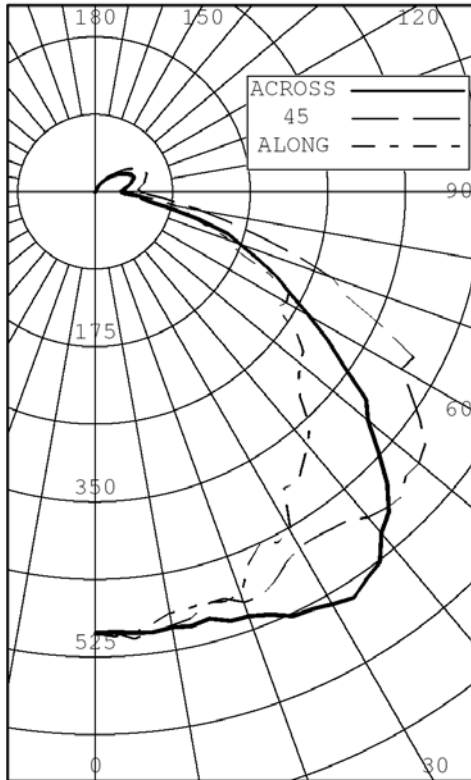




CERTIFIED TEST REPORT No. 26974

GREEN MACHINE - LED SURFACE MOUNT LUMINAIRE, CAT# WP405
WITH SPECULAR REFLECTOR AND PLASTIC PRISMATIC DROP LENS
SIXTEEN LEDS. LUMINAIRE OUTPUT = 2096 LMS
LUMINAIRE OPERATING AT 120 VAC AND 40.9 WATTS



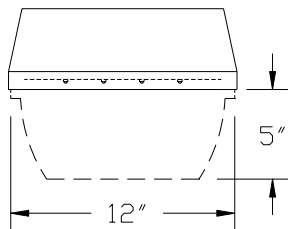
INTENSITY (CANDLEPOWER) SUMMARY						OUTPUT LUMENS
ANGLE	ALONG	22.5	45	67.5	ACROSS	
0	498	498	498	498	498	
5	500	506	507	495	500	48
15	480	487	482	508	499	139
25	439	437	483	508	529	223
35	400	412	465	510	533	292
45	327	396	488	473	466	335
55	277	344	447	386	342	329
65	214	296	355	288	226	276
75	116	145	189	158	124	165
85	54	65	76	71	51	72
90	36	44	51	44	29	
95	35	43	50	46	32	48
105	45	53	59	54	42	55
115	48	51	59	53	46	51
125	39	37	45	39	36	35
135	26	22	27	21	25	19
145	14	12	11	11	14	8
155	3	2	0	2	5	1
165	0	0	0	0	0	0
175	0	0	0	0	0	0
180	0	0	0	0	0	0

ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	410	19.58
0-40	703	33.52
0-60	1366	65.18
0-90	1879	89.62
40-90	1176	56.11
60-90	513	24.45
90-180	218	10.38
0-180	2096	100.00

EFFICACY (LUMENS PER WATT): 51.3

*** THIS IS AN ABSOLUTE TEST ***



LUMINANCE SUMMARY CD./SQ.M.

ANGLE	ALONG	45	ACROSS
45	5078	7579	7236
55	4552	7340	5617
65	3851	6393	4078
75	2400	3913	2559
85	1361	1915	1269

S/MH: 1.6

SC (ALONG): 1.2, SC (ACROSS): 1.6

CERTIFIED BY:

James E. Weber III

DATE:
APR 20, 2010

PREPARED FOR:
GREEN MACHINE LIGHT ENGINE
SANTA CLARA, CA

TESTED IN ACCORDANCE WITH IES PROCEDURES.

LIGHTING SCIENCES, INC.
 7826 E. EVANS RD.
 SCOTTSDALE, AZ, USA 85260

CERTIFIED TEST REPORT No. 26974

GREEN MACHINE - LED SURFACE MOUNT LUMINAIRE, CAT# WP405
 WITH SPECULAR REFLECTOR AND PLASTIC PRISMATIC DROP LENS
 SIXTEEN LEDS. LUMINAIRE OUTPUT = 2096 LMS
 LUMINAIRE OPERATING AT 120 VAC AND 40.9 WATTS

INTENSITY (CANDLEPOWER) DATA

ANGLE	PLANE						OUTPUT LUMENS
	ALONG	22.5	45	67.5	ACROSS	AVERAGE	
0	498	498	498	498	498	498	
5	500	506	507	495	500	502	48
10	483	480	497	516	499	496	
15	480	487	482	508	499	492	139
20	482	472	493	514	510	494	
25	439	437	483	508	529	478	223
30	440	447	463	523	537	480	
35	400	412	465	510	533	463	292
40	373	414	479	501	502	458	
45	327	396	488	473	466	438	335
50	302	366	476	422	401	404	
55	277	344	447	386	342	371	329
60	249	309	399	318	278	323	
65	214	296	355	288	226	290	276
70	166	206	285	210	175	218	
75	116	145	189	158	124	153	165
80	94	112	121	85	61	99	
85	54	65	76	71	51	66	72
90	36	44	51	44	29	43	
95	35	43	50	46	32	43	48
100	40	49	56	50	38	48	
105	45	53	59	54	42	52	55
110	48	54	62	56	46	55	
115	48	51	59	53	46	53	51
120	43	45	53	47	41	46	
125	39	37	45	39	36	40	35
130	33	29	36	29	30	31	
135	26	22	27	21	25	24	19
140	19	17	19	15	19	17	
145	14	12	11	11	14	12	8
150	9	7	2	7	9	6	
155	3	2	0	2	5	2	1
160	0	0	0	0	0	0	
165	0	0	0	0	0	0	0
170	0	0	0	0	0	0	
175	0	0	0	0	0	0	0
180	0	0	0	0	0	0	

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AVERAGE LUMINANCE DATA

CD./SQ.M (FOOTLAMBERTS)

ANGLE	ALONG	22.5	45	67.5	ACROSS
0	6826 (1992)	6826 (1992)	6826 (1992)	6826 (1992)	6826 (1992)
30	6675 (1948)	6772 (1976)	7013 (2046)	7926 (2313)	8144 (2377)
40	5702 (1664)	6328 (1846)	7330 (2139)	7668 (2238)	7679 (2241)
45	5078 (1482)	6152 (1795)	7579 (2212)	7342 (2143)	7236 (2112)
50	4799 (1400)	5821 (1698)	7581 (2212)	6716 (1960)	6388 (1864)
55	4552 (1328)	5655 (1650)	7340 (2142)	6338 (1849)	5617 (1639)
60	4273 (1247)	5301 (1547)	6837 (1995)	5454 (1591)	4756 (1388)
65	3851 (1124)	5340 (1558)	6393 (1865)	5191 (1515)	4078 (1190)
70	3186 (930)	3952 (1153)	5470 (1596)	4037 (1178)	3359 (980)
75	2400 (700)	2999 (875)	3913 (1142)	3258 (951)	2559 (747)
80	2112 (616)	2531 (738)	2727 (795)	1922 (561)	1381 (403)
85	1361 (397)	1621 (473)	1915 (558)	1783 (520)	1269 (370)

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COEFFICIENTS OF UTILIZATION

ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE = .20

CC WALL	90				80				70				50				30				10				0
	70	50	30	10	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	0	1.2	0.1	2.0	1.2	0.1	1.7	1.1	1.7	1.1	1.3	1.1	1.3	1.1	1.0	0.5	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
	1	1.1	0.1	0.4	0.9	0.9	1.0	0.6	1.0	0.9	1.0	0.2	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	
	2	0.9	0.9	0.1	0.8	0.3	0.9	0.6	0.8	0.8	0.9	0.3	0.8	0.5	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	
	3	0.9	0.0	0.7	0.9	0.7	0.0	0.8	0.7	0.7	0.6	0.8	0.4	0.7	0.4	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.5	
	4	0.8	0.3	0.7	0.0	0.6	0.8	0.0	0.6	0.8	0.5	0.7	0.7	0.6	0.6	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	
	5	0.7	0.6	0.2	0.6	0.2	0.5	0.7	0.3	0.6	0.5	0.7	0.0	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	
	6	0.7	0.0	0.5	0.5	0.4	0.5	0.6	0.7	0.5	0.4	0.5	0.6	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	
	7	0.6	0.3	0.4	0.9	0.3	0.6	0.1	0.4	0.7	0.3	0.5	0.9	0.4	0.3	0.6	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.2	
	8	0.5	0.9	0.4	0.3	0.5	0.2	0.5	0.7	0.4	0.3	0.4	0.5	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	
	9	0.5	0.4	0.4	0.0	0.3	0.5	0.2	0.3	0.4	0.3	0.5	0.0	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2		
	10	0.5	0.0	0.3	0.6	0.2	0.5	0.0	0.4	0.7	0.3	0.4	0.2	0.3	0.2	0.5	0.2	0.3	0.2	0.2	0.2	0.2	0.2		

THE ABOVE COEFFICIENTS HAVE BEEN CALCULATED BASED ON LUMINAIRE LUMENS
 BECAUSE IN AN ABSOLUTE TEST THE BARE LAMP LUMENS ARE UNKNOWN.
 LIGHTING DESIGN CALCULATIONS MADE USING THESE COEFFICIENTS SHOULD
 THEREFORE USE THE LUMINAIRE LUMENS IN THE CALCULATION FORMULA

LUMINAIRE INPUT WATTS 40.9

LABORATORY RESULTS MAY NOT BE REPRESENTATIVE OF FIELD PERFORMANCE.
 BALLAST AND FIELD FACTORS HAVE NOT BEEN APPLIED.

TEST DISTANCE EXCEEDS FIVE TIMES THE GREATEST
 LUMINOUS OPENING OF LUMINAIRE.

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SIXTEEN LEDS. LUMINAIRE OUTPUT = 2096 LMS
LUMINAIRE OPERATING AT 120 VAC AND 40.9 WATTS

ELECTRICAL MEASUREMENTS

INPUT VOLTAGE:	120.0	VOLTS AC
INPUT CURRENT:	0.36	AMPS
INPUT POWER:	40.9	WATTS
POWER FACTOR:	94.7	PERCENT
TOTAL HARMONIC DISTORTION:	5.78	PERCENT
OFF STATE POWER:	0.00	WATTS

LIGHT OUTPUT

LUMENS:	2096	lm
EFFICACY:	51.3	lm/W

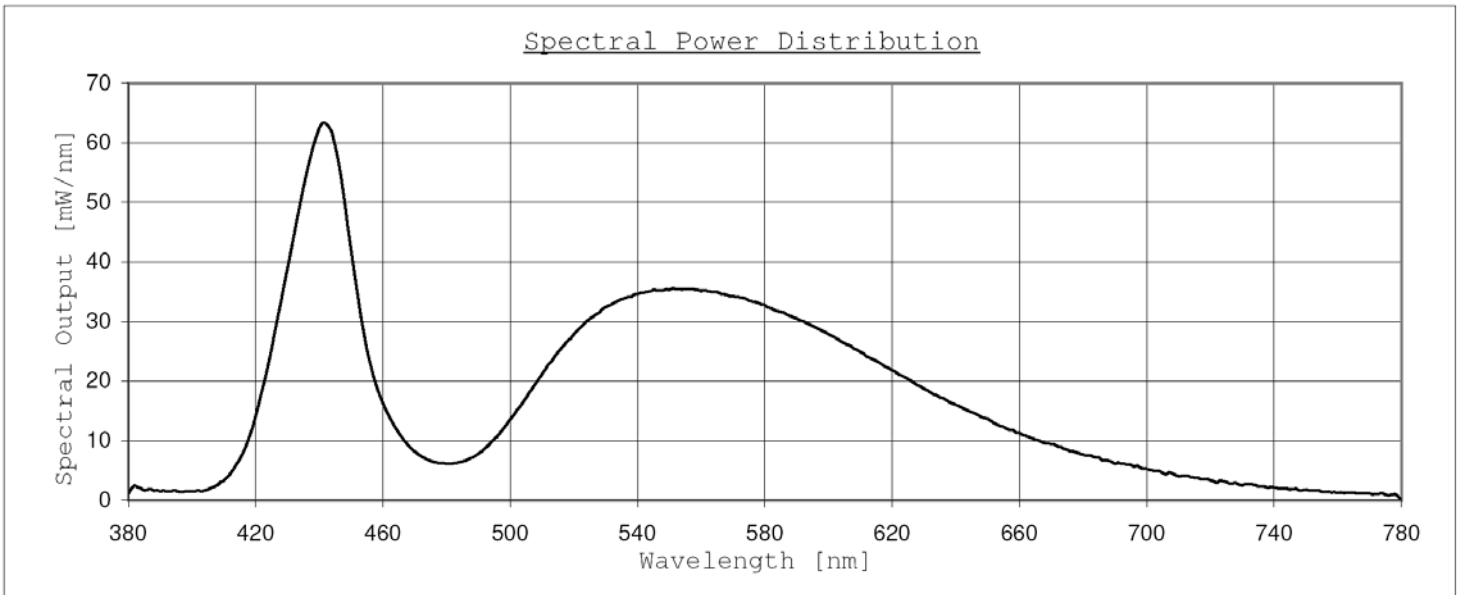
SPECTRAL MEASUREMENTS

X:	0.3272	
y:	0.3356	
u/u':	0.2054	
v:	0.3160	
v':	0.4740	
Duv:	0.0003	
CRI (R _a):	70.6	
CRI (R _g):	-13.9	
CCT:	5739	K
RADIANT FLUX:	6813	mW

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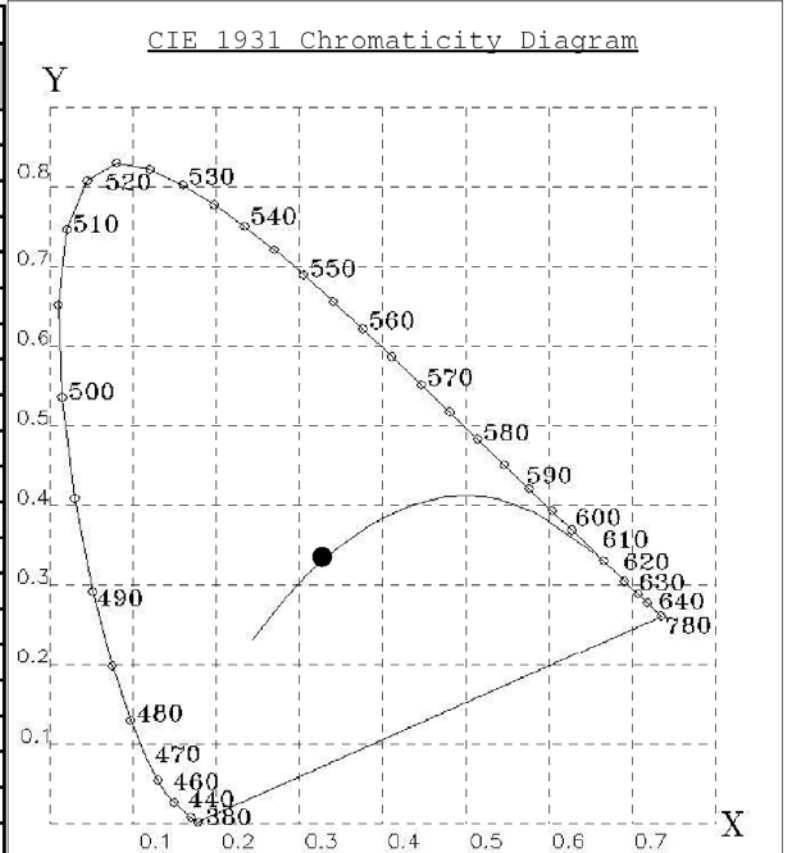
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Tabulated Spectral Power Distribution

Wavelength [nm]	[mW/nm]	Wavelength [nm]	[mW/nm]
380	1.12109	590	30.50926
390	1.51070	600	27.90207
400	1.48647	610	24.91739
410	3.28139	620	21.81300
420	14.08029	630	18.71228
430	38.90514	640	16.02063
440	62.55713	650	13.70574
450	42.04111	660	11.30712
460	16.28575	670	9.46226
470	8.18437	680	7.66073
480	6.13461	690	6.06998
490	7.82818	700	5.24743
500	13.60879	710	4.04518
510	21.20637	720	3.35336
520	27.89840	730	2.49482
530	32.42756	740	2.16360
540	34.65726	750	1.81842
550	35.36818	760	1.25292
560	35.14418	770	1.12954
570	34.28050	780	0.00000
580	32.78816		



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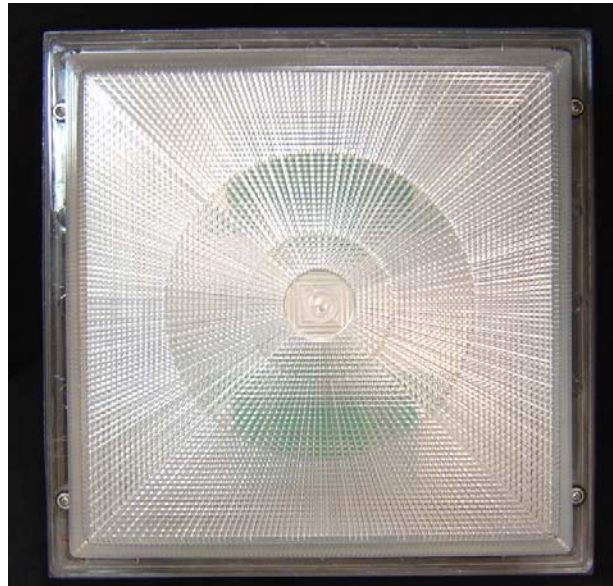
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SIDE VIEW



LUMINOUS OPENING



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All testing was conducted in accordance with LM-79-08,

Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products as published by the Illuminating Engineering Society of North America (IESNA).

The condition of the item tested was new. Stabilization time before testing exceeded 16 hours.

The test results (luminous distribution and flux) were obtained by using a Lighting Sciences series 6000 Type C Moving Mirror Goniophotometer

- The photometric reference standard used is a set of three incandescent luminous intensity standard lamps calibrated and traceable to the U.S. National Institute of Standards and Technology.

The test results (colorimetric and luminous flux) were obtained by using a Lighting Sciences model 4000 Integrating Sphere of either 1 or 2 meters diameter, having an internal reflectance exceeding 0.80. 4π geometry was used. Correction factors were applied for spectral mismatch and self-absorption. The spectroradiometer employed was a LSC model 500E having a bandwidth of .84.

- The photometric reference standard used is a set of three incandescent luminous flux standard lamps calibrated and traceable to the U.S. National Institute of Standards and Technology.
- The colorimetric reference standard used is an incandescent spectral standard lamp calibrated and traceable to the U.S. National Institute of Standards and Technology.

Power measurements were obtained with a Yokogawa WT210 power analyzer.

Ambient temperature during testing was $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured using an Omega model DP460.

Calibration certificates are on file at the laboratories of Lighting Sciences Inc.