



Fraunhofer

**TESTED[®]
DEVICE**

USmatic GmbH & Co. KG
CRUS – Conveyor-System
Report No. US 1011-537

DUPLICATE

Statement of
Qualification

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Customer: USmatic GmbH & Co. KG
Motorstrasse 34b
70499 Stuttgart
Germany

Test results:
(according to ISO 14644-1)

The CRUS – Conveyor-System is suitable for use in cleanrooms fulfilling the Air Cleanliness Class 6.

Component tested:

Category: Automation components

Subcategory: Transfer system

Type: CRUS – Conveyor-System

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

Test procedure: According to VDI 2083 Part 9.1

Measuring instruments being used:

- Model LPSA 210 manufactured by PMS with measuring channels of $\geq 0.2 \mu\text{m}$, $\geq 0.3 \mu\text{m}$, $\geq 0.5 \mu\text{m}$ and $\geq 5.0 \mu\text{m}$
- 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 $\geq 5.0 \mu\text{m}$
- Model Airnet 310 manufactured by PMS with measuring channels of $\geq 0.3 \mu\text{m}$, $\geq 0.5 \mu\text{m}$, $\geq 1.0 \mu\text{m}$ and $\geq 5.0 \mu\text{m}$

Test parameters of the test environment:

- Cleanroom 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
- Temperature: $22^\circ\text{C} \pm 0.5^\circ\text{C}$ ($71.6^\circ\text{F} \pm 0.9^\circ\text{F}$)
- Relative humidity: $45\% \pm 5\%$

Test parameters of the test execution:

- Roller-Conveyor: -USmatic No. 228 010 00 FL=2100
-USmatic motor 400 118 00
-O-belt BEHAbelt PU85A
- Turn-Table 800: - USmatic No. 231 070 00
(incl. Roller-Convoyer USmatic No. 228 010 00 FL=665 with USmatic motor 400 128 00 as well as circular belt BEHAbelt PU85A)
- Roller-Conveyor: - USmatic No. 228 010 00 FL= 1000
- USmatic motor 400 118 00
- Lift-Electric: - USmatic No. 234 250 00
(incl. Roller-Convoyer USmatic No. 228 010 00 FL=800 with USmatic motor 400 118 00 as well as circular belt BEHAbelt PU85A)
- Transported material: 20kg in a plastic box
- Conveying velocity: ca. 6 m/min
- Lifting velocity Lift-Electric: ca. 0.5m/s

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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.

Stuttgart, March 15, 2011

Place, Date


i. A.
Project manager