



Fraunhofer

TESTED[®] DEVICE

ASM Assembly Systems
Circuit board mounter SIPLACE TX2i
Report No. AS 1604-819

DUPLICATE

Statement of
Qualification

Particle Emission

Statement of Qualification

Customer ASM Assembly Systems GmbH & Co. KG
Rupert-Mayer-Strasse 44
80200 Munich
Germany

Component tested

Category: Automation Components
Subcategory: Positioning Systems
Product name: circuit board moulder SIPLACE TX2i
(manufacturing date: 2016; serial number: TA006; material number: 58000)

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines: VDI 2083-9.1; ISO 14644-1
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 $\geq 0.1 \mu\text{m}$, $\geq 0.2 \mu\text{m}$, $\geq 0.3 \mu\text{m}$, $\geq 0.5 \mu\text{m}$, $\geq 1.0 \mu\text{m}$ and $\geq 5.0 \mu\text{m}$

Test 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 \pm 0.5 °C
- Relative humidity: 45 % \pm 5 %

Test procedure parameters:

- Measurement of complete system inside and outside
 - Motion cycle:standard cycle for endurance tests (ASM)
- Single movement of x-axes
 - Traveling distance:.....0.37 m
 - Velocity:1.73 m/s
 - Idling time in end positions:.....500 ms
- Single movement of y-axes
 - Traveling distance of left axis: 0.64 m
 - Traveling distance of right axis: 0.27 m
 - Velocity of left axis: 1.83 m/s
 - Velocity of right axis: 1.34 m/s
 - Idling time in end positions:.....500 ms
- Single movement of heads
 - Motion cycle:continuous movement of all axes
 - Velocity: maximum velocity of respective axis
- Single movement of feeder
 - Feed:..... 1 mm/s

Test result / Classification

When operated under the specified test conditions, the circuit board moulder SIPLACE TX2i is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Class according to ISO 14644-1:

Test parameter (s)	Class	Test parameter (s)	Class
Head CPP, left	7	Head CP_20P, left	7
Outside, with belts	7	Outside, without belts	7
Inside, with belts	7	Inside, without belts	7
Left x-portal	7	Right x-portal	7
y-portals	8	Transport and lifting tables	7
8 mm feeder and cutting device with belt, table on left	6	8 mm feeder and cutting device without belt, table on right	5
24 mm feeder, without belt, table on right	5	56 mm feeder, without belt, table on right	6
Overall result	7		

Poorer assessments of single components are not considered in the overall results because their individual operation does not represent a realistic utilization scenario. They are only used to localize particle sources to derive potential optimization measures.

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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on behalf of 
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