



REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G101918458

Date: September 1, 2015

REPORT NO. 101918458LAX-089

TEST OF ONE LED PENDENT

MODEL NO. PENDENT CW

RENDERED TO

ELATION LIGHTING
6122 S. EASTERN AVE
COMMERCE CA 90040

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

STATEMENT OF LIMITATION: This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the federal government.

AUTHORIZATION: The testing performed was authorized by signed quote number Q500519256.

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: Electrical and Photometric Measurements of Solid State Lighting

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number PENDENT CW. The sample was received by Intertek on August 24, 2015, in undamaged condition and one sample was tested as received. The sample designation was LAN1508241330-001.

DATES OF TESTS: August 31, 2015

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

SUMMARY

Model No.:	PENDENT CW
Description:	LED PENDENT

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	2741	2819
Total Power (W)	63.37	63.17
Luminaire Efficacy (LPW)	43.25	44.63

Criteria	Result
Power Factor	0.942
Current ATHD %	31.43
Correlated Color Temperature (CCT - K)	7116
Color Rendering Index (CRI - Ra)	86.1
Color Rendering Index (CRI - R9)	24.1
DUV	0.001
Chromaticity Coordinate (x)	0.304
Chromaticity Coordinate (y)	0.316
Chromaticity Coordinate (u')	0.197
Chromaticity Coordinate (v')	0.460

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
LapSphere 3M Integrating Sphere	CA-11821-LRT	000830	08/28/15	09/28/15
LabSphere Spectrometer	CDS-3020	000834	08/28/15	09/28/15
California Instruments Power Supply	CSW5550	001339	VBU	VBU
Yokogawa Power Meter	WT333	001320	06/03/15	06/03/16
Extech Instruments Stop Watch	365510	001390	12/08/14	12/08/15
Temp & HR Meter	971	001178	12/22/14	12/22/15
DC Power Supply	LPS-100-0833	000836	05/07/25	05/07/16
LSI High Speed Mirror Goniometer	6440T	943	08/28/15	09/28/15
Elgar Power Supply	CW1251	944	VBU	VBU
Yokogawa Power Analyzer	WT210	945	11/26/14	11/26/15
Temp. & RH Meter	971	1178	12/22/14	12/22/15
Extech Instruments Stop Watch	N/A	1390	12/08/14	12/08/15
Tape Measure	33-428	684	12/08/14	12/08/15

TEST METHODS

Seasoning in Sample Orientation – LED Products

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

Photometric and Electrical Measurements – Integrating Sphere Method

A Labsphere CDS 3020 Spectrometer and Three Meter 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 Yokogawa Power Analyzer.

The calibration of the sphere spectrometer system is traceable to the National Institute of Standards and Technology.

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 Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

RESULTS OF TEST

Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

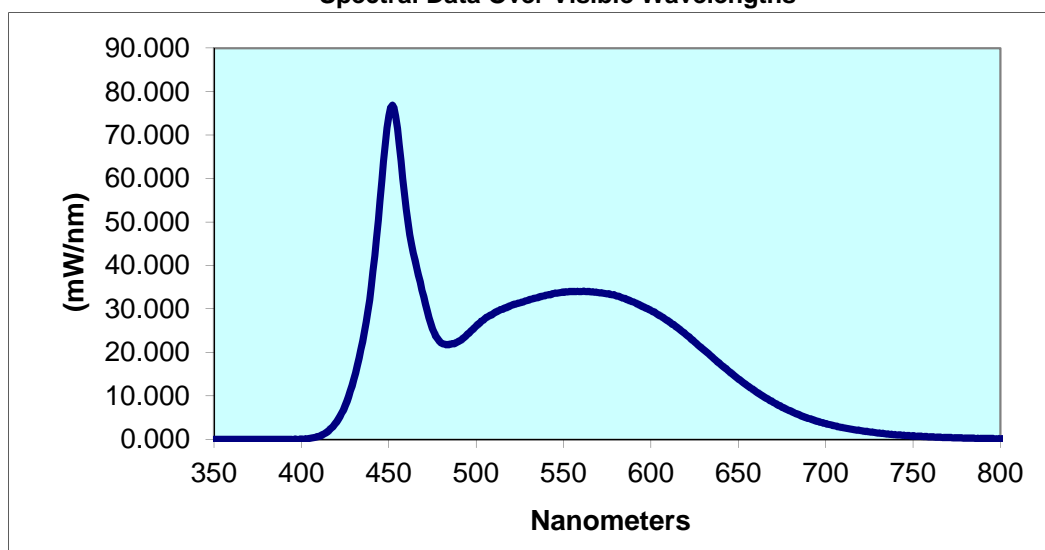
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1508241330-001	UP	120.0	560.1	63.37	0.942	31.43	2741	43.25

Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
7116	86.1	24.1	0.001	0.304	0.316	0.197	0.460

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.002	440	35.290	530	32.110	620	24.140	710	2.731
355	0.002	445	54.850	535	32.650	625	22.480	715	2.359
360	0.002	450	74.490	540	33.180	630	20.720	720	2.042
365	0.002	455	71.500	545	33.620	635	18.970	725	1.765
370	0.002	460	52.990	550	33.830	640	17.260	730	1.505
375	0.002	465	41.170	555	34.000	645	15.540	735	1.283
380	0.002	470	32.800	560	34.050	650	13.940	740	1.106
385	0.002	475	25.450	565	34.000	655	12.450	745	0.941
390	0.002	480	22.270	570	33.820	660	11.070	750	0.812
395	0.013	485	21.960	575	33.500	665	9.746	755	0.701
400	0.077	490	22.630	580	33.080	670	8.565	760	0.595
405	0.264	495	24.210	585	32.490	675	7.471	765	0.514
410	0.772	500	26.110	590	31.620	680	6.523	770	0.440
415	1.861	505	27.790	595	30.620	685	5.654	775	0.373
420	3.960	510	29.000	600	29.660	690	4.879	780	0.321
425	7.765	515	29.960	605	28.530	695	4.214		
430	13.750	520	30.840	610	27.210	700	3.649		
435	22.560	525	31.410	615	25.790	705	3.141		

Spectral Data Over Visible Wavelengths



RESULTS OF TEST (cont'd)

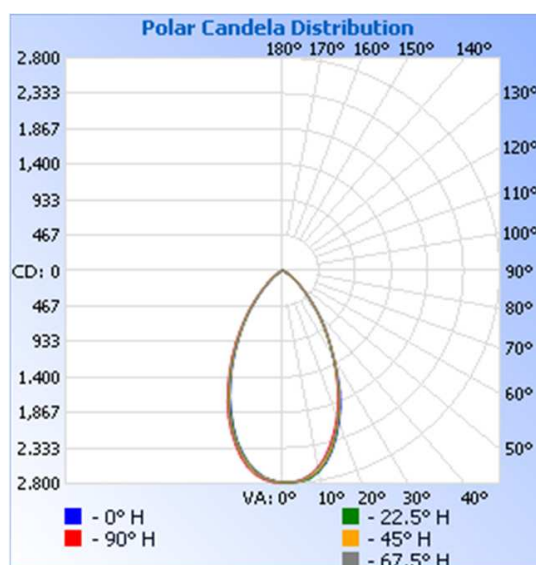
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

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)
LAN1508241330-001	UP	120.0	559.8	63.17	0.942	2819	44.63

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value: 2,787.8

Angle	0	22.5	45	67.5	90
0	2787	2787	2787	2787	2787
5	2781	2777	2774	2763	2759
10	2682	2680	2659	2630	2622
15	2451	2440	2421	2396	2367
20	2123	2101	2091	2074	2045
25	1746	1710	1709	1705	1672
30	1299	1309	1321	1315	1306
35	983	967	966	966	957
40	688	674	670	670	669
45	436	435	433	425	426
50	274	261	263	264	256
55	154	146	151	152	146
60	78	79	82	84	83
65	48	48	50	51	50
70	35	33	34	35	35
75	23	21	22	22	22
80	12	11	12	12	12
85	4	4	3	4	3
90	0	0	0	0	0

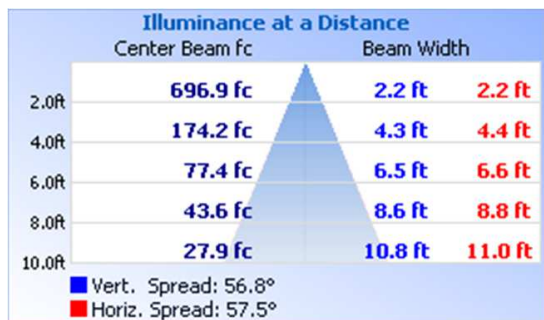


RESULTS OF TEST (cont'd)

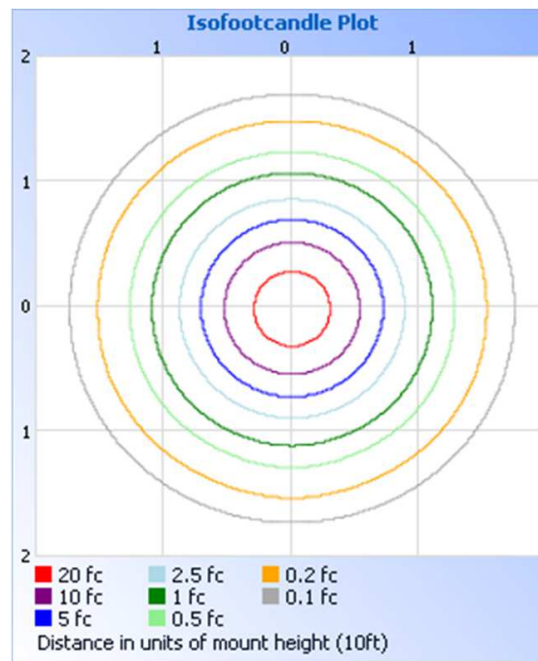
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1679	59.6
0-40	2272	80.6
0-60	2739	97.1
60-90	80.4	2.9
0-90	2819	100.0
90-180	0.0	0.0
0-180	2819	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	258.5	9.2
10-20	658.9	23.4
20-30	761.6	27.0
30-40	593.5	21.1
40-50	330.8	11.7
50-60	135.4	4.8
60-70	51.5	1.8
70-80	23.9	0.8
80-90	5.0	0.2

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:



Ameet Alawi
Technician
Lighting Division

Attachment: None

Report Reviewed By:



Kenda Branch
Lighting Performance Team Lead
Lighting Division