



Fraunhofer

**TESTED[®]
DEVICE**

KUKA Roboter GmbH
LBR iiwa 14 R820 CR
Report No. KU 1707-925

DUPLICATE

Statement of
Qualification

Electrostatic
Discharge Behavior

Statement of Qualification

Customer
 KUKA Roboter GmbH
 Zugspitzstrasse 140
 86165 Augsburg
 Germany

Component tested

Category: Automation Components
 Subcategory: Robotics
 Product name: LBR iiwa 14 R820 CR
 (manufacturing date: 5/2017; serial number: 982697; payload: 14kg; reach: 820mm)

Measurement of the electrostatic field

Standards/Guidelines: SEMI E78-0309
 The norms stated generally refer to the version valid at the time of the tests.

Test devices: Data capture:Influence-E-Fieldmeter, type EMF58
 Eltex-Elektrostatik-GmbH

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:

- Insulating base:
 - Type:.... 4x insulating feet – fully-insulated hexagonal feet with $R > 10^{14} \Omega$
 - Material:.....glass-filled polyester
 - Thickness:..... 35 mm
- Tool weight no tool mounted
- Motion sequence:.....typical pick & place movement
 - Axis 1: -66° to -13°
 - Axis 2: -63° to -38°
 - Axis 3: -14° to 0°
 - Axis 4: 75° to 83°
 - Axis 5: -99° to -66°
 - Axis 6: -100° to -90°
 - Axis 7: -63° to -35°
- Capacity:.....50 % of maximum capacity
- Operating state during the test:..... on

Test result / Classification

The robot LBR iiwa 14 R820 CR fulfills the permissible limit values for the sensitivity threshold 2010/45 nm according to SEMI E78-0309.

Electrostatic Field			
Electrostatic Level		Test result	
Year Node	limit value [V/cm]	mean value [V/cm]	max. single value measured [V/cm]
2010 45 nm	50	17	90
Limit value:		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.

For further information about the test environment and parameters, please refer to the Fraunhofer IPA test report.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

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Stuttgart, October 12, 2017
 Place, date of first document issued

Department of Ultraclean Technology and Micromanufacturing

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on behalf of 
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