VIRAL REMOVAL RATE TEST REPORT

Applicant :	ACCO Brands, Inc.
Address :	Four Corporate Drive | Lake Zurich, IL 60047 | USA

The following merchandise was (were) submitted and identified by the client as:

Name of Sample :	TruSens Z-2000 Air Purifier
Test Type :	Commission
Sample Quantity :	1 PC
Model :	Z-2000
Batch No. :	2021-08-11
Brand :	TruSens
Manufacturer:	Airplove(Xiamen)Electronic Co., Ltd
Sample Received :	2021/08/13
Test Period :	2021/08/13 – 2021/09/26
Test Items :	Please refer to next page(s).
Test Method :	Please refer to next page(s).
Test Result :	Please refer to next page(s).
Sample Description :	Air purifier+STD filter.Test sample originated from mass production,UV system is turned off.
Note:	The sample was equipped with standard filter consisting of 112 pleat 85gsm H11 HEPA.

Prepared by: 黄婉盈 **Approved by:**

Checked by: **Official Seal:**

TEST RESULTS(1):

Table 1 Summary of test results							
Test Item	**Model**	**Test Strain**	**Test Time (min)**	**Mean Natural Decay Rate (%)**	**Mean Removal Rate (%)**	**Mean Log Reduction**	**Test Method(s)**
Removal Rate	Z-2000	HCoV-229E	120	80.69	99.99	3.96	Technical Standards for Disinfection (2002) 2.1.3

********TO BE CONTINUED ********

TEST RESULTS(2):

Table 2 Test data of virus aerosol removal

Virus strain	Test time (min)	Test number	Control group			Test group		Removal rate K_t (%)	Log Reduction L_t
			0 min V_0 ($TCID_{50}/m^3$)	120 min V_t ($TCID_{50}/m^3$)	Natural Decay Rate N_t (%)	0 min V_1 ($TCID_{50}/m^3$)	120 min V_2 ($TCID_{50}/m^3$)		
HCoV -229E	120	1	4.19×10^7	8.85×10^6	78.88	8.85×10^7	2.00×10^3	99.99	3.97
		2	4.95×10^7	8.28×10^6	83.27	9.93×10^7	1.70×10^3	99.99	3.99
		3	4.97×10^7	9.98×10^6	79.92	7.48×10^7	1.77×10^3	99.99	3.93
		Mean			80.69			99.99	3.96

********TO BE CONTINUED ********

Inspection instructions

1. Test method

   Technical Standards for Disinfection (2002) 2.1.3

2. Test item

   Virus strain: HCoV-229E (VR-740)

   Cell: Huh-7 cell

3. Test equipment & materials

   Test chamber (30 m^3),Sampling pump, Aerosol generator,Liquid impingement sampler

4. Test condition

   1) Environment temperature：20~25 ℃

   2) Environment humidity：50~70 %RH

5. Operation condition of the machine

   Set the fan speed to position "Turbo".

6. Test procedure

   1) Adjust the temperature and relative humidity of the test chamber according to the requirements.

   2) Place the equipment to the test chamber and then close the door.

   3) Turn on the aerosol generator to atomize the virus and mix with a fan. After atomizing,virus was placed for a certain time.

   4) Collect the sample of the control group and test group before purification.

   5) Purification was carried out in the test chamber.The control chamber was used as comparison

   6) At the specified intervals, the test chamber and the control chamber were sampled at the same time.

   7) To measure the virus titer of the collected sample, the procedure was as follows:

      a) The collected samples were diluted 10 times.

      b) The diluent was added to 96-pore cell culture plates with monolayer Huh-7 cells, and the control group added to the equivalent culture media.

      c) Cells were cultured at 37°C and 5% CO_2 for 60 min and the supernatant was discarded.

      d) 400 IU/mL double antibody was added to maintain the culture media for 3~5 days.

      e) The cell morphology was observed.

      f) When the Huh-7 cells appeared to become round and shrink the cytopathic changes were recorded.

      g)Viral titers were calculated by the Reed-Muench method and expressed as $TCID_{50}$.

   8) Calculate the virus titer and the removal rate, and this experiment repeated 3 times.

7. Computational formula

Natural decay rate $N_t(\%) = \frac{V_0 - V_t}{V_0} \times 100$

(V_0 = the original virus titer of control group, V_t = the final virus titer of control group)

Removal rate $K_t(\%) = \frac{V_1 \times (1 - N_t) - V_2}{V_1 \times (1 - N_t)} \times 100$

(V_1 = the original virus titer of test group, V_2 = the final virus titer of test group)

Log Reduction $L_t = -\log_{10}(\frac{-K_t}{100} + 1)$

********TO BE CONTINUED ********

SAMPLE PHOTO

******** END OF REPORT ********

Statement

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