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ANNEXES 1 to 9

**ANNEXES**

**to the**

**Commission Delegated Regulation**

**supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of air-to-air air conditioners, air-to-air heat pumps and comfort fans**

**repealing**
**Regulation (EU) No 626/2011 with regard to energy labelling of air conditioners**

*ANNEX I*

**Definitions**

The following definitions shall apply:

**General definitions**

(1) ‘quick response (QR) code’ means a matrix barcode included on the energy label of a product model that links to that model’s information in the public part of the product database;

(2) ‘seasonal space cooling energy efficiency’ ($\eta_{s,c}$) means the ratio between the reference annual cooling demand pertaining to the cooling season covered by an air-to-air air conditioner, and the annual energy consumption for cooling, corrected by contributions accounting for the temperature control, expressed in percentage (%);

(3) ‘season’ means a set of ambient conditions, designated as either a cooling season or a heating season, describing per bin the combination of outdoor temperatures and bin hours pertaining to that season;

(4) ‘bin’ (j) means a combination of an outdoor temperature ($T_j$) and bin hours ($h_j$) as set out in Annex IV, Table 11 for cooling and Table 12 for heating;

(5) ‘bin hours’ ($h_j$) means the hours per season the outdoor temperature occurs for each bin, as set out in Annex IV, Table 11 for cooling and Table 12 for heating, expressed in hours (h);

(6) ‘portable air-to-air air conditioner’ means an air-to-air air conditioner designed to function while not fastened in a specific location and not incorporated in the building structure or building finishing;

(7) ‘fixed air-to-air air conditioner’ means and air-to-air air conditioner designed to be used while fastened in a specific location and possibly incorporated in the building structure or building finishing;

(8) ‘double duct air conditioner’ means an air-to-air air conditioner in which, during cooling, the condenser intake air is introduced from the outdoor environment to the unit by a duct and rejected to the outdoor environment by a second duct, and which is placed wholly inside the space to be conditioned, near a wall;

(9) ‘single duct air conditioner’ means an air-to-air air conditioner in which, during cooling, the condenser intake air is introduced from the space containing the unit and discharged outside this space;

(10) ‘seasonal space heating energy efficiency’ ($\eta_{s,h}$) means the ratio between the reference annual heating demand pertaining to the heating season covered by an air-to-air heat pump, and the annual energy consumption for heating, corrected by contributions accounting for the temperature control, expressed in percentage (%);

(11) ‘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 SCOP and calculated as the product of the design load for heating ($P_{designh}$) and the equivalent active mode hours for heating ($H_{HE}$), expressed in kilowatt hour per annum (kWh/a);

(12) ‘seasonal coefficient of performance’ (SCOP) means the overall coefficient of performance of an air-to-air heat pump, representative of the heating season,

calculated as the reference annual heating demand ($Q_H$) divided by the annual energy consumption for heating ($Q_{HE}$);

(13) 'annual energy consumption for heating' ($Q_{HE}$) means the energy consumption required to meet the reference annual heating demand pertaining to a designated heating season, and is calculated as the reference annual heating demand divided by the active mode seasonal coefficient of performance ($SCOP_{on}$) and the electricity consumption of the unit for thermostat-off, standby, off and crankcase heater mode during the heating season, expressed in kilowatt hour (kWh);

(14) 'active mode seasonal coefficient of performance' ($SCOP_{on}$) means the average coefficient of performance of the unit in active mode for the designated heating season, constructed from the part load, supplementary capacity for heating (where required) and bin-specific coefficients of performance ($COP_{bin}(T_j)$) and weighted by the bin hours the bin condition occurs;

(15) 'equivalent active mode hours for heating' ($H_{HE}$) means the assumed annual number of hours the unit must provide the design load for heating ($P_{designh}$) to satisfy the reference annual heating demand, as set out in Annex IV, Table 5, expressed in hours per annum (h/a);

(16) '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 is not operational. Cycling in active mode is not considered as thermostat-off mode;

(17) 'standby mode' means a condition where the unit 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;

(18) 'reactivation function' means a function facilitating the activation of other modes, including active mode, by remote switch including remote control, internal sensor, timer to a condition providing additional functions, including the main function;

(19) 'information or status display' is a continuous function providing information or indicating the status of the equipment on a display, including clocks;

(20) 'off mode' is a condition in which the air-to-air air conditioner or comfort 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 pursuant to Directive 2004/108/EC of the European Parliament and of the Council[1];

(21) 'crankcase heater mode' means a condition where the unit has activated a heating device to avoid the refrigerant migrating to the compressor to limit the refrigerant concentration in oil at compressor start;

(22) 'supplementary heater' means a heater that generates heat in case the heat load is greater than the declared capacity of the heat pump, using the Joule effect in electric heating elements;

[1] Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC (OJ L 390, 31.12.2004, p. 24).

(23) ‘conversion coefficient’ (CC) means a coefficient reflecting the estimated 47,6 % average EU generation efficiency, as established in Annex IV of Directive 2012/27/EU of the European Parliament and of the Council[2]. The value of the conversion coefficient shall be CC = 2,1;

(24) ‘networked standby’ means a condition in which the equipment is able to resume a function by way of a remotely initiated trigger from a network connection;

(25) ‘network’ means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);

(26) ‘standby mode power consumption’ ($P_{SB}$) means the power consumption of the unit while in standby mode, expressed in kilowatt (kW);

(27) ‘thermostat-off mode operating hours’ ($H_{TO}$) means the annual number of hours the unit is considered to be in thermostat-off mode, the value depends on the designated season and function, expressed in hours per annum (h/a);

(28) ‘thermostat-off mode power consumption’ ($P_{TO}$) means the power consumption of the unit while in thermostat- off mode, expressed in kilowatt (kW);

(29) ‘standby mode operating hours’ ($H_{SB}$) means the annual number of hours the unit is considered to be in standby mode, the value of which depends on the designated season and function, expressed in hours per annum (h/a);

(30) ‘degradation coefficient’ means a factor taking into account the efficiency loss due to cycling (compressor switching on/off in active mode) during cooling (Cdc) or heating (Cdh), equal to 0,25;

(31) ‘on-off unit’ means an air-to-air air conditioner or an air to air heat pump that has a fixed capacity control;

(32) ‘inverter unit’ means an air-to-air air conditioner or an air to air heat pump that has a staged or variable capacity control;

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

(34) ‘part load for heating’ ($P_h(T_j)$) means the heating load at a specific outdoor temperature, calculated as the design heating load multiplied by the part load ratio, expressed in kilowatt (kW);

(35) ‘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;

(36) ‘reference design temperature’ means the outdoor temperature for cooling ($T_{designc}$) or heating ($T_{designh}$) as described in Annex IV, Table 6, at which the part load ratio is equal to 1 and which varies according to the cooling or heating season, expressed in degrees Celsius (°C);

[2] Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (OJ L 315, 14.11.2012, p. 1).

(37) ‘marketed’ is placed on the market specifically for the mentioned operating condition or application, as evidenced by the technical documentation, information on the packaging and any advertising or marketing materials;

(38) ‘crankcase heater mode operating hours’ ($H_{CK}$) means the annual number of hours the unit is considered to be in crankcase heater mode, the value of which depends on the designated season and function, expressed in hours per annum (h/a);

(39) ‘crankcase heater mode power consumption’ ($P_{CK}$) means the power consumption of the unit while in crankcase heater mode, expressed in kilowatt (kW);

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

(41) ‘off-mode power consumption’ ($P_{OFF}$) means the power consumption of the unit while in off-mode, expressed in kilowatt (kW);

(42) ‘display mechanism’ means any screen, including tactile screen, or other visual technology used for displaying internet content to users;

(43) ‘nested display’ means visual interface where an image or data set is accessed by a mouse click, mouse roll-over or tactile screen expansion of another image or data set;

(44) ‘tactile screen’ means a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;

(45) ‘alternative text’ means text provided as an alternative to a graphic allowing information to be presented in non- graphical form where display devices cannot render the graphic or as an aid to accessibility such as input to voice synthesis applications.

**Definitions related to fixed air-to-air air conditioners and fixed air-to-air heat pumps**

(46) ‘seasonal energy efficiency ratio’ (SEER) is the overall energy efficiency ratio of the air-to-air air conditioner, representative of the cooling season, calculated as the reference annual cooling demand ($Q_C$) divided by the annual energy consumption for cooling ($Q_{CE}$);

(47) ‘reference annual cooling demand’ ($Q_C$) means the reference cooling demand pertaining to a designated cooling season, to be used as basis for calculation of SEER and calculated as the product of the design load for cooling ($P_{designc}$) and the equivalent active mode hours for cooling ($H_{CE}$), expressed in kilowatt hours per annum (kWh/a);

(48) ‘design load’ ($P_{design}$) means the space cooling ($P_{designc}$) or the space heating ($P_{designh}$) load declared by the manufacturer at $T_{designc}$ and $T_{designh}$ conditions respectively, expressed in kilowatt hours (kW);

(49) ‘equivalent active mode hours for cooling’ ($H_{CE}$) means the assumed annual number of hours the unit must provide the design load for cooling ($P_{designc}$) to satisfy the reference annual cooling demand, as set out in Annex IV, Table 5, expressed in hours per annum (h/a);

(50) ‘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;

(51) ‘annual energy consumption for cooling’ ($Q_{CE}$) means the energy consumption required to meet the reference annual cooling demand and 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 the thermostat-off mode, standby, off and crankcase heater mode during the heating season, expressed in kilowatt (kWh);

(52) ‘active mode seasonal energy efficiency ratio’ ($SEER_{on}$) means the average energy efficiency ratio of the unit in active mode for the cooling function, constructed from part load for cooling and bin-specific energy efficiency ratio's ($EER_{bin}(T_j)$) and weighted by the bin hours the bin condition occurs;

(53) ‘part load for cooling’ ($P_c(T_j)$) means the cooling load at a specific outdoor temperature, calculated as the design cooling load multiplied by the part load ratio, expressed in kilowatt (kW);

(54) ‘bin-specific energy efficiency ratio’ ($EER_{bin}(T_j)$) means the energy efficiency ratio specific for every bin j with outdoor temperature $T_j$ in a season, derived from the part load for cooling, the declared capacity and declared energy efficiency ratio ($EER_d(T_j)$) for specified bins (j) and calculated for other bins through inter/extrapolation, when necessary corrected by the degradation coefficient;

(55) ‘declared energy efficiency ratio’ ($EER_d(T_j)$) means the energy efficiency ratio at a limited number of specified bins (j) with outdoor temperature ($T_j$);

(56) ‘supplementary capacity for heating’ ($elbu(T_j)$) is the heat output of a real or assumed supplementary heater with COP of 1 that supplements the declared capacity for heating ($P_{dh}(T_j)$) in order to meet the part load for heating ($P_h(T_j)$) in case $P_{dh}(_{Tj})$ is less than $P_h(T_j)$ for the outdoor temperature ($T_j$), expressed in kilowatt (kW);

(57) ‘bin-specific coefficient of performance’ ($COP_{bin}(T_j)$) means the coefficient of performance specific for every bin j with outdoor temperature $T_j$ in a season, derived from the part load, declared capacity and declared coefficient of performance ($COP_d(T_j)$) for specified bins (j) and calculated for other bins through inter/extrapolation, when necessary corrected by the degradation coefficient;

(58) ‘declared coefficient of performance’ ($COP_d(T_j)$) means the coefficient of performance at a limited number of specified bins (j) with outdoor temperature ($T_j$);

(59) ‘reference design conditions’ means the combination of requirements for the reference design temperature, the maximum bivalent temperature and the maximum operation limit temperature, as set out in Annex IV, Table 6;

(60) ‘bivalent temperature’ ($T_{biv}$) means the outdoor temperature ($T_j$) declared by the manufacturer at which the declared heating capacity equals the part load for heating and below which the declared capacity must be supplemented with electric supplementary heater capacity in order to meet the part load for heating, expressed in degrees Celsius (°C);

(61) ‘operation limit temperature’ ($T_{ol}$) means the outdoor temperature declared by the manufacturer, below which the air-to-air heat pump will not be able to deliver any heating capacity and the declared capacity is equal to zero, expressed in degrees Celsius (°C);

(62) ‘capacity ratio’ (CR) means the part load ratio for heating ($P_h(T_j)$) divided by the declared heating capacity ($P_{dh}(T_j)$) or the part load for cooling ($P_c(T_j)$) divided by the declared cooling capacity ($P_{dc}(T_j)$);

**Definitions related to portable air-to-air air conditioners and portable air-to-air heat pumps**

(63) ‘maximum supplementary capacity for heating’ (elbu_max) means the maximum heating capacity of portable air-to-air heat pumps when the vapour compression cycle has been switched off. The maximum supplementary heater capacity (elbu_max) should be at least equal to elbu($T_{designh}$);

(64) ‘supplementary capacity for heating’ (elbu($T_j$)) is the heat output of the real supplementary heater with $COP_d$ equal to 1 that supplements the declared capacity for heating ($P_{dh}(T_j)$) in order to meet the part load for heating ($P_h(T_j)$) in case $P_{dh}(T_j)$ is less than $P_h(T_j)$ for the outdoor temperature ($T_j$), expressed in kilowatt (kW);

(65) ‘seasonal energy efficiency ratio’ (SEER) means the overall energy efficiency ratio of the portable air-to-air air conditioner, representative of the cooling season, calculated as the annual cooling energy supplied by the unit divided by the annual energy consumption for cooling;

(66) ‘supplied annual cooling energy’ ($Q_C$) means the cooling energy supplied by the unit during a designated cooling season, to be used as basis for calculation of SEER, expressed in kilowatt (kW);

(67) ‘annual energy consumption for cooling’ ($Q_{CE}$) means the energy consumption required to generate the supplied annual cooling energy and is calculated as the supplied annual cooling energy divided by the active mode seasonal energy efficiency ratio ($SEER_{on}$) and the electricity consumption of the unit for the thermostat-off mode and standby during the heating season, expressed in kilowatt hour (kWh);

(68) ‘active mode seasonal energy efficiency ratio’ ($SEER_{on}$) means the average energy efficiency ratio of the unit in active mode for the cooling function, constructed from the corrected part load for cooling and bin-specific energy efficiency ratio's ($EER_{bin}(T_j)$) and weighted by the bin hours the bin condition occurs;

(69) ‘corrected part load for cooling’ ($P_{c\_corr}$) means the building load curve ($BL(T_j)$) at a specific outdoor temperature below the equilibrium temperature and the corrected capacity ($P_{dc\_corr}(T_j)$) above the equilibrium temperature, expressed in kilowatt (kW);

(70) ‘building load curve’ ($BL(T_j)$) means the rated capacity multiplied with the outdoor temperature minus 23 °C divided by 35 °C minus 23 °C;

(71) ‘equilibrium temperature’ ($T_{eq}$) means the temperature at which the building load curve ($BL(T_j)$) and the corrected declared capacity ($P_{dc\_corr}(T_j)$) intersect, expressed in degrees Celsius (°C);

(72) ‘corrected declared capacity for cooling’ ($P_{dc\_corr}(T_j)$) means the capacity of the vapour compression cycle of the unit for cooling corrected for infiltration, expressed in kilowatt (kW);

(73) ‘bin-specific energy efficiency ratio’ ($EER_{bin}(T_j)$) means the energy efficiency ratio specific for every bin j with outdoor temperature $T_j$ in a season, derived from the declared energy efficiency ratio ($EER_d(T_j)$) for specific bins (j), when necessary corrected for on/off cycling, and calculated for other bins through inter/extrapolation;

(74) ‘declared energy efficiency ratio’ ($EER_d(T_j)$) means the energy efficiency ratio at a limited number of specified bins (j) with outdoor temperature ($T_j$) calculated as the corrected declared capacity for cooling divided by the rated power input for cooling;

(75) ‘capacity ratio’ (CR) means the part load ratio for heating ($P_h(T_j)$) for double duct heat pumps divided by the declared heating capacity ($P_{dh}(T_j)$) and for single duct heat pumps divided by the corrected declared capacity for heating ($P_{dh\_corr}(T_j)$) or the corrected capacity for cooling ($P_{dc\_corr}(T_j)$) divided by the building load curve ($BL(T_j)$ below or equal to the equilibrium temperature (Teq) and 1 above the equilibrium temperature;

(76) ‘corrected declared capacity for heating’ ($P_{dh\_corr}(Tj)$) means the capacity of the vapour compression cycle of a portable single duct heat pump corrected for infiltration, expressed in kilowatt (kW);

(77) ‘design load for heating’ ($P_{designh}$) means the load declared by the manufacturer at $T_{designc}$ and $T_{designh}$ conditions respectively, expressed in kilowatt hours (kW);

(78) ‘bin-specific coefficient of performance’ ($COP_{bin}(T_j)$) means the coefficient of performance specific for every bin j with outdoor temperature $T_j$ in a season, derived from the declared coefficient of performance ($COP_d(T_j)$) for specific bins (j), when necessary corrected for on/off cycling, and calculated for other bins through inter/extrapolation;

(79) ‘declared coefficient of performance’ ($COP_d(T_j)$) means the energy efficiency ratio at a limited number of specified bins (j) with outdoor temperature ($T_j$) for portable double heat pumps calculated as the heating capacity divided by the rated power input for cooling; for portable single heat pumps calculated as the corrected declared capacity for heating divided by the rated power input for heating;

(80) ‘reference design conditions’ means the combination of requirements for the reference design temperature and the maximum switch temperature heat pump off $T_{hp,off}$, as set out in Annex IV, Table 6;

(81) ‘switch temperature heat pump off’ ($T_{hp,off}$) means the temperature below which the vapour compression cycle is switched off and heat is only provided by the supplementary heater;

**Definitions related to comfort fans**

(82) ‘service value’ (SV) means the ratio of the maximum fan flow rate and the fan power input, expressed in cub meters per minute per watt ($m^3$/min)/W;

(a) ‘rated fan flow rate’ (F) means the air flow rate of the comfort fan at its maximum speed position, expressed in cubic meters per minute ($m^3$/min);

(83) ‘fan power input’ ($P_F$) means the power input of the comfort fan at its maximum speed position, expressed in watt (W);

(84) ‘ceiling fan’ means a propeller-bladed fan having two or more blades, and provided with a device for suspension from the ceiling of a room so that the blades rotate in a horizontal plane;

(85) ‘fan diameter’ means the diameter of the circle traced out by the extreme tips of the fan;

(86) ‘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, expressed in A-weighted decibels (dB(A)).

*ANNEX II*

**Energy Efficiency classes**

1. The energy efficiency class of air-to-air air conditioners

The energy efficiency class of an air-to-air air conditioner shall be determined on the basis of its seasonal space cooling energy efficiency ($\eta_{s,c}$) as set out in **Virhe. Viitteen lähdettä ei löytynyt.**.

**Table 1**
**Energy efficiency classes of air-to-air air conditioners**

| **Energy Efficiency Class** | **Seasonal space cooling energy efficiency ($\eta_{s,c}$) (%)** |
|---|---|
| A (most efficient) | $\eta_{s,c} \geq 460$ |
| B | $330 \leq \eta_{s,c} < 460$ |
| C | $240 \leq \eta_{s,c} < 330$ |
| D | $180 \leq \eta_{s,c} < 240$ |
| E | $130 \leq \eta_{s,c} < 180$ |
| F | $90 \leq \eta_{s,c} < 130$ |
| G (least efficient) | $\eta_{s,c} < 90$ |

The seasonal space cooling energy efficiency ($\eta_{s,c}$) of an air-to-air air conditioner shall be determined in accordance with points 2 and 3 of Annex IV.

2. The energy efficiency class of air-to-air heat pumps

The energy efficiency class of an air-to-air heat pump shall be determined on the basis of its seasonal space heating energy efficiency ($\eta_{s,h}$) as set out in Table 2.

**Table 2**
**Energy efficiency classes of air-to-air heat pumps**

| **Energy Efficiency Class** | **Seasonal space cooling energy efficiency ($\eta_{s,h}$) (%)** |
|---|---|
| A (most efficient) | $\eta_{s,h} \geq 250$ |
| B | $200 \leq \eta_{s,h} < 250$ |
| C | $160 \leq \eta_{s,h} < 200$ |
| D | $130 \leq \eta_{s,h} < 160$ |
| E | $100 \leq \eta_{s,h} < 130$ |
| F | $80 \leq \eta_{s,h} < 100$ |
| G (least efficient) | $\eta_{s,h} < 80$ |

The seasonal space heating energy efficiency ($\eta_{s,h}$) of an air-to-air heat pump shall be determined in accordance with points 3 and 4 of Annex IV.

3. The energy efficiency class of the comfort fan

The energy efficiency class of a comfort fan shall be determined on the basis of its service value (SV) as set out in Table 3.

**Table 3**
**Energy efficiency classes of comfort fans**

| **Energy Efficiency Class** | **Seasonal space cooling energy efficiency (SV) ((m³/min)/W)** |
|---|---|
| A (most efficient) | SV ≥ 6 |
| B | 5 ≤ SV < 6 |
| C | 4 ≤ SV < 5 |
| D | 3 ≤ SV < 4 |
| E | 2 ≤ SV < 3 |
| F | 1 ≤ SV < 2 |
| G (least efficient) | SV < 1 |

The service value (SV) of a comfort fan shall be determined in accordance with point 5 of Annex IV.

4. The sound power class of air-to-air air conditioners, air-to-air heat pumps and comfort fans

The sound power class of air-to-air air conditioners, air-to-air heat pumps and comfort fans shall be determined on the basis of their sound power as set out in Table 4.

**Table 4**
**Sound power classes of air-to-air air conditioners, air-to-air heat pumps and comfort fans**

| **Energy Efficiency Class** | **Sound power (dB(A))** |
|---|---|
| A | < 45 |
| B | ≥ 45 and < 55 |
| C | ≥ 55 and < 65 |
| D | ≥ 65 |

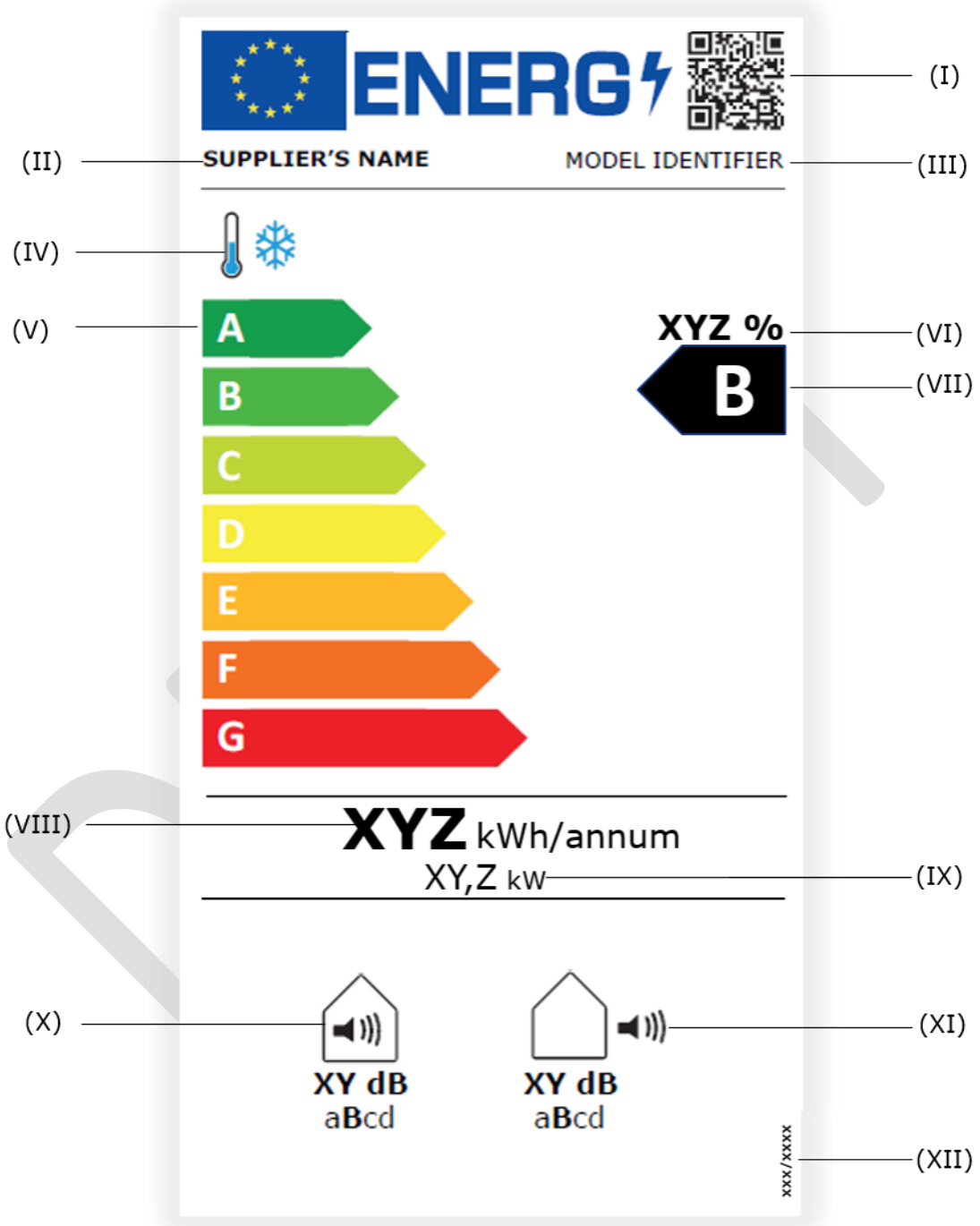
The sound power of air-to-air air conditioners, air-to-air heat pumps and comfort fans shall be determined in accordance with points 7 and 8 of Annex IV.

*ANNEX III*

**Label for XXX**

1. LABEL FOR COOLING ONLY AIR-TO-AIR AIR CONDITIONERS

(1) Label:



(2) The following information shall be included in the label for air-to-air air conditioners:

I the QR code;

II the supplier's name or trade mark;

III the supplier's model identifier;

IV the symbol for cooling;

V the scale of energy efficiency classes from A to G;

VI the seasonal space cooling energy efficiency, expressed in percentage and rounded to the nearest integer;

VII the energy efficiency class determined in accordance with Annex II, Table 1;

VIII the annual energy consumption expressed in kWh per annum and rounded to the nearest integer;

IX the corrected capacity in standard rating conditions for portable air-to-air air conditioners; the design load for cooling for other air-to-air air conditioners, expressed in kW and rounded to the first decimal place;

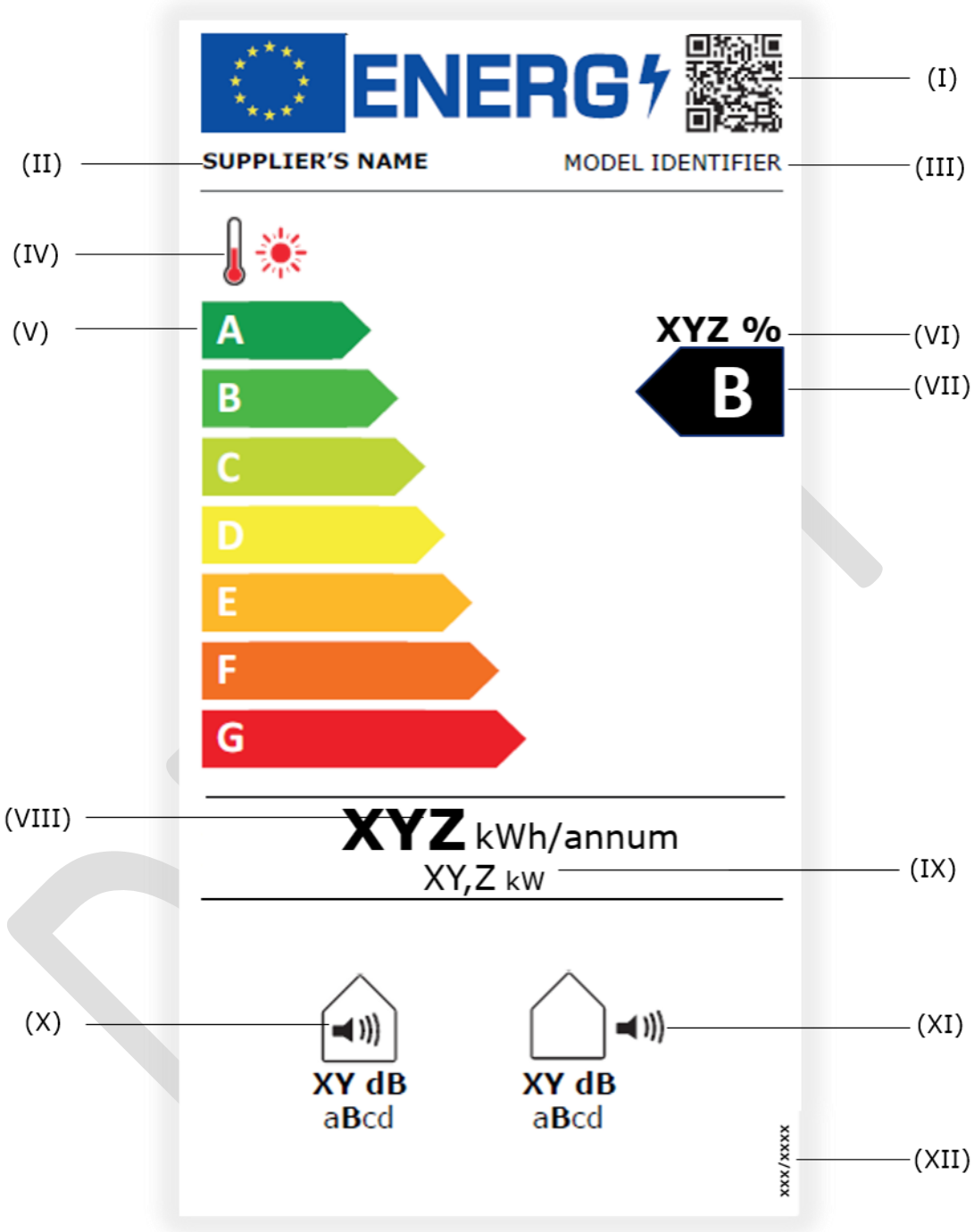
X the indoor sound power expressed in dB(A) and rounded to the nearest integer, determined in accordance with Annex II, Table 4;

XI the outdoor sound power expressed in dB(A) and rounded to the nearest integer, determined in accordance with Annex II, Table 4;

XII the number of this Regulation, that is 'XXXX/XXX' *[PO- please insert the number of this Regulation in this point and in the right bottom corner of the label]*.

2. LABEL FOR PORTABLE HEATING ONLY AIR-TO-AIR HEAT PUMPS

(1) Label:



(2) The following information shall be included in the label for portable heating only air-to-air heat pumps:

I the QR code;

II the supplier's name or trade mark;

III the supplier's model identifier;

IV the symbol for heating;

V the scale of energy efficiency classes from A to G;

VI the seasonal space cooling energy efficiency, expressed in percentage and rounded to the nearest integer;

VII the energy efficiency class determined in accordance with Annex II, Table 2;

VIII the annual energy consumption expressed in kWh per annum and rounded to the nearest integer;

IX the design load for heating expressed in kW and rounded to the first decimal place;

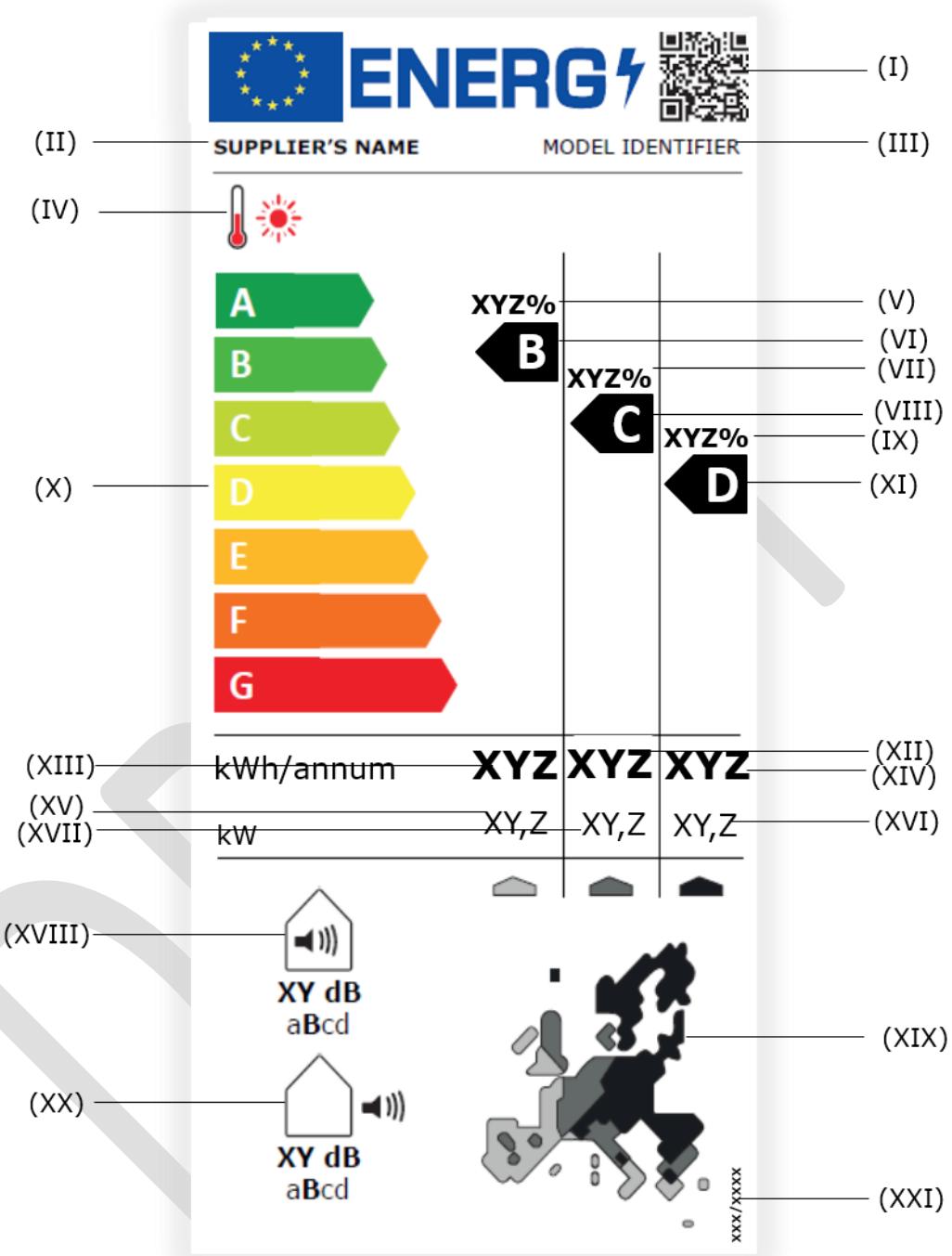
X the indoor sound power expressed in dB(A) and rounded to the nearest integer, determined in accordance with Annex II, Table 4;

XI the outdoor sound power expressed in dB(A) and rounded to the nearest integer, determined in accordance with Annex II, Table 4;

XII the number of this Regulation, that is 'XXXX/XXX' *[PO- please insert the number of this Regulation in this point and in the right bottom corner of the label]*.

3. LABEL FOR OTHER HEATING ONLY AIR-TO-AIR HEAT PUMPS:

(1) Label:



(1) The following information shall be included in the label for other heating only air-to-air heat pumps:

I the QR code;

II the supplier's name or trade mark;

III the supplier's model identifier;

IV the symbol for cooling

V the symbol for heating;

VI the seasonal space cooling energy efficiency expressed in percentage and rounded to the nearest integer;

VII the seasonal space heating energy efficiency for the warmer heating season expressed in percentage and rounded to the nearest integer;

VIII the energy efficiency class for the warmer heating season determined in accordance with Annex II, Table 2;

IX the energy efficiency class for the cooling determined in accordance with Annex II, Table 1;

X the seasonal space heating energy efficiency for the average heating season expressed in percentage and rounded to the nearest integer;

XI the energy efficiency class for the average heating season determined in accordance with Annex II, Table 2;

XII the scale of energy efficiency classes from A to G;

XIII the seasonal space heating energy efficiency for the colder heating season expressed in percentage and rounded to the nearest integer;

XIV the energy efficiency class for the colder heating season determined in accordance with Annex II, Table 2;

XV the annual energy consumption for heating for the warmer heating season, expressed in kWh per annum and rounded to the nearest integer;

XVI the annual energy consumption for heating for the average heating season expressed in kWh per annum and rounded to the nearest integer;

XVII the annual energy consumption for cooling expressed in kWh per annum and rounded to the nearest integer;

XVIII the annual energy consumption for heating for the colder heating season expressed in kWh per annum and rounded to the nearest integer;

XIX the design load for heating for the warmer season expressed in kW and rounded to the first decimal place;

XX the design load for heating for the average season expressed in kW and rounded to the first decimal place;

XXI the design load for cooling expressed in kW and rounded to the first decimal place;

XXII the design load for heating for the colder season, expressed in kW and rounded to the first decimal place;

XXIII the indoor sound power, expressed in dB(A) and rounded to the nearest integer, determined in accordance with Annex II, Table 4;

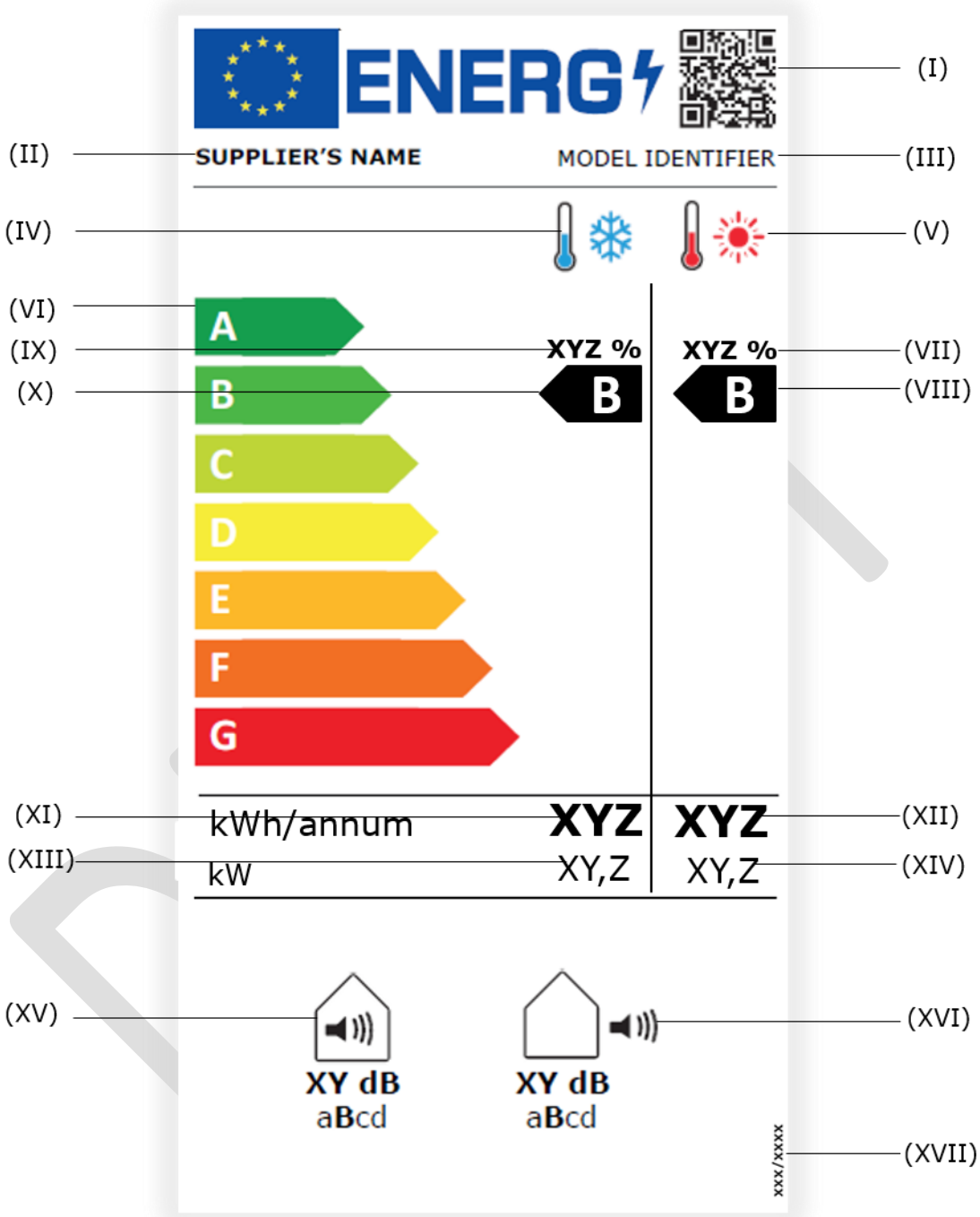
XXIV the European map

XXV the outdoor sound power, expressed in dB(A) and rounded to the nearest integer, determined in accordance with Annex II, Table 4;

XXVI the number of this Regulation, that is 'XXXX/XXX' *[PO- please insert the number of this Regulation in this point and in the right bottom corner of the label]*.

4. LABEL FOR PORTABLE REVERSIBLE AIR-TO-AIR HEAT PUMPS:

(1) Label:



(2) The following information shall be included in the label for portable reversible air-to-air heat pumps:

I the QR code;

II the supplier's name or trade mark;

III the supplier's model identifier;

IV the symbol for cooling;

V the symbol for heating;

VI the scale of energy efficiency classes from A to G;

VII the seasonal space heating energy efficiency, expressed in percentage and rounded to the nearest integer;

VIII the energy efficiency class determined in accordance with Annex II, Table 2;

IX the seasonal space cooling energy efficiency, expressed in percentage and rounded to the nearest integer;

X the energy efficiency class determined in accordance with Annex II, Table 1;

XI the annual energy consumption for cooling, expressed in kWh per annum and rounded to the nearest integer;

XII the annual energy consumption for cooling, expressed in kWh per annum and rounded to the nearest integer;

XIII the corrected cooling capacity in standard rating conditions, expressed in kW and rounded to the first decimal place;

XIV the design load for heating, expressed in kW and rounded to the first decimal place;

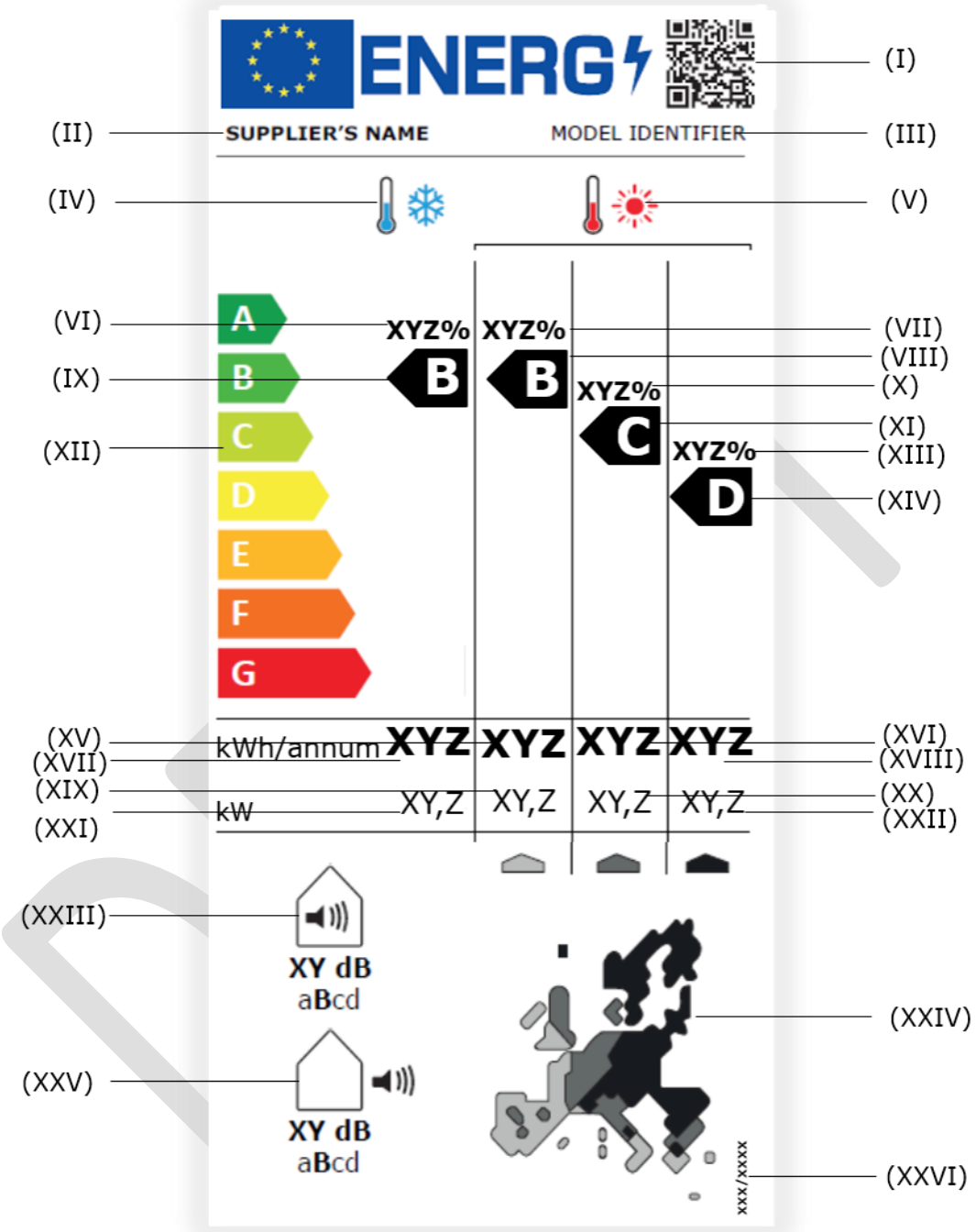
XV the indoor sound power, expressed in dB(A) and rounded to the nearest integer, determined in accordance with Annex II, Table 4;

XVI the outdoor sound power, expressed in dB(A) and rounded to the nearest integer, determined in accordance with Annex II, Table 4;

XVII the number of this Regulation, that is 'XXXX/XXX' *[PO- please insert the number of this Regulation in this point and in the right bottom corner of the label]*.

5. LABEL FOR OTHER REVERSIBLE AIR-TO-AIR HEAT PUMPS:

(1) Label:



(2) The following information shall be included in the label for portable reversible air-to-air heat pumps:

I the QR code;

II the supplier's name or trade mark;

III the supplier's model identifier;

IV the symbol for cooling;

V the symbol for heating;

VI the seasonal space cooling energy efficiency expressed in percentage and rounded to the nearest integer;

VII the seasonal space heating energy efficiency for the warmer season expressed in percentage and rounded to the nearest integer;

VIII the energy efficiency class for heating for the warmer season determined in accordance with Annex II, Table 2;

IX the energy efficiency class for cooling determined in accordance with Annex II, Table 1;

X the seasonal space heating energy efficiency for the average climate expressed in percentage and rounded to the nearest integer;

XI the energy efficiency class for heating for the average season determined in accordance with Annex II, Table 1;

XII the scale of energy efficiency classes from A to G;

XIII the seasonal space heating energy efficiency for the colder season expressed in percentage and rounded to the nearest integer;

XIV the energy efficiency class for heating for the colder season determined in accordance with Annex II, Table 2;

XV the annual energy consumption for heating for the warmer season expressed in kWh per annum and rounded to the nearest integer;

XVI the annual energy consumption for heating for the average season expressed in kWh per annum and rounded to the nearest integer;

XVII the annual energy consumption for cooling expressed in kWh per annum and rounded to the nearest integer;

XVIII the annual energy consumption for heating for the colder season expressed in kWh per annum and rounded to the nearest integer;

XIX the design load for heating for the warmer season expressed in kW and rounded to the first decimal place;

XX the design load for heating for the average season expressed in kW and rounded to the first decimal place;

XXI the design load for cooling expressed in kW and rounded to the first decimal place;

XXII the design load for heating for the colder season expressed in kW and rounded to the first decimal place;

XXIII the indoor sound power expressed in dB(A) and rounded to the nearest integer, determined in accordance with Annex II, Table 4;

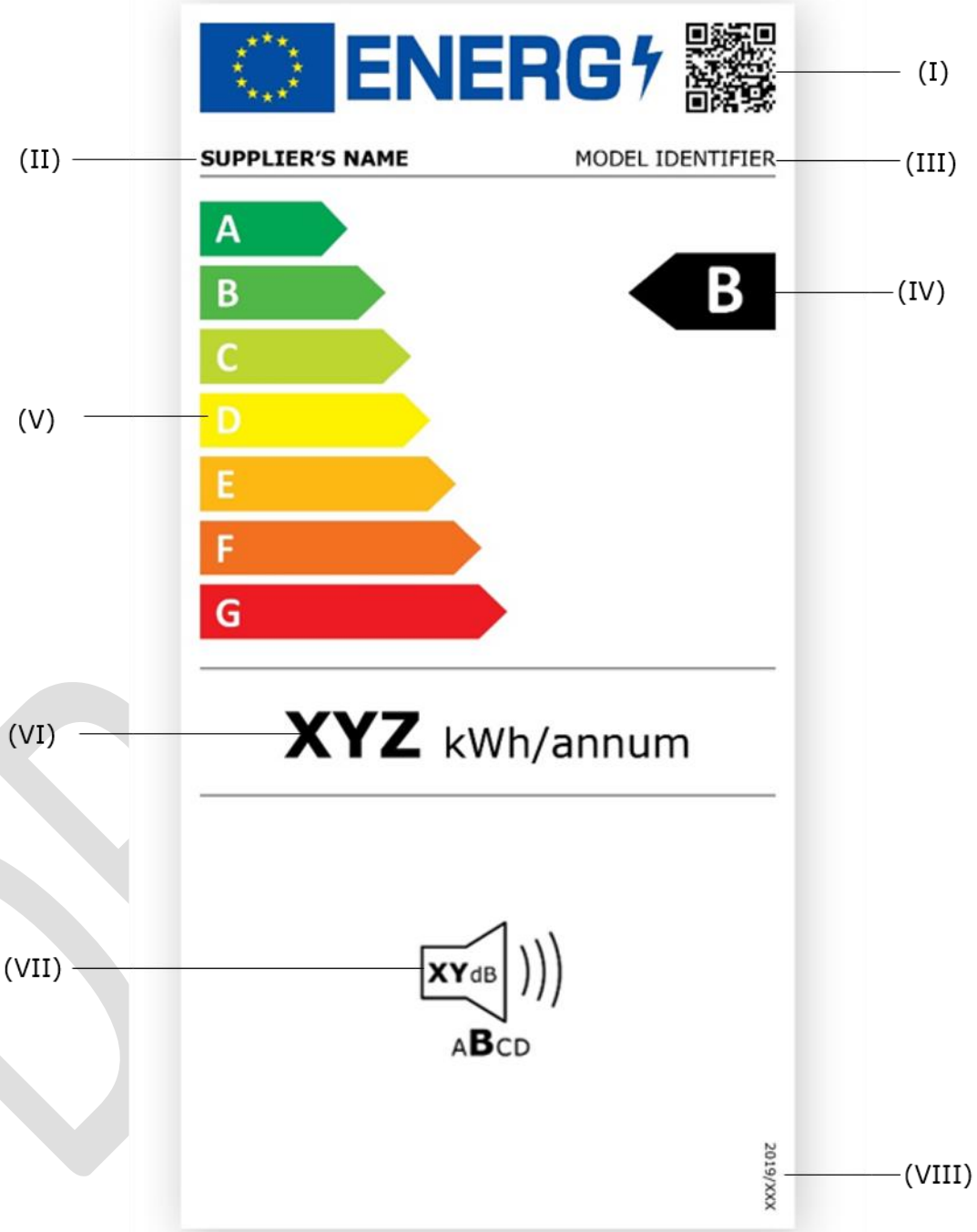
XXIV the European map

XXV the outdoor sound power, expressed in dB(A) and rounded to the nearest integer, determined in accordance with Annex II, Table 4;

XXVI the number of this Regulation, that is 'XXXX/XXX' *[PO- please insert the number of this Regulation in this point and in the right bottom corner of the label]*.

6. LABEL FOR COMFORT FANS:

(1) Label:



(1) The following information shall be included in the label for comfort fans:

I the QR code;

II the supplier's name or trade mark;

III the supplier's model identifier;

IV the energy efficiency class determined in accordance with Annex II, Table 3;

V the scale of energy efficiency classes from A to G;

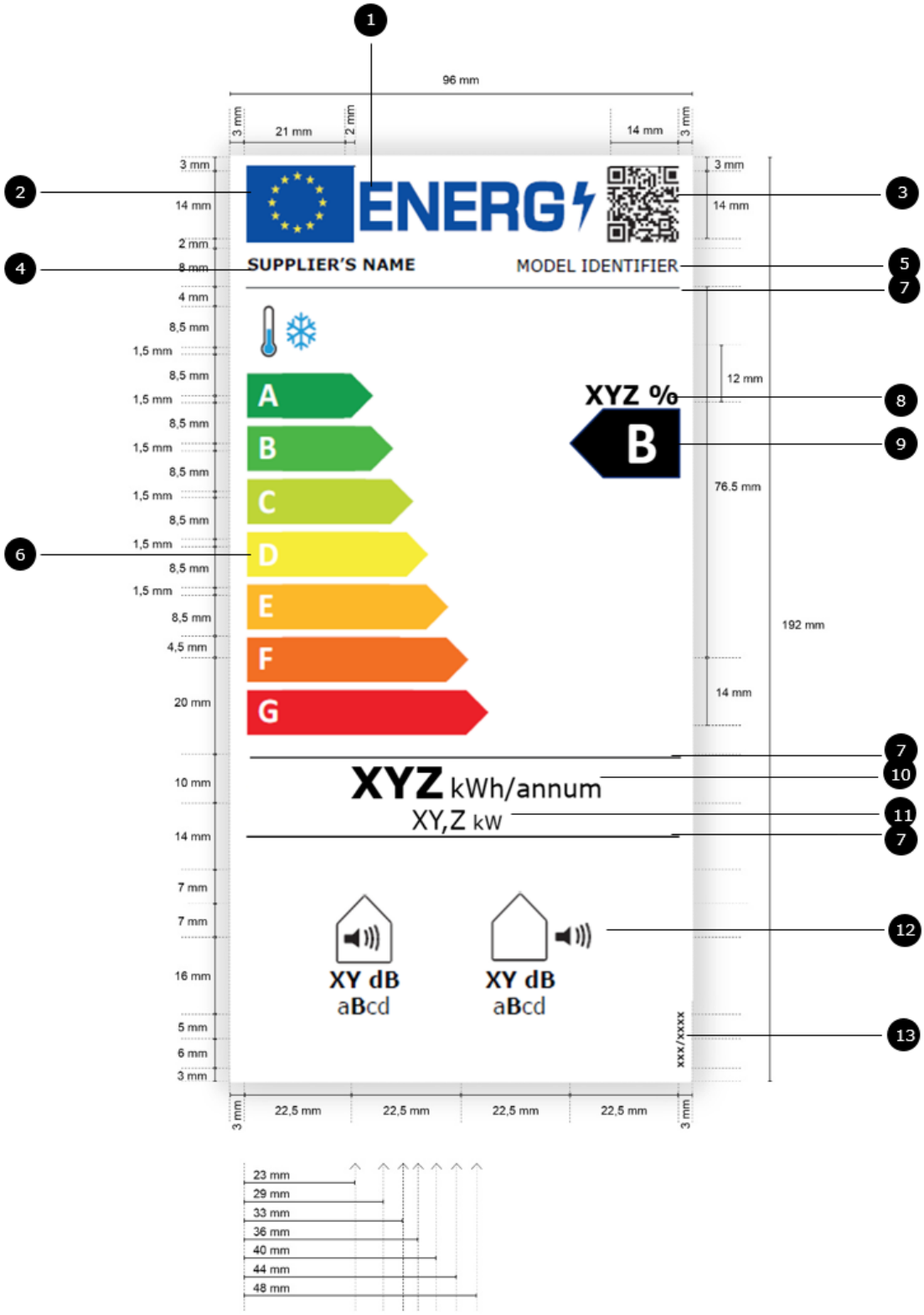
VI the annual energy consumption, expressed in kWh per annum and rounded to the nearest integer;

VII sound power, expressed in dB(A) and rounded to the nearest integer. The sound power class in accordance with Annex II, Table 4;

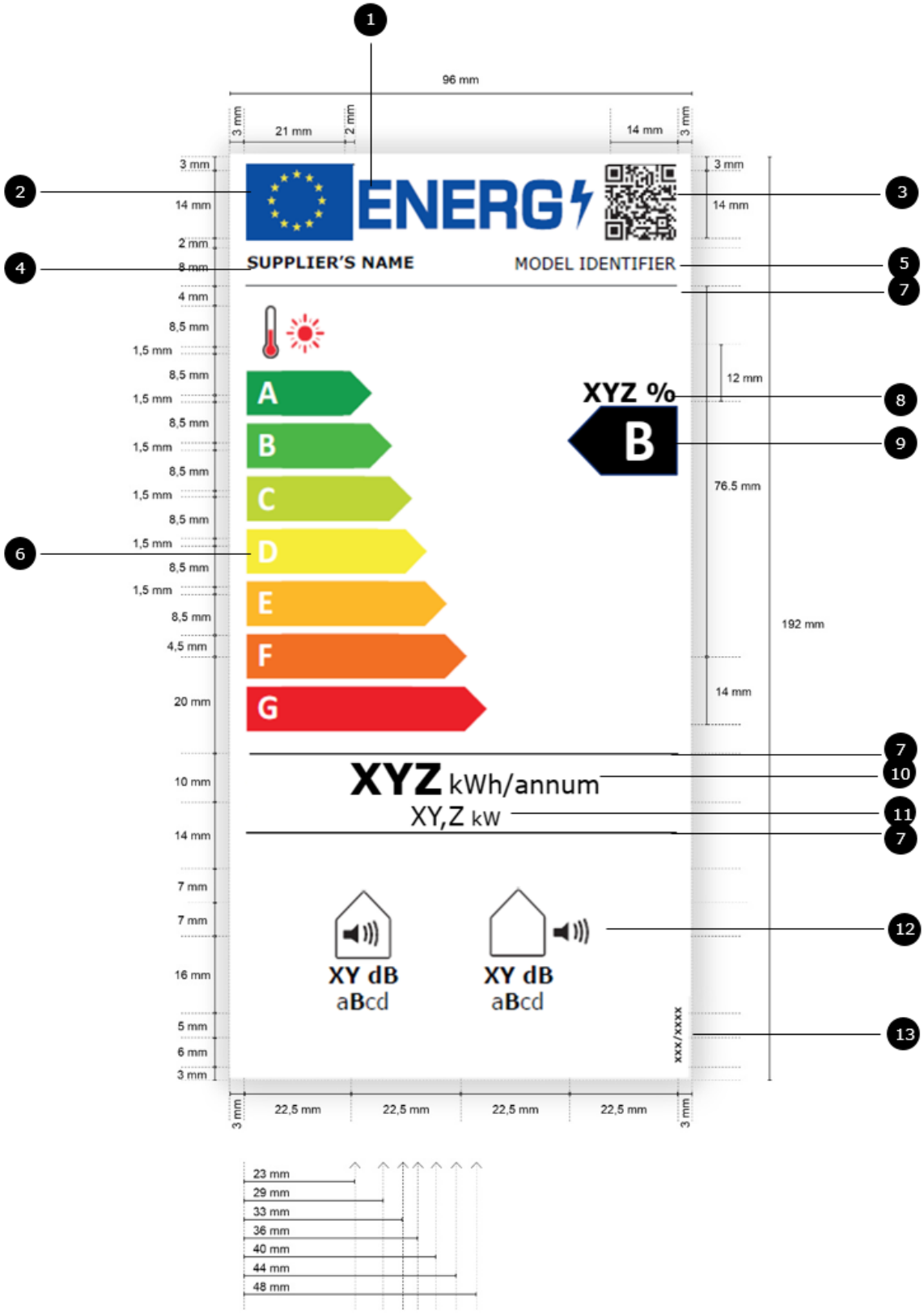
VIII the number of this Regulation, that is 'XXXX/XXX' *[PO- please insert the number of this Regulation in this point and in the right bottom corner of the label]*.

7. LABEL DESIGN:

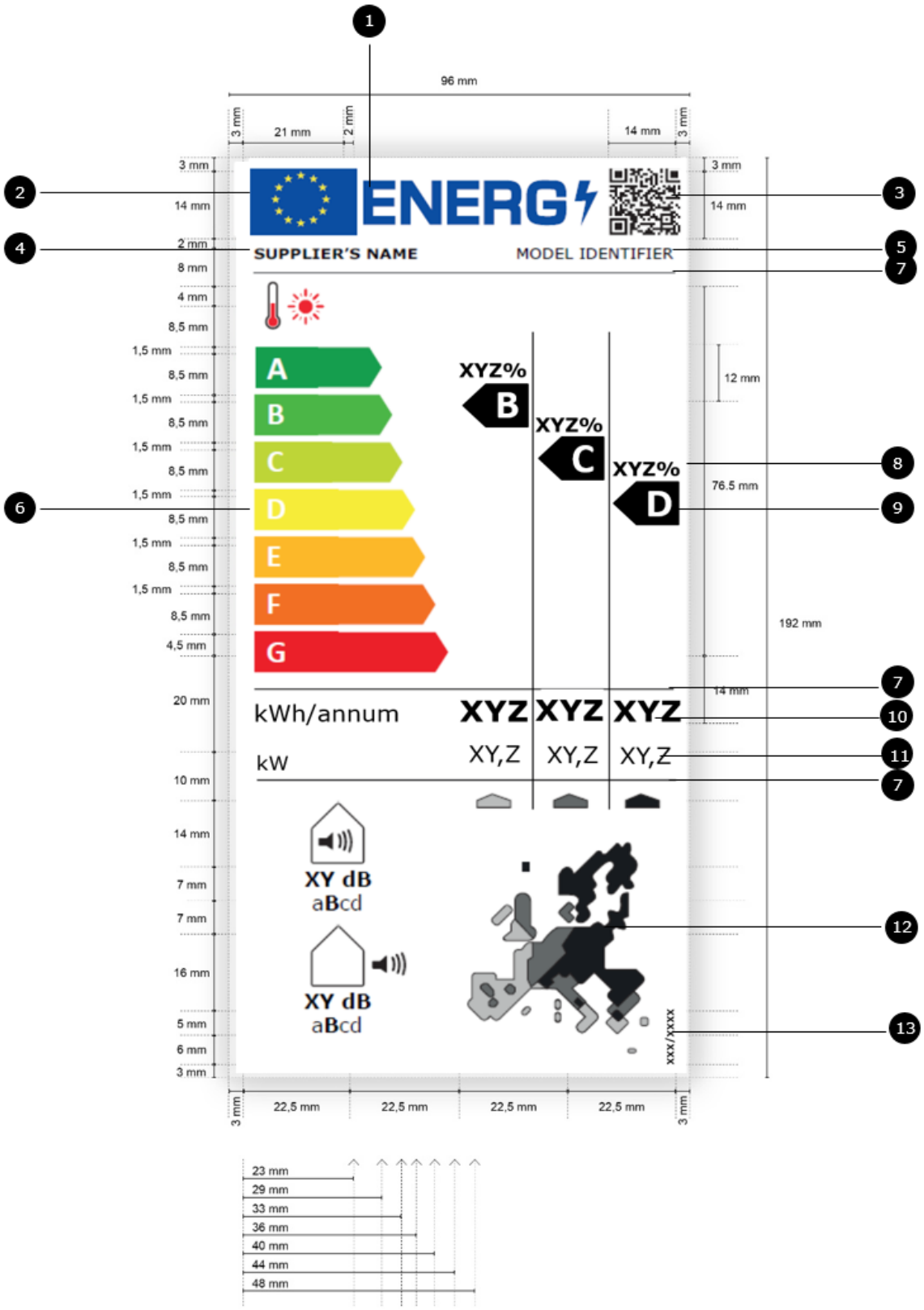
7.1. Label for cooling only air-to-air air conditioners



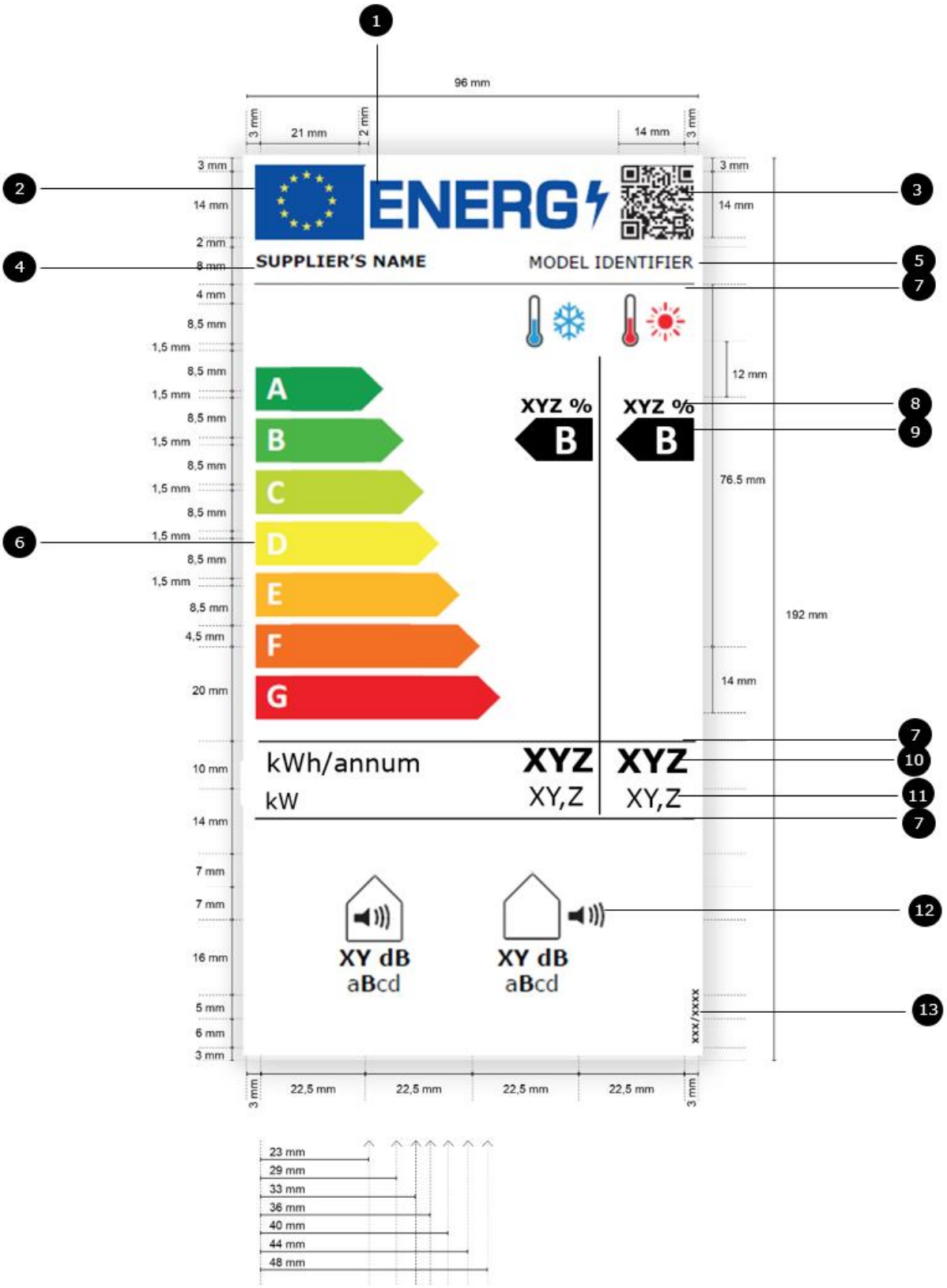
7.2. Label for portable heating only air-to-air heat pumps



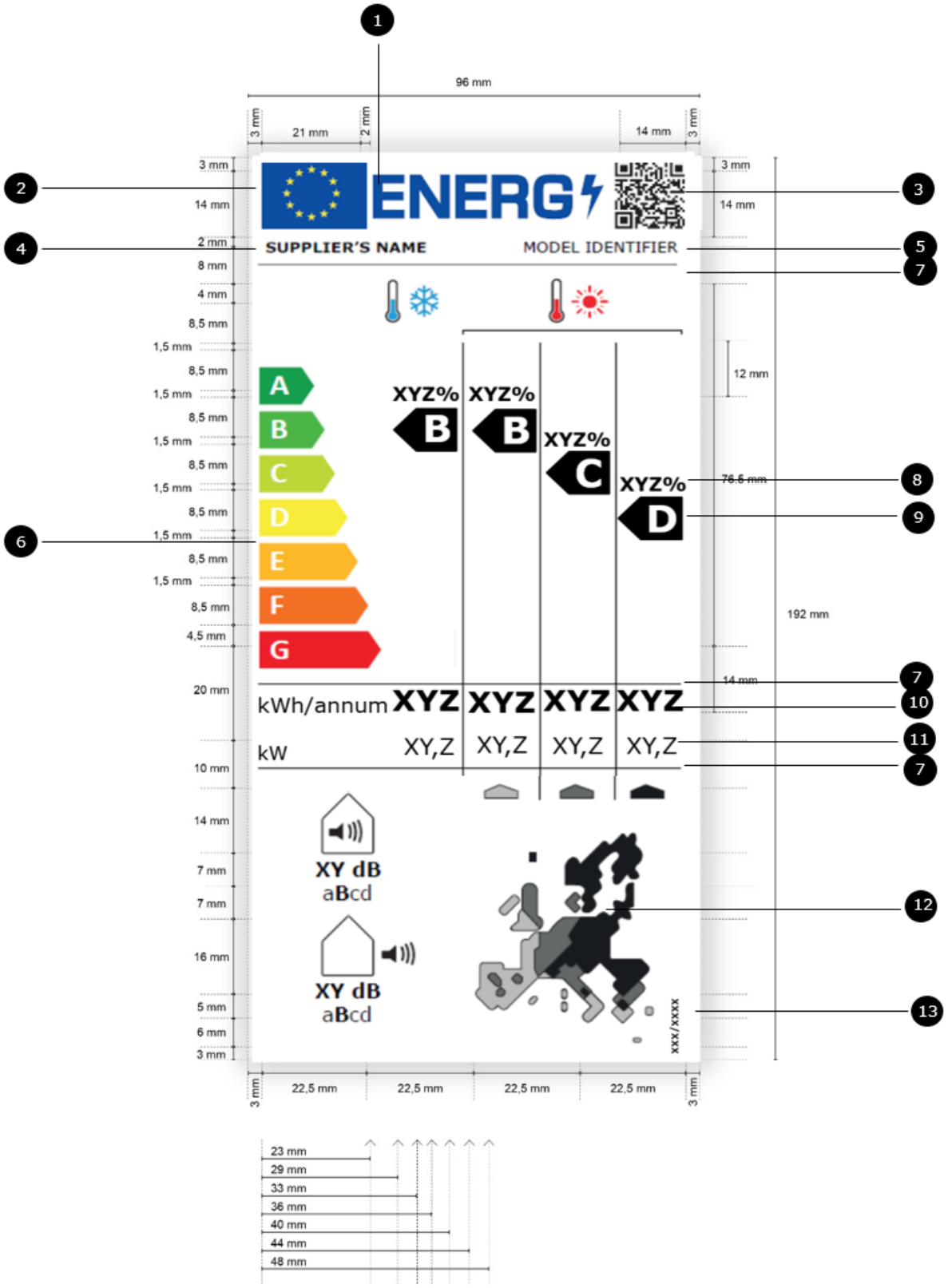
7.3. Label for other heating only air-to-air heat pumps



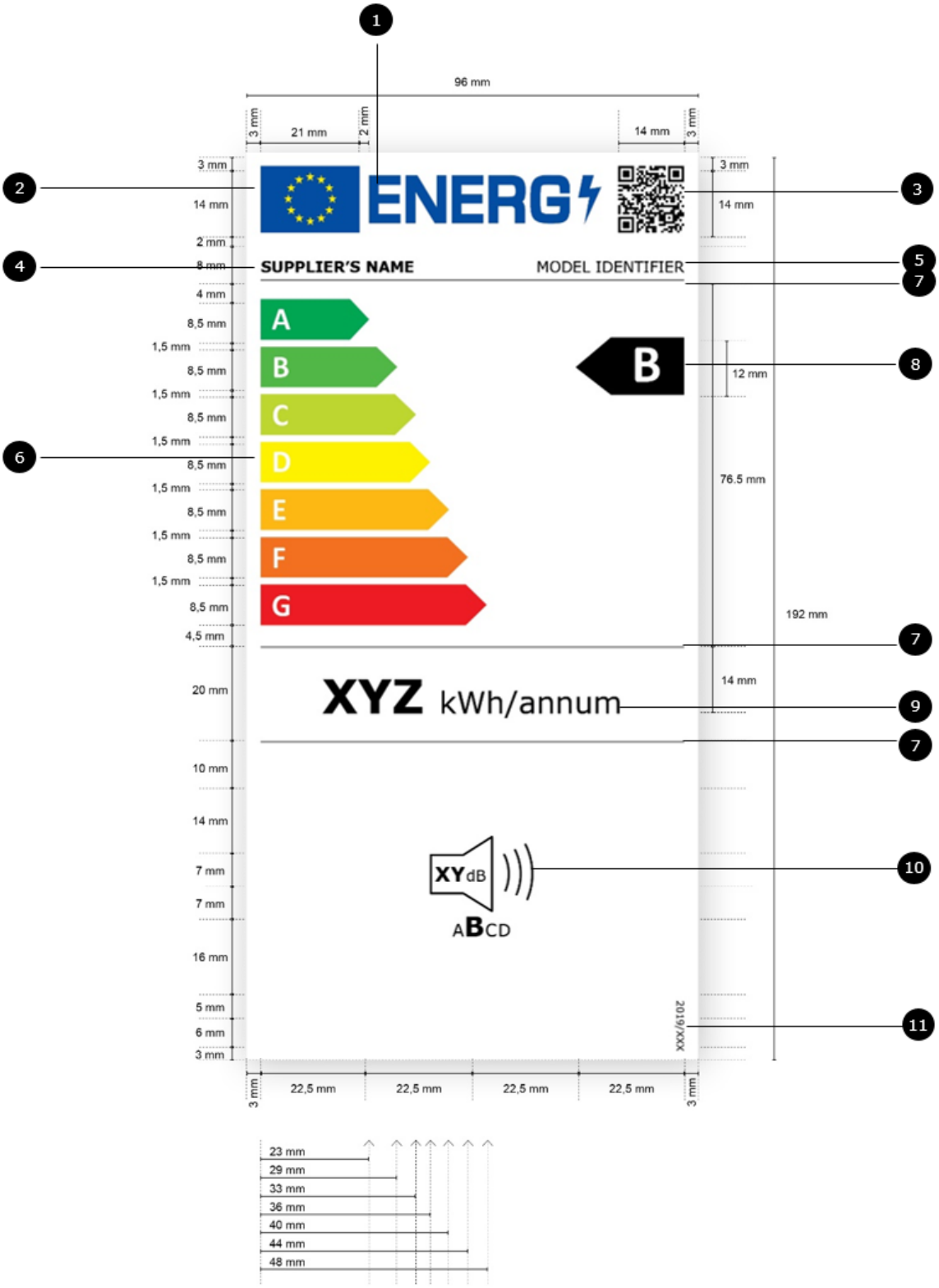
7.4. Label for portable reversible only air-to-air air conditioners



7.5. Label for other reversible only air-to-air air conditioners



7.6. Label for comfort fans



7.7. Description

Whereby:

(a) The label shall be at least 96 mm wide and 192 mm high. Where the label is printed in a larger format, its content shall nevertheless remain proportionate to the specifications above.

(b) The background of the label shall be 100 % white.

(c) The typefaces shall be Verdana and Calibri.

(d) The dimensions and specifications of the elements in the label shall be as indicated in the label designs.

(e) Colours shall be CMYK – cyan, magenta, yellow and black, following this example: 0,70,100,0: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black. Black is 0,0,0,100 and white is 0,0,0,0;

(f)

(g) The label shall fulfil all the following requirements (numbers refer to the numbers in the black bullets in the figure above):

❶ the colours of the EU logo shall be as follows:

– the background: 100,80,0,0;

– the stars: 0,0,100,0;

❷ the colour of the energy logo shall be: 100,80,0,0;

❸ the QR code shall be 100 % black;

❹ the supplier's name shall be in colour 100 % black and in Verdana Bold, 9 pt;

❺ the model identifier shall be 100 % black and in Verdana Regular font 9 pt;

❻ the A to G scale shall be as follows:

– the letters of the energy efficiency scale shall be 100 % white and in Calibri Bold 19 pt; the letters shall be centred on an axis at 4,5 mm from the left side of the arrow;

– the colours of the energy rating scale arrows shall be as follows:

- A-class: 100,0,100,0;
- B-class: 70,0,100,0;
- C-class: 30,0,100,0;
- D-class: 0,0,100,0;
- E-class: 0,30,100,0;
- F-class: 0,70,100,0;
- G-class: 0,100,100,0;

❼ the internal dividers shall have a weight of 0,5 pt and the colour shall be 100 % black;

❽ the seasonal space heating energy efficiency value and/or the seasonal space cooling energy efficiency value(s) shall be in 100 % black and in Verdana Regular font:

– for cooling only air-to-air air conditioners, for portable heating only air-to-air heat pumps and for comfort fans: 12 pt;

– for portable reversible air-to-air air conditioners: 11 pt;

– for other heating only air-to-air heat pumps: 10 pt;

– for other reversible air-to-air air conditioners: 10,5 pt.

The text shall be aligned to the right, with the right border of the arrow.

❾ the colour of the letter of the energy efficiency class shall be in 100 % white and in Calibri font:

– for cooling only air-to-air air conditioners, for portable heating only air-to-air heat pumps and for comfort fans: 33 pt;

– for portable reversible air-to-air air conditioners: 24 pt;

– for other heating only air-to-air heat pumps: 22 pt;

– for other reversible air-to-air air conditioners: 20 pt.

The rating scale arrow and the corresponding energy efficiency class arrow shall be positioned in such a way that their tips are aligned. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow which shall be 100 % black;

❿ the annual energy consumption value shall be:

– For cooling only air-to-air air conditioners, for portable heating only air-to-air heat pumps and for comfort fans:

  – the value: Verdana Bold font 24 pt;

  – the unit: Verdana Regular font 14 pt.

  The value and the unit shall be centred.

– For portable reversible air-to-air air conditioners:

  – the value: Verdana Bold font 18 pt;

  – the unit: Verdana Regular font 14 pt.

  The values for cooling shall be centred between the tip of the red arrow and the vertical divider, and for heating between the vertical divider and the right border of the horizontal dividers. The unit shall be aligned to the right.

– For other heating only air-to-air heat pumps:

  – the value: Verdana Bold font 18 pt;

  – the unit: Verdana Regular font 14 pt;

  the values for the warmer season shall be centred between the tip of the red arrow and the first vertical divider, for the average season between the first and the second vertical divider, and for the colder

season between the second vertical divider and right border of the horizontal dividers; the unit shall be aligned to the right.

– For other reversible air-to-air air conditioners:

  – the value: Verdana Bold font 18 pt;

  – the unit: Verdana Regular font 14 pt;

  the values for cooling shall be centred between the tip of the red arrow and the first vertical divider, for heating in the warmer season between the first and the second vertical divider, for heating in the average season between the second and the third vertical divider, and for heating in the colder season between the third vertical divider and right border of the horizontal dividers; the unit shall be aligned to the right.

The value and unit shall be centred and 100 % black;

❶❶ the rated capacity or the design capacity value, as applicable, shall be:

– For cooling only air-to-air air conditioners and for portable heating only air-to-air heat pumps:

  – the value: Verdana Bold font 14 pt;

  – the unit: Verdana Regular font 10,5 pt.

  The value and the unit shall be centred.

– For comfort fans this value shall be omitted and the value and the unit of the annual energy consumption shall be centred between the horizontal divider.

– For portable reversible air-to-air air conditioners:

  – the value: Verdana Bold font 14 pt;

  – the unit: Verdana Regular font 12 pt.

  The values shall be centred for cooling between the tip of the red arrow and the vertical divider, and for heating between the vertical divider and the right border of the horizontal dividers. The unit shall be aligned to the right.

– For other heating only air-to-air heat pumps:

  – the value: Verdana Bold font 12 pt;

  – the unit: Verdana Regular font 10,5 pt;

  the values for the warmer season shall be centred between the tip of the red arrow and the first vertical divider, for the average season between the first and the second vertical divider, and for the colder season between the second vertical divider and right border of the horizontal dividers; the unit shall be aligned to the right.

– For other reversible air-to-air air conditioners:

  – the value: Verdana Bold font 12 pt;

  – the unit: Verdana Regular font 10 pt;

the values for cooling shall be centred between the tip of the red arrow and the first vertical divider, for heating in the warmer season between the first and the second vertical divider, for heating in the average season between the second and the third vertical divider, and for heating in the colder season between the third vertical divider and right border of the horizontal dividers; the unit shall be aligned to the right.

in Verdana Bold font 14 pt; ‘kW’ shall be in Verdana Regular font, 10 pt. The value and unit shall be centred and 100 % black;

❶❷ the pictograms shall be as shown as in the label design and as follows:

– the pictograms lines shall have a width of 1,2 pt and as the texts (numbers and units) shall be 100 % black;

– the text under the pictogram(s) shall be in Verdana Bold font 16 pt with the unit in Verdana Regular font 12 pt, and it shall be centred under the pictogram;

– the European map, if applicable, and colour squares:

Orange: 00, 46, 46, 00;

Green: 59, 00, 47, 00;

Blue: 54, 08, 00, 00.

❶❸ the number of the regulation shall be in 100 % black and in Verdana Regular font 6 pt.

*ANNEX IV*

**Measurement and calculation methods**

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art methods and are in line with the provisions set out below. The reference numbers of these harmonised standards have been published for this purpose in the *Official Journal of the European Union*:

1. General conditions for testing for air-to-air air conditioners and air-to-air heat pumps:

(a) The seasonal space cooling energy efficiency for air-to-air air conditioners ($\eta_{s,c}$) shall be calculated as the seasonal energy efficiency ratio (SEER) divided by the conversion coefficient (CC), expressed in percent (%), minus F(1), which accounts for the temperature control and is equal to 3 %.

(b) The seasonal space heating energy efficiency for air-to-air heat pumps ($\eta_{s,h}$) shall be calculated as the seasonal coefficient of performance (SCOP) divided by the conversion coefficient (CC), expressed in percent (%), minus F(1), which accounts for the temperature control and is equal to 3 %.

(c) For air-to-air heat pumps equipped with an electric supplementary heater, the measurement and calculation of the declared heating capacity, the seasonal space heating energy efficiency, sound power level shall take account of the electric supplementary heater.

(d) The standby mode power consumption $P_{SB}$ of fixed air-to-air air conditioners and air-to-air heat pumps shall include the networked standby energy consumption of the unit.

2. Seasonal space cooling energy efficiency for fixed air-to-air air conditioners:

(a) For the purposes of measurement of air conditioners, the indoor temperature shall be set at 27 °C dry bulb and 19 °C wet bulb.

(b) The seasonal energy efficiency ratio (SEER) shall be calculated as the ratio of the reference annual cooling demand ($Q_C$) and the annual energy consumption for cooling ($Q_{CE}$).

(c) The reference annual cooling demand ($Q_C$) shall be the design load ($P_{design,c}$) multiplied by the equivalent active mode hours for cooling $H_{CE}$ as set out in Table 5.

(d) The annual electricity consumption for cooling ($Q_{CE}$) shall be calculated as follows:

$$Q_{CE} = Q_C / SEER_{on} + H_{TO} \times P_{TO} + H_{SB} \times P_{SB} + H_{CK} \times P_{CK} + H_{OFF} \times P_{OFF},$$

with

– $SEER_{on}$ the active mode seasonal energy efficiency ratio;

– $H_{TO}$, the thermostat-off mode operating hours, expressed in h, as set out in Table 5;

– $P_{TO}$, the thermostat-off mode power consumption, expressed in kW, as set out in Table 5;

– $H_{SB}$, the standby mode operating hours, expressed in h, as set out in Table 5;

– $P_{SB}$, the standby mode power consumption, expressed in kW, as set out in Table 5;

– $H_{CK}$, crankcase heater mode operating hours, expressed in h, as set out in Table 5;

– $P_{CK}$, crankcase heater mode power consumption, expressed in kW, as set out in Table 5;

– $H_{OFF}$, off-mode operating hours, expressed in h, as set out in Table 5;

– $P_{OFF}$, off mode power consumption, expressed in kW, as set out in Table 5;

(e) The active mode seasonal efficiency ratio ($SEER_{on}$) shall be calculated as follows:

$$SEER_{on} = \sum_{j=1}^{n} (h_j \times P_c(T_j)) / \sum_{j=1}^{n} h_j \times (P_c(T_j) / EER_{bin}(T_j);$$

with

– $h_j$, the bin hours, expressed in h;

– $P_c(T_j)$, the part load for cooling, expressed in kW;

– $EER_{bin}(T_j)$, the bin specific energy efficiency ratio;

taking into account the following:

(1) the reference design conditions, as set out in Table 6;

(2) the European cooling season, as set out in Table 11;

(3) the part load conditions for cooling, as set out in Table 9;

(4) the effects of degradation of the energy efficiency caused by on/off cycling, by calculating the $EER_{bin}(T_j)$ as follows:

$$EER_{bin}(T_j) = EER_d(T_j) \times (1 - Cdc \times (1 - CR(T_j));$$

with

– $EER_d(T_j)$, the declared energy efficiency ratio;

– Cdc, the degradation coefficient, equal to 0,25;

– $CR(T_j)$, the capacity ratio;

(5) for multi-split air-to-air air conditioners: the $EER_{bin}$ at each bin temperature used for the calculation of the $SEER_{on}$ shall include the energy consumption of the outdoor units and indoor units.

3. Seasonal space cooling energy efficiency for portable air-to-air air conditioners:

(a) For the purposes of measurement of portable air-to-air air conditioners, the indoor temperature shall be set at 27 °C dry bulb and 19 °C wet bulb.

(b) The seasonal energy efficiency ratio (SEER) shall be calculated as the ratio of the supplied annual cooling energy ($Q_C$) and the annual energy consumption for cooling ($Q_{CE}$).

(c) The supplied annual cooling energy ($Q_C$) shall be calculated as follows:

$$Q_C = 10/24 \times \sum_{j=1}^{n} h_j \times P_{c\_corr}(T_j);$$

(d) The corrected part load for cooling, with $P_{c\_corr}(T_j)$, shall be calculated as follows:

– when the outdoor temperature ($T_j$) is lower or equal than the equilibrium temperature (Teq), $P_{c\_corr}(T_j)$ is equal to the building load curve ($BL(T_j)$);

– when $T_j$ is higher than Teq, $P_{c\_corr}(T_j)$ is equal to the corrected capacity at the equilibrium temperature $P_{dc\_corr}(Teq)$.

with

– $T_{eq}$, the equilibrium temperature, which is the intersection between the building load curve ($BL(T_j)$), equal to $P_{rated} \times (T_j - 23°C)/(35°C - 23°C)$, and the corrected capacity ($P_{dc\_corr}(T_j)$).

(e) The corrected rated capacity ($P_{dc\_corr}(T_j)$) shall be calculated as follows:

(1) For portable single duct air-to-air air conditioners:

(a) the corrected capacity $P_{dc\_corr}(T_j)$ shall be equal to sum of the capacity $P_{dc}(T_j)$ and the infiltration impact $P_{INF}(T_j)$;

(b) $P_{dc}(T_j)$ for temperature $T_j$ shall be calculated as follows:

$$P_{dc}(T_j) = P_{rated};$$

(c) $P_{INF}(T_j)$ shall be calculated as follows:

– if the outdoor temperature Tj < 27°C:

$$P_{INF}(T_j) = (27°C - T_j)/(27°C - 27°C) \times [AF \times (rho_{air_{27}} \times h_{27} - rho_{air_{20}} \times h_{20})];$$

– if the outdoor temperature Tj > 27°C:

$$P_{INF}(T_j) = (27°C - T_j)/(35°C - 20°C) \times INF;$$

with:

– AF the infiltration in air flow rate, expressed in m³/s;

– INF the infiltration in kW, calculates as:

$$INF = [AF \times (rho_{air_{35}} \times h_{35} - rho_{air_{27}} \times h_{27})];$$

– $rho_{air_{20}}$ density of air at 20°C, equal to 1,20 kg/m³;

– $rho_{air_{27}}$ density of air at 27°C, equal to 1.17 kg/m³;

– $rho_{air_{35}}$ density of air at 35°C, equal to 1.15 kg/m³;

– $h_{20}$ the specific enthalpy of infiltration air at 20°C dry bulb and 15°C wet bulb temperature per kg dry air, equal to 42,2 kJ/kgda;

– $h_{27}$ the specific enthalpy of infiltration air at 27°C dry bulb and 19°C wet bulb temperature per kg dry air, equal to 54,2 kJ/kgda;

– $h_{35}$ the specific enthalpy of infiltration air at 35°C dry bulb and 24°C wet bulb temperature per kg dry air, equal to 72,5 kJ/kgda.

(2) For portable double duct air conditioners:

(a) the corrected rated capacity $P_{dc\_corr}(T_j)$ shall be equal to the capacity $P_{dc}(T_j)$;

(b) the declared capacity $P_{dc}$ for temperature $T_j$ shall be calculated as follows:

$$P_{dc}(T_j) = P_{rated} + (P_{dc}(35) - P_{rated}) / 8 \times (T_j - 27).$$

(b) The annual energy consumption for cooling ($Q_{CE}$) shall be calculated as follows:

$$Q_{CE} = Q_C/SEER_{on} + H_{TO} \times P_{TO} + H_{SB} \times P_{SB}.$$

(b) The active mode seasonal efficiency ratio SEERon shall be calculated as follows:

$$SEER_{on} = \sum^{n}_{j=1} (h_j \times P_{c\_corr}(T_j))/ \sum^{n}_{j=1} h_j \times (P_{c\_corr}(T_j)/ EER_{bin}(T_j);$$

taking into account the following:

(1) the standard rating conditions, as set out in Table 8;

(2) the part load conditions, as set out in Table 10;

(3) the European cooling season, as set out in Table 11;

(4) the effects of degradation of the energy efficiency caused by on/off cycling, by calculating the $EER_{bin}(T_j)$ as follows:

(a) For on-off units:

$EER_{bin}(T_j) = EER_d(T_j) \times (1 - Cdc \times (1 - CR(T_j)));$

with Cdc the degradation coefficient equal to 0,25.

(b) For inverter units:

– if $CR(Tj) \geq 0,33$:

$EER_{bin}(T_j) = EER_d(T_j) \times (1 + PL_c \times (1 - CR(T_j)));$

– if $CR(Tj) < 0,33$:

$EER_{bin}(T_j) = EER_d(T_j) \times (1 + PL_c \times (1 – 0,33) \times (1 - 0,25 \times (1 – CR(T_j)/0,33));$

with

– $EER_d(Tj)$

– for portable single duct air-to-air air conditioners:

– if the outdoor temperature $T_j \leq T_{eq}$:

$EER_d(T_j) = P_{dc\_corr}(T_j) / P_{EER};$

– if the outdoor temperature $Tj > T_{eq}$:

$EER_d(T_j) = P_{dc\_corr}(T_{eq}) / P_{EER};$

with $P_{EER}$, the rated power input for cooling;

– for portable double duct air conditioners:

$EER_d(T_j) = EER_{rated} + (EER_d(35°C) - EER_{rated}) / 8 \times (Tj – 27 °C);$

with $EER_{rated}$ the rated energy efficiency ratio and $EER_d(35°C)$ the EER at 35°C and a part load of 100 %.

– $CR(T_j)$, the capacity ratio;

– $PL_c$, the part load coefficient, calculated as:

$PL_c = ((EER_d(27°C;33\%) – EER_{rated})/ EER_{rated} / (P_{rated} - P_{dc}(27°C;33\%) / P_{rated};$

where $EER_d$(27°C;33%) and $P_{dc}$(27°C;33%) is the $EER_d$ and the $P_{dc}$ respectively at dry bulb temperature of 27°C and a part load of 33 %.

4. Seasonal space heating energy efficiency for fixed air-to-air heat pumps:

(a) For the purposes of measurement of heat pumps, the indoor temperature shall be set at 20°C.

(b) The seasonal coefficient of performance (SCOP) shall be calculated as the ratio of the reference annual heating demand ($Q_H$) and the reference electricity consumption for heating ($Q_{HE}$).

(c) The reference annual heating demand $Q_H$ shall be the design load $P_{design,h}$ multiplied by the equivalent active mode hours for heating $H_{HE}$ as set out in Table 5.

(d) The annual electricity consumption for heating ($Q_{HE}$) shall be calculated as follows:

$$Q_{HE} = Q_H / SCOP_{on} + H_{TO} \times P_{TO} + H_{SE} \times P_{SB} + H_{CK} \times P_{CK} + H_{OFF} \times P_{OFF},$$

with $H_{TO}$, $H_{SE}$, $H_{CK}$ and $H_{OFF}$ as set out in Table 5.

(e) The active mode seasonal efficiency ratio $SCOP_{on}$ shall be calculated as follows:

$$SCOP_{on} = \sum_{j=1}^{n} (h_j \times P_h(T_j)) / \sum_{j=1}^{n} h_j \times (P_h(T_j) / COP_{bin}(T_j) + elbu(T_j),$$

taking into account the following:

(1) the reference design conditions, as set out in Table 6;

(2) the European average heating season, as set out in Table 12;

(3) if the unit is marketed for cold climates, the European colder heating season, as set out in Table 12;

(4) if the unit is marketed for warm climates, the European warmer heating season, as set out in Table 12;

(5) the part load conditions for heating, as set out in Table 9;

(6) the effects of degradation of the energy efficiency caused by on/off cycling, by calculating $COP_{bin}(T_j)$ as follows:

$$COP_{bin}(T_j) = COP_d(T_j) \times CR / (Cdh \times CR + (1 - Cdh));$$

(7) for multi-split air-to-air heat pumps, the $COP_{bin}(T_j)$ used for the calculation of the SCOPon shall include the energy consumption of the outdoor units and indoor units.

5. Seasonal space heating energy efficiency for portable air-to-air heat pumps:

(a) For the purposes of measurement of heat pumps, the indoor temperature shall be set at 20°C;.

(b) The seasonal coefficient of performance (SCOP) shall be calculated as the ratio of the reference annual heating demand ($Q_H$) and the reference electricity consumption for heating ($Q_{HE}$).

(c) The reference annual heating demand ($Q_H$) shall be the design load ($P_{designh}$) multiplied by the equivalent active mode hours for heating $H_{HE}$ as set out in Table 5. The design load cannot be higher than the sum of the declared capacity at $T_{designh}$, ($P_{dh}(T_{designh})$), and the maximum supplementary capacity for heating (elbu_max);

(d) The annual electricity consumption for heating ($Q_{HE}$) shall be calculated as follows:

$$Q_{HE} = Q_H / SCOP_{on} + H_{TO} \times P_{TO} + H_{SE} \times P_{SB} + H_{CK} \times P_{CK} + H_{OFF} \times P_{OFF},$$

with $H_{TO}$, $H_{SE}$, $H_{CK}$ and $H_{OFF}$ as set out in Table 7.

(e) The active mode seasonal efficiency ratio $SCOP_{on}$ shall be calculated as follows:

$$SCOP_{on} = \sum^{n}_{j=1} (h_j \times P_h(T_j))/ \sum^{n}_{j=1} h_j \times (P_h(T_j)/ COP_{bin}(T_j) + elbu(T_j),$$

taking into account the following:

(1) the reference design conditions, as set out in Table 6;

(2) the European average heating season, as set out in Table 12;

(3) if the unit is marketed for cold climates, the European colder heating season, as set out in Table 12;

(4) if the unit is marketed for warm climates, the European warmer heating season, as set out in Table 12;

(5) the part load conditions for heating, as set out in Table 10;

(6) the effects of degradation of the energy efficiency caused by on/off cycling, by calculating $COP_{bin}(T_j)$ as follows:

$$COP_{bin}(T_j) = COP_d(T_j) \times (1 - Cdh \times (1 – CR(T_j)));$$

for $COP_{bin}(T_j)$, with $T_j$ > 12 °C, the values are extrapolated from $COP_{bin}$(7°C) and $COP_{bin}$(12°C), or if $T_{hp,off}$ > 7°C, from $COP_{bin}(T_{hp,off})$ and $COP_{bin}$(12°C). For portable single duct heat pumps the $T_{hp,off}$ should always be lower than 10 °C;

for $P_{dh}(T_j)$, with $T_j$ > 12 °C, the values are extrapolated from $P_{dh}$(7°C) and $P_{dh}$ (12°C), or if $T_{hp,off}$ > 7°C, from $P_{dh}(T_{hp,off})$ $T_{hp,off}$ and $P_{dh}$(12°C); if Tj < $T_{hp,off}$ , the declared heating capacity is equal to zero;

(7) for portable single duct heat pumps, the effects of infiltration are taken into account, by correcting the declared capacity ($P_{dh\_corr}(T_j)$) shall be calculated as follows:

(a) the corrected capacity ($P_{dh\_corr}(T_j)$) shall be equal to sum of the capacity $P_{dh}(T_j)$ and the infiltration impact $P_{INF}(T_j)$;

(b) $P_{dh}(T_j)$ for temperature $T_j$ shall be calculated as follows:

(c) $P_{dh}(T_j) = P_{rated}$;

(d) $P_{INF}(T_j)$ shall be calculated as follows:

$$P_{INF}(T_j) = Cp \times AF(T_j) \times (rho_{air}(T_j) \times T_j - rho_{air_{20}} \times 20);$$

with:

– $AF(T_j)$, the infiltration in air flow rate, expressed in m³/s;

– $P_{INF}$, the heat loss by infiltration, expressed in kW:

– $rho_{air_{20}}$, density of air at 20°C, equal to 1,20 kg/m³;

– $rho_{air}(T_j)$ density of air at $T_j$;

– Cp the specific capacity of dry air, assumed constant, equal to 1,006 kJ/kg/K (1 atm).

6. Service value of comfort fans:

(a) The test shall be carried out at an ambient temperature of 20 °C;

(b) For the purpose of measurement of comfort fans, the voltage and the frequency the comfort fans are tested are the rated voltage and the rated frequency.

If the fan is specified for two or more distinct rated voltages, the tests shall be carried out at the most unfavourable voltage. When a rated voltage range is given, the test voltage shall be:

– the highest and the lowest values of the range when the voltage range is in excess of 10 % of the mean of the range;

– the mean of the upper and lower limits when the voltage range is 10 % or less of the mean of the range.

For a fan with a range of frequencies, the tests shall be made at the frequency which gives the most unfavourable results;

(c) The maximum flow rate is calculated by summing the maximum air flow rates at incrementing distances from the vertical axis of the fan.

The maximum flow rate at each distance is calculated by multiplying the air velocity measured at maximum speed at each distance by the surface area of the annulus, with radius in Table 13, over which is measured;

Air velocity measurements start at the initial position, as set out in Table 13. From that position, measurements shall be done in increments along a horizontal line, as set out in Table 13, until the air velocity fall below a certain value;

(d) For the measurement of the power input of the fan, the capacitors if any shall be retained in the circuit;

(e) The service value SV in ($m^3$/min)/W for comfort fans shall be calculated as follows:

$$SV = F / P_F;$$

where

– F is the maximum flow rate in $m^3$/min;

– $P_F$ is the fan power input in W;

(b) For electric power in stand-by ($P_{SB}$) and thermostat off-mode ($P_{OFF}$) if applicable the same testing methods apply as for air-to-air air conditioners;

(c) The nominal electric power consumption is measured with the oscillating mechanism on. The flow rate is measured without the oscillations.

7. Sound power level of fixed air-to-air air conditioners and fixed air-to-air heat pumps:

While establishing the sound power level, the operating conditioners shall be the standard rating conditions set out in Table 7. The part load ratio in heating mode shall be the part load ratio of rating point C in Table 9.

8. Sound power level of portable air-to-air air conditioners and portable air-to-air heat pumps:

While establishing the sound power level, the operating conditioners shall be the standard rating conditions set out in Table 8. The capacity during the test shall be the rated capacity.

9. Sound power level of comfort fans:

While establishing the sound power level, the operating conditions shall be the maximum speed position of the comfort fan.

**Table 5**
**Operational hours per functional mode for air-to-air air conditioners and air-to-air heat pumps**

| Season | | Operational hours | | | | |
|---|---|---|---|---|---|---|
| | | On-mode | Thermostat Off mode | Standby mode | Off mode | Crankcase heater mode |
| | | $H_{CE}$ (cooling); $H_{HE}$ (heating) | $H_{TO}$ | $H_{SB}$ | $H_{OFF}$ | $H_{CK}$ |
| Cooling only (to calculate SEER) | Average | 350 | 221 | 2142 | 5088 | 2363 |
| Cooling, if reversible (to calculate SEER) | Average | 350 | 221 | 2142 | 0 | 2363 |
| Heating only (to calculate SCOP) | Average | 1 400 | 179 | 0 | 3 672 | 3672 |
| | Colder | 2 100 | 131 | 0 | 2 189 | 2184 |
| | Warmer | 1 400 | 755 | 0 | 4 345 | 4416 |
| Heating, if reversible (to calculate SCOP) | Average | 1400 | 179 | 0 | 0 | 3672 |
| | Colder | 2100 | 131 | 0 | 0 | 2184 |
| | Warmer | 1400 | 755 | 0 | 0 | 4416 |

**Table 6**
**Reference design conditions**

| Function | Season | Reference design temperature dry bulb (wet bulb) (°C) | Bivalent temperature maximum | Operation limit temperature maximum |
|---|---|---|---|---|
| | | $T_{design,c}$ or $T_{design,h}$ | $T_{biv}$ | $T_{ol}$ |
| Cooling | Average | 35 (24) | - | - |
| Heating | Average | - 10 (- 11) | + 2 | - 7 |
| | Warmer | 2 (-1) | 7 | 2 |
| | Colder | -22 (-23) | -7 | -15 |

**Table 7**
**Standard rating conditions for fixed air-to-air air conditioners and fixed air-to-air heat pumps**

| | Outdoor side heat | Indoor side heat |
|---|---|---|

| | | exchanger | exchanger |
|---|---|---|---|
| | | inlet dry bulb temperature (inlet wet bulb temperature) (ºC) | inlet dry bulb temperature (inlet wet bulb temperature) (ºC) |
| Cooling mode (for air conditioners) | Outside air / recycled air | 35(24*) | 27(19) |
| Heating mode (for heat pumps) | Outside air / recycled air | 7(6) | 20(15 max) |

* the wet bulb temperature condition is not required when testing units which do not evaporate condensate

**Table 8**
**Standard rating conditions for portable air-to-air air conditioners and portable air-to-air heat pumps**

| | | Outdoor side heat exchanger | Indoor side heat exchanger |
|---|---|---|---|
| | | inlet dry bulb temperature (inlet wet bulb temperature) (ºC) | inlet dry bulb temperature (inlet wet bulb temperature) (ºC) |
| Cooling mode (for double duct air conditioners) | Outside air / recycled air | 35(24) | 27(19) |
| Cooling mode (for double duct air conditioners) | Outside air / recycled air | 27(19) | 27(19) |
| Heating mode (for single duct heat pumps) | Outside air / recycled air | 20(12) | 20(12) |
| Heating mode (for double duct heat pumps) | Outside air / recycled air | 7(6) | 20(15 max) |

**Table 9**
**Part load conditions for fixed air-to-air air conditioners and fixed air-to-air heat pumps**

| Rating point | Outdoor temperature | Part load ratio | Outdoor side heat exchanger | Indoor side heat exchanger |
|---|---|---|---|---|
| **Cooling** | | | | |
| | $T_j$ (ºC) | | Outdoor air dry bulb temperatures (ºC) | Indoor air dry bulb (wet bulb) temperatures (ºC) |
| A | 35 | 100% | 35 | 27 (19) |
| B | 30 | 74% | 30 | 27 (19) |
| C | 25 | 47% | 25 | 27 (19) |
| D | 20 | 21% | 20 | 27 (19) |
| **Heating** | | | | |
| Rating point | $T_j$ (ºC) | Part load | Outdoor air dry bulb (wet bulb) temperatures (ºC) | Indoor air dry bulb temperature (ºC) |

| | | | | |
|---|---|---|---|---|
| | | ratio | | |
| A | -7 | 88% | -7(-8) | 20 |
| B | +2 | 54% | +2(+1) | 20 |
| C | +7 | 35% | +7(+6) | 20 |
| D | +12 | 15% | +12(+11) | 20 |
| E | $T_{ol}$ | depends on $T_{ol}$ | $T_j = T_{ol}$ | 20 |
| F | $T_{biv}$ | depends on $T_{biv}$ | $T_j = T_{biv}$ | 20 |

**Table 10**
**Test conditions for portable air-to-air air conditioners and portable air-to-air heat pumps**

| Rating point | Outdoor temperature | Part load ratio | Outdoor side heat exchanger | Indoor side heat exchanger |
|---|---|---|---|---|
| **Cooling** | | | | |
| | $T_j$ (ºC) | | Outdoor air dry bulb temperatures (ºC) | Indoor air dry bulb (wet bulb) temperatures (ºC) |
| All | 27 | 100% | 27(19) | 27 (19) |
| Double duct | 35 | 100% | 35(24) | 27(19) |
| Inverter type | 27 | 33% | 27(19) | 27 (19) |

**Table 11**
**European cooling season for fixed air-to-air air conditioners**

| | Outdoor temperature | bin hours |
|---|---|---|
| j | $T_j$ | $h_j$ |
| # | °C | h/a |
| 1 | 17 | 205 |
| 2 | 18 | 227 |
| 3 | 19 | 225 |
| 4 | 20 | 225 |
| 5 | 21 | 216 |
| 6 | 22 | 215 |
| 7 | 23 | 218 |
| 8 | 24 | 197 |
| 9 | 25 | 178 |
| 10 | 26 | 158 |
| 11 | 27 | 137 |
| 12 | 28 | 109 |
| 13 | 29 | 88 |
| 14 | 30 | 63 |
| 15 | 31 | 39 |
| 16 | 32 | 31 |

| | | |
|---|---|---|
| 17 | 33 | 24 |
| 18 | 34 | 17 |
| 19 | 35 | 13 |
| 20 | 36 | 9 |
| 21 | 37 | 4 |
| 22 | 38 | 3 |
| 23 | 39 | 1 |
| 24 | 40 | 0 |

**Table 12**
**European heating seasons for heat pumps**

| $bin_j$ | $T_j$ (°C) | $H_j$ (h/a) | | |
|---|---|---|---|---|
| | | Warmer | Average | Colder |
| 1 to 8 | -30 to -23 | 0 | 0 | 0 |
| 9 | -22 | 0 | 0 | 1 |
| 10 | -21 | 0 | 0 | 6 |
| 11 | -20 | 0 | 0 | 13 |
| 12 | -19 | 0 | 0 | 17 |
| 13 | -18 | 0 | 0 | 19 |
| 14 | -17 | 0 | 0 | 26 |
| 15 | -16 | 0 | 0 | 39 |
| 16 | -15 | 0 | 0 | 41 |
| 17 | -14 | 0 | 0 | 35 |
| 18 | -13 | 0 | 0 | 52 |
| 19 | -12 | 0 | 0 | 37 |
| 20 | -11 | 0 | 0 | 41 |
| 21 | -10 | 0 | 1 | 43 |
| 22 | -9 | 0 | 25 | 54 |
| 23 | -8 | 0 | 23 | 90 |
| 24 | -7 | 0 | 24 | 125 |
| 25 | -6 | 0 | 27 | 169 |
| 26 | -5 | 0 | 68 | 195 |
| 27 | -4 | 0 | 91 | 278 |
| 28 | -3 | 0 | 89 | 306 |
| 29 | -2 | 0 | 165 | 454 |
| 30 | -1 | 0 | 173 | 385 |
| 31 | 0 | 0 | 240 | 490 |
| 32 | 1 | 0 | 280 | 533 |
| 33 | 2 | 3 | 320 | 380 |
| 34 | 3 | 22 | 357 | 228 |
| 35 | 4 | 63 | 356 | 261 |
| 36 | 5 | 63 | 303 | 279 |
| 37 | 6 | 175 | 330 | 229 |
| 38 | 7 | 162 | 326 | 269 |
| 39 | 8 | 259 | 348 | 233 |
| 40 | 9 | 360 | 335 | 230 |
| 41 | 10 | 428 | 315 | 243 |
| 42 | 11 | 430 | 215 | 191 |
| 43 | 12 | 503 | 169 | 146 |
| 44 | 13 | 444 | 151 | 150 |
| 45 | 14 | 384 | 105 | 97 |
| 46 | 15 | 294 | 74 | 61 |
| Total hours: | | 3 590 | 4 910 | 6 446 |

**Table 13**
**Air velocity reading for the maximum air flow determination**

| | Start position (mm from the vertical axis) | Increment (mm) | Radius annulus | Air velocity limit (m/min) |
|---|---|---|---|---|
| Ceiling fans | 20 | 40 | 40 | 24 |
| Other fans | 40 | 80 | 80 | 9 |

*ANNEX V*

**Product information sheet**

1. Pursuant to point 1(b) of Article 3, the supplier shall enter into the product database the information as set out in Table 14 or Table 15, as applicable.

**Table 14**

**Product information sheet for air-to-air air conditioners and air-to-air heat pumps**

| | | | |
|---|---|---|---|
| **Supplier's name or trademark:** | | | |
| **Supplier's address[a]:** | | | |
| **Model identifier:** | | | |
| **Type of air-to-air air conditioner** | | [Portable/Fixed] | |
| **General product parameters for air-to-air air conditioners:** | | | |
| Parameter | Value | Parameter | Value |
| Annual energy consumption for cooling ($Q_{CE}$) (kWh/a) | x or - | Seasonal energy efficiency ratio (SEER) | x,x or - |
| The seasonal space cooling energy efficiency ($\eta_{s,c}$) (%) | x or - | Energy efficiency class (based on the seasonal space cooling energy efficiency) | [A/B/C/D/E/F/G] or - |
| **General product parameters for air-to-air air heat pumps:** | | | |
| Annual energy consumption for heating ($Q_{HE}$) (kWh/a) | x or - | Seasonal energy efficiency ratio (SCOP) | x,x or - |
| The seasonal space heating energy efficiency ($\eta_{s,h}$) (%) | x or - | Energy efficiency class (based on the seasonal space heating energy efficiency) | [A/B/C/D/E/F/G] or - |
| **General product parameters for air-to-air air conditioners and air-to-air heat pumps:** | | | |
| Indoor sound power (dB(A)) (in cooling mode or if there is no cooling mode in heating mode) | x | Indoor sound power class | [A/B/C/D] |
| Outdoor sound power (dB(A)) (in cooling mode or if there is no cooling mode in heating mode) | x or - | Outdoor sound power class | [A/B/C/D] or - |

| | | | |
|---|---|---|---|
| **Product specific parameters:**<br>(Portable air-to-air air conditioners: fill in point 1, portable air-to-air heat pumps: fill in point 2, fixed air-to-air air conditioners: fill in point 3, air-to-air air heat pumps: fill in point 4.) | | | |
| **1. Portable air-to-air air conditioners:** | | | |
| Cooling capacity at an indoor and an outdoor temperature of 27 °C ($P_{ratedc}$) (corrected for infiltration) (kW) | x,x | The temperature above which the appliance does not meet the cooling demand (Teq) (°C) | x,x |
| **2. Portable air-to-air heat pumps:** | | | |
| Heating capacity at an indoor and an outdoor temperature of 20 °C ($P_{ratedh}$) (corrected for infiltration for portable single duct) (kW) | x,x | The capacity of the electric resistance heater for the average climate (elbu($T_{design}$ for the average season)) | x,x |
| **3. Fixed air-to-air air conditioners** | | | |
| The capacity at 27 °C indoor temperature and 35 °C outdoor temperature (= $P_{designc}$) (kW) | x,x | | |
| **4. Fixed air-to-air heat pump** | | | |
| The capacity at 20 °C indoor temperature and -10 °C outdoor temperature ($P_{designh}$ for the average season) (kW) | x,x | The capacity of the electric resistance heater at 20 °C indoor temperature and -10 °C outdoor (elbu($T_{design}$ for the average season)) (kW) | x,x |
| The capacity at 20 °C indoor temperature and 2 °C outdoor temperature ($P_{designh}$ for the warmer season) (kW) | x,x | The capacity of the electric resistance heater for the warmer climate (elbu($T_{design}$ for the warmer season)) (kW) | x,x |
| The capacity at 20 °C indoor temperature and -22 °C outdoor temperature (equal to $P_{designc}$ for the colder season) (kW) | x,x | The capacity of the electric resistance heater for the warmer climate (elbu($T_{design}$ for the colder season)) (kW) | x,x |
| **Minimum duration of the guarantee offered by the supplier[a]:** | | | |

| **Additional information:** |
|---|
| The weblink to the supplier's website, where the information in point 3 of Annex II of Commission Regulation (EU) XXXX/XXX[3] *[OP-please insert Regulation number of the accompanying Ecodesign Regulation on air-to-air air conditioners, air-to-air heat pumps and comfort fans]*[b] is found: |

[a] changes to these items shall not be considered relevant for the purposes of point 4 of Article 4 of Regulation (EU) 2017/1369.

**Table 15**
**Product information sheet for comfort fans**

| **Supplier's name or trademark:** | | | |
|---|---|---|---|
| **Supplier's address[a]:** | | | |
| **Model identifier:** | | | |
| **Type of product:** | | [air-to-air air conditioner/ air-to-air heat pump / reversible air-to-air air conditioner] | |
| **Type of air-to-air air conditioner or air-to air heat pump:** | | [Portable/Fixed] | |
| **General product parameters:** | | | |
| Parameter | Value | Parameter | Value |
| Annual energy consumption (kWh/a) | x | | |
| Service Value ((m³/min)/W) | x | Energy efficiency class | [A/B/C/D/E/F/G] |
| Sound power (dB(A)) | x | Sound power class | [A/B/C/D] |
| **Minimum duration of the guarantee offered by the supplier[a]:** | | | |
| **Additional information:** | | | |
| The weblink to the supplier's website, where the information in point 3 of Annex II of Commission Regulation (EU) XXXX/XXX[4] *[OP-please insert Regulation number of the accompanying Ecodesign Regulation on air-to-air air conditioners, air-to-air heat pumps and comfort fans]*[b] is found: | | | |

[a] changes to these items shall not be considered relevant for the purposes of point 4 of Article 4 of Regulation (EU) 2017/1369.

[3] Commission Regulation (EU) XXXX/XXX *[OP – please enter the number of the Regulation]* of *[OP-please enter the date]* laying down ecodesign requirements for air-to-air air conditioners, air-to-air heat pumps and comfort fans to Directive 2009/125/EC of the European Parliament and of the Council (*[OP – please enter the references to the OJ]*).

[4] Commission Regulation (EU) XXXX/XXX *[OP – please enter the number of the Regulation]* of *[OP-please enter the date]* laying down ecodesign requirements for air-to-air air conditioners, air-to-air heat pumps and comfort fans to Directive 2009/125/EC of the European Parliament and of the Council (*[OP – please enter the references to the OJ]*).

*ANNEX VI*

**Technical documentation**

5. The technical documentation referred to in point 1(d) of Article 3 shall include the following elements:

   (a) the information as set out in Annex V;

   (b) the information as set out in Table 16:

**Table 16**
**Additional information to be included in the technical documentation**

| | | | |
|---|---|---|---|
| **A general description of the model, sufficient for it to be unequivocally and easily identified**: | | | |
| **Product specifications** | | | |
| **Type of capacity control** | | **[**fixed, staged, variable] | |
| **Product specific parameters:** | | | |
| **1. Fixed air-to-air air conditioners** | | | |
| Parameter | Value | Parameter | Value |
| Declared capacity for cooling ($Pdc(T_j)$) (kW) | | Declared energy efficiency ratio ($EER_d(Tj)$) | |
| Pdc(35 °C) | x,x | $EER_d$(35 °C) | x,x |
| Pdc(30 °C) | x,x | $EER_d$(30 °C) | x,x |
| Pdc(25 °C) | x,x | $EER_d$(25 °C) | x,x |
| Pdc(20 °C) | x,x | $EER_d$(20 °C) | x,x |
| Degradation coefficient during cooling | | Rated air flow rate (m³/h) | |
| Cdc | 0,25 | Rated air flow rate | x |
| Power consumption in modes other than 'active mode' (kW) | | | |
| $P_{OFF}$ | x,xxx | $P_{CK}$ | x,xxx |
| $P_{TO}$ | x,xxx | $P_{SB}$ | x,xxx |
| **2. Fixed air-to-air heat pumps** | | | |
| Parameter | Value | Parameter | Value |
| **Average season:** | | | |
| Bivalent temperature (°C) | | Operation limit temperature (°C) | |
| $T_{biv}$ | x,x | $T_{ol}$ | x,x |
| Declared capacity for heating ($Pdh(T_j)$) (kW) | | Declared coefficient of performance ($COP_d(Tj)$) | |
| $P_{dh}$(-7 °C) | x,x | $COP_d$(-7°C °C) | x,x |
| $P_{dh}$(2 °C) | x,x | $COP_d$(2°C °C) | x,x |
| $P_{dh}$(7 °C) | x,x | $COP_d$(7°C °C) | x,x |
| $P_{dh}$(12 °C) | x,x | $COP_d$(12 °C) | x,x |
| $P_{dh}(T_{biv})$ | x,x | $COP_d(T_{biv})$ | x,x |
| $P_{dh}(T_{ol})$ | x,x | $COP_d(T_{ol})$ | x,x |

| | | | |
|---|---|---|---|
| **Warmer season:** | | | |
| Bivalent temperature (°C) | | Operation limit temperature (°C) | |
| $T_{biv}$ | x,x | $T_{ol}$ | x,x |
| Declared capacity for heating (Pdh($T_j$)) (kW) | | Declared coefficient of performance ($COP_d$(Tj)) | |
| $P_{dh}$(2 °C) | x,x | $COP_d$(2°C °C) | x,x |
| $P_{dh}$(7 °C) | x,x | $COP_d$(7°C °C) | x,x |
| $P_{dh}$(12 °C) | x,x | $COP_d$(12 °C) | x,x |
| $P_{dh}$($T_{biv}$) | x,x | $COP_d$($T_{biv}$) | x,x |
| $P_{dh}$($T_{ol}$) | x,x | $COP_d$($T_{ol}$) | x,x |
| **Colder season:** | | | |
| Bivalent temperature (°C) | | Operation limit temperature (°C) | |
| $T_{biv}$ | x,x | $T_{ol}$ | x,x |
| Declared capacity for heating (Pdh($T_j$)) (kW) | | Declared coefficient of performance ($COP_d$(Tj)) | |
| $P_{dh}$(-15 °C) | x,x | $COP_d$(-15 °C °C) | x,x |
| $P_{dh}$(-7 °C) | x,x | $COP_d$(-7 °C) | x,x |
| $P_{dh}$(2 °C) | x,x | $COP_d$(2 °C) | x,x |
| $P_{dh}$(7 °C) | x,x | $COP_d$(7 °C) | x,x |
| $P_{dh}$(12 °C) | x,x | $COP_d$(12 °C) | x,x |
| $P_{dh}$($T_{biv}$) | x,x | $COP_d$($T_{biv}$) | x,x |
| $P_{dh}$($T_{ol}$) | x,x | $COP_d$($T_{ol}$) | x,x |
| Degradation coefficient during heating | | Rated air flow rate (m³/h) | |
| Cdh | 0,25 | | x |
| Power consumption in modes other than 'active mode' (kW) | | | |
| $P_{OFF}$ | x,xxx | $P_{CK}$ | x,xxx |
| $P_{TO}$ | x,xxx | $P_{SB}$ | x,xxx |
| **3. Portable air-to-air air conditioners** | | | |
| Rated capacity (kW) | | | |
| $P_{rated}$ | x,x | | |
| For single duct: | | | |
| Infiltration impact at the standard rating conditions (kW) | | | |
| $P_{INF}$(35°C) | x,x | $P_{dc\_corr}$(Teq) | x,x |
| For double duct: | | | |
| Declared capacity (kW) | | Declared energy efficiency ratio ($EER_{dc}$($T_j$, PL) | |
| $P_{dc}$(35 °C, 100 %) | x,x | $EER_d$(35 °C, 100 %) | x,x |
| $P_{dc}$(27 °C, 33 %) | x,x | $EER_d$(27 °C, 33 %) | x,x |
| **4. Portable air-to-air heat pumps** | | | |
| Capacity (kW) | | | |
| $P_{rated}$ | x,x | elbu_max | x,x |
| **Average season:** | | | |
| Switch temperature heat pump off (°C) | | | |

| | | | | | |
|---|---|---|---|---|---|
| $T_{hp,off}$ | x,x | | | | |
| Declared capacity for heating ($Pdh(T_j)$) for double duct and declared capacity for heating corrected for infiltration for single ducts (kW) | | Declared coefficient of performance ($COP_d(Tj)$) | | For single duct: the infiltration air flow for part load $AF(T_j)$ ($m^3/h$) | |
| $P_{dh}$(-7°C) or $P_{dh\_corr}$(-7°C) | x,x | $COP_d$(-7°C ) | x,x | AF(-7°C ) | x,x |
| $P_{dh}$(2°C) or $P_{dh\_corr}$(2°C) | x,x | $COP_d$(2°C) | x,x | AF(2°C ) | x,x |
| $P_{dh}$(7°C) or $P_{dh\_corr}$(7°C) | x,x | $COP_d$(7°C) | x,x | AF(7°C) | x,x |
| $P_{dh}$(12°C) or $P_{dh\_corr}$(12°C) | x,x | $COP_d$(12 °C) | x,x | AF(12 °C) | x,x |
| $P_{dh}(T_{hp,off})$ or $P_{dh\_corr}(T_{hp,off})$ | x,x | $COP_d(T_{hp,off})$ | x,x | $AF(T_{hp,off})$ | x,x |
| **Warmer season:** | | | | | |
| Switch temperature heat pump off (°C) | | | | | |
| $T_{hp,off}$ | x,x | | | | |
| Declared capacity for heating ($Pdh(T_j)$) for double duct and declared capacity for heating corrected for infiltration for single ducts (kW) | | Declared coefficient of performance ($COP_d(Tj)$) | | For single duct: the infiltration air flow for part load $AF(T_j)$ ($m^3/h$) | |
| $P_{dh}$(2°C) or $P_{dh\_corr}$(2°C) | x,x | $COP_d$(2°C) | x,x | AF(2°C ) | x,x |
| $P_{dh}$(7°C) or $P_{dh\_corr}$(7°C) | x,x | $COP_d$(7°C) | x,x | AF(7°C) | x,x |
| $P_{dh}$(7°C) or $P_{dh\_corr}$(7°C) | x,x | $COP_d$(12 °C) | x,x | AF(12 °C) | x,x |
| $P_{dh}(T_{hp,off})$ or $P_{dh\_corr}(T_{hp,off})$ | x,x | $COP_d(T_{hp,off})$ | x,x | $AF(T_{hp,off})$ | x,x |
| **Colder season:** | | | | | |
| Switch temperature heat pump off (°C) | | | | | |
| $T_{hp,off}$ | x,x | | | | |
| Declared capacity for heating ($Pdh(T_j)$) for double duct and declared capacity for heating corrected for infiltration for single ducts (kW) | | Declared coefficient of performance ($COP_d(Tj)$) | | For single duct: the infiltration air flow for part load $AF(T_j)$ ($m^3/h$) | |
| $P_{dh}$(-15°C) or $P_{dh\_corr}$(-15°C) | x,x | $COP_d$(-15°C ) | x,x | AF(-15°C ) | x,x |
| $P_{dh}$(-7°C) or $P_{dh\_corr}$(-7°C) | x,x | $COP_d$(-7°C ) | x,x | AF(-7°C ) | x,x |
| $P_{dh}$(2°C) or $P_{dh\_corr}$(2°C) | x,x | $COP_d$(2°C) | x,x | AF(2°C ) | x,x |

| | | | | | |
|---|---|---|---|---|---|
| $P_{dh}$(7°C) or $P_{dh\_corr}$(7°C) | x,x | $COP_d$(7°C) | x,x | AF(7°C) | x,x |
| $P_{dh}$(12°C) or $P_{dh\_corr}$(12°C) | x,x | $COP_d$(12 °C) | x,x | AF(12 °C) | x,x |
| $P_{dh}$($T_{hp,off}$) or $P_{dh\_corr}$($T_{hp,off}$) | x,x | $COP_d$($T_{hp,off}$) | x,x | AF($T_{hp,off}$) | x,x |

| | | | |
|---|---|---|---|
| Degradation coefficient during heating | | Rated air flow rate (m³/h) | |
| Cdh | 0,25 | - | x |
| Power consumption in modes other than 'active mode' (kW) | | | |
| $P_{OFF}$ | x,xxx | $P_{CK}$ | x,xxx |
| $P_{TO}$ | x,xxx | $P_{SB}$ | x,xxx |
| **5. Comfort fans** | | | |
| Rated voltage | | Rated frequency | |
| $V_{rated}$ | x | $f_{rated}$ | x |
| Fan power input (W) | | Standby power consumption (W) | |
| $P_F$ | x,x | $P_{SB}$ | x,xxx |
| Maximum flow rate (m³/min) | | | |
| $Flow_{max}$ | x,x | | |
| **Additional information:** | | | |
| The references of the harmonised standards or other reliable accurate and reproducible methods applied: | | | |
| Where appropriate, identification and signature of the person empowered to bind the supplier: | | | |
| A list of equivalent models, including model identifiers: | | | |

*ANNEX VII*

**Information to be provided in visual advertisements, in technical promotional material or other promotional material, in distance selling except distance selling on the internet**

1. In visual advertisements for air-to-air air conditioner, air-to-air heat pumps or comfort fans, for the purposes of ensuring conformity with the requirements laid down in point 1(e) Article 3 and point 1(c) of Article 4, the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.

2. In technical promotional material or other promotional material for air-to-air air conditioner, air-to-air heat pumps or comfort fans, for the purposes of ensuring conformity with the requirements laid down in point 1(f) Article 3 and point 1(d) of Article 4 the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.

3. Any paper based distance selling of for air-to-air air conditioner, air-to-air heat pumps or comfort fans must show the energy efficiency class and the range of energy efficiency classes available on the label as set out in point 4 of this Annex.

4. The energy efficiency class and the range of energy efficiency classes shall be shown, as indicated in Figure 1, with:

   (c) an arrow containing the letter of the energy efficiency class, in white, Calibri Bold and in a font size at least equivalent to that of the price;

   (d) the colour of the arrow matching the colour of the energy efficiency class;

   (e) the range of available energy efficiency classes in 100 % black; and

   (f) the size shall be such that the label is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0,5 pt in black around the arrow and the letter of the energy efficiency class.


**Figure 1: Coloured/monochrome left/right arrow, with range of energy efficiency classes indicated**

By derogation, if the visual advertisement, technical promotional material or other promotional material or paper based distance selling is printed in monochrome, the arrow can be in monochrome in that visual advertisement, technical promotional material, other promotional material or paper based distance selling.

5. Telemarketing based distance selling must specifically inform the customer of the energy efficiency class of the product and of the range of energy efficiency classes available on the label, and that the consumer can access the full label and the product information sheet through a through a link to the product database website or by requesting a printed copy.

6. For all the situations mentioned in points 1 to 3 and 5, it must be possible for the customer to obtain, on request, a printed copy of the label and the product information sheet.

*ANNEX VIII*

**Information to be provided in the case of distance selling through the Internet**

1. The appropriate label made available by suppliers in accordance with point 1(g) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in point 4 of Annex III. The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in point 3 of this Annex. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.

2. The image used for accessing the label in the case of a nested display, as indicated in Figure 2, shall:

   (g) be an arrow in the colour corresponding to the energy efficiency class of the product on the label;

   (h) indicate the energy efficiency class of the product on the arrow in white, Calibri Bold and in a font size equivalent to that of the price; and

   (i) have one of the following two formats, and its size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0,5 pt in 100 % black placed around the arrow and the letter of the energy efficiency class:


**Figure 2: Coloured left/right arrow example, with range of energy classes indicated**

3. In the case of a nested display, the sequence of display of the label shall be as follows:

   (j) the image referred to in point 2 of this Annex shall be shown on the display mechanism in proximity to the price of the product;

   (k) the image shall link to the label as set out in Annex III;

   (l) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;

   (m) the label shall be displayed by pop up, new tab, new page or inset screen display;

   (n) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;

   (o) the label shall cease to be displayed by means of a close option or other standard closing mechanism;

   (p) the alternative text for the graphic, to be displayed on failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price.

4. The electronic product information sheet made available by suppliers in accordance with point 1(b) of Article 3 shall be shown on the display mechanism in proximity to

the price of the product. The size shall be such that the product information sheet is clearly visible and legible. The product information sheet may be displayed using a nested display or by referring to the product database, in which case the link used for accessing the product information sheet shall clearly and legibly indicate ‘Product information sheet’. If a nested display is used, the product information sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

*ANNEX IX*

**Verification procedure for market surveillance purposes**

The verification tolerances set out in this Annex relate only to the verification of the declared parameters by Member State authorities and shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation. The values and classes on the label or in the product fiche shall not be more favourable for the supplier than the values reported in the technical documentation.

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

When verifying the compliance of a product model with the requirements laid down in this Regulation, the authorities of the Member States shall apply the following procedure:

(2) The Member State authorities shall verify one single unit of the model.

(3) The model shall be considered to comply with the applicable requirements if:

(a) the values given in the technical documentation pursuant to point 3 of Article 3 of Regulation (EU) 2017/1369 (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the supplier than the corresponding values given in the test reports; and

(b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values, and the indicated energy efficiency class is not more favourable for the supplier than the class determined by the declared values; and

(c) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 17.

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

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

(6) The model shall be considered to comply with the applicable requirements if for these three units, the arithmetical mean of the determined values complies with the respective tolerances given in Table 17.

(7) If the result referred to in point 5 is not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.

(8) The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision has been taken on the non-compliance of the model according to points 3 and 6.

The Member State authorities shall only apply the verification tolerances set out in Table 17 and shall only use the procedure described this Annex. No other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

**Table 17: Verification tolerances for measured parameters**

| Parameter | Product | Verification tolerances |
|---|---|---|
| SEER | Fixed air-to-air air conditioners < 2 kW | The determined value[a] shall not be more than 8 % higher than the declared value. |
| | Fixed air-to-air air conditioners ≥ 2 kW and < 6 kW | The determined value[a] shall not be more than 6 % higher than the declared value. |
| | Fixed air-to-air air conditioners ≥ 6 kW | The determined value[a] shall not be more than 4 % higher than the declared value. |
| | Portable air-to-air air conditioners | The determined value[a] shall not be more than 6 % higher than the declared value. |
| SCOP | Fixed air-to-air air conditioners < 2 kW | The determined value[a] shall not be more than 8 % higher than the declared value. |
| | Fixed air-to-air air conditioners ≥ 2 kW and < 6 kW | The determined value[a] shall not be more than 7 % higher than the declared value. |
| | Fixed air-to-air air conditioners ≥ 6 kW | The determined value[a] shall not be more than 6 % higher than the declared value. |
| | Portable air-to-air air conditioners | TBC |
| $P_c(T_{eq})$ | Portable air-to-air air conditioners | The determined value[a] shall not be more than 7 % higher than the declared value. |
| $T_{eq}$ | Portable air-to-air air conditioners | The determined value[a] shall not be more than 0,3 K higher than the declared value. |
| Maximum air flow | Comfort fans | The determined value shall not be more than 10 % higher than the declared value. |

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