valid until: May 28, 2030

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TESTED®
DEVICE

HIWIN GmbH
Linear module HM080B
Report No. HI 2504-1621

DUPLICATE

Statement of
Qualification

Single product
Particle Emission
in Cleanroom
(atmospheric)

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Statement of Qualification · Single product

Customer

HIWIN GmbH
Brücklesbünd 1
77654 Offenburg
Germany

Tested product

Category: Automation Components

Subcategory: Linear Units

Product name: Linear module HM080B with profile rail QHH20
(manufacturing date: 3/2025; color: aluminium silver; type: HM080B190N1000S000NNNRHW08G0805-X; weight: 22 kg; article number: 80158125; serial number: HSN0000039085)

Random sampling of particle emissions (airborne) at representative sites in cleanroom under atmospheric conditions

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

Test equipment: 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
- Room temperature: ..... 22 °C ± 0.5 °C
- Relative humidity: ..... 45 % ± 5 %

Test procedure parameters:

- Installation position: ..... horizontal, slide at the top
- Travel length: ..... s = 1000 mm
- Attached payload: ..... none
- Suction parameters:
  – Volume flow: ..... Q = 176 l/min per four connectors
- Parameter Set 1: ..... v_1 = 0.5 m/s; a_1 = 1.0 m/s²; without suction
- Parameter Set 2: ..... v_2 = 1.0 m/s; a_2 = 2.0 m/s²; without suction
- Parameter Set 3: ..... v_3 = 1.5 m/s; a_3 = 3.0 m/s²; without suction
- Parameter Set 4: ..... v_1 = 0.5 m/s; a_1 = 1.0 m/s²; with suction
- Parameter Set 5: ..... v_2 = 1.0 m/s; a_2 = 2.0 m/s²; with suction
- Parameter Set 6: ..... v_3 = 1.5 m/s; a_3 = 3.0 m/s²; with suction

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Test result / Classification

The linear module HM080B with profile rail QHH20 is suitable for use under the specified test parameters (room temperature: 22 °C ± 0.5 °C; relative humidity: 45 % ± 5 %) in cleanrooms 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 = 1.0 m/s²; without suction	5
v_2 = 1.0 m/s; a_2 = 2.0 m/s²; without suction	6
v_3 = 1.5 m/s; a_3 = 3.0 m/s²; without suction	6
v_1 = 0.5 m/s; a_1 = 1.0 m/s²; with suction	2
v_2 = 1.0 m/s; a_2 = 2.0 m/s²; with suction	4
v_3 = 1.5 m/s; a_3 = 3.0 m/s²; with suction	5
Overall result	**6**

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

Business unit
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-- — Place, current date

on behalf of
Dr.-Ing. Frank Bürger, head of business unit Testing and Certification

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**.