



Report of Test

LLIA001431-003A

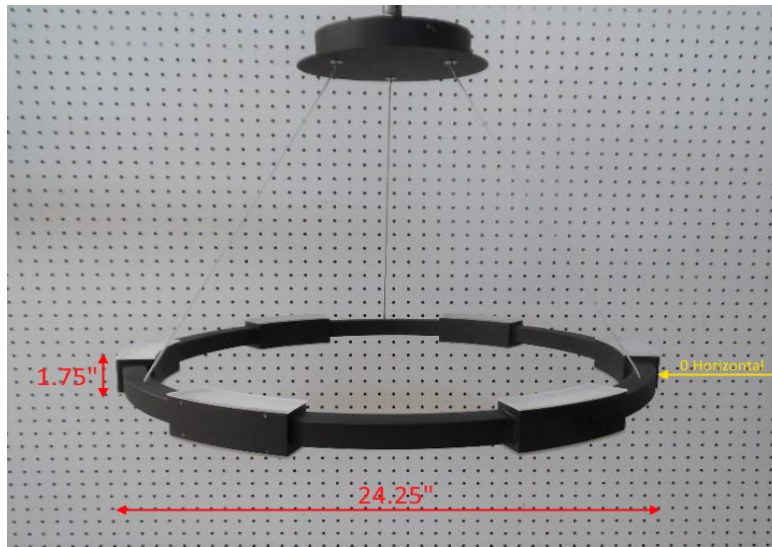
Indoor Distribution Photometry Test Report

Catalog Number: 3-22-15 Dieter

Pendant mounted, formed steel canopy and housing,
frosted plastic enclosures.

576 white LEDs

One Novbo NE048040120-1G LED driver



Prepared For:
Oxygen Lighting
201 Railhead Road
Fort Worth, TX 76106, USA

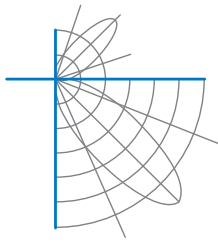
Performance Summary			
Input Voltage	120.0 V	Luminous Flux	2826.6 Lumens
Input Current	0.4011 A	Total Efficacy	59.0 Lm/W
Input Power	47.92 W	Downward Flux	1264.4 Lumens
Frequency	60.00 Hz	Downward Flux	44.7 % of Total
Power Factor	0.995		
Current THD	7.7 %		

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

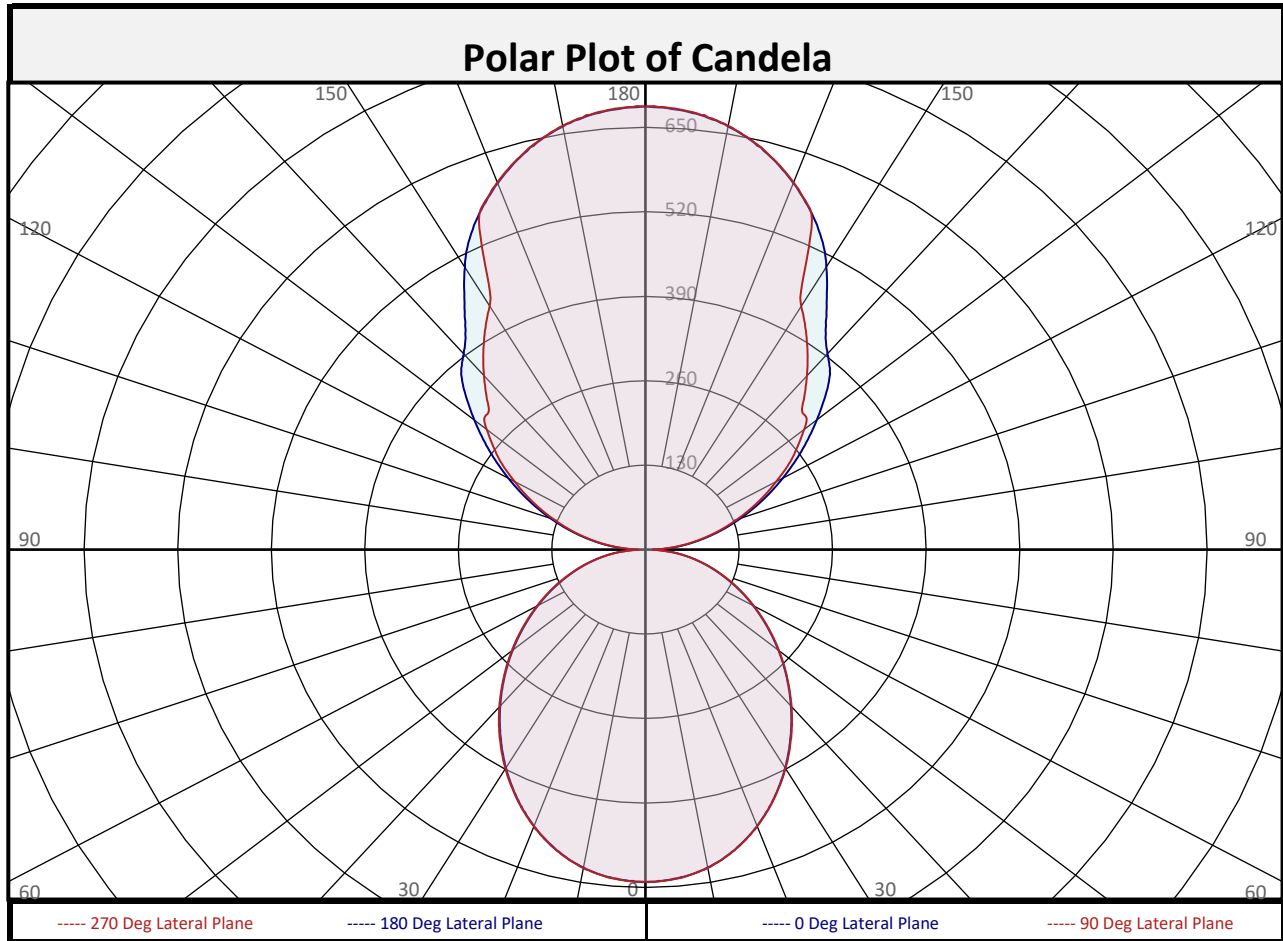
Test date: 04/05/2021

Report date: 04/06/2021

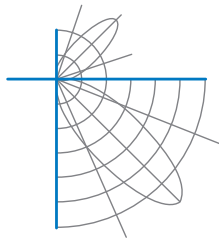
Signed: _____



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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	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	48.2	1.7%	90-100	41.0	1.5%	0-20	182.8	6.5%	0-10	48.2	1.7%
10-20	134.6	4.8%	100-110	108.2	3.8%	0-30	377.1	13.3%	10-20	134.6	4.8%
20-30	194.3	6.9%	110-120	174.9	6.2%	0-40	597.1	21.1%	20-30	194.3	6.9%
30-40	220.0	7.8%	120-130	230.9	8.2%	0-60	996.8	35.3%	30-40	220.0	7.8%
40-50	214.4	7.6%	130-140	258.8	9.2%	0-80	1228	43.4%	40-50	214.4	7.6%
50-60	185.3	6.6%	140-150	256.3	9.1%	10-90	1216	43.0%	50-60	185.3	6.6%
60-70	141.3	5.0%	150-160	249.0	8.8%	20-50	628.7	22.2%	60-70	141.3	5.0%
70-80	90.1	3.2%	160-170	178.9	6.3%	40-90	667.3	23.6%	70-80	90.1	3.2%
80-90	36.2	1.3%	170-180	64.2	2.3%	60-90	267.6	9.5%	80-90	36.2	1.3%
0-90	1264	44.7%	90-180	1562	55.3%	0-180	2827	100.0%	0-90	1264	44.7%

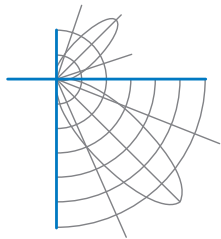


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Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	0	512	512	512	512	512	512	512	512	512
	2.5	510	511	510	510	511	510	510	511	510
	5	508	508	508	507	508	507	508	508	508
	7.5	503	504	504	503	504	503	504	504	503
	10	497	497	497	497	497	497	497	497	497
	12.5	489	489	489	488	489	488	489	489	489
	15	478	479	479	478	479	478	479	479	478
	17.5	466	466	467	466	467	466	467	466	466
	20	453	453	453	453	453	453	453	453	453
	22.5	437	438	438	438	438	438	438	438	437
	25	422	423	423	422	423	422	423	423	422
	27.5	405	406	406	406	406	406	406	406	405
	30	388	388	388	388	389	388	388	388	388
	32.5	369	370	370	370	371	370	370	370	369
	35	351	352	352	352	353	352	352	352	351
	37.5	333	333	333	334	334	334	333	333	333
	40	314	315	315	315	315	315	315	315	314
	42.5	296	296	296	296	297	296	296	296	296
	45	277	277	278	278	278	278	278	277	277
	47.5	259	259	260	260	260	260	260	259	259
50	241	241	242	242	242	242	242	241	241	
52.5	223	224	224	224	225	224	224	224	223	
55	206	207	207	207	207	207	207	207	206	
57.5	189	190	190	190	190	190	190	190	189	
60	173	174	174	174	174	174	174	174	173	
62.5	157	158	158	158	158	158	158	158	157	
65	141	143	143	143	143	143	143	143	141	
67.5	126	128	128	127	128	127	128	128	126	
70	112	113	113	113	114	113	113	113	112	
72.5	98	99	99	99	100	99	99	99	98	
75	84	85	85	85	86	85	85	85	84	
77.5	71	72	72	72	72	72	72	72	71	
80	58	58	59	59	59	59	59	58	58	
82.5	46	45	46	47	45	47	46	45	46	
85	31	33	33	32	33	32	33	33	31	
87.5	19	19	20	19	19	19	20	19	19	
90	10	13	15	13	9	13	15	13	10	



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Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	90	10	13	15	13	9	13	15	13	10
	92.5	21	21	22	22	21	22	22	21	21
	95	36	35	37	37	35	37	37	35	36
	97.5	54	51	54	54	51	54	54	51	54
	100	70	66	70	70	67	70	70	66	70
	102.5	86	83	86	87	83	87	86	83	86
	105	104	99	104	104	100	104	104	99	104
	107.5	121	116	122	122	117	122	122	116	121
	110	140	134	140	141	135	141	140	134	140
	112.5	159	152	160	160	153	160	160	152	159
	115	179	171	179	180	171	180	179	171	179
	117.5	199	191	199	200	191	200	199	191	199
	120	220	211	220	221	209	221	220	211	220
	122.5	242	230	240	243	231	243	240	230	242
	125	265	249	261	265	250	265	261	249	265
	127.5	287	267	283	288	268	288	283	267	287
	130	311	289	305	311	287	311	305	289	311
	132.5	334	311	327	335	303	335	327	311	334
	135	359	320	335	352	307	352	335	320	359
	137.5	379	330	346	365	328	365	346	330	379
140	393	348	362	382	349	382	362	348	393	
142.5	411	369	379	402	370	402	379	369	411	
145	438	390	402	426	391	426	402	390	438	
147.5	469	411	428	454	412	454	428	411	469	
150	502	438	460	487	433	487	460	438	502	
152.5	533	484	506	526	476	526	506	484	533	
155	558	545	553	558	546	558	553	545	558	
157.5	580	581	580	580	581	580	580	581	580	
160	600	601	600	600	602	600	600	601	600	
162.5	619	620	619	619	620	619	619	620	619	
165	635	637	636	636	637	636	636	637	635	
167.5	650	651	650	649	651	649	650	651	650	
170	661	662	662	661	663	661	662	662	661	
172.5	670	672	671	671	671	671	671	672	670	
175	677	678	678	677	678	677	678	678	677	
177.5	681	682	681	680	681	680	681	682	681	
180	682	682	682	682	682	682	682	682	682	



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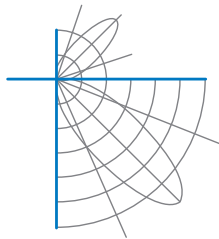
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	106	106	106	106		97	97	97	97		80	80	80		65	65	65		51	51	51	45
1	96	92	88	85		88	84	81	78		70	68	66		57	55	54		45	44	43	37
2	88	80	74	69		80	74	68	64		61	58	54		50	47	45		40	38	36	31
3	80	71	63	57		73	65	59	53		54	49	46		44	41	38		35	33	31	26
4	73	62	55	49		67	58	51	45		48	43	39		39	36	33		31	29	27	23
5	67	56	48	42		61	51	44	39		43	38	34		35	31	28		28	25	23	20
6	62	50	42	36		57	46	39	34		39	33	29		32	28	25		26	23	20	17
7	57	45	37	32		52	42	35	30		35	30	26		29	25	22		24	20	18	15
8	53	41	33	28		49	38	31	26		32	27	23		27	23	20		22	19	16	14
9	49	37	30	25		45	35	28	23		29	24	21		25	21	18		20	17	15	13
10	46	34	27	22		42	32	25	21		27	22	18		23	19	16		19	16	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	14.2	6.84	6.86	
8.0	8.0	9.12	9.14	
10.0	5.1	11.40	11.43	
12.0	3.6	13.68	13.71	
14.0	2.6	15.96	16.00	
16.0	2.0	18.24	18.29	

Average Luminance (cd/m ²)			
	0 deg Plane	45 deg Plane	90 deg Plane
0	16780	16780	16780
45	12856	12898	12905
55	11781	11840	11861
65	10972	11078	11127
75	10698	10812	10897
85	11687	12494	12320

Spacing Criterion	
0 degree plane:	1.1
90 degree plane:	1.1
180 degree plane:	1.1
270 degree plane:	1.1



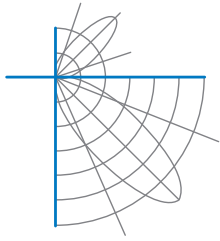
Report of Test

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UGR TABLE - CORRECTED

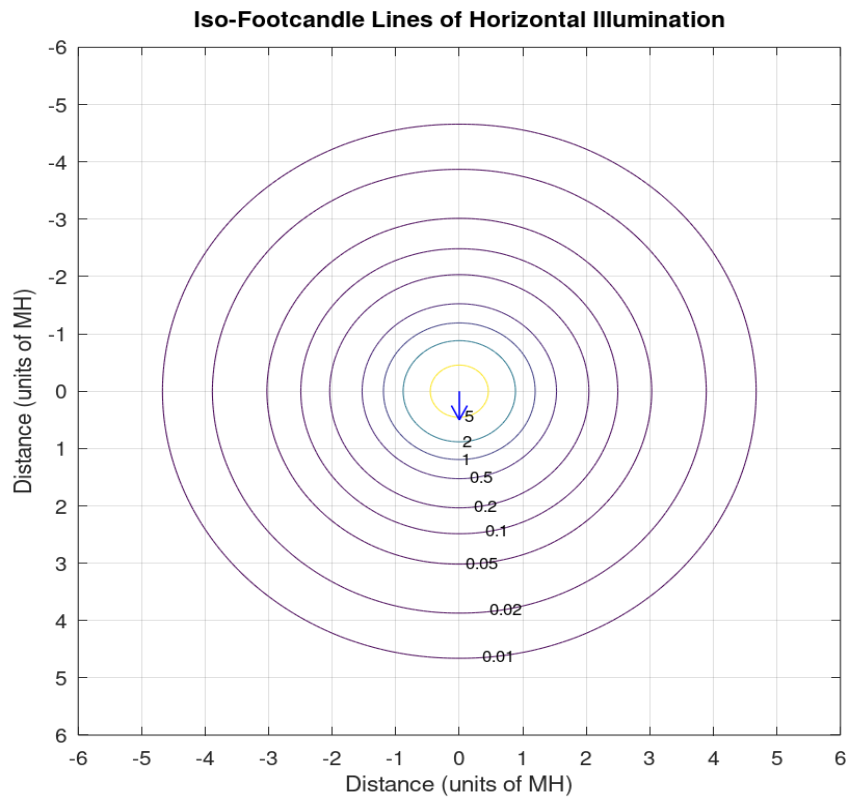
Reflectances											
Ceiling Cavity	70	70	50	50	30	70	70	50	50	30	
Walls	50	30	50	30	30	50	30	50	30	30	
Floor Cavity	20	20	20	20	20	20	20	20	20	20	
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	6.8	7.6	7.8	8.6	10.0	6.8	7.6	7.8	8.7	10.0
	3H	8.5	9.3	9.6	10.3	11.7	8.6	9.3	9.6	10.3	11.7
	4H	9.2	9.9	10.3	11.0	12.3	9.3	10.0	10.3	11.0	12.4
	6H	9.8	10.4	10.8	11.5	12.9	9.8	10.5	10.9	11.5	12.9
	8H	10.0	10.6	11.0	11.7	13.0	10.0	10.7	11.1	11.7	13.1
	12H	10.1	10.7	11.2	11.8	13.2	10.2	10.8	11.2	11.8	13.2
4H	2H	7.3	8.0	8.3	9.0	10.4	7.3	8.0	8.4	9.1	10.4
	3H	9.3	9.9	10.3	10.9	12.3	9.3	9.9	10.3	10.9	12.3
	4H	10.1	10.7	11.1	11.7	13.1	10.1	10.7	11.2	11.7	13.1
	6H	10.8	11.3	11.9	12.3	13.7	10.8	11.3	11.9	12.4	13.8
	8H	11.1	11.5	12.1	12.6	14.0	11.1	11.5	12.2	12.6	14.0
	12H	11.3	11.7	12.3	12.7	14.2	11.3	11.7	12.4	12.8	14.2
8H	4H	10.4	10.8	11.4	11.9	13.3	10.4	10.8	11.5	11.9	13.3
	6H	11.2	11.6	12.3	12.7	14.1	11.3	11.6	12.3	12.7	14.1
	8H	11.6	11.9	12.7	13.0	14.4	11.6	11.9	12.7	13.0	14.5
	12H	11.9	12.2	13.0	13.2	14.7	11.9	12.2	13.0	13.3	14.8
12H	4H	10.4	10.8	11.5	11.9	13.3	10.4	10.8	11.5	11.9	13.3
	6H	11.3	11.6	12.4	12.7	14.1	11.3	11.6	12.4	12.7	14.2
	8H	11.7	12.0	12.8	13.1	14.5	11.7	12.0	12.8	13.1	14.6

Maximum UGR = 14.8

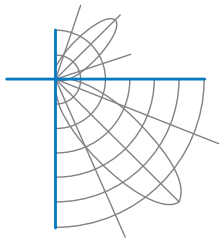


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Iso-Illuminance Plot



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.



Report of Test

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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-41-14 and LM-46-04.

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

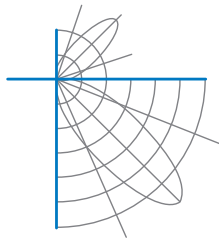
Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

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

LLIA001431-003B

Integrating Sphere Report

Catalog Number: 3-22-15 Dieter

Pendant mounted, formed steel canopy and housing,
frosted plastic enclosures.

576 white LEDs

One Novbo NE048040120-1G LED driver



Performance Summary

Voltage	120.0 Vac
Current	0.4025 A
Power	48.08 W
Frequency	59.99 Hz
Power Factor	0.995
Current THD	8.0 %
Total Luminous Flux	2878.1 lm
Efficacy	59.9 lm/W
Chromaticity (x,y)	(0.4344, 0.3996)
(u',v')	(0.2508, 0.5192)
Duv	-0.0014
CCT	3007 K
CRI (Ra)	91
R9	44
TM-30: Rf	89
TM-30: Rg	99
TM-30: Rcs,h1	-7

Prepared For:

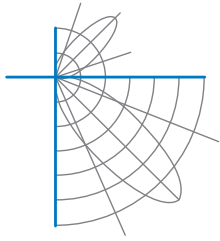
Oxygen Lighting

201 Railhead Road

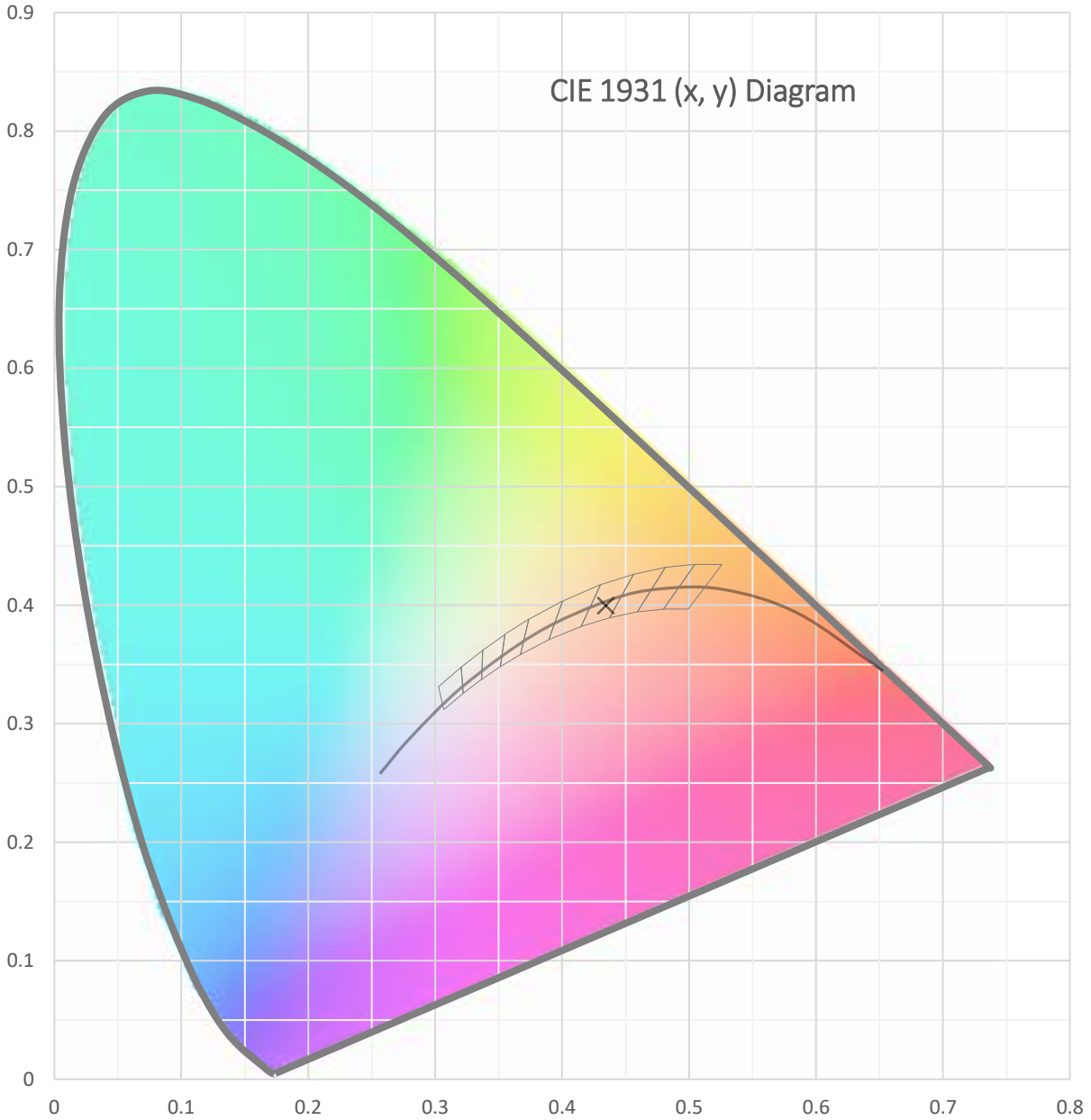
Fort Worth, TX 76106, USA

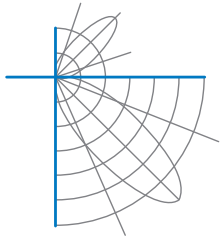
Test date: 03/30/2021

Report date: 04/06/2021

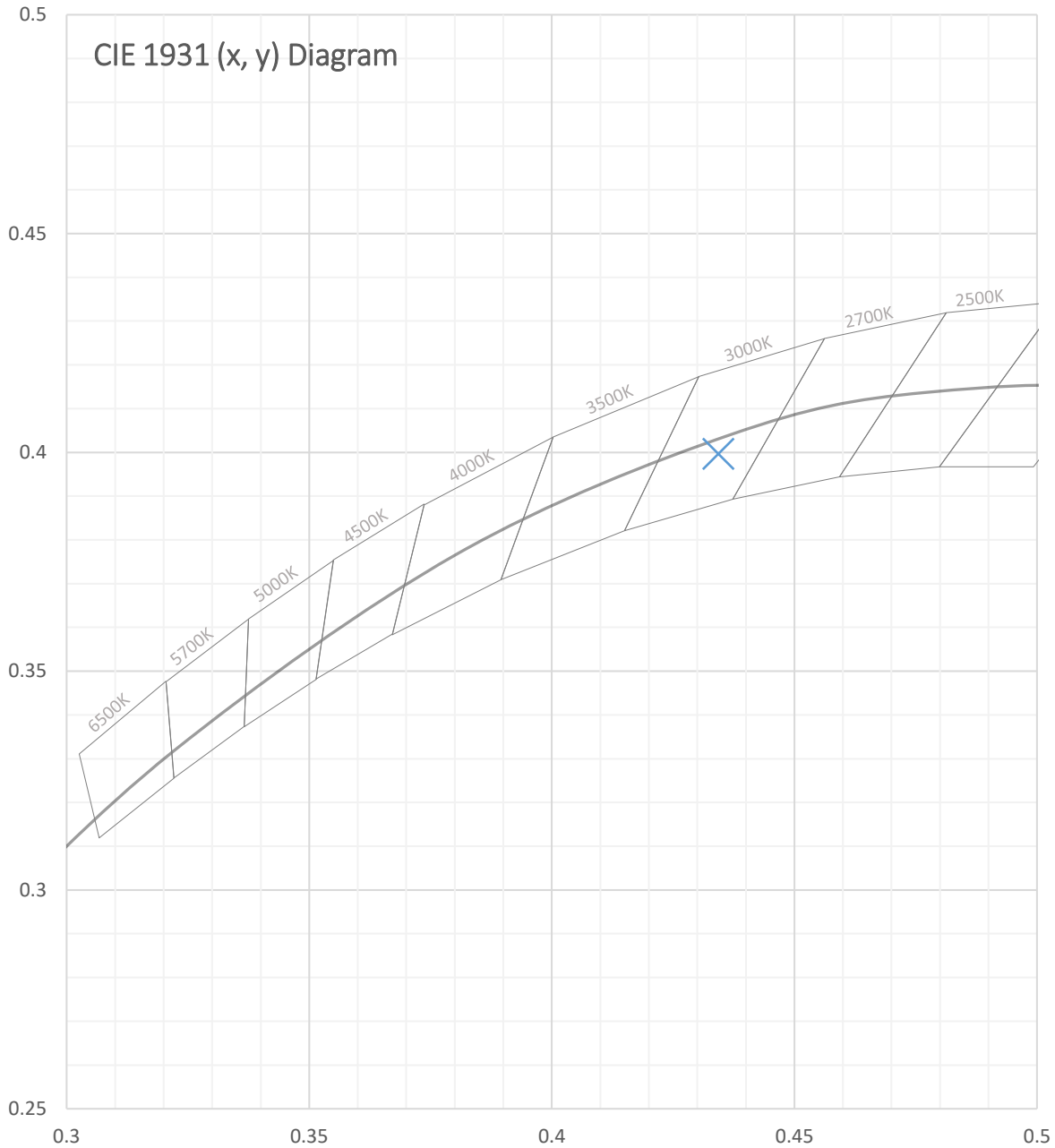


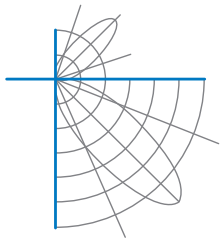
Test Report Number: LLIA001431-003B





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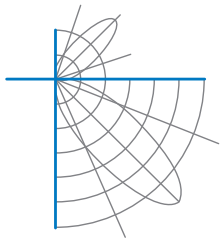


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Total Radiant Flux	9.474 W
Total Luminous Flux	2878.1 Lm
Chromaticity CIE 1931 (x, y)	(0.4344, 0.3996)
Chromaticity CIE 1976 (u', v')	(0.2508, 0.5192)
Correlated Color Temperature (CCT)	3007 K
Color Rendering Index (Ra)	91
R1	91
R2	96
R3	98
R4	91
R5	92
R6	96
R7	88
R8	74
R9	44
R10	91
R11	93
R12	82
R13	93
R14	100
TM-30: Rf	89
TM-30: Rg	99
TM-30: Rcs,h1	-7
Distance from Planckian Locus (Duv)	-0.0014
Scotopic/Photopic Ratio ‡	1.425

Electrical Data

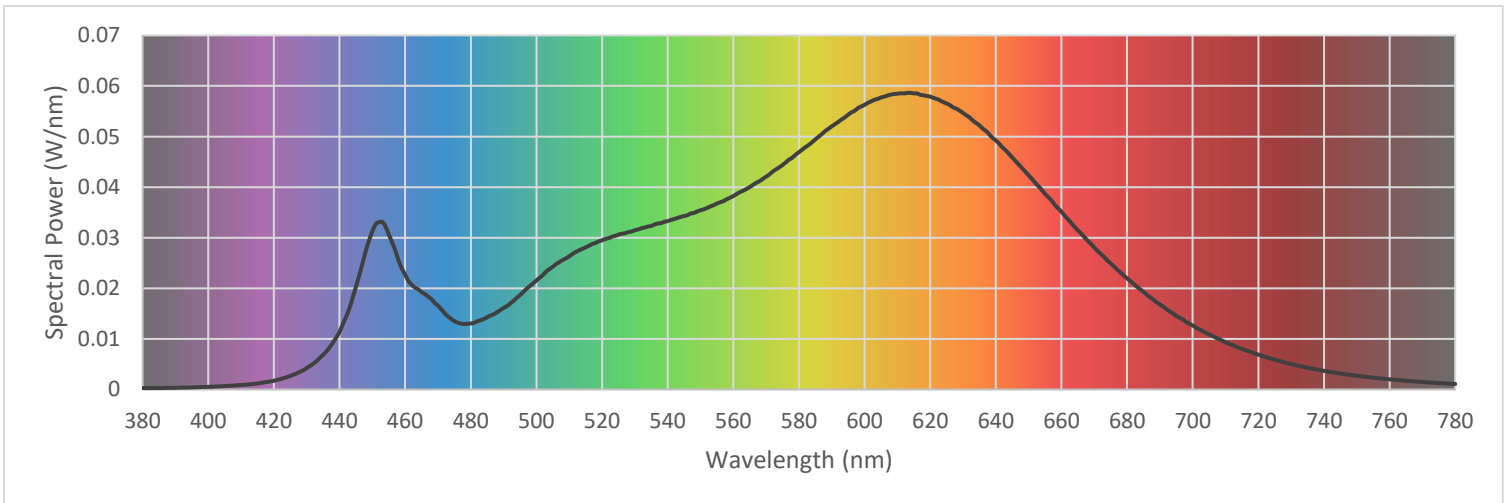
Voltage	120.0 Vac
Current	0.4025 A
Power	48.08 W
Frequency	59.99 Hz
Power Factor	0.995
Current THD	8.0 %

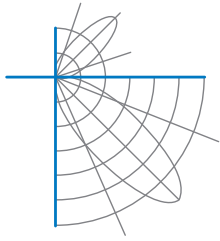


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Summary Spectral Power Distribution (wavelength - nm, spectral power - W/nm)

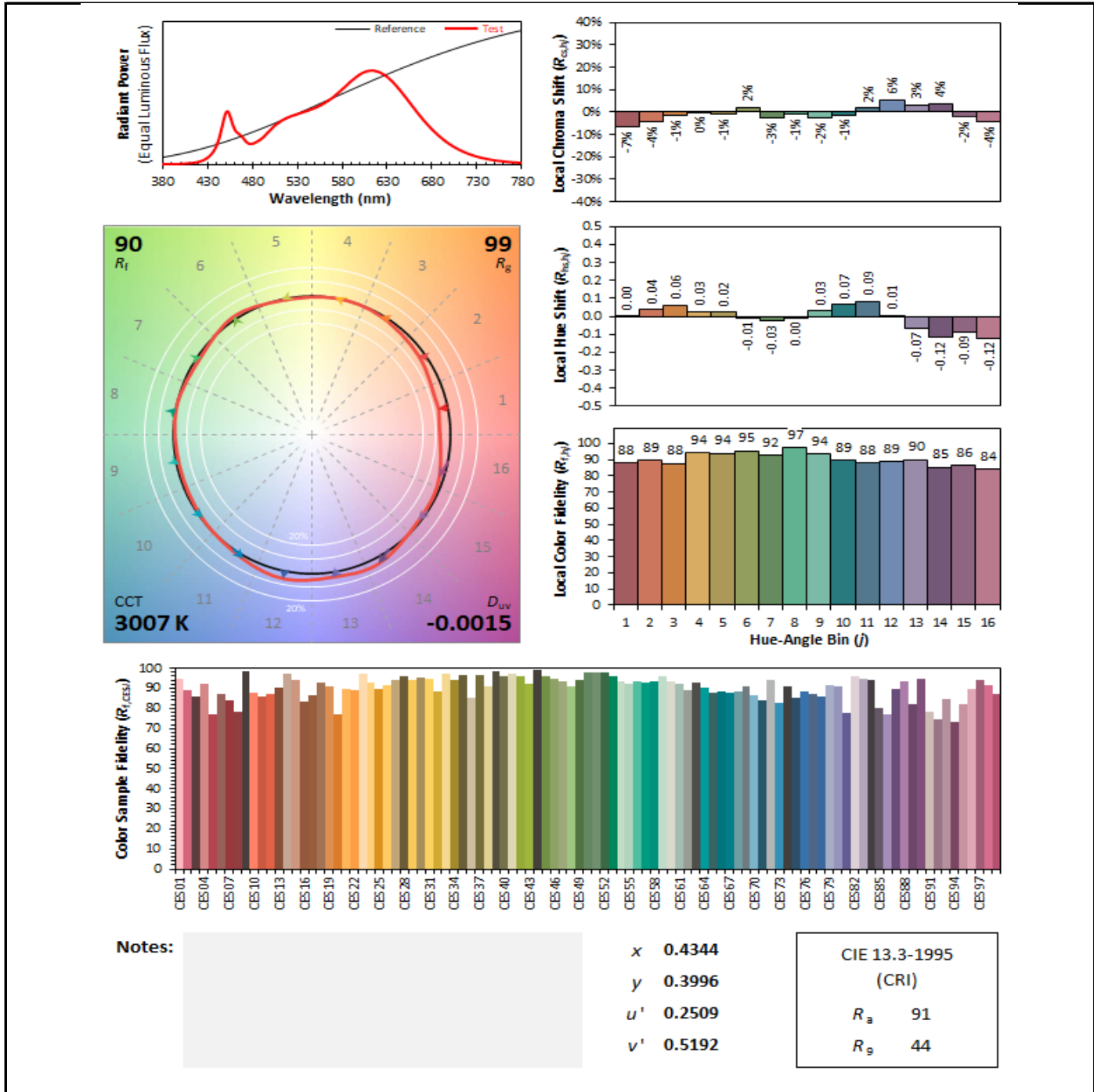
380	0.000270	480	0.013053	580	0.046908	680	0.021948
385	0.000282	485	0.014281	585	0.049435	685	0.019304
390	0.000331	490	0.016114	590	0.052015	690	0.016800
395	0.000407	495	0.018664	595	0.054308	695	0.014538
400	0.000521	500	0.021556	600	0.056266	700	0.012650
405	0.000671	505	0.024257	605	0.057716	705	0.010889
410	0.000878	510	0.026328	610	0.058458	710	0.009328
415	0.001189	515	0.028100	615	0.058520	715	0.008027
420	0.001730	520	0.029483	620	0.057885	720	0.006886
425	0.002679	525	0.030601	625	0.056533	725	0.005880
430	0.004241	530	0.031474	630	0.054666	730	0.005026
435	0.006848	535	0.032324	635	0.052206	735	0.004296
440	0.011392	540	0.033279	640	0.049229	740	0.003672
445	0.020336	545	0.034285	645	0.045880	745	0.003160
450	0.031283	550	0.035427	650	0.042319	750	0.002707
455	0.030659	555	0.036775	655	0.038673	755	0.002329
460	0.022668	560	0.038230	660	0.035128	760	0.002009
465	0.019244	565	0.040009	665	0.031450	765	0.001719
470	0.016550	570	0.042078	670	0.028059	770	0.001473
475	0.013507	575	0.044363	675	0.024914	775	0.001265
						780	0.001086

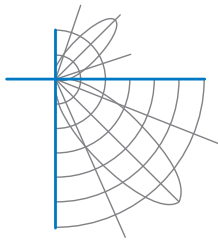




Test Report Number: LLIA001431-003B

IES TM-30 Details





Test Report Number: LLIA001431-003B

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-78-07, LM-58-13, ANSI_ANSLG C78.377-2017, TM-30-18

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.