

REPORT NUMBER: ITL85086  
ISSUE DATE: 07/21/15  
PREPARED FOR: STONE LIGHTING LLC  
CATALOG NUMBER: WS163PCLED18

PAGE: 1 OF 5

LUMINAIRE: FABRICATED CYLINDRICAL SPECULAR METAL HOUSING WITH MACHINED SPECULAR METAL TOP AND BOTTOM END CAPS, FABRICATED SPECULAR WALL MOUNTING PLATE, FORMED SEMI-DIFFUSE METAL HEAT SINK MOUNTING BRACKET, EXTRUDED DIFFUSE FINNED METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH 48 LEDs, HOLOGRAPHIC PLASTIC LENS.

LAMPS: FORTY-EIGHT WHITE LIGHT EMITTING DIODES (LEDs), AIMED AT THE HORIZON.

INPUT ELECTRICAL: 120.0 VOLTS, 18.3 WATTS, 0.153 AMPS

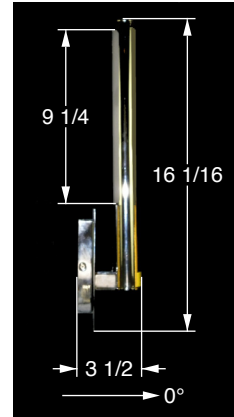
MOUNTING: WALL

LED DRIVER: ESPEN TECHNOLOGY VEL19070120HDA-2

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120VAC, 60Hz) TO THE DRIVER.

TEST PROCEDURE: IESNA LM-79-08

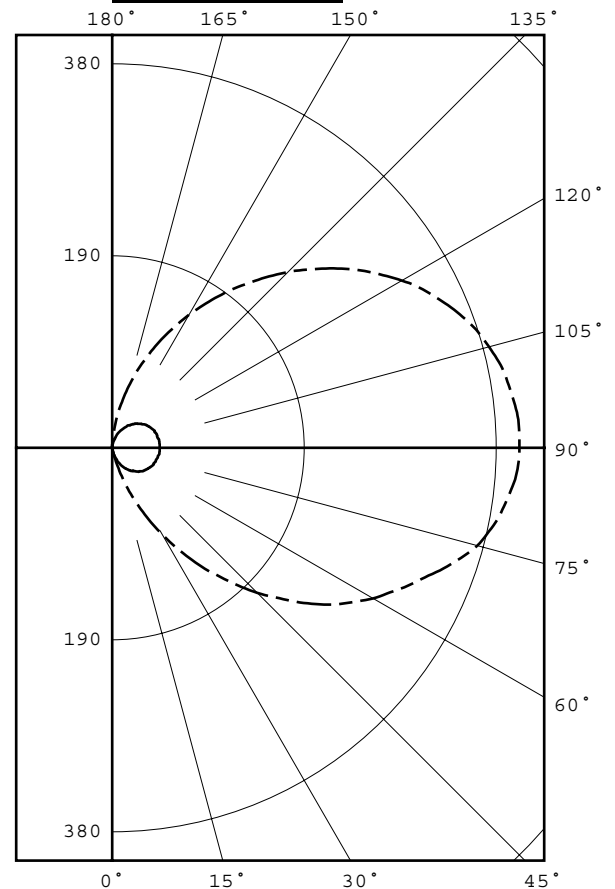
TEST DISTANCE = 20.0 FEET



CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0	
0	0	0	0	0	0	
5	0	0	0	2	0	0
15	0	12	8	1	12	3
25	0	13	17	30	67	12
35	0	14	26	72	133	29
45	0	12	33	117	203	52
55	0	10	39	161	270	79
65	0	7	43	200	323	103
75	0	3	45	229	374	123
85	0	0	47	249	399	135
90	0	0	47	251	403	
95	0	0	47	251	402	136
105	0	0	46	242	386	127
115	0	0	44	222	353	110
125	0	0	40	193	305	86
135	0	0	34	158	246	61
145	0	0	27	119	183	37
155	0	0	18	81	121	19
165	0	1	9	44	63	6
175	0	1	2	8	12	1
180	1	1	1	1	1	

FLUX



LEGEND:  
0-deg    - - - - -  
90-deg    = = = = =  
180-deg    - - - - -

ZONAL LUMEN SUMMARY

ZONE	LUMENS	% FIXT
0- 30	15	1.4
0- 40	45	4.0
0- 60	176	15.7
0- 90	536	48.0
90-120	372	33.3
90-130	458	41.0
90-150	556	49.8
90-180	582	52.0
0-180	1118	100.0

EFFICACY = 61.1 lm/W  
CIE TYPE - GENERAL DIFFUSE

Checked       M KLOPF        
Approved       R BEATTIE        
Lighting Engineer



INDEPENDENT TESTING LABORATORIES, INC.  
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CANDELA DISTRIBUTION  
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
0.0	0	0	0	0	0	0	0	0	0
5.0	0	0	0	0	0	2	2	0	0
10.0	0	0	7	8	4	11	5	0	0
15.0	0	1	12	11	8	19	1	8	12
20.0	0	4	13	11	12	28	12	29	38
25.0	0	7	13	10	17	38	30	55	67
30.0	0	11	14	10	22	49	50	84	99
35.0	0	10	14	9	26	59	72	115	133
40.0	0	11	13	9	30	70	94	146	167
45.0	0	11	12	8	33	80	117	178	203
50.0	0	10	12	8	36	89	139	209	237
55.0	0	9	10	8	39	98	161	241	270
60.0	0	8	9	8	41	106	181	267	298
65.0	0	6	7	7	43	113	200	290	323
70.0	0	4	5	7	44	119	215	312	349
75.0	0	2	3	7	45	124	229	334	374
80.0	0	1	1	6	46	128	242	349	389
85.0	0	1	0	6	47	131	249	366	399
90.0	0	0	0	6	47	132	251	364	403
95.0	0	0	0	6	47	132	251	361	402
100.0	0	0	0	6	47	131	247	355	396
105.0	0	0	0	6	46	128	242	346	386
110.0	0	0	0	6	45	124	233	334	372
115.0	0	0	0	6	44	119	222	317	353
120.0	0	0	0	5	42	112	208	296	331
125.0	0	0	0	5	40	105	193	273	305
130.0	0	0	0	5	37	96	176	248	276
135.0	0	0	0	4	34	86	158	221	246
140.0	0	0	0	4	30	76	139	194	214
145.0	0	0	0	3	27	65	119	165	183
150.0	0	0	0	3	22	54	100	137	152
155.0	0	0	0	2	18	44	81	110	121
160.0	0	1	0	2	14	33	62	83	91
165.0	0	1	1	1	9	23	44	58	63
170.0	0	1	1	1	6	13	24	34	37
175.0	0	1	1	1	2	5	8	11	12
180.0	1	1	1	1	1	1	1	1	1



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5-DEGREE  
ZONAL LUMEN SUMMARY

0- 5	0
5- 10	0
10- 15	1
15- 20	2
20- 25	4
25- 30	8
30- 35	12
35- 40	17
40- 45	23
45- 50	29
50- 55	36
55- 60	43
60- 65	49
65- 70	54
70- 75	59
75- 80	64
80- 85	67
85- 90	69
90- 95	68
95-100	67
100-105	65
105-110	62
110-115	57
115-120	52
120-125	46
125-130	40
130-135	34
135-140	27
140-145	21
145-150	16
150-155	11
155-160	7
160-165	4
165-170	2
170-175	1
175-180	0

10-DEGREE  
ZONAL LUMEN SUMMARY

0- 10	0
0- 20	3
0- 30	15
0- 40	45
0- 50	97
0- 60	176
0- 70	278
0- 80	401
0- 90	536
0-100	672
0-110	799
0-120	909
0-130	995
0-140	1055
0-150	1093
0-160	1111
0-170	1117
0-180	1118



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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	107	107	107	107	98	98	98	98	82	82	82	68	68	68	54	54	54	48
1	91	84	78	72	83	77	71	66	63	58	54	50	47	44	38	36	33	28
2	80	70	61	54	73	64	56	49	51	45	40	40	36	32	30	27	23	18
3	72	60	50	42	65	54	45	39	43	37	31	34	29	24	25	21	17	13
4	65	51	42	34	58	47	38	31	37	30	25	29	23	19	21	17	13	9
5	59	45	35	28	53	41	32	25	33	26	20	25	20	15	18	14	11	7
6	54	40	30	23	49	36	27	21	29	22	17	22	17	13	16	12	9	5
7	50	35	26	20	45	32	24	18	26	19	14	20	15	11	14	10	7	4
8	46	32	23	17	41	29	21	15	23	17	12	18	13	9	13	9	6	3
9	42	29	20	15	38	26	19	13	21	15	11	16	11	8	12	8	5	3
10	40	26	18	13	36	24	17	12	19	13	9	15	10	7	11	7	4	2

ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS TEST SAMPLE.

NOTE: THE ZONAL CAVITY CALCULATION TECHNIQUE IS ACCURATE WHEN LUMINAIRES WITH SYMMETRIC CANDELA DISTRIBUTIONS ARE EMPLOYED AND WHEN THE LUMINAIRES ARE LOCATED SYMMETRICALLY THROUGHOUT THE ROOM. THIS UNIT HAS SPECIAL CHARACTERISTICS AND THEREFORE THESE COEFFICIENTS SHOULD BE USED WITH CAUTION.



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PREPARED FOR: STONE LIGHTING LLC  
CATALOG NUMBER: WS163PCLED18

ADDRESS: 2630 FLOSSMOOR ROAD  
SUITE 102  
FLOSSMOOR, IL 60422

LUMINAIRE: FORMED SEMI-DIFFUSE METAL HEAT SINK MOUNTING BRACKET, EXTRUDED  
DIFFUSE FINNED METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH 48 LEDS.

LAMP: FORTY-EIGHT WHITE LIGHT EMITTING DIODES (LEDS), AIMED AT THE  
HORIZON.

DRIVER: ESPEN TECHNOLOGY VEL19070120HDA-2

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT  
VOLTAGE (120VAC, 60Hz) TO THE DRIVER.

INSTRUMENTS:	Associated Power Technologies APT5040 AC Power Source	Calibration Due:	N/A
	Yokogawa WT210 Digital Power Meter #6		11/30/15
	Ocean Optics QE65000 Spectroradiometer		06/24/16
	ITL 2.0m Diameter Integrating Sphere S20-2, 4PI Geometry		06/24/16

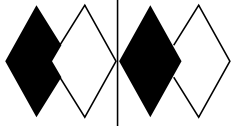
OBJECT OF TEST: Measure the Absolute Flux in lumens\*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Index (CRIa,1-14), Chromaticity Coordinates (x,y; u',v'), ANSI C78.377 Duv, Total Radiant Flux\*, Scotopic / Photopic Lumen Ratio, and electrical data including ANSI C82.77-2002 Power Factor (PF) and Total Harmonic Distortion (THD) to the test sample.

PROCEDURE: The test sample was provided by the customer and had an unknown number of operating hours. The test sample was mounted inside the integrating sphere and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were recorded and averaged. Readings were taken with the test sample operating at 120VAC input in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. All data are traceable to the National Institute of Standards and Technology.

RESULTS: (continued subsequent pages)

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Checked	<i>N WHITE</i>
Approved	<i>P O'CONNOR</i> Sphere Lab Supervisor



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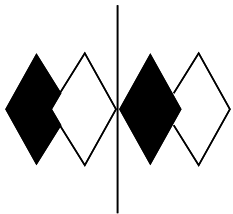
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**RESULTS:**

<b>PHOTOMETRIC</b>	
Total Integrated Flux (lumens)	1730 *
<b>SPECTRORADIOMETRIC</b>	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4239
Chromaticity Ordinate y	0.3971
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2451
Chromaticity Ordinate v'	0.5167
Correlated Color Temp CCT (K)	3175
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	5963 *
Scotopic / Photopic Lumen Ratio	1.530
<b>ELECTRICAL</b>	
Input Voltage (Volts AC )	120.0
Input Current (Amps AC )	0.155
Input Power (Watts)	18.5
Input Power Factor (%)	99.5
Input Current THD (%)	6.6
Input Voltage THD (%)	0.2
EFFICACY (lumens/Watt)	93.5

<b>COLOR RENDERING INDICES</b>		<b>CRI</b>
Ra (Average 1-8)		93
R1	Light greyish red	93
R2	Dark greyish yellow	96
R3	Strong yellowish green	97
R4	Moderate yellowish green	93
R5	Light bluish green	93
R6	Light blue	95
R7	Light violet	93
R8	Light reddish purple	83
R9	Strong red	61
R10	Strong yellow	89
R11	Strong green	94
R12	Strong blue	84
R13	Light yellowish pink (skin)	93
R14	Moderate olive green (leaf)	98

\*NOTE: Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even when these effects are compensated for, are likely to have a greater variation in results compared to the flux output calculated from a goniophotometric exploration since these artifacts do not affect the goniophotometric results.



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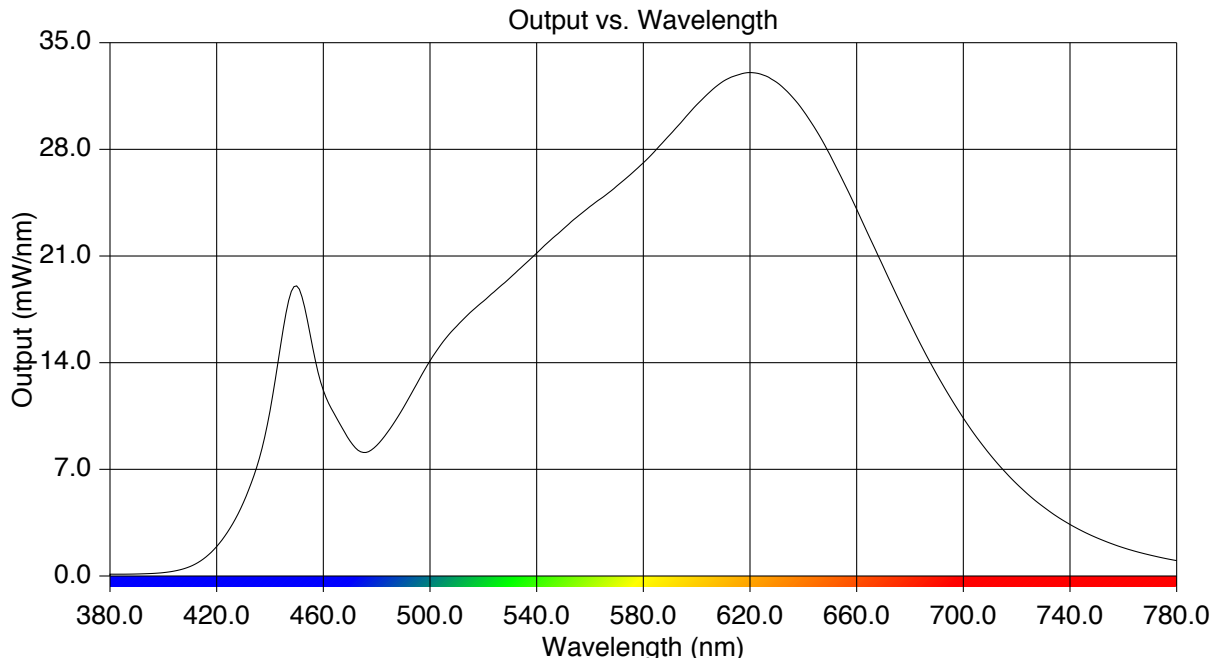
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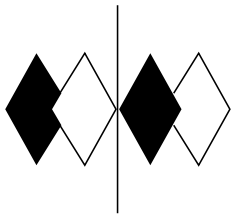
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### RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.120	515	17.279	650	27.637
385	0.119	520	18.026	655	25.891
390	0.131	525	18.799	660	24.068
395	0.160	530	19.566	665	22.167
400	0.221	535	20.376	670	20.297
405	0.356	540	21.187	675	18.420
410	0.619	545	22.011	680	16.607
415	1.116	550	22.778	685	14.863
420	1.932	555	23.540	690	13.243
425	3.135	560	24.247	695	11.750
430	4.810	565	24.880	700	10.364
435	7.129	570	25.585	705	9.101
440	10.826	575	26.319	710	7.971
445	16.256	580	27.114	715	6.957
450	19.038	585	28.014	720	6.048
455	15.904	590	28.964	725	5.241
460	12.186	595	29.937	730	4.542
465	10.357	600	30.921	735	3.918
470	8.861	605	31.773	740	3.381
475	8.106	610	32.470	745	2.914
480	8.564	615	32.858	750	2.510
485	9.659	620	33.041	755	2.159
490	11.039	625	32.873	760	1.855
495	12.593	630	32.399	765	1.595
500	14.120	635	31.604	770	1.374
505	15.398	640	30.530	775	1.178
510	16.393	645	29.199	780	1.010





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## CIE Chromaticity Diagram

