



Report No.: GZE160347-C2

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-8029E40-A  
LED-8029M40-A

Remark : The suffix of the model name“E” stand for E26;  
“M” stand for E39.

Representative (Tested) Model: LED-8029E40-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

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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-C2
Laboratory Contact Name	Tommy Liang

**Product Information:**

Organization Name	LIGHT EFFICIENT DESIGN		
Brand Name	N/A		
Model Number	LED-8029E40-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	--	22.43	W
Input Current	--	0.1883	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9928	
Off-State Power	--	0	W

**Photometric Characteristics**

Total Initial Lumen Output	--	2656.1	lm
Initial Lumen Efficacy	--	118.42	lm/w
Correlated color temperature / CCT	4026	--	K
Color rendering index / CRI	84.4	--	
R9 Value	15	--	
Duv	-0.0009	--	
<b>Luminous Intensity Distribution</b>			
Center beam candlepower (if applicable)		182	cd
Beam angle (if applicable)		290.4	°
Zonal lumens in the 0°-60° zone		31.3	%
Zonal lumens in the 60°-90° zone	-----	30.1	%
Zonal lumens in the 90°-120° zone		25.6	%
Zonal lumens in the 120°-180° zone		12.9	%

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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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  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.

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**1. Product Information:**

Brand Name	N/A
Model Number	LED-8029E40-A, LED-8029M40-A
Luminaire Type	LED Lamp
Rated Voltage / Frequency	120~277 Vac, 50/60Hz
Nominal Power	24W
Rated Initial Lamp Lumen	--
Declared CCT	4000K
LED Manufacturer	N/A
LED Model	N/A
Sample Receipt Date	Apr.01,2016
Sample Number	GZE160347-C2(4000K)

**Photo**



LED-8029E40-A



LED-8029M40-A

<b>2.1 Electrical, Photometric and Chromaticity Measurements</b> (Refer to Work Instruction QD25)	<b>IES LM-79 2008</b>
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<b>Test date</b>	2016-05-03	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	LED-8029E40-A		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160347	120.0	60	0.1883	22.43	0.9928	10.61
-C2	277.0	60	0.0888	22.69	0.9225	15.76

**Sphere-Spectroradiometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	84.4
R9	15
CCT (K)	4026
Chromaticity (x, y)	x=0.3787 y=0.3739
Chromaticity (u', v')	u'=0.2251 v'=0.5000
Duv	-0.0009

Special Color Rendering Indices			
R1	83	R9	15
R2	92	R10	80
R3	96	R11	80
R4	82	R12	64
R5	83	R13	86
R6	88	R14	98
R7	86	R15	78
R8	66	--	--

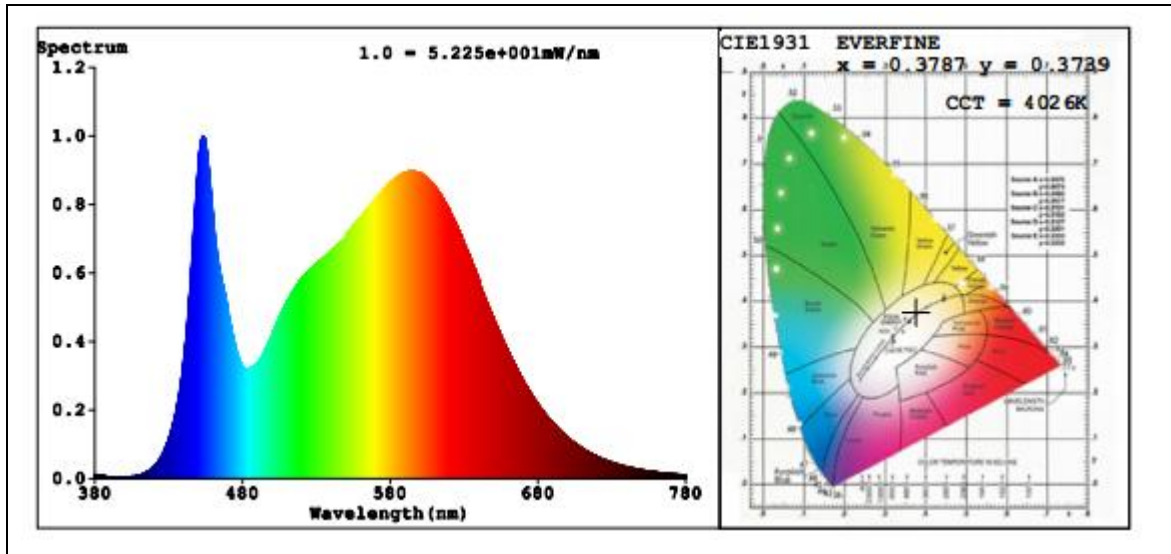
**Goniophotometer Method :**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2656.1
Luminous Efficacy (lm/W)	118.42
Beam Angle°	290.4
Center Beam Candle Power (cd)	182

**Goniophotometer Methodn :**

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2616.4
Luminous Efficacy (lm/W)	115.31

**Spectral Power Distribution & Chromaticity Diagram**



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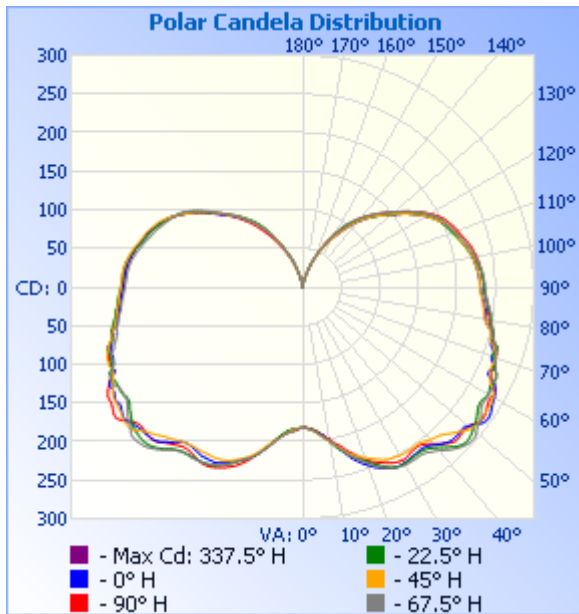
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**Zonal Lumen Tabulation**

<b>Zonal Lumen Summary</b>		
Zone	Lumens	% Luminaire
0-30	198.1	7.5%
0-40	361.4	13.6%
0-60	832.4	31.3%
60-90	800.0	30.1%
70-100	781.4	29.4%
90-120	679.4	25.6%
0-90	1,632.4	61.5%
90-180	1,023.9	38.5%
0-180	2,656.3	100%

<b>Lumens Per Zone</b>					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	18.4	0.7%	90-100	251.5	9.5%
10-20	63.3	2.4%	100-110	230.2	8.7%
20-30	116.4	4.4%	110-120	197.7	7.4%
30-40	163.3	6.1%	120-130	151.5	5.7%
40-50	217.5	8.2%	130-140	102.5	3.9%
50-60	253.5	9.5%	140-150	60.1	2.3%
60-70	270.1	10.2%	150-160	24.8	0.9%
70-80	269.7	10.2%	160-170	5.4	0.2%
80-90	260.2	9.8%	170-180	0.2	0%

### Photometric Data

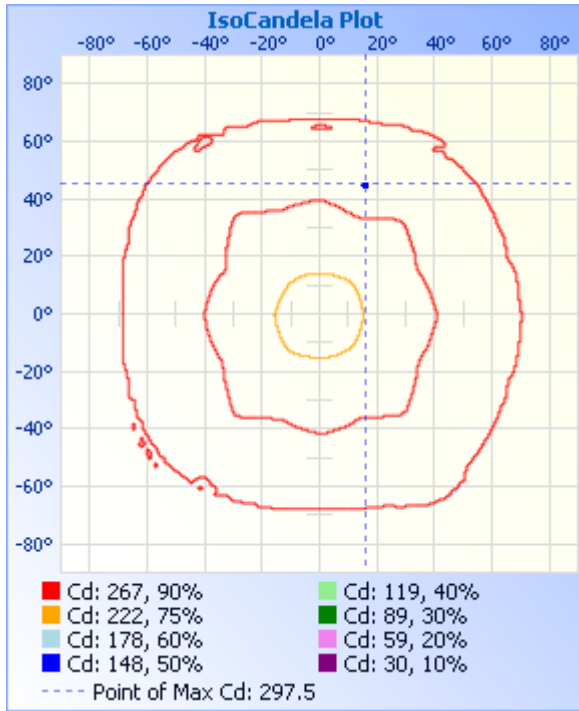


### Illuminance Plots

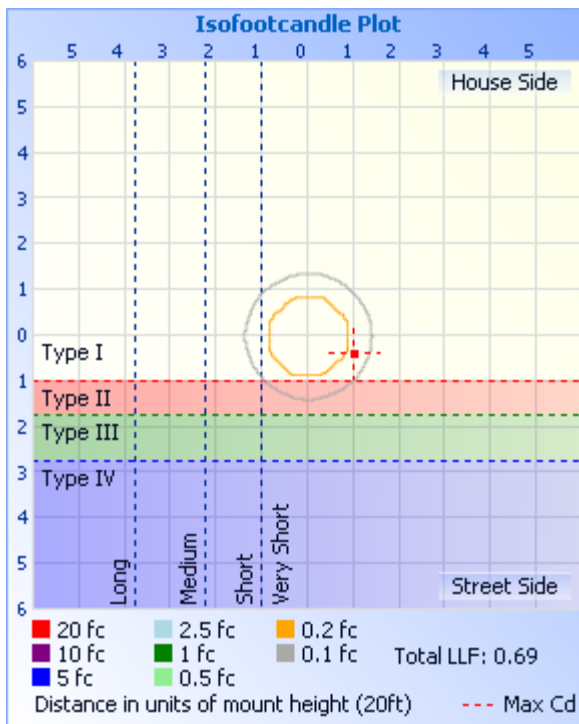
Illuminance at a Distance		
	Center Beam fc	Beam Width
17.0ft	<b>0.63 fc</b>	
34.0ft	<b>0.16 fc</b>	
51.0ft	<b>0.07 fc</b>	
68.0ft	<b>0.04 fc</b>	
85.0ft	<b>0.03 fc</b>	
102.0ft	<b>0.02 fc</b>	



### 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	182	182	182	182	182	182	182	182	182	182	182	182	182	182	182	182	182
1	182	182	182	182	181	182	182	182	182	182	182	182	183	183	183	183	182
2	183	183	183	183	182	182	183	183	183	183	183	184	185	185	185	185	183
3	184	184	185	184	183	183	184	184	184	184	184	186	186	187	188	187	184
4	186	185	186	186	184	184	185	186	185	184	185	187	187	189	190	188	186
5	187	187	188	188	186	185	187	188	186	186	187	189	188	191	193	190	187
6	190	190	191	190	188	188	190	190	188	187	189	190	190	192	195	193	190
7	192	193	195	193	191	191	193	193	192	190	192	192	192	195	198	197	192
8	194	196	198	196	194	195	197	197	194	193	195	195	195	198	200	199	194
9	198	199	200	199	198	199	200	200	198	196	199	199	198	201	202	201	198
10	202	203	202	202	200	201	203	203	202	200	202	202	201	204	206	205	202
11	207	208	207	205	204	205	205	207	206	205	204	207	204	208	209	210	207
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16	230	227	225	227	222	225	220	225	227	227	225	228	228	226	224	226	230
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27	263	262	249	263	256	255	243	256	254	259	248	258	261	260	249	260	263
28	263	263	250	264	257	257	243	256	254	260	248	259	262	262	250	261	263

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29	263	264	251	265	258	258	244	256	254	261	248	261	263	263	250	261	263
30	263	264	252	266	259	258	244	256	255	261	249	261	263	263	251	261	263
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42	272	279	261	283	272	283	260	282	269	280	262	282	271	285	265	287	272
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60	287	277	285	279	283	276	281	272	281	272	283	270	290	271	285	277	287

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61	285	277	283	278	284	277	280	275	279	271	282	271	289	268	286	278	285
62	282	275	278	278	282	278	275	277	279	271	278	273	286	267	282	279	282
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93	229	234	229	235	234	237	233	234	231	234	235	229	232	229	229	231	229
94	229	233	229	234	234	236	232	234	231	234	234	228	231	229	228	231	229
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114	201	200	202	203	207	204	203	202	204	202	205	198	202	196	199	198	201
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116	196	197	196	200	203	200	199	198	199	197	200	195	198	193	194	195	196
117	194	194	193	198	200	198	196	196	197	195	197	193	195	190	192	193	194
118	191	192	190	195	197	196	193	194	193	193	193	191	192	187	189	190	191
119	187	189	187	192	194	194	190	192	190	190	190	189	189	185	186	187	187
120	184	185	184	189	190	191	187	190	186	187	187	188	186	182	183	184	184
121	181	182	180	186	187	189	183	187	183	185	183	186	183	180	180	181	181
122	177	178	177	183	183	186	180	185	179	182	180	183	179	177	176	178	177
123	173	174	173	178	179	183	176	182	176	178	176	180	175	173	172	175	173
124	169	170	169	175	174	180	173	178	171	174	172	176	171	170	169	171	169

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125	166	167	166	171	171	175	169	175	168	170	169	173	168	167	166	167	166
126	162	163	162	168	167	171	165	170	164	166	164	169	164	163	162	164	162
127	157	158	157	163	163	167	160	166	159	162	160	165	159	158	157	159	157
128	153	154	154	159	158	163	156	161	155	157	157	160	155	154	154	155	153
129	149	150	150	155	154	159	153	157	151	154	154	156	151	151	151	152	149
130	146	147	146	152	151	155	150	153	148	150	150	152	148	147	146	148	146
131	142	143	142	148	147	151	146	150	144	147	147	147	144	144	142	145	142
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135	129	130	130	134	133	137	132	136	131	133	132	133	130	130	129	131	129
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147	81	88	81	91	87	94	87	93	86	92	87	90	81	87	80	89	81
148	77	83	77	85	84	89	83	89	82	88	84	86	77	82	76	84	77
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150	69	73	68	75	75	78	76	79	75	78	76	77	69	72	68	74	69
151	65	68	64	69	70	72	71	74	71	73	69	71	65	67	64	68	65
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155	50	50	49	52	53	54	55	54	54	54	53	52	49	50	49	51	50
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157	41	43	42	46	45	46	47	46	46	46	45	44	42	43	41	44	41
158	37	39	38	42	41	43	44	43	43	42	42	40	39	40	37	40	37
159	34	35	34	38	37	39	40	39	40	39	38	35	35	37	33	37	34
160	30	32	31	35	33	35	36	35	37	36	35	31	31	34	30	34	30
161	27	29	29	30	30	32	33	31	33	32	31	28	28	30	29	31	27
162	25	25	25	25	26	27	28	28	29	28	28	27	26	24	25	26	25
163	22	20	21	21	22	22	24	24	24	24	24	24	21	21	21	21	22
164	18	17	17	19	19	19	21	20	21	19	20	20	17	18	18	18	18
165	15	14	15	16	16	16	18	17	18	16	17	17	15	16	16	15	15
166	12	13	12	14	14	14	15	15	16	14	15	14	14	14	13	14	12
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168	8	8	9	9	9	9	9	10	10	10	9	9	9	8	8	9	8
169	7	6	6	7	7	7	8	7	8	7	7	7	6	7	7	7	7
170	5	4	4	6	5	5	6	6	6	6	6	5	5	5	5	5	5
171	3	2	3	4	4	4	4	4	4	4	4	4	4	4	3	3	3
172	2	1	2	2	2	2	3	3	3	3	3	2	2	3	3	3	2
173	1	1	1	2	1	1	2	2	2	2	1	1	2	2	2	1	1
174	1	0	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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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

<b>3. Test Equipment</b>
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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 \*\*\*\*\***

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