



Report No.: 80193986-1
Project No.: 80193986
Client: SPJ Lighting Inc.

PHOTOMETRIC TESTING & EVALUATION TO IES LM-79-19

Sample Tested

SPJ-119-RL

Prepared for:

SPJ Lighting Inc.

2107 Chico Ave.
South El Monte, CA 91733

Technical Report Number

80193986-1

12/13/2023

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Program Description

Photometric and electrical testing of a SPJ-119-RL Type C LED Luminaire to IES LM-79-19.

Executive Summary

Sample Tested = SPJ-119-RL

Sample Number = 214553-1

Driver = HATCH RL12-60M-LED INPUT:120VAC/0.6A, OUTPUT:60W MAX/12VAC

Luminous Efficacy (Lumens/Watt)	Luminous Flux (Lumens)	Input Power (Watts)	Power Factor	ATHD (%)
5.38	40.10	7.45	0.6041	106.69

IES Classification	Longitudinal Classification	Maximum Candela	BUG Rating
N.A.	N.A.	17.85 (0H, 90V)	B0-U2-G0

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

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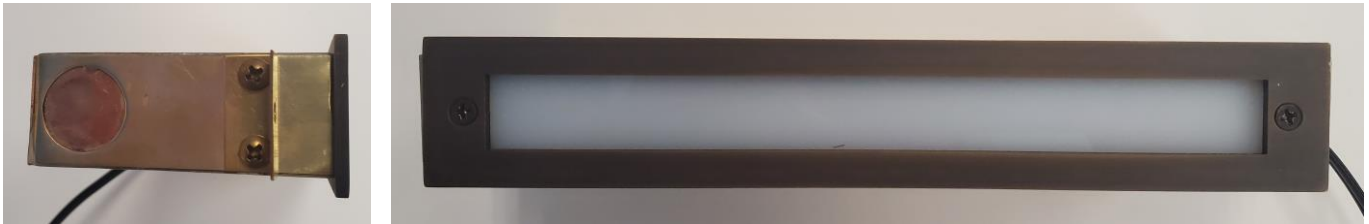
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Test Sample Pictures

The following sample was submitted for evaluation:



SPJ Lighting Inc. : SPJ-119-RL

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Test Result	
<p>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%.</p>	
Key Photometric Results	Sample Reference
	SPJ-119-RL
	Goniophotometer
Luminous Efficacy (Lumens/Watt)	5.38
Total Luminous Flux (Lumens)	40.1
IES Classification	N.A.
Longitudinal Classification	N.A.
Maximum Candela	17.85 (0H, 90V)
Stabilization Time (Light and Power)	66 minutes
Total Run Time (Goniophotometer)	80 minutes

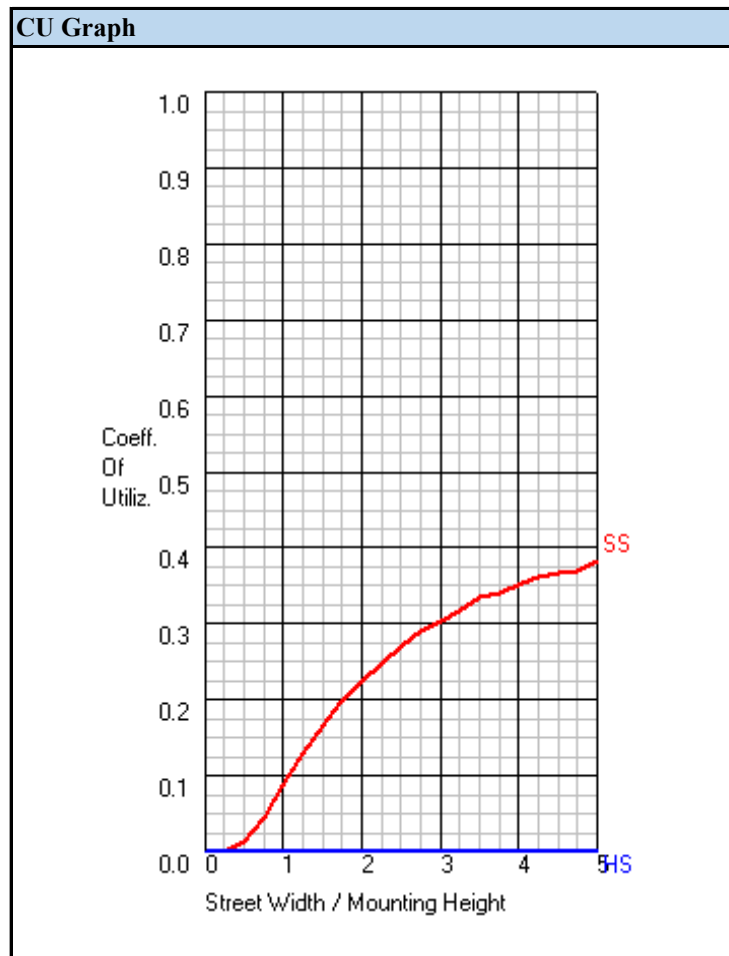
Electrical Input Results:	Sample Reference
	SPJ-119-RL
Input Power (Watts)	7.45
Input Voltage (Volts AC)	120.12
Input Current (Amps)	0.1
Input Frequency (Hertz)	60
Power Factor	0.6041
Total Harmonic Distortion (THD A)%	106.69

Additional Information	Sample Reference
	SPJ-119-RL
Ambient Temperature	24.5
Date Tested	12/13/2023

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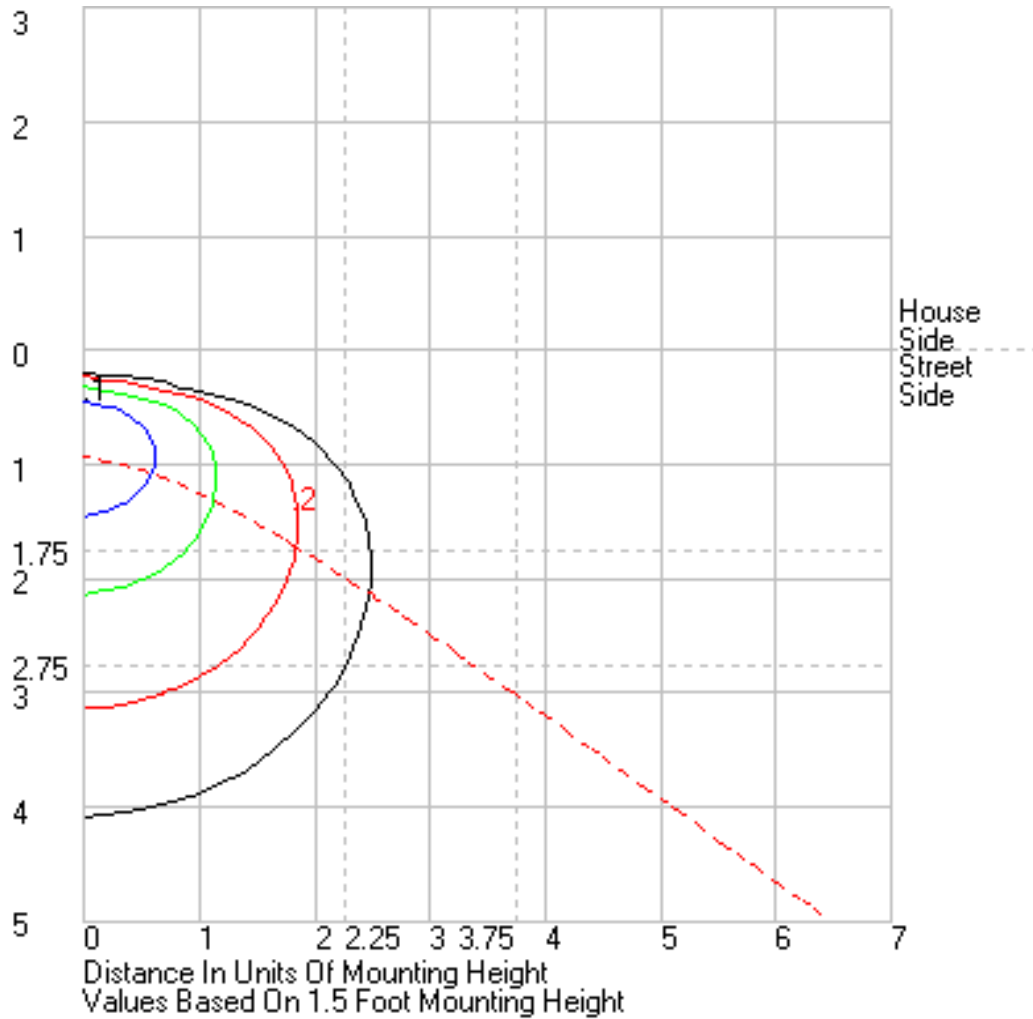
Lumens Classification System (LCS)			
LCS Zone		Lumens	%Lum
FL	0-30°	0.3	0.8
FM	30-60°	5.7	14.1
FH	60-80°	8.8	22
FVH	80-90°	5.4	13.6
BL	0-30°	0	0
BM	30-60°	0	0
BH	60-80°	0	0
BVH	80-90°	0	0
UL	90-100°	5.4	13.5
UH	100-180°	14.5	36.1
Total		40.1	100

Flux Distribution		
	Lumens	%Luminaire
Downward Street Side	20.3	50.4
Downward House Side	0	0
Downward Total	20.3	50.5
Upward Street Side	19.9	49.6
Upward House Side	0	0
Upward Total	19.9	49.5
Total Flux	40.2	100.1



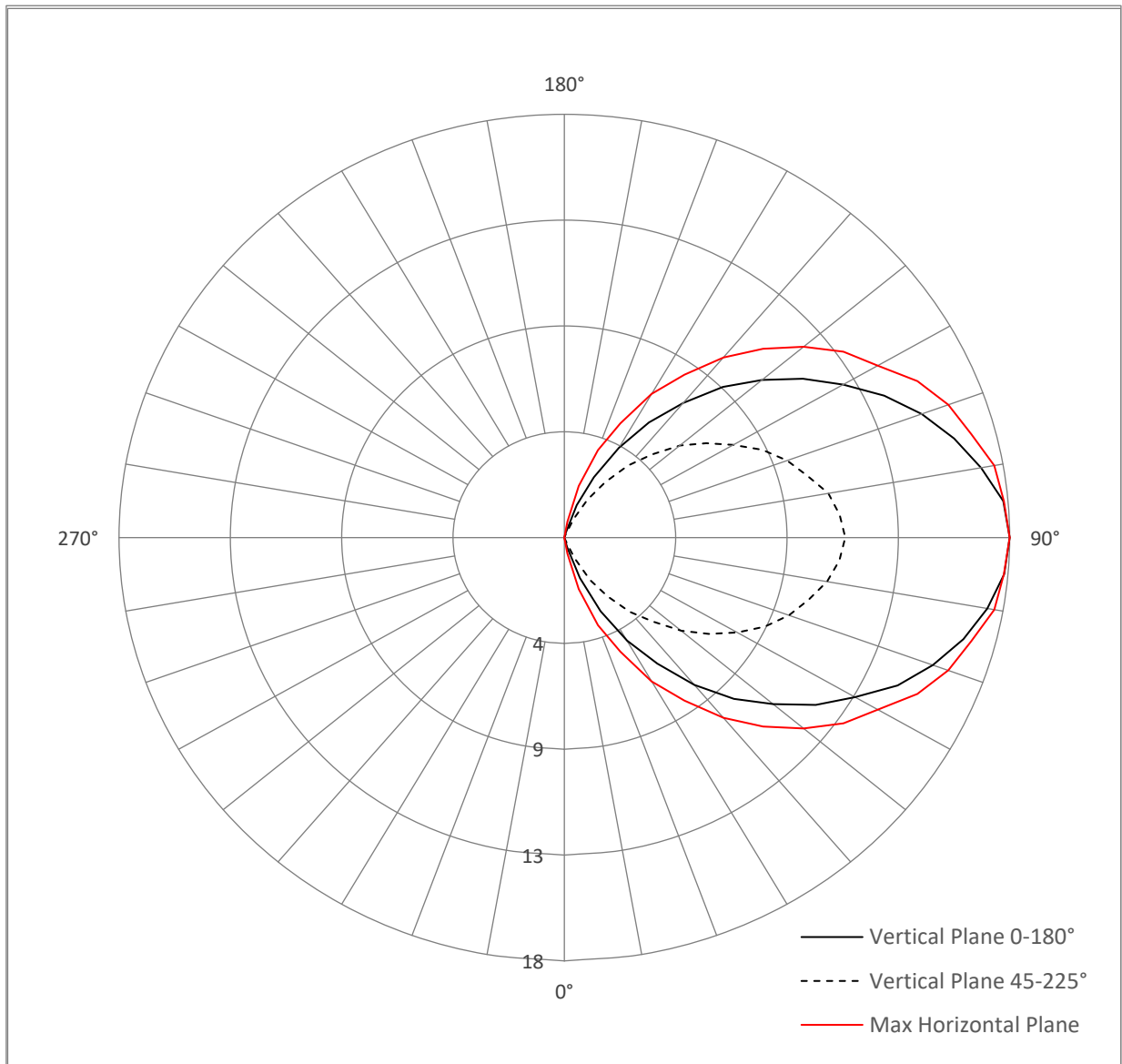
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Isolines



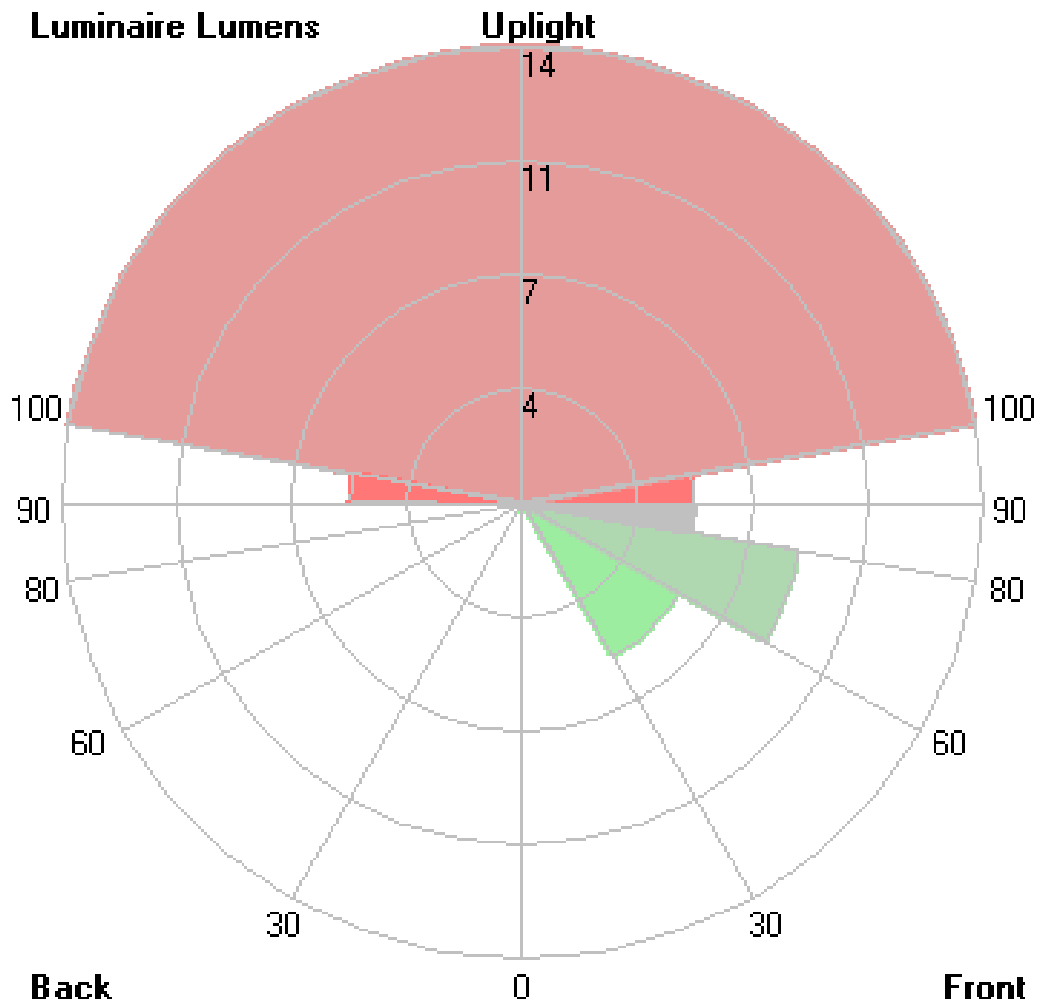
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Polar Graph



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LCS Graph



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Candela Tabulation

		Vertical 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																																																																																																																																															
Horizontal Angle	0	0	0	0	0.42	1.81	3.43	5.02	6.49	8.11	9.61	10.9	12.3	13.5	14.7	15.7	16.6	17.2	17.7	17.9	17.7	17	16.2	15.2	14.2	12.9	11.7	10.4	8.99	7.42	5.92	4.37	2.81	1.45	0.19	0	0	0																																																																																																																																															
	5	0	0	0	0.38	1.7	3.23	4.7	6.22	7.71	9.1	10.6	11.9	13.1	14.3	15.4	16.3	17	17.5	17.7	17.5	16.9	16.1	15.1	14	12.9	11.6	10.3	8.93	7.44	5.93	4.33	2.86	1.42	0.14	0	0	0																																																																																																																																															
	10	0	0	0	0.31	1.51	2.99	4.43	6.03	7.58	8.92	10.3	11.7	12.9	14	15.1	16	16.8	17.3	17.5	17.2	16.7	15.8	15	13.8	12.6	11.4	10.1	8.74	7.25	5.82	4.25	2.84	1.31	0.08	0	0	0																																																																																																																																															
	15	0	0	0	0.24	1.32	2.81	4.3	5.88	7.34	8.76	10.1	11.4	12.7	13.7	14.8	15.6	16.3	16.8	16.9	16.7	16.2	15.4	14.5	13.5	12.4	11.2	9.98	8.45	6.99	5.61	4.13	2.66	1.21	0.03	0	0	0																																																																																																																																															
	20	0	0	0	0.18	1.19	2.58	4.06	5.59	6.98	8.37	9.75	10.9	12.1	13.3	14.3	15	15.8	16.2	16.4	16.1	15.6	14.8	14	13	11.8	10.7	9.45	8.09	6.71	5.34	3.9	2.46	1.1	0.01	0	0	0																																																																																																																																															
	25	0	0	0	0.12	0.99	2.35	3.77	5.24	6.62	7.88	9.23	10.4	11.5	12.6	13.5	14.3	15	15.4	15.6	15.4	14.9	14.2	13.4	12.3	11.4	10.2	8.94	7.63	6.3	4.96	3.62	2.25	0.96	0.02	0	0	0																																																																																																																																															
	30	0	0	0	0.05	0.76	2.1	3.37	4.79	6.06	7.35	8.63	9.68	10.8	11.8	12.7	13.5	14	14.5	14.5	14.4	13.9	13.3	12.5	11.7	10.6	9.54	8.44	7.1	5.87	4.48	3.27	1.92	0.78	0.02	0	0	0																																																																																																																																															
	35	0	0	0	0	0.56	1.71	2.97	4.22	5.45	6.67	7.88	8.95	9.92	10.9	11.8	12.6	13	13.4	13.7	13.4	13	12.3	11.6	10.9	9.8	8.78	7.63	6.49	5.27	4.05	2.86	1.6	0.5	0	0	0	0																																																																																																																																															
	40	0	0	0	0	0.33	1.35	2.46	3.64	4.78	5.98	6.98	8.08	9.1	9.95	10.8	11.4	11.9	12.2	12.5	12.2	11.9	11.3	10.6	9.79	8.85	7.91	6.89	5.79	4.64	3.5	2.41	1.26	0.15	0	0	0	0																																																																																																																																															
	45	0	0	0	0	0.17	0.95	2.07	3.03	4.08	5	6.11	7.08	8.01	8.87	9.58	10.1	10.7	11.1	11.3	11.1	10.7	10.1	9.51	8.76	7.82	6.94	6.05	4.96	3.96	2.86	1.85	0.86	0.03	0	0	0	0																																																																																																																																															
	50	0	0	0	0	0.02	0.56	1.52	2.37	3.35	4.26	5.27	6.15	6.95	7.73	8.39	8.95	9.42	9.79	9.92	9.69	9.31	8.85	8.28	7.55	6.78	5.97	5.15	4.18	3.16	2.21	1.32	0.44	0.01	0	0	0	0																																																																																																																																															
	55	0	0	0	0	0	0.22	0.85	1.62	2.48	3.4	4.29	4.99	5.72	6.48	7.05	7.55	7.91	8.23	8.39	8.33	7.87	7.5	7.03	6.44	5.57	4.9	4.14	3.34	2.42	1.61	0.82	0.17	0	0	0	0	0																																																																																																																																															
	60	0	0	0	0	0	0	0.29	0.96	1.71	2.53	3.23	3.89	4.52	5.17	5.73	6.17	6.57	6.8	7	6.75	6.48	6.1	5.56	4.99	4.36	3.71	3.16	2.37	1.64	0.9	0.29	0	0	0	0	0	0																																																																																																																																															
	65	0	0	0	0	0	0	0.01	0.34	0.8	1.43	2.08	2.68	3.3	3.82	4.26	4.75	5.09	5.29	5.31	5.27	4.98	4.66	4.29	3.83	3.19	2.63	2.01	1.43	0.81	0.27	0	0	0	0	0	0	0																																																																																																																																															
	70	0	0	0	0	0	0	0.03	0.19	0.55	1.06	1.49	2.01	2.43	2.82	3.17	3.36	3.77	3.93	3.78	3.43	3.23	2.8	2.41	1.94	1.49	0.98	0.53	0.06	0	0	0	0	0	0	0	0	0																																																																																																																																															
	75	0	0	0	0	0	0	0	0	0.05	0.17	0.37	0.79	1.09	1.4	1.63	1.84	2.18	2.25	2.17	1.9	1.72	1.4	1.03	0.71	0.36	0.15	0.03	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
	80	0	0	0	0	0	0	0	0	0	0	0	0.04	0.13	0.22	0.39	0.43	0.75	0.68	0.7	0.5	0.41	0.2	0.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																														
	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																														
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																															

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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 88
Bulb Number: 114-A
Voltage: 16.59 Volts DC reference
Calibration Current: 4.810 Amperes
Luminous Intensity: 154.7 Candelas
Calibration Date: 7/12/12 (NIST traceable)

Manufacturer: GE
Part Number: DZE 88
Bulb Number: 114-B
Voltage: 16.61 Volts DC reference
Calibration Current: 4.819 Amperes
Luminous Intensity: 150.6 Candelas
Calibration Date: 7/12/12(NIST traceable)

Manufacturer: GE
Part Number: DZE 88
Bulb Number: 114-C
Voltage: 16.66 Volts DC reference
Calibration Current: 4.815 Amperes
Luminous Intensity: 155.4 Candelas
Calibration Date: 7/12/12 (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	N/A	N/A
Regulated Power Supply	Chroma Instruments 61602P-80-60	DCP401	N/A
Regulated Power Supply	Chroma Instruments 61602	DCP301	N/A
Power Analyzer	Yokogawa WT310-E	POA105	9/22/2024

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

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TESTING
 NVLAP LAB CODE 200732-0

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