

PHOTOMETRIC TESTING & EVALUATION TO IES LM-79-19

Sample Tested

Brian MT1

Prepared for:

Alva Light1212 19th Street
Oakland, CA. 94607**Technical Report Number**

80167894-1

May 4, 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 Brian MT1 Type C LED Luminaire to IES LM-79-19.

Executive Summary

Sample Tested = Brian MT1

Sample Number = 44002879

Luminous Efficacy (Lumens/Watt)	Luminous Flux (Lumens)	Input Power (Watts)	Power Factor	ATHD (%)
8.06	282.40	35.03	0.9792	5.52

IES Classification	Longitudinal Classification	Maximum Candela	BUG Rating
N.A.	N.A.	141.99 (180H, 32.5V)	B0-U0-G0

* 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:

**Front****Side****Bottom****Alva Light : Brian MT1**

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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
	Brian MT1
	Goniophotometer
Luminous Efficacy (Lumens/Watt)	8.06
Total Luminous Flux (Lumens)	282.4
IES Classification	N.A.
Longitudinal Classification	N.A.
Maximum Candela	141.99 (180H, 32.5V)
Stabilization Time (Light and Power)	30 minutes
Total Run Time (Goniophotometer)	60 minutes

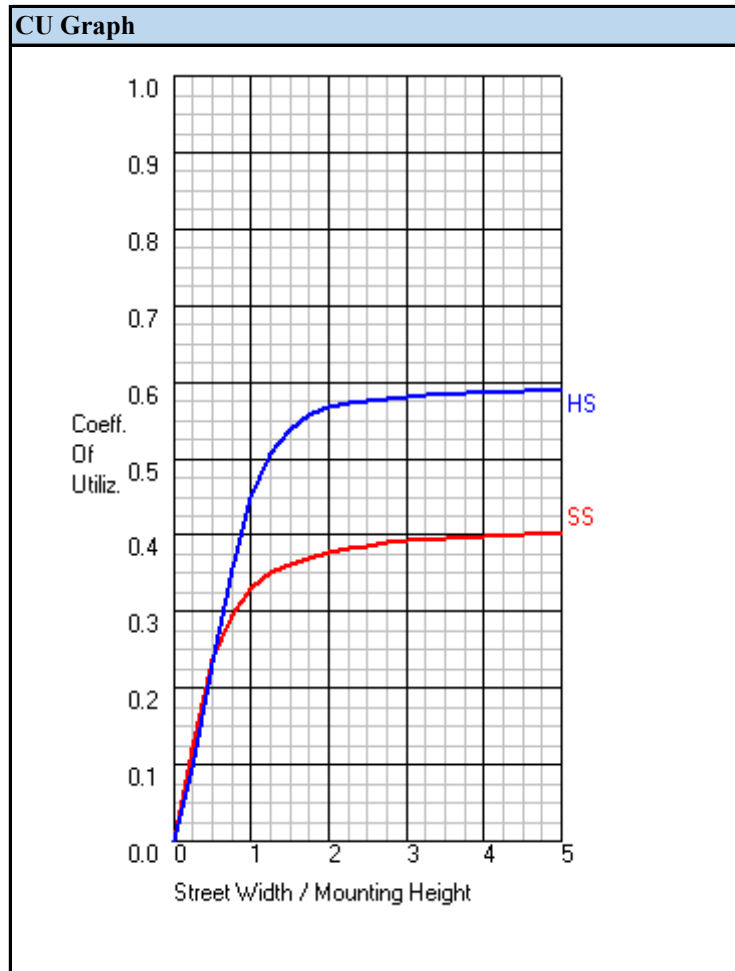
Electrical Input Results:	Sample Reference
	Brian MT1
Input Power (Watts)	35.03
Input Voltage (Volts AC)	120
Input Current (Amps)	0.3
Input Frequency (Hertz)	60
Power Factor	0.9792
Total Harmonic Distortion (THD A)%	5.52

Additional Information	Sample Reference
	Brian MT1
Ambient Temperature	25.7
Date Tested	45049

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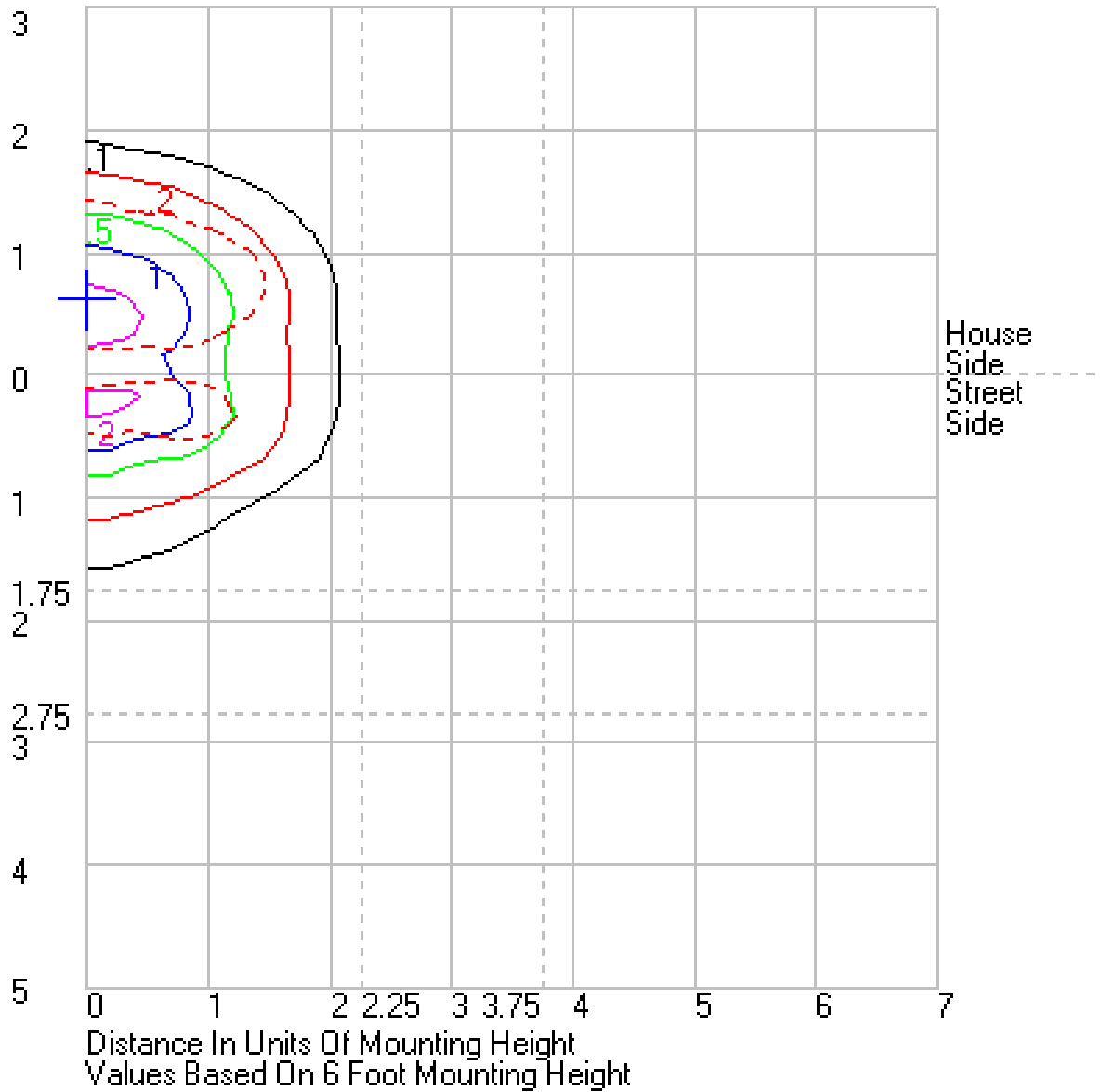
Lumens Classification System (LCS)			
LCS Zone		Lumens	%Lum
FL	0-30°	33.6	11.9
FM	30-60°	58.8	20.8
FH	60-80°	19.9	7.1
FVH	80-90°	2.5	0.9
BL	0-30°	33.9	12
BM	30-60°	104.7	37.1
BH	60-80°	26.7	9.4
BVH	80-90°	2.3	0.8
UL	90-100°	0	0
UH	100-180°	0	0
Total		282.4	100

Flux Distribution		
	Lumens	%Luminaire
Downward Street Side	114.9	40.7
Downward House Side	167.5	59.3
Downward Total	282.4	100
Upward Street Side	0	0
Upward House Side	0	0
Upward Total	0	0
Total Flux	282.4	100



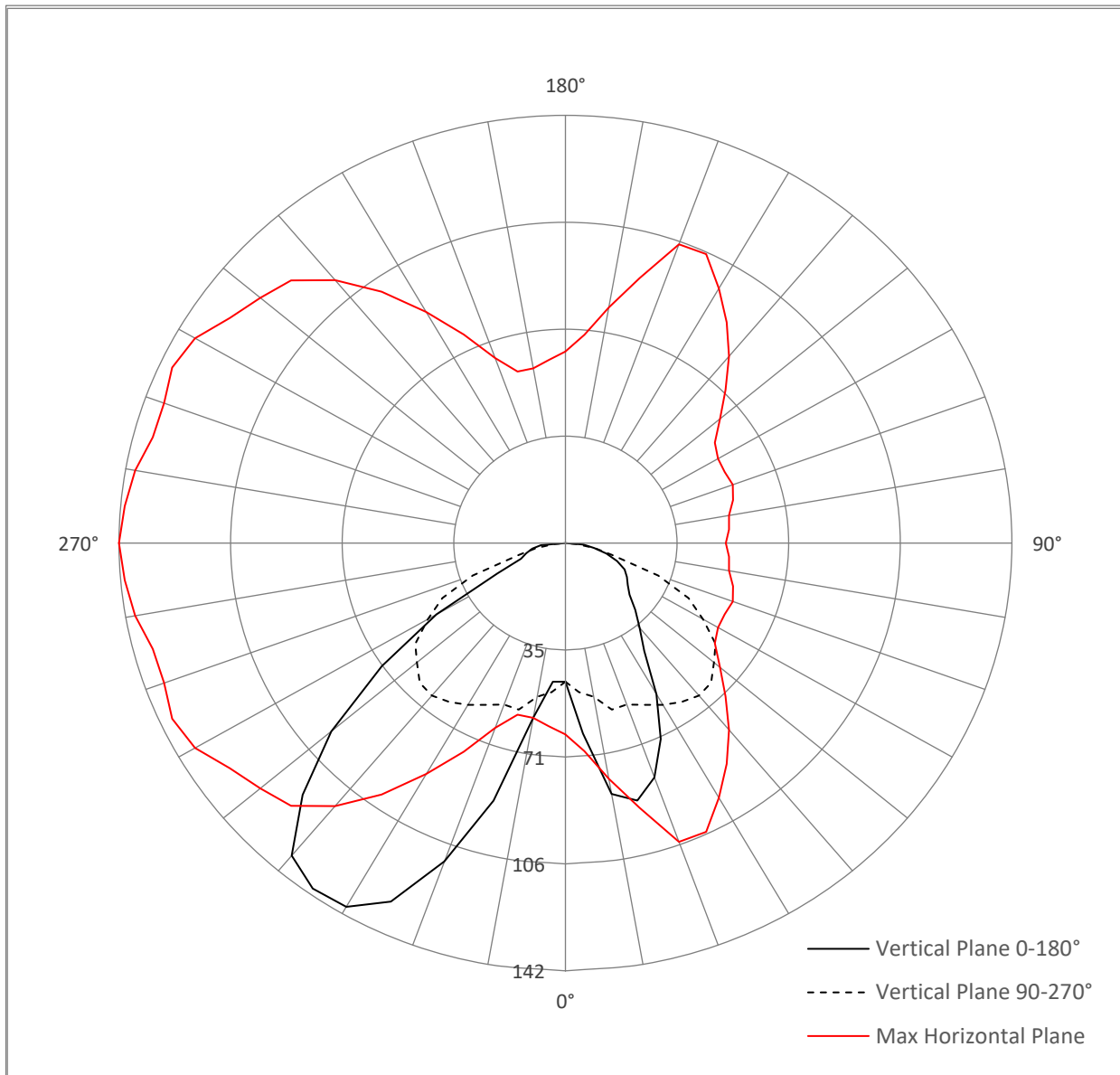
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Isolines



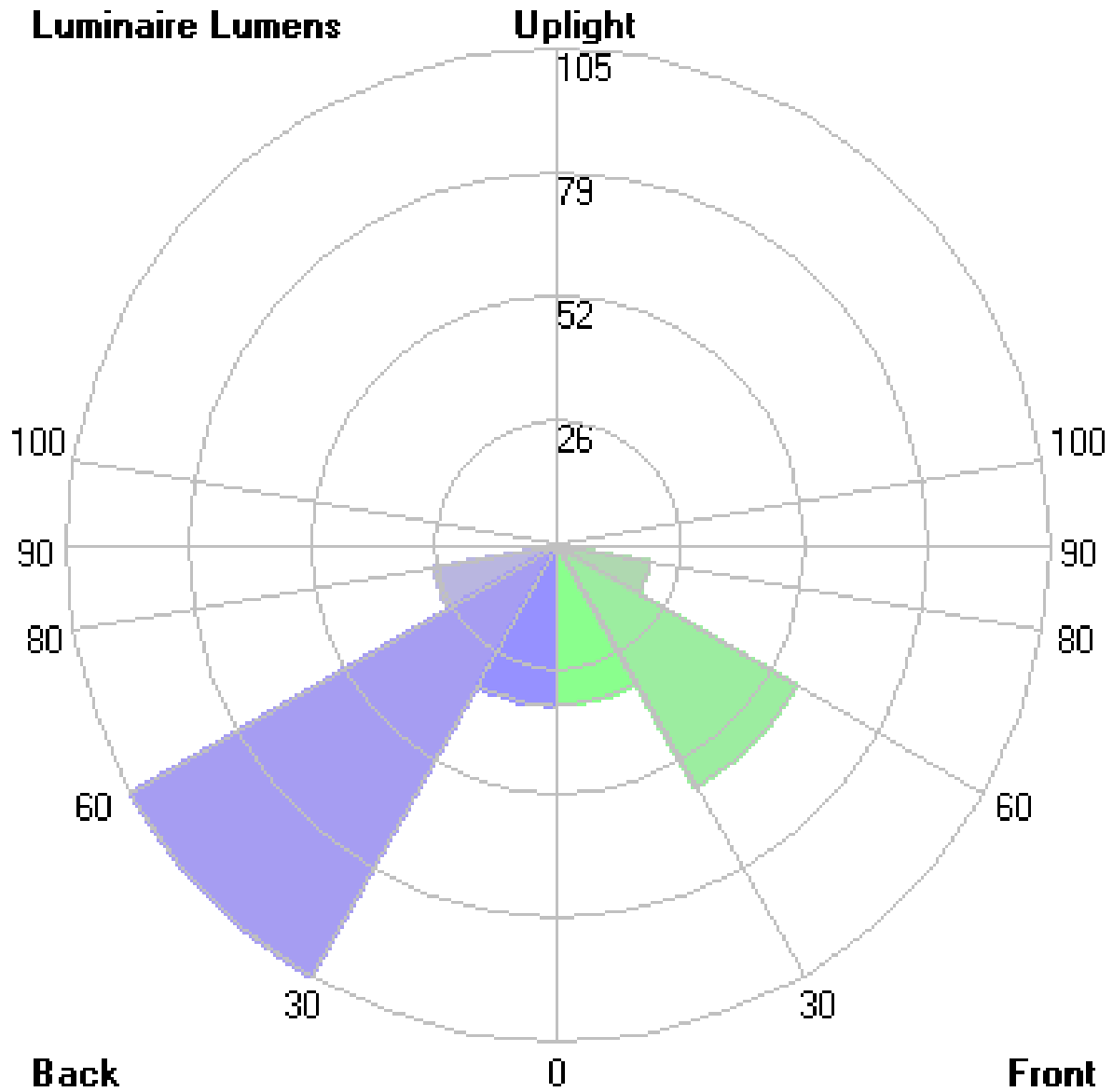
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Polar Graph



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LCS Graph



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Candela Tabulation

		Vertical Angle																																				
		0.0	2.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0	42.5	45.0	47.5	50.0	52.5	55.0	57.5	60.0	62.5	65.0	67.5	70.0	72.5	75.0	77.5	80.0	82.5	85.0	87.5	90.0
Horizontal Angle	0	46.1	52.3	63.5	78.7	84.5	88	88.5	86.2	82.8	77.3	71.7	64.4	57.9	51	43.7	40.2	36.8	34.3	31.4	28.7	26.6	25.2	24.2	23.3	22.6	21.7	20.8	19.2	17.5	15.4	13.4	11.4	9.32	7.59	5.81	3.94	0
	5	46.1	51.7	62.7	77.3	84.1	87.6	88.8	86.8	82.8	78.4	72.3	65.6	59.1	52.2	44.4	40.4	37.1	34.3	31.4	28.9	26.6	25	23.9	23.1	22.3	21.4	20.5	19.2	17.5	15.4	13.4	11.3	9.31	7.65	5.93	4.16	0
	10	46.1	51.5	62.5	77	84.1	88.1	89.4	87.5	84	79.4	73.6	66.8	59.8	52.8	45.1	40.6	37.2	34.2	31.3	28.6	26.6	24.5	23.5	22.7	21.9	21.2	20.1	19	17.3	15.3	13.2	11.2	9.25	7.41	5.73	3.82	0
	15	46.1	51.5	62.1	76.3	84.6	89.1	90.7	89.3	86.3	81.6	75.6	69.2	62.4	55.2	47.3	42.3	38.6	35.1	32	29.3	26.7	24.6	23.6	22.7	21.7	21	20	18.7	17.1	14.9	13.1	11	9.29	7.41	5.55	3.93	0
	20	46.1	51.3	61.7	76.3	85.1	89.4	91.5	90.6	87.9	83.4	78	71.4	64.1	56.7	49.7	42.7	38.4	34.6	31.5	28.6	26.5	25.1	24	22.7	21.8	20.8	19.8	18.5	17	14.8	13	10.9	9.15	7.23	5.54	3.82	0
	25	46.1	51.1	61.3	75.4	85.4	89	90.5	90.1	87.4	82.8	77.2	70.4	63.1	55.9	48.7	40.6	35.8	32.2	30.1	28.4	27	25.7	24.3	23	21.8	20.8	19.5	18.4	16.6	14.9	12.9	10.9	9	7.14	5.33	3.51	0
	30	46.1	51	60.8	74.4	85	87.7	89.6	89.8	87.6	83	76.9	70.4	63.5	56.1	48.6	41.6	36.3	33.5	31.6	29.8	28.3	26.7	25.2	23.5	22	20.5	19.5	18.1	16.6	14.7	12.9	10.8	8.84	6.96	5.26	3.46	0
	35	46.1	50.5	60.2	73.3	83.6	86.8	89.7	90.9	88.7	84.5	78.6	72.4	65.3	58	52	46.5	40.3	36.7	34.1	32.3	30.6	28.6	26.4	24.1	22.3	20.7	19.3	18	16.4	14.8	12.7	10.7	8.72	6.83	5.14	3.25	0
	40	46.1	50.4	59.4	71.4	81.6	85.7	90	92.4	90.9	87.3	81.9	75.9	69.6	64.2	59.1	53.2	47.8	41.8	38.6	36.1	34	31.2	28.2	25.4	22.9	21.1	19.4	17.9	16.5	14.8	12.9	10.7	8.58	6.64	4.98	3.25	0
	45	46.1	49.8	58.7	68.8	78.4	85.3	90.4	94.1	94.4	91.6	87.6	81.5	76.6	72	67.4	61.9	55.9	50.3	44.6	41	38.1	34.5	30.9	27.5	24.2	21.6	19.8	18.1	16.8	14.9	12.9	10.7	8.46	6.58	4.79	3.15	0
	50	46.1	49.6	57.8	66.1	74.9	84.9	90.6	95.6	98	96.7	93.6	89.8	85.6	81	76.2	72.2	65.6	59.4	54	47.1	42.8	38.5	34.4	30.5	26.2	22.7	20.2	18.4	16.8	14.9	13.2	10.7	8.69	6.53	4.64	2.96	0
	55	46.1	49.4	56.6	63.6	71.2	81.8	89.8	95.2	99.1	101	99	96.8	93.8	89.5	85.5	81	75.5	69.8	64.1	57.3	50	44	39.3	34.4	29.7	25.1	21.4	18.9	16.8	15	12.9	10.9	8.58	6.39	4.56	2.8	0
	60	46.1	48.9	55.5	61.1	67.8	77.4	86.8	93.2	97.8	101	103	104	101	97.6	93.9	89.9	84.5	79.7	73	66.2	59.4	52	45.7	39.9	34.6	29.3	24.8	20.8	17.5	15.2	12.8	10.6	8.45	6.3	4.46	2.54	0
	65	46.1	48.7	54	58.6	64.6	73	81.5	88.7	94	98.5	103	107	108	106	102	98.8	93.9	89.1	82.8	76.1	69.8	62.3	55.4	48.1	41.2	35.5	30.2	24.9	19.7	15.3	12.2	10.2	8.24	6.15	4.1	2.35	0
	70	46.1	48.2	52.9	56.1	61.1	68.5	75.9	82.5	87.5	91.9	96.4	100	104	106	106	103	99.1	94.6	89.7	82.9	76.9	70.8	63.3	57.4	49.1	43.5	36.7	31	24.4	17.6	11.3	9.34	7.93	5.79	3.88	2.17	0
	75	46.1	47.9	51.7	53.8	57.6	63.7	70.3	74.9	77.8	80.3	83.8	87	88.9	91	92.5	91.7	90	87.1	83.3	78.5	74	68.8	63	57.5	50.4	45.5	39.9	34.2	27.1	18.4	10.8	8.99	7.75	5.65	3.78	2.09	0
	80	46.1	47.6	50.7	51.8	54.6	59.1	64.1	66.5	67.8	69.7	72.3	74.6	76.9	79.4	80.8	81.8	81.4	80.1	77.8	74.3	71	67.2	62.9	57.6	52.4	47	42.5	36.4	29.4	19.7	11.3	9.2	8.25	5.49	3.73	1.94	0
	85	46.1	47.6	49.9	50.6	52.7	56.2	59.8	60.8	60.9	62	64	65.9	67.5	69.4	70.2	71.8	71.8	71.5	70.3	67.5	65.3	62.6	60	55	51.2	46.4	43.2	37.3	31.8	22.1	13.5	10.4	8.78	5.58	3.51	1.64	0
	90	46.1	47.4	49.6	50	51.8	54.7	57.2	57.3	57	57.7	59.3	60.6	62	63.5	64.4	65.7	66	65.9	65.6	63.4	61.6	59.8	58.3	54.2	50.6	46.5	43.2	37.5	31.4	23	15.4	11.8	9.37	5.88	3.51	1.65	0
95	46.1	47.4	49.7	49.8	51.4	53.8	55.7	55.3	54.8	55.2	56.7	57.9	59.6	61	62.3	63.6	64.9	64.6	64.4	63.3	61.6	60.3	58.4	54.8	50.9	47	43	37.4	31.4	24.4	18	13.3	10	6.15	3.64	1.9	0	
100	46.1	47.3	49.6	49.9	51.1	52.7	53.7	53.1	52.4	52.4	53.7	55.1	56.9	58.9	61.1	63	64.5	64.5	64.5	63.4	62.2	60.6	57.9	54.3	50.4	46.4	42.2	37.1	31.9	25.6	19.7	14.5	10.1	6.05	3.44	1.84	0	
105	46.1	47.3	49.4	50.2	51	51.4	51.1	50.3	49.5	49.7	51.3	53.6	56.1	58.9	62.3	65.4	66.9	67.5	67.8	67.6	66.9	65.3	62.6	58.9	55	50.9	46.1	40.4	34.1	27.4	20.5	14.2	9.47	5.59	3.37	1.82	0	
110	46.1	47.2	49.1	50.7	51.1	50.9	50.8	50.8	51.4	52.1	54.2	57.2	61	65.4	70.5	74.9	76.3	76.3	77.1	77.3	76.2	73.9	70.1	66.2	61.4	56.4	50.3	43.8	36.1	27.9	19.5	12.7	8.35	5.12	3.39	1.93	0	
115	46.1	46.8	48.7	49.9	50.1	50.2	51.1	52.4	54.5	56.6	59.3	64.1	70.4	76.4	82.2	87	87.8	87.6	87.9	87.2	85.2	81.8	77.2	72.4	66.3	59.9	52.5	44.2	35.7	26.5	17.3	10.7	7.24	4.8	3.32	1.93	0	
120	46.1	46.9	48.1	48.6	48.7	49.6	52	54.5	57.8	62.5	67.3	73.9	81.5	88.6	94.8	98.9	99.3	98.7	97.8	95.7	92.4	87.7	82.2	76.2	69	60.4	51.7	42.7	33.6	24.3	14.9	8.68	6.23	4.7	3.19	1.92	0	
125	46.1	46.6	47.6	47.7	48.1	50.6	55.1	58.4	63.6	71.2	78.2	86.3	94.9	102	106	108	108	106	105	101	96.6	91.3	84.8	78.4	69.3	59.2	50.1	40.8	31.3	22.1	13.4	7.86	5.86	4.49	3.19	2.04	0	
130	46.1	46.6	47.2	47	48.1	52.6	58.7	64.3	71.6	81.4	91.4	100	109	114	116	116	115	112	109	105	99.2	93	85.1	76.3	66.7	56.2	46.9	37.5	28.3	19.6	12.5	8.42	6.65	5.32	3.81	2.69	0	
135	46.1	46.3	46.9	46.7	48.9	55.4	62.5	71.2	80.5	91.3	103	113	121	123	124	122	120	117	113	108	101	93.2	82.9	73.2	63.3	52.8	43	33.1	24.3	16.7	11.4	8.57	6.91	5.38	4.1	2.94	0	
140	46.1	46.3	46.5	46.6	50.5	57.8	66.6	78	89.8	99.6	110	120	125	127	127	125	123	120	115	110	102	91.5	80.9	69.9	59.6	49	39.1	29.5	20.1	14.1	10.5	8.62	6.98	5.38	4.1	2.91	0	
145	46.1	46.2	46.2	46.8	52.2	60.6	71	83.9	97.6	108	118	126	130	130	128	125	122	116	109	99.7	88.8	77.6	66.5	55.5	44.3	34.4	25	17.6	12.8	10.4	8.53	6.94	5.48	4.07	3.11	0		
150	46.1	46.3	46.1	47.1	54	63.9	75.4	89.4	103	115	126	133	136	136	135	133	129	125	119	109	98.8	86.8	75.4	64.3	52.4	41.1	31	22.3	16	12.2	10.3	8.77	7.28	5.84	4.43	3.45	0	
155	46.1	46.2	45.9	47.5	55.4	66.3	79.3	94.1	107	118	128	134	137	138	136	134	131	126	118	108	96.8	84.4	73.1	61.9	49.3	37.7	27.2	19.2	14.2	11.2	9.53	8.09	6.79	5.31	3.87	3.04	0	
160	46.1	46.2	46	47.6	56.6	68.6	82.9	97.8	108	117	126	132	134	136	134	133	130	125	115	104	92.7	80.3	69.4	58.5	46.2	34.6	24.2	17.8	13.9	11.5	10.3	8.94	7.58	6.6	4.88	3.93	0	
165	46.1	46.3	46.1	48.2	57.6	70.3	85.9	101	110	119	126	132	134	136	134	133	129	125	114	103	91.2	78.4	66.7	55.3	43.9	32.2	21.6	16.4	13.3	11.4	10.4	9.23	8.04	6.77	5.24	4.49	0	
170	46.1	46.2	46.2	48.6	58.7	71.6	87.8	102	112	121	129	135	137	139	137	136	132	128	115	105	94	79.9	68.1	56.5	44.2	31.8	21.4	15.6	12.8	11.4	10.5	9.1	7.82	6.61	5.35	4.65	0	
175	46.1	46.3	46.2	48.9	59	72.7	89.3	103	113																													

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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