



REPORT

25800 COMMERCE DRIVE, LAKE FOREST, CA 92630

Project No. G103315037

Date: November 29, 2017

REPORT NO. 103315037LAX-003

TEST OF ONE LED DIRECT/INDIRECT LUMINAIRE

MODEL NO. P4030-LED35-LO-FWA -D9
LED MODEL NO. NICHIA NFSL757D
DRIVER MODEL NO. OSRAM 79399

RENDERED TO

PRUDENTIAL LTG
1774 EAST 21ST STREET
LOS ANGELES, CA 90058-1008

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

AUTHORIZATION: The testing performed was authorized by signed quote number Qu-00710638-6.

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

ANSI NEMA ANSLG C78.377: 2012: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number P4030-LED35-LO-FWA -D9. The sample was received by Intertek on November 21, 2017, in undamaged condition and one sample was tested as received. The sample designation was LAN1711211050-003.

DATES OF TESTS: November 22, 2017 through November 27, 2017.

SUMMARY

Model No.:	P4030-LED35-LO-FWA -D9
Description:	LED direct/indirect luminaire

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	5574	5383
Total Power (W)	59.59	58.91
Luminaire Efficacy (LPW)	93.54	91.38

Criteria	Result
Power Factor	0.997
Current ATHD %	7.20
Correlated Color Temperature (CCT - K)	3401
Color Rendering Index (CRI - Ra)	81.4
Color Rendering Index (CRI - R9)	8.6
DUV	0.000
Chromaticity Coordinate (x)	0.412
Chromaticity Coordinate (y)	0.395
Chromaticity Coordinate (u')	0.238
Chromaticity Coordinate (v')	0.514

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Goniophotometer	6440T	000943	10/30/17	11/30/17	11/27/17
AC Source	CW1251P	000944	VBV	VBV	11/27/17
Power Analyzer	WT210	000945	11/10/17	11/10/18	11/27/17
Tape Measure	33-428	001491	01/06/17	01/06/18	11/27/17
Magnetic Level	581-9	001610	10/10/17	10/10/18	11/27/17
Temp. & RH Meter	971	001178	12/22/16	12/22/17	11/27/17
3m Sphere	CSTM-LMS-3M-3020	000830	10/27/17	11/27/17	11/22/17
Spectrometer	CDS-3020-T	000834	10/27/17	11/27/17	11/22/17
Power Supply (AC 3P / DC)	CSW5550-208-LAN	001339	VBV	VBV	11/22/17
Power Meter	WT333-D-C1/EX2/G5	001321	06/23/17	06/23/18	11/22/17
DC Power Supply	LPS-100-0833	000832	12/12/16	12/12/17	11/22/17
Network TC Reader	iSD-TC	000825	03/25/17	03/25/18	11/22/17



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 Model CDS-3020 High Sensitivity Multi Channel Spectrometer and Two Meter or 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 Xitron or Yokogawa Power Analyzer.

The calibration of the sphere photometer-spectroradiometer 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 Xitron or 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

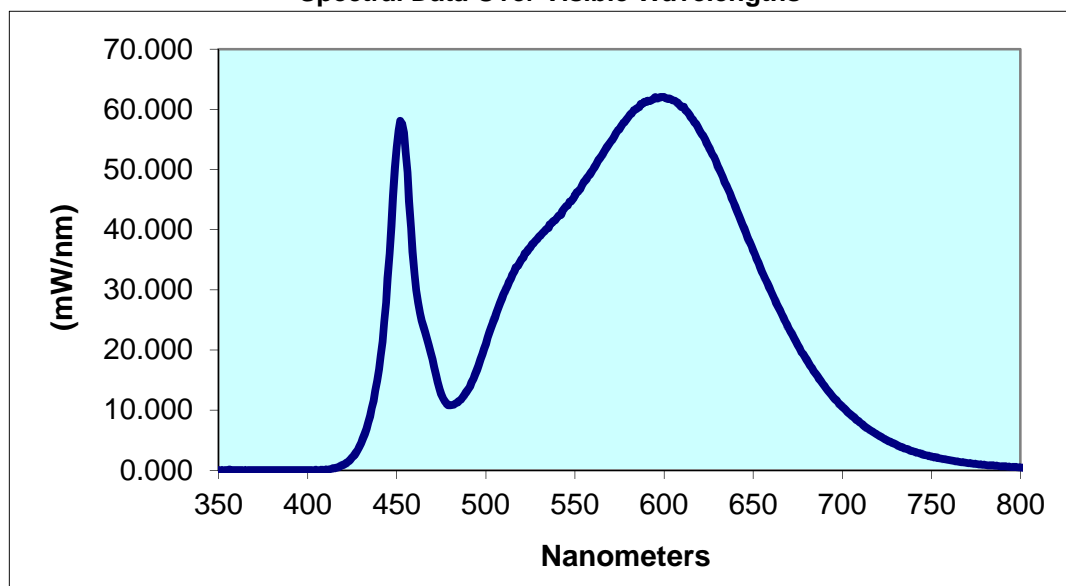
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1711211050-003	Up	120.0	498.2	59.59	0.997	7.20	5574	93.54

Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
3401	81.4	8.6	0.000	0.412	0.395	0.238	0.514

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.000	440	16.80	530	38.89	620	56.48	710	7.912
355	0.000	445	31.91	535	40.25	625	53.78	715	6.797
360	0.000	450	53.73	540	41.98	630	50.61	720	5.855
365	0.044	455	52.93	545	43.90	635	47.30	725	5.017
370	0.000	460	32.57	550	45.71	640	43.86	730	4.277
375	0.000	465	23.85	555	47.94	645	40.22	735	3.630
380	0.000	470	18.45	560	49.97	650	36.56	740	3.114
385	0.000	475	12.64	565	52.32	655	32.99	745	2.663
390	0.000	480	10.78	570	54.63	660	29.72	750	2.274
395	0.000	485	11.56	575	56.72	665	26.59	755	1.937
400	0.000	490	13.41	580	58.73	670	23.62	760	1.680
405	0.020	495	16.68	585	60.26	675	20.88	765	1.411
410	0.095	500	21.02	590	61.27	680	18.39	770	1.223
415	0.332	505	25.39	595	62.05	685	16.05	775	1.036
420	0.893	510	29.29	600	62.07	690	13.99	780	0.894
425	2.118	515	32.53	605	61.52	695	12.15		
430	4.504	520	35.03	610	60.38	700	10.53		
435	8.979	525	37.10	615	58.76	705	9.188		

Spectral Data Over Visible Wavelengths



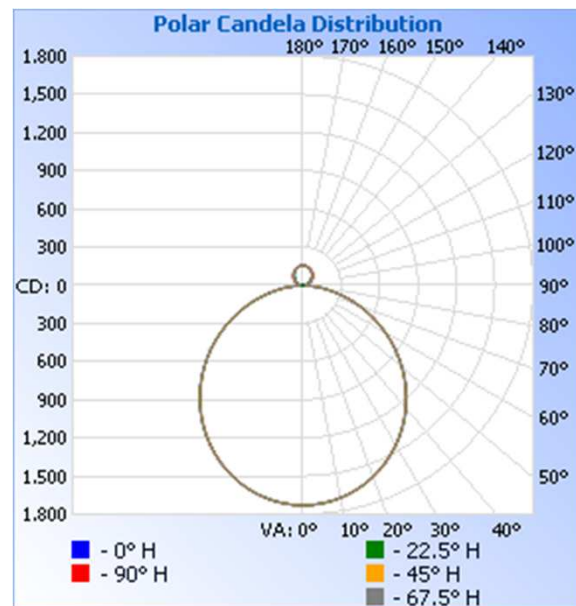
RESULTS OF TEST (cont'd)

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 (LPW)
LAN1711211050-003	Up	120.0	492.3	58.91	0.997	5383	91.38

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	1728	1728	1728	1728	1728
5	1719	1720	1720	1720	1719
10	1694	1695	1696	1695	1695
15	1654	1655	1655	1655	1655
20	1600	1601	1601	1600	1601
25	1531	1532	1531	1530	1530
30	1449	1449	1449	1449	1447
35	1358	1355	1355	1354	1353
40	1250	1251	1250	1249	1249
45	1137	1136	1135	1134	1134
50	1014	1012	1012	1011	1011
55	883	883	883	881	881
60	748	746	746	746	745
65	609	608	608	608	609
70	470	470	471	470	469
75	334	334	335	335	333
80	206	206	207	207	207
85	92	92	93	91	90
90	4	10	19	26	28
95	10	15	26	33	37
100	20	23	33	41	44
105	28	31	40	48	51
110	39	42	48	57	59
115	49	52	59	66	69
120	61	63	69	77	79
125	72	74	80	87	89
130	84	85	92	97	99
135	95	95	102	106	108
140	106	107	112	116	118
145	118	118	121	125	127
150	127	127	129	133	133
155	135	135	137	140	140
160	143	142	143	145	146
165	149	148	148	150	149
170	154	152	152	153	154
175	157	155	154	156	155
180	156	156	156	156	156



RESULTS OF TEST (cont'd)

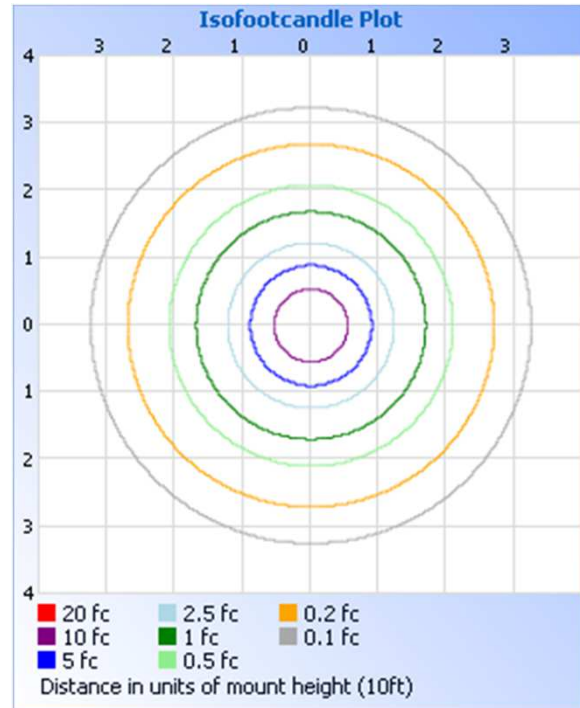
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1336	24.8
0-40	2183	40.6
0-60	3846	71.4
60-90	1063	19.8
0-90	4909	91.2
90-180	473.8	8.8
0-180	5383	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	163.3	3.0
10-20	466.9	8.7
20-30	705.2	13.1
30-40	847.2	15.7
40-50	875.2	16.3
50-60	787.9	14.6
60-70	601.9	11.2
70-80	354.4	6.6
80-90	106.8	2.0
90-100	26.8	0.5
100-110	42.4	0.8
110-120	58.6	1.1
120-130	71.9	1.3
130-140	78.3	1.5
140-150	75.9	1.4
150-160	63.2	1.2
160-170	41.9	0.8
170-180	14.7	0.3

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:



Ameet Alawi
Technician
Lighting Division

Attachment: None

Report Reviewed By:



Vladimir Kozak
Engineering Supervisor
Lighting Division