

LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN**(Brand Name:N/A)**

188 S. Northwest Highway Cary, IL60013

LED Luminaires

Model name(s): LED-8029E40C-A

Representative (Tested) Model: LED-8029E40C-A

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Apr.13,2017

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

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<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-8029E40C-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	220-347Vac, 50/60 Hz	
Nominal Power	24W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-AJ1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
Photo		
		

1.2 Test Specifications:

Date of Receipt	Jan 16,2017
Date of Test	Jan 17,2017
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**1) Photometric and Light Distribution Measurement – Goniophotometer 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 277 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.

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

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 277 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.

3) Electrical Measurements:

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 277 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.

2.1 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2017-01-17	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8029E40C-A		

Electrical Measurement :

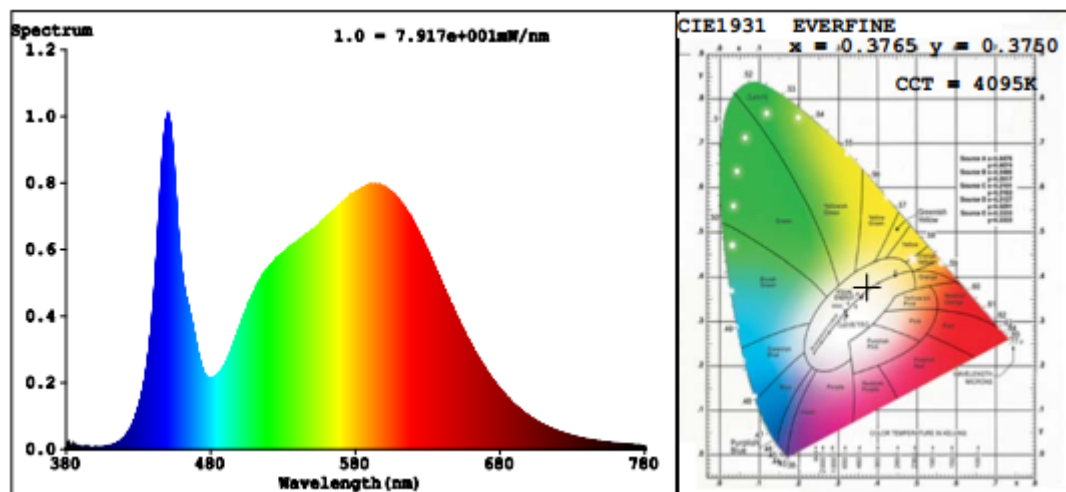
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-	277.0	60	0.0950	24.76	0.9406
AJ1	347.0	60	0.0773	24.88	0.9274

Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	80	R9	7
Frequency (Hz)	60	R2	88	R10	71
CCT (K)	4095	R3	93	R11	80
Duv	0.0003	R4	81	R12	58
Chromaticity (x, y)	x=0.3765 y=0.3750	R5	80	R13	82
Chromaticity (u', v')	u'=0.2232 v'=0.5002	R6	83	R14	96
Color Rendering Index (CRI)	82.1	R7	86	R15	75
R9	7	R8	65	--	--

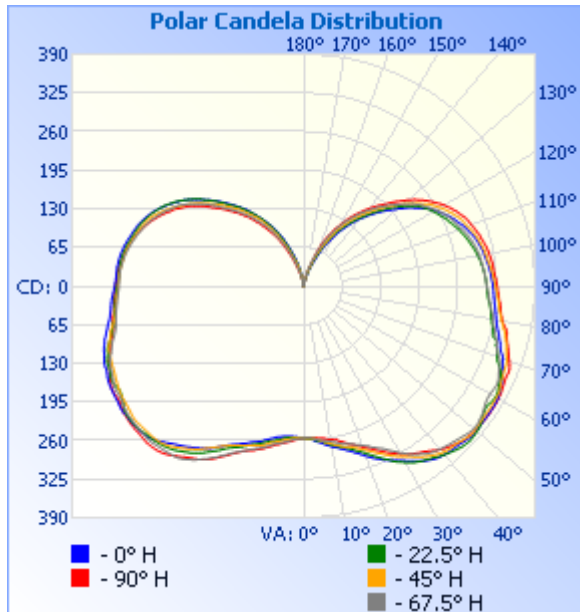
Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	3567.6	3557.8
Luminous Efficacy (lm/W)	144.09	143.00
Beam Angle (°)	269.5	--
Center Beam Candle Power (cd)	255	--

Spectral Power Distribution & Chromaticity Diagram

Zonal Lumen Tabulation

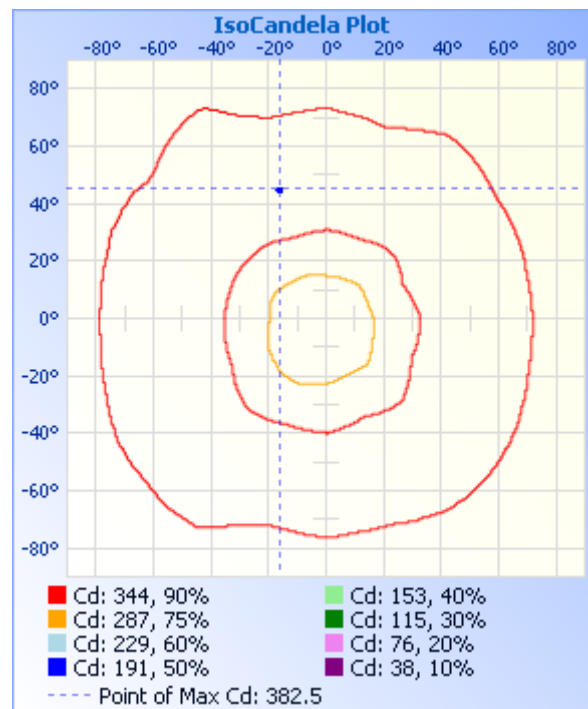
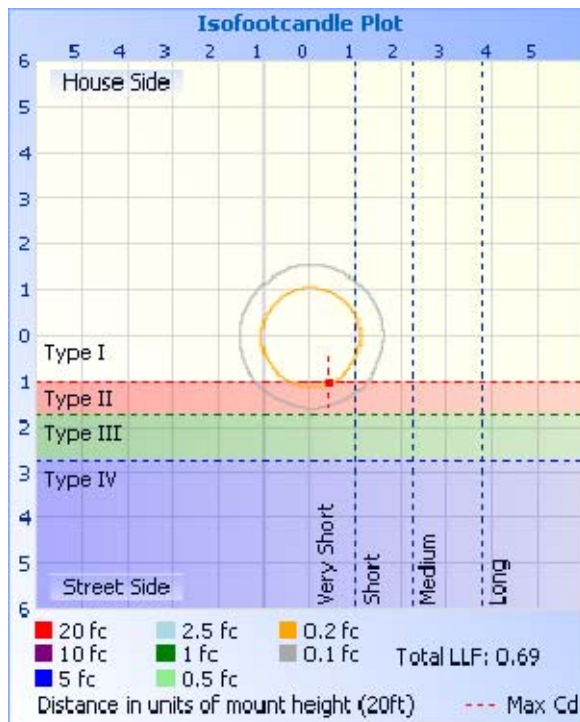
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	247.0	6.9%
0-40	463.9	13%
0-60	1,079.0	30.2%
60-90	1,065.7	29.9%
70-100	1,047.3	29.4%
90-120	929.8	26.1%
0-90	2,144.7	60.1%
90-180	1,423.1	39.9%
0-180	3,567.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	24.9	0.7%	90-100	339.2	9.5%
10-20	79.0	2.2%	100-110	315.9	8.9%
20-30	143.0	4.0%	110-120	274.7	7.7%
30-40	216.9	6.1%	120-130	215.5	6%
40-50	284.0	8.0%	130-140	146.5	4.1%
50-60	331.0	9.3%	140-150	85.8	2.4%
60-70	357.6	10.0%	150-160	37.2	1%
70-80	358.8	10.1%	160-170	8.0	0.2%
80-90	349.3	9.8%	170-180	0.3	0%

Photometric Data


Illuminance at a Distance

	Center Beam fc	Beam Width
17.0ft	0.88 fc	
34.0ft	0.22 fc	
51.0ft	0.10 fc	
68.0ft	0.06 fc	
85.0ft	0.04 fc	
102.0ft	0.02 fc	



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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	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255
1	256	257	256	255	256	254	254	254	255	256	255	256	256	256	256	256	256
2	257	257	256	255	255	253	253	253	254	255	255	257	258	257	257	256	257
3	258	258	256	256	256	252	251	252	254	255	256	258	259	260	259	258	258
4	260	259	257	257	256	252	251	252	254	255	257	259	260	262	261	259	260
5	263	261	258	259	257	253	252	253	254	255	258	261	263	263	262	261	263
6	265	262	261	261	257	254	253	254	255	256	259	263	264	265	264	264	265
7	267	264	263	262	258	255	254	255	255	258	261	264	265	267	267	267	267
8	270	266	265	263	259	255	255	255	256	260	262	266	268	269	269	269	270
9	272	269	267	264	261	256	256	256	257	261	264	268	269	271	272	271	272
10	274	271	269	266	261	257	257	258	258	263	266	269	271	273	274	274	274
11	276	273	272	267	263	258	258	259	260	265	268	271	274	277	276	276	276
12	278	275	273	269	264	259	259	260	262	266	269	275	276	279	278	278	278
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16	289	285	281	277	277	268	266	269	272	276	279	284	286	290	286	289	289
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24	319	316	308	297	302	292	287	286	292	298	294	309	311	322	309	316	319
25	323	321	311	301	306	295	289	288	295	301	296	314	315	328	314	321	323
26	326	325	316	304	311	299	290	291	298	305	299	318	320	332	318	326	326
27	329	330	319	309	314	302	293	294	303	310	302	323	325	337	323	331	329
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29	336	338	328	318	322	311	300	300	311	318	310	332	334	345	331	340	336
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61	377	373	375	364	379	362	364	357	368	356	356	362	367	364	363	361	377
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93	317	306	320	306	323	312	319	306	316	312	312	311	315	309	311	305	317
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123	240	242	253	245	260	259	261	258	259	260	247	250	243	238	237	239	240
124	235	238	248	242	256	256	257	255	255	255	244	245	239	232	230	233	235

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125	230	234	241	238	252	252	253	252	251	252	240	241	235	226	224	229	230
126	225	228	237	234	246	247	249	249	247	246	236	235	229	221	219	222	225
127	219	223	231	231	241	245	243	244	242	243	231	229	224	215	213	216	219
128	213	219	226	225	237	240	239	240	237	237	227	224	218	211	208	211	213
129	208	213	220	220	230	236	234	236	231	232	222	219	214	205	203	205	208
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132	191	196	202	205	213	219	219	222	217	217	207	203	197	189	186	188	191
133	186	191	197	200	208	213	214	217	212	211	203	197	191	185	180	183	186
134	180	185	192	194	202	208	208	212	206	206	197	190	186	179	175	177	180
135	175	179	186	190	195	202	203	207	202	200	193	185	180	174	169	172	175
136	169	174	181	185	191	198	197	201	196	195	187	180	176	169	164	167	169
137	164	168	175	181	185	192	192	195	192	189	182	175	170	163	160	161	164
138	158	162	169	175	181	187	187	190	186	183	177	170	166	159	154	155	158
139	153	157	164	170	175	181	182	184	181	180	172	166	161	152	149	151	153
140	148	151	159	166	170	177	177	180	176	175	168	160	155	146	144	145	148
141	142	147	153	160	165	172	171	175	171	170	162	155	151	141	138	140	142
142	138	141	149	155	159	168	167	171	166	164	158	150	145	135	133	134	138
143	131	135	143	150	154	163	161	165	162	160	152	145	139	129	126	128	131
144	125	131	138	144	149	158	156	161	156	154	148	139	133	124	121	123	125
145	120	125	132	140	144	153	151	155	150	150	142	134	128	119	115	117	120
146	113	120	126	134	139	147	146	150	145	144	139	129	122	114	108	110	113
147	108	114	121	130	133	142	141	145	139	138	133	123	116	108	103	105	108
148	101	109	115	124	126	136	136	139	134	134	127	118	111	102	96	99	101
149	94	103	109	118	122	132	131	135	129	127	121	112	105	97	90	94	94
150	89	98	102	113	115	125	125	129	124	122	114	107	100	90	85	87	89
151	83	92	95	107	110	121	120	124	119	116	109	101	94	85	79	80	83
152	78	85	89	101	104	115	113	117	114	112	102	95	89	78	74	75	78
153	72	80	83	96	98	110	108	113	109	105	97	88	83	70	68	67	72
154	65	73	78	90	93	103	102	106	102	100	90	83	77	64	60	62	65
155	60	66	72	84	87	97	97	101	97	93	84	77	69	58	55	56	60
156	53	60	66	77	81	92	90	95	91	87	78	71	63	53	49	51	53

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

Report Format Number STD/QR4909-A/2

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157	48	54	62	71	74	86	85	89	85	80	72	65	58	48	44	47	48
158	43	49	56	65	67	79	78	82	78	74	65	59	53	42	39	42	43
159	38	45	51	59	60	69	73	75	72	68	59	53	48	38	35	39	38
160	34	39	44	52	53	61	66	69	66	61	53	46	41	33	31	33	34
161	30	35	39	47	45	50	58	63	61	56	49	42	35	29	27	27	30
162	27	31	35	41	39	43	51	58	54	50	45	37	31	25	23	23	27
163	22	26	31	38	33	34	45	52	50	46	41	30	28	21	18	19	22
164	18	22	26	33	28	27	39	49	45	41	37	27	24	18	15	16	18
165	15	18	23	28	24	21	34	44	40	37	32	23	22	15	13	14	15
166	12	16	19	24	20	15	29	38	36	32	27	20	19	11	10	10	12
167	10	13	15	19	17	12	24	33	31	27	22	17	15	8	7	7	10
168	7	10	13	15	14	9	22	27	27	22	18	14	12	7	5	6	7
169	5	8	10	13	10	8	16	21	19	17	15	10	9	4	3	4	5
170	4	5	8	10	7	5	12	14	12	12	12	9	7	3	2	2	4
171	3	4	6	7	5	4	10	10	4	6	8	7	5	2	2	2	3
172	2	3	4	4	2	2	9	5	2	3	4	5	4	1	1	2	2
173	1	2	2	2	1	2	8	2	2	2	5	4	3	1	1	1	1
174	1	1	1	1	1	1	4	1	3	2	4	2	2	1	1	1	1
175	1	1	1	1	1	1	2	1	3	2	2	2	1	1	1	1	1
176	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
177	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
178	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
179	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-327	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-12	2017-07-11
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
GO-R5000	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-12	2017-07-11
PF210	Power Meter for Goniophotometer	2016-07-07	2017-07-06
Expand Uncertainty: Photometric Measurement (Sphere):2.04%, k=2 Chromaticity Measurement(Sphere):28.8K, k=2 Photometric Measurement(Goniophotometer):2.36%, k=2			

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