LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002228-001A-R01*

Indoor Distribution Photometry Test Report

Catalog Number: Brink 23" X 5" Pendant | BP52305
Suspended/pendant mounted, formed white painted steel canopy, painted white aluminum housing/ reflector, diffuse white "Lumenate®" perimeters with diffuse white acrylic bottom enclosures.
168 white LEDs on four Q-Tran 3500K LED strips
One ERP VZM060W-24 LED driver

Prepared For:
Lumetta, Inc
33 Minnesota Avenue
Warwick, RI 02888, USA

Performance Summary					
Input Voltage	120.0	Vac	Luminous Flux	1695.9	Lumens
Input Current	0.2183	A	Total Efficacy	66.4	Lm/W
Input Power	25.55	W	Downward Flux	1346.8	Lumens
Frequency	60.00	Hz	Downward Flux	79.4	% of Total
Power Factor	0.975				
Current THD	15.2	%			

*This test report supersedes previous versions - see the end of this report for a list of revisions

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

Test date: 10/04/2023
Report date: 10/11/2023

Signed: Michael L. Grather Digitally signed by Michael L. Grather Date: 2023.10.11 21:44:46 -04'00'

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Report of Test

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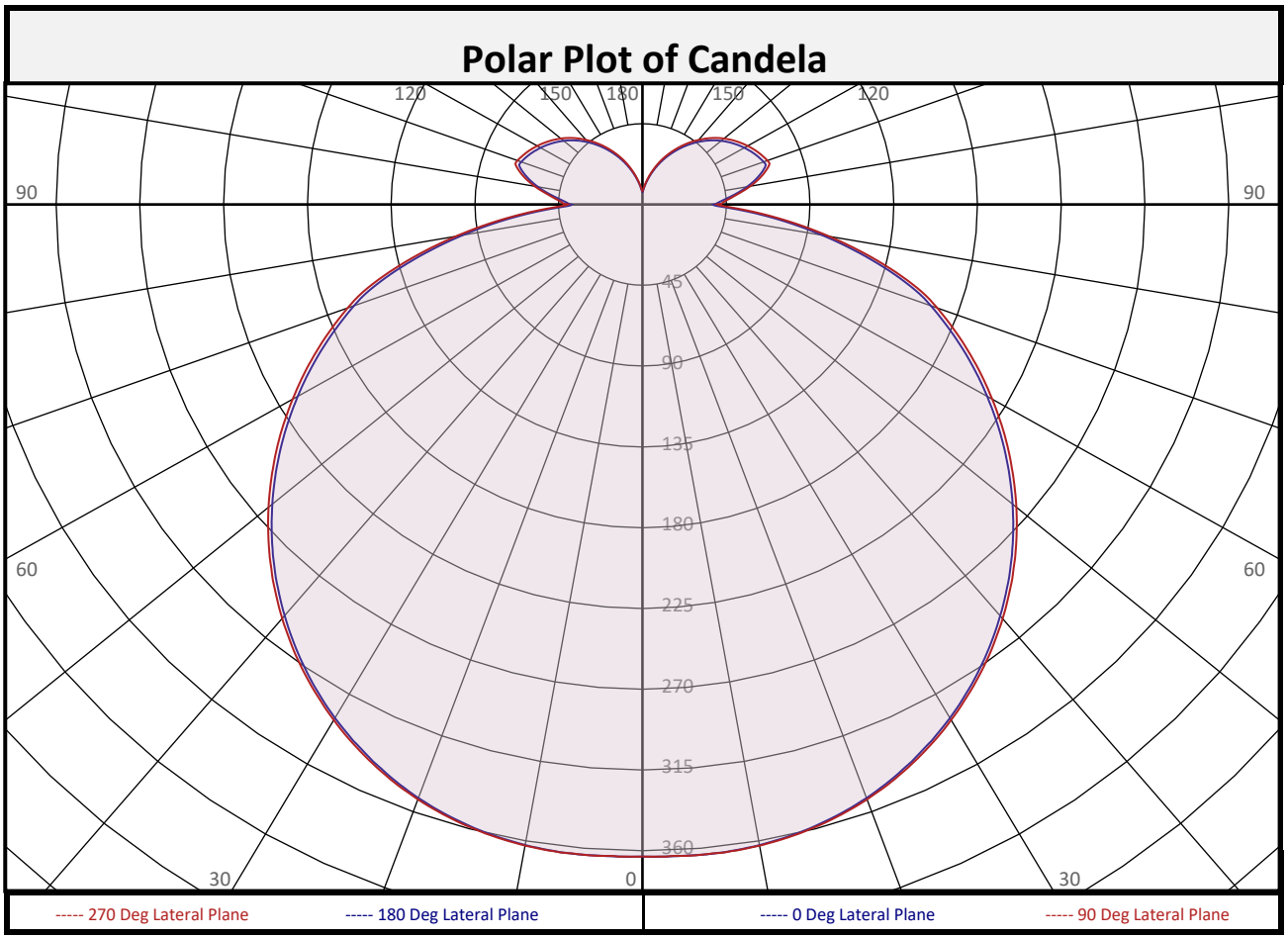

Zonal Flux Summary

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	34.7	2.0%	90-100	56.3	3.3%	0-20	136.5	8.0%
10-20	101.8	6.0%	100-110	72.1	4.3%	0-30	295.9	17.4%
20-30	159.4	9.4%	110-120	70.1	4.1%	0-40	496.4	29.3%
30-40	200.5	11.8%	120-130	58.2	3.4%	0-60	934.3	55.1%
40-50	220.5	13.0%	130-140	43.2	2.5%	0-80	1271	74.9%
50-60	217.4	12.8%	140-150	27.8	1.6%	10-90	1312	77.4%
60-70	192.2	11.3%	150-160	14.7	0.9%	20-50	580.5	34.2%
70-80	144.5	8.5%	160-170	5.6	0.3%	40-90	850.4	50.1%
80-90	75.8	4.5%	170-180	1.1	0.1%	60-90	412.5	24.3%
0-90	1347	79.4%	90-180	349.1	20.6%	0-180	1696	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	363	363	363	363	363	363	363	363	363
	2.5	363	364	363	363	363	363	363	364	363
	5	364	364	364	364	364	364	364	364	364
	7.5	363	364	364	364	363	364	364	364	363
	10	362	363	364	363	363	363	364	363	362
	12.5	361	362	363	362	361	362	363	362	361
	15	358	360	361	360	359	360	361	360	358
	17.5	356	357	358	358	356	358	358	357	356
	20	352	354	356	354	353	354	356	354	352
	22.5	347	350	352	351	348	351	352	350	347
	25	342	346	347	346	343	346	347	346	342
	27.5	337	340	342	341	338	341	342	340	337
	30	330	334	336	335	332	335	336	334	330
	32.5	323	327	330	328	325	328	330	327	323
	35	316	320	323	321	317	321	323	320	316
	37.5	308	312	315	313	310	313	315	312	308
	40	299	304	307	305	301	305	307	304	299
	42.5	290	295	298	296	292	296	298	295	290
	45	280	286	289	287	283	287	289	286	280
	47.5	270	276	279	277	273	277	279	276	270
	50	260	265	269	267	262	267	269	265	260
	52.5	249	254	257	256	251	256	257	254	249
	55	237	243	246	244	240	244	246	243	237
	57.5	226	231	234	233	229	233	234	231	226
	60	214	219	222	221	217	221	222	219	214
	62.5	202	207	209	208	205	208	209	207	202
	65	190	194	196	196	193	196	196	194	190
	67.5	177	181	182	183	181	183	182	181	177
	70	165	167	168	169	168	169	168	167	165
	72.5	151	153	154	155	155	155	154	153	151
	75	134	137	138	139	138	139	138	137	134
	77.5	116	120	122	122	119	122	122	120	116
	80	98	102	105	104	101	104	105	102	98
	82.5	81	85	88	87	84	87	88	85	81
	85	64	68	71	70	66	70	71	68	64
	87.5	48	53	55	54	50	54	55	53	48
	90	38	43	45	44	40	44	45	43	38

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

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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	38	43	45	44	40	44	45	43	38
	92.5	42	47	49	48	45	48	49	47	42
	95	47	51	53	53	49	53	53	51	47
	97.5	52	56	58	57	54	57	58	56	52
	100	57	61	63	62	59	62	63	61	57
	102.5	62	65	67	66	64	66	67	65	62
	105	66	69	70	70	68	70	70	69	66
	107.5	69	72	72	73	71	73	72	72	69
	110	69	72	73	73	71	73	73	72	69
	112.5	68	72	73	73	70	73	73	72	68
	115	67	71	73	72	69	72	73	71	67
	117.5	65	70	72	71	67	71	72	70	65
	120	63	68	71	70	65	70	71	68	63
	122.5	61	67	70	68	63	68	70	67	61
	125	60	65	68	66	61	66	68	65	60
	127.5	57	63	66	64	59	64	66	63	57
	130	55	61	64	62	57	62	64	61	55
	132.5	53	58	61	59	55	59	61	58	53
	135	51	56	59	57	52	57	59	56	51
	137.5	48	53	56	54	50	54	56	53	48
	140	45	50	53	51	47	51	53	50	45
	142.5	43	47	50	48	44	48	50	47	43
	145	40	44	47	45	41	45	47	44	40
	147.5	37	41	43	42	38	42	43	41	37
	150	34	38	40	39	35	39	40	38	34
	152.5	31	35	37	35	33	35	37	35	31
	155	28	31	33	32	30	32	33	31	28
	157.5	26	28	30	29	27	29	30	28	26
	160	23	25	26	26	24	26	26	25	23
	162.5	20	22	23	22	21	22	23	22	20
	165	18	19	20	19	18	19	20	19	18
	167.5	15	16	17	17	16	17	17	16	15
	170	13	14	14	14	14	14	14	14	13
	172.5	11	11	12	12	12	12	12	11	11
	175	9	9	10	10	10	10	10	9	9
	177.5	8	8	8	8	8	8	8	8	8
	180	8	8	8	8	8	8	8	8	8

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	114	114	114	114		109	109	109	109		100	100	100		91	91	91		83	83	83	79
1	102	97	92	88		97	93	88	84		84	81	78		77	74	72		70	68	66	63
2	92	83	76	69		87	79	73	67		73	67	62		66	62	58		60	57	54	50
3	83	72	64	57		79	69	61	55		63	57	51		58	52	48		52	48	44	41
4	76	63	54	47		72	61	52	46		56	49	43		51	45	40		46	42	38	35
5	70	56	47	40		66	54	45	39		49	42	37		45	39	34		41	36	32	29
6	64	50	41	35		61	48	40	34		44	37	32		41	35	30		37	32	28	25
7	59	45	36	30		56	44	35	29		40	33	28		37	31	26		34	29	25	22
8	55	41	33	27		52	40	32	26		37	30	25		34	28	23		31	26	22	20
9	51	38	29	24		49	36	28	23		34	27	22		31	25	21		29	23	20	18
10	48	35	27	21		46	33	26	21		31	24	20		29	23	19		27	21	18	16

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	10.1	8.10	8.13
8.0	5.7	10.80	10.84
10.0	3.6	13.50	13.55
12.0	2.5	16.20	16.26
14.0	1.9	18.90	18.97
16.0	1.4	21.59	21.68

Spacing Criterion

0 deg:	1.3
90 deg:	1.4
180 deg:	1.3
270 deg:	1.4

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	1785	1785	1785
45	1212	1080	1222
55	1090	947	1103
65	959	803	975
75	779	625	800
85	454	370	472

Beam and Field Angle

0-180 Degree Plane

Beam Angle: 133.2°

Field Angle: 296.0°

90-270 Degree Plane

Beam Angle: 134.5°

Field Angle: 298.3°

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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	10.2	11.5	10.8	12.2	12.9	10.2	11.5	10.9	12.2	13.0
	3H	12.4	13.6	13.0	14.2	15.1	12.5	13.6	13.1	14.3	15.1
	4H	13.3	14.4	14.0	15.1	15.9	13.4	14.5	14.1	15.2	16.0
	6H	14.0	15.1	14.7	15.8	16.6	14.1	15.2	14.8	15.9	16.7
	8H	14.3	15.3	15.0	16.0	16.9	14.4	15.4	15.1	16.1	17.0
	12H	14.5	15.5	15.2	16.2	17.1	14.7	15.6	15.4	16.3	17.2
4H	2H	10.9	12.0	11.6	12.7	13.5	10.9	12.0	11.6	12.7	13.6
	3H	13.3	14.2	14.0	15.0	15.8	13.3	14.3	14.0	15.0	15.9
	4H	14.3	15.2	15.0	15.9	16.8	14.4	15.3	15.1	16.0	16.9
	6H	15.2	16.0	15.9	16.7	17.6	15.3	16.1	16.0	16.8	17.7
	8H	15.5	16.3	16.3	17.0	17.9	15.7	16.4	16.4	17.1	18.0
	12H	15.8	16.5	16.6	17.3	18.2	16.0	16.6	16.7	17.4	18.3
8H	4H	14.7	15.4	15.4	16.2	17.1	14.8	15.5	15.5	16.3	17.2
	6H	15.7	16.3	16.5	17.1	18.0	15.8	16.4	16.6	17.2	18.1
	8H	16.2	16.7	17.0	17.5	18.4	16.3	16.8	17.1	17.6	18.5
	12H	16.6	17.1	17.4	17.9	18.8	16.7	17.2	17.5	18.0	18.9
12H	4H	14.8	15.4	15.5	16.2	17.1	14.8	15.5	15.6	16.3	17.2
	6H	15.8	16.4	16.6	17.2	18.1	15.9	16.5	16.7	17.3	18.2
	8H	16.3	16.8	17.1	17.6	18.6	16.4	16.9	17.2	17.7	18.7

Maximum UGR = 18.9

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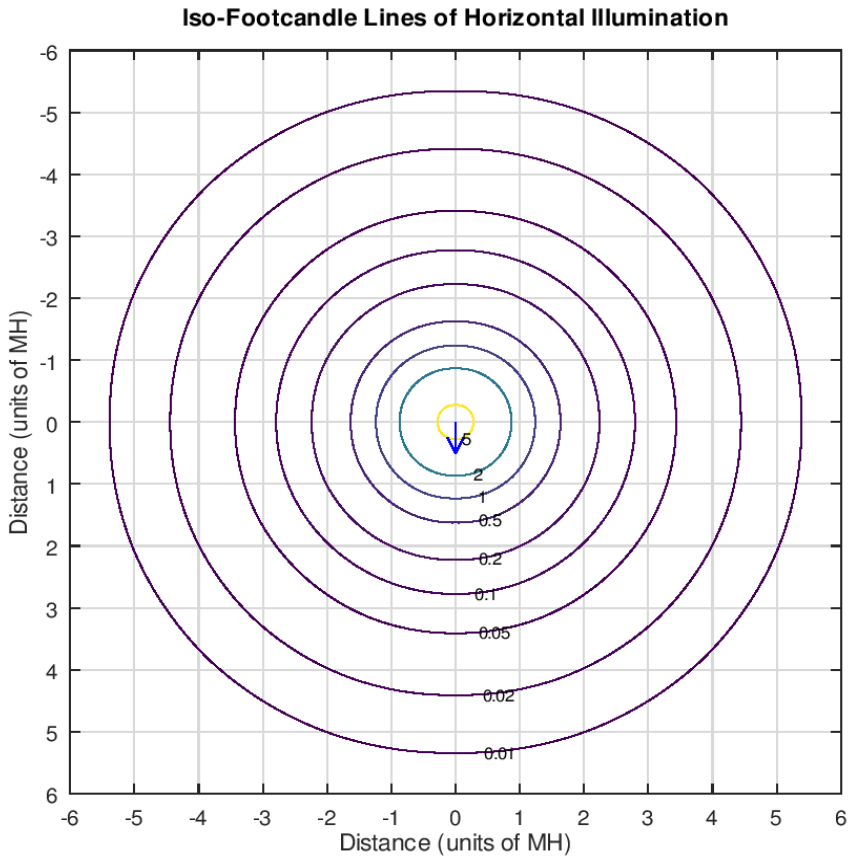
Iso-Illuminance Plot



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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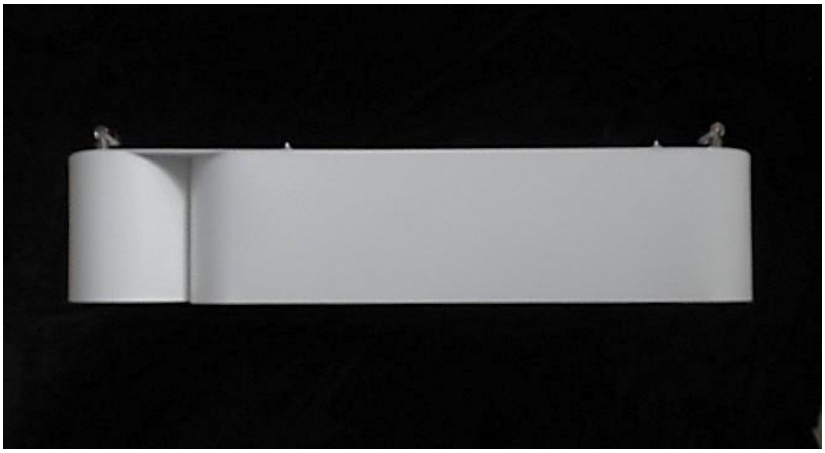
Additional Pictures of Test Subject



Report of Test

LLIA002228-001A-R01

Test Distance	9.5 m
Ambient Temperature	25.0 °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.

Revision History: R01 - 10/11/2023 - Added "Lumenate" in description

LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING Lab Code: 201079-0

Report of Test

LLIA002228-001B-R01*

Integrating Sphere Report

Catalog Number: Brink 23" X 5" Pendant | BP52305

Suspended/pendant mounted, formed white painted steel canopy, painted white aluminum housing/ reflector, diffuse white "Lumenate®" perimeters with diffuse white acrylic bottom enclosures.

168 white LEDs on four Q-Tran 3500K LED strips

One ERP VZM060W-24 LED driver

Performance Summary

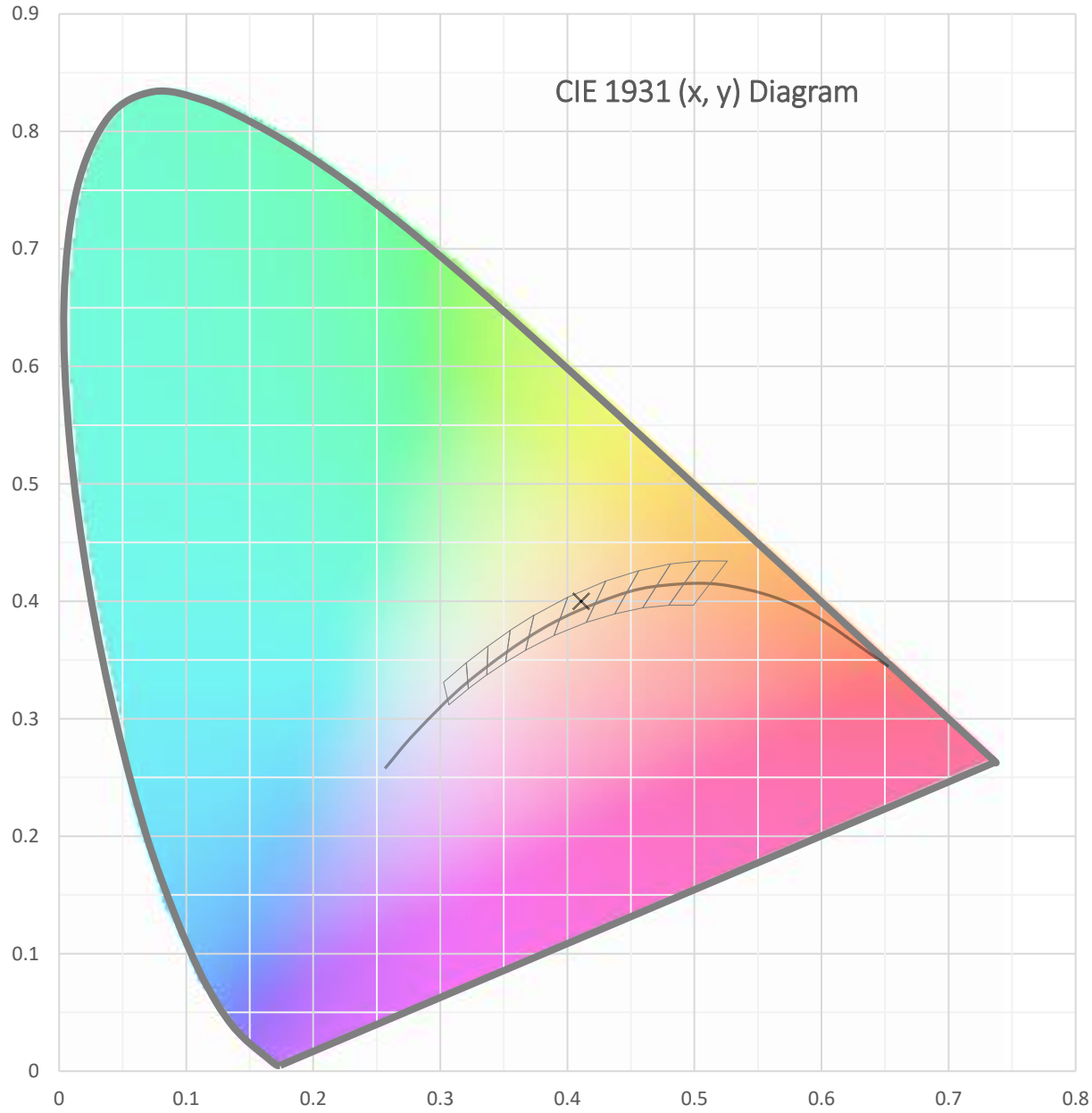
Voltage	120.0	Vac
Current	0.2172	A
Power	25.46	W
Frequency	59.99	Hz
Power Factor	0.977	
Current THD	15.3	%
Total Luminous Flux	1673.6	lm
Efficacy	65.7	lm/W
Chromaticity (x,y)	(0.4109, 0.3999)	
(u',v')	(0.2356, 0.5159)	
Duv	0.0028	
CCT	3455	K
CRI (Ra)	98	
R9	87	
TM-30: Rf	96	
TM-30: Rg	100	
TM-30: Rcs,h1	-1	

Prepared For:
Lumetta, Inc
33 Minnesota Avenue
Warwick, RI 02888, USA

*This test report supersedes previous versions - see the end of this report for a list of revisions

Test date: 10/05/2023
Report date: 10/11/2023

Test Report Number: LLIA002228-001B-R01



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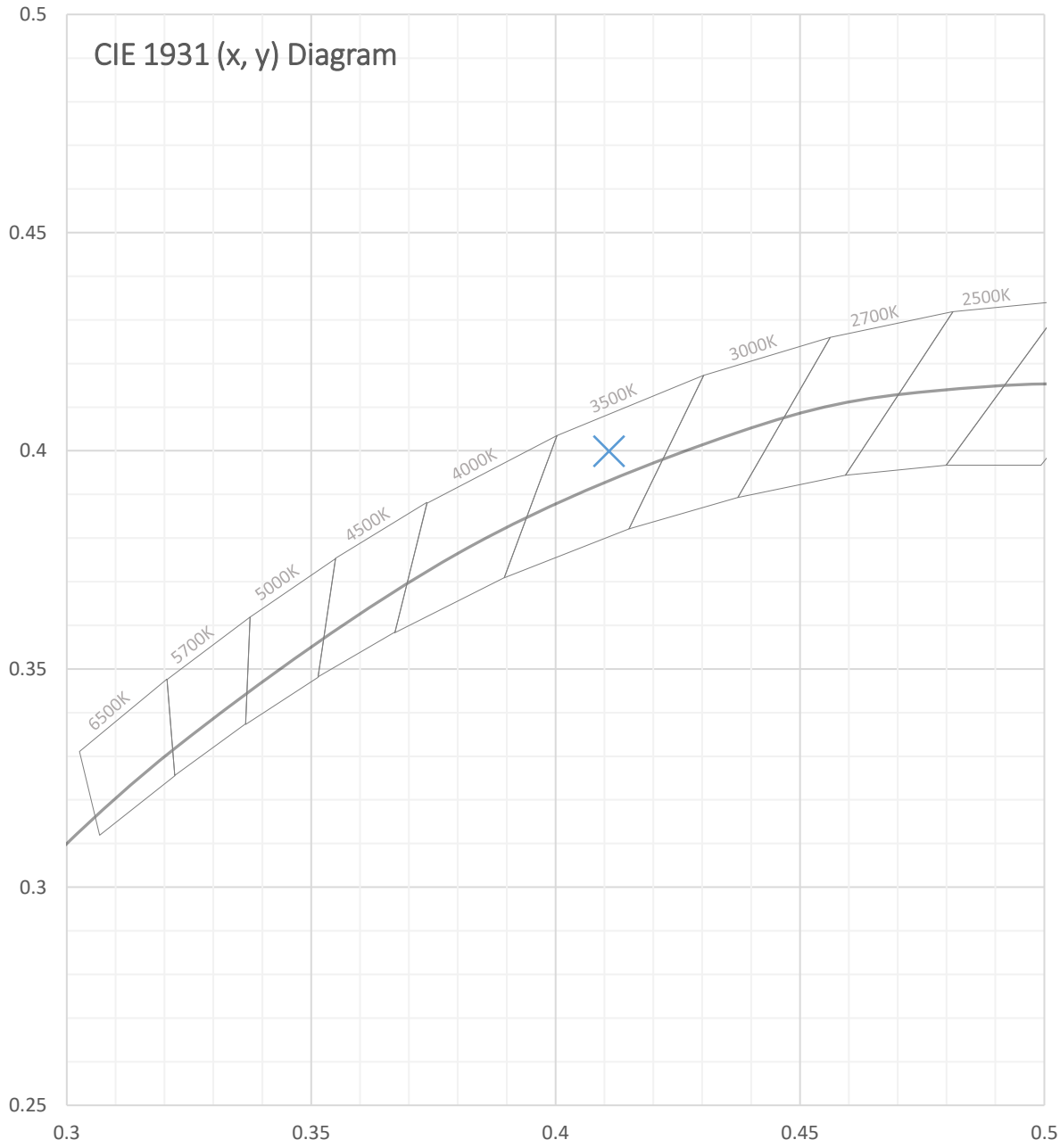


Test Report Number: LLIA002228-001B-R01

Total Radiant Flux	6.117	W
Total Luminous Flux	1673.6	Lm
Chromaticity CIE 1931 (x, y)	(0.4109, 0.3999)	
Chromaticity CIE 1976 (u', v')	(0.2356, 0.5159)	
Correlated Color Temperature (CCT)	3455	K
Color Rendering Index (Ra)	98	
R1	98	
R2	98	
R3	98	
R4	99	
R5	98	
R6	98	
R7	99	
R8	95	
R9	87	
R10	96	
R11	97	
R12	88	
R13	98	
R14	98	
TM-30: Rf	96	
TM-30: Rg	100	
TM-30: Rcs,h1	-1	
Distance from Planckian Locus (Duv)	0.0028	
Scotopic/Photopic Ratio ǂ	1.643	

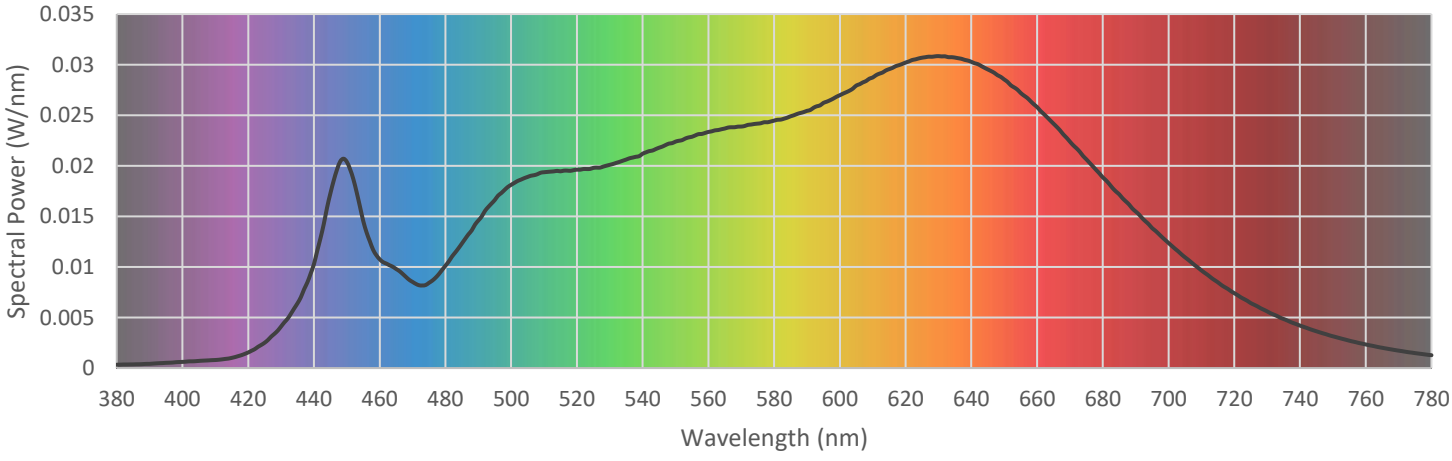
Electrical Data

Voltage	120.0	Vac
Current	0.2172	A
Power	25.46	W
Frequency	59.99	Hz
Power Factor	0.977	
Current THD	15.3	%

Test Report Number: LLIA002228-001B-R01

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

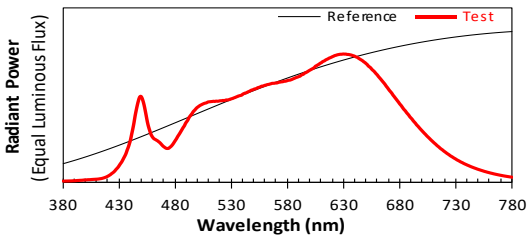
380	0.000332	480	0.010120	580	0.024463	680	0.018852
385	0.000364	485	0.012311	585	0.024889	685	0.017178
390	0.000416	490	0.014584	590	0.025430	690	0.015482
395	0.000519	495	0.016609	595	0.026216	695	0.013840
400	0.000611	500	0.018117	600	0.026976	700	0.012366
405	0.000709	505	0.018897	605	0.027933	705	0.010956
410	0.000796	510	0.019362	610	0.028727	710	0.009659
415	0.001009	515	0.019450	615	0.029554	715	0.008484
420	0.001546	520	0.019617	620	0.030205	720	0.007404
425	0.002506	525	0.019789	625	0.030685	725	0.006426
430	0.004113	530	0.020094	630	0.030840	730	0.005608
435	0.006407	535	0.020615	635	0.030697	735	0.004852
440	0.010287	540	0.021194	640	0.030279	740	0.004200
445	0.017272	545	0.021785	645	0.029525	745	0.003637
450	0.020389	550	0.022388	650	0.028532	750	0.003142
455	0.014533	555	0.022868	655	0.027205	755	0.002707
460	0.010752	560	0.023346	660	0.025807	760	0.002336
465	0.009796	565	0.023682	665	0.024165	765	0.002005
470	0.008518	570	0.023877	670	0.022386	770	0.001722
475	0.008428	575	0.024166	675	0.020639	775	0.001479
						780	0.001270

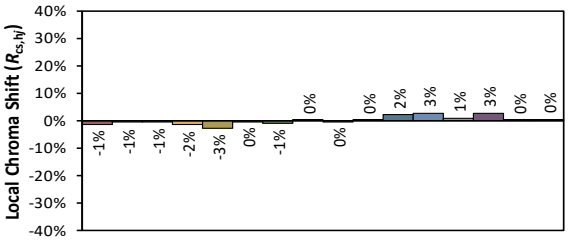


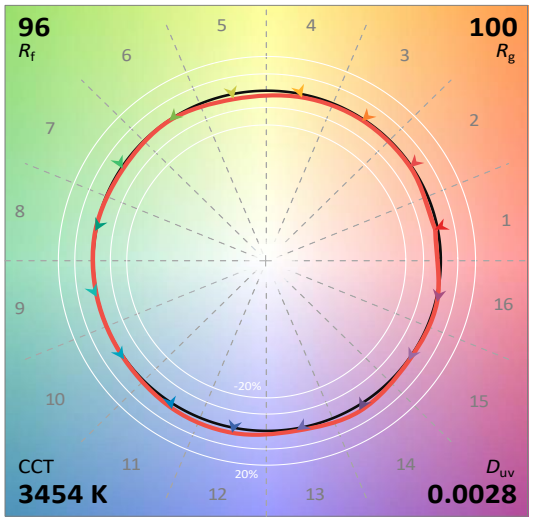
Test Report Number: LLIA002228-001B-R01

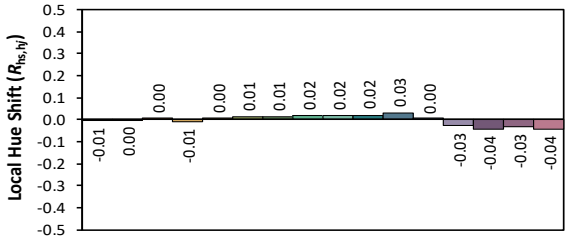
IES TM-30 Details

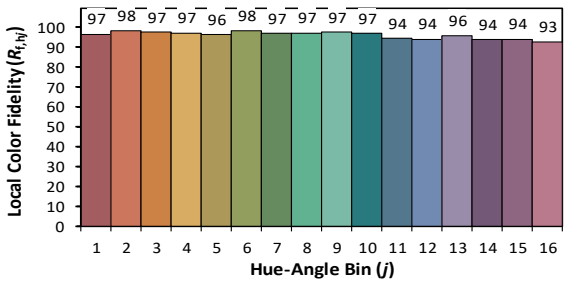
Source:	LLIA002228-001B-R01	**Manufacturer:**	Lumetta, Inc
Date:	10/11/2023	**Model:**	Brink 23" X 5" Pendant | BP52305

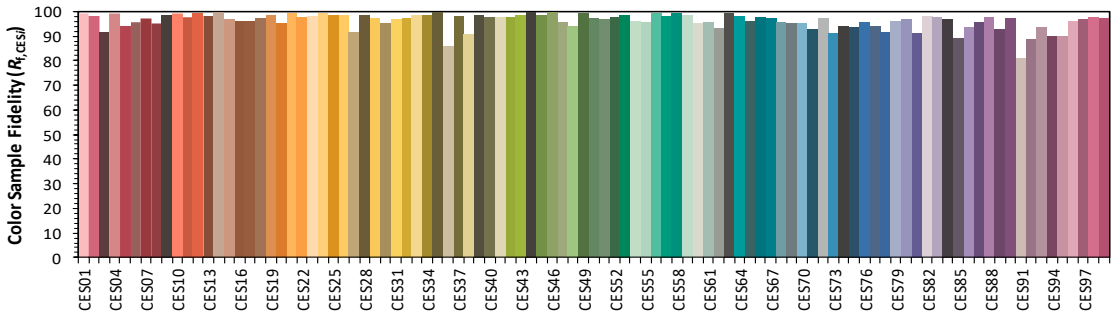












Notes:

x	**0.4109**
y	**0.3999**
u'	**0.2356**
v'	**0.5158**

CIE 13.3-1995 (CRI)

R_a	98
R_9	87

Test Report Number: LLIA002228-001B-R01

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:	24.5 °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.

Revision History: R01 - 10/11/2023 - Added "Lumenate" in description

Sphere Report Template V2-18