

PHOTOMETRIC TESTING & EVALUATION TO IES LM-79-19

Sample Tested

Pru1-STD-LED35-LO-04-SAL-NU

Prepared for:

Prudential Lighting1774 East 21st
Los Angeles, CA 90058**Technical Report Number**

80164103-1

March 29, 2023

Test Report Prepared and Released by:

*K. A. Patel*Keyur Patel
Certifier-I

Test Report Reviewed by:

*KC Fletcher*KC Fletcher
Manager

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. TM-30-18 is not covered under NVLAP Accreditation. **The results in this report relate only to the sample tested.**

This report shall not be reproduced, except in full, without the approval of CSA Group

Program Description

Photometric and electrical testing of a Pru1-STD-LED35-LO-04-SAL-NU Type C LED Luminaire to IES LM-79-19.

Executive Summary

Sample Tested = Pru1-STD-LED35-LO-04-SAL-NU

Sample Number = 44002855

Driver = eldoLED OPTOTRONIC OTi30/120-277/1A0 DIM-1 L G2

LED Module = Lumileds 2835

Luminous Efficacy (Lumens/Watt)	Luminous Flux (Lumens)	Input Power (Watts)	Power Factor	ATHD (%)
108.75	1259.32	11.58	0.9521	15.85

Spacing Criterion (0-180°)	Spacing Criterion (90-270°)	Stabilization Time (Light & Power)
1.22	1.3	30

* The above results are recorded / derived from measurements made using an Integrating Sphere

This report shall not be reproduced, except in full, without the approval of CSA Group

TABLE OF CONTENTS

Test Sample Pictures.....	4
Test Result.....	5
Photometric Results.....	6
Candela Tabulation.....	9
Photometric Testing Information.....	10
Equipment List.....	11

This report shall not be reproduced, except in full, without the approval of CSA Group

Test Sample Pictures

The following sample was submitted for evaluation:



Prudential Lighting : Pru1-STD-LED35-LO-04-SAL-NU

This report shall not be reproduced, except in full, without the approval of CSA Group

Test Result	
The following results were measured after stabilization of the sample in the Integrating Sphere (unless otherwise stated). Stability shall be achieved when the variation (Maximum to minimum) of at least three readings of the light output and electrical power consumption, taken at a maximum of 10 minute intervals over a period of 20 minutes and divided by the last of these measurements chronologically, is less than 0.5%.	
Key Photometric Results	Sample Reference
	Pru1-STD-LED35-LO-04-SAL-NU
	Goniophotometer
Luminous Efficacy (Lumens/Watt)	109.00
Total Luminous Flux (Lumens)	1259.32
Stabilization Time (Light and Power)	30 minutes
Total Run Time (Goniophotometer)	60 minutes
Spacing Criteria (0°-180°)/(90°-270°)	1.22 / 1.3

Electrical Input Results:	Sample Reference
	Pru1-STD-LED35-LO-04-SAL-NU
Input Power (Watts)	11.58
Input Voltage (Volts AC)	120.00
Input Current (Amps)	0.10
Input Frequency (Hertz)	60.0
Power Factor	0.9521
Total Harmonic Distortion (THD A)%	15.85

Additional Information	Sample Reference
	Pru1-STD-LED35-LO-04-SAL-NU
Ambient Temperature	25
Date Tested	3/29/2023

This report shall not be reproduced, except in full, without the approval of CSA Group

Photometric Test Results

Characteristics		Luminance Data (cd/sq.m)			
Total Lumens:	1259.32	Angle In Degrees	Average		
Input Wattage (W):	11.58		0°	45°	90°
Efficacy(lm/W):	108.75	45	8517	7409	7460
Spacing Criterion (0-180°):	1.22	55	7584	6636	6896
Spacing Criterion (90-270°):	1.3	65	6508	5891	6379
Spacing Criterion (Diagonal):	1.38	75	5209	5217	5920
Luminous Length (0-180°):	4.00 ft	85	3543	4801	5611
Luminous Width (90-270°):	0.10 ft				
Luminous Height:	0.04 ft				

Zonal Lumen Summary												
Zone	Lumens	%Fixt		Zone	Lumens	%Fixt		Zone	Lumens		Zone	Lumens
0-20°	140.12	11.1		60-80°	253.33	20.1		0-10°	36.36		90-100°	40.70
0-30°	296.35	23.5		70-80°	106.99	8.5		10-20°	103.76		100-110°	22.35
0-40°	483.34	38.4		80-90°	69.06	5.5		20-30°	156.23		110-120°	11.07
0-60°	854.79	67.9		90-110°	63.05	5.0		30-40°	186.99		120-130°	4.79
0-80°	1108.12	88.0		90-120°	74.12	5.9		40-50°	193.52		130-140°	1.98
0-90°	1177.19	93.5		90-130°	78.92	6.3		50-60°	177.93		140-150°	0.95
10-90°	1140.82	90.6		90-150°	81.85	6.5		60-70°	146.34		150-160°	0.28
20-40°	343.22	27.3		90-180°	82.13	6.5		70-80°	106.99		160-170°	0.00
20-50°	536.74	42.6		110-180°	19.08	1.5		80-90°	69.06		170-180°	0.00
40-70°	517.79	41.1		0-180°	1259.32	100.0		0-90°	1177.19		90-180°	82.13

Coefficients of Utilization																		
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	118	118	118	118	114	114	114	114	108	108	108	102	102	102	96	96	96	94
1	106	100	95	91	102	97	93	89	92	88	84	86	83	81	82	79	77	75
2	95	86	79	73	92	84	77	71	79	74	69	75	70	66	71	67	64	61
3	87	75	67	60	84	73	65	59	69	63	57	66	60	55	62	58	53	51
4	79	67	57	50	76	65	56	50	62	54	48	58	52	47	55	50	46	43
5	73	59	50	43	70	58	49	43	55	47	42	52	46	41	50	44	40	37
6	67	53	44	38	65	52	44	37	50	42	36	47	41	36	45	39	35	32
7	62	48	39	33	60	47	39	33	45	38	32	43	36	31	41	35	31	29
8	58	44	35	30	56	43	35	29	41	34	29	40	33	28	38	32	28	26
9	54	40	32	27	52	40	32	26	38	31	26	36	30	25	35	29	25	23
10	51	37	29	24	49	37	29	24	35	28	23	34	27	23	32	27	23	21

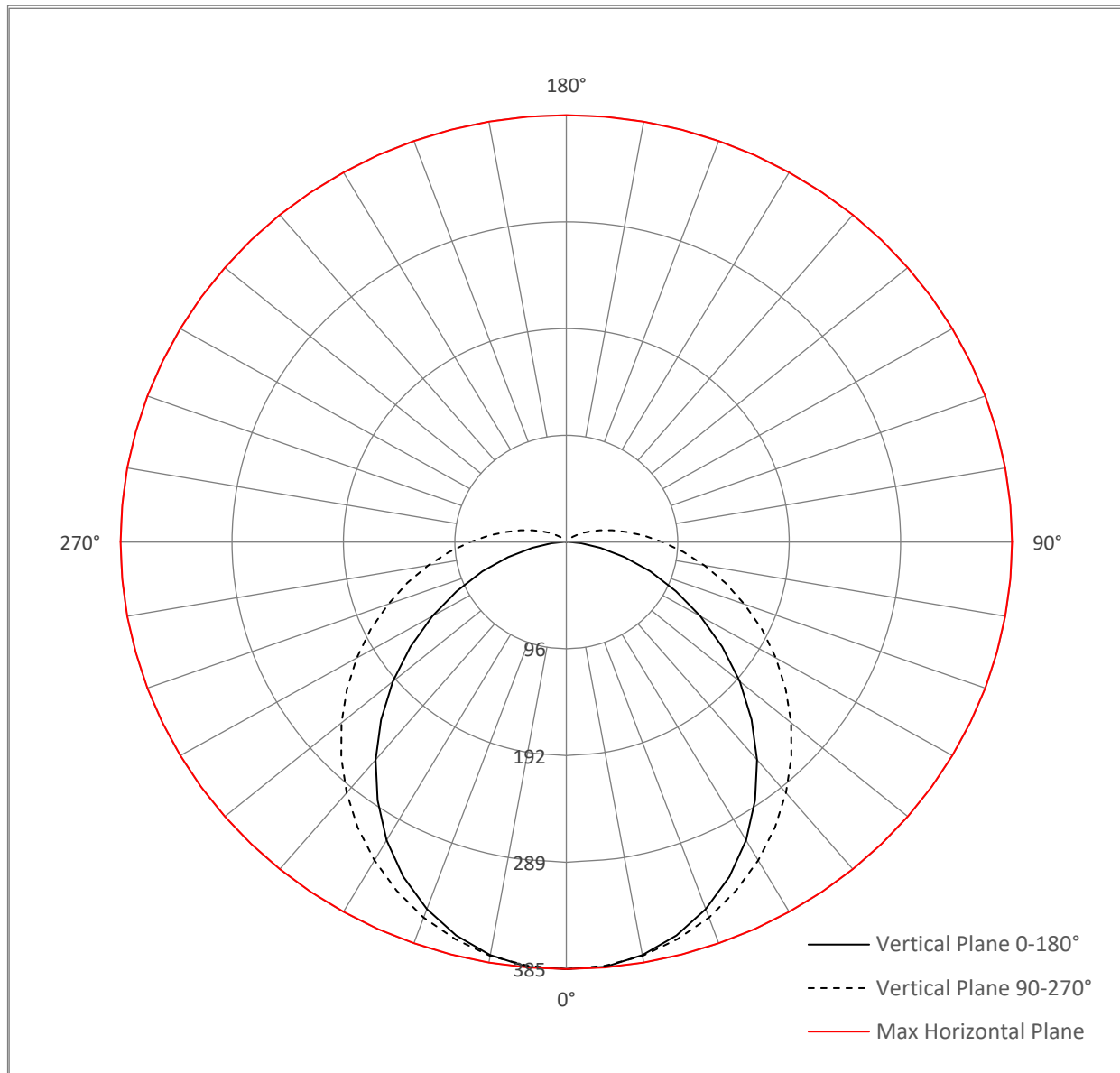
This report shall not be reproduced, except in full, without the approval of CSA Group

UGR Table												
		Reflectances						Reflectances				
Ceiling Cavity		70	70	50	50	30		70	70	50	50	30
Walls		50	30	50	30	30		50	30	50	30	30
Floor Cavity		20	20	20	20	20		20	20	20	20	20
Room Size		UGR Viewed Crosswise						UGR Viewed Endwise				
X=2H	Y=2H	16.4	17.9	18.8	21.1	22.0	19.5	21.1	20.0	21.5	22.0	
	3H	17.6	19.0	20.0	23.5	24.5	22.1	23.5	22.6	24.0	24.5	
	4H	18.0	19.3	20.4	24.7	25.7	23.3	24.7	23.8	25.1	25.7	
	6H	18.2	19.5	20.5	25.9	26.9	24.7	25.9	25.2	26.4	26.9	
	8H	18.3	19.5	20.5	26.5	27.6	25.3	26.5	25.9	27.0	27.6	
	12H	18.3	19.4	20.5	27.2	28.3	26.1	27.2	26.6	27.7	28.3	
4H	2H	17.4	18.7	19.8	21.2	22.2	19.9	21.2	20.4	21.7	22.2	
	3H	18.9	20.1	21.2	23.8	24.9	22.7	23.8	23.2	0.0	24.9	
	4H	19.5	20.5	21.6	25.1	26.3	24.1	25.1	24.6	25.7	26.3	
	6H	19.8	20.7	21.9	26.5	27.7	25.6	26.5	26.2	27.1	27.7	
	8H	19.9	20.7	21.9	27.3	28.4	26.4	27.3	27.0	27.8	28.4	
	12H	19.9	20.7	21.9	28.1	29.3	27.3	28.1	27.9	28.6	29.3	
8H	4H	20.3	21.2	22.4	25.1	26.3	24.3	25.1	24.8	25.7	26.3	
	6H	20.9	21.6	22.8	26.7	27.9	25.9	26.7	26.5	27.3	27.9	
	8H	21.0	21.7	22.9	27.5	28.8	26.9	27.5	27.5	28.1	28.8	
	12H	21.1	21.7	23.0	28.5	29.8	27.9	28.5	28.5	29.1	29.8	
12H	4H	20.6	21.4	22.6	25.0	26.3	24.3	25.0	24.9	25.6	26.3	
	6H	21.3	21.9	23.2	26.6	27.9	26.0	26.6	26.6	27.2	27.9	
	8H	21.5	22.1	23.4	27.5	28.8	27.0	27.5	27.6	28.1	28.8	

Maximum UGR = 29.8

This report shall not be reproduced, except in full, without the approval of CSA Group

Polar Graph



This report shall not be reproduced, except in full, without the approval of CSA Group

Candela Tabulation

		Vertical Angle																																					
		0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0	180.0	
Horizontal Angle	0	385	384	378	367	352	333	310	284	256	226	195	164	134	104	77	52	30	13	4	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	385	384	377	367	352	333	310	285	257	227	195	164	134	105	78	53	31	15	5	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	385	384	377	367	352	333	311	286	258	228	197	166	135	107	80	56	35	19	9	4	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	15	385	383	377	366	352	333	311	285	258	229	199	169	138	110	84	60	40	25	14	7	4	3	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20	385	383	377	366	351	333	312	287	260	232	202	172	143	116	90	66	47	31	19	12	7	4	3	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
	25	385	383	377	366	352	334	313	289	263	235	206	177	149	121	96	74	54	38	26	17	11	7	4	3	2	2	0	0	0	0	0	0	0	0	0	0	0	0
	30	385	383	377	367	353	335	315	292	266	239	211	183	155	128	104	81	62	45	32	22	15	10	7	4	3	2	2	2	2	2	2	0	0	0	0	0	0	0
	35	385	382	377	367	353	337	317	294	270	243	216	188	162	135	111	89	69	53	39	28	20	14	9	6	4	3	2	2	2	2	2	0	0	0	0	0	0	0
	40	385	383	377	367	354	338	318	296	272	247	221	194	168	143	119	97	77	60	46	34	25	17	12	8	5	4	3	2	2	2	2	0	0	0	0	0	0	0
	45	385	383	377	368	355	339	320	299	276	251	226	200	175	150	127	105	85	67	52	39	29	21	15	10	7	5	3	3	2	2	2	2	0	0	0	0	0	0
	50	385	382	377	368	355	340	322	301	279	255	231	206	181	157	134	112	92	74	58	44	34	25	18	13	8	6	4	3	2	2	2	2	2	0	0	0	0	0
	55	385	382	377	368	356	341	323	303	282	259	236	212	187	163	141	119	98	80	64	50	38	28	21	15	10	7	5	3	3	2	2	2	2	0	0	0	0	0
	60	385	382	376	368	356	342	325	306	285	263	240	217	193	170	147	125	104	85	69	54	42	31	23	17	11	8	5	4	3	2	2	2	2	0	0	0	0	0
	65	385	382	377	369	357	344	327	308	288	264	244	221	198	174	152	130	109	90	73	58	45	34	26	19	13	9	6	4	3	2	2	2	2	0	0	0	0	0
	70	385	382	378	369	358	344	328	310	290	269	247	225	202	179	156	134	113	94	76	61	48	37	27	20	14	10	6	4	3	2	2	2	2	0	0	0	0	0
	75	385	382	377	369	359	345	329	312	292	272	250	228	205	182	159	137	117	97	79	64	50	38	29	21	15	10	7	5	3	3	2	2	2	0	0	0	0	0
80	385	383	378	370	359	346	330	313	294	273	252	229	207	184	162	140	119	99	81	66	51	40	30	22	16	11	7	5	3	3	2	2	2	0	0	0	0	0	
85	385	383	378	370	360	346	331	314	294	274	253	231	208	186	163	141	120	101	83	67	53	41	31	23	16	11	8	5	4	3	2	2	2	0	0	0	0	0	
90	385	383	379	370	360	347	331	314	295	275	253	231	209	186	164	142	121	101	83	67	53	41	31	23	17	11	8	5	4	3	2	2	0	0	0	0	0		

This report shall not be reproduced, except in full, without the approval of CSA Group

Photometric Testing Information

The sample was evaluated for photometric and electrical characteristics using a goniophotometer, located in purpose-built, temperature and humidity-controlled, draft free environments

Luminaire Stabilization.

The results were measured after stabilization of the sample in the Goniophotometer (unless otherwise stated). Stability shall be achieved when the variation (Maximum to minimum) of at least three readings of the light output and electrical power consumption, taken at a maximum of 10-minute intervals over a period of 20 minutes and divided by the last of these measurements chronologically, is less than 0.5%.

The goniophotometer Mayer Engineering Type C is calibrated using a frosted tungsten filament FDS/DZE lamp with the following specifications:

The goniophotometer Mayer Engineering Type C is calibrated using a frosted tungsten filament FDS/DZE lamp with the following specifications:

Manufacturer: GE
Part Number: DZE
Bulb Number: 106-A
Voltage: 16.93 Volts DC reference
Calibration Current: 4.863 Amperes
Luminous Intensity: 168.8 Candelas
Calibration Date: 4/25/12 (NIST traceable)

Manufacturer: GE
Part Number: DZE
Bulb Number: 106-B
Voltage: 16.45 Volts DC reference
Calibration Current: 4.79 Amperes
Luminous Intensity: 145.3 Candelas
Calibration Date: 4/25/12(NIST traceable)

Manufacturer: GE
Part Number: DZE
Bulb Number: 106-C
Voltage: 16.57 Volts DC reference
Calibration Current: 4.829 Amperes
Luminous Intensity: 157.0 Candelas
Calibration Date: 4/25/12 (NIST traceable)

A Yokogawa WT310 Power Analyzer was used to measure all electrical characteristics of the sample.

This report shall not be reproduced, except in full, without the approval of CSA Group

Equipment List: Goniophotometer Type C (Mirror 2)

Description	Manufacturer and Model Number	CSA Instrument Reference Number	Calibration Due Date
Optometer	Gigahertz Optik P9801	OPT400	N/A
Programmable DC Power Supply	Chroma Instruments 62012P-80-60	DCP300	N/A
Regulated Power Supply	Chroma Instruments 61602	AC301	N/A
Power Analyzer	Yokogawa WT310-E	POA400	6/27/2023

* All equipment is calibrated to ISO / IEC 17025-2017 guidelines.

Accreditation

- This report, and use of the NVLAP logo, shall not be used by a client to claim certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.
- This report, and use of the CSA logo, shall not be used by a client to claim certification, approval, or endorsement by CSA.
- This test report, may contain sections with product performance criteria, which has been specified by certification program(s) not affiliated with NVLAP. TM-30-18 is not covered under NVLAP Accreditation.
- This test report, contains sections with test data recorded within the scope of this labs accreditation through NVLAP. In these instances, the NVLAP Logo and associated testing lab code will be present on the header of the first page and last page.



Testing
 NVLAP LAB CODE 600329-0

This report shall not be reproduced, except in full, without the approval of CSA Group