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TESTED®
DEVICE

WERMA Signaltechnik
Clean SIGN BM 695.X10.55 series
Report No. WE 1801-997

Statement of
Qualification

Particle Emission

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Statement of Qualification

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: Signaltower Clean SIGN BM 695.X10.55 series, tested objects:
- Clean SIGN BM 695.X10.55/695.310.55
  (manufacturing date: 1/18/2018; article number: 695.310.55)
- Clean SIGN BM 695.X10.55/695.010.55
  (manufacturing date: 11/9/2017; article number: 695.010.55)
- Clean SIGN BM 695.X10.55/695.210.55
  (manufacturing date: 11/21/2017; article number: 695.210.55)

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:
- Position 1: ..... standing on cleanroom ceiling element
- Position 2: ..... hanging on cleanroom ceiling element
- Structure-borne noise: ..... approx. 5 to 50 Hz

Test result / Classification

When operated under the specified test conditions, the signaltower Clean SIGN BM 695.X10.55 series is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Class according to ISO 14644-1:

Test parameter	Air Cleanliness Class
Structure-borne noise = approx. 5 to 50 Hz	2
Overall result	**2**

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
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DUPLICATE