

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-8029E30C-A

Representative (Tested) Model: LED-8029E30C-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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1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-8029E30C-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	3000K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-AH1	
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-8029E30C-A		

Electrical Measurement :

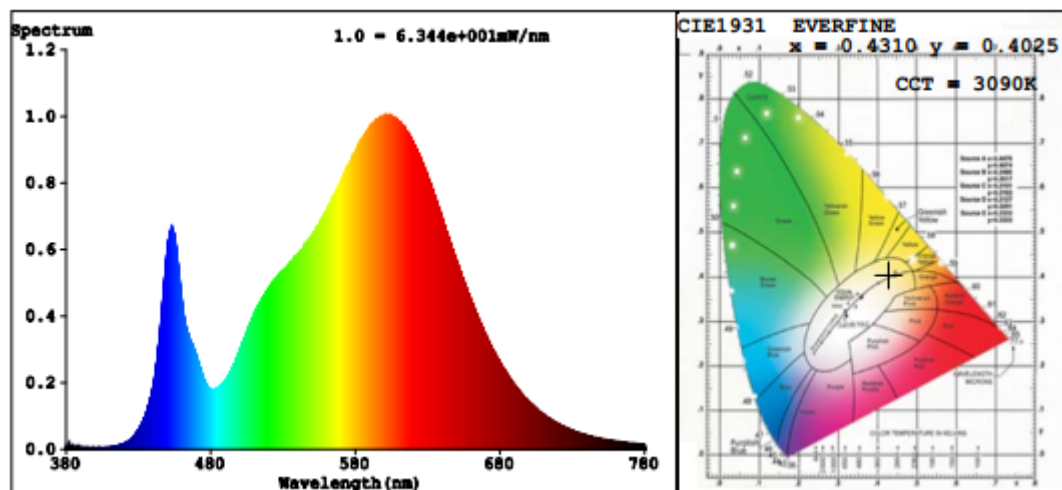
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-	277.0	60	0.0852	22.25	0.9423
AH1	347.0	60	0.0697	22.43	0.9274

Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	80	R9	3
Frequency (Hz)	60	R2	90	R10	76
CCT (K)	3090	R3	96	R11	77
Duv	0.0002	R4	79	R12	64
Chromaticity (x, y)	x=0.4310 y=0.4025	R5	79	R13	82
Chromaticity (u', v')	u'=0.2474 v'=0.5199	R6	87	R14	98
Color Rendering Index (CRI)	81.4	R7	83	R15	72
R9	3	R8	58	--	--

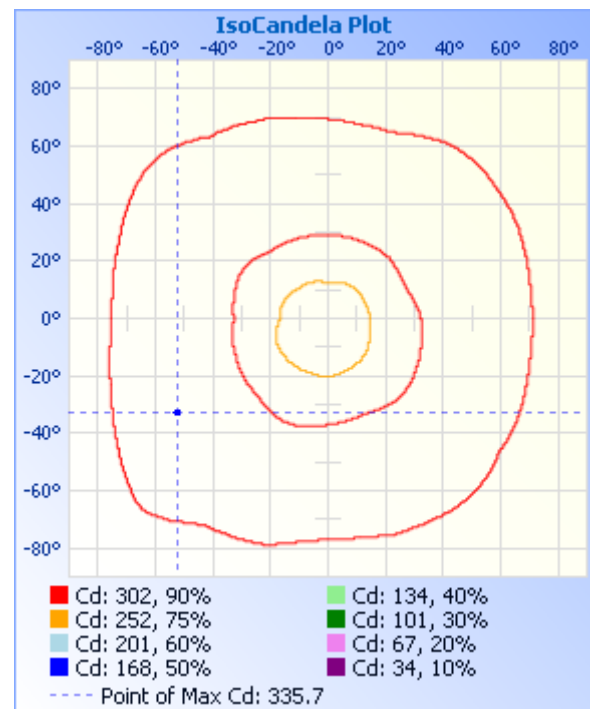
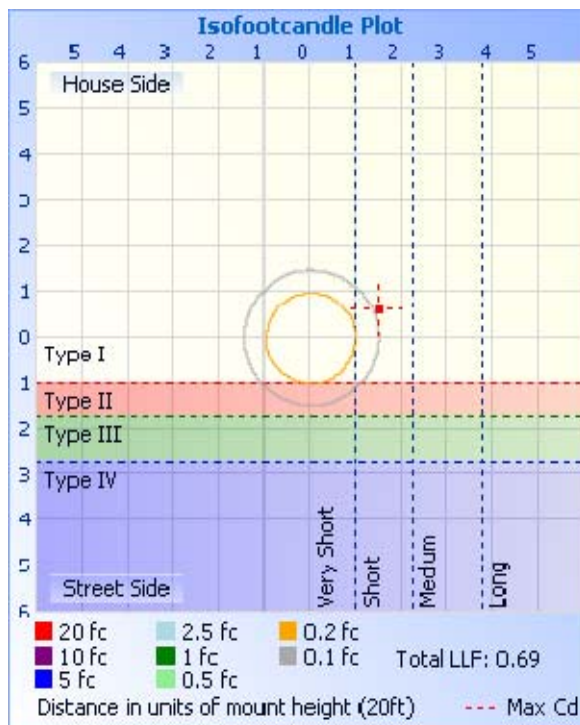
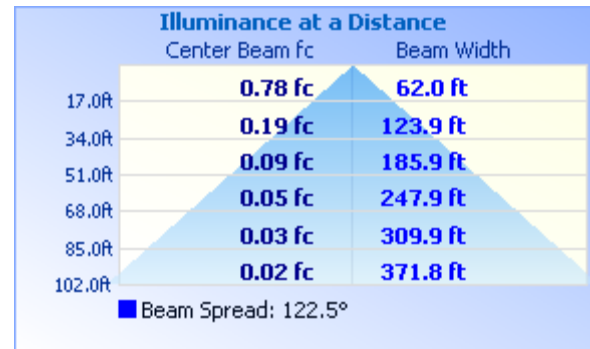
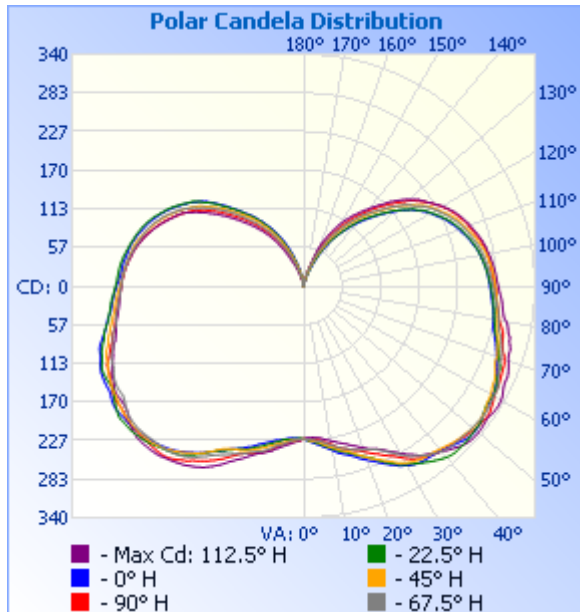
Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	3098.9	3096.3
Luminous Efficacy (lm/W)	139.28	138.04
Beam Angle (°)	266.6	--
Center Beam Candle Power (cd)	224	--

Spectral Power Distribution & Chromaticity Diagram

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	220.5	7.1%
0-40	412.5	13.3%
0-60	952.8	30.7%
60-90	934.6	30.2%
70-100	917.1	29.6%
90-120	802.4	25.9%
0-90	1,887.5	60.9%
90-180	1,211.6	39.1%
0-180	3,099.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	22.1	0.7%	90-100	295.4	9.5%
10-20	70.8	2.3%	100-110	272.6	8.8%
20-30	127.6	4.1%	110-120	234.4	7.6%
30-40	192.0	6.2%	120-130	182.6	5.9%
40-50	249.5	8.1%	130-140	121.8	3.9%
50-60	290.8	9.4%	140-150	69.3	2.2%
60-70	313.0	10.1%	150-160	29.2	0.9%
70-80	314.9	10.2%	160-170	6.1	0.2%
80-90	306.8	9.9%	170-180	0.2	0%

Photometric Data


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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	224	224	224	224	224	224	224	224	224	224	224	224	224	224	224	224	224
1	226	225	225	225	225	223	224	223	224	224	224	224	226	226	226	225	226
2	228	227	226	225	225	222	223	222	224	224	225	225	228	227	228	228	228
3	229	228	227	226	225	222	222	221	224	224	226	226	228	229	229	229	229
4	231	229	228	226	225	223	221	220	223	225	227	227	229	230	231	230	231
5	233	231	229	228	226	223	222	220	224	225	227	229	231	232	232	231	233
6	235	233	231	229	227	224	224	222	225	226	229	231	232	234	234	234	235
7	237	236	234	231	230	225	225	224	226	227	231	233	233	236	236	236	237
8	239	237	236	233	232	227	227	226	228	228	232	235	235	238	238	239	239
9	242	240	238	235	234	229	227	228	229	231	234	236	237	241	241	241	242
10	245	242	241	237	235	230	229	230	230	233	236	239	240	243	243	244	245
11	248	244	242	239	239	232	231	231	231	234	238	242	244	246	246	246	248
12	251	247	245	242	242	234	233	233	234	236	239	244	247	248	248	247	251
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22	278	272	273	258	264	258	258	257	257	258	259	266	268	276	274	271	278
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25	288	285	282	265	273	264	267	263	265	265	263	273	279	289	285	283	288
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27	295	292	289	273	280	271	272	265	271	271	269	278	287	297	294	292	295
28	299	296	294	277	282	275	275	266	274	274	273	281	290	300	297	297	299

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29	301	299	296	281	286	279	278	268	277	278	277	284	293	304	301	301	301
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61	320	321	316	322	322	334	327	326	325	319	319	311	320	317	316	311	320
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92	272	273	281	276	279	284	277	281	271	274	267	267	266	267	269	269	272

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93	271	272	280	275	279	283	276	281	270	274	266	267	266	266	269	268	271
94	271	271	279	274	278	282	276	280	269	273	266	266	265	265	267	267	271
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123	203	205	216	213	223	224	226	228	217	218	208	208	201	198	196	198	203
124	199	200	211	210	220	220	222	225	214	215	205	203	198	194	192	194	199

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125	195	197	206	205	216	217	220	220	211	212	202	200	194	189	187	189	195
126	191	192	202	200	212	214	217	217	208	208	198	195	189	184	182	185	191
127	185	187	198	197	207	211	213	213	204	206	195	191	186	179	177	179	185
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136	139	141	151	153	162	167	170	172	163	161	153	149	141	133	132	132	139
137	134	137	146	149	157	162	166	167	157	156	149	144	137	128	128	128	134
138	129	133	141	144	152	157	160	162	153	152	144	139	132	124	123	123	129
139	125	127	136	140	148	153	155	157	148	147	140	134	128	119	118	119	125
140	120	123	132	136	142	148	150	153	143	142	136	129	123	115	114	114	120
141	115	117	126	131	137	144	146	148	138	137	132	125	119	111	109	109	115
142	110	112	121	126	133	139	141	143	135	132	128	120	114	106	105	105	110
143	104	107	117	121	128	135	137	138	130	129	124	116	110	102	100	100	104
144	100	102	112	116	124	130	133	134	127	124	119	111	105	97	95	96	100
145	96	97	107	112	119	126	129	129	122	120	115	106	101	93	91	91	96
146	91	93	101	107	113	121	124	125	117	116	110	102	97	88	86	86	91
147	87	88	96	102	109	117	119	120	114	112	105	97	92	83	82	82	87
148	82	83	92	97	104	113	115	116	109	107	101	93	88	78	77	77	82
149	77	78	87	92	99	108	110	111	105	102	96	88	83	72	72	71	77
150	72	74	82	89	94	104	106	106	100	97	92	83	79	68	68	67	72
151	66	70	77	83	89	98	101	101	96	93	87	77	74	62	63	61	66
152	62	65	71	78	84	93	97	95	91	88	83	73	70	57	57	57	62
153	56	59	66	74	79	88	91	91	87	83	77	67	65	53	52	52	56
154	51	55	60	68	74	83	87	86	82	78	73	63	60	47	47	47	51
155	45	49	56	63	70	78	82	81	78	72	67	58	54	42	43	43	45
156	40	44	52	58	65	74	77	76	73	68	63	52	49	38	37	38	40

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

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157	36	40	47	53	60	68	72	71	69	62	58	49	44	34	33	34	36
158	32	35	43	49	54	62	66	65	63	58	53	44	40	31	30	30	32
159	30	32	37	43	47	57	60	60	58	53	48	41	36	27	26	26	30
160	26	29	33	38	42	49	53	55	53	49	43	36	32	24	22	23	26
161	22	25	29	35	36	42	47	50	48	43	39	32	28	21	19	19	22
162	20	22	25	31	32	34	39	45	43	39	35	28	24	17	17	16	20
163	15	18	22	27	26	29	35	40	38	34	32	26	21	14	14	14	15
164	12	14	19	25	22	22	29	37	35	30	28	21	17	12	11	11	12
165	10	12	16	21	20	18	23	33	31	26	24	18	15	10	8	9	10
166	9	10	13	17	17	13	19	30	28	23	22	16	11	8	7	7	9
167	7	9	10	14	13	10	16	25	25	21	19	13	9	6	6	5	7
168	5	7	8	11	10	8	15	21	21	17	16	11	7	5	4	4	5
169	3	5	7	9	6	6	11	16	16	14	13	8	7	4	2	3	3
170	3	4	5	7	3	6	8	10	9	10	10	6	5	2	2	2	3
171	2	3	4	4	2	4	7	6	4	7	6	5	4	1	1	1	2
172	1	2	2	2	1	3	6	3	1	3	3	5	3	1	1	1	1
173	1	1	2	2	1	2	4	1	1	2	3	3	2	1	1	1	1
174	1	1	1	1	1	1	2	1	2	2	3	2	1	1	1	1	1
175	1	1	1	1	1	1	1	1	2	2	2	1	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 *******