

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-8029E57-A

LED-8029-DL-E27-A

Remark: The two models are the same product with two model names

Representative (Tested) Model: LED-8029E57-A

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Mar.30,2017

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

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-8029E57-A, LED-8029-DL-E27-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	24W	
Rated Initial Lamp Lumen	--	
Declared CCT	5700K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-P1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo

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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 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.

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 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.

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 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.

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-8029E57-A		

Electrical Measurement :

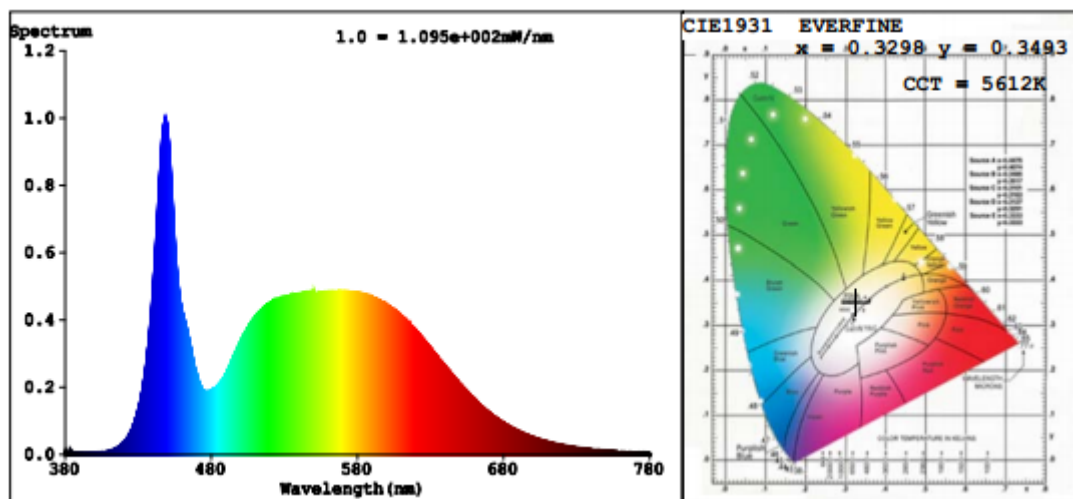
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-	120.0	60	0.2032	23.93	0.9815
P1	277.0	60	0.0943	24.18	0.9256

Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	4
Frequency (Hz)	60	R2	85	R10	65
CCT (K)	5612	R3	89	R11	83
Duv	0.0053	R4	83	R12	59
Chromaticity (x, y)	x=0.3298 y=0.3493	R5	81	R13	81
Chromaticity (u', v')	u'=0.2020 v'=0.4813	R6	81	R14	94
Color Rendering Index (CRI)	81.9	R7	87	R15	74
R9	4	R8	68	--	--

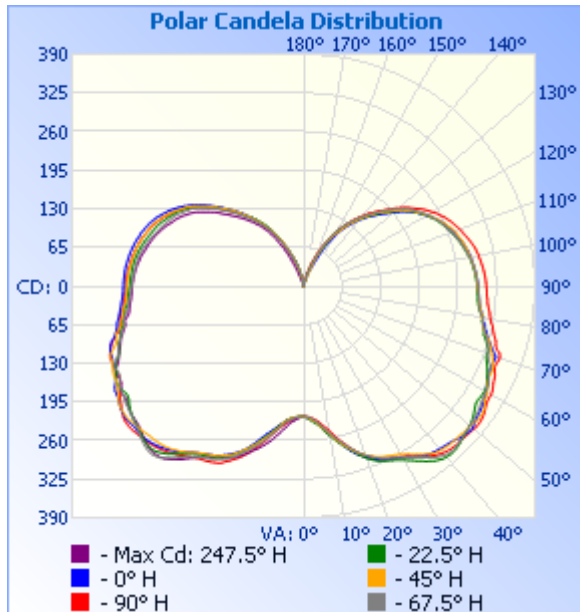
Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	3425.3	3441.0
Luminous Efficacy (lm/W)	143.14	142.31
Beam Angle (°)	266.0	--
Center Beam Candle Power (cd)	219	--

Spectral Power Distribution & Chromaticity Diagram

Zonal Lumen Tabulation

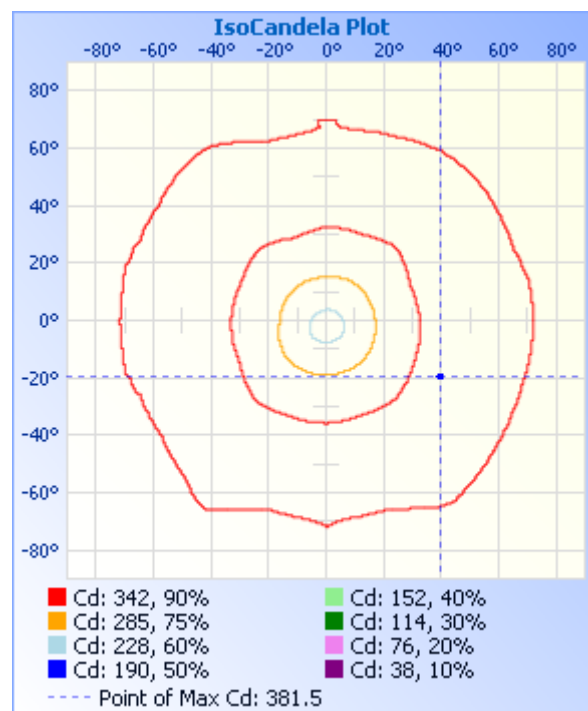
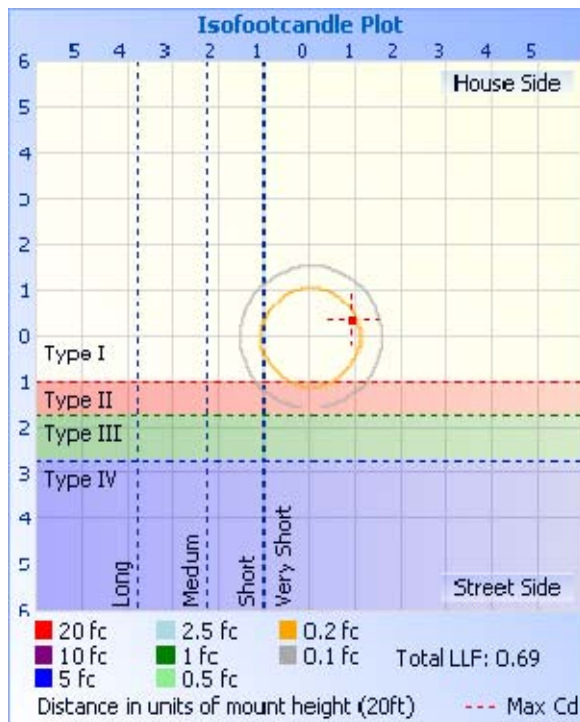
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	247.8	7.2%
0-40	466.8	13.6%
0-60	1,078.3	31.5%
60-90	1,013.8	29.6%
70-100	987.6	28.8%
90-120	872.0	25.5%
0-90	2,092.1	61.1%
90-180	1,333.4	38.9%
0-180	3,425.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	22.2	0.6%	90-100	318.7	9.3%
10-20	78.3	2.3%	100-110	296.2	8.6%
20-30	147.4	4.3%	110-120	257.1	7.5%
30-40	219.0	6.4%	120-130	202.5	5.9%
40-50	285.6	8.3%	130-140	137.9	4%
50-60	325.9	9.5%	140-150	80.9	2.4%
60-70	344.9	10.1%	150-160	33.3	1%
70-80	341.2	10.0%	160-170	6.6	0.2%
80-90	327.7	9.6%	170-180	0.3	0%

Photometric Data


Illuminance at a Distance

	Center Beam fc	Beam Width
17.0ft	0.76 fc	
34.0ft	0.19 fc	
51.0ft	0.08 fc	
68.0ft	0.05 fc	
85.0ft	0.03 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	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219
1	221	221	220	219	219	219	218	219	220	220	219	219	220	220	220	220	221
2	223	223	222	220	220	219	218	219	220	220	219	220	221	221	222	222	223
3	225	226	224	222	222	219	219	220	221	220	220	221	222	223	223	224	225
4	227	229	227	224	223	221	220	221	222	221	222	222	224	225	225	227	227
5	230	231	229	227	226	222	222	222	223	223	223	224	226	228	228	229	230
6	234	235	233	231	229	225	223	223	226	224	224	227	228	231	231	233	234
7	237	239	238	235	233	228	226	226	227	227	227	229	232	236	235	238	237
8	243	245	242	241	237	232	229	230	230	231	231	234	236	240	240	243	243
9	249	251	248	245	242	236	234	233	234	234	235	238	239	246	245	249	249
10	253	255	253	251	246	241	238	238	238	240	241	243	244	251	250	254	253
11	259	261	259	257	253	245	243	244	242	244	247	249	250	256	256	260	259
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13	271	271	269	267	264	255	253	253	252	255	257	260	261	267	267	270	271
14	276	277	275	272	271	261	258	259	257	261	262	266	269	273	272	276	276
15	282	281	280	278	276	266	263	264	263	265	267	273	275	277	278	280	282
16	288	287	285	283	283	273	268	271	268	272	273	277	281	283	283	285	288
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25	322	325	317	320	321	318	310	312	313	316	314	320	328	328	316	319	322
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27	326	329	320	325	325	324	316	318	320	322	320	327	333	333	319	323	326
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29	330	335	324	330	329	329	321	322	324	327	324	332	336	337	323	328	330
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93	292	291	292	292	306	293	304	288	303	292	297	288	299	291	287	287	292
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124	223	225	225	227	234	233	237	233	241	235	238	231	234	226	222	222	223

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126	214	215	216	220	224	226	229	227	233	228	229	223	226	217	213	213	214
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132	182	185	188	191	193	198	198	201	200	197	199	194	196	188	185	182	182
133	177	181	183	187	188	192	193	195	196	192	193	188	190	184	180	177	177
134	173	176	179	181	183	188	188	190	190	187	188	183	185	178	176	172	173
135	168	171	174	176	179	182	183	184	184	181	184	178	179	173	171	167	168
136	163	166	169	171	174	177	179	178	180	177	179	174	174	169	166	163	163
137	160	161	163	166	169	173	174	174	174	171	174	168	170	164	161	158	160
138	155	157	159	162	165	167	168	169	170	167	168	163	165	160	156	154	155
139	150	152	153	157	160	163	164	164	164	161	164	158	161	155	151	149	150
140	146	148	149	152	155	158	158	159	159	156	158	152	156	150	146	144	146
141	140	143	143	148	150	153	154	155	154	152	153	148	151	146	140	140	140
142	135	139	138	143	144	149	149	150	148	148	148	143	146	140	136	135	135
143	130	134	133	138	140	143	144	145	144	144	143	139	140	135	130	131	130
144	124	130	127	134	134	139	138	140	138	139	138	134	136	131	124	127	124
145	119	125	121	128	128	134	132	135	134	135	132	129	130	125	119	121	119
146	113	120	116	124	123	129	127	130	128	130	128	125	126	121	113	115	113
147	107	114	110	119	118	124	121	125	123	126	123	120	121	116	108	110	107
148	100	110	105	113	113	119	116	121	117	120	117	115	115	110	102	103	100
149	92	103	101	109	107	114	110	115	111	115	112	110	111	105	97	98	92
150	86	98	95	102	101	108	105	109	106	110	106	105	105	98	93	88	86
151	79	90	91	95	95	103	100	104	100	103	102	99	100	91	87	80	79
152	70	81	84	90	89	95	96	97	95	98	96	92	93	85	82	75	70
153	62	75	78	83	83	89	90	92	89	91	91	87	88	78	76	68	62
154	53	68	72	77	77	82	85	85	84	85	85	80	81	72	67	58	53
155	46	62	64	70	71	77	79	80	78	77	80	76	75	66	61	48	46
156	41	57	58	63	67	71	72	73	72	72	73	69	69	60	54	39	41

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157	34	51	47	58	61	66	67	68	66	66	67	65	63	56	47	33	34
158	31	47	37	51	55	61	62	62	61	61	62	59	58	51	39	22	31
159	31	43	30	44	51	56	57	58	56	56	57	55	53	48	31	15	31
160	28	37	22	35	45	52	50	53	51	51	53	51	48	44	25	9	28
161	22	31	15	29	41	48	46	48	48	47	47	45	44	40	21	9	22
162	15	23	11	24	36	45	41	45	43	43	41	41	40	35	21	8	15
163	9	18	9	18	31	39	37	40	38	39	36	36	36	28	19	5	9
164	6	14	7	14	27	33	34	37	33	34	32	31	30	23	15	5	6
165	4	9	6	12	21	27	31	31	29	28	28	28	25	20	10	4	4
166	2	6	5	10	17	23	26	25	24	24	23	23	22	17	8	4	2
167	2	4	4	9	15	20	20	21	20	20	20	20	19	14	6	3	2
168	2	2	2	7	12	17	16	18	17	17	17	16	15	11	5	2	2
169	2	2	1	6	9	14	14	15	15	14	14	13	12	9	4	2	2
170	1	1	1	5	7	11	12	13	12	11	11	10	9	7	2	2	1
171	1	1	1	4	5	8	10	10	10	9	8	8	7	4	2	2	1
172	1	1	1	3	3	7	7	8	7	7	7	6	6	3	1	1	1
173	1	1	1	2	3	4	4	6	5	5	5	4	3	2	1	1	1
174	1	1	1	2	2	3	4	4	4	4	3	3	3	2	1	1	1
175	1	1	1	1	2	2	2	3	3	3	2	2	2	1	1	1	1
176	1	1	1	1	1	2	2	2	2	2	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

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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 *******