



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.:** BL210609010-9A

**Product Description:** SMD LED

**Model No.:** AW-1D/DJE5D30Y42FJ

**Test Initiation Date:** 2021-06-09

**Test Completion Date:** 2021-06-09 to 2023-07-14

**Report Issue Date:** 2023-07-26

**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-1D/DJE5D30Y42FJ

**Part Type:** SMD LED

**Product Description:** VF 6V, IF 250mA

**CCT:** 3000K

**Die Spacing(mm):** N/A

**Average Power Density per LED die(W/mm2):** 1.2917

**Average Current Density per LED die(mA/mm2):** 430.5564

**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-1D/DJE5D30Y42FJ	AW-1D/BJE5DXXXXXXJ	First XXX: CCT code; Sencond XX: Flux code; Last X: CRI code.
	AW-1D/CJE5DXXXXXXJ	
	AW-1D/DJE5DXXXXXXJ	
	AW-1D/EJE5DXXXXXXJ	

### 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  $\pm 3\%$  of the specified value of the manufacturer during maintenance test, and was within  $\pm 0.5\%$  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  $2^{\circ}C$  below the corresponding nominal case temperature.

Surrounding air was maintained at a temperature that was greater than or equal to  $5^{\circ}C$  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  $\pm 3\%$  of the specified value of the manufacturer.

Surrounding Air temperature for life test : controlled to within  $-5^{\circ}C$  of the case temperature ( $T_s$ )

Humidity :  $< 65\%$  RH

Ambient temperature for Photometry measurement : maintained at  $25^{\circ}C \pm 2^{\circ}C$

### 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, Meibaoh 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 Ts 55°C, Ts 85°C and Ts 105°C were received at 2021-06-06 and tested during 2021-06-09 to 2023-07-14. The samples were numbered from L1 to L25, L26 to L50 and L51 to L75.

## 1.11 Report Revision

Original report BL210609010-9 dated at 2023-07-21 was recalled and declared as invalid by Shenzhen Belling Efficiency Testing Laboratory Co.,Ltd. Report BL210609010-9A was issued on to replace report BL210609010-9.

Report Number	Report Date	Contents
BL210609010-9	2023-07-21	Original report
BL210609010-9A	2023-07-26	Updated the LED type on page 3.

## 2-Summary of Test Result

Data Set	1	2	3
Nominal case temperatures	55°C	85°C	105°C
Drive Current	250mA	250mA	250mA
Condition	Ts=54.4°C Ta=53.3°C	Ts=84.7°C Ta=83.3°C	Ts=104.9°C Ta=103.7°C
Sample size	25	25	25
Duration (in Hours)	17000	17000	17000
Intervals (in Hours)	1000	1000	1000
Failure	0	0	0
$\alpha$	2.135E-06	2.329E-06	2.291E-06
$\beta$	1.007	1.006	1.003
Reported L70 (17k) (17000h)	>102000	>102000	>102000
Reported L90 (17k) (17000h)	53,000	48,000	47,000

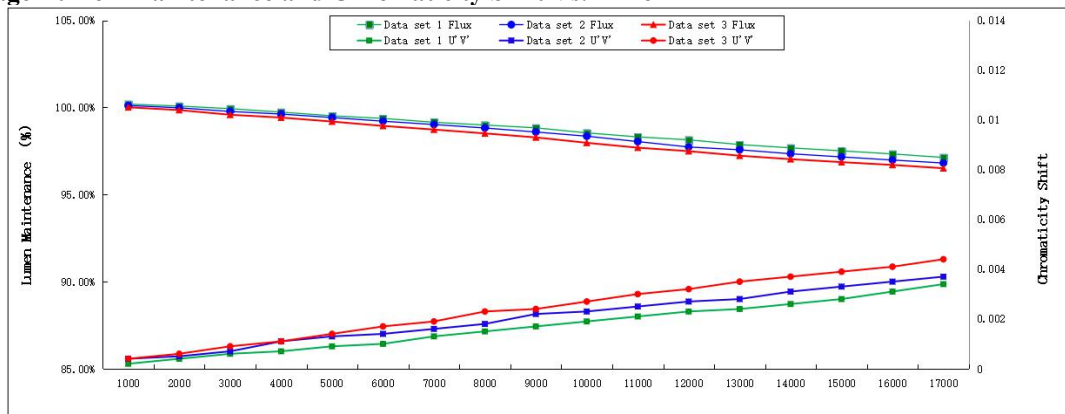
### Average Lumen Maintenance (%)

Data Set	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
1	100.19	100.08	99.93	99.73	99.52	99.37	99.15	98.99	98.83
2	100.11	99.98	99.77	99.62	99.42	99.21	99.02	98.82	98.59
3	100.01	99.85	99.58	99.42	99.19	98.94	98.73	98.51	98.28
Data Set	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
1	98.54	98.31	98.14	97.87	97.68	97.51	97.33	97.13	-
2	98.35	98.04	97.73	97.57	97.34	97.16	96.98	96.81	-
3	97.97	97.69	97.49	97.23	97.03	96.86	96.70	96.51	-


### 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	0.0010	0.0013	0.0015	0.0017
2	0.0004	0.0005	0.0007	0.0011	0.0013	0.0014	0.0016	0.0018	0.0022
3	0.0004	0.0006	0.0009	0.0011	0.0014	0.0017	0.0019	0.0023	0.0024
Data Set	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
1	0.0019	0.0021	0.0023	0.0024	0.0026	0.0028	0.0031	0.0034	-
2	0.0023	0.0025	0.0027	0.0028	0.0031	0.0033	0.0035	0.0037	-
3	0.0027	0.0030	0.0032	0.0035	0.0037	0.0039	0.0041	0.0044	-

### Average Lumen Maintenance and Chromaticity Shift Vs. Time



### TM-21 Report for Lumen Maintenance

		<b>TM-21 Report</b>					
		<b>Table 1: Report at each LM-80 Test Condition</b>			<b>Table 2: Interpolation Report</b> (projection based on <i>in-situ</i> temperature entered)		
<b>Description of LED Light Source Tested</b> (manufacturer, model, catalog number)		Shenzhen HoneBright Technology Co.,Ltd AW-1D/DJE5D30Y42FJ					
<b>Test Condition 1 - 55°C Case Temp</b>		<b>Test Condition 2 - 85°C Case Temp</b>		<b>Test Condition 3 - 105°C Case Temp</b>			
Sample size	25	Sample size	25	Sample size	25	$T_{s,1}$ (°C)	105.00
Number of failures	0	Number of failures	0	Number of failures	0	$T_{s,1}$ (K)	378.15
DUT drive current used in the test (mA)	250	DUT drive current used in the test (mA)	250	DUT drive current used in the test (mA)	250	$\alpha_1$	2.291E-06
Test duration (hours)	17,000	Test duration (hours)	17,000	Test duration (hours)	17,000	$B_1$	1.003
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	$T_{s,2}$ (°C)	-
Tested case temperature (°C)	55	Tested case temperature (°C)	85	Tested case temperature (°C)	105	$T_{s,2}$ (K)	-
$\alpha$	2.135E-06	$\alpha$	2.329E-06	$\alpha$	2.291E-06	$\alpha_2$	-
B	1.007	B	1.006	B	1.003	$B_2$	-
Reported L70(17k) (hours)	>102000	Reported L70(17k) (hours)	>102000	Reported L70(17k) (hours)	>102000	$E_l/k_b$	-
						A	-
						$B_0$	1.003
						$T_{s,i}$ (°C)	105.00
						$T_{s,i}$ (K)	378.15
						$\alpha_i$	2.291E-06
						Reported L70(17k) at 105°C (hours)	>102000

		<b>TM-21 Report</b>					
		<b>Table 1: Report at each LM-80 Test Condition</b>			<b>Table 2: Interpolation Report</b> (projection based on <i>in-situ</i> temperature entered)		
<b>Description of LED Light Source Tested</b> (manufacturer, model, catalog number)		Shenzhen HoneBright Technology Co.,Ltd AW-1D/DJE5D30Y42FJ					
<b>Test Condition 1 - 55°C Case Temp</b>		<b>Test Condition 2 - 85°C Case Temp</b>		<b>Test Condition 3 - 105°C Case Temp</b>			
Sample size	25	Sample size	25	Sample size	25	$T_{s,1}$ (°C)	105.00
Number of failures	0	Number of failures	0	Number of failures	0	$T_{s,1}$ (K)	378.15
DUT drive current used in the test (mA)	250	DUT drive current used in the test (mA)	250	DUT drive current used in the test (mA)	250	$\alpha_1$	2.291E-06
Test duration (hours)	17,000	Test duration (hours)	17,000	Test duration (hours)	17,000	$B_1$	1.003
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	$T_{s,2}$ (°C)	-
Tested case temperature (°C)	55	Tested case temperature (°C)	85	Tested case temperature (°C)	105	$T_{s,2}$ (K)	-
$\alpha$	2.135E-06	$\alpha$	2.329E-06	$\alpha$	2.291E-06	$\alpha_2$	-
B	1.007	B	1.006	B	1.003	$B_2$	-
Reported L90(17k) (hours)	53,000	Reported L90(17k) (hours)	48,000	Reported L90(17k) (hours)	47,000	$E_l/k_b$	-
						A	-
						$B_0$	1.003
						$T_{s,i}$ (°C)	105.00
						$T_{s,i}$ (K)	378.15
						$\alpha_i$	2.291E-06
						Reported L90(17k) at 105°C (hours)	47,000

### 3 Test Data

#### 3.1 Data Set 1, 55°C, 250mA (Lumen Maintenance)

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L1	260.4	100.25	100.16	99.96	99.83	99.60	99.40	99.11	98.93	98.80
L2	265.7	100.11	100.02	99.84	99.60	99.44	99.30	99.07	98.93	98.81
L3	263.2	100.30	100.15	99.92	99.78	99.59	99.40	99.28	99.08	98.94
L4	263.3	100.18	100.01	99.91	99.63	99.43	99.35	99.06	98.91	98.81
L5	264.1	100.17	100.08	99.92	99.69	99.45	99.35	99.20	98.99	98.88
L6	260.3	100.14	100.09	99.85	99.76	99.56	99.48	99.25	99.08	98.85
L7	263.4	100.16	100.10	100.03	99.84	99.56	99.44	99.22	99.09	98.88
L8	262.7	100.14	100.11	100.03	99.78	99.60	99.46	99.24	99.14	98.92
L9	260.4	100.19	99.97	99.86	99.66	99.51	99.45	99.25	99.12	98.94
L10	263.5	100.18	100.16	100.05	99.79	99.58	99.45	99.22	99.01	98.85
L11	264.3	100.17	100.07	100.00	99.70	99.53	99.41	99.25	99.14	98.94
L12	265.8	100.25	100.18	99.96	99.70	99.49	99.43	99.23	99.08	98.93
L13	261.7	100.19	100.00	99.88	99.80	99.55	99.37	99.17	99.05	98.88
L14	262.9	100.17	99.99	99.92	99.63	99.44	99.30	99.04	98.86	98.73
L15	263.4	100.28	100.13	99.98	99.69	99.50	99.29	99.03	98.96	98.80
L16	266.3	100.20	100.16	100.03	99.76	99.55	99.41	99.17	98.95	98.80
L17	264.2	100.19	99.98	99.81	99.69	99.54	99.36	99.04	98.99	98.89
L18	262.4	100.08	100.03	99.96	99.73	99.50	99.33	99.07	98.95	98.79
L19	265.6	100.14	100.01	99.91	99.73	99.48	99.37	99.04	98.95	98.86
L20	261.7	100.15	100.12	99.93	99.86	99.64	99.36	99.12	98.88	98.69
L21	261.2	100.29	100.17	100.04	99.87	99.67	99.46	99.18	98.98	98.89
L22	261.2	100.21	100.16	99.92	99.81	99.58	99.43	99.12	99.04	98.81
L23	263.0	100.21	100.00	99.80	99.63	99.42	99.24	99.11	98.91	98.76
L24	264.5	100.19	100.12	99.86	99.62	99.37	99.27	99.14	98.90	98.68
L25	263.1	100.12	100.01	99.82	99.60	99.46	99.26	99.07	98.85	98.71
Ave.	263.1	100.19	100.08	99.93	99.73	99.52	99.37	99.15	98.99	98.83
Med.	263.2	100.18	100.09	99.92	99.73	99.53	99.37	99.14	98.98	98.85
st dev	1.7172	0.0551	0.0706	0.0758	0.0835	0.0743	0.0693	0.0812	0.0878	0.0784
Min.	260.3	100.08	99.97	99.80	99.60	99.37	99.24	99.03	98.85	98.68
Max.	266.3	100.30	100.18	100.05	99.87	99.67	99.48	99.28	99.14	98.94



Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	98.41	98.31	98.10	97.85	97.73	97.56	97.48	97.24	-
L2	98.45	98.25	98.10	97.91	97.77	97.51	97.39	97.23	-
L3	98.56	98.35	98.24	98.03	97.84	97.65	97.47	97.21	-
L4	98.54	98.24	98.13	97.89	97.67	97.54	97.37	97.18	-
L5	98.68	98.45	98.28	97.96	97.77	97.62	97.38	97.16	-
L6	98.65	98.36	98.14	97.90	97.77	97.56	97.30	97.01	-
L7	98.50	98.21	98.04	97.82	97.57	97.42	97.19	96.98	-
L8	98.67	98.36	98.28	97.96	97.83	97.57	97.37	97.07	-
L9	98.69	98.39	98.25	97.92	97.82	97.64	97.40	97.26	-
L10	98.45	98.18	98.03	97.85	97.61	97.53	97.43	97.23	-
L11	98.63	98.36	98.17	97.85	97.57	97.36	97.26	97.03	-
L12	98.70	98.45	98.24	97.99	97.78	97.64	97.47	97.18	-
L13	98.48	98.21	98.07	97.77	97.64	97.52	97.38	97.19	-
L14	98.39	98.27	98.17	97.85	97.58	97.36	97.26	96.99	-
L15	98.47	98.31	98.05	97.73	97.57	97.39	97.26	97.12	-
L16	98.57	98.39	98.25	98.01	97.73	97.53	97.44	97.26	-
L17	98.69	98.42	98.23	97.96	97.67	97.48	97.34	97.16	-
L18	98.48	98.35	98.11	97.77	97.61	97.37	97.18	97.07	-
L19	98.45	98.28	98.07	97.84	97.71	97.49	97.35	97.21	-
L20	98.43	98.24	98.02	97.76	97.65	97.57	97.41	97.25	-
L21	98.67	98.44	98.24	97.98	97.72	97.52	97.24	97.09	-
L22	98.60	98.25	98.03	97.89	97.61	97.45	97.19	96.99	-
L23	98.38	98.20	98.10	97.75	97.52	97.43	97.26	97.00	-
L24	98.53	98.33	98.12	97.80	97.55	97.48	97.22	96.98	-
L25	98.47	98.19	98.06	97.76	97.61	97.53	97.32	97.09	-
Ave.	98.54	98.31	98.14	97.87	97.68	97.51	97.33	97.13	-
Med.	98.53	98.31	98.12	97.85	97.67	97.52	97.35	97.16	-
st dev	0.1059	0.0854	0.0872	0.0889	0.0958	0.0864	0.0934	0.0999	-
Min.	98.38	98.18	98.02	97.73	97.52	97.36	97.18	96.98	-
Max.	98.70	98.45	98.28	98.03	97.84	97.65	97.48	97.26	-

### 3.2 Data Set 1, 55°C, 250mA (Forward Voltage)

Sample No.	Forward Voltage (V)									
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L1	5.988	5.966	5.998	5.943	5.996	5.954	5.927	5.927	5.973	5.955
L2	5.968	6.030	5.931	6.028	5.962	5.981	5.992	5.913	5.953	6.000
L3	5.976	5.950	5.980	5.991	5.984	5.915	6.029	5.937	5.936	5.999
L4	5.993	5.949	5.957	6.007	5.988	5.955	5.982	5.922	5.964	5.971
L5	5.975	5.932	6.006	6.023	5.945	6.008	5.982	5.916	5.970	5.967
L6	5.975	5.957	6.002	5.959	5.925	5.955	5.938	5.955	6.022	5.941
L7	5.986	5.981	5.926	5.996	5.917	6.006	5.995	5.982	6.024	6.007
L8	5.976	5.980	5.948	5.962	5.951	5.955	5.961	5.912	6.024	5.970
L9	5.967	6.022	5.969	6.009	5.976	5.919	5.999	5.977	5.923	5.943
L10	5.982	5.984	5.960	6.015	5.998	5.962	5.977	5.947	5.935	5.956
L11	6.008	5.994	5.972	6.021	5.995	6.005	6.017	5.968	5.930	5.951
L12	6.001	5.957	5.954	5.993	5.914	5.985	6.028	5.977	6.021	5.942
L13	5.977	6.011	5.947	5.946	5.947	5.957	5.958	5.976	5.958	5.988
L14	5.937	5.925	5.986	5.922	5.981	5.912	5.967	5.938	5.952	5.921
L15	5.960	6.011	5.996	5.946	5.914	5.965	5.980	5.982	5.973	6.001
L16	5.957	5.953	5.966	5.940	6.010	6.007	5.974	5.931	5.935	5.941
L17	5.978	5.925	5.917	6.015	5.913	5.942	5.936	6.006	5.958	5.960
L18	5.965	6.016	5.987	5.930	5.932	6.002	6.022	5.973	5.928	5.968
L19	5.972	6.029	5.926	6.016	5.998	5.951	5.982	5.945	5.968	5.942
L20	5.990	6.006	5.911	5.951	5.913	5.965	5.941	5.912	5.967	5.955
L21	5.979	5.982	5.988	5.985	5.930	5.918	5.977	5.938	5.934	5.990
L22	5.960	6.011	5.993	5.949	5.982	5.915	5.942	5.969	5.925	5.940
L23	5.975	5.921	5.928	6.022	5.923	5.979	5.939	5.943	5.970	5.988
L24	5.961	5.935	5.983	5.992	5.911	5.993	5.980	5.986	5.941	5.946
L25	5.974	5.930	5.928	6.020	5.978	6.007	5.985	5.917	5.976	5.918
Ave.	5.975	5.974	5.962	5.983	5.955	5.965	5.976	5.950	5.962	5.962
Med.	5.975	5.980	5.966	5.992	5.951	5.962	5.980	5.945	5.958	5.956
st dev	0.0149	0.0360	0.0294	0.0346	0.0341	0.0323	0.0292	0.0278	0.0316	0.0253
Min.	5.937	5.921	5.911	5.922	5.911	5.912	5.927	5.912	5.923	5.918
Max.	6.008	6.030	6.006	6.028	6.010	6.008	6.029	6.006	6.024	6.007

Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	5.927	5.977	5.914	5.952	5.980	5.952	5.999	5.971	-
L2	5.954	5.962	5.992	6.014	6.029	6.014	5.961	5.957	-
L3	5.937	5.944	6.009	5.925	5.940	5.925	5.961	5.995	-
L4	5.936	5.999	6.008	5.969	5.989	5.969	5.936	5.943	-
L5	5.919	6.028	6.009	5.990	5.957	5.990	6.010	5.930	-
L6	5.999	6.026	6.008	5.933	5.987	5.933	5.936	5.930	-
L7	5.975	5.989	5.947	5.983	5.995	5.983	5.998	5.998	-
L8	6.002	5.934	5.935	5.967	5.997	5.967	5.967	6.005	-
L9	5.945	5.938	5.927	5.932	5.949	5.932	6.025	5.998	-
L10	5.986	5.970	5.930	6.018	6.024	6.018	5.948	5.925	-
L11	5.998	6.008	5.921	5.941	5.953	5.941	5.989	5.911	-
L12	5.937	5.977	5.977	5.940	5.998	5.940	6.006	5.917	-
L13	5.995	6.022	5.924	5.954	5.928	5.954	5.929	6.006	-
L14	5.916	5.963	5.969	5.934	5.922	5.934	5.969	6.002	-
L15	5.970	6.022	5.960	5.965	6.011	5.965	5.934	6.002	-
L16	5.929	6.017	5.922	5.996	5.940	5.996	5.938	5.963	-
L17	5.991	5.940	5.955	5.963	5.942	5.963	6.018	5.991	-
L18	5.967	6.005	5.925	5.984	5.958	5.984	6.017	5.986	-
L19	5.950	6.000	5.962	5.957	6.019	5.957	5.949	5.960	-
L20	5.942	6.005	6.002	5.951	5.971	5.951	5.976	5.920	-
L21	5.991	5.973	5.964	6.017	5.988	6.017	5.922	5.976	-
L22	5.998	5.957	5.953	6.016	5.954	6.016	5.966	5.946	-
L23	5.988	5.934	5.998	5.994	6.006	5.994	6.024	5.930	-
L24	6.009	5.943	5.950	5.948	5.934	5.948	5.923	6.004	-
L25	5.982	5.991	5.997	6.005	5.938	6.005	5.972	5.971	-
Ave.	5.966	5.981	5.962	5.970	5.972	5.970	5.971	5.965	-
Med.	5.970	5.977	5.960	5.965	5.971	5.965	5.967	5.971	-
st dev	0.0297	0.0315	0.0328	0.0298	0.0324	0.0298	0.0337	0.0325	-
Min.	5.916	5.934	5.914	5.925	5.922	5.925	5.922	5.911	-
Max.	6.009	6.028	6.009	6.018	6.029	6.018	6.025	6.006	-

### 3.3 Data Set 1, 55°C, 250mA (Chromaticity Shift)

Sample No.	u'	v'	CCT(K)	Chromaticity Shift Δu'v'								
	0hr(Initial)			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L1	0.2463	0.5222	3101	0.0004	0.0006	0.0008	0.0009	0.0010	0.0013	0.0016	0.0017	0.0018
L2	0.2462	0.5238	3093	0.0003	0.0005	0.0006	0.0007	0.0008	0.0008	0.0010	0.0012	0.0014
L3	0.2454	0.5213	3133	0.0001	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015
L4	0.2485	0.5235	3038	0.0002	0.0004	0.0005	0.0006	0.0008	0.0009	0.0013	0.0015	0.0016
L5	0.2450	0.5214	3142	0.0004	0.0006	0.0007	0.0008	0.0010	0.0011	0.0014	0.0017	0.0018
L6	0.2469	0.5212	3095	0.0001	0.0004	0.0006	0.0007	0.0009	0.0010	0.0012	0.0014	0.0015
L7	0.2468	0.5206	3100	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0014
L8	0.2475	0.5256	3049	0.0002	0.0005	0.0006	0.0007	0.0008	0.0009	0.0013	0.0015	0.0016
L9	0.2457	0.5201	3132	0.0004	0.0006	0.0007	0.0008	0.0009	0.0012	0.0015	0.0016	0.0018
L10	0.2444	0.5221	3152	0.0001	0.0003	0.0005	0.0006	0.0008	0.0010	0.0013	0.0014	0.0015
L11	0.2451	0.5202	3147	0.0002	0.0004	0.0006	0.0008	0.0010	0.0011	0.0014	0.0017	0.0018
L12	0.2454	0.5204	3138	0.0001	0.0002	0.0003	0.0005	0.0006	0.0009	0.0011	0.0013	0.0015
L13	0.2463	0.5207	3112	0.0003	0.0006	0.0007	0.0009	0.0011	0.0013	0.0016	0.0019	0.0021
L14	0.2456	0.5210	3128	0.0007	0.0009	0.0010	0.0011	0.0012	0.0014	0.0017	0.0020	0.0022
L15	0.2472	0.5212	3085	0.0001	0.0003	0.0004	0.0005	0.0007	0.0009	0.0012	0.0014	0.0015
L16	0.2469	0.5242	3073	0.0002	0.0005	0.0006	0.0007	0.0009	0.0011	0.0015	0.0017	0.0018
L17	0.2491	0.5247	3015	0.0001	0.0004	0.0005	0.0007	0.0008	0.0009	0.0011	0.0014	0.0016
L18	0.2463	0.5218	3105	0.0003	0.0004	0.0006	0.0008	0.0010	0.0011	0.0014	0.0015	0.0017
L19	0.2448	0.5235	3131	0.0002	0.0005	0.0007	0.0009	0.0011	0.0012	0.0015	0.0017	0.0018
L20	0.2464	0.5228	3097	0.0001	0.0003	0.0004	0.0005	0.0006	0.0008	0.0012	0.0013	0.0015
L21	0.2455	0.5222	3123	0.0004	0.0006	0.0007	0.0008	0.0009	0.0010	0.0013	0.0016	0.0017
L22	0.2484	0.5230	3044	0.0002	0.0004	0.0005	0.0006	0.0008	0.0009	0.0012	0.0014	0.0016
L23	0.2458	0.5221	3115	0.0001	0.0002	0.0004	0.0005	0.0007	0.0008	0.0010	0.0011	0.0012
L24	0.2437	0.5177	3205	0.0002	0.0004	0.0006	0.0008	0.0009	0.0012	0.0015	0.0017	0.0019
L25	0.2447	0.5213	3151	0.0001	0.0003	0.0004	0.0006	0.0008	0.0010	0.0013	0.0016	0.0017
Ave.	0.2462	0.5219	3108	0.0002	0.0004	0.0006	0.0007	0.0009	0.0010	0.0013	0.0015	0.0017
Med.	0.2462	0.5218	3112	0.0002	0.0004	0.0006	0.0007	0.0008	0.0010	0.0013	0.0015	0.0016
st dev	0.0013	0.0017	42.18	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2437	0.5177	3015	0.0001	0.0002	0.0003	0.0005	0.0006	0.0008	0.0010	0.0011	0.0012
Max.	0.2491	0.5256	3205	0.0007	0.0009	0.0010	0.0011	0.0012	0.0014	0.0017	0.0020	0.0022

Sample No.	Chromaticity Shift $\Delta u'v'$								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	0.0020	0.0023	0.0025	0.0027	0.0029	0.0032	0.0035	0.0037	-
L2	0.0015	0.0017	0.0018	0.0019	0.0021	0.0024	0.0027	0.0030	-
L3	0.0016	0.0018	0.0019	0.0020	0.0022	0.0025	0.0029	0.0032	-
L4	0.0018	0.0020	0.0022	0.0024	0.0026	0.0029	0.0031	0.0033	-
L5	0.0020	0.0023	0.0025	0.0026	0.0028	0.0030	0.0032	0.0035	-
L6	0.0018	0.0021	0.0022	0.0023	0.0025	0.0027	0.0030	0.0033	-
L7	0.0016	0.0019	0.0021	0.0022	0.0024	0.0025	0.0027	0.0029	-
L8	0.0019	0.0021	0.0022	0.0024	0.0026	0.0028	0.0031	0.0034	-
L9	0.0020	0.0022	0.0024	0.0026	0.0028	0.0031	0.0033	0.0036	-
L10	0.0017	0.0019	0.0021	0.0022	0.0024	0.0026	0.0029	0.0031	-
L11	0.0019	0.0022	0.0023	0.0024	0.0026	0.0029	0.0031	0.0033	-
L12	0.0018	0.0021	0.0022	0.0023	0.0025	0.0027	0.0028	0.0030	-
L13	0.0023	0.0025	0.0027	0.0028	0.0030	0.0032	0.0034	0.0037	-
L14	0.0024	0.0027	0.0028	0.0029	0.0031	0.0033	0.0035	0.0037	-
L15	0.0017	0.0020	0.0021	0.0023	0.0025	0.0028	0.0031	0.0035	-
L16	0.0020	0.0022	0.0024	0.0025	0.0027	0.0029	0.0032	0.0034	-
L17	0.0018	0.0021	0.0022	0.0024	0.0026	0.0029	0.0033	0.0036	-
L18	0.0018	0.0020	0.0021	0.0022	0.0024	0.0026	0.0028	0.0031	-
L19	0.0020	0.0023	0.0024	0.0025	0.0027	0.0030	0.0032	0.0034	-
L20	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0030	0.0033	-
L21	0.0019	0.0022	0.0023	0.0024	0.0026	0.0029	0.0031	0.0034	-
L22	0.0017	0.0020	0.0022	0.0023	0.0025	0.0028	0.0031	0.0033	-
L23	0.0014	0.0016	0.0018	0.0019	0.0021	0.0023	0.0025	0.0038	-
L24	0.0021	0.0024	0.0025	0.0026	0.0028	0.0031	0.0034	0.0037	-
L25	0.0019	0.0022	0.0023	0.0025	0.0027	0.0029	0.0032	0.0034	-
Ave.	0.0019	0.0021	0.0023	0.0024	0.0026	0.0028	0.0031	0.0034	-
Med.	0.0018	0.0021	0.0022	0.0024	0.0026	0.0029	0.0031	0.0034	-
st dev	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	-
Min.	0.0014	0.0016	0.0018	0.0019	0.0021	0.0023	0.0025	0.0029	-
Max.	0.0024	0.0027	0.0028	0.0029	0.0031	0.0033	0.0035	0.0038	-

**3.4 Data Set 2, 85°C, 250mA (Lumen Maintenance)**

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L26	262.0	100.18	100.09	99.86	99.63	99.45	99.21	99.03	98.80	98.48
L27	261.6	100.13	100.02	99.81	99.67	99.42	99.21	99.06	98.92	98.73
L28	262.7	100.14	100.00	99.69	99.50	99.33	99.17	98.96	98.69	98.56
L29	260.6	100.21	100.11	99.87	99.60	99.34	99.20	99.02	98.78	98.60
L30	263.9	100.04	99.97	99.76	99.62	99.33	99.22	99.11	98.95	98.64
L31	262.5	100.18	100.09	99.87	99.74	99.50	99.28	99.09	98.89	98.62
L32	264.6	100.01	99.88	99.67	99.54	99.31	99.12	98.96	98.68	98.49
L33	261.5	100.08	99.94	99.71	99.61	99.42	99.22	99.05	98.82	98.60
L34	265.8	99.99	99.87	99.72	99.61	99.51	99.26	99.13	98.92	98.63
L35	263.4	100.17	100.07	99.90	99.75	99.52	99.29	99.10	98.85	98.62
L36	262.1	100.12	100.04	99.87	99.62	99.34	99.12	98.95	98.83	98.60
L37	264.5	100.10	99.94	99.79	99.68	99.42	99.21	99.07	98.89	98.74
L38	262.9	100.00	99.85	99.73	99.59	99.39	99.17	98.94	98.70	98.59
L39	264.3	100.07	99.94	99.81	99.74	99.54	99.35	99.08	98.88	98.65
L40	262.9	100.20	100.08	99.86	99.76	99.56	99.36	99.08	98.95	98.67
L41	263.7	100.17	100.05	99.88	99.74	99.56	99.29	99.00	98.82	98.59
L42	264.7	100.03	99.86	99.63	99.52	99.30	99.13	98.93	98.71	98.47
L43	262.9	100.02	99.91	99.64	99.54	99.33	99.15	98.92	98.70	98.58
L44	263.5	100.01	99.91	99.81	99.69	99.43	99.26	99.03	98.83	98.57
L45	262.7	100.18	99.99	99.88	99.64	99.45	99.28	99.09	98.95	98.74
L46	262.7	100.04	99.96	99.67	99.46	99.37	99.12	98.95	98.73	98.49
L47	263.5	100.18	99.95	99.84	99.64	99.45	99.15	98.93	98.70	98.55
L48	261.8	100.10	99.97	99.64	99.61	99.42	99.19	98.99	98.89	98.54
L49	262.3	100.10	99.91	99.64	99.50	99.41	99.20	98.96	98.81	98.56
L50	262.2	100.19	99.99	99.66	99.59	99.38	99.21	98.96	98.72	98.49
Ave.	263.0	100.11	99.98	99.77	99.62	99.42	99.21	99.02	98.82	98.59
Med.	262.9	100.10	99.97	99.79	99.62	99.42	99.21	99.02	98.82	98.59
st dev	1.1917	0.0724	0.0774	0.0944	0.0844	0.0789	0.0680	0.0666	0.0917	0.0774
Min.	260.6	99.99	99.85	99.63	99.46	99.30	99.12	98.92	98.68	98.47
Max.	265.8	100.21	100.11	99.90	99.76	99.56	99.36	99.13	98.95	98.74

Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	98.18	97.90	97.64	97.55	97.36	97.25	97.05	96.84	-
L27	98.40	98.07	97.74	97.58	97.27	97.12	97.05	96.83	-
L28	98.37	98.04	97.70	97.57	97.22	97.08	97.02	96.85	-
L29	98.46	98.16	97.82	97.67	97.45	97.25	97.01	96.76	-
L30	98.28	97.92	97.72	97.49	97.34	97.10	96.96	96.75	-
L31	98.31	98.01	97.78	97.68	97.33	97.04	96.93	96.78	-
L32	98.23	97.93	97.71	97.46	97.27	97.16	96.91	96.73	-
L33	98.45	98.12	97.71	97.56	97.38	97.07	96.86	96.69	-
L34	98.49	98.17	97.84	97.58	97.37	97.12	96.86	96.73	-
L35	98.43	98.03	97.70	97.46	97.22	97.05	96.85	96.74	-
L36	98.47	98.07	97.83	97.65	97.49	97.23	97.08	96.89	-
L37	98.46	98.16	97.81	97.69	97.43	97.26	97.05	96.81	-
L38	98.37	98.01	97.65	97.45	97.23	97.13	97.03	96.89	-
L39	98.44	98.16	97.77	97.64	97.49	97.23	97.04	96.87	-
L40	98.40	98.18	97.75	97.59	97.31	97.10	96.92	96.75	-
L41	98.48	98.12	97.72	97.66	97.47	97.20	96.96	96.73	-
L42	98.20	97.96	97.61	97.44	97.17	97.05	96.87	96.77	-
L43	98.31	98.03	97.81	97.64	97.47	97.20	97.00	96.88	-
L44	98.34	98.00	97.68	97.46	97.22	97.09	96.86	96.72	-
L45	98.48	98.08	97.84	97.60	97.43	97.27	97.05	96.90	-
L46	98.24	97.94	97.68	97.53	97.37	97.21	97.02	96.86	-
L47	98.23	98.00	97.64	97.54	97.30	97.18	97.07	96.92	-
L48	98.24	97.93	97.68	97.55	97.37	97.27	97.02	96.76	-
L49	98.40	98.17	97.85	97.65	97.45	97.20	97.06	96.94	-
L50	98.18	97.93	97.62	97.54	97.21	97.02	96.96	96.79	-
Ave.	98.35	98.04	97.73	97.57	97.34	97.16	96.98	96.81	-
Med.	98.37	98.03	97.72	97.57	97.36	97.16	97.01	96.79	-
st dev	0.1053	0.0923	0.0746	0.0783	0.0993	0.0807	0.0766	0.0723	-
Min.	98.18	97.90	97.61	97.44	97.17	97.02	96.85	96.69	-
Max.	98.49	98.18	97.85	97.69	97.49	97.27	97.08	96.94	-

**3.5 Data Set 2, 85°C, 250mA (Forward Voltage)**

Sample No.	Forward Voltage (V)									
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L26	5.969	5.914	5.978	5.986	5.935	5.955	5.934	6.037	5.925	6.022
L27	5.974	5.953	5.958	5.960	6.006	5.914	6.036	5.959	5.982	5.979
L28	5.972	5.955	6.039	5.912	5.968	5.932	5.984	5.981	5.987	5.994
L29	6.032	6.005	6.024	5.960	6.017	6.003	5.993	5.973	5.999	6.002
L30	5.981	5.962	6.028	6.003	6.021	5.963	6.031	5.933	5.970	6.014
L31	5.972	5.948	5.971	5.985	5.936	5.962	5.964	6.033	6.005	6.015
L32	5.954	5.945	5.967	6.004	5.935	6.001	5.960	5.988	6.005	5.937
L33	5.979	5.983	5.948	5.969	5.970	5.979	5.980	5.983	5.959	5.972
L34	5.978	5.917	5.957	6.003	5.937	5.940	5.955	5.969	5.911	6.005
L35	5.954	5.916	6.032	6.003	6.030	5.928	5.976	5.988	6.008	6.007
L36	5.972	5.983	5.942	5.991	5.986	5.932	6.029	5.934	5.988	5.977
L37	5.971	5.971	6.012	5.964	5.933	5.999	6.000	5.967	5.966	5.995
L38	5.949	5.913	6.015	5.966	6.000	6.009	6.030	5.984	5.983	5.956
L39	5.961	5.981	5.960	5.947	6.024	5.974	5.943	5.999	5.951	6.034
L40	5.971	5.949	6.005	5.997	6.010	6.000	6.016	5.997	5.930	5.978
L41	5.953	5.916	5.987	5.937	6.014	5.936	5.959	6.018	5.963	5.974
L42	5.996	5.987	6.008	5.922	5.963	5.972	5.957	5.940	5.928	5.971
L43	5.975	5.929	5.994	5.930	5.932	5.973	5.972	5.986	5.914	5.958
L44	5.980	5.947	5.964	5.972	6.020	5.926	6.039	6.007	5.923	5.933
L45	5.975	5.983	5.962	5.944	6.016	5.985	6.026	6.009	5.973	5.970
L46	5.963	5.991	5.995	5.935	5.962	5.971	5.978	6.038	5.965	6.038
L47	5.960	5.927	6.021	5.961	5.965	5.915	5.954	5.953	5.974	6.023
L48	5.951	5.974	5.999	5.979	5.969	5.915	5.963	5.985	5.969	6.014
L49	6.002	5.963	6.012	5.939	5.969	5.925	6.038	5.942	5.970	5.945
L50	6.003	5.998	5.939	5.996	5.931	5.971	5.953	5.995	5.998	5.959
Ave.	5.974	5.956	5.989	5.967	5.978	5.959	5.987	5.984	5.966	5.987
Med.	5.972	5.955	5.994	5.966	5.969	5.963	5.978	5.985	5.970	5.979
st dev	0.0189	0.0289	0.0304	0.0279	0.0351	0.0309	0.0341	0.0303	0.0295	0.0300
Min.	5.949	5.913	5.939	5.912	5.931	5.914	5.934	5.933	5.911	5.933
Max.	6.032	6.005	6.039	6.004	6.030	6.009	6.039	6.038	6.008	6.038



Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	5.968	5.959	5.988	5.997	5.998	5.983	5.963	5.936	-
L27	5.994	5.989	5.977	5.970	5.969	5.947	5.990	5.923	-
L28	5.967	6.001	5.923	5.973	6.039	6.002	5.990	5.955	-
L29	5.938	5.951	5.925	5.969	6.022	6.006	6.008	5.915	-
L30	5.997	5.930	5.980	5.983	5.970	5.959	6.005	5.951	-
L31	5.917	5.994	5.977	5.946	5.952	5.972	5.994	5.944	-
L32	5.922	5.990	5.934	5.986	5.989	6.008	5.954	5.951	-
L33	5.920	6.024	5.988	6.033	5.933	5.977	5.993	5.985	-
L34	5.930	6.018	5.954	6.040	6.036	5.986	5.958	6.003	-
L35	5.920	5.933	5.959	6.028	6.037	5.916	6.017	5.938	-
L36	5.943	6.007	5.959	6.001	6.030	5.939	5.998	5.997	-
L37	5.918	5.932	5.923	6.005	5.954	5.922	6.025	5.951	-
L38	6.005	6.027	5.911	6.010	6.021	6.010	5.993	5.950	-
L39	5.937	6.019	6.009	6.025	5.934	5.992	5.939	5.957	-
L40	6.010	5.993	5.944	6.040	5.988	5.941	5.942	5.964	-
L41	5.967	5.941	5.919	5.942	5.934	5.950	5.939	5.982	-
L42	5.984	6.039	5.923	6.026	5.971	5.948	5.977	5.977	-
L43	5.987	5.949	5.922	5.977	5.968	5.938	5.947	5.978	-
L44	5.990	6.034	5.958	5.939	6.040	5.961	6.001	6.004	-
L45	5.995	5.981	5.932	6.024	6.034	5.931	5.953	6.001	-
L46	5.988	5.995	5.969	5.961	6.020	5.955	5.950	5.951	-
L47	5.961	6.007	5.941	6.017	5.952	5.966	6.014	5.921	-
L48	5.992	6.009	5.931	6.002	5.973	5.948	6.024	5.920	-
L49	5.983	5.984	5.911	5.938	6.009	5.976	6.014	6.004	-
L50	5.960	6.029	5.935	5.967	6.013	5.933	5.998	5.918	-
Ave.	5.964	5.989	5.948	5.992	5.991	5.963	5.983	5.959	-
Med.	5.967	5.994	5.941	5.997	5.989	5.959	5.993	5.951	-
st dev	0.0310	0.0342	0.0274	0.0328	0.0366	0.0276	0.0285	0.0293	-
Min.	5.917	5.930	5.911	5.938	5.933	5.916	5.939	5.915	-
Max.	6.010	6.039	6.009	6.040	6.040	6.010	6.025	6.004	-

### 3.6 Data Set 2, 85°C, 250mA (Chromaticity Shift)

Sample No.	u'	v'	CCT(K)	Chromaticity Shift $\Delta u'v'$								
				0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h
L26	0.2480	0.5222	3059	0.0004	0.0005	0.0008	0.0011	0.0014	0.0015	0.0017	0.0019	0.0021
L27	0.2459	0.5228	3108	0.0005	0.0007	0.0009	0.0013	0.0016	0.0017	0.0018	0.0021	0.0024
L28	0.2476	0.5242	3056	0.0002	0.0003	0.0005	0.0008	0.0010	0.0012	0.0013	0.0015	0.0018
L29	0.2472	0.5217	3081	0.0004	0.0005	0.0007	0.0010	0.0013	0.0014	0.0016	0.0018	0.0022
L30	0.2435	0.5219	3177	0.0003	0.0004	0.0006	0.0009	0.0012	0.0013	0.0015	0.0017	0.0020
L31	0.2469	0.5220	3087	0.0003	0.0005	0.0008	0.0011	0.0014	0.0016	0.0017	0.0020	0.0024
L32	0.2476	0.5243	3055	0.0004	0.0006	0.0009	0.0012	0.0015	0.0017	0.0019	0.0022	0.0025
L33	0.2468	0.5229	3084	0.0005	0.0007	0.0010	0.0014	0.0016	0.0017	0.0018	0.0020	0.0023
L34	0.2467	0.5236	3081	0.0002	0.0003	0.0005	0.0008	0.0011	0.0012	0.0013	0.0015	0.0018
L35	0.2454	0.5206	3137	0.0001	0.0002	0.0004	0.0007	0.0010	0.0011	0.0014	0.0016	0.0020
L36	0.2474	0.5222	3075	0.0005	0.0006	0.0008	0.0012	0.0014	0.0015	0.0016	0.0019	0.0022
L37	0.2444	0.5213	3157	0.0004	0.0005	0.0007	0.0010	0.0012	0.0013	0.0015	0.0017	0.0021
L38	0.2453	0.5213	3135	0.0003	0.0005	0.0008	0.0011	0.0013	0.0014	0.0016	0.0018	0.0021
L39	0.2450	0.5209	3144	0.0004	0.0006	0.0009	0.0012	0.0013	0.0015	0.0016	0.0019	0.0023
L40	0.2441	0.5199	3177	0.0005	0.0007	0.0010	0.0013	0.0015	0.0016	0.0018	0.0021	0.0025
L41	0.2458	0.5211	3122	0.0002	0.0003	0.0005	0.0007	0.0009	0.0010	0.0011	0.0013	0.0016
L42	0.2467	0.5230	3086	0.0003	0.0004	0.0006	0.0009	0.0012	0.0014	0.0015	0.0018	0.0021
L43	0.2473	0.5232	3069	0.0004	0.0006	0.0008	0.0012	0.0014	0.0015	0.0017	0.0019	0.0023
L44	0.2480	0.5248	3042	0.0002	0.0003	0.0006	0.0009	0.0011	0.0013	0.0014	0.0016	0.0020
L45	0.2439	0.5207	3177	0.0005	0.0007	0.0009	0.0013	0.0016	0.0017	0.0019	0.0022	0.0025
L46	0.2483	0.5237	3043	0.0004	0.0005	0.0008	0.0011	0.0013	0.0015	0.0016	0.0018	0.0020
L47	0.2449	0.5212	3146	0.0003	0.0004	0.0007	0.0010	0.0012	0.0013	0.0015	0.0017	0.0021
L48	0.2450	0.5213	3142	0.0005	0.0007	0.0010	0.0014	0.0015	0.0017	0.0018	0.0021	0.0024
L49	0.2457	0.5209	3127	0.0002	0.0003	0.0005	0.0009	0.0011	0.0012	0.0013	0.0015	0.0019
L50	0.2467	0.5226	3090	0.0004	0.0005	0.0007	0.0010	0.0013	0.0014	0.0017	0.0020	0.0023
Ave.	0.2462	0.5222	3106	0.0004	0.0005	0.0007	0.0011	0.0013	0.0014	0.0016	0.0018	0.0022
Med.	0.2467	0.5220	3090	0.0004	0.0005	0.0008	0.0011	0.0013	0.0014	0.0016	0.0018	0.0021
st dev	0.0014	0.0013	43.31	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2435	0.5199	3042	0.0001	0.0002	0.0004	0.0007	0.0009	0.0010	0.0011	0.0013	0.0016
Max.	0.2483	0.5248	3177	0.0005	0.0007	0.0010	0.0014	0.0016	0.0017	0.0019	0.0022	0.0025

Sample No.	Chromaticity Shift Au'v'								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	0.0023	0.0026	0.0027	0.0029	0.0031	0.0033	0.0035	0.0036	-
L27	0.0025	0.0027	0.0029	0.0030	0.0033	0.0034	0.0037	0.0039	-
L28	0.0020	0.0022	0.0023	0.0024	0.0027	0.0028	0.0030	0.0033	-
L29	0.0024	0.0027	0.0028	0.0031	0.0035	0.0037	0.0039	0.0041	-
L30	0.0021	0.0023	0.0025	0.0026	0.0029	0.0030	0.0033	0.0036	-
L31	0.0025	0.0027	0.0028	0.0029	0.0031	0.0032	0.0035	0.0038	-
L32	0.0027	0.0030	0.0031	0.0032	0.0035	0.0036	0.0038	0.0040	-
L33	0.0024	0.0026	0.0027	0.0028	0.0032	0.0034	0.0036	0.0038	-
L34	0.0019	0.0021	0.0022	0.0024	0.0026	0.0027	0.0029	0.0032	-
L35	0.0022	0.0025	0.0027	0.0028	0.0031	0.0032	0.0034	0.0035	-
L36	0.0023	0.0026	0.0028	0.0029	0.0032	0.0033	0.0035	0.0037	-
L37	0.0022	0.0024	0.0025	0.0027	0.0029	0.0030	0.0032	0.0034	-
L38	0.0023	0.0025	0.0026	0.0028	0.0032	0.0034	0.0037	0.0041	-
L39	0.0025	0.0027	0.0029	0.0030	0.0034	0.0036	0.0038	0.0039	-
L40	0.0026	0.0029	0.0031	0.0032	0.0035	0.0037	0.0039	0.0040	-
L41	0.0017	0.0020	0.0021	0.0022	0.0025	0.0027	0.0030	0.0033	-
L42	0.0023	0.0025	0.0026	0.0027	0.0029	0.0030	0.0032	0.0035	-
L43	0.0025	0.0027	0.0029	0.0031	0.0034	0.0035	0.0037	0.0041	-
L44	0.0021	0.0022	0.0023	0.0025	0.0028	0.0030	0.0031	0.0035	-
L45	0.0027	0.0029	0.0031	0.0032	0.0035	0.0036	0.0038	0.0040	-
L46	0.0022	0.0024	0.0025	0.0027	0.0031	0.0033	0.0035	0.0038	-
L47	0.0023	0.0026	0.0027	0.0028	0.0030	0.0031	0.0034	0.0037	-
L48	0.0025	0.0028	0.0030	0.0031	0.0034	0.0035	0.0037	0.0040	-
L49	0.0021	0.0023	0.0024	0.0026	0.0029	0.0030	0.0032	0.0034	-
L50	0.0024	0.0025	0.0027	0.0029	0.0033	0.0034	0.0036	0.0039	-
Ave.	0.0023	0.0025	0.0027	0.0028	0.0031	0.0033	0.0035	0.0037	-
Med.	0.0023	0.0026	0.0027	0.0028	0.0031	0.0033	0.0035	0.0038	-
st dev	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	-
Min.	0.0017	0.0020	0.0021	0.0022	0.0025	0.0027	0.0029	0.0032	-
Max.	0.0027	0.0030	0.0031	0.0032	0.0035	0.0037	0.0039	0.0041	-

### 3.7 Data Set 3, 105°C, 250mA (Lumen Maintenance)

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	260.1	99.99	99.83	99.61	99.41	99.17	98.95	98.84	98.57	98.33
L52	260.5	99.94	99.81	99.49	99.38	99.16	98.96	98.84	98.57	98.37
L53	263.6	99.91	99.80	99.45	99.34	99.14	98.89	98.61	98.47	98.15
L54	262.2	100.03	99.89	99.66	99.53	99.21	98.99	98.74	98.49	98.18
L55	262.4	100.11	99.93	99.66	99.54	99.22	99.07	98.83	98.61	98.41
L56	261.0	99.93	99.85	99.59	99.48	99.20	98.94	98.80	98.63	98.36
L57	261.4	100.03	99.88	99.59	99.32	99.07	98.80	98.68	98.38	98.18
L58	260.9	99.95	99.72	99.49	99.29	99.14	98.86	98.74	98.45	98.22
L59	260.6	99.93	99.75	99.44	99.33	99.19	98.95	98.70	98.47	98.35
L60	260.5	100.05	99.95	99.69	99.55	99.33	99.02	98.78	98.63	98.45
L61	261.1	99.91	99.73	99.46	99.32	99.11	98.83	98.65	98.40	98.13
L62	260.5	100.09	99.87	99.53	99.41	99.24	98.90	98.64	98.45	98.25
L63	264.9	99.91	99.78	99.48	99.38	99.14	98.88	98.67	98.48	98.34
L64	262.0	100.05	99.88	99.54	99.37	99.18	98.96	98.66	98.40	98.24
L65	262.6	100.12	99.92	99.68	99.45	99.12	98.94	98.72	98.50	98.19
L66	262.8	99.89	99.75	99.43	99.29	99.15	98.89	98.68	98.55	98.25
L67	263.5	100.09	99.94	99.71	99.52	99.30	99.06	98.82	98.64	98.43
L68	262.7	100.08	99.85	99.67	99.46	99.19	99.03	98.84	98.64	98.36
L69	261.0	100.11	99.92	99.70	99.45	99.17	98.90	98.64	98.38	98.18
L70	261.2	100.00	99.87	99.70	99.57	99.24	98.94	98.61	98.44	98.19
L71	261.9	100.12	99.94	99.68	99.44	99.10	98.86	98.61	98.38	98.20
L72	262.0	99.92	99.83	99.58	99.34	99.20	99.01	98.79	98.46	98.24
L73	263.1	100.12	99.98	99.67	99.52	99.30	99.02	98.80	98.61	98.32
L74	262.1	99.95	99.80	99.51	99.37	99.26	99.07	98.81	98.54	98.39
L75	263.6	99.94	99.76	99.48	99.38	99.10	98.90	98.74	98.58	98.36
Ave.	261.9	100.01	99.85	99.58	99.42	99.19	98.94	98.73	98.51	98.28
Med.	262.0	100.00	99.85	99.59	99.41	99.18	98.94	98.74	98.49	98.25
st dev	1.2232	0.0818	0.0751	0.0971	0.0861	0.0669	0.0750	0.0810	0.0893	0.0959
Min.	260.1	99.89	99.72	99.43	99.29	99.07	98.80	98.61	98.38	98.13
Max.	264.9	100.12	99.98	99.71	99.57	99.33	99.07	98.84	98.64	98.45

Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	98.07	97.80	97.51	97.17	96.95	96.84	96.57	96.46	-
L52	98.13	97.82	97.63	97.34	97.16	96.97	96.82	96.62	-
L53	97.88	97.63	97.45	97.19	97.01	96.91	96.64	96.53	-
L54	97.92	97.65	97.48	97.17	96.94	96.77	96.58	96.37	-
L55	98.11	97.86	97.51	97.21	97.06	96.85	96.60	96.39	-
L56	98.01	97.73	97.52	97.32	97.05	96.94	96.77	96.61	-
L57	97.86	97.56	97.37	97.12	96.98	96.79	96.65	96.42	-
L58	97.86	97.64	97.34	97.15	96.94	96.84	96.74	96.47	-
L59	98.02	97.79	97.58	97.35	97.08	96.98	96.86	96.65	-
L60	98.10	97.81	97.58	97.28	97.06	96.96	96.81	96.63	-
L61	97.86	97.61	97.49	97.29	97.11	96.93	96.81	96.51	-
L62	97.86	97.55	97.43	97.16	96.99	96.89	96.76	96.62	-
L63	97.90	97.68	97.48	97.17	97.06	96.90	96.79	96.66	-
L64	97.93	97.58	97.46	97.16	96.92	96.72	96.59	96.45	-
L65	97.94	97.62	97.44	97.13	96.93	96.76	96.58	96.36	-
L66	97.83	97.61	97.48	97.17	96.98	96.73	96.58	96.40	-
L67	98.07	97.84	97.57	97.31	97.17	96.95	96.74	96.52	-
L68	98.08	97.78	97.62	97.34	97.13	96.93	96.83	96.59	-
L69	97.97	97.74	97.52	97.18	97.00	96.84	96.68	96.45	-
L70	97.83	97.54	97.35	97.09	97.00	96.81	96.60	96.49	-
L71	97.83	97.61	97.48	97.29	97.07	96.93	96.83	96.60	-
L72	97.99	97.71	97.48	97.32	97.15	96.88	96.59	96.51	-
L73	97.98	97.69	97.46	97.18	97.00	96.82	96.57	96.46	-
L74	98.11	97.77	97.56	97.36	97.10	96.89	96.75	96.56	-
L75	98.00	97.63	97.43	97.20	97.02	96.79	96.66	96.40	-
Ave.	97.97	97.69	97.49	97.23	97.03	96.86	96.70	96.51	-
Med.	97.97	97.68	97.48	97.19	97.02	96.88	96.68	96.51	-
st dev	0.1008	0.0980	0.0755	0.0836	0.0746	0.0767	0.1019	0.0938	-
Min.	97.83	97.54	97.34	97.09	96.92	96.72	96.57	96.36	-
Max.	98.13	97.86	97.63	97.36	97.17	96.98	96.86	96.66	-

**3.8 Data Set 3, 105°C, 250mA (Forward Voltage)**

Sample No.	Forward Voltage (V)									
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	5.979	5.974	5.952	6.004	5.952	5.985	5.958	6.015	6.004	5.956
L52	5.978	5.975	5.953	5.968	6.031	5.997	6.029	6.015	5.944	6.005
L53	5.968	5.987	5.962	5.970	5.934	5.951	5.953	5.963	5.943	5.992
L54	5.991	5.942	5.955	5.972	6.002	6.013	5.954	5.993	6.004	5.985
L55	5.988	5.999	5.959	5.946	6.022	5.980	5.990	5.959	5.995	5.967
L56	5.969	6.018	5.991	5.971	6.029	6.015	5.990	5.997	5.996	6.001
L57	5.975	5.987	5.983	5.994	5.982	5.983	5.975	5.946	5.945	5.959
L58	5.984	6.001	5.960	5.950	6.001	5.978	5.978	5.984	6.027	5.953
L59	5.975	6.010	5.985	5.971	6.015	5.947	5.973	5.948	6.019	6.011
L60	5.978	5.984	5.963	6.011	5.983	5.986	6.037	5.952	5.970	5.956
L61	5.967	5.995	5.957	5.994	6.026	5.942	5.957	5.975	6.017	5.967
L62	5.988	5.950	5.942	5.974	5.987	5.985	6.019	5.954	5.989	6.000
L63	5.969	5.969	5.941	6.008	5.999	5.977	5.941	5.957	6.006	5.950
L64	5.965	6.013	6.017	6.005	6.025	5.968	6.001	5.984	5.953	6.015
L65	5.984	5.968	5.993	6.004	5.988	5.953	5.938	5.986	5.948	6.020
L66	5.963	6.018	5.971	6.018	5.990	5.989	5.949	5.991	5.966	6.002
L67	5.948	5.936	5.975	5.941	5.985	5.972	6.020	5.994	5.998	5.979
L68	6.002	5.995	5.948	5.951	6.017	6.013	6.002	5.971	5.937	5.993
L69	5.984	5.971	5.941	6.007	5.970	5.998	5.951	6.017	6.039	5.978
L70	5.972	5.965	6.006	5.991	6.030	6.003	5.964	5.993	5.939	6.000
L71	5.977	6.001	6.015	5.985	6.039	6.007	5.932	6.016	5.957	5.948
L72	5.968	5.996	5.967	5.969	6.007	5.972	5.960	6.005	5.974	5.952
L73	5.986	6.037	5.963	5.954	6.039	5.967	6.024	6.013	5.967	6.018
L74	6.013	5.998	5.974	5.947	6.014	6.008	6.038	5.977	6.029	5.946
L75	5.965	6.029	5.971	5.979	5.942	6.017	5.939	6.015	5.998	5.964
Ave.	5.977	5.989	5.970	5.979	6.000	5.984	5.979	5.985	5.983	5.981
Med.	5.977	5.995	5.963	5.974	6.002	5.985	5.973	5.986	5.989	5.979
st dev	0.0134	0.0258	0.0217	0.0233	0.0292	0.0221	0.0338	0.0237	0.0317	0.0247
Min.	5.948	5.936	5.941	5.941	5.934	5.942	5.932	5.946	5.937	5.946
Max.	6.013	6.037	6.017	6.018	6.039	6.017	6.038	6.017	6.039	6.020

Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	6.001	5.951	6.009	5.972	5.999	5.974	5.972	6.014	-
L52	5.932	5.990	5.942	6.034	5.974	6.007	6.010	5.954	-
L53	5.943	5.997	6.008	5.958	6.015	5.983	5.977	5.968	-
L54	5.994	5.952	5.940	5.937	6.038	5.977	6.000	5.962	-
L55	6.040	5.960	5.953	6.028	6.018	5.949	5.940	6.008	-
L56	6.031	6.004	6.000	5.944	5.951	6.008	5.933	5.981	-
L57	5.978	6.008	5.990	6.014	6.029	5.980	6.037	5.949	-
L58	5.989	6.008	5.940	6.033	6.019	5.960	5.952	5.978	-
L59	6.035	5.957	6.008	6.018	5.949	6.005	5.965	5.942	-
L60	5.945	5.945	5.967	6.012	5.998	5.956	5.970	5.966	-
L61	5.945	6.014	6.001	5.980	5.939	5.945	5.942	5.973	-
L62	5.990	6.018	5.947	6.017	6.037	5.998	6.013	5.947	-
L63	5.975	5.980	6.003	5.951	5.966	5.969	5.955	6.007	-
L64	5.982	5.962	5.990	5.951	6.001	6.016	6.012	5.962	-
L65	6.005	5.998	5.999	6.023	6.014	5.954	5.963	6.011	-
L66	5.973	5.988	5.993	6.021	6.033	5.992	5.943	6.009	-
L67	6.036	5.986	5.992	5.969	5.935	5.959	6.002	6.012	-
L68	5.955	5.953	6.000	5.949	6.018	5.977	6.025	5.969	-
L69	6.000	6.018	5.965	5.994	5.943	6.004	6.001	5.998	-
L70	5.986	6.011	5.986	5.976	5.963	5.951	6.028	6.008	-
L71	5.949	5.965	5.965	5.959	6.021	5.965	5.945	5.956	-
L72	6.019	6.007	5.972	5.990	6.021	5.997	5.971	5.977	-
L73	6.005	6.005	5.942	5.999	5.967	5.948	6.019	5.962	-
L74	5.974	5.942	5.992	6.021	5.951	5.979	6.028	5.944	-
L75	5.995	5.968	5.964	5.932	5.947	5.966	5.984	5.976	-
Ave.	5.987	5.983	5.979	5.987	5.990	5.977	5.983	5.977	-
Med.	5.989	5.988	5.990	5.990	5.999	5.977	5.977	5.973	-
st dev	0.0311	0.0255	0.0242	0.0334	0.0355	0.0217	0.0326	0.0241	-
Min.	5.932	5.942	5.940	5.932	5.935	5.945	5.933	5.942	-
Max.	6.040	6.018	6.009	6.034	6.038	6.016	6.037	6.014	-

### 3.9 Data Set 3, 105°C, 250mA (Chromaticity Shift)

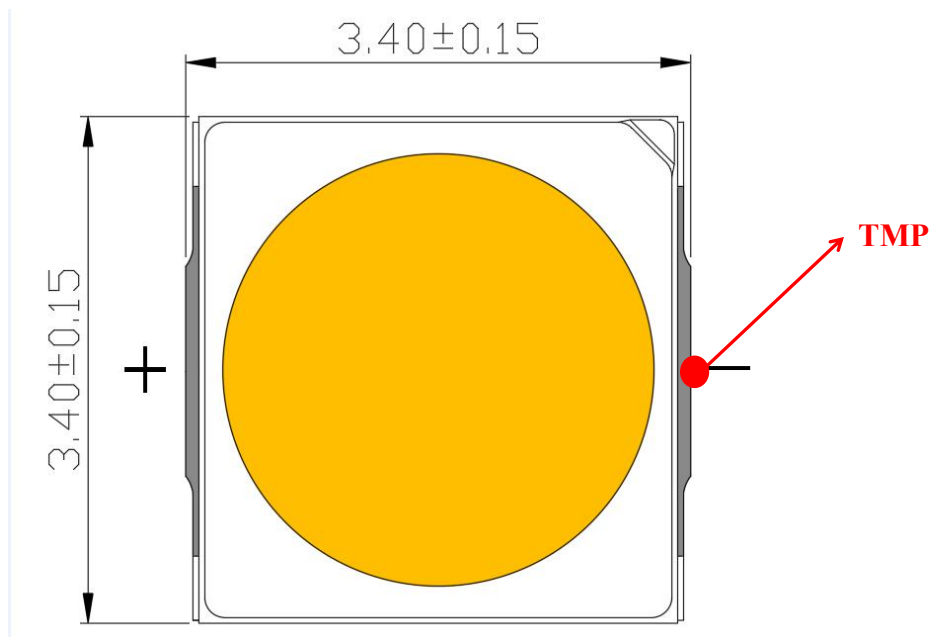
Sample No.	u'	v'	CCT(K)	Chromaticity Shift Δu'v'								
	0hr(Initial)			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	0.2465	0.5208	3105	0.0003	0.0006	0.0009	0.0012	0.0015	0.0017	0.0020	0.0022	0.0024
L52	0.2465	0.5233	3089	0.0005	0.0008	0.0012	0.0015	0.0018	0.0021	0.0023	0.0026	0.0027
L53	0.2477	0.5224	3065	0.0002	0.0004	0.0007	0.0009	0.0012	0.0014	0.0015	0.0019	0.0021
L54	0.2465	0.5229	3093	0.0004	0.0007	0.0010	0.0012	0.0014	0.0015	0.0017	0.0021	0.0023
L55	0.2466	0.5243	3079	0.0006	0.0008	0.0011	0.0014	0.0017	0.0020	0.0023	0.0026	0.0027
L56	0.2476	0.5217	3073	0.0003	0.0005	0.0009	0.0011	0.0013	0.0014	0.0016	0.0020	0.0021
L57	0.2456	0.5216	3125	0.0004	0.0006	0.0010	0.0013	0.0015	0.0017	0.0020	0.0024	0.0026
L58	0.2445	0.5209	3158	0.0002	0.0004	0.0007	0.0009	0.0012	0.0015	0.0017	0.0021	0.0023
L59	0.2463	0.5220	3103	0.0003	0.0005	0.0008	0.0010	0.0013	0.0016	0.0019	0.0022	0.0024
L60	0.2469	0.5219	3090	0.0006	0.0009	0.0013	0.0015	0.0017	0.0019	0.0022	0.0025	0.0027
L61	0.2460	0.5224	3109	0.0004	0.0007	0.0010	0.0011	0.0014	0.0016	0.0018	0.0021	0.0022
L62	0.2469	0.5240	3074	0.0005	0.0008	0.0011	0.0013	0.0015	0.0018	0.0020	0.0024	0.0025
L63	0.2470	0.5235	3075	0.0007	0.0010	0.0013	0.0014	0.0017	0.0020	0.0023	0.0027	0.0028
L64	0.2459	0.5215	3118	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0018	0.0020
L65	0.2452	0.5220	3131	0.0004	0.0006	0.0010	0.0012	0.0014	0.0017	0.0020	0.0023	0.0024
L66	0.2456	0.5204	3132	0.0001	0.0003	0.0006	0.0008	0.0011	0.0014	0.0016	0.0019	0.0021
L67	0.2467	0.5220	3092	0.0005	0.0007	0.0011	0.0014	0.0016	0.0018	0.0021	0.0025	0.0026
L68	0.2453	0.5209	3138	0.0002	0.0005	0.0008	0.0009	0.0012	0.0015	0.0018	0.0021	0.0022
L69	0.2467	0.5216	3096	0.0004	0.0006	0.0010	0.0011	0.0014	0.0016	0.0019	0.0022	0.0024
L70	0.2486	0.5246	3027	0.0006	0.0008	0.0012	0.0014	0.0017	0.0020	0.0022	0.0026	0.0027
L71	0.2464	0.5209	3110	0.0002	0.0004	0.0006	0.0009	0.0011	0.0014	0.0017	0.0021	0.0022
L72	0.2457	0.5227	3114	0.0005	0.0007	0.0011	0.0013	0.0016	0.0019	0.0021	0.0024	0.0025
L73	0.2457	0.5216	3121	0.0003	0.0005	0.0007	0.0008	0.0011	0.0015	0.0018	0.0022	0.0024
L74	0.2464	0.5223	3098	0.0006	0.0009	0.0012	0.0013	0.0015	0.0019	0.0022	0.0025	0.0026
L75	0.2488	0.5246	3024	0.0002	0.0004	0.0006	0.0008	0.0012	0.0014	0.0016	0.0019	0.0020
Ave.	0.2465	0.5223	3098	0.0004	0.0006	0.0009	0.0011	0.0014	0.0017	0.0019	0.0023	0.0024
Med.	0.2465	0.5220	3098	0.0004	0.0006	0.0010	0.0012	0.0014	0.0016	0.0019	0.0022	0.0024
st dev	0.0010	0.0012	31.36	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002
Min.	0.2445	0.5204	3024	0.0001	0.0003	0.0006	0.0008	0.0011	0.0013	0.0015	0.0018	0.0020
Max.	0.2488	0.5246	3158	0.0007	0.0010	0.0013	0.0015	0.0018	0.0021	0.0023	0.0027	0.0028



Sample No.	Chromaticity Shift $\Delta u'v'$								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	0.0027	0.0029	0.0032	0.0034	0.0037	0.0038	0.0041	0.0044	-
L52	0.0030	0.0033	0.0035	0.0037	0.0040	0.0041	0.0043	0.0045	-
L53	0.0023	0.0027	0.0029	0.0032	0.0035	0.0037	0.0039	0.0042	-
L54	0.0026	0.0030	0.0031	0.0034	0.0037	0.0039	0.0042	0.0045	-
L55	0.0030	0.0033	0.0036	0.0038	0.0042	0.0045	0.0047	0.0049	-
L56	0.0025	0.0028	0.0030	0.0033	0.0036	0.0037	0.0038	0.0041	-
L57	0.0028	0.0030	0.0033	0.0036	0.0038	0.0039	0.0041	0.0043	-
L58	0.0026	0.0029	0.0032	0.0034	0.0037	0.0039	0.0042	0.0044	-
L59	0.0027	0.0031	0.0034	0.0036	0.0039	0.0041	0.0043	0.0046	-
L60	0.0031	0.0035	0.0037	0.0039	0.0042	0.0043	0.0045	0.0047	-
L61	0.0024	0.0027	0.0029	0.0031	0.0033	0.0035	0.0037	0.0039	-
L62	0.0028	0.0031	0.0035	0.0037	0.0040	0.0041	0.0043	0.0045	-
L63	0.0032	0.0034	0.0036	0.0038	0.0041	0.0042	0.0045	0.0048	-
L64	0.0023	0.0027	0.0029	0.0031	0.0035	0.0037	0.0039	0.0041	-
L65	0.0025	0.0028	0.0031	0.0033	0.0036	0.0038	0.0040	0.0043	-
L66	0.0024	0.0028	0.0030	0.0032	0.0034	0.0035	0.0037	0.0039	-
L67	0.0028	0.0031	0.0033	0.0035	0.0038	0.0039	0.0042	0.0044	-
L68	0.0025	0.0028	0.0032	0.0034	0.0036	0.0037	0.0039	0.0041	-
L69	0.0027	0.0030	0.0033	0.0036	0.0039	0.0041	0.0043	0.0046	-
L70	0.0031	0.0035	0.0036	0.0039	0.0042	0.0043	0.0046	0.0048	-
L71	0.0025	0.0028	0.0030	0.0032	0.0035	0.0036	0.0038	0.0041	-
L72	0.0029	0.0031	0.0033	0.0035	0.0037	0.0039	0.0041	0.0043	-
L73	0.0026	0.0029	0.0030	0.0033	0.0036	0.0037	0.0039	0.0042	-
L74	0.0029	0.0032	0.0034	0.0036	0.0039	0.0040	0.0042	0.0044	-
L75	0.0023	0.0027	0.0029	0.0031	0.0033	0.0034	0.0036	0.0038	-
Ave.	0.0027	0.0030	0.0032	0.0035	0.0037	0.0039	0.0041	0.0044	-
Med.	0.0027	0.0030	0.0032	0.0034	0.0037	0.0039	0.0041	0.0044	-
st dev	0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003	-
Min.	0.0023	0.0027	0.0029	0.0031	0.0033	0.0034	0.0036	0.0038	-
Max.	0.0032	0.0035	0.0037	0.0039	0.0042	0.0045	0.0047	0.0049	-

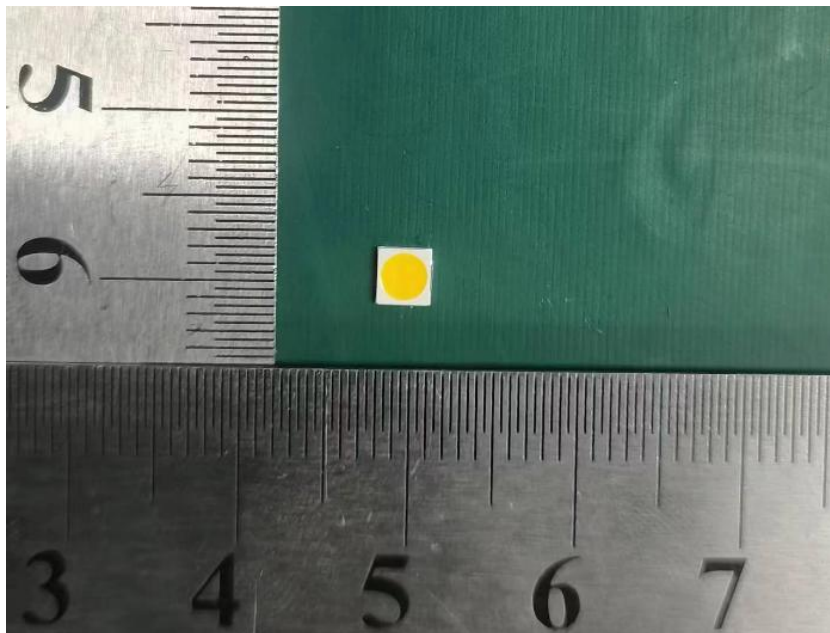
## 4-EUT Photos

### 4.1 Mechanical Dimensions



Note: All dimensions are in millimeters(mm).

### 4.2 EUT Photo



----End of report----