



**Test Report**

**Report No.: GZAFN1909017601S001**

**Date: Oct 28 2019**

Client name: West Ryder Technology, LLC.  
 Client address: 251 Little Falls Drive, Wilmington, Delaware, USA 19808-1674  
 Sample name: "Airthereal" OZONE AIR PURIFIER  
 Sample Batch No.: MA10K-PRO

**Above sample(s) was/were submitted and certified by the client, SGS quoted the information with no responsibility as to the accuracy, adequacy and/or completeness.**

SGS Sample No.: GZAFN1909017601S.001  
 SGS reference No.: KJ20192030  
 Date of sample received: Sep. 11, 2019  
 Testing period: Sep. 11, 2019 ~ Oct. 23, 2019



SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

SGS Authorized Signature  
林奕熙 Eva Lin

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Guangzhou Branch Testing Center for Textile and Food Laboratory.

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## TEST RESULT(S):

Air disinfection effect#

Items of Analysis: Simulated Field Test (*Staphylococcus albus* 8032, *Staphylococcus aureus* ATCC 6538, *Escherichia coli* 8099, *P.Aeruginosa* ATCC 15442, *Aspergillus niger* ATCC 16404) Air disinfection effect

Test Method: <Technical Standard For Disinfection>2002-2.1.3

Method for Testing Air Disinfection:

A:

### 1. Test Equipments

- 1) Test microorganism: *Staphylococcus albus*, *Staphylococcus aureus*, *Escherichia coli*, *P.Aeruginosa*
- 2) Microbial aerosol generator: TK-3      3) Culture media: NA
- 4) Sampling equipment: six-stage sieve sampler

### 2. Test Conditions

- 1) The volume of the test chamber: 10 m<sup>3</sup>
- 2) Environment temperature: (20~25) °C
- 3) Environment humidity: (50~70) % RH
- 4) Test duration: 30 minutes

### 3. Operation Conditions of the Machine

Set the switch to position "The highest minutes gear".

### 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 this inoculums with NB as appropriate.
- 2) The equipments are 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, then turn on the ceiling fan, turn off the fan after 5 min, and let stand for 5 min.
- 4) Original Bacteria aerosols collected by six-stage sieve sampler.
- 5) The air disinfection are adjusted to the highest minutes gear setting for test (test group), Bacteria aerosols (control group and test group) are collected at 30 min 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.

### 5. Computational Formula

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

Where:  $V_0$  = original bacteria count of control group;  $V_t$  = bacteria count after treatment of control group.

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

Where:  $V_1$  = original bacteria count of test group;  $V_2$  = bacteria count after treatment of test group.



## 6. Test results

| Test Time (min) | Test Bacteria                | Test Number | Control Group                                       |  |                              | Test Group  |  |                       |
|-----------------|------------------------------|-------------|---|--|------------------------------|---|--|-----------------------|
|                 |                              |             | Original Bacteria Count $V_0$ (cfu/m <sup>3</sup> ) | Bacteria Count after Treatment $V_t$ (cfu/m <sup>3</sup> ) | Natural Decay Rate $N_t$ (%) | Original Bacteria Count $V_1$ (cfu/m <sup>3</sup> ) | Bacteria Count after Treatment $V_2$ (cfu/m <sup>3</sup> ) | Killing Rate $Kt$ (%) |
|                 | <i>Staphylococcus albus</i>  | 1           | 1.35×10 <sup>5</sup>                                | 1.16×10 <sup>5</sup>                                       | 14.07                        | 1.27×10 <sup>5</sup>                                | 21   | 99.98                 |
|                 |                              | 2           | 1.29×10 <sup>5</sup>                                | 1.10×10 <sup>5</sup>                                       | 14.73                        | 1.21×10 <sup>5</sup>                                | 14   | 99.99                 |
|                 |                              | 3           | 1.24×10 <sup>5</sup>                                | 1.07×10 <sup>5</sup>                                       | 13.71                        | 1.30×10 <sup>5</sup>                                | 28   | 99.98                 |
|                 | <i>Staphylococcus aureus</i> | 1           | 1.46×10 <sup>5</sup>                                | 1.27×10 <sup>5</sup>                                       | 13.01                        | 1.43×10 <sup>5</sup>                                | 21   | 99.98                 |
|                 |                              | 2           | 1.39×10 <sup>5</sup>                                | 1.22×10 <sup>5</sup>                                       | 12.23                        | 1.36×10 <sup>5</sup>                                | 21   | 99.98                 |
|                 |                              | 3           | 1.49×10 <sup>5</sup>                                | 1.31×10 <sup>5</sup>                                       | 12.08                        | 1.47×10 <sup>5</sup>                                | 28   | 99.98                 |
|                 | <i>Escherichia coli</i>      | 1           | 9.42×10 <sup>4</sup>                                | 7.73×10 <sup>4</sup>                                       | 17.94                        | 1.08×10 <sup>5</sup>                                | 14   | 99.98                 |
|                 |                              | 2           | 1.03×10 <sup>5</sup>                                | 8.30×10 <sup>4</sup>                                       | 19.42                        | 9.77×10 <sup>4</sup>                                | 7  | 99.99                 |
|                 |                              | 3           | 8.86×10 <sup>4</sup>                                | 7.30×10 <sup>4</sup>                                       | 17.61                        | 1.11×10 <sup>5</sup>                                | 21   | 99.98                 |
|                 | <i>P.Aeruginosa</i>          | 1           | 1.37×10 <sup>5</sup>                                | 1.20×10 <sup>5</sup>                                       | 12.41                        | 1.19×10 <sup>5</sup>                                | 21   | 99.98                 |
|                 |                              | 2           | 1.13×10 <sup>5</sup>                                | 1.01×10 <sup>5</sup>                                       | 10.62                        | 1.24×10 <sup>5</sup>                                | 21   | 99.98                 |

B:

### 1. Test Equipment

- 1) Strain: *Aspergillus niger*
- 2) Microbial aerosol generator: TK-3
- 3) Culture media: PDA
- 4) Sampling equipment: six-stage sieve sampler

### 2. Test Conditions

- 1) The volume of the test chamber: 10 m<sup>3</sup>
- 2) Environment temperature: (20~25) °C
- 3) Environment humidity: (50~70) % RH
- 4) Test duration: 30 minutes

### 3. Operation Conditions of the Machine

Set the switch to position "The highest minutes gear".

### 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 this inoculums with NB as appropriate.



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Where:  $V_1$  = original bacteria count of test group;  $V_2$  = bacteria count after treatment of test group.

## 6. Test results

| Test Time (min) | Test Bacteria            | Test Number | Control Group                                       |  |                              | Test Group  |  | Killing Rate $K_t$ (%) |
|-----------------|--------------------------|-------------|---|--|------------------------------|---|--|------------------------|
|                 |                          |             | Original Bacteria Count $V_0$ (cfu/m <sup>3</sup> ) | Bacteria Count after Treatment $V_t$ (cfu/m <sup>3</sup> ) | Natural Decay Rate $N_t$ (%) | Original Bacteria Count $V_1$ (cfu/m <sup>3</sup> ) | Bacteria Count after Treatment $V_2$ (cfu/m <sup>3</sup> ) |                        |
| 30              | <i>Aspergillus niger</i> | 1           | 8.10×10 <sup>4</sup>                                | 6.25×10 <sup>4</sup>                                       | 22.84                        | 8.32×10 <sup>4</sup>                                | 14   | 99.98                  |
|                 |                          | 2           | 6.75×10 <sup>4</sup>                                | 5.41×10 <sup>4</sup>                                       | 19.85                        | 7.76×10 <sup>4</sup>                                | 7  | 99.99                  |
|                 |                          | 3           | 7.54×10 <sup>4</sup>                                | 5.96×10 <sup>4</sup>                                       | 20.95                        | 8.55×10 <sup>4</sup>                                | 14   | 99.98                  |



Remark: #The test was carried out by external laboratory assessed as competent.

**SAMPLE DESCRIPTION:** Equipment

Photo Appendix



SGS authenticate the photo on original report only  
\*\*\* End of Report\*\*\*



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