



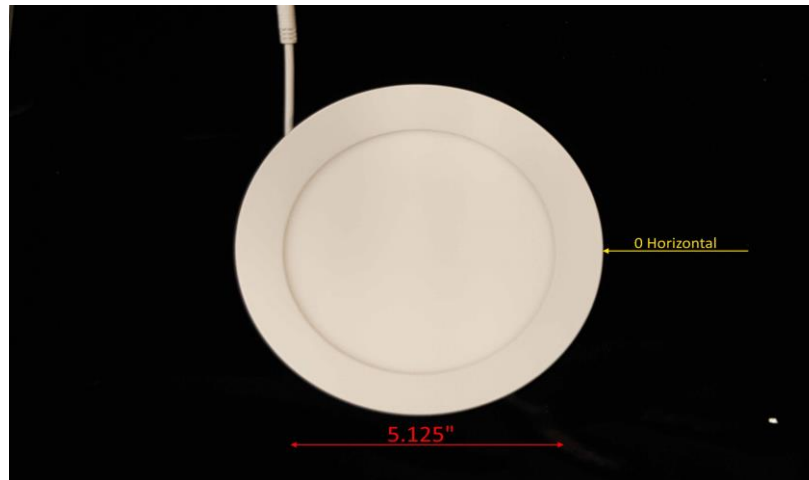
Report of Test

LLIA001147-001A-R01*

Indoor Distribution Photometry Test Report

Catalog Number: RDL/6RND/12HL/5CTS 3000K

Recessed mounted, formed steel housing, formed white aluminum trim with clear patterned plastic lens above translucent white plastic enclosure
96 white LEDs, one PL-CW-WW-12C4B-6CUN-S LED board
One Topaz LED driver



Prepared For:
Topaz Lighting Corp
925 Waverly Avenue
Holtsville, NY 11742, USA

Performance Summary			
Input Voltage	120.0 V	Luminous Flux	957.9 Lumens
Input Current	0.1342 A	Total Efficacy	78.8 Lm/W
Input Power	12.16 W	Downward Flux	957.9 Lumens
Frequency	60.00 Hz	Downward Flux	100.0 % of Total
Power Factor	0.755		
Current THD	33.8 %		

*This test report supersedes test report LLIA001147-001A

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

Test date: 08/08/2019

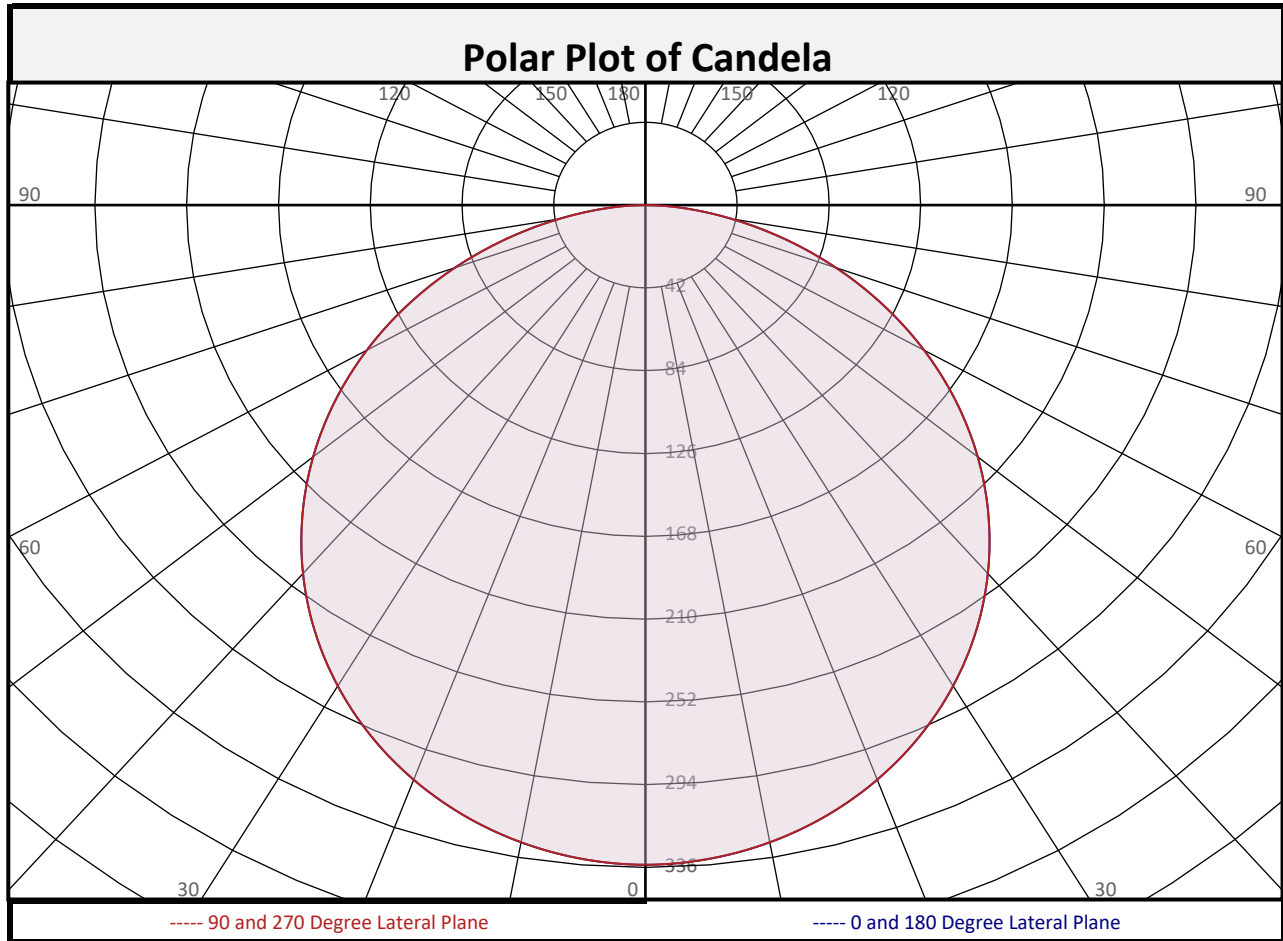
Report date: 08/12/2019

Signed: _____



Report of Test

LLIA001147-001A-R01



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	31.6	3.3%		90-100	0.0	0.0%		0-20	122.1	12.7%
10-20	90.5	9.4%		100-110	0.0	0.0%		0-30	259.1	27.1%
20-30	136.9	14.3%		110-120	0.0	0.0%		0-40	424.1	44.3%
30-40	165.0	17.2%		120-130	0.0	0.0%		0-60	750.2	78.3%
40-50	171.2	17.9%		130-140	0.0	0.0%		0-80	938.3	98.0%
50-60	155.0	16.2%		140-150	0.0	0.0%		10-90	926.2	96.7%
60-70	118.8	12.4%		150-160	0.0	0.0%		20-50	473.1	49.4%
70-80	69.2	7.2%		160-170	0.0	0.0%		40-90	533.8	55.7%
80-90	19.6	2.0%		170-180	0.0	0.0%		60-90	207.6	21.7%
0-90	957.9	100.0%		90-180	0.0	0.0%		0-180	957.9	100.0%



Report of Test

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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	335	335	335	335	335	335	335	335	335
	2.5	334	334	334	334	334	334	334	334	334
	5	333	333	333	333	333	333	333	333	333
	7.5	331	331	331	331	331	331	331	331	331
	10	328	328	328	328	328	328	328	328	328
	12.5	325	325	325	325	325	325	325	325	325
	15	321	321	321	321	321	321	321	321	321
	17.5	316	316	316	316	316	316	316	316	316
	20	310	310	310	310	310	310	310	310	310
	22.5	304	304	304	304	304	304	304	304	304
	25	297	297	297	297	297	297	297	297	297
	27.5	290	290	290	290	290	290	290	290	290
	30	282	282	282	282	282	282	282	282	282
	32.5	273	273	273	273	273	273	273	273	273
	35	264	264	264	264	264	264	264	264	264
	37.5	254	254	254	254	254	254	254	254	254
	40	244	244	244	244	244	244	244	244	244
	42.5	233	233	233	233	233	233	233	233	233
	45	222	222	222	222	222	222	222	222	222
	47.5	210	210	210	210	210	210	210	210	210
50	198	198	198	198	198	198	198	198	198	
52.5	186	186	186	186	186	186	186	186	186	
55	173	173	173	173	173	173	173	173	173	
57.5	160	160	160	160	160	160	160	160	160	
60	147	147	147	147	147	147	147	147	147	
62.5	134	134	134	134	134	134	134	134	134	
65	120	120	120	120	120	120	120	120	120	
67.5	106	106	106	106	106	106	106	106	106	
70	93	93	93	93	93	93	93	93	93	
72.5	79	79	79	79	79	79	79	79	79	
75	65	65	65	65	65	65	65	65	65	
77.5	52	52	52	52	52	52	52	52	52	
80	40	40	40	40	40	40	40	40	40	
82.5	28	28	28	28	28	28	28	28	28	
85	17	17	17	17	17	17	17	17	17	
87.5	8	8	8	8	8	8	8	8	8	
90	0	0	0	0	0	0	0	0	0	



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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	0	0	0	0	0	0	0	0	0
	92.5	0	0	0	0	0	0	0	0	0
	95	0	0	0	0	0	0	0	0	0
	97.5	0	0	0	0	0	0	0	0	0
	100	0	0	0	0	0	0	0	0	0
	102.5	0	0	0	0	0	0	0	0	0
	105	0	0	0	0	0	0	0	0	0
	107.5	0	0	0	0	0	0	0	0	0
	110	0	0	0	0	0	0	0	0	0
	112.5	0	0	0	0	0	0	0	0	0
	115	0	0	0	0	0	0	0	0	0
	117.5	0	0	0	0	0	0	0	0	0
	120	0	0	0	0	0	0	0	0	0
	122.5	0	0	0	0	0	0	0	0	0
	125	0	0	0	0	0	0	0	0	0
	127.5	0	0	0	0	0	0	0	0	0
	130	0	0	0	0	0	0	0	0	0
	132.5	0	0	0	0	0	0	0	0	0
	135	0	0	0	0	0	0	0	0	0
	137.5	0	0	0	0	0	0	0	0	0
	140	0	0	0	0	0	0	0	0	0
	142.5	0	0	0	0	0	0	0	0	0
	145	0	0	0	0	0	0	0	0	0
	147.5	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	
152.5	0	0	0	0	0	0	0	0	0	
155	0	0	0	0	0	0	0	0	0	
157.5	0	0	0	0	0	0	0	0	0	
160	0	0	0	0	0	0	0	0	0	
162.5	0	0	0	0	0	0	0	0	0	
165	0	0	0	0	0	0	0	0	0	
167.5	0	0	0	0	0	0	0	0	0	
170	0	0	0	0	0	0	0	0	0	
172.5	0	0	0	0	0	0	0	0	0	
175	0	0	0	0	0	0	0	0	0	
177.5	0	0	0	0	0	0	0	0	0	
180	0	0	0	0	0	0	0	0	0	



Report of Test

LLIA001147-001A-R01

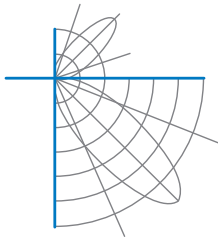
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102	100
1	109	104	99	95		106	101	97	94		97	94	91		93	91	88		90	87	85	83
2	99	90	83	77		96	88	82	77		85	79	75		81	77	73		78	75	71	69
3	90	79	71	64		87	78	70	64		75	68	63		72	66	61		69	64	60	58
4	82	70	61	54		80	69	60	54		66	59	53		64	58	52		62	56	52	50
5	76	63	53	47		73	61	53	46		59	52	46		57	51	45		55	50	45	43
6	70	56	47	41		68	55	47	41		53	46	40		52	45	40		50	44	39	37
7	65	51	42	36		63	50	42	36		49	41	36		47	40	35		46	40	35	33
8	60	47	38	32		59	46	38	32		44	37	32		43	36	32		42	36	31	29
9	56	43	34	29		55	42	34	29		41	34	29		40	33	28		39	33	28	26
10	53	39	31	26		51	39	31	26		38	31	26		37	30	26		36	30	26	24

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	9.3	7.51	7.51	
8.0	5.2	10.01	10.01	
10.0	3.3	12.51	12.51	
12.0	2.3	15.02	15.02	
14.0	1.7	17.52	17.52	
16.0	1.3	20.02	20.02	

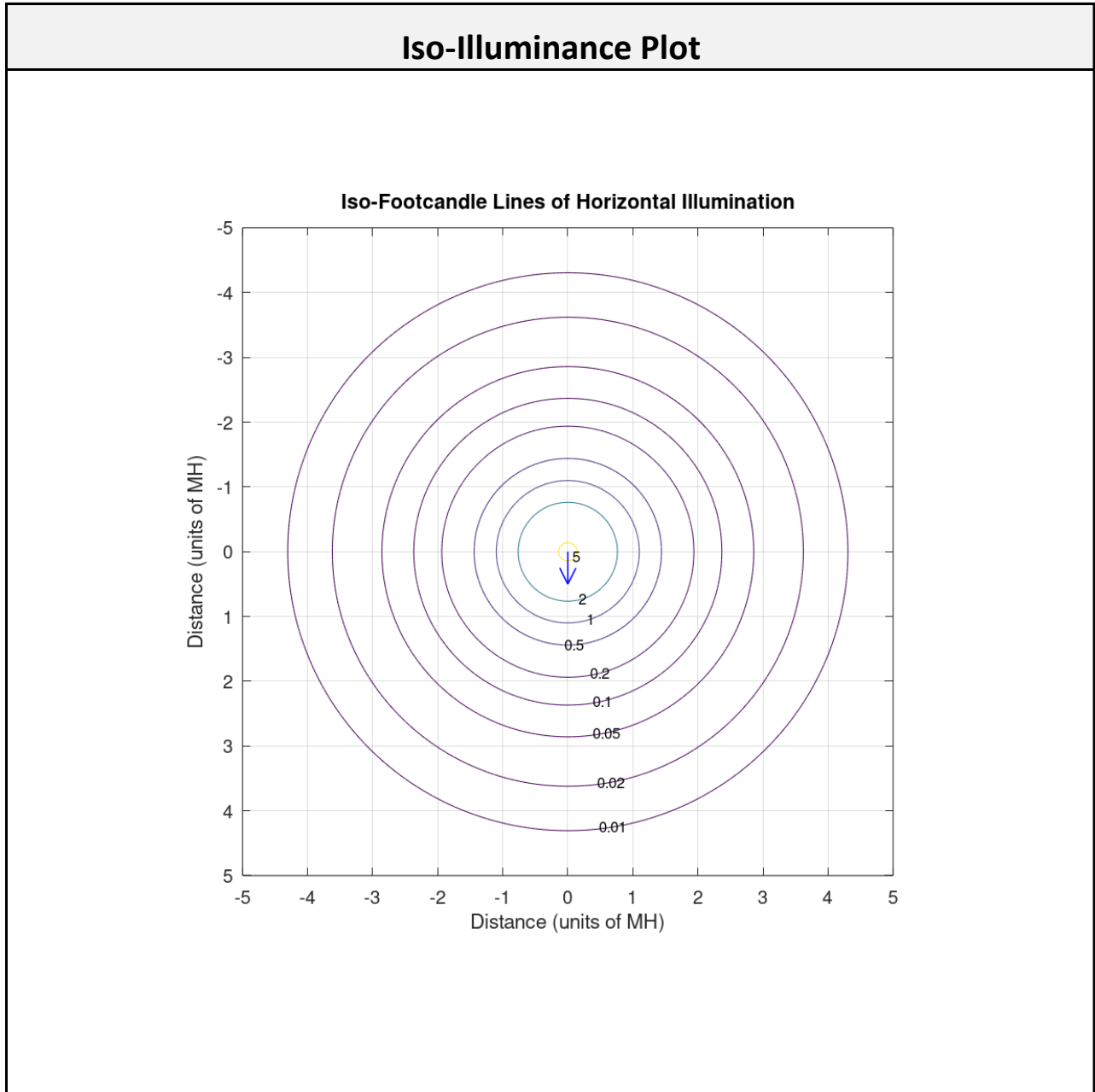
Average Luminance (cd/m ²)			
	0 deg Plane	45 deg Plane	90 deg Plane
0	25146	25146	25146
45	23586	23586	23586
55	22722	22722	22722
65	21360	21360	21360
75	18983	18983	18983
85	14891	14891	14891

Spacing Criterion	
Spacing Criterion:	1.3

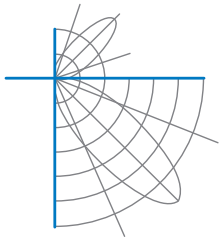


Report of Test

LLIA001147-001A-R01

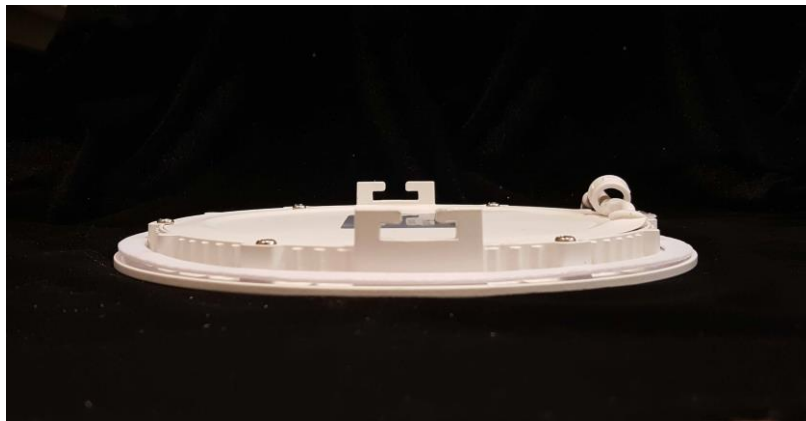


The isofootcandle values shown in the plot above are based on a mounting height of $h = 8.0$ feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution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



Report of Test
LLIA001147-001A-R01

Additional Pictures of Test Subject





Report of Test

LLIA001147-001A-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 publications: IES LM-79-08 and ANSI C82.77-10:2014. 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.

Revision Log:

R01: 8-12-2019-Revised catalog number



Report of Test

LLIA001147-001B-R01*

Integrating Sphere Report

Catalog Number: RDL/6RND/12HL/5CTS 3000K

Recessed mounted, formed steel housing, formed white aluminum trim with clear patterned plastic lens above translucent white plastic enclosure

96 white LEDs, one PL-CW-WW-12C4B-6CUN-S LED board

One Topaz LED driver



Performance Summary

Voltage	120.0 Vac
Current	0.1295 A
Power	12.17 W
Frequency	59.99 Hz
Power Factor	0.783
Current THD	29.8 %

Total Luminous Flux	955.2 lm
Efficacy	78.5 lm/W
Chromaticity (x,y)	(0.4347, 0.3947)
(u',v')	(0.2532, 0.5173)
Duv	-0.0035
CCT	2961 K
CRI (Ra)	94
R9	65
TM-30: Rf	91
TM-30: Rg	99

Prepared For:

Topaz Lighting Corp

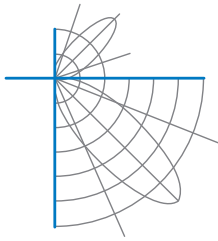
925 Waverly Avenue

Holtsville, NY 11742, USA

*This test report supersedes test report LLIA001147-001B

Test date: 08/06/2019

Report date: 08/12/2019



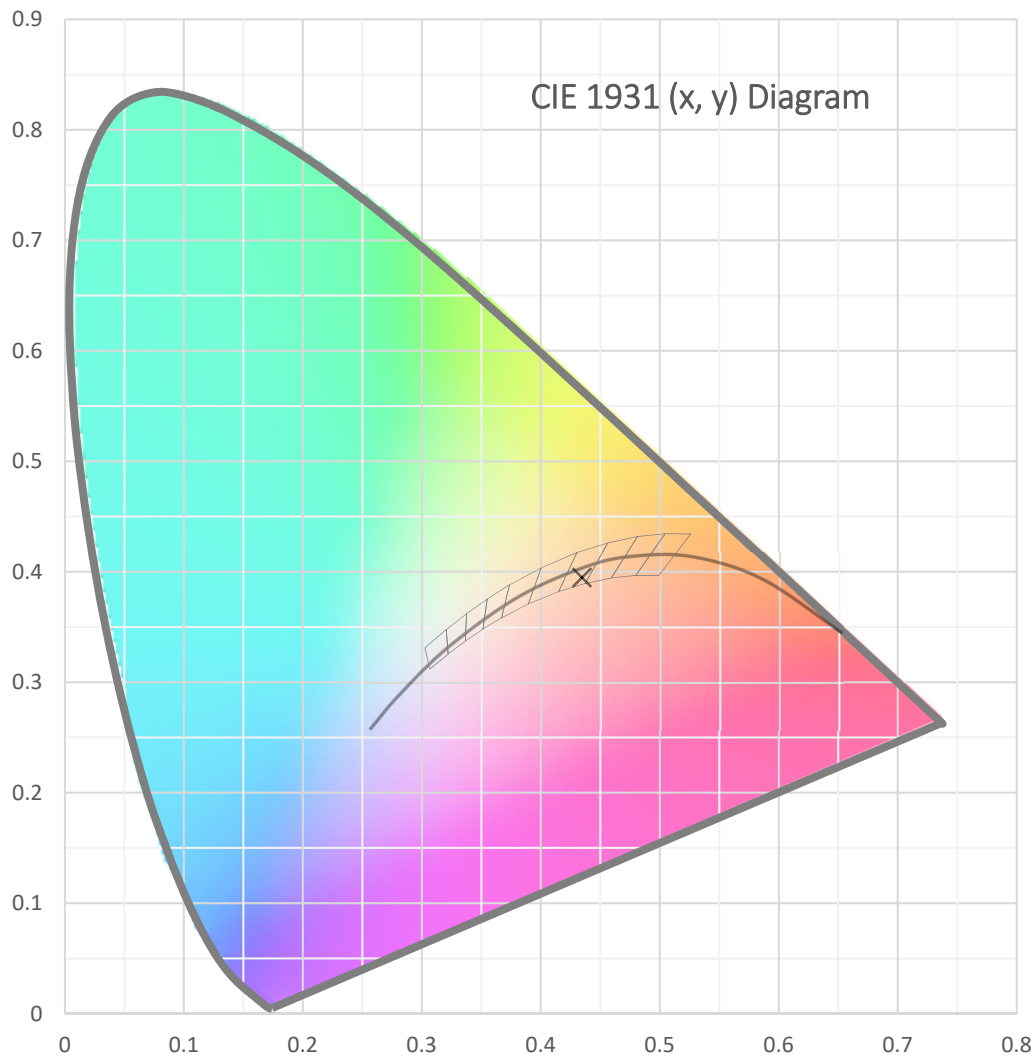
Test Report Number: LLIA001147-001B

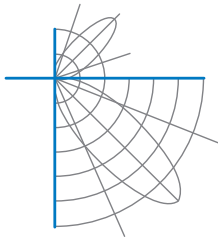
Catalog Number: RDL/6RND/12/5CTS 3000K

Recessed mounted, formed steel housing, formed white aluminum trim with clear patterned plastic lens above translucent white plastic enclosure

96 white LEDs, one PL-CW-WW-12C4B-6CUN-S LED board

One Topaz LED driver





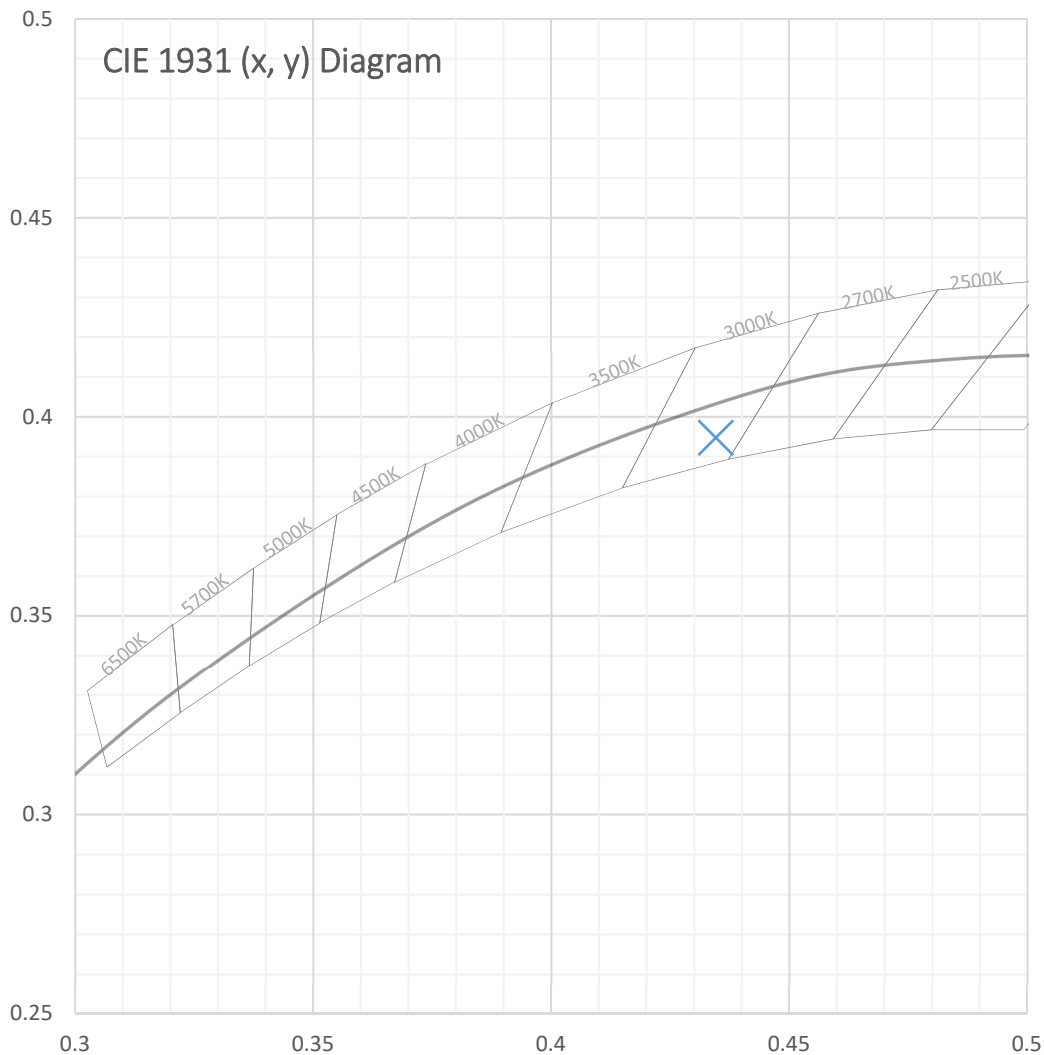
Test Report Number: LLIA001147-001B-R01

Catalog Number: RDL/6RND/12HL/5CTS 3000K

Recessed mounted, formed steel housing, formed white aluminum trim with
clear patterned plastic lens above translucent white plastic enclosure

96 white LEDs, one PL-CW-WW-12C4B-6CUN-S LED board

One Topaz LED driver





Test Report Number: LLIA001147-001B-R01

Catalog Number: RDL/6RND/12HL/5CTS 3000K

Recessed mounted, formed steel housing, formed white aluminum trim with
clear patterned plastic lens above translucent white plastic enclosure
96 white LEDs, one PL-CW-WW-12C4B-6CUN-S LED board
One Topaz LED driver

Spectral Data

Total Radiant Flux	3.384 W
Total Luminous Flux	955.2 Lm
Chromaticity CIE 1931 (x, y)	(0.4347, 0.3947)
Chromaticity CIE 1976 (u', v')	(0.2532, 0.5173)
Correlated Color Temperature (CCT)	2961 K
Color Rendering Index (Ra)	94
R1	96
R2	99
R3	95
R4	94
R5	97
R6	94
R7	90
R8	82
R9	65
R10	98
R11	97
R12	84
R13	98
R14	98
TM-30: Rf	91
TM-30: Rg	99
Distance from Planckian Locus (Duv)	-0.0035
Scotopic/Photopic Ratio *	1.473

Electrical Data

Voltage	120.0 Vac
Current	0.1295 A
Power	12.17 W
Frequency	59.99 Hz
Power Factor	0.783
Current THD	29.8 %



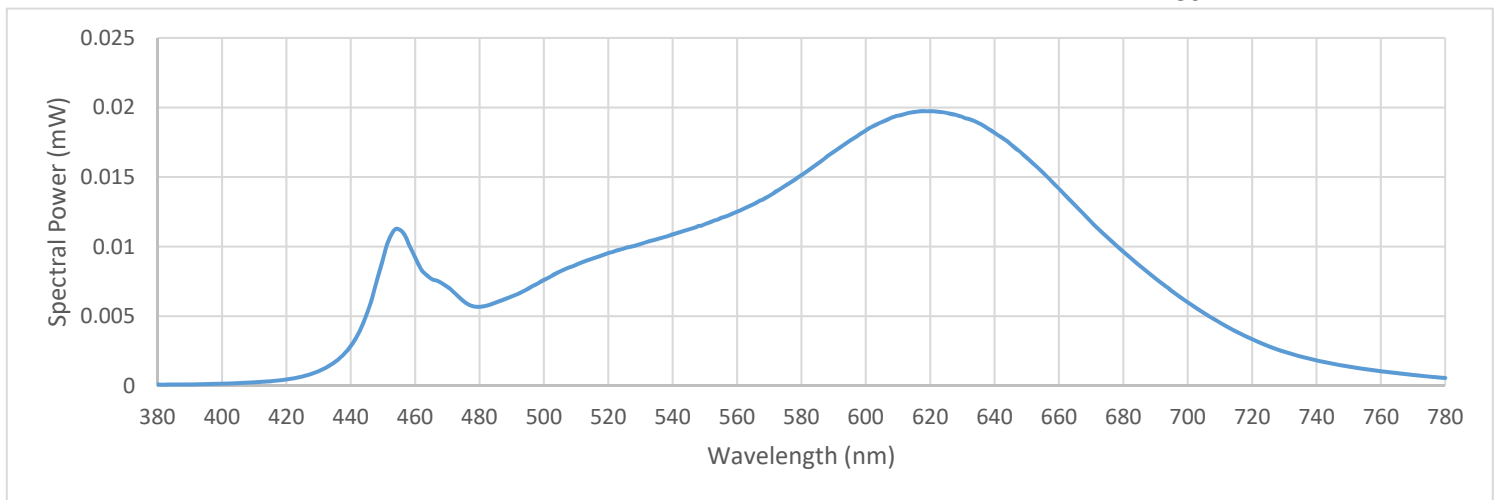
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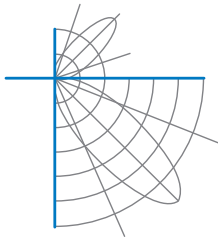
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Recessed mounted, formed steel housing, formed white aluminum trim with
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One Topaz LED driver

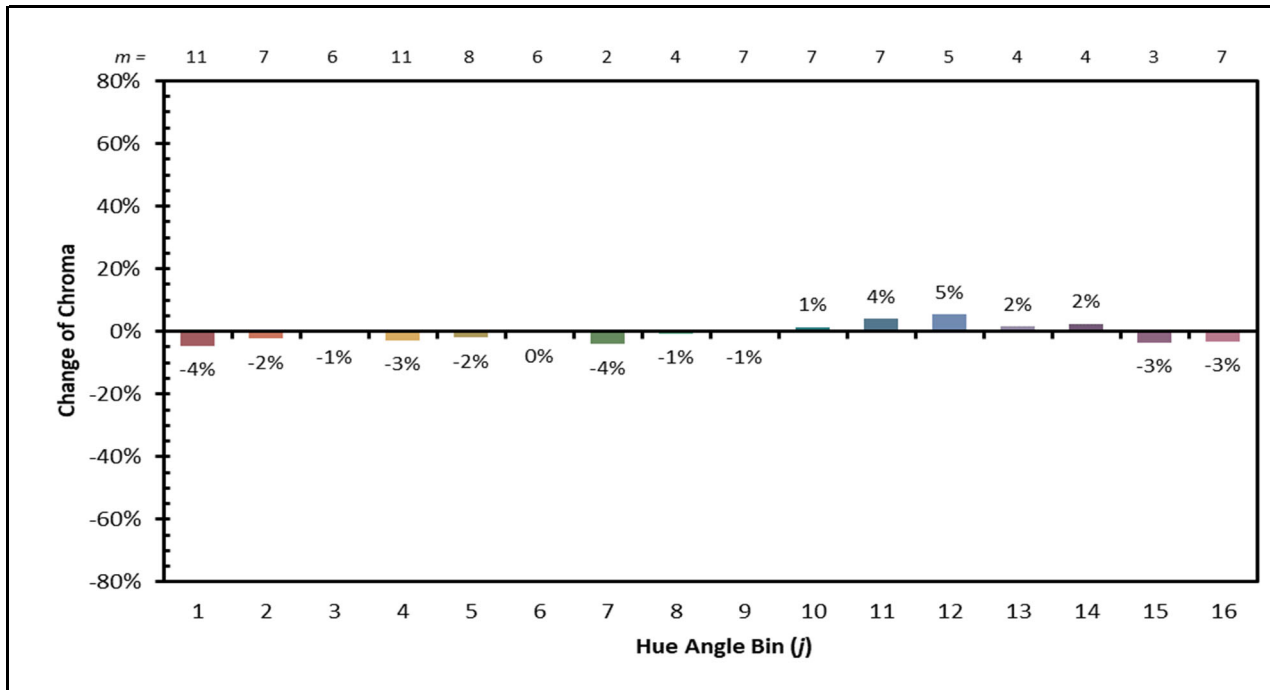
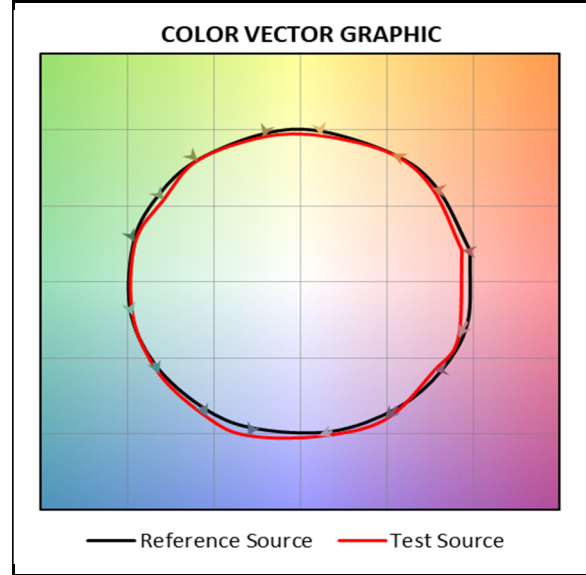
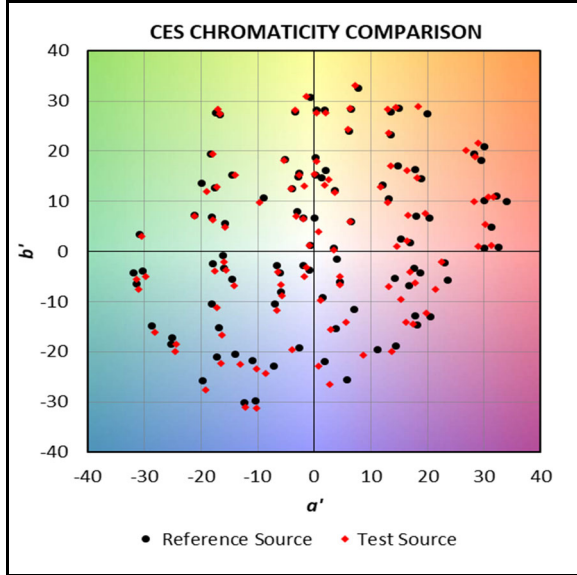
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000086	480	0.005671	580	0.015147	680	0.009623
385	0.000085	485	0.005983	585	0.015966	685	0.008655
390	0.000100	490	0.006411	590	0.016798	690	0.007717
395	0.000118	495	0.006962	595	0.017616	695	0.006809
400	0.000148	500	0.007611	600	0.018348	700	0.006003
405	0.000193	505	0.008216	605	0.018954	705	0.005241
410	0.000247	510	0.008699	610	0.019420	710	0.004527
415	0.000325	515	0.009135	615	0.019673	715	0.003910
420	0.000455	520	0.009546	620	0.019732	720	0.003351
425	0.000663	525	0.009877	625	0.019631	725	0.002849
430	0.001046	530	0.010182	630	0.019335	730	0.002437
435	0.001699	535	0.010525	635	0.018889	735	0.002101
440	0.002853	540	0.010881	640	0.018171	740	0.001820
445	0.005187	545	0.011231	645	0.017359	745	0.001594
450	0.009082	550	0.011618	650	0.016383	750	0.001387
455	0.011238	555	0.012063	655	0.015341	755	0.001208
460	0.009232	560	0.012502	660	0.014177	760	0.001047
465	0.007687	565	0.013030	665	0.012993	765	0.000900
470	0.007112	570	0.013645	670	0.011790	770	0.000771
475	0.006074	575	0.014385	675	0.010676	775	0.000660
						780	0.000562





IES TM-30 Details





Test Report Number: LLIA001147-001B-R01

Catalog Number: RDL/6RND/12HL/5CTS 3000K

Recessed mounted, formed steel housing, formed white aluminum trim with
clear patterned plastic lens above translucent white plastic enclosure
96 white LEDs, one PL-CW-WW-12C4B-6CUN-S LED board
One Topaz LED driver

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

Test Temperature: 24.1 °C

Test Procedure: Tested in accordance with the applicable sections of:
LM-79-08, LM-78-07, LM-58-13, ANSI_ANSLG C78.377-2017,
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.

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.

Revision Log: R01: 8-12-2019-Revised catalog number