



8165 E Kaiser Blvd. Anaheim, CA 92808
p. 714.282.2270
f. 714.676.5558

Report No: L021506201

Date: 2/23/2015



NVLAP LAB CODE 200927-0

Report No: L021506201

Report Prepared For: Prudential Ltg.
1774 E. 21st Street, Los Angeles, CA 90058

Model Number: HSS-LED4-LO-04-SAL-1

Test: Electrical and Photometric tests

Standards Used: Appropriate part or all test guidelines were used for test performed:
IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products
ANSI C82.77:2002: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Catalog number is HSS-LED4-LO-04-SAL-1. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 2/9/15

Date of Tests: 2/18/15 - 2/19/15

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	11/10/15
Xitron Power Analysis System	2503AH	MT-EL01	10/20/15
BK Precision DC Power Supply	1747	PSDC-04	01/08/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/05/16
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

Test Summary

Manufacturer:	Prudential Ltg.
Model Number:	HSS-LED4-LO-04-SAL-1
Driver Model Number:	OSRAM OPTOTRONIC OT30W/PRG1050C/UNV/DIM/L
Total Lumens:	1925.06
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.14
Input Power (W):	16.76
Input Power Factor:	0.99
Current ATHD @ 120V(%):	4%
Current ATHD @ 277V(%):	N/A
Efficacy:	115
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	2:05
Off State Power(W):	0.00

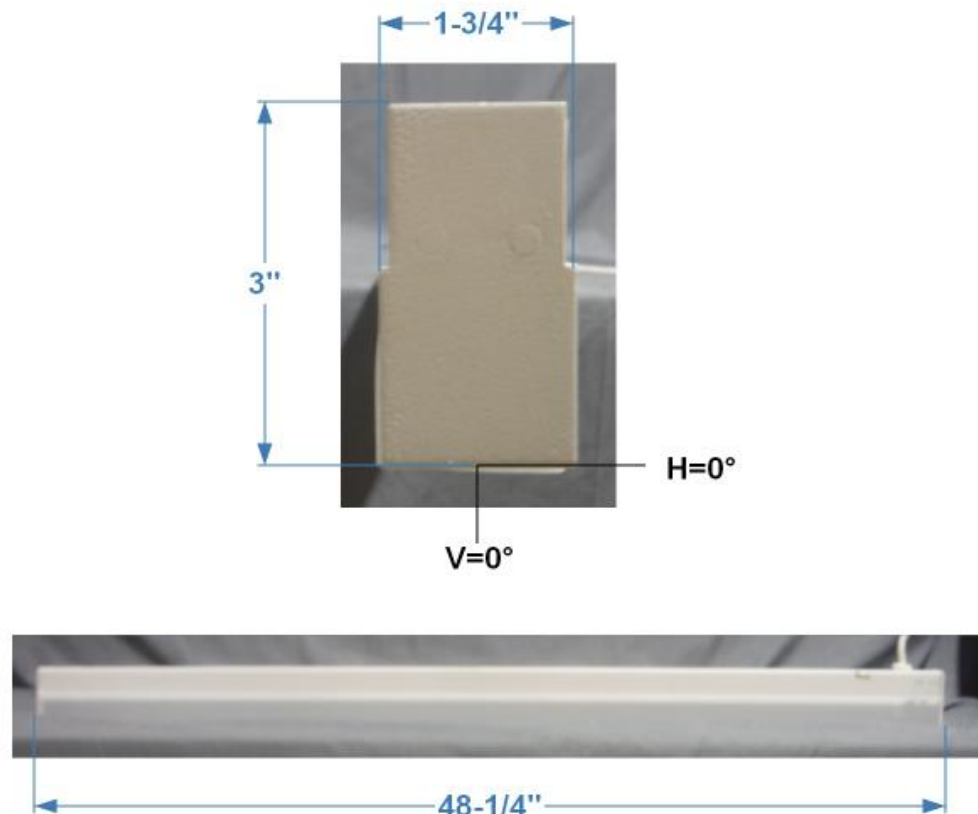


FIG.1 LUMINAIRE



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Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : Keyur Patel

Test Report Released by:

Jeff Ahn
Engineering Manager

Test Report Reviewed by:

Steve Kang
Quality Assurance

**Attached are photometric data reports. Total number of pages: 10*

**All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.*



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Photometric Test Report

IES INDOOR REPORT

PHOTOMETRIC FILENAME : L021506201.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L021506201
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 2/23/2015
[MANUFAC] PRUDENTIAL LTG.
[LUMCAT] HSS-LED4-LO-04-SAL-1
[LUMINAIRE] 1-3/4"L. X 48-1/4"W. X 3"H. LED LINEAR DIRECT LUMINAIRE
[MORE] DIFFUSED LENS
[BALLASTCAT] OSRAM OPTOTRONIC OT30W/PRG1050C/UNV/DIM/L
[BALLAST] INPUT: 120-277VAC, 0.31-0.15A, 50/60HZ OUTPUT: 350-1050mA, 10-55VDC, 30W
[LAMPPOSITION] 0,0
[LAMPCAT] N/A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 120VAC, 16.76W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1925
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	115
Total Luminaire Watts	16.76
Ballast Factor	1.00
CIE Type	Semi-Direct
Spacing Criterion (0-180)	1.46
Spacing Criterion (90-270)	1.18
Spacing Criterion (Diagonal)	1.48
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	0.13 ft
Luminous Width (90-270)	4.00 ft
Luminous Height	0.14 ft

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L021506201.IES

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	4980	5084	6678
55	4569	4528	6029
65	4178	4003	5353
75	3797	3508	4522
85	3395	3032	3049

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L021506201.IES

CANDELA TABULATION

	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
0	404.70	404.70	404.70	404.70	404.70	404.70	404.70	404.70	404.70	404.70
5	409.59	409.59	409.46	409.25	408.91	408.44	408.02	407.38	406.70	406.02
10	413.58	413.58	413.19	412.77	412.13	411.28	410.35	409.12	407.81	406.49
15	413.32	413.11	412.73	412.01	410.95	409.67	408.15	406.36	404.28	402.12
20	409.08	408.87	408.23	407.25	405.85	403.99	401.95	399.45	396.61	393.64
25	401.87	401.53	400.68	399.36	397.50	395.08	392.40	389.10	385.40	381.63
30	392.28	391.77	390.75	388.97	386.72	383.71	380.23	376.11	371.49	366.82
35	380.74	380.31	378.87	376.75	373.86	370.26	365.85	360.88	356.98	351.89
40	367.84	367.25	365.68	363.09	359.61	355.07	349.94	344.55	338.06	330.89
45	353.67	352.99	351.17	348.15	344.21	338.90	332.88	326.39	318.58	310.52
50	338.48	337.80	335.60	332.16	327.41	321.26	314.47	307.04	298.13	289.22
55	321.59	320.79	318.37	314.47	309.08	302.50	294.78	286.59	276.66	266.61
60	303.01	302.12	299.45	295.16	289.44	282.18	274.03	265.08	254.35	243.53
65	282.56	281.67	278.91	274.37	268.31	260.67	251.89	242.64	231.23	219.73
70	260.67	259.74	256.85	252.23	245.82	238.06	228.98	219.05	207.51	195.84
75	238.52	237.59	234.62	230.04	223.72	215.83	206.62	196.22	185.02	172.72
80	214.42	213.53	210.69	206.15	199.96	192.15	183.07	172.72	161.48	149.60
85	190.41	189.48	186.85	182.52	176.54	168.94	160.29	150.28	139.24	127.62
90	169.03	168.18	165.59	161.65	156.00	148.88	140.56	131.01	120.49	109.29
95	157.66	156.94	154.65	151.00	145.86	139.41	131.74	122.91	113.15	102.76
100	147.65	146.97	144.85	141.45	136.91	130.89	124.01	116.00	106.96	97.37
105	137.97	137.29	135.47	132.37	128.30	122.78	116.50	109.08	100.85	91.98
110	128.38	127.83	126.09	123.33	119.64	114.55	108.87	102.12	94.48	86.30
115	118.88	118.41	116.89	114.38	110.99	106.45	101.23	95.04	88.08	80.57
120	109.55	109.16	107.76	105.56	102.46	98.30	93.55	87.91	81.59	74.63
125	100.47	100.04	98.77	96.78	93.89	90.16	85.83	80.78	74.97	68.69
130	91.30	90.96	89.82	87.99	85.36	82.05	78.11	73.53	68.31	62.37
135	82.31	81.93	80.82	79.17	76.88	73.95	70.47	66.19	60.33	54.09
140	73.06	72.80	71.83	70.39	68.27	65.68	62.11	56.68	51.46	46.16
145	63.81	63.56	62.75	61.43	59.57	56.39	51.72	47.43	43.11	38.99
150	54.22	53.97	53.29	52.10	49.72	45.65	42.22	38.95	36.02	33.39
155	44.72	44.63	44.04	42.72	38.95	36.11	33.60	31.91	30.17	28.00
160	35.38	35.17	34.71	31.69	29.40	27.58	26.81	25.80	24.10	21.38
165	25.97	25.84	23.63	21.77	20.54	20.15	19.43	18.37	16.93	15.74
170	16.29	15.15	13.41	12.77	13.20	13.24	12.86	12.39	11.75	11.03
175	8.15	6.79	6.75	7.13	7.38	7.38	7.26	7.04	6.79	6.49
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles **Horizontal Angles**

	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>
0	404.70	404.70	404.70	404.70	404.70	404.70	404.70	404.70	404.70
5	405.26	404.37	403.78	403.01	402.50	402.16	401.82	401.65	401.61
10	404.75	403.10	401.36	399.45	397.50	395.76	394.36	393.72	393.38
15	399.74	397.11	394.40	391.60	388.76	385.79	382.90	381.12	380.65
20	390.33	386.85	383.24	379.42	375.43	371.53	367.50	364.32	363.34
25	377.26	372.89	368.31	363.94	360.12	356.30	351.97	347.56	346.03
30	362.88	359.18	352.31	345.14	338.74	332.71	326.69	321.04	318.46
35	343.61	336.78	329.95	323.04	316.08	309.08	302.16	295.46	292.07
40	323.21	315.57	307.64	299.49	291.60	283.67	275.73	268.39	263.89
45	301.74	293.17	284.00	274.80	265.89	257.23	249.13	241.54	236.32
50	279.47	269.62	260.12	251.68	239.92	229.66	220.20	211.33	205.09
55	256.13	245.35	234.45	223.16	212.35	201.78	191.64	182.10	175.56
60	232.20	220.58	208.82	196.65	186.17	176.37	164.28	153.80	146.54

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CANDELA TABULATION - (Cont.)

65	207.72	195.46	183.20	170.51	158.63	146.97	135.72	125.54	117.61
70	183.33	170.85	158.00	144.68	132.20	119.77	108.23	97.71	89.35
75	160.12	147.09	133.86	120.20	107.38	94.61	82.69	72.21	63.98
80	136.74	123.67	110.35	96.61	83.71	70.98	58.89	48.07	39.20
85	114.98	102.08	88.80	75.14	62.24	49.64	37.59	26.64	17.99
90	97.07	84.47	71.53	58.17	45.48	33.01	21.00	10.18	1.36
95	91.30	79.59	67.46	54.82	42.85	31.06	19.73	9.42	1.19
100	86.76	75.77	64.40	52.48	41.07	29.83	19.01	9.08	0.00
105	82.05	71.79	61.14	49.89	39.16	28.55	18.16	8.32	0.00
110	77.09	67.63	57.53	47.22	37.17	27.20	16.97	7.68	0.00
115	72.17	63.39	53.97	44.38	35.04	25.37	16.04	7.13	0.00
120	66.82	58.85	50.28	41.49	32.58	23.76	15.10	6.36	0.00
125	61.69	54.26	46.20	37.59	29.36	21.43	13.28	5.60	0.00
130	55.24	48.03	40.52	32.88	25.92	19.01	11.20	5.13	0.00
135	47.90	41.54	35.17	28.85	22.83	16.50	9.72	4.67	0.00
140	40.86	35.68	30.63	25.03	19.81	13.62	8.53	4.37	0.00
145	35.17	31.31	26.14	21.43	16.33	11.67	7.68	4.12	0.00
150	30.38	26.43	22.27	17.69	13.70	10.27	7.04	4.12	0.00
155	24.86	21.30	17.99	14.81	11.92	9.21	6.32	4.16	0.00
160	19.01	16.80	14.51	12.30	10.23	8.02	5.69	4.20	0.00
165	14.38	12.94	11.46	9.97	8.40	6.62	5.26	4.29	0.00
170	10.23	9.38	8.44	7.43	6.32	5.39	4.67	4.16	0.00
175	6.15	5.77	5.39	5.05	4.75	4.46	4.24	4.07	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

IES INDOOR REPORT
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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	151.58	N.A.	7.90
0-30	326.09	N.A.	16.90
0-40	542.12	N.A.	28.20
0-60	1010.74	N.A.	52.50
0-80	1396.28	N.A.	72.50
0-90	1527.15	N.A.	79.30
10-90	1488.46	N.A.	77.30
20-40	390.54	N.A.	20.30
20-50	626.01	N.A.	32.50
40-70	679.71	N.A.	35.30
60-80	385.54	N.A.	20.00
70-80	174.45	N.A.	9.10
80-90	130.87	N.A.	6.80
90-110	191.28	N.A.	9.90
90-120	263.50	N.A.	13.70
90-130	318.81	N.A.	16.60
90-150	380.84	N.A.	19.80
90-180	397.91	N.A.	20.70
110-180	206.62	N.A.	10.70
0-180	1925.06	N.A.	100.00

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	38.69
10-20	112.89
20-30	174.50
30-40	216.03
40-50	235.47
50-60	233.15
60-70	211.09
70-80	174.45
80-90	130.87
90-100	102.96
100-110	88.32
110-120	72.22
120-130	55.31
130-140	38.47
140-150	23.55
150-160	12.05
160-170	4.38
170-180	0.64

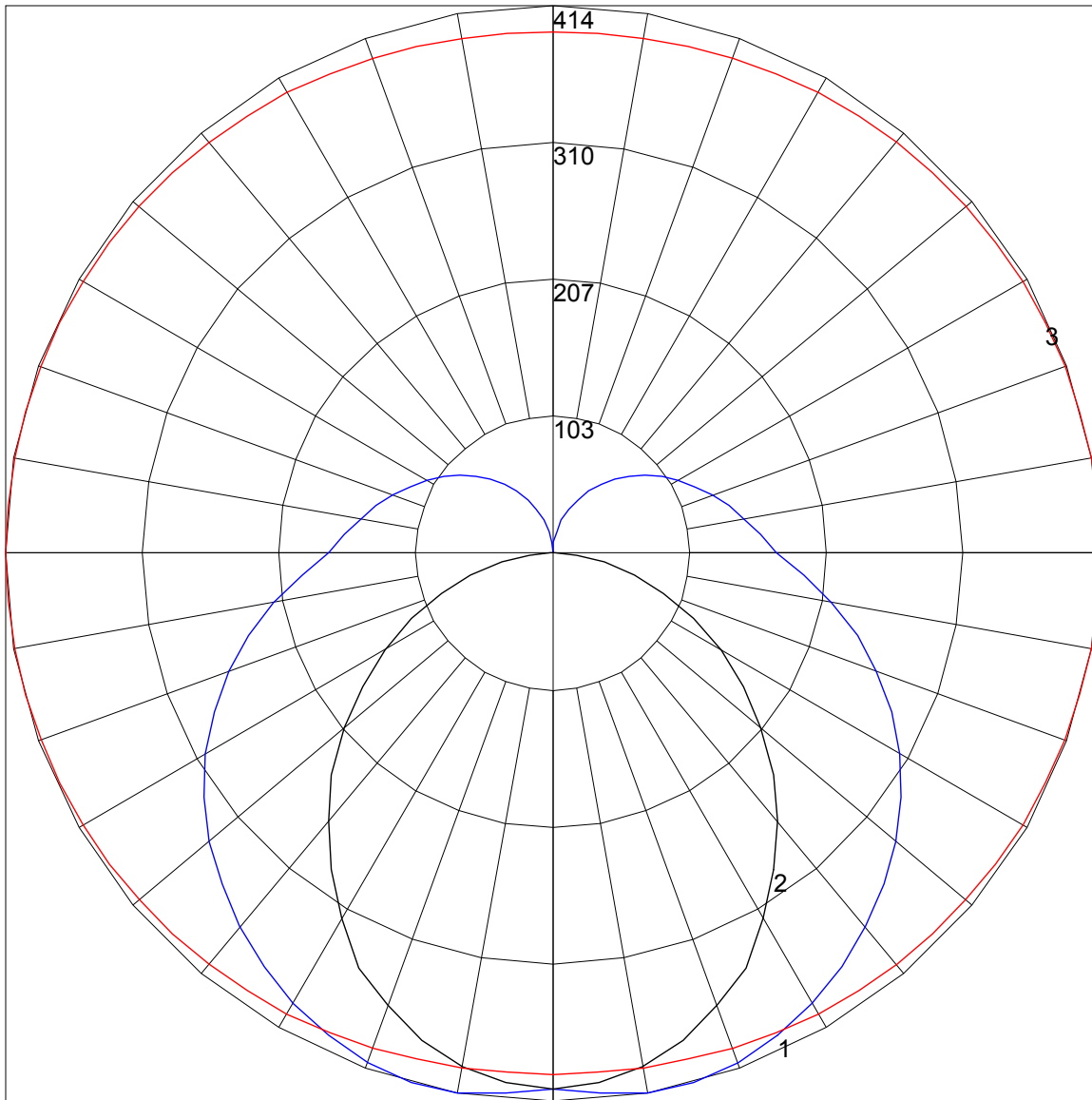
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	114	114	114	114	109	109	109	109	100	100	100	91	91	91	83	83	83	79
1	101	95	90	86	96	91	86	82	83	79	76	76	73	70	69	66	64	61
2	91	82	74	68	86	78	71	65	71	65	60	65	60	56	59	55	52	48
3	82	71	62	55	78	68	60	53	62	55	50	56	51	46	51	47	43	40
4	75	62	53	46	71	60	51	44	54	47	42	50	44	39	45	40	36	33
5	69	55	46	39	65	53	44	38	48	41	35	44	38	33	40	35	31	28
6	63	50	40	34	60	47	39	33	44	36	31	40	34	29	36	31	27	24
7	59	45	36	29	56	43	34	29	39	32	27	36	30	25	33	28	24	21
8	54	41	32	26	52	39	31	25	36	29	24	33	27	23	30	25	21	19
9	51	37	29	23	48	36	28	23	33	26	21	30	24	20	28	23	19	17
10	47	34	26	21	45	33	25	20	30	24	19	28	22	18	26	21	17	15

POLAR GRAPH



Maximum Candela = 413.58 Located At Horizontal Angle = 0, Vertical Angle = 10

1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)

2 - Vertical Plane Through Horizontal Angles (90 - 270)

3 - Horizontal Cone Through Vertical Angle (10) (Through Max. Cd.)