



Biuro Naukowo-Techniczne
SIGMA

Laboratory compliant
with ISO 17025

Testing environment
ISO Class 2

Active member of:

Polish Committee
for Standardization
- Technical Committee no 161
for Interiors Air Quality

Polish Committee
for Standardization
- Technical Committee no 317
for Ventilation and Air Conditioning

Biuro Naukowo-Techniczne SIGMA
Jezycka 44A/5 Street
60-865, Poznan, Poland
Phone: 0048 61 624 27 22
E-mail: info@bnt-sigma.pl

QUALIFICATION CERTIFICATE

ISO 14644-14 CLEANROOM SUITABILITY TEST: PARTICLE EMISSION TEST

Product tested: Lighting fixture Lumedic
Customer name: Lena Lighting S.A.
Customer address: Kórnicka 52, 63-000 Środa Wlkp, Poland



Test results:

When operated under below specified test conditions, lighting fixture **Lumedic** is suitable for use in cleanrooms fulfilling the specification of air cleanliness **ISO Class 3 - 9** according to ISO 14644-1:2015.

Test method: ISO 14644-14:2016

Test device: Laser Particle Counter TSI 9110; s/n: 91101102001

Particles size channels: $\geq 0.1\mu\text{m}$; $\geq 0.2\mu\text{m}$; $\geq 0.3\mu\text{m}$; $\geq 0.5\mu\text{m}$; $\geq 1.0\mu\text{m}$; $5.0\mu\text{m}$

Test environment:

- Cleanroom Air Cleanliness: ISO Class 2 (according to ISO 14644-1:2015)
- Airflow velocity and pattern: $0,45\text{m/s} \pm 20\%$; vertical laminar flow
- Temperature and relative humidity: $21^\circ\text{C} \pm 1^\circ\text{C}$; $50\% \pm 20\%$

Stress conditions applied:

- Structure-bore noise: 50Hz
- Oscillation; velocity; acceleration: 0.7 mm; 19.0 mm/s; 1.5 m/s²

Detailed test results can be found in the BNT SIGMA test report no. E-2509-1-1.

Laboratory: BNT SIGMA, Section of Cleanroom Technology

Operator: Krzysztof Zarczynski, Senior Validation Engineer

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