



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.: BL210714010-9

Product Description: SMD LED

Model No.: AW-21/DBB1E27Y38HJ

Test Initiation Date: 2021-07-15

Test Completion Date: 2021-07-15 to 2023-08-07

Report Issue Date: 2023-08-15

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-21/DBB1E27Y38HJ

Part Type: SMD LED

Product Description: VF 9V, IF 100mA

CCT: 2700K

Die Spacing(mm): N/A

Average Power Density per LED die(W/mm2): 1.033

Average Current Density per LED die(mA/mm2): 344.445

**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):** 90

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-21/DBB1E27Y38HJ	AW-21/ABB1EXXXXXXJ	First XXX: CCT code; Sencond XX: Flux code; Last X: CRI code.
	AW-21/BBB1EXXXXXXJ	
	AW-21/CBB1EXXXXXXJ	
	AW-21/DBB1EXXXXXXJ	

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 2021-07-14 and tested during 2021-07-15 to 2023-08-07. 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	100mA	100mA	100mA
Condition	Ts=54.5°C Ta=53.7°C	Ts=84.8°C Ta=83.4°C	Ts=104.6°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
α	2.072E-06	2.205E-06	2.227E-06
β	1.007	1.005	1.003
Reported L70 (17k) (17000h)	>102000	>102000	>102000
Reported L90 (17k) (17000h)	54,000	50,000	49,000

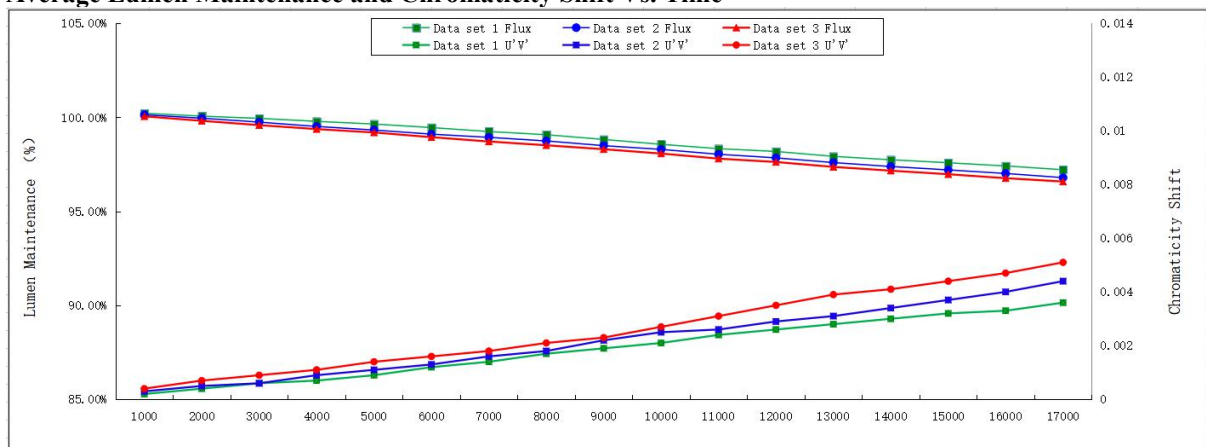
Average Lumen Maintenance (%)

Data Set	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
1	100.21	100.06	99.94	99.78	99.64	99.45	99.24	99.07	98.82
2	100.13	99.95	99.74	99.51	99.32	99.10	98.93	98.74	98.49
3	100.05	99.81	99.58	99.37	99.19	98.94	98.71	98.51	98.30
Data Set	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
1	98.56	98.33	98.18	97.92	97.74	97.58	97.41	97.21	-
2	98.29	98.03	97.84	97.59	97.38	97.20	97.01	96.79	-
3	98.07	97.80	97.62	97.36	97.16	96.97	96.76	96.58	-


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	0.0012	0.0014	0.0017	0.0019
2	0.0003	0.0005	0.0006	0.0009	0.0011	0.0013	0.0016	0.0018	0.0022
3	0.0004	0.0007	0.0009	0.0011	0.0014	0.0016	0.0018	0.0021	0.0023
Data Set	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
1	0.0021	0.0024	0.0026	0.0028	0.0030	0.0032	0.0033	0.0036	-
2	0.0025	0.0026	0.0029	0.0031	0.0034	0.0037	0.0040	0.0044	-
3	0.0027	0.0031	0.0035	0.0039	0.0041	0.0044	0.0047	0.0051	-

Average Lumen Maintenance and Chromaticity Shift Vs. Time



TM-21 Report for Lumen Maintenance

		TM-21 Report					
		Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)		Shenzhen HoneBright Technology Co.,Ltd AW-21/DBB1E27Y38HJ					
Test Condition 1 - 55°C Case Temp		Test Condition 2 - 85°C Case Temp		Test Condition 3 - 105°C Case Temp		Table 2: Interpolation Report (projection based on <i>in-situ</i> temperature entered)	
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)	100	DUT drive current used in the test (mA)	100	DUT drive current used in the test (mA)	100	α_1	2.227E-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)	-
α	2.072E-06	α	2.205E-06	α	2.227E-06	α_2	-
B	1.007	B	1.005	B	1.003	B_2	-
Reported L70(17k) (hours)	>102000	Reported L70(17k) (hours)	>102000	Reported L70(17k) (hours)	>102000	E_d/k_b	-
						A	-
						B_0	1.003
						$T_{s,i}$ (°C)	105.00
						$T_{s,i}$ (K)	378.15
						α_i	2.227E-06
						Reported L70(17k) at 105°C (hours)	>102000

		TM-21 Report					
		Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)		Shenzhen HoneBright Technology Co.,Ltd AW-21/DBB1E27Y38HJ					
Test Condition 1 - 55°C Case Temp		Test Condition 2 - 85°C Case Temp		Test Condition 3 - 105°C Case Temp		Table 2: Interpolation Report (projection based on <i>in-situ</i> temperature entered)	
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)	100	DUT drive current used in the test (mA)	100	DUT drive current used in the test (mA)	100	α_1	2.227E-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)	-
α	2.072E-06	α	2.205E-06	α	2.227E-06	α_2	-
B	1.007	B	1.005	B	1.003	B_2	-
Reported L90(17k) (hours)	54,000	Reported L90(17k) (hours)	50,000	Reported L90(17k) (hours)	49,000	E_d/k_b	-
						A	-
						B_0	1.003
						$T_{s,i}$ (°C)	105.00
						$T_{s,i}$ (K)	378.15
						α_i	2.227E-06
						Reported L90(17k) at 105°C (hours)	49,000

3 Test Data

3.1 Data Set 1, 55°C, 100mA (Lumen Maintenance)

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L1	125.5	100.15	99.99	99.88	99.73	99.61	99.38	99.21	99.02	98.79
L2	125.6	100.25	100.02	99.86	99.72	99.55	99.39	99.13	98.90	98.67
L3	126.2	100.13	99.97	99.87	99.69	99.59	99.42	99.23	99.05	98.81
L4	126.7	100.31	100.09	99.98	99.81	99.70	99.52	99.25	99.08	98.80
L5	127.2	100.14	99.97	99.88	99.66	99.55	99.32	99.08	98.87	98.61
L6	126.9	100.28	100.15	100.07	99.97	99.80	99.54	99.33	99.20	98.95
L7	126.7	100.32	100.16	100.09	99.94	99.77	99.60	99.32	99.15	98.94
L8	126.6	100.25	100.15	99.97	99.74	99.64	99.50	99.30	99.08	98.89
L9	126.9	100.20	100.08	99.97	99.77	99.63	99.45	99.25	99.04	98.86
L10	126.4	100.18	100.07	99.95	99.83	99.70	99.56	99.32	99.15	98.89
L11	126.4	100.29	100.16	100.09	99.94	99.81	99.55	99.39	99.21	98.91
L12	127.1	100.16	100.02	99.89	99.77	99.59	99.44	99.22	99.03	98.77
L13	127.1	100.14	99.91	99.81	99.62	99.45	99.29	99.13	98.91	98.66
L14	126.2	100.30	100.09	99.96	99.80	99.65	99.50	99.25	99.06	98.76
L15	126.5	100.10	99.86	99.73	99.51	99.33	99.16	98.95	98.81	98.54
L16	126.2	100.21	100.04	99.86	99.65	99.52	99.32	99.10	98.93	98.63
L17	127.9	100.27	100.17	100.08	99.97	99.83	99.63	99.47	99.32	99.07
L18	125.9	100.31	100.22	100.11	99.96	99.87	99.63	99.46	99.32	99.09
L19	127.6	100.13	100.01	99.85	99.74	99.61	99.40	99.21	99.05	98.78
L20	126.3	100.16	100.01	99.85	99.71	99.57	99.39	99.18	99.05	98.77
L21	125.5	100.33	100.13	100.03	99.92	99.79	99.57	99.39	99.23	98.92
L22	127.4	100.11	100.01	99.94	99.76	99.56	99.36	99.14	99.00	98.81
L23	127.6	100.20	99.99	99.83	99.70	99.55	99.33	99.15	98.99	98.76
L24	126.8	100.19	100.10	99.95	99.74	99.64	99.48	99.29	99.13	98.87
L25	127.5	100.19	100.04	99.91	99.77	99.60	99.46	99.28	99.14	98.87
Ave.	126.7	100.21	100.06	99.94	99.78	99.64	99.45	99.24	99.07	98.82
Med.	126.7	100.20	100.04	99.94	99.76	99.61	99.45	99.25	99.05	98.81
st dev	0.6675	0.0730	0.0872	0.1000	0.1190	0.1259	0.1162	0.1212	0.1304	0.1328
Min.	125.5	100.10	99.86	99.73	99.51	99.33	99.16	98.95	98.81	98.54
Max.	127.9	100.33	100.22	100.11	99.97	99.87	99.63	99.47	99.32	99.09

Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	98.58	98.37	98.20	98.02	97.79	97.58	97.43	97.22	-
L2	98.39	98.12	97.94	97.65	97.49	97.30	97.13	96.92	-
L3	98.60	98.33	98.17	97.94	97.74	97.56	97.40	97.18	-
L4	98.54	98.25	98.09	97.84	97.69	97.53	97.39	97.21	-
L5	98.40	98.24	98.10	97.89	97.67	97.50	97.37	97.13	-
L6	98.73	98.46	98.34	98.03	97.78	97.65	97.42	97.27	-
L7	98.69	98.47	98.37	98.14	97.90	97.77	97.64	97.49	-
L8	98.62	98.37	98.24	97.99	97.82	97.66	97.52	97.35	-
L9	98.67	98.45	98.30	98.06	97.85	97.71	97.56	97.41	-
L10	98.64	98.44	98.32	98.13	97.95	97.80	97.62	97.39	-
L11	98.65	98.36	98.26	97.97	97.83	97.63	97.43	97.19	-
L12	98.51	98.34	98.21	98.03	97.83	97.62	97.50	97.34	-
L13	98.35	98.08	97.89	97.56	97.44	97.31	97.16	97.00	-
L14	98.45	98.26	98.10	97.84	97.68	97.52	97.31	97.09	-
L15	98.33	98.06	97.93	97.70	97.45	97.29	97.15	96.91	-
L16	98.33	98.04	97.86	97.63	97.49	97.37	97.14	96.96	-
L17	98.85	98.65	98.48	98.17	98.00	97.84	97.66	97.51	-
L18	98.79	98.62	98.44	98.17	98.04	97.92	97.71	97.48	-
L19	98.52	98.32	98.17	97.85	97.67	97.45	97.29	97.15	-
L20	98.55	98.29	98.11	97.83	97.69	97.55	97.43	97.22	-
L21	98.64	98.44	98.32	98.06	97.89	97.72	97.51	97.35	-
L22	98.63	98.36	98.17	97.88	97.74	97.55	97.39	97.18	-
L23	98.45	98.24	98.09	97.87	97.69	97.48	97.26	97.09	-
L24	98.58	98.39	98.26	97.93	97.80	97.59	97.44	97.20	-
L25	98.63	98.37	98.18	97.89	97.67	97.48	97.31	97.09	-
Ave.	98.56	98.33	98.18	97.92	97.74	97.58	97.41	97.21	-
Med.	98.58	98.36	98.18	97.93	97.74	97.56	97.42	97.20	-
st dev	0.1391	0.1534	0.1622	0.1665	0.1603	0.1646	0.1639	0.1719	-
Min.	98.33	98.04	97.86	97.56	97.44	97.29	97.13	96.91	-
Max.	98.85	98.65	98.48	98.17	98.04	97.92	97.71	97.51	-

3.2 Data Set 1, 55°C, 100mA (Forward Voltage)

Sample No.	Forward Voltage (V)									
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L1	9.075	9.050	9.105	9.087	9.037	9.101	9.074	9.040	9.120	9.075
L2	9.100	9.119	9.041	9.069	9.137	9.116	9.131	9.099	9.059	9.069
L3	9.109	9.024	9.078	9.129	9.001	9.107	9.005	9.045	9.119	9.069
L4	9.071	9.055	9.053	9.088	9.075	9.138	9.081	9.042	9.063	9.124
L5	9.049	9.051	9.062	9.057	9.055	9.040	9.010	9.064	9.132	9.095
L6	9.110	9.039	9.048	9.067	9.143	9.043	9.124	9.047	9.110	9.088
L7	9.020	9.075	9.112	9.100	9.014	9.079	9.003	9.104	9.132	9.052
L8	9.121	9.059	9.104	9.138	9.126	9.099	9.066	9.041	9.118	9.107
L9	9.119	9.065	9.099	9.106	9.139	9.061	9.018	9.076	9.051	9.071
L10	9.049	9.121	9.069	9.099	9.095	9.083	9.105	9.129	9.073	9.111
L11	9.074	9.019	9.099	9.074	9.121	9.122	9.092	9.105	9.062	9.064
L12	9.122	9.099	9.110	9.078	9.021	9.044	9.124	9.092	9.054	9.129
L13	9.083	9.133	9.123	9.096	9.088	9.096	9.033	9.132	9.085	9.115
L14	9.062	9.121	9.087	9.093	9.098	9.044	9.047	9.114	9.064	9.138
L15	9.120	9.145	9.051	9.137	9.103	9.110	9.014	9.142	9.135	9.089
L16	9.082	9.103	9.047	9.141	9.126	9.070	9.062	9.104	9.055	9.041
L17	9.096	9.065	9.128	9.070	9.106	9.075	9.070	9.085	9.107	9.050
L18	9.120	9.077	9.119	9.118	9.015	9.103	9.136	9.107	9.106	9.099
L19	9.104	9.107	9.062	9.069	9.080	9.058	9.109	9.114	9.045	9.131
L20	9.105	9.124	9.115	9.063	9.078	9.082	9.014	9.087	9.115	9.070
L21	9.081	9.026	9.146	9.062	9.067	9.089	9.140	9.122	9.078	9.079
L22	9.119	9.001	9.064	9.132	9.140	9.142	9.067	9.106	9.104	9.115
L23	9.012	9.101	9.134	9.054	9.081	9.116	9.111	9.124	9.066	9.090
L24	9.048	9.095	9.118	9.048	9.072	9.104	9.079	9.074	9.081	9.131
L25	9.104	9.094	9.066	9.083	9.097	9.120	9.023	9.055	9.087	9.088
Ave.	9.086	9.079	9.090	9.090	9.085	9.090	9.070	9.090	9.089	9.092
Med.	9.096	9.077	9.099	9.087	9.088	9.096	9.070	9.099	9.085	9.089
st dev	0.0320	0.0394	0.0314	0.0286	0.0422	0.0297	0.0454	0.0316	0.0290	0.0278
Min.	9.012	9.001	9.041	9.048	9.001	9.040	9.003	9.040	9.045	9.041
Max.	9.122	9.145	9.146	9.141	9.143	9.142	9.140	9.142	9.135	9.138

Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	9.148	9.095	9.057	9.101	9.051	9.115	9.066	9.132	-
L2	9.115	9.143	9.094	9.049	9.125	9.125	9.137	9.129	-
L3	9.130	9.056	9.066	9.139	9.092	9.123	9.145	9.119	-
L4	9.056	9.013	9.131	9.100	9.131	9.052	9.119	9.083	-
L5	9.096	9.088	9.113	9.128	9.108	9.036	9.069	9.109	-
L6	9.098	9.041	9.054	9.075	9.082	9.042	9.086	9.044	-
L7	9.069	9.132	9.097	9.040	9.064	9.005	9.112	9.099	-
L8	9.069	9.128	9.091	9.069	9.078	9.093	9.141	9.092	-
L9	9.062	9.056	9.135	9.075	9.120	9.048	9.061	9.130	-
L10	9.046	9.038	9.144	9.074	9.087	9.144	9.052	9.095	-
L11	9.090	9.118	9.072	9.078	9.104	9.027	9.080	9.078	-
L12	9.085	9.036	9.041	9.139	9.102	9.047	9.095	9.095	-
L13	9.137	9.106	9.083	9.116	9.097	9.066	9.115	9.081	-
L14	9.128	9.014	9.097	9.122	9.119	9.117	9.149	9.143	-
L15	9.135	9.023	9.077	9.101	9.133	9.012	9.089	9.085	-
L16	9.115	9.087	9.118	9.065	9.110	9.014	9.065	9.057	-
L17	9.136	9.097	9.101	9.091	9.136	9.101	9.117	9.060	-
L18	9.080	9.018	9.085	9.092	9.128	9.124	9.146	9.102	-
L19	9.150	9.025	9.108	9.051	9.121	9.090	9.071	9.111	-
L20	9.133	9.109	9.046	9.084	9.111	9.009	9.110	9.064	-
L21	9.055	9.144	9.123	9.112	9.104	9.025	9.096	9.078	-
L22	9.136	9.030	9.069	9.048	9.134	9.004	9.082	9.062	-
L23	9.063	9.041	9.076	9.118	9.046	9.039	9.118	9.118	-
L24	9.098	9.138	9.110	9.081	9.090	9.083	9.131	9.145	-
L25	9.079	9.024	9.047	9.068	9.073	9.125	9.100	9.115	-
Ave.	9.100	9.072	9.089	9.089	9.102	9.067	9.102	9.097	-
Med.	9.098	9.056	9.091	9.084	9.104	9.052	9.100	9.095	-
st dev	0.0329	0.0461	0.0291	0.0285	0.0257	0.0457	0.0296	0.0280	-
Min.	9.046	9.013	9.041	9.040	9.046	9.004	9.052	9.044	-
Max.	9.150	9.144	9.144	9.139	9.136	9.144	9.149	9.145	-

3.3 Data Set 1, 55°C, 100mA (Chromaticity Shift)

Sample No.	u'	v'	CCT(K)	Chromaticity Shift Δu'v'								
	0hr(Initial)			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L1	0.2643	0.5278	2661	0.0001	0.0004	0.0005	0.0007	0.0008	0.0010	0.0013	0.0015	0.0016
L2	0.2653	0.5292	2636	0.0003	0.0005	0.0006	0.0008	0.0009	0.0012	0.0014	0.0016	0.0019
L3	0.2650	0.5290	2642	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014	0.0017	0.0019	0.0021
L4	0.2644	0.5288	2657	0.0002	0.0004	0.0005	0.0007	0.0010	0.0012	0.0015	0.0016	0.0017
L5	0.2637	0.5293	2669	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0013	0.0015	0.0017
L6	0.2640	0.5291	2662	0.0002	0.0003	0.0004	0.0006	0.0009	0.0013	0.0016	0.0019	0.0022
L7	0.2658	0.5286	2628	0.0001	0.0003	0.0004	0.0006	0.0009	0.0012	0.0014	0.0015	0.0018
L8	0.2640	0.5302	2659	0.0003	0.0005	0.0007	0.0008	0.0011	0.0014	0.0017	0.0019	0.0021
L9	0.2642	0.5303	2654	0.0001	0.0003	0.0005	0.0006	0.0008	0.0010	0.0013	0.0015	0.0017
L10	0.2649	0.5288	2646	0.0003	0.0006	0.0007	0.0008	0.0010	0.0011	0.0014	0.0017	0.0019
L11	0.2646	0.5289	2651	0.0002	0.0004	0.0005	0.0007	0.0008	0.0010	0.0012	0.0013	0.0015
L12	0.2646	0.5291	2650	0.0004	0.0006	0.0007	0.0009	0.0011	0.0014	0.0018	0.0021	0.0023
L13	0.2616	0.5304	2706	0.0002	0.0005	0.0006	0.0008	0.0010	0.0012	0.0014	0.0016	0.0018
L14	0.2639	0.5289	2665	0.0001	0.0003	0.0004	0.0005	0.0006	0.0009	0.0012	0.0013	0.0014
L15	0.2645	0.5301	2648	0.0001	0.0002	0.0004	0.0005	0.0007	0.0008	0.0010	0.0013	0.0016
L16	0.2654	0.5288	2636	0.0002	0.0004	0.0005	0.0007	0.0010	0.0012	0.0015	0.0017	0.0018
L17	0.2627	0.5318	2678	0.0003	0.0005	0.0006	0.0007	0.0009	0.0013	0.0015	0.0017	0.0019
L18	0.2642	0.5294	2658	0.0004	0.0007	0.0009	0.0011	0.0014	0.0017	0.0020	0.0021	0.0022
L19	0.2636	0.5309	2664	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0015	0.0018	0.0021
L20	0.2654	0.5298	2633	0.0001	0.0003	0.0005	0.0006	0.0008	0.0009	0.0013	0.0015	0.0018
L21	0.2636	0.5294	2670	0.0005	0.0006	0.0007	0.0009	0.0011	0.0014	0.0017	0.0020	0.0023
L22	0.2622	0.5315	2689	0.0002	0.0003	0.0005	0.0007	0.0009	0.0010	0.0014	0.0017	0.0019
L23	0.2635	0.5303	2669	0.0001	0.0003	0.0004	0.0005	0.0007	0.0010	0.0012	0.0015	0.0017
L24	0.2637	0.5289	2670	0.0003	0.0006	0.0007	0.0008	0.0011	0.0013	0.0015	0.0016	0.0018
L25	0.2651	0.5303	2636	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0016
Ave.	0.2642	0.5296	2657	0.0002	0.0004	0.0006	0.0007	0.0009	0.0012	0.0014	0.0017	0.0019
Med.	0.2642	0.5293	2658	0.0002	0.0004	0.0005	0.0007	0.0009	0.0012	0.0014	0.0016	0.0018
st dev	0.0010	0.0010	18.15	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2616	0.5278	2628	0.0001	0.0002	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0014
Max.	0.2658	0.5318	2706	0.0005	0.0007	0.0009	0.0011	0.0014	0.0017	0.0020	0.0021	0.0023

Sample No.	Chromaticity Shift $\Delta u'v'$								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L1	0.0018	0.0021	0.0022	0.0025	0.0026	0.0028	0.0030	0.0032	-
L2	0.0020	0.0021	0.0026	0.0028	0.0030	0.0031	0.0033	0.0035	-
L3	0.0023	0.0027	0.0028	0.0030	0.0031	0.0033	0.0034	0.0037	-
L4	0.0021	0.0025	0.0027	0.0029	0.0032	0.0033	0.0034	0.0038	-
L5	0.0020	0.0022	0.0024	0.0027	0.0029	0.0031	0.0032	0.0035	-
L6	0.0025	0.0029	0.0031	0.0033	0.0036	0.0038	0.0040	0.0044	-
L7	0.0022	0.0024	0.0027	0.0028	0.0030	0.0031	0.0033	0.0034	-
L8	0.0025	0.0028	0.0030	0.0032	0.0034	0.0036	0.0038	0.0039	-
L9	0.0019	0.0022	0.0024	0.0026	0.0029	0.0030	0.0032	0.0034	-
L10	0.0021	0.0023	0.0026	0.0028	0.0031	0.0033	0.0034	0.0038	-
L11	0.0018	0.0019	0.0022	0.0023	0.0024	0.0026	0.0027	0.0029	-
L12	0.0025	0.0027	0.0029	0.0031	0.0033	0.0035	0.0036	0.0038	-
L13	0.0021	0.0022	0.0026	0.0028	0.0030	0.0032	0.0034	0.0036	-
L14	0.0016	0.0019	0.0024	0.0026	0.0029	0.0030	0.0032	0.0036	-
L15	0.0019	0.0021	0.0024	0.0027	0.0029	0.0031	0.0032	0.0034	-
L16	0.0019	0.0021	0.0026	0.0028	0.0030	0.0031	0.0033	0.0035	-
L17	0.0021	0.0024	0.0026	0.0028	0.0030	0.0031	0.0033	0.0035	-
L18	0.0024	0.0026	0.0027	0.0030	0.0032	0.0034	0.0035	0.0038	-
L19	0.0025	0.0028	0.0030	0.0032	0.0034	0.0036	0.0037	0.0038	-
L20	0.0020	0.0023	0.0025	0.0026	0.0028	0.0029	0.0030	0.0032	-
L21	0.0025	0.0028	0.0032	0.0034	0.0036	0.0037	0.0038	0.0040	-
L22	0.0021	0.0023	0.0026	0.0027	0.0029	0.0031	0.0032	0.0035	-
L23	0.0018	0.0021	0.0025	0.0026	0.0028	0.0030	0.0031	0.0035	-
L24	0.0019	0.0021	0.0024	0.0027	0.0029	0.0031	0.0033	0.0035	-
L25	0.0020	0.0023	0.0025	0.0027	0.0029	0.0030	0.0032	0.0035	-
Ave.	0.0021	0.0024	0.0026	0.0028	0.0030	0.0032	0.0033	0.0036	-
Med.	0.0021	0.0023	0.0026	0.0028	0.0030	0.0031	0.0033	0.0035	-
st dev	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	-
Min.	0.0016	0.0019	0.0022	0.0023	0.0024	0.0026	0.0027	0.0029	-
Max.	0.0025	0.0029	0.0032	0.0034	0.0036	0.0038	0.0040	0.0044	-

3.4 Data Set 2, 85°C, 100mA (Lumen Maintenance)

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L26	125.2	100.25	100.08	99.85	99.61	99.47	99.22	98.99	98.83	98.56
L27	125.5	100.15	99.93	99.69	99.49	99.31	99.04	98.79	98.55	98.35
L28	126.3	100.04	99.88	99.71	99.42	99.20	98.91	98.72	98.48	98.29
L29	127.2	100.04	99.84	99.61	99.37	99.18	99.02	98.86	98.66	98.35
L30	126.4	100.03	99.82	99.66	99.43	99.25	99.05	98.91	98.72	98.53
L31	126.1	100.21	100.01	99.78	99.59	99.42	99.20	99.01	98.76	98.48
L32	127.0	100.19	100.02	99.81	99.58	99.37	99.21	99.10	98.93	98.71
L33	127.5	100.10	99.95	99.76	99.56	99.34	99.14	98.98	98.78	98.50
L34	126.3	100.21	100.04	99.81	99.59	99.38	99.22	99.08	98.94	98.70
L35	126.8	100.05	99.86	99.62	99.42	99.24	99.04	98.80	98.62	98.41
L36	126.0	100.06	99.92	99.70	99.42	99.22	98.98	98.76	98.52	98.32
L37	127.5	100.08	99.88	99.64	99.44	99.20	99.03	98.79	98.66	98.37
L38	125.3	100.14	99.98	99.73	99.50	99.33	99.15	99.01	98.87	98.57
L39	127.1	100.06	99.86	99.68	99.44	99.25	98.99	98.80	98.62	98.43
L40	126.2	100.13	99.89	99.72	99.46	99.33	99.15	99.01	98.79	98.48
L41	125.3	100.20	100.04	99.80	99.57	99.41	99.22	99.11	98.93	98.72
L42	125.8	100.25	100.03	99.82	99.61	99.44	99.29	99.16	98.98	98.78
L43	127.6	100.16	99.97	99.77	99.50	99.32	99.10	98.97	98.77	98.50
L44	126.5	100.22	100.05	99.84	99.62	99.46	99.22	98.97	98.74	98.47
L45	126.2	100.13	99.94	99.75	99.55	99.39	99.18	98.95	98.80	98.54
L46	126.0	100.12	99.89	99.63	99.43	99.19	99.00	98.87	98.64	98.38
L47	126.1	100.16	99.99	99.82	99.54	99.34	99.07	98.92	98.67	98.47
L48	127.1	100.08	99.87	99.71	99.43	99.18	98.91	98.67	98.45	98.16
L49	127.1	100.07	99.87	99.67	99.44	99.30	99.11	98.97	98.81	98.61
L50	125.8	100.22	100.06	99.88	99.62	99.44	99.17	99.02	98.87	98.68
Ave.	126.4	100.13	99.95	99.74	99.51	99.32	99.10	98.93	98.74	98.49
Med.	126.3	100.13	99.94	99.73	99.50	99.33	99.11	98.97	98.76	98.48
st dev	0.7214	0.0708	0.0788	0.0779	0.0793	0.0941	0.1048	0.1288	0.1469	0.1513
Min.	125.2	100.03	99.82	99.61	99.37	99.18	98.91	98.67	98.45	98.16
Max.	127.6	100.25	100.08	99.88	99.62	99.47	99.29	99.16	98.98	98.78

Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	98.31	98.08	97.90	97.66	97.49	97.28	97.11	96.91	-
L27	98.08	97.83	97.66	97.42	97.27	97.10	96.94	96.69	-
L28	98.10	97.83	97.67	97.44	97.27	97.09	96.92	96.71	-
L29	98.20	97.96	97.70	97.44	97.16	97.02	96.83	96.59	-
L30	98.37	98.05	97.88	97.58	97.32	97.11	96.88	96.59	-
L31	98.34	98.04	97.85	97.63	97.36	97.18	96.95	96.75	-
L32	98.48	98.21	97.97	97.71	97.43	97.19	96.97	96.79	-
L33	98.26	98.04	97.87	97.65	97.36	97.20	97.02	96.76	-
L34	98.51	98.30	98.07	97.77	97.61	97.46	97.31	97.08	-
L35	98.23	98.00	97.87	97.55	97.26	97.08	96.89	96.72	-
L36	98.16	97.84	97.70	97.39	97.23	97.09	96.85	96.57	-
L37	98.21	97.97	97.79	97.49	97.24	97.10	96.89	96.70	-
L38	98.42	98.18	97.98	97.66	97.46	97.29	97.15	96.99	-
L39	98.17	97.93	97.77	97.46	97.30	97.15	96.91	96.73	-
L40	98.23	97.95	97.72	97.53	97.36	97.13	96.90	96.63	-
L41	98.45	98.23	98.03	97.82	97.63	97.38	97.15	96.95	-
L42	98.53	98.29	98.07	97.81	97.59	97.42	97.18	96.98	-
L43	98.31	98.00	97.81	97.60	97.44	97.22	97.06	96.81	-
L44	98.21	98.01	97.85	97.59	97.38	97.15	97.00	96.83	-
L45	98.36	98.07	97.83	97.57	97.39	97.22	97.06	96.82	-
L46	98.20	97.98	97.84	97.64	97.44	97.26	97.13	96.94	-
L47	98.31	98.00	97.83	97.59	97.42	97.29	97.11	96.84	-
L48	98.01	97.70	97.46	97.21	97.03	96.83	96.59	96.37	-
L49	98.35	98.13	98.00	97.79	97.61	97.44	97.20	96.99	-
L50	98.43	98.15	97.89	97.70	97.50	97.35	97.21	96.96	-
Ave.	98.29	98.03	97.84	97.59	97.38	97.20	97.01	96.79	-
Med.	98.31	98.01	97.85	97.59	97.38	97.19	97.00	96.79	-
st dev	0.1369	0.1472	0.1416	0.1456	0.1471	0.1446	0.1573	0.1662	-
Min.	98.01	97.70	97.46	97.21	97.03	96.83	96.59	96.37	-
Max.	98.53	98.30	98.07	97.82	97.63	97.46	97.31	97.08	-

3.5 Data Set 2, 85°C, 100mA (Forward Voltage)

Sample No.	Forward Voltage (V)									
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L26	9.124	9.072	9.032	9.157	9.090	9.124	9.109	9.146	9.098	9.061
L27	9.029	9.095	9.030	9.097	9.118	9.054	9.073	9.055	9.074	9.140
L28	9.035	9.088	9.105	9.077	9.100	9.102	9.099	9.146	9.093	9.049
L29	9.038	9.055	9.111	9.071	9.124	9.031	9.077	9.133	9.045	9.078
L30	9.005	9.050	9.119	9.026	9.041	9.039	9.078	9.155	9.099	9.086
L31	9.100	9.069	9.100	9.062	9.131	9.065	9.050	9.133	9.066	9.110
L32	9.102	9.124	9.106	9.038	9.124	9.120	9.105	9.133	9.110	9.125
L33	9.117	9.079	9.071	9.075	9.085	9.114	9.049	9.125	9.029	9.055
L34	9.090	9.109	9.023	9.124	9.060	9.122	9.065	9.118	9.074	9.069
L35	9.094	9.100	9.116	9.095	9.064	9.124	9.077	9.054	9.129	9.096
L36	9.105	9.118	9.085	9.074	9.124	9.092	9.137	9.127	9.081	9.089
L37	9.084	9.071	9.104	9.072	9.113	9.065	9.087	9.156	9.097	9.040
L38	9.115	9.145	9.060	9.118	9.142	9.100	9.116	9.094	9.102	9.065
L39	9.098	9.055	9.093	9.049	9.095	9.085	9.129	9.035	9.037	9.103
L40	9.077	9.048	9.082	9.078	9.095	9.044	9.069	9.090	9.106	9.118
L41	9.102	9.055	9.084	9.149	9.099	9.035	9.052	9.099	9.097	9.061
L42	9.061	9.100	9.132	9.140	9.122	9.126	9.069	9.116	9.090	9.122
L43	9.078	9.117	9.108	9.047	9.072	9.067	9.130	9.077	9.084	9.053
L44	9.152	9.050	9.114	9.113	9.075	9.103	9.065	9.052	9.076	9.058
L45	9.041	9.114	9.075	9.054	9.064	9.070	9.124	9.132	9.041	9.140
L46	9.065	9.099	9.063	9.026	9.048	9.040	9.116	9.126	9.024	9.139
L47	9.107	9.054	9.073	9.065	9.083	9.115	9.130	9.066	9.033	9.045
L48	9.059	9.068	9.031	9.072	9.138	9.049	9.051	9.056	9.029	9.053
L49	9.017	9.091	9.046	9.131	9.100	9.093	9.086	9.127	9.026	9.117
L50	9.086	9.091	9.081	9.027	9.137	9.075	9.100	9.134	9.073	9.087
Ave.	9.079	9.085	9.082	9.081	9.098	9.082	9.090	9.107	9.073	9.086
Med.	9.086	9.088	9.084	9.074	9.099	9.085	9.086	9.125	9.076	9.086
st dev	0.0363	0.0273	0.0312	0.0386	0.0293	0.0321	0.0284	0.0367	0.0310	0.0326
Min.	9.005	9.048	9.023	9.026	9.041	9.031	9.049	9.035	9.024	9.040
Max.	9.152	9.145	9.132	9.157	9.142	9.126	9.137	9.156	9.129	9.140

Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	9.098	9.041	9.117	9.080	9.043	9.094	9.150	9.059	-
L27	9.120	9.093	9.061	9.133	9.125	9.021	9.093	9.063	-
L28	9.072	9.057	9.125	9.119	9.068	9.059	9.038	9.107	-
L29	9.036	9.095	9.105	9.127	9.101	9.126	9.060	9.117	-
L30	9.136	9.094	9.133	9.145	9.100	9.039	9.080	9.087	-
L31	9.128	9.063	9.109	9.094	9.079	9.080	9.042	9.138	-
L32	9.128	9.121	9.096	9.125	9.056	9.082	9.143	9.125	-
L33	9.150	9.137	9.062	9.113	9.057	9.114	9.053	9.095	-
L34	9.053	9.141	9.023	9.075	9.044	9.020	9.036	9.132	-
L35	9.111	9.072	9.065	9.139	9.099	9.112	9.067	9.128	-
L36	9.074	9.079	9.103	9.157	9.057	9.074	9.079	9.051	-
L37	9.100	9.132	9.092	9.143	9.071	9.021	9.044	9.050	-
L38	9.045	9.069	9.063	9.029	9.066	9.039	9.055	9.065	-
L39	9.042	9.068	9.098	9.029	9.145	9.126	9.074	9.041	-
L40	9.027	9.053	9.127	9.146	9.131	9.111	9.148	9.083	-
L41	9.160	9.061	9.091	9.088	9.099	9.042	9.105	9.110	-
L42	9.041	9.093	9.126	9.054	9.131	9.068	9.095	9.047	-
L43	9.134	9.095	9.093	9.045	9.053	9.097	9.087	9.083	-
L44	9.023	9.108	9.045	9.084	9.140	9.107	9.084	9.105	-
L45	9.145	9.045	9.128	9.074	9.105	9.090	9.154	9.074	-
L46	9.091	9.093	9.059	9.108	9.044	9.131	9.121	9.069	-
L47	9.159	9.141	9.121	9.030	9.071	9.073	9.148	9.116	-
L48	9.134	9.086	9.130	9.079	9.128	9.048	9.094	9.043	-
L49	9.085	9.134	9.040	9.115	9.058	9.045	9.152	9.111	-
L50	9.131	9.072	9.116	9.112	9.131	9.125	9.135	9.056	-
Ave.	9.097	9.090	9.093	9.098	9.088	9.078	9.093	9.086	-
Med.	9.100	9.093	9.098	9.108	9.079	9.080	9.087	9.083	-
st dev	0.0444	0.0307	0.0321	0.0391	0.0340	0.0362	0.0401	0.0310	-
Min.	9.023	9.041	9.023	9.029	9.043	9.020	9.036	9.041	-
Max.	9.160	9.141	9.133	9.157	9.145	9.131	9.154	9.138	-

3.6 Data Set 2, 85°C, 100mA (Chromaticity Shift)

Sample No.	u'	v'	CCT(K)	Chromaticity Shift Δu'v'								
				0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h
L26	0.2644	0.5292	2655	0.0004	0.0006	0.0007	0.0010	0.0012	0.0013	0.0016	0.0020	0.0024
L27	0.2655	0.5297	2631	0.0001	0.0004	0.0005	0.0007	0.0010	0.0012	0.0014	0.0015	0.0020
L28	0.2648	0.5304	2642	0.0002	0.0004	0.0006	0.0009	0.0010	0.0013	0.0017	0.0021	0.0024
L29	0.2613	0.5256	2732	0.0001	0.0003	0.0005	0.0007	0.0008	0.0011	0.0012	0.0015	0.0019
L30	0.2636	0.5272	2679	0.0003	0.0005	0.0007	0.0011	0.0013	0.0014	0.0018	0.0019	0.0023
L31	0.2649	0.5280	2649	0.0005	0.0008	0.0010	0.0014	0.0016	0.0017	0.0020	0.0022	0.0024
L32	0.2634	0.5289	2675	0.0005	0.0006	0.0009	0.0011	0.0014	0.0017	0.0021	0.0022	0.0027
L33	0.2629	0.5293	2685	0.0001	0.0003	0.0005	0.0007	0.0009	0.0012	0.0013	0.0014	0.0019
L34	0.2631	0.5289	2681	0.0003	0.0004	0.0006	0.0008	0.0010	0.0012	0.0013	0.0017	0.0021
L35	0.2612	0.5293	2718	0.0004	0.0005	0.0006	0.0009	0.0010	0.0011	0.0013	0.0016	0.0019
L36	0.2628	0.5268	2695	0.0002	0.0003	0.0005	0.0008	0.0010	0.0012	0.0014	0.0017	0.0022
L37	0.2620	0.5294	2702	0.0005	0.0006	0.0007	0.0008	0.0010	0.0013	0.0015	0.0016	0.0019
L38	0.2616	0.5289	2712	0.0001	0.0003	0.0004	0.0007	0.0009	0.0010	0.0011	0.0013	0.0016
L39	0.2611	0.5283	2725	0.0003	0.0005	0.0007	0.0010	0.0012	0.0013	0.0016	0.0017	0.0020
L40	0.2644	0.5275	2660	0.0001	0.0003	0.0004	0.0007	0.0008	0.0010	0.0013	0.0015	0.0020
L41	0.2631	0.5286	2683	0.0002	0.0004	0.0005	0.0009	0.0012	0.0014	0.0018	0.0021	0.0024
L42	0.2638	0.5284	2669	0.0003	0.0004	0.0006	0.0007	0.0009	0.0010	0.0013	0.0016	0.0021
L43	0.2620	0.5288	2706	0.0004	0.0007	0.0008	0.0011	0.0014	0.0017	0.0019	0.0020	0.0023
L44	0.2619	0.5279	2710	0.0003	0.0005	0.0006	0.0009	0.0010	0.0012	0.0015	0.0019	0.0024
L45	0.2633	0.5290	2676	0.0005	0.0007	0.0009	0.0011	0.0013	0.0014	0.0016	0.0019	0.0023
L46	0.2636	0.5293	2671	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0013	0.0016	0.0019
L47	0.2633	0.5282	2681	0.0004	0.0007	0.0008	0.0012	0.0014	0.0016	0.0020	0.0023	0.0027
L48	0.2630	0.5291	2683	0.0003	0.0004	0.0007	0.0010	0.0012	0.0015	0.0016	0.0018	0.0020
L49	0.2624	0.5285	2697	0.0003	0.0004	0.0006	0.0010	0.0011	0.0012	0.0016	0.0017	0.0022
L50	0.2625	0.5290	2693	0.0005	0.0007	0.0009	0.0011	0.0013	0.0016	0.0019	0.0022	0.0027
Ave.	0.2630	0.5286	2684	0.0003	0.0005	0.0006	0.0009	0.0011	0.0013	0.0016	0.0018	0.0022
Med.	0.2631	0.5289	2683	0.0003	0.0004	0.0006	0.0009	0.0010	0.0013	0.0016	0.0017	0.0022
st dev	0.0012	0.0010	25.48	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003
Min.	0.2611	0.5256	2631	0.0001	0.0003	0.0004	0.0007	0.0008	0.0010	0.0011	0.0013	0.0016
Max.	0.2655	0.5304	2732	0.0005	0.0008	0.0010	0.0014	0.0016	0.0017	0.0021	0.0023	0.0027

Sample No.	Chromaticity Shift $\Delta u'v'$								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L26	0.0025	0.0028	0.0031	0.0032	0.0034	0.0037	0.0041	0.0043	-
L27	0.0022	0.0024	0.0027	0.0028	0.0030	0.0033	0.0037	0.0039	-
L28	0.0026	0.0028	0.0030	0.0032	0.0035	0.0038	0.0042	0.0046	-
L29	0.0022	0.0024	0.0026	0.0029	0.0032	0.0035	0.0038	0.0041	-
L30	0.0026	0.0028	0.0029	0.0031	0.0036	0.0040	0.0044	0.0048	-
L31	0.0026	0.0028	0.0030	0.0031	0.0034	0.0037	0.0041	0.0043	-
L32	0.0031	0.0032	0.0035	0.0036	0.0039	0.0041	0.0045	0.0047	-
L33	0.0022	0.0024	0.0026	0.0027	0.0032	0.0034	0.0037	0.0040	-
L34	0.0025	0.0027	0.0030	0.0032	0.0034	0.0037	0.0039	0.0041	-
L35	0.0023	0.0025	0.0028	0.0031	0.0034	0.0036	0.0040	0.0044	-
L36	0.0025	0.0027	0.0029	0.0031	0.0034	0.0036	0.0040	0.0045	-
L37	0.0020	0.0021	0.0024	0.0028	0.0031	0.0034	0.0037	0.0041	-
L38	0.0019	0.0020	0.0023	0.0026	0.0030	0.0034	0.0037	0.0042	-
L39	0.0022	0.0023	0.0025	0.0028	0.0031	0.0034	0.0038	0.0043	-
L40	0.0024	0.0026	0.0028	0.0032	0.0036	0.0039	0.0041	0.0044	-
L41	0.0028	0.0029	0.0033	0.0034	0.0038	0.0040	0.0042	0.0047	-
L42	0.0022	0.0025	0.0026	0.0030	0.0033	0.0035	0.0037	0.0041	-
L43	0.0026	0.0028	0.0031	0.0034	0.0036	0.0038	0.0042	0.0046	-
L44	0.0026	0.0028	0.0030	0.0032	0.0036	0.0040	0.0044	0.0049	-
L45	0.0027	0.0029	0.0031	0.0033	0.0036	0.0040	0.0042	0.0045	-
L46	0.0021	0.0022	0.0025	0.0027	0.0031	0.0035	0.0037	0.0039	-
L47	0.0030	0.0031	0.0032	0.0033	0.0036	0.0040	0.0044	0.0048	-
L48	0.0023	0.0024	0.0026	0.0027	0.0029	0.0031	0.0034	0.0037	-
L49	0.0024	0.0027	0.0029	0.0031	0.0035	0.0038	0.0043	0.0045	-
L50	0.0029	0.0032	0.0034	0.0036	0.0039	0.0042	0.0044	0.0048	-
Ave.	0.0025	0.0026	0.0029	0.0031	0.0034	0.0037	0.0040	0.0044	-
Med.	0.0025	0.0027	0.0029	0.0031	0.0034	0.0037	0.0041	0.0044	-
st dev	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	-
Min.	0.0019	0.0020	0.0023	0.0026	0.0029	0.0031	0.0034	0.0037	-
Max.	0.0031	0.0032	0.0035	0.0036	0.0039	0.0042	0.0045	0.0049	-

3.7 Data Set 3, 105°C, 100mA (Lumen Maintenance)

Sample No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	125.7	99.99	99.76	99.55	99.33	99.19	98.89	98.66	98.51	98.26
L52	127.2	100.11	99.88	99.58	99.34	99.17	98.93	98.72	98.56	98.30
L53	127.0	99.98	99.75	99.47	99.25	99.09	98.91	98.74	98.55	98.36
L54	126.8	99.96	99.68	99.51	99.33	99.17	98.89	98.69	98.52	98.30
L55	126.9	100.11	99.91	99.75	99.52	99.39	99.19	98.96	98.82	98.65
L56	126.0	100.02	99.85	99.63	99.41	99.27	99.04	98.83	98.69	98.53
L57	127.5	99.96	99.69	99.49	99.34	99.22	98.98	98.68	98.53	98.38
L58	127.6	99.94	99.64	99.47	99.26	99.02	98.84	98.60	98.34	98.07
L59	126.4	99.98	99.82	99.60	99.41	99.23	99.01	98.84	98.60	98.34
L60	126.8	100.14	99.91	99.67	99.41	99.17	98.91	98.65	98.43	98.23
L61	126.3	99.98	99.68	99.41	99.24	99.09	98.86	98.60	98.40	98.20
L62	126.0	100.02	99.76	99.59	99.44	99.25	99.05	98.77	98.52	98.31
L63	125.7	100.17	99.88	99.69	99.43	99.20	98.93	98.63	98.44	98.26
L64	127.2	100.03	99.78	99.52	99.37	99.21	98.95	98.73	98.49	98.22
L65	127.2	100.09	99.87	99.64	99.40	99.16	98.86	98.60	98.36	98.17
L66	125.3	100.02	99.74	99.47	99.25	99.06	98.80	98.53	98.34	98.20
L67	127.7	100.17	99.87	99.63	99.43	99.29	99.07	98.79	98.61	98.34
L68	126.8	100.01	99.77	99.51	99.33	99.11	98.92	98.68	98.41	98.15
L69	126.6	99.96	99.79	99.56	99.28	99.13	98.87	98.70	98.43	98.23
L70	126.1	99.97	99.77	99.53	99.36	99.12	98.82	98.59	98.46	98.31
L71	126.0	99.98	99.70	99.44	99.18	99.04	98.86	98.59	98.42	98.19
L72	127.7	100.16	99.87	99.66	99.39	99.20	98.90	98.72	98.50	98.27
L73	125.8	100.12	99.93	99.70	99.56	99.34	99.07	98.77	98.55	98.37
L74	125.8	100.14	99.95	99.65	99.39	99.20	98.91	98.70	98.51	98.30
L75	125.6	100.17	99.96	99.75	99.51	99.33	99.11	98.93	98.71	98.55
Ave.	126.5	100.05	99.81	99.58	99.37	99.19	98.94	98.71	98.51	98.30
Med.	126.6	100.02	99.79	99.58	99.37	99.19	98.91	98.70	98.51	98.30
st dev	0.7264	0.0805	0.0926	0.0964	0.0925	0.0936	0.0983	0.1060	0.1162	0.1292
Min.	125.3	99.94	99.64	99.41	99.18	99.02	98.80	98.53	98.34	98.07
Max.	127.7	100.17	99.96	99.75	99.56	99.39	99.19	98.96	98.82	98.65

Sample No.	Lumen Maintenance (%)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	97.99	97.69	97.51	97.29	97.08	96.91	96.71	96.50	-
L52	98.10	97.76	97.59	97.27	97.09	96.94	96.76	96.52	-
L53	98.13	97.80	97.58	97.36	97.17	96.92	96.67	96.46	-
L54	98.07	97.77	97.56	97.31	97.11	96.91	96.73	96.52	-
L55	98.44	98.22	98.04	97.74	97.48	97.22	96.95	96.81	-
L56	98.26	97.96	97.83	97.54	97.37	97.18	96.99	96.81	-
L57	98.21	97.95	97.77	97.45	97.23	97.04	96.83	96.65	-
L58	97.83	97.58	97.36	97.07	96.93	96.73	96.50	96.33	-
L59	98.18	97.85	97.65	97.35	97.17	96.91	96.67	96.53	-
L60	97.96	97.63	97.43	97.21	97.03	96.90	96.74	96.59	-
L61	97.93	97.71	97.56	97.37	97.14	96.88	96.63	96.48	-
L62	98.10	97.88	97.70	97.44	97.20	96.97	96.71	96.54	-
L63	98.10	97.88	97.70	97.44	97.20	97.07	96.85	96.71	-
L64	97.96	97.73	97.59	97.40	97.24	97.08	96.83	96.58	-
L65	97.97	97.77	97.58	97.26	97.02	96.88	96.72	96.56	-
L66	97.98	97.70	97.57	97.24	97.09	96.92	96.72	96.51	-
L67	98.08	97.88	97.65	97.43	97.25	97.08	96.93	96.75	-
L68	97.91	97.57	97.40	97.13	96.88	96.65	96.41	96.25	-
L69	97.97	97.64	97.41	97.16	96.91	96.66	96.52	96.37	-
L70	98.08	97.76	97.61	97.37	97.20	97.04	96.85	96.64	-
L71	97.96	97.75	97.53	97.34	97.16	96.96	96.73	96.56	-
L72	98.08	97.78	97.56	97.36	97.13	96.89	96.74	96.60	-
L73	98.10	97.79	97.58	97.33	97.18	96.93	96.69	96.49	-
L74	98.13	97.91	97.79	97.50	97.32	97.19	96.93	96.76	-
L75	98.28	98.08	97.88	97.64	97.45	97.27	97.10	96.92	-
Ave.	98.07	97.80	97.62	97.36	97.16	96.97	96.76	96.58	-
Med.	98.08	97.77	97.58	97.36	97.17	96.93	96.73	96.56	-
st dev	0.1344	0.1494	0.1568	0.1504	0.1488	0.1568	0.1561	0.1554	-
Min.	97.83	97.57	97.36	97.07	96.88	96.65	96.41	96.25	-
Max.	98.44	98.22	98.04	97.74	97.48	97.27	97.10	96.92	-

3.8 Data Set 3, 105°C, 100mA (Forward Voltage)

Sample No.	Forward Voltage (V)									
	0hr(Initial)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	9.044	9.057	9.040	9.052	9.143	9.028	9.035	9.079	9.075	9.091
L52	9.089	9.083	9.049	9.114	9.112	9.059	9.090	9.085	9.122	9.108
L53	9.032	9.064	9.125	9.122	9.052	9.136	9.081	9.036	9.141	9.127
L54	9.023	9.118	9.049	9.138	9.038	9.093	9.064	9.051	9.099	9.075
L55	9.083	9.057	9.146	9.107	9.073	9.085	9.092	9.046	9.075	9.091
L56	9.057	9.054	9.082	9.054	9.031	9.109	9.099	9.105	9.131	9.158
L57	9.020	9.119	9.028	9.068	9.079	9.151	9.051	9.076	9.099	9.048
L58	9.038	9.132	9.076	9.053	9.088	9.060	9.125	9.096	9.114	9.076
L59	9.111	9.088	9.138	9.089	9.011	9.107	9.060	9.016	9.108	9.045
L60	9.016	9.133	9.140	9.102	9.070	9.077	9.121	9.056	9.112	9.060
L61	9.093	9.092	9.040	9.090	9.016	9.080	9.032	9.015	9.110	9.115
L62	9.147	9.105	9.106	9.103	9.124	9.079	9.047	9.030	9.120	9.023
L63	9.083	9.057	9.054	9.129	9.114	9.098	9.053	9.145	9.058	9.104
L64	9.096	9.065	9.030	9.065	9.070	9.081	9.099	9.096	9.096	9.150
L65	9.090	9.107	9.106	9.135	9.015	9.121	9.148	9.132	9.106	9.159
L66	9.075	9.075	9.042	9.095	9.107	9.103	9.120	9.026	9.122	9.117
L67	9.072	9.081	9.100	9.082	9.080	9.113	9.142	9.061	9.093	9.049
L68	9.076	9.099	9.119	9.052	9.050	9.111	9.148	9.029	9.094	9.033
L69	9.024	9.124	9.147	9.134	9.112	9.060	9.027	9.126	9.143	9.090
L70	9.047	9.080	9.039	9.111	9.126	9.088	9.043	9.099	9.096	9.148
L71	9.138	9.063	9.039	9.108	9.030	9.145	9.055	9.141	9.103	9.049
L72	9.054	9.106	9.108	9.066	9.122	9.063	9.031	9.047	9.137	9.118
L73	9.144	9.090	9.077	9.126	9.133	9.073	9.054	9.113	9.088	9.061
L74	9.077	9.131	9.085	9.082	9.032	9.054	9.111	9.065	9.093	9.158
L75	9.085	9.062	9.069	9.066	9.113	9.127	9.062	9.123	9.123	9.029
Ave.	9.073	9.090	9.081	9.094	9.078	9.092	9.080	9.076	9.106	9.091
Med.	9.076	9.088	9.077	9.095	9.079	9.088	9.064	9.076	9.106	9.091
st dev	0.0377	0.0264	0.0397	0.0286	0.0416	0.0305	0.0388	0.0405	0.0210	0.0437
Min.	9.016	9.054	9.028	9.052	9.011	9.028	9.027	9.015	9.058	9.023
Max.	9.147	9.133	9.147	9.138	9.143	9.151	9.148	9.145	9.143	9.159

Sample No.	Forward Voltage (V)								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	9.086	9.029	9.087	9.160	9.102	9.131	9.138	9.040	-
L52	9.134	9.099	9.133	9.056	9.102	9.096	9.154	9.063	-
L53	9.075	9.148	9.120	9.049	9.101	9.100	9.157	9.052	-
L54	9.100	9.145	9.133	9.153	9.059	9.078	9.040	9.016	-
L55	9.124	9.130	9.087	9.068	9.041	9.111	9.072	9.130	-
L56	9.059	9.150	9.129	9.142	9.124	9.061	9.153	9.112	-
L57	9.137	9.129	9.090	9.087	9.078	9.111	9.106	9.059	-
L58	9.082	9.132	9.090	9.046	9.096	9.123	9.027	9.128	-
L59	9.091	9.135	9.133	9.053	9.144	9.072	9.134	9.031	-
L60	9.070	9.088	9.124	9.066	9.115	9.134	9.024	9.028	-
L61	9.077	9.054	9.143	9.091	9.115	9.052	9.045	9.143	-
L62	9.115	9.030	9.092	9.093	9.044	9.076	9.021	9.099	-
L63	9.076	9.107	9.055	9.040	9.100	9.062	9.130	9.066	-
L64	9.144	9.060	9.123	9.089	9.014	9.065	9.150	9.013	-
L65	9.092	9.119	9.057	9.052	9.101	9.069	9.118	9.041	-
L66	9.099	9.048	9.116	9.074	9.043	9.130	9.101	9.068	-
L67	9.118	9.085	9.143	9.114	9.052	9.130	9.031	9.039	-
L68	9.100	9.022	9.134	9.064	9.026	9.058	9.104	9.089	-
L69	9.127	9.066	9.070	9.110	9.030	9.142	9.075	9.117	-
L70	9.087	9.082	9.136	9.116	9.069	9.116	9.129	9.024	-
L71	9.077	9.126	9.055	9.097	9.072	9.074	9.140	9.072	-
L72	9.088	9.096	9.064	9.111	9.041	9.077	9.098	9.055	-
L73	9.087	9.065	9.087	9.087	9.062	9.129	9.042	9.077	-
L74	9.111	9.085	9.117	9.038	9.046	9.130	9.158	9.073	-
L75	9.065	9.144	9.118	9.062	9.079	9.086	9.023	9.096	-
Ave.	9.097	9.095	9.105	9.085	9.074	9.097	9.095	9.069	-
Med.	9.091	9.096	9.117	9.087	9.072	9.096	9.104	9.066	-
st dev	0.0236	0.0403	0.0294	0.0345	0.0345	0.0293	0.0500	0.0372	-
Min.	9.059	9.022	9.055	9.038	9.014	9.052	9.021	9.013	-
Max.	9.144	9.150	9.143	9.160	9.144	9.142	9.158	9.143	-

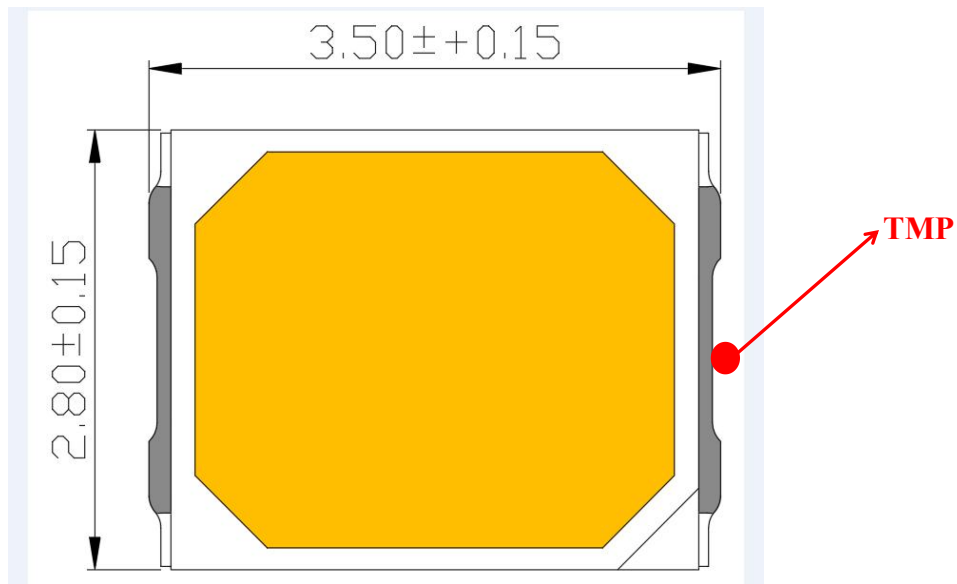
3.9 Data Set 3, 105°C, 100mA (Chromaticity Shift)

Sample No.	u'	v'	CCT(K)	Chromaticity Shift Δu'v'								
	0hr(Initial)			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
L51	0.2635	0.5292	2673	0.0003	0.0006	0.0008	0.0010	0.0013	0.0014	0.0017	0.0021	0.0022
L52	0.2630	0.5279	2687	0.0002	0.0006	0.0008	0.0012	0.0013	0.0016	0.0019	0.0023	0.0026
L53	0.2621	0.5276	2708	0.0005	0.0007	0.0009	0.0013	0.0017	0.0019	0.0023	0.0026	0.0027
L54	0.2609	0.5277	2732	0.0006	0.0008	0.0011	0.0012	0.0015	0.0017	0.0019	0.0021	0.0025
L55	0.2620	0.5278	2709	0.0005	0.0007	0.0009	0.0011	0.0013	0.0016	0.0019	0.0022	0.0023
L56	0.2647	0.5278	2654	0.0003	0.0007	0.0008	0.0009	0.0010	0.0013	0.0017	0.0019	0.0023
L57	0.2615	0.5291	2713	0.0007	0.0009	0.0011	0.0015	0.0018	0.0020	0.0022	0.0026	0.0028
L58	0.2633	0.5296	2675	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019	0.0022	0.0024	0.0027
L59	0.2636	0.5290	2672	0.0002	0.0005	0.0007	0.0009	0.0013	0.0014	0.0017	0.0020	0.0021
L60	0.2636	0.5281	2674	0.0006	0.0009	0.0012	0.0015	0.0016	0.0017	0.0021	0.0024	0.0026
L61	0.2623	0.5280	2701	0.0004	0.0007	0.0008	0.0012	0.0015	0.0018	0.0020	0.0021	0.0024
L62	0.2619	0.5284	2707	0.0003	0.0006	0.0009	0.0012	0.0014	0.0015	0.0017	0.0018	0.0019
L63	0.2627	0.5278	2694	0.0001	0.0004	0.0007	0.0009	0.0011	0.0014	0.0016	0.0020	0.0022
L64	0.2624	0.5280	2699	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0017	0.0019	0.0020
L65	0.2625	0.5270	2702	0.0004	0.0005	0.0006	0.0007	0.0008	0.0011	0.0014	0.0015	0.0019
L66	0.2639	0.5274	2672	0.0002	0.0004	0.0006	0.0008	0.0011	0.0013	0.0016	0.0019	0.0022
L67	0.2634	0.5287	2675	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0016	0.0017	0.0020
L68	0.2613	0.5277	2724	0.0005	0.0007	0.0010	0.0013	0.0016	0.0018	0.0021	0.0023	0.0027
L69	0.2627	0.5296	2688	0.0007	0.0011	0.0013	0.0015	0.0018	0.0021	0.0023	0.0025	0.0028
L70	0.2634	0.5291	2674	0.0003	0.0006	0.0008	0.0010	0.0012	0.0014	0.0017	0.0019	0.0021
L71	0.2613	0.5283	2722	0.0002	0.0005	0.0007	0.0009	0.0012	0.0014	0.0016	0.0019	0.0021
L72	0.2618	0.5291	2707	0.0005	0.0009	0.0011	0.0013	0.0017	0.0019	0.0021	0.0023	0.0024
L73	0.2624	0.5288	2697	0.0004	0.0008	0.0011	0.0012	0.0014	0.0017	0.0020	0.0023	0.0025
L74	0.2641	0.5286	2664	0.0002	0.0005	0.0007	0.0011	0.0012	0.0014	0.0017	0.0018	0.0019
L75	0.2629	0.5285	2687	0.0003	0.0005	0.0008	0.0010	0.0011	0.0012	0.0014	0.0017	0.0020
Ave.	0.2627	0.5284	2692	0.0004	0.0007	0.0009	0.0011	0.0014	0.0016	0.0018	0.0021	0.0023
Med.	0.2627	0.5283	2694	0.0003	0.0006	0.0008	0.0011	0.0013	0.0015	0.0017	0.0021	0.0023
st dev	0.0010	0.0007	20.31	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003
Min.	0.2609	0.5270	2654	0.0001	0.0004	0.0006	0.0007	0.0008	0.0011	0.0014	0.0015	0.0019
Max.	0.2647	0.5296	2732	0.0007	0.0011	0.0013	0.0015	0.0018	0.0021	0.0023	0.0026	0.0028

Sample No.	Chromaticity Shift $\Delta u'v'$								
	10000h	11000h	12000h	13000h	14000h	15000h	16000h	17000h	-
L51	0.0027	0.0030	0.0035	0.0040	0.0045	0.0049	0.0051	0.0054	-
L52	0.0028	0.0031	0.0037	0.0040	0.0042	0.0043	0.0047	0.0053	-
L53	0.0031	0.0034	0.0039	0.0044	0.0046	0.0049	0.0052	0.0056	-
L54	0.0030	0.0032	0.0037	0.0040	0.0042	0.0045	0.0048	0.0052	-
L55	0.0026	0.0028	0.0034	0.0036	0.0037	0.0040	0.0041	0.0046	-
L56	0.0024	0.0027	0.0029	0.0030	0.0034	0.0037	0.0039	0.0042	-
L57	0.0032	0.0037	0.0042	0.0047	0.0051	0.0053	0.0058	0.0062	-
L58	0.0031	0.0036	0.0042	0.0044	0.0045	0.0048	0.0049	0.0055	-
L59	0.0027	0.0031	0.0037	0.0040	0.0041	0.0043	0.0044	0.0045	-
L60	0.0030	0.0033	0.0036	0.0040	0.0042	0.0044	0.0048	0.0053	-
L61	0.0029	0.0033	0.0038	0.0042	0.0043	0.0047	0.0050	0.0056	-
L62	0.0024	0.0027	0.0032	0.0035	0.0038	0.0040	0.0043	0.0047	-
L63	0.0027	0.0029	0.0032	0.0037	0.0038	0.0040	0.0042	0.0047	-
L64	0.0022	0.0027	0.0032	0.0034	0.0037	0.0040	0.0041	0.0043	-
L65	0.0023	0.0026	0.0030	0.0033	0.0035	0.0039	0.0041	0.0048	-
L66	0.0028	0.0031	0.0037	0.0041	0.0043	0.0044	0.0048	0.0053	-
L67	0.0023	0.0026	0.0030	0.0033	0.0038	0.0041	0.0045	0.0048	-
L68	0.0033	0.0036	0.0039	0.0043	0.0046	0.0048	0.0050	0.0053	-
L69	0.0030	0.0034	0.0039	0.0043	0.0048	0.0050	0.0055	0.0056	-
L70	0.0025	0.0029	0.0032	0.0033	0.0037	0.0040	0.0041	0.0044	-
L71	0.0025	0.0030	0.0036	0.0039	0.0043	0.0045	0.0047	0.0054	-
L72	0.0028	0.0031	0.0035	0.0040	0.0043	0.0045	0.0048	0.0052	-
L73	0.0029	0.0031	0.0034	0.0038	0.0043	0.0045	0.0048	0.0049	-
L74	0.0024	0.0028	0.0033	0.0036	0.0039	0.0040	0.0043	0.0047	-
L75	0.0024	0.0029	0.0033	0.0039	0.0041	0.0043	0.0047	0.0050	-
Ave.	0.0027	0.0031	0.0035	0.0039	0.0041	0.0044	0.0047	0.0051	-
Med.	0.0027	0.0031	0.0035	0.0040	0.0042	0.0044	0.0047	0.0052	-
st dev	0.0003	0.0003	0.0004	0.0004	0.0004	0.0004	0.0005	0.0005	-
Min.	0.0022	0.0026	0.0029	0.0030	0.0034	0.0037	0.0039	0.0042	-
Max.	0.0033	0.0037	0.0042	0.0047	0.0051	0.0053	0.0058	0.0062	-

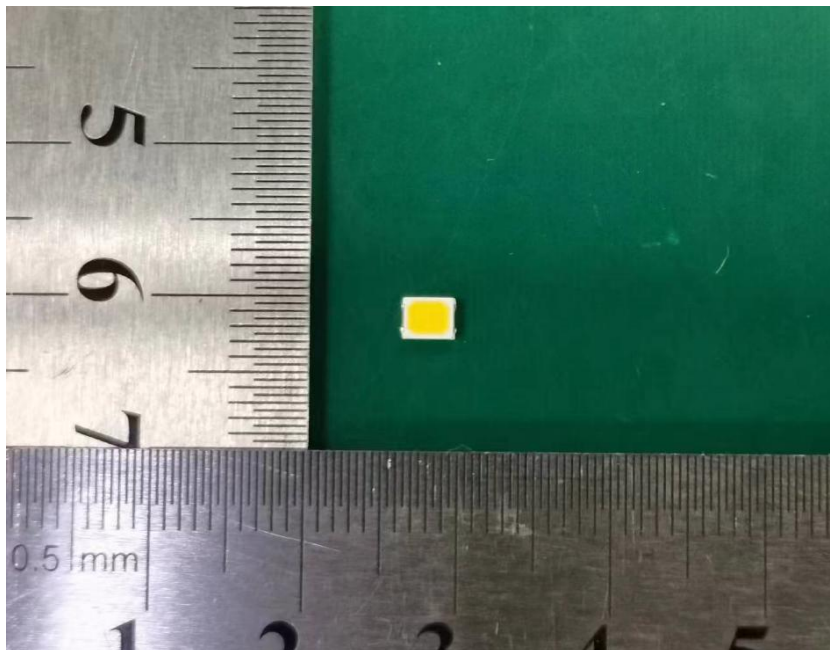
4-EUT Photos

4.1 Mechanical Dimensions



Note: All dimensions are in millimeters(mm).

4.2 EUT Photo



----End of report----