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TESTED[®] DEVICE

ABB Engineering (Shanghai) Ltd.
IRB120 M2004 (SN: 12-80270)
Report No. AB 1109-576

DUPLICATE

Statement of
Qualification

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Customer: ABB Engineering (Shanghai) Ltd.
No.5, Lane 369, Chuangye Road
Kangqiao Town, Pudong District, Shanghai
China

Test results / Classification:
(according to ISO 14644-1)

When operated at low velocity, the robot IRB120 M2004 (SN: 12-80270) is suitable for use in cleanrooms fulfilling the Air Cleanliness Class 6.

When operated at high velocity, the robot IRB120 M2004 (SN: 12-80270) is suitable for use in cleanrooms fulfilling the Air Cleanliness Class 5.

Component tested:

Category: Automation Components

Subcategory: Robotics

Type: IRB120 M2004 (SN: 12-80270)

Random check measurements of particle emission (airborne) at representative points

Test procedure: According to VDI 2083 Part 9.1

Measuring instruments being used: Optical Particle Counter:
Model LasAir II 110 manufactured by PMS with measuring channels of
 $\geq 0.1 \mu\text{m}$, $\geq 0.2 \mu\text{m}$, $\geq 0.3 \mu\text{m}$, $\geq 0.5 \mu\text{m}$, $\geq 1.0 \mu\text{m}$ and $\geq 5.0 \mu\text{m}$

Test parameters of the test environment:

- Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1
- Air flow velocity:..... 0.45 m/s
- Air flow guidance:.....vertical unidirectional air flow
- Temperature:22 °C ± 0.5 °C (71.6 °F ± 0.9 °F)
- Relative humidity: 45 % ± 5 %

Test parameters of the test execution:

Axis	Low velocity		High velocity	
	Average cycle time [s]	Average cycle velocity [°/s]	Average cycle time [s]	Average cycle velocity [°/s]
1	4.63	38.9	1.80	100.2
2	3.06	29.4	1.35	66.9
3	4.24	37.3	1.98	79.7
4	2.61	61.2	1.36	118.2
5	3.73	58.5	1.43	111.8
6	2.34	68.4	1.13	141.8

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The measuring equipment used for the qualification is regularly calibrated and is based on national and international standards. In the case where no national standards exist, the measuring procedure used corresponds with technical regulations and norms valid at the time of the measurement. The documents drawn up for this procedure are available for viewing.

The validity of this certificate applies only to the mentioned product in this particular condition for a duration of 5 years.
Further information: www.tested-device.com.

Fraunhofer Institute for
Manufacturing Engineering and Automation IPA

Department Ultraclean Technology
and Micromanufacturing

Nobelstrasse 12
70569 Stuttgart
Germany

Stuttgart, December 5, 2011

Place, Date

[Signature]
Project manager