <i>EER</i> < 3.60	2.60 <i>COP</i> < 3.10
A	2.60 <i>EER</i> < 3.10	2.30 <i>COP</i> < 2.60
B	2.40 <i>EER</i> < 2.60	2.00 <i>COP</i> < 2.30

13. The energy efficiency class of two-channel air conditioners is determined in accordance with table 13.

Table 13. Energy efficiency classes of two-channel air conditioners

Table 13

Energy efficiency class	Rated energy efficiency in cooling mode	Rated energy efficiency in heating mode
A +++	<i>EER</i> 4.10	<i>COP</i> 4.60
A ++	3.60 <i>EER</i> < 4.10	4.10 <i>COP</i> < 4.60
A +	3.10 <i>EER</i> < 3.60	3.60 <i>COP</i> < 4.10
A	2.60 <i>EER</i> < 3.10	3.10 <i>COP</i> < 3.60
B	2.40 <i>EER</i> < 2.60	2.60 <i>COP</i> < 3.10
C	2.10 <i>EER</i> < 2.40	2.40 <i>COP</i> < 2.60
D	1.80 <i>EER</i> < 2.10	2.00 <i>COP</i> < 2.40
E	1.60 <i>EER</i> < 1.80	1.80 <i>COP</i> < 2.00
F	1.40 <i>EER</i> < 1.60	1.60 <i>COP</i> < 1.80

G	<i>EER</i> < 1.40	<i>COP</i> < 1.60
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