LM-79-08 Test Report

for

GREEN CREATIVE LTD

ROOM 1206-07 NEW VICTORY HOUSE 93-103 WING LOK STREET,
CENTRAL HONGKONG

A23 PRODUCT

Model: 25HID830/277V/EX39

25HID830/277V/E26

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

3rd Floor, Bld. 2, NO. 96 Longchuanwu Rd Qianjiang Economy Dev. Zone, Yuhang Dist,
Hangzhou, Zhejiang Province, China 311100
Tel: +86 571 86376106
www.ledtestlab.com

Report No.: HZ18010048d/R1

This report is replaced the old report No. HZ18010048d dated Feb. 01, 2018

The laboratory that conducted the testing detailed in this report has been accredited for SSL by NVLAP.

Review by: April Zou

Engineer: April Zou
Feb. 08, 2018

Approved by: Jim Zhang

Manager: Jim Zhang
Feb. 08, 2018

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Test Summary

Sample Tested: **25HID830/277V/EX39**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
137.9	3575.9	25.93	0.9953

CCT (K)	CRI	Stabilization Time (Light & Power)
3017	84.1	60

Table 1: Executive Data Summary

Note: The above results are recorded/ derived from measurements made using an Integrating Sphere.

Test specifications:	
Date of Receipt	: Jan. 26, 2018
Date of Test	: Feb. 02, 2018
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	: IESNA LM-79-2008 Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products

TABLE OF CONTENT

LM-79-08 Test Report 1
Sample Photos 4
TEST RESULTS 5
Spectral Power Distribution 6
Zonal Lumen Tabulation 7
Luminous Intensity Distribution Plots 9
Luminous Intensity Data 10
EQUIPMENT LIST 11
TEST METHODS 11
Seasoning of SSL Product 11
Goniophotometer Method 11
Photometric and Electrical Measurements 11
Color Characteristics Measurements 12
Color Spatial Uniformity 12

Sample Photos

25HID830/277V/EX39

25HID830/277V/E26

Equipment Under Test (EUT)	
Name	: A23 PRODUCT
Model	: 25HID830/277V/EX39
Electrical Ratings	: 120-277V, 60Hz
Product Description	: EX39/E26 base, 3000K, CRI80
Manufacturer	: GREEN CREATIVE LTD
Address	: ROOM 1206-07 NEW VICTORY HOUSE 93-103 WING LOK STREET, CENTRAL HONGKONG

Note: Model 25HID830/277V/EX39 and model 25HID830/277V/E26 are identical except their different screw base. Model 25HID830/277V/EX39 is EX39 base. 25HID830/277V/E26 is E26 base. Model 25HID830/277V/EX39 was chosen to be representative model in this report.

TEST RESULTS

Test ambient temperature was 24.7℃.

Base orientation was base up. Test was conducted without a dimmer in the circuit.

The stabilization time of the sample was 60 minutes, and the total operating time including stabilization was 95 minutes.

The photometric distance of Goniophotometer is 2.47 m.

Luminous data was taken at 0.5° vertical intervals and 10.0°horizontal intervals.

Parameter	Result	
Test Voltage (V)	120.0	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.217	0.097
Power Factor	0.9953	0.9369
Test Power (W)	25.93	25.28
THD A%	9.12	17.47
Luminous Efficacy (lm/W)	137.9	140.9
Total Luminous Flux (lm)	3575.9	3564.9
Color Rendering Index (CRI)	84.1	
R9	15	
Correlated Color Temperature (CCT) (K)	3017	
Chromaticity (Chroma x, Chroma y)	(0.4365, 0.4052)	
Chromaticity (Chroma u, Chroma v)	(0.2498, 0.3479)	
Chromaticity (Chroma u', Chroma v')	(0.2498, 0.5218)	
Duv	0.0005	
Average Beam Angle (°)	289.4	
Center Beam Candle Power (cd)	316	
Spacing Criteria	1.67 (0°-180°)/ 1.64 (90°-270°)	
Zonal Lumens in the 0°-60°Zone	30.09%	
Zonal Lumens in the 60°-90°Zone	29.92%	
Zonal Lumens in the 90°-120°Zone	25.02%	
Zonal Lumens in the 120°-180°Zone	14.97%	

Special Color Rendering Indices	
R1	83
R2	94
R3	94
R4	81
R5	84
R6	94
R7	82
R8	61
R9	15
R10	87
R11	81
R12	76
R13	86
R14	97
Rf	84
Rg	93

Table 2: Test data per Goniophotometer Method

Note: According to CIE 1976 (u',v') diagram, u' = u = 4x/(-2x+12y+3), v' = 3v/2 = 9y/(-2x+12y+3).

Spectral Power Distribution

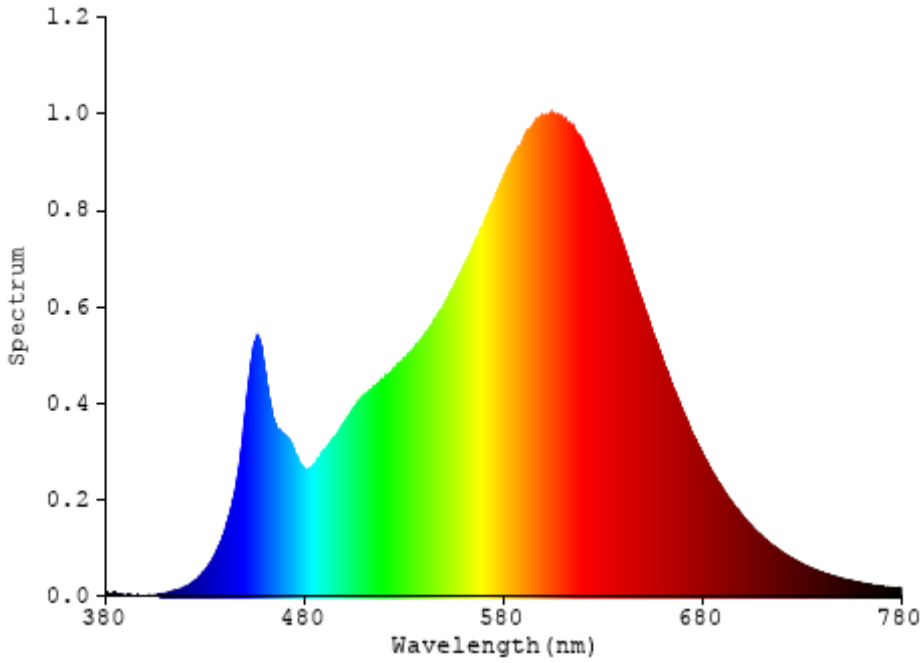


Chart 1: Spectral Power Distribution

Zonal Lumen Tabulation

γ(°)	Lumens	% Total
0- 10	30.247	0.85%
10- 20	91.19	2.55%
20- 30	152.879	4.28%
30- 40	213.931	5.98%
40- 50	270.521	7.57%
50- 60	317.084	8.87%
60- 70	348.795	9.75%
70- 80	362.703	10.14%
80- 90	358.387	10.02%
90-100	336.943	9.42%
100-110	301.652	8.44%
110-120	256.173	7.16%
120-130	204.3	5.71%
130-140	150.249	4.20%
140-150	98.928	2.77%
150-160	55.042	1.54%
160-170	23.022	0.64%
170-180	3.834	0.11%
Total	3575.9	100%

γ(°)	Lumens	% Total
0-130	3244.805	90.74%
130-180	3575.9	100%
0-180	3575.9	100%

Table 3: Zonal Lumen Data

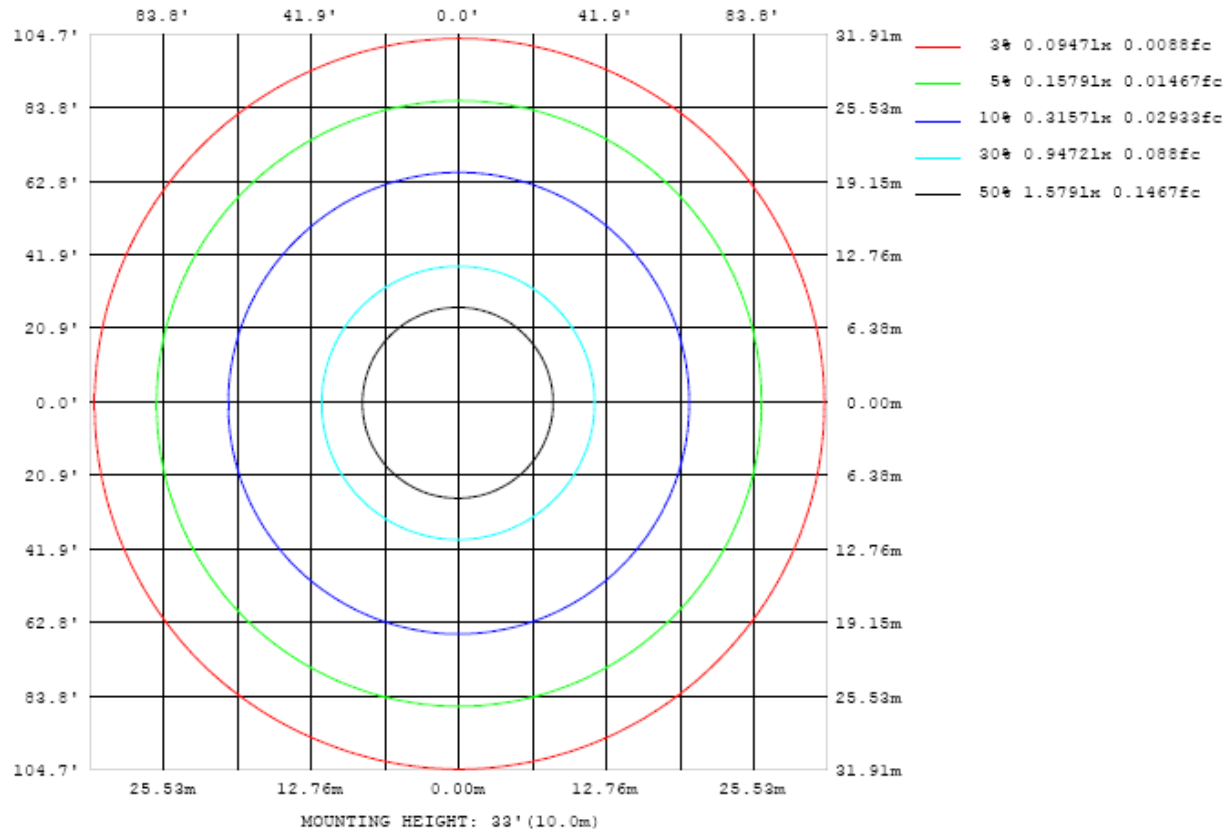


Chart 2: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots

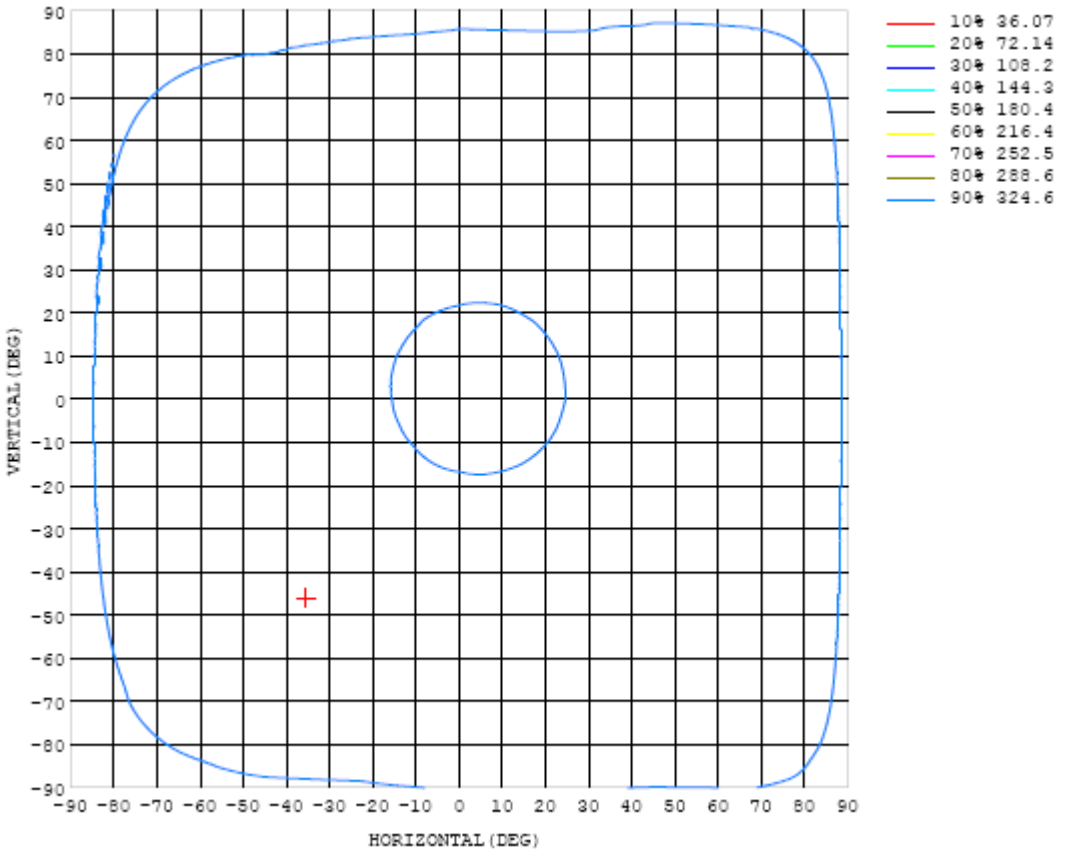


Chart 3: Isocandela Plot

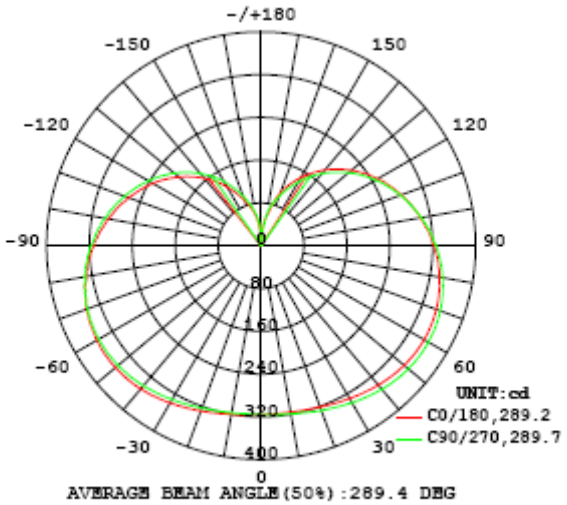


Chart 4: Polar Candela Distribution

Luminous Intensity Data

Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	316	316	316	316	316	316	316	316	316	316	316	316	316	316	316	316			
5	315	316	316	316	317	317	317	318	318	317	317	316	316	315	315	315			
10	316	316	318	318	319	320	320	321	320	319	319	318	317	316	316	316			
15	318	319	320	322	323	324	325	325	324	323	322	321	320	318	318	317			
20	321	322	324	326	328	329	330	330	329	327	326	324	323	322	321	321			
25	325	326	328	331	333	334	335	335	334	333	331	329	327	326	325	325			
30	330	332	334	337	339	340	341	341	339	338	336	334	332	330	330	329			
35	335	336	339	342	345	347	347	347	345	343	341	339	337	336	334	334			
40	340	342	345	348	350	352	352	351	349	347	345	343	341	340	340	339			
45	345	346	349	352	355	356	357	355	353	350	349	347	346	344	344	343			
50	348	350	353	355	358	359	359	358	355	353	350	349	348	347	347	347			
55	350	352	355	358	360	360	361	358	355	353	351	350	350	349	349	349			
60	351	353	355	358	360	360	360	357	353	352	350	349	350	349	350	350			
65	350	352	354	357	359	358	358	354	351	349	346	347	347	347	347	349			
70	348	350	351	354	355	354	353	350	346	344	342	342	345	344	346	348			
75	343	346	347	349	350	348	348	344	340	339	336	338	340	339	342	343			
80	338	340	340	342	344	341	340	336	333	331	330	331	335	333	336	337			
85	331	333	333	335	335	332	331	327	322	323	322	322	326	326	330	331			
90	322	325	324	326	326	322	321	317	312	313	313	313	317	316	321	323			
95	313	315	314	315	315	311	310	306	302	302	300	302	307	308	311	312			
100	302	304	303	303	303	298	297	294	289	290	290	291	295	297	301	302			
105	290	292	291	291	290	286	283	280	277	277	277	280	284	285	289	291			
110	278	280	278	278	276	271	270	266	263	263	263	266	270	273	277	278			
115	265	265	264	263	262	257	255	251	249	249	250	253	258	259	264	265			
120	251	252	250	248	246	241	238	236	233	234	235	239	243	246	250	251			
125	235	236	234	232	230	225	222	219	217	218	220	223	228	230	235	236			
130	220	220	218	215	212	208	205	202	200	202	203	207	211	214	219	220			
135	202	203	201	198	195	190	186	184	183	184	185	189	194	198	202	203			
140	185	185	183	180	176	171	168	166	165	166	168	172	177	180	184	186			
145	166	166	164	161	157	152	149	147	146	148	149	153	158	161	166	167			
150	147	147	144	141	137	133	129	127	127	128	130	134	139	142	146	148			
155	127	127	125	121	118	113	110	108	108	110	111	114	118	122	125	127			
160	105	107	105	102	98.4	94.4	91.2	89.5	90.2	91.9	92.2	95.0	98.4	101	104	105			
165	78.7	85.6	87.3	84.2	80.7	77.2	74.4	72.4	73.6	74.9	75.0	77.4	80.1	82.7	84.4	78.8			
170	54.3	62.7	68.3	64.5	58.2	58.6	56.6	53.1	56.7	57.2	57.0	59.3	61.8	63.0	63.7	59.4			
175	32.3	34.8	40.1	29.1	9.61	17.4	20.1	21.4	28.9	27.3	32.3	36.5	39.9	40.9	38.5	34.0			
180	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19			

Table 4: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Aug. 23, 2017	Aug. 22, 2018
Digital Power Meter	PF2010A	HZTE028-01	Aug. 10, 2017	Aug. 09, 2018
AC Power Supply	DPS1060	HZTE001-06	Aug. 10, 2017	Aug. 09, 2018
DC Power Supply	WY12010	HZTE004-03	Aug. 10, 2017	Aug. 09, 2018
Standard Source	D908	HZTE012-01	Aug. 20, 2017	Aug. 19, 2018
Standard source	SCL-1400	HZTE012-02	Aug. 20, 2017	Aug. 19, 2018
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 16, 2017	Aug. 15, 2018
Temperature recorder	JM624U	HZTE018-08	Aug. 17, 2017	Aug. 16, 2018

Table 5: Test Equipment List

TEST METHODS

Seasoning of SSL Product

For the purpose of rating new SSL products, SSL products shall be tested with no seasoning.
Therefore, no seasoning was performed.

Goniophotometer Method

Photometric and Electrical Measurements

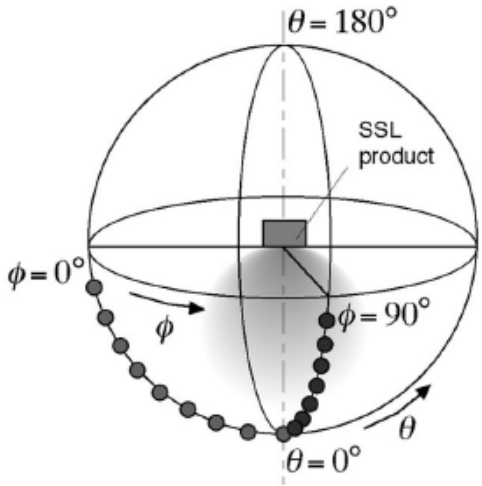
An EVERFINE Type C Model GO-R5000 Goniophotometer was used to measure the intensity at each angle of distribution for each sample. The photometric distance is 2.475m for near-field measurement or 30m for far-field measurement. Bandwidth of spectroradiometer is 380nm-780nm.
Ambient temperature was measured at the same height of the sample mounted on the Goniophotometer equipment. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation.
The stabilization time typically ranges from 30 min (small integrated LED lamps) to 2 or more hours for large SSL luminaires). It can be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 30 min, taken 15 minutes apart, is less than 0.5 %.
Electrical measurements including voltage, current, and power were measured using the Everfine Digital Power Meter.
Some graphics were created with Photometric Plus software.
The standard reference of the Goniophotometer system is halogen incandescent lamp, the intensity distribution type is omni-directional, and is traceable to the National Institute of Metrology P.R. China.
The uncertainty of goniophotometer system reported in this document is expended uncertainty is 2.3% with a coverage factor k=2.

Color Characteristics Measurements

The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as values that are spatially average, weighted to intensity, over the angular range where light is intentionally emitted from the SSL product. The color characteristics measurements are using gonio-spectroradiometer.

Color Spatial Uniformity

The characteristics of SSL products may be spatially non-uniform, the chromaticity coordinate shall be measured at two vertical planes (C=0°/180° and C=90°/270°) and at 10° or less intervals for vertical angle until the light output dropped to below 10% of the peak intensity. The averaged weighted chromaticity coordinate was calculated from these points. The data was then analyzed to check for delta color differences of the u', v' chromaticity coordinates. The spatial non-uniformity of chromaticity, Δu'v', is determined as the maximum deviation (distance on the CIE (u', v') diagram) among all measured points from the spatially averaged chromaticity coordinate.
The geometry for the chromaticity measurement using gonio-spectroradiometer is shown as following.



*** End of Report ***

3rd Floor, Bld. 2, NO. 96 Longchuanwu Rd Qianjiang Economy Dev. Zone, Yuhang Dist,
Hangzhou, Zhejiang Province, China 311100
Tel: +86 571 86376106 www.ledtestlab.com