IPA

valid until: September 24, 2025

Fraunhofer

TESTED®
DEVICE

Thorn Lighting Ltd
Duoproof 2
Report No. TH 2304-1419

Statement of
Qualification

Product series
Particle Emission

Fraunhofer
IPA

Fraunhofer
IPA

Statement of Qualification · Product series

Customer

Thorn Lighting Ltd
Durhamgate Spennymoor
County Durham DL16 6HL
United Kingdom

Component tested

Category: Cleanroom Facilities

Subcategory: Lighting Systems

Product name: Thorn Duoproof 2
Tested Products:
- DUOPRF2 5600-840 HF PM O M600Q E3 (manufacturing date: 3/9/2023)
- DUOPRF2 4600-840 HF PM O M600L E3 (manufacturing date: 3/9/2023)
- CL2 I 6200-840 M625Q PM O LDO (manufacturing date: week 16/2020)
- CL2 I 6000-840 M625L PM O LDO (manufacturing date: week 11/2020)

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: The luminaires were subjected to stress as follows:
- Structure-borne noise: ..... approx. 50 Hz

Test result / Classification

When operated under the specified test conditions, the luminaire series Thorn Duoproof 2 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. 50 Hz	3
Overall result	

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 damages, incorrect installation, aging behavior, 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

Department of Ultraclean Technology and Micromanufacturing

Nobelstrasse 12
70569 Stuttgart
Germany

TH 2304-1419 — Report No. first document
Stuttgart, September 24, 2020 — Place, date of first document issued
-- — Report No. current document
-- — Place, current date
on behalf of
Dr.-Ing. Frank Bürger, 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**.