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TESTED[®] DEVICE

KUKA

KR SCARA_KR 12 R850 Z340 CR

Report No. KU 2204-1316

Statement of
Qualification

Single product
Particle Emission

Statement of Qualification · Single product

Customer	KUKA Robotics Guangdong Co., Ltd. No.3, Liaoxin Road, Shuikou Residential Committee, Beijiao Town, Shunde District, Foshan City 528311, Guangdong Province China
Component tested	
Category:	Automation Components
Subcategory:	Robotics
Product name:	KR SCARA_KR 12 R850 Z340 CR (manufacturing date: 2/2022; color: white; weight: 56 kg; serial number: 10037906; batch number: 8630236)

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 $\geq 0.1\text{ }\mu\text{m}$, $\geq 0.2\text{ }\mu\text{m}$, $\geq 0.3\text{ }\mu\text{m}$, $\geq 0.5\text{ }\mu\text{m}$, $\geq 1.0\text{ }\mu\text{m}$ and $\geq 5.0\text{ }\mu\text{m}$
Test environment parameters:	<ul style="list-style-type: none">• 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:	<ul style="list-style-type: none">• Capacity:50 % and 100 % of maximum velocity• Attached payload: 6 kg• Pause between cycles:1 s• Operation of each axis:..... separately• Movement of each axis:<ul style="list-style-type: none">– Axis 1: -100° to 100°– Axis 2: -100° to 100°– Axis 3: -355° to 0°– Axis 4: -350° to 350°

Test result / Classification	When operated under the specified test conditions, the robot KR SCARA_KR 12 R850 Z340 CR is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:								
	<table><tr><th>Test parameter(s)</th><th>Air Cleanlines Class</th></tr><tr><td>50 % of maximum velocity</td><td>4</td></tr><tr><td>100 % of maximum velocity</td><td>5</td></tr><tr><td>Overall result</td><td>5</td></tr></table>	Test parameter(s)	Air Cleanlines Class	50 % of maximum velocity	4	100 % of maximum velocity	5	Overall result	5
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50 % of maximum velocity	4								
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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.

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	KU 2204-1316 Report No. first document	Stuttgart, November 14, 2022 Place, date of first document issued
Department of Ultraclean Technology and Micromanufacturing	-- Report No. current document	-- Place, current date
Nobelstrasse 12 70569 Stuttgart Germany	on behalf of Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA	