

MAINSTREAM ENGINEERING CORP

EFFICACY TEST REPORT

SCOPE OF WORK

Non-standardized Test Method: Microbial Reduction Rate Test

PRODUCT – Air Purifier

MODEL – QwikPure TripleGuard

REPORT NUMBER
104437224COL-002

ISSUE DATE
12/07/20

PAGES 7

DOCUMENT CONTROL NUMBER
GFT-OP-10h (6-July-2017)
© 2020 INTERTEK



SECTION 1 EFFICACY STUDY SUMMARY

Client		Mainstream Engineering Corporation 200 Yellow Place Pines Industrial Center Rockledge, FL 32955-5327 USA
Project No.		G104437224
Sample	Product	Air Purifier
	Model	QwikPure TripleGuard
Procedural	Engineer	Amanda Mastronicolas
	Reviewer	Nicholas Unger
	Dates Tested	11/12/20 – 11/23/20
	Report Date	11/24/2020
Standard	Non-standardized Test Method: Microbial Reduction Rate Test	
Testing Facility	Intertek Microbiological Laboratory 1717 Arlingate Ln. Columbus, OH 43228 United States	

SECTION 2 TEST PROCEDURE

The test chamber measured 10’x10’x10’ (1000 cubic ft) room and a microbial suspension was aspirated into the chamber. Air samples were taken from the test chamber once the unit was turned on and sampling was taken every 5 minutes over a period of 15 minutes, then every 15 minutes until the 1 hour mark was reached, and finally every 30 minutes until the 2 hour mark was reached and then plated. The process was then repeated without the test unit in the chamber to provide the natural decay results. All plates were incubated overnight and viral growth on the test plate was compared to that of the natural decay control. Testing was completed in triplicate and results presented represent the average results of all test runs.

The unit was placed inside a duct that measured 14 inch by 16 inch and 48” long and placed on a small table in the center of the room approximately 3 feet off the ground.

Air sampling took place using an SKC BioStage Single-stage impactor for 30 seconds at 12L/min (.424 cubic feet/min). Results below represent the percent reduction at 120 minutes.

SECTION 3 ORGANISMS

Organism Name	Organism Type	ATCC Number	Source
Phi X174 bacteriophage	small, non-enveloped virus	13706-B1	Carolina Bioscience
Escherichia coli	Bacteria	11229	ATCC

SECTION 3 EQUIPMENT

Equipment Type	Equipment No.	Calibration Due Date
Micropipette	CE 2587	6/12/2021
Incubator	CE 2381	7/7/2021
Balance	CE 1882	7/7/2021
Autoclave	CE 2376	Verify Before Use
Centrifuge	CE 2382	For Reference Only
Chamber	CE 1149	For Reference Only
Collision Nebulizer	CE 1139	For Reference Only
Refrigerator	CE 1157	For Reference Only
Pump	CE 1137	For Reference Only
Stopwatch	SW013	07/07/2021
Ambient Temperature/RH	CE 1179	For Reference Only

SECTION 4 MEDIA AND REAGENTS

Type	Manufacturer	Lot No	Expiration Date
Nutrient Agar	DIFCO	9346039	10/31/2024
PBS	Fisher	192736	08/01/2022

SECTION 5 SAMPLE ACQUISITION

Acquisition method	Shipped to Intertek
Description	Industrial grade air purifier/ sanitizer
Model Number	QT2730
Arrival date	09/22/2020
Condition	New
Sample Identification No.	COL2009221336-001
Development Level	Production

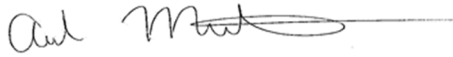

SECTION 6 SUMMARY OF RESULTS

Fan Speed
800 CFM



Benchmark and Non-standard Test Report: Report must be reproduced in its entirety

Organism Type	Virus	Bacteria
Temperature Min/Max	18°C (64°F) / 19°C (66°F)	
Humidity Min/Max	33 % RH / 35% RH	
Organism Name	<i>Phi-X174</i>	<i>E. coli</i>
Average Percent Reduction (N=3)	99.9%	99.9%

Completed by:	Amanda Mastronicolas	Reviewed by:	Nicholas Unger
Title:	Microbiology Tech I	Title:	Staff Engineer
Signature:		Signature	
Date	07-DEC-2020	Date:	07-DEC-2020

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute Intertek's Reports and then only in their entirety, and the Client shall not use the Reports in a misleading manner. Client further agrees and understands that reliance upon the Reports is limited to the representations made therein. In the event any portion of this report becomes public, including but not limited to press releases, articles, and marketing material, without prior written consent from Intertek, Intertek will enforce the reproduction of the report in its entirety by making the full report public. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. Should Customer use an Intertek Report, in whole or in part, in such a manner as to involve Intertek in legal controversy or to adversely affect Intertek's reputation, it shall be Intertek's right to utilize any and all Customer information, including, but not limited to, data, records, instructions, notations, samples or documents within Intertek's custody and control which relate to the customer for the purpose of offering any necessary defense or rebuttal to such circumstances. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

Annex A Test Results:

Test Parameter		Test Result	Natural Decay Result	Units
Organism	Species	<i>Coliphage φX174</i>		---
	ATCC No.	13706-B1		---
	Challenge Concentration	5.0 x 10 ⁹		PFU/mL
Samples (10min.)	0	TNTC	TNTC (2628)	PFU
	5	TNTC	TNTC (2628)	PFU
	10	TNTC	TNTC (2628)	PFU
	15	TNTC	TNTC (2628)	PFU
	30	133	TNTC (2628)	PFU
	45	15	TNTC (2628)	PFU
	60	2	TNTC (2628)	PFU
	90	<1	TNTC (2628)	PFU
120	<1	TNTC (2628)	PFU	
Results	--	99.9%		Reduction
Test Parameter		Test Result	Natural Decay Result	Units
Organism	Species	<i>Coliphage φX174</i>		---
	ATCC No.	13706-B1		---
	Challenge Concentration	5.0 x 10 ⁹		PFU/mL
Samples (10min.)	0	TNTC	TNTC (2628)	PFU
	5	TNTC	TNTC (2628)	PFU
	10	TNTC	TNTC (2628)	PFU
	15	TNTC	TNTC (2628)	PFU
	30	140	TNTC (2628)	PFU
	45	30	TNTC (2628)	PFU
	60	5	TNTC (2628)	PFU
	90	<1	TNTC (2628)	PFU
120	<1	TNTC (2628)	PFU	
Results	--	99.9%		Reduction
Test Parameter		Test Result	Natural Decay Result	Units
Organism	Species	<i>Coliphage φX174</i>		---
	ATCC No.	13706-B1		---
	Challenge Concentration	5.0 x 10 ⁹		PFU/mL
Samples (10min.)	0	TNTC	TNTC (2628)	PFU
	5	TNTC	TNTC (2628)	PFU
	10	TNTC	TNTC (2628)	PFU
	15	TNTC	TNTC (2628)	PFU
	30	119	TNTC (2628)	PFU
	45	17	TNTC (2628)	PFU
	60	<1	TNTC (2628)	PFU
	90	<1	TNTC (2628)	PFU
120	<1	TNTC (2628)	PFU	
Results	--	99.9%		Reduction

Benchmark and Non-standard Test Report: Report must be reproduced in its entirety

ANTIMIROBIAL EFFICACY TEST REPORT

MAINSTREAM ENGINEERING CORPORATION

Report No.: 104437224COL-002

Test Parameter		Test Result	Natural Decay Result	Units
Organism	Species	<i>E.coli</i>		---
	ATCC No.	11229		---
	Challenge Concentration	8.8 x 10 ⁸		CFU/mL
Samples (10min.)	0	TNTC	TNTC (2628)	CFU
	5	TNTC	TNTC (2628)	CFU
	10	112	TNTC (2628)	CFU
	15	5	TNTC (2628)	CFU
	30	1	TNTC (2628)	CFU
	45	<1	TNTC (2628)	CFU
	60	<1	TNTC (2628)	CFU
	90	<1	TNTC (2628)	CFU
120	<1	TNTC (2628)	CFU	
Results	--	99.9%		Reduction

Test Parameter		Test Result	Natural Decay Result	Units
Organism	Species	<i>E.coli</i>		---
	ATCC No.	11229		---
	Challenge Concentration	8.8 x 10 ⁸		CFU/mL
Samples (10min.)	0	TNTC	TNTC (2628)	CFU
	5	TNTC	TNTC (2628)	CFU
	10	103	TNTC (2628)	CFU
	15	26	TNTC (2628)	CFU
	30	3	TNTC (2628)	CFU
	45	<1	TNTC (2628)	CFU
	60	<1	TNTC (2628)	CFU
	90	<1	TNTC (2628)	CFU
120	<1	TNTC (2628)	CFU	
Results	--	99.9%		Reduction

Test Parameter		Test Result	Natural Decay Result	Units
Organism	Species	<i>E.coli</i>		---
	ATCC No.	11229		---
	Challenge Concentration	8.8 x 10 ⁸		CFU/mL
Samples (10min.)	0	TNTC	TNTC (2628)	CFU
	5	TNTC	TNTC (2628)	CFU
	10	106	TNTC (2628)	CFU
	15	9	TNTC (2628)	CFU
	30	4	TNTC (2628)	CFU
	45	<1	TNTC (2628)	CFU
	60	<1	TNTC (2628)	CFU
	90	<1	TNTC (2628)	CFU
120	<1	TNTC (2628)	CFU	
Results	--	99.9%		Reduction

Benchmark and Non-standard Test Report: Report must be reproduced in its entirety