



FOR THE SCOPE OF  
ACCREDITATION UNDER NVLAP LAB  
CODE 100402-0.

# REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Project No. G100825289

Date: August 6, 2012

REPORT NO. 100825289CRT-001

TEST OF ONE LED WALL WASH LUMINAIRE

FIXTURE MODEL NO. LX2031-A3

RENDERED TO

LIGHTING SERVICES, INC  
2 HOLT DRIVE  
STONY POINT, NY 10980

TEST: Electrical and Photometric tests as required to the IESNA test standard.

LABORATORY NOTE: The laboratory that conducted the testing detailed in this report has been Qualified, Verified, and Recognized for LM-79 Testing for ENERGY STAR for SSL by US DOE's CALiPER program.

STATEMENT OF LIMITATION: This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

AUTHORIZATION: The testing performed was authorized by signed quote number 500390028.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79: 2008 Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products

ANSI NEMA ANSLG C78.377: 2008 Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE: The client submitted two samples of model number LX2031-A3. The samples were received by Intertek on June 26, 2012, in undamaged condition, and one sample was tested as received. The sample designation was 250772-2.

DATES OF TESTS: August 1, 2012 through August 2, 2012.

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SUMMARY

Model No.: LX2031-A3
Description: LED Wall Wash Luminaire

Criteria	Result
Total Lumen Output	220.5 Lumens
Total Power	11.22 W
Luminaire Efficacy	19.65
Power Factor	0.912
Current ATHD	31.77%
Correlated Color Temperature (CCT)	2970 K
Color Rendering Index (CRI) - Ra	96.52
Color Rendering Index (CRI) - R9	98.30
Duv	0.003
Chromaticity Coordinate (x)	0.435
Chromaticity Coordinate (y)	0.397
Chromaticity Coordinate (u')	0.253
Chromaticity Coordinate (v')	0.518

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Calibration Date	Calibration Due Date
Leeds & Northup Standard Resistor	Manganin	Y089	02/24/12	02/24/13
Data Precision Digital Voltmeter	3600	V124	02/24/12	02/24/13
Fluke Multimeter	45	M133	02/24/12	02/24/13
Kikusui DC Power Supply	35-10L	E160	---	---
NIST Spectral Flux Standard Source	RF1024	---	09/18/10	100 hours of use
Sorenson DC Power Supply	DLM150-20E	---	---	---
LSI High Speed Mirror Goniometer	6440	---	07/26/12	08/26/12
Elgar Power Supply	CW1251	---	---	---
Yokogawa Power Analyzer	WT210	E464	04/19/12	04/19/13
Extech Hygro-Thermometer	445703	T1359	10/26/11	10/26/12
Labsphere ITS 2 Meter Sphere (2M5)	w/ CDS 600	---	07/30/12	08/06/12
Fluke Temperature Meter	53 II	D588	02/23/12	02/23/13
Yokogawa Power Analyzer	WT1600	91KA25204	04/20/12	04/20/13



## TEST METHODS

### Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IESNA LM-79.

### Photometric and Electrical measurements – Distribution Method

A LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

### Photometric and Electrical Measurements – Integrating Sphere Method

A Labsphere Model CDS 1100 CCD Array Spectroradiometer and Two Meter or Ten Foot Sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation. Each SSL unit was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

The calibration of the sphere photometer-spectroradiometer system is traceable to the National Institute of Standards and Technology.

### Estimated Total Operating Time

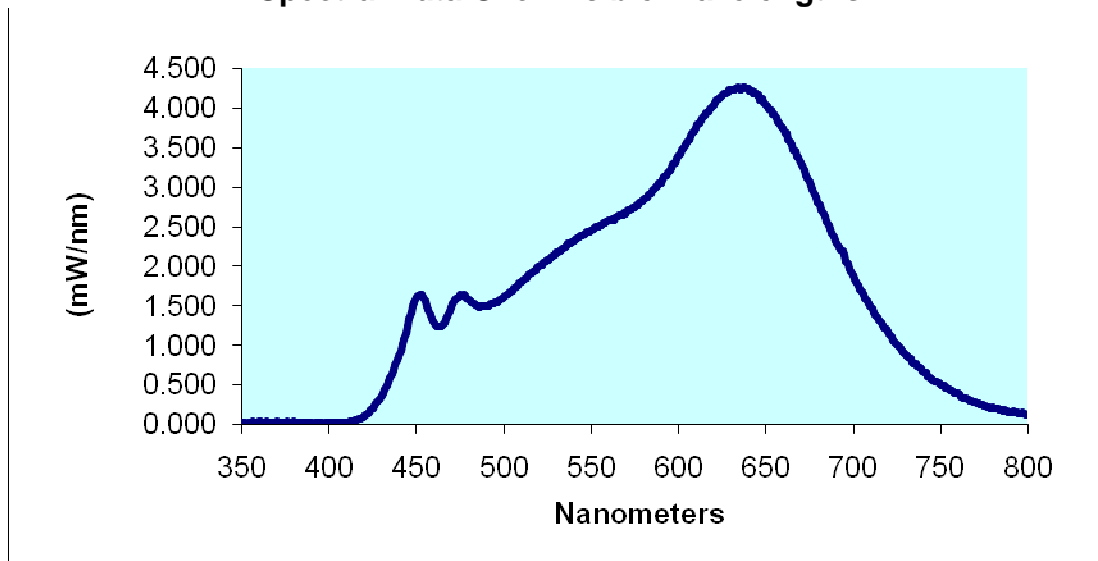
<u>Model No.</u>	<u>Total Hours</u>
LX2031-A3	3

**RESULTS OF TESTS**

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.025	460	1.295	570	2.663	680	2.805
355	0.009	465	1.256	575	2.744	685	2.561
360	0.034	470	1.477	580	2.831	690	2.324
365	0.012	475	1.635	585	2.940	695	2.138
370	0.028	480	1.579	590	3.049	700	1.872
375	0.018	485	1.499	595	3.214	705	1.677
380	0.037	490	1.498	600	3.381	710	1.485
385	0.020	495	1.537	605	3.567	715	1.317
390	0.017	500	1.602	610	3.740	720	1.162
395	0.013	505	1.691	615	3.898	725	1.010
400	0.013	510	1.796	620	4.030	730	0.876
405	0.019	515	1.888	625	4.153	735	0.758
410	0.022	520	1.987	630	4.220	740	0.667
415	0.044	525	2.074	635	4.243	745	0.577
420	0.105	530	2.164	640	4.237	750	0.498
425	0.205	535	2.239	645	4.154	755	0.432
430	0.358	540	2.309	650	4.030	760	0.391
435	0.584	545	2.388	655	3.913	765	0.000
440	0.863	550	2.449	660	3.745	770	0.275
445	1.238	555	2.516	665	3.525	775	0.233
450	1.600	560	2.571	670	3.298	780	0.206
455	1.555	565	2.620	675	3.056		

**Sample No. 250772-2**  
**Spectral Data Over Visible Wavelengths**



## RESULTS OF TESTS (cont'd)

### Photometric and Electrical Measurements at 25°C – Integrating Sphere Method

Intertek Sample No.	Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate		CIE 76' Chromaticity Coordinate	
					(x)	(y)	(u')	(v')
250772-2	2970	96.52	98.30	0.003	0.435	0.397	0.253	0.518

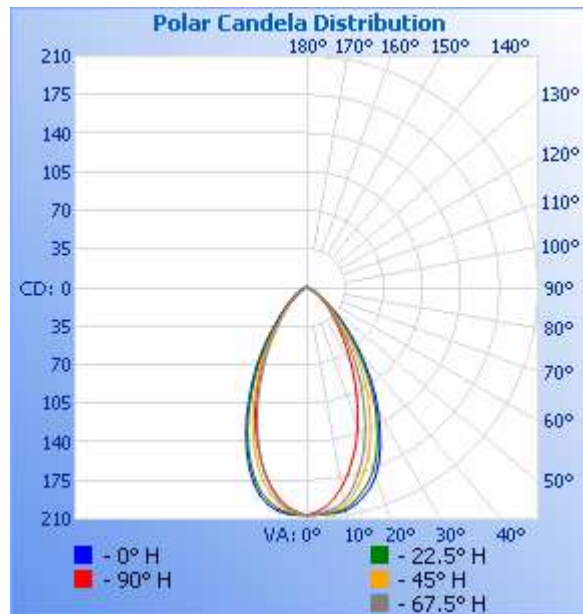
Intertek Sample No.	Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)

### Photometric and Electrical Measurements – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)

### Intensity (Candlepower) Summary at 25°C - Candelas

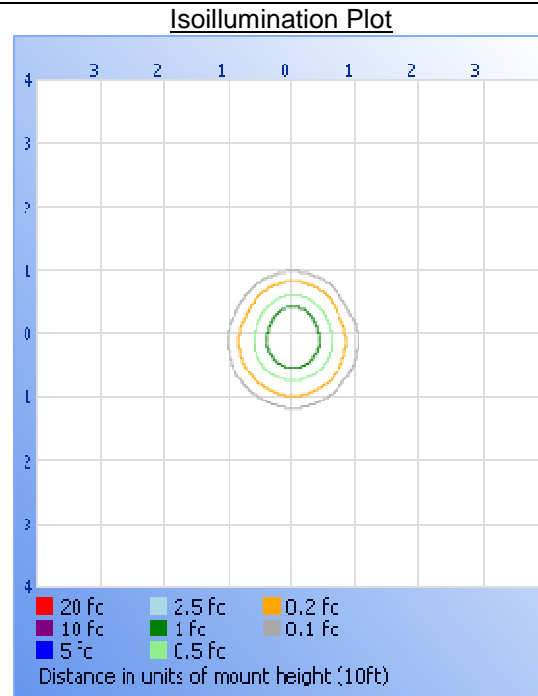
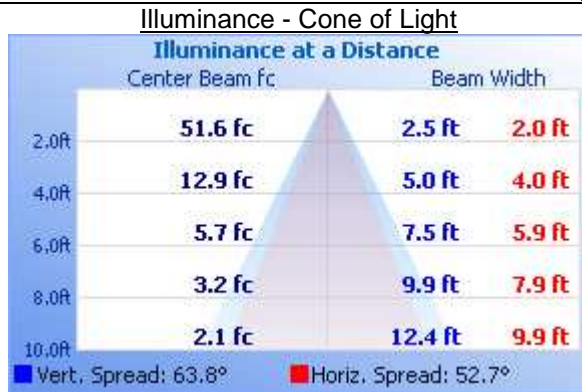
Angle	0	22.5	45	67.5	90
0	206	206	206	206	206
5	206	206	205	204	200
10	205	204	200	197	184
15	197	192	184	177	161
20	183	176	164	153	136
25	158	152	137	124	108
30	130	125	110	97	82
35	101	96	84	71	60
40	74	69	60	50	43
45	51	47	40	34	31
50	32	30	26	24	22
55	19	18	18	16	15
60	10	11	12	11	11
65	5	7	8	8	8
70	3	4	5	6	6
75	2	2	3	4	4
80	1	1	2	3	3
85	1	1	2	2	2
90	0	0	1	1	2
95	0	0	1	1	1
100	0	0	0	0	1



## RESULTS OF TESTS (cont'd)

### Illumination Plots

Mounting Height: 10 ft.



### Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	125.6	56.9
0-40	170.4	77.3
0-60	209.4	95.0
60-90	10.4	4.7
0-90	219.8	99.7
90-180	0.7	0.3
0-180	220.5	100.0

### Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	19.1	8.7
10-20	49.2	22.3
20-30	57.2	25.9
30-40	44.9	20.3
40-50	26.1	11.8
50-60	12.9	5.9
60-70	6.2	2.8
70-80	2.9	1.3
80-90	1.3	0.6
90-100	0.5	0.2
100-110	0.1	0.1

Picture (not to scale)



## CONCLUSION

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:

Handwritten signature of Joseph Schledorn in black ink.

Joseph Schledorn  
Engineer  
Lighting Division

Attachment: None

Report Reviewed By:

Handwritten signature of Jeffrey Davis in black ink.

Jeffrey Davis  
Senior Associate Engineer  
Lighting Division