LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

(Brand Name:N/A)

188 S. Northwest HighwayCary, IL60013

LED Luminaires

Model name(s): LED-8024M30-A
LED-8024-NW-E40-A

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

Representative (Tested) Model: LED-8024M30-A

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Apr.17,2017

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-8024M30-A;LED-8024-NW-E40-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	45W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	SAMSUNG	
LED Model	SPMWHT541MXXXXXXXX	
Sample Number	GZE161214-G1	
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-8024M30-A		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-G1	120.0	60	0.3765	44.74	0.9903
	277.0	60	0.1673	43.18	0.9320

Chromaticity Measurement - Sphere-Spectroradiometer Method :

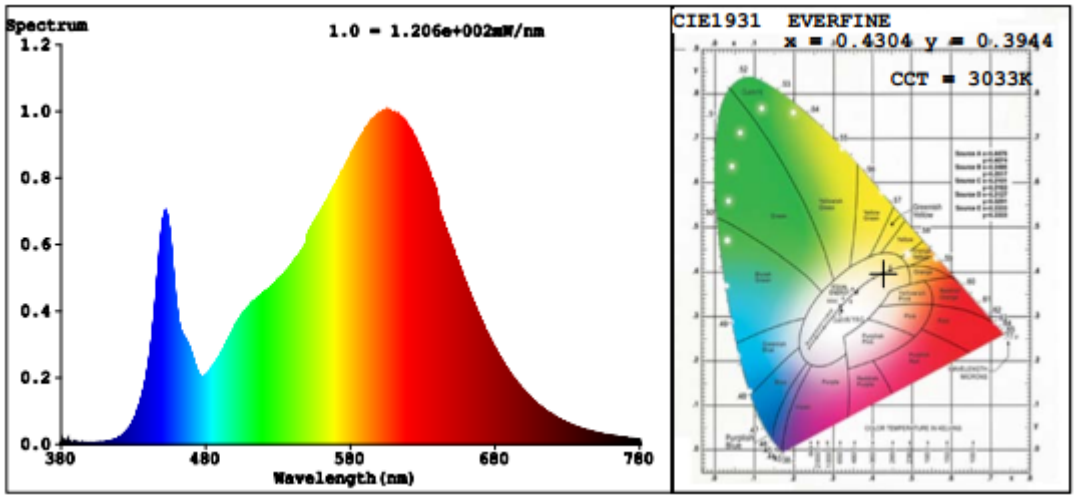
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3033
Duv	-0.0030
Chromaticity (x, y)	x=0.4304 y=0.3944
Chromaticity (u', v')	u'=0.2505 v'=0.5165
Color Rendering Index (CRI)	84.1
R9	16

Special Color Rendering Indices			
R1	83	R9	16
R2	93	R10	84
R3	95	R11	81
R4	82	R12	75
R5	84	R13	86
R6	91	R14	98
R7	83	R15	77
R8	62	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	5892.9	5701.6
Luminous Efficacy (lm/W)	131.71	132.04
Beam Angle (°)	279.2	--
Center Beam Candle Power (cd)	249	--

Spectral Power Distribution & Chromaticity Diagram

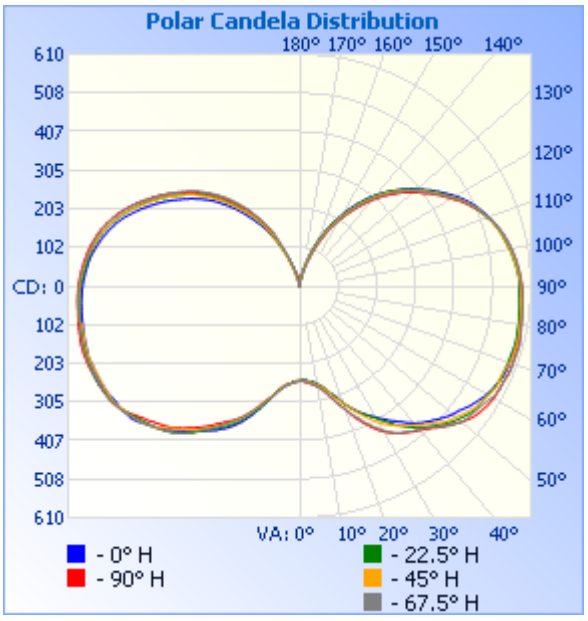


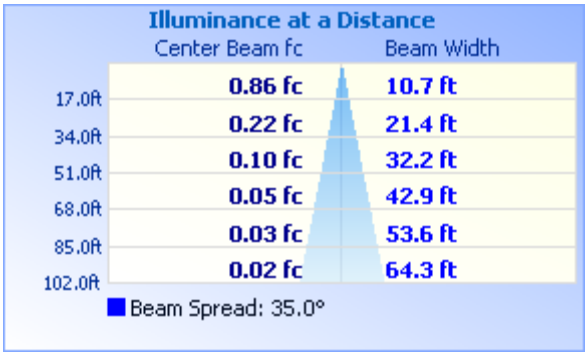
Zonal Lumen Tabulation

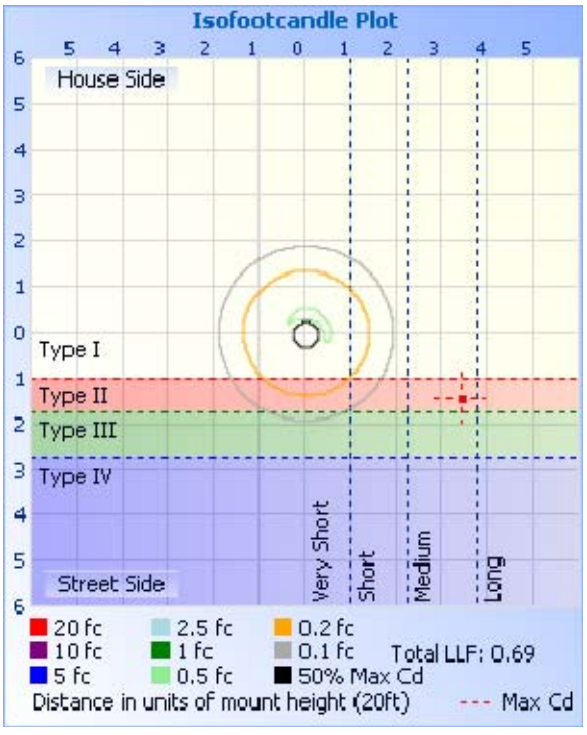
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	289.5	4.9%
0-40	577.1	9.8%
0-60	1,487.0	25.2%
60-90	1,842.4	31.3%
70-100	1,884.3	32%
90-120	1,687.6	28.6%
0-90	3,329.5	56.5%
90-180	2,563.9	43.5%
0-180	5,893.3	100%

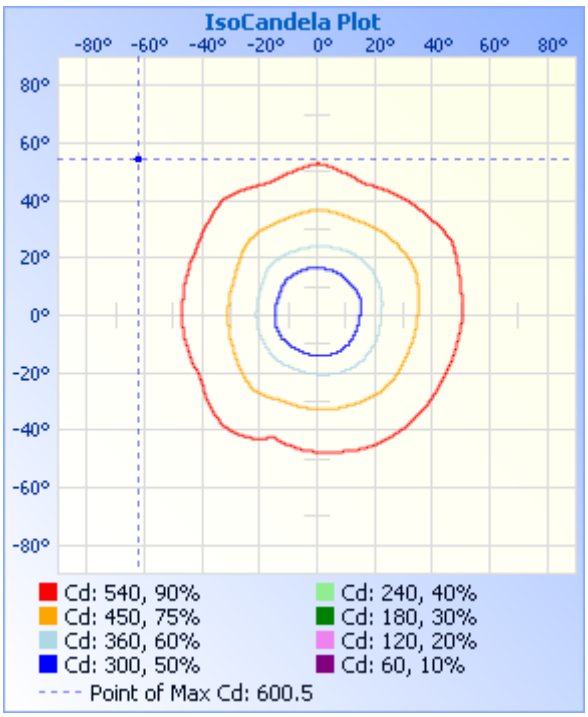
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	24.7	0.4%	90-100	623.2	10.6%
10-20	86.5	1.5%	100-110	575.1	9.8%
20-30	178.4	3.0%	110-120	489.3	8.3%
30-40	287.6	4.9%	120-130	378.6	6.4%
40-50	403.6	6.8%	130-140	265.0	4.5%
50-60	506.3	8.6%	140-150	154.9	2.6%
60-70	581.4	9.9%	150-160	64.3	1.1%
70-80	624.0	10.6%	160-170	12.8	0.2%
80-90	637.0	10.8%	170-180	0.7	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
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1	248	247	248	251	251	248	249	250	250	248	249	251	251	247	247	249	248
2	247	247	249	250	251	248	249	250	250	249	250	252	252	247	248	247	247
3	248	248	249	251	252	249	250	253	252	251	252	253	253	248	248	248	248
4	249	249	251	252	254	250	252	254	254	253	255	255	254	249	249	250	249
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6	251	252	253	256	258	254	257	259	259	258	258	260	258	253	252	252	251
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140	313	312	307	299	294	281	277	274	267	285	280	305	297	310	306	322	313
141	302	301	296	291	283	272	268	263	256	273	268	294	288	302	298	312	302
142	295	292	287	279	274	261	257	254	246	264	259	285	277	291	288	301	295
143	284	281	275	268	263	252	246	243	235	253	249	274	268	279	279	292	284
144	273	271	266	259	254	241	238	234	224	241	241	265	257	270	268	282	273
145	264	260	255	247	242	230	227	223	215	233	231	253	248	258	257	273	264
146	253	248	243	237	231	220	218	212	204	222	220	244	237	249	248	261	253
147	244	239	234	226	222	209	207	203	196	213	210	232	228	238	237	250	244
148	232	227	223	214	211	200	198	192	185	202	199	220	216	226	228	240	232
149	220	216	214	205	203	189	187	182	177	191	189	210	207	216	216	228	220
150	211	207	203	194	192	180	176	170	166	175	177	198	195	203	205	219	211
151	199	196	191	185	181	170	166	161	156	162	165	189	182	192	196	208	199
152	190	189	182	174	171	160	155	149	145	146	151	177	171	180	184	196	190
153	179	178	172	163	159	149	146	140	133	133	136	168	154	166	175	187	179
154	168	167	164	154	148	136	134	128	124	124	125	156	140	153	163	175	168
155	159	158	152	143	138	127	125	117	113	110	111	139	121	135	150	166	159
156	147	146	140	133	126	115	113	108	105	100	98	125	108	121	140	154	147

157	138	135	130	122	117	106	104	97	94	88	83	106	94	104	126	142	138
158	127	125	119	110	106	96	94	89	85	78	73	92	81	90	114	131	127
159	116	113	110	102	95	88	86	79	75	67	60	76	71	81	103	119	116
160	107	105	100	92	86	79	76	72	66	62	51	66	60	71	91	109	107
161	97	95	90	82	77	70	66	62	56	56	38	53	52	62	80	98	97
162	87	85	81	74	70	63	58	53	47	47	28	44	43	56	69	87	87
163	79	77	71	64	61	53	50	42	37	38	20	33	38	49	58	79	79
164	70	67	63	55	52	47	42	32	27	29	14	23	35	43	49	69	70
165	60	58	56	49	46	40	35	26	20	23	10	17	37	38	40	58	60
166	53	52	47	41	37	34	29	19	14	15	8	14	37	34	33	49	53
167	45	45	39	35	32	28	23	13	10	10	6	10	35	32	29	40	45
168	38	38	34	29	26	23	17	11	6	6	6	8	31	30	25	32	38
169	31	31	28	23	21	18	13	10	4	4	5	8	25	24	22	26	31
170	24	25	23	20	16	14	9	8	2	2	4	8	21	20	20	21	24
171	18	20	18	15	13	11	7	6	2	2	3	6	16	15	19	16	18
172	14	16	13	11	9	8	5	3	2	2	3	6	11	11	15	13	14
173	10	12	10	8	6	5	4	2	1	1	2	5	9	8	10	10	10
174	7	8	7	5	4	2	2	1	1	1	2	4	6	6	6	8	7
175	5	6	5	3	3	2	2	1	1	1	1	3	3	4	4	6	5
176	3	4	3	2	2	2	1	1	1	1	1	2	2	2	2	4	3
177	2	2	1	1	1	1	1	1	1	0	1	1	1	1	2	2	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 ********