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DEVICE

DENSO WAVE Inc.
Robot VS050S2-AV6-R1
Report No. DE 1409-725

Statement of
Qualification

Particle Emission

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Statement of Qualification

Customer

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Component tested

Category: Automation components

Subcategory: Robotics

Product name: Robot VS050S2-AV6-R1
(manufacturing date: 1/2015; serial number: 01S149R; weight: 38 kg)

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 and LasAir III 110 with measuring ranges ≥ 0.1 µm, ≥ 0.2 µm, ≥ 0.3 µm, ≥ 0.5 µm, ≥ 1.0 µm and ≥ 5.0 µm

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 °C ± 0.5 °C
- Relative humidity: 45 % ± 5 %

Test procedure parameters:

Work load 40 %:
- Attached payload: 1.6 kg
- Operation of each axis: separately
- Speed: 100 %
- Pause between cycles: 250 ms

Work load 80 %:
- Attached payload: 3.2 kg
- Operation of each axis: separately
- Speed: 100 %
- Pause between cycles (except axis 2): 250 ms
- Pause between cycles for axis 2: 2000 ms

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Test result / Classification

When operated under the specified test conditions, the robot series VS050S2-AV6-R1 is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Parameter	Air Cleanliness Class
Work load 40 %	5
Work load 80 %	5
Overall result	**5**

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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Place, date of first document issued

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Place, current date

i. A.
Udo Gommel, Project Manager Fraunhofer IPA

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