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TESTED®
DEVICE

IL SAN ELECTRIC WIRE CO.,LTD
DI-Flex 101923 cable series
Report No. IL 1806-1051

Statement of
Qualification

Particle Emission

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Statement of Qualification

Customer

IL SAN ELECTRIC WIRE CO.,LTD
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Korea

Component tested

Category: Energy Supply

Subcategory: Cable Systems

Product name: DI-Flex 101923 cable series
Tested objects:
- DI-Flex 101923-6: (manufacturing date: 5/14/2018; structure: 6-5-6 Pods; serial number: 101923-6; POD model name: PD20-06)
- DI-Flex 101923-4: (manufacturing date: 5/14/2018; structure: 4-3-4 Pods; serial number: 101923-4; POD model name: PD20-04)
- DI-Flex 101923-2: (manufacturing date: 5/14/2018; structure: 2-1-2 Pods; serial number: 101923-2; POD model name: PD20-02)

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 ≥ 0.1 µm, ≥ 0.2 µm, ≥ 0.3 µm, ≥ 0.5 µm, ≥ 1.0 µm and ≥ 5.0 µm

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 ± 0.5 °C
- Relative humidity: ..... 45 % ± 5 %

Test procedure parameters:
- Bending radius: ..... r = 85 mm
- Stroke length: ..... s = 820 mm
- Parameter Set 1: ..... v_1 = 0.5 m/s; a_1 = 1.0 m/s²
- Parameter Set 2: ..... v_2 = 1.0 m/s; a_2 = 2.0 m/s²
- Parameter Set 3: ..... v_3 = 2.0 m/s; a_3 = 4.0 m/s²

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Test result / Classification

When operated under the specified test conditions, the DI-Flex 101923 cable series 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
v_1 = 0.5 m/s; a_1 = 1.0 m/s²	2
v_2 = 1.0 m/s; a_2 = 2.0 m/s²	1
v_3 = 2.0 m/s; a_3 = 4.0 m/s²	2
Overall result	**2**

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

This document only applies to the named product in its original state and is valid for a period of 5 years from the date the first document was issued. The document can be verified under **www.tested-device.com**.