LightLab INTERNATIONAL ALLENTOWN LLC

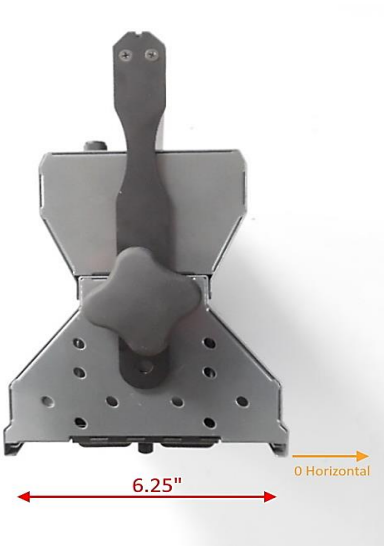
NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA001599-001A

Indoor Distribution Photometry Test Report

Catalog Number: L1.2X-VW 3200K Open Face
Yoke mounted, formed aluminum housing, extruded aluminum heatsink,
formed white enamel steel reflector, diffuse plastic enclosure.
272 white LEDs - 136 WW, 136 CW. Controller set for 3200K, full output.
One EldoLED POWERdrive 1061/S LED driver.



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

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	7924.4	Lumens
Input Current	0.8626	A	Total Efficacy	76.9	Lm/W
Input Power	103.0	W	Downward Flux	7915.4	Lumens
Frequency	60.00	Hz	Downward Flux	99.9	% of Total
Power Factor	0.995				
Current THD	5.1	%			

This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

Test date: 12/09/2021
Report date: 12/10/2021

Signed: Michael L. Grather

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USA east coast LightLab Int'l Allentown LLC, 905 Harrison Street, Suite 135, Allentown, PA 18103, Ph: +1 484-273-0705, www.lightlaballentown.com (issuing laboratory)
Australasia & S.E. Asia LightLab International, 50 Redcliffe Gardens Drive, Clontarf, Queensland, 4019, Australia, Ph : +61 7 3283 7862, Fx : +61 7 3283 8751, www.lightlabint.com

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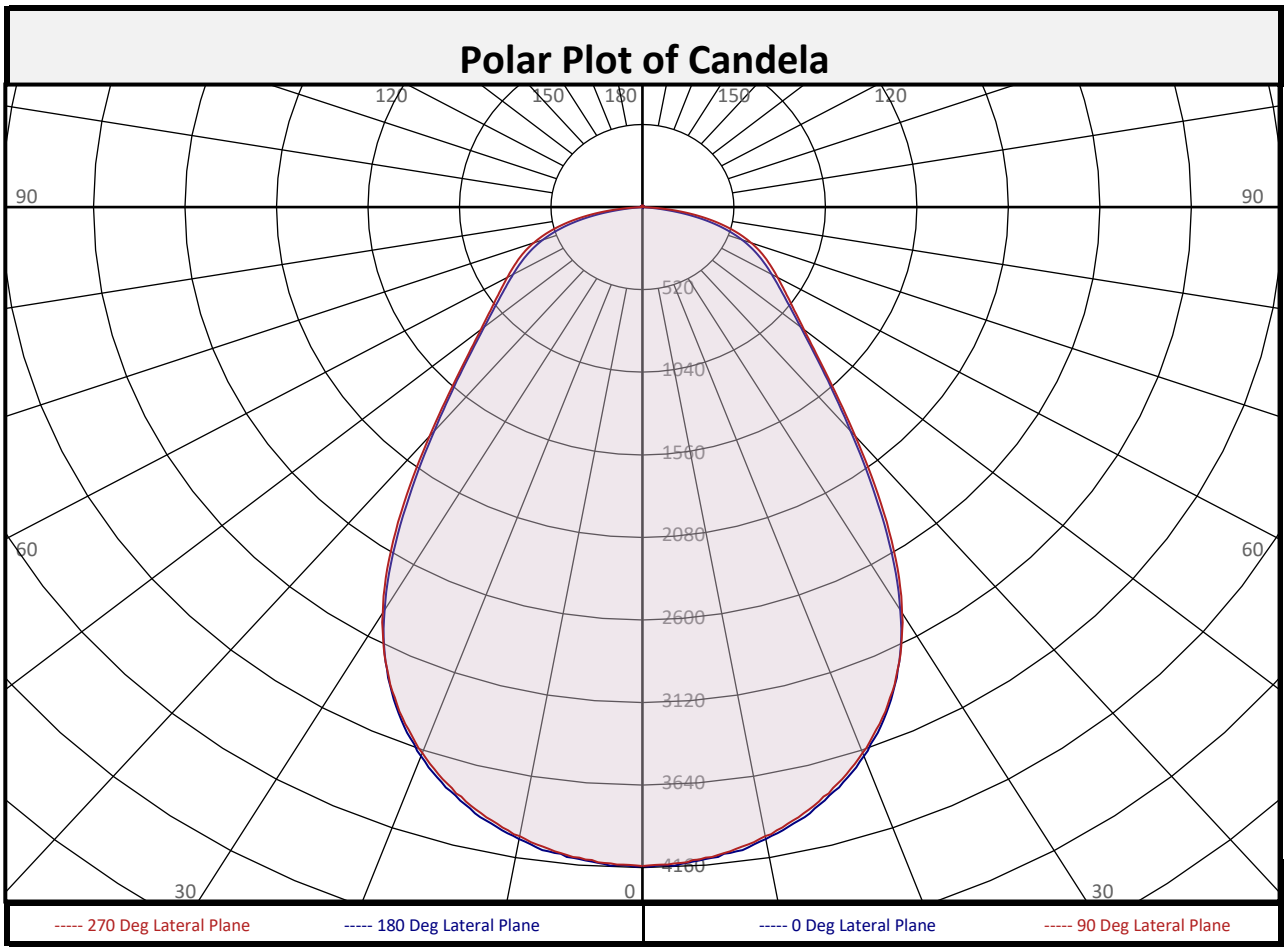

Zonal Flux Summary

Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	390.8	4.9%	90-100	0.5	0.0%	0-20	1483	18.7%
10-20	1092	13.8%	100-110	0.8	0.0%	0-30	3020	38.1%
20-30	1537	19.4%	110-120	1.3	0.0%	0-40	4510	56.9%
30-40	1489	18.8%	120-130	1.4	0.0%	0-60	6555	82.7%
40-50	1139	14.4%	130-140	1.4	0.0%	0-80	7810	98.6%
50-60	907.0	11.4%	140-150	1.2	0.0%	10-90	7525	95.0%
60-70	751.7	9.5%	150-160	1.0	0.0%	20-50	4165	52.6%
70-80	502.7	6.3%	160-170	0.9	0.0%	40-90	3406	43.0%
80-90	105.5	1.3%	170-180	0.4	0.0%	60-90	1360	17.2%
0-90	7915	99.9%	90-180	9.0	0.1%	0-180	7924	100.0%

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Luminous Intensity (Candela) Table

Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	Lateral (C-Plane) Angles									
		0	22.5	45	67.5	90	112.5	135	157.5	180
	0	4150	4150	4150	4150	4150	4150	4150	4150	4150
	2.5	4153	4146	4142	4141	4138	4141	4142	4146	4153
	5	4122	4122	4119	4118	4113	4118	4119	4122	4122
	7.5	4093	4086	4086	4082	4077	4082	4086	4086	4093
	10	4041	4038	4034	4028	4023	4028	4034	4038	4041
	12.5	3975	3973	3965	3962	3957	3962	3965	3973	3975
	15	3895	3891	3884	3880	3877	3880	3884	3891	3895
	17.5	3797	3791	3786	3779	3778	3779	3786	3791	3797
	20	3680	3671	3668	3661	3659	3661	3668	3671	3680
	22.5	3540	3534	3526	3522	3524	3522	3526	3534	3540
	25	3370	3365	3363	3362	3365	3362	3363	3365	3370
	27.5	3172	3166	3167	3176	3177	3176	3167	3166	3172
	30	2930	2930	2932	2945	2953	2945	2932	2930	2930
	32.5	2660	2659	2670	2689	2701	2689	2670	2659	2660
	35	2372	2373	2386	2408	2423	2408	2386	2373	2372
	37.5	2093	2096	2109	2128	2142	2128	2109	2096	2093
	40	1839	1844	1856	1872	1882	1872	1856	1844	1839
	42.5	1626	1629	1637	1652	1658	1652	1637	1629	1626
	45	1447	1450	1457	1467	1473	1467	1457	1450	1447
	47.5	1297	1303	1310	1318	1322	1318	1310	1303	1297
	50	1173	1181	1191	1195	1198	1195	1191	1181	1173
	52.5	1070	1078	1092	1097	1100	1097	1092	1078	1070
	55	986	993	1012	1016	1020	1016	1012	993	986
	57.5	914	921	942	948	950	948	942	921	914
	60	850	858	881	888	888	888	881	858	850
	62.5	790	799	822	833	831	833	822	799	790
	65	730	742	767	779	777	779	767	742	730
	67.5	669	680	708	726	721	726	708	680	669
	70	602	614	644	666	657	666	644	614	602
	72.5	527	540	573	594	587	594	573	540	527
	75	442	456	490	513	509	513	490	456	442
	77.5	347	362	394	422	423	422	394	362	347
	80	243	258	287	322	328	322	287	258	243
	82.5	130	144	174	213	225	213	174	144	130
	85	22	31	64	100	113	100	64	31	22
	87.5	6	6	6	16	14	16	6	6	6
	90	0	0	1	1	1	1	1	0	0

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Luminous Intensity (Candela) Table

Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	Lateral (C-Plane) Angles									
		0	22.5	45	67.5	90	112.5	135	157.5	180
	90	0	0	1	1	1	1	1	0	0
	92.5	0	0	1	1	0	1	1	0	0
	95	0	0	1	1	0	1	1	0	0
	97.5	0	0	1	1	0	1	1	0	0
	100	0	0	1	1	0	1	1	0	0
	102.5	1	1	1	1	0	1	1	1	1
	105	1	1	1	1	1	1	1	1	1
	107.5	1	1	1	1	1	1	1	1	1
	110	1	1	1	1	1	1	1	1	1
	112.5	1	1	1	1	1	1	1	1	1
	115	1	1	1	1	1	1	1	1	1
	117.5	1	1	1	1	1	1	1	1	1
	120	2	2	1	1	1	1	1	2	2
	122.5	2	2	1	2	1	2	1	2	2
	125	2	2	2	2	2	2	2	2	2
	127.5	2	2	2	2	2	2	2	2	2
	130	2	2	2	2	2	2	2	2	2
	132.5	2	2	2	2	2	2	2	2	2
	135	2	2	2	2	2	2	2	2	2
	137.5	2	2	2	2	2	2	2	2	2
	140	2	2	2	2	2	2	2	2	2
	142.5	2	2	2	2	2	2	2	2	2
	145	2	2	2	2	2	2	2	2	2
	147.5	2	2	2	2	2	2	2	2	2
	150	2	2	2	2	2	2	2	2	2
	152.5	2	2	2	2	2	2	2	2	2
	155	2	2	2	2	2	2	2	2	2
	157.5	3	2	2	2	2	2	2	2	3
	160	3	3	3	3	3	3	3	3	3
	162.5	3	3	3	3	3	3	3	3	3
	165	3	3	3	3	3	3	3	3	3
	167.5	4	3	3	3	3	3	3	3	4
	170	4	4	4	4	4	4	4	4	4
	172.5	4	4	4	4	4	4	4	4	4
	175	4	4	4	4	4	4	4	4	4
	177.5	4	4	4	4	4	4	4	4	4
	180	4	4	4	4	4	4	4	4	4

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Coefficients of Utilization/Room 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
RCR																						
0	119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102	100
1	110	105	101	98		107	103	100	96		99	96	93		95	93	90		91	90	88	86
2	101	93	87	82		98	91	86	81		88	83	79		85	81	77		82	78	75	73
3	93	83	76	70		90	82	75	69		79	73	68		76	71	67		73	69	66	64
4	86	75	67	61		84	73	66	60		71	65	59		69	63	59		67	62	58	56
5	80	68	59	53		78	67	59	53		65	58	53		63	57	52		61	56	51	49
6	74	62	54	48		72	61	53	47		59	52	47		57	51	47		56	50	46	44
7	69	57	49	43		68	56	48	43		54	47	42		53	47	42		52	46	42	40
8	65	52	44	39		63	52	44	39		50	43	39		49	43	38		48	42	38	36
9	61	48	41	36		60	48	40	35		47	40	35		46	40	35		45	39	35	33
10	57	45	38	33		56	45	37	33		44	37	32		43	37	32		42	36	32	31

For absolute test reports, RUs are expressed as a percentage of total lumen output. For relative test reports, CUs are expressed as a percentage of total lamp 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)	Ground-level distance to half-of-nadir illuminance (ft) 0-180 deg	90-270 deg
6.0	115.3	6.55	6.57
8.0	64.8	8.74	8.76
10.0	41.5	10.92	10.94
12.0	28.8	13.10	13.13
14.0	21.2	15.29	15.32
16.0	16.2	17.47	17.51

Spacing Criterion

0 deg:	1.1
90 deg:	1.1
180 deg:	1.1
270 deg:	1.1

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	105569	105569	105569
45	52048	52405	52987
55	43731	44892	45225
65	43952	46155	46794
75	43431	48178	50052
85	6414	18549	32839

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 75.3°

Field Angle: 151.4°

90-270 Degree Plane

Beam Angle: 76.2°

Field Angle: 155.4°

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UGR Table - Corrected

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	24.2	25.7	24.6	26.0	26.4	24.4	25.9	24.8	26.3	26.6
	3H	26.4	27.8	26.8	28.1	28.5	26.8	28.2	27.2	28.5	28.8
	4H	27.3	28.6	27.7	28.9	29.3	27.8	29.1	28.2	29.4	29.8
	6H	27.9	29.0	28.3	29.4	29.8	28.5	29.7	29.0	30.1	30.5
	8H	28.0	29.1	28.4	29.5	29.9	28.8	29.9	29.2	30.3	30.7
	12H	28.0	29.0	28.4	29.4	29.8	28.9	30.0	29.3	30.3	30.8
4H	2H	25.0	26.3	25.4	26.6	27.0	25.2	26.4	25.6	26.8	27.2
	3H	27.4	28.5	27.9	28.9	29.3	27.8	28.8	28.2	29.2	29.6
	4H	28.4	29.4	28.9	29.8	30.2	28.9	29.9	29.3	30.3	30.7
	6H	29.1	30.0	29.6	30.4	30.9	29.8	30.6	30.2	31.1	31.5
	8H	29.2	30.0	29.7	30.5	30.9	30.1	30.9	30.5	31.3	31.8
	12H	29.3	30.0	29.7	30.4	30.9	30.2	30.9	30.7	31.4	31.9
8H	4H	28.9	29.7	29.3	30.1	30.6	29.3	30.1	29.7	30.5	31.0
	6H	29.7	30.3	30.1	30.8	31.3	30.3	30.9	30.8	31.4	31.9
	8H	29.8	30.4	30.4	30.9	31.4	30.7	31.2	31.2	31.7	32.2
	12H	29.9	30.4	30.4	30.9	31.4	30.9	31.4	31.4	31.9	32.4
12H	4H	28.9	29.6	29.4	30.1	30.6	29.3	30.0	29.8	30.5	31.0
	6H	29.8	30.3	30.3	30.8	31.3	30.4	30.9	30.9	31.4	31.9
	8H	30.0	30.5	30.5	31.0	31.5	30.7	31.3	31.2	31.7	32.3

Maximum UGR = 32.4

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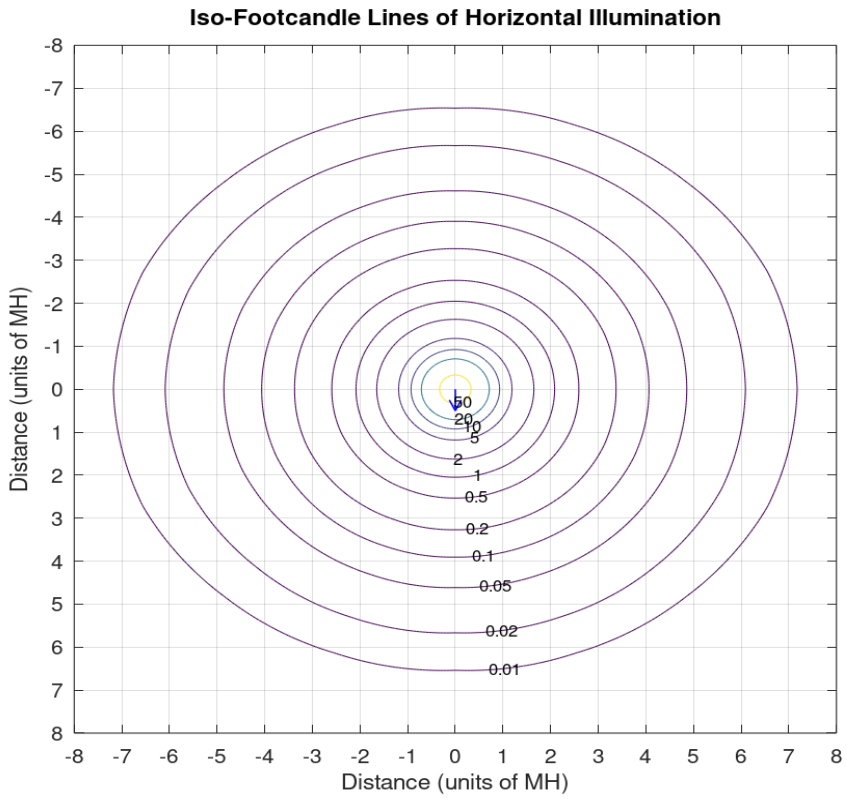
Iso-Illuminance Plot



The isofootcandle values shown in the plot above are based on a mounting height of h = 8.0 feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution of room reflections.

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Additional Pictures of Test Subject

Report of Test

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Test Distance	9.5 m
Ambient Temperature	24.9 °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 IES LM-79-19. Format of reports and angular increments based on IES LM-41-20 and LM-46-20.

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 C-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

LLIA001599-001B

Integrating Sphere Report
Catalog Number: L1.2X-VW 3200K Open Face
Yoke mounted, formed aluminum housing, extruded aluminum heatsink,
formed white enamel steel reflector, diffuse plastic enclosure.
272 white LEDs - 136 WW, 136 CW. Controller set for 3200K, full output.
One EldoLED POWERdrive 1061/S LED driver.

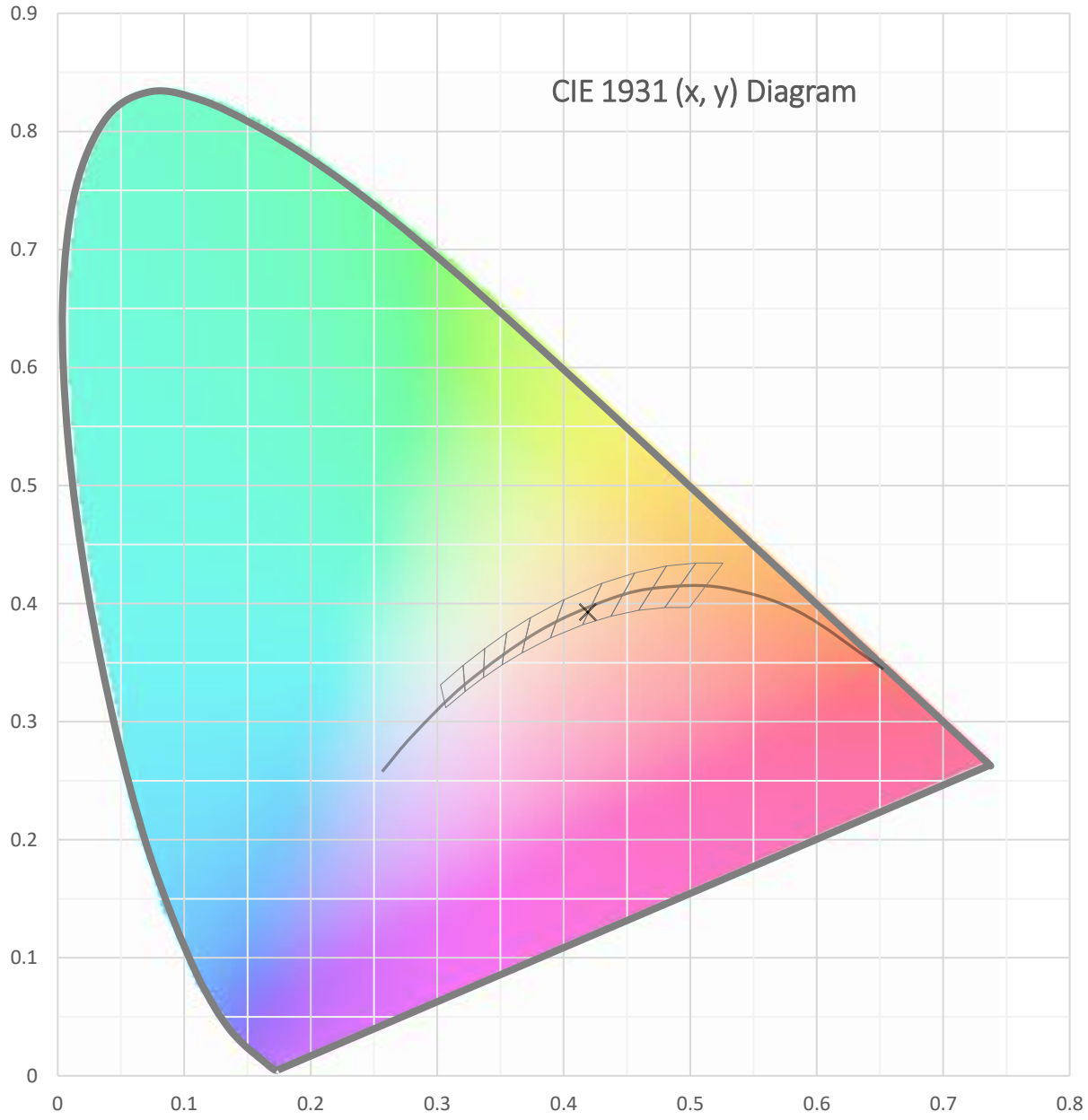
Performance Summary

Voltage	120.0	Vac
Current	0.8629	A
Power	103.0	W
Frequency	59.99	Hz
Power Factor	0.995	
Current THD	5.4	%
Total Luminous Flux	8064.2	lm
Efficacy	78.3	lm/W
Chromaticity (x,y)	(0.4189, 0.3927)	
(u',v')	(0.2437, 0.5141)	
Duv	-0.0018	
CCT	3234	K
CRI (Ra)	96	
R9	98	
TM-30: Rf	91	
TM-30: Rg	99	
TM-30: Rcs,h1	-1	

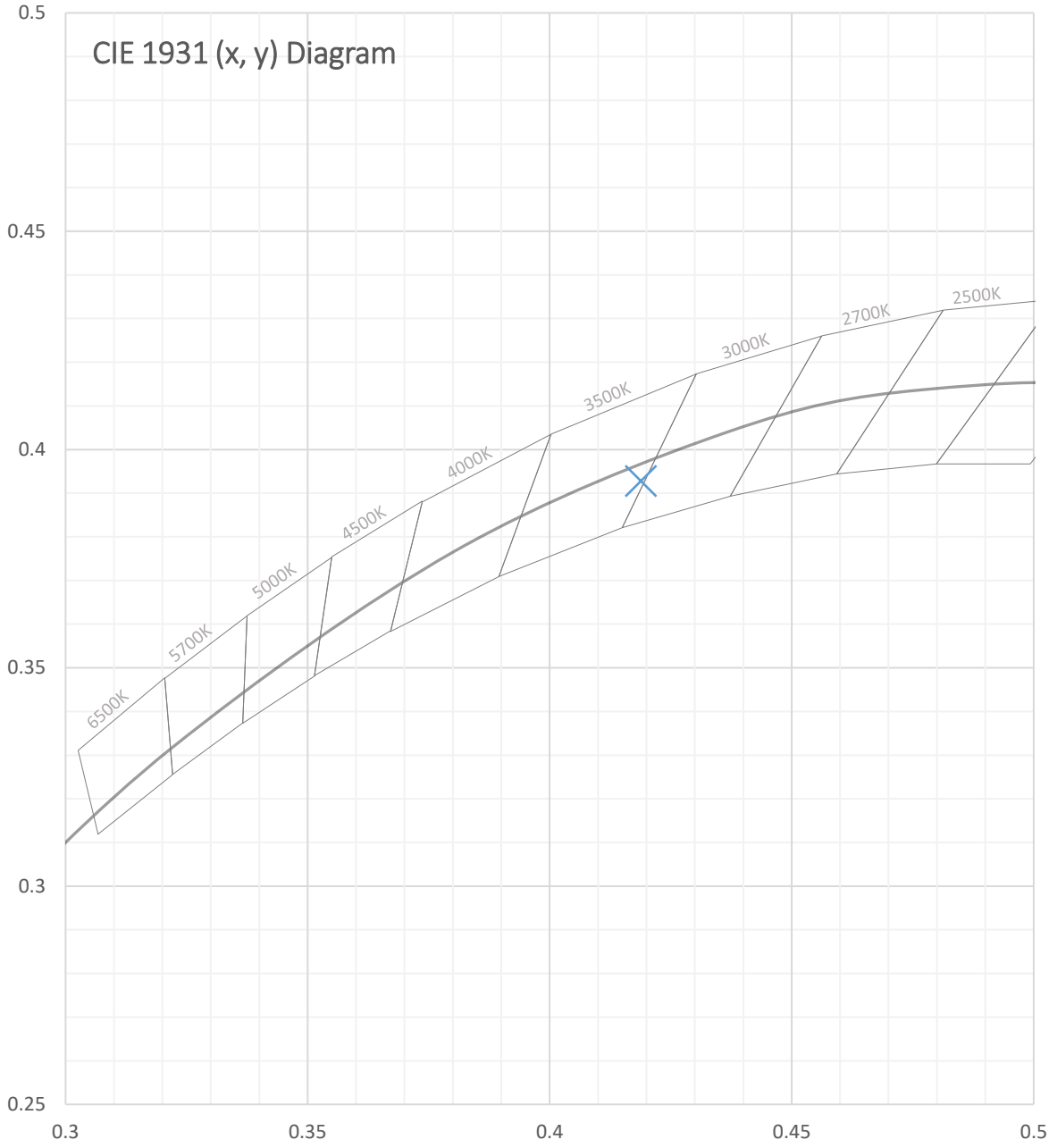
Prepared For:
Brightline L.P.
580 Mayer Street
Suite 7
Bridgeville, PA 15017, USA

Test date: 12/03/2021
Report date: 12/10/2021

Test Report Number: LLIA001599-001B



Test Report Number: LLIA001599-001B



Test Report Number: LLIA001599-001B

Total Radiant Flux	30.46	W
Total Luminous Flux	8064.2	Lm
Chromaticity CIE 1931 (x, y)	(0.4189, 0.3927)	
Chromaticity CIE 1976 (u', v')	(0.2437, 0.5141)	
Correlated Color Temperature (CCT)	3234	K
Color Rendering Index (Ra)	96	
R1	96	
R2	97	
R3	99	
R4	97	
R5	96	
R6	94	
R7	95	
R8	96	
R9	98	
R10	95	
R11	98	
R12	81	
R13	96	
R14	99	
TM-30: Rf	91	
TM-30: Rg	99	
TM-30: Rcs,h1	-1	
Distance from Planckian Locus (Duv)	-0.0018	
Scotopic/Photopic Ratio ǂ	1.616	

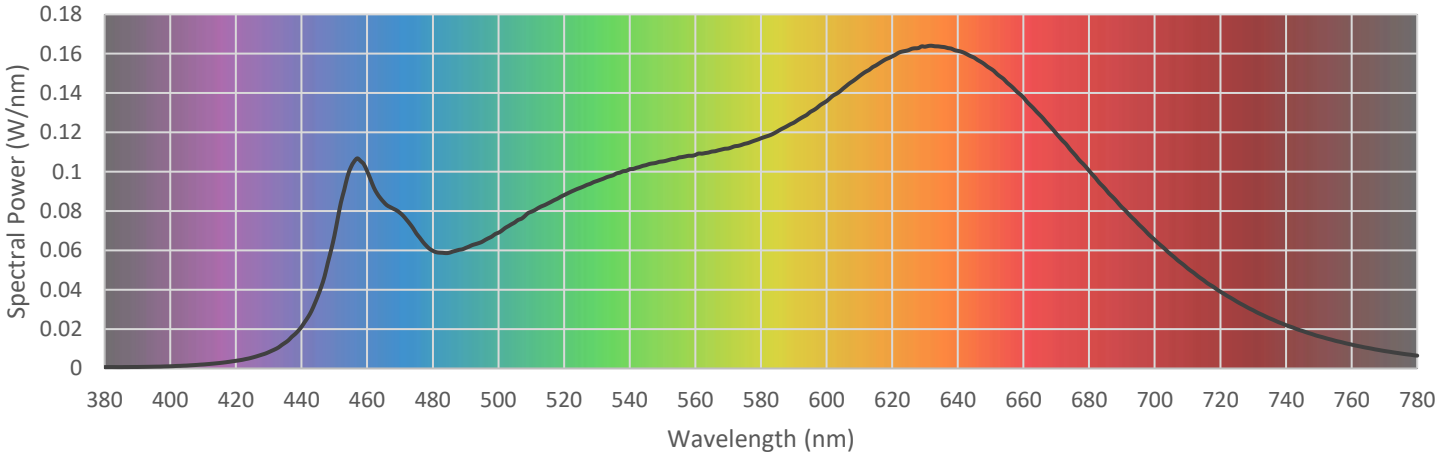
Electrical Data

Voltage	120.0	Vac
Current	0.8629	A
Power	103.0	W
Frequency	59.99	Hz
Power Factor	0.995	
Current THD	5.4	%

Test Report Number: LLIA001599-001B

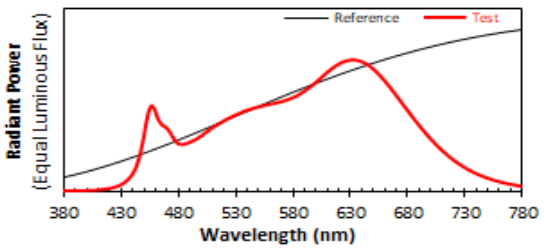
Summary Spectral Power Distribution (wavelength - nm, spectral power - W/nm)

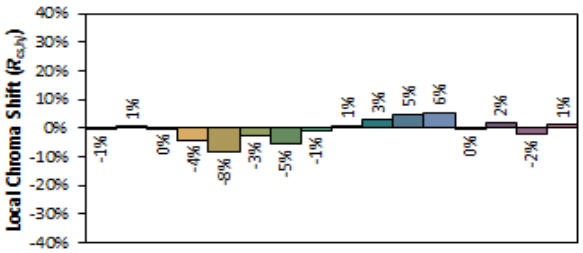
380	0.000703	480	0.059831	580	0.117005	680	0.100500
385	0.000688	485	0.058815	585	0.120481	685	0.091170
390	0.000758	490	0.061264	590	0.124914	690	0.081955
395	0.000898	495	0.064373	595	0.130343	695	0.073426
400	0.001116	500	0.069008	600	0.135875	700	0.065398
405	0.001479	505	0.074255	605	0.142230	705	0.057860
410	0.002027	510	0.079649	610	0.148591	710	0.050948
415	0.002777	515	0.083806	615	0.154000	715	0.044749
420	0.003879	520	0.088119	620	0.158633	720	0.039023
425	0.005558	525	0.091860	625	0.161803	725	0.034026
430	0.008292	530	0.095278	630	0.163564	730	0.029583
435	0.013079	535	0.098249	635	0.163501	735	0.025512
440	0.021207	540	0.101319	640	0.161454	740	0.022037
445	0.037006	545	0.103366	645	0.157994	745	0.019081
450	0.067352	550	0.105222	650	0.152422	750	0.016386
455	0.102155	555	0.107244	655	0.145282	755	0.014092
460	0.100214	560	0.108526	660	0.137780	760	0.012145
465	0.084667	565	0.110249	665	0.128837	765	0.010415
470	0.079091	570	0.111804	670	0.119414	770	0.008884
475	0.068598	575	0.114184	675	0.109900	775	0.007616
						780	0.006519

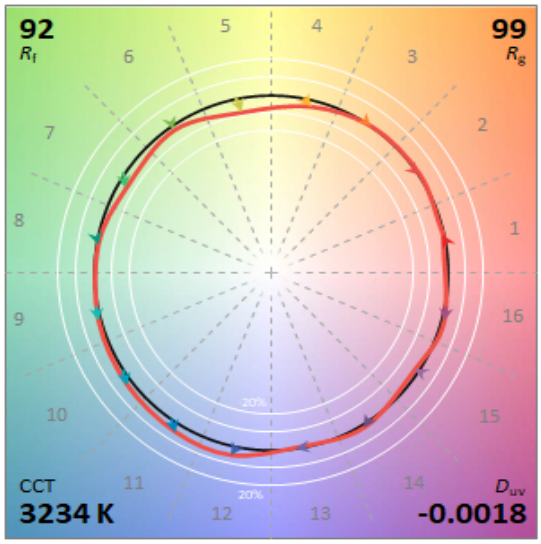


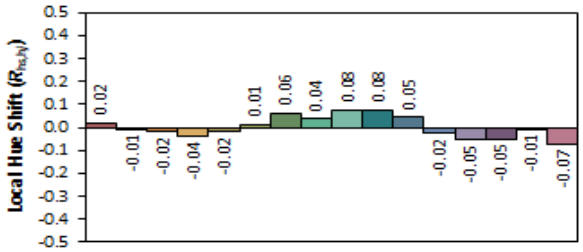
Test Report Number: LLIA001599-001B

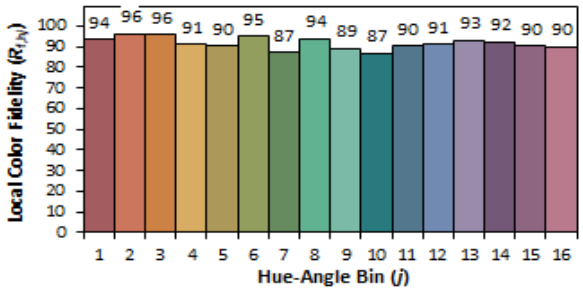
IES TM-30 Details

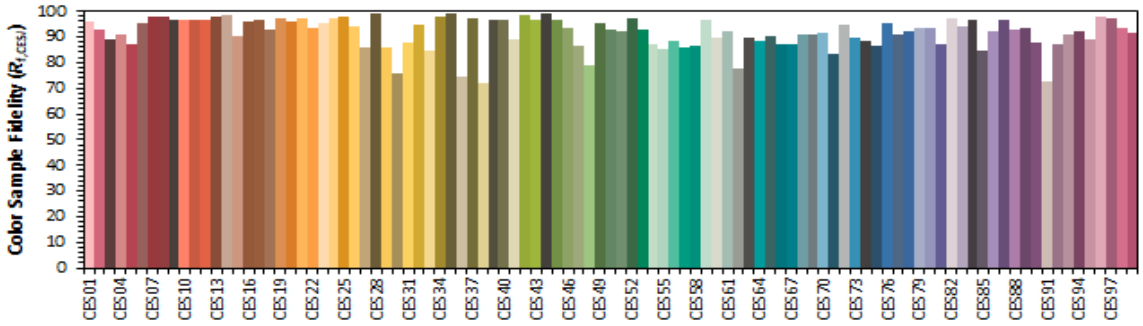












Notes:

x	0.4189
y	0.3927
u'	0.2437
v'	0.5141

CIE 13.3-1995 (CRI)

R_a	96
R_9	98

Test Report Number: LLIA001599-001B

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:	25.2 °C
Test Procedure:	Tested in accordance with the applicable sections of: LM-79-19, LM-78-20, LM-58-20, ANSI_ANSLG C78.377-2017, TM-30-20
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. This report is free of erasures and corrections This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with ǂ 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.

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