



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.:** BL210601007-9

**Product Description:** SMD LED

**Model No.:** AW-22/B1A1C30Y15NJ

**Test Initiation Date:** 2021-06-03

**Test Completion Date:** 2021-06-03 to 2023-07-05

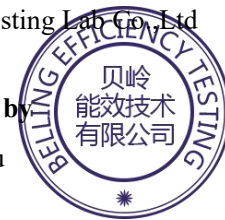
**Report Issue Date:** 2023-07-07

**Test Standard:** ANSI/IES LM-80-15

**Test Laboratory:** Shenzhen Belling Efficiency Testing Lab Co., Ltd

**Tested by**  
Sam Chen

**Reviewed by**  
Jason Zhou



*Sam Chen*

*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-22/B1A1C30Y15NJ

**Part Type:** SMD LED

**Product Description:** VF 3V, IF 150mA

**CCT:** 3000K

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

**Average Power Density per LED die(W/mm2):** 1.55

**Average Current Density per LED die(mA/mm2):** 516.67

**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-22/B1A1C30Y15NJ	AW-22/A1A1CXXXXXXJ	First XXX: CCT code;
	AW-22/B1A1CXXXXXXJ	Sencond XX: Flux code;
	AW-22/C1A1CXXXXXXJ	Last X: CRI code.

### 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, 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 Ts 55°C, Ts 85°C and Ts 105°C were received at 2021-06-01 and tested during 2021-06-03 to 2023-07-05. The samples were numbered from L1 to L25, L26 to L50 and L51 to L75.

## 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=54.8°C Ta=53.7°C	Ts=84.2°C Ta=83.6°C	Ts=104.8°C Ta=103.3°C
Sample size	25	25	25
Duration (in Hours)	17000	17000	17000
Intervals (in Hours)	1000	1000	1000
Failure	0	0	0
$\alpha$	2.048E-06	2.225E-06	2.261E-06
$\beta$	1.006	1.004	1.001
Reported L70 (17k) (17000h)	>102000	>102000	>102000
Reported L90 (17k) (17000h)	54,000	49,000	47,000

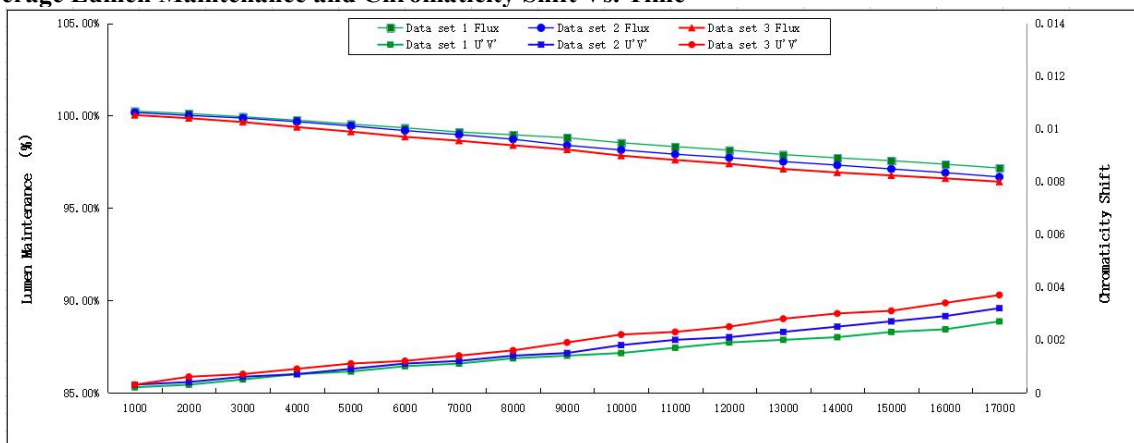
### Average Lumen Maintenance (%)

Data Set	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
1	100.24	100.11	99.94	99.75	99.54	99.34	99.11	98.96	98.80
2	100.17	100.01	99.87	99.67	99.44	99.19	98.97	98.72	98.39
3	100.03	99.86	99.65	99.38	99.13	98.85	98.64	98.39	98.16
Data Set	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
1	98.53	98.32	98.13	97.89	97.71	97.56	97.37	97.16	-
2	98.14	97.91	97.72	97.51	97.32	97.11	96.91	96.68	-
3	97.83	97.60	97.39	97.11	96.92	96.76	96.60	96.42	-


### Average Chromaticity Shift


Data Set	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
1	0.0002	0.0003	0.0005	0.0007	0.0008	0.0010	0.0011	0.0013	0.0014
2	0.0003	0.0004	0.0006	0.0007	0.0009	0.0011	0.0012	0.0014	0.0015
3	0.0003	0.0006	0.0007	0.0009	0.0011	0.0012	0.0014	0.0016	0.0019
Data Set	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
1	0.0015	0.0017	0.0019	0.0020	0.0021	0.0023	0.0024	0.0027	-
2	0.0018	0.0020	0.0021	0.0023	0.0025	0.0027	0.0029	0.0032	-
3	0.0022	0.0023	0.0025	0.0028	0.0030	0.0031	0.0034	0.0037	-

### 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>Description of LED Light Source Tested (manufacturer, model, catalog number)</b>		Shenzhen HoneBright Technology Co.,Ltd AW-22/B1A1C30Y15NJ					
<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>		<b>Table 2: Interpolation Report (projection based on <i>in-situ</i> temperature entered)</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)	150	DUT drive current used in the test (mA)	150	DUT drive current used in the test (mA)	150	$\alpha_1$	2.261E-06
Test duration (hours)	17,000	Test duration (hours)	17,000	Test duration (hours)	17,000	$B_1$	1.001
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)	-
$\alpha$	2.048E-06	$\alpha$	2.225E-06	$\alpha$	2.261E-06	$\alpha_2$	-
B	1.006	B	1.004	B	1.001	$B_2$	-
Reported L70(17k) (hours)	>102000	Reported L70(17k) (hours)	>102000	Reported L70(17k) (hours)	>102000	$E_s/k_b$	-
						A	-
						$B_0$	1.001
						$T_{s,i}$ (°C)	105.00
						$T_{s,i}$ (K)	378.15
						$\alpha_i$	2.261E-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>Description of LED Light Source Tested (manufacturer, model, catalog number)</b>		Shenzhen HoneBright Technology Co.,Ltd AW-22/B1A1C30Y15NJ					
<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>		<b>Table 2: Interpolation Report (projection based on <i>in-situ</i> temperature entered)</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)	150	DUT drive current used in the test (mA)	150	DUT drive current used in the test (mA)	150	$\alpha_1$	2.261E-06
Test duration (hours)	17,000	Test duration (hours)	17,000	Test duration (hours)	17,000	$B_1$	1.001
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)	-
$\alpha$	2.048E-06	$\alpha$	2.225E-06	$\alpha$	2.261E-06	$\alpha_2$	-
B	1.006	B	1.004	B	1.001	$B_2$	-
Reported L90(17k) (hours)	54,000	Reported L90(17k) (hours)	49,000	Reported L90(17k) (hours)	47,000	$E_s/k_b$	-
						A	-
						$B_0$	1.001
						$T_{s,i}$ (°C)	105.00
						$T_{s,i}$ (K)	378.15
						$\alpha_i$	2.261E-06
						Reported L90(17k) at 105°C (hours)	47,000

### 3 Test Data

#### 3.1 Data Set 1, 55°C, 150mA (Lumen Maintenance)

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L1	79.79	100.13	100.06	99.89	99.72	99.53	99.36	99.06	98.86	98.69
L2	80.04	100.16	100.01	99.86	99.74	99.45	99.20	99.04	98.91	98.86
L3	80.67	100.32	100.21	100.04	99.78	99.62	99.44	99.14	98.98	98.88
L4	80.03	100.27	100.04	99.85	99.67	99.49	99.21	99.02	98.85	98.68
L5	80.50	100.19	99.97	99.84	99.66	99.52	99.33	99.06	98.92	98.67
L6	81.70	100.27	100.21	100.00	99.76	99.47	99.23	98.99	98.88	98.74
L7	80.01	100.13	100.02	99.93	99.66	99.41	99.23	99.07	98.88	98.81
L8	80.04	100.32	100.24	100.01	99.80	99.64	99.42	99.13	98.98	98.83
L9	80.64	100.17	100.08	99.84	99.67	99.48	99.28	99.01	98.92	98.68
L10	80.59	100.37	100.24	100.04	99.82	99.64	99.40	99.14	99.04	98.78
L11	80.06	100.31	100.22	99.98	99.68	99.50	99.31	99.13	99.06	98.93
L12	79.71	100.13	99.98	99.89	99.65	99.52	99.44	99.26	99.06	98.89
L13	80.82	100.17	100.07	99.89	99.69	99.47	99.28	99.06	98.98	98.72
L14	80.13	100.26	100.12	99.98	99.83	99.60	99.45	99.26	98.99	98.88
L15	80.61	100.31	100.25	100.07	99.87	99.65	99.48	99.20	99.01	98.75
L16	80.50	100.21	99.97	99.85	99.66	99.49	99.28	99.02	98.83	98.72
L17	79.81	100.23	100.11	100.00	99.83	99.53	99.45	99.12	99.05	98.91
L18	79.85	100.26	100.22	99.95	99.69	99.48	99.28	99.11	98.98	98.76
L19	80.65	100.29	100.11	99.98	99.80	99.55	99.32	99.10	98.88	98.75
L20	80.36	100.17	100.02	99.89	99.78	99.50	99.33	99.09	99.03	98.92
L21	80.10	100.36	100.18	99.94	99.85	99.66	99.44	99.21	99.08	98.95
L22	80.11	100.32	100.15	100.05	99.80	99.62	99.42	99.25	99.04	98.84
L23	79.98	100.31	100.20	99.96	99.85	99.61	99.42	99.10	98.86	98.73
L24	80.44	100.30	100.06	99.96	99.85	99.55	99.22	98.99	98.91	98.77
L25	80.02	100.15	100.02	99.91	99.67	99.52	99.40	99.25	99.05	98.91
Ave.	80.29	100.24	100.11	99.94	99.75	99.54	99.34	99.11	98.96	98.80
Med.	80.11	100.26	100.11	99.95	99.76	99.52	99.33	99.10	98.98	98.78
st dev	0.4364	0.0770	0.0947	0.0707	0.0758	0.0706	0.0892	0.0853	0.0790	0.0894
Min.	79.71	100.13	99.97	99.84	99.65	99.41	99.20	98.99	98.83	98.67
Max.	81.70	100.37	100.25	100.07	99.87	99.66	99.48	99.26	99.08	98.95



Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	98.40	98.19	98.09	97.92	97.85	97.60	97.50	97.25	-
L2	98.56	98.44	98.15	97.91	97.79	97.67	97.39	97.24	-
L3	98.54	98.33	98.03	97.75	97.56	97.47	97.27	97.10	-
L4	98.41	98.25	98.10	97.89	97.82	97.60	97.45	97.25	-
L5	98.46	98.35	98.11	97.81	97.63	97.56	97.46	97.24	-
L6	98.56	98.32	98.16	97.93	97.80	97.55	97.45	97.21	-
L7	98.54	98.30	98.21	97.91	97.66	97.51	97.28	97.01	-
L8	98.56	98.34	98.08	97.82	97.61	97.47	97.34	97.12	-
L9	98.44	98.18	98.09	97.83	97.73	97.64	97.50	97.27	-
L10	98.53	98.19	97.97	97.84	97.61	97.45	97.32	97.15	-
L11	98.68	98.43	98.27	98.03	97.86	97.63	97.39	97.11	-
L12	98.66	98.37	98.23	98.01	97.87	97.60	97.42	97.26	-
L13	98.42	98.19	98.12	97.81	97.68	97.54	97.24	97.04	-
L14	98.62	98.39	98.26	97.93	97.67	97.57	97.46	97.26	-
L15	98.48	98.26	98.15	97.89	97.63	97.44	97.31	97.07	-
L16	98.46	98.17	97.97	97.81	97.56	97.45	97.24	97.00	-
L17	98.58	98.43	98.25	98.02	97.80	97.60	97.33	97.14	-
L18	98.43	98.21	97.97	97.86	97.62	97.55	97.40	97.17	-
L19	98.41	98.21	97.99	97.81	97.67	97.58	97.28	97.09	-
L20	98.63	98.34	98.11	97.99	97.87	97.64	97.48	97.13	-
L21	98.59	98.44	98.21	97.92	97.85	97.61	97.44	97.28	-
L22	98.50	98.38	98.18	97.94	97.75	97.62	97.32	97.13	-
L23	98.56	98.43	98.17	97.84	97.58	97.51	97.25	97.06	-
L24	98.54	98.31	98.07	97.89	97.65	97.58	97.35	97.10	-
L25	98.61	98.43	98.20	97.93	97.68	97.60	97.31	97.20	-
Ave.	98.53	98.32	98.13	97.89	97.71	97.56	97.37	97.16	-
Med.	98.54	98.33	98.12	97.89	97.68	97.58	97.35	97.14	-
st dev	0.0823	0.0947	0.0916	0.0737	0.1048	0.0662	0.0850	0.0862	-
Min.	98.40	98.17	97.97	97.75	97.56	97.44	97.24	97.00	-
Max.	98.68	98.44	98.27	98.03	97.87	97.67	97.50	97.28	-

**3.2 Data Set 1, 55°C, 150mA (Forward Voltage)**

Sample No.	Forward Voltage (V)									
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L1	2.99	3.09	2.94	2.96	2.99	3.05	3.11	2.92	2.95	3.02
L2	3.01	2.92	2.90	3.10	3.09	3.06	2.95	2.99	3.03	3.03
L3	3.04	3.01	2.98	2.92	2.97	3.03	2.99	2.92	3.12	3.07
L4	3.00	3.09	3.05	3.01	3.02	3.14	3.07	3.07	3.02	2.93
L5	2.98	3.10	2.99	3.05	3.10	3.03	3.10	3.00	3.04	2.91
L6	3.00	3.04	3.10	2.92	3.00	2.94	2.94	2.99	3.10	3.08
L7	2.98	2.92	3.07	3.05	3.01	3.08	3.15	3.02	3.11	3.09
L8	3.00	3.02	3.01	3.13	3.08	3.09	3.15	2.90	3.05	2.92
L9	2.99	3.08	3.04	2.92	3.09	3.07	2.96	2.93	2.98	3.07
L10	2.99	3.09	3.00	3.04	2.95	3.12	2.92	2.91	2.96	3.04
L11	3.00	2.98	2.93	3.13	2.98	3.02	3.15	2.92	2.91	2.99
L12	2.99	3.03	2.96	3.04	2.95	3.05	3.00	2.95	2.95	3.10
L13	3.00	3.08	2.98	3.09	3.07	3.07	3.07	2.93	3.09	2.90
L14	3.03	2.98	2.93	3.15	3.09	2.97	3.08	3.05	2.99	2.90
L15	2.99	2.97	3.10	3.08	2.97	3.05	3.11	3.07	2.98	3.07
L16	2.97	3.08	2.99	2.95	3.05	3.01	2.93	3.00	3.09	3.01
L17	3.04	3.01	3.02	3.10	3.04	2.97	3.06	2.91	3.12	3.07
L18	3.01	3.02	3.14	2.97	2.94	2.98	3.12	3.03	3.11	2.97
L19	3.03	3.06	2.98	2.99	2.94	3.07	2.97	3.07	3.09	3.06
L20	3.00	2.91	3.08	2.91	3.04	3.00	3.04	3.03	3.08	2.93
L21	2.99	2.99	3.00	2.97	2.93	2.95	2.95	2.97	3.09	2.94
L22	3.03	3.08	3.06	2.93	3.02	2.94	3.14	3.01	2.92	3.07
L23	3.00	2.98	3.06	3.03	2.91	2.99	3.07	2.93	2.93	3.06
L24	2.99	3.03	3.13	3.15	3.01	2.95	3.02	2.92	2.92	3.06
L25	3.03	3.01	3.02	3.05	2.90	2.98	2.91	2.91	3.10	2.98
Ave.	3.00	3.02	3.02	3.03	3.01	3.02	3.04	2.97	3.03	3.01
Med.	3.00	3.02	3.01	3.04	3.01	3.03	3.06	2.97	3.04	3.03
st dev	0.0195	0.0570	0.0639	0.0782	0.0609	0.0565	0.0807	0.0580	0.0734	0.0674
Min.	2.97	2.91	2.90	2.91	2.90	2.94	2.91	2.90	2.91	2.90
Max.	3.04	3.10	3.14	3.15	3.10	3.14	3.15	3.07	3.12	3.10

Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	3.04	2.94	3.02	3.00	2.93	3.01	3.09	3.11	-
L2	3.13	3.06	2.94	3.09	3.04	2.93	3.05	2.91	-
L3	3.00	2.91	3.13	2.92	2.98	2.93	3.10	3.09	-
L4	2.94	2.92	2.94	3.13	3.05	3.10	3.03	3.09	-
L5	3.10	2.99	3.09	2.97	3.09	3.13	2.94	3.10	-
L6	2.99	2.90	3.00	2.99	3.00	2.93	3.05	3.13	-
L7	2.99	2.90	3.15	2.95	3.05	3.01	3.04	2.91	-
L8	2.92	3.02	2.94	2.92	3.00	3.04	3.07	2.95	-
L9	2.93	2.97	3.11	3.12	3.09	2.97	3.09	3.02	-
L10	3.10	3.01	3.07	3.07	3.03	3.06	3.00	3.03	-
L11	3.03	3.03	3.02	2.94	3.06	3.00	3.09	2.93	-
L12	2.91	2.90	2.91	2.92	2.90	3.01	2.98	3.12	-
L13	3.13	2.96	3.05	2.91	3.00	3.14	2.94	2.90	-
L14	3.08	3.03	2.91	3.12	3.07	2.90	3.02	3.03	-
L15	3.14	3.02	2.97	2.95	2.97	3.12	3.06	3.11	-
L16	2.92	3.06	3.03	2.93	3.08	2.96	3.10	3.09	-
L17	2.97	2.94	3.00	3.10	3.06	2.98	2.96	2.99	-
L18	3.12	2.90	2.91	3.13	3.00	3.04	2.94	3.11	-
L19	3.00	2.98	3.11	3.04	3.03	3.11	2.97	3.04	-
L20	2.98	2.96	3.09	2.99	2.96	2.91	2.95	2.98	-
L21	2.93	3.04	3.05	3.04	3.03	3.02	2.97	3.14	-
L22	2.98	3.05	3.11	3.12	3.01	3.07	2.97	2.91	-
L23	3.11	3.00	3.02	2.93	2.99	3.01	3.00	2.95	-
L24	3.06	3.05	3.05	3.15	3.01	3.14	2.98	3.01	-
L25	2.94	2.98	3.14	3.02	2.96	3.04	2.95	2.97	-
Ave.	3.02	2.98	3.03	3.02	3.02	3.02	3.01	3.02	-
Med.	3.00	2.98	3.03	3.00	3.01	3.01	3.00	3.03	-
st dev	0.0776	0.0555	0.0761	0.0829	0.0490	0.0736	0.0566	0.0805	-
Min.	2.91	2.90	2.91	2.91	2.90	2.90	2.94	2.90	-
Max.	3.14	3.06	3.15	3.15	3.09	3.14	3.10	3.14	-

**3.3 Data Set 1, 55°C, 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	0.5239	0.2482	3042	0.0001	0.0004	0.0006	0.0008	0.0009	0.0011	0.0012	0.0014	0.0015
L2	0.5206	0.2467	3103	0.0002	0.0003	0.0004	0.0006	0.0007	0.0009	0.0010	0.0012	0.0013
L3	0.5221	0.2471	3083	0.0004	0.0005	0.0007	0.0009	0.0011	0.0012	0.0014	0.0015	0.0017
L4	0.5238	0.2458	3104	0.0001	0.0002	0.0004	0.0005	0.0007	0.0008	0.0010	0.0011	0.0013
L5	0.5220	0.2457	3120	0.0002	0.0004	0.0005	0.0007	0.0008	0.0010	0.0011	0.0013	0.0014
L6	0.5249	0.2469	3069	0.0001	0.0003	0.0004	0.0006	0.0007	0.0009	0.0011	0.0012	0.0013
L7	0.5203	0.2467	3105	0.0002	0.0003	0.0005	0.0007	0.0008	0.0010	0.0012	0.0014	0.0016
L8	0.5220	0.2456	3122	0.0001	0.0002	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0011
L9	0.5244	0.2458	3100	0.0003	0.0004	0.0006	0.0008	0.0010	0.0012	0.0013	0.0015	0.0016
L10	0.5229	0.2446	3140	0.0004	0.0005	0.0007	0.0009	0.0011	0.0013	0.0014	0.0016	0.0017
L11	0.5220	0.2471	3082	0.0001	0.0003	0.0004	0.0005	0.0006	0.0007	0.0009	0.0010	0.0012
L12	0.5219	0.2476	3071	0.0002	0.0004	0.0005	0.0007	0.0008	0.0009	0.0011	0.0012	0.0014
L13	0.5229	0.2457	3112	0.0001	0.0002	0.0004	0.0006	0.0007	0.0009	0.0010	0.0012	0.0013
L14	0.5240	0.2455	3109	0.0002	0.0004	0.0006	0.0008	0.0009	0.0011	0.0013	0.0015	0.0017
L15	0.5242	0.2472	3066	0.0002	0.0003	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0012
L16	0.5236	0.2450	3126	0.0003	0.0005	0.0006	0.0007	0.0009	0.0010	0.0011	0.0013	0.0014
L17	0.5193	0.2480	3078	0.0001	0.0002	0.0004	0.0006	0.0008	0.0009	0.0010	0.0011	0.0013
L18	0.5195	0.2472	3098	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0013	0.0014	0.0015
L19	0.5239	0.2470	3072	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008	0.0010	0.0012	0.0013
L20	0.5245	0.2467	3076	0.0002	0.0004	0.0006	0.0007	0.0008	0.0010	0.0011	0.0013	0.0015
L21	0.5219	0.2450	3139	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0010	0.0011	0.0012
L22	0.5215	0.2483	3055	0.0001	0.0003	0.0005	0.0007	0.0009	0.0010	0.0012	0.0013	0.0014
L23	0.5228	0.2472	3074	0.0003	0.0005	0.0006	0.0008	0.0009	0.0011	0.0013	0.0014	0.0016
L24	0.5242	0.2457	3104	0.0001	0.0003	0.0005	0.0006	0.0007	0.0008	0.0009	0.0011	0.0012
L25	0.5219	0.2472	3081	0.0002	0.0003	0.0004	0.0006	0.0008	0.0010	0.0011	0.0012	0.0013
Ave.	0.5226	0.2465	3093	0.0002	0.0003	0.0005	0.0007	0.0008	0.0010	0.0011	0.0013	0.0014
Med.	0.5228	0.2467	3098	0.0002	0.0003	0.0005	0.0007	0.0008	0.0010	0.0011	0.0012	0.0014
st dev	0.0016	0.0010	25.56	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
Min.	0.5193	0.2446	3042	0.0001	0.0002	0.0004	0.0005	0.0006	0.0007	0.0009	0.0010	0.0011
Max.	0.5249	0.2483	3140	0.0004	0.0005	0.0007	0.0009	0.0011	0.0013	0.0014	0.0016	0.0017

Sample No.	Chromaticity Shift $\Delta u'v'$								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	0.0016	0.0018	0.0019	0.0020	0.0022	0.0024	0.0026	0.0029	-
L2	0.0015	0.0016	0.0017	0.0018	0.0020	0.0021	0.0023	0.0024	-
L3	0.0019	0.0021	0.0023	0.0024	0.0025	0.0026	0.0028	0.0031	-
L4	0.0014	0.0015	0.0017	0.0018	0.0019	0.0020	0.0021	0.0023	-
L5	0.0016	0.0018	0.0020	0.0021	0.0023	0.0025	0.0027	0.0028	-
L6	0.0015	0.0016	0.0017	0.0018	0.0019	0.0021	0.0023	0.0025	-
L7	0.0017	0.0019	0.0021	0.0022	0.0024	0.0025	0.0026	0.0029	-
L8	0.0012	0.0014	0.0015	0.0016	0.0018	0.0020	0.0022	0.0024	-
L9	0.0018	0.0019	0.0021	0.0022	0.0023	0.0024	0.0025	0.0026	-
L10	0.0019	0.0021	0.0023	0.0025	0.0027	0.0028	0.0029	0.0032	-
L11	0.0013	0.0014	0.0015	0.0016	0.0017	0.0019	0.0021	0.0024	-
L12	0.0016	0.0018	0.0019	0.0020	0.0021	0.0022	0.0023	0.0026	-
L13	0.0014	0.0015	0.0017	0.0018	0.0019	0.0020	0.0022	0.0025	-
L14	0.0018	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0030	-
L15	0.0013	0.0015	0.0016	0.0017	0.0019	0.0020	0.0021	0.0023	-
L16	0.0016	0.0018	0.0020	0.0022	0.0023	0.0024	0.0025	0.0028	-
L17	0.0015	0.0016	0.0018	0.0020	0.0021	0.0022	0.0024	0.0027	-
L18	0.0016	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	-
L19	0.0014	0.0016	0.0017	0.0018	0.0020	0.0021	0.0022	0.0023	-
L20	0.0017	0.0019	0.0021	0.0023	0.0024	0.0026	0.0027	0.0030	-
L21	0.0013	0.0014	0.0015	0.0017	0.0018	0.0019	0.0021	0.0023	-
L22	0.0015	0.0017	0.0018	0.0019	0.0021	0.0023	0.0024	0.0025	-
L23	0.0017	0.0020	0.0022	0.0023	0.0024	0.0025	0.0027	0.0029	-
L24	0.0013	0.0014	0.0016	0.0018	0.0019	0.0020	0.0022	0.0024	-
L25	0.0015	0.0017	0.0019	0.0020	0.0021	0.0024	0.0026	0.0027	-
Ave.	0.0015	0.0017	0.0019	0.0020	0.0021	0.0023	0.0024	0.0027	-
Med.	0.0015	0.0017	0.0019	0.0020	0.0021	0.0023	0.0024	0.0026	-
st dev	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	-
Min.	0.0012	0.0014	0.0015	0.0016	0.0017	0.0019	0.0021	0.0023	-
Max.	0.0019	0.0021	0.0023	0.0025	0.0027	0.0028	0.0029	0.0032	-

**3.4 Data Set 2, 85°C, 150mA (Lumen Maintenance)**

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L26	80.02	100.22	100.12	99.95	99.77	99.55	99.34	99.06	98.85	98.48
L27	81.34	100.17	99.90	99.79	99.65	99.32	99.07	98.93	98.76	98.51
L28	80.69	100.24	100.06	99.83	99.72	99.41	99.17	98.93	98.59	98.26
L29	79.61	100.08	99.96	99.76	99.54	99.40	99.16	98.96	98.74	98.32
L30	79.95	100.15	99.96	99.89	99.68	99.40	99.24	99.01	98.68	98.29
L31	80.42	100.27	100.10	99.97	99.73	99.46	99.17	99.05	98.69	98.41
L32	81.45	100.16	99.98	99.80	99.59	99.31	99.13	98.90	98.61	98.26
L33	80.41	100.22	100.12	99.93	99.77	99.51	99.28	99.06	98.84	98.49
L34	80.06	100.27	100.09	99.90	99.78	99.51	99.34	99.05	98.76	98.33
L35	80.97	100.10	99.94	99.87	99.58	99.41	99.12	98.94	98.64	98.23
L36	79.82	100.28	100.08	99.86	99.66	99.35	99.07	98.92	98.77	98.54
L37	80.13	100.07	99.97	99.88	99.63	99.49	99.26	99.01	98.80	98.54
L38	81.02	100.13	100.03	99.97	99.76	99.43	99.16	98.85	98.64	98.47
L39	81.29	100.23	100.02	99.90	99.71	99.52	99.35	99.10	98.84	98.47
L40	80.34	100.19	100.04	99.97	99.78	99.46	99.17	98.86	98.68	98.48
L41	80.49	100.11	100.06	99.90	99.78	99.54	99.35	99.05	98.71	98.31
L42	80.94	100.07	99.98	99.80	99.61	99.35	99.06	98.84	98.64	98.30
L43	80.89	100.23	100.03	99.91	99.68	99.55	99.28	99.05	98.86	98.48
L44	79.79	100.13	99.94	99.79	99.57	99.35	99.07	98.89	98.61	98.36
L45	81.64	100.13	100.02	99.81	99.67	99.47	99.26	99.01	98.73	98.43
L46	81.44	100.14	99.93	99.78	99.57	99.42	99.09	98.93	98.68	98.23
L47	80.53	100.23	100.03	99.96	99.66	99.40	99.11	99.00	98.75	98.50
L48	80.44	100.06	99.90	99.86	99.73	99.57	99.27	98.98	98.83	98.38
L49	80.14	100.25	100.07	99.82	99.59	99.43	99.13	98.88	98.60	98.26
L50	79.94	100.11	99.96	99.76	99.58	99.30	99.10	98.95	98.59	98.34
Ave.	80.55	100.17	100.01	99.87	99.67	99.44	99.19	98.97	98.72	98.39
Med.	80.44	100.16	100.02	99.87	99.67	99.43	99.17	98.96	98.71	98.38
st dev	0.5893	0.0701	0.0664	0.0693	0.0784	0.0800	0.0981	0.0753	0.0885	0.1038
Min.	79.61	100.06	99.90	99.76	99.54	99.30	99.06	98.84	98.59	98.23
Max.	81.64	100.28	100.12	99.97	99.78	99.57	99.35	99.10	98.86	98.54

Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	98.23	98.04	97.84	97.62	97.38	97.23	96.90	96.74	-
L27	98.19	98.03	97.82	97.59	97.37	97.20	96.94	96.62	-
L28	98.04	97.89	97.76	97.57	97.32	97.00	96.81	96.63	-
L29	98.11	97.86	97.68	97.55	97.42	97.11	97.00	96.71	-
L30	98.06	97.91	97.65	97.40	97.23	97.01	96.85	96.66	-
L31	98.24	98.02	97.84	97.53	97.40	97.16	96.98	96.71	-
L32	98.09	97.88	97.66	97.47	97.39	97.19	96.94	96.69	-
L33	98.25	97.98	97.81	97.63	97.36	97.11	97.02	96.79	-
L34	98.04	97.80	97.60	97.51	97.24	97.00	96.88	96.64	-
L35	98.03	97.86	97.68	97.38	97.29	97.18	96.96	96.72	-
L36	98.24	98.00	97.84	97.60	97.33	97.12	96.84	96.62	-
L37	98.25	97.91	97.74	97.61	97.37	97.19	96.94	96.72	-
L38	98.26	98.02	97.68	97.51	97.33	97.18	97.00	96.72	-
L39	98.10	97.85	97.69	97.53	97.21	97.06	96.82	96.62	-
L40	98.16	97.87	97.68	97.46	97.27	97.03	96.82	96.58	-
L41	98.06	97.89	97.59	97.35	97.22	96.99	96.79	96.63	-
L42	98.10	97.83	97.66	97.57	97.34	97.23	97.03	96.81	-
L43	98.16	97.99	97.78	97.62	97.39	97.13	96.85	96.56	-
L44	98.16	97.87	97.67	97.40	97.31	97.09	96.95	96.79	-
L45	98.16	98.00	97.71	97.56	97.36	97.15	96.97	96.78	-
L46	98.05	97.81	97.61	97.35	97.19	96.98	96.77	96.55	-
L47	98.16	97.91	97.79	97.58	97.34	97.12	96.94	96.77	-
L48	98.26	97.97	97.76	97.44	97.24	96.99	96.80	96.58	-
L49	98.07	97.88	97.80	97.60	97.42	97.24	97.01	96.77	-
L50	98.04	97.77	97.58	97.43	97.30	97.04	96.83	96.58	-
Ave.	98.14	97.91	97.72	97.51	97.32	97.11	96.91	96.68	-
Med.	98.16	97.89	97.69	97.53	97.33	97.12	96.94	96.69	-
st dev	0.0817	0.0787	0.0828	0.0902	0.0686	0.0854	0.0817	0.0808	-
Min.	98.03	97.77	97.58	97.35	97.19	96.98	96.77	96.55	-
Max.	98.26	98.04	97.84	97.63	97.42	97.24	97.03	96.81	-

**3.5 Data Set 2, 85°C, 150mA (Forward Voltage)**

Sample No.	Forward Voltage (V)									
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L26	3.10	3.01	2.98	2.96	3.01	2.98	2.96	2.91	2.94	3.10
L27	2.96	3.04	2.92	2.92	3.04	3.02	2.92	3.01	2.97	3.06
L28	3.06	3.04	3.06	3.02	2.95	2.98	2.93	2.94	3.08	3.06
L29	3.01	3.08	2.98	2.92	2.98	2.96	3.06	3.00	3.09	3.04
L30	3.08	3.01	2.99	3.01	2.93	3.01	2.96	2.96	3.04	3.08
L31	2.99	2.94	2.92	3.00	2.96	2.92	3.06	3.00	3.01	3.06
L32	3.10	3.07	3.08	3.03	3.00	3.05	2.98	2.97	2.94	3.01
L33	3.01	3.06	3.01	3.04	3.01	3.02	3.04	2.98	2.95	2.96
L34	2.94	3.01	3.10	2.93	2.96	3.06	2.94	3.09	3.00	2.96
L35	2.93	3.06	3.12	3.01	2.96	2.97	3.01	3.05	2.98	3.05
L36	3.06	2.92	3.02	2.91	2.94	3.03	2.99	2.96	3.08	3.08
L37	3.04	3.06	2.98	3.07	3.01	2.94	3.06	3.08	2.99	3.04
L38	2.94	3.02	2.94	3.01	3.06	3.09	3.03	3.08	3.03	3.10
L39	3.03	3.06	2.92	2.91	2.96	2.99	3.09	2.95	3.07	3.00
L40	2.96	2.92	3.06	2.98	2.99	2.92	3.08	3.09	3.01	2.94
L41	3.07	2.93	2.97	2.95	2.94	3.08	2.95	3.03	2.97	3.10
L42	3.01	2.92	3.03	3.05	2.95	2.93	3.01	3.09	2.98	3.12
L43	3.10	2.99	2.94	2.94	3.03	3.03	2.94	3.05	3.04	3.07
L44	2.93	2.92	3.06	2.96	3.10	3.01	3.07	2.95	3.06	2.94
L45	2.95	2.98	2.91	2.96	2.98	2.96	2.95	3.10	2.98	2.99
L46	3.09	3.02	2.93	3.09	3.02	3.00	3.02	2.99	2.95	3.07
L47	2.98	2.94	3.09	3.03	3.05	3.03	3.04	3.03	3.08	3.05
L48	2.92	2.93	3.04	2.91	2.94	3.05	2.97	3.02	3.01	2.96
L49	3.00	3.01	3.09	3.05	2.97	3.05	2.98	2.98	2.92	3.08
L50	3.10	2.94	2.92	3.07	2.95	3.08	3.01	3.06	3.05	3.12
Ave.	3.01	3.00	3.00	2.99	2.99	3.01	3.00	3.01	3.01	3.04
Med.	3.01	3.01	2.99	3.00	2.98	3.01	3.01	3.01	3.01	3.06
st dev	0.0625	0.0564	0.0673	0.0568	0.0442	0.0504	0.0514	0.0556	0.0510	0.0562
Min.	2.92	2.92	2.91	2.91	2.93	2.92	2.92	2.91	2.92	2.94
Max.	3.10	3.08	3.12	3.09	3.10	3.09	3.09	3.10	3.09	3.12



Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	2.92	3.00	2.95	3.03	3.05	2.95	3.00	2.97	-
L27	3.08	3.10	3.00	2.95	3.05	2.97	2.94	2.91	-
L28	2.96	2.94	3.02	2.97	3.00	2.96	3.09	3.00	-
L29	3.01	3.05	3.03	3.00	3.00	2.93	2.98	3.06	-
L30	3.06	3.04	3.01	3.02	3.12	2.98	3.03	3.05	-
L31	2.96	3.04	3.03	2.98	3.08	3.09	3.12	3.07	-
L32	2.91	3.11	3.08	3.08	3.08	2.93	3.12	3.03	-
L33	3.07	3.10	3.06	2.91	3.10	3.00	3.04	3.08	-
L34	2.97	3.07	2.94	2.93	2.96	3.02	2.91	3.01	-
L35	2.96	2.95	2.95	2.99	3.01	3.08	2.96	3.03	-
L36	2.97	2.94	3.06	3.02	3.12	2.98	3.12	2.98	-
L37	2.92	3.07	3.07	2.94	2.95	3.06	2.91	2.97	-
L38	3.01	2.91	3.01	3.03	2.97	3.04	2.94	3.09	-
L39	3.05	2.94	3.07	3.05	2.93	2.96	2.98	3.07	-
L40	3.01	3.12	2.92	3.00	2.99	3.08	3.08	3.12	-
L41	2.93	2.92	2.95	2.92	3.01	3.05	2.97	3.09	-
L42	3.01	3.08	3.02	2.94	2.96	2.93	3.03	3.08	-
L43	3.06	2.95	2.92	3.04	3.07	3.08	2.95	3.04	-
L44	2.92	2.94	2.97	2.96	3.09	3.08	3.09	2.92	-
L45	2.99	3.01	3.08	2.93	2.96	3.07	3.07	3.05	-
L46	3.01	2.98	3.02	2.97	3.03	2.96	3.04	3.08	-
L47	2.95	3.12	2.95	2.92	3.11	3.00	2.99	3.00	-
L48	2.94	3.09	2.94	3.00	3.11	2.96	2.96	3.09	-
L49	3.01	2.99	2.99	3.03	3.02	2.95	2.92	3.03	-
L50	2.94	2.92	2.93	3.01	3.04	3.08	2.94	2.95	-
Ave.	2.98	3.02	3.00	2.98	3.03	3.01	3.01	3.03	-
Med.	2.97	3.01	3.01	2.99	3.03	3.00	2.99	3.04	-
st dev	0.0518	0.0725	0.0536	0.0468	0.0591	0.0575	0.0693	0.0563	-
Min.	2.91	2.91	2.92	2.91	2.93	2.93	2.91	2.91	-
Max.	3.08	3.12	3.08	3.08	3.12	3.09	3.12	3.12	-

### 3.6 Data Set 2, 85°C, 150mA (Chromaticity Shift)

Sample No.	u'	v'	CCT(K)	Chromaticity Shift $\Delta u'v'$								
	0hr(Initial)			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L26	0.5219	0.2472	3081	0.0003	0.0004	0.0006	0.0007	0.0009	0.0010	0.0012	0.0013	0.0015
L27	0.5236	0.2444	3142	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0010	0.0012	0.0013
L28	0.5232	0.2467	3086	0.0004	0.0006	0.0007	0.0009	0.0010	0.0012	0.0014	0.0016	0.0018
L29	0.5187	0.2469	3111	0.0002	0.0003	0.0005	0.0007	0.0008	0.0010	0.0011	0.0012	0.0014
L30	0.5198	0.2457	3135	0.0001	0.0002	0.0003	0.0005	0.0007	0.0008	0.0010	0.0013	0.0015
L31	0.5245	0.2461	3093	0.0003	0.0004	0.0006	0.0008	0.0009	0.0011	0.0012	0.0014	0.0015
L32	0.5233	0.2459	3105	0.0004	0.0006	0.0007	0.0009	0.0010	0.0012	0.0014	0.0015	0.0017
L33	0.5196	0.2464	3118	0.0005	0.0007	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	0.0019
L34	0.5234	0.2467	3083	0.0002	0.0003	0.0005	0.0006	0.0008	0.0009	0.0010	0.0011	0.0012
L35	0.5241	0.2454	3111	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0012	0.0014
L36	0.5247	0.2473	3061	0.0003	0.0005	0.0006	0.0008	0.0010	0.0011	0.0013	0.0015	0.0017
L37	0.5228	0.2480	3055	0.0001	0.0003	0.0005	0.0007	0.0008	0.0009	0.0010	0.0012	0.0014
L38	0.5209	0.2459	3121	0.0002	0.0004	0.0006	0.0008	0.0009	0.0011	0.0012	0.0013	0.0015
L39	0.5229	0.2467	3087	0.0004	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0016	0.0018
L40	0.5240	0.2470	3072	0.0003	0.0004	0.0005	0.0006	0.0007	0.0009	0.0010	0.0012	0.0015
L41	0.5243	0.2469	3071	0.0005	0.0006	0.0008	0.0009	0.0010	0.0012	0.0013	0.0015	0.0016
L42	0.5237	0.2471	3072	0.0003	0.0005	0.0006	0.0007	0.0009	0.0010	0.0011	0.0012	0.0014
L43	0.5214	0.2468	3094	0.0002	0.0003	0.0004	0.0005	0.0006	0.0009	0.0010	0.0011	0.0012
L44	0.5190	0.2474	3096	0.0001	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015
L45	0.5247	0.2461	3090	0.0003	0.0005	0.0006	0.0007	0.0009	0.0011	0.0013	0.0015	0.0017
L46	0.5226	0.2470	3082	0.0004	0.0006	0.0008	0.0010	0.0011	0.0013	0.0015	0.0017	0.0019
L47	0.5204	0.2464	3113	0.0002	0.0004	0.0005	0.0007	0.0008	0.0010	0.0011	0.0013	0.0016
L48	0.5233	0.2484	3041	0.0001	0.0002	0.0004	0.0005	0.0007	0.0008	0.0010	0.0011	0.0012
L49	0.5221	0.2481	3058	0.0003	0.0005	0.0006	0.0008	0.0009	0.0011	0.0012	0.0014	0.0015
L50	0.5251	0.2464	3080	0.0004	0.0006	0.0007	0.0009	0.0011	0.0013	0.0015	0.0016	0.0018
Ave.	0.5226	0.2467	3090	0.0003	0.0004	0.0006	0.0007	0.0009	0.0011	0.0012	0.0014	0.0015
Med.	0.5232	0.2467	3087	0.0003	0.0004	0.0006	0.0007	0.0009	0.0010	0.0012	0.0013	0.0015
st dev	0.0019	0.0009	24.99	0.0001	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.5187	0.2444	3041	0.0001	0.0002	0.0003	0.0005	0.0006	0.0008	0.0010	0.0011	0.0012
Max.	0.5251	0.2484	3142	0.0005	0.0007	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	0.0019

Sample No.	Chromaticity Shift $\Delta u'v'$								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	0.0018	0.0020	0.0021	0.0023	0.0025	0.0028	0.0031	0.0034	-
L27	0.0015	0.0018	0.0020	0.0022	0.0024	0.0027	0.0030	0.0032	-
L28	0.0020	0.0022	0.0023	0.0024	0.0025	0.0027	0.0029	0.0032	-
L29	0.0016	0.0019	0.0021	0.0023	0.0025	0.0028	0.0031	0.0035	-
L30	0.0018	0.0020	0.0022	0.0024	0.0026	0.0029	0.0032	0.0034	-
L31	0.0017	0.0018	0.0019	0.0020	0.0022	0.0024	0.0026	0.0029	-
L32	0.0020	0.0022	0.0023	0.0025	0.0027	0.0028	0.0031	0.0033	-
L33	0.0021	0.0023	0.0024	0.0026	0.0028	0.0031	0.0034	0.0036	-
L34	0.0014	0.0017	0.0018	0.0019	0.0021	0.0023	0.0025	0.0028	-
L35	0.0017	0.0018	0.0020	0.0022	0.0023	0.0025	0.0027	0.0029	-
L36	0.0019	0.0021	0.0023	0.0024	0.0026	0.0027	0.0030	0.0032	-
L37	0.0016	0.0017	0.0018	0.0020	0.0022	0.0024	0.0026	0.0029	-
L38	0.0017	0.0019	0.0020	0.0021	0.0023	0.0025	0.0028	0.0031	-
L39	0.0021	0.0023	0.0024	0.0025	0.0026	0.0029	0.0031	0.0033	-
L40	0.0018	0.0020	0.0021	0.0023	0.0025	0.0028	0.0030	0.0032	-
L41	0.0019	0.0021	0.0023	0.0024	0.0026	0.0029	0.0032	0.0034	-
L42	0.0016	0.0018	0.0019	0.0021	0.0024	0.0026	0.0028	0.0031	-
L43	0.0014	0.0016	0.0018	0.0019	0.0021	0.0024	0.0026	0.0029	-
L44	0.0017	0.0019	0.0021	0.0022	0.0023	0.0025	0.0028	0.0030	-
L45	0.0020	0.0022	0.0023	0.0024	0.0026	0.0029	0.0031	0.0034	-
L46	0.0021	0.0023	0.0024	0.0025	0.0026	0.0028	0.0030	0.0032	-
L47	0.0019	0.0021	0.0022	0.0023	0.0024	0.0026	0.0029	0.0031	-
L48	0.0014	0.0016	0.0017	0.0019	0.0023	0.0025	0.0027	0.0030	-
L49	0.0017	0.0020	0.0022	0.0023	0.0025	0.0028	0.0031	0.0034	-
L50	0.0021	0.0023	0.0024	0.0025	0.0027	0.0030	0.0033	0.0037	-
Ave.	0.0018	0.0020	0.0021	0.0023	0.0025	0.0027	0.0029	0.0032	-
Med.	0.0018	0.0020	0.0021	0.0023	0.0025	0.0027	0.0030	0.0032	-
st dev	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	-
Min.	0.0014	0.0016	0.0017	0.0019	0.0021	0.0023	0.0025	0.0028	-
Max.	0.0021	0.0023	0.0024	0.0026	0.0028	0.0031	0.0034	0.0037	-

**3.7 Data Set 3, 105°C, 150mA (Lumen Maintenance)**

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	81.12	99.96	99.77	99.66	99.49	99.25	98.99	98.76	98.50	98.15
L52	80.92	100.03	99.89	99.61	99.34	99.16	98.94	98.72	98.41	98.24
L53	80.14	100.12	99.90	99.73	99.53	99.25	98.99	98.71	98.55	98.29
L54	81.25	100.01	99.81	99.54	99.27	99.03	98.75	98.63	98.31	98.15
L55	81.40	100.10	99.92	99.74	99.39	99.08	98.88	98.64	98.30	98.09
L56	80.93	100.02	99.79	99.59	99.39	99.18	98.95	98.67	98.39	98.20
L57	80.07	100.06	99.91	99.73	99.49	99.21	98.99	98.75	98.52	98.20
L58	80.26	99.97	99.78	99.56	99.33	99.08	98.75	98.55	98.39	98.21
L59	80.68	100.09	99.94	99.71	99.49	99.17	98.79	98.52	98.25	98.10
L60	81.96	100.12	99.98	99.74	99.42	99.20	98.91	98.66	98.44	98.27
L61	80.86	100.13	99.92	99.72	99.44	99.17	98.89	98.69	98.46	98.12
L62	81.20	100.11	99.96	99.71	99.41	99.18	98.93	98.72	98.44	98.27
L63	80.56	99.93	99.79	99.60	99.29	99.12	98.76	98.61	98.35	98.10
L64	80.38	100.05	99.93	99.64	99.32	99.01	98.72	98.61	98.29	98.04
L65	81.47	99.97	99.79	99.59	99.30	99.01	98.72	98.51	98.26	98.07
L66	79.75	99.95	99.74	99.52	99.24	99.14	98.75	98.54	98.36	98.15
L67	80.63	99.99	99.76	99.53	99.28	99.09	98.71	98.57	98.42	98.10
L68	81.02	100.09	99.92	99.71	99.51	99.25	98.89	98.68	98.41	98.17
L69	80.90	100.02	99.92	99.77	99.41	99.14	98.83	98.67	98.42	98.12
L70	80.90	99.91	99.78	99.68	99.34	99.04	98.75	98.65	98.38	98.18
L71	80.86	99.96	99.88	99.72	99.44	99.23	98.98	98.68	98.34	98.17
L72	80.18	100.01	99.97	99.64	99.42	99.14	98.92	98.76	98.52	98.28
L73	80.56	99.98	99.94	99.64	99.29	99.00	98.71	98.55	98.37	98.08
L74	80.82	100.08	99.82	99.63	99.36	99.16	98.93	98.63	98.36	98.13
L75	81.12	99.97	99.75	99.63	99.35	99.04	98.81	98.61	98.32	98.09
Ave.	80.80	100.03	99.86	99.65	99.38	99.13	98.85	98.64	98.39	98.16
Med.	80.86	100.02	99.89	99.64	99.39	99.14	98.88	98.65	98.39	98.15
st dev	0.4963	0.0660	0.0791	0.0732	0.0824	0.0799	0.1012	0.0740	0.0807	0.0713
Min.	79.75	99.91	99.74	99.52	99.24	99.00	98.71	98.51	98.25	98.04
Max.	81.96	100.13	99.98	99.77	99.53	99.25	98.99	98.76	98.55	98.29

Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	97.94	97.70	97.47	97.20	96.91	96.72	96.58	96.38	-
L52	97.93	97.66	97.51	97.27	96.97	96.72	96.56	96.38	-
L53	97.94	97.63	97.34	97.04	96.81	96.71	96.57	96.46	-
L54	97.83	97.52	97.26	97.02	96.81	96.75	96.58	96.31	-
L55	97.74	97.60	97.38	97.05	96.86	96.77	96.61	96.42	-
L56	97.95	97.71	97.53	97.21	96.97	96.72	96.64	96.52	-
L57	97.98	97.73	97.54	97.27	97.06	96.83	96.67	96.47	-
L58	97.87	97.54	97.31	97.08	96.88	96.70	96.53	96.40	-
L59	97.72	97.58	97.27	97.03	96.86	96.72	96.53	96.33	-
L60	97.85	97.62	97.42	97.19	97.06	96.87	96.66	96.52	-
L61	97.79	97.60	97.41	97.14	96.98	96.75	96.59	96.32	-
L62	97.90	97.59	97.40	97.07	96.79	96.73	96.55	96.29	-
L63	97.72	97.51	97.29	97.04	96.82	96.72	96.68	96.53	-
L64	97.81	97.60	97.46	97.21	97.04	96.84	96.63	96.51	-
L65	97.76	97.56	97.42	97.15	97.02	96.84	96.62	96.45	-
L66	97.78	97.57	97.28	97.01	96.93	96.69	96.50	96.40	-
L67	97.82	97.66	97.43	97.08	96.89	96.82	96.65	96.51	-
L68	97.74	97.50	97.38	97.02	96.79	96.70	96.53	96.27	-
L69	97.85	97.60	97.41	97.08	96.95	96.83	96.66	96.48	-
L70	97.78	97.57	97.45	97.16	96.98	96.73	96.62	96.47	-
L71	97.80	97.56	97.29	97.07	96.88	96.76	96.55	96.30	-
L72	97.96	97.65	97.54	97.27	97.07	96.87	96.70	96.53	-
L73	97.71	97.54	97.35	97.06	96.94	96.70	96.49	96.37	-
L74	97.85	97.62	97.33	97.07	96.84	96.77	96.62	96.46	-
L75	97.74	97.49	97.24	97.04	96.92	96.83	96.67	96.47	-
Ave.	97.83	97.60	97.39	97.11	96.92	96.76	96.60	96.42	-
Med.	97.82	97.60	97.40	97.08	96.92	96.75	96.61	96.45	-
st dev	0.0845	0.0643	0.0909	0.0859	0.0879	0.0589	0.0595	0.0832	-
Min.	97.71	97.49	97.24	97.01	96.79	96.69	96.49	96.27	-
Max.	97.98	97.73	97.54	97.27	97.07	96.87	96.70	96.53	-

**3.8 Data Set 3, 105°C, 150mA (Forward Voltage)**

Sample No.	Forward Voltage (V)									
	0hr( Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	2.93	2.99	3.05	2.93	3.03	3.05	2.96	2.98	3.03	3.02
L52	3.05	2.96	3.05	3.05	3.05	2.92	3.10	3.02	3.04	3.07
L53	3.05	3.03	2.93	2.92	3.00	2.96	3.06	2.98	3.04	3.06
L54	2.98	3.05	3.12	3.00	3.01	2.98	3.02	3.06	3.01	3.05
L55	2.98	3.06	2.95	2.92	2.96	3.00	3.03	3.05	3.06	3.05
L56	3.00	2.97	2.99	2.95	3.05	3.00	3.04	3.03	2.94	3.07
L57	3.06	3.04	3.01	3.01	3.00	2.92	3.05	3.02	2.98	2.98
L58	2.96	3.03	3.12	3.07	2.95	3.08	3.08	3.00	2.96	2.97
L59	2.94	2.95	2.98	2.99	3.07	2.94	3.11	3.03	2.96	3.01
L60	3.05	3.04	3.00	3.07	3.04	3.04	3.10	2.97	3.03	2.99
L61	2.92	2.98	3.01	2.95	3.01	2.92	2.95	2.98	3.01	3.04
L62	3.07	3.06	3.00	3.01	2.93	2.95	2.93	3.02	3.04	3.10
L63	3.03	2.93	3.02	3.08	2.97	2.97	3.08	2.98	2.95	3.12
L64	2.98	2.97	3.02	2.95	2.95	2.91	3.02	3.00	3.01	2.93
L65	3.02	2.93	3.02	2.97	2.94	3.04	3.09	3.01	2.99	3.09
L66	2.99	3.03	3.01	3.01	2.95	2.98	3.10	2.93	2.98	3.01
L67	3.02	2.99	3.07	3.04	2.97	2.99	2.96	3.03	3.07	3.02
L68	3.03	2.95	2.96	3.04	3.07	2.95	3.05	3.06	3.07	3.08
L69	2.94	3.03	3.01	3.00	3.03	3.04	3.05	2.98	2.97	3.10
L70	2.96	3.00	2.98	3.05	3.01	3.09	2.97	3.01	2.93	3.00
L71	2.94	3.00	3.05	3.07	2.96	3.01	2.96	2.99	3.04	2.96
L72	3.05	2.98	3.08	2.92	3.01	2.94	3.00	3.02	3.01	3.06
L73	2.95	3.00	2.95	2.92	3.06	3.00	2.95	2.93	3.04	2.96
L74	2.93	2.98	2.96	3.01	2.97	3.06	3.09	3.06	3.04	3.08
L75	2.92	2.96	3.09	3.04	3.03	2.91	3.04	2.98	2.99	3.01
Ave.	2.99	3.00	3.02	3.00	3.00	2.99	3.03	3.00	3.01	3.03
Med.	2.98	2.99	3.01	3.01	3.01	2.98	3.04	3.01	3.01	3.04
st dev	0.0496	0.0395	0.0516	0.0541	0.0433	0.0546	0.0569	0.0356	0.0408	0.0508
Min.	2.92	2.93	2.93	2.92	2.93	2.91	2.93	2.93	2.93	2.93
Max.	3.07	3.06	3.12	3.08	3.07	3.09	3.11	3.06	3.07	3.12

Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	3.03	3.04	2.93	3.03	3.08	3.02	3.06	3.05	-
L52	3.03	2.95	3.09	3.04	3.02	3.09	2.96	2.94	-
L53	3.00	3.07	3.00	3.04	3.04	3.03	3.06	3.05	-
L54	3.00	3.02	3.02	3.05	3.01	3.07	2.94	3.06	-
L55	3.03	3.06	3.04	3.03	3.05	2.93	3.07	2.95	-
L56	3.03	3.06	2.99	3.04	2.94	2.99	2.98	3.09	-
L57	2.97	2.96	3.10	3.02	2.97	3.03	2.92	3.11	-
L58	2.97	2.93	2.96	2.94	2.96	2.98	3.00	2.99	-
L59	2.96	2.92	3.03	2.95	2.94	2.97	2.96	3.01	-
L60	3.05	3.05	3.10	3.04	2.93	3.11	3.07	2.99	-
L61	3.02	3.00	3.04	3.06	2.92	3.11	3.02	3.02	-
L62	3.03	3.04	3.04	3.00	3.08	3.11	2.96	2.93	-
L63	3.07	2.97	3.05	2.94	2.93	3.10	3.08	3.10	-
L64	2.94	3.02	3.06	2.95	2.98	3.00	2.94	2.97	-
L65	3.01	2.99	3.02	3.04	3.02	2.97	3.07	2.99	-
L66	3.00	2.96	3.00	2.98	3.00	2.95	3.08	2.97	-
L67	2.94	3.02	2.96	3.06	2.95	2.96	2.94	3.02	-
L68	2.99	3.01	3.04	3.04	2.93	3.02	3.01	3.04	-
L69	3.02	3.06	3.07	3.06	2.92	3.06	2.94	3.10	-
L70	2.98	3.03	2.98	3.00	2.99	2.96	2.98	2.94	-
L71	3.06	3.05	3.08	2.96	3.07	2.95	3.07	2.95	-
L72	3.05	3.05	3.00	3.06	3.09	3.02	3.03	3.11	-
L73	2.95	2.93	3.06	2.98	2.92	3.11	3.09	3.01	-
L74	3.02	3.04	2.99	2.97	3.01	3.09	2.96	3.08	-
L75	3.01	2.96	3.10	3.07	2.98	2.94	3.00	3.04	-
Ave.	3.01	3.01	3.03	3.01	2.99	3.02	3.01	3.02	-
Med.	3.01	3.02	3.04	3.03	2.98	3.02	3.00	3.02	-
st dev	0.0365	0.0471	0.0472	0.0429	0.0559	0.0619	0.0561	0.0578	-
Min.	2.94	2.92	2.93	2.94	2.92	2.93	2.92	2.93	-
Max.	3.07	3.07	3.10	3.07	3.09	3.11	3.09	3.11	-

### 3.9 Data Set 3, 105°C, 150mA (Chromaticity Shift)

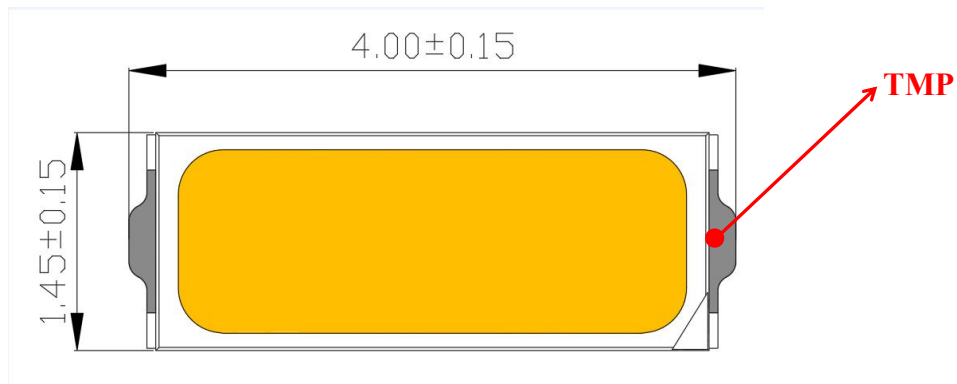
Sample No.	u'	v'	CCT(K)	Chromaticity Shift $\Delta u'v'$								
	0hr(Initial)			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	0.5235	0.2450	3068	0.0004	0.0006	0.0007	0.0009	0.0011	0.0013	0.0014	0.0017	0.0020
L52	0.5232	0.2474	3126	0.0001	0.0003	0.0005	0.0007	0.0009	0.0010	0.0012	0.0015	0.0017
L53	0.5238	0.2449	3074	0.0003	0.0005	0.0006	0.0007	0.0008	0.0009	0.0011	0.0013	0.0016
L54	0.5236	0.2471	3081	0.0005	0.0007	0.0009	0.0011	0.0012	0.0014	0.0016	0.0018	0.0021
L55	0.5249	0.2464	3116	0.0002	0.0005	0.0007	0.0008	0.0010	0.0011	0.0012	0.0015	0.0017
L56	0.5209	0.2461	3152	0.0003	0.0006	0.0008	0.0009	0.0011	0.0013	0.0015	0.0017	0.0020
L57	0.5210	0.2447	3039	0.0005	0.0008	0.0010	0.0012	0.0013	0.0015	0.0017	0.0020	0.0023
L58	0.5247	0.2481	3115	0.0002	0.0004	0.0005	0.0007	0.0008	0.0009	0.0011	0.0013	0.0016
L59	0.5221	0.2458	3103	0.0006	0.0008	0.0009	0.0010	0.0011	0.0013	0.0015	0.0017	0.0019
L60	0.5224	0.2462	3099	0.0003	0.0005	0.0006	0.0008	0.0010	0.0011	0.0012	0.0015	0.0018
L61	0.5241	0.2459	3149	0.0001	0.0003	0.0005	0.0006	0.0008	0.0010	0.0012	0.0014	0.0017
L62	0.5217	0.2446	3121	0.0004	0.0006	0.0008	0.0010	0.0012	0.0013	0.0015	0.0017	0.0020
L63	0.5225	0.2455	3070	0.0003	0.0005	0.0006	0.0008	0.0009	0.0011	0.0012	0.0015	0.0017
L64	0.5222	0.2476	3059	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0016	0.0018	0.0021
L65	0.5251	0.2472	3094	0.0002	0.0005	0.0006	0.0007	0.0010	0.0011	0.0013	0.0016	0.0019
L66	0.5228	0.2464	3054	0.0006	0.0008	0.0010	0.0012	0.0013	0.0014	0.0016	0.0019	0.0021
L67	0.5216	0.2483	3070	0.0003	0.0005	0.0006	0.0008	0.0009	0.0010	0.0011	0.0013	0.0016
L68	0.5235	0.2472	3064	0.0004	0.0007	0.0008	0.0010	0.0011	0.0013	0.0015	0.0017	0.0020
L69	0.5248	0.2471	3071	0.0002	0.0004	0.0006	0.0007	0.0009	0.0010	0.0012	0.0014	0.0016
L70	0.5251	0.2467	3084	0.0005	0.0007	0.0009	0.0011	0.0012	0.0013	0.0014	0.0017	0.0019
L71	0.5242	0.2465	3082	0.0003	0.0005	0.0006	0.0008	0.0010	0.0012	0.0013	0.0016	0.0018
L72	0.5226	0.2470	3067	0.0006	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	0.0020	0.0023
L73	0.5227	0.2476	3106	0.0001	0.0003	0.0005	0.0007	0.0009	0.0010	0.0017	0.0019	0.0022
L74	0.5214	0.2464	3059	0.0004	0.0007	0.0009	0.0010	0.0011	0.0013	0.0014	0.0016	0.0019
L75	0.5243	0.2474	3071	0.0003	0.0005	0.0006	0.0008	0.0010	0.0011	0.0012	0.0015	0.0017
Ave.	0.5231	0.2465	3088	0.0003	0.0006	0.0007	0.0009	0.0011	0.0012	0.0014	0.0016	0.0019
Med.	0.5232	0.2465	3081	0.0003	0.0005	0.0007	0.0008	0.0010	0.0012	0.0014	0.0016	0.0019
st dev	0.0013	0.0010	29.40	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.5209	0.2446	3039	0.0001	0.0003	0.0005	0.0006	0.0008	0.0009	0.0011	0.0013	0.0016
Max.	0.5251	0.2483	3152	0.0006	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	0.0020	0.0023



Sample No.	Chromaticity Shift $\Delta u'v'$								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	0.0022	0.0024	0.0027	0.0029	0.0031	0.0033	0.0035	0.0038	-
L52	0.0020	0.0022	0.0024	0.0027	0.0028	0.0029	0.0032	0.0034	-
L53	0.0019	0.0021	0.0023	0.0025	0.0028	0.0030	0.0033	0.0036	-
L54	0.0023	0.0025	0.0028	0.0031	0.0033	0.0035	0.0037	0.0040	-
L55	0.0020	0.0022	0.0025	0.0028	0.0029	0.0030	0.0033	0.0035	-
L56	0.0022	0.0023	0.0026	0.0029	0.0031	0.0033	0.0035	0.0037	-
L57	0.0026	0.0027	0.0030	0.0032	0.0033	0.0035	0.0038	0.0041	-
L58	0.0019	0.0021	0.0023	0.0024	0.0027	0.0028	0.0031	0.0034	-
L59	0.0021	0.0023	0.0026	0.0027	0.0029	0.0031	0.0034	0.0036	-
L60	0.0021	0.0022	0.0025	0.0028	0.0031	0.0033	0.0035	0.0037	-
L61	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0032	0.0035	-
L62	0.0023	0.0024	0.0026	0.0029	0.0030	0.0032	0.0035	0.0038	-
L63	0.0020	0.0022	0.0024	0.0026	0.0028	0.0029	0.0032	0.0034	-
L64	0.0024	0.0026	0.0027	0.0030	0.0033	0.0035	0.0037	0.0040	-
L65	0.0021	0.0022	0.0025	0.0028	0.0030	0.0031	0.0034	0.0036	-
L66	0.0023	0.0024	0.0026	0.0027	0.0028	0.0030	0.0032	0.0035	-
L67	0.0019	0.0021	0.0022	0.0024	0.0026	0.0027	0.0030	0.0033	-
L68	0.0023	0.0025	0.0028	0.0031	0.0033	0.0035	0.0037	0.0040	-
L69	0.0018	0.0019	0.0021	0.0023	0.0026	0.0028	0.0031	0.0033	-
L70	0.0022	0.0024	0.0026	0.0028	0.0031	0.0032	0.0035	0.0037	-
L71	0.0021	0.0023	0.0024	0.0027	0.0030	0.0031	0.0033	0.0035	-
L72	0.0026	0.0027	0.0030	0.0031	0.0033	0.0035	0.0037	0.0041	-
L73	0.0024	0.0026	0.0028	0.0029	0.0032	0.0034	0.0037	0.0040	-
L74	0.0022	0.0024	0.0026	0.0028	0.0030	0.0031	0.0034	0.0036	-
L75	0.0020	0.0022	0.0024	0.0026	0.0029	0.0030	0.0033	0.0037	-
Ave.	0.0022	0.0023	0.0025	0.0028	0.0030	0.0031	0.0034	0.0037	-
Med.	0.0021	0.0023	0.0026	0.0028	0.0030	0.0031	0.0034	0.0036	-
st dev	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	-
Min.	0.0018	0.0019	0.0021	0.0023	0.0026	0.0027	0.0030	0.0033	-
Max.	0.0026	0.0027	0.0030	0.0032	0.0033	0.0035	0.0038	0.0041	-

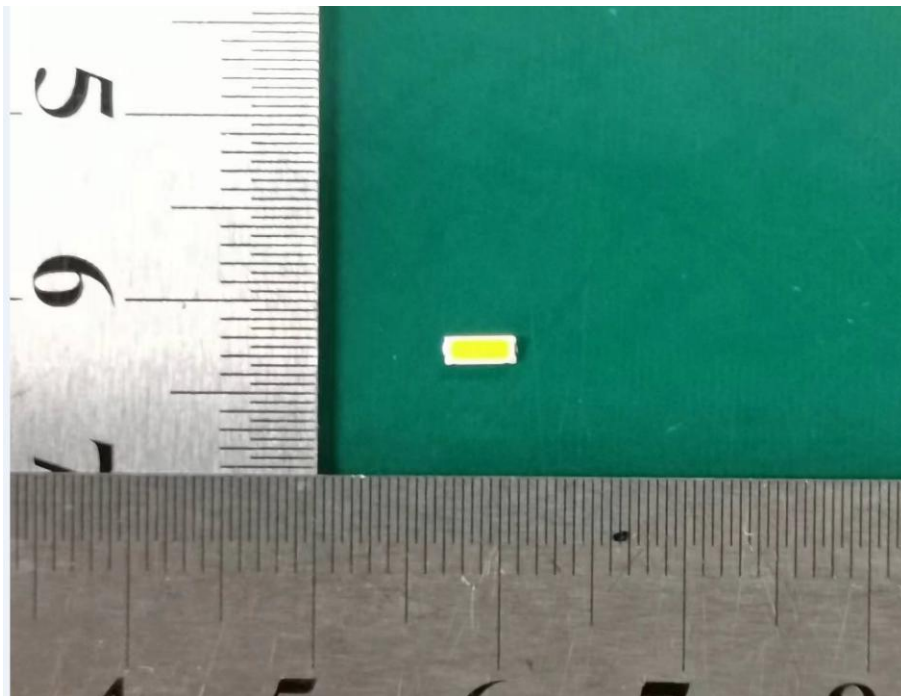
## 4-EUT Photos

### 4.1 Mechanical Dimensions



Note: All dimensions are in millimeters(mm).

### 4.2 EUT Photo



----End of report----