

PHOTOMETRIC TESTING & EVALUATION TO IES LM-79-19

Sample Tested

Pru1-STD-LED35-LO-04-NW-SYM

Prepared for:

Prudential Lighting

1774 East 21st
Los Angeles, CA 90058

Technical Report Number
801502237-5

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Program Description

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

Executive Summary

Sample Tested = Pru1-STD-LED35-LO-04-NW-SYM

Sample Number = 44002765-3

Driver = OSRAM OPTOTRONIC OTi20/120-277/700 DIM-1LG2

Luminous Efficacy (Lumens/Watt)	Luminous Flux (Lumens)	Input Power (Watts)	Power Factor	ATHD
85.46	993.08	11.62	0.9833	8.48%

Spacing Criterion (0-180°)	Spacing Criterion (90-270°)	Stabilization Time (Light & Power)
N.A.	N.A.	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-LO-04-NW-SYM

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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-LO-04-NW-SYM
	Goniophotometer
Luminous Efficacy (Lumens/Watt)	85.00
Total Luminous Flux (Lumens)	993.08
Stabilization Time (Light and Power)	30 minutes
Total Run Time (Integrating Sphere)	85 minutes
Spacing Criteria (0°-180°)/(90°-270°)	N.A. / N.A.

Electrical Input Results:	Sample Reference
	Pru1-STD-LED35-LO-04-NW-SYM
Input Power (Watts)	11.62
Input Voltage (Volts AC)	120.03
Input Current (Amps)	0.10
Input Frequency (Hertz)	60.0
Power Factor	0.9833
Total Harmonic Distortion (THD A)%	8.48

Additional Information	Sample Reference
	Pru1-STD-LED35-LO-04-NW-SYM
Ambient Temperature	25.8
Date Tested	11/28/2022

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Photometric Test Results

Characteristics		Luminance Data (cd/sq.m)			
Total Lumens:	993.08	Angle In Degrees	Average		
Input Wattage (W):	11.62		0°	45°	90°
Efficacy(lm/W):	85.46	45	0	0	90
Spacing Criterion (0-180°):	N.A.	55	0	93	280
Spacing Criterion (90-270°):	N.A.	65	0	298	660
Spacing Criterion (Diagonal):	N.A.	75	0	821	1420
Luminous Length (0-180°):	3.83 ft	85	0	2232	3002
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°	0.00	0.0		60-80°	25.14	2.5		0-10°	0.00		90-100°	53.05
0-30°	0.00	0.0		70-80°	16.96	1.7		10-20°	0.00		100-110°	83.22
0-40°	0.00	0.0		80-90°	31.02	3.1		20-30°	0.00		110-120°	114.72
0-60°	3.96	0.4		90-110°	136.26	13.7		30-40°	0.00		120-130°	140.19
0-80°	29.10	2.9		90-120°	250.99	25.3		40-50°	0.76		130-140°	153.37
0-90°	60.12	6.1		90-130°	391.18	39.4		50-60°	3.20		140-150°	149.23
10-90°	60.12	6.1		90-150°	693.78	69.9		60-70°	8.18		150-160°	125.78
20-40°	0.00	0.0		90-180°	932.97	93.9		70-80°	16.96		160-170°	83.91
20-50°	0.76	0.1		110-180°	796.70	80.2		80-90°	31.02		170-180°	29.50
40-70°	12.14	1.2		0-180°	993.08	100.0		0-90°	60.12		90-180°	932.97

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	97	97	97	97	84	84	84	84	59	59	59	36	36	36	16	16	16	6
1	87	82	78	74	74	71	67	64	49	47	45	30	28	27	12	11	10	2
2	78	71	65	60	67	61	56	52	43	39	36	25	24	22	10	9	8	1
3	71	62	55	49	61	53	47	43	37	33	30	22	20	18	8	7	6	1
4	65	54	47	41	55	47	41	36	33	29	25	20	17	15	7	6	5	0
5	59	48	40	35	51	42	35	30	29	25	21	17	15	13	6	5	5	0
6	54	43	35	30	46	37	31	26	26	22	18	16	13	11	6	5	4	0
7	50	38	31	26	43	33	27	22	23	19	16	14	11	10	5	4	3	0
8	46	35	27	22	40	30	24	19	21	17	14	13	10	8	5	4	3	0
9	43	31	24	19	37	27	21	17	19	15	12	11	9	7	4	3	3	0
10	40	28	22	17	34	25	19	15	17	13	11	11	8	6	4	3	2	0

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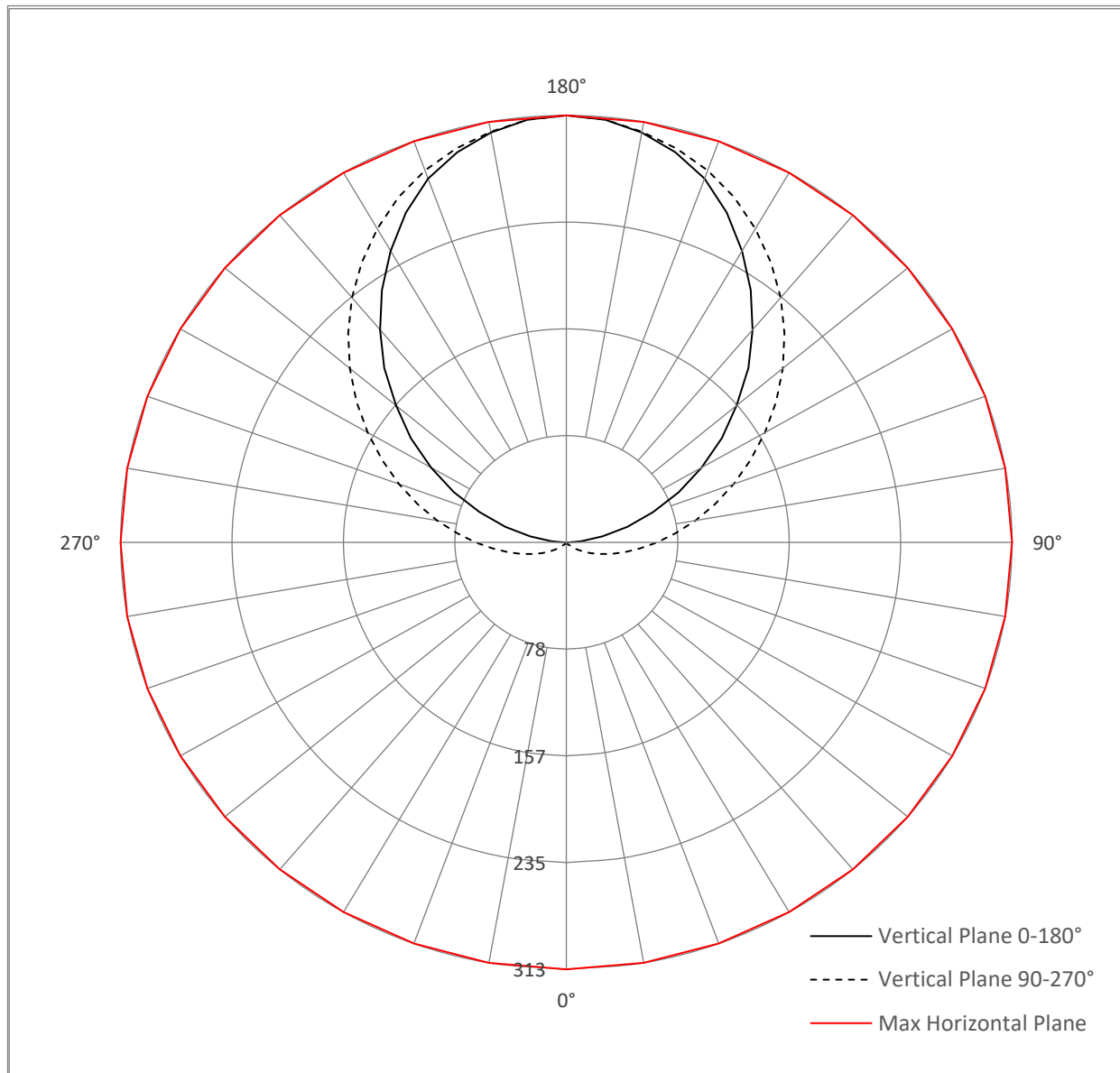
UGR Table												
		Reflectances						Reflectances				
Ceiling Cavity		70	70	50	50	30		70	70	50	50	30
Walls		50	30	50	30	30		50	30	50	30	30
Floor Cavity		20	20	20	20	20		20	20	20	20	20
Room Size		UGR Viewed Crosswise						UGR Viewed Endwise				
X=2H	Y=2H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	3H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	4H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	12H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
4H	2H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	3H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	4H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	12H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
8H	4H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	12H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
12H	4H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8H	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Maximum UGR =

Unable to calculate UGR - No candela in offending zones

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Polar Graph



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Candela Tabulation

		Vertical Angle																																					
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	10	26	44	65	87	109	133	156	181	204	226	247	267	284	296	305	311	313	
	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	3	12	27	45	66	88	110	134	156	181	204	227	247	267	284	296	305	311	313
	10	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	3	6	15	29	47	67	89	111	134	157	182	205	227	248	268	285	297	306	312	313
	15	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	2	5	10	20	33	50	70	90	113	136	159	183	206	227	247	267	284	297	305	311	313
	20	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	3	5	8	15	25	38	54	74	94	116	138	161	184	208	228	248	268	284	297	305	311	313
	25	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	5	8	12	20	30	43	59	77	98	119	141	164	187	209	229	249	269	285	297	305	311	313
	30	0	0	0	0	0	0	0	0	0	0	0	1	1	2	3	4	7	11	17	25	35	49	64	82	102	122	144	167	190	211	231	251	270	285	296	305	311	313
	35	0	0	0	0	0	0	0	0	0	0	1	1	1	2	4	6	10	14	21	30	41	54	70	87	106	126	148	170	192	213	233	253	271	286	296	304	310	313
	40	0	0	0	0	0	0	0	0	0	0	1	1	2	3	5	9	13	18	26	35	46	60	75	92	111	131	152	174	195	215	236	255	273	286	297	305	311	313
	45	0	0	0	0	0	0	0	0	0	1	1	2	3	5	7	11	16	22	30	40	51	65	80	98	116	136	157	177	197	218	239	257	274	287	297	305	311	313
	50	0	0	0	0	0	0	0	0	0	1	1	2	4	6	9	13	19	26	34	44	56	70	86	103	121	141	161	181	201	222	242	260	275	287	298	305	311	313
	55	0	0	0	0	0	0	0	1	1	2	3	5	7	11	16	22	29	38	48	61	75	91	108	126	145	164	184	205	225	244	261	276	288	298	305	311	313	
	60	0	0	0	0	0	0	0	1	1	2	3	6	9	13	18	25	32	42	52	65	79	95	112	130	149	168	189	209	228	246	263	276	288	298	305	311	313	
	65	0	0	0	0	0	0	0	1	1	2	4	7	10	14	20	27	35	45	56	69	83	99	116	134	153	173	193	212	230	248	263	277	289	298	305	311	313	
	70	0	0	0	0	0	0	1	1	2	3	4	7	11	16	22	29	37	47	59	72	86	102	120	138	157	176	195	214	232	248	264	278	289	298	306	311	313	
	75	0	0	0	0	0	0	1	1	2	3	5	8	12	17	23	30	39	49	61	74	89	105	122	140	159	178	197	215	233	249	265	278	289	298	305	311	313	
	80	0	0	0	0	0	0	1	1	2	3	5	9	13	18	24	32	41	51	63	76	90	107	124	142	160	179	198	216	234	250	265	279	290	299	306	311	313	
	85	0	0	0	0	0	1	1	1	2	3	6	9	13	18	25	32	41	52	64	77	91	108	125	143	161	180	198	217	234	250	266	279	290	299	306	311	313	
90	0	0	0	0	0	1	1	1	2	3	6	9	13	18	25	33	41	52	64	77	92	108	125	143	161	180	198	217	234	251	266	279	290	299	306	311	313		

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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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