



# Fraunhofer

## TESTED<sup>®</sup> DEVICE

Flex Prod Robots GmbH  
System Flexi Pro 392 ALX  
**Report No. FL 0903-974**

DUPLICATE

Statement of  
Qualification

# Statement of Qualification

**Customer:** Flex Prod Robots GmbH  
Musterstrasse 38  
91136 Musterstadt

**Component tested:** Robot

**Type:** System Flexi Pro 392 ALX

**Tests performed:** Random check measurements of particle emission (airborne) at representative points.  
PWP-measurements of particle emission (sedimented) on silicon wafers.

**Test parameters:** Robot running with a workload of 50 % and 75 %.

**Test results / classification:** When the robot is being operated at the above mentioned test parameters, it is suitable for use in cleanrooms fulfilling the air cleanliness class 5 according to ISO 14644-1.  
The robot holds an overall PWP-value of  $7.96 \times 10^{-6}$  particles  $\geq 0.21 \mu\text{m}/\text{cm}^2$  (in accordance to SEMI E14-93).

**Standards / guidelines used for the qualification:** VDI 2083 Part 1, 4 and 9.1; ISO 14644-1; SEMI E14-93

**Test parameters of the cleanroom environment:** Cleanroom of Air Cleanliness Class ISO Class 1 (according to ISO 14644-1)  
Air flow velocity: 0.45 m/s  
Air flow guidance: vertical unidirectional air flow from ceiling to floor. (raised floor)  
Temperature:  $22^\circ\text{C} \pm 0.5^\circ\text{C}$  ( $71.6^\circ\text{F} \pm 0.9^\circ\text{F}$ )  
Relative humidity:  $45\% \pm 5\%$   
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.

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Test parameters	Air Cleanliness Class (in accordance to ISO 14644-1)
Workload 50 %	ISO Class 5
Workload 70 %	ISO Class 5