



8165 E Kaiser Blvd. Anaheim, CA 92808
www.lightlaboratory.com

Report No: L06181702



Report No: L061801702

Issue Date: 6/29/2018

Report Prepared For: Cerno LLC
1751 McGaw Ave, Irvine, CA, 92614

Model Number: 08-100-36W-27P1

Test: Photometric/Colorimetric/Electrical Test

Standards Used: Appropriate part or all test guidelines were used for test performed:
IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products
ANSI C82.77:2002: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 6/25/18

Date of Tests: 6/26/18 - 6/29/18

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S4	1/9/19
BK PRECISION	1747	PS-DC04	1/10/19
Fluke Digital Thermometer	52K/J	MT-TP05	1/10/19
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

Test Summary

Manufacturer:	Cerno LLC
Model Number:	08-100-36W-27P1
Driver Model Number:	EFORE RCL040-0700B
Total Lumens:	2246.02
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.3
Input Power (W):	35.98
Input Power Factor:	0.99
Current ATHD @ 120V(%):	10%
Current ATHD @ 277V(%):	N/A
Efficacy:	62.42
Color Rendering Index (CRI):	96
Correlated Color Temperature (K):	2615
Chromaticity Coordinate x:	0.4647
Chromaticity Coordinate y:	0.4083
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:45

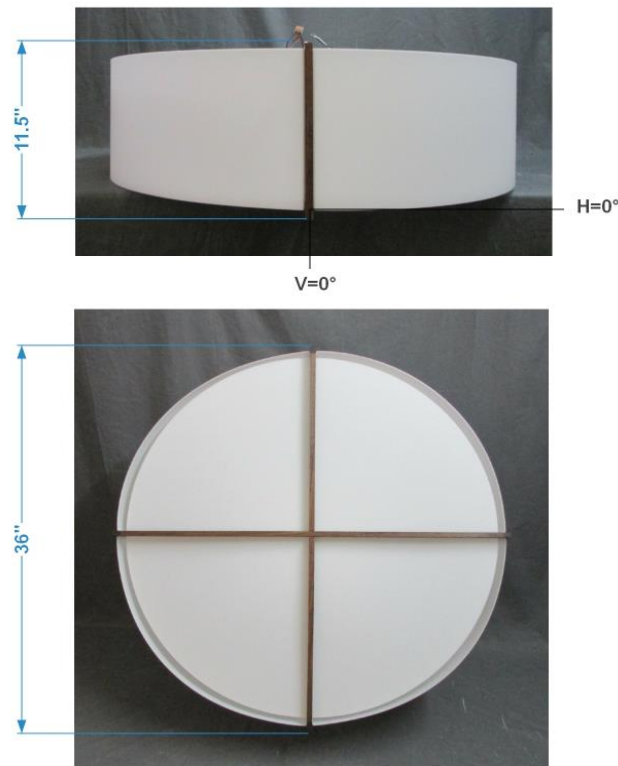
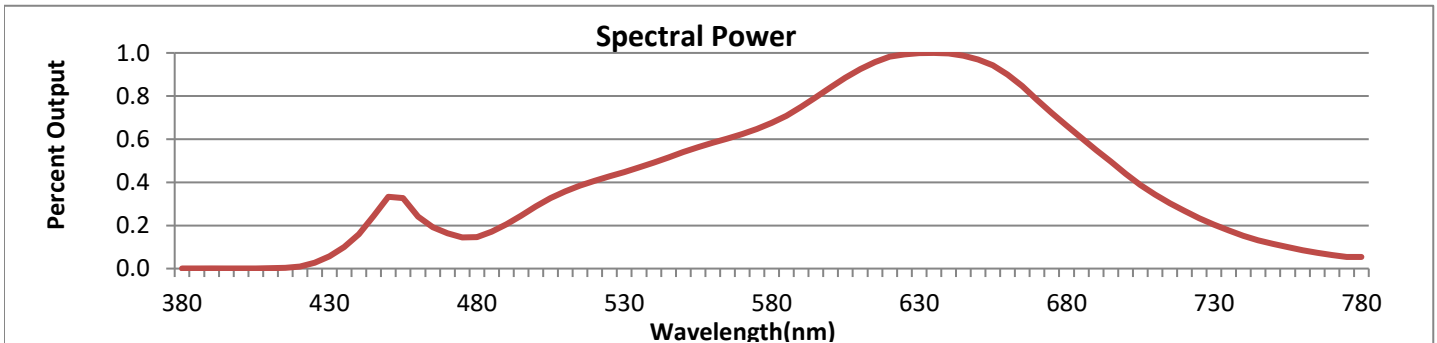


FIG. 1 LUMINAIRE



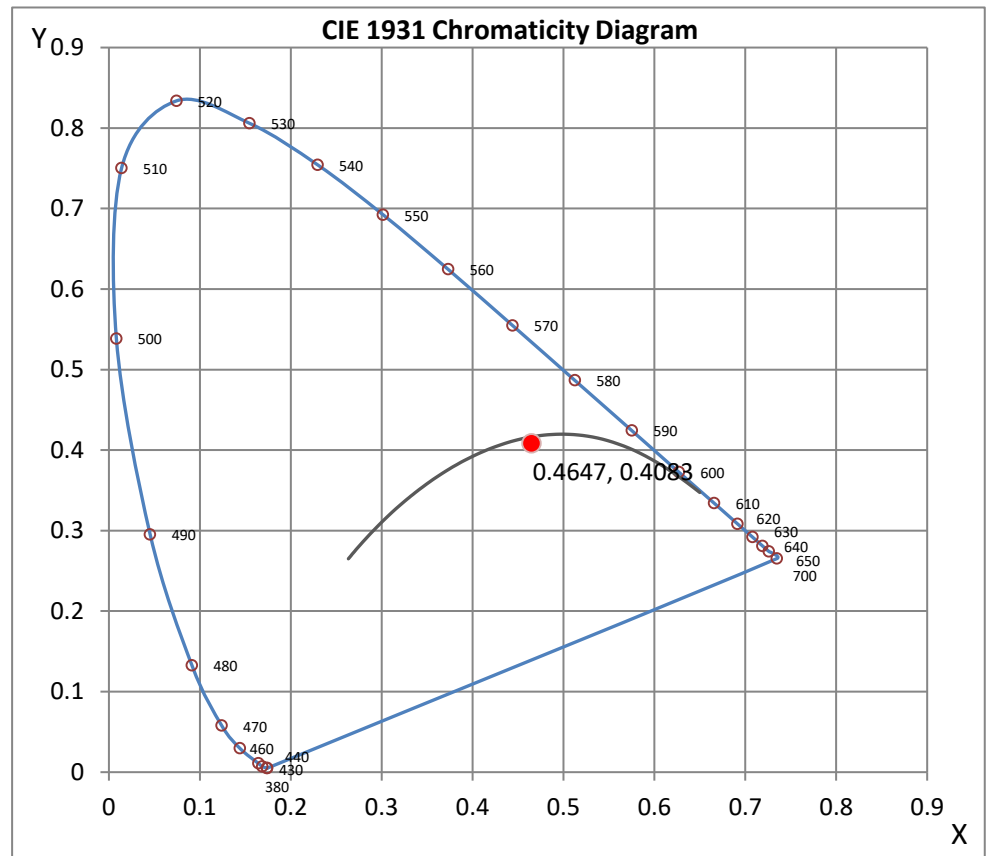
Wavelength	W/m ² nm	440	0.1590	510	0.3587	580	0.6757	650	0.9695	720	0.2678
380	0.0009	450	0.3332	520	0.4073	590	0.7496	660	0.9003	730	0.2035
390	0.0008	460	0.2411	530	0.4475	600	0.8411	670	0.7830	740	0.1519
400	0.0009	470	0.1644	540	0.4923	610	0.9257	680	0.6638	750	0.1148
410	0.0016	480	0.1463	550	0.5399	620	0.9822	690	0.5494	760	0.0855
420	0.0097	490	0.2049	560	0.5831	630	0.9990	700	0.4398	770	0.0632
430	0.0562	500	0.2883	570	0.6238	640	0.9977	710	0.3432	780	0.0545

CRI & CCT

x	0.4647
y	0.4083
u'	0.2667
v'	0.5272
CRI	96.00
CCT	2615
Duv	-0.00120

R Values

R1	97.26
R2	98.04
R3	96.96
R4	96.77
R5	97.01
R6	97.52
R7	94.88
R8	89.63
R9	77.48
R10	94.33
R11	96.87
R12	89.00
R13	97.66
R14	97.29



Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : Joseph Shin

Test Report Released by:



Jeff Ahn
Engineering Manager

Test Report Reviewed by:



Steve Kang
Quality Assurance

**Attached are photometric data reports. Total number of pages: 9*



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Photometric Test Report

IES INDOOR REPORT

PHOTOMETRIC FILENAME : L061801702.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L061801702
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 6/29/2018
[MANUFAC] Cerno LLC
[LUMCAT] 08-100-36W-27P1
[LUMINAIRE] Plura 36 Integrated LED
[BALLASTCAT] EFORE RCL040-0700B
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 120VAC, 35.98W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2246
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	62
Total Luminaire Watts	35.98
Ballast Factor	1.00
CIE Type	General Diffuse
Spacing Criterion (0-180)	N.A.
Spacing Criterion (90-270)	N.A.
Spacing Criterion (Diagonal)	N.A.
Basic Luminous Shape	Circular w/ Sides
Luminous Length (0-180)	1.98 ft (Diameter)
Luminous Width (90-270)	1.98 ft (Diameter)
Luminous Height	1.46 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	708	701	711
55	598	588	603
65	499	491	505
75	389	381	395
85	297	294	301

IES INDOOR REPORT
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CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	384	384	384	384	384
5	375	375	375	375	375
10	370	370	370	370	371
15	367	367	366	367	367
20	360	359	358	359	360
25	349	347	346	347	349
30	335	333	332	334	336
35	319	317	316	317	320
40	300	297	297	298	301
45	278	275	275	276	279
50	254	251	250	252	255
55	230	227	226	228	232
60	209	209	215	212	210
65	182	179	179	180	184
70	156	153	152	154	158
75	130	127	127	129	132
80	107	104	104	105	108
85	87	85	86	87	88
90	82	81	82	83	84
95	93	91	92	91	91
100	103	102	103	103	105
105	115	114	114	115	116
110	129	128	129	129	130
115	147	145	147	146	147
120	161	160	161	160	161
125	170	168	169	169	170
130	178	178	180	180	180
135	181	180	179	180	181
140	184	184	183	185	185
145	177	176	175	176	177
150	175	174	173	174	175
155	175	174	173	174	175
160	174	174	173	174	174
165	172	172	171	172	172
170	168	168	168	168	168
175	159	159	159	159	159
180	156	156	156	156	156

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	139.25	N.A.	6.20
0-30	299.49	N.A.	13.30
0-40	498.05	N.A.	22.20
0-60	916.96	N.A.	40.80
0-80	1233.16	N.A.	54.90
0-90	1331.36	N.A.	59.30
10-90	1295.63	N.A.	57.70
20-40	358.79	N.A.	16.00
20-50	571.81	N.A.	25.50
40-70	598.76	N.A.	26.70
60-80	316.19	N.A.	14.10
70-80	136.35	N.A.	6.10
80-90	98.21	N.A.	4.40
90-110	222.30	N.A.	9.90
90-120	366.54	N.A.	16.30
90-130	518.42	N.A.	23.10
90-150	770.06	N.A.	34.30
90-180	914.66	N.A.	40.70
110-180	692.36	N.A.	30.80
0-180	2246.02	N.A.	100.00

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	35.73
10-20	103.52
20-30	160.24
30-40	198.56
40-50	213.02
50-60	205.90
60-70	179.84
70-80	136.35
80-90	98.21
90-100	100.42
100-110	121.88
110-120	144.23
120-130	151.88
130-140	140.01
140-150	111.62
150-160	80.51
160-170	48.63
170-180	15.46

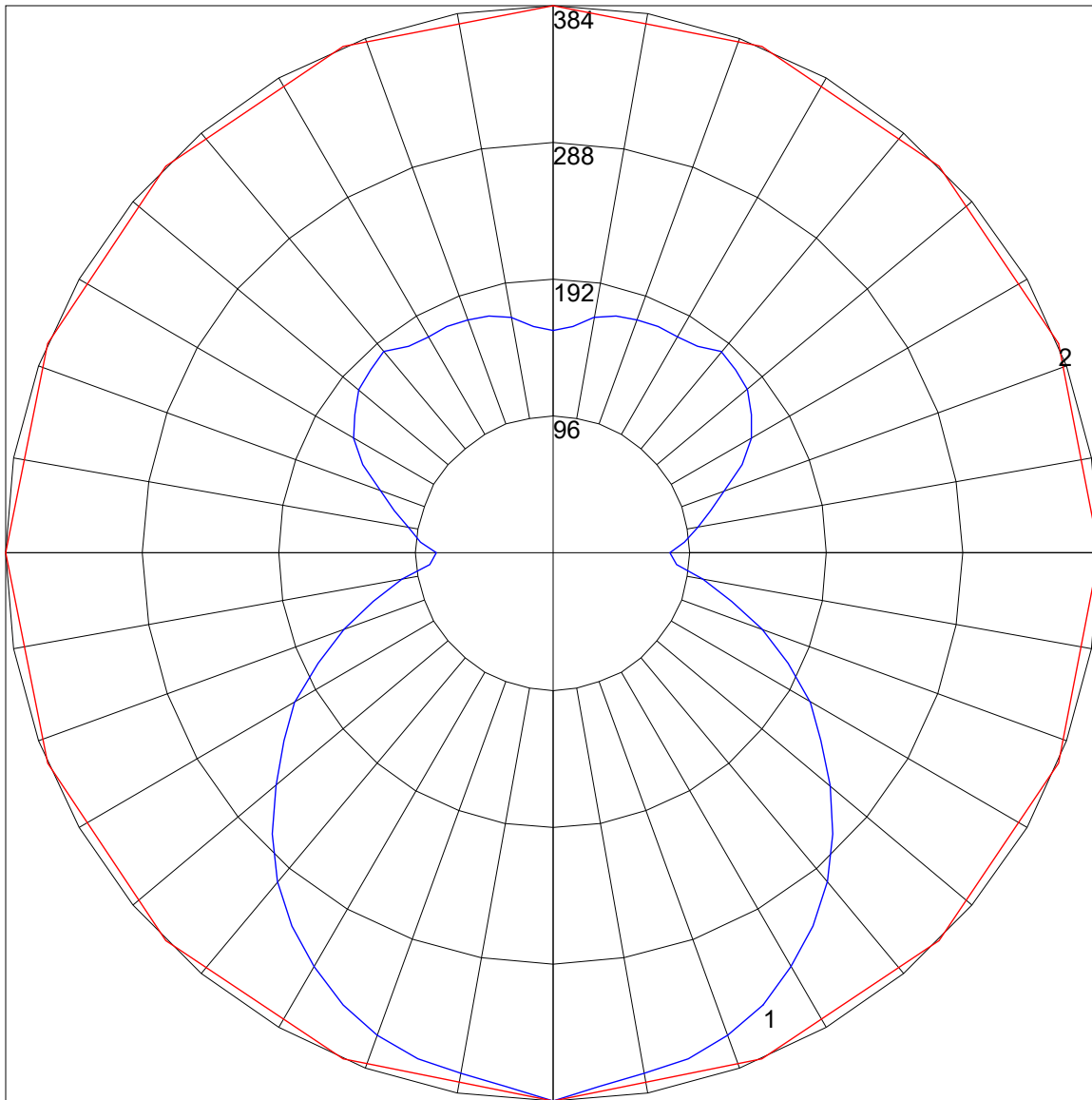
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	109	109	109	109	102	102	102	102	88	88	88	76	76	76	65	65	65	59
1	98	93	88	84	91	87	82	79	75	72	69	64	62	60	54	53	51	46
2	89	80	73	67	82	75	68	63	65	60	56	55	52	48	47	44	41	37
3	80	70	62	55	74	65	58	52	56	51	46	48	44	40	41	37	35	31
4	73	61	53	46	68	57	50	44	50	44	39	43	38	34	36	32	29	26
5	67	54	46	39	62	51	43	37	44	38	33	38	33	29	32	28	25	22
6	62	49	40	34	57	46	38	32	40	33	29	34	29	25	29	25	22	19
7	57	44	35	29	53	41	33	28	36	30	25	31	26	22	27	22	19	17
8	53	40	32	26	49	37	30	25	33	27	22	28	23	20	24	20	17	15
9	49	36	28	23	46	34	27	22	30	24	20	26	21	18	22	18	15	13
10	46	33	26	21	43	31	24	20	28	22	18	24	19	16	21	17	14	12

POLAR GRAPH



Maximum Candela = 384 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)