

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

80153136-5

December 21, 2022

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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 = 44002765-3

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

Luminous Efficacy (Lumens/Watt)	Luminous Flux (Lumens)	Input Power (Watts)	Power Factor	ATHD
88.44	3266.24	36.93	0.9724	9.14%

Spacing Criterion (0-180°)	Spacing Criterion (90-270°)	Stabilization Time (Light & Power)
1.2	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)	88.00
Total Luminous Flux (Lumens)	3266.24
Stabilization Time (Light and Power)	30 minutes
Total Run Time (Goniophotometer)	90 minutes
Spacing Criteria (0°-180°)/(90°-270°)	1.2 / 1.28

Electrical Input Results:	Sample Reference
	Pru1-STD-LED35-HO-04-SAL-NU
Input Power (Watts)	36.93
Input Voltage (Volts AC)	120.06
Input Current (Amps)	0.32
Input Frequency (Hertz)	60.0
Power Factor	0.9724
Total Harmonic Distortion (THD A)%	9.14

Additional Information	Sample Reference
	Pru1-STD-LED35-HO-04-SAL-NU
Ambient Temperature	24.3
Date Tested	12/20/2022

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Photometric Test Results

Characteristics		Luminance Data (cd/sq.m)			
Total Lumens:	3266.24	Angle In Degrees	Average		
Input Wattage (W):	36.93		0°	45°	90°
Efficacy(lm/W):	88.44	45	21818	19788	20364
Spacing Criterion (0-180°):	1.2	55	20665	18348	19449
Spacing Criterion (90-270°):	1.28	65	18268	17045	18412
Spacing Criterion (Diagonal):	1.36	75	15263	15813	18282
Luminous Length (0-180°):	4.00 ft	85	10799	15918	18828
Luminous Width (90-270°):	0.10 ft				
Luminous Height:	0.03 ft				

Zonal Lumen Summary												
Zone	Lumens	%Fixt		Zone	Lumens	%Fixt		Zone	Lumens		Zone	Lumens
0-20°	357.89	11.0		60-80°	671.44	20.6		0-10°	93.00		90-100°	110.87
0-30°	755.40	23.1		70-80°	285.49	8.7		10-20°	264.89		100-110°	61.69
0-40°	1229.75	37.7		80-90°	185.89	5.7		20-30°	397.51		110-120°	30.78
0-60°	2182.90	66.8		90-110°	172.56	5.3		30-40°	474.36		120-130°	13.41
0-80°	2854.34	87.4		90-120°	203.34	6.2		40-50°	491.17		130-140°	5.64
0-90°	3040.23	93.1		90-130°	216.76	6.6		50-60°	461.98		140-150°	2.30
10-90°	2947.23	90.2		90-150°	224.69	6.9		60-70°	385.95		150-160°	0.98
20-40°	871.86	26.7		90-180°	226.02	6.9		70-80°	285.49		160-170°	0.35
20-50°	1363.03	41.7		110-180°	53.46	1.6		80-90°	185.89		170-180°	0.00
40-70°	1339.09	41.0		0-180°	3266.24	100.0		0-90°	3040.23		90-180°	226.02

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	117	117	117	117	114	114	114	114	107	107	107	101	101	101	96	96	96	93
1	105	100	95	90	102	97	92	88	91	87	84	86	83	80	81	79	77	74
2	95	86	78	72	92	83	77	71	79	73	68	74	70	65	70	66	63	60
3	86	75	66	59	83	73	65	58	69	62	56	65	59	55	62	57	53	50
4	79	66	57	50	76	64	56	49	61	54	48	58	52	46	55	49	45	43
5	72	59	50	43	70	58	49	42	55	47	41	52	45	40	49	44	39	37
6	67	53	44	37	64	52	43	37	49	42	36	47	40	35	45	39	34	32
7	62	48	39	33	60	47	38	32	45	37	32	43	36	31	41	35	30	28
8	58	44	35	29	56	43	35	29	41	34	28	39	33	28	37	32	27	25
9	54	40	32	26	52	39	31	26	38	30	25	36	30	25	35	29	24	23
10	50	37	29	24	49	36	29	23	35	28	23	33	27	23	32	26	22	20

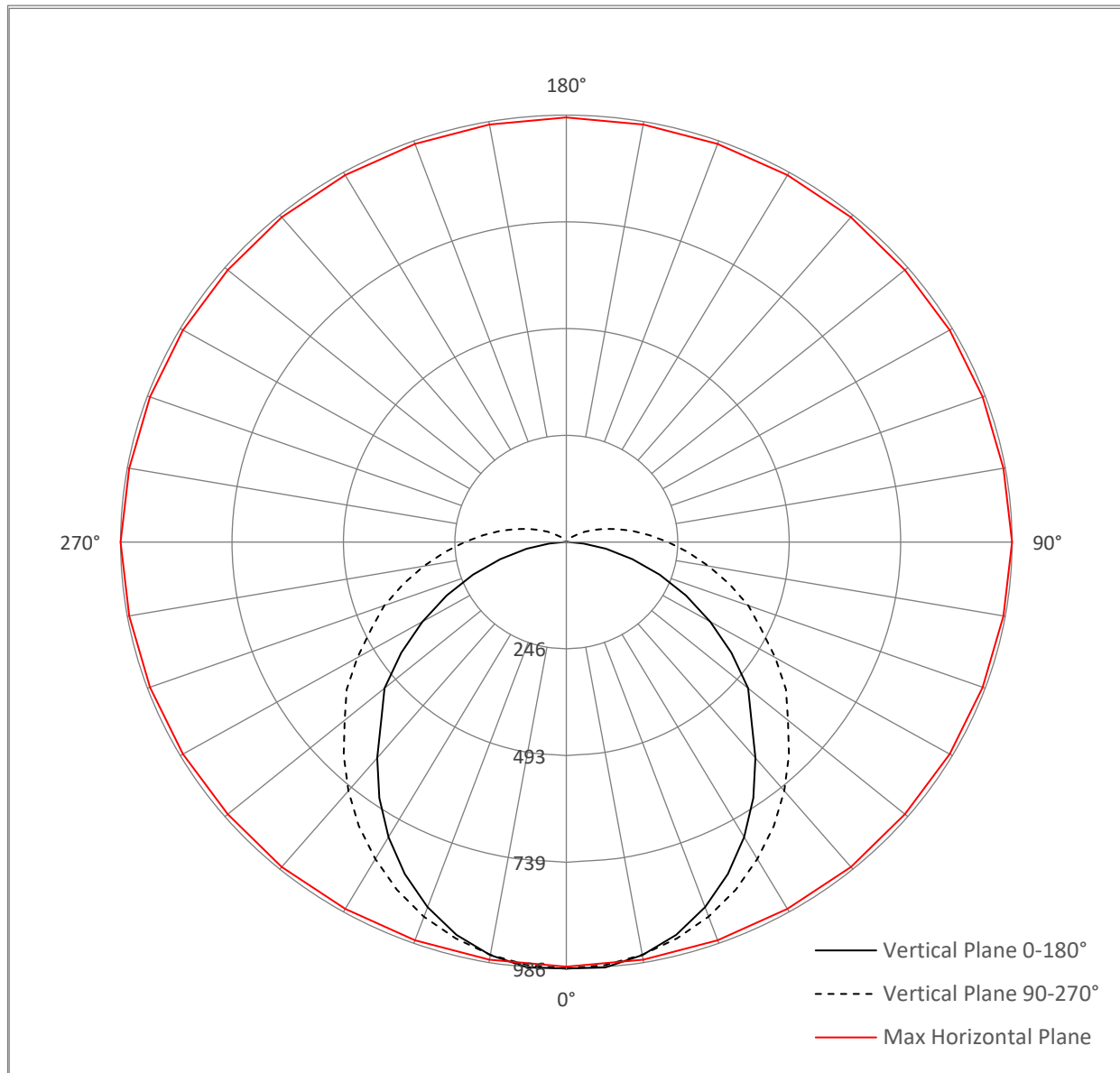
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UGR Table												
		Reflectances						Reflectances				
Ceiling Cavity		70	70	50	50	30		70	70	50	50	30
Walls		50	30	50	30	30		50	30	50	30	30
Floor Cavity		20	20	20	20	20		20	20	20	20	20
Room Size		UGR Viewed Crosswise						UGR Viewed Endwise				
X=2H	Y=2H	20.3	21.8	22.7	24.4	25.4	22.9	24.4	23.4	24.9	25.4	
	3H	21.7	23.1	24.1	26.9	27.9	25.5	26.9	26.0	27.4	27.9	
	4H	22.1	23.5	24.5	28.1	29.2	26.8	28.1	27.3	28.6	29.2	
	6H	22.4	23.6	24.7	29.4	30.5	28.2	29.4	28.7	29.9	30.5	
	8H	22.4	23.6	24.7	30.1	31.1	28.9	30.1	29.4	30.6	31.1	
	12H	22.5	23.6	24.7	30.8	31.9	29.7	30.8	30.2	31.3	31.9	
4H	2H	21.3	22.6	23.6	24.6	25.6	23.3	24.6	23.8	25.1	25.6	
	3H	22.9	24.1	25.1	27.3	28.4	26.2	27.3	26.7	0.0	28.4	
	4H	23.5	24.6	25.7	28.7	29.8	27.6	28.7	28.2	29.2	29.8	
	6H	23.9	24.8	26.0	30.1	31.3	29.2	30.1	29.7	30.7	31.3	
	8H	24.0	24.9	26.1	30.9	32.0	30.0	30.9	30.6	31.4	32.0	
	12H	24.0	24.8	26.1	31.7	32.9	30.9	31.7	31.5	32.3	32.9	
8H	4H	24.3	25.2	26.4	28.7	29.9	27.8	28.7	28.4	29.3	29.9	
	6H	24.9	25.7	26.9	30.3	31.5	29.6	30.3	30.2	30.9	31.5	
	8H	25.1	25.8	27.1	31.2	32.4	30.5	31.2	31.1	31.8	32.4	
	12H	25.3	25.9	27.2	32.2	33.5	31.6	32.2	32.2	32.8	33.5	
12H	4H	24.6	25.4	26.6	28.6	29.8	27.8	28.6	28.4	29.2	29.8	
	6H	25.3	26.0	27.3	30.3	31.5	29.6	30.3	30.2	30.9	31.5	
	8H	25.6	26.2	27.5	31.2	32.5	30.6	31.2	31.2	31.8	32.5	

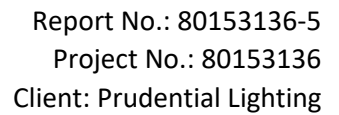
Maximum UGR = 33.5

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Polar Graph



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Horizontal Angle		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180		
	0	984	986	968	939	897	845	787	721	651	578	524	446	368	292	220	151	89	38	7	4	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0		
	5	984	980	962	932	892	842	784	719	649	576	522	445	368	294	222	153	92	42	12	4	3	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10	984	982	964	935	895	845	787	723	653	579	525	447	371	297	226	160	101	53	23	9	4	3	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	
	15	984	981	964	933	894	844	787	722	653	582	519	453	378	305	235	171	114	69	37	18	9	5	4	3	2	2	2	2	0	0	0	0	0	0	0	0	0	0	
	20	984	980	963	934	895	846	790	727	660	588	526	461	387	316	248	185	131	86	53	31	17	10	6	4	3	2	2	2	2	2	2	2	0	0	0	0	0	0	0
	25	984	980	964	935	897	849	793	732	665	595	534	471	399	329	262	202	149	105	70	45	28	17	10	7	5	4	3	3	2	2	2	2	2	0	0	0	0	0	0
	30	984	979	962	935	897	851	797	737	672	604	545	484	412	343	278	219	168	124	88	60	40	26	16	11	8	5	4	3	3	2	2	2	2	2	2	0	0	0	0
	35	984	978	961	935	898	854	802	743	680	614	556	496	425	358	296	238	187	143	106	76	53	36	23	15	10	7	5	4	3	3	2	2	2	2	2	0	0	0	0
	40	984	977	962	937	901	858	807	750	688	623	567	498	441	375	314	257	206	162	123	92	66	47	32	21	14	10	7	5	4	3	3	2	2	2	2	0	0	0	0
45	984	979	964	939	904	862	812	757	697	634	574	513	457	393	332	276	225	180	140	107	80	58	40	27	18	12	9	6	4	3	3	3	3	2	2	2	0	0	0	
50	984	979	964	940	907	865	817	764	706	645	587	528	473	410	350	294	243	197	156	122	92	68	49	34	22	15	11	8	5	4	3	3	3	2	2	2	0	0	0	
55	984	978	963	940	909	869	823	771	715	656	594	542	478	426	367	311	260	213	172	135	104	79	57	40	27	18	13	9	6	4	3	3	3	3	2	2	0	0	0	
60	984	978	964	941	911	873	828	778	724	666	606	555	492	441	382	327	275	227	185	148	115	88	65	47	31	21	15	11	7	5	3	3	3	3	2	2	0	0	0	
65	984	978	965	943	913	876	833	784	731	674	616	565																												

Telephone: 949-733-4300
Fax: 949-733-4320
Version 1.2

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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