



Report No.: GZE160347-Q2

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

(Brand Name:N/A)

188 S. Northwest Highway Cary, IL 60013

LED Lamp

Model name(s): LED-8039E40-A

Representative (Tested) Model: LED-8039E40-A

Model Different :N/A

Test & Report By:

Jack Luo

Engineer: Jack Luo

Date: May.09,2016

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>

U.S. Department of Energy

Lighting Facts™ Uniform LM-79 Reporting Template
Laboratory Information:

Name of Test Laboratory	Standard-Tech Co., Ltd.
Date of Test Report	May.09,2016
Test Report No.	GZE160347-Q2
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	LIGHT EFFICIENT DESIGN		
Brand Name	N/A		
Model Number	LED-8039E40-A		
SKU (if available)	N/A		
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Lamp		
Luminaire Aperture (for downlights)	--	in.	
Luminaire Length	--	mm	
Luminaires Width	--	mm	
Number of Units (modular products)	N/A	s	

Integrating Sphere
Goniophotometer
Electrical Measurements:

	Output	Output	
Input Wattage	--	17.98	W
Input Current	--	0.1522	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9843	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	2297.4	lm
Initial Lumen Efficacy	--	127.78	lm/w
Correlated color temperature / CCT	4087	--	K
Color rendering index / CRI	84.7	--	
R9 Value	17	--	
Duv	-0.0002	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)		93	cd
Beam angle (if applicable)		280.2	°
Zonal lumens in the 0°-60° zone		25.4	%
Zonal lumens in the 60°-90° zone	-----	30.9	%
Zonal lumens in the 90°-120° zone		28.7	%
Zonal lumens in the 120°-180° zone		15	%

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Test Specifications:	
Date of Receipt	: Apr.01,2016
Date of Test	: May.03,2016
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry IESNA LM-16-93 Practical Guide to Colorimetry of Light Source IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

Test Methods

1. Photometric and Electrical measurements – Light Distribution Method:

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 Volts, 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.

2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric 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 Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at least 5 nm intervals over the range of 380 to 780 nm.

1. Product Information:

Brand Name	N/A
Model Number	LED-8039E40-A
Luminaire Type	LED Lamp
Rated Voltage / Frequency	120~277 Vac, 50/60Hz
Nominal Power	18W
Rated Initial Lamp Lumen	--
Declared CCT	4000K
LED Manufacturer	N/A
LED Model	N/A
Sample Receipt Date	Apr.01,2016
Sample Number	GZE160347-Q2(4000K)

Photo



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2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2016-05-03	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8039E40-A		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160347	120.0	60	0.1522	17.98	0.9843	11.26
-Q2	277.0	60	0.0677	16.94	0.9028	18.14

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	84.7
R9	19
CCT (K)	4087
Chromaticity (x, y)	x=0.3766 y=0.3739
Chromaticity (u', v')	u'=0.2237 v'=0.4997
Duv	-0.0002

Special Color Rendering Indices			
R1	84	R9	17
R2	92	R10	79
R3	96	R11	81
R4	82	R12	63
R5	83	R13	86
R6	88	R14	98
R7	86	R15	78
R8	67	--	--

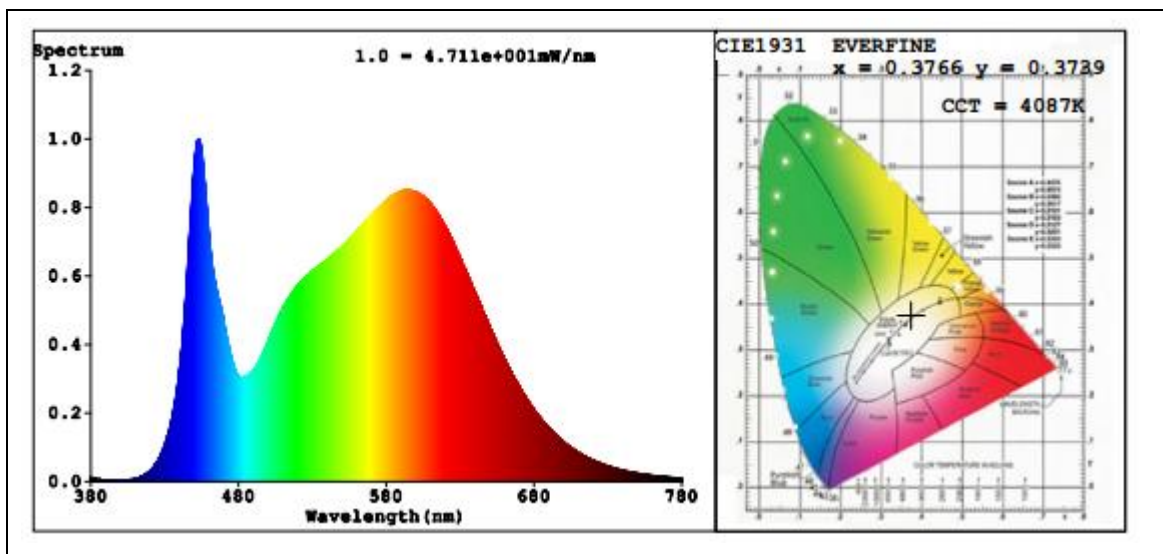
Goniophotometer Method :

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2297.4
Luminous Efficacy (lm/W)	127.78
Beam Angle°	280.2
Center Beam Candle Power (cd)	93

Goniophotometer Methodn :

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2149.4
Luminous Efficacy (lm/W)	126.88

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	112.8	4.9%
0-40	226.4	9.9%
0-60	584.5	25.4%
60-90	709.1	30.9%
70-100	724.7	31.5%
90-120	658.8	28.7%
0-90	1,293.5	56.3%
90-180	1,003.9	43.7%
0-180	2,297.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	9.4	0.4%	90-100	241.0	10.5%
10-20	33.8	1.5%	100-110	224.7	9.8%
20-30	69.6	3.0%	110-120	193.1	8.4%
30-40	113.6	4.9%	120-130	151.8	6.6%
40-50	159.8	7.0%	130-140	104.6	4.6%
50-60	198.3	8.6%	140-150	58.8	2.6%
60-70	225.3	9.8%	150-160	24.5	1.1%
70-80	239.7	10.4%	160-170	5.3	0.2%
80-90	244.0	10.6%	170-180	0.2	0%

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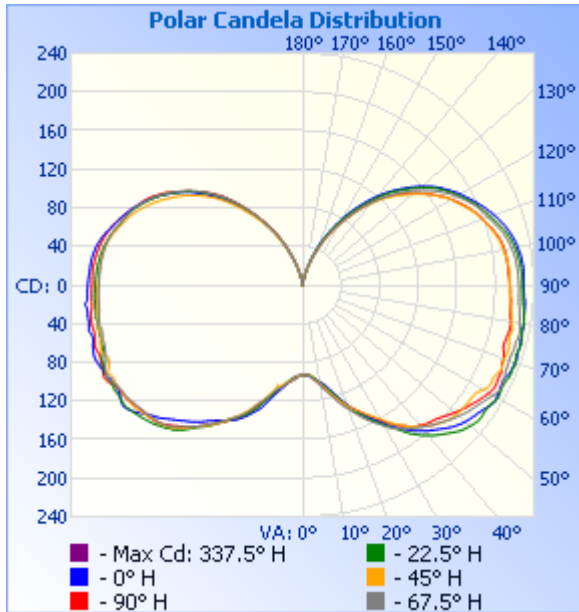
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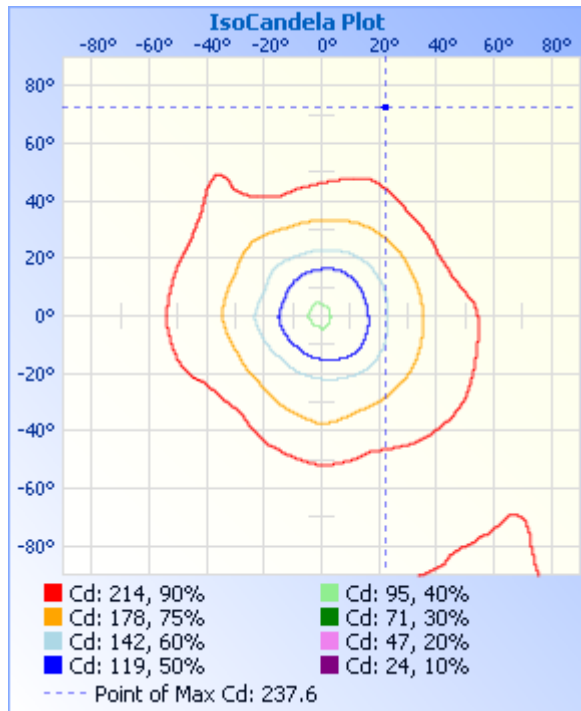
Photometric Data



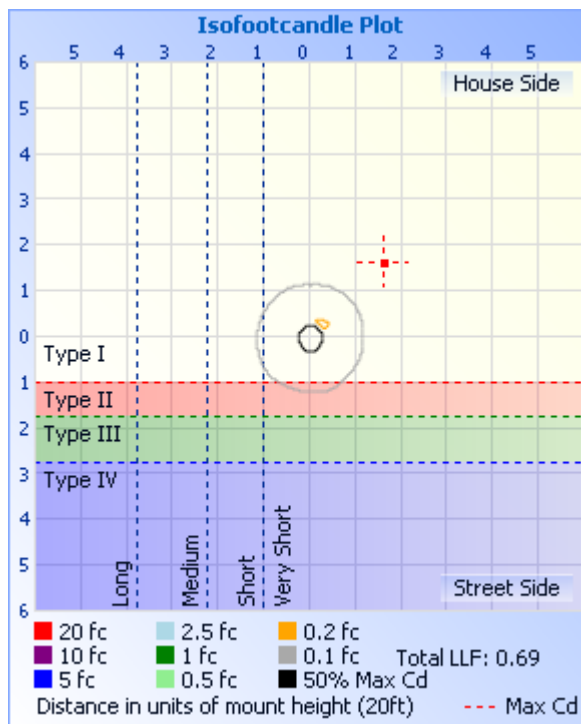
Illuminance Plots

Illuminance at a Distance		
	Center Beam fc	Beam Width
17.0ft	0.32 fc	
34.0ft	0.08 fc	
51.0ft	0.04 fc	
68.0ft	0.02 fc	
85.0ft	0.01 fc	
102.0ft	0.01 fc	

ISOCANDELA DIAGRAM



ISOLUX DIAGRAM



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Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93
1	93	92	93	92	93	93	93	93	93	93	93	94	93	93	93	93	93
2	93	93	93	92	93	93	93	94	94	94	94	95	94	94	94	93	93
3	94	93	93	93	93	94	94	94	94	94	95	96	95	96	94	94	94
4	95	93	94	94	94	94	95	95	94	95	95	97	96	98	96	95	95
5	95	94	94	95	95	96	96	97	95	96	97	98	98	99	97	95	95
6	96	95	96	96	97	97	97	98	97	97	98	99	99	100	98	97	96
7	97	97	98	98	99	99	99	100	99	98	100	101	100	102	100	98	97
8	98	99	99	100	100	101	102	101	101	100	101	102	102	103	102	99	98
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25	148	150	145	153	146	153	157	153	152	150	147	148	150	148	146	146	148
26	151	153	148	156	149	156	161	155	154	152	150	151	153	152	150	150	151
27	155	156	151	159	152	160	164	157	156	155	153	154	156	155	153	154	155
28	158	160	154	162	155	163	167	160	158	157	156	156	156	158	157	158	158

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29	161	163	157	165	158	167	170	162	160	160	159	159	161	162	160	162	161
30	165	166	160	168	161	171	173	165	162	163	163	162	164	165	163	166	165
31	169	170	163	171	165	175	177	168	163	166	166	165	166	168	167	169	169
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47	215	222	205	205	199	214	222	212	202	211	206	206	207	218	218	205	215
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93	230	228	215	224	214	223	227	219	222	214	211	211	218	224	232	233	230
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117	196	194	184	192	185	191	192	188	187	186	181	187	188	194	199	199	196
118	193	191	182	189	183	189	190	186	185	184	179	185	186	192	197	197	193
119	191	189	180	187	180	186	188	184	183	182	176	183	184	190	195	194	191
120	189	186	177	184	178	183	185	181	180	180	174	181	182	187	192	192	189
121	186	184	175	182	175	181	182	179	177	177	171	178	180	185	190	189	186
122	183	182	172	179	173	178	179	176	175	175	168	176	177	182	187	186	183
123	181	179	169	176	170	175	176	173	172	172	165	173	174	180	184	183	181
124	178	176	166	173	167	172	172	171	169	169	162	170	171	177	181	180	178

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

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125	175	174	163	170	164	169	169	168	166	166	160	167	168	174	178	177	175
126	172	171	160	166	161	166	166	165	163	163	157	164	164	171	175	174	172
127	169	168	157	163	158	163	163	162	160	160	154	161	161	168	172	171	169
128	166	164	154	160	155	159	160	159	156	157	151	158	158	165	168	167	166
129	162	160	150	156	152	156	157	156	153	154	148	156	154	161	165	164	162
130	159	157	147	152	149	153	154	153	150	151	145	152	151	157	161	160	159
131	155	153	143	149	145	150	150	149	146	148	141	149	148	154	158	156	155
132	152	149	140	145	142	146	147	146	142	144	138	145	145	150	154	152	152
133	148	146	136	141	138	142	143	142	138	140	135	141	142	146	150	148	148
134	144	141	133	137	135	139	139	138	134	137	131	138	138	142	147	144	144
135	140	138	130	133	131	135	135	135	130	133	127	134	135	138	143	141	140
136	136	134	126	129	128	131	131	131	126	130	124	130	131	135	139	136	136
137	133	130	122	125	124	127	127	127	122	126	120	126	127	131	135	132	133
138	128	126	119	120	120	123	123	123	118	122	116	123	124	127	131	128	128
139	124	121	115	116	116	119	119	119	114	117	111	118	119	123	127	124	124
140	120	117	110	112	111	114	114	114	110	112	107	114	115	118	123	120	120
141	116	112	106	108	107	110	110	110	106	108	103	109	110	114	118	116	116
142	111	108	102	104	103	106	106	106	101	103	98	105	106	110	114	112	111
143	107	104	98	99	98	101	101	101	97	99	94	100	101	105	109	107	107
144	103	99	94	95	94	97	96	96	93	95	90	96	97	100	105	102	103
145	98	95	89	90	90	92	91	92	89	90	87	92	93	96	100	98	98
146	94	91	85	86	85	88	87	88	85	87	83	88	88	92	95	93	94
147	89	87	81	81	81	83	83	83	81	82	79	83	84	87	90	89	89
148	85	82	77	78	77	79	80	79	77	78	76	79	80	83	86	84	85
149	80	78	72	74	73	75	76	75	73	74	72	75	76	79	81	80	80
150	76	74	69	70	69	70	72	71	69	70	68	71	72	75	77	76	76
151	72	70	65	66	65	66	68	67	64	66	64	67	68	71	73	72	72
152	67	66	61	62	61	62	64	63	61	61	60	63	64	67	69	68	67
153	63	61	57	58	57	58	60	59	56	57	55	59	60	63	65	64	63
154	59	58	53	54	53	54	55	55	52	53	52	55	56	59	60	60	59
155	55	54	49	50	50	50	51	51	48	49	47	51	52	55	56	56	55
156	51	49	45	46	46	47	47	47	44	45	44	47	48	50	52	53	51

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157	47	46	41	42	42	43	43	43	40	41	41	42	44	46	48	49	47
158	43	42	37	38	38	39	39	39	37	38	37	38	41	43	44	45	43
159	39	38	34	35	35	35	35	35	33	34	33	34	37	39	40	41	39
160	36	34	30	31	31	31	31	32	30	30	30	31	33	36	36	37	36
161	32	30	27	28	28	28	28	28	26	27	26	27	30	32	32	33	32
162	28	27	24	25	24	24	24	25	23	23	23	24	26	28	29	29	28
163	24	23	21	22	21	21	21	21	19	20	19	21	23	25	26	26	24
164	21	20	18	19	18	18	18	18	17	17	17	18	20	22	22	22	21
165	18	18	16	16	15	15	15	15	14	14	14	15	17	18	19	19	18
166	16	15	13	13	12	13	12	13	12	12	12	13	15	15	16	16	16
167	14	13	10	11	10	11	10	10	9	10	9	10	12	13	14	14	14
168	11	10	8	8	8	8	8	8	7	7	7	8	9	10	11	12	11
169	8	7	5	7	6	6	6	6	5	6	5	6	7	8	9	9	8
170	7	5	4	5	4	4	4	4	4	4	3	4	6	6	7	7	7
171	5	3	2	3	3	3	3	3	2	3	2	3	4	5	5	5	5
172	4	2	1	2	1	1	1	2	1	2	1	1	3	3	4	4	4
173	2	1	0	0	0	0	0	1	0	0	0	1	2	2	2	2	2
174	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
175	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2015-07-01	2016-06-30
ST-R-331	Spectral analysis system HAAS-2000	2015-07-01	2016-06-30
D204	Standard Lamp	2015-07-01	2016-06-30
PF2010	Power Meter for Integrating Sphere	2015-07-01	2016-06-30
EE-09	Goniophotometer system	2015-07-01	2016-06-30
D908S	Standard Lamp	2015-07-01	2016-06-30
PF210	Power Meter for Goniophotometer	2015-07-01	2016-06-30
ST-R-181A	Temperature Tester	2015-07-01	2016-06-30
Uncertainty Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* END OF DATASHEET PACKAGE *******