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OPERATIONAL MANUAL
for the
CERTIFICATION
of
**LIQUID CHILLING PACKAGES AND
HYDRONIC HEAT PUMPS**

OM-3-2015

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Nb	Modifications	Section	Page
1	Reordering of the § II - Scope	II	
2	Heat recovery units are included in the scope but the heat recovery function is not certified	II.1	5
3	Add Applications for Seasonal Efficiency for heating	II.4.b	7
4	Modification of Sampling Rules for 2015 Campaign Modification of Sampling Rules for Options	IV.2.a	11
5	Part-load conditions for Heating & Testings	IV.2.e	13
6	For 2015 Campaign, Part Loads in Heating, Pto, Poff, Pck and SCOP are not concerned by Re-rating rules.	IV.4.d	20

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I. PURPOSE

The purpose of this manual is to prescribe procedures for the operation of the Programme for Liquid Chilling Packages and Hydronic Heat Pumps of Eurovent Certita Certification (ECC). Participation in this programme is open to the following companies:

- Original Equipment Manufacturers (OEM)
- Brand Name Manufacturers (BNM) selling products already certified by OEM
- Distributors (DIS) purchasing and selling products non-certified by OEM

Under this programme there are random tests conducted. These tests shall be conducted at test facilities (independent or owned by a Participant) approved by Eurovent Certita Certification and in accordance with the relevant Eurovent Certita Certification Rating Standards: RS 6/C/003 LCP and RS 6/C/003A HP.

Tests in Participant Laboratories shall be performed under supervision and control of an independent agency approved and under contract with Eurovent Certita Certification. Several Participants' test facilities will be approved by Eurovent Certita Certification and made available to a Participant not having a test facility. It is not the intent of this programme to preclude certification if a Participant does not have a qualified test facility.

II. SCOPE

II.1 General

This programme applies to standard chillers and hydronic heat pumps used for heating, air conditioning and refrigeration. They may operate with any type of compressor (hermetic, semi-hermetic and open) but only electrically driven chillers are included. Only refrigerants authorised in EU are considered. Chillers may be air-cooled or liquid cooled. Reverse cycle liquid chillers shall be certified in cooling and heating mode. Heating-only hydronic heat pumps can be certified as an option (see II.3b).

The following units are specifically excluded from the certification programme:

- chillers and heat pumps powered by other than electric motor drives
- free cooling units
- heat recovery *mode*
- Total heat recovery *mode*
- 4-pipes and 6-pipes chiller / heat-pumps
- Evaporative cooled units

Note 1: *Heat recovery units are included in the scope but the heat recovery function is not certified.*

II.2 Certify-all requirement

The programme covers all chillers and hydronic heat pumps with the limitation of cooling capacities of approved independent laboratories. The company participating in this certification programme shall certify all standard production models below the following cooling capacity at standard conditions (see Table 1).

Table 1: Capacity limits of certified units

Application	Capacity	Mode
Medium brine (optional)	300 kW	Cooling
Low brine (optional)	200 kW	Cooling
Water-cooled units	1500 kW	Cooling
Air-cooled units	600 kW	Cooling
Air-to-water heating-only Heat Pumps	100 kW at +7°C and 80 kW at +2°C ^a	Heating
Water-to-water heating-only Heat Pumps	1500 kW	Heating

Medium brine, low brine, and water-cooled units with higher capacity are not certified. For each standard model, at least one pump configuration shall be declared. Moreover, it is possible to declare several pump configurations.

Examples:

- Configuration 1: Product A without pump
- Configuration 2 : Product A with pump
- Configuration X...

II.3 Options for types of unit

a. Option for higher capacities

Air source units above 600 kW capacities can be certified as an option in Participant Laboratory (see IV.3 EUROVENT CERTITA Certification tests at the laboratory).

Maximum capacities for air source units are defined for each participant according to the capacity of the participant's laboratory and with a maximum at 1500 kW in cooling and heating mode (for the air conditioning application).

b. Option for heating-only hydronic heat pumps

Heating-only hydronic heat pumps can be certified as an option. If a participant applies to this option, all standard production models below the above mentioned maximum heating capacities at standard conditions have to be declared.

c. Option for 60 Hz units

As the "certify all" principle only applies to units intended for the European market (see definition of "Europe" in the Certification manual), it is not mandatory to declare 60 Hz units.

Moreover these units can be certified by range.

II.4 Thermal Performances

a. Eurovent Applications

The following applications are covered by the programme:

In cooling mode:

- cooling floor, with leaving water temperature at + 18°C
- air-conditioning, with leaving chilled water temperature between + 2°C and + 15°C

^aTest conditions according to EN14511

- medium brine, with leaving brine temperature between + 3°C and - 12°C (optional)
- low brine, with leaving brine temperature between - 8°C and - 25°C (optional)

In heating mode:

- heating floor (*low temperature*), with leaving water temperature at + 35°C
- air-conditioning, with leaving water temperature at + 45°C
- high (*/ medium*) temperature, with leaving water temperature at 55°C
- very high temperature, with leaving water temperature at 65°C

At least all applications published by the participant in literature shall be declared.

The air-conditioning application shall be declared even if not published by the participant, except when the Medium Brine and/or the Low Brine applications are declared.^b

The CHF application can be declared separately or together:

- *Cooling Floor*
- *Heating Floor*

b. Applications for Seasonal Efficiency for heating

Regarding the following regulations concerning the Seasonal Efficiency for Heating:

- *ErP Document No 813-2013*
- *Energy labelling Document No 811-2013*

All units with $P_{designh}$ below 70 kW (according with EN 14825:2013), including electrical backup heater, have to be declared:

- *In “Low temperature” (heating floor application), with leaving water temperature at + 35°C*

And/or

- *In “Medium temperature” (high temperature application), with leaving water temperature at +55°C*

The “Low temperature” and “Medium temperature” are the 2 applications relative with above regulations.

2015 Campaign			
<i>SCOP and η_s Declarations for ECC programme</i>	<i>$P_{designh} \leq 70kW$</i>	<i>$70 kW < P_{designh} \leq 400kW$</i>	<i>$P_{designh} > 400kW$</i>
<i>Air cooled units</i>	Mandatory	<i>Out of OM scope for 2015</i>	<i>Not concerned by Regulation</i>
<i>Water cooled units</i>	Mandatory	<i>Optional</i>	<i>Not concerned by Regulation</i>

These applications can be declared for water-cooled units with $P_{designh}$ above 70kW, as an option.

^b*It is considered that the declaration of the air-conditioning application is not mandatory for units intended for refrigeration applications.*

The declaration of the Average Climate (according EN 14825:2013) is mandatory. The Warmer and Colder climates are optional.

2015 Campaign			
<i>Climates Declaration for ECC Programme</i>	<i>Average</i>	<i>Colder</i>	<i>Warmer</i>
	Mandatory	<i>Optional</i>	<i>Optional</i>

Several type of water regulation can be declared also, 1 to 4 control(s) on water among:

	<u><i>Codification</i></u>
• <i>Fixed water flow rate, variable outlet temperature</i>	<i>FW/VO</i>
• <i>Fixed water flow rate, fixed outlet temperature</i>	<i>FW/FO</i>
• <i>Variable water flow rate, variable outlet temperature</i>	<i>VW/VO</i>
• <i>Variable water flow rate, fixed outlet temperature</i>	<i>VW/FO</i>

At least one of the 4 controls shall be declared. The several controls fall under different model declared lines, but in the same Basic Model Group.

II.5 Acoustic Performances

For all the air-cooled units, the sound power level is verified at Air Conditioning application (see details in each relevant Rating Standard)

For air-cooled reversible chillers and air-cooled heat pumps with a Pdesignh below 70kW, the manufacture has to declare 1 or 2 more acoustic performance(s) according their thermal declaration (low or/and medium temperature)

- *Sound power level at +35°C (see details in each relevant Rating Standard)*
- *Sound power level at +55°C (see details in each relevant Rating Standard)*

For water-cooled units when thermal performances according Seasonal Efficiency for Heating are declared, the manufacturer can declare, as an option, acoustic performances for “Low and/or Medium temperature” applications.

III. BASIC OUTLINE OF THE PROGRAMME

III.1 Application

After signing the Licence Agreement, the applicant has to fill in the declaration files (see APPENDIX B, Form LCP-1), with all models in the scope of the programme and requirements of the relevant Rating Standard.

III.2 Qualifying procedure

When the declaration file is completed, a number of units corresponding to the yearly scheduled test programme shall be selected by Eurovent Certita Certification and tested in the test facilities selected by Eurovent Certita Certification. If all the tests show conformity with the relevant Rating Standard, certification is granted (see Certification Manual).

III.3 Repetition procedure

Every year, Eurovent Certita Certification checks whether the certified performances of the certified products still fulfil the requirements. Units selected from regular production shall be tested in the test facilities approved by Eurovent Certita Certification. If the results are in accordance with the requirements of the relevant Rating Standard, the certification is granted for another period (see Certification Manual).

III.4 Failure treatment

When the test results fail to comply with the requirements of the relevant Rating Standard, the failure treatment shall be applied (see IV.4 Failure treatment).

III.5 Programme cost allocations

The allocation of the cost to Participants is based on:

- Annual administration fee
- Listing fee per Basic Model Group listed in the Directory
- Testing fee per unit tested

III.6 Responsibility and confidentiality of certification data

All ratings submitted for certification by participating manufacturers on their own models, and test data on competitive models, shall, in each case, be submitted over the signature of the person properly authorised by the company to undertake this responsibility.

All data submitted to Eurovent Certita Certification shall be held confidential except for information authorised to be published in the Directory.

IV. OPERATION OF PROGRAMME

IV.1 Declaration of data

The certification programme requires that every unit submitted for acceptance shall be accompanied by:

- Performance data
- Complete description as given in submittal forms
- Sound data for air-cooled chillers

a. Rated performance data

All characteristics shall be expressed in SI Units. Maximum of three (3) significant figures shall be used for capacity and effective power input up to 1000 kW, four (4) above 1000 kW and two (2) significant figures for sound power, pressure drop and available pressure.

b. Certification forms

Submittal of models shall be made by filling in the Excel forms provided by Eurovent Certita Certification (see APPENDIX B). It is not acceptable to modify values on previously tested units or previously re-rated units or ranges.

c. Reporting of models

In reporting models for certification and for publication in the Directory, certified ratings shall be given for all models that meet the requirements of the Relevant Rating Standard.

Optional devices or accessories that are employed in obtaining the ratings of the basic unit assembly, and which affect the ratings, shall be included in the certification data. All such components must be specified by the "+" symbol and footnotes in the Directory and must be identified in forms provided, as applicable.

Beside current models, the Participants shall provide Eurovent Certita Certification with the list of obsolete and deleted models.

Deleted Models are listed on the website under the heading "Deleted" for one year. Production of Deleted Models has ceased but stock is still available for sale. These models have to be reported as such on Form LCP-1 (see APPENDIX B).

Obsolete Models are not listed on the Eurovent Certified Performance website. Production of Obsolete Models has ceased and there is no remaining stock for sale. These models have to be reported as such on Form LCP-1 (see APPENDIX B).

Models affected by failed tests cannot be declared as Obsolete in the current year. They can only be listed as Deleted Models for one year.

d. Acquisition of Participant's product line by another Participant

When the product line of a Participant is acquired by another Participant, certified listings will remain valid and certification will continue if wished by the new owner. A new Licence Agreement must be signed by the new owner and the certification is granted if the new owner states that the product line is the same as the line certified by the previous owner. The new owner assumes all obligations and liabilities of the former owner.

IV.2 Selection of units *and tests points conditions*

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

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

Eurovent Certita Certification is responsible for the selection of a unit for testing and may select any unit as defined below.

Selection from the existing available stock is preferable, even if only a single unit is available. If no stock is available a selection will be made from the Participant production schedule within a 6-month period.

For the penalty tests, Eurovent Certita Certification shall select the additional units from the failed range, if applicable.

a. Number of units for scheduled tests

All models presented by the Participant shall be listed together; however only basic models shall be included, various options shall not be counted.

The Participants are free to group models in commercial ranges in accordance with their own rules.

The required number of units for scheduled tests is defined as the highest number of tests in Table 2 corresponding to the number of basic models or the number of commercial ranges.^c

Table 2: Number of required tests

Number of tests	Number of basic model groups	Number of commercial ranges
1	1 to 15	1 to 4
2	16 to 38	5 to 8
3	39 to 73	9 to 12
4	74 to 126	13 to 16
5	127 to 206	17 to 20
6	207 to 326	21 to 24
n (1/4 of number of ranges)	u_{n-1} to $u_n - 1$ where $u_n \begin{cases} u_0 = 1; u_1 = 16 \\ u_n = 2.5u_{n-1} - 1.5u_{n-2} \end{cases}$	$4n - 3$ to $4n$

Example: if a Participant presents 18 ranges with 120 models, he will be required to submit 5 models for testing although according to the number of models only 4 tests should be needed.

When Participant chooses to certify models in option (high capacities cooling only models and heating-only models and 60 Hz), the number of BMG and ranges includes air-cooled chillers below 600kW and units in option, as a single group.

For the option "air-cooled units above 600kW", at least one unit over 600kW shall be selected for testing and at maximum 10% of selected units.

For other options, ECC will choose a number of selected units representative of the share of optional units in the global number of units.

For participants with only models in option the table 2 is applied.

For 2015 Campaign, the Table 2bis and 2ter are applied.

^c See minutes 10/03/2008

Table 2bis

Number of tests	Number of basic model groups	Number of commercial ranges
1	1 to 15	1 to 5
2	16 to 45	6 to 10
3	46 to 105	11 to 15
4	106 to 225	16 to 20
5	226 to 465	21 to 25
6	466 to 945	26 to 30
7	946 to 1905	29 to 35
8	1906 to 3825	36 to 40
n	u_{n-1} to $u_n - 1$ where $u_n \begin{cases} u_0 = 1; u_1 = 16 \\ u_n = 3u_{n-1} - 2u_{n-2} \end{cases}$	$4n - 3$ to $4n$

Table 2ter

Number of tests	Minimum Number of Seasonal test required	Number of air cooled units tested only in Seasonal tests
1	1	0
2	1	0
3	2	1
4	2	1
5	3	1
6	3	1
7	4	2
8	4	2
9	5	2
10	5	2
11	6	3

(*) if the type of units allows that

b. Number of test points

The number of test points shall be determined in accordance with the number of application ranges (air-conditioning, medium brine, low brine, cooling heating floor, high temperature and/or very high temperature) applied for by the Participant.

- If the application ratings are entirely included within one application range, the selected models shall be tested at the corresponding Standard Rating Conditions (see Tables 4 and 5 in RS 6/C/003 and Table 3 in RS 6/C/003A).
- If the application ratings cover totally or partially other application ranges, the selected models shall also be tested at the corresponding Standard Rating conditions. In this case, if the Standard Rating conditions cannot be reached, they shall be replaced by one application rating condition in the range.

In addition, all the selected models shall be tested at:

- One application rating condition (selected by Eurovent Certita Certification) with the exception of air source heating-only heat pumps for which two points at +7°C and +2°C are required.
- Part-load condition(s) for units able to operate in cooling mode and whose application ratings cover the air-conditioning application.

In any cases:

- Maximum two applications shall be tested: the air conditioning application and one of the other applications declared.
- *Maximum three seasonal efficiency in heating (SCOP) shall be tested, among different climates and declared application (Low or Medium temperature).*

c. **Part-load conditions in Cooling**

For part-load conditions (defined by a stage number and a temperature) Participants have two possibilities:

Test all part load points.

Test one part load point. In this case there are two possibilities:

- If unit may be adjusted to provide 75%, 50% and 25% of full load, Eurovent Certita Certification will choose one of these load points.
- If unit is not able to deliver 75%, 50% and 25% of full load Eurovent Certita Certification will choose one measurement point from data presented by Participant in the technical datasheet.

If the Participant has chosen to test only one part load point, and the result of EER at part load condition is outside tolerance but with intermediate deviation (see *relevant* Rating Standard), the Participant has the right to ask for a second part load point. In case of high deviation, the laboratory will automatically test another part load point.

d. **Psb, LRcontmin and CcpLRcontmin**

These performances shall be tested if declared by the participant.

e. **Part-load conditions in Heating**

These conditions concern Reversible Chillers and Heat Pumps.

For 2015 Campaign, the Part Load Conditions in Heating, according with EN14825:2013, are applied for the following units:

- *Air-cooled units with a Pdesignh below 70 kW*

- Water cooled units with a $P_{designh}$ below 400 kW. From 70 kW to 400 kW, the declaration is on voluntary base

For a declared SCOP and declared η_s (seasonal efficiency in Heating), the following tests shall be carried out: for one declared application, low or medium temperature.

Thermal measurements for Air-cooled units (Average Climate)

Ph&COP at +7° (Standard rating condition EN 14511-2)			
Ph&COP at T_{biv} (F condition)			
Ph&COP for 1 Part Load Condition among :			
A	B	C	D
Running test at TOL			
1 Power Consumption test among:			
P_{off}	P_{sb}	P_{to}	P_{ck}

Thermal measurements for Water-cooled units (Average Climate)

Ph&COP at +10 (Standard rating condition EN14511-2)				
Ph&COP for 1 Part Load Condition among :				
A	B	C	D	F
1 Power Consumption test among:				
P_{off}	P_{sb}	P_{to}	P_{ck}	

All the conditions are detailed in EN 14825:2013 Standard.

f. **Part-load Testings in Heating regarding Applications and Climates declared by Applicant/Participant**

In order to cover all the applications and all the climates declared with a relevant number of tests, the following rules shall be applied.

Example 1: (average climate, application required by the Regulation)

Regulation		Low temperature	Medium temperature
Application Name		Heating Floor	High Temperature
Temperature (°C)		30/35	47/55
Climate	Warmer		
	Average	Required by Regulation	
	Colder		

If the SCOP is declared only for the average climate and an application defined by the Regulation, 1 SCOP is checked, the one defined according with the regulation. Indeed the following test are carried out:

- test at +7° (Standard Point)
- one test at T_{bivalent} condition
- one test at part load condition (Temperature/Load) chosen by ECC (among conditions A, B, C, D)
- one running test at T_{ol}
- one tested mode randomly among the four modes (P_{off}, P_{sb}, P_{to}, P_{ck}).

Example 2: (Several climates and application required by the Regulation)

Regulation		Low temperature	Medium temperature
Application Name		Heating Floor	High Temperature
Eurovent Application Name			
Temperature (°C)		30/35	47/55
Climate	Warmer		
	Average	Required by Regulation	
	Colder	Chosen randomly by ECC	

If the SCOP is declared for the several climates and for 1 application, 2 SCOP are checked: the one defined in the regulation and another chosen randomly by ECC

For the SCOP, required by Regulation:

- test at +7° (Standard Point)
- one test at T_{bivalent} condition
- one test at part load condition (Temperature/Load) chosen by ECC (among conditions A, B, C, D)
- one running test at T_{ol}
- one tested mode randomly among the four modes (P_{off}, P_{sb}, P_{to}, P_{ck}).

For the SCOP (chosen by ECC) – e.g. 30/35° and colder climate

- test at +7° (Standard Point)
- one test at T_{bivalent} condition
- one test at part load condition (Temperature/Load) chosen by ECC (among conditions A, B, C, D)

Example 3: (Average climate, 2 applications requested by the Regulation)

Regulation Application Name		Low temperature	Medium temperature
Eurovent Application Name		Heating Floor	High Temperature
Temperature (°C)		30/35	47/55
Climate	Warmer		
	Average	Optional by Regulation	Required by Regulation
	Colder		

If the SCOP is declared for the average climate and for the 2 applications, the 2 SCOP are checked: for the Low Temperature application and for the Medium Temperature application)

For the SCOP, required by Regulation – e.g. 47/55° and Average Climate

- test at +7° (Standard Point)
- one test at T_{bivalent} condition
- one running test at T_{ol}
- one test at part load condition (Temperature/Load) chosen by ECC (among conditions A, B, C, D)
- one tested mode randomly among the four modes (P_{off}, P_{sb}, P_{to}, P_{ck}).

For the other SCOP – e.g. 30/35° and Average Climate

- Test at +7° (Standard Point)
- one test at T_{bivalent} condition
- one test at part load condition (Temperature/Load) chosen by ECC (among conditions A, B, C, D)

Example 4: (several climates, several applications)

Regulation Application Name		Low temperature	Medium temperature
Eurovent Application Name		Heating Floor	High Temperature
Temperature (°C)		30/35	47/55
Climate	Warmer		Chosen randomly by ECC
	Average	Chosen randomly by ECC	Required by Regulation
	Colder		

If the SCOP is declared for the 3 climates and for 2 applications, 3 SCOP are checked: the one defined by the regulation, 2 other ones chosen randomly by ECC among the other climate and application (5 in the example)

For the SCOP, required by Regulation – e.g. 47/55° and Average Climate

- *Test at +7° (Standard Point)*
- *one test at Tbivalent condition*
- *one test at part load condition (Temperature/Load) chosen by ECC (among conditions A, B, C, D)*
- *one running test at Tol*
- *one tested mode randomly among the four modes (Poff, Psb,Pto, Pck).*

For the SCOP, chosen by ECC – e.g. 30/35° and Average Climate

- *Test at +7° (Standard Point)*
- *one test at Tbivalent condition*
- *one test at part load condition (Temperature/Load) chosen by ECC (among conditions A, B, C, D)*
- *one tested mode randomly among the four modes (Poff, Psb,Pto, Pck), not already tested before*

1 SCOP, chosen by ECC – e.g. 47/55° and Warmer Climate

- *test at +7° (Standard Point)*
- *one test at Tbivalent condition*
- *one test at part load condition (Temperature/Load) chosen by ECC (among conditions A, B, C, D)*
- *one tested mode randomly among the four modes (Poff, Psb,Pto, Pck), not already tested before*

g. Sound testings

Only one point (randomly selected) will be tested by selected unit.

IV.3 Eurovent Certita Certification tests at the laboratory

a. Laboratory

All units with cooling capacity at Eurovent Certita Certification Standard Rating Conditions below the following values shall be tested in an independent laboratory approved and under contract with Eurovent Certita Certification. The choice of the independent laboratory is made by Eurovent Certita Certification:

- 100 kW for Air-Conditioning Applications
- 60 kW for Medium Brine Applications
- 40 kW for Low Brine Applications
- 100 kW for Cooling and Heating Floor
- 100 kW for High Temperature applications
- 100 kW for Very High Temperature applications

Units with higher capacity shall be tested either in an independent laboratory or in a Participant laboratory (approved by Eurovent Certita Certification) by an independent agency (selected by Eurovent Certita Certification) following the

procedures specified in the *relevant* Rating Standard. Tests in Participant laboratory are not allowed for air source heating-only heat pumps.

Units shall be installed in the test facility in accordance with the Participant's published installation instructions. A contact person shall be designated by the Participant to provide whatever support is required during the test.

Special instructions shall be sent with the unit. The laboratory cannot be held responsible for a wrong installation if the Participant didn't provide these specific instructions.

b. Notification to provide equipment for testing

Eurovent Certita Certification shall notify the Participant of the intent to test specific models in accordance with the requirements of this programme. This notification shall request delivery of the units, the duly completed Technical Data sheet, the order and all relevant installation and operation manuals.

c. Selection, shipment, handling of test unit and return

Eurovent Certita Certification shall arrange for a particular unit to be obtained from the Participant's production lines, or any stocking point, and delivered to the laboratory.

The independent 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 Participant to organise the shipment to the laboratory, the laboratory shall inform him when the test is completed.

d. Time limitation of acquisition of unit

If the laboratory is unable to obtain the unit and the relevant documentation within the time limitations defined by Eurovent Certita Certification (see APPENDIX A) the Participant shall be notified that the list of its products will be withdrawn from the Website for one year.

Eurovent Certita Certification may choose not to discontinue the listing when a Participant provides him with a definite and acceptable date of his next production.

e. Participant's representatives

1. Testing at an independent laboratory

A Participant's representative can make the start-up of the unit. In that case, the Participant shall inform Eurovent Certita Certification that he wants to attend the start-up, and the laboratory shall inform the Participant about the date the unit will be installed. Participant may review test results immediately after the test.

Only the laboratory personnel shall be permitted to install and check out test units. The procedures used shall be in accordance with the Participant's installation start-up and service instructions. No Participant's personnel shall be permitted in the laboratory test facility before, or during the test except the personnel needed to operate.

In case of damage the laboratory personnel shall be allowed to supply necessary tools for repair of the test sample before the test. If the unit is not

repairable, it shall be replaced by the Participant within one month for units below 100 kW and three months for units above 100 kW.

2. Testing own products at a Participant laboratory

Tests shall be performed by an independent agency, selected by and under contract with Eurovent Certita Certification. The same procedure as for testing at an independent laboratory shall be applied except that the Participant's personnel shall not be permitted in the laboratory test room facility. The test requirements in Participant laboratory are given in the relevant Rating Standards.

3. Testing competitor products at a Participant laboratory

Tests shall be performed by an independent agency, selected by and under contract with Eurovent Certita Certification. The application forms shall be checked by an independent agent and shall not be disclosed to the competitor laboratory. Problems of confidentiality shall be solved by a mutual agreement between Participants.

IV.4 Failure treatment

a. Component failure

If any functional component is inoperative, or the unit is damaged and cannot be repaired and tested at the Laboratory, then it is considered as a "component failure".

For heating-only units if the unit defrost cycles at +7°C outdoor temperature are too short to perform acoustic performances testing the unit is considered as a component failure.

In case the targeted cooling capacity at part-load condition is not reached (taking into account the tolerance defined in RS 6/C/003), the unit is considered as a component failure.

The complete test shall then be carried out on the repaired unit or a new unit from the same range. The new unit shall be delivered within four weeks from the notification of the failure. If the new unit is not delivered on time it is considered as a non-application of procedures (see Certification Manual).

b. General

If the value found by testing in the independent laboratory differs more than the acceptable tolerance (see relevant Rating Standard), Participants will have four weeks from the notification of the failure to select one of the following alternatives:

- Ask for a second test on the same unit.
- Ask for a second test on a new unit. The new unit shall be delivered within four weeks after reply.
- Re-rate the same commercial range in accordance with the re-rating rules (see below).

If there is no decision from the participant after this deadline, the re-rate is applied.

c. Second test

- If the second test is performed on the same unit (without any modification on the unit, and not leaving the laboratory), the Participant can choose to repeat only:
 - All thermal and pressure measurements
or
 - All sound measurements
- If the second test is performed on a repaired or a new unit, or if the Participant has shipped back the unit, the complete test shall be carried out.

If the second test is unsuccessful, the Participant shall re-rate according to the results from the second test and the re-rating rules.

The repetition procedure does not allow for a third test.

d. Re-rating rules

The performance characteristics of the tested model shall be re-rated to the values obtained by testing. If for an application, a test is performed at an additional non-standard condition, the performances (capacity, EER, COP, pressure drop, available pressure) shall be re-rated according to the mean deviation between the measurement at standard conditions and the corresponding measurement at the non-standard condition.

Performances at Non Standard conditions shall be justified by a printout from the selection tool of the applicant/participant.

It is not acceptable to up-rate claimed values.

The following specific rules shall be applied.

Note: For 2015 Campaign, Part Loads in Heating, Pto, Poff, Pck and SCOP are not concerned by re-rating rules.

1. Capacity fails and EER or COP pass

- The capacity of the tested model shall be re-rated to the values obtained by testing.
- EER (or COP) is not re-rated.
- The power input shall be re-calculated from the measured capacity and the declared EER or COP.

2. Capacity passes and EER or COP fails

- Eurovent Certita Certification shall re-rate EER or COP according to measured values.
- Capacity is not re-rated
- Eurovent Certita Certification shall calculate the power input of the tested model according to the declared capacity and the measured EER or COP.

3. Capacity fails and EER or COP fails

- Eurovent Certita Certification shall re-rate EER or COP and capacity according to measured values.

- Eurovent Certita Certification shall calculate the power input according to measured capacity and measured EER or COP.

4. Capacity, EER, ESEER or COP fails

The performance characteristics of all other models in the same commercial range as declared by Participant shall be re-rated by the deviation found with the tested model minus 3%.

Example: If the deviation of cooling capacity is - 9%, the tested model shall be re-rated by - 9%, and other models in the range by - 6%.

5. Pressure drop or available pressure fails

- The performance characteristic of the tested model only shall be re-rated to the value obtained by testing.
- Other models in the same commercial range are not affected.

6. Sound power level fails

- The performance characteristic of the tested model shall be re-rated to the value obtained by testing.
- The performance characteristic of all other models in the same commercial range shall be re-rated by the deviation found with the tested model minus 2 dB(A) for deviation up to intermediate deviation (intermediate deviation included) (see *relevant* Rating Standard).
- The performance characteristic of all other models in the same commercial range shall be re-rated by the deviation found with the tested model minus 1 dB(A) for deviation from intermediate deviation (intermediate deviation excluded) to high deviation (high deviation included) (see *relevant* Rating Standard).
- The performance characteristic of all other models in the same commercial range as declared by Participant shall be re-rated by the deviation found with the tested model for high deviation (high deviation excluded) (see *relevant* Rating Standard).

7. Part load point fails

If the Participant has chosen to test all part load points, the depreciation to be considered for re-rating will be the average weighted (see Table 1 in RS 6/C/003) deviation above tolerances at all measuring points.

If the Participant has tested one part load point, and the test result is outside tolerances but not more than high deviation (see Table 7 in RS 6/C/003), the deviation measured will be applied to the ESEER value.

When the test result is outside the tolerance but below or equal to the high deviation, The Participant has the right to ask for a second part load point.

A second part load point is automatically tested when the test result is outside tolerance with high deviation (see Table 7 in RS 6/C/003).

When two part load points have been tested, the deviation is calculated for both points, and the mean deviation will be used for re-rating the ESEER value in case the mean deviation is outside the tolerance (if the mean deviation is within the tolerance the result is passed).

8. Psb, LRcontmin or Ccp_{LRcontmin} fails

The Psb tested model shall be re-rated to the values obtained by testing.

EER/COP_{LRcontmin} is measured and compared to the efficiency at LRcontmin derived from the declared Ccp_{LRcontmin}.

If the unit allows to keep stable conditions during the test as defined in EN 14511, then LRcontmin is validated.

The values measured are the rerate values.

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.

The performance characteristics of all other models in the same commercial range as declared by Participant shall be re-rated by the deviation found with the tested model or the default values when applicable.

e. High deviation and penalty tests

For each failure above high deviation in cooling, heating capacity, EER, COP, sound power level, EER at part load condition or ESEER, an additional test shall be scheduled for the next test campaign. There will be a maximum of 3 penalty tests per campaign^d. High Failures on several performances in the same test lead to one penalty test.

IV.5 Approval and verification of computerised chiller selection programmes

- 1) The Participant may obtain Eurovent Certita Certification approval for a computerised chiller selection programme. The following computerised selection programmes may be approved by Eurovent Certita Certification.
 - a) Computerised chiller selection whereby the user uses the Participant's data input sheets and the Participant's "in-house" computer.
 - b) Computerised chiller selection whereby the user uses an exchange data terminal to the Participant's computer storage bank (or a timesharing service bank).
 - c) Computerised chiller selection whereby the user uses the Participant's sales office direct connection to the "in-house" computer.
 - d) Computerised chiller selection whereby the user uses a microcomputer and the Participant's data input sheets to execute the Participant's computerised chiller selection programs that are placed on CD-Rom by the Participant for use by the user on microcomputers. The microcomputer may also be used as an exchange data terminal to the Participant's computer storage bank (or a timesharing service bank).

CD-Rom or complete printout and catalogues, if available, shall be provided.
- 2) Before approval of a Participant's computerised chiller selection programmes, Eurovent Certita Certification will:
 - e) Verify the Participant's computerised chiller selection programme through the use of his initial qualifying test run calculations.
 - f) If a catalogue with published ratings exists, select running conditions and determine the chiller selections from the Participant's approved catalogue ratings. Eurovent Certita Certification will then use the Participant's computerised chiller selection method to determine the computer ratings for the same conditions as those taken from the published catalogue if applicable.

^dSee minutes of meeting held on 16/01/2008.

- g) If a catalogue does not exist, Eurovent Certita Certification shall consider the computer selection as published ratings. The printout shall state if ratings are certified.

Following satisfactory completion of the above procedures, Eurovent Certita Certification will authorise a Participant to claim that his computerised chiller selection programme for Standard Ratings has been verified by Eurovent Certita Certification.

- 3) Following initial verification by Eurovent Certita Certification, the continuing Eurovent Certita Certification approval of the computerised chiller selection programme will be contingent on the satisfactory monitoring by Eurovent Certita Certification.
- 4) If the Participant has an approved computerised chiller selection programme, then a printout and copies of any CD-Rom referenced in IV.5.1) shall be provided to Eurovent Certita Certification, for verification of the approved computerised chiller selection programme.
 - h) The computer printout and CD-Rom referenced in IV.5.1) shall be reviewed by Eurovent Certita Certification, for compliance with the Participant's certified published ratings.
 - i) The computer printout and CD-Rom shall match the published certified rating if applicable.
 - j) If the computer printout and CD-Rom are not in agreement with the certified published rating, Eurovent Certita Certification shall notify the Participant of the discrepancy and the Participant shall have 60 days to correct this discrepancy. If the discrepancy has not been corrected within 60 days, this is considered as a non-application of procedures.
- 5) Verification of approved computerised chiller selection method(s) shall include the following
 - k) Immediately following initial approval, Eurovent Certita Certification will develop, for its internal use, a matrix of working conditions which will be used periodically to monitor and check the Participant's computerised chiller selection method(s).
 - l) In addition to the monitoring procedure, Eurovent Certita Certification will make random comparisons between the catalogue ratings and the computer ratings as a further checking procedure to guard against a Participant using a second program not approved by Eurovent Certita Certification.
 - m) The above procedure will allow Eurovent Certita Certification to continually verify a Participant's computerised chiller selection method(s).
 - n) If a Participant has more than one computerised chiller selection programme available to users, each method must be verified by Eurovent Certita Certification. This will be done using the matrix (see k) for checking selections and by monitoring.
 - o) Eurovent Certita Certification may request that Participants, users, consulting engineers etc., submit copies of specific working conditions and chiller selection results that they have used. Eurovent Certita Certification will then compare the selections obtained by the consulting engineer with the results obtained by Eurovent Certita Certification through the Participant's computerised chiller selection method. Eurovent Certita Certification may also obtain computer data from consultants who, in turn, have, in the recent past, received them from the Participants.
 - p) The results of the Eurovent Certita Certification checks will be held confidential, nevertheless the Participant will be notified of any discrepancies and will be urged to correct them as specified in VI.7.6).
 - q) Upon successful verification of a Participant's computerised chiller selection programme, the programme reference and release shall be published in the Directory.
 - r) As part of the publication in the Directory, Eurovent Certita Certification will list the certified Participant's code or CD-Rom identification.
- 6) Whenever the Participant revises his computerised chiller selection methods he shall send to Eurovent Certita Certification and all users the above-mentioned CD-Rom:

- notice of such revisions
- Copies of CD-Rom or the programme reflecting such revisions. CD-Rom or the programme printout reflecting such revisions shall prominently include a revised code or identification.

IV.6 Repeated failures along the test campaigns

This section refers to Certification Manual.

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

IV.7 Non-application of procedures

Non-application of procedures is detailed the Certification Manual.

V. PROMOTION OF THE PROGRAMME

This section refers to the Certification Manual.

V.1 By Eurovent Certita Certification

The list of Participants and the following information are published on the website: www.eurovent-certification.com

- Name of Participant
- Trade or Brand name of model
- Model number or designation
- Type
- Refrigerant
- Certified ratings
- All approved selection methods, including, computer and CD-Rom identification, if applicable

Eurovent Certita Certification will supply, on request, to any interested party, the current status on Participants or models (certified, deleted or obsolete).

V.2 By Participants

The Participant shall indicate his participation in the programme by displaying the appropriate Eurovent Certified performance mark on all specification sheets and in literature carrying ratings or claiming certified data or models. This is allowed only after having completed the qualifying procedure.

He may further indicate his participation by:

- Display the appropriate mark on all units of certified models.
- Display the appropriate mark in literature, computer selection programmes and advertising. Where ratings are shown, or participation in this programme claimed, display of mark is mandatory.

a. Display of Eurovent Certified Performance mark on production units

Each Participant will display the mark on units of models that have been certified in only two authorised ways:

^eSee minutes of 16/01/2008.

- By using the relevant Eurovent Certified Performance mark
- By applying Eurovent Certified Performance mark directly on the nameplate

1. Regulation regarding display of Eurovent Certified Performance mark

No data or other marking shall be added to this mark.

2. Nameplates

The Eurovent Certified Performance mark may be applied as part of the nameplate of a certified model, under the following regulations:

The Eurovent Certified Performance mark applied as part of the nameplate shall conform to the design approved for the symbol in all respects, including design, dimensions, letter size and style, and colour.

The acceptable colour combinations consist of green pantone No. 341 on white or black on white.

b. Display of Eurovent Certified Performance mark in specification sheets, literature, computer selection programmes and advertising

Display of Eurovent Certified Performance mark in literature is described in the Certification Manual.

1. Certified published ratings

▪ Inclusion of standard ratings

In order to display the certification symbol, all published literature or computer programme shall include standard ratings.

▪ Inclusion of application ratings

Only certified application ratings may be published together with standard ratings. Non-certified ratings are not allowed to be published together with certified ratings.

▪ Termination of published ratings

Publication of ratings in specifications, advertising or other literature controlled by the Participant must cease immediately for those models no longer in production and which have been deleted or made obsolete and whose ratings are no longer verifiable by testing.

APPENDIX A. CERTIFICATION SCHEDULES

For each repetition test campaign (year n), the following schedules shall be applied.

Table 3: Certification Schedule

Eurovent Certita Certification asks for the up-dating of product list	31/10/n-1
Participant confirms up-dating of products list	30/11/n-1
Eurovent Certita Certification sends selection list for testing	15/01/n
The Participant confirms selection list	31/01/n
Submittal form + order from Participant are completed + <ul style="list-style-type: none"> for tests in independent laboratory, delivery is completed; for tests in Participant laboratory, the test has been scheduled between the Participant and the test agency. and TDS have to be sent to ECC 4 weeks before the test of the unit. 	<100kW : 30/04/n ^f >100kW : 30/06/n
The Laboratory carries out all first tests as well the tests in Participant laboratories.	30/11/n
Eurovent Certita Certification sends the test reports	1 week
The Participant can ask for a second test	15/12/n
Delivery + submittal form + order from Participant are completed for secondtest(s)	15/01/n+1
The Laboratory carries out all second tests	29/02/n+1
Diploma are valid until	30/09/n+1

^f See minutes of meeting held on 23/10/2007.

APPENDIX B. FORMS

B.I. Form LCP-1: Declaration file for certification

Cells in grey correspond to data filled in by Eurovent Certita Certification or to calculated data.

Generic information:

Product Number	
Master product number	
Tested On	
Rated on	
Created on	
Last update on	
Status	<ul style="list-style-type: none"> - New - Certified - Deleted - Obsolete
Participant Name	
Product Name	
Trade Name	
Type of product	E.g.: LCP/A/P/C; LCP/P/R; LCP/A/S/R; LCP/W/P/C
Range Name	
BMG	

<u>Application</u>	<u>Performances of the products:</u>	<u>Description</u>
Acoustics	Lwo.ENV	A-weighted sound level outdoor near the envelope for non-ducted units (dB(A))
	Discharge noise (ducted only)	A-weighted sound power level of Discharge noise(ducted only dB(A))
Air Conditioning (AC)	Pc	Cooling Capacity for Air Conditioning Application (kW)
	Pec	Effective Power Input in cooling mode (kW)
	EER	Energy Efficiency Ratio for Air Conditioning Application in Cooling Mode
	ESEER	European Seasonal Energy Efficiency Ratio for Air Conditioning Application in Cooling Mode
	Dpc Indoor	Pressure drop of the water (or water brine media) through the evaporator in cooling mode at 12/7 °C (kPa)
	Dpc Outdoor	Pressure drop of the water (or brine media) through the condenser in cooling mode (only for water cooled units) at 30/35 °C (kPa)
	Apc Indoor	Available external static pressure at the outlet of the evaporator in cooling mode at 12/7°C (for units equipped with variable speed pump, according the pump speed declared by the applicant/participant)
	Apc Outdoor	Available external static pressure at the outlet of the condenser in cooling mode (only water cooled units) at 30/35°C (for units equipped with variable speed pump, according the pump speed declared by the applicant/participant)
	Ph	Heating Capacity (kW)
	Peh	Effective Power Input in heating mode (kW)
	COP	Coefficient Of Performance (-)
	Dph Indoor	Pressure drop of the water (or water brine media) through the condenser in Heating mode at 40/45 °C (kPa)
	Dph Outdoor	Pressure drop of the water (or brine media) through the evaporator in heating mode (in kPa)
	Aph Indoor	Available external static pressure at the outlet of the condenser in heating mode at 40/45°C (for units equipped with variable speed pump, according the pump speed declared by the applicant/participant)
	Aph Outdoor	Available external static pressure at the outlet of the evaporator in heating mode (for units equipped with variable speed pump, according the pump speed declared by the applicant/participant)
	Ph @2°C	Heating Capacity at +2°C outdoor air for Heating Only Application (kW)
	Peh @ 2°C	Effective Power Input in heating mode at +2°C OA (kW)
	COP @2°C	Coefficient Of Performance at +2°C outdoor air for Heating Only Application (-)
	Dph Indoor @°2C	Water pressure drop (or water brine media) trough the condenser for Heating Only Application (kPa)
	Aph Indoor @°2C	Available external static pressure at the outlet of the condenser for heating only Application at 40/45°C (for units equipped with variable speed

		pump, according the pump speed declared by the applicant/participant)
	Class COP	EUROVENT CERTITA CERTIFICATION Energy Efficiency Class
	Class EER	
	Class EER	
	Class COP	

<u>Application</u>	<u>Performances of the products:</u>	<u>Description</u>
Cooling&HeatingFloor (CHF)	Pc	Cooling Capacity for Cooling Heating Floor Application in Cooling Mode
	Pec	Effective Power Input in cooling mode (kW)
	EER	Energy Efficiency Ratio for Cooling Heating Floor Application in Cooling Mode
	Dpc Indoor	Pressure drop of the water (or water brine media) through the evaporator in cooling mode at 23/18°C (in kPa)
	Dpc Outdoor	Pressure drop of the water (or brine media) through the condenser in cooling mode at 30/35 °C (only for water cooled units kPa)
	Apc Indoor	Available external static pressure at the outlet of the evaporator in cooling mode at 23/18°C (for units equipped with variable speed pump, according the pump speed declared by the applicant/participant)
	Apc Outdoor	Available external static pressure at the outlet of the condenser in cooling mode at 30/35°C only for water cooled units (for units equipped with variable speed pump, according the pump speed declared by the applicant/participant)
	Ph	Heating Capacity for Cooling Heating Floor Application (kW)
	Peh	Effective Power Input in heating mode (kW)
	COP	Coefficient Of Performance for Cooling Heating Floor Application
	Dph Indoor	Pressure drop of the water (or water brine media) through the condenser in Heating mode at 30/35 °C (kPa)
	Dph Outdoor	Pressure drop of the water (or brine media) through the evaporator in heating mode (kPa)
	Aph Indoor	Available external static pressure at the outlet of the condenser in cooling mode at 30/35°C only for water cooled units (for units equipped with variable speed pump, according the pump speed declared by the applicant/participant)
	Aph Outdoor	Available external static pressure at the outlet of the evaporator in heating mode (for units equipped with variable speed pump, according the pump speed declared by the applicant/participant)
	Ph @2°C	Heating Capacity for Heating Floor Application
	Peh @ 2°C	Effective Power Input in heating mode at +2°C OA (kW)
	COP @2°C	Coefficient Of Performance for Heating Floor Application
	Dph Indoor @2°C	Pressure drop of the water (or water brine media) through the condenser for Heating Floor Application (kPa)
	Aph Indoor @2°C	Available external static pressure at the outlet of the condenser for Heating Floor Application at 30/35°C only for water cooled units (for units equipped with variable speed pump, according

		the pump speed declared by the applicant/participant)
	Class EER	EUROVENT CERTITA CERTIFICATION Energy Efficiency Class
	Class COP	
	Class COP	
	Class EER	

<u>Application</u>	<u>Performances of the products:</u>	<u>Description</u>
Air Conditioning – Medium Bine (AC-MB)	Pc	Same as Air conditioning application
	Pec	
	EER	
	Dpc Indoor	
	Dpc Outdoor	
	Apc Indoor (or according the pump speed declared by the applicant/participant)	
	Apc Outdoor (or according the pump speed declared by the applicant/participant)	
	Ph	
	Peh	
	COP	
	Dph Indoor	
	Dph Outdoor	
	Aph Indoor (or according the pump speed declared by the applicant/participant)	
	Aph Outdoor (or according the pump speed declared by the applicant/participant)	
Cooling & Heating Floor – Medium Bine (CHF-MB)	Pc	Same as Cooling Heating Floor application
	Pec	
	EER	
	Dpc Indoor	
	Dpc Outdoor	
	Apc Indoor (or according the pump speed declared by the applicant/participant)	
	Apc Outdoor (or according the pump speed declared by the applicant/participant)	
	Ph	
	Peh	
	COP	
	Dph Indoor	
	DphOutdoor	
	Aph Indoor (or according the pump speed declared by the applicant/participant)	
	AphOutdoor (or according the pump speed declared by the applicant/participant)	

<u>Application</u>	<u>Performances of the products:</u>	<u>Description</u>
High Temperatures (HT)	Ph	Heating Capacity for High Temperature Application (kW)
	Peh	Effective Power Input in heating mode (kW)
	COP	Coefficient Of Performance for High Temperature Application (kW)
	Dph Indoor	Pressure drop of the water through the condenser in heating mode at 47/55 °C (kPa)
	Dph Outdoor	Pressure drop of the water through the evaporator in heating mode at 10/7°C (kPa)
	Aph Indoor (or according the pump speed declared by the applicant/participant)	Available external static pressure at the outlet of the Condenser in Heating mode at 47/55°C (units equipped with a pump kPa)
	Aph Out (or according the pump speed declared by the applicant/participant)	Available external static pressure at the outlet of the Evaporator in Heating mode at 10/7 °C (kPa)
	Ph @2°C	Heating Capacity for Heating Pump Application (kW)
	Peh @ 2°C	Effective Power Input in heating mode at +2°C OA (kW)
	COP @2°C	Coefficient Of Performance for Heating Pump Application
	Dph Indoor @2°C	Pressure drop of the water through the condenser for Heating Pump Application (kPa)
	Aph Indoor @2°C (or according the pump speed declared by the applicant/participant)	Available external static pressure at the outlet of the Evaporator in Heating pump application
Very High Temperatures (VHT)	Ph	Heating Capacity for Very High Temperatures Application (kW)
	Peh	Effective Power Input in heating mode (kW)
	COP	Coefficient Of Performance for Very High Temperatures Application
	Dph Indoor	Pressure drop of the water through the condenser in heating mode at 50/65 °C (kPa)
	Dph Outdoor	Pressure drop of the water through the evaporator in heating mode at 10/7°C (kPa)
	Aph Indoor (or according the pump speed declared by the applicant/participant)	Available external static pressure at the outlet of the Condenser in Heating mode 50/65°C (units equipped with pump kPa)
	Aph Outdoor (or according the pump speed declared by the applicant/participant)	Available external static pressure at the outlet of the Evaporator in heating mode 10/7°C (units equipped with pump kPa)
	Ph @2°C	Heating Capacity for Heating Pump Application (kPa)
	Peh @ 2°C	Effective Power Input in heating mode at +2°C OA (kW)
	COP @ 2°C	Coefficient Of Performance for Heating Pump Application (kPa)
	Dph Indoor	Pressure drop of the water through the condenser in Heating Pump Application (kPa)
	Aph Indoor @2°C (or according the pump speed declared by the applicant/participant)	Available external static pressure at the outlet of the Condenser in Heating Pump application (kPa)

<u>Application</u>	<u>Performances of the products:</u>	<u>Description</u>
Medium Brine (MB)	Pc	Cooling Capacity for Medium Brine Application (kW)
	Pec	Effective Power Input in cooling mode (kW)
	EER	Energy Efficiency Ratio for Medium Brine Application
	Dpc Indoor	Pressure drop of the water (or water brine media) through the evaporator in cooling mode at 0/-5°C (in kPa)
	Dpc Outdoor	Pressure drop of the water (or brine media) through the condenser in cooling mode at 30/35°C
	Apc Indoor (or according the pump speed declared by the applicant/participant)	Available external static pressure at the outlet of the evaporator in cooling mode at 0/-5°C (units equipped with a pump kPa)
	Apc Outdoor (or according the pump speed declared by the applicant/participant)	Available external static pressure at the outlet of the condenser in cooling mode at 30/35°C (only for water cooled units kPa)
LowBrine (LB)	Pc	Cooling Capacity for Low Brine Application (kW)
	Pec	Effective Power Input in cooling mode (kW)
	EER	Energy Efficiency Ratio for Low Brine Application
	Dpc Indoor	Pressure drop of the water (or water brine media) through the evaporator in cooling mode at -10/-15°C (in kPa)
	Dpc Outdoor	Pressure drop of the water (or brine media) through the condenser in cooling mode at 30/35°C
	Apc Indoor (or according the pump speed declared by the applicant/participant)	Available external static pressure at the outlet of the evaporator in cooling mode at -10/-15°C (units equipped with a pump kPa)
	Apc Outdoor (or according the pump speed declared by the applicant/participant)	Available external static pressure at the outlet of the condenser in cooling mode at 30/35°C (only for water cooled units kPa)

<u>Application</u>	<u>Performances of the products:</u>	<u>Description</u>
<i>Poff</i>	<i>Poff</i>	<i>Power consumption during Off mode (W)</i>
<i>Pto</i>	<i>Pto</i>	<i>Power consumption during Thermostat off mode (W)</i>
<i>Pck</i>	<i>Pck</i>	<i>Power consumption of Crackcase heater (W)</i>
<i>Efficiency Average W35</i>	<i>Pdesignh Average W35</i>	<i>Design Capacity for Average climate and Low Temperature application (kW)</i>
	<i>SCOP Average W35</i>	<i>Seasonal COP for Average climate and Low Temperature application</i>
	<i>ηs Average W35</i>	<i>Seasonal Energy Efficiency for Average climate and Low Temperature application</i>
<i>PLH A Average W35</i>	<i>Ph A Average W35</i>	<i>Capacity at Condition A for Average climate and Low Temperature application (kW)</i>
	<i>COP A Average W35</i>	<i>COP at Condition A for Average climate and Low Temperature application</i>
<i>PLH B Average</i>	<i>Ph B Average W35</i>	<i>Capacity at Condition B for Average climate and Low Temperature application (kW)</i>

W35	COP B Average W35	COP at Condition B for Average climate and Low Temperature application
PLH C Average W35	Ph C Average W35	Capacity at Condition C for Average climate and Low Temperature application (kW)
	COP C Average W35	COP at Condition C for Average climate and Low Temperature application
PLH D Average W35	Ph D Average W35	Capacity at Condition D for Average climate and Low Temperature application (kW)
	COP D Average W35	COP at Condition D for Average climate and Low Temperature application
PLH Biv Average W35	T° Biv Average W35	Bivalent Temperature for Average climate and Low Temperature application
	Ph Biv Average W35	Capacity at Bivalent Condition for Average climate and Low Temperature application (kW)
	COP Biv Average W35	COP at Bivalent Condition for Average climate and Low Temperature application
TOL W35	TOL W35	Operation Limit Temperature at Low Temperature application
Sound Average W35	LwO Average W35	A-weighted sound level outdoor near the envelope for non-ducted units (dB(A)) for Average climate and Low Temperature application
	Lw dis (ducted only) Average W35	A-weighted sound power level of Discharge noise(ducted only) dB(A)) for Average climate and Low Temperature application
Efficiency Average W55	Pdesignh Average W55	Design Capacity for Average climate and Medium Temperature application (kW)
	SCOP Average W55	Seasonal COP for Average climate and Medium Temperature application
	ηs Average W55	Seasonal Energy Efficiency for Average climate and Medium Temperature application
PLH A Average W55	Ph A Average W55	Capacity at Condition A for Average climate and Medium Temperature application (kW)
	COP A Average W55	COP at Condition A for Average climate and Medium Temperature application
PLH B Average W55	Ph B Average W55	Capacity at Condition B for Average climate and Medium Temperature application (kW)
	COP B Average W55	COP at Condition B for Average climate and Medium Temperature application
PLH C Average W55	Ph C Average W55	Capacity at Condition C for Average climate and Medium Temperature application (kW)
	COP C Average W55	COP at Condition C for Average climate and Medium Temperature application
PLH D Average W55	Ph D Average W55	Capacity at Condition D for Average climate and Medium Temperature application (kW)
	COP D Average W55	COP at Condition D for Average climate and Medium Temperature application
PLH Biv Average W55	T° Biv Average W55	Bivalent Temperature for Average climate and Medium Temperature application
	Ph Biv Average W55	Capacity at Bivalent Condition for Average climate and Medium Temperature application (kW)
	COP Biv Average W55	COP at Bivalent Condition for Average climate and Medium Temperature application
TOL W35	TOL W55	Operation Limit Temperature at Medium Temperature application
Sound Average W55	LwO Average W55	A-weighted sound level outdoor near the envelope for non-ducted units (dB(A)) for Average climate and Medium Temperature
	Lw dis (ducted only) Average W55	A-weighted sound power level of Discharge noise(ducted only) dB(A)) for Average climate and Medium Temperature

Application **Technical Characteristics of the product:** **Description**

General	Refrigerant	Type of refrigerant (i.e. R407C, R410A)
	MPS	Main Power Supply (i.e. 430-3-50, 230-1-50)
	Inverter	Unit equipped with a Frequency converter (true or false)
	Height	Overall dimensions, only for units with capacity
	Weight	
	Width	
	Ducted Outdoor	True or false
	ESP	External Static Pressure for ducted units (Pa)
	NFPAC	"True" in case of manufacturer participating to NFPAC
	Capacity Control	Fixed, Staged , variable
	Cc	Degradation Coefficient
	Lrcontmin %	Minimum Load Rate where the unit is running continuously
	Psb	Power consumption during Standby mode
	Compressor Type	scroll, screw, reciprocating, Centrifugal
	Compressor motor type	AC, AC Inv, DC inv.
	Outdoor Heat Exchanger Type	Plate, micro channel, finned tube...
	Outdoor Heat Exchanger Dimensions (WxLxH)	Outdoor Heat Exchanger Dimensions (WxLxH)
	Indoor Heat Exchanger Type	Plate, micro channel, finned, shell- and-tube
	Indoor Heat Exchanger Dimension(WxLxH)	Indoor Heat Exchanger Dimensions (WxLxH)

B.II. Form LCP-3: Technical Datasheet for unit to be tested

B.II.1. Form LCP-3-1: Performances for Air Source Chillers and reversible Heat-Pumps

Eurovent Certita Certification APPLICATION FORM FOR CERTIFICATION

TECHNICAL DATA SHEET

PARTICIPANT :
AIR to WATER CHILLERS
EUROVENT CERTITA CERTIFICATION CODE

Model identification		Model designation	Refrigerant						
		Serial number							
			0						
			Standard Rating	Non Standard Rating					
EUROVENT CERTITA CERTIFICATION Application range(s) : AC - CHF - LB - with Brine			AC	AC	CHF	HT	VHT	MB	LB
Test conditions	Chilled water temperature ent./leav.	°C	12 / 7	/	23 / 18			0 / -5	-10/-15
Cooling Mode	Outdoor air dry bulb temperature	°C	35	/	35			35	35
Claimed performances	Cooling capacity	kW							
	Power input (cooling)	kW							
	EER	kW / kW							
	Indoor side fluid pressure drop C	kPa							
	A-weighted sound power level (Lwo / Lwi for split)	dB(A)							
Test conditions	Hot water temperature ent./leav.	°C	40 / 45	/	30 / 35	47 / 55	50 / 65		
Heating Mode at +7°C	Outdoor air dry (wet bulb) temperature	°C	7 (6)	/	7 (6)	7 (6)	7 (6)		
Claimed performances	Heating capacity at +7°C	kW							
	Power input (heating) at +7°C	kW							
	COP at +7°C	kW / kW							
	Indoor side fluid pressure drop H at +7°C	kPa							
Centrifugal fans if ducted	nominal external static pressure ducted units	Pa							
Name plate	Voltage - Phase - Frequency	V - - Hz							

B.II.2. Form LCP-3-2: Performances for Air Source Heating only Heat-Pumps

Eurovent Certita Certification APPLICATION FORM FOR CERTIFICATION

TECHNICAL DATA SHEET

PARTICIPANT :

AIR to WATER Heat Pumps

EUROVENT CERTITA CERTIFICATION CODE

Model identification		Model designation									
		Serial number		Refrigerant :							
EUROVENT CERTITA CERTIFICATION Application range(s) : AC - CHF -HT				AC		CHF		HT		VHT	
Test conditions	Hot water temperature ent./leav.	°C	40 / 45	* /45	30 / 35	* /35	47 / 55	* /55	50 / 65	* /65	
Heating Mode at +7°C	Outdoor air dry (wet bulb) temperature	°C	7 (6)	2 (1)	7 (6)	2 (1)	7 (6)	2 (1)	7 (6)	2 (1)	
Claimed performances Heating Mode at +7°C	Heating capacity	kW									
	Power input (heating)	kW									
	COP	kW / kW									
	Indoor side fluid pressure drop H	kPa									
Centrifugal fans if ducted	nominal external static pressure ducted units	Pa									
Name plate	Voltage - Phase - Frequency	V - - Hz									

* Measurement with the same flow rate as for the test at 7°C

B.II.3. Form LCP-3-3: Performances for Water Source Chillers and Heat-Pumps

Eurovent Certita Certification APPLICATION FORM FOR CERTIFICATION

TECHNICAL DATA SHEET

PARTICIPANT :

WATER to WATER CHILLERS

EUROVENT CERTITA CERTIFICATION

Model identification		Model designation		Refrigerant										
		Serial number												
				Standard Rating	Non Standard									
EUROVENT CERTITA CERTIFICATION Application range(s) : AC - CHF - LB - with Brine				AC	AC	CHF	AC-MB	CHF-MB	HT	VHT	HT-MB	VHT-MB	MB	LB
Test conditions	Chilled water temperature Inlet/Outlet	°C	12 / 7	/	23 / 18								0 / -5	-10 / -
Cooling Mode	Outdoor water temperature Inlet/Outlet	°C	30 / 35	/	30 / 35								30 / 35	30 / 35
Claimed performances	Cooling capacity	kW												
	Power input (cooling)	kW												
	EER	kW /												
	Indoor side fluid pressure drop C	kPa												
	Outdoor side fluid pressure drop C	kPa												
Test conditions	Hot water temperature Inlet/Outlet	°C	40 / 45	/	30 / 35	40 /	30 / 35	47 /	50 /	47 /	50 /			
Heating Mode	Outdoor water temperature Inlet/Outlet	°C	10 / 7	/	10 / 7	0 / -3	0 / -3	10 / 7	10 / 7	0 / -3	0 / -3			
Claimed performances	Heating capacity	kW												
	Power input (heating)	kW												
	COP	kW /												
	Indoor side fluid pressure drop H	kPa												
	Outdoor side fluid pressure drop H	kPa												
Centrifugal fans if ducted	nominal external static pressure ducted units	Pa												
Name plate	Voltage - Phase - Frequency	V - -												

B.II.4. Form LCP-3-4: ESEER calculation sheet

		Full Load	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
A	Pc										
	Pec										
B	Pc										
	Pec										
C	Pc										
	Pec										
D	Pc										
	Pec										

%	100	75	50	25
EER				
ESEER				

B.II.5. Form LCP-3-5: Information of the Compressor(s)

Chiller compressor type	Scroll		STAGE 1	STAGE 2	STAGE 3	STAGE 4
Number of circuits			Stage configuration			
	Ratio of capacity as regards to circuit capacity	Compressor part load? YES OR NO				
C1 // number of compressors			C1 (complete with ratio of unloading by compressor if needed)			
C11						
C12						
C13						
C14						
C2 // number of compressors			C2 (complete with ratio of unloading by compressor)			
C11						
C12						
C13						
C14						
FOR EACH STAGE AND COMPRESSOR,						
(*) For inverter controlled compressors, the frequency of the stage must be supplied						
(**) For screw equipped with slide, the ratio should be defined in term of electric power						
(***) For reciprocating and scroll that can be unloaded, the volume capacity of the compression chamber should be defined.						

B.II.6. Form LCP-3-6: Technical Data Sheet (1/2)

Eurovent Certita Certification Chiller SpecificationForm			
Chiller Commercial Designation			
Manufacturer			
Ref. EUROVENT CERTITA CERTIFICATION / Serial			
Chiller Type			
Nominal Voltage / Phase / Frequency		V / _ /	
Refrigerant Circuits Number / Type			
	Circuit N°1	Circuit N°2	
Compressors			
Number			
Manufacturer Designation			
Serial number			
Type			
Part load	YES or NO		
Evaporator (Indoor heat exchanger)			
Manufacturer Designation			
Type / Number			
Inlet Fluid Connection Diameter			mm
Outlet Fluid Connection Diameter			mm
Kind of connection			Flange
Pump included	YES or NO		
Type of brine and content if used			
Condenser (Outdoor heat exchanger) - Water Cooled			
Manufacturer Designation			
Type / Number			
Inlet Fluid Connection Diameter			mm
Outlet Fluid Connection Diameter			mm
Kind of connection			Flange
Pump included	YES or NO		
Type of brine and content if used			
Condenser (Outdoor heat exchanger) - Air Cooled			
Manufacturer Designation			
Fins spacing / Type			mm
Fan number / Type			
RPM			rpm
Fan diameter			mm
Fan motor: manufacturer / reference			
Defrosting period at standard condition *	\	\	hour
Refrigerant Circuits			
Expansion device type			
Manufacturer			
Economizer cycle	YES or NO		
Refrigerant charge			kg
Overall dimensions of the unit	LxWxH		mm
Weight without water			kg
Weight during transport with box			kg

* Defrost may occur in heating mode at standard condition (7/6°C air side and 40/45°C water side)

B.II.7. Form LCP-3-6: Technical Data Sheet (2/2)

IMPORTANT ADDITIONNAL INFORMATION TO GIVE TO THE LABORATORY		
Electrical wiring high voltage	wiring main switch connection	
Electrical wiring low voltage	bridge point	
Three-phase unit	correct sequence checking procedure	
Pump electrical wiring	how to disable the pump	
Compressor electrical wiring	how to disable one or more compressors	
Inverter compressor frequency	how to set the compressor frequency	
Ducted units	ESP	
	nominal air flow rate	m ³ /h
Water connections	scheme	
Test N°1	remote control setting	
Test N°2	remote control setting	
Test N°3	remote control setting	
Test N°4	remote control setting	

B.II.8. Form LCP-3-7: Technical Data Sheet for Seasonal Efficiency

Information requirements for heat pump space heaters and heat pump combination heaters

Source: 813/2013

Model(s):		[information identifying the model(s) to which the information relates]	
Air-to-water heat pump:		[yes/no]	
Water-to-water heat pump:		[yes/no]	
Brine-to-water heat pump:		[yes/no]	
Low-temperature heat pump:		[yes/no]	
For low-temperature heat pumps, parameters shall be declared for low-temperature application. Otherwise, parameters shall be declared for medium-temperature application. Parameters shall be declared for average climate conditions.			
Item	Symbol	Value	Unit
Rated heat output ⁽³⁾ at T _{designh} = -10 (-11) °C	P _{rated} = P _{designh}	x	kW
Seasonal coefficient of performance	SCOP	x,xx	—
T _j = -7 °C	P _{dH}	x,x	kW
T _j = +2 °C	P _{dH}	x,x	kW
T _j = +7 °C	P _{dH}	x,x	kW
T _j = +12 °C	P _{dH}	x,x	kW
T _j = bivalent temperature	P _{dH}	x,x	kW
T _j = operation limit temperature	P _{dH}	x,x	kW
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	P _{dH}	x,x	kW
Bivalent temperature (maximum +2°C)	T _{biv}	x	°C
Cycling interval capacity for heating at T _j = -7°C	P _{cyH}	x,x	kW
Degradation coefficient ⁽⁴⁾ at T _j = -7°C	C _{dH}	x,xx	—
Cycling interval capacity for heating at T _j = +2°C	P _{cyH}	x,x	kW
Degradation coefficient ⁽⁴⁾ at T _j = +2°C	C _{dH}	x,xx	—
Cycling interval capacity for heating at T _j = +7°C	P _{cyH}	x,x	kW
Degradation coefficient ⁽⁴⁾ at T _j = +7°C	C _{dH}	x,xx	—
Cycling interval capacity for heating at T _j = +12°C	P _{cyH}	x,x	kW
Degradation coefficient ⁽⁴⁾ at T _j = +12°C	C _{dH}	x,xx	—
Power consumption in modes other than active mode			
Off mode	P _{OFF}	x,xxx	kW
Thermostat-off mode	P _{TO}	x,xxx	kW
Standby mode	P _{SB}	x,xxx	kW
Crankcase heater mode	P _{CK}	x,xxx	kW
Other items			
Capacity control	fixed/variable		
Sound power level, indoors	L _{WA}	x	dB(A)
Sound power level, outdoors	L _{WA}	x	dB(A)
Contact details	Name and address of the manufacturer or its authorised representative.		

Seasonal space heating energy efficiency	η _s	x	%
Active mode coef. of performance	SCOP _{on}	x,xx	—
Net seasonal coef. of performance	SCOP _{net}	x,xx	—
T _j = -7 °C	COP _d	x,xx	—
T _j = +2 °C	COP _d	x,xx	—
T _j = +7 °C	COP _d	x,xx	—
T _j = +12 °C	COP _d	x,xx	—
T _j = bivalent temperature	COP _d	x,xx	—
T _j = operation limit temperature	COP _d	x,xx	—
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	COP _d	x,xx	—
For air-to-water HP : Operation limit temperature (maximum -7°C)	TOL	x	°C
Heating water operating limit temperature	WTOL	x	°C
Cycling interval efficiency at T _j = +7°C	COP _{cyH}	x,xx	—
Cycling interval efficiency at T _j = +12°C	COP _{cyH}	x,xx	—
Cycling interval efficiency at T _j = +7°C	COP _{cyH}	x,xx	—
Cycling interval efficiency at T _j = +12°C	COP _{cyH}	x,xx	—
Supplementary heater			
Rated heat output (3)	P _{sup} = sup(T _j)		kW
Type of energy input			
Outdoor heat exchanger			
For air-to-water HP: Rated air flow rate	Q _{airsource}	x	m ³ /h
For water-to-water: Rated water flow rate	or Q _{watersource}	x	m ³ /h
For brine-to-water: Rated brine flow rate	or Q _{brinesource}	x	m ³ /h

(3) For heat pump space heaters and heat pump combination heaters, the rated heat output P_{rated} is equal to the design load for heating P_{designh}, and the rated heat output of a supplementary heater P_{sup} is equal to the supplementary capacity for heating sup(T_j).

(4) If C_{dH} is not determined by measurement then the default degradation coefficient is C_{dH} = 0.9.

rev6

Legend

black	Declared and certified
gray	Declared for the tested model

black	From 813/2013
gray	added to the fiche
	Not applicable

B.II.9. Forms needed for each type of units

Unit Type	Air Source	Water Source
Cooling only	LCP-3-1, LCP-3-4, LCP-3-5, LCP-3-6	LCP-3-3, LCP-3-4, LCP-3-5, LCP-3-6
Reversible	LCP-3-1, LCP-3-4, LCP-3-5, LCP-3-6 <i>LCP-3-7</i>	LCP-3-3, LCP-3-4, LCP-3-5, LCP-3-6 <i>LCP-3-7</i>
Heating only	LCP-3-2, LCP-3-5, LCP-3-6 <i>LCP-3-7</i>	LCP-3-3, LCP-3-5, LCP-3-6 <i>LCP-3-7</i>

B.III. Form LCP-4: Eurovent Certita Certification 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: Liquid Chilling Packages and Hydronic Heat Pumps Date of reception of the unit: - Date of reception of test report: Unit tested on:									
RESULT DETAILS										
					Measurement		MFV		High failure	
APPLICATION	Acoustics	Measured	Declared	Deviation	Limit	Result	Limit	Result	Limit	Result
LwO	dB(A)				3.0		5.0		7.0	
APPLICATION	Air Conditioning	Measured	Declared	Deviation	Limit	Result	Limit	Result	Limit	Result
Pc	kW				-0.05		0.08		0.1	
Pec	kW									
EER	-				-0.05		0.08		0.1	
ESEER	-				-0.09		0.13		0.17	
Dpc Indoor	kPa				0.15					
Class EER	-									
Load rate at tested Point (25%)	-									
Tested EER Point B	-									
Tested EER Point C	-									
Tested EER Point D	-									
APPLICATION	Non-standard ratings	Measured	Declared	Deviation	Limit	Result	Limit	Result	Limit	Result
Pc Non Standard	kW									
Pec Non Standard	kW									
EER Non Standard	-									
Dpc In Non Standard	kPa									
TEST CONCLUSION										
					Test		MFV		High failure	

B.IV. Form LCP-5: Eurovent Certita Certification rerate form

PROPOSAL OF RERATE	
GENERIC	Rerate key Created on Last update on: Status:
MANUFACTURER	Participant key Participant name
TEST	Test key Unit tested on:

APPLICATION

DECLARED																			
Product key	Product name	Type of product	Range name	BMG	Perf 1.1														
		LCP/.../.../...																	
RERATED																			
		LCP/.../.../...																	

LEGEND			
Code	Name	Product type	Component type
Perf.1.1			

APPENDIX C. CALCULATION METHOD AND IMPLEMENTATION OF MEAN VALUE OF FAILURE (MVF)

Mean Value of Failure (MVF) is equal, for each manufacturer, to the ratio between the total numbers of measurements of all the considered characteristics above intermediate deviations and the total performed measurements in the considered years (see Certification Manual).

$$\text{MVF} = \frac{\sum \text{Number of measurements failed with intermediate deviation}}{\sum \text{Number of measurements performed}}$$

Mean Value of Failure *Number of considered years*

One global value will be considered. The following certified performances are taken into account:

- cooling capacity at full load (Pc)
- heating capacity at full load (Ph)
- EER at full load
- COP at full load
- Sound levels

And depending on the choice of the manufacturer; either:

- EER at part load if one or two tests are performed on the unit, or
- ESEER if all points are tested

The thresholds to consider are the intermediate deviations given in Table 8 in RS 6/C/003 LCP and Table 5 in RS 6/C/003A HP.

Eurovent Certita Certification takes into consideration data of the last three test campaigns of each manufacturer.

A manufacturer is expelled from the Eurovent Certita Certification Programme for one year if the mean value of failure MVF is higher than 25%.

APPENDIX D. ENERGY EFFICIENCY LABEL

Rules for the use of Eurovent Certified Performance energy label are given in the Certification Manual.

It is not mandatory to use Eurovent Certified Performance energy labels however it is highly recommended to do so. If an energy label is used by the participant it is mandatory to use the layout described on our website.

High resolution files of these labels, as well as specifications for the layout are available on the website in the manufacturer's restricted area.

