

DUDATE





Fraunhofer TESTED® DEVICE ABB Engineering (Shanghai) Ltd. IRB120T CR Report No. AB 1403-698

Statement of Qualification

Particle Emission

Statement of Qualification

Customer:

ABB Engineering (Shanghai) Ltd. No. 5, Lane 369, Chuangye Road 201319 Pudon District, Shanghai China

Component tested

| Category: | Automation Component |
|---------------|--|
| Sub-category: | Automation Components/Robotics |
| Product name: | IRB120T CR (Serial number: 120-501227; member of the IRB120 M2004 family, manufacturing date: 11/1/2014; color: RAL 9003, white) |

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 $\geq 0.1 \mu\text{m}$, $\geq 0.2 \mu\text{m}$, $\geq 0.3 \mu\text{m}$, $\geq 0.5 \mu\text{m}$, $\geq 1.0 \mu\text{m}$ und $\geq 5.0 \mu\text{m}$ |
| Test environment parameters: | Cleanroom Air Cleanliness Class (according to ISO 14644-1): |
| Test procedure parameters: | Attached payload: |

| Axis | 50 % workload | | 100 % workload | |
|------|------------------------------|------------------------------------|------------------------------|------------------------------------|
| | Average cycle time [s] | Average cycle velocity [°/s] | Average cycle time [s] | Average cycle velocity [°/s] |
| 1 | 4.0 | 44.8 | 1.8 | 100.0 |
| 2 | 3.2 | 28.1 | 1.4 | 66.0 |
| 3 | 4.6 | 34.1 | 2.0 | 77.3 |
| 4 | 2.6 | 61.2 | 1.0 | 149.2 |
| 5 | 2.7 | 58.4 | 1.1 | 136.7 |
| 6 | 3.4 | 47.1 | 0.9 | 169.7 |



(in acc. with ISO 14644-1)

Test result/Classification:



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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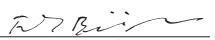
The robot IRB120T CR (SN: 120-501227) is suitable for use in cleanrooms fulfilling the specifications of the following air cleanliness classes:

| meter | Air Cleanliness Class |
|-------------|-----------------------|
| , , | 4 |
| % | 5 |
| rall result | 5 |

Stuttgart, April 8, 2014

Place, date of first document issued

Place, current date



nk Bürger, Project Manager Fraunhofer IPA

This document only applies to the named product in an unchanged state and is valid from the date of issue for a period of 5 years. The document can be verified under www.tested-device.com