



IESNA LM -80-08

MEASURING LUMEN MAINTENANCE OF LED LIGHTSOURCES

MEASUREMENT AND TEST REPORT For

HongliZhihui Group Co.,Ltd. Guangzhou Branch
Room 316, Building 2, No.1, Xianke Road, Huadong Town, Huadu District, Guangzhou, China

Model: HL -AS-2835H466W3C-S1-08L-PCT-HR3(R9)

Report Type: 10000 HoursTest Report	Product Type: LED Package
Reviewed By:	Pote Wang
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1 - GENERAL INFORMATION

1.1 Description of LED Light Sources

Part Number: HL-AS-2835H466W3C-S1-08L-PCT-HR3(R9)
 Part Name: 2835
 Part Type: LED
 #Nominal CCT: 3000
 #Power: 1W
 #Average Current Density per LED die: 906
 #Average Power Density per LED die: 3.0
 #CRI: 80
 #Die Spacing: 0.15mm

Family products covered by this report:

According to ENERGY STAR® Requirements for the Use of LM-80 Data the following products can be covered by this report based on the information and declaration provided by manufacturer. The information of these models shows that the covered products meet all section 4 requirements ENERGY STAR®

Requirements for the Use of LM-80 Data (September 28, 2017)
 This report covers the following models:

Model type		CCT (K)			Power density W/mm ²	Current density per LED die (mA/mm ²)	Current per die (mA)	Distance between of die(mm)	Current (mA)	
Master model	HL-AS-2835H466W3C-S1-08L-PCT-HR3(R9)	80	3000	3	1	0.102041	906.43	100	0.15	100
	HL-**-2835H***W-3C-S1-08*-PCT-HR3(R9)***	80	2700-	3	1	0.102041	906.43	100	0.15	100
	HL-**-2835H***W-3C-S1-08*-PCT-HR3***	80	2700-6500	3	1	0.102041	906.43	100	0.15	100
	HL-**-2835D***W-3C-S1-08*-PCT-HR3(R9)***	80	2700-6500	3	1	0.102041	516.668	100	0.15	100

Multiple model

Model type	Model name	CRI	CCT (K)	Series	P			Current per die (mA)	Distance between of dies(mm)	Current (mA)
	HL-**-2835H***W-2-S1-08*-PCT-HR3(R9)***	80	2700-6500	1	2	0.052	679.825	75	0.15	150
	HL-**-2835H***W-2-S1-08*-PCT-HR3***	80	2700-6500	1	2	0.052	679.825	75	0.15	150
	HL-**-2835D***W-2-S1-08*-PCT-HR3(R9)***	80	2700-6500	1	2	0.052	387.5	75	0.15	150
	HL-**-2835D***W-2-S1-08*-PCT-HR3***	80	2700-6500	1	2	0.052	387.5	75	0.15	150
	HL-**-2835H***W-2-S1-08*-PCT-HR3(R9)***	80	2700-6500	1	2	0.0208	271.93	30	0.15	60

Multiple model

1.3 Test Facility

The testing facility used by Bay Area Compliance Laboratories Corp. (Dongguan) located at No.69, Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China

1.4 Description of Auxiliary Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Integral Sphere	EVERFINE	Diameter 0.3m	1011119	201603-10	2017-03-09
Programmable Test Power for LEDs	EVERFINE	LED300E	1008002	201603-04	2017-03-03
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	201603-10	2017-03-09
Standard Light Source	EVERFINE	D062	1011093	201509-17	201609-16
Precision digital stabilized DC power supply	EVERFINE	WY605-V110	G115987CJ732114	201603-04	

1.8 Sample Set

Sampling Method:

LED samples for IESNA LM80 testing consist of units built from a minimum of three manufacturing lots with each manufacturing lot built from different wafer lots built on ~~consecutive~~ consecutive days.

2 - SUMMARY OF TEST RESULT

Data Set:	Data Set1, 85°C, 100mA
Number of Units:	25
Failures Observed:	0
Test Interval and Test Duration:	0h,1000h,2000h,3000h,4000h,5000h,6000h,8000,9000h,10000h
Average. Lumen Maintenance at 10000 hours	96.16%
Average Chromaticity Shift at 10000 hours (u'v')	0.0032
Reported TM21 L ₇₀ Lifetime:	>60,000 hours

Data Set:	Data Set2, 105°C , 100mA
Number of Units:	25
Failures Observed:	0
Test Interval and Test Duration:	0h,1000h,2000h,3000h,4000h,5000h,6000h,8000,9000h,10000h
Average. Lumen Maintenance at 10000 hours	94.52%
Average Chromaticity Shift at 10000 hours (u'v')	0.0029
Reported TM21 L ₇₀ Lifetime:	58,000 hours

3 - Test Data

3.1 Data Set1, 85°C, 100 mA(Lumen Maintenance)

No.	V _F (V)	(lm)	Lumen Maintenance (%)									
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	9.154	118.7	100.67	100.51	100.42	99.83	99.16	98.57	97.81	97.56	97.30	97.05
2	9.176	116.9	101.45	101.03	100.77	100.26	99.57	98.97	98.46	98.20	97.95	97.43
3	9.147	117.1	101.02	100.94	100.77	100.26	99.40	98.98	98.21	97.95	97.69	97.10
4	9.144	117.4	101.28	100.77	100.26	99.49	98.72	98.04	97.53	97.19	96.85	96.51
5	9.138	117.3	100.85	100.43	100.00	99.49	98.81	98.29	97.70	97.10	96.85	96.33
6	9.094	116.5	101.29	100.77	100.34	99.74	99.14	98.63	98.28	97.94	97.60	97.00
7	9.137	119.3	100.25	99.92	99.50	98.91	98.41	97.74	96.90	96.65	96.14	96.06
8	9.193	117.7	101.10	100.68	100.34	100.08	99.49	98.64	98.05	97.88	97.45	97.11
9	9.170	117.4	101.28	100.85	100.43	99.83	99.15	98.55	98.21	97.96	97.70	97.27
10	9.156	118.7	100.84	100.25	99.49	98.99	98.32	97.64	96.88	96.29	95.96	95.45
11	9.153	117.9	101.70	101.10	100.51	99.75	98.98	98.22	97.54	96.86	96.69	96.27
12	9.130	118.2	101.10	100.76	100.17	99.58	98.73	97.97	97.38	96.70	96.28	95.69
13	9.136	118.1	101.19	100.85	100.34	99.92	99.15	98.48	97.54	97.21	96.95	96.53
14	9.173	118.8	100.51	100.00	99.58	98.99	98.23	97.64	96.97	96.80	96.38	95.88
15	9.171	120.2	100.50	100.25	99.75	99.00	98.17	97.50	96.76	96.51	96.34	96.01
16	9.172	117.5	101.11	100.26	99.83	99.15	98.47	97.96	97.28	96.68	96.43	96.09
17	9.131	118.7	100.84	100.51	100.08	99.07	98.32	97.73	97.22	96.97	96.38	95.96
18	9.172	117.1	101.20	100.85	100.43	99.66	98.89	98.21	97.52	97.01	96.84	96.24
19	9.147	119.1	100.92	100.50	100.34	99.50	98.66	98.07	97.06	96.56	96.14	95.89
20	9.108	119.2	100.67	99.92	99.75	99.08	98.49	97.65	97.06	96.31	95.97	95.47
21	9.148	118.3	101.27	100.51	99.83	98.56	97.46	96.79	96.45	96.03	95.69	95.01
22	9.150	117.4	100.85	100.00	99.40	98.89	98.38	97.96	97.19	96.76	96.34	96.00
23	9.206	117.5	100.94	100.00	99.23	98.81	97.96	97.28	96.60	95.91	95.74	95.15
24	9.079	118.6	100.25	99.58	98.74	98.40	97.22	96.88	96.29	95.78	95.62	95.03
25	9.137	119.3	100.50	99.66	98.91	98.49	97.65	97.07	96.81	96.23	96.06	95.39
Ave.	9.149	118.1	100.94	100.44	99.97	99.35	98.60	97.98	97.35	96.92	96.61	96.16
Med.	9.148	118.1	100.94	100.51	100.08	99.49	98.66	97.97	97.28	96.80	96.38	96.06
st dev	0.0285	0.9	0.3654	0.4336	0.5446	0.5406	0.6127	0.5992	0.5936	0.6834	0.6820	0.7110
Min.	9.079	116.5	100.25	99.58	98.74	98.40	97.22	96.79	96.29	95.78	95.62	95.01
Max.	9.206	120.2	101.70	101.10	100.77	100.26	99.57	98.98	98.46	98.20	97.95	97.43

3.2 Data Set1, 85C, 100mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (u'v')									
				Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	0.2524	0.5217	2953	0.0006	0.0008	0.0008	0.0010	0.0013	0.0021	0.0025	0.0026	0.0031	0.0031
2	0.2524	0.5205	2960	0.0007	0.0007	0.0007	0.0008	0.0011	0.0016	0.0020	0.0023	0.0026	0.0027
3	0.2520	0.5187	2982	0.0006	0.0008	0.0010	0.0012	0.0016	0.0020	0.0023	0.0027	0.0031	0.0034
4	0.2536	0.5204	2932	0.0006	0.0008	0.0009	0.0011	0.0014	0.0019	0.0022	0.0026	0.0031	0.0034
5	0.2535	0.5218	2928	0.0006	0.0008	0.0009	0.0012	0.0017	0.0018	0.0021	0.0026	0.0031	0.0034
6	0.2530	0.5203	2946	0.0007	0.0009	0.0009	0.0011	0.0014	0.0020	0.0023	0.0026	0.0031	0.0035
7	0.2521	0.5199	2973	0.0006	0.0008	0.0009	0.0012	0.0015	0.0017	0.0022	0.0025	0.0030	0.0032
8	0.2532	0.5219	2933	0.0007	0.0009	0.0009	0.0012	0.0014	0.0016	0.0021	0.0024	0.0030	0.0031
9	0.2526	0.5214	2950	0.0006	0.0008	0.0009	0.0011	0.0014	0.0017	0.0019	0.0023	0.0028	0.0031

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3.3 Data Set2, 105C, 100 mA (Lumen Maintenance)

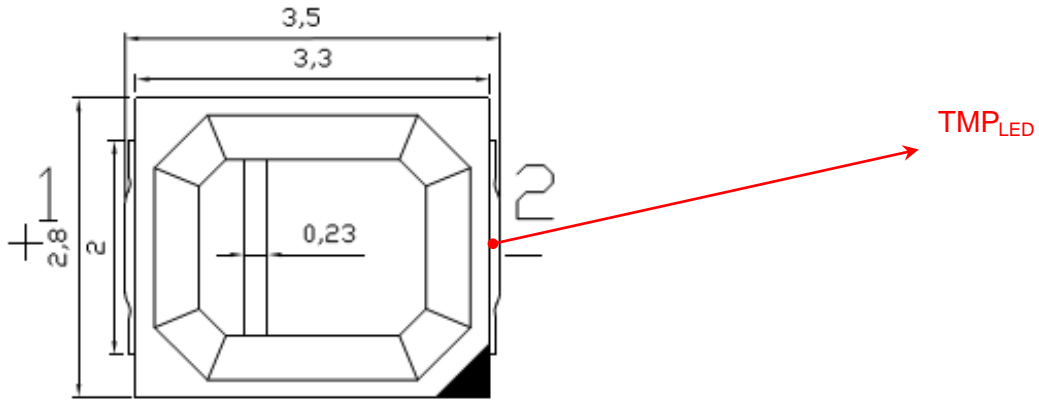
No.	V _F (V)	(lm)	Lumen Maintenance (%)									
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
26	9.172	117.3	100.85	99.91	99.15	98.29	97.44	96.59	95.57	94.80	94.54	94.29
27	9.174	117.2	100.85	99.91	99.32	98.98	98.21	97.61	95.56	94.88	94.37	93.77
28	9.130	117.0	100.34	99.83	99.32	98.55	97.62	96.85	96.09	95.92	95.49	94.90
29	9.157	117.5	100.60	100.00	99.32	98.81	97.79	96.85	96.17	95.32	94.89	94.47
30	9.194	117.2	100.77	99.91	99.23	98.81	97.95	97.18	96.33	96.16	95.90	95.56
31	9.138	117.7	101.19	100.17	99.07	98.13	97.28	96.35	95.33	94.73	94.14	93.71
32	9.196	117.3	100.94	99.74	98.64	97.70	96.76	96.08	95.57	94.97	94.54	94.12
33	9.112	119.0	100.92	99.83	98.91	97.82	96.72	95.88	95.04	94.54	94.12	93.78
34	9.173	118.1	101.52	100.68	99.58	98.81	97.97	97.29	96.53	95.85	95.34	94.83
35	9.155	119.9	100.50	99.83	99.17	97.83	96.83	96.08	95.33	94.75	94.33	93.83
36	9.095	119.2	100.92	100.25	99.50	98.91	98.15	97.57	96.81	96.39	95.97	95.39
37	9.118	119.1	100.67	99.92	99.33	98.66	97.65	96.81	96.73	96.22	95.72	95.21
38	9.127	119.7	100.58	99.67	99.08	98.50	97.66	96.74	95.99	95.57	95.15	94.65
39	9.172	117.7	101.70	100.85	99.92	99.07	97.96	97.11	96.52	96.18	95.75	95.07
40	9.165	117.6	101.36	100.26	99.23	98.38	97.28	96.68	95.92	95.83	95.58	94.90
41	9.150	117.9	101.78	100.93	99.92	98.98	97.79	97.03	96.18	95.50	95.17	94.66
42	9.104	117.7	100.08	99.15	98.73	98.05	97.20	96.69	96.01	95.33	95.16	94.65
43	9.131	118.9	100.93	99.16	98.82	97.98	96.80	96.13	95.29	94.70	94.37	93.78
44	9.163	118.6	101.35	100.51	99.83	98.65	97.22	96.63	95.70	95.19	94.77	94.10
45	9.177	118.2	101.02	100.08	98.98	97.97	97.12	96.36	95.52	94.75	94.59	93.91
46	9.166	118.2	100.51	99.83	99.15	97.80	97.04	96.19	95.18	94.59	94.25	93.74
47	9.155	118.7	101.52	100.51	99.92	99.24	97.47	96.71	95.53	94.95	94.44	93.93
48	9.121	117.9	100.76	100.08	99.32	98.73	97.88	97.20	96.27	95.76	95.42	94.83
49	9.142	119.1	100.42	99.41	98.66	98.24	97.48	96.47	95.89	95.38	95.21	94.63
50	9.158	117.4	101.87	101.11	100.43	99.91	98.98	98.21	97.27	96.59	96.42	96.25
Ave.	9.150	118.2	100.96	100.06	99.30	98.51	97.53	96.77	95.93	95.39	95.03	94.52
Med.	9.155	117.9	100.92	99.92	99.23							

3.4 Data Set2, 105C, 100 mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (u'v')									
				Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	0.2532	0.5202	2942	0.0006	0.0009	0.0006	0.0008	0.0014	0.0019	0.0020	0.0023	0.0028	0.0031
27	0.2534	0.5216	2931	0.0006	0.0008	0.0004	0.0006	0.0012	0.0020	0.0022	0.0025	0.0029	0.0032
28	0.2540	0.5208	2921	0.0008	0.0009	0.0006	0.0007	0.0013	0.0021	0.0024	0.0026	0.0029	0.0032
29	0.2533	0.5225	2927	0.0006	0.0008	0.0004	0.0006	0.0010	0.0018	0.0021	0.0023	0.0026	0.0030
30	0.2529	0.5202	2949	0.0006	0.0009	0.0006	0.0006	0.0014	0.0020	0.0022	0.0026	0.0028	0.0031
31	0.2536	0.5215	2925	0.0006	0.0010	0.0007	0.0006	0.0010	0.0017	0.0020	0.0023	0.0025	0.0028
32	0.2536	0.5211	2928	0.0006	0.0008	0.0006	0.0008	0.0015	0.0022	0.0026	0.0028	0.0031	0.0034
33	0.2526	0.5211	2952	0.0007	0.0011	0.0006	0.0006	0.0011	0.0018	0.0022	0.0024	0.0026	0.0029
34	0.2527	0.5224	2942	0.0007	0.0011	0.0007	0.0006	0.0010	0.0016	0.0019	0.0021	0.0024	0.0026
				0.0008	0.0011	0.0008	0.0006	0.0011	0.0018	0.0020	0.0022	0.0026	0.0027
				0.0010	0.0015	0.0010	0.0009	0.0011	0.0017	0.0019	0.0021	0.0024	0.0027

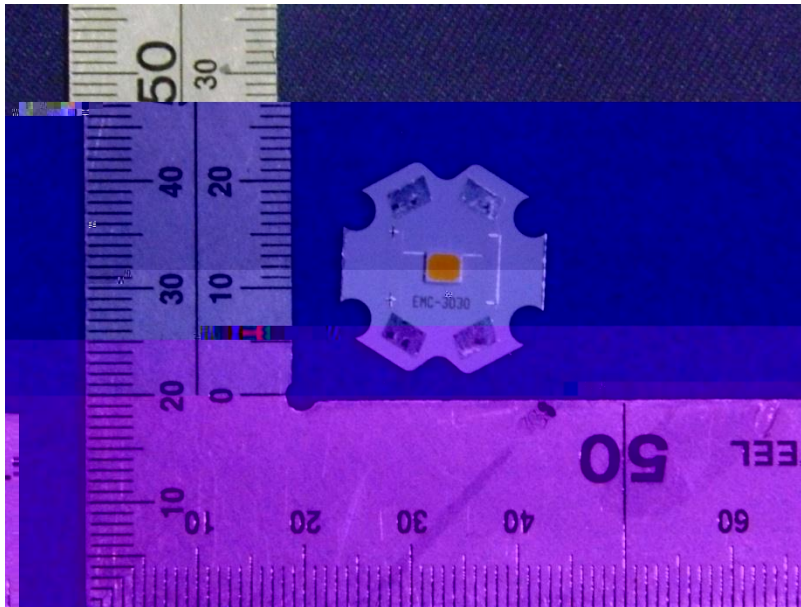
Appendix A EUT PHOTO

A.1 Mechanical Dimensions (Ta =25°C)



All dimensions are in millimeter

A.2 EUT Photo



Directions

*****END OF REPORT*****