REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Project No. G100233915 Date: November 16, 2010

REPORT NO. 100233915CRT-001

TEST OF LED FIXTURE

FIXTURE MODEL NO. PUCK-RD-3W-90D-30K-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 500261117.

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 PUCK-RD-3W-90D-30K-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 E7436L.

DATES OF TESTS: November 11, 2010.

SUMMARY

Model No.:	PUCK-RD-3W-90D-30K-SA
Description:	LED Fixture

Criteria	Result
Total Lumen Output	137.7 Lumens
Total Power	3.491 W
Luminaire Efficacy	39.44
Power Factor	0.480
Current ATHD	164.0 %
Correlated Color Temperature (CCT)	3070 K
Color Rendering Index (CRI)	84.1
Chromaticity Coordinate (x)	0.433
Chromaticity Coordinate (y)	0.404
Chromaticity Coordinate (u')	0.248
Chromaticity Coordinate (v')	0.521

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

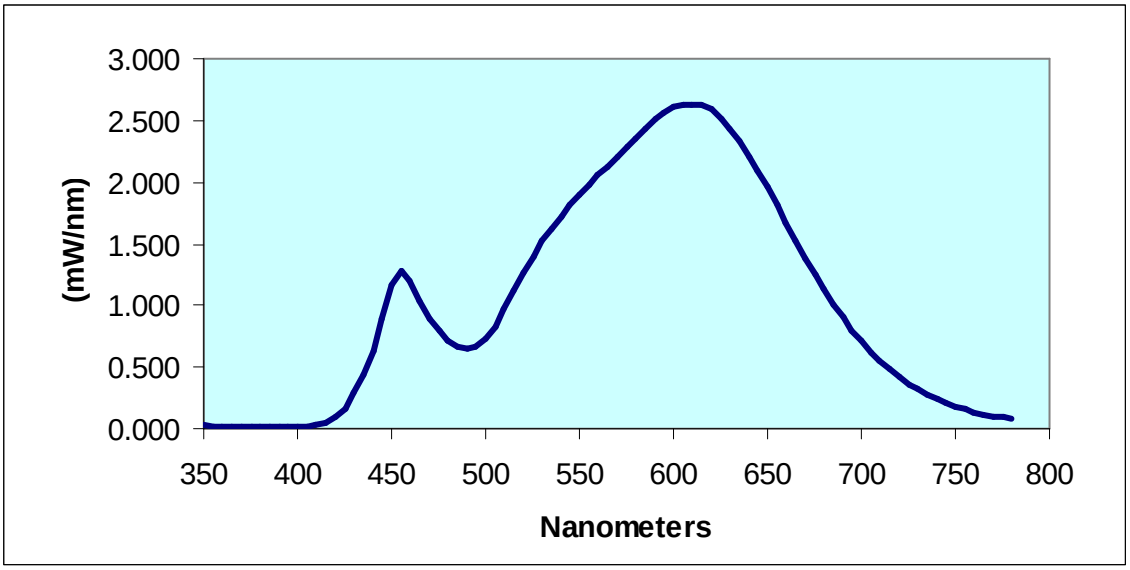
Model No.	Total Hours
PUCK-RD-3W-90D-30K-SA	3

RESULTS OF TESTS

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
PUCK-RD-3W-90D-30K-SA							
350	0.031	460	1.195	570	2.206	680	1.130
355	0.018	465	1.032	575	2.280	685	1.010
360	0.015	470	0.895	580	2.352	690	0.900
365	0.020	475	0.801	585	2.439	695	0.797
370	0.014	480	0.719	590	2.509	700	0.706
375	0.020	485	0.672	595	2.561	705	0.622
380	0.016	490	0.643	600	2.604	710	0.546
385	0.012	495	0.660	605	2.625	715	0.480
390	0.012	500	0.722	610	2.629	720	0.420
395	0.014	505	0.828	615	2.620	725	0.365
400	0.014	510	0.966	620	2.587	730	0.318
405	0.020	515	1.112	625	2.517	735	0.275
410	0.025	520	1.261	630	2.438	740	0.240
415	0.047	525	1.398	635	2.328	745	0.209
420	0.091	530	1.520	640	2.213	750	0.182
425	0.168	535	1.627	645	2.091	755	0.158
430	0.287	540	1.721	650	1.957	760	0.137
435	0.440	545	1.811	655	1.812	765	0.118
440	0.625	550	1.899	660	1.669	770	0.102
445	0.896	555	1.975	665	1.526	775	0.090
450	1.168	560	2.059	670	1.384	780	0.078
455	1.285	565	2.129	675	1.250		

EDGE LIGHTING
Sample No. E7436L
Model No. PUCK-RD-3W-90D-30K-SA
Spectral Data Over Visible Wavelengths



RESULTS OF TESTS (cont'd)

Photometric Measurements at 25℃ – Integrating Sphe re Method

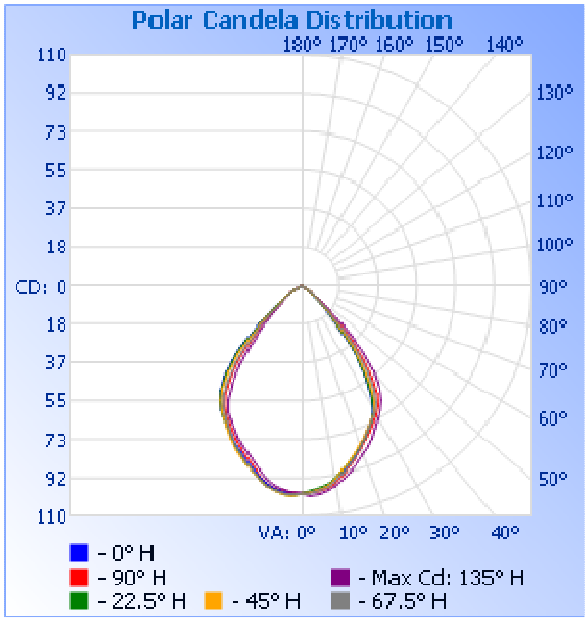
Intertek Sample No.	Current ATHD (%)	Correlated Color Temperature (K)	CRI	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
PUCK-RD-3W-90D-30K-SA							
E7436L	164.0	3070	84.1	0.433	0.404	0.248	0.521

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)
PUCK-RD-3W-90D-30K-SA							
E7436L	UP	120.0	60.55	3.491	0.480	137.7	39.44

Intensity (Candlepower) Summary at 25℃ - Candelas

Angle	0	22.5	45	67.5	90
PUCK-RD-3W-90D-30K-SA					
0	99	99	99	99	99
5	97	97	98	98	98
10	94	93	94	95	95
15	88	87	87	88	89
20	82	82	81	82	83
25	75	75	75	75	77
30	69	69	70	70	71
35	54	54	57	60	63
40	35	35	38	42	46
45	18	19	21	24	27
50	9	9	9	10	11
55	7	7	7	7	7
60	5	5	5	5	5
65	3	3	3	3	2
70	0	0	0	1	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

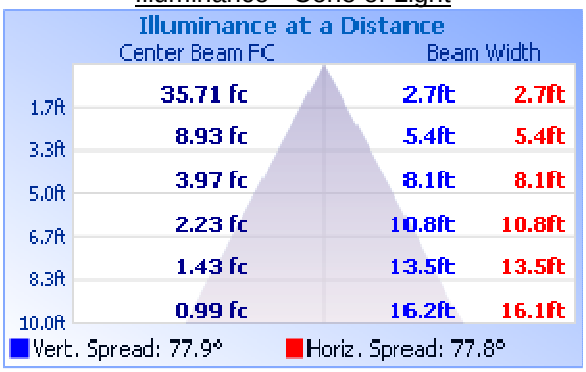


RESULTS OF TESTS (cont'd)

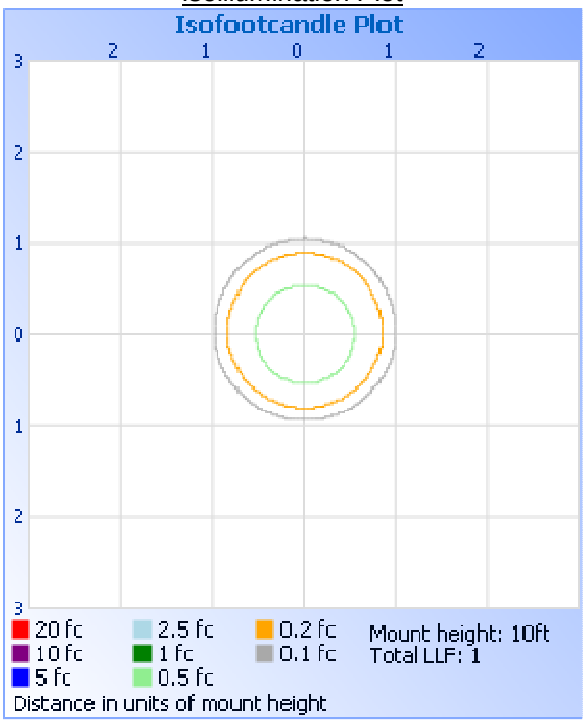
Illumination Plots

Model No.: PUCK-RD-3W-90D-30K-SA
Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25℃

Zone	Lumens	% Luminaire
PUCK-RD-3W-90D-30K-SA		
0-30	69.9	50.8
0-40	107.6	78.1
0-60	135.1	98.1
60-90	2.6	1.9
0-90	137.7	100.0
90-180	0.0	0.0
0-180	137.7	100.0

Reflector Summary

	Efficiency (%)	Lumens	Horizontal Spread (°)	Vertical Spread (°)
PUCK-RD-3W-90D-30K-SA				
Field (10%):	93.9	129.4	101.2	101.2
Beam (50%):	75.8	104.4	77.8	77.9
Total:	100	137.7		

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