Shenzhen Belling Efficiency Testing Lab Co., Ltd

TEST REPORT

ANSI/IES LM-80-15

MEASURING LUMEN MAINTENANCE OF LED LIGHT SOURCES
For

Shenzhen HoneBright Technology Co.,Ltd

Floor, 5 Building, Hongyu Guangming Valley, 11 Youmagang Road, Gongming Town, Guangming District, Shenzhen, China

Report No.:	BL210721005-9A
Product Description:	SMD LED
Model No.:	AW-48/DAB1D27Y40NJ
Test Initiation Date:	2021-07-22
Test Completion Date:	2021-07-22 to 2023-08-17
Report Issue Date:	2023-12-14
Test Standard:	ANSI/IES LM-80-15
Test Laboratory:	Shenzhen Belling Efficiency Testing Lab Co.,Ltd

Tested by

Sam Chen

Reviewed by

Jason zhou

Note: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Shenzhen Belling Efficiency Testing Lab Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement By NVLAP, NIST, or any agency of the U.S. Government.

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1-GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

Manufacturer:	Shenzhen HoneBright Technology Co.,Ltd
Brand name:	HoneBright
Part Number:	AW-48/DAB1D27Y40NJ
Part Type:	SMD LED
Product Description:	VF 6V, IF 150mA
CCT:	2700K
Die Spacing(mm):	N/A
Average Power Density per LED die(W/mm2):	1.182
Average Current Density per LED die(mA/mm2):	394.166
Repersnetative CRI (Ra) of the tested sample set (Indicate whether the reported calue s the mean or median value of the sample set, or per unit):	80
LED light source monitoring interval:	The LED array are inspected at regular interval (24 hours) throughout the 17000 hours test.
Photometric measurement uncertainty:	1.8% on flux measurements for LM-80 testing.

1.2 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 IES/NA LM-80 Data (September 28, 2017)

This report covers the following models:

Test Model Name	Family Model Name	Difference
AW-48/DAB1D27Y40NJ	AW-48/AAB1DXXXXXXJ	First XXX: CCT code; Sencond XX: Flux code; Last X: CRI code.
	AW-48/BAB1DXXXXXXJ	
	AW-48/CAB1DXXXXXXJ	
	AW-48/DAB1DXXXXXXJ	
	AW-48/AAC1DXXXXXXJ	
	AW-48/BAC1DXXXXXXJ	
	AW-48/CAC1DXXXXXXJ	
	AW-48/DAC1DXXXXXXJ	
	AW-48/AJB5DXXXXXXJ	
	AW-48/BJB5DXXXXXXJ	
	AW-48/CJB5DXXXXXXJ	
	AW-48/DJB5DXXXXXXJ	

1.3 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.

1.4 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℃ below the corresponding nominal case temperature.

Surrounding air was maintained at a temperature that was greater than or equal to 5℃ below the corresponding nominal case temperature. Thermocouples were shielded from direct DUT optical radiation and comply with Type K.

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.

Surrounding Air temperature for life test : controlled to within -5℃of the case temperature (Ts)

Humidity : < 65% RH

Ambient temperature for Photometry measurement : maintained at 25℃±2℃

1.5 Photometric measurement uncertainty

The uncertainty of the light output measurements is U=1.8% (K=2)

Long term measurement uncertainty is based on reproducibility tests done over a period of one year, calculated to K=2 coverage (i.e. 95% coverage).

1.6 Standards Used:

- ANSI/IES LM-80-15: IES Approved Method for Measuring Lumen Maintenance of LED Light Sources.
- CIE 127:2007: Measurement of LEDs(This test method was not accredited by NVLAP)

1.7 Test Facility Description

The test facility used by Shenzhen Belling Efficiency Testing Lab Co., Ltd is located at 1Floor, No.1 Building, Meibaohe Industrial Park, Dalang Street, Longhua District, Shenzhen, Guangdong Prov.518101 China.

1.8 Statement of Traceability

Shenzhen Belling Efficiency Testing Lab Co., Ltd attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

1.9 Test Equipment List

Device	Manufacture	Model No.	Serial No.	Calibration due date
Digital Power Meter	YOKOGAWA	WT310	N.A	2024-03-27
Integral Sphere(0.5M)	SENSING	Ball0516	N.A	2024-03-27
Spectral radiometer	SENSING	SPR-3000	S1101108	2024-03-27
Stop watch	KISLO	K610	N/A	2024-04-19
LED aging equipment	Guangzhou CK	Box0516	N.A	2024-04-11
DC Power Supply	AIKESAI	APS300-5	N.A	2024-03-27
Thermocouple K	OMEGA	Type K	23736-1	2024-04-17

1.10 Sample Set

Sampling Method:

LED samples for ANSI/IES LM-80-15 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 ANSI/IES LM-80-15 tests.

Sample Size:

Total 75Pcs; Each Ts test condition 25Pcs, The samples tested at T_S 55°C, T_S 85°C and T_S 105°C were received at 2021-07-21 and tested during 2021-07-22 to 2023-08-17. The samples were numbered from L1 to L25, L26 to L50 and L51 to L75.

1.11 Report Revision

Original report BL210721005-9 dated at 2023-08-23 was recalled and declared as invalid by Shenzhen Belling Efficiency Testing Laboratory Co.,Ltd. Report BL210721005-9A was issued on to replace report BL210721005-9.

Report Number	Report Date	Contents
BL210721005-9	2023-08-23	Original report
BL210721005-9A	2023-12-14	Added the series number.

2-Summary of Test Result

Data Set	1	2	3
Nominal case temperatures	55°C	85°C	105°C
Drive Current	150mA	150mA	150mA
Condition	Ts=54.3°C Ta=53.9°C	Ts=84.5°C Ta=83.6°C	Ts=104.3°C Ta=103.0°C
Sample size	25	25	25
Duration (in Hours)	17000	17000	17000
Intervals (in Hours)	1000	1000	1000
Failure	0	0	0
α	1.911E-06	2.131E-06	2.219E-06
β	1.005	1.004	1.002
Reported L70 (17k) (17000h)	>102000	>102000	>102000
Reported L90 (17k) (17000h)	58,000	51,000	48,000

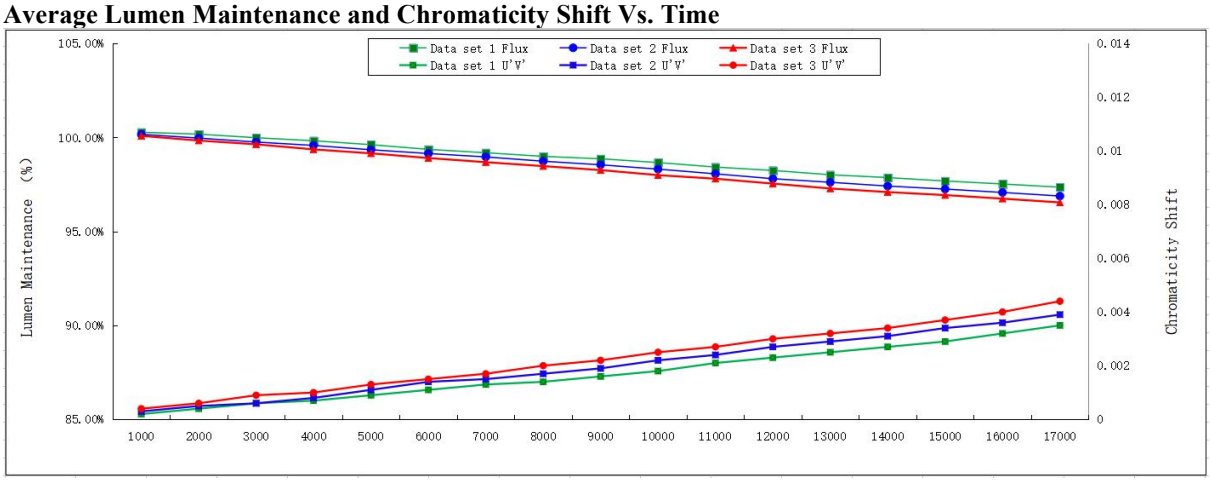
Average Lumen Maintenance (%)

Data Set	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
1	100.27	100.17	99.98	99.82	99.61	99.36	99.18	98.99	98.86
2	100.16	99.96	99.75	99.57	99.34	99.14	98.96	98.73	98.54
3	100.08	99.83	99.63	99.36	99.15	98.90	98.68	98.47	98.26
Data Set	**10000h**	**11000h**	**12000h**	**13000h**	**14000h**	**15000h**	**16000h**	**17000h**	-
1	98.66	98.42	98.24	98.01	97.86	97.68	97.52	97.35	-
2	98.31	98.06	97.80	97.61	97.41	97.25	97.07	96.88	-
3	97.99	97.80	97.54	97.28	97.09	96.93	96.74	96.54	-

Average Chromaticity Shift

Data Set	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
1	0.0002	0.0004	0.0006	0.0007	0.0009	0.0011	0.0013	0.0014	0.0016
2	0.0003	0.0005	0.0006	0.0008	0.0011	0.0014	0.0015	0.0017	0.0019
3	0.0004	0.0006	0.0009	0.0010	0.0013	0.0015	0.0017	0.0020	0.0022
Data Set	**10000h**	**11000h**	**12000h**	**13000h**	**14000h**	**15000h**	**16000h**	**17000h**	-
1	0.0018	0.0021	0.0023	0.0025	0.0027	0.0029	0.0032	0.0035	-
2	0.0022	0.0024	0.0027	0.0029	0.0031	0.0034	0.0036	0.0039	-
3	0.0025	0.0027	0.0030	0.0032	0.0034	0.0037	0.0040	0.0044	-

Average Lumen Maintenance and Chromaticity Shift Vs. Time



TM-21 Report for Lumen Maintenance

TM-21 Report

Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)	Shenzhen HoneBright Technology Co.,Ltd AW-48/DAB1D27Y40NJ				
Test Condition 1 - 55ºC Case Temp		Test Condition 2 - 85ºC Case Temp		Test Condition 3 - 105ºC Case Temp	
Sample size	25	Sample size	25	Sample size	25
Number of failures	0	Number of failures	0	Number of failures	0
DUT drive current used in the test (mA)	150	DUT drive current used in the test (mA)	150	DUT drive current used in the test (mA)	150
Test duration (hours)	17,000	Test duration (hours)	17,000	Test duration (hours)	17,000
Test duration used for projection (hour to hour)	8,000 - 17,000	Test duration used for projection (hour to hour)	8,000 - 17,000	Test duration used for projection (hour to hour)	8,000 - 17,000
Tested case temperature (ºC)	55	Tested case temperature (ºC)	85	Tested case temperature (ºC)	105
α	1.911E-06	α	2.131E-06	α	2.219E-06
B	1.005	B	1.004	B	1.002
Reported L70(17k) (hours)	>102000	Reported L70(17k) (hours)	>102000	Reported L70(17k) (hours)	>102000

Table 2: Interpolation Report (projection based on *in-situ* temperature entered)	
$T_{s,1}$ (ºC)	105.00
$T_{s,1}$ (K)	378.15
α_1	2.219E-06
B_1	1.002
$T_{s,2}$ (ºC)	-
$T_{s,2}$ (K)	-
α_2	-
B_2	-
E_a/k_b	-
A	-
B_0	1.002
$T_{s,i}$ (ºC)	105.00
$T_{s,i}$ (K)	378.15
α_i	2.219E-06
Reported L70(17k) at 105ºC (hours)	>102000

TM-21 Report

Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)	Shenzhen HoneBright Technology Co.,Ltd AW-48/DAB1D27Y40NJ				
Test Condition 1 - 55ºC Case Temp		Test Condition 2 - 85ºC Case Temp		Test Condition 3 - 105ºC Case Temp	
Sample size	25	Sample size	25	Sample size	25
Number of failures	0	Number of failures	0	Number of failures	0
DUT drive current used in the test (mA)	150	DUT drive current used in the test (mA)	150	DUT drive current used in the test (mA)	150
Test duration (hours)	17,000	Test duration (hours)	17,000	Test duration (hours)	17,000
Test duration used for projection (hour to hour)	8,000 - 17,000	Test duration used for projection (hour to hour)	8,000 - 17,000	Test duration used for projection (hour to hour)	8,000 - 17,000
Tested case temperature (ºC)	55	Tested case temperature (ºC)	85	Tested case temperature (ºC)	105
α	1.911E-06	α	2.131E-06	α	2.219E-06
B	1.005	B	1.004	B	1.002
Reported L90(17k) (hours)	58,000	Reported L90(17k) (hours)	51,000	Reported L90(17k) (hours)	48,000

Table 2: Interpolation Report (projection based on *in-situ* temperature entered)	
$T_{s,1}$ (ºC)	105.00
$T_{s,1}$ (K)	378.15
α_1	2.219E-06
B_1	1.002
$T_{s,2}$ (ºC)	-
$T_{s,2}$ (K)	-
α_2	-
B_2	-
E_a/k_b	-
A	-
B_0	1.002
$T_{s,i}$ (ºC)	105.00
$T_{s,i}$ (K)	378.15
α_i	2.219E-06
Reported L90(17k) at 105ºC (hours)	48,000

3 Test Data

3.1 Data Set 1, 55℃, 150mA (Lumen Maintenance)

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L1	142.6	100.23	100.10	99.91	99.72	99.46	99.23	99.10	98.91	98.83
L2	143.9	100.37	100.23	100.01	99.85	99.70	99.42	99.22	98.98	98.89
L3	144.4	100.31	100.23	100.06	99.92	99.70	99.40	99.25	99.01	98.88
L4	143.0	100.29	100.21	100.04	99.82	99.66	99.46	99.21	99.04	98.92
L5	144.6	100.17	100.09	99.92	99.79	99.58	99.34	99.10	98.98	98.79
L6	143.0	100.38	100.28	100.10	99.97	99.73	99.53	99.30	99.12	98.98
L7	143.6	100.21	100.15	100.02	99.84	99.57	99.33	99.12	98.92	98.80
L8	143.6	100.18	100.10	99.98	99.88	99.73	99.47	99.33	99.13	99.01
L9	143.6	100.21	100.06	99.87	99.72	99.52	99.21	99.06	98.85	98.72
L10	143.2	100.19	100.12	99.96	99.83	99.61	99.30	99.09	98.86	98.74
L11	144.0	100.26	100.19	100.04	99.81	99.61	99.34	99.15	98.91	98.83
L12	144.4	100.29	100.14	99.96	99.74	99.53	99.34	99.15	99.02	98.92
L13	141.2	100.40	100.32	100.06	99.90	99.73	99.50	99.38	99.24	99.14
L14	142.6	100.18	100.11	99.87	99.69	99.47	99.17	98.94	98.69	98.51
L15	143.9	100.22	100.11	99.89	99.68	99.54	99.32	99.14	99.02	98.86
L16	144.0	100.33	100.27	100.11	99.94	99.71	99.50	99.30	99.07	98.99
L17	143.3	100.24	100.09	99.86	99.73	99.53	99.27	99.03	98.87	98.72
L18	144.1	100.36	100.26	100.08	99.94	99.71	99.49	99.30	99.12	99.00
L19	143.3	100.22	100.09	99.89	99.68	99.42	99.22	99.08	98.93	98.79
L20	142.7	100.33	100.24	100.07	99.88	99.65	99.38	99.21	99.07	98.90
L21	143.6	100.30	100.15	100.00	99.88	99.74	99.45	99.33	99.16	99.06
L22	143.5	100.24	100.13	99.91	99.81	99.53	99.35	99.12	98.98	98.83
L23	143.3	100.28	100.16	99.92	99.69	99.54	99.34	99.19	99.00	98.82
L24	144.6	100.17	100.10	99.90	99.75	99.48	99.23	99.00	98.82	98.65
L25	144.1	100.39	100.24	100.10	99.94	99.70	99.48	99.32	99.10	98.97
Ave.	143.5	100.27	100.17	99.98	99.82	99.61	99.36	99.18	98.99	98.86
Med.	143.6	100.26	100.15	99.98	99.82	99.61	99.34	99.15	99.00	98.86
st dev	0.7601	0.0737	0.0738	0.0831	0.0930	0.1006	0.1047	0.1163	0.1235	0.1372
Min.	141.2	100.17	100.06	99.86	99.68	99.42	99.17	98.94	98.69	98.51
Max.	144.6	100.40	100.32	100.11	99.97	99.74	99.53	99.38	99.24	99.14

Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	98.63	98.42	98.26	98.04	97.95	97.79	97.62	97.39	-
L2	98.68	98.50	98.32	98.11	97.99	97.84	97.72	97.52	-
L3	98.61	98.38	98.22	97.92	97.73	97.53	97.41	97.22	-
L4	98.74	98.45	98.24	98.07	97.89	97.68	97.50	97.37	-
L5	98.55	98.25	98.12	97.93	97.78	97.55	97.42	97.28	-
L6	98.73	98.50	98.34	98.12	97.98	97.81	97.64	97.46	-
L7	98.52	98.34	98.15	97.90	97.79	97.59	97.45	97.32	-
L8	98.84	98.53	98.31	98.06	97.94	97.71	97.53	97.33	-
L9	98.58	98.34	98.11	97.91	97.72	97.55	97.44	97.31	-
L10	98.48	98.30	98.09	97.84	97.73	97.52	97.31	97.19	-
L11	98.62	98.32	98.13	97.89	97.73	97.54	97.43	97.26	-
L12	98.75	98.49	98.26	98.06	97.86	97.68	97.51	97.38	-
L13	98.92	98.65	98.49	98.32	98.23	98.09	97.98	97.85	-
L14	98.36	98.10	97.90	97.63	97.53	97.41	97.26	97.03	-
L15	98.67	98.50	98.32	98.10	97.97	97.84	97.66	97.55	-
L16	98.84	98.67	98.46	98.19	98.00	97.84	97.69	97.50	-
L17	98.48	98.22	98.07	97.79	97.70	97.57	97.38	97.20	-
L18	98.79	98.58	98.45	98.24	98.04	97.88	97.68	97.53	-
L19	98.63	98.45	98.33	98.07	97.88	97.72	97.59	97.45	-
L20	98.66	98.36	98.21	97.97	97.87	97.64	97.44	97.22	-
L21	98.84	98.61	98.47	98.24	98.09	97.93	97.77	97.62	-
L22	98.64	98.40	98.17	97.90	97.71	97.53	97.32	97.09	-
L23	98.60	98.40	98.22	97.92	97.81	97.64	97.48	97.33	-
L24	98.49	98.22	98.07	97.79	97.63	97.48	97.33	97.10	-
L25	98.78	98.55	98.35	98.16	97.98	97.75	97.56	97.35	-
Ave.	98.66	98.42	98.24	98.01	97.86	97.68	97.52	97.35	-
Med.	98.64	98.42	98.24	98.04	97.87	97.68	97.50	97.33	-
st dev	0.1366	0.1424	0.1458	0.1636	0.1594	0.1638	0.1678	0.1828	-
Min.	98.36	98.10	97.90	97.63	97.53	97.41	97.26	97.03	-
Max.	98.92	98.67	98.49	98.32	98.23	98.09	97.98	97.85	-

3.2 Data Set 1, 55℃, 150mA (Forward Voltage)

Sample No.	Forward Voltage (V)									
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L1	5.913	5.899	5.946	5.898	5.969	5.943	5.919	5.930	5.936	5.915
L2	5.908	5.890	5.894	5.916	5.940	5.922	5.938	5.914	5.963	5.916
L3	5.909	5.908	5.929	5.915	5.911	5.887	5.891	5.918	5.961	5.900
L4	5.914	5.954	5.895	5.891	5.894	5.954	5.928	5.888	5.973	5.954
L5	5.921	5.955	5.935	5.919	5.944	5.898	5.918	5.923	5.920	5.886
L6	5.911	5.916	5.934	5.944	5.912	5.959	5.950	5.955	5.915	5.945
L7	5.952	5.917	5.931	5.943	5.959	5.886	5.952	5.927	5.901	5.944
L8	5.921	5.919	5.926	5.924	5.893	5.895	5.960	5.883	5.948	5.886
L9	5.902	5.934	5.958	5.898	5.962	5.927	5.891	5.943	5.903	5.963
L10	5.943	5.897	5.942	5.907	5.931	5.906	5.954	5.903	5.897	5.964
L11	5.909	5.896	5.939	5.960	5.948	5.898	5.963	5.883	5.931	5.942
L12	5.968	5.905	5.930	5.901	5.894	5.898	5.911	5.890	5.949	5.927
L13	5.971	5.933	5.946	5.896	5.968	5.964	5.923	5.897	5.959	5.954
L14	5.897	5.895	5.916	5.961	5.955	5.898	5.926	5.950	5.980	5.881
L15	5.950	5.908	5.939	5.936	5.950	5.949	5.949	5.919	5.945	5.940
L16	5.914	5.896	5.958	5.950	5.944	5.952	5.894	5.903	5.970	5.927
L17	5.893	5.967	5.943	5.922	5.954	5.934	5.906	5.954	5.907	5.883
L18	5.920	5.958	5.933	5.907	5.960	5.901	5.933	5.901	5.963	5.893
L19	5.890	5.958	5.924	5.956	5.901	5.956	5.892	5.898	5.945	5.880
L20	5.909	5.912	5.881	5.916	5.911	5.947	5.902	5.886	5.933	5.965
L21	5.911	5.923	5.931	5.923	5.937	5.921	5.927	5.893	5.945	5.942
L22	5.897	5.924	5.925	5.969	5.916	5.881	5.912	5.930	5.906	5.921
L23	5.904	5.946	5.918	5.951	5.926	5.930	5.903	5.947	5.937	5.927
L24	5.915	5.918	5.939	5.905	5.929	5.948	5.890	5.964	5.933	5.939
L25	5.935	5.964	5.961	5.920	5.935	5.882	5.924	5.911	5.978	5.892
Ave.	5.919	5.924	5.931	5.925	5.934	5.921	5.922	5.916	5.940	5.923
Med.	5.913	5.918	5.933	5.920	5.937	5.922	5.923	5.914	5.945	5.927
st dev	0.0220	0.0245	0.0193	0.0232	0.0241	0.0277	0.0232	0.0250	0.0253	0.0286
Min.	5.890	5.890	5.881	5.891	5.893	5.881	5.890	5.883	5.897	5.880
Max.	5.971	5.967	5.961	5.969	5.969	5.964	5.963	5.964	5.980	5.965

Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	5.959	5.928	5.980	5.966	5.951	5.966	5.917	5.969	-
L2	5.920	5.939	5.927	5.901	5.957	5.917	5.923	5.907	-
L3	5.921	5.891	5.909	5.949	5.960	5.909	5.888	5.919	-
L4	5.943	5.909	5.894	5.918	5.974	5.914	5.948	5.969	-
L5	5.937	5.937	5.941	5.923	5.940	5.955	5.888	5.900	-
L6	5.952	5.951	5.935	5.902	5.972	5.954	5.922	5.939	-
L7	5.960	5.961	5.944	5.910	5.934	5.919	5.922	5.915	-
L8	5.906	5.926	5.907	5.951	5.958	5.947	5.965	5.919	-
L9	5.903	5.925	5.920	5.959	5.927	5.934	5.932	5.922	-
L10	5.959	5.912	5.964	5.944	5.926	5.942	5.896	5.926	-
L11	5.945	5.932	5.976	5.944	5.919	5.945	5.898	5.969	-
L12	5.902	5.883	5.978	5.952	5.900	5.952	5.886	5.936	-
L13	5.895	5.897	5.948	5.964	5.970	5.907	5.919	5.935	-
L14	5.921	5.916	5.913	5.951	5.931	5.960	5.938	5.933	-
L15	5.894	5.955	5.970	5.962	5.926	5.953	5.944	5.969	-
L16	5.933	5.948	5.956	5.911	5.899	5.890	5.946	5.943	-
L17	5.940	5.924	5.942	5.903	5.929	5.896	5.949	5.937	-
L18	5.955	5.939	5.902	5.915	5.899	5.933	5.898	5.975	-
L19	5.904	5.932	5.891	5.970	5.905	5.920	5.902	5.958	-
L20	5.910	5.886	5.979	5.917	5.977	5.894	5.896	5.948	-
L21	5.891	5.945	5.921	5.955	5.974	5.915	5.894	5.971	-
L22	5.934	5.900	5.969	5.893	5.914	5.919	5.887	5.907	-
L23	5.959	5.936	5.939	5.897	5.979	5.929	5.910	5.940	-
L24	5.966	5.911	5.951	5.952	5.906	5.957	5.939	5.908	-
L25	5.901	5.955	5.914	5.904	5.934	5.898	5.912	5.970	-
Ave.	5.928	5.926	5.939	5.933	5.938	5.929	5.917	5.939	-
Med.	5.933	5.928	5.941	5.944	5.934	5.929	5.917	5.937	-
st dev	0.0247	0.0224	0.0281	0.0257	0.0270	0.0231	0.0233	0.0239	-
Min.	5.891	5.883	5.891	5.893	5.899	5.890	5.886	5.900	-
Max.	5.966	5.961	5.980	5.970	5.979	5.966	5.965	5.975	-

3.3 Data Set 1, 55℃, 150mA (Chromaticity Shift)

Sample No.	u'	v'	CCT(K)	Chromaticity Shift Δu'v'								
	0hr(Initial)			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L1	0.2638	0.5255	2681	0.0001	0.0003	0.0006	0.0007	0.0008	0.0011	0.0013	0.0014	0.0016
L2	0.2611	0.5257	2737	0.0003	0.0005	0.0007	0.0009	0.0012	0.0013	0.0014	0.0015	0.0017
L3	0.2605	0.5267	2744	0.0002	0.0003	0.0006	0.0008	0.0009	0.0012	0.0014	0.0016	0.0018
L4	0.2616	0.5240	2732	0.0003	0.0004	0.0005	0.0006	0.0007	0.0010	0.0012	0.0012	0.0014
L5	0.2608	0.5261	2742	0.0002	0.0004	0.0006	0.0007	0.0009	0.0010	0.0011	0.0013	0.0015
L6	0.2619	0.5248	2723	0.0001	0.0003	0.0004	0.0005	0.0008	0.0009	0.0011	0.0012	0.0014
L7	0.2617	0.5259	2724	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0017
L8	0.2616	0.5252	2728	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0014	0.0016	0.0018
L9	0.2623	0.5266	2706	0.0004	0.0005	0.0007	0.0008	0.0010	0.0013	0.0014	0.0015	0.0017
L10	0.2604	0.5224	2765	0.0002	0.0004	0.0006	0.0008	0.0011	0.0014	0.0015	0.0017	0.0020
L11	0.2607	0.5270	2739	0.0003	0.0005	0.0007	0.0008	0.0010	0.0013	0.0014	0.0015	0.0017
L12	0.2595	0.5233	2781	0.0002	0.0004	0.0006	0.0007	0.0008	0.0009	0.0011	0.0013	0.0014
L13	0.2620	0.5230	2729	0.0004	0.0006	0.0008	0.0010	0.0012	0.0014	0.0016	0.0017	0.0018
L14	0.2616	0.5255	2727	0.0003	0.0004	0.0005	0.0006	0.0008	0.0011	0.0013	0.0014	0.0016
L15	0.2597	0.5253	2769	0.0005	0.0007	0.0009	0.0010	0.0011	0.0014	0.0015	0.0016	0.0017
L16	0.2603	0.5253	2755	0.0002	0.0003	0.0005	0.0006	0.0009	0.0010	0.0011	0.0012	0.0015
L17	0.2609	0.5265	2737	0.0003	0.0005	0.0006	0.0008	0.0011	0.0013	0.0015	0.0016	0.0017
L18	0.2614	0.5258	2730	0.0001	0.0003	0.0005	0.0007	0.0009	0.0012	0.0013	0.0015	0.0017
L19	0.2620	0.5271	2711	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	0.0020
L20	0.2621	0.5255	2717	0.0003	0.0005	0.0007	0.0008	0.0009	0.0010	0.0011	0.0013	0.0014
L21	0.2623	0.5264	2708	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0012	0.0014
L22	0.2600	0.5252	2763	0.0001	0.0003	0.0004	0.0005	0.0007	0.0009	0.0011	0.0013	0.0014
L23	0.2627	0.5267	2698	0.0002	0.0003	0.0005	0.0007	0.0010	0.0012	0.0014	0.0015	0.0016
L24	0.2606	0.5263	2745	0.0001	0.0002	0.0004	0.0006	0.0009	0.0011	0.0013	0.0015	0.0017
L25	0.2620	0.5275	2710	0.0002	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0012	0.0014
Ave.	0.2613	0.5256	2732	0.0002	0.0004	0.0006	0.0007	0.0009	0.0011	0.0013	0.0014	0.0016
Med.	0.2616	0.5257	2730	0.0002	0.0004	0.0006	0.0007	0.0009	0.0011	0.0013	0.0015	0.0017
st dev	0.0010	0.0013	23.47	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
Min.	0.2595	0.5224	2681	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0010	0.0012	0.0014
Max.	0.2638	0.5275	2781	0.0005	0.0007	0.0009	0.0010	0.0012	0.0014	0.0016	0.0017	0.0020

Sample No.	Chromaticity Shift Δu'v'								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	0.0019	0.0023	0.0025	0.0026	0.0028	0.0030	0.0034	0.0039	-
L2	0.0018	0.0020	0.0022	0.0024	0.0026	0.0029	0.0030	0.0033	-
L3	0.0021	0.0025	0.0027	0.0028	0.0030	0.0031	0.0033	0.0034	-
L4	0.0015	0.0018	0.0020	0.0022	0.0024	0.0026	0.0030	0.0033	-
L5	0.0016	0.0018	0.0021	0.0023	0.0024	0.0025	0.0027	0.0031	-
L6	0.0016	0.0020	0.0022	0.0025	0.0027	0.0028	0.0031	0.0034	-
L7	0.0019	0.0021	0.0024	0.0027	0.0030	0.0032	0.0034	0.0036	-
L8	0.0021	0.0022	0.0024	0.0026	0.0028	0.0030	0.0033	0.0037	-
L9	0.0019	0.0021	0.0023	0.0025	0.0028	0.0030	0.0033	0.0037	-
L10	0.0022	0.0023	0.0025	0.0026	0.0029	0.0030	0.0034	0.0038	-
L11	0.0019	0.0023	0.0025	0.0027	0.0029	0.0031	0.0035	0.0038	-
L12	0.0016	0.0019	0.0021	0.0024	0.0026	0.0028	0.0032	0.0037	-
L13	0.0019	0.0021	0.0024	0.0027	0.0030	0.0031	0.0032	0.0035	-
L14	0.0018	0.0020	0.0023	0.0025	0.0027	0.0028	0.0031	0.0034	-
L15	0.0019	0.0020	0.0021	0.0024	0.0027	0.0028	0.0032	0.0035	-
L16	0.0018	0.0022	0.0025	0.0027	0.0029	0.0031	0.0032	0.0035	-
L17	0.0018	0.0020	0.0022	0.0024	0.0026	0.0027	0.0031	0.0033	-
L18	0.0019	0.0021	0.0023	0.0025	0.0026	0.0028	0.0030	0.0032	-
L19	0.0023	0.0027	0.0028	0.0029	0.0031	0.0033	0.0035	0.0036	-
L20	0.0015	0.0017	0.0020	0.0023	0.0025	0.0026	0.0029	0.0033	-
L21	0.0017	0.0019	0.0021	0.0023	0.0024	0.0025	0.0028	0.0033	-
L22	0.0016	0.0020	0.0021	0.0024	0.0026	0.0027	0.0028	0.0029	-
L23	0.0018	0.0019	0.0020	0.0022	0.0024	0.0027	0.0030	0.0035	-
L24	0.0020	0.0022	0.0025	0.0028	0.0030	0.0032	0.0035	0.0038	-
L25	0.0016	0.0019	0.0022	0.0023	0.0026	0.0027	0.0030	0.0034	-
Ave.	0.0018	0.0021	0.0023	0.0025	0.0027	0.0029	0.0032	0.0035	-
Med.	0.0018	0.0020	0.0023	0.0025	0.0027	0.0028	0.0032	0.0035	-
st dev	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	-
Min.	0.0015	0.0017	0.0020	0.0022	0.0024	0.0025	0.0027	0.0029	-
Max.	0.0023	0.0027	0.0028	0.0029	0.0031	0.0033	0.0035	0.0039	-

3.4 Data Set 2, 85℃, 150mA (Lumen Maintenance)

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L26	144.2	100.04	99.81	99.58	99.35	99.14	98.90	98.76	98.57	98.34
L27	144.1	100.26	100.04	99.79	99.57	99.30	99.06	98.90	98.72	98.51
L28	143.7	100.05	99.79	99.55	99.42	99.18	98.97	98.80	98.55	98.37
L29	144.5	100.14	99.93	99.77	99.55	99.38	99.20	98.99	98.74	98.57
L30	143.9	100.21	100.05	99.88	99.68	99.51	99.30	99.16	98.98	98.85
L31	143.2	100.10	99.91	99.74	99.60	99.34	99.09	98.95	98.66	98.48
L32	143.8	100.15	99.95	99.80	99.62	99.34	99.11	98.89	98.67	98.54
L33	141.8	100.15	99.90	99.74	99.58	99.31	99.17	99.00	98.71	98.51
L34	143.2	100.28	100.04	99.80	99.67	99.43	99.17	99.03	98.85	98.70
L35	142.0	100.06	99.82	99.63	99.43	99.19	98.94	98.73	98.49	98.28
L36	142.4	100.27	100.10	99.85	99.73	99.54	99.28	99.12	98.94	98.71
L37	144.7	100.24	100.05	99.81	99.60	99.37	99.18	98.96	98.68	98.45
L38	143.9	100.26	100.03	99.87	99.72	99.51	99.28	99.10	98.92	98.72
L39	143.6	100.26	100.10	99.94	99.77	99.52	99.31	99.09	98.87	98.66
L40	142.4	100.16	99.98	99.82	99.60	99.40	99.25	99.12	98.87	98.71
L41	144.3	100.19	99.99	99.75	99.55	99.30	99.10	98.95	98.72	98.50
L42	143.1	100.05	99.84	99.65	99.43	99.25	99.02	98.81	98.54	98.36
L43	143.7	100.25	100.06	99.86	99.66	99.42	99.20	99.05	98.80	98.67
L44	142.6	100.05	99.82	99.57	99.45	99.20	99.04	98.85	98.66	98.48
L45	143.0	100.12	99.94	99.70	99.49	99.22	99.03	98.88	98.62	98.47
L46	144.0	100.05	99.80	99.61	99.41	99.20	99.01	98.84	98.63	98.47
L47	142.5	100.27	100.10	99.85	99.73	99.52	99.28	99.06	98.82	98.67
L48	144.5	100.22	99.97	99.78	99.63	99.35	99.17	98.99	98.73	98.50
L49	142.5	100.18	100.02	99.78	99.58	99.38	99.18	99.01	98.72	98.49
L50	144.7	100.08	99.88	99.70	99.55	99.32	99.14	99.00	98.76	98.57
Ave.	143.5	100.16	99.96	99.75	99.57	99.34	99.14	98.96	98.73	98.54
Med.	143.7	100.16	99.97	99.78	99.58	99.34	99.17	98.99	98.72	98.51
st dev	0.8666	0.0854	0.1025	0.1055	0.1137	0.1188	0.1171	0.1192	0.1292	0.1389
Min.	141.8	100.04	99.79	99.55	99.35	99.14	98.90	98.73	98.49	98.28
Max.	144.7	100.28	100.10	99.94	99.77	99.54	99.31	99.16	98.98	98.85

Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	98.15	97.91	97.65	97.46	97.21	97.01	96.90	96.70	-
L27	98.29	98.10	97.86	97.66	97.52	97.42	97.28	97.04	-
L28	98.14	97.90	97.66	97.52	97.29	97.16	96.98	96.78	-
L29	98.37	98.12	97.84	97.58	97.34	97.14	96.92	96.68	-
L30	98.68	98.39	98.09	97.93	97.74	97.60	97.41	97.22	-
L31	98.23	97.93	97.65	97.52	97.31	97.15	96.99	96.80	-
L32	98.36	98.06	97.79	97.65	97.48	97.28	97.07	96.96	-
L33	98.26	98.04	97.76	97.59	97.36	97.26	97.08	96.94	-
L34	98.48	98.25	97.99	97.83	97.70	97.54	97.34	97.16	-
L35	98.03	97.80	97.52	97.35	97.09	96.89	96.66	96.43	-
L36	98.48	98.21	97.91	97.74	97.50	97.30	97.06	96.82	-
L37	98.24	98.01	97.73	97.57	97.34	97.17	96.98	96.74	-
L38	98.51	98.21	97.98	97.74	97.50	97.36	97.24	97.01	-
L39	98.40	98.21	97.99	97.77	97.59	97.39	97.23	97.09	-
L40	98.43	98.13	97.90	97.74	97.56	97.35	97.20	97.04	-
L41	98.31	98.11	97.92	97.69	97.56	97.37	97.18	97.03	-
L42	98.12	97.81	97.53	97.29	97.11	97.00	96.82	96.66	-
L43	98.42	98.16	97.87	97.66	97.46	97.32	97.21	97.03	-
L44	98.27	98.05	97.82	97.63	97.44	97.31	97.11	96.96	-
L45	98.21	97.91	97.67	97.54	97.31	97.14	96.99	96.82	-
L46	98.19	97.97	97.70	97.54	97.30	97.14	96.92	96.72	-
L47	98.43	98.13	97.93	97.70	97.48	97.33	97.10	96.85	-
L48	98.30	98.07	97.82	97.61	97.44	97.23	96.99	96.80	-
L49	98.22	97.91	97.69	97.48	97.28	97.13	97.00	96.86	-
L50	98.31	98.08	97.77	97.58	97.34	97.19	97.03	96.87	-
Ave.	98.31	98.06	97.80	97.61	97.41	97.25	97.07	96.88	-
Med.	98.30	98.07	97.82	97.61	97.44	97.26	97.06	96.86	-
st dev	0.1453	0.1431	0.1465	0.1425	0.1615	0.1631	0.1689	0.1788	-
Min.	98.03	97.80	97.52	97.29	97.09	96.89	96.66	96.43	-
Max.	98.68	98.39	98.09	97.93	97.74	97.60	97.41	97.22	-

3.5 Data Set 2, 85℃, 150mA (Forward Voltage)

Sample No.	Forward Voltage (V)									
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L26	5.901	5.912	5.909	5.894	5.918	5.956	5.975	5.951	5.943	5.926
L27	5.911	5.891	5.961	5.933	5.947	5.907	5.942	5.949	5.903	5.945
L28	5.911	5.961	5.964	5.900	5.895	5.964	5.895	5.927	5.913	5.912
L29	5.958	5.964	5.889	5.972	5.964	5.947	5.916	5.982	5.929	5.919
L30	5.907	5.898	5.929	5.971	5.953	5.941	5.938	5.932	5.897	5.969
L31	5.934	5.945	5.951	5.943	5.929	5.918	5.966	5.895	5.942	5.963
L32	5.912	5.883	5.917	5.955	5.933	5.907	5.950	5.942	5.948	5.882
L33	5.903	5.958	5.950	5.932	5.955	5.949	5.894	5.919	5.944	5.904
L34	5.906	5.911	5.889	5.940	5.932	5.948	5.951	5.971	5.907	5.899
L35	5.920	5.946	5.892	5.950	5.950	5.902	5.949	5.969	5.879	5.921
L36	5.923	5.962	5.921	5.910	5.899	5.896	5.955	5.970	5.970	5.952
L37	5.902	5.890	5.923	5.918	5.928	5.942	5.950	5.975	5.963	5.959
L38	5.899	5.930	5.910	5.892	5.901	5.962	5.883	5.946	5.969	5.908
L39	5.899	5.934	5.890	5.926	5.886	5.899	5.881	5.942	5.894	5.929
L40	5.903	5.922	5.903	5.902	5.927	5.938	5.951	5.925	5.906	5.950
L41	5.919	5.964	5.975	5.940	5.965	5.919	5.965	5.954	5.897	5.946
L42	5.921	5.943	5.965	5.951	5.879	5.885	5.910	5.936	5.922	5.961
L43	5.918	5.918	5.923	5.952	5.923	5.882	5.883	5.906	5.943	5.896
L44	5.939	5.958	5.930	5.906	5.936	5.946	5.939	5.976	5.963	5.900
L45	5.936	5.912	5.923	5.937	5.908	5.904	5.965	5.980	5.951	5.941
L46	5.900	5.958	5.894	5.944	5.950	5.932	5.931	5.895	5.964	5.939
L47	5.935	5.887	5.887	5.916	5.940	5.901	5.907	5.920	5.893	5.913
L48	5.911	5.942	5.895	5.951	5.887	5.884	5.879	5.935	5.906	5.972
L49	5.912	5.915	5.968	5.919	5.889	5.902	5.908	5.910	5.924	5.966
L50	5.909	5.899	5.925	5.967	5.969	5.888	5.908	5.981	5.914	5.924
Ave.	5.916	5.928	5.923	5.933	5.927	5.921	5.928	5.944	5.927	5.932
Med.	5.911	5.930	5.923	5.937	5.929	5.918	5.938	5.942	5.924	5.929
st dev	0.0150	0.0274	0.0284	0.0237	0.0272	0.0266	0.0307	0.0273	0.0276	0.0261
Min.	5.899	5.883	5.887	5.892	5.879	5.882	5.879	5.895	5.879	5.882
Max.	5.958	5.964	5.975	5.972	5.969	5.964	5.975	5.982	5.970	5.972

Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	5.962	5.905	5.883	5.943	5.926	5.951	5.938	5.897	-
L27	5.954	5.917	5.914	5.938	5.925	5.934	5.935	5.920	-
L28	5.905	5.938	5.921	5.912	5.925	5.912	5.955	5.974	-
L29	5.892	5.939	5.931	5.936	5.950	5.906	5.936	5.926	-
L30	5.934	5.928	5.958	5.902	5.884	5.887	5.900	5.914	-
L31	5.901	5.913	5.932	5.937	5.897	5.892	5.898	5.937	-
L32	5.927	5.936	5.929	5.912	5.897	5.890	5.942	5.894	-
L33	5.890	5.902	5.954	5.899	5.911	5.909	5.916	5.943	-
L34	5.932	5.919	5.934	5.918	5.923	5.921	5.914	5.898	-
L35	5.947	5.954	5.938	5.977	5.971	5.920	5.972	5.893	-
L36	5.916	5.963	5.950	5.947	5.947	5.918	5.926	5.972	-
L37	5.939	5.911	5.931	5.976	5.968	5.917	5.978	5.951	-
L38	5.891	5.957	5.940	5.892	5.929	5.922	5.964	5.907	-
L39	5.898	5.894	5.917	5.951	5.941	5.960	5.970	5.930	-
L40	5.939	5.965	5.890	5.962	5.938	5.902	5.897	5.962	-
L41	5.980	5.906	5.900	5.952	5.893	5.892	5.935	5.955	-
L42	5.891	5.889	5.892	5.931	5.926	5.893	5.935	5.898	-
L43	5.980	5.953	5.924	5.950	5.894	5.900	5.935	5.946	-
L44	5.977	5.925	5.975	5.923	5.935	5.948	5.968	5.913	-
L45	5.929	5.882	5.927	5.969	5.947	5.950	5.949	5.971	-
L46	5.920	5.886	5.959	5.937	5.911	5.935	5.899	5.896	-
L47	5.919	5.903	5.967	5.924	5.882	5.961	5.980	5.972	-
L48	5.955	5.911	5.925	5.967	5.948	5.918	5.961	5.882	-
L49	5.917	5.888	5.941	5.917	5.899	5.928	5.954	5.948	-
L50	5.909	5.913	5.879	5.904	5.880	5.943	5.928	5.914	-
Ave.	5.928	5.920	5.928	5.935	5.922	5.920	5.939	5.929	-
Med.	5.927	5.913	5.931	5.937	5.925	5.918	5.936	5.926	-
st dev	0.0285	0.0251	0.0255	0.0246	0.0263	0.0227	0.0257	0.0294	-
Min.	5.890	5.882	5.879	5.892	5.880	5.887	5.897	5.882	-
Max.	5.980	5.965	5.975	5.977	5.971	5.961	5.980	5.974	-

3.6 Data Set 2, 85℃, 150mA (Chromaticity Shift)

Sample No.	u'	v'	CCT(K)	Chromaticity Shift Δu'v'								
	0hr(Initial)			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L26	0.2595	0.5260	2770	0.0002	0.0003	0.0005	0.0007	0.0010	0.0011	0.0014	0.0016	0.0017
L27	0.2601	0.5260	2755	0.0005	0.0006	0.0008	0.0011	0.0014	0.0016	0.0018	0.0021	0.0023
L28	0.2604	0.5261	2750	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0016	0.0017	0.0018
L29	0.2616	0.5254	2726	0.0003	0.0004	0.0006	0.0008	0.0011	0.0012	0.0014	0.0016	0.0019
L30	0.2610	0.5253	2740	0.0005	0.0007	0.0009	0.0012	0.0015	0.0019	0.0021	0.0023	0.0025
L31	0.2619	0.5255	2720	0.0003	0.0004	0.0006	0.0009	0.0012	0.0014	0.0016	0.0018	0.0020
L32	0.2601	0.5241	2766	0.0005	0.0006	0.0007	0.0009	0.0010	0.0012	0.0013	0.0017	0.0019
L33	0.2646	0.5261	2661	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0016	0.0019	0.0021
L34	0.2617	0.5256	2724	0.0004	0.0006	0.0008	0.0009	0.0010	0.0012	0.0015	0.0018	0.0020
L35	0.2622	0.5240	2720	0.0001	0.0002	0.0004	0.0005	0.0006	0.0009	0.0012	0.0015	0.0016
L36	0.2615	0.5259	2726	0.0002	0.0004	0.0006	0.0007	0.0009	0.0012	0.0013	0.0014	0.0016
L37	0.2592	0.5260	2776	0.0003	0.0004	0.0005	0.0007	0.0009	0.0012	0.0015	0.0017	0.0020
L38	0.2619	0.5258	2720	0.0004	0.0006	0.0008	0.0010	0.0013	0.0016	0.0018	0.0020	0.0022
L39	0.2599	0.5251	2765	0.0003	0.0005	0.0007	0.0010	0.0012	0.0016	0.0017	0.0018	0.0019
L40	0.2619	0.5254	2721	0.0004	0.0005	0.0008	0.0009	0.0011	0.0015	0.0018	0.0020	0.0022
L41	0.2619	0.5271	2712	0.0004	0.0006	0.0007	0.0008	0.0012	0.0016	0.0018	0.0019	0.0021
L42	0.2610	0.5257	2737	0.0002	0.0003	0.0004	0.0006	0.0009	0.0013	0.0014	0.0017	0.0019
L43	0.2615	0.5261	2727	0.0001	0.0003	0.0005	0.0007	0.0009	0.0010	0.0012	0.0015	0.0016
L44	0.2627	0.5254	2704	0.0002	0.0004	0.0005	0.0008	0.0012	0.0015	0.0017	0.0019	0.0021
L45	0.2619	0.5261	2719	0.0004	0.0005	0.0007	0.0009	0.0012	0.0013	0.0014	0.0016	0.0019
L46	0.2611	0.5262	2734	0.0005	0.0007	0.0008	0.0009	0.0010	0.0014	0.0015	0.0018	0.0020
L47	0.2615	0.5245	2733	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0016	0.0018	0.0021
L48	0.2596	0.5262	2765	0.0001	0.0003	0.0005	0.0007	0.0009	0.0010	0.0011	0.0012	0.0015
L49	0.2622	0.5264	2710	0.0003	0.0004	0.0006	0.0007	0.0010	0.0013	0.0014	0.0015	0.0016
L50	0.2605	0.5261	2747	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	0.0021
Ave.	0.2613	0.5257	2733	0.0003	0.0005	0.0006	0.0008	0.0011	0.0014	0.0015	0.0017	0.0019
Med.	0.2615	0.5259	2727	0.0003	0.0005	0.0007	0.0009	0.0011	0.0014	0.0015	0.0018	0.0020
st dev	0.0012	0.0007	25.37	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2592	0.5240	2661	0.0001	0.0002	0.0004	0.0005	0.0006	0.0009	0.0011	0.0012	0.0015
Max.	0.2646	0.5271	2776	0.0005	0.0007	0.0009	0.0012	0.0015	0.0019	0.0021	0.0023	0.0025

Sample No.	Chromaticity Shift Δu'v'								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	0.0019	0.0021	0.0024	0.0027	0.0029	0.0034	0.0036	0.0037	-
L27	0.0027	0.0029	0.0031	0.0035	0.0036	0.0040	0.0042	0.0043	-
L28	0.0022	0.0025	0.0027	0.0029	0.0031	0.0036	0.0039	0.0043	-
L29	0.0021	0.0024	0.0025	0.0029	0.0031	0.0033	0.0036	0.0037	-
L30	0.0027	0.0028	0.0031	0.0035	0.0038	0.0040	0.0042	0.0044	-
L31	0.0023	0.0025	0.0026	0.0030	0.0031	0.0033	0.0035	0.0037	-
L32	0.0021	0.0023	0.0025	0.0028	0.0030	0.0034	0.0036	0.0039	-
L33	0.0023	0.0026	0.0029	0.0032	0.0033	0.0034	0.0036	0.0038	-
L34	0.0023	0.0025	0.0027	0.0028	0.0032	0.0034	0.0035	0.0038	-
L35	0.0018	0.0020	0.0022	0.0025	0.0027	0.0030	0.0033	0.0034	-
L36	0.0020	0.0022	0.0024	0.0026	0.0028	0.0031	0.0033	0.0037	-
L37	0.0024	0.0025	0.0026	0.0027	0.0029	0.0033	0.0035	0.0038	-
L38	0.0026	0.0029	0.0030	0.0032	0.0034	0.0036	0.0038	0.0043	-
L39	0.0022	0.0024	0.0026	0.0027	0.0029	0.0033	0.0036	0.0038	-
L40	0.0025	0.0028	0.0030	0.0033	0.0035	0.0038	0.0040	0.0043	-
L41	0.0023	0.0026	0.0028	0.0031	0.0034	0.0036	0.0038	0.0040	-
L42	0.0023	0.0026	0.0029	0.0032	0.0035	0.0038	0.0039	0.0040	-
L43	0.0018	0.0019	0.0022	0.0023	0.0025	0.0030	0.0031	0.0032	-
L44	0.0025	0.0026	0.0028	0.0031	0.0035	0.0037	0.0039	0.0043	-
L45	0.0021	0.0022	0.0024	0.0026	0.0028	0.0031	0.0032	0.0037	-
L46	0.0024	0.0026	0.0029	0.0030	0.0033	0.0035	0.0038	0.0042	-
L47	0.0025	0.0028	0.0029	0.0031	0.0035	0.0039	0.0041	0.0046	-
L48	0.0017	0.0019	0.0022	0.0025	0.0028	0.0030	0.0033	0.0036	-
L49	0.0019	0.0020	0.0023	0.0026	0.0029	0.0032	0.0034	0.0036	-
L50	0.0024	0.0026	0.0028	0.0030	0.0032	0.0033	0.0034	0.0038	-
Ave.	0.0022	0.0024	0.0027	0.0029	0.0031	0.0034	0.0036	0.0039	-
Med.	0.0023	0.0025	0.0027	0.0029	0.0031	0.0034	0.0036	0.0038	-
st dev	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	-
Min.	0.0017	0.0019	0.0022	0.0023	0.0025	0.0030	0.0031	0.0032	-
Max.	0.0027	0.0029	0.0031	0.0035	0.0038	0.0040	0.0042	0.0046	-

3.7 Data Set 3, 105℃, 150mA (Lumen Maintenance)

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	143.9	100.17	99.98	99.74	99.40	99.12	98.88	98.67	98.52	98.26
L52	144.1	100.06	99.77	99.60	99.26	98.99	98.75	98.47	98.30	98.16
L53	142.0	100.14	99.97	99.82	99.54	99.37	99.11	98.93	98.76	98.55
L54	143.8	100.07	99.85	99.68	99.45	99.29	99.09	98.92	98.75	98.54
L55	142.4	100.12	99.82	99.57	99.31	99.10	98.89	98.76	98.50	98.27
L56	143.2	100.06	99.75	99.55	99.32	99.12	98.81	98.65	98.41	98.15
L57	143.3	99.95	99.72	99.54	99.27	99.05	98.82	98.53	98.24	98.05
L58	142.9	100.12	99.89	99.70	99.42	99.24	98.98	98.75	98.48	98.29
L59	144.5	99.97	99.73	99.59	99.34	99.11	98.84	98.65	98.36	98.20
L60	143.6	100.10	99.92	99.74	99.50	99.28	99.00	98.73	98.59	98.38
L61	144.7	100.01	99.76	99.59	99.29	99.10	98.87	98.60	98.44	98.18
L62	141.8	100.11	99.85	99.63	99.38	99.15	98.88	98.61	98.47	98.24
L63	141.9	100.12	99.83	99.68	99.43	99.21	98.94	98.78	98.59	98.40
L64	143.7	100.05	99.87	99.68	99.36	99.19	98.98	98.76	98.52	98.25
L65	142.8	100.07	99.83	99.60	99.37	99.17	98.93	98.67	98.51	98.29
L66	143.5	100.11	99.85	99.67	99.36	99.09	98.83	98.66	98.40	98.25
L67	142.1	100.09	99.78	99.63	99.41	99.20	98.95	98.75	98.51	98.26
L68	144.7	100.13	99.81	99.57	99.25	99.06	98.75	98.57	98.43	98.15
L69	144.8	100.12	99.84	99.63	99.37	99.16	98.86	98.58	98.43	98.19
L70	144.9	100.08	99.76	99.49	99.20	98.93	98.69	98.42	98.15	97.97
L71	144.7	100.09	99.85	99.67	99.35	99.11	98.91	98.72	98.53	98.31
L72	143.3	100.04	99.84	99.67	99.44	99.22	98.98	98.82	98.63	98.37
L73	143.3	100.05	99.87	99.66	99.39	99.22	98.95	98.73	98.47	98.31
L74	143.4	100.07	99.83	99.62	99.35	99.12	98.86	98.67	98.40	98.24
L75	142.4	100.06	99.80	99.55	99.31	99.07	98.86	98.69	98.45	98.27
Ave.	143.4	100.08	99.83	99.63	99.36	99.15	98.90	98.68	98.47	98.26
Med.	143.4	100.08	99.83	99.63	99.36	99.12	98.88	98.67	98.47	98.26
st dev	0.9715	0.0507	0.0660	0.0738	0.0786	0.0966	0.0990	0.1206	0.1359	0.1281
Min.	141.8	99.95	99.72	99.49	99.20	98.93	98.69	98.42	98.15	97.97
Max.	144.9	100.17	99.98	99.82	99.54	99.37	99.11	98.93	98.76	98.55

Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	97.94	97.68	97.36	97.10	96.91	96.74	96.49	96.23	-
L52	97.95	97.80	97.56	97.36	97.13	96.98	96.80	96.63	-
L53	98.24	98.09	97.88	97.61	97.40	97.29	97.05	96.83	-
L54	98.25	98.03	97.75	97.52	97.26	97.10	96.91	96.77	-
L55	98.04	97.78	97.58	97.31	97.05	96.88	96.70	96.46	-
L56	97.95	97.80	97.54	97.34	97.17	96.96	96.83	96.68	-
L57	97.83	97.60	97.27	97.04	96.80	96.63	96.42	96.25	-
L58	98.04	97.87	97.65	97.40	97.27	97.13	96.88	96.73	-
L59	97.87	97.67	97.38	97.13	96.94	96.74	96.57	96.42	-
L60	98.10	97.92	97.60	97.38	97.21	97.02	96.86	96.71	-
L61	97.98	97.83	97.51	97.25	97.10	96.99	96.83	96.69	-
L62	97.94	97.74	97.50	97.29	97.12	96.92	96.76	96.57	-
L63	98.09	97.87	97.56	97.36	97.12	96.89	96.71	96.49	-
L64	98.01	97.86	97.61	97.41	97.28	97.09	96.84	96.59	-
L65	98.00	97.83	97.60	97.30	97.14	97.05	96.83	96.68	-
L66	97.99	97.85	97.66	97.35	97.17	96.99	96.83	96.67	-
L67	97.94	97.72	97.46	97.17	96.97	96.85	96.64	96.39	-
L68	97.86	97.69	97.49	97.22	97.01	96.78	96.62	96.41	-
L69	97.86	97.62	97.40	97.14	96.93	96.77	96.54	96.30	-
L70	97.76	97.57	97.25	96.95	96.74	96.57	96.42	96.16	-
L71	98.09	97.85	97.56	97.31	97.11	96.96	96.81	96.56	-
L72	98.12	97.97	97.64	97.35	97.20	97.10	96.84	96.62	-
L73	97.99	97.83	97.63	97.37	97.23	97.04	96.90	96.77	-
L74	98.05	97.86	97.55	97.24	97.12	96.94	96.78	96.54	-
L75	97.97	97.72	97.42	97.13	96.97	96.81	96.56	96.31	-
Ave.	97.99	97.80	97.54	97.28	97.09	96.93	96.74	96.54	-
Med.	97.99	97.83	97.56	97.31	97.12	96.96	96.80	96.57	-
st dev	0.1165	0.1275	0.1413	0.1481	0.1559	0.1663	0.1636	0.1881	-
Min.	97.76	97.57	97.25	96.95	96.74	96.57	96.42	96.16	-
Max.	98.25	98.09	97.88	97.61	97.40	97.29	97.05	96.83	-

3.8 Data Set 3, 105℃, 150mA (Forward Voltage)

Sample No.	Forward Voltage (V)									
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	5.926	5.966	5.966	5.956	5.949	5.967	5.902	5.945	5.918	5.929
L52	5.960	5.918	5.951	5.955	5.908	5.934	5.911	5.887	5.942	5.931
L53	5.913	5.917	5.970	5.910	5.897	5.893	5.969	5.963	5.974	5.943
L54	5.906	5.898	5.945	5.926	5.924	5.910	5.903	5.882	5.913	5.932
L55	5.917	5.891	5.921	5.887	5.939	5.914	5.965	5.942	5.969	5.911
L56	5.966	5.952	5.937	5.942	5.940	5.939	5.963	5.910	5.974	5.903
L57	5.961	5.933	5.953	5.971	5.936	5.924	5.912	5.904	5.910	5.900
L58	5.932	5.960	5.962	5.951	5.888	5.915	5.921	5.923	5.906	5.887
L59	5.963	5.879	5.920	5.953	5.935	5.921	5.937	5.970	5.975	5.972
L60	5.969	5.948	5.908	5.951	5.941	5.933	5.892	5.924	5.957	5.884
L61	5.914	5.891	5.967	5.951	5.957	5.888	5.950	5.899	5.966	5.895
L62	5.932	5.917	5.886	5.906	5.900	5.899	5.926	5.890	5.938	5.949
L63	5.930	5.934	5.956	5.974	5.941	5.979	5.939	5.945	5.958	5.922
L64	5.902	5.949	5.895	5.917	5.898	5.965	5.960	5.933	5.942	5.949
L65	5.916	5.927	5.955	5.979	5.914	5.912	5.900	5.932	5.973	5.960
L66	5.903	5.953	5.914	5.917	5.972	5.931	5.941	5.892	5.946	5.919
L67	5.905	5.917	5.958	5.934	5.957	5.962	5.892	5.935	5.976	5.897
L68	5.912	5.940	5.912	5.960	5.962	5.945	5.896	5.951	5.952	5.930
L69	5.899	5.887	5.929	5.902	5.955	5.897	5.976	5.938	5.891	5.890
L70	5.958	5.886	5.905	5.953	5.930	5.960	5.898	5.881	5.966	5.968
L71	5.908	5.961	5.902	5.914	5.926	5.948	5.914	5.973	5.950	5.921
L72	5.894	5.932	5.943	5.949	5.925	5.941	5.950	5.880	5.950	5.952
L73	5.899	5.920	5.885	5.923	5.962	5.898	5.969	5.919	5.968	5.973
L74	5.905	5.968	5.915	5.914	5.974	5.903	5.960	5.901	5.904	5.915
L75	5.932	5.957	5.930	5.922	5.893	5.909	5.916	5.937	5.967	5.885
Ave.	5.925	5.928	5.931	5.937	5.933	5.927	5.930	5.922	5.947	5.925
Med.	5.916	5.932	5.930	5.942	5.936	5.924	5.926	5.924	5.952	5.922
st dev	0.0243	0.0276	0.0265	0.0247	0.0254	0.0260	0.0282	0.0284	0.0260	0.0281
Min.	5.894	5.879	5.885	5.887	5.888	5.888	5.892	5.880	5.891	5.884
Max.	5.969	5.968	5.970	5.979	5.974	5.979	5.976	5.973	5.976	5.973

Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	5.975	5.882	5.928	5.930	5.894	5.879	5.889	5.903	-
L52	5.911	5.892	5.899	5.903	5.886	5.901	5.963	5.960	-
L53	5.891	5.883	5.938	5.944	5.887	5.905	5.940	5.897	-
L54	5.896	5.940	5.947	5.934	5.952	5.916	5.970	5.973	-
L55	5.929	5.953	5.890	5.951	5.886	5.969	5.908	5.974	-
L56	5.937	5.913	5.969	5.921	5.923	5.956	5.970	5.957	-
L57	5.953	5.884	5.898	5.945	5.939	5.971	5.969	5.925	-
L58	5.925	5.936	5.894	5.926	5.900	5.969	5.938	5.955	-
L59	5.950	5.970	5.907	5.904	5.924	5.907	5.910	5.890	-
L60	5.887	5.906	5.889	5.891	5.922	5.934	5.944	5.949	-
L61	5.939	5.969	5.943	5.974	5.917	5.897	5.917	5.952	-
L62	5.979	5.897	5.954	5.973	5.892	5.938	5.929	5.942	-
L63	5.946	5.965	5.884	5.948	5.944	5.938	5.970	5.912	-
L64	5.977	5.883	5.904	5.911	5.960	5.954	5.978	5.969	-
L65	5.934	5.883	5.944	5.979	5.938	5.902	5.917	5.889	-
L66	5.979	5.884	5.897	5.888	5.916	5.918	5.898	5.929	-
L67	5.916	5.961	5.975	5.886	5.949	5.884	5.897	5.978	-
L68	5.911	5.890	5.915	5.923	5.911	5.949	5.968	5.924	-
L69	5.942	5.929	5.879	5.936	5.889	5.890	5.942	5.950	-
L70	5.953	5.916	5.880	5.926	5.959	5.941	5.916	5.963	-
L71	5.903	5.959	5.918	5.933	5.950	5.975	5.947	5.977	-
L72	5.899	5.891	5.967	5.916	5.971	5.968	5.885	5.972	-
L73	5.959	5.891	5.934	5.940	5.977	5.903	5.910	5.941	-
L74	5.916	5.908	5.949	5.895	5.936	5.896	5.950	5.956	-
L75	5.936	5.942	5.942	5.918	5.944	5.913	5.920	5.918	-
Ave.	5.934	5.917	5.922	5.928	5.927	5.927	5.934	5.942	-
Med.	5.936	5.908	5.918	5.926	5.924	5.918	5.938	5.950	-
st dev	0.0281	0.0321	0.0299	0.0259	0.0282	0.0306	0.0287	0.0282	-
Min.	5.887	5.882	5.879	5.886	5.886	5.879	5.885	5.889	-
Max.	5.979	5.970	5.975	5.979	5.977	5.975	5.978	5.978	-

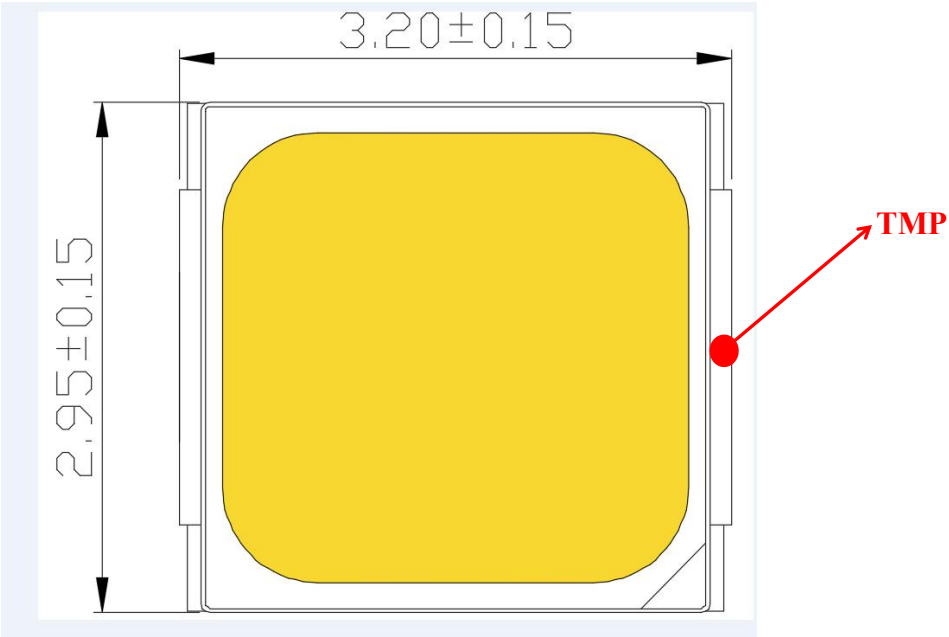
3.9 Data Set 3, 105℃, 150mA (Chromaticity Shift)

Sample No.	u'	v'	CCT(K)	Chromaticity Shift Δu'v'								
	0hr(Initial)			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	0.2595	0.5258	2771	0.0002	0.0004	0.0007	0.0010	0.0014	0.0016	0.0018	0.0022	0.0024
L52	0.2618	0.5260	2721	0.0001	0.0003	0.0005	0.0007	0.0008	0.0010	0.0013	0.0017	0.0019
L53	0.2617	0.5250	2726	0.0005	0.0008	0.0011	0.0014	0.0017	0.0019	0.0022	0.0025	0.0027
L54	0.2615	0.5267	2724	0.0004	0.0006	0.0008	0.0010	0.0012	0.0014	0.0015	0.0018	0.0021
L55	0.2625	0.5235	2715	0.0007	0.0010	0.0012	0.0013	0.0015	0.0018	0.0021	0.0025	0.0026
L56	0.2615	0.5244	2732	0.0005	0.0007	0.0008	0.0010	0.0014	0.0016	0.0019	0.0022	0.0024
L57	0.2616	0.5239	2734	0.0003	0.0004	0.0005	0.0007	0.0009	0.0010	0.0011	0.0014	0.0016
L58	0.2608	0.5233	2752	0.0007	0.0009	0.0012	0.0014	0.0018	0.0019	0.0022	0.0026	0.0028
L59	0.2593	0.5236	2786	0.0006	0.0009	0.0013	0.0014	0.0015	0.0018	0.0020	0.0024	0.0025
L60	0.2623	0.5240	2718	0.0002	0.0004	0.0006	0.0007	0.0010	0.0012	0.0015	0.0019	0.0021
L61	0.2603	0.5266	2749	0.0003	0.0006	0.0008	0.0009	0.0013	0.0014	0.0015	0.0019	0.0021
L62	0.2646	0.5255	2665	0.0006	0.0007	0.0010	0.0013	0.0015	0.0016	0.0018	0.0021	0.0022
L63	0.2620	0.5263	2715	0.0004	0.0005	0.0008	0.0009	0.0011	0.0013	0.0015	0.0018	0.0021
L64	0.2606	0.5256	2748	0.0003	0.0004	0.0007	0.0009	0.0010	0.0011	0.0013	0.0017	0.0019
L65	0.2618	0.5242	2727	0.0005	0.0008	0.0010	0.0012	0.0017	0.0020	0.0021	0.0024	0.0026
L66	0.2612	0.5258	2734	0.0005	0.0006	0.0007	0.0009	0.0012	0.0015	0.0017	0.0019	0.0021
L67	0.2635	0.5258	2686	0.0003	0.0006	0.0008	0.0009	0.0011	0.0012	0.0015	0.0018	0.0019
L68	0.2597	0.5256	2767	0.0005	0.0007	0.0009	0.0010	0.0013	0.0014	0.0016	0.0018	0.0021
L69	0.2607	0.5272	2739	0.0006	0.0008	0.0009	0.0011	0.0013	0.0015	0.0016	0.0019	0.0021
L70	0.2583	0.5237	2807	0.0005	0.0006	0.0007	0.0009	0.0012	0.0013	0.0015	0.0017	0.0019
L71	0.2598	0.5265	2761	0.0002	0.0004	0.0008	0.0009	0.0014	0.0015	0.0018	0.0020	0.0023
L72	0.2618	0.5269	2717	0.0005	0.0007	0.0011	0.0012	0.0015	0.0016	0.0018	0.0021	0.0023
L73	0.2608	0.5250	2746	0.0003	0.0006	0.0008	0.0009	0.0012	0.0014	0.0015	0.0019	0.0021
L74	0.2615	0.5260	2726	0.0005	0.0008	0.0009	0.0010	0.0013	0.0015	0.0017	0.0021	0.0024
L75	0.2617	0.5249	2728	0.0003	0.0005	0.0009	0.0011	0.0016	0.0017	0.0019	0.0021	0.0023
Ave.	0.2612	0.5253	2736	0.0004	0.0006	0.0009	0.0010	0.0013	0.0015	0.0017	0.0020	0.0022
Med.	0.2615	0.5256	2732	0.0005	0.0006	0.0008	0.0010	0.0013	0.0015	0.0017	0.0019	0.0021
st dev	0.0013	0.0012	29.49	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003
Min.	0.2583	0.5233	2665	0.0001	0.0003	0.0005	0.0007	0.0008	0.0010	0.0011	0.0014	0.0016
Max.	0.2646	0.5272	2807	0.0007	0.0010	0.0013	0.0014	0.0018	0.0020	0.0022	0.0026	0.0028

Sample No.	Chromaticity Shift Δu'v'								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	0.0027	0.0031	0.0033	0.0035	0.0038	0.0040	0.0043	0.0046	-
L52	0.0022	0.0026	0.0028	0.0029	0.0031	0.0034	0.0037	0.0042	-
L53	0.0029	0.0033	0.0036	0.0039	0.0041	0.0045	0.0047	0.0052	-
L54	0.0025	0.0028	0.0029	0.0031	0.0034	0.0038	0.0039	0.0041	-
L55	0.0030	0.0033	0.0035	0.0037	0.0038	0.0041	0.0046	0.0051	-
L56	0.0025	0.0026	0.0030	0.0033	0.0036	0.0038	0.0039	0.0044	-
L57	0.0020	0.0024	0.0025	0.0027	0.0029	0.0031	0.0033	0.0036	-
L58	0.0030	0.0033	0.0038	0.0040	0.0044	0.0045	0.0050	0.0054	-
L59	0.0028	0.0029	0.0032	0.0033	0.0035	0.0037	0.0040	0.0042	-
L60	0.0025	0.0026	0.0030	0.0032	0.0036	0.0038	0.0042	0.0046	-
L61	0.0023	0.0025	0.0029	0.0030	0.0032	0.0034	0.0036	0.0038	-
L62	0.0026	0.0027	0.0030	0.0031	0.0035	0.0037	0.0040	0.0042	-
L63	0.0022	0.0026	0.0027	0.0029	0.0031	0.0033	0.0037	0.0038	-
L64	0.0021	0.0025	0.0026	0.0028	0.0030	0.0032	0.0034	0.0037	-
L65	0.0027	0.0029	0.0032	0.0035	0.0036	0.0040	0.0044	0.0050	-
L66	0.0024	0.0027	0.0030	0.0032	0.0036	0.0037	0.0041	0.0042	-
L67	0.0020	0.0024	0.0027	0.0029	0.0033	0.0034	0.0038	0.0040	-
L68	0.0023	0.0026	0.0031	0.0032	0.0034	0.0038	0.0041	0.0045	-
L69	0.0024	0.0026	0.0027	0.0030	0.0032	0.0034	0.0038	0.0043	-
L70	0.0021	0.0023	0.0026	0.0028	0.0031	0.0034	0.0039	0.0044	-
L71	0.0026	0.0029	0.0033	0.0036	0.0039	0.0042	0.0046	0.0051	-
L72	0.0026	0.0027	0.0029	0.0032	0.0034	0.0037	0.0038	0.0042	-
L73	0.0023	0.0024	0.0027	0.0030	0.0031	0.0035	0.0036	0.0040	-
L74	0.0026	0.0027	0.0029	0.0032	0.0033	0.0035	0.0039	0.0042	-
L75	0.0024	0.0026	0.0028	0.0030	0.0033	0.0036	0.0039	0.0044	-
Ave.	0.0025	0.0027	0.0030	0.0032	0.0034	0.0037	0.0040	0.0044	-
Med.	0.0025	0.0026	0.0029	0.0032	0.0034	0.0037	0.0039	0.0042	-
st dev	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	0.0005	-
Min.	0.0020	0.0023	0.0025	0.0027	0.0029	0.0031	0.0033	0.0036	-
Max.	0.0030	0.0033	0.0038	0.0040	0.0044	0.0045	0.0050	0.0054	-

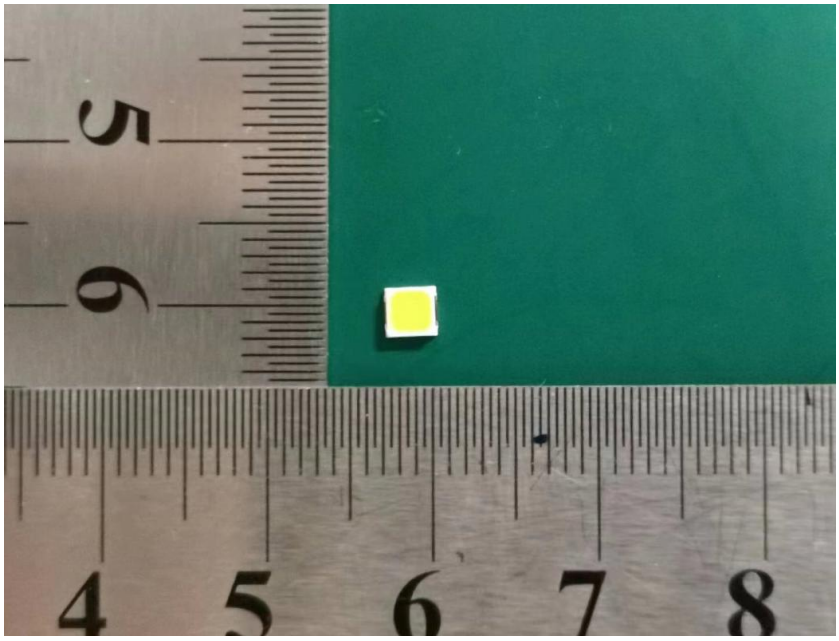
4-EUT Photos

4.1 Mechanical Dimensions



Note: All dimensions are in millimeters(mm).

4.2 EUT Photo



----End of report----