



UVC Germicidal Disinfection Lighting

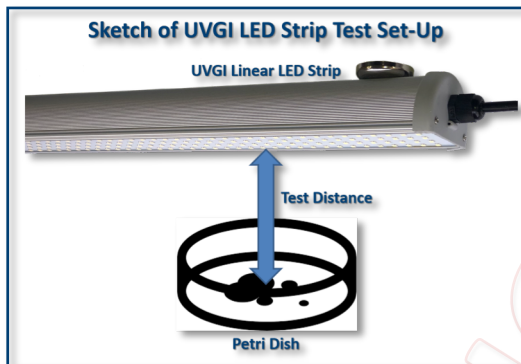
Independent Third-Party Laboratory Testing

99.9% COVID-19 Virus (SARS-CoV-2) Reduction

Tested by Microbac Laboratories, Inc.



COVID-19 Virus (SARS-CoV-2) Efficacy Test with OLYMPIA's UVC Device
 "UVS-2FT-60W-UVC-277V" UVC LINEAR LED STRIP



- Tested at a Standard Distance of 1 Meter
- Cell culture plates (Petri Dishes) placed in "direct-line-of sight" with the center of the UV device
- Cell culture plates exposed for 1 Minute, 4 Minutes and 8 Minutes

Olympia's UVC Device achieved a Virus Reduction of >99.4% at 1 Meter in 1 Min.!

**Table 1
Titer Results**

Sample	Contact time	Titer (Log ₁₀ TCID ₅₀ /mL)	Volume (mL)	Viral Load (Log ₁₀ TCID ₅₀)
Cell viability/media sterility control	N/A	no virus detected, cells viable; media sterile		
Virus Stock Titer Control		7.43	-	-
Theoretical load ^a		6.73		
Plate Recovery Control	0 minutes	6.55	0.2	5.85
	8 minutes	6.68	0.2	5.98
UVS-2FT-60W-UVC-277V	1 minute	4.30	0.2	3.60
	4 minutes	2.30	0.2	1.60
	8 minutes	≤ 1.83 *	0.2	≤ 1.13

^a The theoretical load is determined based on the Virus Stock Titer control and the volume of virus challenged per carrier.
 NA = Not applicable
 * No virus was detected; the theoretical titer was determined based on the Poisson Distribution.

Test follows the principles in the "Germicidal Spray Products as Disinfectants" method in the AOAC Official Methods of Analysis, and the ASTM International test method designated E1053-11, "Standard Test Method to Assess Virucidal Activity of Chemicals Intended for Disinfection of Inanimate, Nonporous Environmental Surfaces".

NOTE: Unaudited preliminary results for Project No. 1096-101:Virucidal Hard Surface Efficacy Test for a Free-Standing UV Device - Severe Acute Respiratory Syndrome-Related Coronavirus 2 (SARS-CoV-2) (COVID-19).

**Table 3
Viral Reduction**

Test Agent	Contact Time	Initial Viral Load (Log ₁₀ TCID ₅₀)	Output Viral Load (Log ₁₀ TCID ₅₀)	Log ₁₀ Reduction	Percent Reduction
UVS-2FT-60W-UVC-277V	1 minute	5.85	3.60	2.25	99.438
	4 minutes		1.60	4.25	99.994
	8 minutes		≤ 1.13	≥ 4.72	≥ 99.998

≥ Denotes a complete inactivation of the virus challenged.
 Note: The results are unaudited and preliminary. They are subject to change until the review is complete and a final report is issued



UVC Germicidal Disinfection Lighting

Independent Third-Party Laboratory Testing

99.9% Microbial Reduction Test by INTERTEK Microbiological Lab.

intertek
Total Quality Assured

OLYMPIA LIGHTING, INC EFFICACY TEST REPORT

SCOPE OF WORK
Non-standardized Test Method: Microbial Reduction Rate Test

PRODUCT – Air Purifier

MODEL – UVW-110W-UVC-120V & UVV-2X4FT-100W-UVC-120V

REPORT NUMBER
104493272COL-001

ISSUE DATE
12/18/20

PAGES 9

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

ANTIMICROBIAL EFFICACY TEST REPORT
OLYMPIA LIGHTING, INC.
Report No.: 204493272001/001

SECTION 6 SUMMARY OF RESULTS

Fan Speed	Optional Features
Max	N/A

UV AIR PURIFIER
Model: UVW-110W-UVC-120V
220VAC, 50/60Hz, 110W
WARNING: UV LIGHT HAZARD!
Avoid Looking Directly at UV Light!
OLYMPIA LIGHTING, INC.
27th Floor, 14833 NE 87th St, Redmond, WA 98052
Tel: +1 (866) 738-8000
www.OlympiaLighting.com

UVV LAX LED TROFFER
Model: UVV-2X4FT-100W-UVC-120V
220VAC, 50/60Hz, 100W
WARNING: UV LIGHT HAZARD!
Avoid Looking Directly at UV Light!
OLYMPIA LIGHTING, INC.
27th Floor, 14833 NE 87th St, Redmond, WA 98052
Tel: +1 (866) 738-8000
www.OlympiaLighting.com

UVW-110W-UVC-120V (Wall Unit)			
Organism Type	Virus	Mold	Bacteria
Temperature Min/Max	18°C (64°F) / 19°C (66°F)	20°C (68°F)	18°C (64°F)
Humidity Min/Max	43% RH / 44% RH	45%RH	40%RH
Organism Name	Phi-X174	A. niger	E. coli epidermidis
Percent Reduction	99.9%	99.9%	99.9%

Page 4 of 9

ANTIMICROBIAL EFFICACY TEST REPORT
OLYMPIA LIGHTING, INC.
Report No.: 204493272001/001

UVV-2X4FT-100W-UVC-120V (Troffer)

Organism Type	Virus	Mold	Bacteria	Bacteria
Temperature Min/Max	18°C (64°F) / 19°C (66°F)	20°C (68°F)	18°C (64°F)	18°C (64°F)
Humidity Min/Max	43% RH / 44% RH	45%RH	40%RH	40%RH
Organism Name	Phi-X174	A. niger	E. coli	S. epidermidis
Percent Reduction	99.9%	99.7%	99.9%	99.9%

Completed by: Amanda Mastronicolas
Title: Microbiology Tech I

Reviewed by: Nicholas Unger
Title: Staff Engineer

Signature: [Signature]
Date: 18-DEC-2020

Signature: [Signature]
Date: 18-DEC-2020

Page 5 of 9

CSA America Certification – IES LM-58 Spectral Irradiance Testing

SA CSA GROUP

Product Performance Report - On-Axis Irradiance/Energy

Product Test Report

Test results reported for:
Olympia Lighting Inc.
Product Description: UVC LED Strip

Issued Report: OLYG003-010_UVC LED Strip
000003-1-1999

Original Issue date: Wednesday, December 9, 2020

Revision Issue Date: First Issue

Prepared for: Olympia Lighting Inc.
148 Veterans Drive,
Voorhees, New Jersey 07847
United States

Testing performed by: CSA Group
14833 NE 87th St, Redmond, WA 98052
425-865-8000
www.csa-group.com

Attn: Ramy Shalvi

Test report prepared by:
Aaron Miller
Aaron Miller
Laboratory Manager
Test & Measurement Services

CSA Group
14833 NE 87th St, Redmond, WA 98052
425-865-8000
www.csa-group.com

Page 1 of 9

Product Performance Report - On-Axis Irradiance/Energy
Manufacturer: Olympia Lighting Inc. Report Number: OLYG003-010
Product Description: UVC LED Strip Release Date: 12/9/2020

SAMPLE DESCRIPTION

Lab sample identification: UVC LED Strip	Manufacturer's ratings
Customer identification: 4W UVC LED	Max Current (A): N/A
Manufacturer: Olympia Lighting	Operating voltage: 277V
Part number: NA	Wattage (watts): 60
Model Number: UVV-2FT-60W-UVC-227V	Frequency (Hz): 60
Description: UVC LED Strip	Type: LED

Sample Device as Received **Sample Device Mounted to Test Apparatus**

Equipment Geometry **Test Geometry - Cartesian Coordinates, Vertical Plane**

$z = 1.000, 2.000, 3.048 \text{ meters}$
 $x = \text{center of fixture/lamp}$
 $y = \text{center of fixture/lamp}$

Measurement System Description
Reference: Custom Test: Irradiance on a Plane
A single point or plane is established distance (z) from the emission aperture. A single measurement, or series of measurements are performed at this distance.

CSA Group
14833 NE 87th St, Redmond, WA 98052
425-865-8000
www.csa-group.com

Page 3 of 9

Product Performance Report - On-Axis Irradiance/Energy
Manufacturer: Olympia Lighting Inc. Report Number: OLYG003-010
Product Description: UVC LED Strip Release Date: 12/9/2020

TIME EXPOSURE SUMMARY

Distance to Surface Meters	Average Total Irradiance (µW/cm²)	Average UVC Irradiance (µW/cm²)	Time needed to reach 20mJ/cm² UVC (s)	Time needed to reach 100mJ/cm² UVC (s)
1.000	35.29	27.40	720	2543
2.000	7.65	6.73	2974	14869
3.048	3.43	3.00	6662	33308

SPECTRAL BIN

% of Spectrum	Peak λ	FWHM (nm)
UVC (100 - 280nm)	271 nm	14.46 nm
UVA (280 - 400nm)	0.27%	-
Visible (400 - 700nm)	0.08%	-
Near Infrared (700 - 1500nm)	0.01%	-
TOTAL UV	99.91%	-

Spectrum normalized to Peak = 1

CSA Group
14833 NE 87th St, Redmond, WA 98052
425-865-8000
www.csa-group.com

Page 5 of 9



UVC Germicidal Disinfection Lighting

INTERTEK VERIFIED ZERO OZONE

Comply with UL 2998 Zero Ozone ≤ 0.005 ppm

MAX OZONE TEST

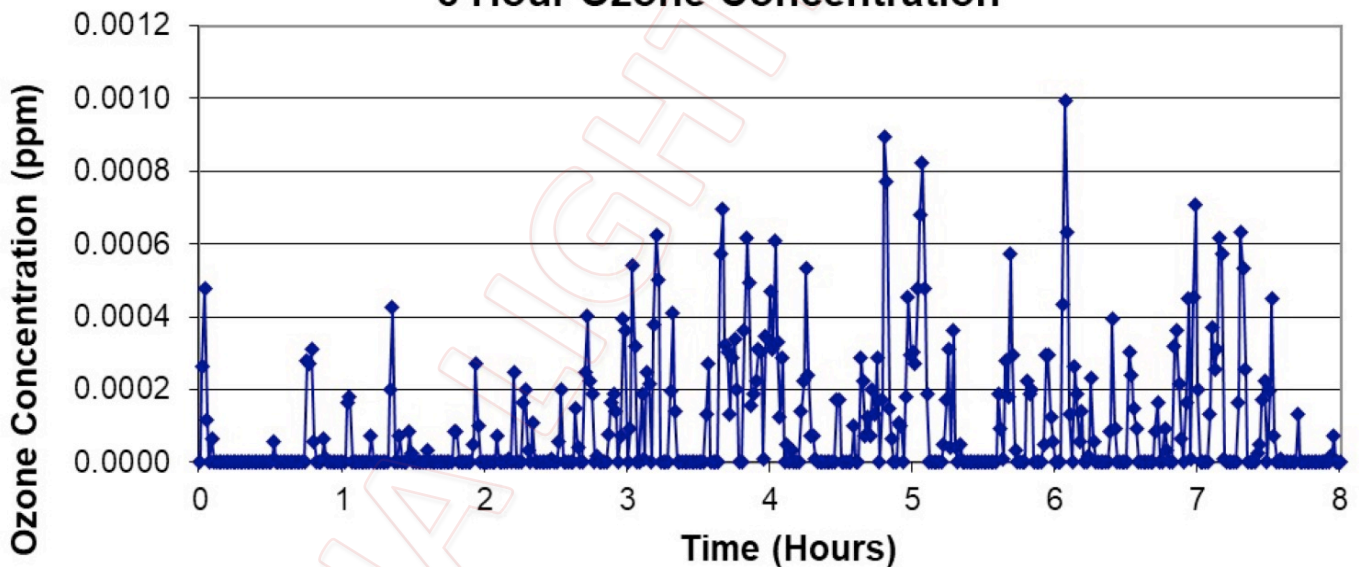
START DATE OF TEST: 9/12/2021

SAMPLE: First

FAN SPEED: On

FILTER(S): No

8 Hour Ozone Concentration



Peak 8 Hours Ozone Concentrations are below:

MODEL #	CFM	POWER	OZONE EMISSIONS C(t)max	UL 867 Limit 0.050 ppm	UL 2998 & Zero Ozone Limit 0.005 ppm
UVW-70W-UVC-120V	45 CFM	70W	0.001 PPM	PASS	PASS
UVW-110W-UVC-120V	45 CFM	110W	0.001 PPM	PASS	PASS
UVW-120W-UVC-120V	100 CFM	120W	0.000 PPM	PASS	PASS
UVW-150W-UVC-120V	100 CFM	150W	0.001 PPM	PASS	PASS

Meet UL 867 Electrostatic Air Cleaners: Max. Ozone Concentration Limit of 0.05 ppm

Meet UL 2998 Environmental Claim Validation: Max. Ozone Concentration Limit of 0.005 ppm