



Fraunhofer

**TESTED[®]
DEVICE**

ASM AS GmbH & Co.KG
SIPLACE CA4 VS
Report No. AS 1903-1104

DUPLICATE

Statement of
Qualification

Single product
Particle Emission

Statement of Qualification · Single product

Customer	ASM AS GmbH & Co.KG Rupert-Mayer-Strasse 44 81379 Munich Germany
Component tested	
Category:	Process Equipment
Subcategory:	Circuit Board Assembly
Product name:	SIPLACE CA 4 V2 Placement Machine with optional SIPLACE Wafer System (manufacturing date: 2017; article number: 519781; serial number: H721; weight: 3674 kg)

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines:	ISO 14644-1, -14 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:	<ul style="list-style-type: none"> • 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:	<ul style="list-style-type: none"> • Maximum velocity x axis:$v_{x,\text{max}} = 2.5 \text{ m/s}$ • Maximum velocity y axis:$v_{y,\text{max}} = 2.5 \text{ m/s}$ • Maximum acceleration x axis:$a_{x,\text{max}} = 40.0 \text{ m/s}^2$ • Maximum acceleration y axis:$a_{y,\text{max}} = 30 \text{ m/s}^2$ • Theoretical placement capacity: $P_{\text{TB}} = 78640 \text{ BE/h}$ • Vacuum pump:active • Venturi operation:active • SWS:not installed <p>Parameter Set 1:</p> <ul style="list-style-type: none"> • Placement head measured side: 2x C&P20 M active • Placement head passive side: 2x CPP active <p>Parameter Set 2:</p> <ul style="list-style-type: none"> • Placement head measured side: 2x CPP active • Placement head passive side: 2x C&P20 M active

Test result / Classification

When operated under the specified test conditions, the SIPLACE CA 4 V2 Placement Machine with optional SIPLACE Wafer System is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Test parameter(s)	Air Cleanliness Class
Parameter Set 1: • Theoretical placement capacity: $P_{\text{TB}} = 78640 \text{ BE/h}$ • Placement head measured side: 2x C&P20 M active • Placement head passive side: 2x CPP active	7
Parameter Set 2: • Theoretical placement capacity: $P_{\text{TB}} = 78640 \text{ BE/h}$ • Placement head measured side: 2x CPP active • Placement head passive side: 2x C&P20 M active	7
Overall result	7

Please note: Transport damage, incorrect installation, oil leakage, aging behavior and corrosion etc. can influence the test result.

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.

Detailed information and parameters of the test environment can be found in the Fraunhofer IPA test report.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

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Department of Ultraclean Technology and Micromanufacturing

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Place, current date

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on behalf of 
Dr.-Ing. Udo Gommel, Project Manager Fraunhofer IPA