AirExchange®

Test Report

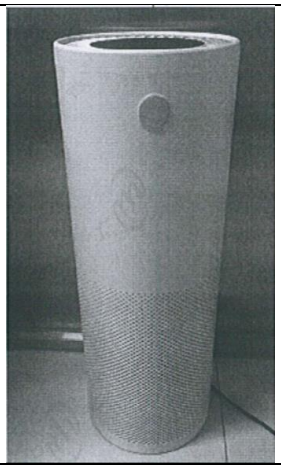
All tests have been performed under by the accredited GZ Institute and Testing Center for industrial Microbiology. For these tests representative units were used.

CADR (FORMALDEHYDE, PARTICULATE)

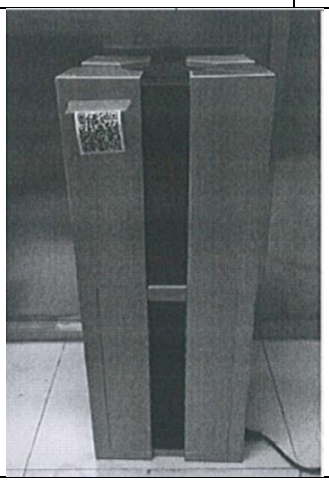
STAPHYLOCOCCUS ALBUS ATCC8032

TEST REPORT
600-T AND 750-T

Test No. KJ20160928
Date Received: September 19, 2016
Date Analysed: September 20, 2016

Name of Sample	Air Cleaner	**Source of Sample**	Delivery
Applicant	AirExchange	**Sample Grade**	---
Date and Batch Number of Production	---	**Brand**	AirExchange
Sample Description	Machine	**Quantity of Sample**	1 PC
		Packing of Sample	In box
Sample Picture			
Standard and Methods	1. GB/T 18801-2015 Air cleaner 2. GB 21551.3-2010 Antibacterial and cleaning function for household and similar electrical appliances-Particular requirements of air cleaner		
Items of Analysis	1. CADR (Formaldehyde, Particulate) 2. Killing Rate (Staphylococcus albus ATCC8032)		
Remarks	---		

Test No. KJ20160927
Date Received: September 19, 2016
Date Analysed: September 26, 2016

Name of Sample	Air Cleaner	Source of Sample	Delivery
Applicant	AirExchange	Sample Grade	---
Date and Batch Number of Production	---	Brand	AirExchange
Sample Description	Machine	Quantity of Sample	1 PC
		Packing of Sample	In box
Sample Picture			
Standard and Methods	1. GB/T 18801-2015 Air cleaner 2. GB 21551.3-2010 Antibacterial and cleaning function for household and similar electrical appliances-Particular requirements of air cleaner		
Items of Analysis	1. CADR (Formaldehyde, Particulate) 2. Killing Rate (Staphylococcus albus ATCC8032)		
Remarks	---		

Test No. KJ20160928
Date Received: September 19, 2016
Date Analysed: September 20, 2016

Method for testing gaseous pollutant removal (600-T):

1. Test conditions
   1) Environment temperature: (25±2)°C
   2) Environment humidity: (50±10)%RH.

2. Test equipment
   Test chamber (30 m^3), constant current atmospheric sampler, UV-VIS spectrophotometer.

3. Operation conditions of the machine
   Set the switch to position “the highest wind speed”.

4. Test procedures
   1) Place the air cleaner to be tested in the chamber according to the requirements of standard and set the air cleaner controls to the conditions for test. Test for proper operation, then shut off with switch external to test chamber.
   2) Using the chamber HEPA filter, allow the test chamber air to clean until the background pollutants reaches a level. Simultaneously operate the environment control devices until the room conditions (temperature and RH) reach a specified state. Turn off the chamber environmental control system (HEPA filter and humidifiers).
   3) A certain amount of gaseous pollutant is added into the chamber using the gaseous pollutant generator. After the initial concentration reaches the requirements of standards, close the generator.
   4) Mix the gaseous pollutant for 10 min, then turn off ceiling mixing fan.
   5) Wait for fan to stop, the initial concentration of sample is gathered.
   6) Turn on air cleaner, Collect samples at 3-minute intervals for 60 minutes.
   7) According to the step 1) ~ 6), turn off air cleaner, test the natural decay.
   8) Air cleaner should let stand for at least 24 h between two tests, CADR of the third test as the final result.
      Note 1. Before the test, the air cleaner is to commissioning at least 1 h.
      Note 2. The sample concentration under the limit value of national standard GB/T 18883 or other relevant regulations should be invalid.
      Note 3. If the valid data points less than six, porous cross of sampling can be used.

5. Computational formula
   CADR (m^3 / h) = 60 x ($\underline{k_e}$ — k_n) x V

   Where:
   k_e = total decay constant; k_n = natural decay constant; V = volume of the test chamber, m^3

Test results

Number of Sample	Pollutant	Natural decay constant k_n (min^{-1})	Total decay constant k_e (min^{-1})	CADR (m^3 / h)
KJ20160928-1	Formaldehyde	0.0800	0.1911	200

Test No. KJ20160927
Date Received: September 19, 2016
Date Analysed: September 2, 2016

Method for testing gaseous pollutant removal (750-T):

1. Test conditions
   1) Environment temperature: (25±2)°C
   2) Environment humidity: (50±10)%RH.

2. Test equipment
   Test chamber (30 m^3), constant current atmospheric sampler, UV-VIS spectrophotometer.

3. Operation conditions of the machine
   Set the switch to position “the highest wind speed”.

4. Test procedures
   3) Place the air cleaner to be tested in the chamber according to the requirements of standard and set the air cleaner controls to the conditions for test. Test for proper operation, then shut off with switch external to test chamber.
   1) Using the chamber HEPA filter, allow the test chamber air to clean until the background pollutants reaches a level. Simultaneously operate the environment control devices until the room conditions (temperature and RH) reach a specified state. Turn off the chamber environmental control system (HEPA filter and humidifiers).
   2) A certain amount of gaseous pollutant is added into the chamber using the gaseous pollutant generator. After the initial concentration reaches the requirements of standards, close the generator.
   3) Mix the gaseous pollutant for 10 min, then turn off ceiling mixing fan.
   4) Wait for fan to stop, the initial concentration of sample is gathered.
   5) Turn on air cleaner, Collect samples at 3-minute intervals for 60 minutes.
   6) According to the step 1) ~ 6), turn off air cleaner, test the natural decay.
   7) Air cleaner should let stand for at least 24 h between two tests, CADR of the third test as the final result.
      Note 1. Before the test, the air cleaner is to commissioning at least 1 h.
      Note 2. The sample concentration under the limit value of national standard GB/T 18883 or other relevant regulations should be invalid.
      Note 3. If the valid data points less than six, porous cross of sampling can be used.

5. Computational formula
   CADR (m^3 / h) = 60 x ($\underline{k_e}$ — k_n) x V

   Where:
   k_e = total decay constant; k_n = natural decay constant; V = volume of the test chamber, m^3

Test results

Number of Sample	Pollutant	Natural decay constant k_n (min^{-1})	Total decay constant k_e (min^{-1})	CADR (m^3 / h)
KJ20160927-1	Formaldehyde	0.3608	0.4858	225

Test No. KJ20160928
Date Received: September 19, 2016
Date Analysed: September 20, 2016

Method for Measuring Clean Air Delivery Rate of Particulate (600-T):

1. Test object
   Particulate (≥0.3μm)

2. Test conditions
   1) Environment temperature: (25±2)°C
   2) Environment humidity: (50±10)%RH

3. Test equipment
   Test chamber (30 m^3), Laser dust particle counter, Dilutors

4. Operation conditions of the machine
   Set the switch to position "The highest wind speed".

5. Test procedures
   1) Place the air cleaner to be tested in the test chamber in accordance with standard request and set the air cleaner controls to the conditions for test. Test for proper operation, then turn off the air cleaner.
   2) Using the test chamber HEPA filter, allow the test chamber air to clean until the background concentration in the size range of 0.3μm to 10μm reaches a concentration of less than 1000 particles/L. Simultaneously operate the environmental control devices until the test chamber conditions.
   3) When an acceptable test chamber background concentration is achieved record the background concentration, turn off the test chamber environmental control system.
   4) Immediately light, then place one standard cigarette in the cigarette smoke generator, seal generator, open valve to chamber, to provide the required initial concentration (2 x 10^6 ~ 2 x 10^7 particles/L). Turn off air supply and close test chamber valve. Mix cigarette smoke for ten minutes after the initial concentration has been reached.
   5) Turning off ceiling mixing fan, begin to acquire the cigarette smoke particulate concentration. This test point is the initial concentration (C_0).
   6) Open the air cleaner and start the test as soon as the initial concentration of particulate matter is completed. Collect samples at two-minute intervals for 20 minutes.
   7) Test the natural decay according to the steps 1) ~ 6), except that the air cleaner is unoperated.

6. Computational formula
   CADR Q (m^3 / h) = 60 x ($\underline{k_e}$ — k_n) x V

   Where:
   k_e = total decay constant; k_n = natural decay constant; V = volume of the test chamber, m^3

Test results

Number of Sample	Pollutant	Natural decay constant k_n (min^{-1})	Total decay constant k_e (min^{-1})	CADR Q (m^3 / h)
KJ20160928-1	Particulate	0.1106	0.4439	600

Test No. KJ20160927
Date Received: September 19, 2016
Date Analysed: September 26, 2016

Method for Measuring Clean Air Delivery Rate of Particulate (750-T):

1. Test object
   Particulate (≥0.3μm)

2. Test conditions
   1) Environment temperature: (25±2)°C
   2) Environment humidity: (50±10)%RH

3. Test equipment
   Test chamber (30 m^3), Laser dust particle counter, Dilutors

4. Operation conditions of the machine
   Set the switch to position "The highest wind speed".

5. Test procedures
   1) Place the air cleaner to be tested in the test chamber in accordance with standard request and set the air cleaner controls to the conditions for test. Test for proper operation, then turn off the air cleaner.
   2) Using the test chamber HEPA filter, allow the test chamber air to clean until the background concentration in the size range of 0.3μm to 10μm reaches a concentration of less than 1000 particles/L. Simultaneously operate the environmental control devices until the test chamber conditions.
   3) When an acceptable test chamber background concentration is achieved record the background concentration, turn off the test chamber environmental control system.
   4) Immediately light, then place one standard cigarette in the cigarette smoke generator, seal generator, open valve to chamber, to provide the required initial concentration (2 x 10^6 ~ 2 x 10^7 particles/L). Turn off air supply and close test chamber valve. Mix cigarette smoke for ten minutes after the initial concentration has been reached.
   5) Turning off ceiling mixing fan, begin to acquire the cigarette smoke particulate concentration. This test point is the initial concentration (C_0).
   6) Open the air cleaner and start the test as soon as the initial concentration of particulate matter is completed. Collect samples at two-minute intervals for 20 minutes.
   7) Test the natural decay according to the steps 1) ~ 6), except that the air cleaner is unoperated.

6. Computational formula
   CADR Q (m^3 / h) = 60 x ($\underline{k_e}$ — k_n) x V

   Where:
   k_e = total decay constant; k_n = natural decay constant; V = volume of the test chamber, m^3

Test results

Number of Sample	Pollutant	Natural decay constant k_n (min^{-1})	Total decay constant k_e (min^{-1})	CADR Q (m^3 / h)
KJ20160927-1	Particulate	0.1106	0.5272	750

Method for Testing Air Disinfection (600-T and 750-T):

1. Test equipment
   1) Test microorganism: Staphylococcus albus
   2) Microbial aerosol generator: PLG 2000
   3) Culture media: NA
   4) Sampling equipment: six-stage sieve sampler

2. Test conditions
   1) The volume of the test chamber: 30 m^3
   2) Environment temperature: (20~25)°C
   3) Environment humidity: (50~70)%RH

3. Operation conditions of the machine
   Set the switch to position "The highest wind speed".

4. Test procedures
   1) Get a Bacteria slant culture (4~7 generation) which is incubated at 37 °C for 24 h, wash the culture from this slant with 10 mL NB, filter the liquid culture by aseptic cotton buds, and dilute these inoculums with NB as appropriate.
   2) The equipment is placed in the test chambers respectively, close the door, and open the HEPA filter. Simultaneously operate the environmental control devices until the experimental cabin temperature to be 20~25 °C, relative humidity to be 50~70 %RH. Turn off the chamber environmental control system.
   3) Release microbial aerosol: turn on the microbial aerosol generator, release the microbial aerosol 15~20 min at 0.2 MPa, operate the ceiling mixing fan, then turn off the fan after 10 min, and let stand for 15 min.
   4) Original Bacteria aerosols collected by six-stage sieve sampler.
   5) The air cleaner is adjusted to the highest air cleaning mode setting for test (test group), Bacteria aerosols (control group and test group) are collected at 1 h respectively.
   6) Choose 2 NA plates (the same batch) as the negative control, and culture them on the same condition with the samples.
   7) Run the test three times and take the mean as the final result.

5. Computational formula

Natural Decay Rate N_t(%) = $\frac{V_0 - V_1}{V_0}$ x 100

Where:
V_0 = Original Bacteria Count of Control Group;
V_1 = Bacteria Count after Treatment of Control Group.

Killing Rate K_t(%) = $\frac{V_1 - (1 - N_t) - V_2}{V_1 - (1 - N_t)}$ x 100

Where:
V_1= Original Bacteria Count of Test Group;
V_2 = Bacteria Count after Treatment of Test Group.

Test No. KJ20160928
Date Received: September 19, 2016
Date Analysed: September 20, 2016

Test results (600-T)

Number of Sample	Test Bacteria	Test Time (h)	Test Number	Control Group: Original Bacteria Count V_0 (cfu/m^3)	Control Group: Bacteria Count after Treatment V_t (cfu/m^3)	Control Group: Natural Decay Rate N_t (%)	Test Group: Original Bacteria Count V_1 (cfu/m^3)	Test Group: Bacteria Count after Treatment V_2 (cfu/m^3)	Killing Rate K_t (%)
KJ20160928-1	Staphylococcus albus	1	1	1.15×10^5	9.00×10^4	21.74	1.16×10^5	7	99.99
			2	1.08×10^5	8.32×10^4	22.96	1.12×10^5	7	99.99
			3	1.36×10^5	1.06×10^5	22.06	1.33×10^5	7	99.99
			Mean						99.99

Test No. KJ20160927
Date Received: September 19, 2016
Date Analysed: September 26, 2016

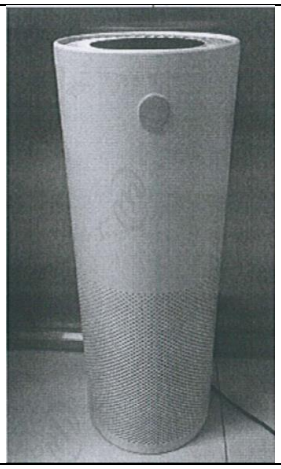
Test results (750-T)

Number of Sample	Test Bacteria	Test Time (h)	Test Number	Control Group: Original Bacteria Count V_0 (cfu/m^3)	Control Group: Bacteria Count after Treatment V_t (cfu/m^3)	Control Group: Natural Decay Rate N_t (%)	Test Group: Original Bacteria Count V_1 (cfu/m^3)	Test Group: Bacteria Count after Treatment V_2 (cfu/m^3)	Killing Rate K_t (%)
KJ20160927-1	Staphylococcus albus	1	1	1.27×10^5	9.85×10^4	22.44	1.23×10^5	7	99.99
			2	1.24×10^5	9.70×10^4	21.77	1.30×10^5	7	99.99
			3	1.32×10^5	1.03×10^4	21.97	1.27×10^5	7	99.99
			Mean						99.99

INFLUENZA A VIRUS A/PR8/34
H1N1

TEST REPORT
600-T

Test No. KY20200548
Date Received: Jul. 02, 2020
Date Analysed: Jul. 09, 2020

Name of Sample	Air Purifier	Source of Sample	Delivery
Applicant	AirExchange	Sample Grade	---
Date and Batch Number of Production	---	Brand	AirExchange
Sample Description	Machine	Quantity of Sample	1 Set (3 PCS)
		Packing of Sample	In box
Sample Picture			
Standard and Methods	1. Referring to GB/T 18801-2015 Air cleaner 2. Referring to <Technical Standard For Disinfection> 2002-2.1.3 Air disinfection effect evaluation test		
Items of Analysis	Removal Rate (Influenza A virus A/PR8/34 H1N1)		
Remarks	---		

Test No. KY20200548
Date Received: Jul. 02, 2020
Date Analysed: Jul. 09, 2020

Test Method for Purification Effect of Airborne Virus Aerosols:

1. Test Equipment
   1) Strain: Influenza A virus A/PR8/34 HIN1
   2) Cells: MDCK

2. Test Conditions
   1) Environment temperature: (23~25)°C
   2) Environment relative humidity: (50~60)%RH
   3) Test time: 60 min
   4) The volume of the test chamber: 30 m^3
   5) Machine setting: "The highest gear".

Test results (600-T)

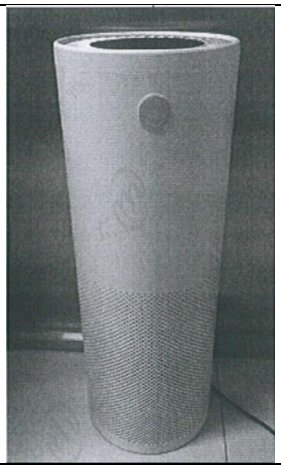
Virus	Test Time (h)	Test Number	Virus Titer of Control Group			Virus Titer of Test Group		Removal Rate (%)
			Original Concen-tration ($TCID_{50}/m^3$)	Final Concen-tration ($TCID_{50}/m^3$)	Natural Decay Rate (%)	Original Concen-tration ($TCID_{50}/m^3$)	Final Concen-tration ($TCID_{50}/m^3$)	
A/PR8/34 (H1N1)	1	1	3.69×10^6	7.03×10^5	80.9	5.46×10^6	/	≥99.99
		2	2.49×10^6	5.85×10^5	76.5	1.17×10^6	/	≥99.99
		3	7.89×10^5	1.98×10^5	74.9	3.69×10^6	/	≥99.99

Note: "/" means not detected.

CADR (POLLEN)

TEST REPORT
600-T

Test No. KY20200550
Date Received: Jul. 02, 2020
Date Analysed: Jul.31, 2020

Name of Sample	Air Purifier	**Source of Sample**	Delivery
Applicant	AirExchange	**Sample Grade**	---
Date and Batch Number of Production	---	**Brand**	AirExchange
Sample Description	Machine	**Quantity of Sample**	1 PC
		Packing of Sample	In box
Sample Picture			
Standard and Methods	Referring to ANSI/ARAM AC-1-2019 Method for Measuring Performance of Portable Household Electric Room Air Cleaners		
Items of Analysis	CADR (Pollen)		
Remarks	---		

Test No. KY20200550
Date Received: Jul. 02, 2020
Date Analysed: Jul.31, 2020

Method for Measuring Clean Air Delivery Rate of Pollen:

1. Test Object
   Particulate (5~11μm)

2. Test Conditions:
   1) Environment temperature: (21±3)°C
   2) Environment humidity: (40-15)%RH

3. Test Equipment
   Test chamber (30 m^3), Aerosol Spectrometer (TSI 3340), Aerosol Diluter (TSI 3302A), Fluidized Bed Aerosol Generator (TSI 3400A)

4. Operational Conditions of the Machine
   Set the switch to position "The highest gear".

5. Test Procedure
   1) Place the air cleaner to be tested in the test chamber in accordance with standard request and set the air cleaner controls to the conditions for test. Test for proper operation, then turn off the air cleaner.
   2) Using the test chamber HEPA filter, allow the test chamber air to clean until the background concentration in the size range of (5~11μm) to reaches a concentration of less than 0.03 particles/cm^3, Simultaneously operate the environmental control devices until the test chamber conditions.
   3) Dust is generated in the test chamber by connecting the dust generator, and the pollen generation stops when the pollen concentration reaches (4~9 particles/cm^3).
   4) After the pollen reaches the concentration, the fan will continue mixing for I min, then turn off and rest for I min, and confirm again whether the pollen concentration is up to the standard.
   5) The air cleaner was turned on for t=0min. Starting from 0min, pollen concentration data were collected every 1min by Aerosol Spectrometer for 10min.
   6) Turn off the air cleaner and record the temperature and humidity during the test.
   7) Test the natural decay according to the steps 1)~ 6), except that the air cleaner is unoperated.

6. Computational Formula
   CADR = ($\underline{k_e}$ — k_n) x V

   Where:
   k_e = total decay constant; k_n = natural decay constant; V = volume of the test chamber, m^3

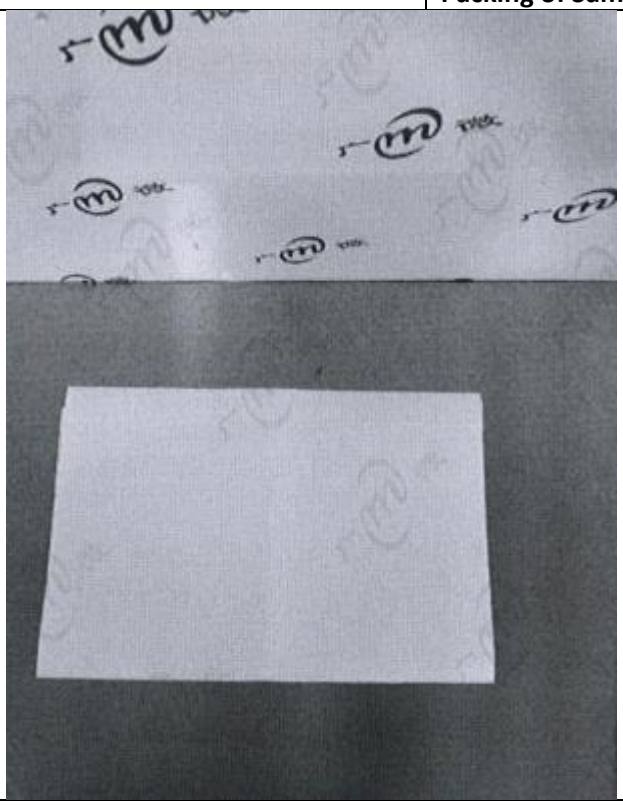
Test results

Number of Sample	Pollutant	Natural decay constant k_n (min^{-1})	CADR (m^3 / h)
KY20200550-1	Pollen	0.14298	600.92

Note: 1ft^3 = 0.0283m^3, 353.9ft^3/min=600.92m^3/h

HEPA H14
EN 1822-1: 2019
EN ISO 29463-3: 2018
High-efficiency air filters

Test No. KJ20204822
Date Received: December 23, 2020
Date Analysed: January 08, 2021

Name of Sample	HEPA H14 air purifier filter cloth	**Source of Sample**	Delivery
Applicant	AirExchange	**Sample Grade**	---
Date and Batch Number of Production	---	**Brand**	AirExchange
Sample Description	Filter Material	**Quantity of Sample**	1 PC
		Packing of Sample	In bag
Sample Picture			
Standard and Methods	3. BS EN ISO 29463-3: 2018 High-efficiency filters and filter media for removing particles in ai – Part 3: Testing flat sheet filter media 4. BS EN 1822-1: 2019 High efficiency air filters (EPA,HEPA and ULPA)		
Items of Analysis	1. Resistance 2. Efficiency		
Remarks	_ _		

Test No. KJ20204822
Date Received: December 23, 2020
Date Analysed: January 08, 2021

Measurement of Resistance:

6. Test conditions
   3) Environment temperature: 25.6°C
   4) Environment humidity: 53%RH
   5) Air Velocity: 5.33 cm/s

7. Test equipment
   Aerodynamic Test Platform

8. Test procedure
   9) Perform visual inspection on the sample to be tested, and install it on the air duct according to the standard requirements after passing the test.
   10) Turn aerodynamic test platform to the working state, adjust the temperature to (23±5)°C and the relative humidity to 75%.
   11) Adjust to the test wind speed and record the pressure drop on both sides of the sample.

Test results

Number of Sample	Resistance (Pa)
KJ20204822-1	54.3

Test No. KJ20204822
Date Received: December 23, 2020
Date Analysed: January 08, 2021

Measurement of efficiency (Particulate):

6. Test pollutant:
   DEHS

7. Test conditions
   1) Environment temperature: 25.6°C
   2) Environment humidity: 53%RH
   3) Air Velocity: 5.33 cm/s

8. Test equipment
   Aerodynamic Test Platform, Dust Particle Counter, Diluter

9. Test procedure
   8) Turn aerodynamic test platform to the working state, adjust the temperature to (23±5)°C and the relative humidity to 75%, and determine the correlation coefficient of upstream and downstream.
   9) The filter material to be tested is installed on the air duct according to the standard requirements, and the aerosol generator is started.
   10) After the concentration of the pollutant is stable, measure the concentration of upstream and downstream pollutants.

10. Computational formula $E(\%) = (1 - \frac{A_2}{A_1}) \times 100$

    Where:
    A_1= upstream particle concentrations, p/m³; A_2=downstream particle concentrations, p/m³

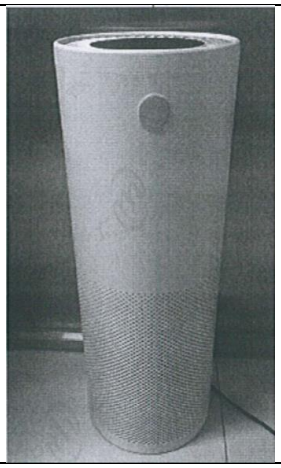
Test results:

Number of Sample	Testing Size	Number of Sample	Upstream Particle Concentrations A_1 (p/m³)	Downstream Particle Concentrations A_2 (p/m³)	Efficiency E (%)
KJ20204822-1	0.1~0.3	1	1.73×10^9	4.49×10^4	99.9974
		2	1.92×10^9	4.89×10^4	99.9975
		3	1.71×10^9	4.36×10^4	99.9975
		4	1.71×10^9	4.51×10^4	99.9974
		5	1.94×10^9	5.04×10^4	99.9974

TVOC

TESTREPORT
600-T

Test No. KY2020045
Date Received: February 11th , 2020
Date Analysed: February 13th , 2020

Name of Sample	Air Cleaner	**Source of Sample**	Delivery
Applicant	AirExchange	**Sample Grade**	---
Date and Batch Number of Production	---	**Brand**	AirExchange
Sample Description	Machine	**Quantity of Sample**	1 PC
		Packing of Sample	In box
Sample Picture			
Standard and Methods	GB/T 18801-2015 Air cleaner		
Items of Analysis	1. CADR (TVOC) 2. *Removal Rate (Methyl mercaptan)		
Remarks	---		

Test No. KY2020045
Date Received: February 11th , 2020
Date Analysed: February 13th , 2020

Method for Testing Clean Air Delivery Rate of Gaseous Pollutant:

1. Testing condition
   6) Environment temperature: (25±2)°C
   7) Environment humidity: (50 ± 10) %RH.

2. Testing Equipment
   Test chamber (30 m^3), constant current atmospheric sampler, gas chromatograph, VOC analyser.

3. Running State of the Machine
   Set the switch to position “the highest grade”.

4. Test Procedure
   1) Place the air purifier into the chamber according to the standard’s requirements. Set the air purifier to the particular running state. Make sure the air purifier runs normally, and then turn off the air purifier.
   2) Purify the air in the chamber using the HEPA filter. Make sure the background concentration of the pollutants reaches a particular level, and then turn on the temperature and humidity control device. Keep the temperature and humidity control device running until the temperature and the humidity reaches the standard’s requirement.
   3) A certain amount of gaseous pollutant is added into the chamber using the gaseous pollutant generator. Turn off the gaseous pollutant generator while concentration of the pollutants reaches the standard’s requirement.
   4) Mix the gaseous pollutant for 10 min, and then turn off the ceiling mixing fan.
   5) Sample the initial concentration after the fan is stopped.
   6) Turn on the air purifier. Collect samples at 5-minute intervals for 60 minutes.
   7) According to the step |) ~ 6), test the natural decay without the air purifier.
   8) The CADR should be tested in the same way for 3 times, and between every test the air purifier should be idled for more than 24 h. The last test should be used for the calculation of CADR final result.
      Note 1. Before the test, the air purifier has been running for more than 1 h.
      Note 2. The data less than the requirement of GB/T 18883 is invalid.
      Note 3. If the valid data points are less than six, Crossed sampling can be used.

5. Computational formula
   CADR (m^3 / h) = 60 x ($\underline{k_e}$ — k_n) x V

   Where:
   k_e = total decay constant; k_n = natural decay constant; V = volume of the test chamber, m^3

Test results

Number of Sample	Pollutant	Natural Decay Constant k_n (min^{-1})	Total Decay Constant k_e (min^{-1})	CADR (m^3 / h)
KY20200045-1	TVOC	0.0007	0.0343	60.5

Test No. KY2020045
Date Received: February 11th , 2020
Date Analysed: February 13th , 2020

Method for Testing Gaseous Pollutant Removal:

1. Testing condition
   1) Environment temperature: (25±2)°C
   2) Environment humidity: (50 ± 10) %RH.

2. Test Equipment
   Test chamber (30 m^3), Compound gas detector.

3. Operation Conditions of the Machine
   Set the switch to position “the highest grade”.

4. Test Procedure
   1) Place the air cleaner to be tested in the chamber according to the requirements of standard and set the air cleaner controls to the conditions for test. Test for proper operation, then shut off with switch external to test chamber.
   2) Purify the air in the chamber using the HEPA filter. Make sure the background concentration of the pollutants reaches a particular level, and then turn on the temperature and humidity control device. Keep the temperature and humidity control device running until the temperature and the humidity reaches the standard’s requirement.
   3) Using the chamber HEPA filter, allow the test chamber air to clean until the background pollutants reaches a level. Simultaneously operate the environment control devices until the room conditions (temperature and RH) reach a specified state. Turn off the chamber environmental control system (HEPA filter and humidifiers).
   4) A certain amount of gaseous pollutant is added into the chamber using the gaseous pollutant generator. After the initial concentration reaches the requirements of standards, close the generator.
   5) Mix the gaseous pollutant for 10 min, then turn off ceiling mixing fan.
   6) Wait for the fan to stop, the initial concentration of sample is gathered.
   7) Turn on air cleaner. The sample is collected after 60 min.
   8) According to the step 1) ~ 6), test the natural decay without the air purifier.

5. Computational formula

Natural Decay Rate N_1(%) = $\frac{C_0' - C_1'}{C_0'}$ x 100

Where: C_0 = the original concentration of control group;
C_1 = the final concentration of control group

Total Decay Rate N_1(%) = $\frac{C_0 - C_1}{C_0}$ x 100

Where: C_0 = the original concentration of test group;
C_1 = the final concentration of test group

Removal Rate K_t(%) = $\frac{C_0-(1-N_1')-C_t}{C_0-(1-N_t')}$ x 100

Test results

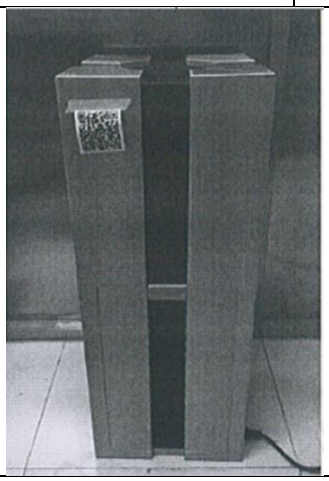
			Control Group		Test Group		
Number of Sample	Pollutant	Test Time (min)	Concentration C ' (mg/m3)	Natural Decay Rate N_1 ' (%)	Concentration C (mg/m3)	Total Decay Rate N_1 (%)	Removal Rate K_t (%)
KY20200045-1	Methyl mercaptan	0	1.03	-	1.07	-	-
		60	0.99	3.9	0.07	93.5	93.2

OZONE

Harmful substances release amount

TEST REPORT
750-T

Test No. KJ20181030
Date Received: Jun. 27, 2018
Date Analysed: Jul. 06, 2018

Name of Sample	Air Purifier	Source of Sample	Delivery
Applicant	AirExchange	Sample Grade	---
Date and Batch Number of Production	---	Brand	AirExchange
Sample Description	Machine	Quantity of Sample	1 PC
		Packing of Sample	In box
Sample Picture			
Standard and Methods	7. GB/T 18801-2015 Air cleaner 8. GB 21551.3-2010 Antibacterial and cleaning function for household and similar electrical appliances-Particular requirements of air cleaner		
Items of Analysis	Harmful Substances Release Amount (Ozone)		
Remarks	---		

Test No. KJ20181030
Date Received: Jun. 27, 2018
Date Analysed: Jul. 06, 2018

Method for Testing Harmful Substances Release Amount:

1. Test equipment
   Ozone Analyzer (Model: T400)

2. Operation Conditions of the Machine
   Set the switch to “the highest grade”.

3. Test Procedure
   1) Put the test sample into a clean space.
   2) Test the background concentration.
   3) Turn on the test unit. Test the ozone concentration 5 cm away from the air outlet.

Test results

Number of Sample	Items	Unit	Results	Standard Request (GB 21551.3-2010)
KJ20181030	Ozone (5cm away from the air outlet)	mg/m^3	< 0.003	≤ 0.10

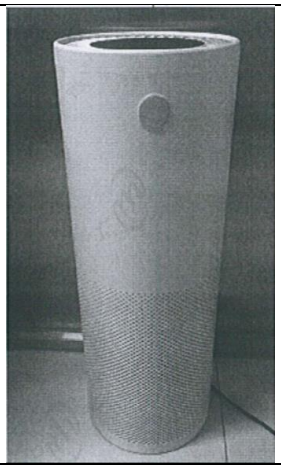
STAPHYLOCOCCUS AUREUS ATCC 6538

ESCHERICHIA COLI 8099

KLEBSIELLA PNEUMONIAE ATCC 4352

TEST REPORT
600-T

Test No. KJ2020448
Date Received: Feb. 24, 2020
Date Analysed: Feb. 24, 2020

Name of Sample	Air Purifier	Source of Sample	Delivery
Applicant	AirExchange	Sample Grade	---
Date and Batch Number of Production	---	Brand	AirExchange
Sample Description	Machine	Quantity of Sample	1 PC
		Packing of Sample	In box
Sample Picture			
Standard and Methods	GB 21551.3-2010 Antibacterial and cleaning function for household and similar electrical appliances-Particular requirements of air cleaner		
Items of Analysis	Eliminating Bacterial Rate (Staphylococcus aureus ATCC 6538, Escherichia coli 8099, Klebsiella pneumoniae ATCC 4352)		
Remarks	---		

Test No. KJ2020448
Date Received: Feb. 24, 2020
Date Analyzed: Feb. 24, 2020

Test Method for Air Purifier Disinfection Performance:

9. Test Equipment
   1) Strain: Staphylococcus aureus, Escherichia coli, Klebsiella pneumoniae
   2) Microbial aerosol generator: TK-3
   3) Culture media: NA
   4) Sampling equipment: six-stage sieve sampler

10. Test Conditions
    1) The volume of the test chamber: 30 m^3
    2) Environment temperature: (20~25)°C
    3) Environment humidity: (50~70) %RH

11. Operation Conditions of the Air Purifier
    Set the switch to position "The highest gear".

12. Test Procedure
    1) Get a bacteria slant culture (4~7 generation) which is incubated at 37 °C for 24 h, wash the culture from this slant with 10 mL NB, filter the liquid culture by aseptic cotton buds, and dilute these inoculums with NB as appropriate.
    2) The equipment is placed in the test chambers, close the door, and turn on the HEPA filter system. Simultaneously operate the environmental control devices until the temperature reaches 20°C ~ 25°C, relative humidity reaches 50-70%. Turn off the chamber environmental control system.
    3) Release microbial aerosol: turn on the microbial aerosol generator, then turn on the ceiling fan, turn off the fan after 10 min, and let stand for 15 min.
    4) Original bacteria aerosols collected by six-stage sieve sampler.
    5) The air purifier is adjusted to the highest air cleaning mode setting for test (test group). Bacteria aerosols (control group and test group) are collected at 60 min.
    6) Choose 2 NA plates (the same batch) as the negative control, and culture them on the same condition with the samples.
    7) Run the test three times and take the mean as the final result.

13. Computational Formula

Natural Decay Rate N_t(%) = $\frac{V_0 - V_1}{V_0}$ x 100
Where:
V_0 = Original Bacteria Count of Control Group;
V_1 = Bacteria Count after Treatment of Control Group.

Killing Rate K_t(%) = $\frac{V_1 - (1 - N_t) - V_2}{V_1 - (1 - N_t)}$ x 100

Where:
V_1= Original Bacteria Count of Test Group;
V_2 = Bacteria Count after Treatment of Test Group.

Test No. KJ2020448
Date Received: Feb. 24, 2020
Date Analyzed: Feb. 24, 2020

Test results (600-T)

Number of Sample	Test Time (min)	Test Strain	Test Number	Control Group: Original Bacteria Count V_0 (cfu/m^3)	Control Group: Bacteria Count after Treatment V_1 (cfu/m^3)	Control Group: Natural Decay Rate N_t (%)	Test Group: Natural Bacteria Count V_1 (cfu/m^3)	Test Group: Bacteria Count after Treatment V_2 (cfu/m^3)	Eliminating Bacterial Rate K_t (%)
KJ2020448-1	60	*Staphylococcus aureus*	1	1.18 x 10^5	9.39 x 10^4	20.42	1.29 x 10^5	7	99.99
			2	1.25 x 10^5	9.72 x 10^4	22.24	1.27 x 10^5	7	99.99
			3	1.45 x 10^5	1.15 x 10^4	20.69	1.05 x 10^5	7	99.99
			Mean						99.99
		Escherichia coli	1	1.30 x 10^5	8.39 x 10^4	35.46	1.22 x 10^5	7	99.99
			2	1.24 x 10^5	8.31 x 10^4	32.98	1.45 x 10^5	7	99.99
			3	1.37 x 10^5	8.90 x 10^4	35.04	1.31 x 10^5	7	99.99
			Mean						99.99
		Klebsiella pneumoniae	1	1.26 x 10^5	9.63 x 10^4	23.57	1.11 x 10^5	7	99.99
			2	1.32 x 10^5	9.97 x 10^4	24.47	1.38 x 10^5	7	99.99
			3	1.12 x 10^5	8.86 x 10^4	20.89	1.33 x 10^5	7	99.99
			Mean						99.99

Note: The negative control group was sterile growth.

Statements

1. The report would be invalid under the following conditions: altered, added, deleted, copied, without the special seal for inspection or signatures by approver.
2. For the received sample, the sample information in the report is claimed by the applicant, the inspection unit is not responsible for its authenticity. The report is responsibility for the received sample only.
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