



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

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QUALIFICATION CERTIFICATE

ISO 14644-14 CLEANROOM SUITABILITY TEST: PARTICLE EMISSION TEST

Product under test: Lighting fixture EXF390LED-1200

Customer name: ATM LIGHTING Sp. z o.o.

Customer address: ul. Maszynowa 30A, 90-298 Gdańsk, Poland



Test results:

When operated under below specified test conditions, lighting fixture **EXF390LED-1200** 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 14644-14:2015

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: $21^\circ\text{C} \pm 1^\circ\text{C}$; $50\% \pm 10\%$

Stress conditions applied:

- Structure-bore noise: 50Hz
- Oscillation of the object, velocity and accel.: 0.74 mm; 19.0 mm/s; 2.0 m/s^2

Detailed test results can be found in the BNT SIGMA test report no. E-24-31/1. This document, as well as full test report, applies only to the product named above.

Laboratory: BNT SIGMA, Section of Cleanroom Technology

Operator: Krzysztof Zarczynski, Senior Validation Engineer

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