IPA

valid until: October 18, 2028

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TESTED®
DEVICE

WERMA Signaltechnik
CleanSIGN
Report No. WE 2309-1457

DUPLICATE

Statement of
Qualification

Product series
Particle Emission

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Statement of Qualification · Product series

Customer

WERMA Signaltechnik GmbH + Co. KG
Dürbheimer Strasse 15
78604 Rietheim-Weilheim
Germany

Component tested

Category: Working Place and Operator

Subcategory: Equipment Parts

Product name: CleanSIGN
Tested Products:
- CleanSIGN BM Permanent tone 24VDC MC - 695.010.55 (manufacturing date: 4/4/2023)
- CleanSIGN BM Permanent tone 24VDC MC - 695.210.55 (manufacturing date: 2/7/2023)
- CleanSIGN BM Permanent tone 24VDC GN/YE/RD - 695.310.55 ..... (manufacturing date: 5/2/2023)

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:
- Structure-borne noise: ..... approx. 50 Hz
- Tonality: ..... continuous tone (85 dB (A))
- Installation position 1:..... hanging on clean room ceiling element
- Installation position 2: .....standing on clean room ceiling element

Test result / Classification

When operated under the specified test conditions, the signaltower series CleanSIGN is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Test parameter(s)	Air Cleanlines Class
Installation position: hanging Structure-borne noise: 50 Hz	1
Installation position: standing Structure-borne noise: 50 Hz	1
Overall result	**1**

Please note: Transport damages, incorrect installation, aging behavior, 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

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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 current date the document was issued. The document can be verified under **www.tested-device.com**.