



# Fraunhofer

## TESTED<sup>®</sup> DEVICE

KUKA Deutschland GmbH  
LBR iisy 15 R930 CR  
**Report No. KU 2303-1404**

Statement of  
Qualification

Single product  
Particle Emission  
in Cleanroom  
(atmospheric)

Statement of Qualification · Single product

Customer	KUKA Deutschland GmbH Zugspitzstrasse 140 86165 Augsburg Germany
Component tested	
Category:	Automation Components
Subcategory:	Robotics
Product name:	LBR iiy 15 R930 CR (manufacturing date: 9/2024; color: white and orange; weight: 43.2 kg; serial number: 4561012)

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 devices:	Optical particle counter: LasAir II 110 and LasAir III 110 with measuring ranges $\geq 0.1\text{ }\mu\text{m}$ , $\geq 0.2\text{ }\mu\text{m}$ , $\geq 0.3\text{ }\mu\text{m}$ , $\geq 0.5\text{ }\mu\text{m}$ , $\geq 1.0\text{ }\mu\text{m}$ and $\geq 5.0\text{ }\mu\text{m}$
Test environment parameters:	<ul style="list-style-type: none"><li>Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1</li><li>Airflow velocity:.....0.45 m/s</li><li>Airflow pattern:..... vertical laminar flow</li><li>Room temperature: .....22 °C <math>\pm</math> 0.5 °C</li><li>Relative humidity: ..... 45 % <math>\pm</math> 5 %</li></ul>
Test procedure parameters:	<ul style="list-style-type: none"><li>Capacity: .....40 % and 80 % of maximum velocity</li><li>Attached payload: ..... 15 kg</li><li>Pause between cycles: .....0 s</li><li>Operation of each axis:..... separately</li><li>Movement of each axis:<ul style="list-style-type: none"><li>– Axis 1: ..... -150° to 150°</li><li>– Axis 2: ..... -160° to -40°</li><li>– Axis 3: ..... -90° to 90°</li><li>– Axis 4: ..... -150° to 150°</li><li>– Axis 5: ..... -90° to 90°</li><li>– Axis 6: ..... -180° to 180°</li></ul></li></ul>

Test result / Classification

When operated under the specified test conditions (room temperature: 22 °C  $\pm$  0.5 °C; relative humidity: 45 %  $\pm$  5 %), the robot LBR iiy 15 R930 CR 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
40 % of maximum velocity	3
80 % of maximum velocity	3
Overall result	3

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.

Detailed information and parameters of the test environment can be found in the Fraunhofer IPA test report.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

Department of Ultraclean Technology and Micromanufacturing

Nobelstrasse 12  
70569 Stuttgart  
Germany

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



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