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OPERATIONAL MANUAL
for the
CERTIFICATION
of
AIR CONDITIONERS

OM-1-2017

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Editing (date):	Arnaud LACOURT	02 Septembre 2016
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1	Reference to trial campaign for seasonal efficiencies (AC2 and AC3)	IV.2	7
2	Reference to Euro HP programme	VI.1	17
3	Modification of MVF decision according to CM	C.III	30

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Published by Eurovent Certita Certification SAS
48-50 rue de la Victoire, 75009
Paris, France
Tel: +33 1 7544 7155
E-mail: a.lacourt@eurovent-certification.com

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I. PURPOSE

The purpose of this manual is to prescribe procedures for the operation of the Eurovent Certified Performance Programme for Air Conditioners in accordance with the Certification Manual.

II. SCOPE

The programme for Air Conditioners is divided in four sub-programmes, as it applies to air conditioners in the following groups:

- Comfort air cooled air conditioners and air/air heat pumps rated up to 12 kW cooling capacity, except double duct and single duct units (AC1);
- Comfort air conditioners rated from 12 kW up to but not including 45 kW cooling capacity (AC2);
- Comfort air conditioners rated from 45 kW up to 100 kW cooling capacity (AC3);
- Close control air conditioners up to 100 kW, direct expansion and chilled water (CC).

Companies may apply to participate in any of the above certification sub-programmes:

Are included in the scope:

- Multi-split with data declared and published as combination of outdoor and indoor units with 2 indoor units only: each unit individually connected to the outdoor unit and with an expansion device inside the outdoor unit. The 2 indoor units have to be of the same mounting type. For AC1 capacity ratio must be 1 ± 0.05 .

Are excluded from the scope:

- Variable Refrigerant flow Systems
- Multi-split with 3 or more indoor units;
- AC1 multi with 2 indoors and a connection ratio different of 1 ± 0.05 ;
- Single duct mono-bloc mobile air conditioners;
- Packaged combined air conditioning and control mechanical ventilation;
- Air conditioners up to 12 kW not fulfilling the requirements of Regulation 206/2102 (see APPENDIX D).

“Certify-all” requirement: If a company participates in one of the sub-programmes for Air Conditioners (AC1, AC2, AC3 and/or CC), all production models, within the scope of that sub-programme, shall be certified in accordance with the relevant Rating Standard.

III. BASIC OUTLINE OF THE PROGRAMME

Participation in the programme consists of the following:

III.1 Application

After signing the Licence Agreement, the Applicant has to fill in the declaration list for each sub-programme separately with all models that comply with respectively Rating Standard:

- 6/C/001A for Air-cooled AC1 products,
- 6/C/001 for Water-cooled AC1 products, AC2 and AC3 products
- 6/C/004 for CC products.

III.2 Qualifying procedure

When the declaration file is completed, units selected by Eurovent Certita Certification shall be tested in an Independent Laboratory chosen by Eurovent Certita Certification. If the tests show conformity with the relevant Rating Standards, certification is granted until 3 months after delivery deadline of next testing campaign.

III.3 Repetition procedure

Every year, Eurovent Certita Certification checks whether the certified performances of the certified products still fulfil the requirements. If the participants fulfilled all previous test campaigns and provided all the necessary elements and delivered all the units for the current campaign, the certification is renewed for another campaign within the timeframe allocated by the certification schedule, see Appendix A.

III.4 Failure treatment

When the test results fail to comply with the requirements of the relevant Rating Standard(s) the failure treatment shall be applied.

III.5 Complaint procedure

Under special conditions a complaint procedure may be carried out as described in the Certification Manual.

IV. OPERATION OF THE PROGRAMME

IV.1 Declaration of data

a. Rated performance data

All characteristics and performance items shall be expressed in SI Units. Maximum of 3 significant figures shall be used for capacity, EER, COP, SEER, SCOP, power consumption and water pressure drop and 2 significant figures for sound power.

b. Certification forms

Submittal for certification of models shall be made in writing and sent to Eurovent Certita Certification as an .xls or .xlsx file (Copy of these forms is part of this manual (see APPENDIX B).

Declaration list (Form AC-1) shall be used for declaration of ranges, ranges, models and data. For models submitted by a private brand manufacturer (BN) the form will be used to identify the corresponding model number of the original equipment manufacturer.

Technical Data Sheet (Form AC-2) for models selected for testing shall be completed with technical description of all components along with complementary declared data.

Additional Information Form (Form AC-3) shall be filled-in explaining how to start the unit and to reach the proper frequency of the motor and including a contact person the laboratory can reach in case of problem.

Reporting of test result (Form AC-4) is sent by Eurovent Certita Certification for models tested, showing the deviations between claimed and measured data.

Response form after failure: (Form AC-5), is sent by Eurovent Certita Certification for models which failed the test, showing the list of products affected by the failed test.

c. Reporting of models

In reporting models for certification and for publication on the Eurovent Certified Performance website, certified ratings shall be given for Packaged Air Conditioners Units and all combinations of Split Air Conditioners which are intended by the participant to be used together and which meet the requirements of the relevant Rating Standard(s).

Optional devices or accessories which are used to obtain the ratings of the basic unit assembly and which affect the ratings shall be included in the certification data. Systems having coils with both horizontal and vertical orientation, when ratings are different, shall be certified to reflect the capacity and efficiency ratings for both positions.

Besides current models, the Participants shall provide Eurovent Certita Certification with the list of:

- models under development,
- new models,
- deleted models,
- obsolete models.

d. Basic model group and acoustical family

Each Participant declaration list will be grouped in Basic Model Groups (BMG). A basic model shall be defined by units which are essentially the same in terms of thermal performance ($\pm 10\%$ on capacity) and function (cooling or heating) and the same or comparable in terms of basic components, specifically fans, coils, compressors and motors. In the case of split packaged units, the unit containing the compressor shall be the reference unit.

The Acoustical Family is defined as same reference for all sizes for outdoor units and as same reference and same mounting type for indoor units.

IV.2 Selection of units to be tested

Within the programme, tests may be conducted under the following procedures:

- Scheduled tests in qualifying procedure
- Scheduled tests in repetition procedure
- Penalty test
- Complaint test

a. Number of units to be tested

Eurovent Certita Certification shall select models on the basis of its evaluation of a Manufacturer's declaration to establish suitable criteria of types and sizes to be tested. The number of units tested each year per participant shall be as follows:

- 8% (rounded, at least 1) of the number of the listed basic model groups for AC1
- 10% (rounded, at least 1) of the number of the listed basic model groups for AC2, AC3 and CC.

Examples of rounding (with 10%):

- 7 BMG \Rightarrow 1 selected unit;
- 14 BMG \Rightarrow 1 selected unit;
- 15 BMG \Rightarrow 2 selected units

b. Thermal measurements for AC1

For certification of seasonal efficiency, 30% of the selected units (minimum one unit) the following measurements at the following conditions shall be performed:

- One running test at Tol. If for the average climate Tol $\geq -10^{\circ}\text{C}$ and a measurement has to be made at Tol (chosen condition), the running test is unnecessary.
- One point at the standard condition full load, i.e. condition A (35°C) in cooling mode at T_{designC}
- One point at $+7^{\circ}\text{C}$ standard rating condition in heating mode, as specified in EN14511-2:2013. (if declared)
- One point to be chosen by Eurovent Certita Certification at part load condition in cooling mode between B, C or D
- One point at the condition F at T_{bivalent} in heating mode for the average climate (mandatory to declare)
- One point at the condition F at T_{bivalent} in heating mode for each additional optional declared climate
- One point to be chosen by Eurovent Certita Certification at part load condition in heating mode between A (if different from F), B (if different from F), C, D or E (if $\neq F$)
- Tests of Poff, P_{sb} and P_{to} (cooling mode)
- P_{ck} whenever relevant (in alternance with Poff, P_{sb} and P_{to})
- Test of C_d if declared at a different value than the default value (0.25).

For the remaining selected units from the conditions listed above:

- One point selected by Eurovent Certita Certification in cooling
- One point selected by Eurovent Certita Certification in heating

This can be summarized in the following table:

Table 1: Thermal measurements of AC1 units

		30%	70%
Running test at Tol		X	
cooling	A (standard $+35^{\circ}\text{C}$ full load) at T_{designC}	X	
heating	nominal ($+7^{\circ}\text{C}$ standard rating condition)	(X)	
cooling	B, C or D	X	
heating	F at T_{biv} for the average climate	X	
heating	F at T_{biv} for each additional climate	(X)	
heating	A (at part load, if $\neq F$), B (if $\neq F$), C, D or E (if $\neq F$)	X	
Poff		X	
P _{sb} (Cooling)		X	
P _{to} (cooling)		X	
P _{ck}		X	
C _d		(X)	
cooling	A (full load), B, C or D		X
heating	nominal $+7^{\circ}\text{C}$ (standard rating condition), F_{avg} , F_{colder} , F_{warmer} , A (part load), B, C, D or E (if $\neq F$)		X

c. Thermal measurements for AC1 Water Cooled Units, AC2, AC3 and CC

At standard rating conditions, in cooling and heating as specified in EN14511-2:2013 (no test at part load conditions):

d. Acoustics measurements for AC1, AC2, AC3 and CC

A weighted sound power level test for indoor(s) and outdoor shall be carried out for all units selected.

e. Optional performances for AC1, AC2 and AC3

If declared, the following performances must be tested:

- P_{sb} in heating
- LR_{contmin} & CcpLR_{contmin} in Cooling mode and if relevant, in Heating mode.
- The definition and testing methods are described in each relevant Rating Standard.

These optional performances can be declared only by BMG and not for all the declared products.

For a unit selected, where LR_{contmin} and CcpLR_{contmin} are declared, Eurovent Certita will choose to test LR_{contmin} in cooling or in heating.

f. Acquisition of unit

Deadline for delivery of units to the laboratory together with the technical forms duly completed, the starting procedure and the payment/order¹ is given in the Certification Schedule (see APPENDIX A).

If units, technical forms, starting procedures and payment/orders are not delivered within the time limits specified in the notification received from Eurovent Certita Certification, it is considered as non-application of procedures (see Certification Manual).

g. Tests at the laboratory

Units shall be installed in the test facility in accordance with the Participant published installation instructions. The Participant will provide the laboratory with full information about the installation, including at least the following items:

- any adjustment of the fan speeds (change of connector, switches, etc.);
- any change of the settings for any part of the unit (for instance, switch for floor/ceiling mounting, switch for cooling only/heat pump unit, etc.);
- maximum external static pressure for ducted units;
- exact location of the refrigerant piping for multisplit systems, above all for units intended for more than 2 indoor units;
- any other information necessary to the correct installation of the unit.

The laboratory shall install and check out the units. The procedures used shall be in accordance with the Participant installation, start-up and service instructions.

Participant personnel can be allowed to attend the setting-up and the starting of the unit on request (for inverter units for example) but not the test itself and are not permitted in the laboratory test room facility.

Prior to the test, the Laboratory personnel are only allowed to:

- Repair leaks
- Repair or replace items damaged by shipping or handling

¹ Depending of the licence agreement signed between Eurovent Certita Certification and the manufacturer.

- Assure correct refrigerant charge
- Assure correct fan speed(s) where adjustable speed fans are used

If the unit is not repairable, it shall be replaced by the Participant.

h. Report of test results

Upon completion of the tests on each unit, the Laboratory will render its complete report as pdf file to Eurovent Certita Certification. Eurovent Certita Certification will transmit a copy of the report together with reporting, Form AC-4, and re-rating, Form AC-5, test result to the Participant.

i. Selection, shipment and return

Selected units shall be obtained either from the Applicant/Participant production line or a stocking point, and then delivered to the Laboratory. Following completion of the tests, the Participant shall arrange for the shipment of the unit. The Laboratory shall have the responsibility of un-crating, handling, testing and re-crating the unit for shipment.

A contact person shall be designated by the Applicant/Participant to organise the shipment to the laboratory, the laboratory shall inform him when the testis completed.

All transport fees shall be covered by the participant. The laboratory shall not engage any transport fees.

The Participant has to notify Eurovent Certita Certification within four weeks after receiving the test report if he intends to recover the tested unit. If the participant fails to do so, Eurovent Certita Certification will order the laboratory to dispose of the units and invoice the participant the disposal fee.

For AC1 units the participant can choose to recover all units at the end of the testing campaign. The Participant has to recover its units within four weeks after receiving the last test report. For AC2, AC3 and CC units the Participant has to recover its units within eight weeks after receiving the test report.

For AC2 and AC3 programmes, a trial testing campaign for seasonal performances for cooling and heating modes is organized during 2017 campaign following decisions taken from all compliance committee meetings held in 2016. (cf.Minutes from 27 September 2016)

IV.3 Failure treatment

a. Component failure

If any functional component is inoperative, or the unit is damaged and cannot be repaired at the Laboratory, the unit is considered as a “component failure”. A new unit shall then be delivered within 2 weeks.

b. Testing at Tol

If the unit fails to start and operate continually for 30 min at Tol the Applicant/Participant has 2 weeks to choose from the following alternatives:

- Change Tol and ask for a second test on the same unit (SCOP to be recalculated)

- Change Tol to the lowest fully tested outdoor temperature (-7°C for average climate, SCOP to be recalculated)
- Maintain Tol and ask for a second test on the same unit

c. Failure to meet the required capacity ratio (variable capacity)

For variable capacity units in case the tested capacity ratio fails to reach the required load ratio within $\pm 10\%$ the laboratory should contact immediately the Applicant/Participant to acquire the information to test the closest for the steps on either side of the required heating load. If the manufacturer fails to provide the information the unit will be considered as a component failure.

d. Testing of general performances

For each test, a performance item fails when the difference between the declared value and the measurement differs by more than the acceptable tolerance (see relevant Rating Standard(s)). A test fails when one or more performance items fail.

For each failed test, the Applicant/Participant has 4 weeks after notification of failure to choose between one of the following alternatives:

- Re-rate the products in accordance with the re-rating rules (see dedicated chapter below);
- Ask for a second test on the same unit;
- Ask for a second test on another unit of the same model selected by Eurovent Certita Certification.

e. Penalty tests

An additional unit will be selected for the next test campaign each time there is a deviation by more than the high tolerance (see relevant Rating Standard) on:

- efficiency and/or capacity;
- sound power level.

Penalty tests following a qualifying procedure need to be validated before the certification is granted.

f. Second test

If the Applicant/Participant had shipped back the unit, the complete test shall be carried out.

If the second test is performed on the same unit (without any modification on the unit, and not leaving the laboratory), the Applicant/Participant can choose to repeat only:

- All thermal and pressure measurements
or
- All sound measurements

Note: For a complete test, if the Part Load tests failed but not the Standard points, the second tests can be carried out only for the Part Load tests (T_{biv}, one condition among conditions A to D, TOL) with/without auxiliary test.

The Applicant/Participant can choose also to test all the points needed for SCOP/SEER calculation:

- Condition A

- Condition B
- Condition C
- Condition D
- Bivalent point for Cooling mode
- Auxiliaries (Psb, Pto, Poff, Pck when relevant)

IV.4 Repeated failures along the test campaigns

This paragraph refers to paragraph V.6 of the Certification Manual.

The rules regarding Mean Value of Failure (MVF) are described in APPENDIX C.

V. RE-RATING RULES

For each failed test, the model shall be re-rated according to the following rules:

V.1 Rerating of Tol

If Tol has been changed for second tests and second measurement passed, Tol is rerated at changed value.

If during second test, second measurement has also failed, Tol will be rerated at the tested point with the lowest outdoor temperature (-7°C for average climate).

V.2 Seasonal efficiency points: rerating of design load

Whenever the test at extreme/bivalent condition shows a deviation on capacity larger than the allowed tolerance, the design load is rerated according to the measured deviation for all models in the same basic model group.

V.3 Rerating of auxiliary power consumption

Whenever the test on auxiliary power consumption shows a deviation larger than the allowed tolerance, the auxiliary power consumption is rerated according to the measured deviation for all models in the same basic model group.

Available also for the optional Psb in Heating.

V.4 Rerating when capacity and/or efficiency fails

In case of failure on capacity and efficiency, then capacity, efficiency and power input of the tested model shall be rerated to the measured values.

Deviation on capacity shall be applied to all models in the same basic model group (BMG).

Deviation on efficiency shall be applied to all models in the same BMG.

Power input shall be recalculated for all models in the same BMG.

In case of failure on capacity only or efficiency only, the power input shall also be recalculated for all models in the same basic model group.

Table 2: Example of rerating when efficiency or capacity only fails

Complete tests :

(30% of the selected units - minimum one unit)

EER				
Conditions	T°	Deviation	Passed / Failed	Rerate SEER with
A	35	-2%	P	EER _{A,declared}
B	30			EER _{B,declared} -12%
C	25	-12%	F	EER _{C,measured}
D	20			EER _{D,declared} -12%

EER				
Conditions	T°	Deviation	Passed / Failed	Rerate SEER with
A	35	-12%	F	EER _{A,measured}
B	30			EER _{B,declared}
C	25	-2%	P	EER _{C,declared}
D	20			EER _{D,declared}

EER				
Conditions	T°	Deviation	Passed / Failed	Rerate SEER with
A	35	-11%	F	EER _{A,measured}
B	30			EER _{B,declared} -12%
C	25	-12%	F	EER _{C,measured}
D	20			EER _{D,declared} -12%

Other points : Power consumption at off mode, standby mode, thermostat off mode and crankcase heater mode

Power consumption	Deviation	Passed / Failed	Rerate SEER with
P _{off}		P	P _{off,declared}
P _{sb}		P	P _{sb,declared}
P _{to}	12%	F	P _{to,measured}
P _{ck}			P _{ck,declared}

Partial tests :

(1 point in cooling, 1 point in heating)

Cooling :

EER				
Conditions	T°	Deviation	Passed / Failed	Rerate SEER with
A	35			EER _{A,declared}
B	30			EER _{B,declared} -12%
C	25	-12%	F	EER _{C,measured}
D	20			EER _{D,declared} -12%

EER				
Conditions	T°	Deviation	Passed / Failed	Rerate SEER with
A	35	-12%	F	EER _{A,measured}
B	30			EER _{B,declared}
C	25			EER _{C,declared}
D	20			EER _{D,declared}

Heating

COP

Conditions	T°	Deviation	Passed / Failed	Rerate SCOP with
E	Tol	(unit running at TOL)	P	TOL declared
F	Tbiv	-11%	F	COP _{tbiv,measured}
A	-7			COP _{A,declared} -12%
B	2	-12%	F	COP _{B,measured}
C	7			COP _{C,declared} -12%
D	12			COP _{D,declared} -12%

COP

Conditions	T°	Deviation	Passed / Failed	Rerate SCOP with
E	Tol			TOL declared
F	Tbiv			COP _{tbiv,declared}
A	-7			COP _{A,declared} -12%
B	2	-12%	F	COP _{B,measured}
C	7			COP _{C,declared} -12%
D	12			COP _{D,declared} -12%

COP

Conditions	T°	Deviation	Passed / Failed	Rerate SCOP with
E	Tol	(unit running at TOL)	P	TOL declared
F (-7°)	Tbiv	-11%	F	COP _{tbiv,measured}
A	-7	-11%	F	COP _{A,declared} -11%
B	2	-12%	F	COP _{B,measured}
C	7			COP _{C,declared} -12%
D	12			COP _{C,declared} -12%

COP

Conditions	T°	Deviation	Passed / Failed	Rerate SCOP with
E	Tol			TOL declared
F	Tbiv	-11%	F	COP _{tbiv,measured}
A	-7			COP _{A,declared}
B	2			COP _{B,declared}
C	7			COP _{C,declared}
D	12			COP _{D,declared}

COP

COP

Conditions	T°	Deviation	Passed / Failed	Rerate SCOP with
E	Tol	(not running at TOL)	F	Tol _{rerated}
F	Tbiv		P	COP _{tbiv,declared}
	-7			COP _{A,declared}
B	2		P	COP _{B,declared}
C	7			COP _{C,declared}
D	12			COP _{D,declared}

	Deviation	Passed / Failed	Rerate P _{designh}
Ph _{Tbiv}	-12%	F	Ph _{Tbiv, measured}
P _{designh}			P _{designh,declared} -12%

The rerated P_{designh} is used to calculate the rerated SCOP.

Other points : Power consumption at off mode, standby mode, thermostat off mode and crankcase heater mode

Power consumption	Deviation	Passed / Failed	Rerate SCOP with
P _{off}		P	P _{off,declared}
P _{sb}		P	P _{sb,declared}
P _{to}	12%	F	P _{to, measured}
P _{ck}			P _{ck,declared}

V.5 Rerating of SEER and SCOP

When second measurement of Tol fails, SCOP of the tested model shall be recalculated with the assumption that all demands beyond Tol are provided by an electric backup heater with a COP of 1.

When all points for SCOP/SEER are tested, Eurovent Certita will recalculate the seasonal efficiency using:

- The declared value of part load, if the result is passed
- The measured value, if the result is failed (out of tolerance)

Whenever a measurement at a part-load condition selected by Eurovent Certita Certification shows a deviation on EER or COP larger than the allowed tolerance, the § V.4 shall be applied on all the other part load EER (respectively COP) and then, SEER and SCOP will be recalculated by Eurovent Certita Certification, to be rerated.

Whenever the test on auxiliary power consumption or/and the test on capacity at extreme condition/bivalent condition shows a deviation larger than the allowed tolerance the value of SCOP/SEER should be recalculated.

In case of recalculation of the SEER or SCOP, the annual energy consumption should be recalculated for the tested unit.

In case of recalculation of SEER or SCOP and annual energy consumption for the tested model:

- the deviation on SEER or SCOP shall be applied to all models in the same basic model group (BMG),

- the deviation on annual energy consumption shall be applied to all models in the same basic model group (BMG).
- the deviation of the tested auxiliary power consumptions shall be applied to all models in the same basic model group (BMG).

Table 3: Example of rerating

BMG	Model	Items	Declared	Calculated	Deviation	Rerated Value	
1	A	SCOP	3,8	3,18	-16%	3,18	
		Qhe	1750	1805	3%	1805	
	B	SCOP	3,9	-	-	SCOPdeclared x (1 - 0,16)	3,26
		Qhe	1780	-	-	Qheddeclared x (1 + 0,05)	1836
	C	SCOP	3,7	-	-	SCOPdeclared x (1 - 0,16)	3,10
		Qhe	1700	-	-	Qheddeclared x (1 + 0,05)	1753

V.6 Rerating on acoustic performances

- If the result on sound power level exceeds the claimed by the tolerance, but less than than the high tolerance (see relevant Rating Standard), only the tested model shall be re-rated in accordance with the test result.
- If the result exceeds the claimed value by the tolerance or more, the tested model shall be re-rated in accordance with the test result. In addition, the whole product family of the failed model shall be re-rated to the tested deviation value minus 2 dB(A).

Table 4: Example of rerating when sound power level fails

Family	Declared	Measured	Deviation	Rerated?	Rerated value	
1	50	51	1	Y	LW _{measured}	51
	49	-	-	N	LW _{declared}	49
2	60	65	5	Y	LW _{measured}	65
	58	-	-	Y	LW _{declared} + LW _{deviation} - 2	61

V.7 Rerating on LRcontmin

If the unit allows to keep stable conditions during the test as defined in EN 14511:2013 and measured LRcontmin doesn't exceed the claimed by the tolerance, then LRcontmin is validated. Then:

- If the deviation of Ccp_{LRcontmin} is within the tolerance, declared Ccp_{LRcontmin} is validated.
- Otherwise, Ccp_{LRcontmin} is rerated according the measured deviation of Ccp
- But, if the rerated Ccp_{LRcontmin} is below 1, the rerated Ccp_{LRcontmin} becomes 1 (default value).

If measure of LRcontmin is failed, LRcontmin becomes 0.4 (default value) and CcpLRcontmin is rerated to 1.

The performance values of all other models in the same BMG shall be re-rated by the deviation found with the tested model or the default values when applicable.

V.8 Possible uprating

At the moment of the annual declaration, an uprating of performances from a same BMG is allowed:

- If the deviation of tested unit (in the BMG) is above inversed tolerance

Or if:

- Units are not already tested and rerated and

- Units of the BMG, if we received the proof (=report) that the tested unit was very underrated

VI. PROMOTION OF THE PROGRAMME

This section refers to section VI of the Certification Manual.

VI.1 By Eurovent Certita Certification

The certified data of the certified products are published on the Eurovent Certified Performance website: www.eurovent-certification.com.

Eurovent Certita Certification will supply, on request, to any interested party, the current status of any Participant or of any model (under development, new, deleted or obsolete).

The following information pertaining to each model certified shall be published on the Website for Air Conditioners:

- Name of Company
- Trade or brand name of model
- Model number(s) or designation(s)
- A-weighted indoor side sound power
- A-weighted outdoor side sound power
- A-weighted sound power radiated from the duct (ducted units)
- Refrigerant line for split system
- Main Power Supply
- Mounting base
- Refrigerant fluid
- Design load in cooling
- EER at condition A in Cooling^a
- Bivalent Temperature (for each climate declared)
- Performances at bivalent temperature (Ph and COP)
- Tol operation limit temperature
- Performances at Tol (Ph and COP)
- Design load in heating (for each climate declared)
- Total heating capacity and COP for reverse cycle unit at standard rating condition (+7°C)

- Seasonal Energy Efficiency Ratio SEER
- Seasonal Coefficient Of Performance SCOP (for each climate declared)
- Annual electric power consumption in cooling mode
- Annual electric power consumption in heating mode (for each climate declared)
- Auxiliary Power consumption

For AC2, AC3 and CC

- Total cooling capacity
- Total heating capacity for reverse cycle unit at +7°C
- Sensible cooling capacity for close control units
- Effective power input (cooling and heating)
- EER and COP
- Water pressure drop (chilled water close control units)

In option, for AC1, AC2, and AC3:

- LRcontmin in cooling and in heating if relevant
- P_{sb} in cooling and in heating if relevant (for AC1, P_{sb} in Cooling is always mandatory)

By default, each participant of the present programme is also a participant of the European Heat Pumps (Euro HP) programme for all products certified under the present programme and falling under the scope of the Euro HP Operational Manual (OM-17-2016). European Heat Pumps certification may however be limited by the participant to specific ranges or models, using the relevant Declaration list; it may also be refused by the participant for all his products, using a waiver to be signed and sent out to Eurovent Certita Certification.

VI.2 By Participants

The participating company may indicate participation in the programme. When he does, it shall be by displaying the appropriate Eurovent Certified Performance mark on all specification sheets and in other literature carrying ratings, or claiming certification, of certified models (see Certification Manual).

a. Display of certification mark in literature, software and advertising

Use of the Eurovent Certified Performance mark is described in Certification Manual. The following completes the description in the AC programme.

When publishing ratings a Participant shall include at least the certified performance in the standard rating conditions, as specified in the relevant Rating Standard(s).

b. Display of certification mark on production units

Each Participant is entitled to display the Eurovent Certified Performance mark on units of models which have been certified. The Participant may also display the Eurovent Certified Performance mark on each certified unit by application of Eurovent Certified Performance mark. No data or other marking shall be added to the mark. The Participant may affix the certification mark at any location thereon satisfactory to him for single-package units, and on the component containing the compressor for split units. The Eurovent Certified Performance mark may be applied as part of the nameplate of a certified model.



APPENDIX A. Certification schedule

For each repetition test campaign (year n), the following schedule shall be applied:

Eurovent Certita Certification asks for up-date of product list	31/09/n-1
Participant confirms up-date of products list	30/11/n-1
Eurovent Certita Certification sends selection list for test	15/01/n
The Participant confirms selection list	31/01/n
Delivery + submittal form + order/payment from Participant (+ starting procedure for inverter units) are completed for units with cooling capacity not higher than 5 kW	15/03/n
Delivery + submittal form + order from Participant (+ starting procedure for inverter units) are completed for units with cooling capacity higher than 5 kW	30/04/n
Diploma for test campaign are valid until	31/07/n+1
The Laboratory carries out all first tests	30/11/n or 60 days after test is ordered
Eurovent Certita Certification sends the test reports	3 days after reception of the laboratory report
The Participant can ask for a second test up to	15/12/n
Eurovent Certita Certification sends selection list for 2 nd test(s)	-
Delivery + submittal form + order/payment from Participant are completed for secondtest(s)	05/01/n+1
The Laboratory carries out all second tests	28/02/n+1

APPENDIX B. Forms

B.I. Form AC-1: Submittal for certification

	Label	Description	Unit
GENERIC	Product Number	(see Certification Manual)	
	Master product number		
	Tested On		
	Rerated on		
	Created on		
	Last update on		
	Status		
	Participant Name		
	Product Name		
	Trade Name		
	Type of product		
	Range Name		
BMG			
Thermal	Ps (CC only)	Sensible cooling capacity (Close Control units only)	kW
	Pc	Cooling Capacity	kW
	EER	Energy Efficiency Ratio	-
	Ph	Heating Capacity	kW
	COP	Coefficient of Performance	-
	Ps (CW CC only)	Sensible Cooling Capacity (Chilled Water cooled Close Control units only)	kW
	Pc (CW CC only)	Total Cooling Capacity (Chilled Water cooled Close Control units only)	kW
	Pec (CW CC only)	Effective Power Input for Cooling (Chilled Water cooled CC units only)	kW
	Dpc	Pressure Drop in Cooling Mode (Chilled Water cooled CC units only)	kPa
Acoustic	LwO env	A-weighted sound power level outdoor unit (non ducted)	dB(A)
	LwI1 env	A-weighted sound power level indoor unit 1 (non ducted)	dB(A)
	LwI1 duct	A-weighted sound power level indoor unit 2 (non ducted)	dB(A)
	LwI2 env	A-weighted sound power level outdoor unit (ducted)	dB(A)
	LwO duct	A-weighted sound power level indoor unit 1 (ducted)	dB(A)
	LwI2 duct	A-weighted sound power level indoor unit 2 (ducted)	dB(A)
Cooling	EER @ 35°C	Energy Efficiency at full load at 35°C	-
	Pc @ 35°C	Cooling Cpacity at full load at 35°C	kW
	EER Stage1 @ 30°C	Energy Efficiency step 1 at 30°C	-
	Pc Stage 1 @ 30°C	Cooling Cpacity at step 1 at 30°C	kW
	EER Stage 2 @ 30°C	Energy Efficiency step 2 at 30°C	-
	Pc Stage 2 @ 30°C	Cooling Cpacity at step 2 at 30°C	kW
	EER Stage1 @ 25°C	Energy Efficiency step 1 at 25°C	-
	Pc Stage 1 @ 25°C	Cooling Capacity at step 1 at 25°C	kW
	EER Stage2 @ 25°C	Energy Efficiency step 2 at 25°C	-

	Pc Stage 2 @ 25°C	Cooling Capacity at step 2 at 25°C	kW	
	EER Stage1 @ 20°C	Energy Efficiency step 1 at 20°C	-	
	Pc Stage 1 @ 20°C	Cooling Capacity at step 1 at 20°C	kW	
	EER Stage2 @ 20°C	Energy Efficiency step 2 at 20°C	-	
	Pc Stage 2 @ 20°C	Cooling Capacity at step 2 at 20°C	kW	
	Pdesignc	Design Load Cooling	kW	
	SEER	Seasonal Energy Efficiency Ratio	-	
	SEER_on	Seasonal Energy Efficiency Ratio in active cooling mode	-	
	Qce	Annual electricity consumption for cooling	kWh/ annum	
	SEER Class	Seasonal Energy Efficiency Ratio Class	-	
PLH Heating Average Climate	COP @-7°C	Coefficient of performances at -7°C step 1	-	
	Ph Stage1 @ -7°C	Heating capacity at -7°C step 1	kW	
	COP Stage 2 @-7°C	Coefficient of performances at -7°C step 2	-	
	Ph Stage2 @ -7°C	Heating capacity at -7°C step 2	kW	
	COP Stage 1 @ 2°C	Coefficient of performances at +2°C step 1	-	
	Ph Stage 1 @ +2°C	Heating capacity at +2°C step 1	kW	
	COP Stage 2 @2°C	Coefficient of performances at +2°C step 2	-	
	Ph Stage 2 @ +2°C	Heating capacity at +2°C step 2	kW	
	COP Stage1 @ +7°C	Coefficient of performances at +7°C step 1	-	
	Ph Stage 1 @ +7°C	Heating capacity at +7°C step 1	kW	
	COP Stage 2 @ +7°C	Coefficient of performances at +7°C step 2	-	
	Ph Stage 2 @ +7°C	Heating capacity at +7°C step 2	kW	
	COP Stage 1 @ +12°C	Coefficient of performances at +12°C step 1	-	
	Ph Stage1 @ +12°C	Heating capacity at +12°C step 1	kW	
	COP Stage 2 @ +12°C	Coefficient of performances at +12°C step 2	-	
	Ph Stage2 @ +12°C	Heating capacity at +12°C step 2	kW	
		Pdesignh	Heating load at design conditions	kW
		SCOP	The seasonal efficiency of a unit calculated for the reference annual heating demand	-
		SCOPnet	Seasonal Energy Efficiency Ratio in active heating mode	-
		SCOP on	Seasonal Energy Efficiency in active Heating mode without supplementary electric heaters	-
	Qhe	Annual electricity consumption for heating	kWh/ annum	
	SCOP Class	Class of seasonal efficiency of a unit calculated for the reference annual heating demand	-	
Bivalent Point	Tbiv	Bivalent Temperature	°C	
	COP @ Tbiv	Coefficient of Performances at bivalent temperatures conditions	-	
	Ph TBiv	Heating Capacity at bivalent temperatures conditions	kW	
TOL Running Test	TOL	The lowest outdoor temperature at which the heat pump can still deliver heating capacity, as declared by the manufacturer	°C	
	COP @ TOL	Coefficient of Performances at TOL temperatures conditions	-	
	Ph @ TOL	Heating Capacity at TOL temperatures conditions	kW	
Heating Colder Climate	Pdesignh	Heating load at design conditions (kW)	kW	
	SCOP	The seasonal efficiency of a unit calculated for the reference annual heating demand	-	
	SCOP net	Seasonal Energy Efficiency in active heating mode without supplementary electric heaters	-	
	SCOP on	Seasonal Energy Efficiency Ratio in active heating mode	-	

	Qhe	Annual electricity consumption for heating [kWh/annum]	kWh/annum
	COP @ Tbiv	Coefficient of Performances at bivalent temperatures conditions	-
	Ph @ Tbiv°C	Heating Capacity at bivalent temperatures conditions	kW
	Tbiv	Bivalent Temperature [°C]	°C
	COP @TOL	Coefficient of Performances at TOL temperatures conditions	-
	Ph @TOL°C	Heating Capacity at TOL temperatures conditions	kW
	TOL	The lowest outdoor temperature at which the heat pump can still deliver heating capacity, as declared by the manufacturer	-
Heating Warmer Climate	Pdesignh	Heating load at design conditions (kW)	kW
	SCOP	The seasonal efficiency of a unit calculated for the reference annual heating demand	-
	SCOP net	Seasonal Energy Efficiency in active heating mode without supplementary electric heaters	-
	SCOPon	Seasonal Energy Efficiency Ratio in active heating mode	-
	Qhe	Annual electricity consumption for heating	kWh/annum
	COP @ Tbiv	Coefficient of Performances at bivalent temperatures conditions	-
	Ph @ Tbiv°C	Heating Capacity at bivalent temperatures conditions	kW
	TBiv	Bivalent Temperature	°C
	COP @ TOL	Coefficient of Performances at TOL temperatures conditions	-
	Ph @TOL°C	Heating Capacity at TOL temperatures conditions	kW
TOL	The lowest outdoor temperature at which the heat pump can still deliver heating capacity, as declared by the manufacturer	°C	
Crankcase heater	Pck	Power consumption in the crank case heater mode	W
Psb, Pto and Poff	Poff	Power consumption in the off mode	W
	Psb	Power consumption in the standby mode	W
	Pto	Power consumption in the thermostat off mode	W
	Off Mode	True/False	True/False
RT 20 12	Capacity Control	Fixed, Staged, Variable	
General	Inverter	Inverter	True/False
	MPS	Main Power Supply: Voltage (V)-Phase-Frequency(Hz)	
	Refrigerant	Refrigerant(Refr)	
	Refr. Line	Refrigerant Line.	m
	Mounting	Mounting Type	
	Mount. Opt.	Mounting Option	
	Ducted Outdoor	Ducted Outdoor	True/False
	Ducted Indoor	Ducted Indoor	True/False
	Ducted Vertical	Ducted Vertical	True/False
Duct Option	Duct Option		

B.II. Form AC-2: Technical Data Sheet

Technical Data Sheet shows all information of Declaration file, to which will be added:

	Label	Description	Unit
General	Dimension	Unit dimension length by height by width	mm.mm. mm
	Total Charge	Total charge	kg
	Weight	Unit weight (indoor unit / outdoor unit)	kg
	Attendance	Attendance [true/false]	-
	Compressor Manufacturer	Compressor manufacturer	-
	Compressor Model	Compressor model	-
	Contact Name	Contact name	-
	Contact Title	Contact title	-
	Expansion Device Location	Expansion device location (outdoor/indoor)	-
	Heating Mode Minimum Temperature	Heating mode minimum temperature	°C
	Indoor Coil 1 Air Flow	Air flow rate indoor coil	m ³ /s
	Indoor Coil 1 Available Static Pressure	Available pressure indoor coil	Pa
	Indoor Coil 1 Dimension	Coil length × height × width	mm.mm. mm
	Indoor Coil 1 Fan Motor Type	Fan motor type (dc inv, ac inv, ac large slip)	-
	Indoor Coil 1 Fan Type	Fan type	-
	Indoor Coil 1 Fin Spacing	Fin spacing	-
	Indoor Coil 1 Fin Type	Fin type	-
	Indoor Coil 1 Number of Fan	Number of fans	-
	Indoor Coil 1 Number of Circuit	Number of circuits	-
	Indoor Coil 1 Number of Row	Number of row	-
	Indoor Coil 1 Pitch	Tube pitch × row pitch	mm.mm
	Indoor Coil 1 Tube Outside Ø	Tube outside diameter	mm
	Indoor Coil 1 Tube Type	Tube type	-
	Outdoor Coil Air Flow Rate	Air flow rate outdoor coil	m ³ /s
	Outdoor Coil Available Static Pressure	Avialable pressure outdoor coil	Pa
	Outdoor Coil Dimension (L X H X W)	Coil length × height × width	mm.mm. mm
	Outdoor Coil Fan Type	Fan type	-
	Outdoor Coil Fin Spacing	Fin spacing	mm
	Outdoor Coil Fin Type	Fin type	-
	Outdoor Coil Number of Circuit	Number of circuits	-
	Outdoor Coil Number of Fan	Number of fan	-
	Outdoor Coil Number of Row	Number of row	-
	Outdoor Coil Pitch	Tube pitch × row pitch	mm.mm
	Outdoor Coil Tube Outside Dimension	Tube outside diameter	mm
	Outdoor Coil Water Flow Rate Heating	Outdoor coil water flow rate heating mode	m ³ /s
	Outdoor Coil Fan Motor Type	Outdoor coil fan motor type	-
	Outdoor Coil Tube Type	Outdoor coil tube type	-
	Refrigerant Line Outside Ø (Liquid)	Refrigerant line outside diameter liquid (split syst)	mm
	Refrigerant Line Outside Ø (Vapour)	Refrigerant line outside diameter vapour (split syst)	mm
	Remote Control Box	Remote control box [true/false]	-
Water Cooled Condenser Manufacturer	Manufacturer	-	
Water Cooled Condenser Pump Included	Pump included [true/false]	-	
Water Cooled Condenser Reference	Water cooled condenser reference	-	
Water Cooled Condenser Type	Water cooled condenser type	-	
Water Flow Rate Outdoor Coil at 30°C	Water flow rate outdoor coil at 30 °C	m ³ /s	
Water Flow Rate Outdoor Coil at 30/35 °C	Water flow rate outdoor coil at 30/35 °C	m ³ /s	

B.III. Seasonal Efficiency Calculation Sheet

EUROVENT APPLICATION FORM FOR CERTIFICATION				SEASONAL PERFORMANCE			
TECHNICAL DATA SHEET				Cooling Mode			
PARTICIPANT				PL			
EUROVENT CODE				CR			
Model identification				Stage 1			
Model designation				Stage 2			
Variable Capacity				A			
Refrigerant				35 °C			
Cooling Mode				B			
Cooling capacity				30 °C			
EER				C			
Heating Mode				25 °C			
Heating capacity at +7°C				D			
COP at +7°C				20 °C			
Note: if T _{biv} < -10 please insert -10				Heating Mode			
T _{biv}				A			
Heating capacity at T _{biv}				-7 °C			
COP at T _{biv}				B			
Note: if T _{ol} < -10 please insert -10				C			
T _{ol}				7 °C			
Heating capacity at T _{ol}				D			
COP at T _{ol}				12 °C			
Auxiliary Power				PL			
P _{sb}				CR			
P _{to}				Stage 1			
P _{ck}				Stage 2			
P _{off}				A			
				-7 °C			
				B			
				2 °C			
				C			
				7 °C			
				D			
				12 °C			

Some blocks are linked with "raw data" tab, please not to break these links and complete directly in "raw data" tab

For inverter controlled compressors, the frequency of the stage must be supplied

B.IV. Form AC-3: Additional Information Form

This form is to be completed for inverter AND non-inverter models.

Test Number	
Model	

1. Participant technical contact person

In order to be able to quickly solve starting-up problems, the laboratory needs to have data of a technical contact. Please fill the table below.

Name	
Telephone number	
E-mail address / fax number	

2. Fan speeds and compressor frequencies

The following data will help the laboratory to check that the unit is running in TEST MODE. It's highly recommended to fill the table below for inverter models.

	Model	Fan speed [rpm]		Compressor frequency [Hz]	
		Cooling	Heating	Cooling	Heating
Outdoor Unit					
Indoor Unit 1					
Indoor Unit 2					

For cooling mode in part load conditions (part load condition A is covered above):

	Part load ratio [%]	Outdoor air dry bulb T [°C]	Fan outdoor unit [rpm]	Fan indoor unit 1 [rpm]	Fan indoor unit 2 [rpm]	Compressor frequency [Hz]
B	74	30				
C	47	25				
D	21	20				

For heating mode in part load conditions:

A	88	-7(-8)				
B	54	2(1)				
C	35	7(6)				
D	15	12(11)				
F	(Tbivalent-16)/(Tdesignh -16)	Tbivalent(Tbivalent-1)				

Following EN 14825:2013, indoor fan speeds in part load can be different for m the ones in standard rating conditions

3. Has the laboratory to apply a specific start-up procedure to achieve the rated capacities? (No test will be performed without answer to this question.)

YES | NO

4. Start-up procedure

Note: Once frequencies and expansion valves opening are fixed, no further changes will be allowed until test completion.

If answer to clause 3 is YES, a detailed start-up procedure shall be attached.

VERY IMPORTANT: Attached start-up proceduret shall be drafted with enough details to ensure the laboratory personal will be able to set the unit at the first try. In particular, special care shall be given to the following items:

- Initial state of the following items (before starting the configuration):
 - wired/remote controller model status (ON or OFF)
 - appliance status (ON or OFF)
 - mode (cooling, heating, ventilation, auto, etc.)
 - room temperature range requirements (if yes, specify clearly), Temperature requirements cannot be closer than ± 2 K from the rating conditions.

In addition:

- Indicate if the remote controller shall be configured with the indoor unit(s) receiving or not the signals from the remote controller.
- When entering TEST MODE, indicate if the appliance will give a feedback (acoustic or visible) to acknowledge the setting.
- Indicate the louver position, and the method to reach it. A drawing may be useful.
- For multisplit systems, please clearly specify if the starting procedure has to be performed for all indoor units at the same time, or in which order.

5. Time before beginning of the measurement period

Please note that the measurement period will begin 60 minutes (heating mode) or 70 min (heating mode) after starting the unit. **This means that the unit shall be running in TEST MODE by that time.**

6. Default start up procedure

When there are no details on start-up supplied with the units, the normal start-up procedure used by the laboratory will be as follows:

COOLING CAPACITY TESTING AND SOUND POWER DETERMINATION

Configuration of the remote controller:

- Mode: Cooling mode*

- Temperature set: Minimum allowed by remote controller without including special modes like LOW temperature function.
- Fan speed: Maximum allowed by remote controller without including special modes like TURBO mode.
- Louver: Maximum airflow position**

HEATING CAPACITY TESTING

Configuration of the remote controller:

- Mode: Heating mode*
- Temperature set: Maximum allowed by remote controller without including special modes like HIGH temperature function.
- Fan speed: Maximum allowed by remote controller without including special modes like TURBO mode.
- Louver: Maximum airflow position**

* Any other functions, like eco mode, display backlighting, ionizer, etc will be kept as default after inserting the batteries in the remote controller or switching the power on for wired remote controllers. **The louver position for maximum airflow is only checked visually so there is a risk not to exactly be in the maximum airflow position.

<u>Contacts in Ceis laboratory:</u> Ms Pilar GARCIA – pgarcia@ceis.es Mr Julio CONDE – jconde@ceis.es	<u>Contacts in Tüv-Nord laboratory:</u> Ms Monika STEIMLE – msteimle@tuev-nord.de Dr. Ing. Helge UHLIG – huhlig@tuev-nord.de
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B.V.Form AC-4: Test result form

REPORTING OF TEST RESULT											
GENERIC	Test key: Created on: Last update on: Status:										
MANUFACTURER	Participant key: Participant name:										
MODEL	Model key: Model name: Product type: Serial number:										
TEST	Programme - Sub-programmes: Air Conditioners/Comfort Air Conditioners Date of reception of the unit: xxxx/xx/xx Date of reception of test report: xxxx/xx/xx Unit tested on:										
RESULT DETAILS											
APPLICATION		General	Measured	Declared	Deviation	Measurement		MFV		High failure	
AC_ClassCOP		-				Limit	Result	Limit	Result	Limit	Result
AC_ClassEER		-									
APPLICATION		Thermal	Measured	Declared	Deviation	Limit	Result	Limit	Result	Limit	Result
Pc		kW									
EER		-									
Ph		kW									
COP		-									
Pec		kW									
Psh		kW									
APPLICATION		Acoustic	Measured	Declared	Deviation	Limit	Result	Limit	Result	Limit	Result
LwOenv		dB(A)									
Lw11 env		dB(A)									
Lw12 env		dB(A)									
TEST CONCLUSION											
						Test		MFV		High failure	
								x/x		x penalty test(s)	

2

² Displayed Performances may vary according to subprogramme (AC1,AC2,AC3 or CC) and product type

B.VI. Form AC-5: Re-rate form

PROPOSAL OF RERATE															
GENERIC				Rerate key:	xxxx/xx/xx										
				Created on:											
				Last update on:											
				Status:											
MANUFACTURER				Participant key:	F										
				Participant name:											
TEST				Test key:											
				Unit tested on:	xxxx/xx/xx										
APPLICATION Acoustic															
DECLARED															
Product key	Product name	Type of product	Range name	BMG	Perf 1.1										
RERATED															

LEGEND			
Code	Name	Product type	Component type
Perf. 1.1			

APPENDIX C. Calculation method and implementation of MVF

C.I. General

Mean Value of Failure (MVF) is equal, for each manufacturer and for each considered characteristic, to the ratio between the total number of measurements above the “**High deviation limit**” (see table below) and the total performed measurements in the considered years.

$$\begin{aligned}
 \text{MVF} &= \frac{\sum \text{Number of measurements failed with high deviation}}{\sum \text{Number of measurements performed}} \\
 \text{Mean High Failure Value} &= \frac{\text{Number of considered years}}{\text{Number of considered years}}
 \end{aligned}$$

When there is a second test on a unit, then the first measurements are not taken into account.

A manufacturer is expelled from the Eurovent Certified Performance Programme for one year if, for at least one considered characteristic, the mean value of MVF is higher than the limit z.

Current Failure treatment (re-rating and additional tests) still applies above the “Eurovent AC tolerance” (see IV.3).

Participants		Participants already certified	New participants
Test campaigns to be considered		3 last test campaigns	Qualifying test campaign + first repetition test campaign
Time of application		starting from 2011	after first repetition test campaign
Charac- teristic	Eurovent AC tolerance	High deviation limit	Limits for being expelled MVF > ...
Pc	< -5%	< -12%	> 25 %
Ph	< -5%	< -12%	> 40 %
EER	< -8%	< -15%	> 25 %
COP	< -8%	< -15%	> 40 %
Lw	> + 0dB(A)	> + 3dB(A)	> 40 %

C.II. Implementation & newcomers

At the end of 2009 test campaign, Eurovent Certita Certification takes into consideration the last two test campaign data of each manufacturer. At the end of 2010 test campaign and at the end of each following year, Eurovent Certita Certification takes into consideration the last three test campaign data of each manufacturer.

Data of new participants will be first taken into consideration after two test campaigns (including qualifying tests).

C.III. Notification of being *suspended*

A participant who is going to be *suspended* will receive a notification from Eurovent Certita Certification, with a possible additional selected unit to be tested. The purpose of this additional test is to give the participant the opportunity to comply with the limits. The response to Eurovent Certita Certification with confirmation of request for additional testing has to be done within 30 days after this notification, and the unit has to be delivered within 45 days after this notification.

A manufacturer that leaves the programme because he has been expelled should complete the qualifying procedure within the year for which he has been expelled in order to rejoin for the next year. He becomes a newcomer.

APPENDIX D. ECO-DESIGN AND ENERGY LABELLING

Commission Regulation (EU) No 206/2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air conditioners and comfort fans gives requirements for all air conditioners with the cooling capacity under 12 kW (AC1) introduced on the European market after 1 January 2013. The Directive defines maximum sound power levels and energy efficiency as given in the following tables.

Table 5
Requirements for maximum sound power level

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

(c) From 1 January 2014, air conditioners shall correspond to requirements as indicated in the table below, calculated in accordance with Annex II. The requirements on energy efficiency for air conditioners, excluding single and double duct air conditioners, shall relate to the reference design conditions specified in Annex II, Table 3 using the 'Average' heating season where applicable. The requirements on energy efficiency for single and double duct air conditioners shall relate to the standard rating conditions specified in Annex II, Table 2.

Table 6
Requirements for minimum energy efficiency

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

(d) From 1 January 2014, single duct and double duct air conditioners and comfort fans shall correspond to requirements as indicated in Table 7 below, calculated in accordance with Annex II.

Commission Regulation (EU) No 626/2011 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of air conditioners makes mandatory energy labelling of all air conditioners with the cooling capacity under 12 kW (AC1) introduced on the European market after the 1st January 2013. The Directive defines for each function the energy class going from A++ (more efficient) to G (less efficient). The classification is given in the following table.

Table 5: Energy Classification for Conditioners except double ducts and single ducts

Energy Efficiency Class	SEER	SCOP
A+++	SEER ≥ 8.50	SCOP ≥ 5.10
A++	$6.10 \leq$ SEER < 8.50	$4.60 \leq$ SCOP < 5.10
A+	$5.60 \leq$ SEER < 6.10	$4.00 \leq$ SCOP < 4.60
A	$5.10 \leq$ SEER < 5.60	$3.40 \leq$ SCOP < 4.00
B	$4.60 \leq$ SEER < 5.10	$3.10 \leq$ SCOP < 3.40
C	$4.10 \leq$ SEER < 4.60	$2.80 \leq$ SCOP < 3.10
D	$3.60 \leq$ SEER < 4.10	$2.50 \leq$ SCOP < 2.80
E	$3.10 \leq$ SEER < 3.60	$2.20 \leq$ SCOP < 2.50
F	$2.60 \leq$ SEER < 3.10	$1.90 \leq$ SCOP < 2.20
G	SEER < 2.60	SCOP < 1.90