



# REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Project No. G100113996

Date: May 21, 2010

REPORT NO. 100113996CRT-002

TEST OF ONE LED LAMP

MODEL NO. LED-8013

RENDERED TO

TADD LLC DBA LIGHTING EMITTING DESIGNS  
108 S WYNSTONE PARK DRIVE  
NORTH BARRINGTON, IL 60010

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.

AUTHORIZATION: The testing performed was authorized by signed quote number 500230542.

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-8013. The sample was received by Intertek on May 10, 2010, in undamaged condition, and one sample was tested as received. The sample designation was L5097L.

DATES OF TESTS: May 13, 2010 through May 20, 2010

SUMMARY

Model No.:	LED-8013
Description:	LED FIXTURE 85-277V 35W 72 LED DAYLIGHT WHITE

Criteria	Result
Total Lumen Output	1,891.2
Total Power	33.078W
Luminaire Efficacy	57.17
Power Factor	0.9058
Color Rendering Index (CRI)	75.62
Correlated Color Temperature (CCT)	5578K
Chromaticity Coordinate (x)	0.3306
Chromaticity Coordinate (y)	0.3291
Chromaticity Coordinate (u')	0.2103
Chromaticity Coordinate (v')	0.4710

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Calibration Date	Calibration Due Date
Elgar AC Power Supply	1001SX	---	---	---
Xitron Power Analyzer	2503H	E235	04/09/10	04/09/11
Elgar AC Power Supply	CW1251	--	--	--
Yokogawa Power Analyzer	WT1600	E462	06/02/09	06//02/10
Labsphere Diode Array	DAS 1100	N714	Before Use	Before Use
Leeds & Northup Standard Resistor	Manganin	Y089	02/10/10	02/10/11
Data Precision Digital Voltmeter	3600	V124	02/10/10	02/10/11
Fluke Multimeter	45	M133	02/10/10	02/10/11
Fluke Temperature Meter	52	T801	06/09/09	06/09/10
Kikusui DC Power Supply	35-10L	E160	---	---
Sorenson DC Power Supply	DLM150-20E	--	---	---
UDT Optometer	S370	N301	Before Use	Before Use
ITS Two Meter Diameter Integrating Sphere	---	N308	Before Use	Before Use
ITS Ten Foot Diameter Integrating Sphere	---	N307	Before Use	Before Use
NIST Luminous Flux Standard Sources	---	150-25, 8036, 3062	12/09/08	12/09/09
NIST Spectral Flux Standard Source	RF0605	---	11/29/06	100 hours of use
LSI High Speed Mirror Goniophotometer	6440	--	Before Use	Before Use
Labsphere CDS 1100 CCD Spectroradiometer	CDS1100	--	Before Use	Before Use
Optronics Spectroradiometer	EL750D	E288	Before Use	Before Use



## 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 DAS 1100 Diode 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.

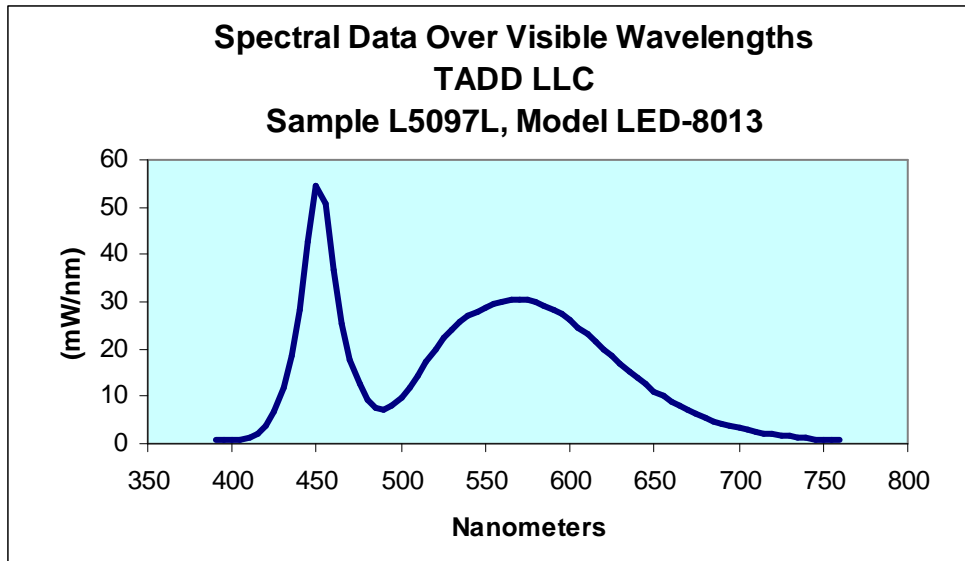
### Estimated Total Operating Time

<u>Model No.</u>	<u>Total Hours</u>
LED-8013	3

**TEST METHODS** (cont'd)

**Spectral Distribution over Visible Wavelengths**

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
Model No. LED-8013							
390	0.7009	500	9.6009	610	23.2360	720	1.9852
395	0.8217	505	11.8640	615	21.6530	725	1.7491
400	0.7828	510	14.5140	620	20.0130	730	1.5124
405	0.9614	515	17.3130	625	18.3820	735	1.3443
410	1.3450	520	19.8580	630	16.7870	740	1.1818
415	2.1751	525	22.1870	635	15.2750	745	1.0447
420	3.8395	530	24.0770	640	13.8490	750	0.9247
425	6.8361	535	25.6040	645	12.4700	755	0.8066
430	11.6440	540	26.8340	650	11.1530	760	0.7320
435	18.4450	545	27.9160	655	10.0030		
440	28.4120	550	28.8000	660	8.9288		
445	42.6660	555	29.5130	665	7.9572		
450	54.3450	560	30.0440	670	7.0313		
455	50.8740	565	30.3870	675	6.2143		
460	36.7370	570	30.4740	680	5.5215		
465	25.3550	575	30.3180	685	4.8541		
470	17.9480	580	29.8960	690	4.2793		
475	12.5810	585	29.2810	695	3.7546		
480	9.3390	590	28.3910	700	3.3317		
485	7.8040	595	27.3260	705	2.9102		
490	7.3552	600	26.0930	710	2.5773		
495	7.9743	605	24.7060	715	2.2213		



## RESULTS OF TESTS (cont'd)

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

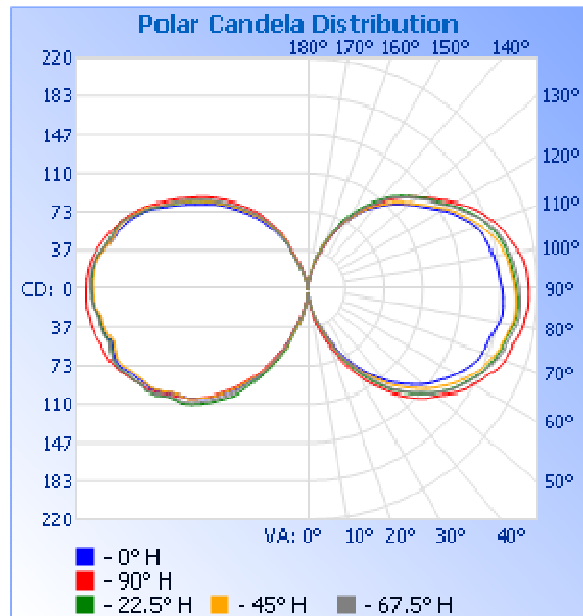
Intertek Sample No.	Correlated Color Temperature (K)	CRI	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
Model No. LED-8013						
L5097L	5578	75.62	0.3306	0.3291	0.2103	0.4710

### 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)
Model No. LED-8013							
L5097L	UP	120.0	304.78	33.078	0.9058	1,891.2	57.17

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

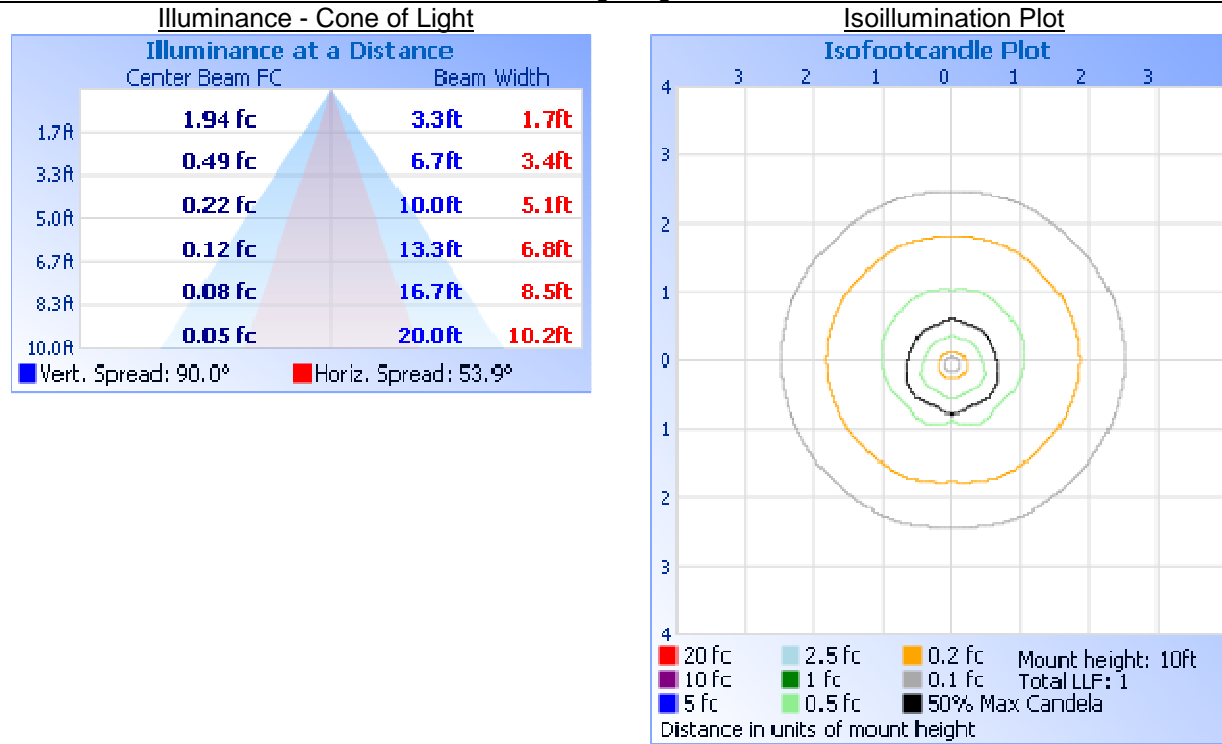
Angle	0	22.5	45	67.5	90
Model No. LED-8013					
0	5	5	5	5	5
5	6	6	7	7	9
10	13	14	14	15	19
15	26	27	27	27	35
20	41	44	43	44	53
25	58	64	63	63	72
30	79	86	83	83	94
35	96	107	100	104	112
40	112	125	117	123	130
45	128	140	133	139	147
50	142	155	148	154	159
55	153	166	161	167	172
60	162	176	172	177	182
65	172	185	182	186	192
70	178	191	189	193	200
75	180	194	193	197	203
80	185	199	198	202	208
85	187	201	199	203	211
90	185	199	198	202	211
95	182	197	195	200	209
100	180	194	191	196	204
105	177	189	185	191	197
110	172	182	176	183	189
115	161	172	164	170	178
120	149	160	152	158	164
125	136	147	139	146	150
130	125	136	128	134	136
135	114	125	117	123	122
140	102	111	104	109	107
145	89	97	91	94	92
150	75	81	75	77	75
155	59	63	60	59	57
160	43	45	43	40	38
165	26	27	27	23	21
170	13	13	13	10	8



## RESULTS OF TESTS (cont'd)

### Illumination Plots

Model No.: LED-8013  
Mounting Height: 10 ft.



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

Zone	Lumens	% Luminaire
Model No. LED-8013		
0-30	45.0	2.4
0-40	114.9	6.1
0-60	377.0	19.9
60-90	611.7	32.3
0-90	988.8	52.3
90-180	902.5	47.7
0-180	1,891.2	100.0

Pictures (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:

Jeffrey Davis  
Associate Engineer  
Lighting Division

Attachment: None

Report Reviewed By:

Jacki Swiernik  
Project Engineer  
Lighting Division