TEST REPORT

According to ANSI/IES LM-80-15
For

#Jiangxi Elite Semiconductors technology Co, Ltd

#Building 9, standard workshop Park, Dupin industrial flat platform, Xiangdong Industrial Park, Pingxiang City, Jiangxi Province

#Model: SMD3035

Report Type: 9000 Hours Test Report	**Product Type:** LED Package
Reviewed By:	Pote Wang
Report Number:	R2DG210225082-10-9000
Test Date:	2021-02-26 to 2022-03-08
Report Date:	2022-08-11
Approved by:	Blake Zhang / EE Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 5/F(B-West) -7/F, the 3rd Phase of Wan Li Industrial Building D, Shihua Road, Futian Free Trade Zone Shenzhen, Guangdong, China. Tel: +86-755-33320018 Fax: +86-755-33320008
Test Facility:	Test facility was located at No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.(Shenzhen). This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, or any agency of the U.S. Government.

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Note：

**: The items tested by Bay Area Compliance Laboratories Corp. (Dongguan) and covered by IAS accreditation, the reference report No. is R2DG210225082-10-6000 (test Date: 2021-02-26 to 2021-11-05).
Bay Area Compliance Laboratories Corp. (Dongguan) is EPA-Recognized Laboratories and the ORG ID: 1109266.

1 - General Information

1.1 Description of LED Light Sources#

Sample Size:

75 PCS test samples were in good condition and received on 2021-02-25. The samples were numbered from 1 to 25, 26 to 50 and 51 to 75.

Manufacturer:	Guangdong Elite Optoelectronic Technology Co.,Ltd
Factory:	Guangdong Elite Optoelectronic Technology Co.,Ltd
Factory Address:	Hu An Wei Village,Gaobu Town,Dongguan City,Guangdong Province,China
Part Number:	SMD3035
Part Type:	LED Package
Drive Level:	DC 175mA
Nominal CCT:	3000K
Power:	1W
Average Current Density per LED die:	155 mA/mm^2
Average Power Density per LED die:	0.45W/mm^2
CRI:	80
Die Spacing:	1mm

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.

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 (This standard was not accredited by NVLAP)
- *ENERGY STAR® Requirements for the Use of LM-80 Data (This standard was not accredited by NVLAP)

1.3 Testing Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
0.3m integrating sphere	EVERFINE	Diameter 0.3m	1011119	2022-03-08	2023-03-07
Programmable Test Power for LEDs	EVERFINE	LED300E	1008002	2022-01-05	2023-01-04
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	2022-03-08	2023-03-07
Standard Light Source	EVERFINE	D062	1011093	2021-10-15	2022-10-14
Precision digital stabilized DC power supply	EVERFINE	WY605-V110	G115987CJ7321114	2022-01-06	2023-01-05
Multilayer aging machine	BACL	B2-270	20023	2022-01-04	2023-01-03
DC Power Supply	Maisheng	MP6020D	2017111107	2022-01-05	2023-01-04

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. (Shenzhen) 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: 55°C, 175mA

Part Number:	SMD3035
Number of Units:	25
Case Temperature:	>53°C
Ambient Temperature:	>50°C
Life Test Drive Current:	175mA
Measurement Current:	175mA

Data Set 2: 85°C, 175mA

Part Number:	SMD3035
Number of Units:	25
Case Temperature:	>83°C
Ambient Temperature:	>80°C
Life Test Drive Current:	175mA
Measurement Current:	175mA

Data Set 3: 115°C, 175mA

Part Number:	SMD3035
Number of Units:	25
Case Temperature:	>113°C
Ambient Temperature:	>110°C
Life Test Drive Current:	175mA
Measurement Current:	175mA

2 - Summary of Test Result

Data Set:	Sample Size	Failures Observed:	Test Interval	Test Duration	α	β	Reported TM-21 L_{70} Lifetime	Reported TM-21 L_{90} Lifetime
1	25	0	1000hrs	9000hrs	2.436E-06	1.003	>54000 hours	44,000 hours
2	25	0	1000hrs	9000hrs	2.659E-06	1.002	>54000 hours	40,000 hours
3	25	0	1000hrs	9000hrs	2.996E-06	1.002	>54000 hours	36,000 hours

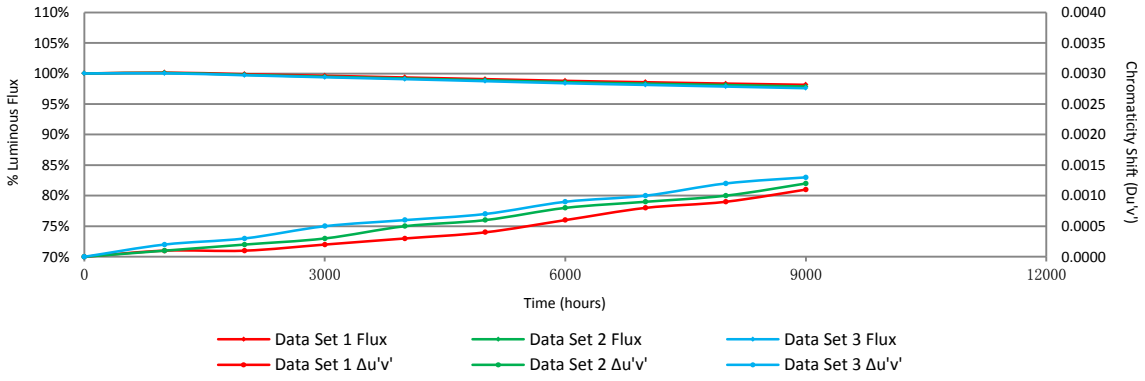
Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs**	2000hrs**	3000hrs**	4000hrs**	5000hrs**	6000hrs**	7000hrs	8000hrs	9000hrs
1	100.15%	99.89%	99.63%	99.35%	99.08%	98.80%	98.57%	98.35%	98.15%
2	100.10%	99.78%	99.48%	99.19%	98.89%	98.58%	98.35%	98.11%	97.87%
3	100.03%	99.71%	99.38%	99.07%	98.74%	98.40%	98.13%	97.86%	97.59%

Average Chromaticity Shift

Data Set:	1000hrs**	2000hrs**	3000hrs**	4000hrs**	5000hrs**	6000hrs**	7000hrs	8000hrs	9000hrs
1	0.0001	0.0001	0.0002	0.0003	0.0004	0.0006	0.0008	0.0009	0.0011
2	0.0001	0.0002	0.0003	0.0005	0.0006	0.0008	0.0009	0.0010	0.0012
3	0.0002	0.0003	0.0005	0.0006	0.0007	0.0009	0.0010	0.0012	0.0013

Average Lumen Maintenance and Chromaticity Shift VS. Time



3 - Test Data

3.1 Data Set 1, 55°C, 175mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)**	1000hrs**	2000hrs**	3000hrs**	4000hrs**	5000hrs**	6000hrs**	7000hrs	8000hrs	9000hrs
1	176.60	100.06	99.83	99.72	99.38	99.21	98.92	98.70	98.47	98.19
2	172.50	100.29	99.94	99.59	99.25	98.90	98.61	98.32	98.03	97.74
3	175.60	100.17	99.89	99.66	99.49	99.15	99.03	98.75	98.58	98.29
4	174.60	100.23	99.94	99.66	99.37	99.08	98.74	98.51	98.28	98.17
5	171.80	100.12	99.83	99.53	99.24	98.95	98.72	98.49	98.31	98.20
6	176.30	100.11	99.83	99.60	99.38	99.09	98.87	98.64	98.41	98.24
7	175.60	100.17	100.06	99.77	99.54	99.20	98.97	98.75	98.52	98.35
8	174.00	100.11	99.83	99.48	99.20	98.91	98.56	98.28	98.05	97.93
9	175.80	100.11	99.83	99.54	99.26	98.98	98.63	98.46	98.18	98.07
10	174.00	100.17	99.89	99.60	99.31	99.02	98.74	98.45	98.22	98.05
11	174.00	100.06	99.77	99.54	99.31	99.02	98.74	98.51	98.28	98.10
12	174.70	100.23	99.89	99.60	99.26	98.97	98.68	98.45	98.28	98.00
13	173.60	100.12	99.83	99.54	99.31	99.08	98.73	98.44	98.27	98.04
14	173.10	100.23	99.88	99.77	99.48	99.25	99.02	98.84	98.67	98.44
15	176.10	100.11	99.94	99.66	99.38	99.20	98.98	98.81	98.58	98.35
16	176.00	100.23	99.94	99.72	99.55	99.38	99.15	98.86	98.58	98.30
17	172.60	100.12	99.83	99.54	99.25	98.90	98.61	98.44	98.32	98.09
18	175.90	100.17	99.89	99.60	99.26	98.92	98.64	98.47	98.24	98.12
19	172.20	100.23	99.88	99.59	99.30	99.01	98.72	98.49	98.26	97.97
20	175.70	100.11	99.94	99.66	99.37	99.09	98.75	98.58	98.29	98.01
21	175.00	100.06	99.89	99.60	99.26	99.09	98.86	98.63	98.40	98.11
22	175.40	100.17	100.06	99.89	99.54	99.20	98.86	98.63	98.35	98.18
23	180.50	100.11	99.78	99.72	99.50	99.28	98.95	98.73	98.56	98.45
24	173.10	100.17	99.94	99.65	99.36	99.08	98.79	98.50	98.32	98.15
25	177.50	100.17	99.89	99.61	99.32	99.04	98.70	98.54	98.42	98.25
Avg.	174.89	100.15	99.89	99.63	99.35	99.08	98.80	98.57	98.35	98.15
Med.	175.00	100.17	99.89	99.60	99.32	99.08	98.74	98.51	98.32	98.15
st dev	1.91	0.06	0.07	0.09	0.11	0.13	0.15	0.16	0.16	0.16
Min.	171.80	100.06	99.77	99.48	99.20	98.90	98.56	98.28	98.03	97.74
Max.	180.50	100.29	100.06	99.89	99.55	99.38	99.15	98.86	98.67	98.45

3.2 Data Set 1, 55°C, 175mA (Forward Voltage)

No.	Forward Voltage (V)									
	0hr(Initial)**	1000hrs**	2000hrs**	3000hrs**	4000hrs**	5000hrs**	6000hrs**	7000hrs	8000hrs	9000hrs
1	5.853	5.860	5.862	5.850	5.846	5.871	5.857	5.864	5.831	5.823
2	5.853	5.855	5.852	5.840	5.868	5.859	5.854	5.851	5.884	5.851
3	5.857	5.860	5.856	5.866	5.858	5.860	5.858	5.856	5.844	5.871
4	5.853	5.857	5.860	5.867	5.861	5.861	5.863	5.814	5.844	5.828
5	5.858	5.856	5.857	5.857	5.865	5.868	5.864	5.815	5.852	5.851
6	5.847	5.851	5.852	5.851	5.867	5.848	5.858	5.857	5.850	5.840
7	5.853	5.853	5.854	5.853	5.859	5.858	5.853	5.874	5.854	5.875
8	5.856	5.858	5.854	5.857	5.856	5.854	5.869	5.845	5.845	5.835
9	5.842	5.840	5.842	5.852	5.846	5.853	5.841	5.824	5.860	5.836
10	5.840	5.842	5.845	5.841	5.851	5.856	5.851	5.850	5.858	5.832
11	5.845	5.851	5.846	5.849	5.842	5.849	5.856	5.812	5.844	5.817
12	5.848	5.856	5.850	5.864	5.855	5.861	5.857	5.844	5.842	5.838
13	5.857	5.858	5.853	5.857	5.855	5.857	5.860	5.860	5.847	5.841
14	5.856	5.852	5.853	5.851	5.852	5.853	5.853	5.853	5.833	5.830
15	5.856	5.854	5.852	5.864	5.863	5.866	5.863	5.856	5.830	5.851
16	5.864	5.863	5.869	5.866	5.854	5.866	5.865	5.856	5.853	5.863
17	5.862	5.867	5.862	5.865	5.862	5.861	5.864	5.846	5.836	5.864
18	5.858	5.865	5.856	5.844	5.843	5.862	5.867	5.861	5.853	5.825
19	5.856	5.854	5.860	5.861	5.862	5.867	5.869	5.865	5.847	5.869
20	5.850	5.852	5.854	5.852	5.850	5.857	5.848	5.845	5.846	5.873
21	5.842	5.852	5.843	5.862	5.858	5.851	5.854	5.843	5.848	5.876
22	5.862	5.864	5.867	5.863	5.864	5.854	5.868	5.848	5.841	5.861
23	5.862	5.865	5.855	5.863	5.865	5.867	5.868	5.862	5.843	5.840
24	5.859	5.856	5.858	5.850	5.857	5.868	5.861	5.876	5.859	5.849
25	5.844	5.844	5.854	5.857	5.865	5.873	5.857	5.818	5.862	5.853
Avg.	5.853	5.855	5.855	5.856	5.857	5.860	5.859	5.848	5.848	5.848
Med.	5.856	5.856	5.854	5.857	5.858	5.860	5.858	5.851	5.847	5.849
st dev	0.007	0.007	0.007	0.008	0.008	0.007	0.007	0.018	0.011	0.018
Min.	5.840	5.840	5.842	5.840	5.842	5.848	5.841	5.812	5.830	5.817
Max.	5.864	5.867	5.869	5.867	5.868	5.873	5.869	5.876	5.884	5.876

3.3 Data Set 1, 55°C, 175mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')								
	0hr(Initial)**			1000hrs**	2000hrs**	3000hrs**	4000hrs**	5000hrs**	6000hrs**	7000hrs	8000hrs	9000hrs
1	0.2498	0.5204	3025	0.0000	0.0001	0.0000	0.0003	0.0004	0.0005	0.0006	0.0008	0.0009
2	0.2497	0.5220	3018	0.0000	0.0002	0.0002	0.0004	0.0005	0.0006	0.0008	0.0009	0.0011
3	0.2496	0.5213	3024	0.0001	0.0001	0.0001	0.0002	0.0003	0.0006	0.0008	0.0010	0.0012
4	0.2481	0.5214	3061	0.0001	0.0000	0.0000	0.0002	0.0004	0.0005	0.0006	0.0007	0.0009
5	0.2496	0.5192	3039	0.0002	0.0001	0.0002	0.0003	0.0004	0.0008	0.0009	0.0011	0.0013
6	0.2493	0.5203	3038	0.0001	0.0001	0.0002	0.0004	0.0004	0.0007	0.0009	0.0010	0.0012
7	0.2499	0.5204	3024	0.0002	0.0002	0.0002	0.0004	0.0004	0.0006	0.0008	0.0009	0.0012
8	0.2483	0.5178	3081	0.0001	0.0001	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008	0.0009
9	0.2495	0.5211	3028	0.0001	0.0001	0.0002	0.0004	0.0004	0.0007	0.0009	0.0011	0.0013
10	0.2494	0.5198	3040	0.0001	0.0001	0.0003	0.0004	0.0006	0.0006	0.0007	0.0008	0.0009
11	0.2497	0.5213	3024	0.0001	0.0003	0.0003	0.0005	0.0005	0.0007	0.0009	0.0009	0.0012
12	0.2485	0.5214	3052	0.0000	0.0000	0.0001	0.0003	0.0005	0.0006	0.0007	0.0009	0.0010
13	0.2487	0.5194	3059	0.0000	0.0002	0.0002	0.0005	0.0004	0.0007	0.0009	0.0011	0.0011
14	0.2478	0.5204	3076	0.0001	0.0001	0.0002	0.0004	0.0004	0.0006	0.0007	0.0009	0.0010
15	0.2487	0.5225	3040	0.0001	0.0002	0.0002	0.0004	0.0004	0.0005	0.0007	0.0008	0.0010
16	0.2511	0.5202	2995	0.0002	0.0002	0.0002	0.0003	0.0003	0.0006	0.0008	0.0009	0.0009
17	0.2504	0.5232	2993	0.0001	0.0001	0.0001	0.0003	0.0003	0.0005	0.0006	0.0007	0.0009
18	0.2475	0.5216	3076	0.0002	0.0001	0.0003	0.0004	0.0005	0.0009	0.0010	0.0011	0.0012
19	0.2511	0.5208	2990	0.0001	0.0001	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0010
20	0.2493	0.5210	3033	0.0001	0.0002	0.0003	0.0003	0.0004	0.0007	0.0009	0.0009	0.0011
21	0.2482	0.5207	3064	0.0001	0.0001	0.0002	0.0004	0.0004	0.0007	0.0009	0.0011	0.0013
22	0.2484	0.5210	3058	0.0001	0.0001	0.0001	0.0002	0.0004	0.0004	0.0006	0.0008	0.0011
23	0.2507	0.5216	2996	0.0001	0.0001	0.0002	0.0004	0.0004	0.0007	0.0009	0.0010	0.0011
24	0.2502	0.5198	3019	0.0001	0.0001	0.0001	0.0003	0.0003	0.0005	0.0007	0.0009	0.0009
25	0.2484	0.5208	3059	0.0002	0.0001	0.0003	0.0004	0.0003	0.0005	0.0006	0.0008	0.0010
Avg.	0.2493	0.5208	3036	0.0001	0.0001	0.0002	0.0003	0.0004	0.0006	0.0008	0.0009	0.0011
Med.	0.2494	0.5208	3038	0.0001	0.0001	0.0002	0.0004	0.0004	0.0006	0.0008	0.0009	0.0011
st dev	0.0010	0.0011	27	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	0.2475	0.5178	2990	0.0000	0.0000	0.0000	0.0002	0.0003	0.0004	0.0006	0.0007	0.0009
Max.	0.2511	0.5232	3081	0.0002	0.0003	0.0003	0.0005	0.0006	0.0009	0.0010	0.0011	0.0013

3.4 Data Set 2, 85°C, 175mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)**	1000hrs**	2000hrs**	3000hrs**	4000hrs**	5000hrs**	6000hrs**	7000hrs	8000hrs	9000hrs
26	173.70	100.12	99.77	99.42	99.08	98.79	98.45	98.22	97.93	97.70
27	176.10	100.06	99.83	99.49	99.26	99.03	98.75	98.52	98.24	98.01
28	174.40	100.11	99.77	99.43	99.14	98.85	98.51	98.34	98.11	97.88
29	175.20	100.06	99.77	99.43	99.09	98.74	98.40	98.12	97.95	97.72
30	171.90	99.94	99.65	99.36	99.07	98.78	98.49	98.31	98.08	97.85
31	177.90	100.11	99.78	99.49	99.16	98.82	98.48	98.20	97.86	97.64
32	175.10	99.94	99.60	99.26	98.91	98.63	98.34	98.12	97.89	97.66
33	172.40	100.12	99.77	99.42	99.07	98.72	98.38	98.14	97.85	97.68
34	174.80	100.11	99.77	99.49	99.26	99.03	98.68	98.51	98.40	98.17
35	175.90	99.94	99.72	99.49	99.20	98.92	98.58	98.35	98.07	97.84
36	175.90	100.17	99.89	99.55	99.37	99.15	98.86	98.64	98.41	98.18
37	175.00	100.06	99.71	99.43	99.09	98.69	98.34	98.17	98.00	97.77
38	173.30	100.23	99.83	99.48	99.31	99.02	98.73	98.44	98.33	98.10
39	175.50	100.00	99.66	99.43	99.09	98.86	98.63	98.40	98.12	97.83
40	175.10	100.11	99.89	99.54	99.26	99.03	98.80	98.57	98.34	98.17
41	172.20	100.12	99.88	99.65	99.30	99.01	98.72	98.55	98.37	98.08
42	173.50	100.23	99.88	99.77	99.37	99.02	98.67	98.44	98.10	97.81
43	171.70	100.17	99.83	99.53	99.18	98.89	98.60	98.37	98.25	97.96
44	172.10	100.17	99.83	99.48	99.19	98.90	98.49	98.20	98.02	97.73
45	176.40	100.06	99.77	99.43	99.09	98.81	98.53	98.30	98.07	97.79
46	175.40	100.17	99.77	99.49	99.20	98.86	98.52	98.29	98.06	97.83
47	177.10	100.11	99.83	99.55	99.38	99.04	98.81	98.59	98.25	97.97
48	175.10	100.17	99.83	99.49	99.20	98.86	98.57	98.29	98.00	97.77
49	172.90	100.23	99.88	99.54	99.25	98.90	98.55	98.26	97.98	97.74
50	176.40	99.94	99.72	99.43	99.21	98.92	98.64	98.30	98.02	97.85
Avg.	174.60	100.10	99.78	99.48	99.19	98.89	98.58	98.35	98.11	97.87
Med.	175.10	100.11	99.77	99.49	99.20	98.89	98.57	98.31	98.07	97.83
st dev	1.72	0.09	0.08	0.10	0.11	0.13	0.15	0.15	0.17	0.17
Min.	171.70	99.94	99.60	99.26	98.91	98.63	98.34	98.12	97.85	97.64
Max.	177.90	100.23	99.89	99.77	99.38	99.15	98.86	98.64	98.41	98.18

3.5 Data Set 2, 85°C, 175mA (Forward Voltage)

No.	Forward Voltage (V)									
	0hr(Initial)**	1000hrs**	2000hrs**	3000hrs**	4000hrs**	5000hrs**	6000hrs**	7000hrs	8000hrs	9000hrs
26	5.852	5.866	5.854	5.858	5.859	5.834	5.862	5.868	5.857	5.824
27	5.862	5.867	5.871	5.862	5.875	5.861	5.854	5.859	5.888	5.824
28	5.852	5.864	5.859	5.857	5.868	5.862	5.875	5.857	5.861	5.877
29	5.849	5.852	5.852	5.859	5.841	5.851	5.851	5.877	5.842	5.870
30	5.845	5.858	5.853	5.846	5.861	5.858	5.879	5.853	5.821	5.848
31	5.859	5.852	5.852	5.866	5.863	5.869	5.859	5.894	5.869	5.842
32	5.851	5.858	5.853	5.851	5.853	5.879	5.854	5.856	5.843	5.852
33	5.859	5.862	5.865	5.847	5.849	5.861	5.875	5.864	5.845	5.888
34	5.856	5.869	5.859	5.861	5.853	5.862	5.866	5.881	5.822	5.893
35	5.841	5.847	5.852	5.848	5.852	5.857	5.862	5.868	5.847	5.861
36	5.860	5.858	5.865	5.868	5.864	5.869	5.861	5.883	5.847	5.849
37	5.856	5.863	5.869	5.856	5.844	5.864	5.845	5.854	5.874	5.876
38	5.859	5.868	5.862	5.865	5.861	5.863	5.861	5.860	5.838	5.862
39	5.855	5.858	5.856	5.864	5.861	5.863	5.852	5.875	5.845	5.860
40	5.854	5.853	5.858	5.850	5.862	5.841	5.865	5.833	5.851	5.869
41	5.862	5.861	5.865	5.861	5.873	5.869	5.870	5.850	5.842	5.859
42	5.851	5.869	5.852	5.868	5.865	5.877	5.867	5.839	5.843	5.871
43	5.859	5.848	5.856	5.855	5.876	5.858	5.855	5.845	5.830	5.875
44	5.856	5.863	5.851	5.864	5.869	5.862	5.862	5.823	5.838	5.894
45	5.858	5.855	5.851	5.856	5.863	5.868	5.856	5.849	5.826	5.848
46	5.854	5.862	5.864	5.865	5.861	5.849	5.858	5.864	5.846	5.860
47	5.844	5.860	5.876	5.869	5.869	5.865	5.867	5.862	5.841	5.857
48	5.861	5.849	5.868	5.868	5.862	5.869	5.869	5.878	5.860	5.857
49	5.847	5.843	5.867	5.857	5.867	5.864	5.869	5.843	5.849	5.846
50	5.869	5.867	5.862	5.865	5.866	5.861	5.849	5.895	5.834	5.854
Avg.	5.855	5.859	5.860	5.859	5.861	5.861	5.862	5.861	5.846	5.861
Med.	5.856	5.860	5.859	5.861	5.862	5.862	5.862	5.860	5.845	5.860
st dev	0.006	0.007	0.007	0.007	0.009	0.010	0.009	0.018	0.016	0.018
Min.	5.841	5.843	5.851	5.846	5.841	5.834	5.845	5.823	5.821	5.824
Max.	5.869	5.869	5.876	5.869	5.876	5.879	5.879	5.895	5.888	5.894

3.6 Data Set 2, 85°C, 175mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')								
	0hr(Initial)**			1000hrs**	2000hrs**	3000hrs**	4000hrs**	5000hrs**	6000hrs**	7000hrs	8000hrs	9000hrs
26	0.2505	0.5209	3006	0.0002	0.0001	0.0002	0.0003	0.0006	0.0007	0.0008	0.0009	0.0009
27	0.2482	0.5208	3063	0.0002	0.0002	0.0004	0.0005	0.0007	0.0007	0.0008	0.0009	0.0011
28	0.2491	0.5224	3030	0.0001	0.0001	0.0001	0.0004	0.0004	0.0007	0.0008	0.0008	0.0009
29	0.2476	0.5198	3086	0.0001	0.0002	0.0004	0.0005	0.0007	0.0008	0.0009	0.0010	0.0012
30	0.2479	0.5203	3075	0.0001	0.0003	0.0003	0.0006	0.0004	0.0009	0.0009	0.0011	0.0012
31	0.2484	0.5211	3056	0.0001	0.0003	0.0005	0.0006	0.0005	0.0009	0.0010	0.0011	0.0013
32	0.2477	0.5206	3078	0.0001	0.0001	0.0003	0.0005	0.0004	0.0005	0.0006	0.0008	0.0010
33	0.2481	0.5222	3056	0.0001	0.0002	0.0002	0.0004	0.0006	0.0007	0.0008	0.0009	0.0011
34	0.2460	0.5196	3127	0.0002	0.0000	0.0002	0.0004	0.0004	0.0007	0.0008	0.0009	0.0012
35	0.2469	0.5213	3094	0.0001	0.0003	0.0004	0.0005	0.0007	0.0009	0.0009	0.0010	0.0013
36	0.2492	0.5209	3037	0.0001	0.0001	0.0004	0.0005	0.0007	0.0009	0.0010	0.0011	0.0012
37	0.2494	0.5213	3029	0.0001	0.0001	0.0004	0.0005	0.0005	0.0007	0.0009	0.0010	0.0011
38	0.2488	0.5218	3041	0.0000	0.0001	0.0003	0.0004	0.0005	0.0008	0.0009	0.0009	0.0012
39	0.2509	0.5227	2985	0.0001	0.0003	0.0005	0.0006	0.0006	0.0009	0.0011	0.0013	0.0013
40	0.2488	0.5222	3039	0.0001	0.0002	0.0004	0.0006	0.0006	0.0008	0.0009	0.0012	0.0014
41	0.2493	0.5201	3040	0.0001	0.0001	0.0003	0.0006	0.0007	0.0009	0.0009	0.0010	0.0011
42	0.2500	0.5235	3001	0.0001	0.0000	0.0001	0.0004	0.0005	0.0006	0.0009	0.0011	0.0011
43	0.2476	0.5185	3095	0.0000	0.0001	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010
44	0.2501	0.5216	3011	0.0002	0.0002	0.0002	0.0005	0.0005	0.0008	0.0009	0.0010	0.0012
45	0.2500	0.5220	3011	0.0001	0.0001	0.0003	0.0006	0.0006	0.0007	0.0009	0.0011	0.0012
46	0.2494	0.5205	3036	0.0001	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0012
47	0.2488	0.5218	3041	0.0000	0.0002	0.0004	0.0005	0.0004	0.0007	0.0010	0.0011	0.0013
48	0.2492	0.5208	3039	0.0001	0.0002	0.0004	0.0006	0.0006	0.0009	0.0010	0.0013	0.0013
49	0.2486	0.5228	3040	0.0001	0.0001	0.0002	0.0005	0.0004	0.0006	0.0009	0.0011	0.0013
50	0.2472	0.5212	3085	0.0002	0.0002	0.0003	0.0004	0.0004	0.0007	0.0008	0.0010	0.0011
Avg.	0.2487	0.5212	3048	0.0001	0.0002	0.0003	0.0005	0.0006	0.0008	0.0009	0.0010	0.0012
Med.	0.2488	0.5212	3040	0.0001	0.0001	0.0003	0.0005	0.0005	0.0007	0.0009	0.0010	0.0012
st dev	0.0012	0.0011	34	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	0.2460	0.5185	2985	0.0000	0.0000	0.0001	0.0003	0.0004	0.0005	0.0006	0.0008	0.0009
Max.	0.2509	0.5235	3127	0.0002	0.0003	0.0005	0.0006	0.0007	0.0009	0.0011	0.0013	0.0014

3.7 Data Set 3, 115°C, 175mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)**	1000hrs**	2000hrs**	3000hrs**	4000hrs**	5000hrs**	6000hrs**	7000hrs	8000hrs	9000hrs
51	176.10	100.17	99.83	99.43	99.09	98.69	98.35	98.07	97.79	97.50
52	174.50	99.94	99.60	99.26	98.97	98.57	98.11	97.94	97.71	97.42
53	176.70	100.11	99.72	99.49	99.26	98.92	98.59	98.36	98.13	97.85
54	178.20	100.11	99.83	99.49	99.27	99.10	98.60	98.37	98.09	97.87
55	175.10	100.06	99.66	99.37	99.03	98.69	98.29	97.94	97.66	97.37
56	175.90	100.17	99.89	99.55	99.15	98.81	98.69	98.41	98.07	97.84
57	174.40	99.94	99.66	99.31	98.97	98.62	98.17	97.88	97.65	97.36
58	177.10	100.11	99.89	99.44	99.15	98.93	98.76	98.48	98.19	97.91
59	177.50	100.06	99.66	99.61	99.38	98.99	98.59	98.31	98.08	97.80
60	176.50	100.06	99.72	99.38	98.98	98.64	98.30	98.07	97.85	97.56
61	174.00	99.89	99.66	99.37	99.08	98.85	98.62	98.33	97.99	97.70
62	174.90	99.94	99.60	99.26	98.91	98.51	98.11	97.88	97.60	97.31
63	174.00	100.11	99.71	99.31	98.85	98.51	98.16	97.99	97.70	97.41
64	174.90	99.83	99.66	99.43	99.09	98.74	98.46	98.17	97.88	97.60
65	172.80	100.06	99.77	99.36	99.13	98.90	98.55	98.26	97.97	97.69
66	175.00	99.94	99.60	99.20	98.86	98.46	98.06	97.83	97.54	97.31
67	174.80	100.06	99.71	99.37	99.14	98.74	98.46	98.11	97.83	97.54
68	173.20	100.00	99.60	99.19	98.96	98.73	98.38	98.15	97.92	97.69
69	175.10	99.89	99.71	99.43	99.20	98.91	98.63	98.34	98.12	97.89
70	176.90	100.06	99.72	99.32	98.98	98.64	98.36	98.08	97.80	97.51
71	173.50	100.06	99.71	99.31	99.02	98.73	98.33	98.04	97.81	97.58
72	170.90	100.12	99.77	99.59	99.24	98.95	98.60	98.30	98.01	97.72
73	174.60	99.94	99.66	99.37	98.97	98.63	98.22	97.88	97.59	97.31
74	173.70	100.12	99.77	99.48	99.14	98.79	98.45	98.16	97.87	97.64
75	177.60	100.06	99.72	99.27	98.87	98.54	98.20	97.92	97.69	97.47
Avg.	175.12	100.03	99.71	99.38	99.07	98.74	98.40	98.13	97.86	97.59
Med.	174.90	100.06	99.71	99.37	99.08	98.73	98.38	98.11	97.85	97.58
st dev	1.71	0.09	0.08	0.11	0.14	0.17	0.20	0.19	0.19	0.20
Min.	170.90	99.83	99.60	99.19	98.85	98.46	98.06	97.83	97.54	97.31
Max.	178.20	100.17	99.89	99.61	99.38	99.10	98.76	98.48	98.19	97.91

3.8 Data Set 3, 115°C, 175mA (Forward Voltage)

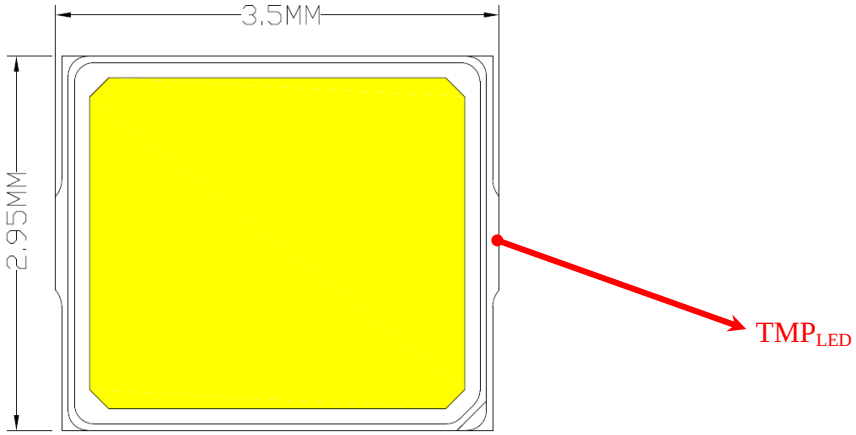
No.	Forward Voltage (V)									
	0hr(Initial)**	1000hrs**	2000hrs**	3000hrs**	4000hrs**	5000hrs**	6000hrs**	7000hrs	8000hrs	9000hrs
51	5.842	5.849	5.858	5.858	5.852	5.856	5.857	5.858	5.848	5.856
52	5.842	5.868	5.848	5.867	5.866	5.853	5.862	5.858	5.843	5.833
53	5.859	5.860	5.873	5.840	5.859	5.858	5.857	5.868	5.863	5.830
54	5.843	5.861	5.856	5.857	5.864	5.859	5.851	5.847	5.843	5.841
55	5.859	5.861	5.859	5.851	5.858	5.853	5.850	5.858	5.853	5.851
56	5.858	5.855	5.857	5.855	5.851	5.854	5.851	5.855	5.821	5.838
57	5.866	5.862	5.863	5.864	5.866	5.862	5.863	5.860	5.832	5.836
58	5.850	5.861	5.862	5.865	5.867	5.866	5.865	5.874	5.870	5.843
59	5.856	5.859	5.862	5.869	5.863	5.865	5.863	5.887	5.844	5.854
60	5.843	5.868	5.865	5.867	5.864	5.861	5.861	5.847	5.843	5.849
61	5.866	5.869	5.859	5.844	5.862	5.872	5.876	5.871	5.871	5.852
62	5.862	5.870	5.865	5.859	5.868	5.866	5.861	5.852	5.852	5.875
63	5.863	5.863	5.858	5.867	5.865	5.867	5.869	5.886	5.885	5.847
64	5.868	5.867	5.863	5.872	5.870	5.867	5.864	5.865	5.858	5.867
65	5.868	5.863	5.864	5.866	5.863	5.862	5.866	5.855	5.826	5.868
66	5.850	5.867	5.878	5.848	5.862	5.853	5.868	5.847	5.844	5.835
67	5.847	5.868	5.847	5.875	5.876	5.865	5.865	5.860	5.846	5.848
68	5.855	5.864	5.866	5.868	5.867	5.864	5.877	5.885	5.854	5.849
69	5.847	5.850	5.861	5.863	5.861	5.868	5.860	5.864	5.872	5.835
70	5.857	5.858	5.868	5.832	5.868	5.848	5.855	5.875	5.853	5.869
71	5.867	5.854	5.859	5.872	5.860	5.866	5.859	5.856	5.847	5.889
72	5.854	5.851	5.868	5.868	5.862	5.867	5.851	5.880	5.856	5.859
73	5.847	5.859	5.861	5.863	5.868	5.869	5.863	5.854	5.884	5.841
74	5.868	5.868	5.867	5.868	5.863	5.869	5.868	5.857	5.851	5.862
75	5.864	5.865	5.850	5.866	5.861	5.868	5.869	5.839	5.872	5.858
Avg.	5.856	5.862	5.861	5.861	5.863	5.862	5.862	5.862	5.853	5.851
Med.	5.857	5.862	5.862	5.865	5.863	5.865	5.863	5.858	5.852	5.849
st dev	0.009	0.006	0.007	0.011	0.005	0.006	0.007	0.013	0.016	0.015
Min.	5.842	5.849	5.847	5.832	5.851	5.848	5.850	5.839	5.821	5.830
Max.	5.868	5.870	5.878	5.875	5.876	5.872	5.877	5.887	5.885	5.889

3.9 Data Set 3, 115°C, 175mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')								
	0hr(Initial)**			1000hrs**	2000hrs**	3000hrs**	4000hrs**	5000hrs**	6000hrs**	7000hrs	8000hrs	9000hrs
51	0.2486	0.5224	3042	0.0003	0.0004	0.0005	0.0007	0.0009	0.0010	0.0013	0.0014	0.0015
52	0.2481	0.5195	3074	0.0002	0.0003	0.0006	0.0006	0.0006	0.0009	0.0011	0.0012	0.0014
53	0.2495	0.5209	3029	0.0001	0.0002	0.0004	0.0006	0.0007	0.0010	0.0012	0.0013	0.0015
54	0.2501	0.5223	3006	0.0002	0.0003	0.0006	0.0007	0.0007	0.0009	0.0011	0.0012	0.0012
55	0.2497	0.5214	3021	0.0001	0.0002	0.0004	0.0006	0.0007	0.0009	0.0010	0.0011	0.0012
56	0.2487	0.5214	3048	0.0002	0.0004	0.0005	0.0007	0.0008	0.0010	0.0011	0.0012	0.0014
57	0.2490	0.5204	3045	0.0001	0.0002	0.0005	0.0007	0.0008	0.0009	0.0010	0.0013	0.0014
58	0.2508	0.5204	3000	0.0001	0.0002	0.0005	0.0006	0.0006	0.0009	0.0010	0.0013	0.0013
59	0.2502	0.5217	3007	0.0003	0.0004	0.0004	0.0008	0.0006	0.0009	0.0011	0.0013	0.0014
60	0.2486	0.5222	3044	0.0001	0.0003	0.0004	0.0006	0.0007	0.0007	0.0008	0.0011	0.0013
61	0.2486	0.5207	3054	0.0001	0.0002	0.0004	0.0007	0.0005	0.0008	0.0009	0.0011	0.0012
62	0.2492	0.5188	3051	0.0002	0.0004	0.0004	0.0006	0.0007	0.0009	0.0010	0.0012	0.0013
63	0.2493	0.5203	3039	0.0001	0.0002	0.0005	0.0006	0.0006	0.0009	0.0009	0.0010	0.0012
64	0.2491	0.5224	3029	0.0002	0.0004	0.0006	0.0007	0.0007	0.0010	0.0012	0.0014	0.0015
65	0.2488	0.5224	3036	0.0001	0.0002	0.0005	0.0006	0.0006	0.0009	0.0011	0.0013	0.0014
66	0.2488	0.5225	3038	0.0001	0.0003	0.0004	0.0008	0.0006	0.0009	0.0011	0.0013	0.0014
67	0.2500	0.5223	3009	0.0001	0.0002	0.0004	0.0006	0.0006	0.0009	0.0011	0.0011	0.0012
68	0.2488	0.5224	3038	0.0002	0.0002	0.0004	0.0007	0.0007	0.0009	0.0009	0.0011	0.0013
69	0.2488	0.5210	3047	0.0002	0.0004	0.0006	0.0007	0.0006	0.0010	0.0011	0.0012	0.0013
70	0.2510	0.5228	2980	0.0003	0.0003	0.0004	0.0006	0.0004	0.0007	0.0008	0.0009	0.0010
71	0.2506	0.5219	2996	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0009	0.0011	0.0012
72	0.2498	0.5185	3038	0.0002	0.0003	0.0004	0.0006	0.0007	0.0009	0.0010	0.0011	0.0013
73	0.2494	0.5195	3041	0.0002	0.0002	0.0003	0.0006	0.0006	0.0009	0.0009	0.0010	0.0012
74	0.2478	0.5223	3063	0.0002	0.0002	0.0005	0.0006	0.0007	0.0011	0.0012	0.0013	0.0014
75	0.2502	0.5225	3001	0.0001	0.0002	0.0004	0.0005	0.0006	0.0009	0.0010	0.0012	0.0014
Avg.	0.2493	0.5213	3031	0.0002	0.0003	0.0005	0.0006	0.0007	0.0009	0.0010	0.0012	0.0013
Med.	0.2492	0.5217	3038	0.0002	0.0003	0.0004	0.0006	0.0006	0.0009	0.0010	0.0012	0.0013
st dev	0.0008	0.0013	23	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	0.2478	0.5185	2980	0.0001	0.0002	0.0003	0.0005	0.0004	0.0007	0.0008	0.0009	0.0010
Max.	0.2510	0.5228	3074	0.0003	0.0004	0.0006	0.0008	0.0009	0.0011	0.0013	0.0014	0.0015

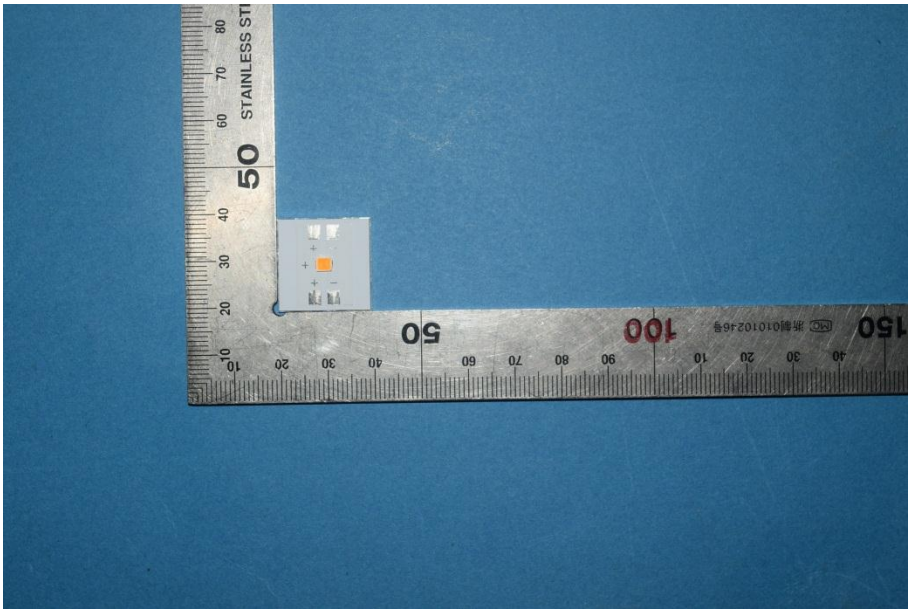
4 - DUT Photo

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. This report includes some test methods are not in NVLAP accreditation scope marked *.
3. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
5. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K=2 with the 95% confidence interval.
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**********END OF REPORT**********