



Fraunhofer

TESTED[®] DEVICE

FANUC Europe Corporation
LR-Mate 200iD/7C
Report No. FA 1602-806

DUPLICATE

Statement of
Qualification

Particle Emission

Statement of Qualification

Customer
 FANUC Europe Corporation
 Zone Industrielle
 6468 Echternach
 Luxembourg

Component tested

Category: Automation component

Subcategory: Robotics

Product name: LR-Mate 200iD/7C
 (manufacturing date: 8/2015; color: white; serial number: E-80311;
 type: A05B-1142-B221)

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines: VDI 2083-9.1; ISO 14644-1
 The norms stated generally refer to the version valid at the time of the tests.

Test devices: Optical particle counter:
 LasAir II and LasAir III 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 $> 5.0 \mu\text{m}$

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:

- Attached payload: 0.0 kg
- Operation of each axis:..... separately
- Speed: 40 % and 80 %
- Pause between cycles axis J1, J2, J3, J5, J6:.....0s
- Pause between cycles axis J4: 1 s
- Movement of each axis:
 - J1:175° until -175°
 - J2:75° until -55°
 - J3:170° until -30°
 - J4:180° until -180°
 - J5:100° until -100°
 - J6:180° until -180°

Test result / Classification

When operated under the specified test conditions, the robot LR-Mate 200iD/7C 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
Workload = 40 %	4
Workload = 80 %	5
Overall result	5

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

Department of Ultraclean Technology and Micromanufacturing

Nobelstrasse 12
 70569 Stuttgart
 Germany

Stuttgart, May 13, 2016

Place, date of first document issued

--

Place, current date

on behalf of 
 Frank Bürger, Project Manager Fraunhofer IPA