

Assessment of Cleanroom Suitability for Built-in Guideway Actuator by Airborne Particle Concentration

Project Report

Applicant : RENDER PRECISION CO., LTD.
Testing Institution : SGS Taiwan Ltd.
Report No. : DSS21700055M01

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 3. The results shown in this witness test report refer only to the test article(s) tested.
 4. The analytical report is the test result issued by the testing institutions as requested by the consignor. Regarding the legitimacy of the product, it shall be determined by the authorities according to the law.



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SUMMARY

REPORT NO.: DSS21700055M01

Date: 2021/09/17



RENDER PRECISION CO., LTD.

10th Floor, No. 18, Jihu Road, Neihu District, Taipei City, Taiwan

The following sample(s) was/were submitted and identified by/on behalf of client as:

Sample Name : Built-in Guideway Actuator

Applicant : RENDER PRECISION CO., LTD.

Item No : AUS88-P20-S300-1CSJ3L

Date of Received : 2021/08/26

Date of Testing : 2021/08/26~ 2021/09/17

Test Results and Cleanroom Suitability Classification :

Built-in Guideway Actuator(Item No.: AUS88-P20-S300-1CSJ3L) at operational state has cleanroom suitability for use within a cleanroom of **ISO Class 6; at-rest; 0.1 µm, 0.3 µm, 0.5 µm, 1.0 µm, 5.0 µm.**



INFORMATION

Document No.: DSS21700055M01

Date of start of test: 2021. 08. 26

Date of end of test: 2021. 09. 17

Test Organization

Name: SGS TAIWAN LTD.

Address: No. 38, Wu Chyuan 7th Rd., New Taipei Industrial Park, Wu Ku Dist., New Taipei City, 24890, Taiwan

Team Leader

Name: River Lee

Address: No. 38, Wu Chyuan 7th Rd., New Taipei Industrial Park, Wu Ku Dist., New Taipei City, 24890, Taiwan

Company Assessed

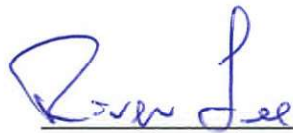
Name: RENDER PRECISION CO., LTD.

Address: No.20-1 , Ln. 140, Sec. 2, Ren-ai Rd., Tanzi Dist., Taichung City427 , Taiwan

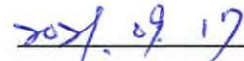
REVIEW OF REPORT

Assessment of Cleanroom Suitability
for Built-in Guideway Actuator by
Airborne Particle Concentration

This report was reviewed and approved by
Team Leader:



River Lee / SGS Taiwan Ltd.

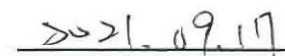


Date Completed

Laboratory Manager:



Shinjyh Chen / SGS Taiwan Ltd.



Date Completed



OBJECTIVE

The tests of airborne particle concentration with classification of the cleanroom suitability were done according to ISO 14644-1:2015 (E) and 14644-14:2016 (E). To place the Built-in Guideway Actuator into the ISO class 3 cleanroom, and utilizing the Airborne Particle Counter to measure airborne particle concentrations for operational state of the device.



Testing Process

1. Preparation

Device was set up in ISO Class 3 cleanroom overnight. Turn the power off to stabilize environment after 4 hours operation.

2. Testing Environment

Condition of the Cleanroom: ISO Class 3; at-rest; 0.1 μm , 0.3 μm .

Temperature 20 ± 2 °C, Relative Humidity 50 ± 10 %.

3. Testing Procedure for Particle Concentration

3.1. Background testing: The air in the cleanroom is as the blank and measuring by the airborne particle counter. The result is the average for the measurement of 5 times test.

3.2. Running testing: Turn equipment on and measuring the particle count on five minutes for maximum of operating.

3.3. Recovery testing: Measuring by the airborne particle counter. The recovery background result is the average for the measurement of 5 times test.



INSTRUMENTATION/ WORKING SPACE

Name	Brand / Lot.	Purpose
Airborne Particle Counter	PMS Lasair® III 110	Real-time measurement of airborne particles in the range of size from 0.1 to 5.0 μm
Cleanroom	SGS TNN Lab	A controlled area for the test environment of ISO Class 3 as the clean background



AIRBORNE PARTICLE CONCENTRATION RESULT

1. Background test (average of 5 data)

粒徑大小 (μm)	區間微粒子數 $\Delta(\text{count}/\text{m}^3)$	總微粒子數 $\Sigma(\text{count}/\text{m}^3)$
0.10	0	0
0.15	0	0
0.20	0	0
0.25	0	0
0.30	0	0
0.50	0	0
1.00	0	0
5.00	0	0

2. Running testing (maxima of 5 data)

粒徑大小 (μm)	區間微粒子數 $\Delta(\text{count}/\text{m}^3)$	總微粒子數 $\Sigma(\text{count}/\text{m}^3)$
0.10	1660	14267
0.15	1201	12607
0.20	706	11406
0.25	918	10700
0.30	3108	9782
0.50	3284	6674
1.00	3390	3390
5.00	0	0



3. Recovery testing (average of 5 data)

粒徑大小 (μm)	區間微粒子數 $\Delta(\text{count}/\text{m}^3)$	總微粒子數 $\Sigma(\text{count}/\text{m}^3)$
0.10	0	0
0.15	0	0
0.20	0	0
0.25	0	0
0.30	0	0
0.50	0	0
1.00	0	0
5.00	0	0



Summary

Cleanroom Suitability Classification

According to ISO 14644-1:2015 (E) and ISO 14644-14:2016 (E) and The cleanroom suitability for the device by airborne particle concentration (N/m³) is classified (the maximum allowable concentrations table please see the reference page) as follow:

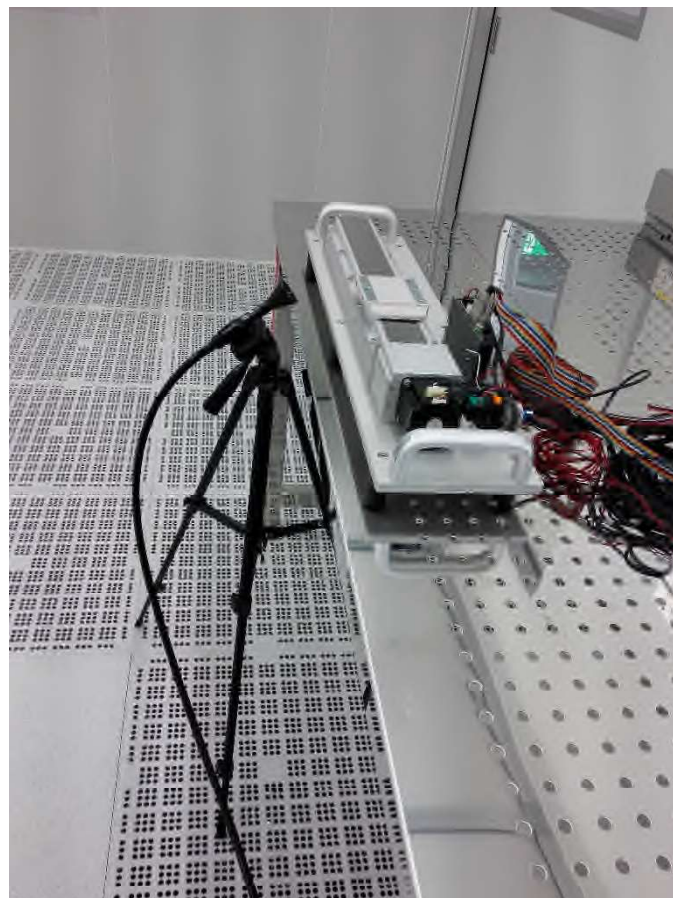
Built-in Guideway Actuator(Item No: AUS88-P20-S300-1CSJ3L) made by RENDER PRECISION is suitable for cleanroom of ISO Class 6; at-rest; 0.1 µm, 0.3 µm, 0.5 µm, 1.0 µm, 5. 0µm

Disclaimer:

This report has a restricted validity and shall not be construed to draw any conclusions regarding certification or approval of the auditee's product, process or service. Neither can any warranty be borrowed from the report. This document is confidential.

- The End of the Report -

Sample Photo



Reference

Airborne Particulate Cleanliness Classes (ISO 14644-1:2015)

ISO Class	Maximum allowable concentrations (count/m ³) for particles equal to and greater than the considered sizes shown below (up to 2 particle sizes may be considered for classification)						FS 209E Class
	0.1 µm	0.2 µm	0.3 µm	0.5 µm	1 µm	5 µm	
Class 1	10	-	-	-	-	-	
Class 2	100	24	10	-	-	-	
Class 3	1000	237	102	35	-	-	Class 1
Class 4	10000	2370	1020	352	83	-	Class 10
Class 5	100000	23700	10200	3520	832	-	Class 100
Class 6	1000000	237000	102000	35200	8320	293	Class 1000
Class 7	N/A			352000	83200	2930	Class 10000
Class 8				3520000	832000	29300	Class 100000
Class 9				35200000	8320000	293000	