

## PHOTOMETRIC TESTING & EVALUATION TO IES LM-79-19

Sample Tested

**Pru1-STD-LED35-HO-04-SAL-NU**

Prepared for:

**Prudential Lighting**

1774 East 21st  
Los Angeles, CA 90058

**Technical Report Number**

80164103-2

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

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## Program Description

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

## Executive Summary

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

Sample Number = 44002855

Driver = eldoLED OPTOTRONIC OTi50/120-277/1A4 DIM-1 L G2

LED Module = Lumileds 2835

Luminous Efficacy (Lumens/Watt)	Luminous Flux (Lumens)	Input Power (Watts)	Power Factor	ATHD (%)
110.89	4132.77	37.27	0.9734	8.81

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

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**Test Sample Pictures**

The following sample was submitted for evaluation:



**Prudential Lighting : Pru1-STD-LED35-HO-04-SAL-NU**

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**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-HO-04-SAL-NU
	Goniophotometer
Luminous Efficacy (Lumens/Watt)	111.00
Total Luminous Flux (Lumens)	4132.77
Stabilization Time (Light and Power)	30 minutes
Total Run Time (Goniophotometer)	60 minutes
Spacing Criteria (0°-180°)/(90°-270°)	1.22 / 1.28

Electrical Input Results:	Sample Reference
	Pru1-STD-LED35-HO-04-SAL-NU
Input Power (Watts)	37.27
Input Voltage (Volts AC)	120.09
Input Current (Amps)	0.32
Input Frequency (Hertz)	60.0
Power Factor	0.9734
Total Harmonic Distortion (THD A)%	8.81

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

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## Photometric Test Results

Characteristics		Luminance Data (cd/sq.m)			
Total Lumens:	4132.77	Angle In Degrees	Average		
Input Wattage (W):	37.27		0°	45°	90°
Efficacy(lm/W):	110.89	45	28534	24730	24931
Spacing Criterion (0-180°):	1.22	55	24354	21910	23029
Spacing Criterion (90-270°):	1.28	65	20801	18789	20853
Spacing Criterion (Diagonal):	1.36	75	16523	16614	18876
Luminous Length (0-180°):	4.00 ft	85	10796	15231	17826
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°	469.55	11.4		60-80°	811.99	19.6		0-10°	121.87		90-100°	128.07
0-30°	992.85	24.0		70-80°	340.87	8.2		10-20°	347.68		100-110°	69.22
0-40°	1618.68	39.2		80-90°	218.94	5.3		20-30°	523.30		110-120°	33.32
0-60°	2851.33	69.0		90-110°	197.29	4.8		30-40°	625.83		120-130°	13.50
0-80°	3663.32	88.6		90-120°	230.60	5.6		40-50°	646.93		130-140°	4.67
0-90°	3882.26	93.9		90-130°	244.10	5.9		50-60°	585.72		140-150°	1.63
10-90°	3760.39	91.0		90-150°	250.40	6.1		60-70°	471.12		150-160°	0.11
20-40°	1149.12	27.8		90-180°	250.51	6.1		70-80°	340.87		160-170°	0.00
20-50°	1796.05	43.5		110-180°	53.22	1.3		80-90°	218.94		170-180°	0.00
40-70°	1703.77	41.2		0-180°	4132.77	100.0		0-90°	3882.26		90-180°	250.51

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	85	87	84	81	82	80	78	75
2	96	87	79	73	92	84	78	72	80	74	69	75	71	67	72	68	64	62
3	87	76	67	60	84	74	66	59	70	63	58	66	61	56	63	58	54	52
4	80	67	58	51	77	65	57	50	62	55	49	59	53	48	56	51	46	44
5	73	60	51	44	71	58	50	43	56	48	42	53	46	41	50	45	40	38
6	67	54	45	38	65	53	44	38	50	43	37	48	41	36	46	40	35	33
7	63	49	40	34	60	48	39	33	46	38	33	44	37	32	42	36	31	29
8	58	44	36	30	56	44	35	30	42	34	29	40	33	29	38	32	28	26
9	54	41	33	27	53	40	32	27	38	31	26	37	30	26	35	30	25	23
10	51	38	30	24	49	37	29	24	35	29	24	34	28	23	33	27	23	21

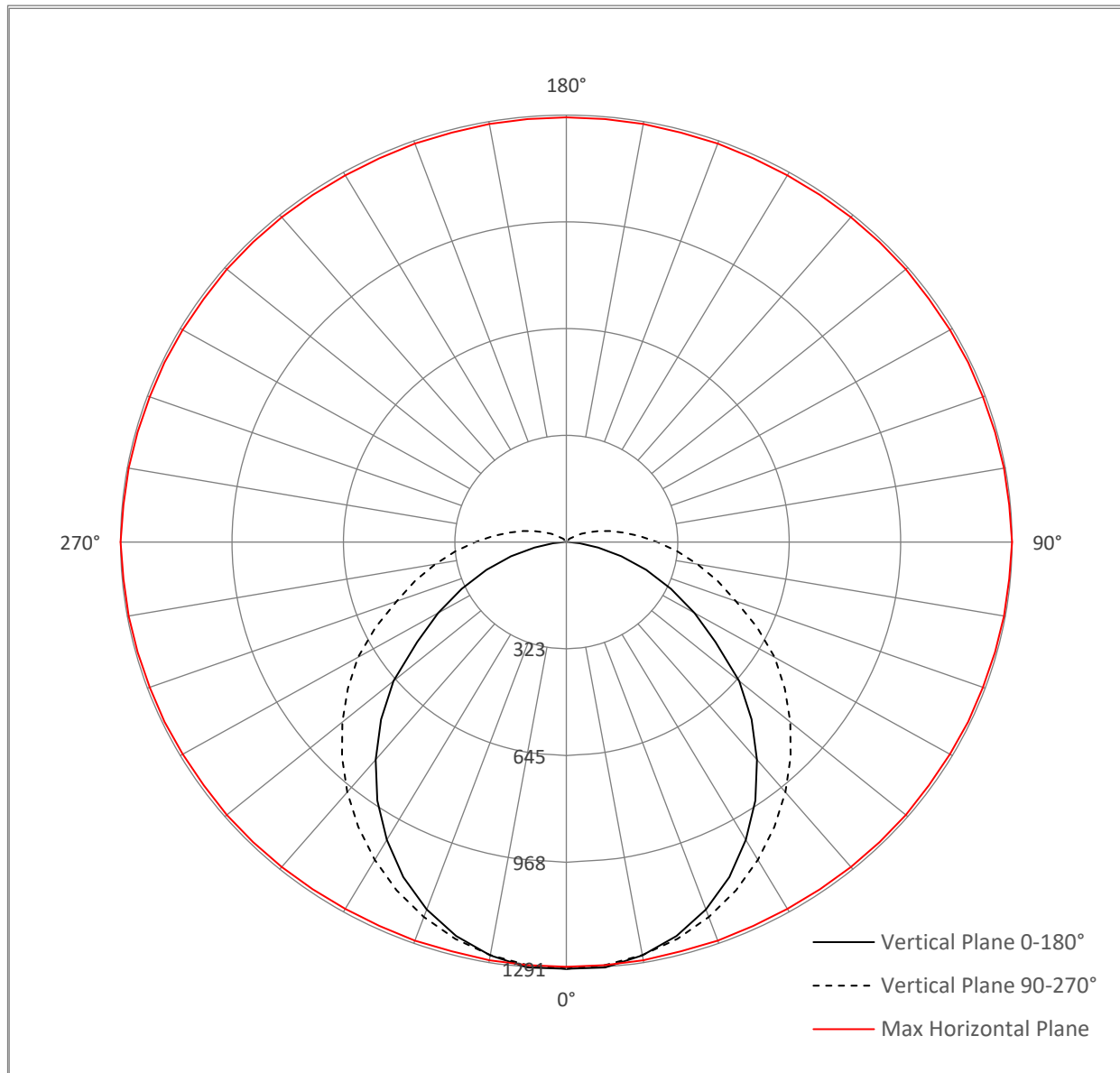
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UGR Table												
		Reflectances						Reflectances				
Ceiling Cavity		70	70	50	50	30		70	70	50	50	30
Walls		50	30	50	30	30		50	30	50	30	30
Floor Cavity		20	20	20	20	20		20	20	20	20	20
Room Size		UGR Viewed Crosswise						UGR Viewed Endwise				
X=2H	Y=2H	20.3	21.9	22.8	25.3	26.2	23.8	25.3	24.2	25.8	26.2	
	3H	21.6	23.0	24.0	27.6	28.6	26.2	27.6	26.7	28.1	28.6	
	4H	22.0	23.3	24.3	28.7	29.7	27.4	28.7	27.9	29.2	29.7	
	6H	22.2	23.4	24.4	29.9	30.9	28.7	29.9	29.2	30.4	30.9	
	8H	22.2	23.4	24.5	30.5	31.6	29.3	30.5	29.8	31.0	31.6	
	12H	22.2	23.4	24.4	31.2	32.3	30.1	31.2	30.6	31.7	32.3	
4H	2H	21.4	22.7	23.7	25.4	26.4	24.1	25.4	24.6	25.9	26.4	
	3H	22.9	24.0	25.1	27.9	28.9	26.7	27.9	27.3	0.0	28.9	
	4H	23.4	24.5	25.6	29.2	30.3	28.1	29.2	28.7	29.7	30.3	
	6H	23.8	24.7	25.8	30.5	31.7	29.6	30.5	30.2	31.1	31.7	
	8H	23.8	24.7	25.8	31.2	32.4	30.4	31.2	30.9	31.8	32.4	
	12H	23.9	24.6	25.8	32.0	33.2	31.3	32.0	31.8	32.6	33.2	
8H	4H	24.3	25.2	26.3	29.2	30.3	28.3	29.2	28.8	29.7	30.3	
	6H	24.8	25.5	26.7	30.7	31.9	29.9	30.7	30.5	31.3	31.9	
	8H	25.0	25.6	26.8	31.5	32.7	30.8	31.5	31.4	32.1	32.7	
	12H	25.1	25.7	26.9	32.5	33.8	31.9	32.5	32.5	33.1	33.8	
12H	4H	24.5	25.3	26.5	29.1	30.3	28.3	29.1	28.9	29.7	30.3	
	6H	25.2	25.9	27.1	30.6	31.9	30.0	30.6	30.6	31.2	31.9	
	8H	25.5	26.0	27.3	31.5	32.8	30.9	31.5	31.5	32.1	32.8	

Maximum UGR = 33.8

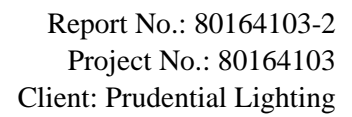
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**Polar Graph**



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Horizontal 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		
	0	1290	1291	1268	1233	1182	1117	1039	954	859	758	653	527	428	334	246	165	94	39	9	4	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5	1290	1287	1265	1229	1178	1115	1039	952	858	757	653	526	428	335	249	168	98	44	13	5	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10	1290	1287	1265	1229	1179	1116	1041	956	862	760	656	531	434	342	256	178	111	58	26	11	5	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	15	1290	1285	1264	1228	1178	1115	1040	956	863	765	664	540	443	353	269	193	127	77	42	21	10	6	4	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	
	20	1290	1283	1262	1226	1177	1117	1044	962	872	775	676	551	458	369	286	212	148	98	60	35	20	11	6	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	25	1290	1284	1263	1228	1180	1120	1049	968	880	786	689	568	475	388	308	234	171	120	80	52	32	19	11	7	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0
	30	1290	1282	1262	1228	1182	1123	1054	976	891	799	705	591	495	410	331	259	195	144	101	69	46	29	18	11	7	5	0	0	0	0	0	0	0	0	0	0	0	0	0
	35	1290	1281	1261	1228	1184	1127	1060	985	901	812	720	615	515	432	354	284	220	167	123	88	61	41	27	17	10	7	5	0	0	0	0	0	0	0	0	0	0	0	0
	40	1290	1283	1264	1231	1186	1132	1066	992	911	826	737	636	537	455	379	308	245	190	144	106	77	53	36	24	14	9	6	5	0	0	0	0	0	0	0	0	0	0	0
45	1290	1282	1263	1231	1188	1135	1071	1000	922	839	754	661	565	479	404	333	269	213	164	124	91	65	45	31	19	12	8	5	4	3	0	0	0	0	0	0	0	0	0	
50	1290	1282	1263	1233	1191	1139	1077	1008	933	853	771	687	588	502	427	357	292	234	184	141	106	77	55	37	24	15	10	6	5	4	3	0	0	0	0	0	0	0	0	
55	1290	1281	1263	1233	1192	1142	1082	1016	943	866	788	707	613	523	449	378	313	253	202	157	120	89	64	45	29	19	12	8	5	4	3	0	0	0	0	0	0	0	0	
60	1290	1280	1262	1233	1194	1146	1088	1024	955	881	803	723	631	541	468	397	331	271	218	171	132	99	72	51	34	22	14													

Telephone: 949-733-4300  
Fax: 949-733-4320  
Version 1.4

**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.

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**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.

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