IPA

Cleanroom (atmospheric)

valid until: November 28, 2030

Fraunhofer

TESTED®
DEVICE

Zumtobel Lighting GmbH
CLEAN II Supreme Essential
Report No. ZU 2511-1683

Statement of
Qualification

Product series
**Particle Emission
in Cleanroom
(atmospheric)**

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Statement of Qualification · Product series

Customer

Zumtobel Lighting GmbH
Schweizerstrasse 30
6850 Dornbirn
Austria

Tested product

Category: Cleanroom facilities

Subcategory: Lighting systems

Product name: CLEAN II Supreme Essential
Tested products:
- CLEAN II Supreme Essential M600Q 4600lm 840 (manufacturing date: 10/10/2025)
- CLEAN II Supreme Essential M625Q 6600lm 840 (manufacturing date: 10/10/2025)
- CLEAN II Supreme Essential M600L 6600lm 840 (manufacturing date: 10/10/2025)
- CLEAN II Supreme Essential M625L 7800lm 840 (manufacturing date: 10/10/2025)

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

Standards/guidelines: ISO 14644-1, -14
The norms stated generally refer to the version valid at the time of the tests.

Test equipment: Optical particle counter:
LasAir II 110 and LasAir III 110 with measuring ranges ≥0.1 µm, ≥0.2 µm, ≥0.3 µm, ≥0.5 µm, ≥1.0 µm and ≥5.0 µm

Test environment parameters:
- Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1
- Airflow velocity:.....0.45 m/s
- Airflow pattern:..... vertical laminar flow
- Room temperature: .....22 °C ± 0.5 °C
- Relative humidity: ..... 45 % ± 5 %

Test procedure parameters: The luminaires were subjected to stress as follows:
- Structure-borne noise: ..... approx. 50 Hz

Test result / Classification

The luminaire series CLEAN II Supreme Essential 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.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

Business unit
Testing and Certification

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-- — Place, current date

on behalf of
Dr.-Ing. Frank Bürger, head of business unit Testing and Certification

This document only applies to the named product in its original state and is valid for a period of 5 years from the date the first document was issued. The document can be verified under **www.tested-device.com**.