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**TESTED[®]
DEVICE**

RK Rose+Krieger GmbH
Multilift II-400-Clean
Report No. RO 1706-917

DUPLICATE

Statement of
Qualification

Particle Emission

Statement of Qualification

Customer RK Rose+Krieger GmbH
Potsdamer Strasse 9
32423 Minden
Germany

Component tested

Category: Automation Components

Subcategory: Positioning Systems

Product name: Multilift II-400-Clean
(manufacturing date: 2017; serial number: TM22B1C3C22CE0400)

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 $\geq 0.1 \mu\text{m}$, $\geq 0.2 \mu\text{m}$, $\geq 0.3 \mu\text{m}$, $\geq 0.5 \mu\text{m}$, $\geq 1.0 \mu\text{m}$ and $\geq 5.0 \mu\text{m}$

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 \pm 0.5 °C
- Relative humidity: 45 % \pm 5 %

Test procedure parameters:

- Installation position: vertical, engine above
- Travel length:..... s = 400 mm
- Test load:..... 40 kg
- Velocity: v = 8 mm/s
- Traversing profile: 1 minute in operation, 9 minutes rest period

Test result / Classification

When operated under the specified test conditions, Multilift II-400-Clean is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Class according to ISO 14644-1:

Test parameter	Air Cleanliness Class
Travel length: s = 400 mm Velocity: v = 8 mm/s Test load: 40 kg	4
Overall result	4

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

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Department of Ultraclean Technology and Micromanufacturing

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