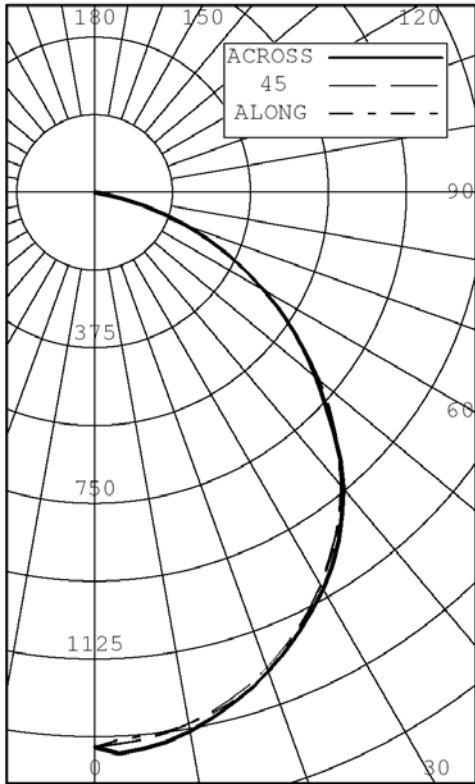




CERTIFIED TEST REPORT No. 26975

GREEN MACHINE - LED AREA LUMINAIRE, CAT# SB329-400
WITH SPECULAR REFLECTOR AND CLEAR FLAT GLASS LENS
TWELVE LEDS. LUMINAIRE OUTPUT = 3308 LMS
LUMINAIRE OPERATING AT 120 VAC AND 60.5 WATTS



INTENSITY (CANDLEPOWER) SUMMARY						OUTPUT LUMENS
ANGLE	ALONG	22.5	45	67.5	ACROSS	
0	1338	1338	1338	1338	1338	
5	1317	1326	1325	1333	1347	128
10	1302	1304	1301	1308	1320	
15	1272	1270	1264	1270	1277	358
20	1223	1225	1217	1224	1227	
25	1161	1165	1159	1166	1167	535
30	1091	1095	1089	1101	1102	
35	1014	1013	1010	1024	1024	633
40	921	921	922	927	931	
45	813	818	818	819	812	628
50	698	708	707	697	695	
55	581	591	585	586	586	523
60	461	467	470	472	468	
65	350	353	356	355	352	350
70	241	244	243	242	237	
75	134	133	132	129	125	141
80	41	43	46	43	29	
85	8	9	5	6	2	12
90	0	0	0	0	0	

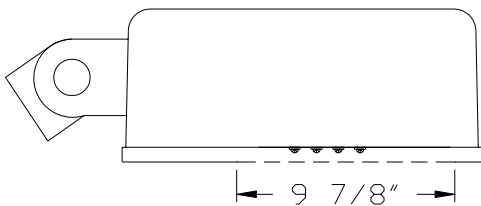
ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1021	30.85
0-40	1654	50.00
0-60	2805	84.80
0-90	3308	100.00
40-90	1654	50.00
60-90	503	15.20
90-180	0	0.00
0-180	3308	100.00

EFFICACY (LUMENS PER WATT) : 54.7

*** THIS IS AN ABSOLUTE TEST ***

LUMINOUS LENGTH: 13.870 INS
WIDTH: 9.870 INS



LUMINANCE SUMMARY CD./SQ.M.

S/MH: 1.2
SC: 1.2

ANGLE	ALONG	45	ACROSS
45	13014	13154	13045
55	11470	11587	11605
65	9373	9558	9461
75	5848	5759	5476
85	1066	651	200

CERTIFIED BY:

Jonah E. Walker III

DATE:
APR 21, 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

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 LUMINAIRE OPERATING AT 120 VAC AND 60.5 WATTS

INTENSITY (CANDLEPOWER) DATA
 IN 2.5 DEGREE STEPS

ANGLE	PLANE						OUTPUT LUMENS
	ALONG	22.5	45	67.5	ACROSS	AVERAGE	
0.0	1338	1338	1338	1338	1338	1338	
2.5	1321	1332	1330	1341	1355	1335	
5.0	1317	1326	1325	1333	1347	1329	128
7.5	1311	1316	1316	1323	1336	1320	
10.0	1302	1304	1301	1308	1320	1306	
12.5	1289	1289	1285	1291	1300	1290	
15.0	1272	1270	1264	1270	1277	1270	358
17.5	1250	1249	1243	1249	1255	1248	
20.0	1223	1225	1217	1224	1227	1223	
22.5	1192	1197	1188	1197	1198	1194	
25.0	1161	1165	1159	1166	1167	1164	535
27.5	1126	1131	1125	1133	1135	1130	
30.0	1091	1095	1089	1101	1102	1095	
32.5	1052	1053	1049	1064	1065	1056	
35.0	1014	1013	1010	1024	1024	1016	633
37.5	968	967	967	977	978	971	
40.0	921	921	922	927	931	924	
42.5	869	870	870	875	874	872	
45.0	813	818	818	819	812	817	628
47.5	756	765	765	757	751	760	
50.0	698	708	707	697	695	702	
52.5	643	651	647	642	642	646	
55.0	581	591	585	586	586	586	523
57.5	522	530	528	531	528	529	
60.0	461	467	470	472	468	468	
62.5	406	410	414	414	410	411	
65.0	350	353	356	355	352	354	350
67.5	296	298	299	299	295	298	
70.0	241	244	243	242	237	242	
72.5	186	186	185	182	180	184	
75.0	134	133	132	129	125	131	141
77.5	83	82	83	81	70	81	
80.0	41	43	46	43	29	42	
82.5	18	19	19	18	10	18	
85.0	8	9	5	6	2	6	12
87.5	1	1	0	0	0	0	
90.0	0	0	0	0	0	0	

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WITH SPECULAR REFLECTOR AND CLEAR FLAT GLASS LENS
TWELVE LEDS. LUMINAIRE OUTPUT = 3308 LMS
LUMINAIRE OPERATING AT 120 VAC AND 60.5 WATTS

AVERAGE LUMINANCE DATA

CD./SQ.M (FOOTLAMBERTS)

ANGLE	ALONG	22.5	45	67.5	ACROSS
0	15143 (4419)	15143 (4419)	15143 (4419)	15143 (4419)	15143 (4419)
30	14257 (4161)	14353 (4189)	14276 (4166)	14430 (4211)	14410 (4205)
40	13609 (3972)	13651 (3984)	13633 (3979)	13745 (4011)	13767 (4018)
45	13014 (3798)	13117 (3828)	13154 (3839)	13149 (3837)	13045 (3807)
50	12296 (3588)	12521 (3654)	12449 (3633)	12309 (3592)	12237 (3571)
55	11470 (3347)	11694 (3413)	11587 (3382)	11608 (3388)	11605 (3387)
60	10433 (3045)	10603 (3094)	10658 (3110)	10722 (3129)	10595 (3092)
65	9373 (2735)	9475 (2765)	9558 (2789)	9537 (2783)	9461 (2761)
70	7980 (2329)	8107 (2366)	8054 (2350)	8019 (2340)	7849 (2290)
75	5848 (1706)	5859 (1710)	5759 (1681)	5648 (1648)	5476 (1598)
80	2693 (786)	2788 (813)	3006 (877)	2839 (828)	1873 (546)
85	1066 (311)	1137 (331)	651 (190)	719 (209)	200 (58)

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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	1.221	.221	.221	.22	1.191	.191	.191	.19	1.161	.161	.161	.16	1.111	.111	.111	.11	1.061	.061	.061	.06	1.021	.021	.021	.02	1.00
	1	1.131	.091	.051	.02	1.111	.071	.031	.00	1.081	.051	.010	.98	1.000	.980	.95	0.960	.940	.92	0.930	.910	.90	0.88			
	2	1.050	.980	.920	.86	1.020	.960	.900	.85	1.000	.940	.880	.84	0.900	.860	.82	0.870	.840	.80	0.840	.810	.79	0.77			
	3	0.960	.870	.790	.73	0.940	.850	.780	.73	0.920	.840	.770	.72	0.810	.750	.71	0.780	.740	.70	0.760	.720	.68	0.67			
	4	0.890	.780	.700	.64	0.870	.770	.690	.63	0.850	.760	.690	.63	0.730	.670	.62	0.710	.660	.61	0.690	.640	.60	0.58			
	5	0.830	.700	.620	.55	0.810	.690	.610	.55	0.780	.680	.600	.55	0.660	.590	.54	0.640	.580	.54	0.620	.570	.53	0.51			
	6	0.760	.630	.550	.49	0.740	.620	.540	.48	0.730	.610	.530	.48	0.590	.530	.47	0.580	.520	.47	0.560	.510	.47	0.45			
	7	0.700	.570	.480	.43	0.680	.560	.480	.42	0.670	.550	.470	.42	0.540	.460	.41	0.520	.460	.41	0.510	.450	.41	0.39			
	8	0.650	.510	.430	.37	0.640	.510	.430	.37	0.620	.500	.420	.37	0.490	.420	.37	0.480	.410	.36	0.460	.410	.36	0.34			
	9	0.600	.470	.380	.33	0.590	.460	.380	.33	0.580	.460	.380	.33	0.440	.370	.33	0.430	.370	.32	0.420	.360	.32	0.30			
	10	0.560	.430	.340	.29	0.550	.420	.340	.29	0.540	.420	.340	.29	0.410	.340	.29	0.400	.330	.29	0.390	.330	.29	0.27			

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 60.5

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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ELECTRICAL MEASUREMENTS

INPUT VOLTAGE:	120.0	VOLTS AC
INPUT CURRENT:	0.514	AMPS
INPUT POWER:	60.5	WATTS
POWER FACTOR:	98.1	PERCENT
TOTAL HARMONIC DISTORTION:	6.08	PERCENT
OFF STATE POWER:	0.00	WATTS

LIGHT OUTPUT

LUMENS:	3308	lm
EFFICACY:	54.7	lm/W

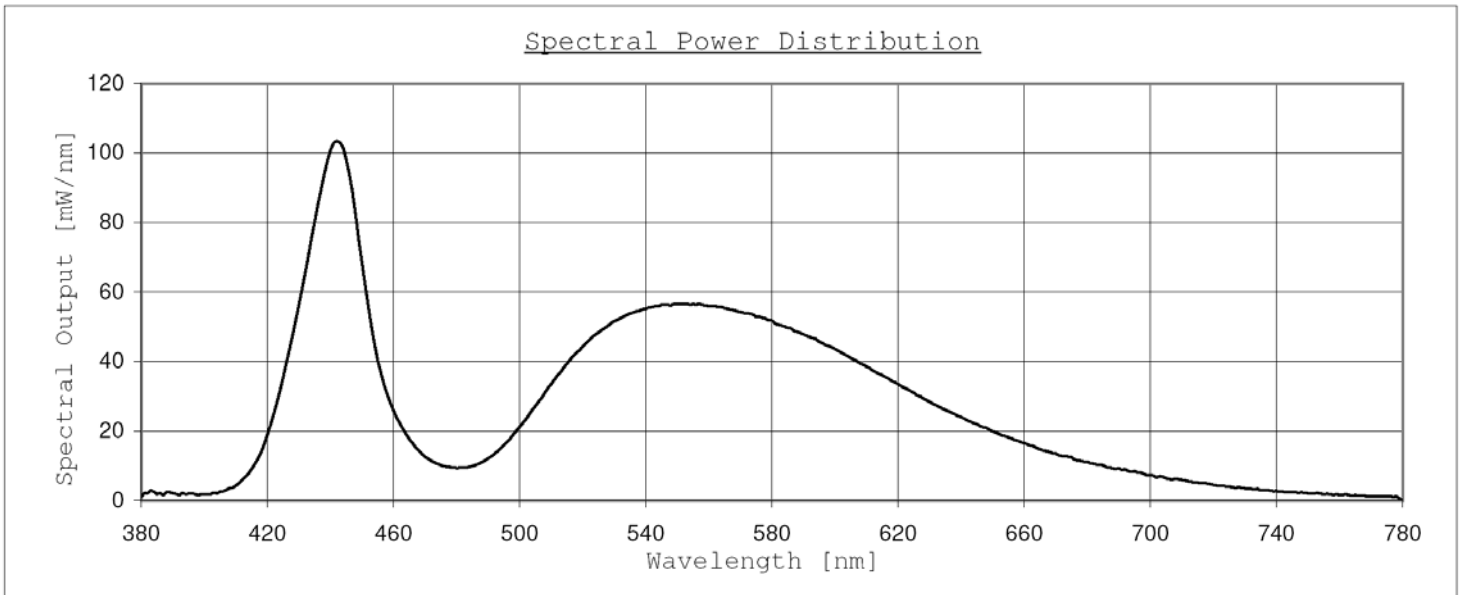
SPECTRAL MEASUREMENTS

X:	0.3258	
y:	0.3373	
u/u':	0.2038	
v:	0.3164	
v':	0.4746	
Duv:	0.0012	
CRI (R _a):	69.7	
CRI (R _g):	-20.9	
CCT:	5803	K
RADIANT FLUX:	10532	mW

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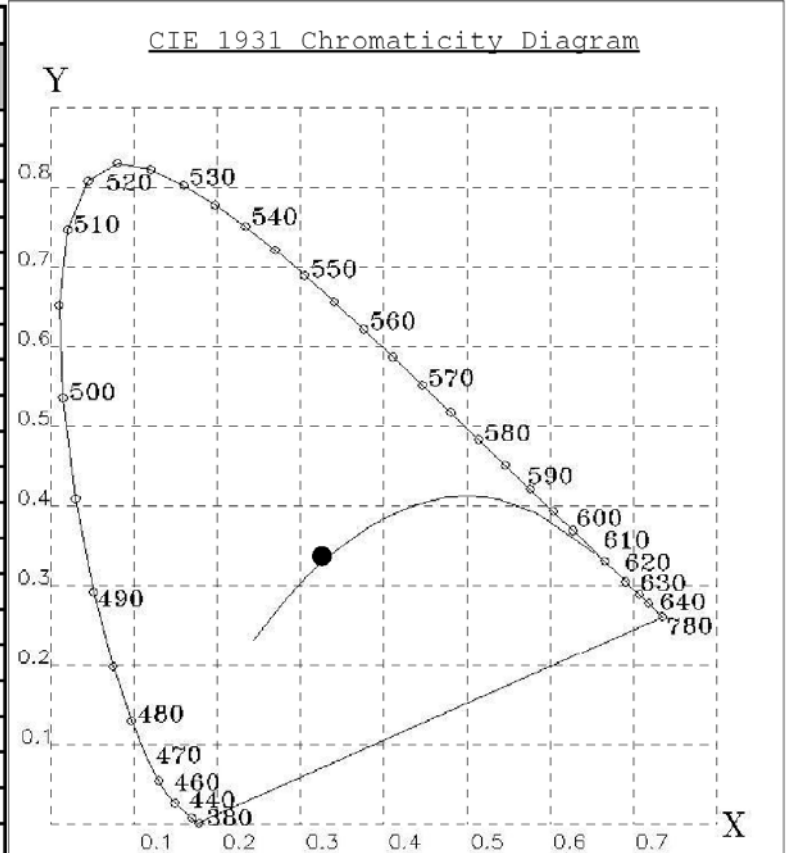
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Tabulated Spectral Power Distribution

Wavelength [nm]	[mW/nm]	Wavelength [nm]	[mW/nm]
380	1.03734	590	47.82694
390	2.08318	600	43.56237
400	1.76670	610	38.44901
410	4.27063	620	33.49086
420	19.01291	630	28.41024
430	56.49188	640	24.03533
440	100.87757	650	19.90657
450	68.33251	660	16.52717
460	25.80445	670	13.55640
470	12.51845	680	11.21738
480	9.37550	690	9.29062
490	12.10739	700	7.32628
500	21.21371	710	5.96579
510	33.51390	720	4.49253
520	44.34811	730	3.49096
530	51.62709	740	2.71249
540	55.15321	750	2.09894
550	56.42761	760	1.58118
560	55.97290	770	1.22832
570	54.27653	780	0.00000
580	51.78230		



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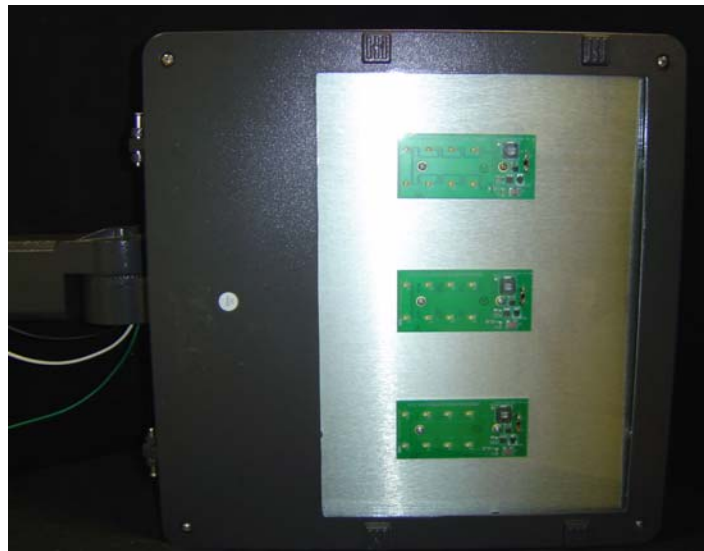
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SIDE VIEW



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.