IESNA LM-80-2008

MEASURING LUMEN MAINTENANCE OF LED LIGHT SOURCES

MEASUREMENT AND TEST REPORT

For

Hongli Zhihui Group Co.,Ltd. Guangzhou Branch

Room 316, Building 2, No.1, Xianke Yi Road, Huadong Town, Huadu District, Guangzhou, China

Model: HL-EMC-3030D46W-2C-S1-HR3

Report Type: 9000 Hours Test Report	**Product Type:** LED Package
Test Engineer:	Daniel Duan
Report Number:	RSZ201012502-10
Test Date:	2014-11-06 to 2015-12-09
Report Date:	2020-10-13
Reviewed By:	Blake Zhang / EE Engineer
Test Facility:	Test facility was located at No.69,Pulongcun ,Puxinhu Industrial Area, Tangxia , Dongguan, Guangdong, China.
Prepared By:	Bay Area Compliance Laboratories Corp. (Dongguan). No.69,Pulongcun ,Puxinhu Industrial Area, Tangxia , Dongguan, Guangdong, China. Tel: +86-0769-86858888 Fax:+86-0769-86858588
Accreditation:	The IAS Accreditation Number TL-460.

TABLE OF CONTENTS

1 - GENERAL INFORMATION

1.1 Description of LED Light Sources

Devices tested

#Brand Name:	Hongli
#Part Number:	HL-EMC-3030D46W-2C-S1-HR3
#Part Name:	3030
#Part Type:	LED Package
#Nominal CCT:	3000K
#Power:	1.02W
#Average Current Density per LED die:	726.56mA/mm2
#Average Power Density per LED die:	2.4703W/mm2
#CRI:	80
#Die Spacing:	0.22mm

Note:

1. The applicant Hongli Zhihui Group Co.,Ltd. Guangzhou Branch declare that their products with model HL-EMC-3030D46W-2C-S1-HR3 are the same to the products in report#R2DG140930052-10-9000-M1 and is authorized by original applicant to use their test data.

2. All the data in previous report (R2DG140930052-10-9000-M1) is shared in this report.

1.2 Standards Used:

- IESNA LM-80-08: IES Approved Method for Measuring Lumen Maintenance of LED Light Sources.
- ENERGY STAR® Requirements for the Use of LM-80 Data (This standard was not accredited by IAS)

1.3 Test Facility

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

1.4 Description of Auxiliary Equipment

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Integral Sphere	EVERFINE	Diameter 0.3m	1011119	380-780nm, Diameter:0.3m ,0-1999Lumen	2015-03-25	2016-03-25
Programmable Test Power for LEDs	EVERFINE	LED300E	1008002	15V/2000mA	2015-03-05	2016-03-05
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	380-780nm	2015-03-25	2016-03-25

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Standard Light Source	EVERFINE	D062	1011093	N/A	2015-09-17	2016-09-16
Precision digital stabilized DC power supply	EVERFINE	WY605	G115987CJ7321114	300VA	2015-03-05	2016-03-05
Multilayer aging machine	BACL	B2-270	B2-270	25℃~110℃	2015-03-05	2016-03-05
DC Power Supply	Taishan Xingguang	T0150E8.5-80	ST06607	0~5V,0~40A	2015-10-30	2016-10-29
DC Power Supply	Taishan Xingguang	T0150E8.5-80	ST06606	0~5V,0~40A	2015-10-30	2016-10-29
DC Power Supply	Taishan Xingguang	T0150E8.5-80	ST06605	0~5V,0~40A	2015-10-30	2016-10-29

1.5 Operating Cycle

Samples are driven with a constant direct current (DC)

1.6 Ambient Conditions

For lumen maintenance test, samples were operated in thermal chambers with minimal ambient airflow. For long term reliability test, the case temperature was controlled by mounting several thermocouples on a sample reliability stress board at the designated thermal measurement point, as shown in APPENDIX. The ambient temperature T_A was measured by several thermocouples at a distance of 5 mm above the reliability test board. The relative humidity within chamber was less than 65%.

For photometry measurement, temperature was set to 25℃ ±2℃, RH <65%.

1.7 Photometry Measurement Uncertainty

The uncertainty of the light output measurements is U=1.59% (K=2), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is U=21K (K=2), at the 95% confidence level. This calibration results traceable to the NATIONAL INSTITUTE OF METROLOGY (NIM).

1.8 Sample Set

Sampling Method:
LED samples for IESNA LM-80 testing consist of units built from a minimum of three manufacturing lots with each manufacturing lot built from different wafer lots built on non-consecutive days.
These manufacturing lots are picked to represent a wide parametric distribution.
Each Sample is soldered to all of the reliability stress boards for a given set of IESNA LM-80 tests.

Sample Size:
Total 50Pcs;
Each Ts test condition 25Pcs
The samples tested at Ts 85℃ and Ts 105℃ were received at 2014-09-30 and tested during 2014-11-06 to 2015-12-09. The samples were numbered from 1 to 25 and 26 to 50

Data Set 1: 85℃,150mA	
Part Number:	HL-EMC-3030D46W-2C-S1-HR3
Number of Units:	25
Actual Case Temperature(T_S):	T_S =84.6℃
Actual Ambient Temperature(T_A):	T_A =82.2℃
Life Test Drive Current:	I_F =150mA
Measurement Current:	I_F = 150mA

Data Set 2: 105℃, 150mA	
Part Number:	HL-EMC-3030D46W-2C-S1-HR3
Number of Units:	25
Actual Case Temperature(T_S):	T_S =104.3℃
Actual Ambient Temperature(T_A):	T_A =103.4℃
Life Test Drive Current:	I_F = 150mA
Measurement Current:	I_F = 150mA

2 - SUMMARY OF TEST RESULT

Data Set:	**Data Set 1, 85℃, 150mA**
Number of Units:	25
Failures Observed:	0
Test Interval and Test Duration:	0h,1000h,2000h,3000h,4000h,5000h,6000h,7000h,8000h, 9000h
Average. Lumen Maintenance at 6000 hours:	97.38%
Average. Lumen Maintenance at 9000 hours:	96.18%
Average Chromaticity Shift at 6000 hours(Δu'v'):	0.0021
Average Chromaticity Shift at 9000 hours(Δu'v'):	0.0028
Reported TM-21 L_{70} Lifetime:	>54,000 hours

Data Set:	**Data Set 2, 105℃, 150mA**
Number of Units:	25
Failures Observed:	0
Test Interval and Test Duration:	0h,1000h,2000h,3000h,4000h,5000h,6000h,7000h,8000h, 9000h
Average. Lumen Maintenance at 6000 hours:	96.81%
Average. Lumen Maintenance at 9000 hours:	95.14%
Average Chromaticity Shift at 6000 hours(Δu'v'):	0.0025
Average Chromaticity Shift at 9000 hours(Δu'v'):	0.0033
Reported TM-21 L_{70} Lifetime:	>54,000 hours

3 - Test Data

3.1 Data Set 1, 85℃, 150mA (Lumen Maintenance)

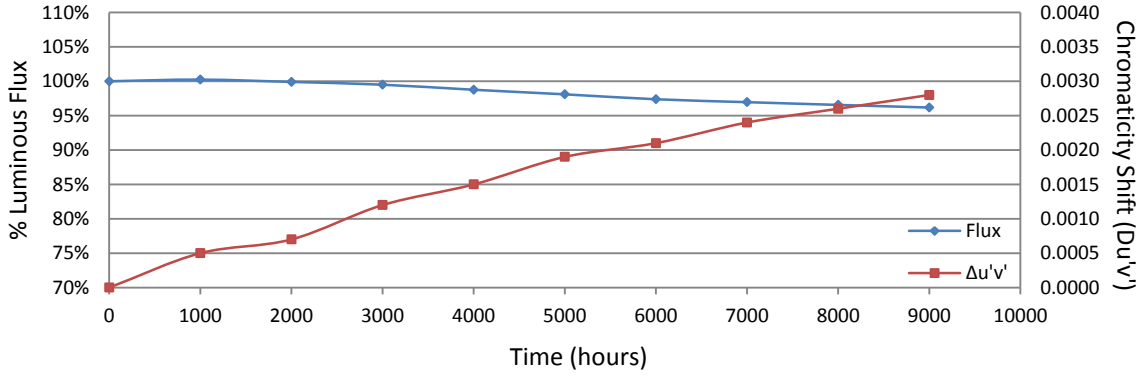
No.	V_F(V)	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	6.348	118.2	100.25	99.83	99.41	98.98	98.31	97.63	97.21	97.04	96.62
2	6.375	116.9	99.57	99.49	99.06	98.12	97.69	96.92	96.41	96.07	95.47
3	6.115	117.6	100.34	100.34	100.17	99.32	98.64	98.04	97.45	97.19	96.85
4	6.111	118.7	99.75	99.58	99.16	98.57	97.81	97.14	96.88	96.46	96.21
5	6.288	114.2	100.61	100.18	99.74	98.95	98.51	97.81	97.20	96.67	96.15
6	6.356	116.5	100.17	99.83	99.48	98.54	97.94	97.34	97.08	96.48	95.97
7	6.357	114.8	102.35	101.92	101.48	100.78	99.56	98.87	97.91	97.39	96.86
8	6.381	116.0	100.17	99.48	99.14	98.10	97.59	96.64	96.21	95.86	95.52
9	6.374	114.0	100.26	100.35	99.91	99.47	98.95	97.98	97.46	97.28	96.84
10	6.417	115.6	99.83	99.48	99.05	98.44	97.84	96.97	96.54	96.28	95.93
11	6.123	119.9	100.25	99.92	99.42	98.42	97.75	97.08	96.66	96.41	95.91
12	6.333	116.3	99.91	99.48	98.97	98.62	98.02	97.08	96.73	96.47	96.04
13	6.307	116.0	99.91	99.05	98.71	98.36	97.50	96.98	96.47	96.12	95.86
14	6.109	119.8	100.17	99.92	99.50	98.83	98.00	97.33	96.83	96.41	95.99
15	6.132	116.7	100.51	100.26	99.83	98.89	98.37	97.34	96.83	96.40	95.97
16	6.365	117.5	100.51	100.26	99.74	98.89	98.13	97.36	96.85	96.43	96.09
17	6.086	119.5	100.17	99.92	99.50	98.74	97.99	97.24	96.57	96.15	95.82
18	6.419	115.1	99.91	99.39	98.96	98.26	97.65	96.87	96.44	96.00	95.66
19	6.142	119.7	100.00	99.67	99.25	98.66	97.91	97.24	96.99	96.49	96.16
20	6.302	116.1	100.09	99.74	99.57	98.71	98.11	97.42	97.16	96.55	96.12
21	6.286	116.4	100.52	100.26	99.91	99.23	98.45	98.02	97.68	96.99	96.82
22	6.307	115.9	99.74	99.48	98.96	98.02	97.33	96.72	96.46	96.12	95.86
23	6.412	116.3	100.09	99.48	99.05	98.28	97.68	97.08	96.73	96.47	96.22
24	6.117	120.1	100.42	99.92	99.58	98.67	98.17	97.42	97.25	96.92	96.75
25	6.347	116.0	100.43	100.26	99.91	99.14	98.71	98.02	97.93	97.41	96.81
Ave.	6.276	117.0	100.24	99.90	99.50	98.76	98.10	97.38	96.96	96.56	96.18
Med.	6.307	116.4	100.17	99.83	99.48	98.67	98.00	97.33	96.85	96.47	96.09
st dev	0.117	1.8	0.5186	0.5501	0.5605	0.5694	0.5031	0.5101	0.4707	0.4421	0.4348
Min.	6.086	114.0	99.57	99.05	98.71	98.02	97.33	96.64	96.21	95.86	95.47
Max.	6.419	120.1	102.35	101.92	101.48	100.78	99.56	98.87	97.93	97.41	96.86

TM-21 Projection:

Test Duration: 9000 hours
Failures Observed: 0
α: 5.26E-06
β: 1.01
Calculated L_{70}: 69000 hours
Reported L_{70}: >54,000 hours

3.2 Data Set 1, 85 ℃, 150mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')								
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	0.2528	0.5222	2941	0.0004	0.0004	0.0007	0.0011	0.0015	0.0018	0.0021	0.0022	0.0026
2	0.2519	0.5227	2959	0.0006	0.0007	0.0011	0.0014	0.0018	0.0021	0.0023	0.0025	0.0029
3	0.2533	0.5207	2937	0.0003	0.0006	0.0011	0.0015	0.0018	0.0021	0.0023	0.0026	0.0028
4	0.2518	0.5205	2975	0.0005	0.0005	0.0011	0.0014	0.0018	0.0021	0.0022	0.0023	0.0026
5	0.2537	0.5207	2929	0.0006	0.0007	0.0012	0.0015	0.0018	0.0022	0.0024	0.0027	0.0028
6	0.2523	0.5216	2957	0.0005	0.0006	0.0012	0.0015	0.0018	0.0023	0.0025	0.0027	0.0029
7	0.2530	0.5235	2928	0.0007	0.0003	0.0004	0.0008	0.0012	0.0016	0.0017	0.0018	0.0020
8	0.2520	0.5230	2954	0.0004	0.0006	0.0011	0.0015	0.0018	0.0023	0.0024	0.0027	0.0029
9	0.2519	0.5200	2976	0.0004	0.0007	0.0011	0.0014	0.0017	0.0021	0.0023	0.0025	0.0027
10	0.2525	0.5224	2947	0.0005	0.0008	0.0012	0.0016	0.0019	0.0023	0.0024	0.0026	0.0028
11	0.2527	0.5204	2954	0.0005	0.0007	0.0012	0.0016	0.0019	0.0021	0.0023	0.0025	0.0027
12	0.2531	0.5239	2924	0.0006	0.0009	0.0013	0.0017	0.0021	0.0024	0.0028	0.0028	0.0030
13	0.2532	0.5230	2927	0.0005	0.0008	0.0013	0.0015	0.0020	0.0022	0.0025	0.0026	0.0028
14	0.2530	0.5211	2942	0.0006	0.0006	0.0012	0.0016	0.0020	0.0021	0.0025	0.0026	0.0030
15	0.2528	0.5206	2949	0.0005	0.0007	0.0011	0.0015	0.0019	0.0020	0.0024	0.0025	0.0026
16	0.2524	0.5210	2959	0.0005	0.0010	0.0014	0.0017	0.0021	0.0024	0.0028	0.0029	0.0031
17	0.2521	0.5204	2968	0.0005	0.0007	0.0012	0.0016	0.0019	0.0021	0.0024	0.0025	0.0027
18	0.2522	0.5229	2951	0.0005	0.0008	0.0013	0.0016	0.0020	0.0022	0.0025	0.0027	0.0029
19	0.2527	0.5202	2955	0.0005	0.0007	0.0013	0.0018	0.0022	0.0021	0.0025	0.0027	0.0029
20	0.2525	0.5229	2943	0.0005	0.0008	0.0012	0.0015	0.0019	0.0021	0.0024	0.0026	0.0028
21	0.2519	0.5218	2964	0.0005	0.0007	0.0013	0.0017	0.0020	0.0022	0.0024	0.0027	0.0028
22	0.2530	0.5232	2931	0.0004	0.0007	0.0012	0.0015	0.0019	0.0023	0.0025	0.0029	0.0029
23	0.2513	0.5230	2972	0.0004	0.0007	0.0012	0.0015	0.0019	0.0022	0.0024	0.0027	0.0028
24	0.2535	0.5205	2934	0.0004	0.0009	0.0013	0.0018	0.0022	0.0023	0.0025	0.0028	0.0029
25	0.2530	0.5223	2935	0.0005	0.0007	0.0014	0.0018	0.0022	0.0023	0.0025	0.0028	0.0029
Ave.	0.2526	0.5218	2948	0.0005	0.0007	0.0012	0.0015	0.0019	0.0021	0.0024	0.0026	0.0028
Med.	0.2527	0.5218	2949	0.0005	0.0007	0.0012	0.0015	0.0019	0.0022	0.0024	0.0026	0.0028
st dev	0.0006	0.0012	15.6234	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2513	0.5200	2924	0.0003	0.0003	0.0004	0.0008	0.0012	0.0016	0.0017	0.0018	0.0020
Max.	0.2537	0.5239	2976	0.0007	0.0010	0.0014	0.0018	0.0022	0.0024	0.0028	0.0029	0.0031



3.3 Data Set 2, 105 ℃, 150mA (Lumen Maintenance)

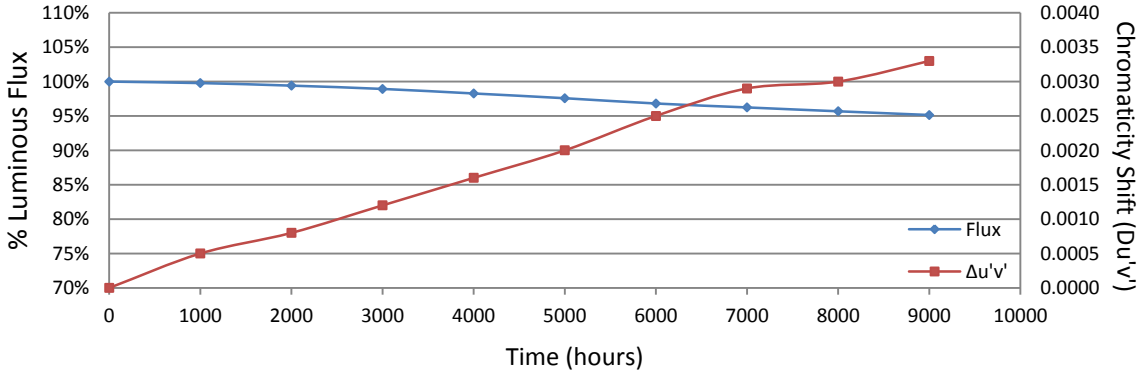
No.	V_F(V)	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	6.125	119.7	99.42	99.16	98.66	97.99	97.41	96.32	95.74	95.15	94.57
27	6.352	116.9	99.83	99.06	98.80	98.20	97.52	96.66	95.64	95.30	94.78
28	6.086	119.9	99.83	99.17	98.75	98.17	97.33	96.58	95.66	95.08	94.83
29	6.294	115.3	99.91	99.83	99.13	98.53	97.83	96.88	96.01	95.32	94.97
30	6.294	117.0	99.23	98.89	98.21	97.78	97.18	96.24	95.21	94.62	94.19
31	6.349	118.4	99.41	98.99	98.40	97.64	96.79	96.20	95.10	94.51	94.00
32	6.090	119.4	98.91	98.66	98.16	97.82	97.15	96.31	95.73	95.31	94.81
33	6.308	114.5	99.91	99.04	98.52	97.73	97.12	96.77	96.33	95.81	95.37
34	6.333	117.6	99.57	99.15	98.72	98.04	97.19	96.77	96.17	95.92	95.49
35	6.097	119.3	100.08	99.25	98.99	98.41	97.74	96.90	96.56	96.31	95.89
36	6.100	119.3	99.83	99.92	99.41	98.83	98.16	97.65	96.48	96.23	95.56
37	6.082	120.2	99.67	99.75	99.17	98.42	97.92	97.50	97.34	96.84	95.34
38	6.293	117.3	100.09	100.34	100.00	99.40	98.47	98.38	98.12	97.78	97.19
39	6.253	115.6	100.09	99.83	99.13	98.70	97.92	97.15	96.89	95.85	95.16
40	6.342	114.7	99.65	99.65	99.22	98.87	98.17	97.30	96.77	96.08	95.38
41	6.125	118.6	100.25	99.83	99.24	98.74	98.15	97.22	96.71	96.37	95.87
42	6.375	117.0	99.91	98.97	98.55	97.95	97.18	96.24	95.90	95.38	94.62
43	6.106	118.9	99.92	99.75	99.33	98.23	97.56	96.64	96.30	96.05	95.29
44	6.385	118.5	99.32	99.07	98.82	97.47	96.71	96.03	95.36	94.60	94.18
45	6.119	119.7	99.67	99.25	98.75	97.99	97.24	96.41	95.91	95.07	94.57
46	6.385	118.4	100.00	99.41	98.90	97.89	97.30	96.45	96.28	95.69	95.10
47	6.079	120.0	99.92	99.58	99.08	98.08	97.42	96.50	96.08	95.25	94.75
48	6.129	120.4	99.92	99.34	99.00	98.50	97.76	96.93	96.76	95.93	95.60
49	6.116	120.0	99.83	99.50	99.00	98.33	97.75	97.00	96.42	95.67	95.42
50	6.321	114.6	100.26	99.91	99.30	98.95	98.43	97.21	96.42	95.81	95.64
Ave.	6.222	118.0	99.78	99.41	98.93	98.27	97.58	96.81	96.24	95.68	95.14
Med.	6.253	118.5	99.83	99.34	98.99	98.20	97.52	96.77	96.28	95.69	95.16
st dev	0.119	1.9	0.3242	0.4109	0.4065	0.4685	0.4765	0.5399	0.6720	0.7300	0.6727
Min.	6.079	114.5	98.91	98.66	98.16	97.47	96.71	96.03	95.10	94.51	94.00
Max.	6.385	120.4	100.26	100.34	100.00	99.40	98.47	98.38	98.12	97.78	97.19

TM-21 Projection:

Test Duration: 9000 hours
Failures Observed: 0
α: 6.48E-06
β: 1.01
Calculated L_{70}: 56000 hours
Reported L_{70}: >54,000 hours

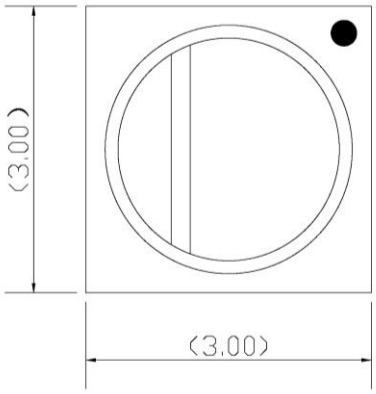
3.4 Data Set 2, 105 ℃, 150mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')								
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	0.2521	0.5212	2965	0.0006	0.0010	0.0015	0.0019	0.0023	0.0027	0.0029	0.0031	0.0032
27	0.2525	0.5217	2950	0.0005	0.0010	0.0014	0.0018	0.0023	0.0027	0.0030	0.0031	0.0030
28	0.2530	0.5207	2945	0.0006	0.0010	0.0014	0.0019	0.0023	0.0026	0.0030	0.0031	0.0031
29	0.2524	0.5202	2963	0.0007	0.0009	0.0013	0.0017	0.0021	0.0025	0.0028	0.0030	0.0031
30	0.2521	0.5235	2951	0.0006	0.0009	0.0014	0.0018	0.0022	0.0025	0.0029	0.0030	0.0030
31	0.2520	0.5227	2956	0.0006	0.0008	0.0013	0.0017	0.0022	0.0026	0.0029	0.0030	0.0031
32	0.2531	0.5207	2942	0.0006	0.0009	0.0015	0.0017	0.0021	0.0027	0.0031	0.0033	0.0034
33	0.2539	0.5209	2922	0.0005	0.0009	0.0013	0.0017	0.0022	0.0027	0.0030	0.0031	0.0032
34	0.2529	0.5218	2941	0.0005	0.0009	0.0013	0.0017	0.0021	0.0026	0.0030	0.0032	0.0031
35	0.2529	0.5211	2946	0.0005	0.0010	0.0014	0.0018	0.0022	0.0026	0.0031	0.0031	0.0032
36	0.2530	0.5208	2945	0.0004	0.0009	0.0013	0.0016	0.0020	0.0028	0.0033	0.0034	0.0035
37	0.2534	0.5212	2932	0.0006	0.0010	0.0014	0.0019	0.0024	0.0026	0.0032	0.0034	0.0034
38	0.2527	0.5209	2951	0.0006	0.0008	0.0013	0.0017	0.0021	0.0025	0.0027	0.0030	0.0032
39	0.2525	0.5210	2954	0.0004	0.0007	0.0015	0.0018	0.0023	0.0026	0.0030	0.0031	0.0032
40	0.2539	0.5219	2915	0.0002	0.0004	0.0013	0.0017	0.0021	0.0026	0.0036	0.0034	0.0032
41	0.2535	0.5203	2935	0.0005	0.0005	0.0011	0.0015	0.0019	0.0027	0.0029	0.0032	0.0036
42	0.2523	0.5225	2952	0.0003	0.0004	0.0009	0.0014	0.0018	0.0026	0.0034	0.0026	0.0035
43	0.2521	0.5192	2976	0.0005	0.0005	0.0008	0.0012	0.0017	0.0022	0.0028	0.0030	0.0034
44	0.2528	0.5229	2938	0.0006	0.0007	0.0010	0.0014	0.0017	0.0022	0.0034	0.0027	0.0033
45	0.2530	0.5209	2944	0.0007	0.0007	0.0011	0.0016	0.0020	0.0022	0.0027	0.0030	0.0033
46	0.2528	0.5221	2942	0.0006	0.0008	0.0010	0.0014	0.0018	0.0021	0.0024	0.0017	0.0032
47	0.2536	0.5218	2924	0.0002	0.0007	0.0009	0.0013	0.0017	0.0021	0.0027	0.0032	0.0032
48	0.2536	0.5209	2929	0.0006	0.0008	0.0009	0.0014	0.0017	0.0020	0.0022	0.0031	0.0034
49	0.2525	0.5204	2958	0.0006	0.0007	0.0009	0.0013	0.0017	0.0022	0.0024	0.0024	0.0034
50	0.2537	0.5213	2926	0.0007	0.0009	0.0010	0.0014	0.0018	0.0021	0.0030	0.0023	0.0032
Ave.	0.2529	0.5213	2944	0.0005	0.0008	0.0012	0.0016	0.0020	0.0025	0.0029	0.0030	0.0033
Med.	0.2529	0.5211	2945	0.0006	0.0008	0.0013	0.0017	0.0021	0.0026	0.0030	0.0031	0.0032
st dev	0.0006	0.0009	14.4652	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0004	0.0002
Min.	0.2520	0.5192	2915	0.0002	0.0004	0.0008	0.0012	0.0017	0.0020	0.0022	0.0017	0.0030
Max.	0.2539	0.5235	2976	0.0007	0.0010	0.0015	0.0019	0.0024	0.0028	0.0036	0.0034	0.0036



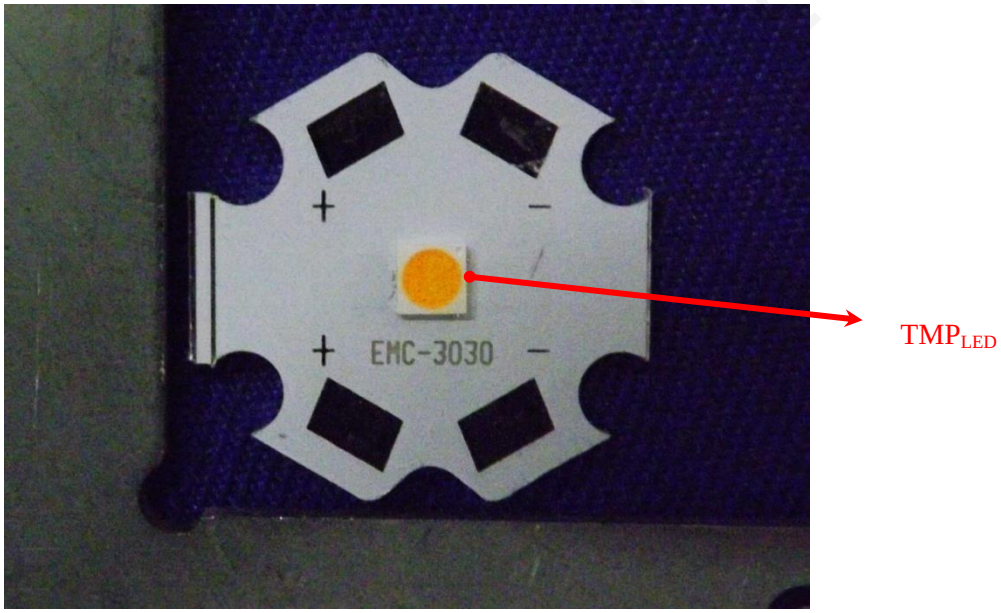
Appendix A – EUT PHOTO

A.1 #Mechanical Dimensions (Ta = 25℃)



All dimensions are in millimeter

A.2 EUT Photo



Directions

1. The information marked "superscript #" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
3. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.
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**********END OF REPORT**********