OM-21-2017

Published April 2017

OPERATIONAL MANUAL
for the
CERTIFICATION
of
Residential Air Filters

OM-21-2017

Published April 2017

Editing (date):	Marie-Clémence DEGALLAIX	(20/03/2017)
Checking (date):	Jean FOURCROY	(22/03/2017)
Consultation (date):	Launching Committee for RFIL	(March 2017)
Consultation (date):	CPPC	(07/04/2017)
Comes into effect from:		26/04/2017

Modifications as against last version:

No.	Modifications	Section	Page
-	Creation of the programme	all	all

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I. PURPOSE

The purpose of this manual is to prescribe procedures for the operation of the Eurovent Certified Performance (ECP) certification programme for Residential Air Filters (RFIL), in accordance with the Certification Manual.

II. SCOPE

II.1. General

The programme scope covers the particulate and combination (particulate and gas) filters used in a residential ventilation unit as defined in Rating standard RS/4/C/003.

This programme covers filters for which the following applies:

- the rated maximum air flow rate is comprised between 70 and 1000 m³/h included ;
- the initial efficiency ePM10 is higher than or equal to 50% ;
- the initial efficiency ePM1 is strictly lower than 99%;
- the ratio between effluent and influent concentrations (see definitions in RS/4/C/003) measured at time zero (see definition in RS/4/C/003) is strictly lower than 20% (for combination filters only).

The programme scope covers filters for which the face area is lower than or equal to 300 mm x 600 mm.

II.2. Certify-all principle

Whenever a company participates in the programme for RFIL, all Residential Air Filters that are promoted by the applicant/participant to end-users, specifiers, trading companies, contractors by means of paper or electronic catalogue, price list or technical datasheet or software within the scope of the programme, shall be certified, in accordance with Rating Standard RS/4/C/003. This includes all models in modular ranges and at least 80% of the filter references shall be declared in accordance with the conditions specified in §IV.1.

For the RFIL programme, the certify-all requirement as defined in the Certification Manual is applicable from 2020, January 1st.

III. BASIC OUTLINE OF THE PROGRAMME

Participation in this Eurovent Certified Performance programme consists of the following:

III.1. Application

The Applicant, after signing the License Agreement, shall send to Eurovent Certita Certification all information required for the qualification according to Rating standard RS/4/C/003: declaration file and relevant literature (see also §IV.1).

III.2. Qualifying procedure

Once the application is completed, the qualification procedure is articulated as follows:

- For Brand Name (BN) companies, applicable steps of the audit procedure shall be conducted (see §IV.4).

- For Original Equipment Manufacturers (OEM), Eurovent Certita Certification proceeds to selection (see §IV.2) based on the declaration file RFIL-1 and schedules the production site(s) audit(s) (see §IV.4). During the audit, the auditor appointed by Eurovent Certita Certification proceeds to sampling of the selected units that shall be sent to the laboratory together with the related technical datasheet. The independent laboratory staff proceeds to product performance testing on the selected units according to the procedure detailed in §IV.3.

If the aforementioned checks prove all the ranges compliance with the requirements specified in Rating Standard RS/4/C/003 and that all other requirements from the present Operational Manual are fulfilled, the certification is granted. If not, the procedure for failure treatment shall be applied.

When certified, the ranges are published on the Eurovent Certified Performance (ECP) website as specified in §V.1. Once the certificate is received, the participant is entitled to use the certification mark according to applicable requirements (see §V.2).

III.3. Repetition procedure

Every year, Eurovent Certita Certification checks whether the certified products still fulfil the requirements:

- For Brand Name (BN) companies, applicable steps of the audit procedure shall be conducted (see §IV.4).
- For Original Equipment Manufacturers (OEM), repetition tests in the independent laboratory (see §IV.3) and production site(s) audit (see §IV.4) shall be conducted annually in compliance with the Certification Schedule (see A.I).

For the repetition procedure, the certification is renewed at the date specified in the Certification Schedule (see A.I) on condition that:

- The previous test campaign (N-1) has been successfully completed;
- The scheduled audits have been performed by the auditor and are successful or the corrective actions plan is considered satisfactory;
- The product sampling, the technical datasheet delivery and the payment have been completed.

The company receives then a renewed certificate and the display of data is maintained on the Eurovent Certified Performance (ECP) website. If not, failure treatment shall be applied.

III.4. Failure treatment

When a range fails to comply with the requirements of the Rating Standard RS/4/C/003, the failure treatment shall be applied.

III.5. Challenge procedure

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

IV. OPERATION OF THE PROGRAMME

IV.1. Declaration of data

All characteristics shall be expressed in SI units.

Submittal of data shall be made by filling in the forms provided by Eurovent Certita Certification as .xls or .xlsx files.

The forms shall be sent by e-mail to Eurovent Certita Certification within the time limits specified in Certification Schedule (see A.I).

The Declaration file RFIL-1 (see B.I) will be used:

- for manufacturing companies (Original Equipment Manufacturer – OEM) to declare ranges, performance ratings and technical data of units sold within the last 12 months;
- for Brand Name (BN) companies to identify the corresponding models number of the original equipment manufacturer.

From 2020 January 1st, at least 80% of the units sold within the last 12 months in Europe shall be declared (see also §II.2). Until then the applicant/participant is allowed to declare only the sold units for which performance data has been promoted according to ISO 16890-1:2016 criteria (see list of performance items in Rating Standard RS/4/C/003).

The applicant/participant shall inform Eurovent Certita Certification of any modification of the product portfolio by updating the declaration file (RFIL-1). Non-compliance of the applicant/participant is considered as non-application of procedures (see §IV.6).

Eurovent Certita Certification decides whether the modification is significant for the certified performance data or not. In the case of significant modifications Eurovent Certita Certification is entitled to request adequate tests to check the influence on performance data. This test shall not be considered as a repetition one.

Confidentiality of certification data: All data submitted to Eurovent Certita Certification will be held confidential except for information authorised to be published in the Eurovent Certified Performance website.

IV.2. Selection of units to be tested

Selected filters will have to be manufactured with face dimensions corresponding to an A4 format (210 mm x 297 mm) to enable sampling (see §IV.4.b) and testing (see testing specifications in Rating Standard RS/4/C/003).

a. Selection for qualifying procedure

Eurovent Certita Certification shall select units to be tested on the basis of its evaluation of the declaration file RFIL-1 communicated by the applicant (see also §IV.1).

Six (6) units shall be selected for the qualifying procedure. Eurovent Certita Certification will proceed to the selection in such a way that various filter families (see filter family definition in Rating Standard RS/4/C/003), and preferably various filter media, are covered by the selection.

b. Selection for repetition procedure

For the repetition procedure, Eurovent Certita Certification shall select units to be tested on the basis of its evaluation of the declaration file RFIL-1 communicated by the participant (see also §IV.1).

Four (4) units shall be selected for the repetition procedure. Eurovent Certita Certification will proceed to the selection in such a way that various filter families are covered (see filter family definition in Rating Standard RS/4/C/003).

If possible, a configuration different from that previously tested shall be selected.

c. Selection for penalty tests

Eurovent Certita Certification shall select units for penalty tests from the filter family which failed (see §IV.5.d). If the filter family is no longer produced in year N+1 (status “deleted” or “obsolete”) then the selection will be made from the filter family which is the most similar to the one that failed.

IV.3. Tests at the independent laboratory

a. General

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
- Challenge procedure test

Tests shall be performed at the independent laboratory selected by Eurovent Certita Certification.

The laboratory shall have the responsibility of uncrating, handling, testing and recrating the unit for shipment.

Before testing, the laboratory shall check the product dimensions against the values declared in the technical datasheet to ensure that the unit corresponds to the selection.

The laboratory shall not perform the test and contact Eurovent Certita Certification who shall ask the applicant/participant to send a new unit in the following cases:

- one of the dimensions is not compliant with the technical datasheet (see Rating Standard RS/4/C/003 for tolerances),
- one of the units appears damaged (see IV.5.b “Component failure”).

Units shall be assembled and installed in the test facility by the laboratory personnel in accordance with the manufacturer’s published installation instructions. The applicant/participant shall therefore provide the laboratory with full information about the installation.

No applicant/participant’s personnel shall be present in the laboratory test facility during the tests.

If the test establishes that the unit fails to meet one or more of the requirements of the Rating Standard RS/4/C/003, the laboratory shall promptly notify Eurovent Certita Certification to receive instructions regarding further actions (see §IV.5.c).

b. Time limitation of acquisition and recovery of units

Deadline for delivery of units to the laboratory, together with the technical data sheet completed and the payment, is defined in the Certification Schedule (see A.II). For the qualifying procedure the deadline is specified in the notification received from Eurovent Certita Certification.

If elements are not delivered within the time limitations, it is considered as non-application of procedures (see §IV.6).

Eurovent Certita Certification has discretion not to discontinue the certification when the applicant/participant provides a definite and acceptable date of supply.

The applicant/participant has to recover the products maximum six (6) working weeks after receiving the test reports and results. If the products are not recovered after this delay, the laboratory can destroy them and the corresponding invoice will be sent by Eurovent Certita Certification to the applicant/participant.

c. Test conditions

The tests shall be conducted at the conditions stated in Rating Standard RS/4/C/003.

d. Report of test results and test-check

Upon completion of the tests on each unit, the laboratory will send the complete report as a .pdf file to Eurovent Certita Certification.

For each test, a performance item fails when the declared value and the measurement differ by more than the allowable tolerance (see Rating Standard RS/4/C/003).

When one or more performance items fail, the test status is considered FAILED and the failure treatment corresponding to unit failure (see §IV.5.c) shall be applied.

Eurovent Certita Certification will forward a copy of the report together with the test report result sheet (RFIL-2) and, if applicable, the test rerate form (RFIL-3) to the applicant/participant (see Appendix B).

IV.4. Audit procedure

a. General

General audit requirements are stated in the Certification Manual.

The audit will consist of the verification that the applicable requirements specified in paragraph IV.4.b are fulfilled.

In the frame of the qualifying procedure, all the production sites declared by the applicant shall be audited.

In the frame of the repetition procedure, audits shall be conducted annually according to the Certification Schedule (see A.II) and to the rules below:

- the production sites already audited by Eurovent Certita Certification during the qualifying procedure will be audited in turn (see Table 1);
- any new production site declared by the participant shall be audited as extra.

Table 1 : Number of production sites to be audited annually during the repetition procedure

Total number of production sites N_{total}	***Number of production sites to be audited each year***
$0 < N_{total} \leq 3$	1 (+ new site(s) if any)
$3 < N_{total} \leq 6$	2 (+ new site(s) if any)
$6 < N_{total}$	3 (+ new site(s) if any)

Whenever necessary, Eurovent Certita Certification has the right to ask an auditor to conduct an additional audit to the applicant/participants' factory as well as to collect data directly from customer and perform extra checking of software.

The audit is preceded by notice of the date and location. Thus, the applicant/participant shall ensure that the selected filters (see §IV.2) are available at the premises of the audited site(s) to enable sampling (see §IV.4.b). Incomplete sampling is considered as non-application of procedures (see §IV.6).

If audits are not conducted within the time limitations specified in the notification received from Eurovent Certita Certification, it is considered as non-application of procedures (see §IV.6).

In case of force majeure (e.g. accidents, labour disputes, natural events, acts of war) which would not allow Eurovent Certita Certification to perform a factory audit Eurovent Certita Certification can decide to replace it by another mean of verification, to postpone it within a reasonable deadline or to cancel it.

b. <u>Audit requirements</u>

During the audit, the auditor will:

- check that the products in the sales record and/or production line and/or stock are compliant with the declaration file RFIL-1;
- check that the filters made available for sampling are consistent with regular production, by comparing them to similar filters (same or close filter family) taken from the production line and/or stock, and/or by comparing production records;
- proceed to the units sampling for testing;
- check that whenever the ECP mark is displayed on the production units this is done in compliance with the requirements specified in paragraph V.2;
- check that the ECP mark is displayed on the documentation in compliance with the requirements specified in paragraph V.2;
- check, whenever applicable, that the corrective actions plan (see §IV.4.c) is completed or under implementation;
- check, whenever applicable, that any technical documentation communicated after the rerate deadline carries ratings consistent with rerated performance data (see also §IV.5.e).

The auditor will also perform a complete review of the quality management system to check that:

- the suppliers are regularly evaluated and that the corresponding evaluations are recorded;
- each batch of raw material or incoming goods is controlled at reception (100%):
    - either by internal testing on samples;
    - or by requiring the supplier to provide a report that enables the applicant/participant to assess conformity against his specification for
        - the filter media:
            - filtration efficiency for particle size 0.3 µm at a given face velocity specified by the applicant/participant
            - initial pressure drop at 5.3 cm/s
            - recommended final pressure drop
            - tensile strength in 2 directions
            - elongation in 2 directions
            - mass per unit area
            - thickness
        - the adhesive and/or sealant:
            - viscosity
            - density
- the finite products conformity with the bill of material (BOM) specifications is regularly evaluated and the corresponding evaluations are recorded;
- in particular, the manufacturer shall be able to show any of the performance test reports that were conducted since last audit (or in the past 18 months in case of qualifying procedure). At least 1 test report, internal or issued by an independent laboratory, is to be shown to the auditor. From January 1st 2019, all reports shall correspond to tests conducted in accordance with Eurovent 4/22:2015 ;
- the manufacturing process key steps are submitted to a validation check with as a minimum :
    - visual control(s) on each production unit. These controls can be conducted anytime in the process (folding, assembly, right before packing…) upon justification from the manufacturer;
    - if not guaranteed by the manufacturing sequence itself, the dimensional compliance shall be ensured by individual check, for example by insertion of the filter element in a gauging device;
- the factory personnel is qualified to perform the specific tasks if any;
- every product traceability is ensured;
- calibration of measuring devices is performed on a regular basis;

- production non-conformities are recorded and corrective actions initiated;
- customer complaints are registered and treated;
- internal audits are conducted.

c. Audit non-conformity

After evaluation, a non-conformity is classified as critical when, on the basis of objective evidence, the following cases are identified:

- there is a significant risk to the product conformity with respect to specified requirements;
- there is a significant risk regarding the quality management system ability to control the product conformity to specified requirements;
- there is systematic or repeated non-conformity to a specified requirement;

Otherwise the non-conformity is classified as not-critical.

In case of non-conformity, the applicant/participant shall be requested to provide Eurovent Certita Certification with a corrective actions plan within the deadline specified by the auditor (see also §IV.5.f for the audit failure treatment procedure).

IV.5. Failure treatment

a. Reasons of failure

The applicant/participant may examine the reasons of the failure.

b. Component failure

If the unit is damaged this is considered as a “component failure”. The laboratory shall immediately inform Eurovent Certita Certification who will notify the applicant/participant. The applicant/participant shall deliver within four (4) working weeks a new copy of the same model, which then shall be tested according to the availability of the laboratory.

c. Unit failure

For each failed test, the applicant/participant has four (4) working weeks from the notification of failure to select between the following alternatives (see form RFIL-3 in Appendix B):

- Rerate the data by adapting the ratings to the test results for the whole filter family (see §IV.5.e). The range is then published on the ECP website, with the new rating for the filter family that had failed, and certification is granted/maintained.
- Ask for a second test on a new copy of the same unit, to be scheduled by Eurovent Certita Certification according to the availability of the laboratory. This request shall be accompanied by a cause analysis and a relevant corrective actions plan. If this second test is successful, no revision of ratings will be required, otherwise the data will have to be rerated as explained in the rerating procedure (see §IV.5.e).

In both cases, penalty tests can be requested as described in §IV.5.d.

d. Penalty tests

In case of established failure, one (1) unit for penalty test has to be selected in case of deviation of more than twice the tolerance specified in Rating standard RS/4/C/003.

The penalty tests are full tests (all standard conditions defined in Rating standard RS/4/C/003) and shall be performed during the following repetition test campaign, in addition to scheduled repetition tests.

e. Rerating procedure

General Rerating procedure requirements are stated in the dedicated paragraph of the Certification Manual.

In addition to these general requirements the following applies:

- Rerate of ISO ePM class reporting value applies to the whole filter family using the value obtained for the tested filter ;
- Rerate of initial pressure drop is to be applied on the whole filter family by rerating the declared values in accordance with the deviation found for the tested filter;
- Rerate of adsorption capacity (for combination filters only, see definition in Rating standard RS/4/C/003) applies to the whole filter family by rerating the declared values in accordance with the deviation found for the tested filter.

Consistency of performance values communicated to customers for any filter comprised in the rerated filter family shall be ensured after the rerate deadline (see also §IV.4.b).

f. Audit failure

The applicant/participant shall resolve the non-conformity within the time limitation agreed in the corrective actions plan.

In case of critical non-conformity, the certification may be suspended/not granted until the critical non-conformity resolution and the corresponding verification.

g. Repeated failures along test campaigns

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

IV.6. Non-application of procedures

The general consequences of non-application of procedures are described in the relevant paragraph of the Certification Manual.

V. PROMOTION OF THE PROGRAMME

Promotion of the programme shall be done in accordance with relevant sections of the Certification Manual.

V.1. By Eurovent Certita Certification

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

Eurovent Certita Certification will supply, on request, to any interested party, the current status of any participant or of any range (new, certified, deleted or obsolete).

The following data are published:

- Name of Company
- Trade or brand name
- Certificate number
- Range designation
- Filter family designation
- Filter family characteristics:
    - Filter type (particulate filter or combination filter)
    - Filter media
    - Minimum and maximum face dimensions
    - Minimum and maximum air flow rates
- Reference velocity (see definition in Rating Standard RS/4/C/003)
- Certified characteristics and performance items (see Rating Standard RS/4/C/003 for more details):
    - Initial pressure drop
    - Filter ISO ePMx class reporting value
    - Specific Energy Consumption
    - Clean Air Efficiency
    - Adsorption capacities (for combination filters only)
- Production sites (city, country)

V.2. By Participants

It is highly recommended that the participating company indicates participation in the ECP programme for Residential Air Filters by the following means.

a. <u>Display of Eurovent Certified Performance logo on production units</u>

Each Participant is entitled to display the Eurovent Certified Performance mark on each production unit of ranges which have been certified. The Participant may affix the certification mark at any location thereon satisfactory to him. The Eurovent Certified Performance mark may be applied as part of nameplate of certified models providing it meets the requirements stated in Certification Manual.

Whenever the participant applies the Eurovent Certified Performance mark on the product or its packaging, it shall be done in compliance with the design, minimum size and proportions presented in the Certification Manual. Also, the Eurovent Certified Performance mark shall include in the dedicated area (see Certification Manual) the name of the relevant programme the product is certified for, i.e. “Residential Air Filters” or the corresponding short name “RFIL”.

b. <u>Display of Eurovent Certified Performance logo on technical documentation</u>

When used in technical documentation as defined in the Certification Manual (electronic and printed catalogues, websites, specification sheets), carrying ratings or claiming certification of certified models, the Eurovent Certified

Performance mark shall be used only for certified products. Non-certified products shall be clearly distinguished or presented in a separate document.

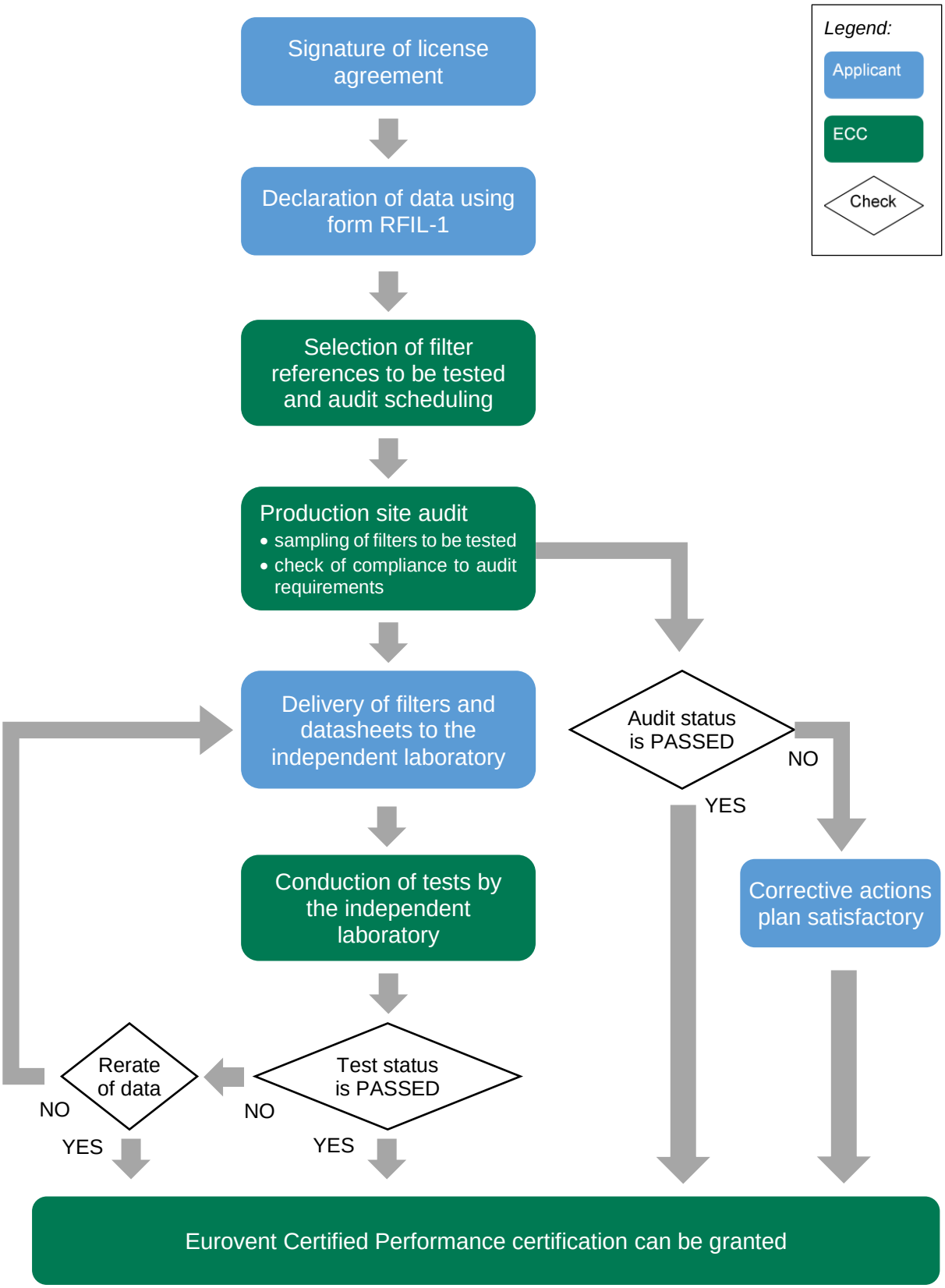
Whenever displayed on technical documentation, the ECP mark shall include in the dedicated area (see Certification Manual) the name of the relevant programme the product is certified for, i.e. “Residential Air Filters” or the corresponding short name “RFIL”.

The ECP mark alone may be used in literature without certified performance data (general leaflets, advertising etc.).

Following the qualification procedure the basic documentation literature shall be submitted for approval to Eurovent Certita Certification. It shall be the responsibility of the participant to ensure compliance of other published literature.

APPENDIX A. CERTIFICATION PROCESS AND SCHEDULE

A.I. Qualification procedure



A.II. Repetition procedure

Table 2 : Certification schedule

Certification step	Deadline
Eurovent Certita Certification asks for update of declaration file from the participant.	30/09/n-1
The participant sends the updated declaration file including all models sold in the past 12 months that fall into the scope.	15/11/n-1
Eurovent Certita Certification sends the list of selected models to the participant and schedules the audit(s).	15/12/n-1
All payments are completed by the participant.	31/01/n
The auditor audits the participant's production site(s) and samples the units selected for testing.	31/03/n
Selected units delivery + technical datasheet transmission are completed by the participant	15/04/n
The participant sends the non-conformity corrective actions plan whenever applicable.	Deadline set up by the auditor
The auditor evaluates the corrective actions plan relevance	31/05/n
Eurovent Certita Certification sends the diploma if all requirements are fulfilled.	30/06/n
Diploma validity	30/06/n+1
All regular tests, and penalty tests when applicable, are completed and test report(s) sent by the independent laboratory to Eurovent Certita Certification	31/07/n
Eurovent Certita Certification forwards the test report together with the test report result sheet, and the test rerate form when applicable, to the participant	15/08/n
The participant can ask for second tests before	15/09/n
Rerated data is published on the ECP website (when applicable)	30/09/n
Product delivery + technical datasheet transmission + payment are completed by the participant for second tests (when applicable)	15/10/n
Second tests are completed and test report(s) sent by the independent laboratory to Eurovent Certita Certification (when applicable)	30/11/n
Eurovent Certita Certification forwards the second test report together with the test report result sheet to the participant (when applicable)	15/12/n

APPENDIX B. FORMS

B.I. Form RFIL-1 : Declaration file

The form RFIL-1 (declaration file) to be filled in shall be sent by Eurovent Certita Certification to:

- applicants who have signed the license agreement,
- participants on an annual basis before the deadline specified in the Certification schedule.

A template will be available for information and upon request.

B.II. Form RFIL-2 : Test report result sheet

The form RFIL-2 (Test report result sheet) shall be sent by Eurovent Certita Certification to applicants/participants together with the test report.

A template will be available for information and upon request.

B.III. Form RFIL-3 : Test rerate form

CERTIFICATION PROGRAMME FOR RESIDENTIAL AIR FILTERS

RESPONSE FORM AFTER FAILURE ON TESTED UNIT
This response form shall be sent back by e-mail to Eurovent Certita Certification within four (4) working weeks maximum. Without news from you within this delay, revision of data will be required.

Date : _____ Name : _____ Signature : _____

According to the document OM-21-2017, you are asked to select one of the following alternatives:

☐ **Ask for a second test, i.e. on another copy of the same unit.**

☐ **Rerate the ratings in line with test results on any technical documentation, related to any of the filters belonging to the filter family of the filter that failed, communicated from this day included.**