

Report of Test

LLIA001046-001A

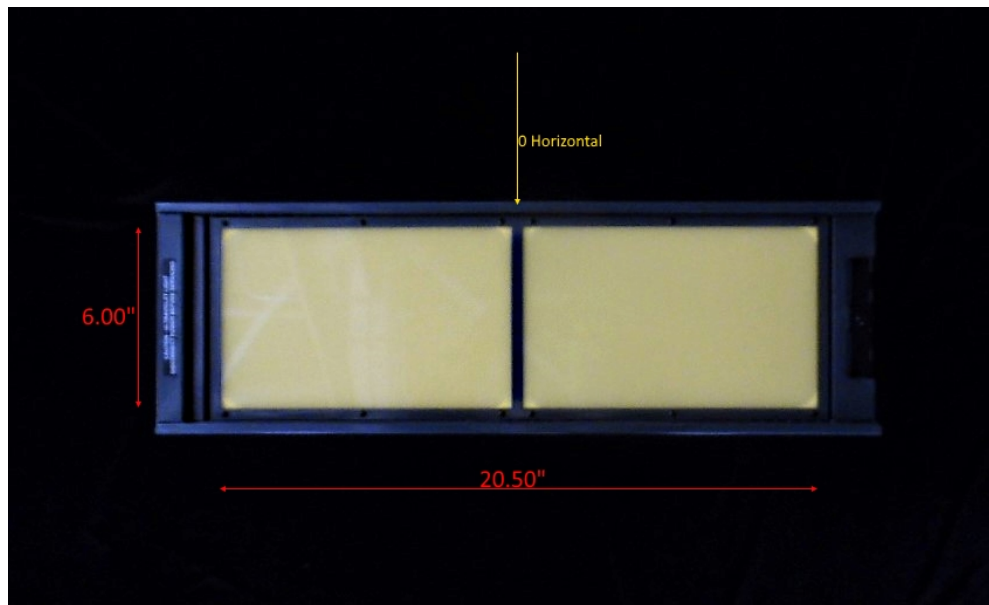
Catalog Number: L1.4X1-56-H

Yoke mounted, formed aluminum housing, extruded aluminum heatsink,
formed white enamel steel reflector, phosphor coated plastic enclosure.

152 blue LEDs

Two EldoLED SOLOdrive 1060/M LED drivers.

120.0Vac, 60.00Hz, 1.950A, 233.4W, 0.997PF, 4.1%THD(i)



Performance Summary

Total Light Output	20299 lm
Luminaire Power	233.4 W
Luminous Efficacy	87.0 lm/W

PREPARED FOR : Brightline L.P., 580 Mayer Street, Bridgeville, PA 15017, USA



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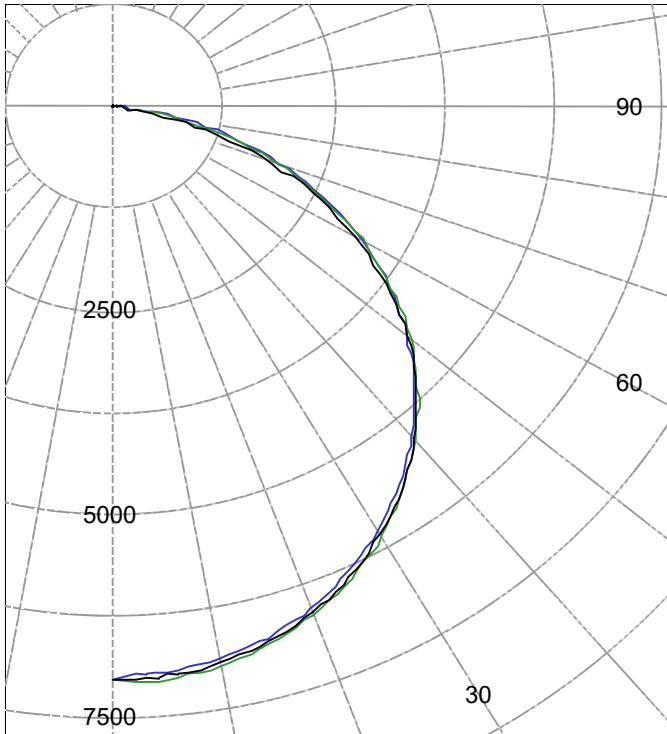
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Legend: C0-Black, C45-Green, C90-Blue (cd)



(Two plane symmetry) C0-C90

AVERAGE LUMINANCE (cd / m²)

Gamma	C0	C45	C90
45.0	87025	87201	86197
55.0	83149	84841	84049
65.0	74327	77977	78974
75.0	53529	60262	65543
85.0	3863	12706	27917

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	7052	7052	7052	7052	7052	
5.0	7015	7035	7066	7002	6964	668
10.0	6931	6950	6977	6920	6885	
15.0	6797	6810	6837	6779	6745	1920
20.0	6606	6618	6639	6587	6550	
25.0	6359	6368	6389	6338	6306	2930
30.0	6063	6068	6083	6040	6009	
35.0	5716	5719	5730	5690	5663	3571
40.0	5323	5323	5330	5293	5266	
45.0	4873	4877	4883	4850	4827	3751
50.0	4353	4369	4395	4366	4342	
55.0	3777	3797	3854	3839	3818	3411
60.0	3152	3179	3256	3271	3249	
65.0	2488	2522	2610	2663	2643	2556
70.0	1793	1831	1931	2016	2001	
75.0	1097	1138	1235	1333	1343	1304
80.0	462	497	577	677	713	
85.0	27	40	88	153	193	188
90.0	0	1	1	2	1	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	5518	N / A	27.2
0-40	9088	N / A	44.8
0-60	16250	N / A	80.1
0-90	20299	N / A	100.0
40-90	11210	N / A	55.2
60-90	4049	N / A	19.9
90-180	0	N / A	0.0
0-180	20299	N / A	100.0

Total Light Output = 20,299 lm

Spacing Criterion: 0-180 1.3
Spacing Criterion: 90-270 1.3

Signed:

Authorized Signatory

Date of test 5-Nov-2018
Date of report 8-Nov-2018



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	7052	7052	7052	7052	7052
2.5	7033	7056	7086	7024	6986
5.0	7015	7035	7066	7002	6964
7.5	6980	7000	7030	6967	6933
10.0	6931	6950	6977	6920	6885
12.5	6871	6888	6916	6855	6820
15.0	6797	6810	6837	6779	6745
17.5	6705	6721	6744	6689	6655
20.0	6606	6618	6639	6587	6550
22.5	6486	6497	6519	6468	6435
25.0	6359	6368	6389	6338	6306
27.5	6217	6225	6244	6196	6160
30.0	6063	6068	6083	6040	6009
32.5	5896	5900	5914	5872	5841
35.0	5716	5719	5730	5690	5663
37.5	5527	5527	5537	5499	5470
40.0	5323	5323	5330	5293	5266
42.5	5107	5105	5112	5077	5052
45.0	4873	4877	4883	4850	4827
47.5	4619	4631	4644	4614	4589
50.0	4353	4369	4395	4366	4342
52.5	4071	4090	4132	4107	4086
55.0	3777	3797	3854	3839	3818
57.5	3469	3495	3562	3560	3540
60.0	3152	3179	3256	3271	3249
62.5	2823	2853	2936	2971	2949
65.0	2488	2522	2610	2663	2643
67.5	2142	2177	2273	2345	2327
70.0	1793	1831	1931	2016	2001
72.5	1444	1483	1584	1677	1672
75.0	1097	1138	1235	1333	1343
77.5	766	806	895	997	1020
80.0	462	497	577	677	713
82.5	205	232	298	387	432
85.0	27	40	88	153	193
87.5	11	10	10	21	37
90.0	0	1	1	2	1



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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	0	1	1	2	1
92.5	0	0	0	0	0
95.0	0	0	0	0	0
97.5	0	0	0	0	0
100.0	0	0	0	0	0
102.5	0	0	0	0	0
105.0	0	0	0	0	0
107.5	0	0	0	0	0
110.0	0	0	0	0	0
112.5	0	0	0	0	0
115.0	0	0	0	0	0
117.5	0	0	0	0	0
120.0	0	0	0	0	0
122.5	0	0	0	0	0
125.0	0	0	0	0	0
127.5	0	0	0	0	0
130.0	0	0	0	0	0
132.5	0	0	0	0	0
135.0	0	0	0	0	0
137.5	0	0	0	0	0
140.0	0	0	0	0	0
142.5	0	0	0	0	0
145.0	0	0	0	0	0
147.5	0	0	0	0	0
150.0	0	0	0	0	0
152.5	0	0	0	0	0
155.0	0	0	0	0	0
157.5	0	0	0	0	0
160.0	0	0	0	0	0
162.5	0	0	0	0	0
165.0	0	0	0	0	0
167.5	0	0	0	0	0
170.0	0	0	0	0	0
172.5	0	0	0	0	0
175.0	0	0	0	0	0
177.5	0	0	0	0	0
180.0	0	0	0	0	0



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Coefficients Of Utilization - Zonal Cavity Method

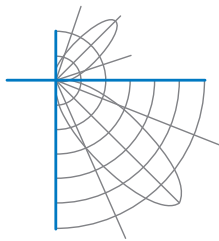
Effective Floor Cavity Reflectance 0.20

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		119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1		109	104	100	97	106	102	98	95	98	95	92	94	91	89	90	88	86	84
2		99	91	84	79	97	89	83	78	86	80	76	82	78	74	79	76	72	70
3		90	80	72	65	88	78	71	65	75	69	63	72	67	62	70	65	61	59
4		83	71	62	55	80	69	61	55	67	60	54	64	58	53	62	57	52	50
5		76	63	54	47	74	62	53	47	60	52	47	58	51	46	56	50	46	43
6		70	57	48	41	68	56	47	41	54	46	41	52	45	40	51	45	40	38
7		65	51	43	36	63	51	42	36	49	41	36	47	41	36	46	40	35	33
8		60	47	38	32	59	46	38	32	45	37	32	43	37	32	42	36	32	30
9		56	43	35	29	55	42	34	29	41	34	29	40	33	29	39	33	29	27
10		53	40	32	26	52	39	31	26	38	31	26	37	31	26	36	30	26	24

For absolute test reports, CUs are expressed as a percentage of total lumen output. Calculations were based on published IES procedures, and are based on the zonal cavity method. Basic assumptions: 1) Room surfaces are lambertian reflectors. 2) Incident flux on each surface is uniformly distributed. 3) The room is spectrally neutral. When luminaires are not evenly distributed throughout the room, or do not exhibit lateral symmetry, CU values may differ from actual performance.

Circle of Light Plot

Height(ft)	Illuminance at Nadir (fc)	Beam Width (across 50% Nadir Illum)	
		0-180	90-270
6.0	195.9	7.67	7.60
8.0	110.2	10.22	10.14
10.0	70.5	12.78	12.67
12.0	49.0	15.33	15.21
14.0	36.0	17.89	17.74
16.0	27.5	20.44	20.28



Test Report No. LLIA001046-001A

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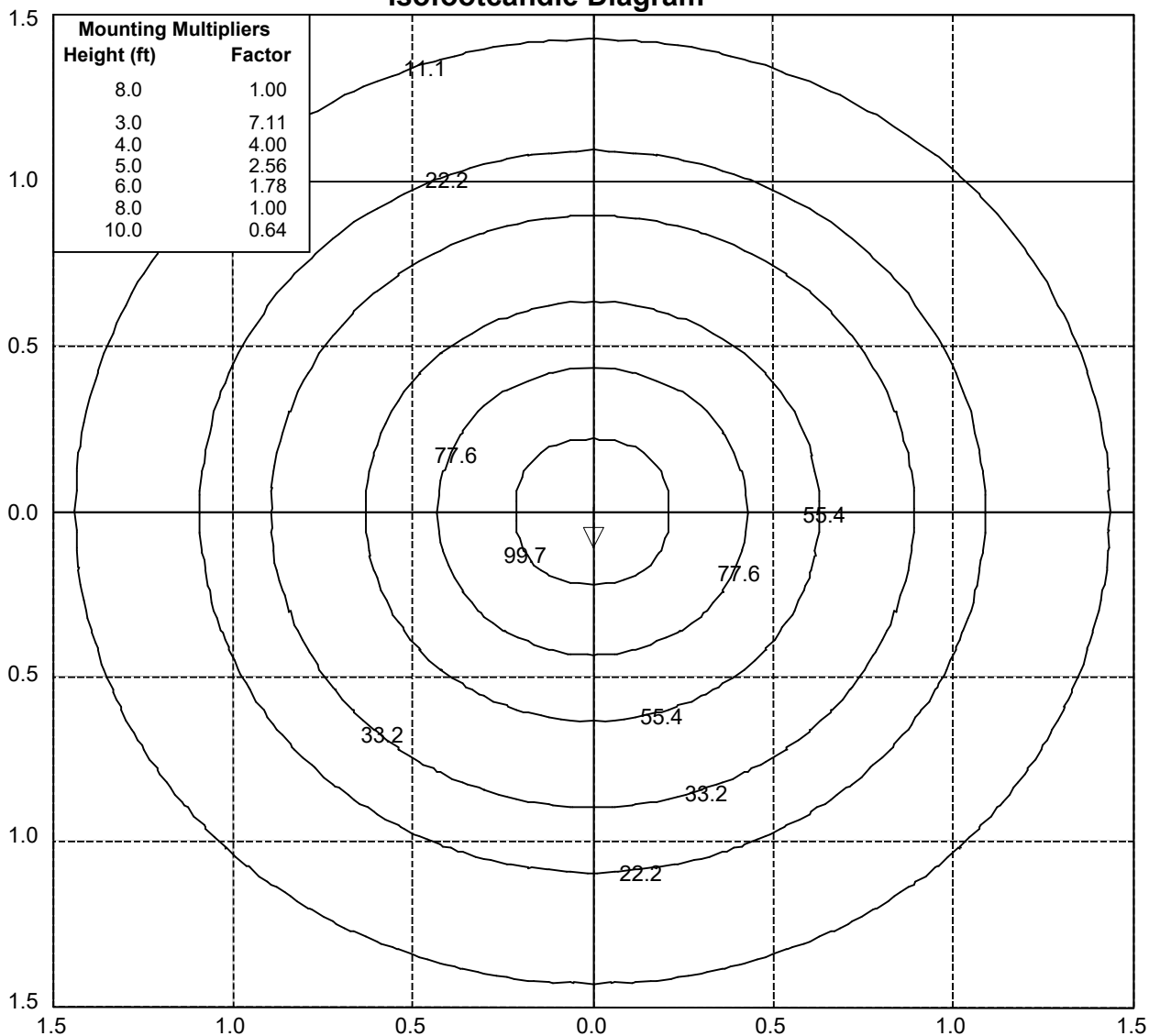
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152 blue LEDs

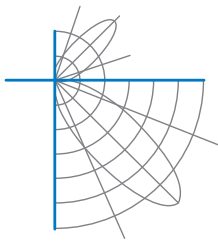
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Isofootcandle Diagram



Note: The isofootcandle levels are based on a mounting height of H = 8.0 feet. Grid values show multiples of mounting height. The isofootcandle contour units are expressed as footcandles. The left and right sides of photometric data have been averaged.



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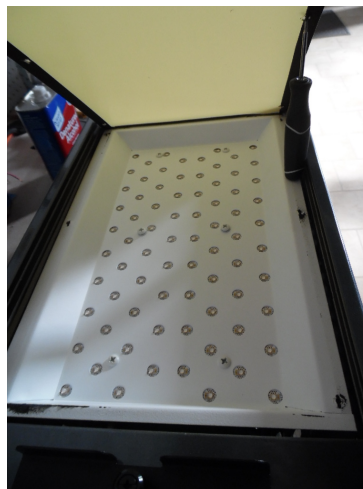
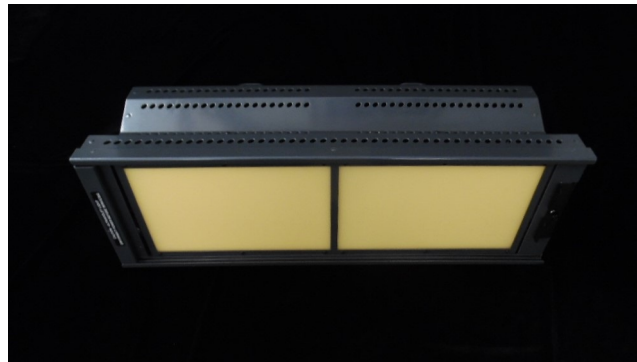
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Test Distance 9.5 m
Test Temperature 25.1 °C

Notes The laboratory has not participated in the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.

Tested in accordance with the applicable sections of publications: IES LM-79-08 (Sec. 12), IES LM-16-93, IES LM-58-13, CIE 13.3:1995, CIE 15:2004, ANSI C78.377:2015, ANSI C82.77-10:2014.

The luminous intensity values, and other derived quantities, contained in this report are based on the absolute data, as measured.

Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

This report is free of erasures and corrections.

Photometric intensity values are reported using the CIE Gamma coordinate system as defined in CIE publication number 121.

This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with * are not covered.

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the Federal Government.



Report of Test

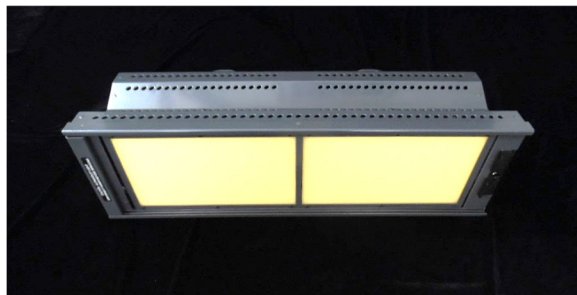
LLIA001046-001B

Integrating Sphere Report
Catalog Number: L1.4X1-56-H

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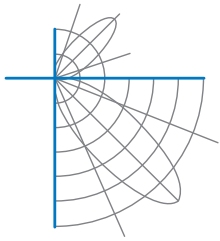
Performance Summary

Voltage	120.0 Vac
Current	1.952 A
Power	233.5 W
Frequency	59.98 Hz
Power Factor	0.997
Current THD	4.1 %

Total Luminous Flux	21875.1 lm
Efficacy	93.7 lm/W
Chromaticity (x,y)	(0.3257, 0.3367)
(u',v')	(0.2039, 0.4743)
Duv	0.0009
CCT	5813 K
CRI (Ra)	96
R9	96
TM-30: Rf	91
TM-30: Rg	99

Prepared For:
Brightline L.P.
580 Mayer Street
Suite 7
Bridgeville, PA 15017, USA

Test date: 11/06/2018
Report date: 11/08/2018



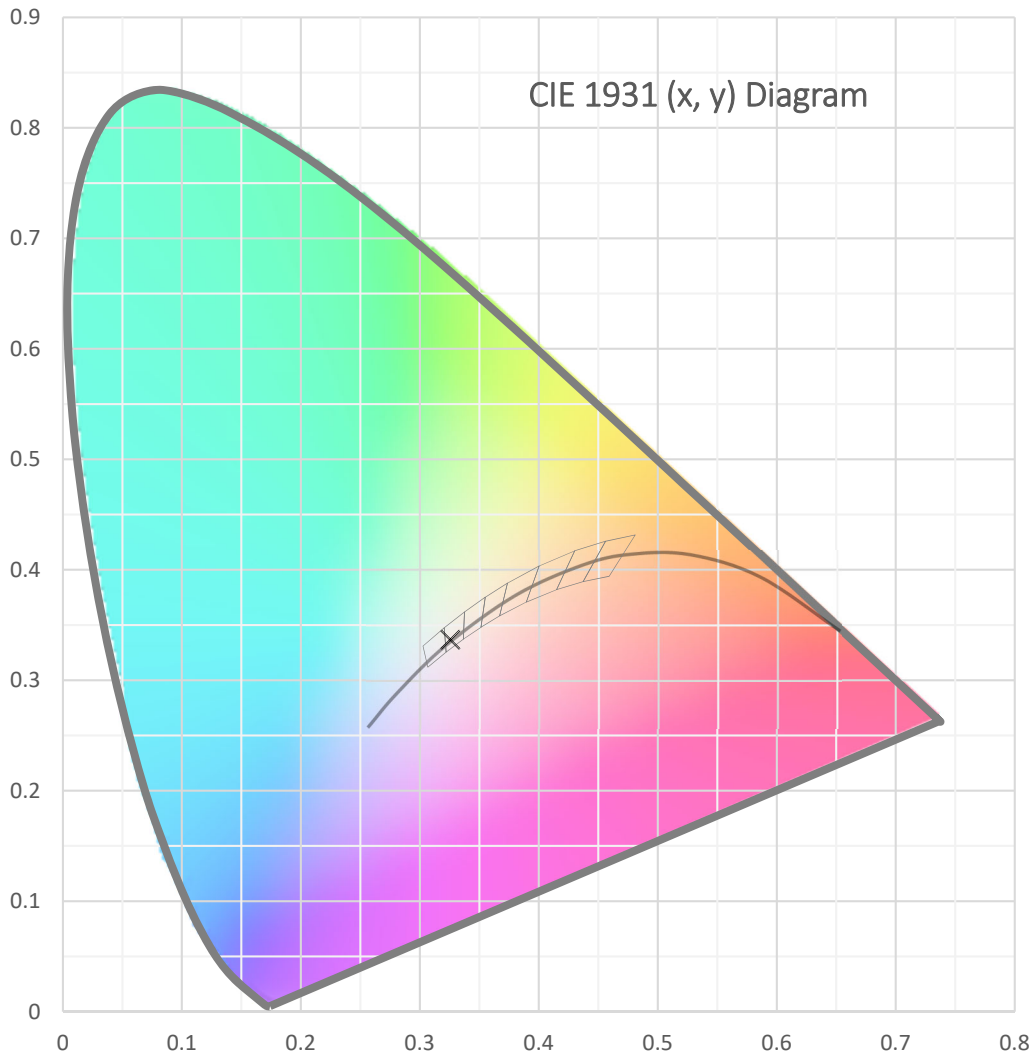
Test Report Number: LLIA001046-001B

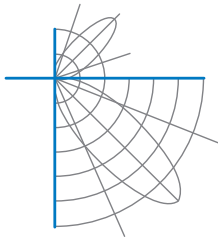
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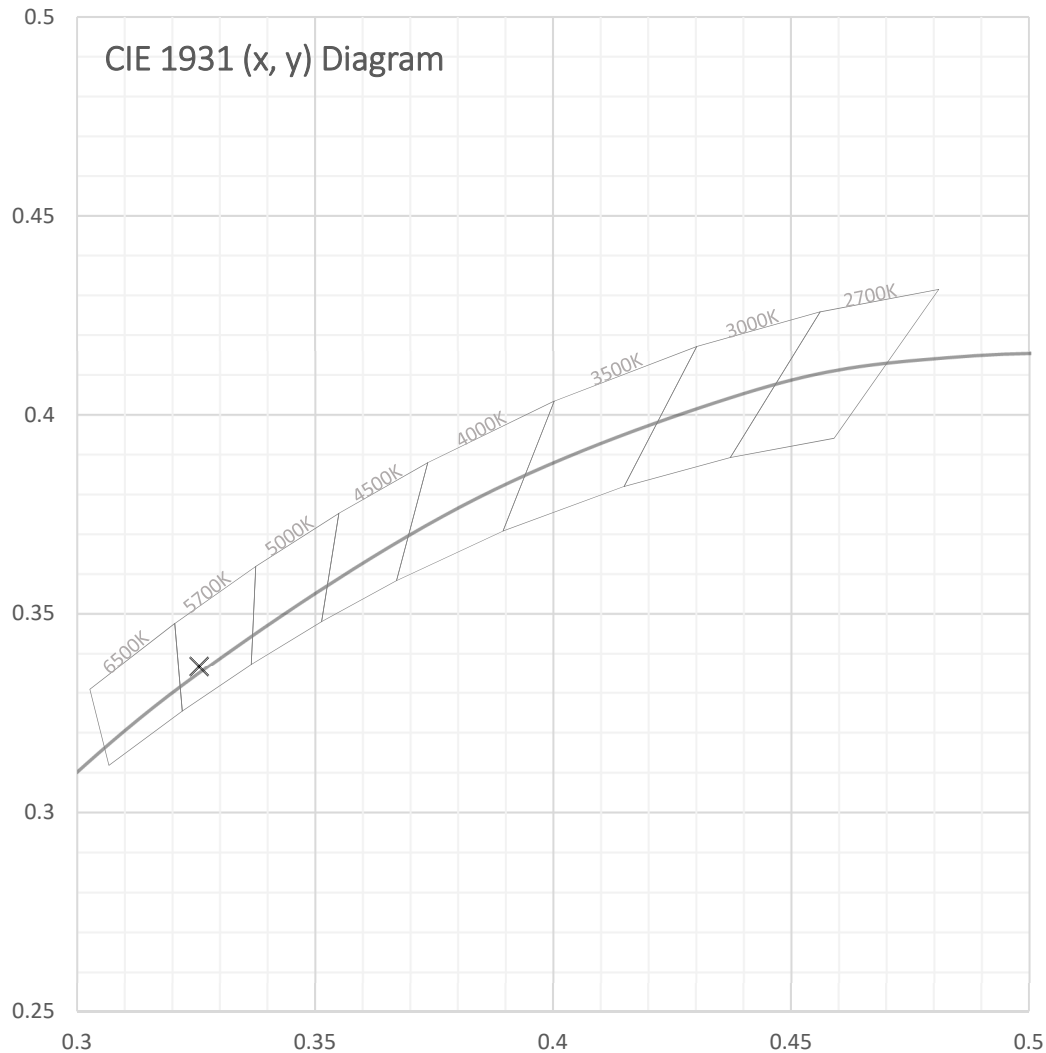
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Spectral Data

Total Radiant Flux	81.60 W
Total Luminous Flux	21875.1 Lm
Chromaticity CIE 1931 (x, y)	(0.3257, 0.3367)
Chromaticity CIE 1976 (u', v')	(0.2039, 0.4743)
Correlated Color Temperature (CCT)	5813 K
Color Rendering Index (Ra)	96
R1	98
R2	99
R3	96
R4	95
R5	95
R6	94
R7	97
R8	97
R9	96
R10	95
R11	96
R12	73
R13	99
R14	98
TM-30: Rf	91
TM-30: Rg	99
Distance from Planckian Locus (Duv)	0.0009
Scotopic/Photopic Ratio *	2.289

Electrical Data

Voltage	120.0 Vac
Current	1.952 A
Power	233.5 W
Frequency	59.98 Hz
Power Factor	0.997
Current THD	4.1 %



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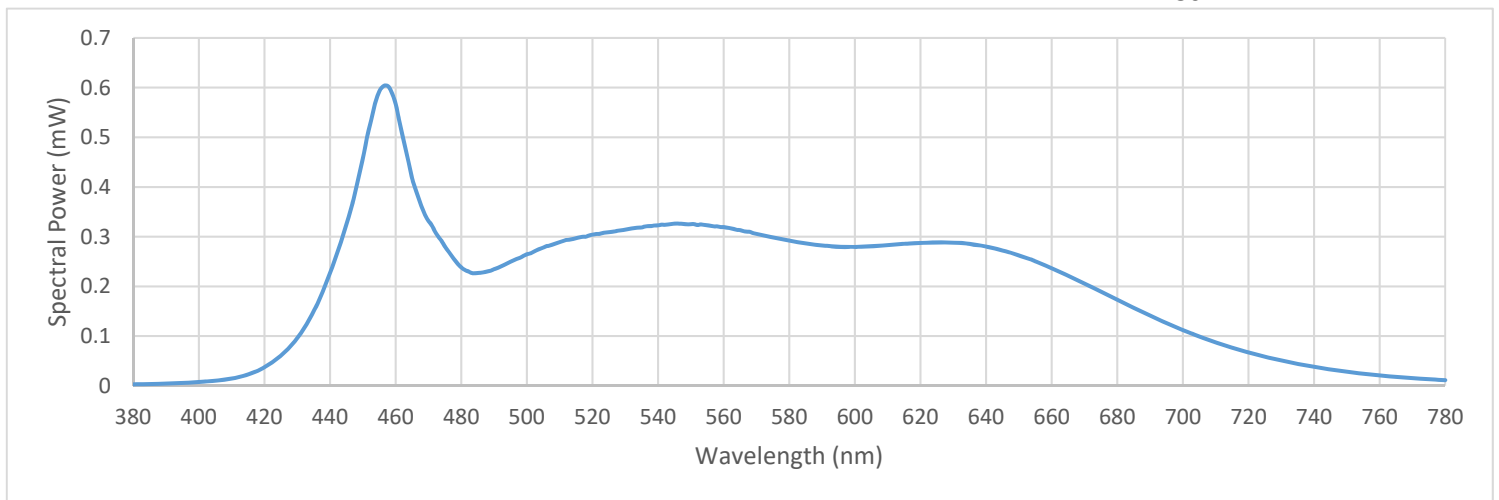
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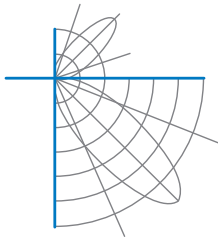
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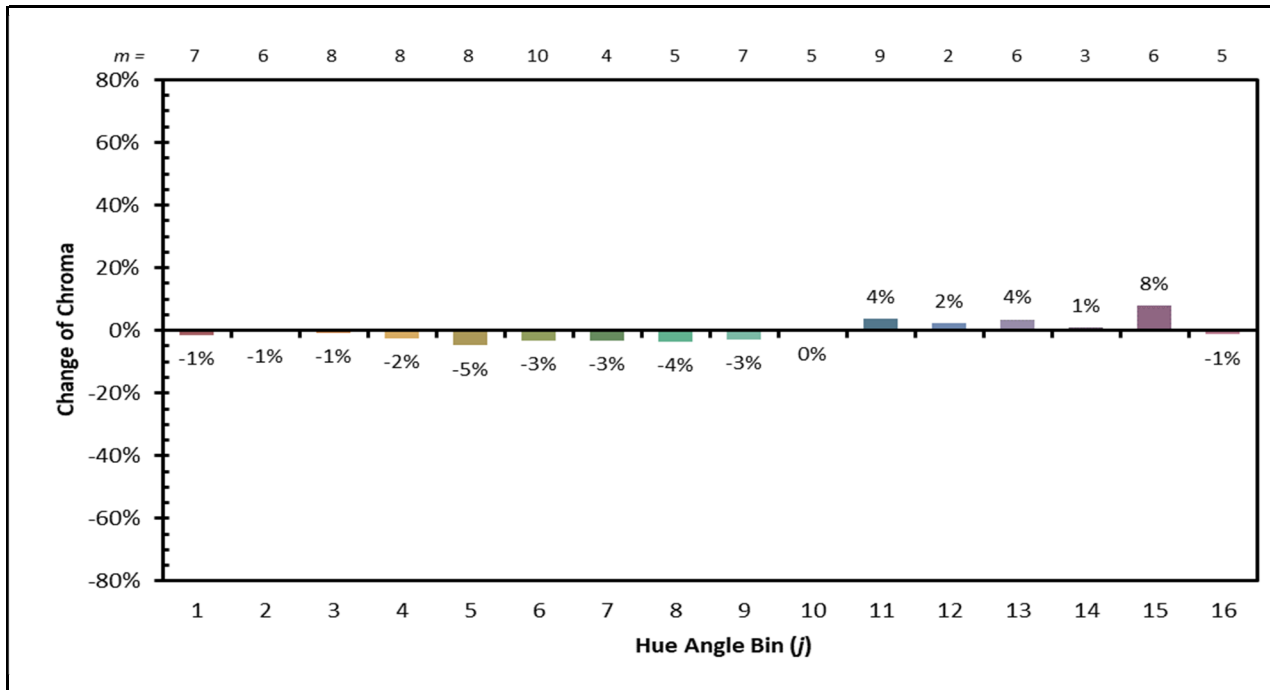
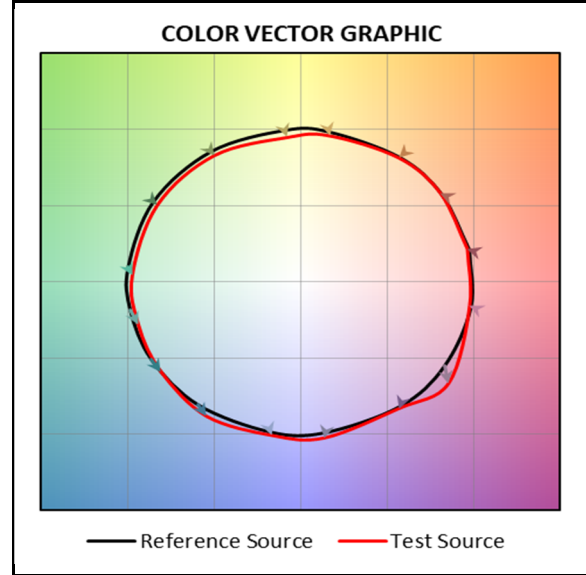
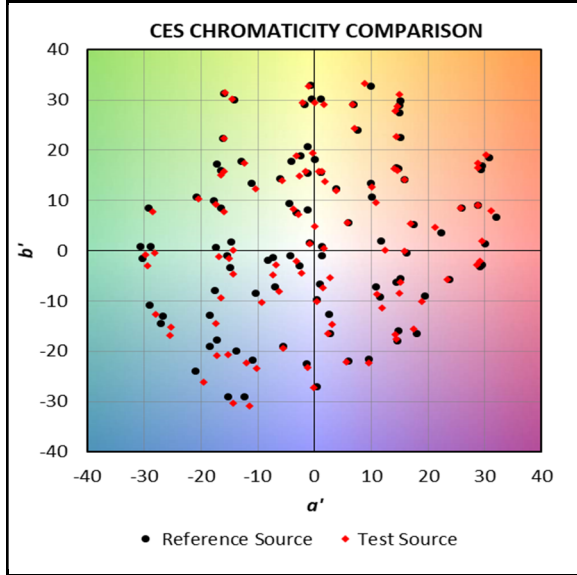
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.002981	480	0.238228	580	0.292139	680	0.173142
385	0.003379	485	0.227084	585	0.286578	685	0.157448
390	0.004419	490	0.234602	590	0.282105	690	0.141072
395	0.005700	495	0.249267	595	0.279400	695	0.125903
400	0.007505	500	0.264712	600	0.279271	700	0.112421
405	0.010178	505	0.278110	605	0.280461	705	0.099057
410	0.014572	510	0.288848	610	0.282800	710	0.087163
415	0.022685	515	0.297029	615	0.285745	715	0.076868
420	0.037585	520	0.304101	620	0.287562	720	0.067248
425	0.061054	525	0.309108	625	0.288257	725	0.058613
430	0.096190	530	0.314106	630	0.287862	730	0.050977
435	0.150399	535	0.318605	635	0.285525	735	0.044003
440	0.227450	540	0.322814	640	0.280336	740	0.037868
445	0.324306	545	0.326264	645	0.272323	745	0.032740
450	0.457296	550	0.325276	650	0.262254	750	0.028232
455	0.592615	555	0.322875	655	0.250522	755	0.024282
460	0.567241	560	0.319381	660	0.236980	760	0.020991
465	0.417746	565	0.313267	665	0.221751	765	0.018032
470	0.331762	570	0.305792	670	0.205637	770	0.015427
475	0.280299	575	0.298498	675	0.189293	775	0.013214
						780	0.011323





IES TM-30 Summary





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Yoke mounted, formed aluminum housing, extruded aluminum heatsink,
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152 blue LEDs

Two EldoLED SOLOdrive 1060/M LED drivers.

Test Equipment Configuration: LightLab International Allentown 2m Integrating Sphere
Measurements acquired using a Labsphere CDS 2600 spectroradiometer
Testing was performed using 4π geometry

Test Temperature: 24.0 °C

Test Procedure: Tested in accordance with the applicable sections of:
LM-79-08, LM-78-07, LM-58-13, ANSI_ANSLG C78.377-2015,
ANSI C82-77-10:2014, TM-30-15

Significance: The laboratory has not participated in the selection of samples to be tested.
All testing is performed on the understanding that the significance of the report
is limited to the extent that the test sample is representative of production units.

Notes: The measurements and other derived quantities contained in this report
are based on the absolute data as measured.

Prorating the performance of the sample for the use of other component
combinations (such as lamp / LED / Ballast / driver), or for use in different
environmental conditions than that tested, may produce erroneous results.

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