

Report of Test

LLIA000954-012A

Catalog Number: 3-536-24 Adelphi

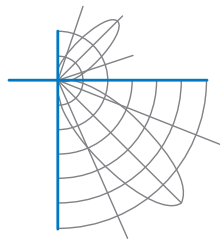
Wall mounted, formed steel and aluminum housing, translucent white glass enclosure.
144 white LEDs, two Harvard Engineering LER7-568x17-930-72S-I LED boards with 72 LEDs each
Two LTF DA12W350C1834D010-0014 dimmable LED drivers.
120.0Vac, 60.00Hz, 0.2516A, 29.59W, 0.980PF, 8.3%THD(i)



Performance Summary

Total Light Output	2490 lm
Luminaire Power	29.6 W
Luminous Efficacy	84.1 lm/W

PREPARED FOR : Oxygen Lighting, 201 Railhead Road, Fort Worth, TX 76106, USA



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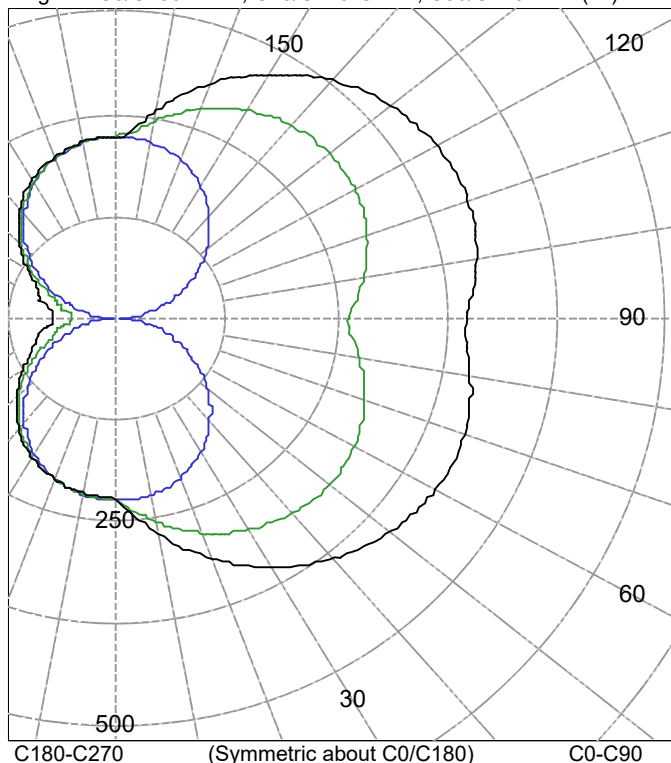
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Legend: C0/C180-Black, C45/C225-Green, C90/C270-Blue (cd)



AVERAGE LUMINANCE (cd/m²)

Gamma	C0	C45	C90
45.0	4760	4356	3440
55.0	5044	4547	3265
65.0	5371	4765	3050
75.0	5758	5062	2721
85.0	6239	5525	2065

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	224	224	224	224	224	
5.0	246	244	239	229	223	22
10.0	270	266	254	236	220	
15.0	292	286	268	240	216	68
20.0	314	305	280	243	209	
25.0	334	323	291	244	200	112
30.0	353	339	300	243	190	
35.0	370	352	307	240	178	149
40.0	385	364	312	236	165	
45.0	397	374	316	230	150	176
50.0	407	381	317	223	134	
55.0	414	386	316	215	117	190
60.0	419	388	313	205	101	
65.0	421	388	307	194	83	190
70.0	420	386	299	181	66	
75.0	416	382	290	167	48	180
80.0	408	374	280	153	32	
85.0	399	363	268	139	16	163
90.0	397	361	263	130	3	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	201	N / A	8.1
0-40	351	N / A	14.1
0-60	717	N / A	28.8
0-90	1250	N / A	50.2
40-90	899	N / A	36.1
60-90	533	N / A	21.4
90-180	1241	N / A	49.8
0-180	2490	N / A	100.0

Total Light Output = 2,490 lm

Signed:

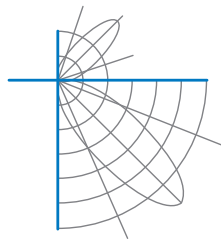
Authorized Signatory

Date of test

28-Mar-2018

Date of report

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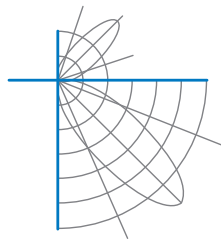
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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	224	224	224	224	224
2.5	234	234	232	226	224
5.0	246	244	239	229	223
7.5	258	255	247	233	222
10.0	270	266	254	236	220
12.5	281	276	261	238	218
15.0	292	286	268	240	216
17.5	303	296	275	242	212
20.0	314	305	280	243	209
22.5	325	314	286	244	205
25.0	334	323	291	244	200
27.5	344	331	296	244	195
30.0	353	339	300	243	190
32.5	362	346	304	242	184
35.0	370	352	307	240	178
37.5	378	358	310	238	172
40.0	385	364	312	236	165
42.5	391	369	314	233	157
45.0	397	374	316	230	150
47.5	402	377	317	227	142
50.0	407	381	317	223	134
52.5	411	383	317	219	126
55.0	414	386	316	215	117
57.5	417	387	315	210	109
60.0	419	388	313	205	101
62.5	420	388	310	200	92
65.0	421	388	307	194	83
67.5	421	388	303	188	75
70.0	420	386	299	181	66
72.5	418	384	295	174	57
75.0	416	382	290	167	48
77.5	413	378	285	160	40
80.0	408	374	280	153	32
82.5	404	369	274	146	24
85.0	399	363	268	139	16
87.5	396	361	263	132	9
90.0	397	361	263	130	3



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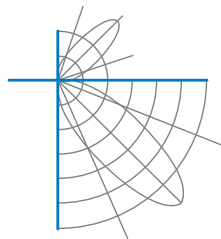
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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	397	361	263	130	3
92.5	402	366	268	135	9
95.0	407	371	274	142	16
97.5	412	376	280	148	24
100.0	416	380	285	155	32
102.5	419	384	290	161	40
105.0	421	387	294	168	49
107.5	423	390	299	175	57
110.0	424	391	303	181	66
112.5	425	392	306	187	75
115.0	425	392	309	193	83
117.5	423	392	312	198	92
120.0	421	391	314	203	101
122.5	418	390	315	207	109
125.0	415	387	316	211	118
127.5	411	385	316	215	126
130.0	406	381	316	219	134
132.5	401	378	315	222	142
135.0	395	373	314	225	150
137.5	389	368	312	228	157
140.0	381	363	309	230	164
142.5	374	356	306	232	171
145.0	365	350	303	234	178
147.5	357	342	299	235	184
150.0	347	334	295	236	189
152.5	338	326	290	236	195
155.0	328	317	285	236	200
157.5	317	308	279	235	204
160.0	306	298	273	235	208
162.5	295	289	267	233	212
165.0	283	278	260	231	215
167.5	272	268	253	229	218
170.0	260	257	246	227	220
172.5	248	246	238	225	222
175.0	236	235	231	223	223
177.5	226	227	226	223	224
180.0	224	224	224	224	224



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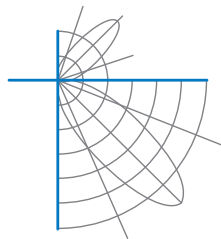
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Intensity data (cd)

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
0.0	224	224	224	224	224
2.5	224	221	223	222	220
5.0	223	220	222	222	220
7.5	222	219	221	221	219
10.0	220	217	220	220	218
12.5	218	215	218	219	217
15.0	216	212	216	217	215
17.5	212	210	214	215	213
20.0	209	206	211	212	210
22.5	205	203	207	209	207
25.0	200	199	203	205	204
27.5	195	194	199	201	200
30.0	190	189	194	197	196
32.5	184	184	190	192	192
35.0	178	178	184	187	186
37.5	172	172	179	181	181
40.0	165	165	173	175	175
42.5	157	159	167	169	169
45.0	150	152	160	162	163
47.5	142	145	153	156	157
50.0	134	137	145	149	150
52.5	126	130	138	142	143
55.0	117	123	130	134	136
57.5	109	115	123	127	129
60.0	101	107	115	120	122
62.5	92	99	107	112	115
65.0	83	91	99	106	109
67.5	75	83	91	100	105
70.0	66	74	84	96	101
72.5	57	66	78	92	98
75.0	48	58	73	88	95
77.5	40	50	69	85	92
80.0	32	43	66	82	88
82.5	24	39	62	76	81
85.0	16	35	56	70	76
87.5	9	29	52	68	74
90.0	3	27	51	68	74



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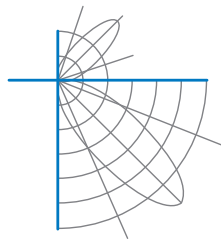
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Intensity data (cd)					
Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
90.0	3	27	51	68	74
92.5	9	27	51	68	74
95.0	16	35	52	68	73
97.5	24	37	57	69	74
100.0	32	41	67	75	79
102.5	40	47	67	87	90
105.0	49	55	70	85	91
107.5	57	63	73	88	94
110.0	66	71	79	90	96
112.5	75	80	86	94	99
115.0	83	88	94	99	103
117.5	92	97	102	106	109
120.0	101	105	110	113	116
122.5	109	113	118	121	123
125.0	118	120	126	128	131
127.5	126	128	134	136	138
130.0	134	136	141	143	145
132.5	142	143	149	150	153
135.0	150	151	156	157	159
137.5	157	158	162	164	166
140.0	164	164	169	171	173
142.5	171	171	175	177	179
145.0	178	177	181	182	185
147.5	184	183	186	188	190
150.0	189	189	191	193	195
152.5	195	194	196	197	199
155.0	200	199	201	202	203
157.5	204	203	205	206	207
160.0	208	207	209	209	211
162.5	212	211	212	213	214
165.0	215	214	215	216	216
167.5	218	216	218	218	219
170.0	220	219	220	220	221
172.5	222	221	222	222	222
175.0	223	222	223	223	223
177.5	224	223	224	224	224
180.0	224	224	224	224	224



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Coefficients Of Utilization - Zonal Cavity Method

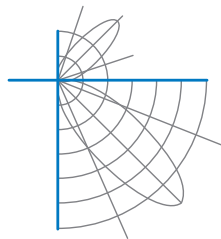
Effective Floor Cavity Reflectance 0.20

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
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	95	89	84	79	87	82	77	73	68	65	62	56	54	51	45	43	41	36
2	85	76	69	62	78	70	63	58	58	53	49	47	44	40	38	35	32	28
3	77	66	57	50	70	60	53	47	50	44	40	41	37	33	32	29	26	22
4	70	58	49	42	64	53	45	39	44	38	33	36	31	27	28	25	22	18
5	64	51	42	35	58	47	39	33	39	33	28	32	27	23	25	21	18	15
6	58	45	36	30	53	42	34	28	35	29	24	29	24	20	23	19	16	13
7	54	41	32	26	49	37	30	24	31	25	21	26	21	17	20	17	14	11
8	50	37	28	23	46	34	26	21	29	22	18	23	19	15	19	15	12	10
9	46	33	25	20	42	31	24	19	26	20	16	21	17	13	17	14	11	9
10	43	30	23	18	40	28	21	17	24	18	14	20	15	12	16	12	10	8

For absolute test reports, CUs are expressed as a percentage of total lumen 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)	Beam Width (across 50% Nadir Illum)	
		0-180	90-270
6.0	6.2	10.90	7.55
8.0	3.5	14.53	10.07
10.0	2.2	18.16	12.59
12.0	1.6	21.80	15.11
14.0	1.1	25.43	17.62
16.0	0.9	29.06	20.14



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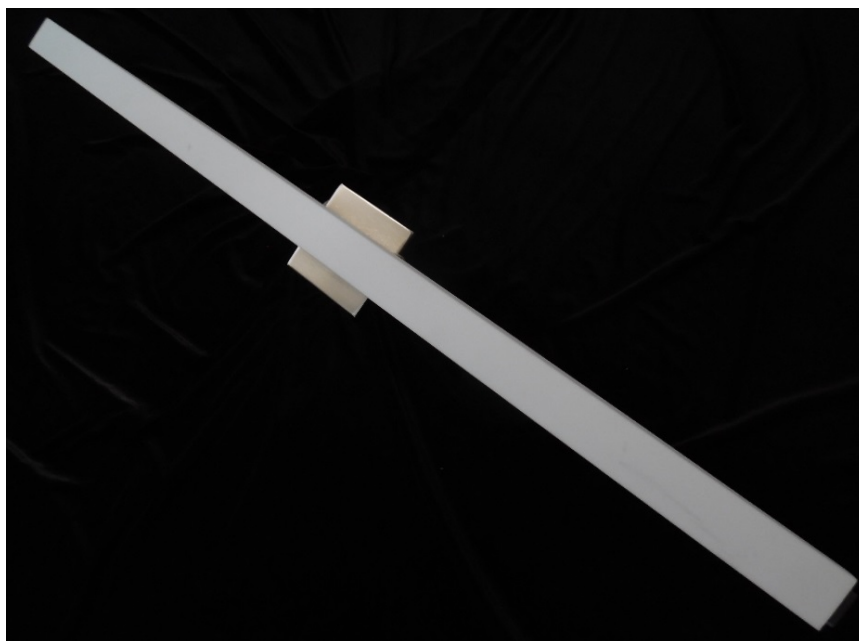
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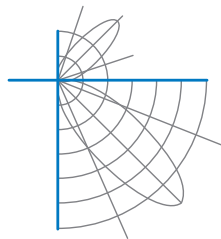
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Test Distance 9.5 m
Test Temperature 25.1 °C

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 (Sec. 12), IES LM-16-93, IES LM-58-13, CIE 13.3:1995, CIE 15:2004, ANSI C78.377:2015, ANSI C82.77-10:2014.

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

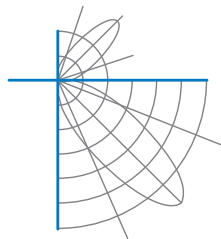
Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

This report is free of erasures and corrections.

Photometric intensity values are reported using the CIE 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

LLIA000954-012B

Integrating Sphere Report

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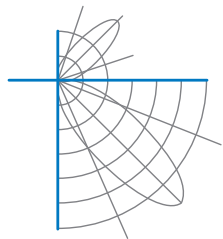


Performance Summary

Voltage	120.0 Vac
Current	0.2514 A
Power	29.61 W
Frequency	59.97 Hz
Power Factor	0.981
Current THD	8.6 %
Total Luminous Flux	2531.1 lm
Efficacy	85.5 lm/W
Chromaticity (x,y)	(0.4425, 0.4069)
(u',v')	(0.2530, 0.5233)
Duv	0.0004
CCT	2931 K
CRI (Ra)	97
R9	90
TM-30: Rf	94
TM-30: Rg	102

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

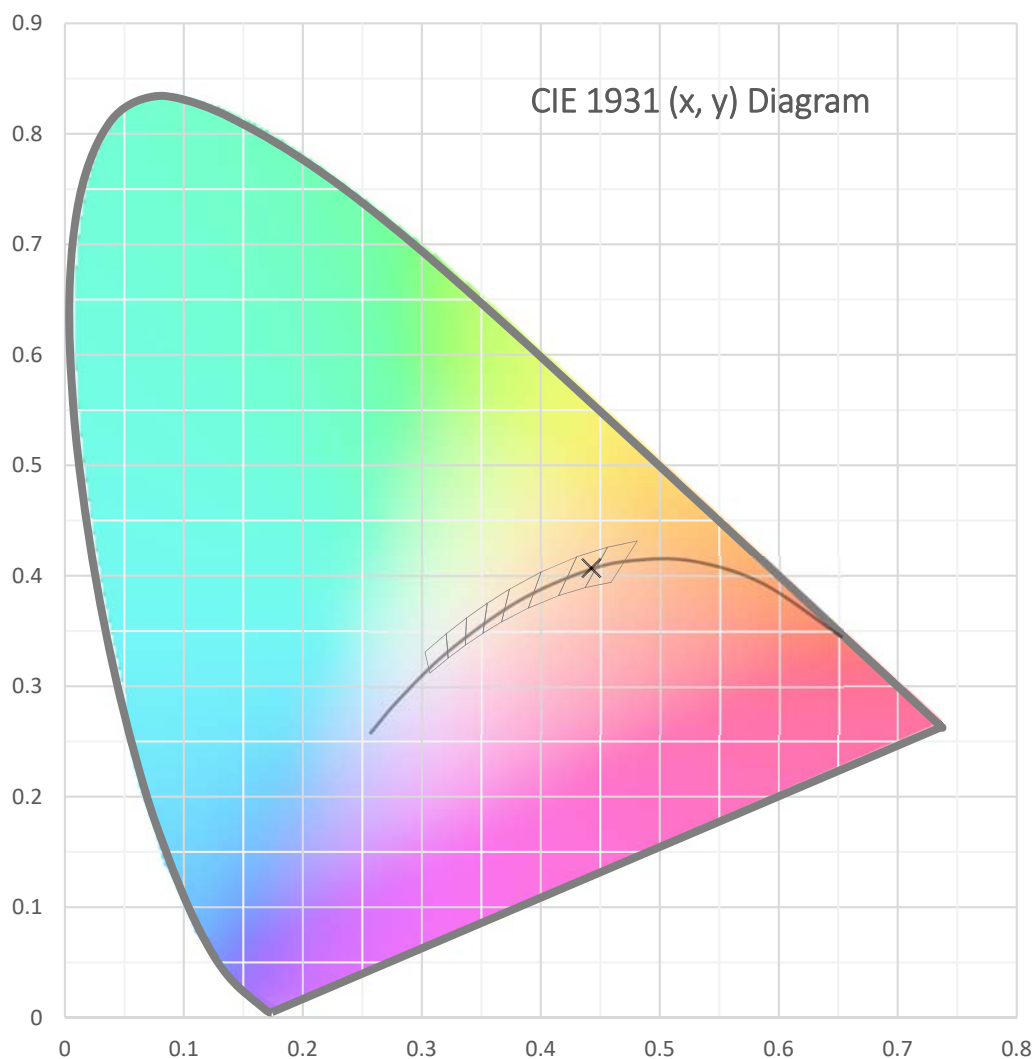
Test date: 03/06/2018
Report date: 03/28/2018

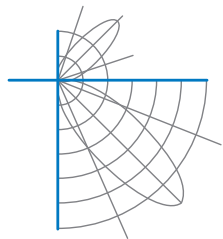


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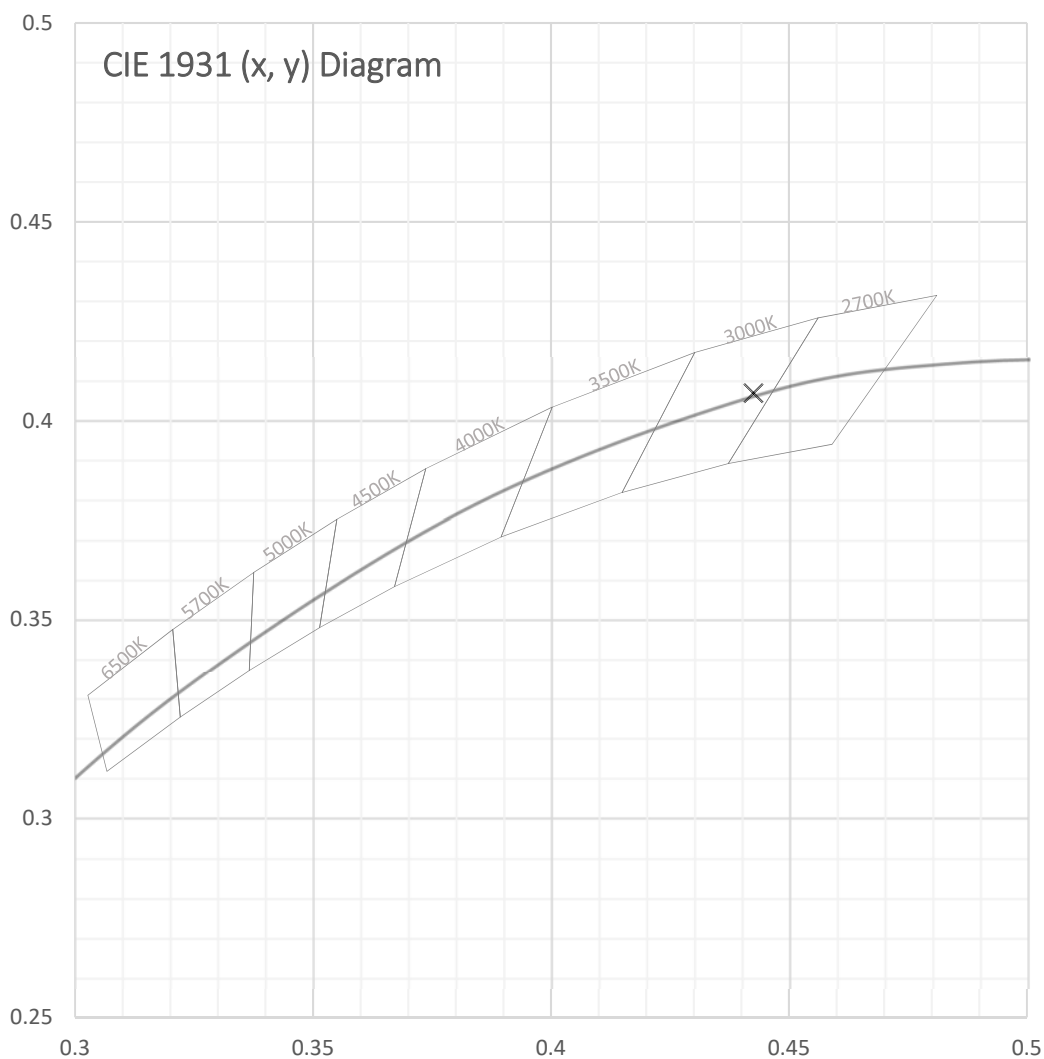


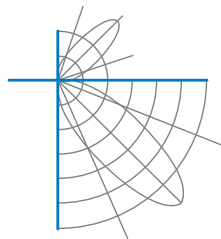


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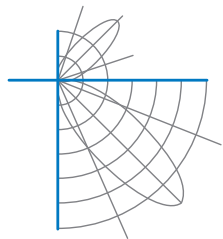
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Spectral Data

Total Radiant Flux	9.538 W
Total Luminous Flux	2531.1 Lm
Chromaticity CIE 1931 (x, y)	(0.4425, 0.4069)
Chromaticity CIE 1976 (u', v')	(0.2530, 0.5233)
Correlated Color Temperature (CCT)	2931 K
Color Rendering Index (Ra)	97
R1	99
R2	97
R3	94
R4	97
R5	98
R6	96
R7	98
R8	96
R9	90
R10	93
R11	96
R12	86
R13	99
R14	96
TM-30: Rf	94
TM-30: Rg	102
Distance from Planckian Locus (Duv)	0.0004
Scotopic/Photopic Ratio *	1.398

Electrical Data

Voltage	120.0 Vac
Current	0.2514 A
Power	29.61 W
Frequency	59.97 Hz
Power Factor	0.981
Current THD	8.6 %



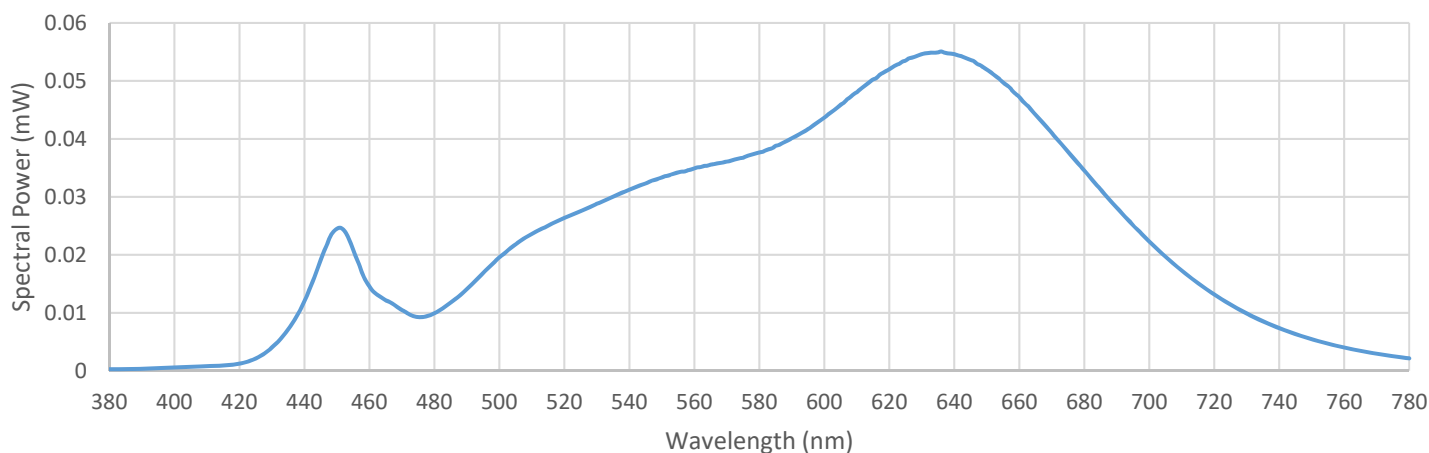
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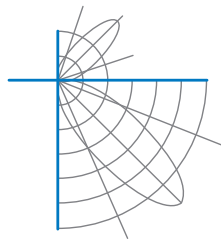
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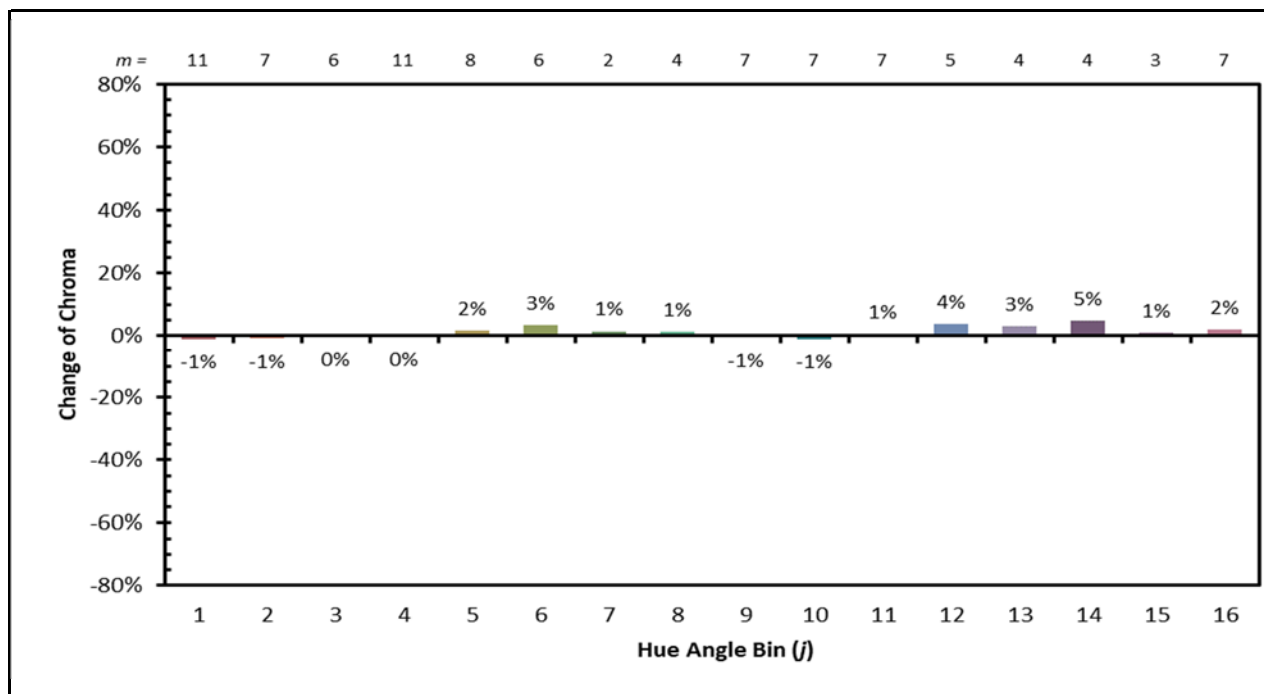
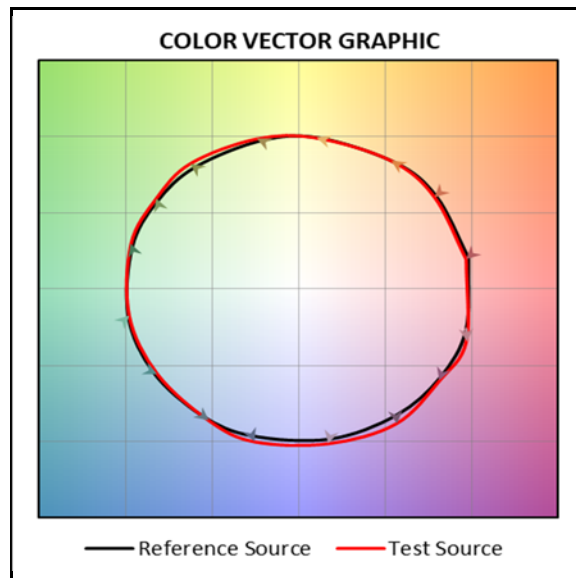
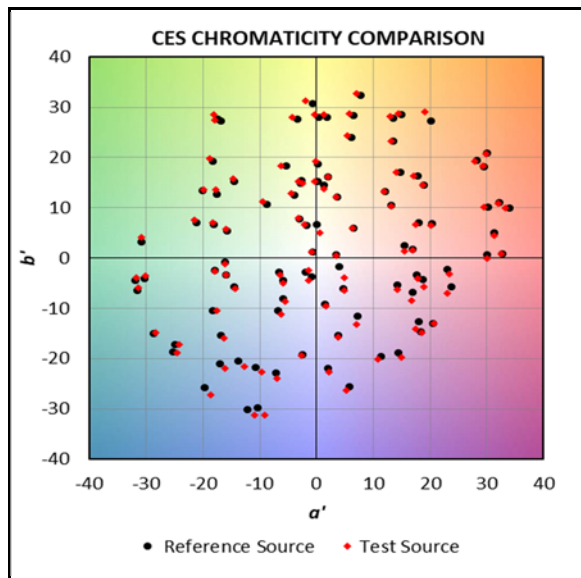
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

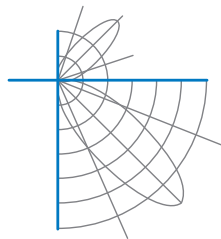
380	0.000263	480	0.009945	580	0.037671	680	0.034524
385	0.000285	485	0.011774	585	0.038795	685	0.031306
390	0.000355	490	0.014115	590	0.040118	690	0.028134
395	0.000440	495	0.016821	595	0.041697	695	0.025071
400	0.000561	500	0.019579	600	0.043614	700	0.022355
405	0.000685	505	0.021782	605	0.045873	705	0.019682
410	0.000794	510	0.023590	610	0.048050	710	0.017262
415	0.000916	515	0.025034	615	0.050251	715	0.015129
420	0.001216	520	0.026387	620	0.051998	720	0.013148
425	0.002110	525	0.027520	625	0.053509	725	0.011387
430	0.004044	530	0.028819	630	0.054612	730	0.009885
435	0.007175	535	0.029997	635	0.054922	735	0.008511
440	0.011932	540	0.031238	640	0.054617	740	0.007329
445	0.019166	545	0.032305	645	0.053613	745	0.006330
450	0.024492	550	0.033358	650	0.051966	750	0.005444
455	0.020888	555	0.034198	655	0.049729	755	0.004676
460	0.014557	560	0.034912	660	0.047242	760	0.004034
465	0.012159	565	0.035550	665	0.044168	765	0.003456
470	0.010486	570	0.036082	670	0.041033	770	0.002939
475	0.009275	575	0.036748	675	0.037808	775	0.002511
						780	0.002145





IES TM-30 Summary





Test Report Number: LLIA000954-012B

Catalog Number: 3-536-24 Adelphi

Wall mounted, formed steel and aluminum housing, translucent white glass enclosure.
144 white LEDs, two Harvard Engineering LER7-568x17-930-72S-I LED boards with 72 LEDs each
Two LTF DA12W350C1834D010-0014 dimmable LED drivers.

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:	24.5 °C
Test Procedure:	Tested in accordance with the applicable sections of: LM-79-08, LM-78-07, LM-58-13, ANSI_ANSLG C78.377-2015, 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:	<p>The measurements and other derived quantities contained in this report are based on the absolute data as measured.</p> <p>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.</p> <p>This report is free of erasures and corrections</p> <p>This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with * are not covered.</p>

Sphere Report Template V2-8