



valid until: April 20, 2031

# Fraunhofer

## TESTED<sup>®</sup> DEVICE

Ammega Group B.V.  
DS2QM240ESD

**Report No. AM 2507-1651**

DUPLICATE

Statement of  
Qualification

Single product  
Electrical Resistance  
in Dry-Cleanroom

# Statement of Qualification · Single product

**Customer**  
 Ammega Group B.V.  
 Marconistraat 15  
 Heerhugowaard 1704RH  
 P.O. Box 38  
 1700 AA Heerhugowaard  
 The Netherlands

**Tested product**  
 Category: Automation Components  
 Subcategory: Transfer Systems and Bearing  
 Product name: DS2QM240ESD pallet conveyor  
 (manufacturing date: 2025; material: aluminium; article number: DS2QXWWW-LLLLXXXMS3D-LLLL; serial number: 966054)

**Electrical resistance measurements at representative points (resistance to groundable point ( $R_{gp}$ ) and point-to-Point resistance ( $R_{p-p}$ )) in Dry-Cleanroom**

Standards/guidelines: IEC 61340-2-3, -5-1  
 The norms stated generally refer to the version valid at the time of the tests.

Test equipment:

- Data acquisition:
  - Type: .....Metriso 3000
  - .....Wolfgang Warmbier GmbH & Co. KG
- Measuring probes:
  - Type: ..... Model 850, ME 2.5 kg,  $\varnothing$  63.5 mm, IEC 61340-2-3, -4-1
  - .....Wolfgang Warmbier GmbH & Co. KG

Test environment parameters:

- Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 3
- Airflow velocity:..... 0.1 m/s $\pm$ 0.05 m/s
- Airflow pattern:..... displacement flow
- Temperature:..... 22°C  $\pm$  1.0°C
- Dew point: .....-40°C  $\pm$  5°C

Test procedure parameters:

Insulating base 1:

- Type: ..... flat PTFE-sheet with  $R > 10^{14} \Omega$
- Size: ..... 1210 mm x 1200 mm ( $\pm$  5 mm)
- Thickness:..... 5 mm ( $\pm$  1 mm)

Insulating base 2:

- Type: ..... flat PTFE-Plate with  $R > 10^{14} \Omega$
- Size: ..... 300 mm x 300 mm ( $\pm$  5 mm)
- Thickness:..... 5 mm ( $\pm$  1 mm)

**Test result / Classification**

The transfer system DS2QM240ESD pallet conveyor was tested based on IEC 61340-2-3 to measure the electrical resistance. The maximum test result lies below the required limit value of  $1 \times 10^9 \Omega$  specified in IEC 61340-5-1 for ESD protective elements.

Resistances to groundable point ( $R_{gp}$ )		
Measuring points	Max. $\sigma$ -values [ $\Omega$ ]	Limit value
Potential to contact ESDS	$3.2 \times 10^4$	fulfilled
Without potential to contact ESDS	$3.5 \times 10^4$	fulfilled
Point-to-point resistances ( $R_{p-p}$ )		
Measuring point pairings	Max. $\sigma$ -values [ $\Omega$ ]	Limit value
No potential to contact ESDS – potential to contact ESDS	$6.7 \times 10^4$	fulfilled
No potential to contact ESDS – no potential to contact ESDS	$5.4 \times 10^{10}$	fulfilled

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.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

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Business unit  
 Testing and Certification

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 Report No. current document

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Nobelstrasse 12  
 70569 Stuttgart  
 Germany

on behalf of   
 Dr.-Ing. Frank Bürger, head of business unit Testing and Certification