



Fraunhofer

TESTED<sup>®</sup>  
DEVICE

Climar, Indústria de Iluminação, S.A.  
Aseptic Extr. Opal PC  
**Report No. CL 2507-1656**

DUPLICATE

Statement of  
Qualification

Single product  
Particle Emission  
in Cleanroom  
(atmospheric)

|                |                                                                                                                                           |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Customer       | Climar, Indústria de Iluminação, S.A.<br>Rua Estrada Real, 50<br>3750-866 Borralha<br>Águeda<br>Portugal                                  |
| Tested product |                                                                                                                                           |
| Category:      | Cleanroom Facilities                                                                                                                      |
| Subcategory:   | Lighting Systems                                                                                                                          |
| Product name:  | Aseptic Extreme Rec. White 1195x595mm Opal PC30 90W 840<br>(manufacturing date: 3/24/2025; color: white; article number: 33.12.711.00211) |

Random sampling of particle emissions (airborne) at representative sites in cleanroom under atmospheric conditions

|                              |                                                                                                                                                                                                                                                                                                                       |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards/guidelines:        | ISO 14644-1, -14<br>The norms stated generally refer to the version valid at the time of the tests.                                                                                                                                                                                                                   |
| Test equipment:              | Optical particle counter:<br>LasAir II 110 and LasAir III 110 with measuring ranges $\geq 0.1\text{ }\mu\text{m}$ , $\geq 0.2\text{ }\mu\text{m}$ , $\geq 0.3\text{ }\mu\text{m}$ , $\geq 0.5\text{ }\mu\text{m}$ , $\geq 1.0\text{ }\mu\text{m}$ and $\geq 5.0\text{ }\mu\text{m}$                                   |
| Test environment parameters: | <ul style="list-style-type: none"><li>Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1</li><li>Airflow velocity:.....0.45 m/s</li><li>Airflow pattern:..... vertical laminar flow</li><li>Room temperature: .....22 °C ± 0.5 °C</li><li>Relative humidity: ..... 45 % ± 5 %</li></ul>           |
| Test procedure parameters:   | The luminaire was subjected to stress as follows: <ul style="list-style-type: none"><li>Structure-borne noise: ..... approx. 50 Hz</li><li>Oscillation velocity (Ø):.....v = 5.3060 mm/s</li><li>Oscillation acceleration (Ø):.....a = 1.8900 m/s²</li><li>Deflection of the system (Ø):..... s = 0.1023 mm</li></ul> |

|                              |                                                                                                                                                                                                                                                                                |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test result / Classification | The luminaire Aseptic Extreme Rec. White 1195x595mm Opal PC30 90W 840 is suitable for use under the specified test parameters (room temperature: 22 °C ± 0.5 °C; relative humidity: 45 % ± 5 %) in cleanrooms of the following Air Cleanliness Class according to ISO 14644-1: |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Test parameter(s)                     | Air Cleanlines Class |
|---------------------------------------|----------------------|
| Structure-borne noise = approx. 50 Hz | 1                    |
| Overall result                        |                      |

It should be noted that cleanrooms of class 1 to 5 according to ISO 14644-1 have a higher filter occupancy, which may restrict the use of panel lighting systems. Cleanrooms with a horizontal displacement flow form an exception to this.

The test result may be affected by the surrounding ceiling system, in particular the material pairing between lights and ceiling frames, as well as other mounting accessories. Particle emission behavior should be reassessed in each assembly situation.

Please note: Transport damages, incorrect installation, aging behavior, corrosion etc. can influence the test result.

The measuring devices used for the qualification tests are calibrated at regular intervals; their results can be traced back to national and international standards. In cases where no national standards exist, the test procedure implemented complies with the technical regulations and norms applicable at the time of the test. The relevant documentation can be viewed on request at any time.

Detailed information and parameters of the test environment can be found in the Fraunhofer IPA test report.