IPA

Cleanroom (atmospheric)

valid until: April 17, 2031

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TESTED®
DEVICE

KUKA Deutschland GmbH
KR 10 R1440-2
Report No. KU 2602-1729

Statement of
Qualification

Single product
Particle Emission
in Cleanroom
(atmospheric)

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Statement of Qualification · Single product

Customer

KUKA Deutschland GmbH
Zugspitzstrasse 140
86165 Augsburg
Germany

Tested product

Category: Automation Components

Subcategory: Robotics

Product name: KR 10 R1440-2
(manufacturing date: 12/2025; color: orange; weight: 156 kg; article number: 0010033437; serial number: 4327630)

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:

- Capacity: ..... 40 % and 80 % of maximum velocity
- Attached payload: ..... 10 kg
- Pause between cycles: ..... 1 s
- Operation of each axis: ..... separately
- Movement of each axis:
  - Axis 1: ..... 150° to -150°
  - Axis 2: ..... -40° to -160°
  - Axis 3: ..... 90° to -90°
  - Axis 4: ..... 150° to -150°
  - Axis 5: ..... 60° to -110°
  - Axis 6: ..... 180° to -180°

Test result / Classification

The robot KR 10 R1440-2 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
40 % of maximum velocity	5
80 % of maximum velocity	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.

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KU 2012-1197 — Report No. first document
Stuttgart, February 19, 2021 — Place, date of first document issued

KU 2602-1729 — Report No. current document
Stuttgart, April 17, 2026 — 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 current date the document was issued. The document can be verified under www.tested-device.com.