LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

(Brand Name:N/A)

188 S. Northwest HighwayCary, IL60013

LED Luminaires

Model name(s): LED-8024E40-A
LED-8024-CW-E27-A

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

Representative (Tested) Model: LED-8024E40-A

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Mar.29,2017

Review By:

Tommy Liang

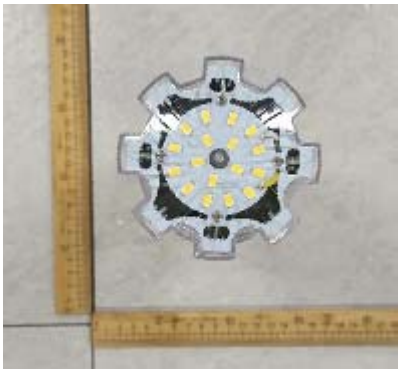
Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-8024E40-A, LED-8024-CW-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	100W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-L1	
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	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	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° C ± 1° 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 25º C ± 1º 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 25º C ± 1º 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-8024E40-A		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-L1	120.0	60	0.3771	43.58	0.9630
	277.0	60	0.1727	44.52	0.9308

Chromaticity Measurement - Sphere-Spectroradiometer Method :

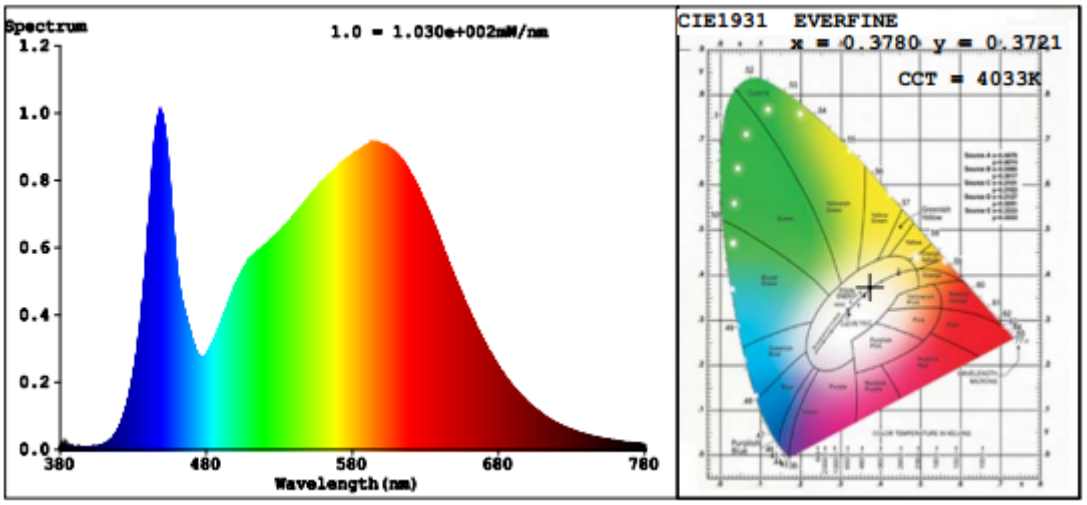
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	4033
Duv	-0.0015
Chromaticity (x, y)	x=0.3780 y=0.3721
Chromaticity (u', v')	u'=0.2254 v'=0.4991
Color Rendering Index (CRI)	85.1
R9	21

Special Color Rendering Indices			
R1	84	R9	21
R2	90	R10	77
R3	95	R11	84
R4	85	R12	69
R5	84	R13	85
R6	86	R14	97
R7	87	R15	79
R8	69	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	5328.2	5429.3
Luminous Efficacy (lm/W)	122.26	121.95
Beam Angle (°)	283.4	--
Center Beam Candle Power (cd)	7	--

Spectral Power Distribution & Chromaticity Diagram

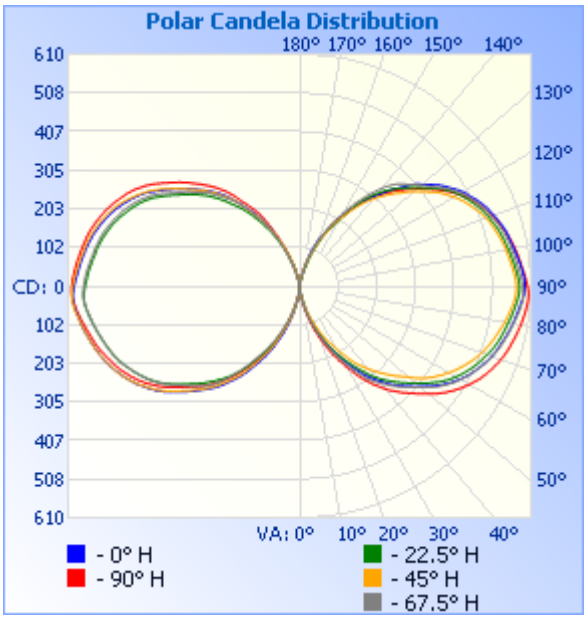


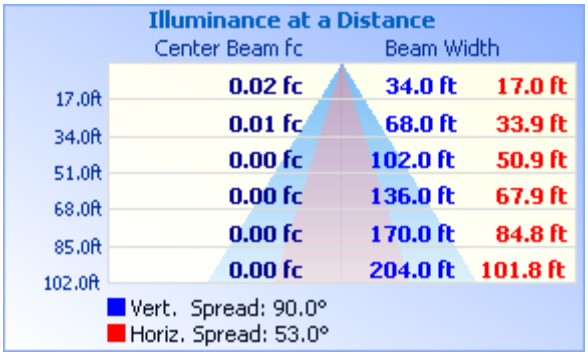
Zonal Lumen Tabulation

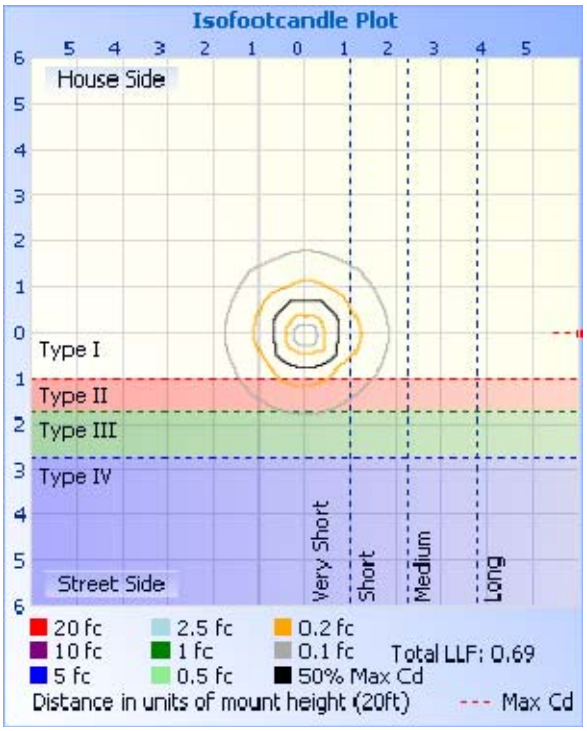
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	104.5	2%
0-40	278.8	5.2%
0-60	970.9	18.2%
60-90	1,726.3	32.4%
70-100	1,843.0	34.6%
90-120	1,711.4	32.1%
0-90	2,697.2	50.6%
90-180	2,631.4	49.4%
0-180	5,328.6	100%

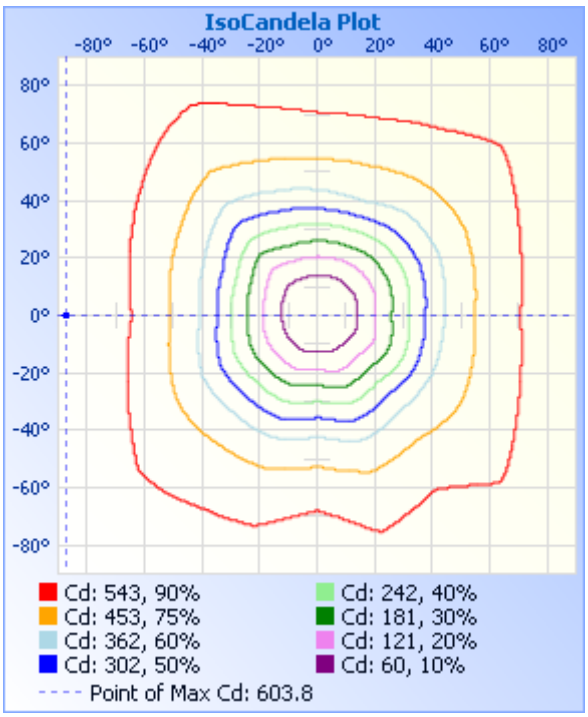
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	2.0	0.0%	90-100	626.3	11.8%
10-20	22.2	0.4%	100-110	580.5	10.9%
20-30	80.3	1.5%	110-120	504.5	9.5%
30-40	174.3	3.3%	120-130	395.6	7.4%
40-50	286.6	5.4%	130-140	276.3	5.2%
50-60	405.5	7.6%	140-150	162.7	3.1%
60-70	509.7	9.6%	150-160	69.8	1.3%
70-80	584.5	11.0%	160-170	15.0	0.3%
80-90	632.2	11.9%	170-180	0.6	0%

Photometric Data









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	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1	5	6	6	8	8	8	8	8	8	8	8	8	7	7	6	5	5
2	6	7	8	9	9	9	10	10	10	10	10	9	8	8	7	6	6
3	8	9	10	10	11	11	11	11	12	11	11	10	10	9	9	9	8
4	10	10	11	12	13	13	13	14	14	14	13	12	11	11	10	10	10
5	11	12	13	14	15	15	16	17	17	16	16	14	13	13	12	11	11
6	13	14	15	16	18	19	19	19	22	19	19	17	16	15	14	13	13
7	16	16	17	19	23	22	23	24	26	23	23	21	19	18	17	16	16
8	19	21	21	24	27	28	28	29	32	28	29	24	22	21	21	19	19
9	23	24	25	29	34	34	34	34	39	33	34	29	28	25	24	22	23
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11	34	36	36	42	48	47	48	48	54	46	48	40	40	35	35	33	34
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13	49	49	48	56	64	62	62	62	70	60	63	52	55	49	49	47	49
14	57	56	53	65	74	71	72	69	81	66	71	60	63	55	56	54	57
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140	309	318	299	335	310	301	301	291	313	284	309	304	337	308	307	341	309
141	301	308	291	324	302	292	293	282	304	276	301	296	326	296	298	330	301
142	289	296	281	311	291	281	281	271	292	266	290	286	317	285	287	314	289
143	280	287	272	300	279	270	271	263	281	258	280	278	305	276	279	304	280
144	268	273	261	287	267	261	258	252	268	247	266	267	294	266	268	293	268
145	256	259	248	274	254	249	245	240	256	236	255	257	280	258	258	282	256
146	243	246	239	263	245	240	236	231	247	227	243	244	267	246	245	272	243
147	231	230	227	248	234	228	226	219	237	215	232	231	258	236	233	258	231
148	222	217	216	238	223	219	217	210	228	205	224	220	246	226	224	246	222
149	211	202	208	225	214	206	206	199	217	194	214	207	237	213	214	229	211
150	200	192	197	212	203	195	195	190	208	183	206	197	226	203	206	212	200
151	191	181	189	202	193	187	186	180	196	175	194	184	217	193	196	202	191
152	181	172	178	191	183	176	173	170	183	165	183	172	203	183	186	188	181
153	172	165	165	179	169	166	164	160	173	155	170	162	185	176	176	177	172
154	162	155	155	169	160	155	152	146	161	142	158	148	172	166	162	165	162
155	150	144	144	156	149	143	142	135	149	131	149	138	156	152	148	151	150
156	141	134	137	146	139	134	133	125	133	124	138	127	144	143	138	139	141

157	135	120	127	134	130	124	121	114	119	114	129	114	130	131	128	127	135
158	128	111	116	124	118	116	112	104	110	105	116	102	115	123	120	120	128
159	119	102	107	115	108	104	102	93	100	94	105	87	105	110	108	112	119
160	109	91	96	103	100	95	93	86	92	87	97	77	92	98	97	100	109
161	102	81	87	95	90	87	83	76	80	77	85	65	82	90	90	89	102
162	89	66	78	85	81	76	70	66	71	67	73	53	70	80	81	74	89
163	73	53	68	74	72	68	61	60	64	60	63	44	61	67	70	66	73
164	63	48	62	67	62	60	50	52	55	51	51	33	54	56	59	61	63
165	50	41	53	58	55	51	40	45	46	42	44	20	46	45	48	49	50
166	40	33	45	49	46	44	30	36	37	35	33	14	38	38	43	42	40
167	31	24	39	43	40	36	21	25	27	28	22	10	29	31	35	31	31
168	26	19	32	35	32	31	18	17	21	22	15	6	20	22	26	24	26
169	24	16	26	29	25	24	14	12	15	17	9	4	11	14	20	18	24
170	20	13	22	23	19	16	11	9	11	13	6	3	5	6	13	14	20
171	15	11	17	17	14	13	9	8	8	11	5	3	2	5	9	12	15
172	12	9	14	14	11	10	7	4	6	8	4	2	1	2	6	10	12
173	9	7	10	10	8	7	4	3	5	5	4	2	1	2	5	6	9
174	7	6	7	7	5	5	3	4	4	4	3	1	1	2	3	4	7
175	4	4	4	5	3	3	2	3	3	2	2	1	1	2	2	3	4
176	2	2	3	2	1	1	1	1	1	1	2	1	1	1	2	1	2
177	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
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 ********