

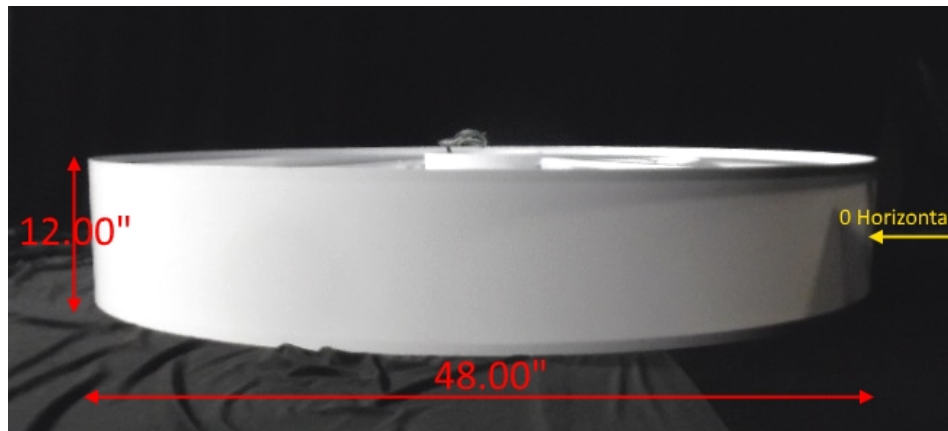
Report of Test

LLIA000901-056A

Catalog Number: SM5488/F11/D61/L410

Ceiling mounted, formed aluminum and steel frame, white "lumenate"
diffuser, translucent white plastic top and bottom enclosures.

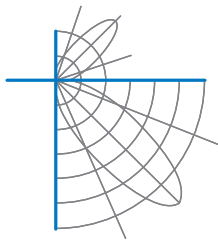
384 white LEDs, eight Samsung Electronics LT-M562C G2 3000K-S49 LED boards with 48 LEDs each
Two Philips Advance Xitanium XI075C200V054BST1 LED drivers.
120.0Vac, 60.00Hz, 1.271A, 151.9W, 0.996PF, 6.7%THD(i)



Performance Summary

Total Light Output	17299 lm
Luminaire Power	151.9 W
Luminous Efficacy	113.9 lm/W

PREPARED FOR : Lumetta, Inc, 33 Minnesota Avenue, Warwick, RI 02888, USA



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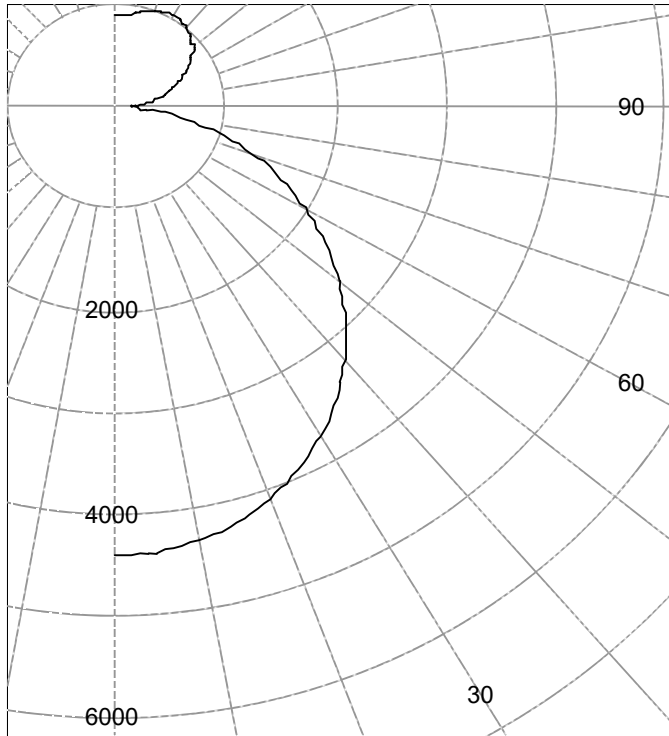
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Legend: All planes - Black (cd)



(Rotational symmetry)

AVERAGE LUMINANCE (cd / m²)

Gamma	C0
45.0	2947
55.0	2662
65.0	2300
75.0	1798
85.0	974

INTENSITY SUMMARY (cd)

Gamma	All Planes	Flux (lm)	Gamma	C0	Flux (lm)
0	4409		90	137	
5	4388	417	95	213	231
10	4330		100	298	
15	4232	1194	105	456	459
20	4098		110	531	
25	3928	1810	115	643	633
30	3725		120	750	
35	3492	2185	125	835	748
40	3232		130	913	
45	2948	2274	135	966	745
50	2644		140	1003	
55	2322	2076	145	1025	642
60	1990		150	1036	
65	1650	1633	155	1026	474
70	1311		160	1002	
75	973	1028	165	978	277
80	646		170	930	
85	339	385	175	895	86
90	137		180	893	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	%Lamp	%Luminaire
0-30	3422	N / A	19.8
0-40	5606	N / A	32.4
0-60	9955	N / A	57.6
0-90	13003	N / A	75.2
40-90	7397	N / A	42.8
60-90	3047	N / A	17.6
90-180	4296	N / A	24.8
0-180	17299	N / A	100.0

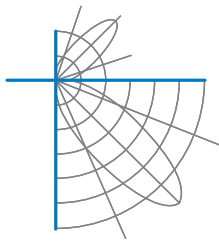
Total Light Output = 17,299 lm

Spacing Criterion: 0-180 1.3
Spacing Criterion: 90-270 1.3

Signed:

Authorized Signatory

Date of test 12-Apr-2018
Date of report 12-Apr-2018



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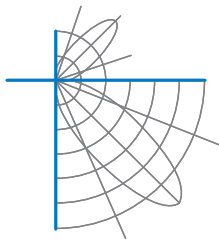
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Intensity (cd) and Flux (lm) data

Gamma	Intensity	Flux	Gamma	Intensity	Flux
0.0	4409		90.0	137	
2.5	4403		92.5	170	
5.0	4388	417	95.0	213	231
7.5	4363		97.5	253	
10.0	4330		100.0	298	
12.5	4286		102.5	379	
15.0	4232	1194	105.0	456	459
17.5	4169		107.5	493	
20.0	4098		110.0	531	
22.5	4017		112.5	580	
25.0	3928	1810	115.0	643	633
27.5	3831		117.5	695	
30.0	3725		120.0	750	
32.5	3612		122.5	794	
35.0	3492	2185	125.0	835	748
37.5	3366		127.5	878	
40.0	3232		130.0	913	
42.5	3093		132.5	939	
45.0	2948	2274	135.0	966	745
47.5	2798		137.5	988	
50.0	2644		140.0	1003	
52.5	2484		142.5	1012	
55.0	2322	2076	145.0	1025	642
57.5	2157		147.5	1033	
60.0	1990		150.0	1036	
62.5	1820		152.5	1034	
65.0	1650	1633	155.0	1026	474
67.5	1480		157.5	1014	
70.0	1311		160.0	1002	
72.5	1141		162.5	991	
75.0	973	1028	165.0	978	277
77.5	807		167.5	956	
80.0	646		170.0	930	
82.5	489		172.5	908	
85.0	339	385	175.0	895	86
87.5	207		177.5	889	
90.0	137		180.0	893	



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Coefficients Of Utilization - Zonal Cavity Method

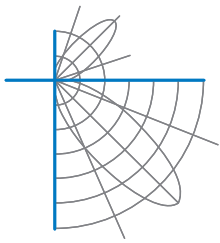
Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	113	113	113	113	108	108	108	108	97	97	97	88	88	88	79	79	79	75
1	103	98	94	90	98	93	89	86	84	82	79	76	74	72	69	67	66	62
2	93	85	78	73	88	81	75	70	74	69	65	67	63	59	60	57	55	51
3	85	75	67	60	80	71	64	58	65	59	54	59	54	50	53	49	46	43
4	78	66	57	51	73	63	55	49	57	51	46	52	47	43	47	43	39	36
5	71	59	50	43	67	56	48	42	51	44	39	47	41	37	42	38	34	31
6	66	53	44	38	62	50	42	37	46	39	34	42	36	32	38	34	30	27
7	61	48	39	33	57	46	38	32	42	35	30	38	33	28	35	30	27	24
8	56	43	35	29	53	42	34	29	38	32	27	35	29	25	32	27	24	22
9	53	40	32	26	50	38	31	26	35	29	24	32	27	23	30	25	21	19
10	49	36	29	24	47	35	28	23	32	26	22	30	24	21	27	23	19	18

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	122.5	7.54	7.54
8.0	68.9	10.05	10.05
10.0	44.1	12.56	12.56
12.0	30.6	15.07	15.07
14.0	22.5	17.58	17.58
16.0	17.2	20.10	20.10



Test Report No. LLIA000901-056A

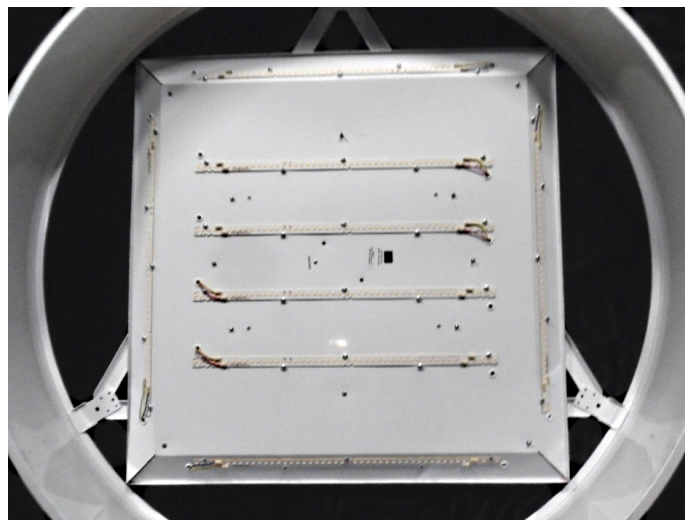
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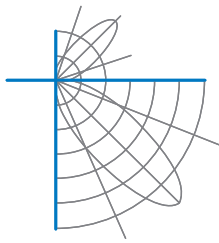
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Test Distance 9.5 m
Test Temperature 24.6 °C

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.

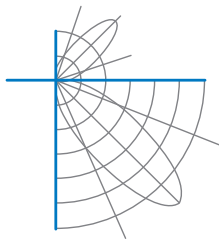
Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

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

LLIA000901-056B

Color Quality Test Report

Catalog Number: SM5488/F11/D61/L410

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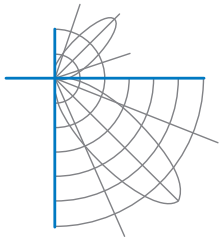
Performance Summary

Voltage	120.0 Vac
Current	1.271 A
Power	151.9 W
Frequency	60.00 Hz
Power Factor	0.996
Current THD	6.7 %

Chromaticity (x,y)	(0.4242, 0.3955)
(u',v')	(0.2460, 0.5160)
Duv	-0.0016
CCT	3155 K
CRI (Ra)	84
R9	10
TM-30: Rf	84
TM-30: Rg	97

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

Test date: 04/11/2018
Report date: 04/12/2018



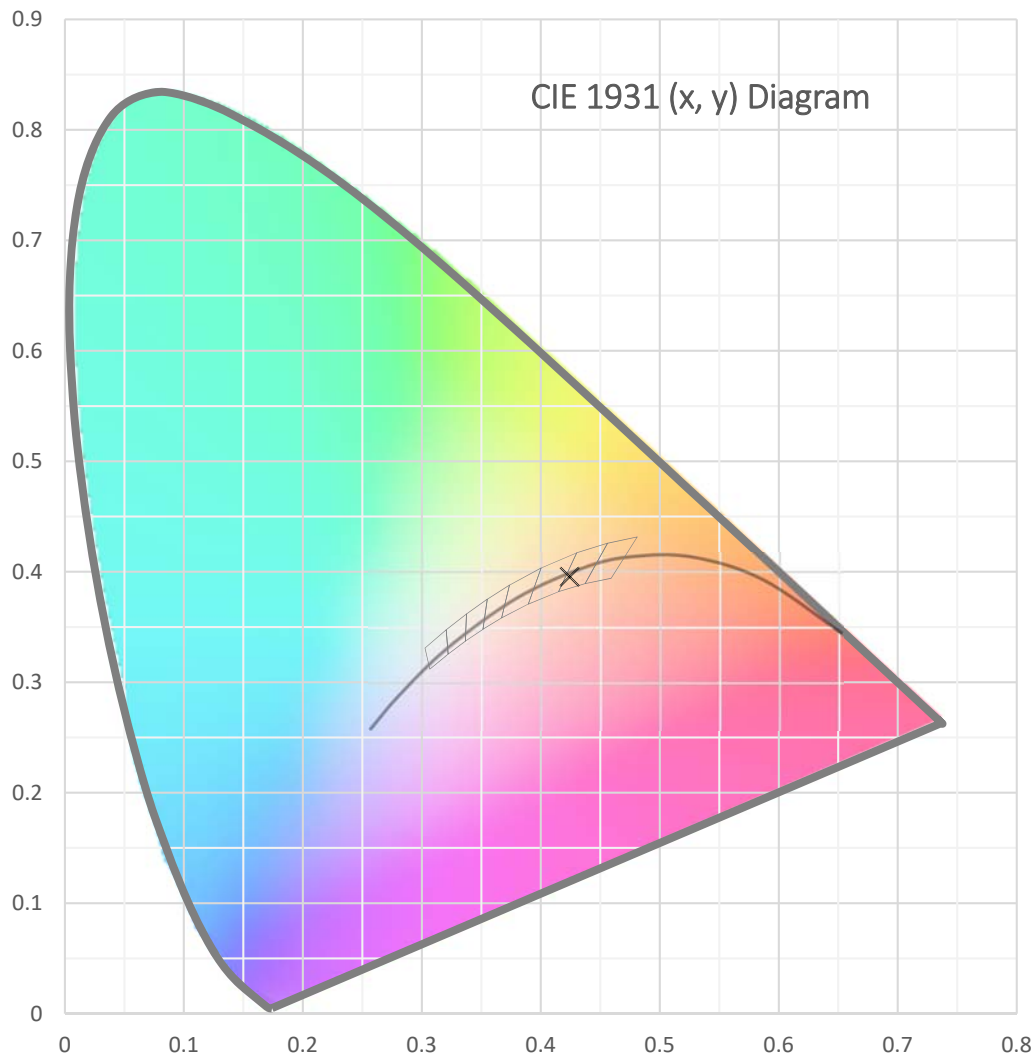
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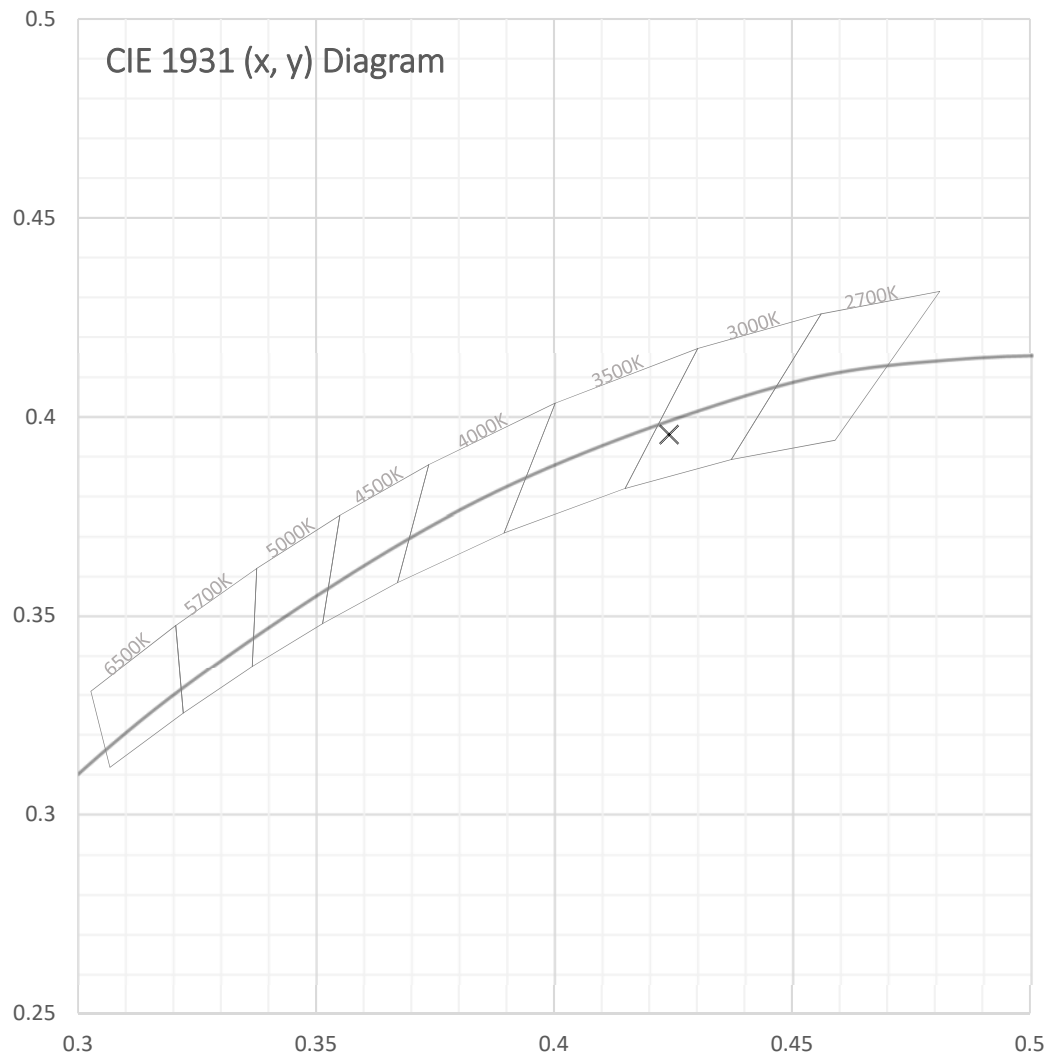
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Spectral Data

Chromaticity CIE 1931 (x, y)	(0.4242, 0.3955)
Chromaticity CIE 1976 (u', v')	(0.2460, 0.5160)
Correlated Color Temperature (CCT)	3155 K
Color Rendering Index (Ra)	84
R1	82
R2	92
R3	96
R4	82
R5	83
R6	90
R7	83
R8	61
R9	10
R10	82
R11	82
R12	75
R13	85
R14	99
TM-30: Rf	84
TM-30: Rg	97
Distance from Planckian Locus (Duv)	-0.0016

Electrical Data

Voltage	120.0 Vac
Current	1.271 A
Power	151.9 W
Frequency	60.0 Hz
Power Factor	0.996
Current THD	6.7 %



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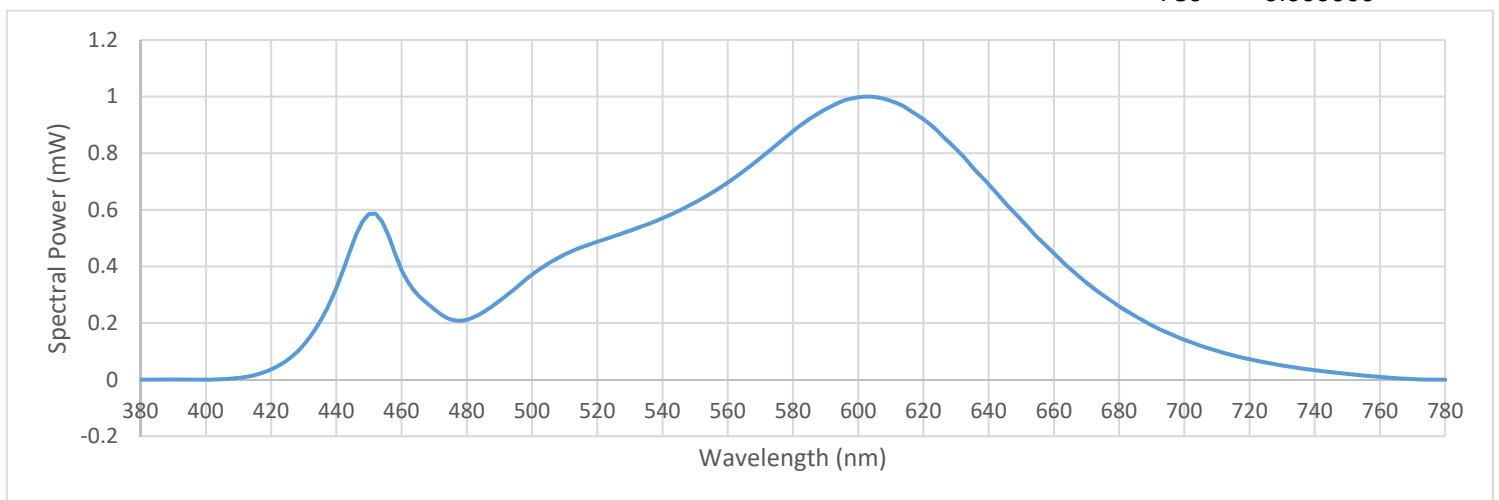
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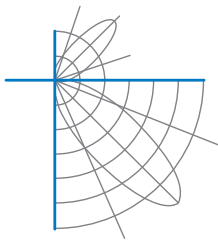
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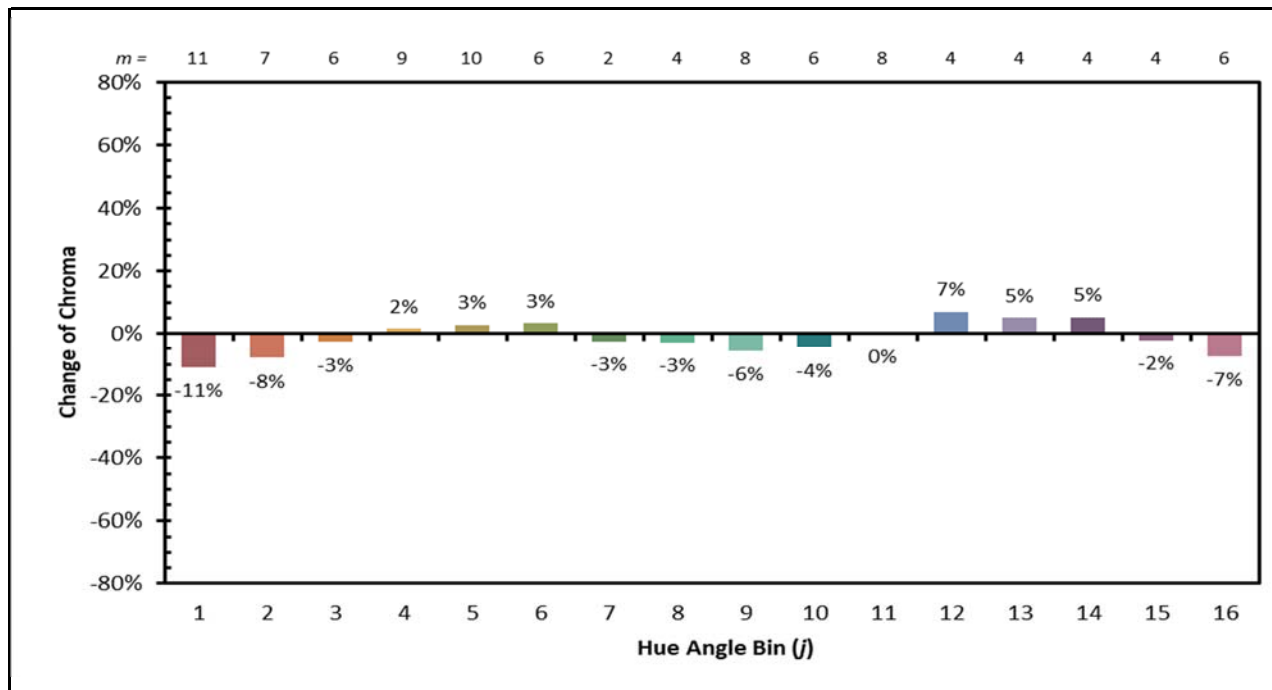
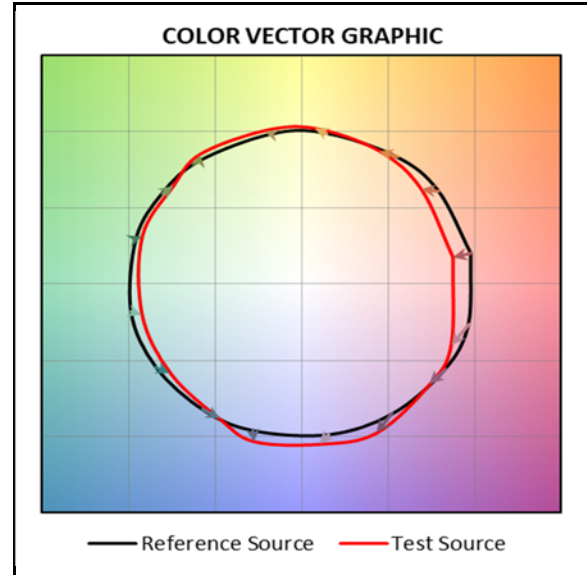
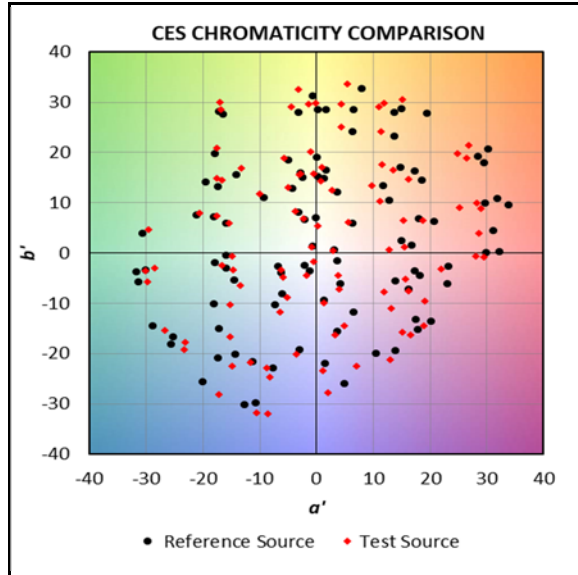
Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000000	480	0.211590	580	0.877110	680	0.259040
385	0.000000	485	0.238200	585	0.920450	685	0.224440
390	0.000000	490	0.277950	590	0.954480	690	0.192040
395	0.000000	495	0.323650	595	0.983130	695	0.165380
400	0.000000	500	0.371010	600	0.997110	700	0.140670
405	0.001425	505	0.410270	605	0.998170	705	0.120130
410	0.005896	510	0.442680	610	0.984990	710	0.101870
415	0.016481	515	0.466620	615	0.957820	715	0.085655
420	0.036079	520	0.487460	620	0.920250	720	0.072413
425	0.069754	525	0.506190	625	0.870540	725	0.060387
430	0.123170	530	0.525660	630	0.814830	730	0.050291
435	0.205700	535	0.546710	635	0.751970	735	0.041480
440	0.324070	540	0.570040	640	0.690110	740	0.033195
445	0.479520	545	0.596580	645	0.625180	745	0.026788
450	0.584940	550	0.626240	650	0.564520	750	0.020254
455	0.533680	555	0.659120	655	0.502150	755	0.014770
460	0.386910	560	0.696250	660	0.447190	760	0.009533
465	0.299940	565	0.737150	665	0.391580	765	0.005549
470	0.249620	570	0.782540	670	0.342840	770	0.001803
475	0.213650	575	0.829730	675	0.299130	775	0.000249
						780	0.000000





IES TM-30 Summary





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Test Equipment Configuration: LightLab International Allentown Goniospectroradiometer
Measurements acquired using a PhotoResearch PR670 spectroradiometer

Test Temperature: 24.6 °C

Test Procedure: Tested in accordance with the applicable sections of:
LM-79-08, LM-58-13, ANSI_ANSI 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
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Notes: The measurements and other derived quantities contained in this report
are based on the absolute data as measured.

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