



TEST REPORT

201819000873

Applicant :

Address :

China

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

Name of Sample : -720GZDL UV air disinfection machine

Test Type : Commission

Sample Quantity : 1

Model : -720GZDL

Batch No. : 20210418

Brand :

Manufacturer:

Sample Received : 2021/04/22

Test Period : 2021/04/22- 2021/05/24

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 : Machine

Note: /

Edited by: 黄婉盈

Approved by: [Signature]

Checked by: 叶智坚

Official Seal: 

TEST RESULTS (1):

Test Conclusions:

1. Cyclic wind volume:

The cyclic wind volume of the -720GZDL UV air disinfection machine under the condition of "Maximum Wind Speed" was 764 m³/h.

2. Ultraviolet intensity:

The ultraviolet intensity of the -720GZDL UV air disinfection machine was 94 μW/cm² and the tested point was 1 m away from the vertical center below the UV lamp.

3. UV leakage:

The ultraviolet intensity of the -720GZDL UV air disinfection machine was <1 μW/cm² and the tested point (left, middle and right) was 30 cm away from the machine, which was accorded with the "Hygienic requirements for ultraviolet appliance of disinfection" (GB 28235-2020) that the UV leakage should be ≤ 5 μW/cm².

4. Ozone leakage:

The -720GZDL UV air disinfection machine activated and disinfected for 120 minutes under the condition of "Maximum Wind Speed", the average ozone concentration in the indoor air environment was 0.023 mg/m³, which was accorded with the requirements of the "Hygienic standard for ozone in indoor air" (GB/T 18202-2000).

5. Simulated air disinfection field test:

The -720GZDL UV air disinfection machine activated and disinfected for 120 minutes under the condition of "Maximum Wind Speed" and the killing rate of *Staphylococcus albus* in 3 tests was all >99.90%, which was qualified for disinfection and accorded with the requirements of the "Technical Standard for Disinfection" (2002).

6. Air disinfection field test:

The -720GZDL UV air disinfection machine activated and disinfected for 120 minutes under the condition of "Maximum Wind Speed" and the test place is an empty, confined room about 70 m³. The extinction rate of natural bacteria in 3 tests was all >90.00%, which was qualified for disinfection and accorded with the requirements of "Technical Standard for Disinfection" (2002).

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

TEST RESULTS (2):

1. Test item

Cyclic wind volume

2. Instrument

- (1) Intelligent hot-bulb anemometer(TST 9565-P-NB);
- (2) Disinfection equipment: -720GZDL UV air disinfection machine

3. Test method

- (1) Test basis:"Central-station air handling units"(GB/T 14294-2008) Annex B
- (2) Test conditions: Environment temperature: 25.0°C; Environment humidity: 55%RH
- (3) Operation conditions of the machine:"Maximum Wind Speed".
- (4) Test method:Install the prototype to be tested on the aerodynamic test bench, turn on the maximum wind speed at rated voltage and rated frequency, arrange points on the air outlet plane, and record the wind speed at each test point with an anemometer. The test must be repeated for 3 times and the average value must be calculated . The air volume is obtained from the wind speed and area of the air outlet plane.

4. Result

After three repeated tests, the cyclic wind volume of the -720GZDL UV air disinfection machine was 764 m³ /h under the condition of "Maximum Wind Speed"(Table 1)

Table 1 Test result of cyclic wind volume

Test item	Test result(m ³ /h)
Cyclic wind volume	764

5. Conclusion

The cyclic wind volume of the -720GZDL UV air disinfection machine under the condition of "Maximum Wind Speed" was 764 m³ /h.

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

TEST RESULTS (3):

1. Test item

Ultraviolet intensity

2. Instrument

- (1) ST-512 ultraviolet radiation illuminometer (sensitivity: $1\mu\text{W}/\text{cm}^2$);
- (2) Disinfection equipment:UV lamp for -720GZDL UV air disinfection machine (ZW18D15W-Z357)

3. Test method

- (1) Test basis: "Hygienic requirements for ultraviolet appliance of disinfection" (GB 28235-2020) Annex A
- (2) Test conditions: Environment temperature: 25.1°C ; Environment humidity: 53%RH
- (3) Test method: Set the UV lamp to be tested on the measuring frame, adjust the distance so that the probe of the illuminometer was placed 1 m away from the vertical center of the lamp, connect the voltage regulator (220V), turn on the UV lamp for 5 min, and measure the ultraviolet intensity with the illuminometer. The test was repeated 3 times.

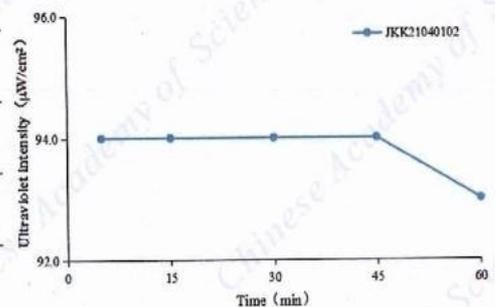
4. Result

After three repeated tests, the ultraviolet intensity of 1 m at the vertical center below the UV lamp was $94\mu\text{W}/\text{cm}^2$. (Table 2)

Table 2 Experimental data of Ultraviolet intensity

Test item		Test result	
Ultraviolet intensity	Unit	Test number	The ultraviolet intensity
	$\mu\text{W}/\text{cm}^2$	1	94
		2	94
		3	94
	Average value	94	

Graph 1 Curve of ultraviolet intensity changing with time



5. Conclusion

The ultraviolet intensity of the -720GZDL UV air disinfection machine was $94\mu\text{W}/\text{cm}^2$ and the tested point was 1 m away from the vertical center below the UV lamp.

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

TEST RESULTS (4):

1. Test item

UV leakage

2. Instrument

- (1) ST-512 ultraviolet radiation illuminometer (sensitivity: $1\mu\text{W}/\text{cm}^2$);
- (2) Disinfection equipment -720GZDL UV air disinfection machine

3. Test method

- (1) Test basis: "Hygienic requirements for ultraviolet appliance of disinfection" (GB 28235-2020) Annex A
- (2) Test conditions: Environment temperature: 25.3°C ; Environment humidity: 56%RH
- (3) Operation conditions of the machine: "Maximum Wind Speed".
- (4) Test method: When the machine was turned on to the set mode, and set the tested point (left, middle and right) 30 cm away from the machine. The ultraviolet intensity of the ultraviolet ray was measured by an irradiance illuminometer. The test was repeated for 3 times.

4. Result

After three repeated tests, The ultraviolet intensity of the -720GZDL UV air disinfection machine was $<1\mu\text{W}/\text{cm}^2$, the tested point (left, middle and right) was 30 cm away from the machine (Table 3).

Table 3 Experimental data of UV leakage

Test item	Test result			
	Test location	Unit	Test number	The ultraviolet intensity
UV leakage	left	$\mu\text{W}/\text{cm}^2$	1	<1
			2	<1
			3	<1
			Average	<1
	middle	$\mu\text{W}/\text{cm}^2$	1	<1
			2	<1
			3	<1
			Average	<1
	right	$\mu\text{W}/\text{cm}^2$	1	<1
			2	<1
			3	<1
			Average	<1

5. Conclusion

The ultraviolet intensity of the -720GZDL UV air disinfection machine was $<1\mu\text{W}/\text{cm}^2$ and the tested point (left, middle and right) was 30 cm away from the machine, which was accorded with the "Hygienic requirements for ultraviolet appliance of disinfection" (GB 28235-2020) that the UV leakage should be $\leq 5\mu\text{W}/\text{cm}^2$.

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

TEST RESULTS (5):

1. Test item

Ozone leakage

2. Instrument

- (1) Ozone analyzer (106-L)
- (2) Disinfection equipment: -720GZDL UV air disinfection machine

3. Test method

- (1) Test conditions: Environment temperature: 25.4°C; Environment humidity: 57%RH
- (2) Operation conditions of the machine: "Maximum Wind Speed".
- (3) Test basis: "Hygienic standard for ozone in indoor air" (GB/T 18202-2000)
- (4) Test method: Place the -720GZDL UV air disinfection machine in confined room about 70 m³ according to the requirements of use. A sampling point was set at the center of the room 1.5 m away from the ground, and turned on the machine at rated mode. The test time was 2 h. During this time, 24 data to be read at a certain interval for averaging. The ozone concentration measured in the test was subtracted from the ozone concentration in the air before the test as the ozone leakage amount of the -720GZDL UV air disinfection machine.

4. Result

The -720GZDL UV air disinfection machine activated and disinfected for 120 minutes under the condition of "Maximum Wind Speed" and the average ozone concentration in the indoor environment was 0.023 mg/m³ (Table 4).

Table 4 Experimental data of Ozone leakage

Time (min)	Ozone leakage (mg/m ³)	Time (min)	Ozone leakage (mg/m ³)	Average (mg/m ³)
5	0.002	65	0.024	
10	0.003	70	0.027	
15	0.005	75	0.030	
20	0.008	80	0.030	
25	0.009	85	0.031	
30	0.011	90	0.032	0.023
35	0.015	95	0.034	
40	0.016	100	0.035	
45	0.019	105	0.036	
50	0.021	110	0.038	
55	0.021	115	0.040	
60	0.023	120	0.041	

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

5. Conclusion

The -720GZDL UV air disinfection machine activated and disinfected for 120 minutes under the condition of "Maximum Wind Speed",the average ozone concentration in the indoor air environment was 0.023 mg/m^3 , which was accorded with the requirements of the "Hygienic standard for ozone in indoor air" (GB/T 18202-2000).

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

TEST RESULTS (6):

1. Test item

 Simulated air disinfection field test (*Staphylococcus albus*)

2. Instrument

- (1) Test chamber: 20 m³;
- (2) Test microorganism: *Staphylococcus albus* 8032, Medium: nutrient agar medium, Sampler: six-stage sieve sampler;
- (3) Disinfection equipment: -720GZDL UV air disinfection machine

3. Test method

- (1) Test basis: "Technical Standard for Disinfection" (2002) 2.1.3
- (2) Test conditions: Environment temperature:(20~25) °C; Environment humidity: (50~70) %RH
- (3) Operation status of the machine: "Maximum Wind Speed".
- (4) Disinfection method: During the test, the machine to be tested was placed in the test chamber. Open the prototype to the set mode and sampling after 120 minutes. The test was repeated 3 times.
- (5) Sampling method: A sampling point was set at the center of the test chamber 1.0 m away from the ground, sampling by a six-stage sieve sampler with the sampling flow of 28.3 L/min. Sample was collected at the beginning and after 120 minutes working. The sampling time of the comparison group was 20 s and 20 s, and the sampling time of the test group was 20 s and 6 min.

4. Result

The test temperature was (20~25)°C and the relative humidity was(50~70)%RH.The -720GZDL UV air disinfection machine activated and disinfected for 120 minutes under the condition of "Maximum Wind Speed" , and the 3 test results for the killing rate of *Staphylococcus albus* were all >99.99% (Table 5).

Table 5 Experimental data of air sterilization effect identification test

Test bacteria	Test time (min)	Test number	Comparison group			Test group		Killing rate (%)
			Original bacteria quantity (CFU/m ³)	Bacteria quantity after test (CFU/m ³)	Natural decay rate (%)	Original bacteria quantity (CFU/m ³)	Bacteria quantity after test (CFU/m ³)	
<i>Staphylococcus albus</i>	120	1	1.11×10 ⁵	6.43×10 ⁴	42.07	1.18×10 ⁵	<6	>99.99
		2	9.99×10 ⁴	5.99×10 ⁴	40.04	8.54×10 ⁴	<6	>99.99
		3	1.07×10 ⁵	6.89×10 ⁴	35.61	1.05×10 ⁵	<6	>99.99

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

5. Conclusion

The -720GZDL UV air disinfection machine activated and disinfected for 120 minutes under the condition of "Maximum Wind Speed" and the killing rate of *Staphylococcus albus* in 3 tests was all >99.90%, which was qualified for disinfection and accorded with the requirements of the "Technical Standard for Disinfection" (2002).

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

TEST RESULT (7):

1. Test item

Air disinfection field test

2. Instrument

 (1) Test place: About 70 m³ empty airtight room;

(2) Medium: NA, Sampler: six-stage sieve sampler;

Disinfection equipment: -720GZDL UV air disinfection machine

3. Test method

(1) Test basis: "Technical Standard for Disinfection" (2002) 2.1.3

(2) Test conditions: Environment temperature: (25~28) °C; Environment humidity: (52~56) %RH

(3) Operation status of the machine: "Maximum Wind Speed".

 (4) Disinfection method: During the test, the machine to be tested was placed in an empty airtight room of about 70 m³, and the sample was collected after 120 minutes working. The test was repeated 3 times.

(5) Sampling method: Two sampling points were set 1.0 m away from the ground in the middle of empty airtight room, sampling by a six-stage sieve sampler with the sampling flow of 28.3 L/min.

(6) Sampling time: 5 minutes before disinfection, 10 minutes after disinfection.

4. Result

The test room was an empty airtight room about 70 m³. The test temperature was (25~28) °C, the relative humidity was (52~56) % RH, the -720GZDL UV air disinfection machine activated and disinfected for 120 minutes under the condition of "Maximum Wind Speed", and the 3 test results for the extinction rate of natural airborne bacteria of two sampling points were all >90.00% (Table 6).

Table 6 Experimental data of air sterilization effect identification test (natural airborne bacteria)

Test bacteria	Test time (min)	Sampling point	Test number	Original bacteria quantity (CFU/m ³)	Bacteria quantity after test (CFU/m ³)	Extinction rate (%)
Natural airborne bacteria	120	1	1	1.59×10 ³	21	98.68
			2	1.48×10 ³	11	99.26
			3	1.14×10 ³	4	99.65
		2	1	1.54×10 ³	18	98.83
			2	1.37×10 ³	7	99.49
			3	1.25×10 ³	11	99.12

5. Conclusion

The -720GZDL UV air disinfection machine activated and disinfected for 120 minutes under the condition of "Maximum Wind Speed" and the test place is an empty, confined room about 70 m³. The extinction rate of natural bacteria in 3 tests was all >90.00%, which was qualified for disinfection and accorded with the requirements of "Technical Standard for Disinfection" (2002).

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

SAMPLE PHOTO



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

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