

REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G101918458

Date: September 1, 2015

REPORT NO. 101918458LAX-090

TEST OF ONE LED PENDENT

MODEL NO. PENDENT WW

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 WW. 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



SUMMARY

Model No.: PENDENT WW
Description: LED PENDENT

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	2205	2276
Total Power (W)	67.03	66.90
Luminaire Efficacy (LPW)	32.9	34.02

Criteria	Result
Power Factor	0.943
Current ATHD %	31.53
Correlated Color Temperature (CCT - K)	2915
Color Rendering Index (CRI - Ra)	81.0
Color Rendering Index (CRI - R9)	1.3
DUV	0.000
Chromaticity Coordinate (x)	0.443
Chromaticity Coordinate (y)	0.406
Chromaticity Coordinate (u')	0.254
Chromaticity Coordinate (v')	0.523

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

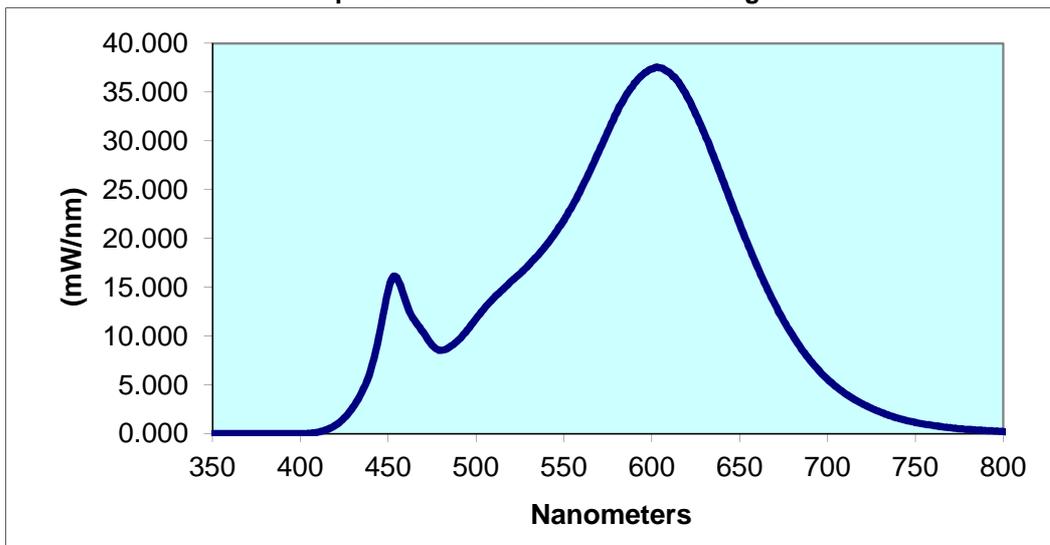
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1508241330-001	UP	120.0	592.3	67.03	0.943	31.53	2205	32.9

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')
2915	81.0	1.3	0.000	0.443	0.406	0.254	0.523

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.001	440	6.484	530	17.320	620	34.560	710	4.123
355	0.001	445	10.140	535	18.250	625	32.780	715	3.549
360	0.001	450	14.690	540	19.340	630	30.730	720	3.050
365	0.001	455	16.000	545	20.540	635	28.500	725	2.612
370	0.001	460	13.570	550	21.880	640	26.160	730	2.214
375	0.001	465	11.610	555	23.440	645	23.760	735	1.869
380	0.001	470	10.380	560	25.120	650	21.460	740	1.608
385	0.001	475	9.057	565	27.020	655	19.240	745	1.332
390	0.001	480	8.531	570	28.990	660	17.130	750	1.151
395	0.001	485	8.902	575	30.970	665	15.120	755	0.992
400	0.001	490	9.631	580	32.910	670	13.290	760	0.847
405	0.041	495	10.640	585	34.630	675	11.580	765	0.720
410	0.175	500	11.810	590	35.930	680	10.100	770	0.607
415	0.414	505	12.930	595	36.810	685	8.711	775	0.503
420	0.874	510	13.870	600	37.380	690	7.525	780	0.433
425	1.621	515	14.750	605	37.490	695	6.471		
430	2.725	520	15.630	610	37.030	700	5.575		
435	4.258	525	16.390	615	36.080	705	4.801		

Spectral Data Over Visible Wavelengths



RESULTS OF TEST (cont'd)

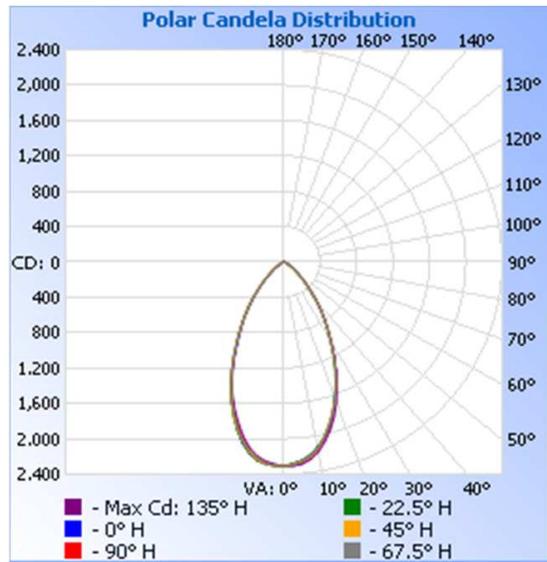
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

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	591.2	66.90	0.943	2276	34.02

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value: 2,307.4

Angle	0	22.5	45	67.5	90
0	2306	2306	2306	2306	2306
5	2251	2255	2261	2270	2283
10	2125	2127	2140	2140	2156
15	1926	1904	1910	1916	1934
20	1636	1629	1645	1649	1652
25	1344	1324	1333	1340	1349
30	1017	1021	1022	1026	1039
35	775	756	759	761	768
40	524	520	518	525	537
45	333	323	328	336	342
50	201	190	195	200	203
55	112	107	110	113	114
60	60	60	62	64	65
65	37	37	38	39	40
70	26	27	26	29	29
75	17	17	17	18	18
80	9	9	9	9	10
85	3	2	3	3	3
90	0	0	1	0	0

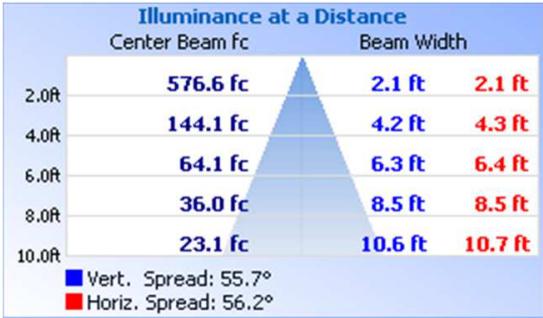


RESULTS OF TEST (cont'd)

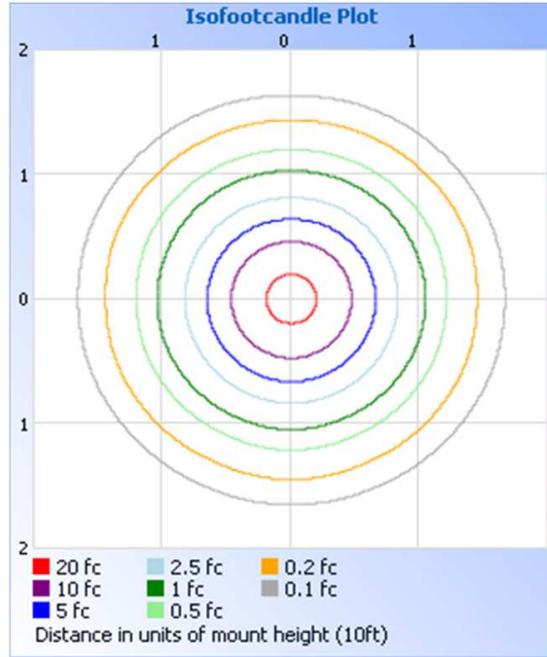
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1365	60.0
0-40	1840	80.9
0-60	2211	97.2
60-90	64.2	2.8
0-90	2275	100.0
90-180	0.0	0.0
0-180	2276	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	213.4	9.4
10-20	538.4	23.7
20-30	613.5	27.0
30-40	474.9	20.9
40-50	264.0	11.6
50-60	106.9	4.7
60-70	41.0	1.8
70-80	19.2	0.8
80-90	4.0	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