



Fraunhofer

**TESTED[®]
DEVICE**

CP SYSTEM CO., LTD.
NSB CR-SERIES
Report No. CP 1106-558

DUPLICATE

Statement of
Qualification

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Customer: CP SYSTEM CO., LTD.
#160-2, Allak-2 dong, Dongrae-Ku
607-825 Busan
South Korea

Test results:
(according to ISO 14644-1)

The NSB CR-SERIES is suitable for use in cleanrooms fulfilling the Air Cleanliness Class 3.

Component tested:

Category: Energy Supply
Subcategory: Cable Guiding System
Type: NSB CR-Series
Tested components:

- TP01: nsb020CR.20.R45/F-1,000L
- TP02: nsb035CR.55.R100/F-1,050L
- TP02: nsb045CR.75.R100/F-1,050L

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

Test procedure: According to VDI 2083 Part 9.1

Measuring instruments being used:

- 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 $\geq 5.0 \mu\text{m}$

Test parameters of the test environment:

- Cleanroom: 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:

- Travelling distance s: 0.82 m
- TP01: chain length $l_1 = 1095 \text{ mm}$
- TP02: chain length $l_2 = 1200 \text{ mm}$
- TP03: chain length $l_3 = 1560 \text{ mm}$
- Parameters a: $s_a = 0.82 \text{ m}$; $v_a = 0.5 \text{ m/s}$; $a_a = 1.0 \text{ m/s}^2$
- Parameters b: $s_b = 0.82 \text{ m}$; $v_b = 1.0 \text{ m/s}$; $a_b = 2.0 \text{ m/s}^2$
- Parameters c: $s_c = 0.82 \text{ m}$; $v_c = 2.0 \text{ m/s}$; $a_c = 5.0 \text{ m/s}^2$

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.


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Place, Date


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Project manager