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DEVICE

KUKA Roboter GmbH
LBR iiwa 7 R800 CR
Report No. KU 1601-801

Statement of
Qualification

Particle Emission

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Statement of Qualification

Customer

KUKA Roboter GmbH
Zugspitzstrasse 140
86165 Augsburg
Germany

Component tested

Category: Automation component

Subcategory: Robotics

Product name: Robot LBR iiwa 7 R800 CR (prototype 3; with fan and seals on joint caps and covers)
(manufacturing date: 29/5/2015; serial number: 981676; payload: 7 kg; reach: 800 mm)

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines: VDI 2083-9.1; ISO 14644-1
The norms stated refer to the relevant editions applicable at the time of the tests.

Test devices: Optical particle counter:
LasAir II 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
- Temperature: ..... 22 °C ± 0.5 °C
- Relative humidity: ..... 45 % ± 5 %

Test procedure parameters:

- Speed: ..... 40 % and 80 %
- Attached payload: ..... 7 kg
- Pause between cycles: ..... 1 s
- Operation of each axis: ..... separately
- Fan unit: ..... on
- Movement of each axis:
  - Axis 1: ..... 150° until -150°
  - Axis 2: ..... 70° until -70°
  - Axis 3: ..... 165° until -165°
  - Axis 4: ..... 70° bis -70°
  - Axis 5: ..... 165° bis -165°
  - Axis 6: ..... 70° bis -70°
  - Axis 7: ..... 170° bis -170°

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Test result / Classification

When operated under the specified test conditions, the robot LBR iiwa 7 R800 CR (prototype 3; with fan and seals on joint caps and covers) 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 % Fan unit = on	1
Workload = 80 % Fan unit = on	3
Overall result	**3**

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

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Stuttgart, March 16, 2016
Place, date of first document issued

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Place, current date

on behalf of
Frank Bürger, Project Manager Fraunhofer IPA

This document only applies to the named product in an unchanged state and is valid from the date of issue for a period of 5 years. The document can be verified under **www.tested-device.com**.

DUPLICATE