



RS 2/C/001-2017

Published on March 2017

**RATING STANDARD
for the
EUROVENT CERTIFICATION
of
ACTIVE AND PASSIVE CHILLED BEAMS**

RS 2/C/001-2017

Published on March 2017

Supersedes RS-2/C/001-2016 (April 2016)

Editing:	Brice GILBERT	14 March 2017
Checking:	Jean FOURCROY	20 March 2017
Approval:	Compliance Committee CB CPPC	17 February 2017 06 March 2017 29 March 2017
Comes into effect from:		

Modifications as against last version:

No	Modifications	Section	Page
1	Documentation is replaced by software	V.2	6
2	Method to adjust the water flow	V.3	6

This document is strictly reserved for use in the Certification Programmes of Eurovent Certita Certification. Reproduction or translation of any part of the document is forbidden without written permission from Eurovent Certita Certification.

Published by Eurovent Certita Certification SAS
48-50 rue de la Victoire
75009 Paris, France

Tel: + 33 (0)1-7544-7171

E-mail: b.gilbert@eurovent-certification.com

TABLE OF CONTENTS

I. PURPOSE	4
II. SCOPE	4
III. DEFINITIONS	4
III.1 Passive Chilled Beam	4
III.2 Active Chilled Beam	4
III.3 Range	4
IV. TESTING REQUIREMENTS	5
V. RATING REQUIREMENTS	5
V.1 Mounting of passive and active chilled beams.....	5
V.2 Pressure testing and correction for water cooling capacity.....	5
V.3 Water flow adjustment	6
VI. CERTIFIED PERFORMANCE	6
VII. TOLERANCES	6

I. PURPOSE

The purpose of this Rating Standard is to establish definitions and specifications for testing and rating of Active and Passive Chilled Beams for the related Certification Programme of Eurovent Certita Certification, in accordance with Operational Manual OM-12.

II. SCOPE

The Certification Programme for Chilled Beams applies to all Active and Passive Chilled Beams of the Applicant/Participant. Chilled ceilings Radiant Heating panels are excluded.

Certify-all: Chilled Beams are presented by ranges and all ranges must be certified. This applies to all product ranges which have either catalogue leaflets with product details including technical data or similar product information in electronic format. Eurovent Certita Certification certifies the performances of the ranges as presented in their selection tool.

The Certify-all Principle applies for the whole world.

The following transitional arrangements apply, further to the new definition of active chilled beams (see definition in RS/ 2/C/001):

- During 2016 campaign beams which are not mounted under the ceiling or integrated into a false ceiling are excluded from the Certify-All Principle, it is not mandatory to declare them.
- From 2017 campaign the Certify-All Principle shall apply for all types of mountings.

III. DEFINITIONS

III.1 Passive Chilled Beam

Convactor cooled with water or any other liquid and mounted under the ceiling or integrated into a false ceiling.

III.2 Active Chilled Beam

Convactor with integrated air supply where the induced air or primary air plus induced air pass through the cooling coil cooled with water or any other liquid.

III.3 Range

In order to be considered in the same range, the models must have some fixed characteristics, while all others may be variable.

The basic element of an active chilled beam is a coil and the following characteristics shall be fixed:

- Coil width
- Coil height
- Fin material and spacing
- Pipe material, shape (internally smooth or rifled) and pattern
- Plenum and diffuser geometry
- Discharge (one way, two ways, three ways and four ways)
- Range name

Other characteristics may differ between products in the same range, such as:

- Coil length
- Pipe connections
- Nozzle configuration
- Pipe diameter
- With/without heating

For passive beams, the following characteristics shall be fixed:

- Coil height
- Fin material and spacing
- Pipe material, shape (internally smooth or rifled) and pattern
- Range name

Other characteristics may differ between models in the same range, such as:

- Coil length
- Coil width
- Casing depth below coil
- Open discharge or perforation

IV. TESTING REQUIREMENTS

Standard ratings shall be established at the standard conditions specified in the relevant test standards. Standard ratings shall be verified by tests conducted by the Eurovent Certita Certification independent laboratory in accordance with the following standards:

- EN 15116:2008 - "Testing and rating of Active Chilled Beams"
- EN 14518:2005 - "Testing and rating of Passive Chilled Beams".

If vanes can be oriented, the laboratory shall test the unit in the straight configuration or with the smallest angle (most favorable configuration for the capacity). Openings of the DIN dummies shall be covered when testing passive and active beams.

V. RATING REQUIREMENTS

V.1 Mounting of passive and active chilled beams

Passive beams shall be mounted under a ceiling.

Active beams are usually mounted under the ceiling or integrated into a false ceiling.

Active beams may have other mountings: on the floor, on the wall, integrated into a false floor, etc. In that case the manufacturer shall give to the laboratory guidance based on full scale tests including the set-up.

V.2 Pressure testing and correction for water cooling capacity

One air pressure (static chamber pressure or total pressure loss of the unit) has to be provided in the documentation/software by the Applicant/Participant for the capacity to be rated.

The test shall be performed for nominal primary airflow rate. The measured pressure drop Δp shall be within $\pm 10\%$ of claimed value. If Δp may be adjusted, the manufacturer is allowed to do it.

In all cases, the capacity shall be corrected, following the formula:

$$P_c = P_m \sqrt{\frac{\Delta p_n}{\Delta p_m}}$$

- with: P_c = Pressure corrected water cooling capacity
 P_m = Measured water cooling capacity
 Δp_n = Chamber pressure or total pressure loss given in manufacturer's software
 Δp_m = Pressure recorded during the measurement from the product's measurement connection or static pressure measured using 4 static taps connected by piezometric ring.

Formula used on the nominal airflow rate, and the same correction factor is used for 80% and 120%. In the reports, the laboratory shall give the claimed, the measured values and corrected output of the formula.

The corrected value P_c shall be compared with the claimed value.

V.3 Water flow adjustment

For long active beams the water flow can be adjusted with a water temperature rise in the beam higher than 2K. In that case the Manufacturer shall mention the value of water temperature rise in the Technical Data Sheet. The value of water temperature rise shall be between 2K and 5K.

VI. CERTIFIED PERFORMANCE

The following performance shall be certified and verified by tests:

- For Passive Beams:
 - Cooling capacity in compliance with the requirements of EN 14518:2005, including testing with three values of $\Delta\theta$.
 - Water pressure drop.
- For Active Beams:
 - Cooling capacity in compliance with the requirements of EN 15116:2008 - three values of air flow rate (80%, 100% and 120% of the selected air flow rate), for the nominal temperature difference (8 K) only for the nominal water flow rate. Eurovent Certita Certification shall select the air flow rate to be tested.
 - Water pressure drop.

VII. TOLERANCES

For cooling capacity:

- Mean deviation between three measured values and values claimed in the participant literature and selection tool (it shall be calculated as the mean of single deviations and not the deviation between mean claimed and measured capacities). - 6%
- Each of the three single deviations has a negative and a positive tolerance. - 12% and +24%

For water pressure drop: +2 kPa or +10% whatever is the higher