



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

REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Project No. G100560144

Original Issue Date: December 20, 2011

Revision Date: February 9, 2012

REPORT NO. 100560144CRT-002

TEST OF ONE LED HIGHBAY

FIXTURE MODEL NO. LED-DF-100-CW

RENDERED TO

THE LIGHT SOURCE, INC.
3935 WESTINGTONHOUSE BLVD.
CHARLOTTE, NC 28273

Revision Note February 9, 2012: This report was revised to correct the company name.

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 500342506.

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 one sample of model number LED-DF-100-CW. The sample was received by Intertek on November 11, 2011, in undamaged condition, and one sample was tested as received. The sample designation was T238216-1.

DATES OF TESTS: December 5, 2011 through December 7, 2011.

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SUMMARY

Model No.: LED-DF-100-CW
Description: LED Highbay

Criteria	Result
Total Lumen Output	6976 Lumens
Total Power	112.8 W
Luminaire Efficacy	61.84
Power Factor	0.954
Current ATHD	9.95%
Correlated Color Temperature (CCT)	5698 K
Color Rendering Index (CRI) - Ra	74.3
Color Rendering Index (CRI) - R9	8.2
Duv	0.002
Chromaticity Coordinate (x)	0.328
Chromaticity Coordinate (y)	0.334
Chromaticity Coordinate (u')	0.207
Chromaticity Coordinate (v')	0.473

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Calibration Date	Calibration Due Date
Leeds & Northup Standard Resistor	Manganin	Y089	02/17/11	02/17/12
Data Precision Digital Voltmeter	3600	V124	02/17/11	02/17/12
Fluke Multimeter	45	M133	02/17/11	02/17/12
Fluke Temperature Meter	53 II	T1318	02/25/11	02/25/12
Kikusui DC Power Supply	35-10L	E160	---	---
Sorenson DC Power Supply	DLM150-20E	--	---	---
NIST Spectral Flux Standard Source	RF1024	---	09/18/10	100 hours of use
Elgar AC Power Supply	CW1251	--	--	--
Yokogawa Power Meter	WT210	E464	04/19/11	04/19/12
LSI High Speed Mirror Goniometer	6440	--	w/use	w/use
Cole Parmer Hygro Thermometer	445703	T1359	10/26/11	10/26/12
Yokogawa Power Analyzer	WT1600	E462	06/22/11	06/22/12
ITS 3 Meter Sphere	W/ CDS 1100	N307	w/use	w/use
EXTECH	445703	T1366	10/26/11	10/26/12



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

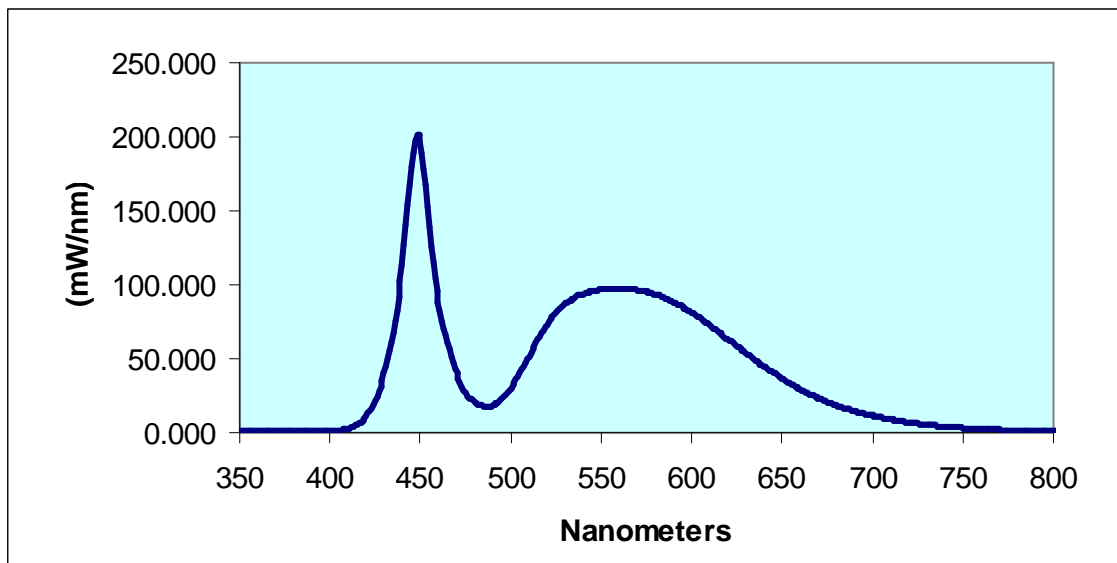
<u>Model No.</u>	<u>Total Hours</u>
LED-DF-100-CW	4

RESULTS OF TESTS

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
LED-DF-100-CW							
350	1.138	460	88.410	570	96.530	680	18.498
355	0.769	465	61.334	575	95.211	685	16.451
360	1.019	470	40.028	580	93.720	690	14.612
365	0.794	475	26.617	585	91.215	695	12.951
370	0.833	480	20.670	590	88.410	700	11.499
375	0.817	485	18.137	595	85.153	705	10.200
380	0.778	490	18.545	600	81.312	710	8.986
385	0.899	495	22.584	605	77.276	715	7.958
390	0.896	500	30.252	610	72.755	720	7.031
395	0.979	505	40.313	615	68.223	725	6.235
400	1.306	510	51.731	620	63.396	730	5.503
405	1.768	515	63.177	625	58.604	735	4.848
410	2.936	520	72.964	630	53.806	740	4.281
415	5.571	525	81.206	635	49.239	745	3.783
420	11.291	530	87.486	640	44.822	750	3.375
425	21.768	535	91.062	645	40.660	755	3.015
430	39.932	540	93.654	650	36.622	760	2.680
435	67.756	545	95.432	655	32.990	765	0.000
440	114.173	550	96.772	660	29.529	770	2.086
445	180.337	555	97.593	665	26.332	775	1.854
450	197.169	560	97.624	670	23.544	780	1.632
455	138.692	565	97.568	675	20.910		

THE LIGHT SOURCE, INC.
Sample No. T238216-1
Model No. LED-DF-100-CW
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 31' Chromaticity Coordinate	CIE 76' Chromaticity Coordinate	CIE 76' Chromaticity Coordinate
					(x)	(y)	(u')	(v')
LED-DF-100-CW								
T238216-1	5698	74.3	8.2	0.002	0.328	0.334	0.207	0.473

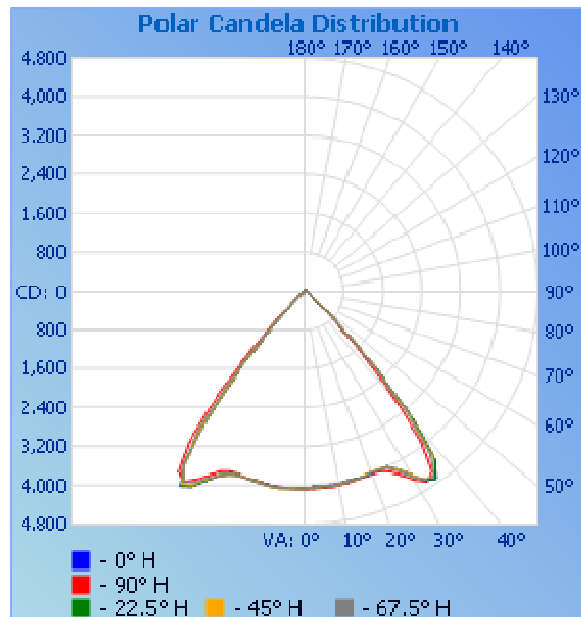
Intertek Sample No.	Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)
						LED-DF-100-CW
T238216-1	UP	208.0	572.2	113.0	0.949	9.95

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)
						LED-DF-100-CW	
T238216-1	UP	208.0	569.0	112.8	0.954	6976	61.84

Intensity (Candlepower) Summary at 25°C - Candelas

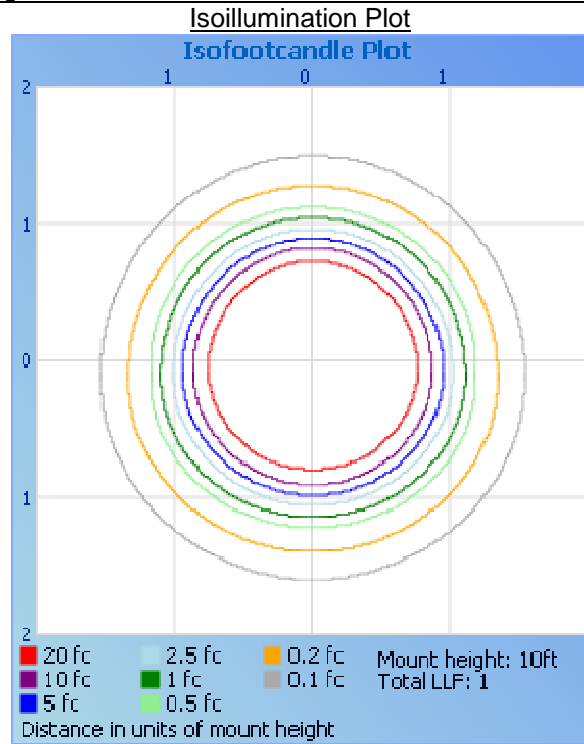
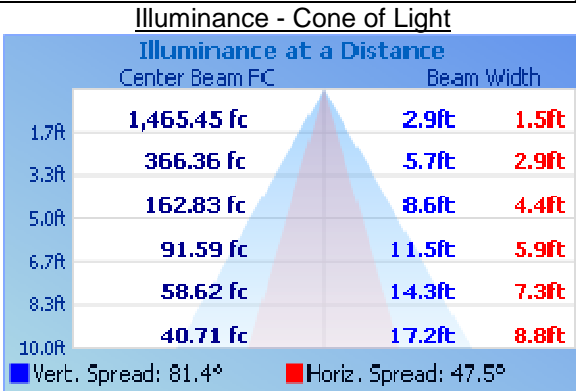
Angle	0	22.5	45	67.5	90
LED-DF-100-CW					
0	4071	4071	4071	4071	4071
5	4041	4042	4041	4040	4071
10	4043	4048	4049	4049	4066
15	3996	3996	4022	4013	4033
20	3994	3977	3966	3987	4007
25	4003	4002	4012	4021	4097
30	4381	4371	4368	4412	4494
35	4719	4716	4626	4623	4542
40	3464	3486	3363	3233	2807
45	1066	1090	1084	1044	807
50	211	219	229	221	170
55	88	90	89	86	75
60	55	56	55	53	48
65	36	36	35	34	30
70	21	20	20	19	16
75	8	7	7	7	5
80	0	0	0	0	0
85	0	0	0	0	1
90	0	0	0	0	0



RESULTS OF TESTS (cont'd)

Illumination Plots

Model No.: LED-DF-100-CW
Mounting Height: 10 ft.



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
LED-DF-100-CW		
0-30	3464	49.6
0-40	6062	86.9
0-60	6938	99.5
60-90	38.3	0.5
0-90	6976	100.0
90-180	0.0	0.0
0-180	6976	100.0

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 Joe Schledorn in black ink.

Joe Schledorn
Engineer
Lighting Division

Attachment: None

Report Reviewed By:

Handwritten signature of Jacki Swiernik in black ink.

Jacki Swiernik
Project Engineer
Lighting Division