



Fraunhofer

TESTED[®] DEVICE

KUKA Roboter GmbH
KR 6/10 AGILUS sixx CR
Report No. KU 1401-685

DUPLICATE

Statement of
Qualification

Particle Emission

Statement of Qualification

Customer: KUKA Roboter GmbH
Zugspitzstraße 140
86165 Augsburg
Deutschland

Component tested

Category: Automation component

Subcategory: Robotics

Product name: Robot Series KR 6/10 AGILUS sixx CR
(tested on robots KR6 R900 sixx CR / serial number 500040 and KR10 R1100 sixx CR / serial number 502072)

Test result / Classification:
(ISO 14644-1)

The Robot Series KR 6/10 AGILUS sixx CR is suitable for use in clean-rooms fulfilling the specifications of Air Cleanliness Class 2.

Parameter	Air Cleanliness Class
40%	2
80%	2
Overall result	2

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 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 $\geq 5.0 \mu\text{m}$
- Airnet 310 with measuring ranges $\geq 0.3 \mu\text{m}$, $\geq 0.5 \mu\text{m}$, $\geq 1.0 \mu\text{m}$ 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: $22^\circ\text{C} \pm 0.5^\circ\text{C}$
- Relative humidity:..... $45\% \pm 5\%$

Test procedure parameters:

- Speed:..... 40% and 80% of maximum utilization
- Attached payload: 6 kg
- Pause between cycles: 1 s
- Operation of each axis:..... separately
- Position of each axis: see report

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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