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**TESTED[®]
DEVICE**

Regent Beleuchtskörper AG

PURO LED CLA CDP

Report No. BU 1905-1120

DUPLICATE

Statement of
Qualification

Single product
Particle Emission

Customer	Regent Beleuchtskörper AG Dornacherstrasse 390 4018 Basel Schweiz
Component tested	
Category:	Cleanroom Facilities
Subcategory:	Lighting Systems
Product name:	PURO LED CLA CDP 1000 x 295 (manufacturing date: 3/7/2019; color: white; serial number: 2003.3991; batch number: RN19/00838; dimension: 1000 mm x 295 mm)

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:	<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: $22^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$Relative humidity: $45\% \pm 5\%$
Test procedure parameters:	The ceiling system was subjected to stress as follows: <ul style="list-style-type: none">Structure-borne noise: approx. 5 to 50 HzOscillation velocity (\varnothing):..... $v = 2.1480 \text{ mm/s}$Oscillation acceleration (\varnothing):..... $a = 0.2434 \text{ m/s}^2$Oscillation of the system (\varnothing): $s = 0.3737 \text{ mm}$

Test result / Classification

When operated under the specified test conditions, the luminaire PURO LED CLA CDP 1000 x 295 is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Class according to ISO 14644-1:

Test parameter(s)	Air Cleanlines Class
Structure-borne noise = approx. 5 to 50 Hz	2
Overall result	2

It should be noted that cleanrooms of class 1 to 5 according to ISO 14644-1 have a higher filter occupancy, which may restrict the use of panel lighting systems. Cleanrooms with a horizontal displacement flow form an exception to this.

The test result may be affected by the surrounding ceiling system, in particular the material pairing between lights and ceiling frames, as well as other mounting accessories. Particle emission behavior should be reassessed in each assembly situation.

Please note: Transport damage, incorrect installation, oil leakage, aging behavior and corrosion 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	BU 1905-1120 Report No. first document	Stuttgart, July 15, 2019 Place, date of first document issued
Department of Ultraclean Technology and Micromanufacturing	-- Report No. current document	-- Place, current date
Nobelstrasse 12 70569 Stuttgart Germany	on behalf of Dr.-Ing. Udo Gommel, Project Manager Fraunhofer IPA	