REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Project No. G100233515 Date: November 16, 2010

REPORT NO. 100233515CRT-002

TEST OF LED FIXTURE

FIXTURE MODEL NO. SUN3-RD-SC-SA

RENDERED TO

EDGE LIGHTING
1718 W FULLERTON AVENUE
CHICAGO, IL 60614

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 500260430.

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 SUN3-RD-SC-SA. The sample was received by Intertek on September 29, 2010, in undamaged condition, and one sample was tested as received. The sample designation was E7438L.

DATES OF TESTS: November 9, 2010 through November 11, 2010.

SUMMARY

Model No.:	SUN3-RD-SC-SA
Description:	LED Fixture

Criteria	Result
Total Lumen Output	280.5 Lumens
Total Power	6.576 W
Luminaire Efficacy	42.66
Power Factor	0.824
Current ATHD	80.8 %
Correlated Color Temperature (CCT)	2968 K
Color Rendering Index (CRI)	80.3
Chromaticity Coordinate (x)	0.440
Chromaticity Coordinate (y)	0.407
Chromaticity Coordinate (u')	0.252
Chromaticity Coordinate (v')	0.523

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Calibration Date	Calibration Due Date
Xitron Power Analyzer	2503H	E235	04/09/10	04/09/11
Elgar AC Power Supply	CW1251	--	--	--
Yokogawa Power Analyzer	WT1600	E462	06/11/10	06/11/11
Labsphere Diode Array	DAS 1100	N714	Before Use	Before Use
Yokogawa Power Analyzer	WT210	E464	04/19/10	04/19/11
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	06/11/10	06/11/11
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	---	150-14, 8043, 8830	03/17/10	03/17/11
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

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

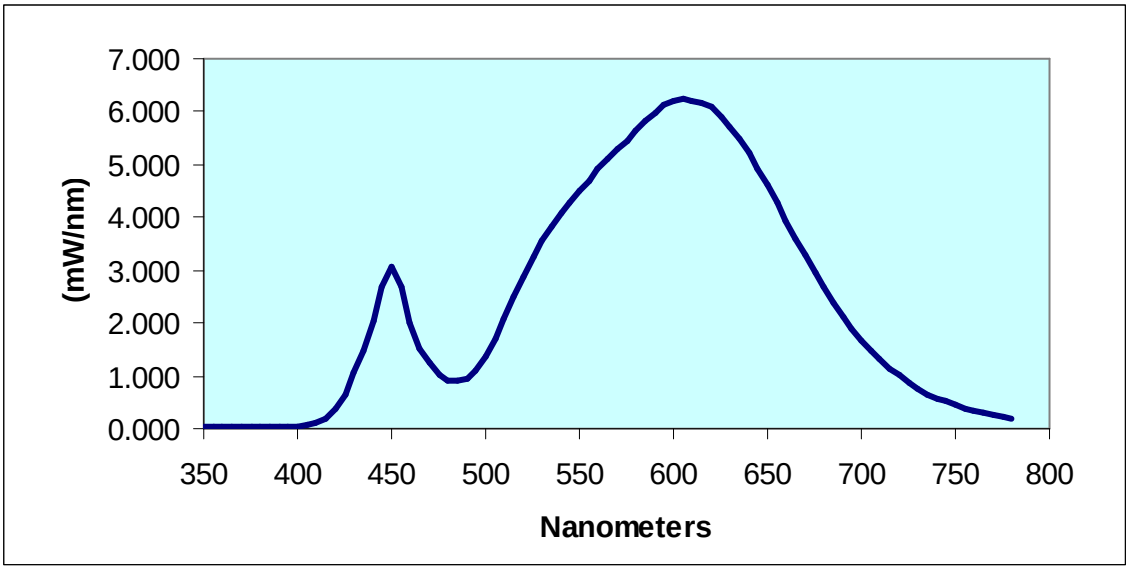
Model No.	Total Hours
SUN3-RD-SC-SA	3

RESULTS OF TESTS

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
SUN3-RD-SC-SA							
350	0.047	460	1.992	570	5.295	680	2.672
355	0.044	465	1.523	575	5.461	685	2.392
360	0.024	470	1.233	580	5.635	690	2.131
365	0.031	475	1.027	585	5.824	695	1.895
370	0.052	480	0.911	590	5.984	700	1.681
375	0.036	485	0.895	595	6.118	705	1.479
380	0.027	490	0.940	600	6.202	710	1.307
385	0.028	495	1.093	605	6.250	715	1.147
390	0.044	500	1.356	610	6.212	720	1.004
395	0.036	505	1.700	615	6.174	725	0.874
400	0.047	510	2.089	620	6.091	730	0.760
405	0.064	515	2.499	625	5.917	735	0.661
410	0.103	520	2.895	630	5.720	740	0.581
415	0.191	525	3.254	635	5.469	745	0.513
420	0.361	530	3.563	640	5.210	750	0.442
425	0.648	535	3.838	645	4.923	755	0.385
430	1.042	540	4.071	650	4.613	760	0.337
435	1.491	545	4.285	655	4.280	765	0.295
440	2.025	550	4.516	660	3.928	770	0.254
445	2.704	555	4.701	665	3.594	775	0.222
450	3.061	560	4.916	670	3.275	780	0.195
455	2.686	565	5.095	675	2.954		

EDGE LIGHTING
Sample No. E7438L
Model No. SUN3-RD-SC-SA
Spectral Data Over Visible Wavelengths



RESULTS OF TESTS (cont'd)

Photometric Measurements at 25℃ – Integrating Sphe re Method

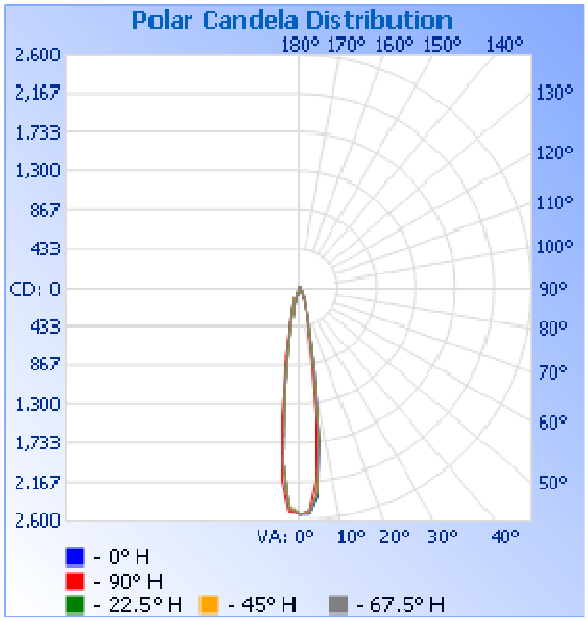
Intertek Sample No.	Current ATHD (%)	Correlated Color Temperature (K)	CRI	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
			SUN3-RD-SC-SA				
E7438L	80.8	2968	80.8	0.440	0.407	0.252	0.523

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)
			SUN3-RD-SC-SA				
E7438L	UP	12.00	665.1	6.576	0.824	280.5	42.66

Intensity (Candlepower) Summary at 25℃ - Candelas

Angle	0	22.5	45	67.5	90
			SUN3-RD-SC-SA		
0	2537	2537	2537	2537	2537
5	2343	2323	2300	2284	2161
10	978	960	947	928	781
15	337	332	321	316	286
20	167	179	184	158	130
25	65	83	95	66	41
30	21	28	33	22	16
35	10	11	11	10	7
40	4	5	5	4	3
45	2	2	2	1	1
50	0	0	0	0	0
55	0	0	0	0	0
60	0	0	0	0	0
65	0	0	0	0	0
70	0	0	0	0	0
75	0	0	0	0	0
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

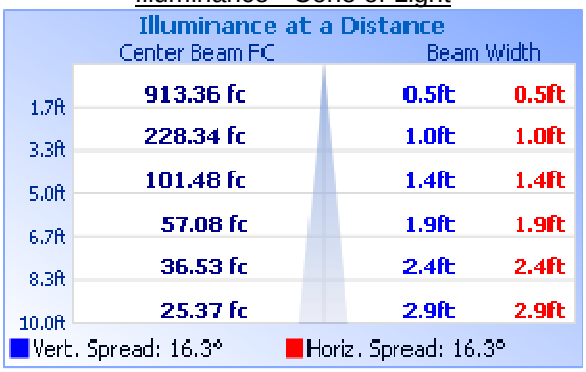


RESULTS OF TESTS (cont'd)

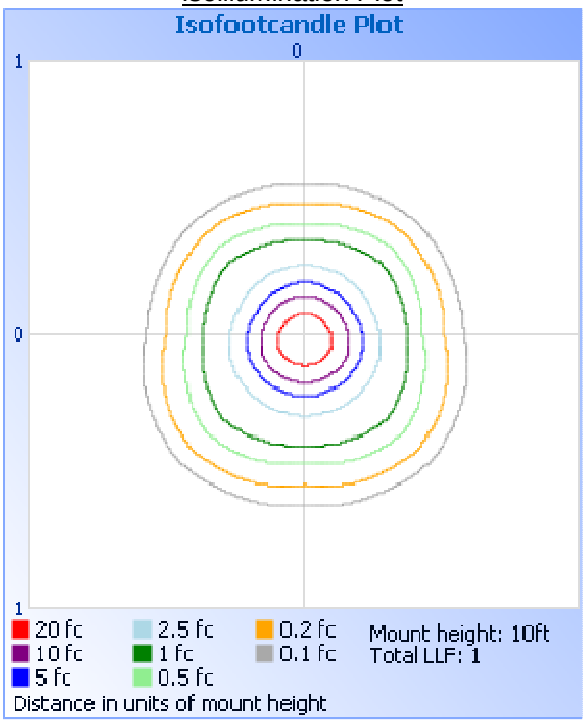
Illumination Plots

Model No.: SUN3-RD-SC-SA
Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25℃

Zone	Lumens	% Luminaire
	SUN3-RD-SC-SA	
0-30	273.9	97.7
0-40	279.6	99.7
0-60	280.5	100.0
60-90	0.0	0.0
0-90	280.5	100.0
90-180	0.0	0.0
0-180	280.5	100.0

Reflector Summary

	Efficiency (%)	Lumens	Horizontal Spread (°)	Vertical Spread (°)
		SUN3-RD-SC-SA		
Field (10%):	78.1	219.1	31.9	31.8
Beam (50%):	45.0	126.3	16.3	16.3
Total:	100.3	281.3		

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:

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Report Reviewed By:

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Attachment: None