LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002446-001A

Indoor Distribution Photometry Test Report

Catalog Number: Blade Pendant 4 Ft C10831
Pendant mounted, formed aluminum housing, rubberized translucent white enclosure.
118 white LEDs and 64 white LEDs on two Luxtech flexible LED strips
Two Osram OTi 48/120-277/2A0 DIM-1 L LED drivers

Prepared For:
Boyd Lighting
1455 Vapor Trail
Colorado Springs, CO 80916, USA

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	2702.5	Lumens
Input Current	0.7070	A	Total Efficacy	32.0	Lm/W
Input Power	84.52	W	Downward Flux	1129.7	Lumens
Frequency	60.00	Hz	Downward Flux	41.8	% of Total
Power Factor	0.996				
Current THD	7.3	%			

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

Test date: 07/09/2024
Report date: 07/10/2024

Signed: Michael L. Grather Digitally signed by Michael L. Grather Date: 2024.07.10 15:18:38 -04'00'

North America (issuing laboratory)
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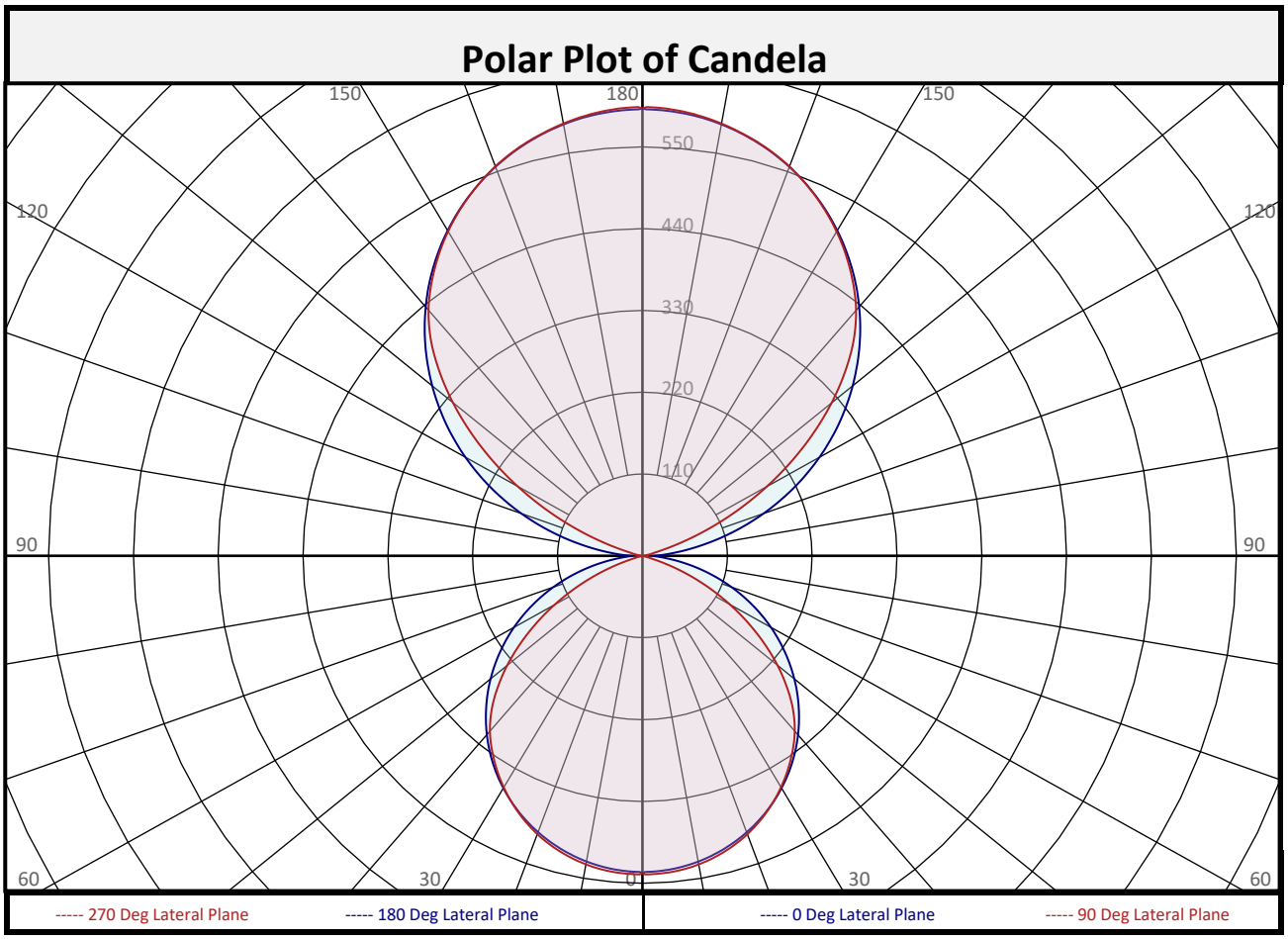

Zonal Flux Summary

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	40.3	1.5%	90-100	14.4	0.5%	0-20	155.8	5.8%
10-20	115.4	4.3%	100-110	66.5	2.5%	0-30	330.6	12.2%
20-30	174.8	6.5%	110-120	170.8	6.3%	0-40	540.9	20.0%
30-40	210.4	7.8%	120-130	259.0	9.6%	0-60	943.2	34.9%
40-50	216.3	8.0%	130-140	302.5	11.2%	0-80	1116	41.3%
50-60	186.0	6.9%	140-150	294.9	10.9%	10-90	1089	40.3%
60-70	123.6	4.6%	150-160	245.5	9.1%	20-50	601.4	22.3%
70-80	49.5	1.8%	160-170	162.5	6.0%	40-90	588.8	21.8%
80-90	13.4	0.5%	170-180	56.9	2.1%	60-90	186.5	6.9%
0-90	1130	41.8%	90-180	1573	58.2%	0-180	2703	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	426	426	426	426	426	426	426	426	426
	2.5	424	424	425	427	428	427	425	424	424
	5	423	423	424	426	426	426	424	423	423
	7.5	420	420	422	423	424	423	422	420	420
	10	417	417	418	420	421	420	418	417	417
	12.5	413	413	414	415	417	415	414	413	413
	15	408	408	409	410	411	410	409	408	408
	17.5	402	402	403	404	405	404	403	402	402
	20	395	395	396	397	398	397	396	395	395
	22.5	388	388	388	388	390	388	388	388	388
	25	379	379	379	379	380	379	379	379	379
	27.5	370	370	370	369	370	369	370	370	370
	30	360	360	359	358	359	358	359	360	360
	32.5	350	349	348	347	348	347	348	349	350
	35	339	338	336	334	335	334	336	338	339
	37.5	327	326	324	321	322	321	324	326	327
	40	314	313	311	308	307	308	311	313	314
	42.5	300	300	297	293	291	293	297	300	300
	45	286	286	283	276	272	276	283	286	286
	47.5	272	272	268	257	251	257	268	272	272
	50	257	257	252	236	229	236	252	257	257
	52.5	241	241	234	214	205	214	234	241	241
	55	226	225	215	191	181	191	215	225	226
	57.5	209	209	194	167	157	167	194	209	209
	60	193	192	172	143	132	143	172	192	193
	62.5	176	175	149	119	108	119	149	175	176
	65	159	158	126	95	84	95	126	158	159
	67.5	141	139	103	72	61	72	103	139	141
	70	124	118	80	50	39	50	80	118	124
	72.5	106	98	59	29	19	29	59	98	106
	75	89	77	38	13	9	13	38	77	89
	77.5	72	56	21	8	4	8	21	56	72
	80	56	38	14	4	3	4	14	38	56
	82.5	41	22	10	4	2	4	10	22	41
	85	29	15	10	3	2	3	10	15	29
	87.5	21	15	10	3	1	3	10	15	21
	90	16	14	9	3	1	3	9	14	16

16 lateral half-planes of data were acquired, 22.5 degree increments shown.

Report of Test

LLIA002446-001A

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	16	14	9	3	1	3	9	14	16
92.5	23	14	9	2	1	2	9	14	23
95	35	15	9	3	1	3	9	15	35
97.5	52	26	10	3	2	3	10	26	52
100	73	47	16	5	3	5	16	47	73
102.5	95	73	27	11	6	11	27	73	95
105	118	102	51	19	14	19	51	102	118
107.5	143	132	80	42	29	42	80	132	143
110	167	160	110	70	56	70	110	160	167
112.5	192	189	142	101	86	101	142	189	192
115	216	216	175	134	119	134	175	216	216
117.5	241	240	207	167	152	167	207	240	241
120	265	265	239	201	186	201	239	265	265
122.5	288	288	270	235	220	235	270	288	288
125	311	311	299	268	254	268	299	311	311
127.5	334	334	327	301	288	301	327	334	334
130	356	356	352	332	320	332	352	356	356
132.5	377	377	374	362	352	362	374	377	377
135	398	398	395	389	381	389	395	398	398
137.5	418	418	416	413	408	413	416	418	418
140	437	437	435	434	431	434	435	437	437
142.5	456	455	454	453	451	453	454	455	456
145	473	472	471	471	470	471	471	472	473
147.5	490	489	488	488	487	488	488	489	490
150	505	504	504	504	504	504	504	504	505
152.5	520	519	519	519	519	519	519	519	520
155	533	532	533	533	533	533	533	532	533
157.5	545	544	545	546	546	546	545	544	545
160	557	555	557	558	557	558	557	555	557
162.5	567	565	567	568	567	568	567	565	567
165	575	574	576	577	576	577	576	574	575
167.5	583	582	583	585	584	585	583	582	583
170	589	588	590	591	590	591	590	588	589
172.5	594	593	594	597	596	597	594	593	594
175	598	596	598	601	600	601	598	596	598
177.5	600	598	601	603	603	603	601	598	600
180	602	602	602	602	602	602	602	602	602

16 lateral half-planes of data were acquired, 22.5 degree increments shown.

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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	105	105	105	105		96	96	96	96		79	79	79		63	63	63		49	49	49	42
1	96	92	88	85		88	84	81	78		69	67	65		56	54	53		43	42	41	36
2	88	81	75	70		80	74	69	64		61	57	54		49	47	44		38	37	35	30
3	80	71	64	58		73	65	59	54		54	49	46		44	40	38		34	32	30	26
4	73	63	55	49		67	57	51	46		48	43	39		39	35	32		30	28	26	22
5	67	56	48	42		61	51	44	39		43	37	33		35	31	28		27	25	23	19
6	62	50	42	36		56	46	39	34		38	33	29		31	27	24		25	22	20	17
7	57	45	37	32		52	41	35	30		35	29	26		28	24	21		23	20	18	15
8	53	41	33	28		48	38	31	26		32	26	23		26	22	19		21	18	16	13
9	49	37	30	25		45	34	28	23		29	24	20		24	20	17		19	16	14	12
10	46	34	27	22		42	31	25	21		27	22	18		22	18	15		18	15	13	11

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	11.8	7.55	7.51
8.0	6.7	10.07	10.02
10.0	4.3	12.59	12.52
12.0	3.0	15.11	15.03
14.0	2.2	17.62	17.53
16.0	1.7	20.14	20.03

Spacing Criterion

0 deg:	1.3
90 deg:	1.3
180 deg:	1.3
270 deg:	1.3

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	15801	15801	15801
45	14142	14200	14266
55	13391	13050	11714
65	12263	10126	7371
75	10302	4711	1256
85	7206	2799	727

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 84.5°

Field Angle: 158.6°

90-270 Degree Plane

Beam Angle: 81.8°

Field Angle: 135.1°

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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	11.0	11.8	12.0	12.8	14.2	12.0	12.8	13.1	13.9	15.2
	3H	12.2	12.9	13.2	13.9	15.3	12.6	13.3	13.6	14.3	15.7
	4H	12.5	13.2	13.6	14.2	15.7	12.5	13.2	13.6	14.2	15.6
	6H	12.7	13.3	13.8	14.4	15.8	12.4	13.0	13.5	14.1	15.5
	8H	12.7	13.3	13.8	14.4	15.8	12.4	13.0	13.4	14.0	15.4
	12H	12.7	13.3	13.8	14.3	15.8	12.3	12.9	13.4	13.9	15.4
4H	2H	11.3	11.9	12.3	13.0	14.4	12.2	12.8	13.2	13.9	15.3
	3H	12.6	13.2	13.7	14.2	15.7	12.8	13.3	13.8	14.4	15.8
	4H	13.0	13.5	14.1	14.6	16.0	12.7	13.2	13.8	14.3	15.7
	6H	13.3	13.7	14.3	14.8	16.2	12.6	13.1	13.7	14.2	15.6
	8H	13.3	13.7	14.4	14.8	16.2	12.6	13.0	13.7	14.1	15.5
	12H	13.3	13.7	14.4	14.8	16.2	12.5	12.9	13.6	14.0	15.4
8H	4H	13.0	13.4	14.0	14.4	15.9	12.7	13.1	13.7	14.2	15.6
	6H	13.2	13.5	14.3	14.7	16.1	12.6	12.9	13.7	14.0	15.5
	8H	13.3	13.6	14.4	14.7	16.1	12.5	12.8	13.6	13.9	15.4
	12H	13.3	13.6	14.4	14.7	16.2	12.5	12.7	13.6	13.8	15.3
12H	4H	12.9	13.3	14.0	14.4	15.8	12.6	13.0	13.7	14.1	15.5
	6H	13.2	13.5	14.3	14.6	16.0	12.5	12.8	13.6	13.9	15.4
	8H	13.2	13.5	14.3	14.6	16.1	12.5	12.8	13.6	13.8	15.4

Maximum UGR = 16.2

Report of Test

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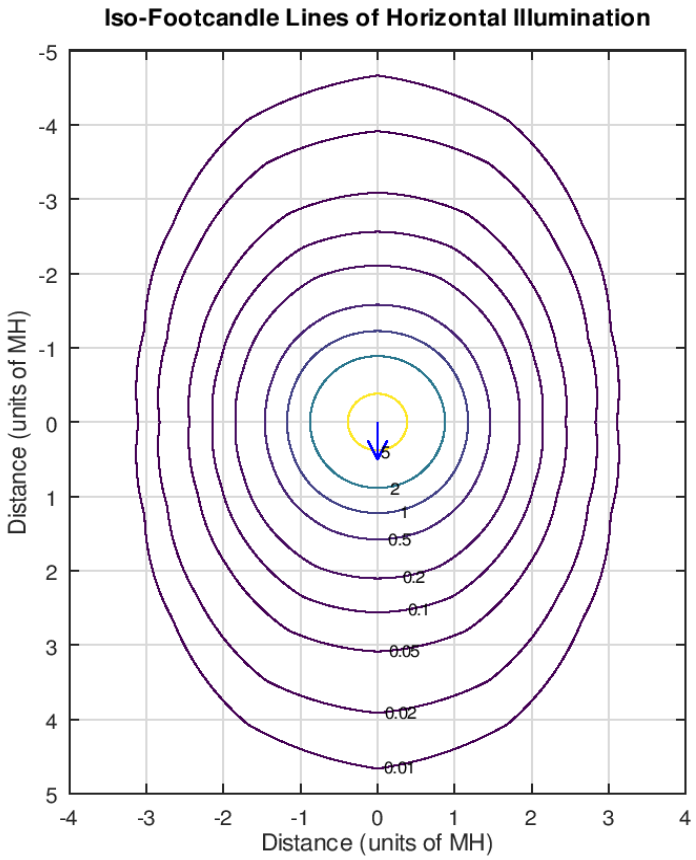
Iso-Illuminance Plot



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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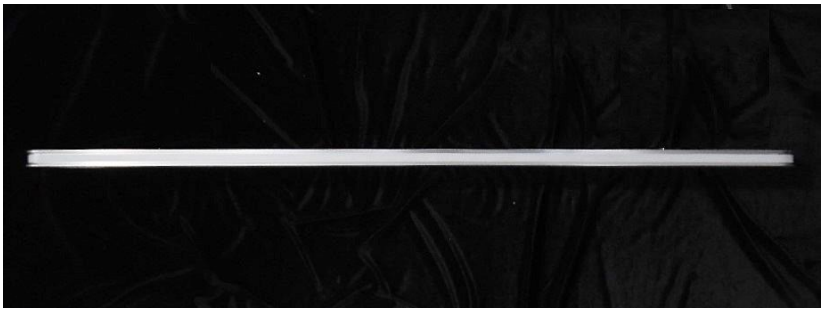
Additional Pictures of Test Subject



Report of Test

LLIA002446-001A

Test Distance	9.5 m
Ambient Temperature	25.3 °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.

LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002446-001B

Integrating Sphere Report
Catalog Number: Blade Pendant 4 Ft C10831
Pendant mounted, formed aluminum housing, rubberized translucent white enclosure.
118 white LEDs and 64 white LEDs on two Luxtech flexible LED strips
Two Osram OTi 48/120-277/2A0 DIM-1 L LED drivers

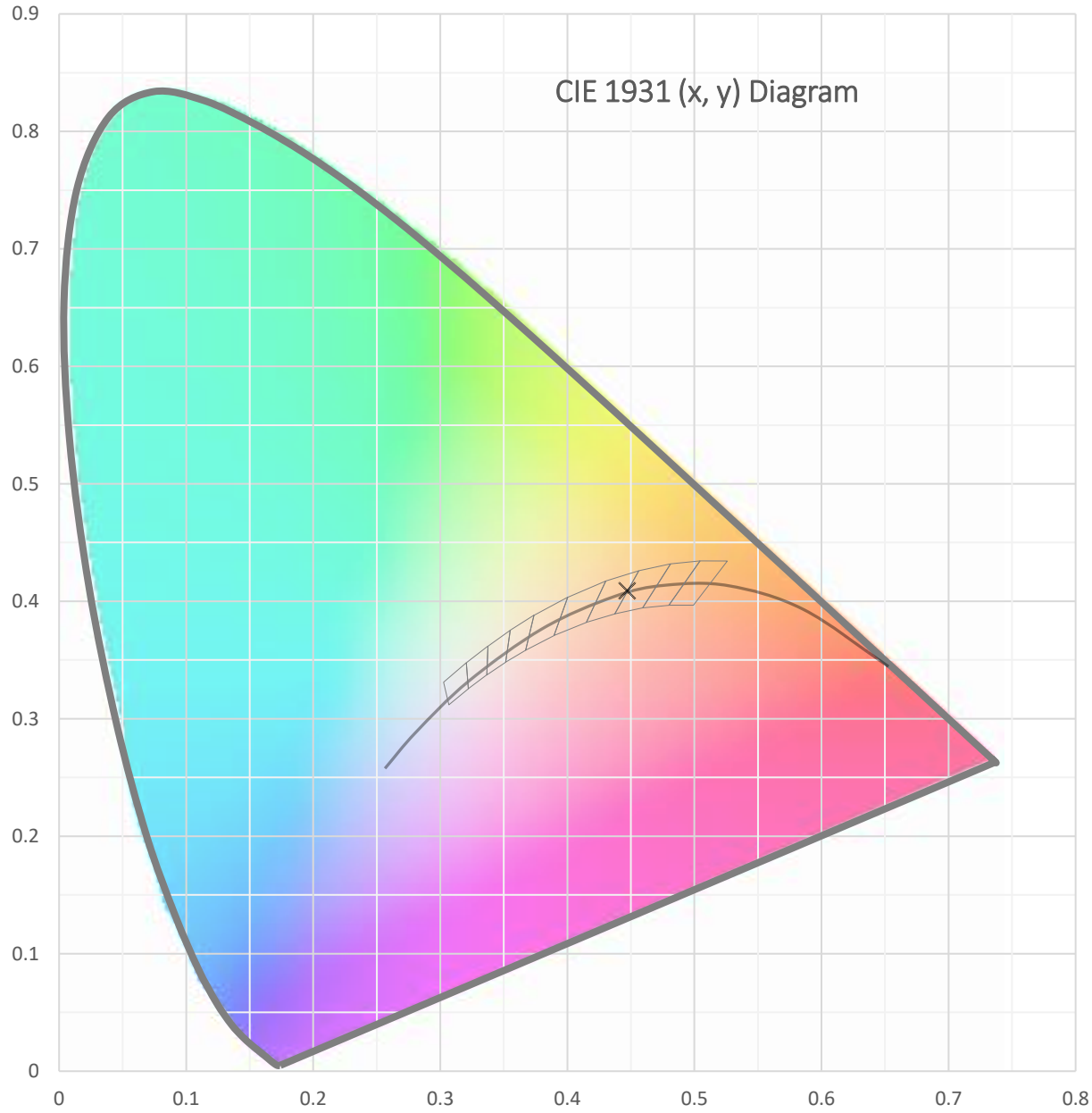
Performance Summary

Voltage	120.0	Vac
Current	0.7055	A
Power	84.31	W
Frequency	59.99	Hz
Power Factor	0.996	
Current THD	7.4	%
Total Luminous Flux	2625.3	lm
Efficacy	31.1	lm/W
Chromaticity (x,y)	(0.4470, 0.4090)	
(u',v')	(0.2549, 0.5248)	
Duv	0.0007	
CCT	2878	K
CRI (Ra)	92	
R9	54	
TM-30: Rf	91	
TM-30: Rg	97	
TM-30: Rcs,h1	-6	

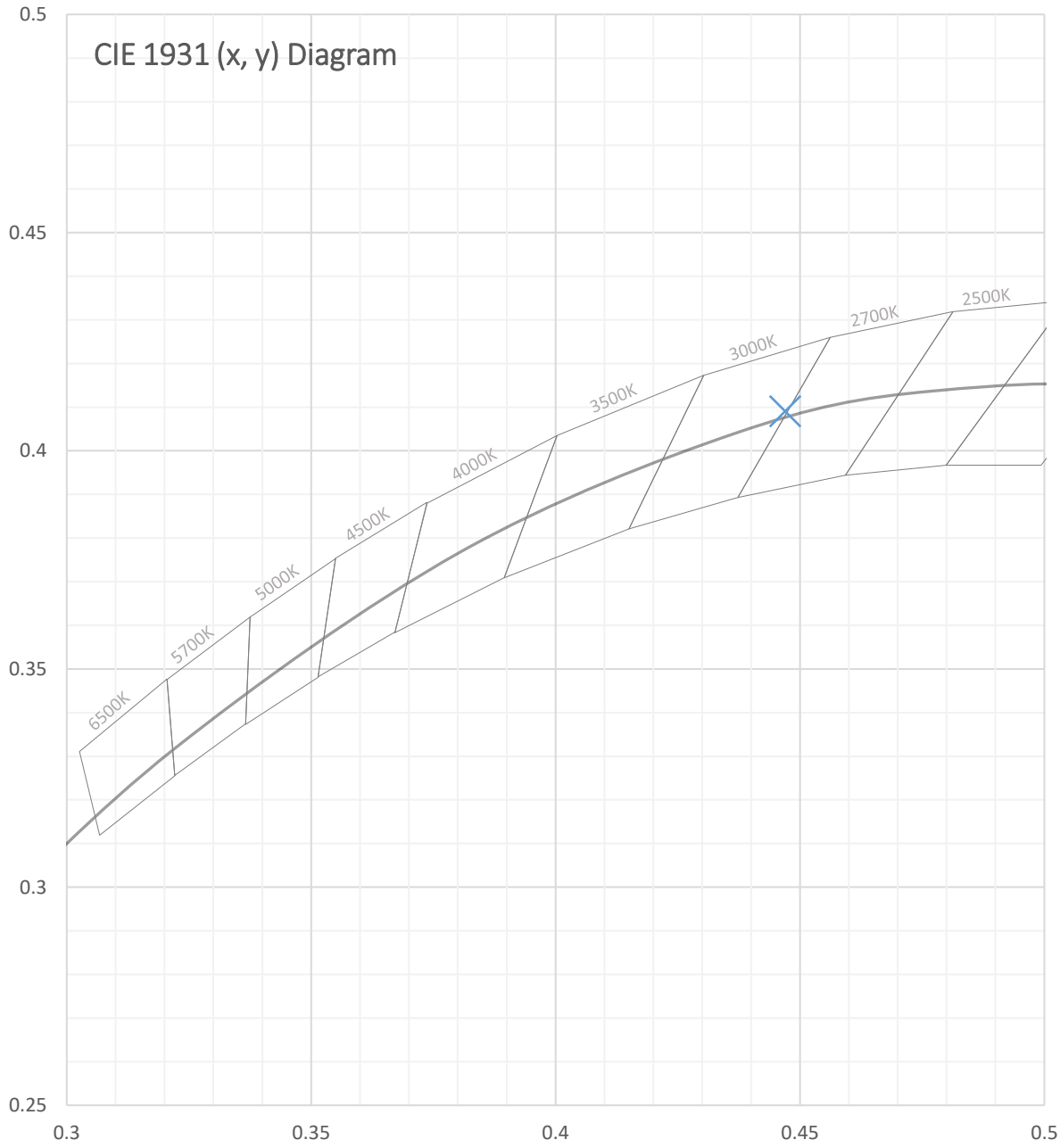
Prepared For:
Boyd Lighting
1455 Vapor Trail
Colorado Springs, CO 80916, USA

Test date: 07/09/2024
Report date: 07/10/2024

Test Report Number: LLIA002446-001B



Test Report Number: LLIA002446-001B



Test Report Number: LLIA002446-001B

Total Radiant Flux	9.103	W
Total Luminous Flux	2625.3	Lm
Chromaticity CIE 1931 (x, y)	(0.4470, 0.4090)	
Chromaticity CIE 1976 (u', v')	(0.2549, 0.5248)	
Correlated Color Temperature (CCT)	2878	K
Color Rendering Index (Ra)	92	
R1	92	
R2	97	
R3	99	
R4	91	
R5	92	
R6	96	
R7	91	
R8	79	
R9	54	
R10	92	
R11	92	
R12	83	
R13	93	
R14	100	
TM-30: Rf	91	
TM-30: Rg	97	
TM-30: Rcs,h1	-6	
Distance from Planckian Locus (Duv)	0.0007	
Scotopic/Photopic Ratio ǂ	1.367	

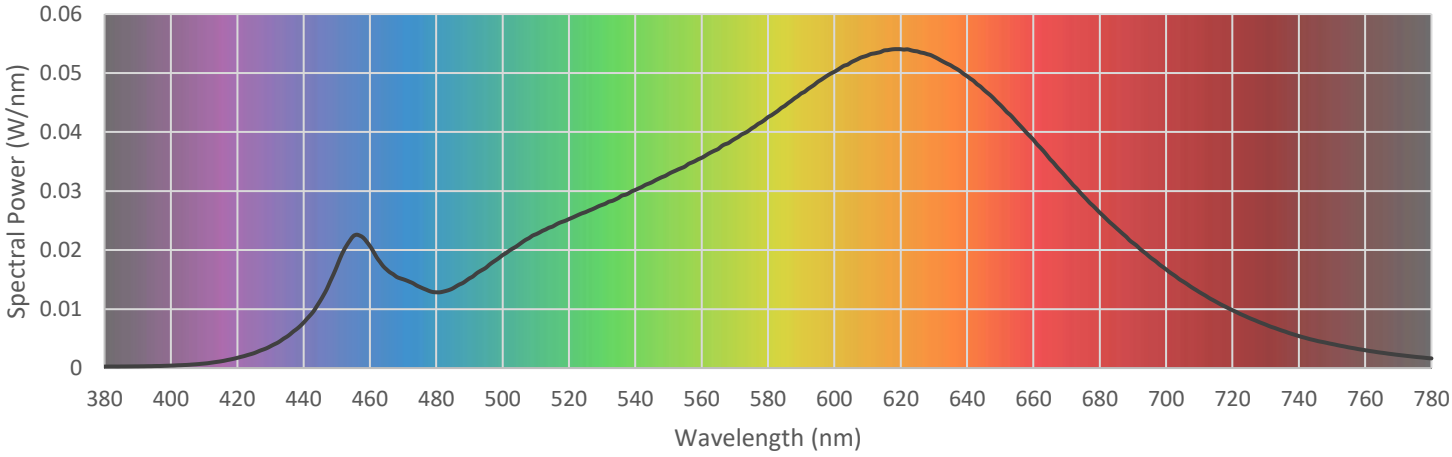
Electrical Data

Voltage	120.0	Vac
Current	0.7055	A
Power	84.31	W
Frequency	59.99	Hz
Power Factor	0.996	
Current THD	7.4	%

Test Report Number: LLIA002446-001B

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

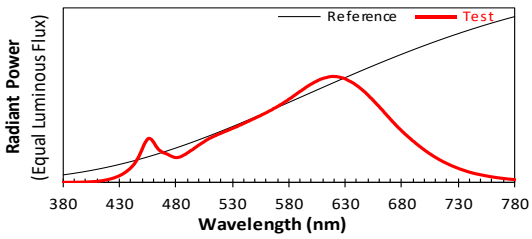
380	0.000257	480	0.012844	580	0.042529	680	0.026348
385	0.000268	485	0.013513	585	0.044419	685	0.023731
390	0.000287	490	0.015211	590	0.046545	690	0.021217
395	0.000340	495	0.017019	595	0.048513	695	0.018866
400	0.000417	500	0.019151	600	0.050217	700	0.016726
405	0.000539	505	0.020965	605	0.051807	705	0.014710
410	0.000763	510	0.022668	610	0.052981	710	0.012885
415	0.001137	515	0.023972	615	0.053831	715	0.011258
420	0.001730	520	0.025257	620	0.054044	720	0.009810
425	0.002517	525	0.026428	625	0.053672	725	0.008505
430	0.003693	530	0.027658	630	0.052782	730	0.007375
435	0.005330	535	0.028867	635	0.051330	735	0.006341
440	0.007703	540	0.030183	640	0.049473	740	0.005430
445	0.011392	545	0.031491	645	0.047188	745	0.004682
450	0.017208	550	0.032894	650	0.044601	750	0.004083
455	0.022369	555	0.034165	655	0.041669	755	0.003512
460	0.020677	560	0.035629	660	0.038695	760	0.003027
465	0.016719	565	0.037131	665	0.035411	765	0.002598
470	0.015053	570	0.038850	670	0.032286	770	0.002228
475	0.013751	575	0.040589	675	0.029190	775	0.001908
						780	0.001639

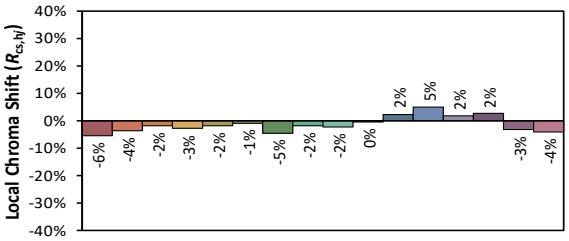


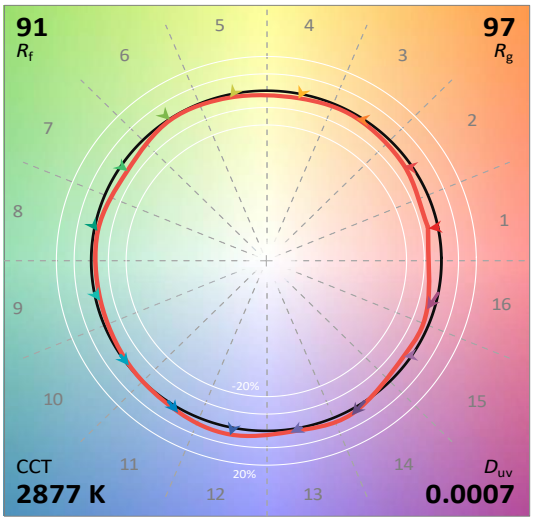
Test Report Number: LLIA002446-001B

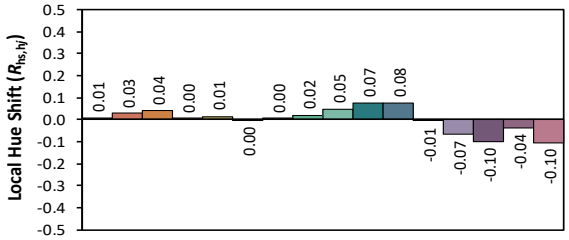
IES TM-30 Details

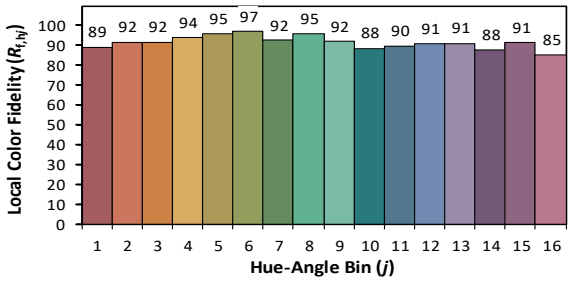
Source:	LLIA002446-001B	**Manufacturer:**	Boyd Lighting
Date:	7/10/2024	**Model:**	Blade Pendant 4 Ft C10831

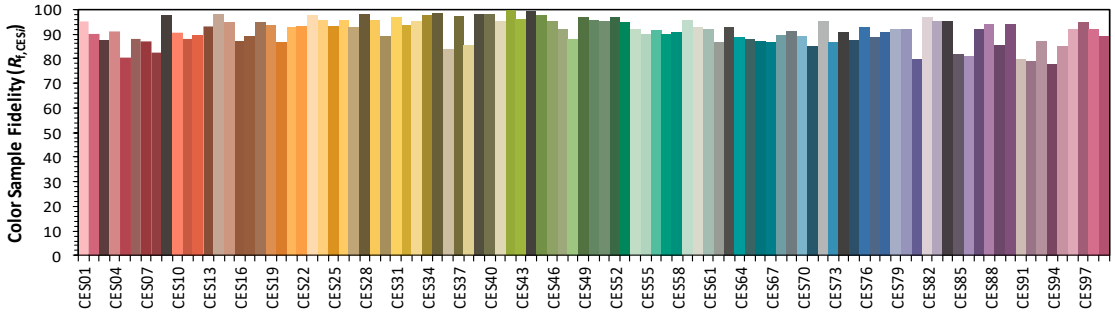












Notes:

x	**0.4470**
y	**0.4090**
u'	**0.2549**
v'	**0.5248**

CIE 13.3-1995 (CRI)

R_a	92
R_9	54

Test Report Number: LLIA002446-001B

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:	25.8 °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 ‡ 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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