CABINET OF MINISTERS OF UKRAINE

RESOLUTION

No. 739 of 14 August 2019
Kyiv

On Approval of the Technical Regulation on Ecodesign Requirements for Air Conditioners and Comfort Fans

In accordance with Article 5 of the Law of Ukraine 'On Technical Regulations and Conformity Assessment', the Cabinet of Ministers of Ukraine hereby **resolves**:

1. The Technical Regulation on Ecodesign Requirements for Air Conditioners and Comfort Fans shall be approved as attached to the original.

2. The State Agency on Energy Efficiency and Energy Saving shall ensure the implementation of the Technical Regulation approved by this Resolution.

3. The attached amendment shall be introduced to the list of types of products subject to state market surveillance by state market surveillance authorities, approved by the Resolution of the Cabinet of Ministers of Ukraine No. 1069 of 28 December 2016 (Official Journal of Ukraine, 2017, No. 50, p. 1550).

4. This Resolution shall enter into force after six months following its publication.

Prime Minister of Ukraine **VOLODYMYR GROYSMAN**

Ind. 21

APPROVED
by the Resolution of the Cabinet of Ministers of Ukraine
No. 739 of 14 August 2019

AMENDMENT
to be introduced to the list of types of products subject to state market surveillance by state market surveillance authorities

The list shall be supplemented with point 54 to read as follows:

‘54. Air conditioners and comfort fans	Resolution of the Cabinet of Ministers of Ukraine No. 739 of 14 August 2019 “On Approval of the Technical Regulation on Ecodesign Requirements for Air Conditioners and Comfort Fans”	State Service of Ukraine on Food Safety and Consumer Protection’.

{The text of the Technical Regulation was taken from the official website of the Cabinet of Ministers of Ukraine}

TECHNICAL REGULATION
on Ecodesign Requirements for Air Conditioners and Comfort Fans
General Provisions

1. This Technical Regulation establishes eco-design requirements for the placing on the market of electric mains-operated air conditioners with a rated capacity of ≤ 12 kW for cooling, or heating if the product has no cooling function, and comfort fans with an electric fan power input ≤ 125W.

The Technical Regulation is based on the Commission Regulation (EU) No. 206/2012 of 6 March 2012 supplementing Directive 2009/125/EC of the European Parliament and of the Council regard to ecodesign requirements for air conditioners and comfort fans.

2. This Technical Regulation shall not apply to:

appliances that use non-electric energy sources;

air conditioners of which the condenser-side or evaporator-side, or both, do not use air for heat transfer medium.

3. Terms and definitions used in this Technical Regulation shall have the following meanings:

1) 'comfort fan' means an appliance primarily designed for creating air movement around or on part of a human body for personal cooling comfort, including comfort fans that can perform additional functionalities such as lighting;

2) 'fan power input' P_f means the electric power input of a comfort fan (in Watt) operating at the declared maximum fan flow rate, measured, when applicable, with the oscillating mechanism active;

3) 'double duct air conditioner' means an air conditioner in which, during cooling or heating, the condenser or evaporator intake air is introduced from the outdoor environment to the unit by a duct and rejected to the outdoor environment by a second duct. Such air conditioner is placed wholly inside the space to be conditioned, near a wall;

4) 'air conditioner' means a device capable of cooling or heating, or both, indoor air, using a vapour compression cycle driven by an electric compressor, including air conditioners that provide additional functionalities such as dehumidification, air-purification, ventilation or supplemental air-heating by means of electric resistance heating, as well as appliances that may use water (either condensate water that is formed on the evaporator side or externally added water) for evaporation on the

condenser, provided that the device is also able to function without the use of additional water, using air only;

5) ‘rated capacity’ P_{rated} means the cooling or heating capacity of the vapour compression cycle of the unit at standard rating conditions;

6) ‘single duct air conditioner’ means an air conditioner in which, during cooling or heating, the condenser or evaporator intake air is introduced from the system and discharged outside this system;

The definitions that are used in Annexes to this Technical Regulation shall be set out in Annex 1.

Other terms used herein shall have meanings set out in the Laws of Ukraine ‘On Technical Regulations and Conformity Assessment’, ‘On State Market Surveillance and Control of Non-Food Products’, ‘On Standardization’ and in the Technical Regulation establishing a framework for the setting of ecodesign requirements for energy-related products, approved by the Resolution of the Cabinet of Ministers of Ukraine No. 804 of 3.10.2018 (Official Journal of Ukraine, 2018, No. 80, p. 2678).

Ecodesign Requirements

4. The ecodesign requirements for air conditioners and comfort fans are set out in Annex 1.

One year after this Technical Regulation has come into force single duct and double duct air conditioners shall correspond to the requirements as indicated in Annex 1, point 2, subpoint 1.

One year after this Technical Regulation has come into force:

all air conditioners, except single and double duct air conditioners, shall correspond to requirements as indicated in Annex 1, point 2, subpoint 2 and point 3, subpoints 1, 2, 3;

single duct and double duct air conditioners shall correspond to the requirements as indicated in Annex 1, point 3, subpoints 1, 2, 4;

fans shall correspond to requirements as indicated in Annex 1, point 3. subpoints 1, 2, 5.

Two years after this Technical Regulation has come into force:

air conditioners shall correspond to ecodesign requirements as indicated in Annex 1, point 2, subpoint 3;

single duct and double duct air conditioners shall correspond to the requirements as indicated in Annex 1, point 2, Subpoint 4.

Compliance with ecodesign requirements shall be measured and calculated in accordance with the requirements set out in Annex 2.

Conformity Assessment

5. Conformity of air conditioners and comfort fans with the requirements of this Technical Regulation shall be assessed by applying the internal design control procedure or the management system conformity assessment procedure set out, respectively, in Annexes 3 and 4 to the Technical Regulation establishing a framework for the setting of ecodesign requirements for energy-related products, approved by the Resolution of the Cabinet of Ministers of Ukraine No 804 of 3.10.2018 (Official Journal of Ukraine, 2018, No 80, p. 2678).

For the purposes of conformity assessment, the technical documentation shall contain a copy of the calculations as laid down in Annex 2 to this Technical Regulation.

State Market Surveillance

6. Verification of conformity of the characteristics of air conditioners and comfort fans with the requirements of this Technical Regulation in the course of state market surveillance shall be made in accordance with the requirements set out in Annex 3.

Indicative Benchmarks

7. The indicative benchmarks for best-performing air conditioners and comfort fans available on the market are set out in Annex 4.

Correlation Table

8. The correlation table between the provisions of the Commission Regulation (EU) No. 206/2012 of 6 March 2012 supplementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air conditioners and comfort fans, and this Technical Regulation is set out in Annex 5.

Annex 1
to the Technical Regulation

ECODESIGN REQUIREMENTS
for air conditioners and comfort fans

1. Definitions applicable for the purposes of the Annexes to this Technical Regulation:

'active mode' means the mode corresponding to the hours with a cooling or heating load of the building and whereby the cooling or heating function of the unit is activated. This condition may involve on/off-cycling of the unit in order to reach or maintain a required indoor air temperature;

'bivalent temperature' T_{biv} means the outdoor temperature T_j [°C] declared by the manufacturer for heating at which the declared capacity equals the part load. Below this temperature the declared capacity must be supplemented with electric back up heater capacity in order to meet the part load for heating;

'bin' (with index *j*) means a combination of an outdoor temperature and bin hours as set out in Annex 2, Table 1;

'information display and status indicator' is a continuous function providing information or indicating the status of the equipment on a display, including clocks;

'operation limit temperature' T_{ol} means the outdoor temperature [°C] declared by the manufacturer for heating, below which air conditioner will not be able to deliver any heating capacity. Below this temperature, the declared capacity is equal to zero;

'equivalent active mode hours for heating' H_{HE} means the assumed annual number of hours [h/a] the unit must provide the design load for heating $P_{designh}$ in order to satisfy the reference annual heating demand, as set out in Annex 2, Table 4;

'off-mode power consumption' P_{OFF} means the power consumption of the unit [kW] while in off-mode;

'crankcase heater mode power consumption' P_{CK} means the power consumption of the unit [kW] while in crankcase heater operation mode;

'thermostat-off mode power consumption' P_{TO} means the power consumption of the unit [kW] while in thermostat- off mode;

'standby mode power consumption' P_{SB} means the power consumption of the unit [kW] while in standby mode;

'cycling interval efficiency for heating' COP_{cyc} is the average coefficient of performance over the cycling test interval (compressor switching on and off), calculated as the integrated heating capacity over the interval [kWh] divided by the

integrated electric power input over that same interval;

'reference annual heating demand' Q_H means the reference heating demand, pertaining to a designated heating season, to be used as basis for calculation of seasonal coefficient of performance and calculated as the product of the design load for heating $P_{designh}$ and the seasonal equivalent active mode hours for heating H_{HE};

'reference annual cooling demand' Q_c means the reference cooling demand [kWh/a] to be used as basis for calculation of seasonal energy efficiency ratio *SEER* and calculated as the product of the design load for cooling $P_{designc}$ and the equivalent active mode hours for cooling H_{CE};

'reference design temperature' means the outdoor temperature for either cooling or heating, at which the part load ratio shall be equal to 1, and which varies according the designated cooling or heating season;

'reference design conditions' means the requirements for determination of the reference design temperature, the maximum bivalent temperature and the maximum operation limit temperature, as set out in Annex 2, Table 3;

'equivalent active mode hours for cooling' H_{CE} means the assumed annual number of hours [h/a] the unit must provide the design load for cooling $P_{designc}$ in order to satisfy the reference annual cooling demand, as set out in Annex 2, Table 4;

'declared energy efficiency ratio' $EER_d(T_j)$ means the energy efficiency ratio at a limited number of specified bins *j* with outdoor temperature T_j, as declared by the manufacturer;

'declared coefficient of performance' $COP_d(T_j)$ means the coefficient of performance at a limited number of specified bins *j* with outdoor temperature T_j, as declared by the manufacturer;

'declared capacity' [kW] is the capacity of the vapour compression cycle of the unit for cooling $Pdc(T_j)$ or heating $Pdh(T_j)$, pertaining to an outdoor temperature T_j and indoor temperature *Tin*, as declared by the manufacturer;

'oscillating mechanism' means the capability of the fan to automatically vary the direction of the air flow while the fan is operating;

'cycling interval efficiency for cooling' EER_{cyc} is the average energy efficiency ratio over the cycling test interval (compressor switching on and off), calculated [kWh] as the integrated cooling capacity over the interval divided by the integrated electric power input over that same interval;

'degradation coefficient' is the measure of efficiency loss due to cycling (compressor switching on/off in active mode) established for cooling C_{dc}, heating C_{dh} or chosen as default value 0,25;

'part load ratio' $pl(T_j)$ means the outdoor temperature minus 16°C, divided by the reference design temperature minus 16°C, for either cooling or heating;

'capacity ratio' means the ratio of the total declared cooling or heating capacity of all operating indoor units to the declared cooling or heating capacity of the outdoor unit at standard rating conditions;

'maximum fan flow rate' F means the air flow rate of the comfort fan at its maximum setting, measured in m^3/min at the fan outlet with the oscillating mechanism (if applicable) turned off;

'nominal conditions' means the combination of indoor T_{in} and outdoor temperatures T_j that describe the operating conditions while establishing the sound power level, rated capacity, rated air flow rate, rated energy efficiency ratio EER_{rated} and/or rated coefficient of performance COP_{rated}, as set out in Annex 2, Table 2;

'rated energy efficiency ratio' EER_{rated} means the declared capacity for cooling divided by the rated power input for cooling in kW when using a unit to provide cooling at nominal testing conditions;

'rated coefficient of performance' COP_{rated} means the declared capacity for heating divided by the rated power input for heating in kW when using a unit to provide heating at nominal testing conditions;

'part load' means the cooling load or the heating load at a specific outdoor temperature, calculated as the design load multiplied by the part load ratio;

'rated power input for cooling' P_{ERR} means the electric power input of a unit when providing cooling, measured in kW at standard conditions;

'rated power input for heating' P_{COP} means the electric power input of a unit when providing heating, measured in kW at standard conditions;

'nominal air flow rate' means the air flow rate in m^3/h, measured at the air outlet of indoor and/or (if necessary) outdoor units of air conditioners at standard conditions for cooling or heating, if the product has no cooling function;

'global warming potential' *GWP* means the coefficient that determines how much 1 kilogram of the refrigerant applied in the vapour compression cycle is estimated to contribute to global warming over a 100-year time horizon, expressed in kg CO_2 equivalents;

'cycling interval capacity' (kW) is the average of the declared capacity over the cycling test interval for cooling P_{cycc} or heating P_{cych};

'bin-specific energy efficiency ratio' EER_{bin} (T_j) means the normalized energy efficiency ratio specific for every bin j with outdoor temperature T_j in a season, derived from the part load, declared capacity and declared energy efficiency ratio

$EER_{bin}(T_j)$ for specified bins j and calculated for other bins through inter/extrapolation, when necessary corrected by the correction coefficient;

'bin-specific coefficient of performance' (*COPbin(Tj)*) means the coefficient of performance specific for every bin j with outdoor temperature Tj in a season, derived from the part load, declared capacity and declared coefficient of performance (*COPd(Tj*)) for specified bins (j) and calculated for other bins through inter/extrapolation, when necessary corrected by the degradation coefficient;

'service value' *(SV)* in (m^3/min)/W means the ratio of the maximum fan flow rate (m^3/min) and the fan power input (W);

'electric back-up heater capacity' *elbu(T_j)* is the heating capacity [kW] of a real or assumed electric back-up heater with COP of 1 that supplements the declared capacity for heating *Pdh(T_j)* in case the declared capacity for heating *Pdh(T_j)* is less than the part load for heating *Ph(T_j)* for the outdoor temperature T_j;

'annual electricity consumption for cooling' Q_{CE} means the electricity consumption required to meet the reference annual cooling demand. It is calculated as the reference annual cooling demand divided by the active mode seasonal energy efficiency ratio $SEER_{on}$, and the electricity consumption of the unit for thermostat off-, standby-, off- and crankcase heater-mode during the cooling season;

'off mode' is a condition in which the air conditioner or fan is connected to the mains power source and is not providing any function. Also considered as off mode are conditions providing only an indication of off mode condition, as well as conditions providing only functionalities intended to ensure electromagnetic compatibility;

'standby mode' means a condition where the air conditioner is connected to the mains power source, depends on energy input from the mains power source to work as intended and provides only the following functions, which may persist for an indefinite time: reactivation function, or reactivation function and only an indication of enabled reactivation function, and/or information or status display;

'capacity control' means the ability of the unit to change its capacity by changing the volumetric flow rate. Units are to be indicated as 'fixed' if the unit can not change its volumetric flow rate, 'staged' if the volumetric flow rate is changed or varied in series of not more than two steps, or 'variable' if the volumetric flow rate is changed or varied in series of three or more steps;

'reversible air conditioner' means an air conditioner capable of both cooling and heating;

'sound power level' means the A-weighted sound power level indoors and/or outdoors measured at nominal (standard) conditions for cooling (or heating, if the air conditioner has no cooling function);

‘annual electricity consumption for heating’ Q_{HE} means the electricity consumption required to meet the indicated reference annual heating demand and which pertains to a designated heating season; and is calculated as the reference annual heating demand divided by the active mode seasonal coefficient of performance (SCOPon), and the electricity consumption of the unit for thermostat off-, standby-, off- and crankcase heater-mode during the heating season;

‘design load’ means the declared cooling load $P_{designc}$ and/or declared heating load $P_{designh}$, measured in kW at the reference design temperature:

for cooling mode, $P_{designc}$ is equal to the declared capacity for cooling at the outdoor temperature T_j equal to reference design temperature for cooling $T_{designc}$;

for heating mode, $P_{designh}$ is equal to the part load at the outdoor temperature T_j equal to reference design temperature for heating $T_{designh}$;

‘thermostat-off mode’ means a mode corresponding to the hours with no cooling or heating load whereby the cooling or heating function of the unit is switched on but the unit does not carry it out. This condition is therefore related to outdoor temperatures and not to indoor loads. Cycling on/off in active mode is not considered as thermostat off;

‘crankcase heater operation mode’ means a condition where the unit has activated a heating device in order to avoid the refrigerant migrating to the compressor and to limit the refrigerant concentration in oil at compressor start;

‘thermostat-off mode operating hours’ H_{TO} means the annual number of hours the unit is operating in thermostat-off mode, the value of which depends on the designated season and function;

‘standby mode operating hours’ H_{SB} means the annual number of hours, expressed in [h/a], the unit is operating in standby mode, the value of which depends on the designated season and function;

‘off-mode operating hours’ H_{OFF} means the annual number of hours, expressed in [h/a], the unit is considered to be in off-mode, the value of which depends on the designated season and function;

‘crankcase heater mode operating hours’ H_{CK} means the annual number of hours [h/a] the unit is operating in crankcase heater operation mode, the value of which depends on the designated season and function;

‘fan sound power level’ means the A-weighted sound power level of the comfort fan while providing the maximum fan flow rate, measured at the outlet side in dB(A);

‘fan active mode hours’ H_{CE} means the number of hours [h/a] the fan is assumed to provide the maximum fan flow rate, as described in Annex 2, Table 4;

‘season’ means one of the four sets of operating conditions (one cooling season, two heating seasons: colder/warmer) describing per bin the combination of outdoor temperatures and the number of hours these temperatures occur during season for which the air conditioner is designed;

‘seasonal energy efficiency ratio’ *SEER* is the overall energy efficiency ratio of the air conditioner, representative for the whole cooling season, calculated as the reference annual cooling demand divided by the annual electricity consumption for cooling;

‘active mode seasonal energy efficiency ratio’ (SEERon) means the average energy efficiency ratio of the air conditioner in active mode for the cooling function, constructed from part load ratio and bin-specific energy efficiency ratio (EERbin(Tj)) and weighted by the bin hours the bin conditions occur;

‘seasonal coefficient of performance’ (SCOP) is the overall coefficient of performance of the air conditioner, representative for the whole designated heating season, calculated as the reference annual heating demand divided by the annual electricity consumption for heating;

‘electricity consumption of single and double ducts’ (Q_{SD} and Q_{DD}) means the electricity consumption of single or double duct air conditioners for the cooling and/or heating (whichever mode applies);

‘active mode seasonal coefficient of performance’ $SCOP_{on}$ means the average coefficient of performance of the air conditioner in active mode during the designated heating season, constructed from the part load, electric back up heating capacity (where required) and bin-specific coefficients of performance (*COPbin(Tj)*) and weighted by the bin hours the bin conditions occur;

‘indoor temperature’ T_{in} means the dry bulb indoor air temperature (with the relative humidity indicated by the corresponding wet bulb temperature);

‘outdoor temperature’ T_j means the dry bulb outdoor air temperature (with the relative humidity indicated by the corresponding wet bulb temperature);

‘bin hours’ means the hours per season the outdoor temperature occurs for each bin, as set out in Annex 2, Table 1;

‘reactivation function’ means a function facilitating the activation of other modes, active mode in particular, by remote switch including remote control, internal sensor, timer to a condition providing additional functions, including the main function;

‘function’ means the indication of whether the unit is capable of indoor air cooling and/or heating;

2. Requirements for minimum energy efficiency, maximum power

consumption in off-mode and standby mode and for maximum sound power level

1) One year after this Technical Regulation has come into force single duct and double duct air conditioners shall correspond to the requirements as indicated in Tables 1, 2 and 3 of this Annex, calculated in accordance with Annex 2. Single duct and double duct air conditioners and comfort fans shall fulfil the requirements that apply to standby and off mode as indicated in Table 2 of this Annex. The requirements on minimum energy efficiency and maximum sound power shall relate to the standard conditions and are specified in Annex 2, Table 2.

Table 1

Requirements for minimum energy efficiency

	Double duct air conditioners		Single duct air conditioners	
	EER_{rated}	COP_{rated}	EER_{rated}	COP_{rated}
If *GWP* of refrigerant > 150	2,40	2,36	2,40	1,80
If *GWP* of refrigerant ≤ 150	2,16	2,12	2,16	1,62

Table 2

Requirements for maximum power consumption in off-mode and standby mode for single duct and double duct air conditioners and comfort fans

Off mode	Power consumption of equipment in any off-mode condition shall not exceed 1,00 W.
Standby mode	The power consumption of equipment in any mode providing only a reactivation function, or providing only a reactivation function and a mere indication of enabled reactivation function, shall not exceed 1,00 W.
	The power consumption of equipment in any mode providing only information display or status indicator, or providing only a combination of reactivation function and information display or status indicator, shall not exceed 2,00 W.
Availability of standby and/or off mode	Equipment shall provide off mode and/or standby mode, and/or another condition which does not exceed the applicable power consumption requirements for off mode and/or standby mode, except where use of these functions is inappropriate for the intended use,

Table 3

Requirements for maximum sound power level

Indoor sound power level in dB(A)
65

2) One year after this Technical Regulation has come into force, all air conditioners, except single and double duct air conditioners, shall correspond to minimum energy efficiency and maximum sound power level requirements as indicated in Tables 4 and 5, calculated in accordance with Annex 2. The requirements on energy efficiency shall take into account the reference design conditions specified in Annex 2, Table 3 using the 'Average' heating season where applicable. The requirements on maximum sound power level shall relate to the standard rating conditions specified in Annex 2, Table 2.

Table 4

Requirements for minimum energy efficiency

	SEER	*SCOP* (Average heating season)
If *GWP* of refrigerant > 150	3,60	3,40
If *GWP* of refrigerant ≤ 150	3,24	3,06

Table 5

Requirements for maximum sound power level

Rated capacity ≤ 6 kW		6 < Rated capacity ≤12 kW	
Indoor sound power level in dB(A)	Outdoor sound power level in dB(A)	Indoor sound power level in dB(A)	Outdoor sound power level in dB(A)
60	65	65	70

3) Two years after this Technical Regulation has come into force all air conditioners shall correspond to requirements as indicated in the Table 6, calculated in accordance with Annex 2. The requirements on energy efficiency for air conditioners, excluding single and double duct air conditioners, shall relate to the reference design conditions specified in Annex 2, Table 3 using the 'Average' heating season where applicable. The requirements on energy efficiency for single and double duct air conditioners shall relate to the standard conditions specified in Annex 2, Table 2.

Table 6

Requirements for minimum energy efficiency

	Air conditioners, except single and double duct air conditioners		Double duct air conditioners		Single duct air conditioners	
	SEER	*SCOP* (Average heating season)	EER_{rated}	COP_{rated}	EER_{rated}	COP_{rated}
If *GWP* of refrigerant > 150 for < 6 kW	4,60	3,80	2,60	2,60	2,60	2,04
If *GWP* of refrigerant ≤ 150 for < 6 kW	4,14	3,42	2,34	2,34	2,34	1,84
If *GWP* of refrigerant > 150 for 6-12 kW	4,30	3,80	2,60	2,60	2,60	2,04
If *GWP* of refrigerant ≤ 150 for 6-12 kW	3,87	3,42	2,34	2,34	2,34	1,84

4) Two years after this Technical Regulation has come into force, single duct and double duct air conditioners and comfort fans shall correspond to requirements as indicated in Table 7, calculated in accordance with Annex 2.

Table 7

Requirements for maximum power consumption in off-mode and standby mode

Off mode	Power consumption of equipment in off-mode shall not exceed 0,50 W.
Standby mode	The power consumption of equipment in any mode providing only a reactivation function, or providing only a reactivation function and a mere indication of enabled reactivation function, shall not exceed 0,50 W.
	The power consumption of equipment in any mode providing only information display or status indicator, or providing only a combination of reactivation function and information display or status indicator, shall not exceed 1,00 W.

Availability of standby and/or off mode	Equipment shall provide off mode and/or standby mode, and/or another condition which does not exceed the applicable power consumption requirements for off mode and/or standby mode, except where use of these functions is inappropriate for the intended use,
Power management	When equipment is not providing the main function, or when other energy-using product(s) are not dependent on its functions, equipment shall offer a power management function, or a similar function, that allows after the shortest possible period of time appropriate for its intended use, to switch the equipment automatically into: standby mode; off mode; another condition which does not exceed the applicable power consumption requirements for off mode and/or standby mode when the equipment is connected to the mains power source, unless usage of the mentioned functions is inappropriate for the intended use.

3. Product information requirements

1) One year after this Technical Regulation has come into force, as regards air conditioners and fans, the information in accordance with Annex 2 shall be provided on:

the technical documentation of the product;

free access websites of manufacturers of air conditioners and comfort fans.

2) The manufacturer of air conditioners and comfort fans shall provide laboratories performing market surveillance checks, upon request, the necessary information on the setting of the unit as applied for the establishment of declared capacities, *SEER/EER, SCOP/COP* values and service values, and provide contact information for obtaining such information.

3) Product information provision requirements, referred to in Table 8, shall be relevant to all air conditioners, except double duct and single duct air conditioners.

Table 8

Product information provision requirements
(the number of decimals in the box indicates the precision of reporting)
Identifiers of the model(s) to which the information relates to:

Function (indicate if present)				If function includes heating: indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'			
cooling	Y/N			'Average' (mandatory)	Y/N		
heating	Y/N			'Warmer' (if designated)	Y/N		
				'Colder' (if designated)	Y/N		
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Design load				Seasonal efficiency			
Cooling	$P_{designc}$	x,x	kW	Cooling	*SEER*	x,x	—
Heating/Average	$P_{designh}$	x,x	kW	Heating/Average	*SCOP/A*	x,x	—
Heating/Warmer	$P_{designh}$	x,x	kW	Heating/Warmer	*SCOP/W*	x,x	—
Heating/Colder	$P_{designh}$	x,x	kW	Heating/Colder	*SCOP/C*	x,x	—
Declared capacity for cooling, at indoor temperature 27(19)°C and outdoor temperature T_j				Declared energy efficiency ratio for cooling, at indoor temperature 27(19)°C and outdoor temperature T_j			
T_j = 35 °C	P_{dc}	x,x	kW	T_j = 35 °C	EER_d	x,x	—
T_j = 30 °C	P_{dc}	x,x	kW	T_j = 30 °C	EER_d	x,x	—
T_j = 25 °C	P_{dc}	x,x	kW	T_j = 25 °C	EER_d	x,x	—
T_j = 20 °C	P_{dc}	x,x	kW	T_j = 20 °C	EER_d	x,x	—
Declared capacity for heating at 'Average' season, at indoor temperature 20°C and outdoor temperature T_j				Declared coefficient of performance at 'Average' season, at indoor temperature 20°C and outdoor temperature T_j			
T_j = - 7 °C	P_{dh}	x,x	kW	T_j = - 7 °C	COP_d	x,x	—
T_j = 2 °C	P_{dh}	x,x	kW	T_j = 2 °C	COP_d	x,x	—
T_j = 7 °C	P_{dh}	x,x	kW	T_j = 7 °C	COP_d	x,x	—
T_j = 12 °C	P_{dh}	x,x	kW	T_j = 12 °C	COP_d	x,x	—
T_j = bivalent temperature	P_{dh}	x,x	kW	T_j = bivalent temperature	COP_d	x,x	—
T_j = operating limit	P_{dh}	x,x	kW	T_j = operating limit	COP_d	x,x	—
Declared capacity for heating at 'Warmer' season, at indoor temperature 20°C and outdoor temperature T_j				Declared coefficient of performance at 'Warmer' season, at indoor temperature 20°C and outdoor temperature T_j			
T_j = 2 °C	P_{dh}	x,x	kW	T_j = 2 °C	COP_d	x,x	—
T_j = 7 °C	P_{dh}	x,x	kW	T_j = 7 °C	COP_d	x,x	—
T_j = 12 °C	P_{dh}	x,x	kW	T_j = 12 °C	COP_d	x,x	—
T_j = bivalent temperature	P_{dh}	x,x	kW	T_j= bivalent temperature	COP_d	x,x	—
T_j = operating limit	P_{dh}	x,x	kW	T_j = operating limit	COP_d	x,x	—
Declared capacity for heating at 'Colder' season, at indoor temperature 20°C and outdoor temperature T_j				Declared coefficient of performance at 'Colder' season, at indoor temperature 20°C and outdoor temperature T_j			
T_j = - 7 °C	P_{dh}	x,x	kW	T_j = - 7 °C	COP_d	x,x	—
T_j = 2 °C	P_{dh}	x,x	kW	T_j = 2 °C	COP_d	x,x	—
T_j = 7 °C	P_{dh}	x,x	kW	T_j = 7 °C	COP_d	x,x	—
T_j = 12 °C	P_{dh}	x,x	kW	T_j = 12 °C	COP_d	x,x	—
T_j = bivalent temperature	P_{dh}	x,x	kW	T_j = bivalent temperature	COP_d	x,x	—
T_j = operating limit	P_{dh}	x,x	kW	T_j = operating limit	COP_d	x,x	—

Function (indicate if present)				If function includes heating: indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'			
cooling	Y/N			'Average' (mandatory)	Y/N		
heating	Y/N			'Warmer' (if designated)	Y/N		
				'Colder' (if designated)	Y/N		
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
T_j = - 15 °C	P_{dh}	x,x	kW	T_j = - 15 °C	COP_d	x,x	—
Bivalent temperature				Operating limit temperature			
Heating/Average	T_{biv}	x	°C	Heating/Average	T_{ol}	x	°C
Heating /Average	T_{biv}	x	°C	Heating /Average	T_{ol}	x	°C
Heating /Colder	T_{biv}	x	°C	Heating /Colder	T_{ol}	x	°C
Cycling interval capacity				Cycling interval efficiency			
for cooling	P_{cycc}	x,x	kW	for cooling	EER_{cyc}	x,x	—
for heating	P_{cych}	x,x	kW	for heating	COP_{cyc}	x,x	—
Degradation co-efficient cooling	C_{dc}	x,x	—	Degradation co-efficient cooling	C_{dh}	x,x	—
Electric power input in power modes other than 'active mode'				Annual electricity consumption			
off mode	P_{OFF}	x,x	kW	Cooling	Q_{CE}	x	kWh/a
standby mode	P_{SB}	x,x	kW	Heating/Average	Q_{HE}	x	kWh/a
thermostat-off mode	P_{TO}	x,x	kW	Heating /Average	Q_{HE}	x	kWh/a
crankcase heater mode	P_{CK}	x,x	kW	Heating/Colder	Q_{HE}	x	kWh/a
Capacity control (indicate one of three options)				Other items			
Fixed	Y/N			Sound power level (indoor/outdoor)	L_{WA}	x,x/x, x	dB(A)
Staged	Y/N			Global warming potential	GWP	x	kg CO_2 eq.
Variable	Y/N			Rated air flow (indoor/outdoor)	—	x/x	m^3/h
Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative.						

For staged capacity units, two values divided by a slash ('/') will be declared in each box in the section 'Declared capacity of the unit' and 'declared *EER/COP* of the unit'.

If starting degradation coefficient value C_d = 0,25 then cycling tests are not required. Otherwise resulting value of either the heating or cooling cycling test is required.

Depending on the functionality of the equipment, the manufacturer shall supply the necessary and sufficient information in the technical documentation of the product in accordance with Table 8. For units with capacity control marked 'staged', two values for the highest and lowest levels, noted 'hi/lo' divided by a slash ('/') will be declared in each box under 'Declared capacity'.

4) Information provision requirements for single duct and double duct air conditioners.

Single duct air conditioners shall be named ‘local air conditioning systems’ in packaging, product documentation and in any advertisement material, whether electronic or in paper

Manufacturer shall provide information as detailed in Table 9.

Table 9

Product information requirements

Information to identify the product model(s) to which the information relates to (fill in as necessary)			
Description	Symbol	Value	Unit
Rated capacity for cooling	P_{rated} for cooling	*[x,x]*	kW
Rated capacity for heating	P_{rated} for heating	*[x,x]*	kW
Rated power input for cooling	P_{EER}	*[x,x]*	kW
Rated power input for heating	P_{COP}	*[x,x]*	kW
Declared energy efficiency ratio	EER_d	*[x,x]*	—
Declared coefficient of performance	COP_d	*[x,x]*	—
Power consumption in thermostat-off mode	P_{TO}	*[x,x]*	W
Power consumption in standby mode	P_{SB}	*[x,x]*	W
Electricity consumption of single and double duct appliances (indicate for cooling and heating separately)	*DD:* Q_{DD} *SD:* Q_{SD}	*DD: [x] SD: [x,x]*	*DD:* kWh/a SD: kWh/h
Sound power level	L_{WA}	*[x]*	dB(A)
Global warming potential	*GWP*	*[x]*	$kgCO_2$-eq.
Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative.		

5) Information provision requirements for comfort fans.

Manufacturer shall provide information on comfort fans as detailed in Table 10.

Table 10

Information provision requirements

Information to identify the product model(s) to which the information relates to (fill in as necessary)			
Description	Symbol	Value	Unit
Maximum fan flow rate	*F*	*[x,x]*	m^3/min
Fan power input	*P*	*[x,x]*	W
Service value	*SV*	*[x,x]*	(m^3/min)/W
Power consumption in standby mode	P_{SB}	*[x,x]*	W
Fan sound power level	L_{WA}	*[x]*	dB(A)
Maximum air velocity	*c*	*[x,x]*	m/s
Measurement standard for service value	[state here the reference to measurement standard used]		
Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative.		

Annex 2
to the Technical Regulation

Measurements and calculations

1. For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using national standards that correspond to European harmonised standards, or other reliable, accurate and reproducible method, which takes into account the generally recognised state-of-the-art methods, and whose results are deemed to be of low uncertainty. They shall fulfil all of the following technical parameters.

2. The determination of the seasonal energy consumption and efficiency for seasonal energy efficiency ratio *SEER* and seasonal coefficient of performance *SCOP* shall take into account:

seasonal conditions in accordance with Table 1 in this Annex;

reference design conditions, as defined in Table 3 in this Annex;

energy consumption for all relevant modes of operation, using time periods as defined in Table 4 in this Annex;

effects of the degradation of the energy efficiency caused by on/off cycling (if applicable) depending on the type of control of the cooling and/or heating capacity;

corrections on the seasonal coefficients of performance in conditions where the heating load can not be met by the heating capacity;

the contribution of a back-up heater (if applicable) in the calculation of the seasonal energy efficiency ratio of a unit in heating mode.

3. Where the information relating to a specific model, being a combination of indoor and outdoor units, has been obtained by calculation on the basis of design, and/or extrapolation from other combinations, the documentation should include details of such calculations and/or extrapolations, and of tests undertaken to verify the accuracy of the calculations undertaken (including details of the mathematical model for calculating performance of such combinations, and of measurements taken to verify this model).

4. The rated energy efficiency ratio (EER_{rated}) and, when necessary, rated coefficient of performance (COP_{rated}) for single and double duct air conditioners shall be established at the standard rating conditions as defined in Table 2 of this Annex.

5. The calculation of seasonal electricity consumption for cooling and/or heating shall take into account electric energy consumption of all relevant modes of operation, as defined in Table 3 of this Annex, using operational hours, as defined in Table 4 of this Annex.

6. The comfort fan efficiency shall be determined on the basis of the nominal air flow rate of the unit divided by the nominal electric power input of the unit.

Table 1

Cooling and heating season bins (j = bin index, T_j = outdoor temperature, h_j = hours per annum per bin) where 'db' = dry bulb temperature

COOLING SEASON				HEATING SEASON				
j #	T_j °C db	h_j , h/annum		j #	T_j °C db	h_j, h/annum		
						Average	Warmer	Colder
1	17	205		1-8	-30 to -23	0	0	0
2	18	227		9	– 22	0	0	1
3	19	225		10	-21	0	0	6
4	20	225		11	-20	0	0	13
5	21	216		12	-19	0	0	17
6	22	215		13	-18	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
10	26	158		17	-14	0	0	35
11	27	137		18	-13	0	0	52
12	28	109		19	-12	0	0	37
13	29	88		20	-11	0	0	41
14	30	63		21	-10	1	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
18	34	17		25	-6	27	0	169
19	35	13		26	-5	68	0	195
20	36	9		27	-4	91	0	278
21	37	4		28	-3	89	0	306
22	38	3		29	-2	165	0	454
23	39	1		30	-1	173	0	385
24	40	0		31	0	240	0	490
				32	1	280	0	533
				33	2	320	3	380
				34	3	357	22	228
				35	4	356	63	261
				36	5	303	63	279
				37	6	330	175	229
				38	7	326	162	269
				39	8	348	259	233
				40	9	335	360	230
				41	10	315	428	243
				42	11	215	430	191
				43	12	169	503	146
				44	13	151	444	150
				45	14	105	384	97
				46	15	74	294	61
Total hours:		2 602		Total hours:		4 910	3 590	6 446

Table 2

Standard rating conditions, temperatures in dry bulb air temperature (wet bulb temperature indicated in brackets)

Appliance	Function	Indoor air temperature (°C)	Outdoor air temperature (°C)
Air conditioners, except single and double duct air conditioners	cooling	27 (19)	35 (24)
	heating	20 (max. 15)	7(6)
Single duct air conditioners	cooling	35 (24)	35 (24) *
	heating	20 (12)	20 (12) *

*In case of single duct air conditioners with the condenser (evaporator) that is not supplied with outdoor air, but indoor air when cooling (heating).

Table 3

Reference design conditions, temperatures in 'dry bulb' air temperature ('wet bulb temperature' indicated in brackets)

Function/season	Indoor air temperature (°C)	Outdoor air temperature (°C)	Bivalent temperature (°C)	Operating limit temperature (°C)
	T_{in}	$T_{designc}$/ $T_{designh}$	T_{biv}	T_{ol}
Cooling	27 (19)	$T_{designc}$ = 35 (24)	-	-
Heating/Average	20 (15)	$T_{designc}$= -10 (-11)	max: 2	max:-7
Heating/Warmer		$T_{designc}$= 2 (1)	max: 7	max: 2
Heating/Colder		$T_{designc}$= -22 (-23)	max: -7	max: -15

Table 4

Operational hours depending on the type of appliance per functional mode to be used for calculation of electricity consumption

Type of appliance/functionality (if applicable)		Dimensions	Heating season	Active mode	Thermostat-off mode	Stand by mode	Off mode	Crankcase heater mode
				cooling: H_{CE} heating: H_{HE}	H_{TO}	H_{SB}	H_{OFF}	H_{CK}
Air conditioners, except single and double duct air conditioners								
Cooling mode, if appliance offers cooling only		h/annum		350	221	2 142	5 088	7 760
Cooling and heating modes, if appliance offers both functions	Cooling mode	h/annum		350	221	2 142	0	2 672
	Heating mode	h/annum	Average	1 400	179	0	0	179
			Warmer	1 400	755	0	0	755
			Colder	2 100	131	0	0	131
Heating mode, if appliance offers heating function only		h/annum	Average	1 400	179	0	3 672	3 851
			Warmer	1 400	755	0	4 345	4 476
			Colder	2 100	131	0	2 189	2 944
Double duct air conditioner								
Cooling mode, if appliance offers cooling only		h/60 min		1	-	-	-	-
Cooling and heating modes, if appliance offers both functions	Cooling mode	h/60 min		1	-	-	-	-
	Heating mode	h/60 min		1	-	-	-	-
Heating mode, if appliance has heating function only		h/60 min		1	-	-	-	-
Single duct air conditioner								
Cooling mode		h/60 min		1	-	-	-	-
Heating mode		h/60 min		1	-	-	-	-

Annex 3
to the Technical Regulation

REQUIREMENTS
to verification during state market surveillance

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

2. When verifying compliance of air conditioners and comfort fans with the requirements of this Technical Regulation, state market surveillance authorities shall apply the following procedure:

1) one appliance per model shall be tested;

2) a model of the appliance shall be considered to comply with the requirements of the Technical Regulation if:

the values given in the technical documentation and, where applicable, the values used to calculate those values, are not more favourable for the manufacturer or importer than the results of the corresponding measurements;

the declared values meet any requirements laid down in the Technical Regulation, and the necessary product information provided by the manufacturer or importer does not contain values that are more favourable for the manufacturer or importer than the indicated values;

when state market surveillance authorities test the appliance, the indicated values (the values of the relevant parameters as measured during the tests and the values calculated from these measurements) shall comply with the respective verification tolerances as indicated in the table in this Annex.

3. If the results referred to in the first and the second indents of point 2, subpoint 2, hereof are not achieved, the appliance model shall be considered not to comply with the requirements of the Technical Regulation.

4. If the result referred to in the fourth indent of point 2, subpoint 2, hereof is not achieved, the market surveillance authorities shall randomly select three additional units of the same model for testing.

5. The model shall be considered to comply with the requirements if, for these three appliances, the arithmetical mean is within the verification tolerances indicated in the Table in this Annex.

6. If the result referred to in point 5 is not achieved, the appliance model shall be considered not to comply with the requirements of the Technical Regulation.

State market surveillance authorities shall use the measurement and calculation methods set out in Annex 2.

State market surveillance authorities shall only apply the verification tolerances that are set out in the Table below and shall only use the procedure described in points 2 to 6 of this Annex. No other tolerances, such as those set out in national standards that are identical to the European harmonised standards or in any other measurement method, shall be applied.

Table

Verification tolerances

Parameters	**Verification tolerances**
Seasonal energy efficiency ratio ($SEER$)	The determined value shall not be less than the declared value minus 8 %
Seasonal coefficient of performance ($SCOP$)	The determined value shall not be less than the declared value minus 8 %
Off mode power demand	The determined value shall not exceed the declared value by more than 10%
Standby mode power demand	The determined value shall not exceed the declared value by more than 10%
Rated energy efficiency ratio (EER_{rated})	The determined value shall not be less than the declared value minus 10 %
Rated coefficient of performance (COP_{rated})	The determined value shall not be less than the declared value minus 10 %
Sound power level	The determined value shall not exceed the declared value by more than 2 dB(A).

Annex 4
to the Technical Regulation

INDICATIVE BENCHMARKS

Indicative benchmarks for the best available technology on the market for air conditioners are laid down in the table to this Annex.

Table

Benchmarks for air conditioners

All air conditioners, except single and double duct air conditioners		Single duct air conditioners		Double duct air conditioners	
SEER	*SCOP*	*EER*	*COP*	*EER*	*COP*
8,50	5,10	3,00	3,15	3,15	2,60

Benchmark for the level of *GWP* of the refrigerant used in the air conditioner is $GWP \leq 20$.

The *EER* value is based on energy efficiency of evaporatively cooled single duct air conditioners.

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Annex 5
to the Technical Regulation

CORRELATION TABLE

between the provisions of the Commission Regulation (EU) No. 206/2012 of 6 March 2012 supplementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air conditioners and comfort fans, and of the Technical Regulation on Ecodesign Requirements for Air Conditioners and Comfort Fans

Provisions of the Commission Regulation (EU)	**Provisions of the Technical Regulation**
Point 1 of Article 1	point 1
Point 2 of Article 1	point 2
First indent of Article 2	point 3
Point 1 of Article 2	fifth indent of point 3
Point 2 of Article 2	fourth indent of point 3
Point 3 of Article 2	seventh indent of point 3
Point 4 of Article 2	sixth indent of point 3
Point 5 of Article 2	second indent of point 3
Point 6 of Article 2	third indent of point 3
Article 3	point 4
Article 4	point 5
Article 5	point 6
Article 6	point 7
Article 7	-
Article 8	-
Annex I	Annex 1
Annex II	Annex 2
Annex III	Annex 3
Annex IV	Annex 4