



IESNA LM-80-2008

MEASURING LUMEN MAINTENANCE OF LED LIGHT SOURCES

MEASUREMENT AND TEST REPORT

For

LIGHTNING OPTOELECTRONIC TECHNOLOGY (SZ) Co., LTD.

Building B. Wen Tao Technological Park. Yingrenshi Community. Shiyuan Street. Baoan District. Shenzhen.
518108 China

Model: T19

Report Type: 3000 Hours Test Report		Product Type: LED Package	
Test Engineer:	Daniel Duan	<i>Daniel Duan</i>	
Report Number:	RSZ150212501-10-3000		
Test Date:	2015-02-13 to 2015-06-18		
Report Date:	2015-07-02		
Reviewed By:	Jeanne Han /EE Manager	<i>Jeanne Han</i>	
Prepared By:	Bay Area Compliance Laboratories Corp. (Dongguan). Pu Long Cun 69, Puxinghu Industrial Area, Tangxia Town, Dongguan, Guangdong, P.R.China. Tel: +86-0769-86858888 Fax: +86-0769-86858588		

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).

This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

TABLE OF CONTENTS

1 - GENERAL INFORMATION.....	3
1.1 DESCRIPTION OF LED LIGHT SOURCES	3
1.2 STANDARDS USED:.....	3
1.3 TEST FACILITY	3
1.4 DESCRIPTION OF AUXILIARY EQUIPMENT	3
1.5 OPERATING CYCLE.....	4
1.6 AMBIENT CONDITIONS	4
1.7 PHOTOMETRY MEASUREMENT UNCERTAINTY	4
1.8 SAMPLE SET	5
2 - SUMMARY OF TEST RESULT	6
3 - TEST DATA	7
3.1 DATA SET 1, 55 °C, 350 mA (LUMEN MAINTENANCE).....	7
3.2 DATA SET 1, 55 °C, 350 mA (CHROMATICITY SHIFT)	8
3.3 DATA SET 2, 85 °C, 350 mA (LUMEN MAINTENANCE).....	9
3.4 DATA SET 2, 85 °C, 350mA (CHROMATICITY SHIFT)	10
3.5 DATA SET 3, 105 °C, 350 mA (LUMEN MAINTENANCE).....	11
3.6 DATA SET 3, 105 °C, 350 mA (CHROMATICITY SHIFT)	12
APPENDIX A – EUT PHOTO	13
A.1 MECHANICAL DIMENSIONS (TA = 25 °C).....	13
A.2 EUT PHOTO	13

1 - GENERAL INFORMATION

1.1 Description of LED Light Sources

Devices tested

Part Number: T19
 Part Name: 3535
 Part Type: LED Package
 Nominal CCT: 3000K

1.2 Standards Used:

- IESNA LM-80-08: IES Approved Method for Measuring Lumen Maintenance of LED Light Sources.
- 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 Test Facility

The testing facility used by Bay Area Compliance Laboratories Corp. (Dongguan). is located at Pu Long Cun 69, Puxinghu Industrial Area, Tangxia Town, Dongguan, Guangdong, P.R.China.

1.4 Description of Auxiliary Equipment

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Integral Sphere	EVERFINE	Diameter 0.3m	1011119	380-780nm, Diameter:0.3m,0- 1999Lumen	2015-03-25	2016-03-25
Programmable Test Power for LEDs	EVERFINE	LED300E	1008002	15V/2000mA	2015-03-05	2016-03-05
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	380-780nm	2015-03-25	2016-03-25
Standard Light Source	EVERFINE	D062	1011093	N/A	2014-08-05	2015-08-05
Precision digital stabilized DC power supply	EVERFINE	WY605	G115987C J7321114	300VA	2015-03-05	2016-03-05
Multilayer aging machine	BACL	B2-270	20022	25°C~110°C	2014-10-27	2015-10-27
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11060010	(50V/15A)	2015-03-05	2016-03-05
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11060002	(50V/15A)	2014-07-11	2015-07-11

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090008	(50V/15A)	2014-07-11	2015-07-11

1.5 Operating Cycle

Samples are driven with a constant direct current (DC)

1.6 Ambient Conditions

For lumen maintenance test, samples were operated in thermal chambers with minimal ambient airflow. For long term reliability test, the case temperature was controlled by mounting several thermocouples on a sample reliability stress board at the designated thermal measurement point, as shown in APPENDIX. The ambient temperature T_A was measured by several thermocouples at a distance of 5 mm above the reliability test board. The relative humidity within chamber was less than 65%.

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

1.7 Photometry Measurement Uncertainty

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. This calibration results traceable to the NATIONAL INSTITUTE OF METROLOGY (NIM).

1.8 Sample Set

Sampling Method:

LED samples for IESNA LM-80 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 IESNA LM-80 tests.

Sample Size:

Total 66Pcs;

Each Ts test condition 22Pcs

The samples tested at Ts 55 °C, Ts 85 °C and Ts 105 °C were received at 2015-02-12 and tested during 2015-02-13 to 2015-06-18. The samples were numbered from 1 to 22, 23 to 44 and 45 to 66

Data Set 1: 55 °C, 350mA

Part Number:	T19
Number of Units:	22
Actual Case Temperature(T_S):	$T_S = 54.3$ °C
Actual Ambient Temperature(T_A):	$T_A = 51.4$ °C
Life Test Drive Current:	$I_F = 350$ mA
Measurement Current:	$I_F = 350$ mA

Data Set 2: 85 °C, 350mA

Part Number:	T19
Number of Units:	22
Actual Case Temperature(T_S):	$T_S = 84.2$ °C
Actual Ambient Temperature(T_A):	$T_A = 82.4$ °C
Life Test Drive Current:	$I_F = 350$ mA
Measurement Current:	$I_F = 350$ mA

Data Set 3: 105 °C, 350mA

Part Number:	T19
Number of Units:	22
Actual Case Temperature(T_S):	$T_S = 104.3$ °C
Actual Ambient Temperature(T_A):	$T_A = 103.2$ °C
Life Test Drive Current:	$I_F = 350$ mA
Measurement Current:	$I_F = 350$ mA

2 - SUMMARY OF TEST RESULT

Data Set:	Data Set 1, 55 °C, 350mA
Number of Units:	22
Failures Observed:	0
Test Interval and Test Duration:	0h,1000h,2000h,3000h
Average. Lumen Maintenance at 3000 hours:	98.90%
Average Chromaticity Shift at 3000 hours ($\Delta u'v'$):	0.0016
Reported TM-21 L ₇₀ Lifetime:	TBD

Data Set:	Data Set 2, 85 °C, 350mA
Number of Units:	22
Failures Observed:	0
Test Interval and Test Duration:	0h,1000h,2000h,3000h
Average. Lumen Maintenance at 3000 hours:	98.75%
Average Chromaticity Shift at 3000 hours($\Delta u'v'$):	0.0015
Reported TM-21 L ₇₀ Lifetime:	TBD

Data Set:	Data Set 3, 105 °C, 350mA
Number of Units:	22
Failures Observed:	0
Test Interval and Test Duration:	0h,1000h,2000h,3000h
Average. Lumen Maintenance at 3000 hours:	98.50%
Average Chromaticity Shift at 3000 hours($\Delta u'v'$):	0.0017
Reported TM-21 L ₇₀ Lifetime:	TBD

3 - Test Data

3.1 Data Set 1, 55 °C, 350 mA (Lumen Maintenance)

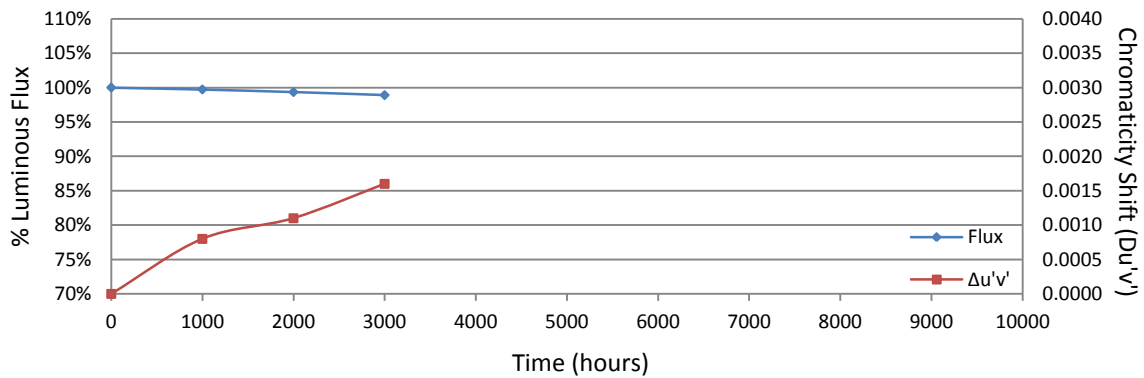
No.	V _F (V)	Φ(lm)	Lumen Maintenance (%)					
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	3.030	117.9	99.66	99.32	98.98	TBD	TBD	TBD
2	3.021	122.6	99.76	99.35	98.94	TBD	TBD	TBD
3	3.033	119.7	99.58	99.25	98.75	TBD	TBD	TBD
4	3.047	121.5	99.84	99.34	98.85	TBD	TBD	TBD
5	3.059	121.8	99.34	98.93	98.44	TBD	TBD	TBD
6	3.050	121.1	99.67	99.42	99.09	TBD	TBD	TBD
7	3.059	119.8	99.50	99.17	98.75	TBD	TBD	TBD
8	3.062	119.6	100.25	99.92	99.41	TBD	TBD	TBD
9	3.053	120.0	99.92	99.58	99.17	TBD	TBD	TBD
10	3.042	118.9	100.34	100.00	99.58	TBD	TBD	TBD
11	3.051	122.4	100.08	99.51	98.94	TBD	TBD	TBD
12	3.044	119.9	99.67	99.25	98.92	TBD	TBD	TBD
13	3.037	121.7	99.75	99.42	98.93	TBD	TBD	TBD
14	3.029	119.8	99.83	99.50	99.08	TBD	TBD	TBD
15	3.034	121.5	99.67	99.18	98.68	TBD	TBD	TBD
16	3.042	118.8	99.66	99.33	98.82	TBD	TBD	TBD
17	3.044	123.6	99.84	99.51	99.11	TBD	TBD	TBD
18	3.017	121.3	99.67	99.34	98.85	TBD	TBD	TBD
19	3.044	121.1	99.75	99.34	98.84	TBD	TBD	TBD
20	3.070	118.7	99.66	99.33	98.74	TBD	TBD	TBD
21	3.061	112.3	99.11	98.75	98.22	TBD	TBD	TBD
22	3.045	118.1	99.32	99.07	98.73	TBD	TBD	TBD
Ave.	3.044	120.1	99.72	99.35	98.90	TBD	TBD	TBD
Med.	3.044	120.0	99.67	99.34	98.88	TBD	TBD	TBD
st dev	0.0136	2.3	0.2791	0.2742	0.2897	TBD	TBD	TBD
Min.	3.017	112.3	99.11	98.75	98.22	TBD	TBD	TBD
Max.	3.070	123.6	100.34	100.00	99.58	TBD	TBD	TBD

TM-21 Projection:

Test Duration: 3000 hours
Failures Observed: 0
α: TBD
β: TBD
Calculated L₇₀: TBD
Reported L₇₀: TBD

3.2 Data Set 1, 55 °C, 350 mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)					
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	0.2473	0.5128	3144	0.0006	0.0009	0.0012	TBD	TBD	TBD
2	0.2450	0.5192	3158	0.0008	0.0013	0.0016	TBD	TBD	TBD
3	0.2461	0.5183	3135	0.0008	0.0012	0.0016	TBD	TBD	TBD
4	0.2453	0.5187	3154	0.0007	0.0012	0.0016	TBD	TBD	TBD
5	0.2461	0.5221	3108	0.0008	0.0011	0.0016	TBD	TBD	TBD
6	0.2480	0.5204	3070	0.0008	0.0011	0.0016	TBD	TBD	TBD
7	0.2455	0.5181	3152	0.0008	0.0010	0.0016	TBD	TBD	TBD
8	0.2441	0.5161	3209	0.0009	0.0013	0.0018	TBD	TBD	TBD
9	0.2450	0.5164	3179	0.0008	0.0011	0.0016	TBD	TBD	TBD
10	0.2499	0.5204	3024	0.0008	0.0011	0.0017	TBD	TBD	TBD
11	0.2480	0.5223	3058	0.0009	0.0013	0.0018	TBD	TBD	TBD
12	0.2468	0.5167	3129	0.0008	0.0012	0.0018	TBD	TBD	TBD
13	0.2460	0.5195	3130	0.0008	0.0012	0.0018	TBD	TBD	TBD
14	0.2455	0.5190	3146	0.0008	0.0012	0.0016	TBD	TBD	TBD
15	0.2492	0.5241	3017	0.0008	0.0009	0.0015	TBD	TBD	TBD
16	0.2477	0.5226	3065	0.0008	0.0012	0.0016	TBD	TBD	TBD
17	0.2442	0.5184	3185	0.0009	0.0014	0.0018	TBD	TBD	TBD
18	0.2487	0.5208	3051	0.0007	0.0011	0.0016	TBD	TBD	TBD
19	0.2491	0.5204	3044	0.0009	0.0012	0.0017	TBD	TBD	TBD
20	0.2505	0.5211	3003	0.0006	0.0010	0.0014	TBD	TBD	TBD
21	0.2483	0.5217	3055	0.0006	0.0009	0.0014	TBD	TBD	TBD
22	0.2509	0.5174	3017	0.0007	0.0010	0.0014	TBD	TBD	TBD
Ave.	0.2471	0.5194	3102	0.0008	0.0011	0.0016	TBD	TBD	TBD
Med.	0.2471	0.5194	3119	0.0008	0.0012	0.0016	TBD	TBD	TBD
st dev	0.0020	0.0026	62.4033	0.0001	0.0001	0.0002	TBD	TBD	TBD
Min.	0.2441	0.5128	3003	0.0006	0.0009	0.0012	TBD	TBD	TBD
Max.	0.2509	0.5241	3209	0.0009	0.0014	0.0018	TBD	TBD	TBD



3.3 Data Set 2, 85 °C, 350 mA (Lumen Maintenance)

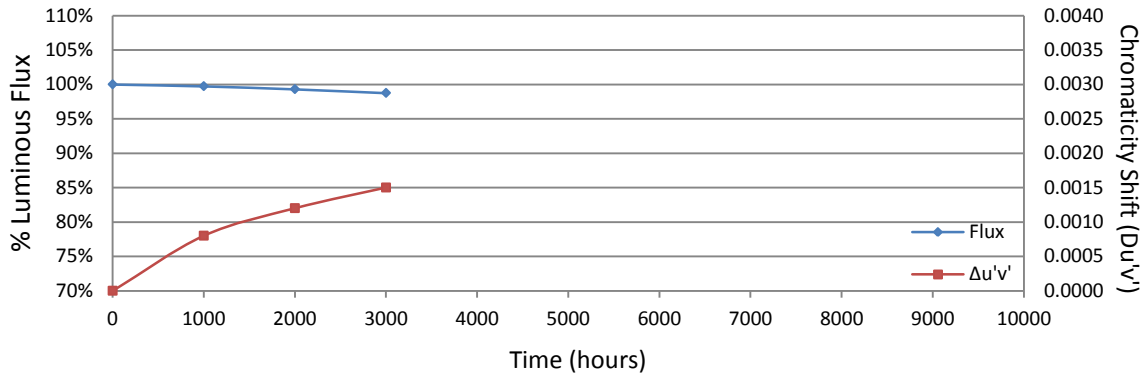
No.	V _F (V)	Φ(lm)	Lumen Maintenance (%)					
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
23	3.076	117.6	99.74	99.49	99.06	TBD	TBD	TBD
24	3.071	114.1	100.00	99.47	98.86	TBD	TBD	TBD
25	3.024	118.5	99.66	99.07	98.40	TBD	TBD	TBD
26	3.055	113.4	100.00	99.56	99.03	TBD	TBD	TBD
27	3.169	118.6	99.83	99.41	99.07	TBD	TBD	TBD
28	3.019	108.8	99.82	99.45	98.90	TBD	TBD	TBD
29	3.079	114.1	99.82	99.47	98.86	TBD	TBD	TBD
30	3.079	112.4	99.73	99.38	98.67	TBD	TBD	TBD
31	3.039	116.3	99.48	99.05	98.28	TBD	TBD	TBD
32	3.079	112.7	99.73	99.29	98.76	TBD	TBD	TBD
33	3.092	115.4	99.22	98.70	98.18	TBD	TBD	TBD
34	3.062	117.2	99.83	99.49	98.89	TBD	TBD	TBD
35	3.020	117.3	99.57	99.15	98.64	TBD	TBD	TBD
36	3.078	113.5	99.74	99.21	98.50	TBD	TBD	TBD
37	3.077	114.2	99.65	99.21	98.69	TBD	TBD	TBD
38	3.045	115.2	99.74	99.22	98.78	TBD	TBD	TBD
39	3.057	113.2	99.47	99.03	98.32	TBD	TBD	TBD
40	3.021	112.9	99.82	99.29	99.03	TBD	TBD	TBD
41	3.074	111.7	99.82	99.55	99.10	TBD	TBD	TBD
42	3.041	117.3	99.66	99.23	99.06	TBD	TBD	TBD
43	3.055	116.0	100.26	99.74	99.05	TBD	TBD	TBD
44	3.072	116.2	99.48	99.05	98.45	TBD	TBD	TBD
Ave.	3.063	114.8	99.73	99.30	98.75	TBD	TBD	TBD
Med.	3.067	114.7	99.74	99.29	98.82	TBD	TBD	TBD
st dev	0.0326	2.5	0.2147	0.2346	0.2901	TBD	TBD	TBD
Min.	3.019	108.8	99.22	98.70	98.18	TBD	TBD	TBD
Max.	3.169	118.6	100.26	99.74	99.10	TBD	TBD	TBD

TM-21 Projection:

Test Duration: 3000 hours
Failures Observed: 0
α: TBD
β: TBD
Calculated L₇₀: TBD
Reported L₇₀: TBD

3.4 Data Set 2, 85 °C, 350mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)					
				0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs
23	0.2498	0.5199	3028	0.0008	0.0011	0.0013	TBD	TBD	TBD
24	0.2489	0.5172	3071	0.0006	0.0010	0.0014	TBD	TBD	TBD
25	0.2472	0.5226	3076	0.0010	0.0013	0.0017	TBD	TBD	TBD
26	0.2497	0.5182	3042	0.0009	0.0013	0.0015	TBD	TBD	TBD
27	0.2497	0.5204	3029	0.0009	0.0013	0.0014	TBD	TBD	TBD
28	0.2514	0.5170	3006	0.0008	0.0012	0.0015	TBD	TBD	TBD
29	0.2519	0.5233	2956	0.0007	0.0011	0.0014	TBD	TBD	TBD
30	0.2507	0.5222	2991	0.0007	0.0012	0.0013	TBD	TBD	TBD
31	0.2493	0.5192	3047	0.0009	0.0012	0.0014	TBD	TBD	TBD
32	0.2506	0.5215	2997	0.0008	0.0011	0.0013	TBD	TBD	TBD
33	0.2514	0.5241	2964	0.0008	0.0011	0.0014	TBD	TBD	TBD
34	0.2466	0.5228	3089	0.0008	0.0011	0.0013	TBD	TBD	TBD
35	0.2488	0.5233	3031	0.0008	0.0012	0.0014	TBD	TBD	TBD
36	0.2510	0.5193	3004	0.0010	0.0014	0.0016	TBD	TBD	TBD
37	0.2500	0.5229	3004	0.0008	0.0013	0.0016	TBD	TBD	TBD
38	0.2505	0.5214	3003	0.0009	0.0012	0.0014	TBD	TBD	TBD
39	0.2469	0.5188	3110	0.0009	0.0012	0.0016	TBD	TBD	TBD
40	0.2504	0.5259	2977	0.0008	0.0011	0.0014	TBD	TBD	TBD
41	0.2500	0.5189	3030	0.0010	0.0016	0.0017	TBD	TBD	TBD
42	0.2513	0.5193	2995	0.0010	0.0013	0.0016	TBD	TBD	TBD
43	0.2491	0.5230	3026	0.0009	0.0013	0.0016	TBD	TBD	TBD
44	0.2494	0.5149	3072	0.0009	0.0013	0.0016	TBD	TBD	TBD
Ave.	0.2498	0.5207	3025	0.0008	0.0012	0.0015	TBD	TBD	TBD
Med.	0.2499	0.5209	3027	0.0009	0.0012	0.0014	TBD	TBD	TBD
st dev	0.0014	0.0027	40.5086	0.0001	0.0001	0.0001	TBD	TBD	TBD
Min.	0.2466	0.5149	2956	0.0006	0.0010	0.0013	TBD	TBD	TBD
Max.	0.2519	0.5259	3110	0.0010	0.0016	0.0017	TBD	TBD	TBD



3.5 Data Set 3, 105 °C, 350 mA (Lumen Maintenance)

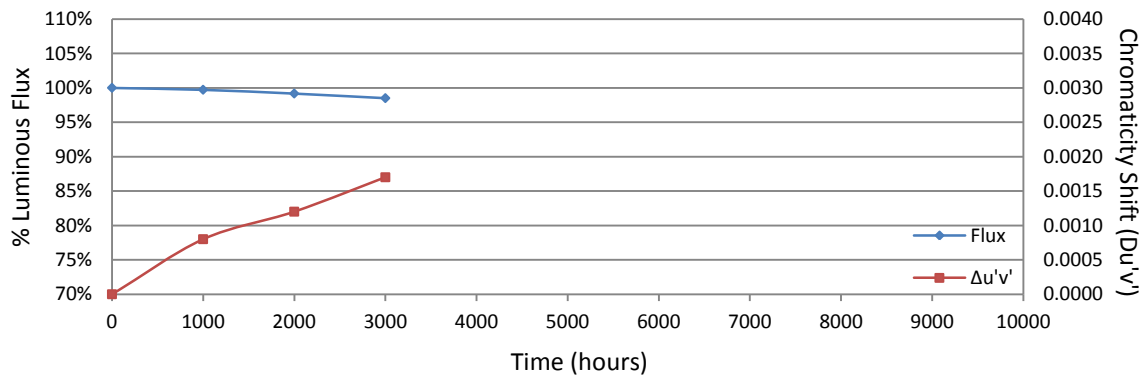
No.	V _F (V)	Φ(lm)	Lumen Maintenance (%)					
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
45	3.061	113.0	99.73	99.20	98.58	TBD	TBD	TBD
46	3.062	115.3	99.83	99.22	98.53	TBD	TBD	TBD
47	3.090	116.0	99.91	99.48	98.97	TBD	TBD	TBD
48	3.064	115.0	99.83	99.48	98.61	TBD	TBD	TBD
49	3.075	116.2	99.48	98.88	98.28	TBD	TBD	TBD
50	3.030	115.9	99.65	99.05	98.27	TBD	TBD	TBD
51	3.074	116.4	99.91	99.48	98.71	TBD	TBD	TBD
52	3.070	115.8	99.91	99.48	99.14	TBD	TBD	TBD
53	3.076	113.8	99.38	98.86	98.24	TBD	TBD	TBD
54	3.064	109.5	99.63	99.09	98.36	TBD	TBD	TBD
55	3.060	112.1	100.27	99.55	98.84	TBD	TBD	TBD
56	3.163	115.5	99.74	99.13	98.61	TBD	TBD	TBD
57	3.068	116.0	99.66	98.97	98.28	TBD	TBD	TBD
58	3.049	112.3	99.64	99.20	98.75	TBD	TBD	TBD
59	3.030	108.8	99.91	99.08	98.16	TBD	TBD	TBD
60	3.078	115.1	99.39	99.04	98.52	TBD	TBD	TBD
61	3.038	114.2	99.74	99.30	98.42	TBD	TBD	TBD
62	3.075	113.9	99.65	99.03	98.42	TBD	TBD	TBD
63	3.056	115.2	99.83	99.31	98.70	TBD	TBD	TBD
64	3.072	107.3	99.44	98.70	97.95	TBD	TBD	TBD
65	3.066	108.0	99.72	99.35	98.61	TBD	TBD	TBD
66	3.077	110.0	99.55	98.91	98.09	TBD	TBD	TBD
Ave.	3.068	113.4	99.72	99.17	98.50	TBD	TBD	TBD
Med.	3.067	114.6	99.73	99.17	98.52	TBD	TBD	TBD
st dev	0.0262	2.9	0.2063	0.2380	0.2899	TBD	TBD	TBD
Min.	3.030	107.3	99.38	98.70	97.95	TBD	TBD	TBD
Max.	3.163	116.4	100.27	99.55	99.14	TBD	TBD	TBD

TM-21 Projection:

Test Duration: 3000 hours
Failures Observed: 0
α: TBD
β: TBD
Calculated L₇₀: TBD
Reported L₇₀: TBD

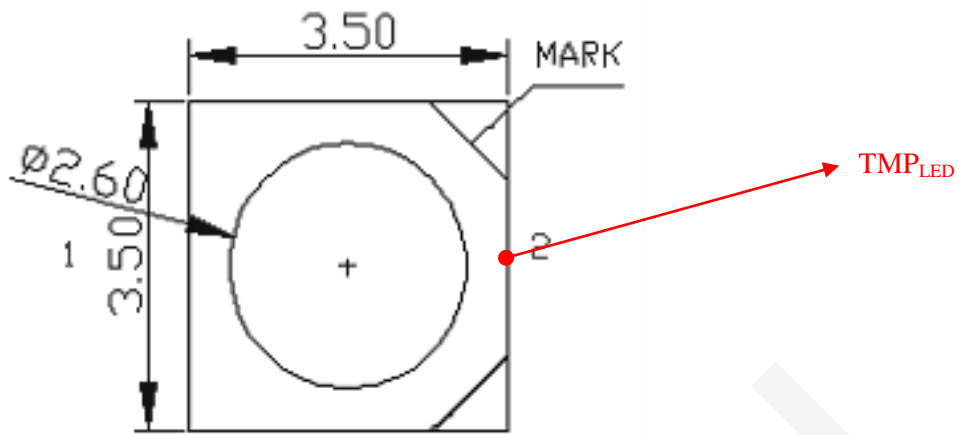
3.6 Data Set 3, 105 °C, 350 mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)					
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
45	0.2485	0.5231	3040	0.0009	0.0013	0.0015	TBD	TBD	TBD
46	0.2516	0.5198	2985	0.0011	0.0015	0.0018	TBD	TBD	TBD
47	0.2521	0.5241	2947	0.0010	0.0013	0.0016	TBD	TBD	TBD
48	0.2483	0.5229	3047	0.0009	0.0013	0.0016	TBD	TBD	TBD
49	0.2514	0.5210	2982	0.0011	0.0012	0.0015	TBD	TBD	TBD
50	0.2505	0.5262	2972	0.0009	0.0013	0.0015	TBD	TBD	TBD
51	0.2494	0.5184	3048	0.0011	0.0015	0.0018	TBD	TBD	TBD
52	0.2482	0.5187	3079	0.0012	0.0016	0.0020	TBD	TBD	TBD
53	0.2505	0.5186	3019	0.0009	0.0013	0.0016	TBD	TBD	TBD
54	0.2515	0.5232	2966	0.0011	0.0014	0.0018	TBD	TBD	TBD
55	0.2482	0.5162	3095	0.0008	0.0012	0.0015	TBD	TBD	TBD
56	0.2469	0.5140	3147	0.0008	0.0012	0.0016	TBD	TBD	TBD
57	0.2513	0.5180	3003	0.0009	0.0014	0.0019	TBD	TBD	TBD
58	0.2486	0.5242	3032	0.0009	0.0013	0.0017	TBD	TBD	TBD
59	0.2480	0.5223	3059	0.0008	0.0011	0.0018	TBD	TBD	TBD
60	0.2504	0.5222	2999	0.0006	0.0009	0.0016	TBD	TBD	TBD
61	0.2481	0.5173	3091	0.0008	0.0010	0.0018	TBD	TBD	TBD
62	0.2486	0.5195	3062	0.0006	0.0010	0.0017	TBD	TBD	TBD
63	0.2486	0.5202	3058	0.0006	0.0010	0.0018	TBD	TBD	TBD
64	0.2513	0.5160	3017	0.0006	0.0011	0.0018	TBD	TBD	TBD
65	0.2535	0.5179	2949	0.0007	0.0010	0.0019	TBD	TBD	TBD
66	0.2502	0.5186	3027	0.0005	0.0010	0.0018	TBD	TBD	TBD
Ave.	0.2498	0.5201	3028	0.0008	0.0012	0.0017	TBD	TBD	TBD
Med.	0.2498	0.5197	3030	0.0009	0.0012	0.0017	TBD	TBD	TBD
st dev	0.0017	0.0031	50.9767	0.0002	0.0002	0.0001	TBD	TBD	TBD
Min.	0.2469	0.5140	2947	0.0005	0.0009	0.0015	TBD	TBD	TBD
Max.	0.2535	0.5262	3147	0.0012	0.0016	0.0020	TBD	TBD	TBD



Appendix A – EUT PHOTO

A.1 Mechanical Dimensions (Ta = 25 °C)



All dimensions are in millimeter

A.2 EUT Photo



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