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DEVICE

RK Rose+Krieger GmbH
RK DuoLine Z60 Clean
Report No. RK 1404-704

Statement of
Qualification

Particle Emission

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Statement of Qualification

Customer:

RK Rose+Krieger GmbH
Potsdamer Strasse 9
32375 Minden
Germany

Component tested

Category: Automation Components

Subcategory: Linear Units

Product name: RK DuoLine Z60 Clean
(article number: TD15A5F1A12C02405; manufacturing date: CW 12/2014;
stroke: 2000 mm)

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines: VDI 2083-9.1; ISO 14644-1
The norms stated refer to the relevant editions applicable at the time of the tests.

Test devices: Optical particle counter:
LasAir II 110 with measuring ranges ≥ 0.1 µm, ≥ 0.2 µm, ≥ 0.3 µm, ≥ 0.5 µm, ≥ 1.0 µm und ≥ 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:

- Extraction: ..... 1420 l/min
- Installation position: ..... vertical, drive underneath
- Travelling distance: ..... s = 1870 mm
- Velocities: ..... v_1 = 0.25 m/s; v_2 = 0.5 m/s; v_3 = 1.0 m/s
- Acceleration: ..... a = 4.0 m/s²

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Test result / Classification:
(in acc. with ISO 14644-1)

When operated with an extraction system, the linear unit RK DuoLine Z60 Clean (TD15A5F1A12C02405) is suitable for use in cleanrooms fulfilling the following air cleanliness specifications according to ISO 14644-1:

Parameter	Air Cleanliness Class
v_1 = 0.25 m/s; a = 4.0 m/s²	ISO 1
v_2 = 0.5 m/s; a = 4.0 m/s²	ISO 1
v_3 = 1.0 m/s; a = 4.0 m/s²	ISO 1
Overall result	**ISO 1**

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.

For further information about the test environment and parameters, please refer to the Fraunhofer IPA test report.

Fraunhofer Institute for
Manufacturing Engineering and Automation IPA

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Place, date of first document issued

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i. A.
Frank Bürger, Project Manager Fraunhofer IPA

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