



Fraunhofer

TESTED[®] DEVICE

Zumtobel Lighting GmbH
INDUSTRY RECESSED
Report No. ZU 2503-1608

DUPLICATE

Statement of
Qualification

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

Customer	Zumtobel Lighting GmbH Schweizerstrasse 30 6850 Dornbirn Austria
Tested product	
Category:	Cleanroom Facilities
Subcategory:	Lighting Systems
Product name:	INDUSTRY RECESSED Tested Products: <ul style="list-style-type: none">INDUSTRY RECESSED CL2 I 6200-840 M625Q PM O LDO (manufacturing date: 1/28/2025)INDUSTRY RECESSED CL2 I 6000-840 M625L PM O LDO (manufacturing date: 2/11/2025)
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 $\geq 0.1\text{ }\mu\text{m}$, $\geq 0.2\text{ }\mu\text{m}$, $\geq 0.3\text{ }\mu\text{m}$, $\geq 0.5\text{ }\mu\text{m}$, $\geq 1.0\text{ }\mu\text{m}$ and $\geq 5.0\text{ }\mu\text{m}$
Test environment parameters:	<ul style="list-style-type: none">Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1Airflow velocity:.....0.45 m/sAirflow pattern:..... vertical laminar flowRoom temperature:22 °C ± 0.5 °CRelative humidity: 45 % ± 5 %
Test procedure parameters:	The luminaires were subjected to stress as follows: <ul style="list-style-type: none">Structure-borne noise: approx. 50 Hz

Test result / Classification

The luminaire series INDUSTRY RECESSED 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	ZU 2503-1608 Report No. first document	Stuttgart, May 26, 2025 Place, date of first document issued
Business unit Testing and Certification	-- Report No. current document	-- Place, current date
Nobelstrasse 12 70569 Stuttgart Germany	on behalf of  Dr.-Ing. Frank Bürger, head of business unit Testing and Certification	