



Report No.: GZE160698-B

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

(Brand Name:N/A)

188 S. Northwest Highway Cary, IL60013

LED Lamp

Model name(s): LED-8088E30
LED-8088M30

Representative (Tested) Model: LED-8088E30 (3000K)

Model Different: All construction and rating are the same, except CCT

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Jul.12,2016

Review By:

Tommy Liang

Manager: Tommy Liang

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

Laboratory: Standard-Tech Co. Ltd Testing Center
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

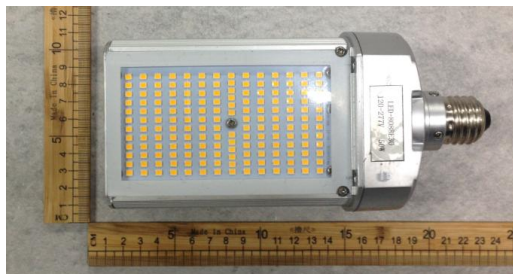
Tel: 8620-3229 0320 Fax: 8620-32290422 <http://www.standard-tech.com>

1.1 Product Information:

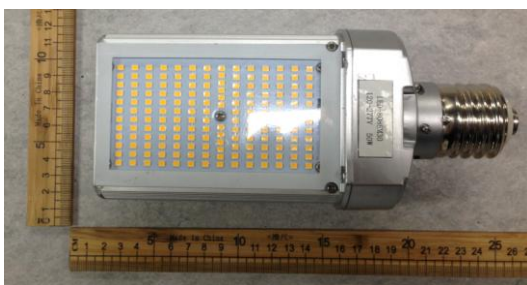
Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-8088E30 LED-8088M30	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Lamp	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	50W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	HongLi	
LED Model	SPMWH1228FD5WAV0S3	
Sample Number	GZE160698-B1(3000K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo

LED-8088E30



LED-8088M30



1.2 Test Specifications:

Date of Receipt	Jul.11,2016
Date of Test	Jul.12,2016
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</p> <p>Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</p> <p>Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.</p>
<p>3) Electrical Measurements:</p> <p>Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.</p>

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-07-11	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8088E30(3000K)		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160698-	120.0	60	0.4009	44.85	0.9323	12.67
B1	277.0	60	0.2115	53.27	0.9091	19.88
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

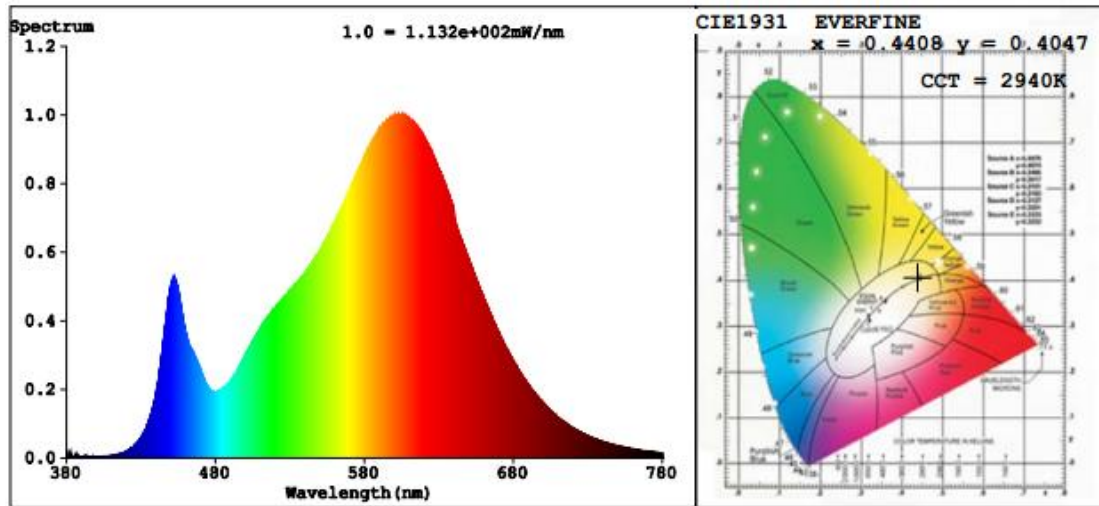
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	5
Frequency (Hz)	60	R2	91	R10	79
CCT (K)	2940	R3	96	R11	77
Duv	-0.0003	R4	79	R12	70
Chromaticity (x, y)	x=0.4408 y=0.4047	R5	80	R13	83
Chromaticity (u', v')	u'=0.2528 v'=0.5222	R6	89	R14	98
Color Rendering Index (CRI)	81.7	R7	82	R15	73
R9	5	R8	58	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	4868.7	5691.4	--	
Luminous Efficacy (lm/W)	108.56	106.84	--	--
Beam Angle (°)	108.0	--	--	
Center Beam Candle Power (cd)	1817	--	--	

Spectral Power Distribution & Chromaticity Diagram

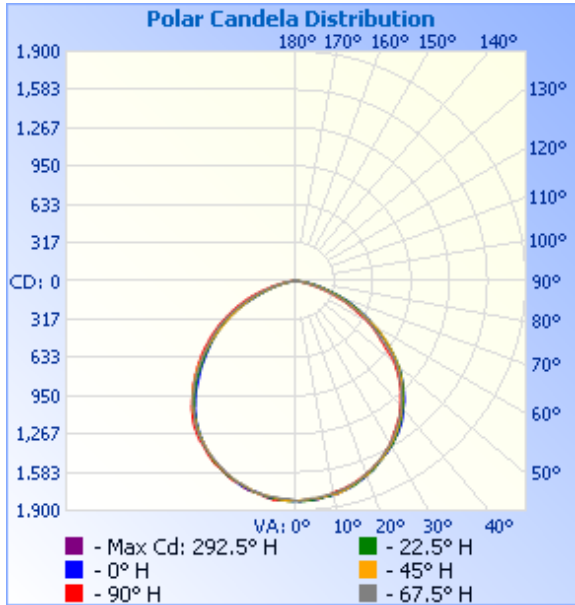


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,417.9	29.1%
0-40	2,329.0	47.8%
0-60	4,051.1	83.2%
60-90	800.3	16.4%
70-100	270.7	5.6%
90-120	7.4	0.2%
0-90	4,851.4	99.7%
90-180	16.8	0.3%
0-180	4,868.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	171.8	3.5%	90-100	0.7	0%
10-20	493.8	10.1%	100-110	3.2	0.1%
20-30	752.3	15.5%	110-120	3.5	0.1%
30-40	911.1	18.7%	120-130	3.0	0.1%
40-50	930.2	19.1%	130-140	2.4	0%
50-60	791.9	16.3%	140-150	1.8	0%
60-70	530.2	10.9%	150-160	1.2	0%
70-80	228.2	4.7%	160-170	0.7	0%
80-90	41.9	0.9%	170-180	0.3	0%

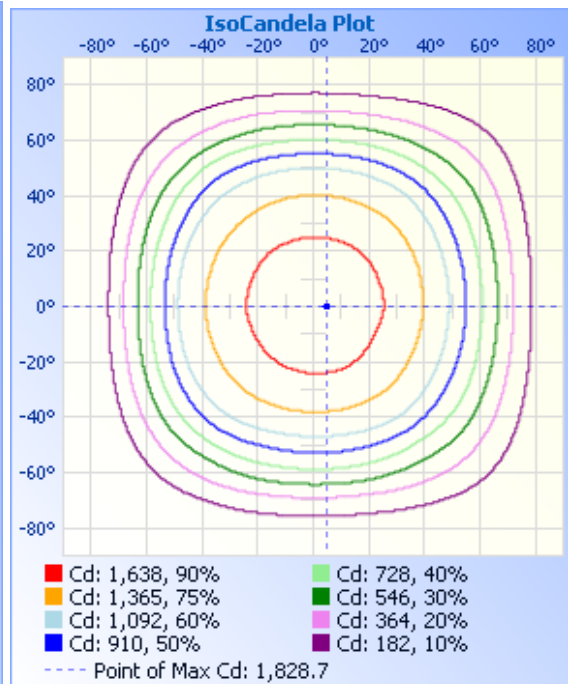
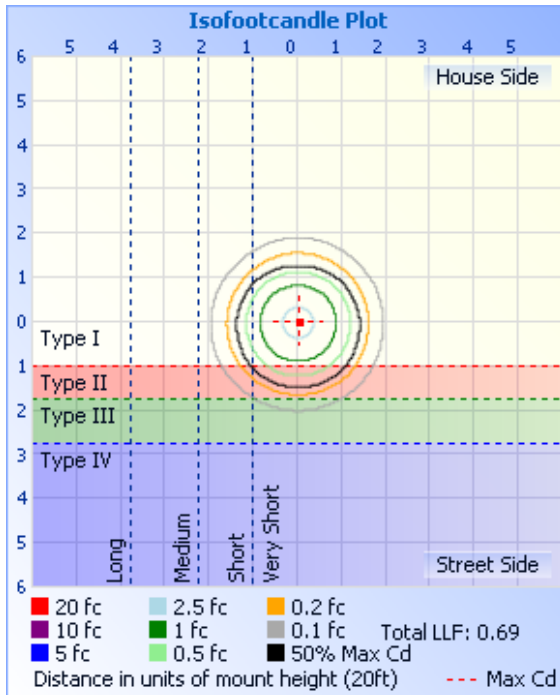
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	6.29 fc	46.6 ft	46.9 ft
34.0ft	1.57 fc	93.3 ft	93.8 ft
51.0ft	0.70 fc	139.9 ft	140.7 ft
68.0ft	0.39 fc	186.6 ft	187.6 ft
85.0ft	0.25 fc	233.2 ft	234.5 ft
102.0ft	0.17 fc	279.8 ft	281.4 ft

■ Vert. Spread: 107.8°
■ Horiz. Spread: 108.1°



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Table--1

UNIT: cd

C (DEG) y (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817	1817
5	1820	1822	1811	1811	1814	1814	1804	1805	1809	1800	1798	1808	1808	1810	1807	1798
10	1787	1782	1788	1789	1795	1791	1790	1784	1778	1776	1784	1776	1778	1781	1787	1786
15	1751	1749	1754	1755	1765	1760	1755	1745	1746	1739	1737	1741	1753	1745	1740	1737
20	1701	1702	1709	1712	1713	1707	1712	1695	1695	1688	1686	1683	1686	1699	1691	1690
25	1640	1639	1646	1654	1644	1644	1642	1631	1634	1614	1615	1615	1620	1630	1623	1619
30	1554	1561	1576	1570	1577	1577	1563	1557	1553	1540	1532	1532	1536	1542	1537	1544
35	1470	1473	1487	1485	1491	1481	1472	1461	1452	1438	1438	1434	1431	1436	1442	1450
40	1343	1364	1379	1377	1379	1370	1362	1350	1346	1328	1333	1303	1297	1305	1331	1330
45	1200	1220	1254	1255	1257	1251	1236	1224	1215	1201	1194	1149	1137	1162	1191	1187
50	1049	1065	1106	1115	1108	1110	1103	1082	1067	1060	1033	986	981	995	1032	1026
55	893	908	940	942	931	939	939	882	859	859	854	829	836	837	844	872
60	745	753	750	755	749	753	765	711	696	691	666	671	676	676	663	717
65	578	591	570	574	581	574	546	517	497	489	482	504	500	504	499	546
70	421	428	397	401	412	406	362	338	319	307	312	321	321	322	347	381
75	257	265	251	235	245	235	208	177	154	152	163	185	189	189	200	226
80	142	140	126	124	129	117	89.1	61.8	45.6	51.7	69.3	86.4	92.1	93.5	99.8	120
85	64.9	61.0	49.4	33.4	30.5	30.2	28.6	10.2	0.21	9.02	23.7	27.8	25.1	31.0	43.7	54.1
90	9.24	7.83	2.51	0.49	0.12	0.22	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89	6.98
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	24.6	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.98
105	19.8	13.1	0.26	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	1.01	16.0
110	16.3	15.0	3.07	0.00	0.00	0.00	0.00	0.47	0.47	0.43	0.11	0.11	0.16	0.69	4.93	15.4
115	13.9	13.6	5.49	0.68	0.26	0.00	0.21	0.63	0.58	0.68	0.48	0.16	0.59	1.60	5.83	13.1
120	12.3	11.8	5.50	1.48	0.43	0.37	0.58	0.74	1.00	0.90	0.85	0.64	0.75	2.13	5.46	10.7
125	9.71	8.70	5.34	2.23	1.23	0.90	1.52	1.27	1.26	1.16	1.69	0.90	1.44	2.61	6.04	7.80
130	8.28	7.38	5.34	2.44	1.44	1.22	1.64	1.32	1.42	1.32	1.43	1.33	1.60	2.98	4.87	6.38
135	7.07	6.27	4.55	3.13	2.02	2.02	1.64	1.32	1.58	1.48	1.48	1.70	1.92	3.08	4.18	5.69
140	6.06	5.54	4.18	2.45	2.13	2.13	1.64	1.58	1.74	1.85	1.69	1.86	2.19	2.60	3.82	5.06
145	5.27	4.79	3.86	2.18	2.13	2.13	1.54	1.58	2.00	2.00	1.85	2.12	2.35	2.29	4.99	4.59
150	4.75	4.27	3.81	2.70	2.29	2.18	2.01	1.69	2.00	2.16	2.17	2.23	2.35	2.50	3.66	3.85
155	3.85	4.00	3.86	2.92	2.40	2.18	2.38	2.11	1.79	2.16	2.17	2.44	2.29	2.50	2.65	3.22
160	3.11	3.48	2.70	2.86	2.51	2.23	2.44	2.16	1.79	2.00	2.27	2.55	2.35	2.71	3.02	2.22
165	2.11	2.32	2.70	2.81	2.51	2.34	2.65	2.22	2.16	2.11	2.33	2.60	2.40	2.66	2.86	3.06
170	2.85	2.69	3.07	2.97	2.98	2.92	3.12	2.37	2.48	2.48	2.96	3.34	3.52	3.62	3.50	3.69
175	2.90	3.00	3.38	3.02	3.47	3.19	3.39	2.64	2.48	2.53	2.91	3.34	3.31	3.82	3.50	3.64
180	2.63	3.11	3.49	3.13	3.84	3.24	3.44	2.85	2.42	2.53	2.96	3.45	3.15	3.62	3.23	3.43

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3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-09	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-01	2017-06-30
PF210	Power Meter for Goniophotometer	2016-07-01	2017-06-30
ST-R-181A	Temperature Tester	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* END OF REPORT *******