



valid until: June 20, 2029

Fraunhofer

TESTED[®] DEVICE

Rockwell Automation Inc.
MML (Variant 1)
Report No. RO 2404-1512

DUPLICATE

Statement of
Qualification

Single product
Particle Emission

Statement of Qualification · Single product

Customer

Rockwell Automation Inc.
1201 S 2nd St
Milwaukee, WI 53204
USA

Component tested

Category: Automation Components
Subcategory: Transfer Systems and Bearing
Product name: MagneMoverLITE System (Variant 1)

(manufacturing date: 1/2024; weight: 59.9kg; batch numbers system components: 700-1708-80, 700-1708-60, 700-1708-40, 700-1708-00; serial numbers system components: 1000 mm AL Rails: 317658646, 317658630, 317658633, 73024343, 73024345, 73024356; Curve AL Rail: 72938237, 72938232, 72938235, 72938234; Left SW LF: 316995021; Right SW LF: 316881580; dimensions: 2420 mm x 600 mm x 960 mm)

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:

- System length: l = ~ 2420 mm
- System width:..... w = ~ 600 mm
- System height:..... h = ~ 960 mm
- Drive type:..... Magnetism
- Attached payload: $m_1 = 5 \text{ kg}$
- Curve: Tandem wheeled puck; v = 1.0 m/s; a = 1.5 m/s²
- Straight line:..... Tandem wheeled pucks; v = 1.0 m/s; a = 1.5 m/s²
- Switch:..... Tandem wheeled pucks; v = 1.0 m/s; a = 1.5 m/s²

Test result / Classification

When operated under the specified test conditions, the MagneMoverLITE System (Variant 1) is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Test parameter(s)	Air Cleanliness Class
Curve	5
Straight line	4
Switch	5
Overall result	5

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

RO 2404-1512
Report No. first document

Stuttgart, June 20, 2024
Place, date of first document issued

Department of Ultraclean Technology and Micromanufacturing

--
Report No. current document

--
Place, current date

Nobelstrasse 12
70569 Stuttgart
Germany

on behalf of 
Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA