



valid until: June 28, 2029

Fraunhofer

TESTED[®] DEVICE

THOMAS CABLE Co.,Ltd.

WOWFLEX_5H300X

Report No. TH 2406-1527

DUPLICATE

Statement of
Qualification

Single product
Particle Emission

Statement of Qualification · Single product

Customer
 THOMAS CABLE Co., Ltd.
 #206 Yeochon 3-gil, Ochang-eup
 28127 Cheongju-si, Chungcheongbuk-do
 Republic of Korea

Component tested

Category: Energy Supply
 Subcategory: Cable Systems
 Product name: WOWFLEX SYSTEM_5H300X
 (manufacturing date: 3/20/2024; color: white; batch number: 2402-43000;
 serial number: 34TTST1000)

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:

- 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:

- Bending radius:r = 85 mm
- Stroke length:..... s = 820 mm
- Parameter Set 1:..... $v_1 = 0.5 \text{ m/s}$; $a_1 = 1.0 \text{ m/s}^2$
- Parameter Set 2:..... $v_2 = 1.0 \text{ m/s}$; $a_2 = 2.0 \text{ m/s}^2$
- Parameter Set 3:..... $v_3 = 2.0 \text{ m/s}$; $a_3 = 4.0 \text{ m/s}^2$

Test result / Classification

When operated under the specified test conditions, the WOWFLEX SYSTEM_5H300X is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Test parameter(s)	Air Cleanlines Class
$v_1 = 0.5 \text{ m/s}$; $a_1 = 1.0 \text{ m/s}^2$	1
$v_2 = 1.0 \text{ m/s}$; $a_2 = 2.0 \text{ m/s}^2$	1
$v_3 = 2.0 \text{ m/s}$; $a_3 = 4.0 \text{ m/s}^2$	1
Overall result	1

Please note: Transport damages, incorrect installation, aging behavior, 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

TH 1901-1088
 Report No. first document

Stuttgart, January 30, 2019
 Place, date of first document issued

Department of Ultraclean Technology and Micromanufacturing

TH 2406-1527
 Report No. current document

Stuttgart, June 28, 2024
 Place, current date

Nobelstrasse 12
 70569 Stuttgart
 Germany

on behalf of 
 Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA