



Fraunhofer

**TESTED[®]
DEVICE**

Thorn lighting system
INVINCIBLE 2

Report No. TH 0702-388

DUPLIKAT

Statement of
Qualification

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Manufacturer of object to be tested:

Lighting Technology Centre
Merrington Lane Industrial Estate
Spennymoor
County Durham
DL16 7UR
United Kingdom

Component tested:

lighting system

Type:

INVINCIBLE 2 Part No. 96502859

Test parameters of object to be assessed:

Operation of the lighting system at a representative vibration of structure-borne noise

Performed tests:

Random check measurements of particle emission (airborne) at representative points

Creation of an expertise to the GMP / FDA and EHEDG conformity.

Test results / classification:

The test piece INVINCIBLE 2 (Part No. 96502859) is suitable for use in cleanrooms fulfilling the specifications of Air Cleanliness Class ISO Class 1 (according to ISO 14644-1).

The test piece INVINCIBLE 2 (Part No. 96502859) is suitable for use in cleanrooms fulfilling the specifications of the room classes E - F (according to EU GMP-Guideline vol.4, annex).

Standards used for the qualification:

VDI 2083 Part 1, 4 and 8, ISO 14644-1,
EU GMP-Guideline vol.4, annex

Test environment:

Cleanroom of Air Cleanliness Class ISO Class 1
(according to ISO 14644-1)

Air flow velocity: 0.45 m/s

Air flow guidance: vertical unidirectional air flow from ceiling to floor (raised floor)

Temperature: 71.6°F ± 0.9°F (22°C ± 0.5°C)

Relative humidity: 45% ± 5%

The measuring equipment used for the qualification is regularly calibrated and is based on national and international standards. In the case where no national standards exist, the measuring procedure used corresponds with technical regulations and norms valid at the time of the measurement. The documents drawn up for this procedure are available for viewing.



Fraunhofer Institut
Produktionstechnik und
Automatisierung

Fraunhofer-Institut
für Produktionstechnik
und Automatisierung IPA

Abteilung Reinst- und Mikroproduktion
Department Cleanroom Manufacturing

Nobelstrasse 12
D-70569 Stuttgart

Stuttgart, Germany, 28th February 2007

Place, date

on behalf of
Signature of person responsible