



TEST REPORT

According to ANSI/IES LM-80-15
For

Shenzhen Refond Optoelectronic Co., Ltd.

1 to 8th Floor, Building #1, 10th Industrial Zone, Tian Liao Community, Gong Ming Area, Guang Ming New District, SHENZHEN, CHINA.

Model: RF-27TP32DS-DF-I3

Report Type: 9000 Hours Test Report		Product Type: LED Package	
Test Engineer:	Pote Wang	<i>Pote Wang</i>	
Report Number:	R2DG161221052-10-M2		
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Report Date:	2018-11-14		
Reviewed By:	Daniel Duan / EE Manager	<i>Daniel</i>	
Revised Note:	The previous report R2DG161221052-10-M1 is replaced by this report on 2018-11-14		
Test Facility:	Test facility was located at No.69,Pulongcun ,Puxihu Industrial Area, Tangxia , Dongguan, Guangdong, China.		
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Accreditation:	The IAS Accreditation Number TL-460.		

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:

90 PCS samples were received on 2016-12-21. The samples were numbered from 1 to 30, 31 to 60 and 61 to 90.

Manufacturer:	Shenzhen Refond Optoelectronic Co., Ltd.
Part Number:	RF-27TP32DS-DF-I3
Part Type:	LED Package
Drive Level:	DC 100mA
Nominal CCT:	2700K
Power:	1W
Current Density per LED die:	533.33 mA/mm ²
Power Density per LED die:	1.78 W/mm ²
CRI:	90
Die Spacing:	0.2mm

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.

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 LM-80 Data* (September 28, 2017)

This report covers the following models:

Tested Model	Multiple Models	Variations	Details
RF-27TP32DS-DF-I3	R*-*** * 32DS-**-** (-Y)-**	1. CCT:2200-8200 2. internal management code.	See below

$$\begin{array}{cccccccc} \underline{R} & \underline{*} & \underline{-} & \underline{*} & \underline{*} & \underline{*} & \underline{*} & \underline{32DS} & \underline{-} & \underline{*} & \underline{*} & \underline{-} & \underline{Y} & \underline{-} & \underline{*} & \underline{*} \\ 1 & 2 & 3 & 4 & 5 & & & 6 & & & & 7 & & & 8 & \end{array}$$

Note:

- The first * can be F or T, It is an internal Market code which does not affect property.
- The second * represent customer name, it can be C, D, H, K, L, M, P, S, T, W, Y, which also can be excluded.
- The third to fourth * represent CCT, it can be 22, 24, 27, 30, 35, 40, 45, 50, 57, 60, 62, 65, 82; ** don't mean only two numbers, it maybe also as mentioned 2, 3, 4, 5, 6, 7, 8.
- The fifth * represent Chromogenic index ,it can be R,M,H,T,or Q&S which does not affect product property.
- The sixth * it can be I or P, it is an internal Market code of Leadframe .
- The seventh to eighth * can be AF, BF, CF, DF, EF, FF, FD or FH, it is an internal Market code which does not affect product property.
- The ninth to tenth ** can be I3, G3, N3, 3T ,3J,or3N, it is an internal Market code which does not affect product property.
- The letter "Y" on behalf of the centrifugal power equipment is not used, No "Y" on behalf of using centrifugal power equipment.
- The last letter -** represent project code, not specified, it can be blank, * or ** and number or letter

1.2 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 standard was not accredited by IAS)

- ENERGY STAR[®] Requirements for the Use of LM-80 Data (This standard was not accredited by IAS)

1.3 Testing Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
0.3m integrating sphere	EVERFINE	Diameter 0.3m	1011119	2017-03-09	2018-03-09
Programmable Test Power for LEDs	EVERFINE	LED300E	1008002	2017-03-03	2018-03-03
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	2017-03-09	2018-03-09
Standard Light Source	EVERFINE	D062	1011093	2017-09-13	2018-09-13
Precision digital stabilized DC power supply	EVERFINE	WY605-V110	G115987CJ7321114	2017-03-03	2018-03-03
Multilayer aging machine	BACL	B3-900	20030	2017-07-17	2018-07-17
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11060010	2017-03-03	2018-03-03
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090008	2017-07-07	2018-07-07
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11060002	2017-07-07	2018-07-07

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 $2^{\circ}C$ 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 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 $25^{\circ}C \pm 2^{\circ}C$, 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. The forward current was regulated to within $\pm 0.5\%$ of the nominal value. The test system was calibrated by halogen reference lamp. The ambient temperature during test was set to $25^{\circ}C \pm 2^{\circ}C$, RH <65%. The temperature measurement point was located in the sphere and the temperature was detected by a temperature probe.

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 $U=21K$ ($K=2$), at the 95% confidence level.

The uncertainty of the temperature is $U=0.8671^{\circ}C$ ($K=2$), 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, 100mA

Part Number: RF-27TP32DS-DF-I3
Number of Units: 30
Case Temperature: >53°C
Ambient Temperature: >50°C
Life Test Drive Current: 100mA
Measurement Current: 100mA

Data Set 2: 85°C, 100mA

Part Number: RF-27TP32DS-DF-I3
Number of Units: 30
Case Temperature: >83°C
Ambient Temperature: >80°C
Life Test Drive Current: 100mA
Measurement Current: 100mA

Data Set 3: 105°C, 100mA

Part Number: RF-27TP32DS-DF-I3
Number of Units: 30
Case Temperature: >103°C
Ambient Temperature: >100°C
Life Test Drive Current: 100mA
Measurement Current: 100mA

2 - Summary of Test Result

Data Set:	Sample Size	Failures Observed:	Test Interval	Test Duration	α :	β :	Reported TM-21 L ₇₀ Lifetime	Reported TM-21 L ₉₀ Lifetime
1	30	0	1000hrs	9000hrs	2.009E-06	1.003	>54000hrs	>54000hrs
2	30	0	1000hrs	9000hrs	2.505E-06	1.002	>54000hrs	43000hrs
3	30	0	1000hrs	9000hrs	2.741E-06	0.999	>54000hrs	38000hrs

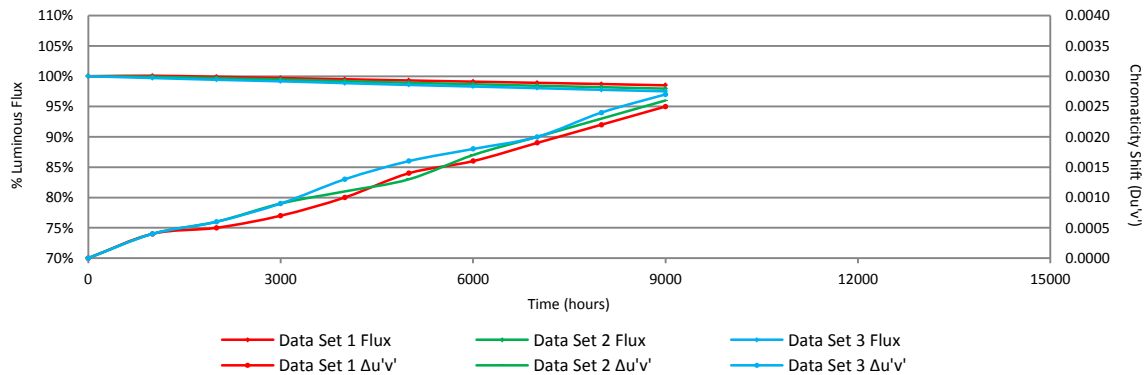
Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	100.08%	99.90%	99.70%	99.50%	99.30%	99.10%	98.91%	98.71%	98.50%
2	99.90%	99.68%	99.45%	99.19%	98.92%	98.68%	98.43%	98.19%	97.95%
3	99.70%	99.41%	99.16%	98.86%	98.56%	98.30%	98.03%	97.76%	97.51%

Average Chromaticity Shift

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	0.0004	0.0005	0.0007	0.0010	0.0014	0.0016	0.0019	0.0022	0.0025
2	0.0004	0.0006	0.0009	0.0011	0.0013	0.0017	0.002	0.0023	0.0026
3	0.0004	0.0006	0.0009	0.0013	0.0016	0.0018	0.002	0.0024	0.0027

Average Lumen Maintenance and Chromaticity Shift VS. Time



3 - Test Data

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

No.	Φ(lm)	Lumen Maintenance (%)								
	Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	113.0	100.18	99.82	99.73	99.56	99.20	98.85	98.76	98.50	98.32
2	113.1	100.09	99.91	99.82	99.73	99.56	99.47	99.20	99.03	98.76
3	111.9	99.91	99.73	99.46	99.29	99.11	98.84	98.57	98.30	98.12
4	110.3	100.00	99.91	99.73	99.55	99.37	99.09	98.91	98.82	98.55
5	111.8	99.91	99.82	99.55	99.46	99.11	98.93	98.57	98.30	98.03
6	110.0	100.09	99.82	99.55	99.36	99.18	99.00	98.73	98.64	98.45
7	109.7	100.18	99.82	99.54	99.18	98.81	98.45	98.27	98.09	97.90
8	112.4	99.82	99.56	99.47	99.29	99.20	99.02	98.75	98.40	98.13
9	109.5	100.18	100.09	99.91	99.63	99.36	99.27	99.18	99.00	98.63
10	112.6	100.09	99.82	99.64	99.47	99.29	99.02	98.85	98.67	98.58
11	111.5	100.27	100.09	99.91	99.73	99.46	99.28	99.10	98.83	98.65
12	111.9	100.09	99.91	99.64	99.55	99.37	99.20	99.11	98.93	98.57
13	111.5	100.27	100.09	99.91	99.82	99.73	99.55	99.37	99.19	99.01
14	111.5	99.91	99.73	99.55	99.37	99.28	99.01	98.92	98.65	98.48
15	110.5	99.91	99.64	99.28	99.00	98.64	98.55	98.46	98.19	98.01
16	111.9	100.00	99.82	99.64	99.29	99.11	98.75	98.48	98.30	98.03
17	109.8	100.09	100.00	99.73	99.45	99.18	98.82	98.72	98.54	98.27
18	111.2	100.18	99.91	99.82	99.73	99.37	99.10	98.92	98.65	98.47
19	110.5	100.36	100.27	100.00	99.82	99.64	99.55	99.28	99.19	98.91
20	111.1	100.27	100.18	99.82	99.73	99.55	99.37	99.19	99.01	98.83
21	110.9	100.27	100.09	99.82	99.55	99.46	99.28	99.10	99.01	98.83
22	110.7	100.27	100.18	100.09	99.82	99.73	99.64	99.46	99.28	99.10
23	109.6	99.91	99.73	99.64	99.45	99.27	99.09	99.00	98.91	98.63
24	111.4	100.18	99.91	99.82	99.64	99.46	99.37	99.28	99.10	99.01
25	108.4	100.09	99.91	99.72	99.45	99.35	99.26	99.08	98.89	98.71
26	111.5	99.82	99.55	99.46	99.28	99.19	99.10	98.74	98.57	98.39
27	110.0	100.09	99.91	99.82	99.55	99.36	99.09	98.91	98.73	98.55
28	108.9	99.82	99.63	99.45	99.27	99.08	98.90	98.62	98.26	98.07
29	110.4	100.18	100.09	99.82	99.55	99.46	99.28	99.09	98.91	98.82
30	112.0	100.09	99.91	99.73	99.55	99.11	98.93	98.75	98.48	98.30
Ave.	111.0	100.08	99.90	99.70	99.50	99.30	99.10	98.91	98.71	98.50
Med.	111.2	100.09	99.91	99.73	99.55	99.32	99.09	98.92	98.70	98.55
st dev	1.2	0.1533	0.1849	0.1852	0.2041	0.2397	0.2832	0.2928	0.3274	0.3319
Min.	108.4	99.82	99.55	99.28	99.00	98.64	98.45	98.27	98.09	97.90
Max.	113.1	100.36	100.27	100.09	99.82	99.73	99.64	99.46	99.28	99.10

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

No.	Forward Voltage (V)									
	Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	8.854	8.882	8.862	8.857	8.855	8.877	8.856	8.847	8.868	8.863
2	8.894	8.925	8.907	8.903	8.897	8.902	8.897	8.888	8.909	8.902
3	8.872	8.912	8.893	8.888	8.882	8.898	8.883	8.867	8.890	8.886
4	8.850	8.884	8.889	8.855	8.853	8.881	8.856	8.843	8.870	8.859
5	8.844	8.874	8.871	8.856	8.847	8.873	8.846	8.839	8.867	8.854
6	8.837	8.865	8.857	8.848	8.846	8.849	8.847	8.832	8.854	8.851
7	8.853	8.881	8.872	8.860	8.851	8.859	8.862	8.845	8.869	8.861
8	8.873	8.904	8.879	8.879	8.873	8.875	8.874	8.866	8.889	8.876
9	8.846	8.875	8.853	8.866	8.850	8.853	8.847	8.838	8.875	8.854
10	8.867	8.898	8.885	8.884	8.875	8.875	8.875	8.863	8.887	8.879
11	8.831	8.869	8.858	8.850	8.838	8.843	8.842	8.830	8.857	8.840
12	8.887	8.920	8.900	8.902	8.898	8.894	8.894	8.888	8.907	8.896
13	8.857	8.893	8.864	8.872	8.857	8.863	8.864	8.856	8.875	8.862
14	8.902	8.937	8.922	8.919	8.908	8.915	8.905	8.905	8.921	8.909
15	8.841	8.875	8.848	8.853	8.845	8.844	8.846	8.835	8.851	8.850
16	8.844	8.879	8.857	8.856	8.845	8.853	8.845	8.846	8.855	8.854
17	8.861	8.892	8.881	8.877	8.863	8.866	8.861	8.862	8.877	8.870
18	8.852	8.890	8.872	8.864	8.855	8.861	8.858	8.850	8.873	8.859
19	8.861	8.891	8.868	8.875	8.863	8.867	8.865	8.858	8.881	8.870
20	8.866	8.905	8.884	8.880	8.877	8.879	8.875	8.872	8.887	8.875
21	8.853	8.887	8.865	8.861	8.860	8.862	8.859	8.846	8.871	8.863
22	8.836	8.878	8.855	8.850	8.849	8.845	8.844	8.844	8.860	8.846
23	8.864	8.897	8.875	8.872	8.871	8.868	8.863	8.869	8.882	8.869
24	8.849	8.890	8.863	8.861	8.853	8.854	8.849	8.849	8.863	8.856
25	8.876	8.907	8.889	8.892	8.878	8.884	8.875	8.881	8.901	8.889
26	8.844	8.882	8.857	8.869	8.851	8.858	8.853	8.852	8.871	8.856
27	8.851	8.891	8.864	8.863	8.863	8.854	8.855	8.851	8.877	8.856
28	8.841	8.886	8.856	8.858	8.856	8.850	8.853	8.842	8.872	8.857
29	8.858	8.903	8.881	8.880	8.868	8.875	8.871	8.866	8.886	8.875
30	8.863	8.910	8.883	8.888	8.881	8.874	8.869	8.864	8.886	8.879
Ave.	8.858	8.893	8.874	8.871	8.864	8.868	8.863	8.856	8.878	8.867
Med.	8.854	8.891	8.872	8.868	8.859	8.867	8.860	8.852	8.875	8.863
st dev	0.017	0.017	0.017	0.018	0.017	0.018	0.016	0.018	0.017	0.017
Min.	8.831	8.865	8.848	8.848	8.838	8.843	8.842	8.830	8.851	8.840
Max.	8.902	8.937	8.922	8.919	8.908	8.915	8.905	8.905	8.921	8.909

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

No.	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)								
				0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs
1	0.2558	0.5244	2859	0.0003	0.0006	0.0008	0.0011	0.0014	0.0014	0.0017	0.0020	0.0025
2	0.2583	0.5273	2788	0.0004	0.0005	0.0005	0.0011	0.0016	0.0016	0.0018	0.0021	0.0025
3	0.2571	0.5264	2820	0.0003	0.0005	0.0004	0.0009	0.0013	0.0014	0.0017	0.0019	0.0024
4	0.2583	0.5251	2799	0.0004	0.0005	0.0007	0.0010	0.0013	0.0015	0.0017	0.0019	0.0022
5	0.2594	0.5285	2761	0.0005	0.0005	0.0007	0.0011	0.0015	0.0016	0.0018	0.0023	0.0024
6	0.2612	0.5281	2724	0.0005	0.0006	0.0007	0.0009	0.0015	0.0014	0.0017	0.0018	0.0022
7	0.2568	0.5248	2835	0.0004	0.0005	0.0007	0.0011	0.0015	0.0019	0.0018	0.0021	0.0024
8	0.2588	0.5269	2780	0.0002	0.0004	0.0007	0.0010	0.0015	0.0018	0.0022	0.0020	0.0022
9	0.2581	0.5226	2816	0.0003	0.0004	0.0006	0.0010	0.0013	0.0018	0.0022	0.0023	0.0024
10	0.2576	0.5252	2815	0.0004	0.0004	0.0006	0.0009	0.0014	0.0016	0.0022	0.0023	0.0025
11	0.2580	0.5264	2800	0.0004	0.0005	0.0007	0.0010	0.0015	0.0017	0.0022	0.0022	0.0026
12	0.2592	0.5289	2762	0.0004	0.0003	0.0007	0.0010	0.0010	0.0014	0.0017	0.0023	0.0024
13	0.2597	0.5276	2759	0.0004	0.0004	0.0006	0.0010	0.0010	0.0013	0.0017	0.0021	0.0024
14	0.2566	0.5269	2829	0.0002	0.0003	0.0006	0.0010	0.0014	0.0014	0.0018	0.0022	0.0025
15	0.2589	0.5238	2793	0.0004	0.0004	0.0007	0.0011	0.0014	0.0016	0.0018	0.0024	0.0026
16	0.2597	0.5278	2757	0.0002	0.0003	0.0006	0.0009	0.0014	0.0014	0.0016	0.0021	0.0025
17	0.2603	0.5248	2757	0.0003	0.0003	0.0006	0.0010	0.0013	0.0015	0.0018	0.0019	0.0026
18	0.2603	0.5276	2745	0.0002	0.0006	0.0007	0.0009	0.0014	0.0014	0.0017	0.0018	0.0024
19	0.2595	0.5261	2769	0.0004	0.0005	0.0006	0.0009	0.0014	0.0017	0.0018	0.0019	0.0025
20	0.2588	0.5249	2789	0.0004	0.0004	0.0006	0.0009	0.0014	0.0017	0.0020	0.0022	0.0025
21	0.2584	0.5240	2803	0.0004	0.0004	0.0007	0.0009	0.0014	0.0017	0.0021	0.0022	0.0026
22	0.2590	0.5259	2781	0.0006	0.0007	0.0007	0.0011	0.0015	0.0017	0.0021	0.0023	0.0026
23	0.2575	0.5269	2809	0.0004	0.0005	0.0006	0.0009	0.0013	0.0017	0.0019	0.0019	0.0023
24	0.2568	0.5225	2846	0.0003	0.0004	0.0007	0.0010	0.0013	0.0017	0.0020	0.0021	0.0025
25	0.2572	0.5250	2823	0.0004	0.0005	0.0007	0.0011	0.0015	0.0018	0.0022	0.0023	0.0027
26	0.2575	0.5237	2824	0.0004	0.0005	0.0006	0.0011	0.0015	0.0018	0.0023	0.0026	0.0027
27	0.2623	0.5266	2706	0.0003	0.0005	0.0006	0.0009	0.0013	0.0017	0.0020	0.0025	0.0027
28	0.2580	0.5262	2800	0.0004	0.0005	0.0007	0.0011	0.0015	0.0019	0.0024	0.0026	0.0028
29	0.2592	0.5260	2777	0.0004	0.0005	0.0006	0.0009	0.0013	0.0016	0.0022	0.0025	0.0025
30	0.2581	0.5246	2806	0.0003	0.0005	0.0006	0.0010	0.0014	0.0017	0.0021	0.0025	0.0026
Ave.	0.2585	0.5259	2791	0.0004	0.0005	0.0007	0.0010	0.0014	0.0016	0.0019	0.0022	0.0025
Med.	0.2584	0.5261	2796	0.0004	0.0005	0.0007	0.0010	0.0014	0.0016	0.0019	0.0022	0.0025
st dev	0.0014	0.0017	35	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001
Min.	0.2558	0.5225	2706	0.0002	0.0003	0.0004	0.0009	0.0010	0.0013	0.0016	0.0018	0.0022
Max.	0.2623	0.5289	2859	0.0006	0.0007	0.0008	0.0011	0.0016	0.0019	0.0024	0.0026	0.0028

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

No.	Φ(lm)	Lumen Maintenance (%)								
	Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
31	109.8	99.82	99.54	99.36	99.18	99.00	98.91	98.54	98.36	98.09
32	110.2	100.09	99.91	99.64	99.36	99.00	98.55	98.28	98.09	97.91
33	111.9	100.18	100.09	99.91	99.73	99.37	99.11	98.75	98.66	98.57
34	111.6	99.91	99.73	99.64	99.55	99.28	99.19	99.10	98.84	98.57
35	109.5	99.91	99.82	99.73	99.45	99.27	99.00	98.90	98.54	98.17
36	109.0	99.91	99.72	99.63	99.54	99.36	99.08	98.81	98.72	98.62
37	110.8	100.09	99.91	99.64	99.46	99.10	98.92	98.65	98.47	98.29
38	110.6	99.82	99.64	99.28	99.01	98.64	98.55	98.37	98.19	98.01
39	110.7	100.18	100.09	99.73	99.55	99.37	99.01	98.92	98.55	98.46
40	111.2	99.82	99.64	99.46	99.19	98.92	98.83	98.74	98.56	98.11
41	112.2	99.82	99.47	99.38	99.02	98.66	98.40	98.04	97.77	97.50
42	110.8	100.18	99.91	99.55	99.37	99.01	98.92	98.74	98.38	98.01
43	109.7	99.91	99.73	99.36	99.09	99.00	98.72	98.45	98.27	97.90
44	112.0	99.82	99.55	99.29	98.84	98.66	98.39	98.13	97.77	97.59
45	110.1	99.82	99.64	99.46	99.27	99.00	98.91	98.64	98.37	97.91
46	111.5	99.82	99.55	99.19	99.01	98.74	98.48	98.30	97.94	97.85
47	110.4	99.64	99.37	99.28	98.91	98.55	98.28	98.10	97.64	97.37
48	111.5	99.82	99.73	99.46	99.10	98.74	98.39	98.03	97.85	97.67
49	112.7	99.82	99.56	99.38	99.02	98.76	98.49	98.14	97.96	97.69
50	112.2	99.73	99.47	99.38	99.02	98.66	98.40	98.31	97.95	97.77
51	112.2	99.64	99.47	99.29	99.20	98.84	98.57	98.31	97.95	97.68
52	108.8	100.00	99.72	99.36	99.08	98.81	98.53	98.07	97.70	97.61
53	110.4	99.82	99.64	99.46	99.18	99.09	98.91	98.64	98.46	98.10
54	111.5	99.73	99.55	99.28	98.92	98.65	98.30	97.85	97.58	97.31
55	112.4	100.27	100.09	99.82	99.47	99.11	98.75	98.49	98.22	97.86
56	109.3	100.09	99.82	99.63	99.27	98.99	98.72	98.44	98.35	98.17
57	110.2	99.91	99.64	99.46	99.27	99.09	99.00	98.73	98.55	98.46
58	110.7	99.73	99.37	99.01	98.74	98.55	98.28	98.01	97.74	97.65
59	109.7	99.82	99.54	99.18	98.91	98.54	98.27	98.18	98.09	97.81
60	111.6	99.91	99.64	99.28	99.10	98.84	98.48	98.30	98.21	97.85
Ave.	110.8	99.90	99.68	99.45	99.19	98.92	98.68	98.43	98.19	97.95
Med.	110.8	99.82	99.64	99.42	99.18	98.96	98.65	98.41	98.21	97.91
st dev	1.1	0.1641	0.1996	0.2064	0.2436	0.2554	0.2860	0.3214	0.3495	0.3525
Min.	108.8	99.64	99.37	99.01	98.74	98.54	98.27	97.85	97.58	97.31
Max.	112.7	100.27	100.09	99.91	99.73	99.37	99.19	99.10	98.84	98.62

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

No.	Forward Voltage (V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
31	8.869	8.907	8.885	8.870	8.880	8.885	8.871	8.869	8.891	8.875
32	8.870	8.914	8.890	8.872	8.886	8.887	8.877	8.870	8.899	8.882
33	8.905	8.942	8.924	8.906	8.912	8.918	8.910	8.907	8.962	8.917
34	8.852	8.896	8.869	8.859	8.868	8.869	8.865	8.857	8.887	8.869
35	8.839	8.882	8.857	8.839	8.853	8.855	8.855	8.844	8.869	8.861
36	8.860	8.899	8.869	8.863	8.869	8.901	8.867	8.863	8.876	8.875
37	8.860	8.902	8.871	8.857	8.864	8.871	8.871	8.858	8.878	8.864
38	8.859	8.902	8.876	8.862	8.862	8.879	8.871	8.855	8.883	8.869
39	8.866	8.905	8.881	8.868	8.873	8.885	8.875	8.869	8.889	8.877
40	8.861	8.899	8.875	8.858	8.862	8.872	8.868	8.864	8.882	8.870
41	8.854	8.888	8.871	8.850	8.862	8.865	8.863	8.856	8.874	8.863
42	8.851	8.892	8.882	8.852	8.869	8.867	8.860	8.857	8.871	8.867
43	8.852	8.893	8.877	8.855	8.865	8.867	8.863	8.849	8.874	8.864
44	8.851	8.890	8.873	8.853	8.858	8.863	8.859	8.844	8.872	8.861
45	8.859	8.898	8.881	8.857	8.865	8.876	8.867	8.858	8.879	8.870
46	8.862	8.909	8.892	8.866	8.875	8.881	8.874	8.865	8.886	8.875
47	8.844	8.889	8.869	8.849	8.852	8.866	8.852	8.847	8.867	8.858
48	8.841	8.874	8.856	8.835	8.850	8.852	8.841	8.838	8.856	8.845
49	8.844	8.882	8.864	8.845	8.851	8.855	8.850	8.843	8.861	8.850
50	8.862	8.902	8.886	8.868	8.883	8.878	8.869	8.867	8.885	8.876
51	8.846	8.893	8.866	8.850	8.873	8.867	8.856	8.848	8.870	8.862
52	8.851	8.886	8.870	8.850	8.863	8.874	8.858	8.847	8.862	8.861
53	8.854	8.890	8.874	8.855	8.867	8.887	8.862	8.851	8.867	8.863
54	8.864	8.901	8.896	8.865	8.871	8.880	8.867	8.873	8.882	8.874
55	8.882	8.927	8.906	8.887	8.893	8.911	8.887	8.890	8.902	8.895
56	8.841	8.884	8.860	8.860	8.855	8.850	8.849	8.844	8.858	8.849
57	8.893	8.940	8.919	8.891	8.904	8.905	8.901	8.891	8.908	8.903
58	8.868	8.910	8.887	8.867	8.881	8.880	8.875	8.865	8.885	8.872
59	8.848	8.897	8.877	8.853	8.863	8.857	8.856	8.861	8.872	8.859
60	8.843	8.880	8.860	8.845	8.857	8.853	8.853	8.860	8.862	8.851
Ave.	8.858	8.899	8.879	8.860	8.870	8.875	8.866	8.860	8.880	8.869
Med.	8.857	8.898	8.876	8.858	8.866	8.873	8.866	8.858	8.877	8.868
st dev	0.015	0.016	0.016	0.015	0.015	0.017	0.014	0.015	0.020	0.015
Min.	8.839	8.874	8.856	8.835	8.850	8.850	8.841	8.838	8.856	8.845
Max.	8.905	8.942	8.924	8.906	8.912	8.918	8.910	8.907	8.962	8.917

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

No.	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)								
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
31	0.2588	0.5290	2772	0.0004	0.0006	0.0006	0.0013	0.0016	0.0018	0.0023	0.0025	0.0032
32	0.2565	0.5260	2835	0.0004	0.0005	0.0007	0.0011	0.0013	0.0017	0.0022	0.0023	0.0027
33	0.2575	0.5245	2819	0.0004	0.0005	0.0007	0.0011	0.0014	0.0017	0.0021	0.0024	0.0026
34	0.2573	0.5237	2828	0.0003	0.0004	0.0009	0.0012	0.0015	0.0018	0.0023	0.0029	0.0029
35	0.2592	0.5262	2775	0.0004	0.0004	0.0007	0.0011	0.0012	0.0017	0.0020	0.0027	0.0027
36	0.2596	0.5281	2757	0.0004	0.0005	0.0007	0.0011	0.0014	0.0016	0.0021	0.0024	0.0026
37	0.2592	0.5245	2783	0.0004	0.0004	0.0007	0.0012	0.0013	0.0017	0.0021	0.0026	0.0028
38	0.2597	0.5271	2760	0.0004	0.0007	0.0008	0.0011	0.0014	0.0016	0.0019	0.0022	0.0026
39	0.2581	0.5248	2805	0.0004	0.0005	0.0006	0.0010	0.0013	0.0015	0.0019	0.0024	0.0025
40	0.2574	0.5239	2825	0.0004	0.0006	0.0009	0.0013	0.0017	0.0019	0.0023	0.0027	0.0029
41	0.2598	0.5298	2746	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0015	0.0021	0.0022
42	0.2598	0.5261	2762	0.0004	0.0004	0.0006	0.0011	0.0013	0.0015	0.0019	0.0022	0.0025
43	0.2615	0.5259	2726	0.0003	0.0007	0.0007	0.0010	0.0012	0.0016	0.0018	0.0020	0.0026
44	0.2576	0.5239	2822	0.0006	0.0009	0.0011	0.0011	0.0013	0.0017	0.0017	0.0021	0.0027
45	0.2597	0.5285	2754	0.0004	0.0005	0.0006	0.0009	0.0011	0.0015	0.0017	0.0018	0.0023
46	0.2585	0.5255	2793	0.0004	0.0008	0.0010	0.0012	0.0014	0.0017	0.0019	0.0021	0.0026
47	0.2601	0.5260	2757	0.0004	0.0009	0.0011	0.0012	0.0014	0.0017	0.0019	0.0021	0.0026
48	0.2598	0.5286	2751	0.0003	0.0009	0.0012	0.0012	0.0014	0.0017	0.0019	0.0022	0.0030
49	0.2560	0.5236	2859	0.0004	0.0006	0.0009	0.0011	0.0012	0.0016	0.0021	0.0021	0.0026
50	0.2565	0.5257	2836	0.0003	0.0006	0.0009	0.0012	0.0014	0.0017	0.0019	0.0021	0.0025
51	0.2589	0.5269	2779	0.0004	0.0006	0.0010	0.0011	0.0013	0.0017	0.0020	0.0022	0.0027
52	0.2574	0.5254	2817	0.0003	0.0006	0.0010	0.0011	0.0013	0.0017	0.0021	0.0021	0.0026
53	0.2586	0.5267	2785	0.0004	0.0006	0.0009	0.0010	0.0012	0.0016	0.0021	0.0020	0.0026
54	0.2580	0.5257	2802	0.0004	0.0006	0.0009	0.0011	0.0012	0.0016	0.0020	0.0022	0.0024
55	0.2579	0.5277	2796	0.0004	0.0007	0.0010	0.0011	0.0013	0.0016	0.0020	0.0024	0.0025
56	0.2581	0.5266	2796	0.0004	0.0007	0.0009	0.0011	0.0013	0.0016	0.0019	0.0022	0.0025
57	0.2583	0.5242	2803	0.0004	0.0007	0.0010	0.0012	0.0014	0.0018	0.0022	0.0022	0.0026
58	0.2609	0.5282	2730	0.0004	0.0007	0.0009	0.0011	0.0014	0.0016	0.0019	0.0023	0.0024
59	0.2616	0.5273	2719	0.0004	0.0008	0.0011	0.0011	0.0014	0.0016	0.0019	0.0023	0.0026
60	0.2583	0.5256	2798	0.0004	0.0007	0.0009	0.0011	0.0014	0.0018	0.0021	0.0025	0.0027
Ave.	0.2587	0.5262	2786	0.0004	0.0006	0.0009	0.0011	0.0013	0.0017	0.0020	0.0023	0.0026
Med.	0.2586	0.5260	2789	0.0004	0.0006	0.0009	0.0011	0.0013	0.0017	0.0020	0.0022	0.0026
st dev	0.0014	0.0017	35	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002
Min.	0.2560	0.5236	2719	0.0003	0.0004	0.0006	0.0007	0.0010	0.0012	0.0015	0.0018	0.0022
Max.	0.2616	0.5298	2859	0.0006	0.0009	0.0012	0.0013	0.0017	0.0019	0.0023	0.0029	0.0032

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

No.	Φ(lm)	Lumen Maintenance (%)								
	Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
61	110.6	99.91	99.64	99.28	99.01	98.73	98.37	98.19	98.01	97.74
62	110.2	99.64	99.36	99.09	98.73	98.37	98.19	97.91	97.73	97.64
63	109.8	99.73	99.54	99.18	98.82	98.54	98.18	98.09	97.81	97.72
64	110.6	99.73	99.37	99.19	98.73	98.46	98.19	98.01	97.65	97.29
65	110.3	99.73	99.37	99.27	99.00	98.55	98.19	97.73	97.46	97.10
66	110.6	99.91	99.64	99.46	99.28	98.82	98.73	98.46	98.10	97.56
67	111.5	99.55	99.28	99.10	98.92	98.65	98.39	98.21	97.85	97.49
68	108.6	99.72	99.26	98.90	98.62	98.34	98.25	97.79	97.51	97.42
69	109.0	99.82	99.54	99.27	98.90	98.35	97.98	97.80	97.34	97.25
70	111.2	99.64	99.46	99.28	99.10	98.83	98.47	98.11	97.84	97.66
71	112.3	99.73	99.38	99.11	98.84	98.49	98.40	98.04	97.60	97.24
72	111.6	99.73	99.37	99.10	98.84	98.57	98.30	97.94	97.49	97.22
73	110.2	99.46	99.09	98.82	98.64	98.37	98.19	98.09	97.91	97.64
74	112.6	99.73	99.29	99.20	98.93	98.58	98.40	98.05	97.78	97.60
75	108.4	98.71	98.43	98.15	97.97	97.79	97.51	97.05	96.86	96.68
76	110.6	99.55	99.19	98.92	98.46	98.19	97.74	97.38	97.11	96.93
77	109.3	100.37	100.09	99.91	99.54	99.27	98.81	98.35	98.26	98.08
78	109.0	100.18	99.91	99.54	99.17	99.08	98.62	98.35	97.89	97.61
79	107.4	99.53	99.35	99.16	98.88	98.70	98.51	98.42	98.14	97.77
80	109.6	99.73	99.54	99.27	99.09	98.81	98.63	98.45	98.08	97.63
81	111.7	99.55	99.28	98.93	98.57	98.30	97.94	97.76	97.58	97.31
82	108.3	99.72	99.45	99.26	98.98	98.61	98.15	98.06	97.78	97.60
83	112.6	99.73	99.38	99.20	98.85	98.58	98.49	98.22	97.96	97.69
84	111.5	99.64	99.28	99.01	98.74	98.30	98.21	98.03	97.85	97.58
85	112.9	99.47	99.20	98.94	98.67	98.23	97.87	97.61	97.43	97.17
86	111.1	99.82	99.46	99.37	98.92	98.65	98.29	98.02	97.75	97.66
87	109.5	99.63	99.36	99.09	98.81	98.54	98.36	98.26	97.90	97.81
88	110.6	99.64	99.46	99.19	98.92	98.55	98.37	98.01	97.83	97.65
89	110.7	100.00	99.82	99.55	99.10	98.92	98.55	98.37	98.28	98.10
90	109.0	99.72	99.54	99.08	98.90	98.72	98.62	98.17	98.07	97.61
Ave.	110.4	99.70	99.41	99.16	98.86	98.56	98.30	98.03	97.76	97.51
Med.	110.6	99.73	99.37	99.18	98.89	98.56	98.33	98.05	97.82	97.61
st dev	1.4	0.2692	0.2825	0.2922	0.2760	0.2857	0.2897	0.3152	0.3211	0.3084
Min.	107.4	98.71	98.43	98.15	97.97	97.79	97.51	97.05	96.86	96.68
Max.	112.9	100.37	100.09	99.91	99.54	99.27	98.81	98.46	98.28	98.10

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

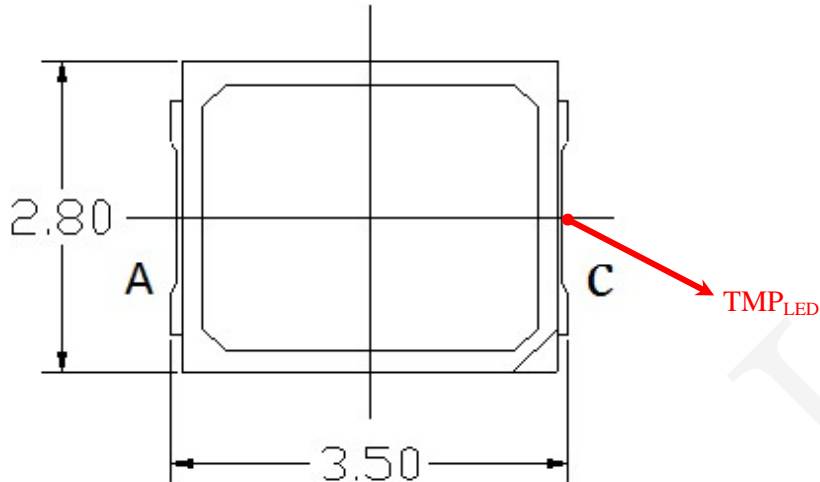
No.	Forward Voltage (V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
61	8.855	8.892	8.887	8.856	8.861	8.868	8.856	8.878	8.875	8.863
62	8.848	8.890	8.885	8.854	8.858	8.865	8.857	8.856	8.870	8.863
63	8.855	8.901	8.887	8.857	8.863	8.872	8.865	8.856	8.880	8.871
64	8.838	8.882	8.865	8.843	8.843	8.853	8.840	8.840	8.852	8.852
65	8.851	8.897	8.878	8.856	8.852	8.864	8.859	8.850	8.870	8.867
66	8.826	8.861	8.846	8.827	8.826	8.837	8.833	8.829	8.841	8.835
67	8.866	8.916	8.909	8.872	8.871	8.881	8.874	8.873	8.885	8.886
68	8.840	8.887	8.878	8.845	8.850	8.855	8.848	8.846	8.866	8.856
69	8.841	8.882	8.869	8.850	8.850	8.858	8.852	8.849	8.859	8.854
70	8.854	8.893	8.875	8.852	8.854	8.863	8.855	8.856	8.873	8.867
71	8.869	8.912	8.900	8.877	8.873	8.892	8.876	8.872	8.891	8.887
72	8.863	8.905	8.884	8.859	8.863	8.871	8.867	8.864	8.879	8.877
73	8.819	8.852	8.836	8.821	8.821	8.845	8.825	8.820	8.837	8.831
74	8.857	8.904	8.881	8.860	8.866	8.894	8.864	8.863	8.876	8.876
75	8.835	8.880	8.861	8.836	8.847	8.854	8.843	8.838	8.855	8.858
76	8.850	8.885	8.868	8.850	8.855	8.866	8.858	8.852	8.868	8.869
77	8.866	8.912	8.896	8.870	8.868	8.903	8.875	8.870	8.885	8.886
78	8.856	8.897	8.872	8.857	8.861	8.870	8.860	8.859	8.875	8.869
79	8.853	8.898	8.870	8.856	8.857	8.867	8.861	8.853	8.869	8.868
80	8.843	8.880	8.856	8.844	8.849	8.857	8.848	8.844	8.854	8.853
81	8.852	8.892	8.876	8.857	8.857	8.869	8.861	8.870	8.872	8.863
82	8.836	8.878	8.859	8.844	8.841	8.856	8.848	8.839	8.858	8.855
83	8.856	8.898	8.877	8.858	8.859	8.869	8.860	8.852	8.873	8.869
84	8.850	8.894	8.875	8.847	8.853	8.868	8.853	8.852	8.865	8.863
85	8.858	8.899	8.883	8.861	8.865	8.868	8.864	8.858	8.875	8.865
86	8.844	8.895	8.870	8.847	8.849	8.863	8.851	8.847	8.865	8.856
87	8.890	8.933	8.910	8.893	8.894	8.911	8.897	8.893	8.905	8.898
88	8.885	8.933	8.912	8.884	8.888	8.899	8.895	8.906	8.908	8.895
89	8.867	8.915	8.886	8.874	8.877	8.892	8.878	8.880	8.892	8.885
90	8.845	8.884	8.858	8.842	8.854	8.855	8.849	8.851	8.867	8.856
Ave.	8.852	8.895	8.877	8.855	8.858	8.870	8.859	8.857	8.871	8.866
Med.	8.853	8.895	8.877	8.856	8.857	8.868	8.859	8.855	8.871	8.866
st dev	0.015	0.018	0.018	0.015	0.015	0.017	0.016	0.018	0.016	0.015
Min.	8.819	8.852	8.836	8.821	8.821	8.837	8.825	8.820	8.837	8.831
Max.	8.890	8.933	8.912	8.893	8.894	8.911	8.897	8.906	8.908	8.898

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

No.	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)								
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
61	0.2589	0.5242	2790	0.0004	0.0007	0.0009	0.0013	0.0011	0.0017	0.0019	0.0023	0.0025
62	0.2613	0.5319	2708	0.0004	0.0006	0.0010	0.0013	0.0017	0.0017	0.0021	0.0024	0.0026
63	0.2618	0.5287	2708	0.0005	0.0008	0.0009	0.0011	0.0015	0.0017	0.0021	0.0021	0.0024
64	0.2566	0.5228	2849	0.0005	0.0009	0.0009	0.0013	0.0016	0.0016	0.0021	0.0022	0.0025
65	0.2611	0.5250	2739	0.0005	0.0006	0.0010	0.0013	0.0016	0.0017	0.0019	0.0024	0.0026
66	0.2573	0.5242	2826	0.0005	0.0009	0.0013	0.0015	0.0019	0.0020	0.0022	0.0028	0.0029
67	0.2585	0.5263	2790	0.0004	0.0008	0.0011	0.0013	0.0017	0.0017	0.0021	0.0022	0.0026
68	0.2579	0.5271	2800	0.0004	0.0007	0.0011	0.0013	0.0016	0.0017	0.0021	0.0024	0.0025
69	0.2587	0.5269	2782	0.0004	0.0007	0.0009	0.0012	0.0016	0.0018	0.0019	0.0025	0.0026
70	0.2597	0.5270	2760	0.0004	0.0007	0.0009	0.0013	0.0017	0.0019	0.0021	0.0022	0.0025
71	0.2582	0.5256	2798	0.0005	0.0005	0.0009	0.0013	0.0016	0.0017	0.0019	0.0022	0.0025
72	0.2580	0.5261	2802	0.0004	0.0005	0.0010	0.0014	0.0017	0.0020	0.0020	0.0025	0.0027
73	0.2580	0.5244	2809	0.0005	0.0006	0.0011	0.0014	0.0017	0.0019	0.0021	0.0022	0.0027
74	0.2576	0.5233	2824	0.0004	0.0005	0.0009	0.0014	0.0017	0.0019	0.0021	0.0026	0.0028
75	0.2600	0.5272	2754	0.0005	0.0009	0.0014	0.0016	0.0021	0.0023	0.0023	0.0028	0.0032
76	0.2596	0.5269	2763	0.0005	0.0005	0.0009	0.0014	0.0017	0.0021	0.0022	0.0024	0.0026
77	0.2584	0.5261	2792	0.0004	0.0005	0.0009	0.0014	0.0017	0.0021	0.0023	0.0025	0.0028
78	0.2571	0.5270	2817	0.0003	0.0005	0.0007	0.0014	0.0017	0.0019	0.0022	0.0025	0.0026
79	0.2573	0.5264	2815	0.0004	0.0008	0.0008	0.0014	0.0017	0.0011	0.0014	0.0020	0.0027
80	0.2589	0.5265	2780	0.0004	0.0006	0.0007	0.0013	0.0017	0.0017	0.0021	0.0022	0.0029
81	0.2602	0.5285	2744	0.0004	0.0005	0.0007	0.0013	0.0016	0.0016	0.0019	0.0022	0.0025
82	0.2602	0.5268	2750	0.0003	0.0004	0.0008	0.0014	0.0016	0.0017	0.0020	0.0023	0.0027
83	0.2574	0.5253	2819	0.0004	0.0004	0.0007	0.0013	0.0016	0.0017	0.0021	0.0025	0.0026
84	0.2576	0.5240	2820	0.0004	0.0005	0.0007	0.0013	0.0016	0.0018	0.0020	0.0024	0.0028
85	0.2574	0.5245	2822	0.0004	0.0005	0.0007	0.0012	0.0016	0.0017	0.0021	0.0024	0.0028
86	0.2597	0.5289	2752	0.0004	0.0005	0.0007	0.0013	0.0017	0.0017	0.0019	0.0024	0.0025
87	0.2601	0.5293	2742	0.0003	0.0004	0.0007	0.0013	0.0016	0.0016	0.0019	0.0023	0.0026
88	0.2566	0.5244	2842	0.0004	0.0006	0.0008	0.0013	0.0016	0.0017	0.0019	0.0023	0.0025
89	0.2563	0.5247	2846	0.0005	0.0006	0.0008	0.0014	0.0017	0.0018	0.0022	0.0026	0.0028
90	0.2618	0.5270	2716	0.0005	0.0005	0.0007	0.0013	0.0016	0.0016	0.0019	0.0023	0.0026
Ave.	0.2587	0.5262	2785	0.0004	0.0006	0.0009	0.0013	0.0016	0.0018	0.0020	0.0024	0.0027
Med.	0.2585	0.5264	2791	0.0004	0.0006	0.0009	0.0013	0.0017	0.0017	0.0021	0.0024	0.0026
st dev	0.0016	0.0020	41	0.0001	0.0001	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
Min.	0.2563	0.5228	2708	0.0003	0.0004	0.0007	0.0011	0.0011	0.0011	0.0014	0.0020	0.0024
Max.	0.2618	0.5319	2849	0.0005	0.0009	0.0014	0.0016	0.0021	0.0023	0.0023	0.0028	0.0032

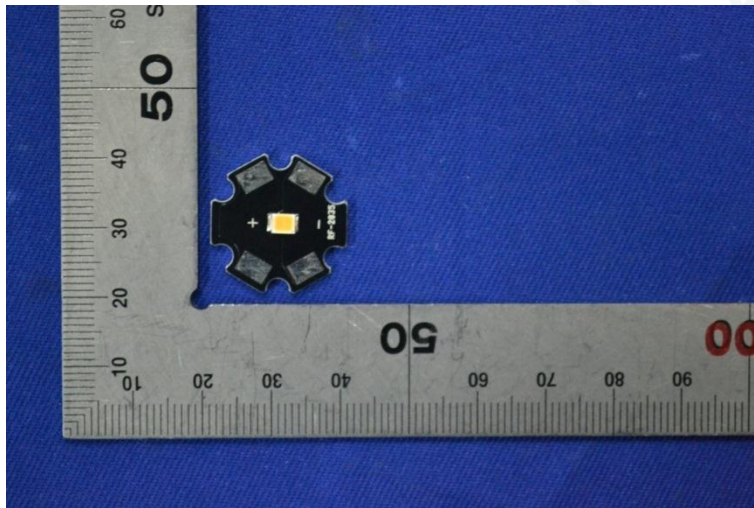
4 - DUT Photo

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 DUT Photo



Report Revision

Report Number	Report Date	Contents
R2DG161221052-10	2018-02-05	Original report.
R2DG161221052-10-M1	2018-08-17	Add the Family Declaration in page 3. Add the Reported TM-21 L_{90} Lifetime in page 6.
R2DG161221052-10-M2	2018-11-14	Update the Family Declaration in page 3.

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