



TEST REPORT

ACCORDING TO IES LM-80-2015
For

Shenzhen Runlite Technology Co.,Ltd

Building A15, Tantou the 4th Industrial Estate, SongGang Town, BaoAn District, ShenZhen, China.

Model: T2835 LED

Report Type: 6000 Hours Test Report		Product Type: LED Package	
Test Engineer:	Pote Wang	<i>Pote Wang</i>	
Report Number:	RSZ161221560-10		
Test Date:	2017-01-04 to 2017-09-12		
Report Date:	2017-09-23		
Reviewed By:	Daniel Duan / EE Manager	<i>Daniel Duan</i>	
Test Facility:	Test facility was located at No.69,Pulongcun ,Puxinhu Industrial Area, Tangxia , Dongguan, Guangdong, China.		
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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 used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

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1 - General Information

1.1 Description of LED Light Sources

Sample Size:

75 PCS samples were received on 2016-12-21. The samples were numbered from 1 to 25, 26 to 50 and 51 to 75.

Manufacturer: Shenzhen Runlite Technology Co.,Ltd
 Part Number: T2835 LED
 Part Type: LED Package
 Drive Level: DC 60mA
 Nominal CCT: 2700K

1.2 Standards Used:

- IESNA 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 IAS)
- ENERGY STAR® Program Guidance Regarding LED Package, LED Array and LED Module Lumen Maintenance Performance Data Supporting Qualification of Lighting Products(This test method was not accredited by IAS)

1.3 Testing Equipment

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
0.3m integrating sphere	EVERFINE	Diameter 0.3m	1011119	0.3m	2017-03-09	2018-03-09
Programmable Test Power for LEDs	EVERFINE	LED300E	1008002	15V/2000mA	2017-03-03	2018-03-03
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	380-780nm	2017-03-09	2018-03-09
Standard Light Source	EVERFINE	D062	1011093	3000K	2016-09-13	2017-09-13
Precision digital stabilized DC power supply	EVERFINE	WY605-V110	G115987CJ73 21114	300VA	2017-03-03	2018-03-03
Multilayer aging machine	BACL	B2-270	20013	25°C~130°C	2017-09-01	2018-09-01
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090008	(50/15A)	2017-07-07	2018-07-07
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11060002	(50/15A)	2017-07-07	2018-07-07

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090007	(50/15A)	2017-03-03	2018-03-03

1.4 Drive Level

Samples are driven with a constant direct current (DC) during maintenance test, photometric and electrical measurement. The current value was regulated to within $\pm 3\%$ of the specified value of the manufacturer during maintenance test, and was within $\pm 0.5\%$ during photometric and electrical measurement test.

1.5 Ambient Conditions for Maintenance Test

For lumen maintenance test, samples within one data set, were installed on cooling boards in thermal chambers with minimal ambient airflow. The case temperature and ambient temperature was monitored by thermocouples which one was soldered to the coldest DUTs' case (TMP_{LED}) location, while the other is mounted at a distance of 5 mm above the TMP location.

During life testing, TMP_{LED} of the coldest LEDs were maintained at a temperature that was greater than or equal to 2°C below the corresponding nominal case temperature. Surrounding air was maintained at a temperature that was greater than or equal to 5°C below the corresponding nominal case temperature. Thermocouples were shielded from direct DUT optical radiation and comply with ASTM E230 Table 1 "Special Limits".

Samples were connected to DC power supply in series circuits with a constant current. The forward current was regulated to within $\pm 3\%$ of the specified value of the manufacturer.

The relative humidity within chamber was kept less than 65% during test.

For photometry measurement, the ambient temperature during test was set to $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, RH <65%.

1.6 Photometric Measurement Method and Uncertainty

Integrating sphere and spectroradiometer is used to measure luminous flux and chromaticity coordinate $u'v'$. 2π measurement was used and sample was driven by DC power supply. Luminous flux and chromaticity coordinate was scaled by halogen reference lamp. The ambient temperature during test was set to $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, RH <65%.

The uncertainty of the light output measurements is $U=1.59\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=21\text{K}$ ($K=2$), at the 95% confidence level.

The uncertainty of the temperature is $U=0.8671^{\circ}\text{C}$ ($K=2$), at the 95% confidence level.

1.7 Statement of Traceability

Bay Area Compliance Laboratories Corp. (Dongguan) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

1.8 Sample Set

Data Set 1: 55°C, 60mA

Part Number: T2835 LED
Number of Units: 25
Case Temperature: >53°C
Ambient Temperature: >50°C
Life Test Drive Current: 60mA
Measurement Current: 60mA

Data Set 2: 85°C, 60mA

Part Number: T2835 LED
Number of Units: 25
Case Temperature: >83°C
Ambient Temperature: >80°C
Life Test Drive Current: 60mA
Measurement Current: 60mA

Data Set 3: 105°C, 60mA

Part Number: T2835 LED
Number of Units: 25
Case Temperature: >103°C
Ambient Temperature: >100°C
Life Test Drive Current: 60mA
Measurement Current: 60mA

2 - Summary of Test Result

Data Set:	Sample Size	Failures Observed:	Test Interval(hours)	Test Duration(hours)	Reported TM-21 L ₇₀ Lifetime	Reported TM-21 L ₉₀ Lifetime
1	25	0	1000	6000	>36,000hours	>36,000hours
2	25	0	1000	6000	>36,000hours	>36,000hours
3	25	0	1000	6000	>36,000hours	>36,000hours

Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000	2000	3000	4000	5000	6000
1	100.07%	99.91%	99.72%	99.53%	99.35%	99.19%
2	99.91%	99.72%	99.45%	99.20%	98.97%	98.73%
3	99.81%	99.60%	99.30%	99.03%	98.76%	98.49%

Average Color Maintenance

Data Set:	1000	2000	3000	4000	5000	6000
1	0.0003	0.0005	0.0007	0.0011	0.0013	0.0014
2	0.0005	0.0008	0.0010	0.0013	0.0015	0.0016
3	0.0007	0.0008	0.0010	0.0014	0.0016	0.0018

3 - Test Data

3.1 Data Set 1, 55°C, 60mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)					
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	33.05	100.09	99.82	99.67	99.55	99.39	99.24
2	32.32	99.91	99.72	99.44	99.23	99.07	98.76
3	32.51	100.22	100.06	99.78	99.57	99.29	99.05
4	31.69	99.78	99.62	99.40	99.34	99.21	98.96
5	31.78	99.81	99.43	99.28	99.12	98.96	98.68
6	32.02	100.12	99.97	99.66	99.53	99.38	99.31
7	32.64	100.18	99.85	99.72	99.42	99.30	99.17
8	32.26	100.15	100.09	99.85	99.69	99.66	99.57
9	32.22	99.88	99.75	99.53	99.44	99.38	99.22
10	32.23	100.16	100.06	99.84	99.57	99.35	99.13
11	32.57	100.28	100.15	99.97	99.79	99.45	99.26
12	32.26	100.19	100.09	99.91	99.81	99.69	99.63
13	33.01	99.97	99.85	99.76	99.55	99.33	99.27
14	32.55	100.22	100.15	99.88	99.60	99.39	99.20
15	32.82	99.91	99.73	99.45	99.15	99.02	98.87
16	32.40	100.19	99.94	99.69	99.51	99.23	99.17
17	32.26	100.15	100.03	99.85	99.63	99.41	99.32
18	32.99	100.21	100.15	100.09	99.94	99.88	99.64
19	31.84	100.06	99.91	99.87	99.69	99.40	99.18
20	32.80	99.97	99.85	99.76	99.63	99.45	99.33
21	32.75	100.21	99.94	99.76	99.57	99.39	99.18
22	32.81	100.12	100.06	99.82	99.60	99.36	99.24
23	33.01	100.06	100.03	99.79	99.61	99.39	99.33
24	32.79	99.88	99.63	99.45	99.36	99.15	98.93
25	32.49	100.09	99.82	99.72	99.38	99.11	99.02
Ave.	32.48	100.07	99.91	99.72	99.53	99.35	99.19
Med.	32.51	100.12	99.94	99.76	99.57	99.38	99.20
st dev	0.39	0.1433	0.1890	0.1952	0.1959	0.2041	0.2366
Min.	31.69	99.78	99.43	99.28	99.12	98.96	98.68
Max.	33.05	100.28	100.15	100.09	99.94	99.88	99.64

TM-21 Projection:

Test Duration: 6000 hours

Failures Observed: 0

α: 1.798E-06

β: 1.003

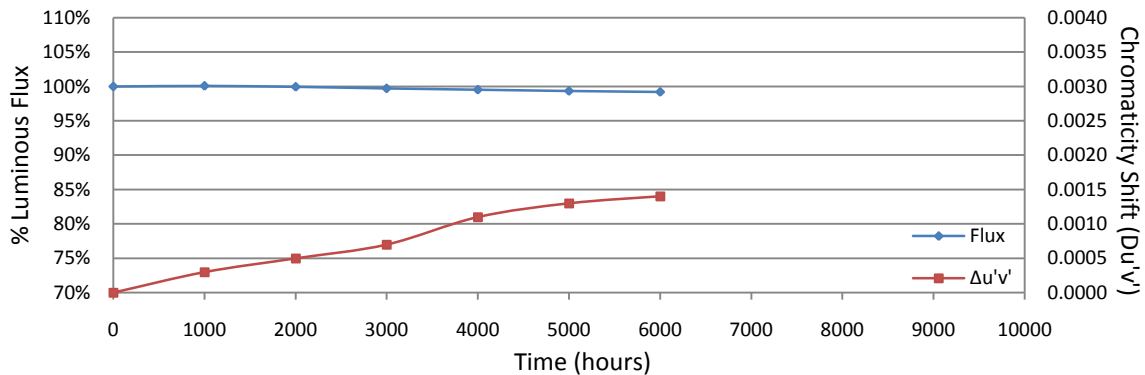
Reported L₇₀: >36000 hours

3.2 Data Set 1, 55°C, 60mA (Forward Voltage)

No.	Forward Voltage (V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	2.801	2.801	2.800	2.800	2.793	2.795	2.793
2	2.778	2.778	2.773	2.867	2.771	2.772	2.779
3	2.794	2.793	2.788	2.793	2.787	2.787	2.797
4	2.770	2.770	2.767	2.769	2.763	2.768	2.773
5	2.771	2.775	2.767	2.847	2.763	2.778	2.770
6	2.773	2.770	2.767	2.776	2.807	2.769	2.768
7	2.803	2.805	2.819	2.801	2.796	2.799	2.797
8	2.772	2.772	2.774	2.771	2.767	2.768	2.766
9	2.799	2.799	2.794	2.782	2.779	2.794	2.794
10	2.786	2.787	2.794	2.782	2.779	2.782	2.857
11	2.778	2.779	2.777	2.776	2.772	2.775	2.773
12	2.784	2.783	2.780	2.781	2.776	2.781	2.776
13	2.795	2.795	2.791	2.791	2.788	2.832	2.789
14	2.779	2.782	2.795	2.779	2.773	2.777	2.808
15	2.794	2.797	2.794	2.794	2.789	2.791	2.789
16	2.782	2.783	2.791	2.787	2.775	2.899	2.820
17	2.775	2.775	2.772	3.500	2.780	3.292	2.778
18	2.796	2.796	2.798	2.794	2.789	2.825	2.822
19	2.773	2.771	2.771	2.770	2.764	2.857	2.766
20	2.780	2.780	2.776	2.776	2.773	2.774	2.778
21	2.813	2.813	2.810	2.810	2.804	2.806	2.805
22	2.830	2.789	2.787	2.788	2.851	2.786	2.831
23	2.813	2.814	2.809	2.812	2.805	2.807	2.805
24	2.801	2.800	2.797	2.802	2.792	2.799	2.802
25	2.789	2.788	2.784	2.786	2.781	2.795	2.875
Ave.	2.789	2.788	2.787	2.821	2.785	2.816	2.796
Med.	2.786	2.787	2.788	2.788	2.780	2.791	2.793
st dev	0.015	0.013	0.014	0.143	0.019	0.104	0.028
Min.	2.770	2.770	2.767	2.769	2.763	2.768	2.766
Max.	2.830	2.814	2.819	3.500	2.851	3.292	2.875

3.3 Data Set 1, 55°C, 60mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)					
				0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs
1	0.2614	0.5242	2737	0.0003	0.0005	0.0009	0.0011	0.0014	0.0016
2	0.2621	0.5257	2716	0.0004	0.0006	0.0008	0.0013	0.0015	0.0015
3	0.2624	0.5233	2719	0.0004	0.0006	0.0008	0.0011	0.0013	0.0016
4	0.2649	0.5222	2670	0.0003	0.0005	0.0007	0.0011	0.0013	0.0016
5	0.2639	0.5240	2683	0.0003	0.0004	0.0004	0.0010	0.0013	0.0014
6	0.2636	0.5257	2683	0.0002	0.0005	0.0006	0.0010	0.0013	0.0015
7	0.2621	0.5233	2726	0.0003	0.0005	0.0007	0.0012	0.0011	0.0014
8	0.2600	0.5224	2774	0.0003	0.0004	0.0006	0.0010	0.0012	0.0013
9	0.2629	0.5236	2708	0.0003	0.0006	0.0008	0.0012	0.0015	0.0016
10	0.2621	0.5247	2718	0.0002	0.0005	0.0008	0.0010	0.0013	0.0013
11	0.2612	0.5262	2733	0.0004	0.0005	0.0009	0.0010	0.0016	0.0016
12	0.2642	0.5253	2673	0.0004	0.0005	0.0009	0.0012	0.0014	0.0015
13	0.2623	0.5258	2711	0.0003	0.0004	0.0006	0.0009	0.0013	0.0013
14	0.2642	0.5258	2671	0.0003	0.0005	0.0007	0.0009	0.0013	0.0012
15	0.2614	0.5275	2722	0.0003	0.0005	0.0006	0.0009	0.0013	0.0012
16	0.2631	0.5247	2698	0.0004	0.0005	0.0008	0.0011	0.0013	0.0013
17	0.2620	0.5252	2720	0.0003	0.0004	0.0008	0.0010	0.0014	0.0015
18	0.2617	0.5255	2725	0.0004	0.0004	0.0007	0.0010	0.0013	0.0016
19	0.2644	0.5234	2677	0.0004	0.0005	0.0009	0.0010	0.0013	0.0014
20	0.2616	0.5251	2728	0.0003	0.0004	0.0007	0.0010	0.0013	0.0012
21	0.2613	0.5217	2749	0.0003	0.0005	0.0006	0.0009	0.0012	0.0012
22	0.2605	0.5267	2745	0.0004	0.0004	0.0008	0.0011	0.0014	0.0014
23	0.2610	0.5246	2744	0.0004	0.0004	0.0008	0.0010	0.0015	0.0015
24	0.2639	0.5297	2662	0.0002	0.0004	0.0006	0.0009	0.0012	0.0012
25	0.2616	0.5268	2721	0.0002	0.0005	0.0008	0.0010	0.0013	0.0013
Ave.	0.2624	0.5249	2713	0.0003	0.0005	0.0007	0.0011	0.0013	0.0014
Med.	0.2621	0.5251	2719	0.0003	0.0005	0.0008	0.0010	0.0013	0.0014
st dev	0.0013	0.0018	29	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	0.2600	0.5217	2662	0.0002	0.0004	0.0004	0.0009	0.0011	0.0012
Max.	0.2649	0.5297	2774	0.0004	0.0006	0.0009	0.0013	0.0016	0.0016



3.4 Data Set 2, 85°C, 60mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)					
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
26	32.28	100.03	99.88	99.72	99.41	99.16	99.01
27	32.73	99.97	99.73	99.42	99.21	99.02	98.63
28	32.33	99.94	99.81	99.51	99.29	99.01	98.79
29	32.37	99.78	99.60	99.47	99.29	99.01	98.83
30	32.68	99.88	99.72	99.48	99.14	98.84	98.56
31	32.50	100.06	99.85	99.54	99.38	99.05	98.80
32	32.63	100.03	99.94	99.54	99.33	99.14	98.93
33	33.20	99.73	99.58	99.31	99.19	98.86	98.58
34	32.39	100.12	99.85	99.57	99.23	99.10	98.83
35	32.75	99.97	99.91	99.63	99.39	99.11	98.90
36	32.50	99.75	99.63	99.38	99.23	99.05	98.92
37	32.21	99.94	99.72	99.29	99.07	98.98	98.73
38	32.56	99.88	99.72	99.29	98.96	98.65	98.34
39	31.98	99.75	99.62	99.31	99.09	98.75	98.47
40	31.79	99.97	99.78	99.37	99.31	99.21	98.80
41	33.09	100.03	99.88	99.58	99.37	99.24	99.00
42	32.26	99.81	99.69	99.47	99.23	99.07	98.79
43	32.59	99.75	99.57	99.45	99.17	98.86	98.62
44	33.04	99.91	99.55	99.39	99.00	98.82	98.46
45	32.65	99.82	99.57	99.39	99.17	98.81	98.62
46	32.79	99.97	99.60	99.30	98.96	98.81	98.60
47	31.95	99.87	99.62	99.41	99.06	98.81	98.72
48	32.61	99.91	99.72	99.33	99.05	98.77	98.68
49	32.61	99.85	99.69	99.48	99.17	98.83	98.56
50	32.75	99.94	99.76	99.60	99.36	99.24	99.15
Ave.	32.53	99.91	99.72	99.45	99.20	98.97	98.73
Med.	32.59	99.91	99.72	99.45	99.21	99.01	98.73
st dev	0.34	0.1074	0.1172	0.1176	0.1361	0.1697	0.1931
Min.	31.79	99.73	99.55	99.29	98.96	98.65	98.34
Max.	33.20	100.12	99.94	99.72	99.41	99.24	99.15

TM-21 Projection:

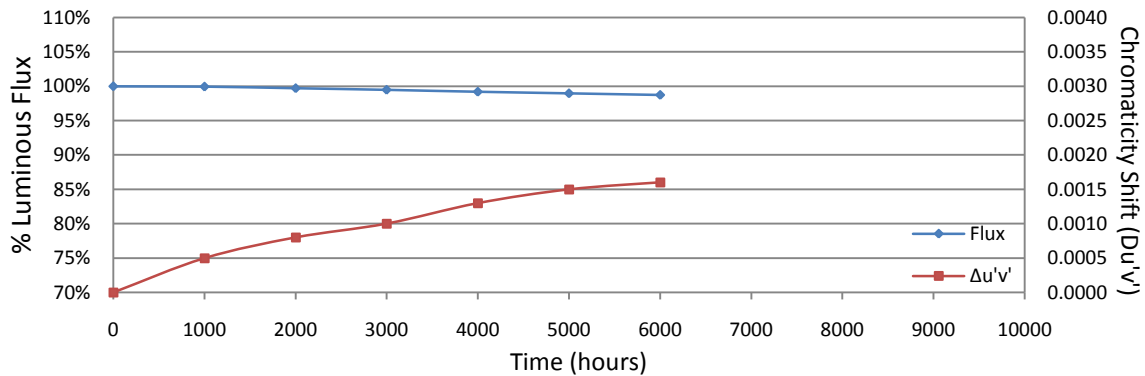
Test Duration: 6000 hours
Failures Observed: 0
 α : 2.416E-06
 β : 1.002
Reported L₇₀: >36000 hours

3.5 Data Set 2, 85°C, 60mA (Forward Voltage)

No.	Forward Voltage (V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
26	2.776	2.776	2.779	2.776	2.770	2.772	2.782
27	2.809	2.809	2.806	2.808	2.801	2.804	2.803
28	2.779	2.777	2.780	2.789	2.772	2.775	2.784
29	2.793	2.787	2.786	2.794	2.782	2.789	2.795
30	2.784	2.783	2.782	2.789	2.778	2.785	2.781
31	2.790	2.789	2.787	2.788	2.782	2.789	2.807
32	2.804	2.814	2.802	2.791	2.790	2.785	2.784
33	2.807	2.806	2.811	2.803	2.797	2.804	2.803
34	2.779	2.778	2.775	2.776	2.771	2.776	2.777
35	2.808	2.808	2.805	2.804	2.799	2.802	2.801
36	2.785	2.784	2.779	2.781	2.777	2.780	2.779
37	2.783	2.783	2.781	2.781	2.777	2.780	2.779
38	2.789	2.788	2.792	2.788	2.782	2.789	2.783
39	2.775	2.774	2.773	2.774	2.767	2.772	2.769
40	2.772	2.771	2.772	2.771	2.766	2.770	2.766
41	2.808	2.808	2.807	2.805	2.800	2.803	2.802
42	2.779	2.778	2.775	2.776	2.771	2.775	2.774
43	2.798	2.798	2.793	2.798	2.838	2.792	2.789
44	2.794	2.794	2.789	2.793	2.787	2.790	2.788
45	2.805	2.806	2.802	2.802	2.795	2.800	2.800
46	2.787	2.787	2.789	2.784	2.778	2.782	2.780
47	2.774	2.773	2.769	2.771	2.765	2.770	2.768
48	2.787	2.786	2.786	2.784	2.779	2.784	2.782
49	2.786	2.785	2.782	2.782	2.778	2.782	2.781
50	2.815	2.814	2.809	2.810	2.806	2.810	2.808
Ave.	2.791	2.790	2.788	2.789	2.784	2.786	2.787
Med.	2.787	2.787	2.786	2.788	2.779	2.785	2.783
st dev	0.013	0.014	0.013	0.012	0.016	0.012	0.012
Min.	2.772	2.771	2.769	2.771	2.765	2.770	2.766
Max.	2.815	2.814	2.811	2.810	2.838	2.810	2.808

3.6 Data Set 2, 85°C, 60mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)					
				0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs
26	0.2631	0.5270	2688	0.0004	0.0004	0.0007	0.0012	0.0013	0.0013
27	0.2626	0.5230	2716	0.0006	0.0009	0.0011	0.0014	0.0014	0.0016
28	0.2624	0.5259	2707	0.0005	0.0006	0.0009	0.0012	0.0012	0.0013
29	0.2625	0.5259	2706	0.0006	0.0007	0.0009	0.0012	0.0013	0.0015
30	0.2619	0.5249	2723	0.0005	0.0008	0.0010	0.0013	0.0013	0.0013
31	0.2618	0.5260	2720	0.0005	0.0007	0.0009	0.0013	0.0014	0.0014
32	0.2606	0.5269	2743	0.0006	0.0008	0.0010	0.0012	0.0013	0.0013
33	0.2617	0.5264	2720	0.0005	0.0008	0.0009	0.0012	0.0011	0.0013
34	0.2634	0.5257	2688	0.0006	0.0008	0.0010	0.0013	0.0012	0.0013
35	0.2620	0.5236	2725	0.0006	0.0009	0.0009	0.0013	0.0017	0.0015
36	0.2620	0.5243	2723	0.0006	0.0007	0.0009	0.0013	0.0017	0.0017
37	0.2622	0.5243	2720	0.0006	0.0007	0.0009	0.0014	0.0015	0.0016
38	0.2632	0.5276	2686	0.0007	0.0009	0.0013	0.0014	0.0018	0.0018
39	0.2656	0.5278	2636	0.0004	0.0006	0.0009	0.0012	0.0015	0.0015
40	0.2635	0.5241	2692	0.0004	0.0008	0.0011	0.0015	0.0017	0.0017
41	0.2635	0.5276	2678	0.0004	0.0006	0.0009	0.0012	0.0016	0.0017
42	0.2624	0.5244	2713	0.0004	0.0007	0.0009	0.0013	0.0016	0.0017
43	0.2603	0.5231	2765	0.0004	0.0009	0.0011	0.0015	0.0017	0.0018
44	0.2623	0.5256	2710	0.0004	0.0006	0.0009	0.0012	0.0015	0.0016
45	0.2626	0.5238	2712	0.0004	0.0008	0.0010	0.0014	0.0016	0.0016
46	0.2613	0.5261	2729	0.0004	0.0007	0.0010	0.0012	0.0016	0.0019
47	0.2640	0.5234	2685	0.0004	0.0009	0.0010	0.0014	0.0017	0.0017
48	0.2630	0.5266	2692	0.0004	0.0008	0.0009	0.0012	0.0016	0.0015
49	0.2622	0.5257	2714	0.0005	0.0007	0.0010	0.0013	0.0016	0.0016
50	0.2627	0.5243	2707	0.0005	0.0008	0.0010	0.0013	0.0017	0.0016
Ave.	0.2625	0.5254	2708	0.0005	0.0008	0.0010	0.0013	0.0015	0.0016
Med.	0.2624	0.5257	2712	0.0005	0.0008	0.0009	0.0013	0.0016	0.0016
st dev	0.0011	0.0015	25	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002
Min.	0.2603	0.5230	2636	0.0004	0.0004	0.0007	0.0012	0.0011	0.0013
Max.	0.2656	0.5278	2765	0.0007	0.0009	0.0013	0.0015	0.0018	0.0019



3.7 Data Set 3, 105°C, 60mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)					
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
51	32.28	99.81	99.41	99.23	98.95	98.76	98.70
52	32.98	99.94	99.76	99.42	99.27	99.06	98.79
53	32.08	99.69	99.59	99.28	98.91	98.72	98.66
54	32.70	99.82	99.63	99.51	99.27	99.08	98.75
55	32.28	99.91	99.81	99.41	99.10	98.79	98.48
56	33.25	99.85	99.61	99.40	99.16	98.92	98.50
57	32.77	99.76	99.54	99.05	98.72	98.38	98.14
58	32.51	100.12	99.82	99.38	99.08	98.86	98.52
59	33.02	99.88	99.73	99.39	99.00	98.85	98.73
60	32.83	99.79	99.70	99.45	99.27	98.81	98.51
61	32.10	99.60	99.38	99.19	98.85	98.54	98.07
62	32.00	99.91	99.69	99.25	98.97	98.50	98.31
63	32.61	100.06	99.79	99.42	99.05	98.71	98.47
64	32.12	99.88	99.66	99.38	99.19	98.91	98.82
65	32.41	99.60	99.38	99.20	98.92	98.52	98.06
66	32.67	99.82	99.57	99.30	99.05	98.71	98.44
67	32.75	99.66	99.42	99.05	98.69	98.63	98.32
68	32.18	99.78	99.66	99.29	99.01	98.69	98.51
69	33.03	99.76	99.61	99.36	99.03	98.82	98.49
70	32.10	99.81	99.69	99.31	99.16	98.97	98.57
71	32.42	99.72	99.57	99.38	99.01	98.58	98.46
72	31.92	99.81	99.66	99.40	99.19	99.09	98.78
73	31.98	99.94	99.47	99.19	98.91	98.59	98.37
74	31.87	99.65	99.47	99.15	98.96	98.74	98.34
75	32.89	99.73	99.39	99.21	98.97	98.75	98.51
Ave.	32.47	99.81	99.60	99.30	99.03	98.76	98.49
Med.	32.42	99.81	99.61	99.31	99.01	98.75	98.50
st dev	0.40	0.1285	0.1372	0.1220	0.1546	0.1858	0.2113
Min.	31.87	99.60	99.38	99.05	98.69	98.38	98.06
Max.	33.25	100.12	99.82	99.51	99.27	99.09	98.82

TM-21 Projection:

Test Duration: 6000 hours

Failures Observed: 0

α: 2.706E-06

β: 1.001

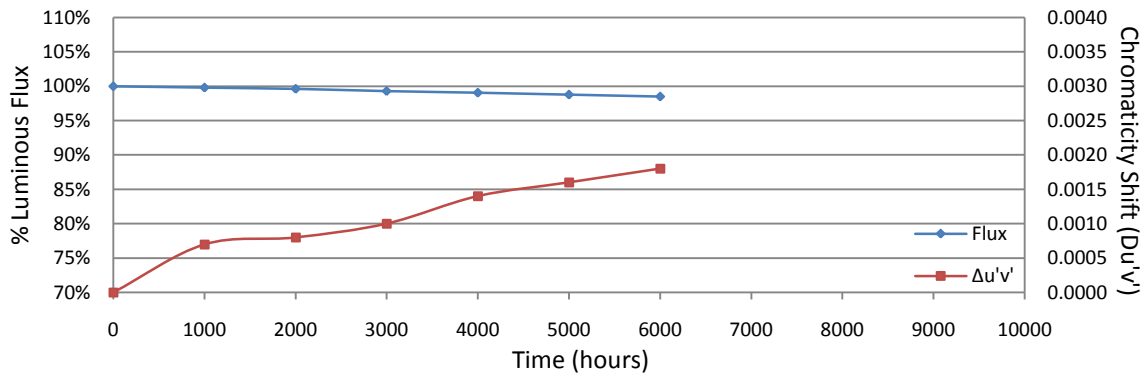
Reported L₇₀: >36000 hours

3.8 Data Set 3, 105°C, 60mA (Forward Voltage)

No.	Forward Voltage (V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
51	2.773	2.772	2.768	2.771	2.766	2.770	2.767
52	2.808	2.810	2.800	2.803	2.800	2.801	2.801
53	2.774	2.773	2.794	2.770	2.769	2.771	2.769
54	2.786	2.785	2.782	2.782	2.783	2.782	2.782
55	2.797	2.797	2.793	2.794	2.791	2.794	2.792
56	2.813	2.811	2.812	2.809	2.807	2.807	2.805
57	2.792	2.792	2.793	2.789	2.791	2.797	2.788
58	2.808	2.807	2.801	2.802	2.800	2.804	2.799
59	2.797	2.795	2.794	2.793	2.789	2.793	2.790
60	2.791	2.790	2.794	2.789	2.786	2.788	2.787
61	2.774	2.772	2.768	2.770	2.766	2.768	2.772
62	2.784	2.784	2.780	2.781	2.776	2.778	2.776
63	2.791	3.020	2.787	2.788	2.783	2.788	2.772
64	2.775	2.774	2.770	2.771	2.767	2.770	2.772
65	2.788	2.788	2.788	2.786	2.781	2.783	2.785
66	2.805	2.810	2.804	2.801	2.798	2.801	2.818
67	2.788	2.787	2.789	2.786	2.782	2.788	2.789
68	2.779	2.779	2.777	2.777	2.773	2.777	2.778
69	2.801	2.801	2.797	2.800	2.794	2.797	2.798
70	2.778	2.778	2.775	2.778	2.772	2.776	2.778
71	2.783	2.783	2.787	2.782	2.778	2.779	2.784
72	2.771	2.770	2.771	2.770	2.765	2.767	2.772
73	2.770	2.770	2.774	2.768	2.764	2.766	2.793
74	2.770	2.787	2.793	2.768	2.785	2.765	2.773
75	2.798	2.800	2.795	2.795	2.791	2.794	2.795
Ave.	2.788	2.797	2.787	2.785	2.782	2.784	2.785
Med.	2.788	2.787	2.789	2.786	2.783	2.783	2.785
st dev	0.013	0.048	0.012	0.012	0.012	0.013	0.013
Min.	2.770	2.770	2.768	2.768	2.764	2.765	2.767
Max.	2.813	3.020	2.812	2.809	2.807	2.807	2.818

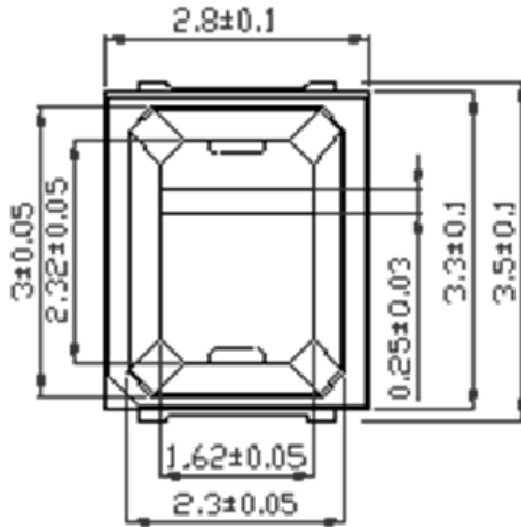
3.9 Data Set 3, 105°C, 60mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)					
				0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs
51	0.2628	0.5246	2705	0.0007	0.0008	0.0010	0.0015	0.0017	0.0017
52	0.2632	0.5260	2690	0.0006	0.0008	0.0010	0.0015	0.0018	0.0018
53	0.2638	0.5258	2680	0.0008	0.0008	0.0010	0.0015	0.0017	0.0017
54	0.2630	0.5258	2695	0.0006	0.0006	0.0009	0.0014	0.0015	0.0016
55	0.2649	0.5251	2659	0.0006	0.0008	0.0010	0.0015	0.0016	0.0019
56	0.2608	0.5270	2738	0.0006	0.0008	0.0010	0.0015	0.0018	0.0020
57	0.2639	0.5280	2669	0.0006	0.0006	0.0009	0.0013	0.0016	0.0018
58	0.2630	0.5256	2697	0.0008	0.0008	0.0010	0.0016	0.0017	0.0021
59	0.2610	0.5248	2742	0.0007	0.0007	0.0009	0.0014	0.0016	0.0018
60	0.2627	0.5292	2690	0.0007	0.0006	0.0009	0.0014	0.0015	0.0018
61	0.2619	0.5238	2727	0.0006	0.0008	0.0010	0.0016	0.0016	0.0019
62	0.2639	0.5248	2682	0.0008	0.0008	0.0010	0.0015	0.0016	0.0020
63	0.2616	0.5267	2720	0.0006	0.0006	0.0009	0.0014	0.0016	0.0019
64	0.2636	0.5257	2685	0.0008	0.0010	0.0011	0.0016	0.0017	0.0017
65	0.2627	0.5244	2707	0.0007	0.0009	0.0010	0.0016	0.0018	0.0018
66	0.2634	0.5255	2688	0.0007	0.0009	0.0009	0.0014	0.0016	0.0015
67	0.2633	0.5268	2685	0.0008	0.0009	0.0009	0.0015	0.0016	0.0017
68	0.2623	0.5240	2717	0.0007	0.0008	0.0010	0.0015	0.0016	0.0019
69	0.2632	0.5276	2686	0.0008	0.0009	0.0010	0.0015	0.0017	0.0020
70	0.2629	0.5261	2697	0.0007	0.0010	0.0010	0.0015	0.0016	0.0017
71	0.2625	0.5255	2707	0.0006	0.0007	0.0008	0.0012	0.0015	0.0016
72	0.2632	0.5242	2699	0.0007	0.0008	0.0010	0.0015	0.0016	0.0018
73	0.2647	0.5268	2658	0.0008	0.0016	0.0017	0.0014	0.0015	0.0015
74	0.2640	0.5266	2672	0.0006	0.0009	0.0009	0.0013	0.0015	0.0014
75	0.2630	0.5260	2696	0.0006	0.0007	0.0009	0.0014	0.0015	0.0016
Ave.	0.2630	0.5259	2696	0.0007	0.0008	0.0010	0.0014	0.0016	0.0018
Med.	0.2630	0.5258	2695	0.0007	0.0008	0.0010	0.0015	0.0016	0.0018
st dev	0.0010	0.0013	22	0.0001	0.0002	0.0002	0.0001	0.0001	0.0002
Min.	0.2608	0.5238	2658	0.0006	0.0006	0.0008	0.0012	0.0015	0.0014
Max.	0.2649	0.5292	2742	0.0008	0.0016	0.0017	0.0016	0.0018	0.0021



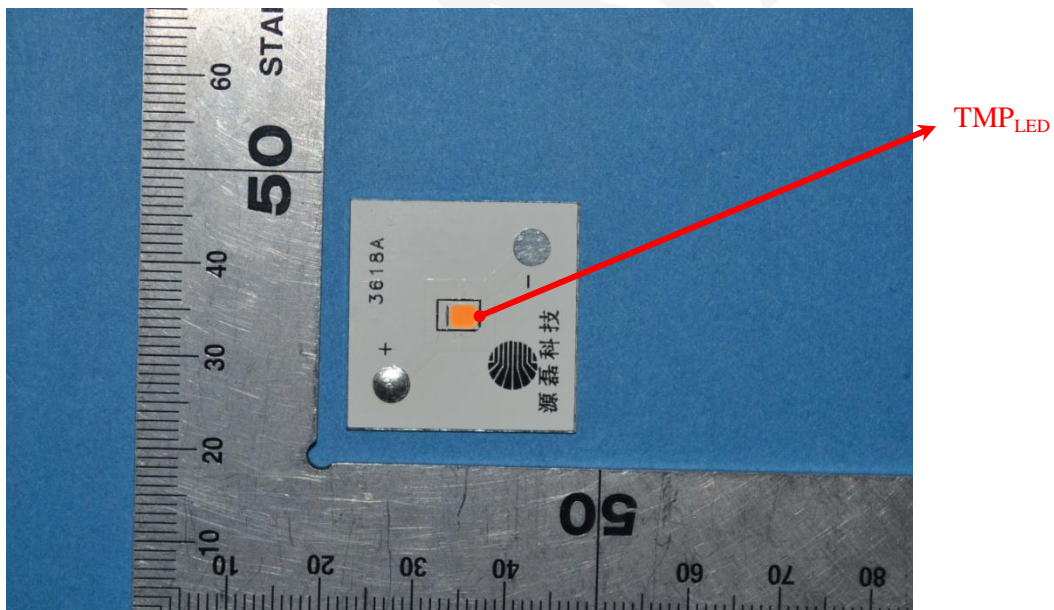
4 - EUT Photo

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 EUT Photo



*****END OF REPORT*****