



valid until: April 26, 2029

Fraunhofer

TESTED[®] DEVICE

SAMICK PRECISION IND.
LMES25uu

Report No. SA 2308-1446

DUPLICATE

Statement of
Qualification

Single product
Particle Emission

Statement of Qualification · Single product

Customer
 SAMICK PRECISION IND. CO., Ltd
 39, Seongseogongdannam-ro 32-gil
 Dalseo-gu 42721 Daegu
 South Korea

Component tested

Category: Automation Components
 Subcategory: Transfer Systems and Bearing
 Product name: LMES25uu
 (manufacturing date: 1/12/2024; color: black; serial number: XBA12100-062)

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
- Velocity:..... v = 0.5 m/s
- Acceleration: a = 1.0 m/s²
- Travel length: s = 820 mm

Test result / Classification

When operated under the specified test conditions, the linear bushing LMES25uu is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Class according to ISO 14644-1:

Test parameter(s)	Air Cleanliness Class
v = 0.5 m/s; a = 1.0 m/s ²	5
Overall result	

In the course of the particle emission measurements, lubricant leakage was detected on the moving parts of the test piece. In addition to the released airborne particles, this represents a major contamination potential in cleanrooms and the production areas located therein. Therefore, use of the linear bushing in clean/hygienic areas is considered to be critical.

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.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

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Department of Ultraclean Technology and Micromanufacturing

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on behalf of 
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