



8165 E Kaiser Blvd. Anaheim, CA 92808
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Report No: L021507502R02

Date: 6/18/2015



NVLAP LAB CODE 200927-0

Report No: L021507502R02

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

Model Number: BIO-LIN-LED4-LO-AWW-D1G

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 BIO-LIN-LED4-LO-AWW-D1G. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 2/20/15

Date of Tests: 2/24/15 - 2/24/15

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:	BIO-LIN-LED4-LO-AWW-D1G
Driver Model Number:	OSRAM OPTOTRONIC OT30W/PRG1050C/UNV/DIM/L
Total Lumens:	1408.48
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.15
Input Power (W):	17.33
Input Power Factor:	0.98
Current ATHD @ 120V(%):	5%
Current ATHD @ 277V(%):	N/A
Efficacy:	81
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:35
Total Operating Time (Hours):	1:45
Off State Power(W):	0.00

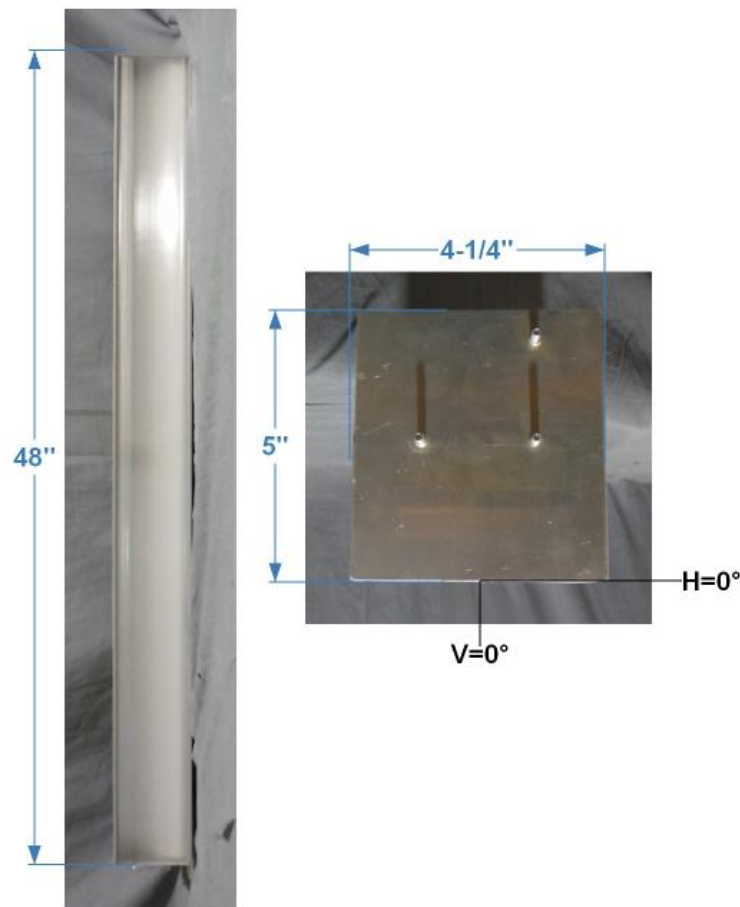


FIG.1 LUMINAIRE



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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 : Randy Chau

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 : L021507502R02.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L021507502R02
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 6/18/2015
[MANUFAC] PRUDENTIAL LTG.
[LUMCAT] BIO-LIN-LED4-LO-AWW-D1G
[LUMINAIRE] 4-1/2"L. X 48"W. X 5"H. LED LUMINAIRE
[MORE] PRISMATIC LENS
[BALLASTCAT] OSRAM OPTOTRONIC OT30W/PRG1050C/UNV/DIM/L
[BALLAST] INPUT: 120-277VAC, 0.31-0.15A, 50/60Hz. OUTPUT: 30W, 10-55VDC, 350-1050mA
[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, 17.33W
[_TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1408
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	81
Total Luminaire Watts	17.33
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	0.62
Spacing Criterion (90-270)	1.14
Spacing Criterion (Diagonal)	0.76
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.33 ft
Luminous Width (90-270)	3.94 ft
Luminous Height	0.00 ft

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L021507502R02.IES

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	2948	3146	5954
55	2567	2725	4312
65	2407	2505	3170
75	1342	2333	2237
85	1993	1993	1518

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L021507502R02.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	1145	1145	1145	1145	1145	1145	1145	1145	1145	1145
5	1105	1105	1107	1108	1112	1117	1123	1129	1135	1140
10	906	907	911	918	928	942	958	977	997	1019
15	708	709	713	721	733	749	769	793	821	853
20	557	559	562	569	579	592	610	632	659	691
25	453	453	455	460	467	477	490	506	528	555
30	384	384	385	388	392	397	405	416	430	450
35	336	336	336	337	339	342	346	352	360	373
40	294	294	294	295	296	299	301	304	308	316
45	252	252	253	254	256	258	260	262	265	269
50	211	211	212	213	215	217	220	223	225	228
55	178	178	179	179	180	181	183	185	187	189
60	150	150	151	151	152	153	154	155	156	156
65	123	123	123	124	125	126	127	128	128	128
70	91	91	92	93	95	97	99	100	101	100
75	42	65	65	66	66	67	69	70	72	73
80	21	43	43	43	43	43	43	44	45	45
85	21	21	21	21	21	21	21	21	21	21
90	0	0	0	0	0	0	0	0	0	0

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>	<u>95</u>
0	1145	1145	1145	1145	1145	1145	1145	1145	1145	1145
5	1145	1150	1154	1154	1153	1152	1148	1143	1136	1127
10	1041	1064	1086	1104	1117	1126	1128	1125	1113	1094
15	890	929	969	1008	1042	1069	1085	1088	1075	1045
20	731	777	829	885	939	986	1018	1031	1019	982
25	590	634	687	749	816	879	928	953	947	906
30	477	513	560	619	687	758	818	854	856	819
35	391	417	454	504	567	635	697	738	748	720
40	327	344	371	410	462	520	575	613	629	614
45	276	287	306	334	374	420	462	492	509	503
50	232	239	252	272	301	334	363	383	396	397
55	193	196	206	220	240	262	279	290	299	301
60	158	162	168	177	191	205	214	219	223	225
65	127	128	132	139	148	156	160	161	162	163
70	99	98	99	102	108	112	113	112	111	111
75	73	71	70	70	72	75	74	72	70	69
80	46	45	44	44	43	43	42	40	39	37
85	21	21	21	20	19	19	18	17	16	15
90	0	0	0	0	0	0	0	0	0	0

Vert. Angles **Horizontal Angles**

	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>	<u>120</u>	<u>125</u>	<u>130</u>	<u>135</u>	<u>140</u>	<u>145</u>
0	1145	1145	1145	1145	1145	1145	1145	1145	1145	1145
5	1115	1101	1087	1072	1055	1038	1021	1004	988	972
10	1066	1033	996	956	915	875	837	801	769	741
15	1000	945	885	823	763	709	662	619	583	553
20	922	849	771	695	627	570	522	483	452	429
25	837	751	664	583	516	463	421	389	365	348
30	747	657	568	490	427	381	348	324	308	296
35	656	569	484	411	358	320	294	277	264	254

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L021507502R02.IES

CANDELA TABULATION - (Cont.)

40	562	486	410	346	301	271	250	236	224	213
45	468	408	343	290	253	228	211	197	182	174
50	376	333	283	240	210	185	174	160	149	140
55	290	263	227	195	166	153	139	127	118	109
60	219	203	179	156	136	121	110	100	91	84
65	159	150	135	118	104	93	83	75	70	65
70	108	103	94	83	74	66	60	56	52	49
75	68	65	60	54	49	45	42	39	37	35
80	36	35	33	32	30	28	27	26	25	24
85	15	15	15	15	15	14	14	14	13	13
90	0	0	0	0	0	0	0	0	0	0

Vert. Angles	Horizontal Angles						
	<u>150</u>	<u>155</u>	<u>160</u>	<u>165</u>	<u>170</u>	<u>175</u>	<u>180</u>
0	1145	1145	1145	1145	1145	1145	1145
5	959	947	938	930	924	921	920
10	717	697	681	668	658	654	652
15	529	510	495	483	475	471	470
20	409	394	383	375	370	368	367
25	336	326	320	315	311	310	310
30	287	280	275	270	267	266	266
35	246	238	232	227	224	222	222
40	204	197	189	185	182	180	180
45	166	158	152	148	145	143	143
50	132	125	120	116	113	111	111
55	102	96	92	89	87	86	86
60	79	75	73	71	70	69	69
65	62	59	57	56	55	54	54
70	47	45	44	43	42	42	42
75	34	33	32	31	31	31	31
80	23	22	22	22	21	21	21
85	13	13	13	13	13	13	13
90	0	0	0	0	0	0	0

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L021507502R02.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	318.29	N.A.	22.60
0-30	576.94	N.A.	41.00
0-40	830.66	N.A.	59.00
0-60	1215.16	N.A.	86.30
0-80	1389.64	N.A.	98.70
0-90	1408.48	N.A.	100.00
10-90	1310.4	N.A.	93.00
20-40	512.37	N.A.	36.40
20-50	730.95	N.A.	51.90
40-70	497.62	N.A.	35.30
60-80	174.48	N.A.	12.40
70-80	61.37	N.A.	4.40
80-90	18.84	N.A.	1.30
90-110	0.00	N.A.	0.00
90-120	0.00	N.A.	0.00
90-130	0.00	N.A.	0.00
90-150	0.00	N.A.	0.00
90-180	0.00	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	1408.48	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	98.08
10-20	220.21
20-30	258.66
30-40	253.72
40-50	218.58
50-60	165.92
60-70	113.12
70-80	61.37
80-90	18.84
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

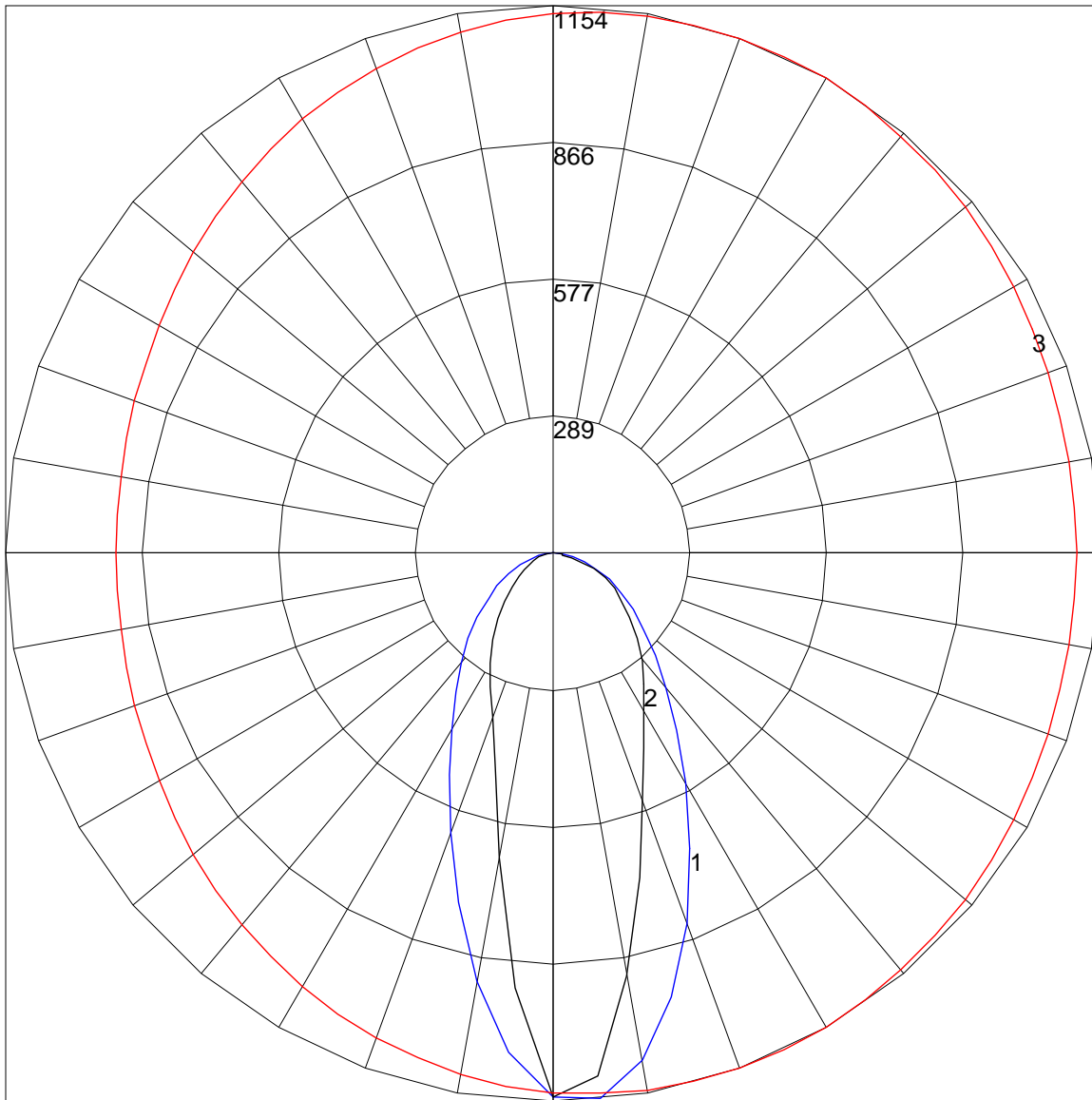
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	110	106	103	99	108	104	101	98	100	97	95	96	94	92	92	91	89	87
2	102	95	89	84	99	93	88	83	90	85	81	86	83	79	83	80	78	76
3	94	85	78	72	92	84	77	72	81	75	70	78	73	69	76	72	68	66
4	87	77	69	63	85	76	68	63	73	67	62	71	66	61	69	64	60	59
5	81	70	62	56	79	69	61	56	67	60	55	65	59	55	63	58	54	52
6	76	64	56	50	74	63	56	50	61	55	50	60	54	49	58	53	49	47
7	71	59	51	46	70	58	51	45	57	50	45	55	49	45	54	49	45	43
8	67	55	47	42	65	54	47	42	53	46	41	52	45	41	50	45	41	39
9	63	51	43	38	62	50	43	38	49	43	38	48	42	38	47	42	38	36
10	59	47	40	35	58	47	40	35	46	40	35	45	39	35	44	39	35	33

POLAR GRAPH



Maximum Candela = 1154 Located At Horizontal Angle = 60, Vertical Angle = 5
1 - Vertical Plane Through Horizontal Angles (60 - 240) (Through Max. Cd.)
2 - Vertical Plane Through Horizontal Angles (0 - 180)
3 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)