



Fraunhofer

**TESTED[®]
DEVICE**

DYDEN CORPORATION
RMadylo (74 x 26 mm)
Report No. DY 1510-787

DUPLICATE

Statement of
Qualification

Particle Emission

Statement of Qualification

Customer	DYDEN CORPORATION 2-15-1 Minami 830-8511 Kurume-shi, Fukuoka Japan
Component tested	
Category:	Energy Supply
Subcategory:	Cable System
Product name:	RMadylo (74 x 26 mm) (manufacturing date: 9/2015; color: black; serial number: DY150925-03)

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines:	VDI 2083-9.1; ISO 14644-1 The stated norms are generally those that were applicable at the time the tests were conducted.
Test devices:	Optical particle counter: LasAir II and LasAir III 110 with measuring ranges $\geq 0.1\text{ }\mu\text{m}$, $\geq 0.2\text{ }\mu\text{m}$, $\geq 0.3\text{ }\mu\text{m}$, $\geq 0.5\text{ }\mu\text{m}$, $\geq 1.0\text{ }\mu\text{m}$ and $\geq 5.0\text{ }\mu\text{m}$
Test environment parameters:	<ul style="list-style-type: none">Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1Airflow velocity:.....0.45 m/sAirflow pattern:..... vertical laminar flowTemperature:22 °C \pm 0.5 °CRelative humidity: 45 % \pm 5 %
Test procedure parameters:	<ul style="list-style-type: none">Energy chain: noneChain bending radius:r = 80 mmStroke length:..... s = 820 mmCable length:.....l = 1000 mmParameter Set 1:.....v₁ = 0.5 m/s; a₁ = 1.0 m/s²Parameter Set 2:.....v₂ = 1.0 m/s; a₂ = 2.0 m/s²Parameter Set 3:.....v₃ = 2.0 m/s; a₃ = 4.0 m/s²

Test result / Classification

When operated under the specified test conditions, the cable system RMadylo (74 x 26 mm) is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Class according to ISO 14644-1:

Test parameters	Air Cleanliness Class
v ₁ = 0.5 m/s; a ₁ = 1.0 m/s ²	2
v ₂ = 1.0 m/s; a ₂ = 2.0 m/s ²	1
v ₃ = 2.0 m/s; a ₃ = 4.0 m/s ²	5
Overall result	5

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.

For further information about the test environment and parameters, please refer to the Fraunhofer IPA test report.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

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on behalf of 
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