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TESTED®
DEVICE

IEF-Werner GmbH
euroLINE 140-S1-LIC2
Report No. IE 2102-1210

Statement of
Qualification

Single product
Particle Emission

Fraunhofer
IPA

Statement of Qualification · Single product

Customer

IEF-Werner GmbH
Wendelhofstrasse 6
78120 Furtwangen
Germany

Component tested

Category: Automation Components

Subcategory: Linear Units

Product name: euroLINE 140-S1-LIC2
(manufacturing date: 10/2020; type: direct drive; hub (effective): 634 mm;
serial number: 107544)

Random sampling of particle emissions (airborne) at representative sites

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

Test devices: 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
- Temperature: ..... 22 °C ± 0.5 °C
- Relative humidity: ..... 45 % ± 5 %

Test procedure parameters:

- Installation position: ..... horizontal, slide above
- Travel length: ..... s = 550 mm
- Test load: ..... none
- Suction:
  - Type: ..... DC Radial fan Type RLF 100-11/14
  - Manufacturer: ..... ebm-papst St. Georgen GmbH & Co. KG
  - Number: ..... two, connected in series
  - Position: ..... at the side, each at the ends of the travel length
- Parameter:
  - Set 1: ..... v_1 = 0.5 m/s; a_1 = 0.5 m/s²; without suction
  - Set 2: ..... v_2 = 2.0 m/s; a_2 = 15.0 m/s²; without suction
  - Set 3: ..... v_3 = 0.5 m/s; a_3 = 0.5 m/s²; with suction
  - Set 4: ..... v_4 = 2.0 m/s; a_4 = 15.0 m/s²; with suction

Test result / Classification

When operated under the specified test conditions, the linear unit euroLINE 140-S1-LIC2 is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Test parameter (s)	Air Cleanlines Class
v_1 = 0.5 m/s; a_1 = 0.5 m/s²; without suction	5
v_2 = 2.0 m/s; a_2 = 15.0 m/s²; without suction	6
Overall result without suction	**6**
v_3 = 0.5 m/s; a_3 = 0.5 m/s²; with suction	1
v_4 = 2.0 m/s; a_4 = 15.0 m/s²; with suction	1
Overall result with suction	**1**

Please note: Transport damages, incorrect installation, oil leakage, 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.

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on behalf of
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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**.