

To LG Japan Lab Inc.

Test report

(Evaluation test on dust collection performance of the air cleaner)
(LSRL-A106)

August 8, 2017

Life Science Research Laboratory

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Life Science Research Laboratory

TEST NAME

Evaluation test on dust collection performance of the air cleaner

TEST PURPOSE

To clarify dust collection performance of air cleaner

OUTLINE OF THE TEST

- Name and address of the test laboratory

Life Science Research Laboratory, Co., Ltd.

Koriyama city, Tomita-machi, aza, Inagahara 66, Fukushima pref. Zip code: 963-8041, Japan

- Responsible person

Yasunori Narita (Life Science Research Laboratory Co., Ltd.)

- Testing staff

Yukihiro Fukuda (Life Science Research Laboratory Co., Ltd.)

- Testing period

July 18, 2017

TESTED AIR CLEANER

- Product name

1. Air cleaner (Model: AS281DAW, Manufacturer: LG Electronics Inc.)

2. Air cleaner (Model: AS181DAW, Manufacturer: LG Electronics Inc.)

TEST FACILITY AND MEASURING INSTRUMENT

- Test facility

Environmental stainless steel chamber (Volume: 31.5 m³)

- Measuring instrument

Digital dust meter (Dust Trak II Model:8533, TSI Inc.)

Measurement particle diameter range: 0.1 to 2.5 μm

TEST METHOD

- Method

JEM 1467 Annex C (Established and indicated by JEMA (The Japan Electrical Manufacturers Association))

- Operating condition of tested air cleaner

Model:AS281DAW

Air flow rate setting: Maximum

Booster: No operation

Model: AS181DAW

Air flow rate setting: Maximum

Booster: No operation

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- Environmental condition
 - Temperature: 23 ± 2 °C
 - Relative humidity: 50 ± 5 %
 - Ventilation rate: < 0.01 h⁻¹
- Cigarette
 - Mevius original (Japan Tobacco Inc.)
- Test placement

The test placement of target devices AS 281 DAW and AS 181 DAW are shown in Fig. 1.

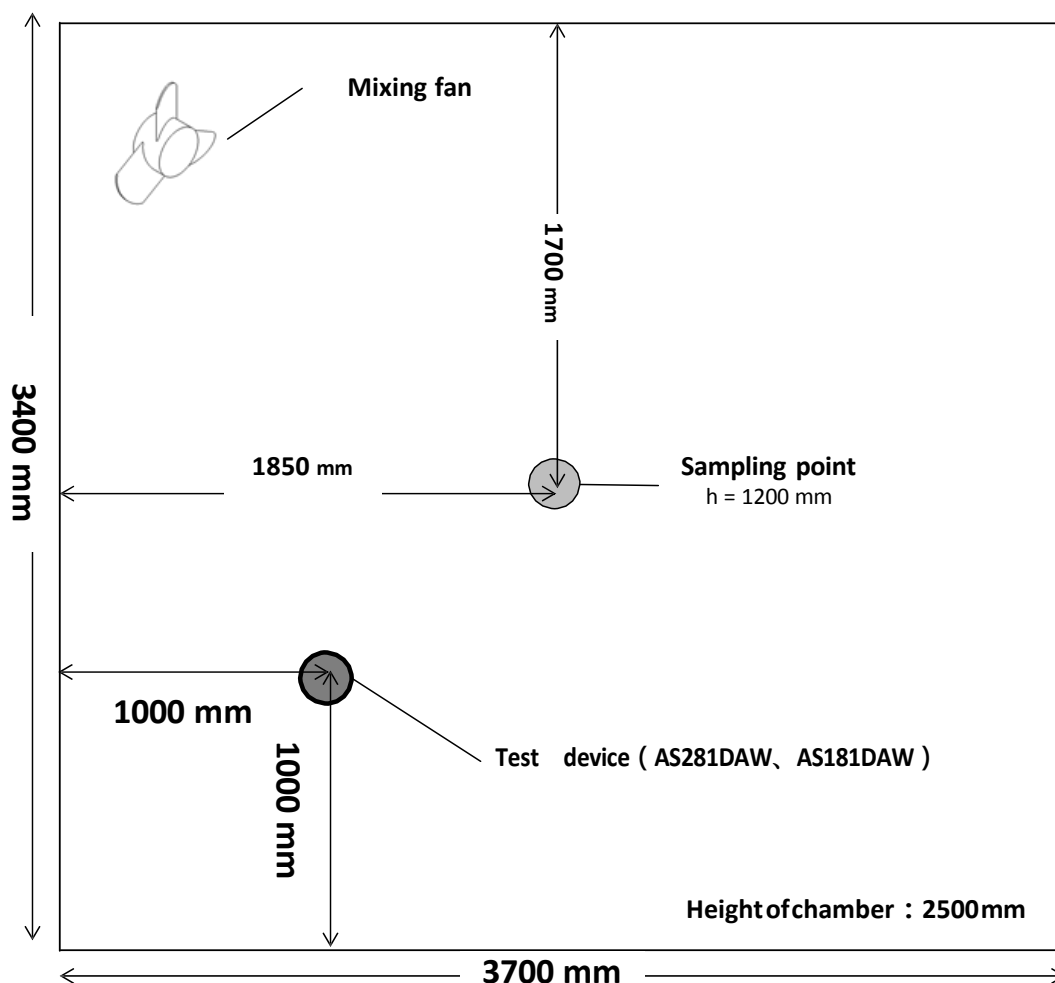


Fig. 1 Schematic design of test room for the performance evaluation test (AS281DAW, AS181DAW)

- Test procedure
 1. Supply cigarette smoke in the chamber and adjust the dust concentration in the chamber to 2 to 5 mg / m³ (1 to 2 mg / m³ for the natural decay test).
 2. After the particle concentration inside the chamber stabilizes, start operation of the target air cleaner, and at the same time stop the mixing fan.

3. The particle concentration is measured for 30 minutes from the start of air cleaner operation or until the concentration of PM 2.5 in the chamber is decayed by 99% or more.

RESULTS

- Natural decay period

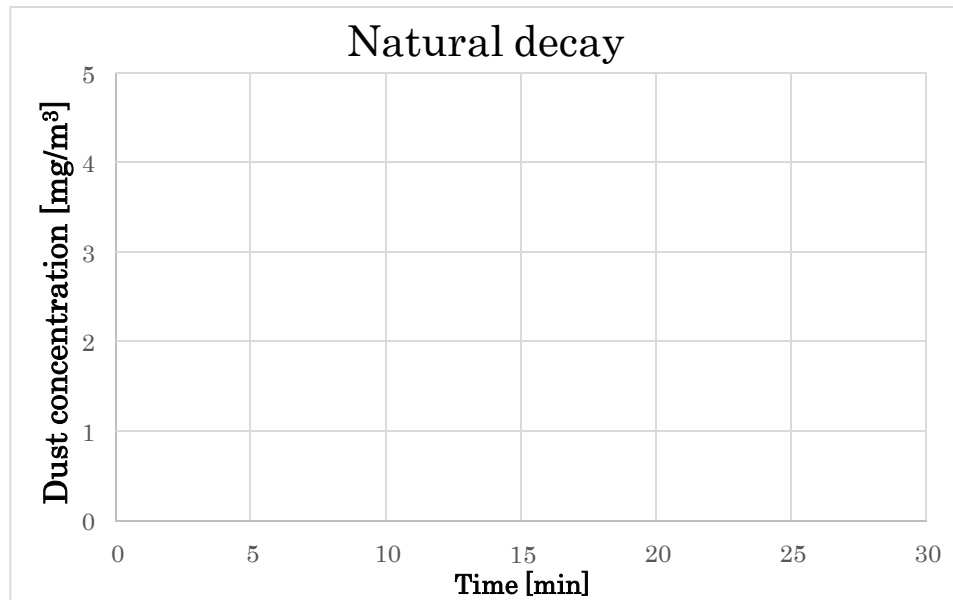


Fig. 2 Changes in dust concentration in chamber during natural decay period

Table 1 Changes in dust concentration in chamber during natural decay period

Time [min]	Dust concentration [mg/m ³]	Time [min]	Dust concentration [mg/m ³]	Time [min]	Dust concentration [mg/m ³]
0	1.59	11	1.62	21	1.65
1	1.59	12	1.63	22	1.65
2	1.60	13	1.63	23	1.66
3	1.60	14	1.64	24	1.67
4	1.60	15	1.64	25	1.67
5	1.60	16	1.64	26	1.68
6	1.61	17	1.64	27	1.68
7	1.61	18	1.64	28	1.68
8	1.62	19	1.66	29	1.68
9	1.62	20	1.66	30	1.68
10	1.62				

- Operating air cleaner period (AS 281 DAW)

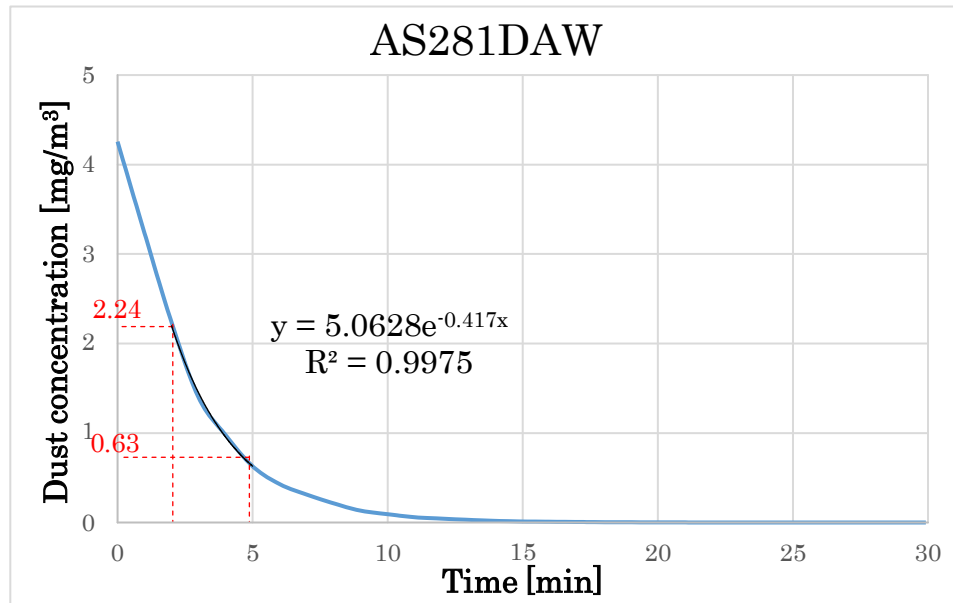


Fig. 3 Changes in dust concentration in chamber during natural decay period (AS281DAW)

Table 2 Changes in dust concentration in chamber during natural decay period (AS281DAW)

Time [min]	Dust concentration [mg/m ³]	Time [min]	Dust concentration [mg/m ³]	Time [min]	Dust concentration [mg/m ³]
0	4.26	11	0.06	21	0.00
1	3.23	12	0.04	22	0.00
2	2.24	13	0.03	23	0.00
3	1.40	14	0.02	24	0.00
4	0.98	15	0.01	25	0.00
5	0.63	16	0.01	26	0.00
6	0.43	17	0.01	27	0.00
7	0.31	18	0.00	28	0.00
8	0.21	19	0.00	29	0.00
9	0.13	20	0.00	30	0.00
10	0.09				

※The approximate expression in Fig. 3 was derived using the value in the section until the concentration at 2 minutes after the start of the air cleaner operation became 1/3 in accordance with the standard of JEM 1467.

- Operating air cleaner period (AS 181 DAW)

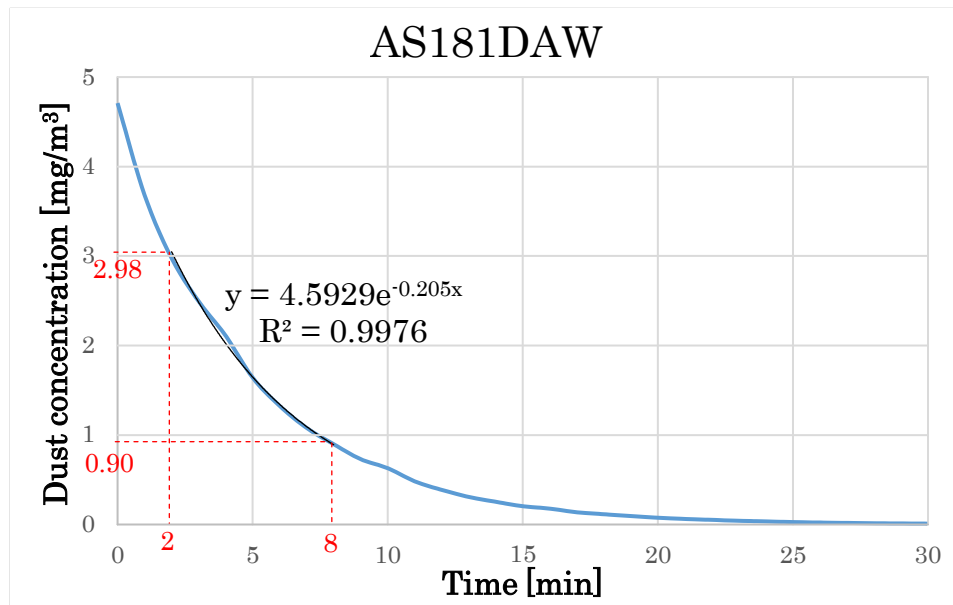


Fig. 4 Changes in dust concentration in chamber during natural decay period (AS181DAW)

Table 3 Changes in dust concentration in chamber during natural decay period (AS181DAW)

Time [min]	Dust concentration [mg/m ³]	Time [min]	Dust concentration [mg/m ³]	Time [min]	Dust concentration [mg/m ³]
0	4.71	11	0.48	21	0.06
1	3.68	12	0.39	22	0.05
2	2.98	13	0.31	23	0.04
3	2.50	14	0.25	24	0.04
4	2.11	15	0.21	25	0.03
5	1.64	16	0.18	26	0.02
6	1.33	17	0.14	27	0.02
7	1.08	18	0.12	28	0.01
8	0.90	19	0.09	29	0.01
9	0.73	20	0.08	30	0.01
10	0.63				

* The approximate expression in Fig. 4 was derived using the value in the section until the concentration at 2 minutes after the start of the air cleaner operation became 1/3 in accordance with the standard of JEM 1467.

- Calculation of dust collection performance

The dust collection performance *P* is calculated by the following equations (1) and (2) according with test method JEM 1467.

