TEST REPORT

According to ANSI/IES LM-80-15
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-5050D68W-B1C8-S1-HR3

Report Type: 9000 Hours Test Report	**Product Type:** LED Package
Reviewed By:	Pote Wang
Report Number:	SZ2210730-31983E-10
Test Date:	2017-12-04 to 2018-12-18
Report Date:	2021-08-03
Approved by:	Blake Zhang / EE Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Dongguan). No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China. Tel: +86-0769-86858888 Fax:+86-0769-86858588

TABLE OF CONTENTS

1 - General Information

1.1 Description of LED Light Sources

Sample Size:

50 PCS samples were received on 2017-12-04. The samples were numbered from 1 to 25 and 26 to 50.

Manufacturer:	Hongli Zhihui Group Co.,Ltd. Guangzhou Branch
Part Number:	HL-EMC-5050D68W-B1C8-S1-HR3
Part Type:	LED Package
#Drive Level:	DC 150mA
#Nominal CCT:	2700K
#Power:	3.75 W
#Average Current Density per LED die:	552.95 mA/mm^2
#Average Power Density per LED die:	1.73 W/mm^2
#CRI:	80
#Die Spacing:	0.535 mm

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.

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 base on the information and declaration provided by manufacturer. The information of these models shows that the covered products meet all section 4 requirements of *ENERGY STAR® Requirements for the Use of LM-80 Data* (September 28, 2017)

This report covers the following models:

Model name	CRI (typ.)	CCT (typ.)	Series	Parallel	Power density (W/mm^2)	Current density per LED die (mA/mm^2)	Current per die (mA)	Distance between of dies	Current (mA)
HL-EMC-5050D68W-B1C8-S1-HR3	80	2700K	8	1	0.148	552.95	150	0.535	150
HL-EMC-5050D***W-B1C8-S1-HR3-***	80	2200-6500K	8	1	0.144	516.67	150	0.535	150
HL-EMC-5050D***W-B1C6-S1-HR3-***	80	2200-6500K	6	1	0.108	516.67	150	0.535	150
HL-EMC-5050D***W-B2C4-S1-HR3-***	80	2200-6500K	4	2	0.144	516.67	150	0.535	300
HL-EMC-5050D***W-B4C2-S1-HR3-***	80	2200-6500K	2	4	0.144	516.67	150	0.535	600
HL-EMC-5050D***W-B3C2-S1-HR3-***	80	2200-6500K	2	3	0.108	516.67	150	0.535	450

The model name begins with "HL", such as "HL-EMC-5050D***W-B1C8-S1-HR3-***", "*" is described in detail as follows:

1. The first "***" is a number from 1 to 999 which stands for the brightness level.

2. The second "***" is the letter, which stands for the customer code.

Note:

1. The applicant Hongli Zhihui Group Co.,Ltd. Guangzhou Branch declare that their products with model HL-EMC-5050D68W-B1C8-S1-HR3 are the same to the products in report#R2DG171204057-10 and is authorized by original applicant to use their test data.
2. All the data in previous report (R2DG171204057-10) is shared in this report.

1.2 Standards and Reference Documentations

- ANSI/IES LM-80-15: IES Approved Method for Measuring Lumen Maintenance of LED Light Sources.
- CIE 127:2007: Measurement of LEDs
- ENERGY STAR® Requirements for the Use of LM-80 Data (This standard was not accredited by IAS)

1.3 Testing Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
0.5m integrating sphere	EVERFINE	AIS-2	G185304TA1381172	2018-06-28	2019-06-28
LED Test Source	EVERFINE	LTS-300	P185616CD1371113	2018-06-28	2019-06-28
High Accuracy Arry Spectroradiometer	EVERFINE	HAAS-2000	P600674CM1381123	2018-06-28	2019-06-28
Standard Light Source	EVERFINE	D062	1011064	2018-01-15	2019-01-15
Multilayer aging machine	BACL	B2-270	20024	2018-03-13	2019-03-13
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090006	2018-03-26	2019-03-26

1.4 Drive Level

Samples are driven with a constant direct current (DC) during maintenance test, photometric and electrical measurement. The current value was regulated to within ±3% of the specified value of the manufacturer during maintenance test, and was within ±0.5% during photometric and electrical measurement test.

1.5 Ambient Conditions for Maintenance Test

For lumen maintenance test, samples within one data set, were installed on cooling boards in thermal chambers with minimal ambient airflow. The case temperature and ambient temperature was monitored by thermocouples which one was soldered to the coldest DUTs' case (TMP_{LED}) location, while the other is mounted at a distance of 5 mm above the TMP location.

During life testing, TMP_{LED} of the coldest LEDs were maintained at a temperature that was greater than or equal to 2°C below the corresponding nominal case temperature. Surrounding air was maintained at a temperature that was greater than or equal to 5°C below the corresponding nominal case temperature. Thermocouples were shielded from direct DUT optical radiation and comply with ASTM E230 Table 1 "Special Limits".

Samples were connected to DC power supply in series circuits with a constant current. The forward current was regulated to within ±3% of the specified value of the manufacturer.

The relative humidity within chamber was kept less than 65% during test.

For photometry measurement, the ambient temperature during test was set to 25°C ± 2°C, RH <65%.

1.6 Photometric Measurement Method and Uncertainty

Integrating sphere and spectroradiometer is used to measure luminous flux and chromaticity coordinate u'v'. 2π measurement was used and sample was drived by DC power supply. The forward current was regulated to within ±0.5% of the nominal value. The test system was calibrated by halogen reference lamp. The ambient temperature during test was set to 25°C ± 2°C, RH <65%. The temperature measurement point was located in the sphere and the temperature was detected by a temperature probe.

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.

The uncertainty of the temperature is U=0.8671°C (K=2), at the 95% confidence level.

1.7 Statement of Traceability

Bay Area Compliance Laboratories Corp. (Dongguan) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

1.8 Sample Set

Data Set 1: 85°C, 150mA

Part Number:	HL-EMC-5050D68W-B1C8-S1-HR3
Number of Units:	25
Case Temperature:	>83°C
Ambient Temperature:	>80°C
Life Test Drive Current:	150mA
Measurement Current:	150mA

Data Set 2: 105°C, 150mA

Part Number:	HL-EMC-5050D68W-B1C8-S1-HR3
Number of Units:	25
Case Temperature:	>103°C
Ambient Temperature:	>100°C
Life Test Drive Current:	150mA
Measurement Current:	150mA

2 - Summary of Test Result

Data Set:	Sample Size	Failures Observed :	Test Interval	Test Duration	α	β	Reported TM-21 L_{70} Lifetime
1	25	0	1000hrs	9000hrs	1.456E-06	1.002	>54000 hours
2	25	0	1000hrs	9000hrs	2.495E-06	1.003	>54000 hours

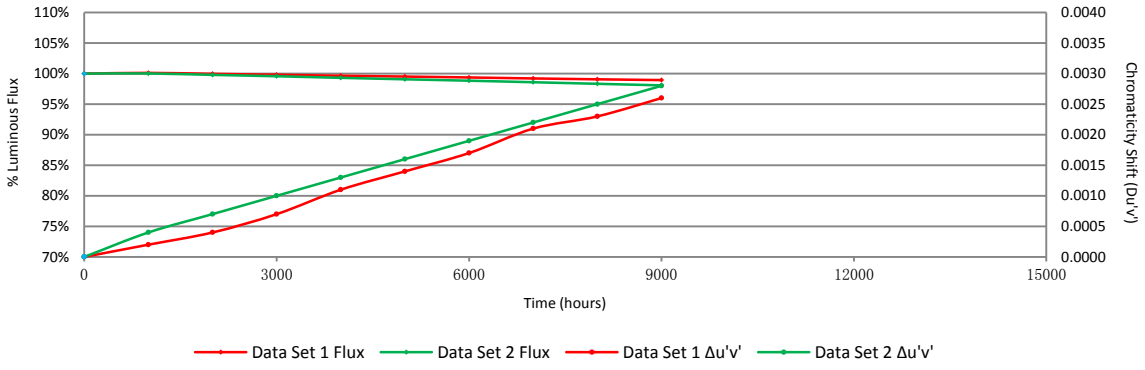
Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	100.12%	99.96%	99.81%	99.65%	99.52%	99.37%	99.21%	99.07%	98.94%
2	100.02%	99.79%	99.57%	99.31%	99.07%	98.84%	98.59%	98.33%	98.08%

Average Chromaticity Shift

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	0.0002	0.0004	0.0007	0.0011	0.0014	0.0017	0.0021	0.0023	0.0026
2	0.0004	0.0007	0.0010	0.0013	0.0016	0.0019	0.0022	0.0025	0.0028

Average Lumen Maintenance and Chromaticity Shift VS. Time



3 - Test Data

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

No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	634.0	100.19	100.08	99.98	99.91	99.78	99.54	99.46	99.35	99.26
2	627.9	100.14	99.98	99.89	99.76	99.67	99.54	99.43	99.39	99.22
3	629.9	100.24	100.11	99.90	99.83	99.67	99.56	99.27	99.21	99.00
4	630.5	100.22	100.10	100.06	99.92	99.86	99.76	99.71	99.68	99.52
5	631.1	100.21	100.03	99.94	99.87	99.73	99.68	99.45	99.35	99.32
6	629.6	100.16	100.08	99.90	99.76	99.67	99.56	99.27	99.09	98.90
7	629.5	100.14	99.97	99.81	99.57	99.52	99.41	99.33	99.19	99.17
8	633.9	100.14	100.03	99.94	99.87	99.73	99.56	99.23	98.99	98.96
9	634.7	100.08	99.98	99.75	99.70	99.43	99.28	99.16	99.05	98.98
10	634.5	100.24	100.17	99.95	99.78	99.62	99.56	99.50	99.21	99.15
11	627.5	99.98	99.82	99.75	99.57	99.44	99.38	99.24	99.20	99.01
12	631.3	100.10	99.86	99.67	99.49	99.40	99.27	99.08	99.05	98.95
13	629.4	100.10	99.84	99.67	99.48	99.38	99.29	99.14	98.86	98.65
14	637.0	99.98	99.84	99.50	99.15	99.12	98.84	98.63	98.60	98.40
15	636.1	100.08	99.89	99.75	99.69	99.47	99.29	99.07	98.84	98.79
16	636.6	100.16	100.02	99.80	99.59	99.47	99.28	99.07	98.90	98.81
17	633.2	100.25	100.05	99.84	99.67	99.57	99.53	99.45	99.38	99.29
18	629.0	100.11	100.03	99.78	99.55	99.41	99.09	98.86	98.51	98.38
19	626.3	100.10	99.89	99.82	99.70	99.57	99.44	99.27	99.06	98.87
20	616.3	100.05	99.84	99.71	99.59	99.50	99.22	99.03	98.86	98.75
21	630.5	100.03	99.94	99.83	99.60	99.35	99.14	99.08	98.86	98.60
22	625.8	100.05	99.92	99.90	99.70	99.66	99.52	99.38	99.17	98.93
23	628.9	100.13	99.83	99.59	99.32	99.17	99.06	99.03	98.92	98.82
24	625.2	99.92	99.68	99.57	99.38	99.28	99.07	98.86	98.75	98.66
25	630.2	100.27	100.08	99.84	99.78	99.52	99.49	99.35	99.14	99.03
Avg.	630.4	100.12	99.96	99.81	99.65	99.52	99.37	99.21	99.07	98.94
Med.	630.2	100.13	99.98	99.82	99.69	99.52	99.41	99.24	99.06	98.95
st dev	4.4	0.09	0.12	0.14	0.19	0.18	0.22	0.24	0.27	0.28
Min.	616.3	99.92	99.68	99.50	99.15	99.12	98.84	98.63	98.51	98.38
Max.	637.0	100.27	100.17	100.06	99.92	99.86	99.76	99.71	99.68	99.52

3.2 Data Set 1, 85°C, 150mA (Forward Voltage)

No.	Forward Voltage (V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	25.07	24.36	24.36	24.37	24.37	24.37	24.37	24.34	24.34	24.37
2	24.22	24.25	24.25	24.25	24.25	24.25	24.24	24.24	24.22	24.24
3	25.04	24.29	24.29	24.29	24.29	24.29	24.29	24.27	24.28	24.28
4	24.26	24.30	24.29	24.30	24.29	24.29	24.29	24.27	24.29	24.27
5	25.25	24.16	24.16	24.16	24.17	24.16	24.16	24.15	24.16	24.15
6	24.16	24.19	24.19	24.19	24.19	24.18	24.17	24.18	24.18	24.17
7	24.24	24.26	24.28	24.26	24.29	24.25	24.27	24.26	24.25	24.25
8	24.13	24.17	24.16	24.17	24.16	24.15	24.16	24.16	24.15	24.15
9	24.19	24.23	24.23	24.22	24.22	24.21	24.20	24.21	24.21	24.20
10	24.68	24.12	24.12	24.13	24.13	24.11	24.11	24.10	24.11	24.10
11	24.15	24.17	24.19	24.19	24.18	24.16	24.17	24.17	24.15	24.16
12	24.26	24.31	24.32	24.30	24.30	24.30	24.30	24.28	24.27	24.28
13	24.11	24.12	24.14	24.13	24.13	24.14	24.13	24.13	24.12	24.12
14	24.09	24.14	24.13	24.14	24.15	24.13	24.13	24.14	24.14	24.13
15	24.38	24.36	24.37	24.36	24.39	24.36	24.36	24.36	24.36	24.35
16	24.35	24.39	24.40	24.39	24.41	24.38	24.37	24.37	24.37	24.39
17	24.09	24.12	24.13	24.12	24.13	24.12	24.11	24.11	24.10	24.12
18	24.11	24.15	24.15	24.14	24.15	24.15	24.12	24.14	24.13	24.14
19	24.22	24.25	24.28	24.29	24.27	24.27	24.26	24.25	24.25	24.26
20	24.77	24.23	24.24	24.23	24.24	24.22	24.22	24.20	24.22	24.21
21	24.16	24.19	24.20	24.20	24.21	24.19	24.19	24.18	24.18	24.25
22	24.16	24.20	24.20	24.22	24.22	24.19	24.21	24.20	24.21	24.24
23	24.04	24.10	24.11	24.10	24.10	24.09	24.09	24.07	24.09	24.09
24	24.08	24.13	24.14	24.13	24.13	24.13	24.12	24.13	24.43	24.17
25	24.16	24.23	24.24	24.24	24.22	24.22	24.22	24.21	24.22	24.22
Avg.	24.33	24.22	24.22	24.22	24.22	24.21	24.21	24.20	24.22	24.21
Med.	24.19	24.20	24.20	24.22	24.22	24.19	24.20	24.20	24.21	24.21
st dev	0.34	0.08	0.08	0.08	0.09	0.08	0.09	0.08	0.09	0.08
Min.	24.04	24.10	24.11	24.10	24.10	24.09	24.09	24.07	24.09	24.09
Max.	25.25	24.39	24.40	24.39	24.41	24.38	24.37	24.37	24.43	24.39

3.3 Data Set 1, 85°C, 150mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')								
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	0.2618	0.5271	2717	0.0001	0.0004	0.0007	0.0010	0.0013	0.0016	0.0020	0.0023	0.0028
2	0.2623	0.5257	2710	0.0002	0.0004	0.0006	0.0008	0.0013	0.0016	0.0019	0.0020	0.0022
3	0.2629	0.5267	2694	0.0001	0.0004	0.0007	0.0012	0.0016	0.0019	0.0021	0.0022	0.0024
4	0.2613	0.5252	2735	0.0003	0.0006	0.0007	0.0009	0.0014	0.0019	0.0023	0.0028	0.0031
5	0.2631	0.5262	2692	0.0002	0.0005	0.0007	0.0010	0.0014	0.0016	0.0021	0.0026	0.0029
6	0.2618	0.5266	2719	0.0002	0.0004	0.0005	0.0012	0.0014	0.0015	0.0020	0.0025	0.0029
7	0.2623	0.5258	2710	0.0003	0.0006	0.0008	0.0010	0.0012	0.0015	0.0019	0.0022	0.0029
8	0.2602	0.5232	2767	0.0002	0.0005	0.0008	0.0011	0.0015	0.0018	0.0019	0.0021	0.0024
9	0.2621	0.5256	2715	0.0002	0.0004	0.0008	0.0011	0.0014	0.0018	0.0021	0.0022	0.0023
10	0.2618	0.5251	2723	0.0001	0.0002	0.0005	0.0011	0.0014	0.0017	0.0020	0.0023	0.0024
11	0.2643	0.5263	2668	0.0002	0.0004	0.0006	0.0009	0.0013	0.0019	0.0023	0.0025	0.0027
12	0.2633	0.5266	2687	0.0003	0.0005	0.0008	0.0011	0.0014	0.0017	0.0023	0.0027	0.0029
13	0.2638	0.5264	2677	0.0002	0.0005	0.0006	0.0010	0.0014	0.0016	0.0019	0.0022	0.0025
14	0.2622	0.5254	2714	0.0002	0.0004	0.0008	0.0011	0.0014	0.0015	0.0018	0.0019	0.0022
15	0.2624	0.5258	2709	0.0002	0.0004	0.0008	0.0011	0.0013	0.0016	0.0017	0.0019	0.0021
16	0.2628	0.5270	2695	0.0002	0.0004	0.0008	0.0012	0.0016	0.0018	0.0020	0.0021	0.0022
17	0.2621	0.5255	2717	0.0002	0.0004	0.0007	0.0011	0.0014	0.0017	0.0018	0.0020	0.0022
18	0.2632	0.5256	2693	0.0002	0.0004	0.0009	0.0013	0.0015	0.0017	0.0020	0.0022	0.0023
19	0.2590	0.5222	2798	0.0002	0.0005	0.0010	0.0014	0.0016	0.0019	0.0024	0.0026	0.0030
20	0.2610	0.5251	2740	0.0003	0.0005	0.0008	0.0012	0.0014	0.0017	0.0021	0.0025	0.0028
21	0.2612	0.5253	2736	0.0003	0.0004	0.0006	0.0013	0.0018	0.0023	0.0026	0.0029	0.0033
22	0.2623	0.5262	2709	0.0002	0.0004	0.0006	0.0012	0.0017	0.0020	0.0024	0.0027	0.0032
23	0.2629	0.5261	2697	0.0003	0.0004	0.0006	0.0008	0.0012	0.0014	0.0020	0.0023	0.0031
24	0.2638	0.5262	2677	0.0003	0.0005	0.0008	0.0010	0.0014	0.0017	0.0021	0.0024	0.0028
25	0.2606	0.5242	2753	0.0001	0.0004	0.0009	0.0011	0.0012	0.0014	0.0017	0.0020	0.0023
Avg.	0.2622	0.5256	2714	0.0002	0.0004	0.0007	0.0011	0.0014	0.0017	0.0021	0.0023	0.0026
Med.	0.2623	0.5258	2710	0.0002	0.0004	0.0007	0.0011	0.0014	0.0017	0.0020	0.0023	0.0027
st dev	0.0012	0.0011	29	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0003	0.0004
Min.	0.2590	0.5222	2668	0.0001	0.0002	0.0005	0.0008	0.0012	0.0014	0.0017	0.0019	0.0021
Max.	0.2643	0.5271	2798	0.0003	0.0006	0.0010	0.0014	0.0018	0.0023	0.0026	0.0029	0.0033

3.4 Data Set 2, 105°C, 150mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	626.6	99.97	99.87	99.57	99.28	99.09	98.88	98.64	98.26	97.88
27	635.0	99.97	99.67	99.57	99.31	99.07	98.85	98.69	98.54	98.14
28	637.1	100.13	99.81	99.53	99.26	99.03	98.85	98.63	98.32	98.10
29	629.5	100.08	99.83	99.67	99.35	99.17	98.98	98.70	98.52	98.27
30	634.4	99.92	99.73	99.43	99.18	98.82	98.46	98.19	97.95	97.82
31	626.3	100.02	99.84	99.55	99.28	99.04	98.67	98.48	98.31	97.96
32	631.4	99.90	99.67	99.37	99.08	98.78	98.43	98.27	97.86	97.66
33	626.7	100.03	99.92	99.68	99.44	99.22	99.19	99.09	98.80	98.47
34	634.0	100.03	99.81	99.68	99.51	99.26	99.05	98.91	98.64	98.34
35	635.3	100.06	99.89	99.69	99.65	99.53	99.32	99.20	98.82	98.43
36	631.5	100.10	99.98	99.75	99.60	99.40	99.08	98.91	98.76	98.70
37	634.2	100.02	99.62	99.51	99.32	99.01	98.80	98.77	98.64	98.30
38	638.8	100.08	99.94	99.64	99.42	99.09	98.81	98.69	98.40	98.15
39	632.4	100.03	99.83	99.57	99.34	99.04	98.73	98.47	98.15	97.93
40	638.6	99.92	99.77	99.67	99.44	99.28	98.95	98.54	98.12	97.75
41	619.3	99.97	99.64	99.50	99.39	99.02	98.81	98.45	98.18	98.05
42	636.4	100.13	99.73	99.54	99.31	99.06	98.79	98.46	98.16	97.96
43	632.5	99.98	99.84	99.68	99.40	99.10	98.85	98.61	98.23	97.99
44	627.5	100.08	99.94	99.70	99.33	99.30	99.24	98.85	98.65	98.41
45	641.2	99.97	99.63	99.17	98.99	98.71	98.52	98.25	97.99	97.74
46	639.3	100.03	99.86	99.48	99.00	98.83	98.70	98.33	98.08	97.89
47	621.9	99.98	99.74	99.49	99.08	98.91	98.54	98.18	97.97	97.83
48	632.8	99.98	99.70	99.53	99.30	99.12	98.74	98.29	98.06	97.96
49	628.9	100.03	99.83	99.59	99.24	99.00	98.93	98.79	98.51	98.12
50	638.5	100.08	99.78	99.61	99.22	99.00	98.81	98.37	98.28	98.25
Avg.	632.4	100.02	99.79	99.57	99.31	99.07	98.84	98.59	98.33	98.08
Med.	632.8	100.03	99.81	99.57	99.31	99.06	98.81	98.61	98.28	98.05
st dev	5.5	0.06	0.10	0.12	0.16	0.19	0.23	0.27	0.29	0.26
Min.	619.3	99.90	99.62	99.17	98.99	98.71	98.43	98.18	97.86	97.66
Max.	641.2	100.13	99.98	99.75	99.65	99.53	99.32	99.20	98.82	98.70

3.5 Data Set 2, 105°C, 150mA (Forward Voltage)

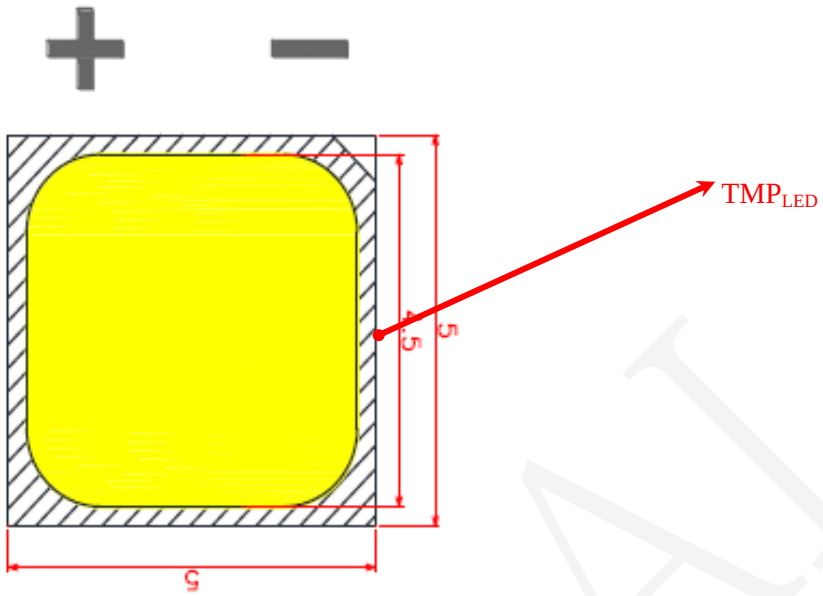
No.	Forward Voltage (V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	24.11	24.14	24.15	24.14	24.15	24.13	24.12	24.15	24.14	24.13
27	24.13	24.18	24.17	24.18	24.18	24.17	24.15	24.18	24.17	24.16
28	24.17	24.22	24.23	24.21	24.22	24.19	24.21	24.20	24.22	24.21
29	24.21	24.26	24.26	24.26	24.27	24.25	24.23	24.25	24.25	24.25
30	24.16	24.21	24.21	24.21	24.20	24.21	24.19	24.19	24.20	24.20
31	24.27	24.32	24.33	24.33	24.33	24.30	24.31	24.31	24.31	24.31
32	24.76	24.28	24.30	24.28	24.28	24.26	24.27	24.27	24.27	24.29
33	24.70	24.25	24.25	24.25	24.25	24.22	24.35	24.23	24.23	24.23
34	24.20	24.25	24.26	24.25	24.25	24.23	24.23	24.24	24.23	24.24
35	24.12	24.17	24.17	24.18	24.17	24.17	24.15	24.18	24.16	24.17
36	24.07	24.13	24.12	24.12	24.11	24.11	24.10	24.10	24.11	24.10
37	24.16	24.20	24.20	24.20	24.21	24.19	24.21	24.18	24.20	24.19
38	24.27	24.31	24.33	24.32	24.33	24.31	24.30	24.32	24.31	24.30
39	24.22	24.27	24.27	24.26	24.27	24.24	24.25	24.26	24.25	24.25
40	24.07	24.11	24.11	24.12	24.13	24.11	24.10	24.11	24.11	24.08
41	24.19	24.24	24.26	24.24	24.24	24.23	24.23	24.23	24.23	24.23
42	24.15	24.19	24.21	24.21	24.20	24.18	24.18	24.19	24.17	24.18
43	24.18	24.23	24.25	24.26	24.24	24.22	24.22	24.23	24.21	24.21
44	24.10	24.15	24.16	24.15	24.15	24.14	24.13	24.14	24.13	24.14
45	24.31	24.36	24.37	24.38	24.37	24.34	24.36	24.33	24.34	24.35
46	24.26	24.32	24.33	24.34	24.33	24.31	24.30	24.30	24.31	24.30
47	24.20	24.25	24.25	24.25	24.25	24.24	24.23	24.23	24.22	24.22
48	24.15	24.20	24.22	24.22	24.22	24.20	24.20	24.20	24.19	24.19
49	24.19	24.24	24.25	24.24	24.25	24.23	24.24	24.22	24.23	24.22
50	24.28	24.36	24.35	24.37	24.34	24.33	24.33	24.33	24.33	24.32
Avg.	24.23	24.23	24.24	24.24	24.24	24.22	24.22	24.22	24.22	24.22
Med.	24.19	24.24	24.25	24.24	24.24	24.22	24.23	24.23	24.22	24.22
st dev	0.16	0.07	0.07	0.07	0.07	0.06	0.07	0.06	0.07	0.07
Min.	24.07	24.11	24.11	24.12	24.11	24.11	24.10	24.10	24.11	24.08
Max.	24.76	24.36	24.37	24.38	24.37	24.34	24.36	24.33	24.34	24.35

3.6 Data Set 2, 105°C, 150mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')								
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	0.2617	0.5259	2722	0.0002	0.0005	0.0010	0.0012	0.0014	0.0017	0.0018	0.0020	0.0022
27	0.2598	0.5217	2783	0.0004	0.0007	0.0009	0.0014	0.0016	0.0020	0.0022	0.0024	0.0026
28	0.2585	0.5222	2809	0.0004	0.0007	0.0010	0.0014	0.0017	0.0019	0.0021	0.0025	0.0026
29	0.2627	0.5264	2700	0.0004	0.0006	0.0009	0.0014	0.0016	0.0018	0.0021	0.0022	0.0024
30	0.2626	0.5257	2705	0.0005	0.0007	0.0011	0.0013	0.0016	0.0019	0.0023	0.0026	0.0028
31	0.2638	0.5262	2678	0.0002	0.0005	0.0008	0.0011	0.0014	0.0019	0.0022	0.0026	0.0030
32	0.2594	0.5215	2792	0.0004	0.0008	0.0011	0.0014	0.0016	0.0020	0.0024	0.0027	0.0029
33	0.2634	0.5255	2688	0.0004	0.0007	0.0010	0.0012	0.0015	0.0018	0.0021	0.0023	0.0025
34	0.2637	0.5264	2679	0.0004	0.0007	0.0009	0.0014	0.0017	0.0021	0.0023	0.0023	0.0025
35	0.2619	0.5254	2721	0.0003	0.0005	0.0010	0.0014	0.0016	0.0018	0.0022	0.0025	0.0027
36	0.2628	0.5266	2697	0.0005	0.0008	0.0012	0.0015	0.0018	0.0021	0.0024	0.0029	0.0031
37	0.2620	0.5257	2718	0.0004	0.0007	0.0010	0.0014	0.0018	0.0021	0.0023	0.0025	0.0029
38	0.2619	0.5258	2719	0.0004	0.0006	0.0010	0.0014	0.0017	0.0019	0.0022	0.0025	0.0029
39	0.2631	0.5261	2692	0.0004	0.0006	0.0009	0.0014	0.0017	0.0021	0.0022	0.0026	0.0029
40	0.2619	0.5257	2718	0.0004	0.0006	0.0008	0.0013	0.0016	0.0019	0.0022	0.0026	0.0030
41	0.2635	0.5253	2688	0.0004	0.0006	0.0009	0.0015	0.0019	0.0021	0.0024	0.0027	0.0028
42	0.2621	0.5261	2712	0.0004	0.0007	0.0010	0.0013	0.0015	0.0018	0.0022	0.0024	0.0028
43	0.2639	0.5256	2677	0.0004	0.0008	0.0010	0.0013	0.0017	0.0019	0.0021	0.0024	0.0027
44	0.2606	0.5223	2762	0.0003	0.0006	0.0008	0.0011	0.0013	0.0016	0.0020	0.0023	0.0027
45	0.2598	0.5225	2778	0.0004	0.0007	0.0011	0.0013	0.0014	0.0016	0.0018	0.0022	0.0027
46	0.2623	0.5263	2708	0.0003	0.0006	0.0009	0.0014	0.0016	0.0018	0.0021	0.0023	0.0026
47	0.2631	0.5260	2693	0.0004	0.0006	0.0011	0.0016	0.0019	0.0021	0.0023	0.0025	0.0026
48	0.2633	0.5268	2685	0.0004	0.0007	0.0010	0.0013	0.0017	0.0022	0.0026	0.0028	0.0028
49	0.2614	0.5256	2730	0.0004	0.0006	0.0009	0.0013	0.0015	0.0019	0.0022	0.0029	0.0030
50	0.2622	0.5259	2712	0.0004	0.0008	0.0011	0.0013	0.0015	0.0019	0.0021	0.0026	0.0029
Avg.	0.2621	0.5252	2719	0.0004	0.0007	0.0010	0.0013	0.0016	0.0019	0.0022	0.0025	0.0028
Med.	0.2622	0.5257	2712	0.0004	0.0007	0.0010	0.0014	0.0016	0.0019	0.0022	0.0025	0.0028
st dev	0.0015	0.0016	38	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2585	0.5215	2677	0.0002	0.0005	0.0008	0.0011	0.0013	0.0016	0.0018	0.0020	0.0022
Max.	0.2639	0.5268	2809	0.0005	0.0008	0.0012	0.0016	0.0019	0.0022	0.0026	0.0029	0.0031

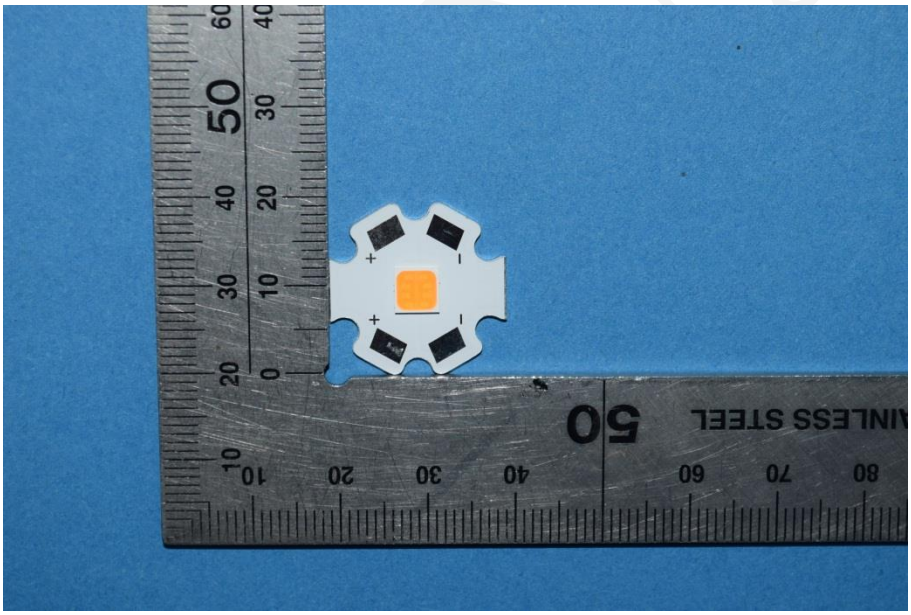
4 - DUT Photo

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 DUT 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**********