LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN, LLC

(Brand Name: N/A)

188 S.Northwest Highway, Cary, IL60013, USA

LED Luminaires

Model name(s): LED-8146M30-A

Representative (Tested) Model: LED-8146M30-A

Model Different: All construction and rating are the same, except CCT

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: May.18,2018

Review By:

Univ Xie

Manager: Univ Xie

Note: 1.The results contained in this report pertain only to the tested samples.

2.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, LLC	
Brand Name	N/A	
Model Number	LED-8146M30-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	65W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	SAMSUNG ELECTRONICS CO., LTD	
LED Model	SPMWH1228FD5WAV0SE	
Sample Number	GZE1801030-H-Q1	
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	May.01,2018
Date of Test	May.02,2018
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 25 ºC ±1 ºC. 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 ºC ±1 ºC. 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	2018-05-02	Test Ambient:	25.2 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8146M30-A		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180103 0-H-Q1	120.0	60	0.5565	66.20	0.9913	9.98
	277.0	60	0.2641	67.72	0.9257	17.12

Chromaticity Measurement - Sphere-Spectroradiometer Method:

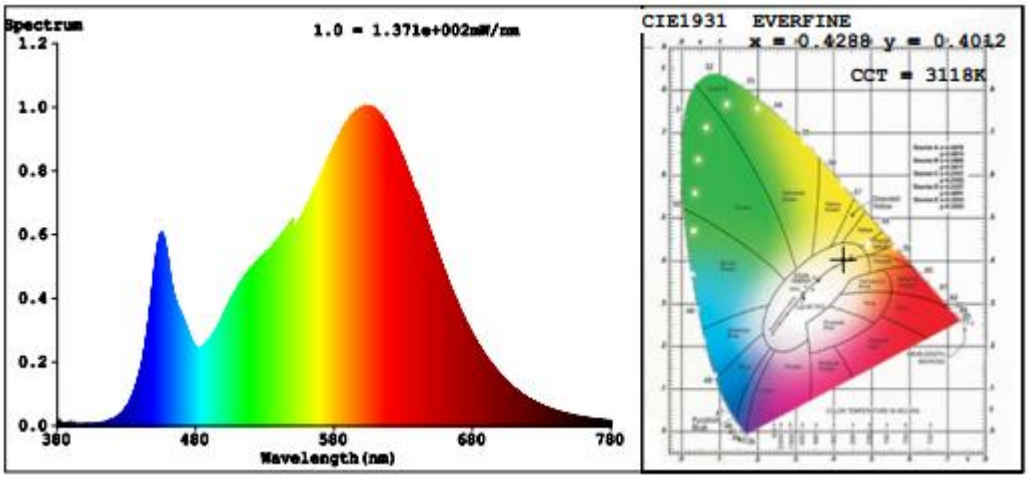
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3118
Duv	0.0000
Chromaticity (x, y)	x=0.4288 y=0.4012
Chromaticity (u', v')	u'=0.2466 v'=0.5190
Color Rendering Index (CRI)	84.6
R9	15

Special Color Rendering Indices			
R1	84	R9	15
R2	93	R10	84
R3	96	R11	82
R4	82	R12	72
R5	84	R13	86
R6	92	R14	99
R7	84	R15	77
R8	62	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	8422.3	8647.0
Luminous Efficacy (lm/W)	127.23	127.69
Most worst Luminous/Highest Watts	124.37	
Beam Angle ( )	324.6	--
Center Beam Candle Power (cd)	4	--

Spectral Power Distribution & Chromaticity Diagram

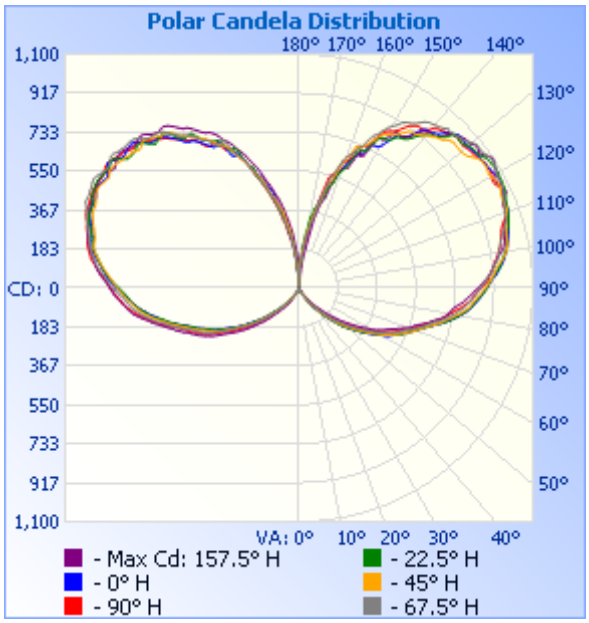


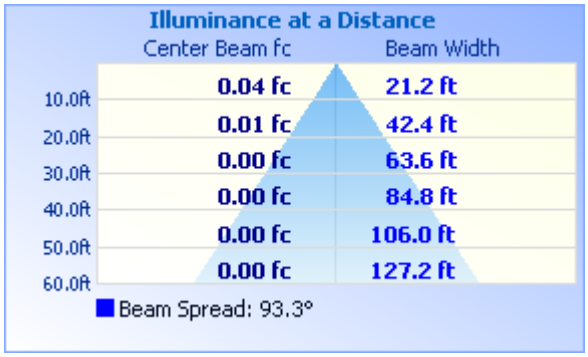
Zonal Lumen Tabulation

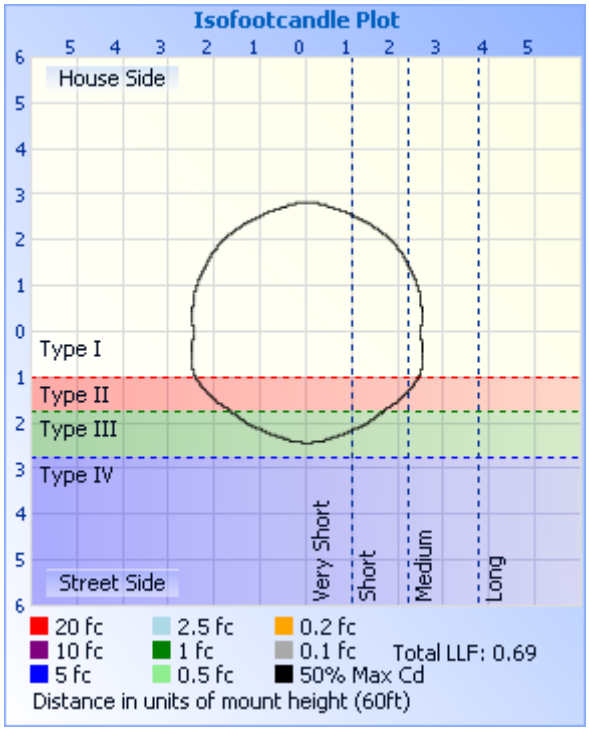
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	13.3	0.2%
0-40	58.3	0.7%
0-60	493.8	5.9%
60-90	2,051.9	24.4%
70-100	2,573.3	30.6%
90-120	3,128.4	37.1%
0-90	2,545.7	30.2%
90-180	5,876.8	69.8%
0-180	8,422.6	100%

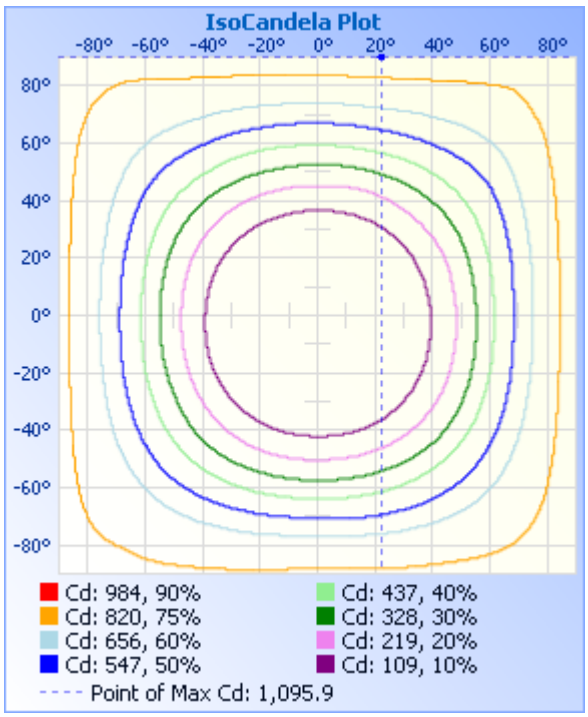
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	0.4	0.0%	90-100	1,008.3	12%
10-20	2.6	0.0%	100-110	1,069.8	12.7%
20-30	10.2	0.1%	110-120	1,050.3	12.5%
30-40	45.1	0.5%	120-130	941.5	11.2%
40-50	140.0	1.7%	130-140	771.9	9.2%
50-60	295.4	3.5%	140-150	555.0	6.6%
60-70	486.9	5.8%	150-160	332.3	3.9%
70-80	686.6	8.2%	160-170	129.7	1.5%
80-90	878.4	10.4%	170-180	18.0	0.2%

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	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6	5	5	5	4	4	4	4	4	4	4	4	4	4	4	5	5	5
7	5	5	5	5	4	4	4	4	4	4	4	4	4	5	5	5	5
8	5	5	5	5	5	5	5	5	5	4	4	5	5	5	5	5	5
9	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6
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11	7	7	6	6	6	6	5	5	5	5	5	5	6	6	7	7	7
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72	612	610	611	595	586	589	586	571	568	570	582	598	601	591	607	623	612
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77	706	707	697	680	674	681	666	663	665	656	672	694	701	679	700	713	706
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90	882	884	877	853	857	853	849	842	862	846	855	875	887	869	879	889	882
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95	940	938	925	910	909	929	905	910	924	919	915	940	948	922	932	950	940
96	953	949	934	920	916	938	912	917	936	931	928	956	959	934	939	962	953
97	963	958	951	928	926	943	922	926	947	943	943	966	975	943	948	969	963
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119	1074	1077	1054	1072	1041	1051	1042	1054	1048	1071	1040	1089	1065	1071	1059	1070	1074
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121	1061	1084	1040	1082	1055	1047	1058	1081	1048	1063	1041	1070	1066	1070	1046	1060	1061
122	1057	1081	1046	1088	1055	1044	1051	1086	1061	1058	1049	1064	1076	1066	1037	1044	1057
123	1053	1078	1049	1091	1053	1030	1041	1093	1077	1061	1046	1065	1076	1058	1033	1035	1053
124	1053	1076	1048	1091	1055	1027	1022	**1096**	1069	1068	1044	1072	1072	1053	1033	1041	1053

125	1050	1071	1049	1085	1049	1018	1018	1083	1055	1061	1034	1081	1065	1044	1033	1050	1050
126	1049	1059	1039	1077	1042	1023	1025	1069	1040	1034	1028	1078	1052	1038	1034	1056	1049
127	1049	1052	1025	1073	1037	1027	1027	1059	1033	1010	1024	1067	1048	1031	1028	1057	1049
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129	1040	1047	1001	1074	1032	1002	1033	1069	1040	1007	1014	1055	1031	1032	1008	1043	1040
130	1037	1044	996	1064	1028	994	1024	1056	1042	1005	1004	1055	1021	1029	1007	1032	1037
131	1035	1028	997	1052	1023	996	1011	1050	1042	1013	995	1052	1021	1017	1009	1026	1035
132	1038	1025	996	1042	1023	994	996	1050	1029	1016	997	1048	1024	1002	1008	1030	1038
133	1043	1027	999	1037	1027	985	988	1040	1009	1002	1009	1036	1013	994	1007	1034	1043
134	1039	1030	995	1032	1027	981	991	1029	983	980	1009	1011	997	988	1002	1034	1039
135	1027	1020	989	1028	1024	980	992	1024	974	958	995	1000	987	992	990	1025	1027
136	1013	989	971	1022	1016	970	991	1006	972	962	983	994	977	998	979	1004	1013
137	1000	972	963	1026	1006	964	972	975	973	966	977	992	959	991	973	995	1000
138	977	963	959	1014	999	951	956	963	957	969	965	985	949	974	969	988	977
139	967	954	945	1004	993	944	938	958	942	965	966	975	932	960	962	992	967
140	957	941	940	1001	980	923	937	961	919	950	959	953	918	947	952	993	957
141	958	929	924	995	957	915	921	948	901	915	937	931	902	927	947	983	958
142	948	910	916	991	946	902	902	936	875	897	914	909	888	924	941	967	948
143	920	887	908	979	946	892	895	904	860	886	897	900	870	922	910	945	920
144	886	867	907	962	945	867	884	885	857	887	884	889	863	913	892	927	886
145	860	857	902	945	932	858	871	872	844	889	868	872	853	899	880	922	860
146	858	854	882	936	920	845	862	860	826	862	856	848	819	873	873	905	858
147	862	847	868	931	897	838	856	863	805	834	840	825	794	853	859	885	862
148	835	828	854	919	876	826	851	867	789	821	828	822	788	834	842	866	835
149	804	813	842	896	861	803	836	840	773	808	811	799	792	824	828	852	804
150	774	810	837	881	852	764	803	811	777	798	789	771	793	807	811	846	774
151	759	809	825	863	844	722	776	800	791	794	773	762	767	783	799	832	759
152	760	798	812	839	822	715	778	805	761	780	761	784	737	775	779	812	760
153	756	766	782	812	788	719	781	757	703	736	744	777	741	779	762	781	756
154	734	719	764	798	748	678	760	694	690	713	717	730	726	774	746	766	734
155	695	711	741	766	737	631	722	684	705	729	687	698	696	753	732	746	695
156	686	714	725	729	728	620	683	706	689	708	670	671	666	717	709	714	686

157	676	691	722	716	725	616	661	657	648	649	641	659	645	697	688	696	676
158	652	641	721	693	687	567	631	610	615	614	616	607	614	690	675	672	652
159	628	604	675	672	640	519	588	610	603	611	582	566	567	668	652	644	628
160	603	586	642	660	635	492	550	597	568	550	562	542	541	629	620	618	603
161	578	577	616	634	628	475	522	573	556	518	548	523	514	596	615	594	578
162	547	523	572	597	587	434	471	546	538	508	521	494	485	566	590	562	547
163	523	502	530	566	550	401	461	502	505	460	469	467	456	531	519	527	523
164	515	492	511	540	556	335	405	443	483	441	449	442	423	512	505	507	515
165	469	444	491	494	535	305	353	425	464	412	439	408	399	480	504	480	469
166	446	429	436	447	479	286	333	404	410	380	409	365	365	449	462	451	446
167	417	406	403	413	429	250	289	368	383	367	384	337	326	436	428	435	417
168	378	391	383	354	390	207	271	332	347	337	371	319	310	406	411	406	378
169	353	380	350	324	353	177	246	270	312	313	322	288	264	386	369	379	353
170	299	347	323	310	294	156	227	225	269	279	301	260	246	369	352	345	299
171	282	337	286	265	257	134	175	189	239	266	277	240	217	352	322	319	282
172	256	283	265	257	226	93	131	160	206	233	220	204	198	326	305	290	256
173	231	264	235	215	205	80	114	144	185	188	180	182	161	301	280	269	231
174	215	230	207	182	185	49	89	105	132	162	143	128	129	264	244	233	215
175	192	186	179	144	153	26	54	86	88	97	106	101	86	237	211	197	192
176	169	148	159	130	127	11	31	51	48	56	64	63	53	214	172	168	169
177	121	119	115	116	121	8	14	26	25	27	30	26	19	162	143	141	121
178	88	101	92	104	84	12	9	11	10	10	11	10	9	135	104	96	88
179	48	59	65	60	51	32	15	15	11	14	16	18	16	95	66	67	48
180	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-327	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
GO-R5000	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2017-07-07	2018-07-06
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 ********