



**OM-13-2017**

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OPERATIONAL MANUAL  
for the  
CERTIFICATION  
of  
**ROOFTOPS**

# OM-13-2017

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**Modifications as against latest version:**

Nb	Modifications	Section	Page
1	Air-cooled and water-cooled replaced by air-to-air and water-to-air following the new definition of a rooftops	All the document	
2	The programme is divided into 3 sub-programmes	II.1	5
3	Description of sub-programme for Water-to-air units	II.3b	6
4	Modification of sampling rules according BMG definition	IV.2a	8
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8	Rerating is updated (Part loads)	IV.5c	15
9	Modification of certification schedule	APPENDIX A	22
10	Implementation of MVF is removed	APPENDIX D	34

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## I. PURPOSE

The purpose of this Operational Manual is to prescribe procedures for the operation of the Programme for Rooftops within Eurovent Certita Certification, in accordance with Certification Manual.

Participation in this programme is open to:

- Original Equipment Manufacturers (OEM)
- Brand Name Manufacturers (BNM) selling products already certified by OEM
- Distributors 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 Rating Standard RS 6/C/007-2017 for Rooftops.

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

## II. SCOPE

### II.1 General

This Certification Programme applies to *air-to-air rooftops* and *water-to-air rooftops* as defined in section III.1 of RS 6/C/007-2017 for Rooftops, rated *up to 200 kW* in cooling capacity as defined in EN 14511:2013.

*Declaring rooftops with 3 or 4 dampers, as described in the section III.1 of RS 6/C/007-2017, is optional.*

*The following features are not certified:*

- *gaz burners,*
- *pre-heaters,*
- *heaters,*
- *additionnal internal coil,*
- *heat recovery (plate, wheels, thermodynamic systems),*
- *exhaust fans.*

*The programme is splitted into three sub-programmes:*

- *One mandatory sub-programme: Air-to-air units Up to 100 kW*
- *Two optional sub-programmes:*
  - *Air-to-air units from 100 kW to 200 kW*
  - *Water-to-air units up to 200 kW*

Minimum and maximum external static pressure requirements are defined in standard EN 14511-3:2013.

## **II.2 Certify-all requirement**

Whenever a Company participates to a certification programme (*one or several sub-programme(s)*), all *standard* production models, within the scope of that programme, shall be declared and certified.

## **II.3 Optional sub-programmes**

### **a. Air-to-air rooftops from 100 kW to 200 kW**

Units above 100 kW capacities can be certified as an option in Participant Laboratory (see RS 6/C/007-2017).

Maximum capacities are defined for each participant according to the capacity of the participant's laboratory and with a maximum at 200 kW in cooling mode.

Nevertheless, some units above 100 kW can be declared and certified in independent laboratory following some conditions and configurations (see IV.3.a).

### **b. Water-to-air rooftops up to 200 kW**

*Water-to-air rooftop can be certified as an option.*

*Maximum capacities are defined for each participant according to the capacity of the participant's laboratory and with a maximum at 200 kW in cooling mode.*

*Without participant laboratory able to test units above 100 kW, the limit of this option is up to 100 kW.*

## **III. BASIC OUTLINE OF THE PROGRAMME**

### **III.1 Application**

The applicant, after signing the licence agreement, provides Eurovent Certita Certification with all information, calculation or software model and literature as required by the relevant Rating Standard.

All technical documentation shall be provided 12 weeks after having signed the Licence Agreement (see Certification Manual).

### **III.2 Qualifying procedure**

When the declaration file is completed, units selected by Eurovent Certita Certification shall be tested in the Independent Laboratory.

If the tests show conformity with the relevant Rating Standard and if all fees have been settled (see Chapter III.6) and documentation has been corrected (see Certification Manual) certification is granted.

### **III.3 Repetition procedure**

Every year, Eurovent Certita Certification checks whether the certified characteristics 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 *RS 6/C/007-2017*( Chapter VII Tolerances) the failure treatment is applied. (see *IV.5*)

### **III.5 Complaint procedure**

Under special conditions a complaint procedure may be carried out. It deals with complaints to Eurovent Certita Certification concerning certified products as described in the Certification Manual.

### **III.6 Programme cost allocations**

The allocation of the cost to Participants is based on:

- Annual administration fee
- Listing fee per Models listed in the Directory
- Testing fee per unit tested

### **III.7 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.

### **III.8 Non application of procedure**

The non-application of procedure process is detailed in the Certification Manual.

## **IV. OPERATION OF THE PROGRAMME**

### **IV.1 Declaration of data**

Submittal of certification of models shall be made in writing and sent to Eurovent Certita Certification by e-mail by filling in the appropriate form.

#### **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 and two (2) significant figures for sound power.

#### **b. Certification forms**

Submittal of models shall be made by filling in the Excel forms provided by Eurovent Certita Certification. 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.

Beside current models, the Participants shall provide Eurovent Certita Certification with the list of *obsolete and deleted* models, according to the Certification Manual (See APPENDIX D)

**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 RT-1 (see B.I).

**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 RT-1 (see B.I).

*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.*

**IV.2 Selection of units to be tested**

**a. Number of units for scheduled tests**

For the qualifying and repetition procedure, a defined number of units shall be tested by a test Laboratory every year. The following method shall be used in order to calculate the number of 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 number of required tests shall follow Table 1.

**Table 1: Number of required tests according to the number of basic model groups\***

<b>Number of basic model groups</b>	<b>Number of tests</b>	
	<b>ISO 9001 manufacturers</b>	<b>others</b>
1 to 10	1	2
11 to 20	2	4
> 20	3	6

\*: number of BMG including units *related to the main programm and optional sub-Programms*.

Manufacturers fulfilling the following requirements are considered as ISO 9001 certified:

- All manufacturing places for the products within the scope of the certification programme are declared to Eurovent Certita Certification



- All declared ranges are associated to at least one of the manufacturing place declared
- All manufacturing places are covered by a ISO 9001 certificate:
  - issued by a certification body accredited by an accreditation body member of the European co-operation for Accreditation (EA, see list in [www.european-accreditation.org](http://www.european-accreditation.org))
  - valid:
    - on the day of the first selection by Eurovent Certita Certification for qualification test campaign
    - on the 15th of January year n for repetition test campaigns (see Appendix A Certification schedule)
    - whose scope covers at least “design production” of all products within the scope of the certification programme
  - If several factories produce the same reference, all of them have to be certified

A Manufacturing place is the address of the factory where the finished product is assembled.

**b. Number of tested points**

For each selected unit, the number of tested points shall follow the tables 2 and 3:

**Table 2: Air-to-air unit**

<i>Air-to-air unit</i>			
Mode	Condition	Cooling only unit	Reversible unit
Cooling	A (standard +35°C) at Tdesignc	X	X
	One condition chosen by Eurovent Certita among B, C or D	X	X
Heating	+7°C standard rating condition	<i>Not Applicable</i>	X
	<i>Bivalent Point</i>		X
	<i>One condition chosen by Eurovent Certita among A, B, C or D</i>		X
Auxilairies	1 mode chosen by Eurovent Certita among Psb, Poff, Pto, Pck in cooling mode	X	X
	1 mode chosen by Eurovent Certita among Psb, Poff, Pto, Pck in heating mode	<i>Not Applicable</i>	X

**Table 3: Water-to-air unit**

<i>Water-to-air unit</i>			
Mode	Condition	Cooling only unit	Reversible unit
Cooling	A (standard +35°C) at Tdesignc	X	X
Heating	+7°C standard rating condition	<i>Not Applicable</i>	X

For RT 2012 declaration (Optional)

- One measurement of LRcontmin (in heating mode or in cooling mode)

**c. Tested part loads for Seasonal Efficiency in Cooling**

For the first tested part load (example: upper stage), if the load (kW) is not reached, the laboratory will test automatically the second stage of the same part load (example: Lower stage). The laboratory will recalculate the  $EER_{(ErP)}$  according the 2 stages, by linear interpolation.

If the  $EER_{(ErP)}$  recalculated is outside the required tolerance, the manufacturer can choose:

- accept the result
- ask to test all the other part loads

**IV.3 Eurovent Certita Certification tests at the laboratory**

**a. Laboratories**

All units with cooling capacity at Eurovent Certita Certification Standard Rating Conditions below 80 kW in cooling mode 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.

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 hereunder and in the Rating Standard RS 6/C/007-2017.

Specifications for the testing facility of independent laboratory below:

	<b>DMT</b>	<b>CEIS</b>
<b>Water Side</b>		
<b>Flow rate on cooling water side up to</b>	500 m <sup>3</sup> /h	45 m <sup>3</sup> /h
<b>Flow rate on cold water side up to</b>	500 m <sup>3</sup> /h	data available soon
	Temperatures of 1.8 to 60°C (even lower temperatures with ethylene glycol)	data available soon
<b>Air Side</b>		
<b>1st air side: pre-conditioned air flow rates of up to</b>	60 m <sup>3</sup> /h	440 m <sup>3</sup> /h
<b>2nd air side: pre-conditioned air flow rates of up to</b>	10 m <sup>3</sup> /h	data available soon
<b>Outdoor Temperatures</b>	from -7 to 60°C	from -22 to 54 °C
<b>Relative humidity</b>	up to 95% at 32°C	data available soon

<b>Data of test hall</b>		
<b>Inner dimension of the climate-controlled test chamber (L x H x W)</b>	10m x 3,6m x 5m	
	<i>Maximum height of crane hook and carrying capacity 7,9m and 80 kN</i>	<i>data available soon</i>
<b>Maximum size of the unit</b>	<i>A rooftop unit up to (L x W x H) 4000m x 2150m x 1700m with both duct connections on the same long side, or one on the long side and one on the front side</i>	<i>data available soon</i>

A specific demande to the Lab can be done.

Laboratory shall notify the participant of the estimated date of test at least one week prior to the test.

Units shall be installed in the test facility in accordance with the Participant's published installation start-up and service 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 Datasheet, 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 uncrating, handling, testing and recrating 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 laboratory is unable to obtain the unit and the relevant documentation within the time limitations defined by Eurovent Certita Certification (see Appendix A: Certification schedule and timeframes) section regarding non-application of procedure of the Certification Manual shall be applied.

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

**e. Testing in an independent laboratory**

A Participant's representative can prepare 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 cannot be repaired, it shall be replaced by the Participant within one month for units below 100 kW and three months for units above 100 kW in cooling capacity.

**f. Testing own products in 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 in an independent laboratory shall be applied except that the Participant's personnel shall not be permitted in the laboratory test room facility.

The test agency is requested to install its own instruments (apart from the airflow measuring device) and to carry out complete test under its own responsibility. The Participant's personnel are requested to help during the preparation and to operate the test installation during the measurement. The Participant may perform its own measurement in parallel, but only results obtained by the independent test agency are considered by Eurovent Certita Certification.

The following procedure shall be applied:

- Approval of independent test agencies by Eurovent Certita Certification (based on technical capabilities and cost)
- Approval of Participant's laboratory by the independent agency selected by Eurovent Certita Certification (based on characteristics of test installation)
- Selection of unit to be tested by Eurovent Certita Certification
- Selection of test agency by Eurovent Certita Certification (based on availability, cost or other considerations)
- The Participant provides the selected test agency with all the required information concerning test installation. In particular, the

participant will notify to Eurovent Certita Certification and the independent test agency if the refrigerant pressure shall be tested (not mandatory, this will lead to additional cost).

- The test agency notifies the Participant of its requirements to prepare adjustments for installation of measuring probes and instruments
- On the agreed date of test, the test agency installs its own instruments and performs the test; the Participant's personnel assures the correct operation of the installation
- Test report prepared by the test agency is sent to Eurovent Certita Certification

The detailed procedure for testing in Participant laboratory is given in the Rating Standard *RS 6/C/007-2017*.

**g. 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 Report of test results**

Upon completion of the tests on each unit, the Laboratory will send a complete report, as a PDF file to Eurovent Certita Certification who will then forward a copy together with the reporting and rerating test result to participating company.

Participant has to recover his products one month after receiving the test report. If the units are not recovered after this delay, the laboratory will destroy the units and invoice the manufacturer.

**IV.5 Failure treatment**

If a failure occurs during testing, a second test, on another unit of the same model, may be asked. Re-rating will be applied to the tested model in accordance with the test results.

**a. General**

If the value found by testing in the independent laboratory differs more than the acceptable tolerance, 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 tested model according to the measured performances

**b. 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. It is not acceptable to up-rate claimed values.

The repetition procedure does not allow for a third test.

**c. Re-rating rules**

*For 2017, no re-rating for performances belong to SCOP/ $\eta_{s,h}$ . (Trial campaign)*

**1. Capacities, EER and COP at standard conditions**

The tested model and all models with the same BMG of the tested models shall be re-rated according to the deviation measured.

In case of failure on efficiency and/or capacity the power input of the re-rated models shall be recalculated according to the re-rated performances.

*The different cases of re-rating for standard performances and acoustics are described in § 7.*

**2. Efficiency fails for SEER**

*When  $EER_A$  (equal to EER at standard rating conditions) is out of tolerance,  $EER_A$  measured will be applied for SEER calculation.*

*When  $EER_{partload}$  is out of tolerance,  $EER_{Partload}$  measured will be applied for SEER calculation following the case below:*

			Part Load Ratio	ErP Declaration	Lower Stage	Upper Stage
<b>Condition A</b>	35 °C	100%	$P_c$			
			$P_{ec}$			
			$EER$			
<b>Condition B</b>	30 °C	74%	$P_c$			
			$P_{ec}$			
			$EER$	$EER_B (ErP)$		
<b>Condition C</b>	25 °C	47%	$P_c$			
			$P_{ec}$			
			$EER$	$EER_C (ErP)$		

Condition D	20 °C	21%	P <sub>c</sub>			
			P <sub>ec</sub>			
			EER	EER <sub>C (ErP)</sub>		

When 1 part load (upper or lower stage) is tested:

The deviation measured at the tested stage is applied to rerate the associated EER<sub>(ErP)</sub>. The other EER<sub>(ErP)</sub> for part load points will be rerated by the deviation minus tolerance used for the test.

When 2 part loads (upper and lower stage) are tested:

If the EER<sub>(ErP)</sub> interpolated after tested shows a deviation out of tolerance, the other EER<sub>(ErP)</sub> for part load points will be rerated by the deviation minus tolerance used for the test.

When all the part loads (B, C and D conditions) are tested, SEER is recalculated with all the measured EER.

When EER<sub>standard/Partload</sub> and/or the auxiliary are out of tolerance, SEER is recalculated.

### 3. Re-rating for SEER

Whenever a measurement at a part-load condition selected by Eurovent Certita Certification shows a deviation on EER larger than the allowed tolerance, the § c.2 shall be applied and then, SEER will be recalculated by Eurovent Certita Certification, to be rerated.

Whenever the test on auxiliary power consumption (P<sub>sb</sub>, P<sub>to</sub>, P<sub>off</sub> or P<sub>ck</sub>) shows a deviation larger than the allowed tolerance the value of SEER shall be recalculated.

In case of recalculation of SEER for the tested model, the deviation of SEER shall be applied to all models in the same BMG,

**Table 4: Example of rerating**

BMG	Model	Items	Declared	Calculated	Deviation	Rerated Value	
1	A	SEER	3,8	3,18	-16%	3,18	
	B	SEER	3,9	-	-	SEER declared x (1 - 0,16)	3,26
	C	SEER	3,7	-	-	SEER declared x (1 - 0,16)	3,10



#### **4. Sound power levels**

The tested model and all models with the same BMG of the tested models shall be re-rated according to the deviation measured.

#### **5. $P_{sb}$ , LRcontmin or CcpLRcontmin fails**

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

The performance characteristics of all other models in the same *BMG* as declared by Participant shall be re-rated by the deviation found with the tested model.

#### **6. ESP and Qv**

If the ESP measured is not in accordance with EN 14511:2013 (*means lower  $ESP_{min}$  or above  $2x ESP_{min}$* ), then the laboratory shall adjust the airflow rate.

The final values measured for ESP and Qv are the re-rated values.

#### **7. Synthesis for standard performances**

<i>P<sub>c</sub></i> (respectively <i>P<sub>h</sub></i> )	<i>EER</i> (respectively <i>COP</i> )	<i>LwoEnv</i>	<i>LwiDuct</i>	<i>LR<sub>contmin</sub></i>	<i>Ccp<sub>LRcontmin</sub></i>	<i>Psb</i>	<i>Dp</i> (Water Press. Drop)	<i>Tested model</i>	<i>Models with same BMG than the tested model</i>
out of tolerance	ok	ok	ok	ok	ok	ok	ok	$P_{Cre-rated} = P_{Cmeasured}$ $EER = EER_{declared}$ $Pe(c)_{re-rated} = P_{Cre-rated} / EER_{declared}$	$P_{Cre-rated} = P_{Cdeclared} + deviation$ $EER = EER_{declared}$ $Pe(c)_{re-rated} = P_{Cre-rated} / EER_{declared}$
ok	out of tolerance	ok	ok	ok	ok	ok	ok	$P_{Cre-rated} = P_{Cmeasured}$ $EER_{re-rated} = EER_{measured}$ $Pe(c)_{re-rated} = P_{Cre-rated} / EER_{re-rated}$	$P_{Cre-rated} = P_{Cdeclared} + deviation$ $EER_{re-rated} = EER_{declared} + deviation$ $Pe(c)_{re-rated} = P_{Cre-rated} / EER_{re-rated}$
out of tolerance	out of tolerance	ok	ok	ok	ok	ok	ok	$P_{Cre-rated} = P_{Cmeasured}$ $EER_{re-rated} = EER_{measured}$ $Pe(c)_{re-rated} = P_{Cre-rated} / EER_{re-rated}$	$P_{Cre-rated} = P_{Cdeclared} + deviation$ $EER_{re-rated} = EER_{declared} + deviation$ $Pe(c)_{re-rated} = P_{Cre-rated} / EER_{re-rated}$
ok	ok	out of tolerance	ok	ok	ok	ok	ok	$LwoEnv_{re-rated} = LwoEnv_{measured}$ $LwiDuct = LwiDuct_{declared}$	$LwoEnv_{re-rated} = LwoEnv_{declared} + deviation$ $LwiDuct = LwiDuct_{declared}$
ok	ok	ok	out of tolerance	ok	ok	ok	ok	$LwoEnv = LwoEnv_{declared}$ $LwiDuct_{re-rated} = LwiDuct_{measured}$	$LwoEnv = LwoEnv_{declared}$ $LwiDuct_{re-rated} = LwiDuct_{declared} + deviation$
ok	ok	out of tolerance	out of tolerance	ok	ok	ok	ok	$LwoEnv_{re-rated} = LwoEnv_{measured}$ $LwiDuct_{re-rated} = LwiDuct_{measured}$	$LwoEnv_{re-rated} = LwoEnv_{declared} + deviation$ $LwiDuct_{re-rated} = LwiDuct_{declared} + deviation$

<b><i>P<sub>c</sub></i></b> <i>(respectively Ph)</i>	<b><i>EER</i></b> <i>(respectively COP)</i>	<b><i>LwoEnv</i></b>	<b><i>LwiDuct</i></b>	<b><i>LR<sub>contmin</sub></i></b>	<b><i>CcpLR<sub>contmin</sub></i></b>	<b><i>Psb</i></b>	<b><i>Dp</i></b> <i>(Water Press. Drop)</i>	<b><i>Tested model</i></b>	<b><i>Models with same BMG than the tested model</i></b>
ok	ok	ok	ok	out of tolerance	ok	ok	ok	$LR_{contmin_{re-rated}} = LR_{contmin_{measured}}$	$LR_{contmin_{re-rated}} = LR_{contmin_{declared}} + deviation$
ok	ok	ok	ok	ok	out of tolerance	ok	ok	$CcpLR_{contmin_{re-rated}} = LR_{contmin_{measured}}$	$CcpLR_{contmin_{re-rated}} = CcpLR_{contmin_{declared}} + deviation$
ok	ok	ok	ok	out of tolerance	out of tolerance	ok	ok	$LR_{contmin_{re-rated}} = LR_{contmin_{measured}}$ $CcpLR_{contmin_{re-rated}} = LR_{contmin_{measured}}$	$LR_{contmin_{re-rated}} = LR_{contmin_{declared}} + deviation$ $CcpLR_{contmin_{re-rated}} = CcpLR_{contmin_{declared}} + deviation$
ok	ok	ok	ok	ok	ok	out of tolerance	ok	$Psb_{re-rated} = Psb_{measured}$	$Psb_{re-rated} = Psb_{declared} + deviation$
ok	ok	ok	ok	ok	ok	ok	out of tolerance	$Dp_{re-rated} = Dp_{measured}$	$Dp_{re-rated} = Dp_{declared}$

**d. 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”. 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.

**e. High failure treatment:**

An additional unit will be selected for the next test campaign in case of a:

- Deviation by more than 12 % on capacity.(standard conditions)
- Deviation by more than 15 % on efficiency (standard conditions)
- Deviation by more than 7 dB(A) on sound power level.

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

**IV.6 Repeated failures along the test campaigns**

This section refers to the corresponding Appendix of the Certification Manual.

The rules regarding Mean Value of Failure (MVF) are described in Appendix D of this document.

**IV.7 Non Application or Non Compliance of rules**

Non application of procedures and relevant penalties are described in the Certification Manual, Section VIII.

To come back to the certification programme, the suspended participant has to complete the test campaign of the year he has been suspended for (n) and give all the necessary elements for the following test campaign (n+1).

**V. PROMOTION OF THE PROGRAMME**

This section refers to the section “Promotion of the programme” of the Certification Manual.

**V.1 By Eurovent Certita Certification**

The certified data of the certified products are published on the website: [www.eurovent-certification.com](http://www.eurovent-certification.com). Eurovent Certita Certification will supply, on request, any interested party, with the current status of any participant or of any model.

*The limits of certified capacity shall be clearly indicated on the Eurovent Certified Performance website.*

The following information pertaining to each model certified shall be published on the web page for Rooftops:

- Name of Company
- Trade or brand name of model
- Model number(s) or designation(s)
- Nominal Airflow Rate (Qv)
- External Static Pressure (ESP)
- Main Power Supply (MPS)
- Refrigerant
- Cooling Capacity (Pc)
- Heating Capacity (Ph)
- Effective power inputs in cooling and heating (Pec, Peh)
- EER
- COP
- Energy Efficiency classes (cooling and heating)
- Condenser water pressure drop - only for water cooled rooftops (Dpc, Dph)
- A-weighted Sound Power Level outside (LwO env)
- A-weighted Sound Power Level in supply duct (Lwl duct)

From 1<sup>st</sup> January 2018:

- *Seasonal Efficiency in Cooling (SEER &  $\eta_{sc}$ )*
- *Seasonal Efficiency in Heating (SCOP &  $\eta_{sh}$ )*

*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.*

## **V.2 By Participants**

### **a. Eurovent Certified Performance Mark**

The Eurovent Certified Performance Mark consists of:

- Mark in conformity to the design as presented in the Licence Agreement. The accepted colour combinations consist of green pantone n° 341 on white, or black on white. Any size of mark may be used.
- Reference of the certified Rooftops.
- Identification number provided by Eurovent Certita Certification when the certification is granted.

### **b. Display of Eurovent Certified Performance Mark**

Display of this mark shall be in accordance with the Certification Manual.

## APPENDIX A. CERTIFICATION SCHEDULE AND TIMEFRAMES

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

Eurovent Certita Certification asks for up-date of product list	30/09/n-1
Participant confirms up-date of products list	31/10/n-1
Eurovent Certita Certification sends selection list for test	15/12/n-1
The Participant confirms selection list	31/12/n-1
Delivery + submittal form + order from Participant	31/03/n
Date of test in Participant laboratory are defined before	31/05/n
Eurovent Certita Certification sends the certificate (only if and when submittal form + order + delivery are completed)	31/03/n
Diploma for test campaign n are valid until	30/06/n+1
The Laboratory carries out all first tests (including tests in participant laboratories)	30/09/n
Eurovent Certita Certification sends the test reports	1 week
The Participant can ask for a second test up to	30/11/n
Delivery + submittal form + order from Participant are completed for second test(s)	31/12/n
The Laboratory carries out all second tests	31/01/n+1

## APPENDIX B. FORMS

### B.I. Form RT-1: Submittal for certification

<b>GENERIC</b>	<b>Product Number</b>		
	<b>Master product number</b>		Product number of the master product in OEM list of products (for brandname products only)
	<b>Tested On</b>		
	<b>Rerated on</b>		
	<b>Created on</b>		
	<b>Last update on</b>		
	<b>Status</b>		New / Certified / Deleted / Obsolete
	<b>Participant Name</b>		MyName
	<b>Product Name</b>		Model reference
	<b>Trade Name</b>		
	<b>Type of product</b>		E.g.: RT/A/P/C, RT/A/P/R, RT/W/P/C, RT/W/P/R
	<b>Range Name</b>		
	<b>BMG</b>		
	<b>PERFORMANCES</b>	<b>Pc</b>	[kW]
<b>Pec</b>		[kW]	Electrical consumption in cooling mode according to EN14511:2013 (calculated from Pc and EER)
<b>EER</b>		[W/W]	Energy Efficiency Ratio (Cooling mode) according to EN14511:2013
<b>EER Class</b>		-	For air source units as defined in the Rating Standard
<b>EER Class</b>		-	For water source units as defined in the Rating Standard
<b>Dpc</b>		[kPa]	Water pressure drop in cooling mode [kPa]
<b><math>\eta_{s,c}</math></b>		%	<i>Seasonal space cooling energy efficiency</i>
<b>SEER</b>		-	Seasonal Energy Efficiency Ratio according to EN14825:2016
<b>SEERon</b>		-	Seasonal Energy Efficiency Ratio according to EN14825:2016 in active mode
<b>Ph</b>		[kW]	Heating capacity according to EN14511:2013
<b>Peh</b>		[kW]	Electrical consumption in heating mode according to EN14511:2013 (calculated from Ph and COP)
<b>COP</b>		[W/W]	Coefficient of Performance (Heating mode) acc. to EN14511:2013
<b>COP Class</b>		-	For air source units as defined in the Rating Standard
<b>COP Class</b>		-	For water source units as defined in the Rating Standard
<b>Dph</b>		[kPa]	Water pressure drop in Heating mode
<b><math>\eta_{s,h}</math></b>		%	<i>Seasonal space heating energy efficiency</i>
<b>SCOP</b>		-	<i>Seasonal coefficient of performance</i>
<b>SCOPon</b>		-	<i>Seasonal coefficient of performance in active mode</i>
<b>Lwo Env</b>		[dB(A)]	A-weighted sound power level of the envelope
<b>Lwi Duct</b>	[dB(A)]	A-weighted sound power level in supply duct	
<b><i>Psb in cooling</i></b>	W	Power input in stand-by mode (optional)	
<b><i>Psb in heating</i></b>	W	Power input in stand-by mode (optional)	

<b>LRcontmin</b>	-	Load rate under which a unit with a variable speed compressor behaves as an ON/OFF unit (optional)
<b>CcpLRcontmin</b>	-	Ratio of the COP (or EER) at LRcontmin and the COP (or EER) at full load (optional).
<b>Qv nom</b>	[m <sup>3</sup> /h]	Nominal Air volume flow
<b>ESP</b>	[Pa]	External Static pressure
<b>Type of compressor</b>		Type of compressor (ON/OFF, staged, variable)
<b>Type of fan</b>		Type of fan (Fixed or variable speed)
<b>Refrigerant</b>		Refrigerant
<b>Height</b>	[mm]	Height
<b>Length</b>	[mm]	Length
<b>Width</b>	[mm]	Width
<b>Weight</b>	[kg]	Weight
<b>MPS</b>		Main Power Supply: Voltage (V) - Phase - Frequency (Hz) E.g.: 400-3-50

## B.II. Form RT-2: Technical Data Sheet (TDS)

### EUROVENT CERTIFICATION PROGRAMME FOR ROOFTOP SUBMITTAL FOR CERTIFICATION BY PARTICIPANT

<b>PARTICIPANT :</b>
----------------------

<b>Code article:</b>
----------------------

1. MODEL IDENTIFICATION	UNIT Reference		
	RANGE		
2. TRADE NAME			
3. EUROVENT CLASSIFICATION TYPE			
4. EUROVENT CERTIFIED RATING	NOMINAL AIRFLOW		m <sup>3</sup> /h
	ESP		Pa
	COOLING CAPACITY		kW
	COOLING UNIT POWER INPUT		kW
	COOLING EER		kW
	HEATING CAPACITY		kW
	HEATING UNIT POWER INPUT		kW
	HEATING COP		kW
	A-WEIGHTED SOUND POWER LEVEL		
	Outdoor side - Envelope		dB(A)



	Indoor side - In duct	dB(A)	
5. INDOOR COIL AIR FLOW RATE		m <sup>3</sup> /s	
	Ducted	(true/false)	
6. OUTDOOR COIL AIR FLOW RATE		m <sup>3</sup> /s	
	Ducted	(true/false)	
	PRESSURE AVAILABLE (if ducted unit)	Pa	
7. CONDENSER WATER FLOW RATE			
Cooling mode	With standard temperatures of 30/35 °C	dm <sup>3</sup> /s	
Heating mode	With minimum inlet temperature	°C	<b>20°C (mandatory)</b>
	And water flow rate	dm <sup>3</sup> /s	<b>Same waterflow as in cooling</b>
8. RATING CURRENT	Data for compressor unit (Voltage / Phase / Frequency)	V/-/Hz	
9. DIMENSIONS	a. Length	mm	
	b. Width	mm	
	c. Height	mm	
	d. Weight	kg	
10. REFRIGERANT	a. Type		
	b. Charge total system including refrigerant line	kg	
11. EXPANSION DEVICE	a. Location	(Indoor/Outdoor)	
	b. Type		
12. INDOOR COIL (will not be checked)	a. Number of rows		
	b. Tube pitch (a) x row pitch (b)	mm	
	c. Fin spacing	mm	
	d. Fin type (code)		
	e. Tube outside diameter and type		
	f. Coil length (l) x height (H) x coil width (L)	mm	
	g. Number of circuits		
	h. Fan type (code)		
	i. Number of fan		
13. OUTDOOR COIL (will not systematically be checked)	a. Number of rows		
	b. Tube pitch (a) x row pitch (b)	mm	
	c. Fin spacing	mm	
	d. Fin type (code)		
	e. Tube Outside Diameter D and type		
	f. Coil length (l) x height (H) x coil width (L)	mm	
	g. Number of circuits		
	h. Fan type (code)		
	i. Number of Fan		
14. WATER COOLED CONDENSER	a. Type (code)		
	b. Pump included	(true/false)	
	c. Manufacturer		

	d. Reference	
15. COMPRESSOR	a. Manufacturer	
	b. Model	
	c. Type (ON/OFF, staged, variable)	
16. FAN	a. Manufacturer	
	b. Motor type (Fixed of Variable speed)	
	c. Fan speed	rpm
17. CONTACT INFORMATION	a. Name	
	b. Title	
	c. Telephone	
	d. E-mail adress	

### B.III. Form RT-3: Capacity stage for Part Load Conditions in cooling mode – TDS SEER

According to EN14825:2016 standard:

Determine the declared capacity and  $EER_{PL}$  at the closest step or increment of the capacity control of the unit to reach the required *cooling* load.

If this step does not allow to reach the required *cooling* load within  $\pm 10\%$  (e.g. between 9,9 kW and 8,1 kW for a required *cooling* load of 9 kW), determine the capacity and EER at the defined part load temperatures for the steps on either side of the required *cooling* load. The  $EER_d$  at the required *cooling* load is then determined by linear interpolation between the results obtained from these two steps.

If the smallest control step of the unit is higher than the required *cooling* load, then the capacity at the smallest test has to be declared

Capacity Stages			Testings		
Condition	Temperature	Part Load Ratio	ErP Declation	Lower Stage	Upper Stage
			Condition A	35 °C	100%
Condition B	30 °C	74%	Pc	Pec	EER
			Pc	Pec	EER
			Pc	Pec	EER
Condition C	25 °C	47%	Pc	Pec	EER
			Pc	Pec	EER
			Pc	Pec	EER
Condition D	20 °C	21%	Pc	Pec	EER
			Pc	Pec	EER
			Pc	Pec	EER

ECC will choose only one stage to test among Lower and Upper stage.

## B.IV. Form RT-4: Additional Information Form

This form is to be completed for models selected for Seasonal Testing for Cooling (SEER)  
This form must be joined with the TDS (Technical Data sheet) for SEER.

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 in the table below.

Name	
Telephone number	
E-mail address / fax number	

### 2- Fan speed (for *Air-to-air* unit) and compressor frequency

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.

Test condition	Fan speed [rpm]	Compressor frequency [Hz]
	Cooling	Cooling
Condition A +35°C		
Condition B +30°C		
Condition C +25°C		
Condition D +20°C		

### 3- Does the laboratory need a special device (for example control unit) to set the conditions?

(No test will be performed without answer to this question.)

YES |  NO

If yes, send it to the laboratory.

### 4- Include the instructions for the start-up of the unit in rated capacity and additional certifying measuring points.

- Condition A
- Condition B
- Condition C
- Condition D
- Design load (if different to A)
- Pto
- Pck
- Psb

**Contact in CEIS laboratory:**

*Pilar Casado Garcia: [pgarcia@ceis.es](mailto:pgarcia@ceis.es)*

**Contactin DMT laboratory:**

Evgenij Witt: [Evgenij.Witt@dmf.de](mailto:Evgenij.Witt@dmf.de)

## B.V. Form RT-5: Capacity stage for Part Load Conditions in heating mode – TDS SCOP

According to EN14825:2016 standard:

Determine the declared capacity and COP<sub>PL</sub> at the closest step or increment of the capacity control of the unit to reach the required heat load.

If this step does not allow to reach the required heating load within ±10 % (e.g. between 9,9 kW and 8,1 kW for a required heating load of 9 kW), determine the capacity and COP at the defined part load temperatures for the steps on either side of the required heating load. The COP<sub>d</sub> at the required heating load is then determined by linear interpolation between the results obtained from these two steps.

If the smallest control step of the unit is higher than the required heating load, then the capacity at the smallest test has to be declared

Capacity Stages				Declared	Testable conditions	
Part Load Ratio			Lower Stage		Upper Stage	
Condition A	-7 °C	88%	Ph	x,x		
			Peh	#####		
			COP	x,xx	#DIV/0!	#DIV/0!
Condition B	2 °C	54%	Ph	x,x		
			Peh	#####		
			COP	x,xx	#DIV/0!	#DIV/0!
Condition C	7 °C	35%	Ph	x,x		
			Peh	#####		
			COP	x,xx	#DIV/0!	#DIV/0!
Condition D	12 °C	15%	Ph	x,x		
			Peh	#####		
			COP	x,xx	#DIV/0!	#DIV/0!
Condition F Bivalent point	x °C	#VALEUR!	Ph	x,x		
			Peh	#####		
			COP	x,xx	#DIV/0!	#DIV/0!

Could be tested	
A1	A2
B1	B2
C1	C2
D1	D2
F1	F2

ECC will choose only one stage to test among Lower and Upper stage.

## B.VI. Form RT-6: Additional Information Form

This form is to be completed for models selected for Seasonal Testing for heating (SCOP)  
This form must be joined with the TDS (Technical Data sheet) for SCOP.

Test Number	
Model	

### 5- 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 in the table below.

Name	
Telephone number	
E-mail address / fax number	

### 6- Fan speed (for Air-to-air unit) and compressor frequency

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.

Test condition	Fan speed [rpm]	Compressor frequency [Hz]
	Cooling	Cooling
Condition A -7°C		
Condition B +2°C		
Condition C +7°C		
Condition D +12°C		
Condition F Bivalent point °C		

### 7- Does the laboratory need a special device (for example control unit) to set the conditions?

(No test will be performed without answer to this question.)

YES |  NO

If yes, send it to the laboratory.

### 8- Include the instructions for the start-up of the unit in rated capacity and additional certifying measuring points.

- Condition A
- Condition B
- Condition C
- Condition D
- Bivalent point
- Pto
- Pck
- Psb

**Contact in CEIS laboratory:**

*Pilar Casado Garcia: [pgarcia@ceis.es](mailto:pgarcia@ceis.es)*

**Contactin DMT laboratory:**

Evgenij Witt: [Evgenij.Witt@dmf.de](mailto:Evgenij.Witt@dmf.de)

## **B.VII.Form RT-7: Test result form**

REPORTING OF TEST RESULT											
GENERIC		Test key: 2012-XXXX-01 Created on: 2012/07/23 Last update on: Status: FAILED									
MANUFACTURER		Participant key: XX Participant name: XXXX									
MODEL		Model key: XXXXXX Model name: XXXX Product type: RT/A/P/R Serial number:									
TEST		Programme - Sub-programmes: Rooftops Date of reception of the unit: 2012/06/08 Date of reception of test report: 2012/07/23 Unit tested on: -									
RESULT DETAILS											
					Measurement		MFV		High failure		
APPLICATION	Standard	Measured	Declared	Deviation	Limit	Result	Limit	Result	Limit	Result	
Pc	kW	55.6	60.77	-0.09	-0.05	FAILED	0.08	FAILED	0.1	PASSED	
Pe(c)	kW	19.2	20.12	0.0		FAILED					
EER	-	2.9	3.02	-0.04	-0.08	PASSED	0.12	PASSED	0.15	PASSED	
EER Class (Air Cooled)	-	A	A			PASSED					
Ph	kW	59.8	61.35	-0.03	-0.05	PASSED	0.08	PASSED	0.1	PASSED	
Pe(h)	kW	20.1	18.7	0.0		FAILED					
COP	-	2.97	3.28	-0.09	-0.08	FAILED	0.12	PASSED	0.15	PASSED	
COP Class (Air Cooled)	-	B	B			FAILED					
Lwo Env	dB(A)	87	85	2	3	PASSED	5	PASSED	7	PASSED	
Lwi Duct	dB(A)	97	89	8	3	FAILED	5	FAILED	7	FAILED	
TEST CONCLUSION											
					Test		MFV		High failure		
					FAILED		2/6		1 penalty test(s)		



## B.VIII. Form RT-8: Rerate form

PROPOSAL OF RERATE	
GENERIC	Rerate key: Created on: 2012/07/23 Last update on: Status:
MANUFACTURER	Participant key: XX Participant name: XXXX
TEST	Test key: 2012-XXXX-01 Unit tested on: -

APPLICATION Standard

DECLARED												
Product key	Product name	Type of product	Range name	BMG	Perf 1.1	Perf 1.2	Perf 1.3	Perf 1.4	Perf 1.5	Perf 1.6		
XXXXXX	XXXXXX	RT/A/P/R	XXXXXX	9	20.1	60.7	B	89	3.28	18.7		
RERATED												
XXXXXX	XXXXXX	RT/A/P/R	XXXXXX	9	18.4	55.6	D	97	2.97	20.6		

LEGEND			
Code	Name	Product type	Component type
Perf. 1.1	Pe(c)	RT/A/P/R	
Perf. 1.2	Pc	RT/A/P/R	
Perf. 1.3	COP Class (Air Cooled)	RT/A/P/R	
Perf. 1.4	Lwt Duct	RT/A/P/R	
Perf. 1.5	COP	RT/A/P/R	
Perf. 1.6	Pe(h)	RT/A/P/R	

## APPENDIX C. EUROVENT CERTIFIED PERFORMANCE 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.

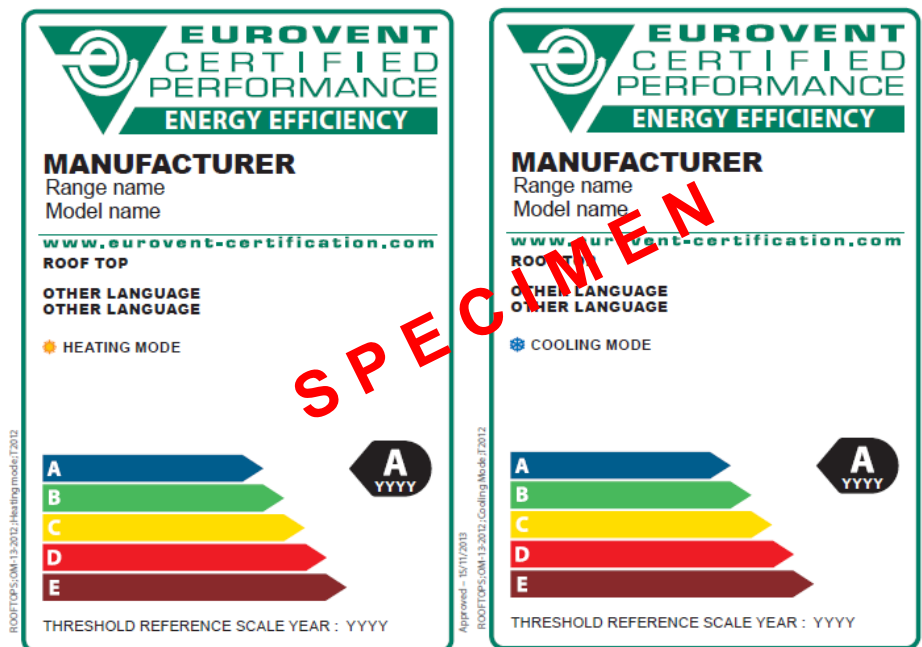


Figure 1: Illustration of the ROOFTOP Energy Efficiency Labels: Cooling and heating modes

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

### D.I. General

Mean Value of Failure (MVF) is equal, for each manufacturer, to the ratio between the total number of measurements which failed and the total number of performed measurements in the considered years.

$$\text{MVF} = \frac{\sum \text{Number of measurements failed}}{\sum \text{Number of measurements performed}} \times \frac{\text{Number of considered years}}{\text{Number of considered years}}$$

*Mean Value of Failure*

One global MVF is calculated for each participant. The following performances are considered for the calculation of the MVF:

- Cooling and heating capacity
- EER and COP
- Sound power levels

There is a failure regarding MVF if the deviation measured is greater than the mean value given in Section VII, Table 2 of RS/6/C/007-2017.

When there is a second test, then the first test is not taken into account.

A manufacturer is suspended from the Certification Programme for one year if the MVF is strictly higher than 25%.

A separate MVF is calculated for the tests performed for *each sub-programme*. (*example* for higher capacities).

## D.II. Newcomers and qualifying procedure

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

A manufacturer that leaves the programme and rejoins some years later is considered to be a newcomer if he rejoins after three years. If he rejoins before, all the latest existing test campaigns are considered, with minimum two and maximum three. The same rule applies if the manufacturer has been excluded for one year.