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TESTED®
DEVICE

KUKA Deutschland GmbH
KR 6 R1840-2 arc HW
Report No. KU 2012-1197

DUPLICATE

Statement of
Qualification

Single product
Particle Emission

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Statement of Qualification · Single product

Customer

KUKA Deutschland GmbH
Zugspitzstrasse 140
86165 Augsburg
Germany

Component tested

Category: Automation Components

Subcategory: Robotics

Product name: KR 6 R1840-2 arc HW
(manufacturing date: 7/14/2020; color: orange; article number: 355822;
serial number: 4325008; weight: app. 188 kg; max. reach: 1843 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 ≥ 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:

- Velocity: 40 % and 80 % of maximum velocity
- Attached payload: 6 kg
- Break between cycles: 1 s
- Operation of each axis: separately
- Movement of each axis:
  - Axis 1: -150° to 150°
  - Axis 2: -160° to -40°
  - Axis 3: -60° to 90°
  - Axis 4: -150° to 150°
  - Axis 5: -105° to 35°
  - Axis 6: -250° to 250°

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Test result / Classification

When operated under the specified test conditions, the robot KR 6 R1840-2 arc HW is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Test parameter(s)	Air Cleanlines Class
Velocity = 40 %	5
Velocity = 80 %	5
Overall result	**5**

Please note: Transport damages, incorrect installation, oil leakage, aging behavior, corrosion etc. can influence the test result.

Coating was found to be flaking off the test object. This was probably caused by tightening the screws. This should be avoided, since large particles pose a contamination risk in cleanrooms and the production areas located inside them. Therefore, the coating should be prepared so that it does not chip off when the robot is installed in a cleanroom.

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.

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

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**.