



# TEST REPORT

According to ANSI/IES LM-80-15

For

## Guangdong Elite Optoelectronic Technology Co.,Ltd

Hu An Wei Village, Gaobu Town, Dongguan City, Guangdong Province, China

**#Model: SMD2835**

<b>Report Type:</b> 9000 Hours Test Report		<b>Product Type:</b> LED Package	
<b>Reviewed By:</b>	Pote Wang <i>Pote Wang</i>		
<b>Report Number:</b>	R2DG190109051-10-9000-M1		
<b>Test Date:</b>	2019-01-22 to 2020-04-11		
<b>Report Date:</b>	2020-10-19		
<b>Approved By:</b>	Blake Zhang / EE Engineer		
<b>Revised Note:</b>	The previous report R2DG190109051-10-9000 is replaced by this report on 2020-10-19		
<b>Test Facility:</b>	Test facility was located at No.69, Pulongcun , Puxihu Industrial Area, Tangxia , Dongguan, Guangdong, China.		
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<b>Accreditation:</b>	The IAS Accreditation Number TL-460.		

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## 1 - General Information

### 1.1 Description of LED Light Sources

#### Sample Size:

50 PCS test samples were in good condition and received on 2019-01-09. The samples were numbered from 1 to 25 and 26 to 50.

#Manufacturer:	Guangdong Elite Optoelectronic Technology Co.,Ltd
#Part Number:	SMD2835
#Part Type:	LED Package
#Drive Level:	DC 150mA
#Nominal CCT:	3000K
#Power:	1.0W
#Average Current Density per LED die:	275mA/mm <sup>2</sup>
#Average Power Density per LED die:	1.65W/mm <sup>2</sup>
#CRI:	80
#Die Spacing:	3.0mm
#Brand information:	Jiangxi ruiLu Semiconductors technology Co., Ltd. Building 9, Standard Plant, Dukou Industrial Platform, Xiangdong Industrial Zone, Pingxiang City, Jiangxi Province

#### 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.

### 1.2 Standards and Reference Documentations

- ANSI/IES LM-80-15: IES Approved Method for Measuring Lumen Maintenance of LED Light Sources.
- CIE 127:2007: Measurement of LEDs
- ENERGY STAR<sup>®</sup> 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	2020-03-08	2021-03-07
Programmable Test Power for LEDs	EVERFINE	LED300E	1008002	2020-03-08	2021-03-07
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	2020-03-08	2021-03-07
Standard Light Source	EVERFINE	D062	G100278CJ7351206	2019-12-24	2020-12-24
Precision digital stabilized DC power supply	EVERFINE	WY605-V110	G115987CJ7321114	2020-03-16	2021-03-15
Multilayer aging machine	BACL	B2-270	20023	2020-03-11	2021-03-10
DC Power Supply	BACL	B12001-12	90023	2020-03-16	2021-03-15

#### 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<sub>LED</sub>) location, while the other is mounted at a distance of 5 mm above the TMP location.

During life testing, TMP<sub>LED</sub> 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°C  $\pm$  2°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'. 2 $\pi$  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°C  $\pm$  2°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 (luminous flux) measurements is U=2.5% (K=2), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is U=20K (K=2), at the 95% confidence level.

The uncertainty of the CRI is U=2.5 (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: 85°C, 150mA

Part Number: SMD2835  
Number of Units: 25  
Case Temperature: >83°C  
Ambient Temperature: >80°C  
Life Test Drive Current: 150mA  
Measurement Current: 150mA

##### Data Set 2: 105°C, 150mA

Part Number: SMD2835  
Number of Units: 25  
Case Temperature: >103°C  
Ambient Temperature: >100°C



**Bay Area Compliance Laboratories Corp. (Dongguan)**

No.69, Pulongcun, Puxinhu Industrial Area Tangxia ,  
Dongguan, Guangdong, China.  
The IAS Accreditation Number TL-460

Life Test Drive Current: 150mA

Measurement Current: 150mA

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## 2 - Summary of Test Result

Data Set:	Sample Size	Failures Observed:	Test Interval	Test Duration	$\alpha$	$\beta$	Reported TM-21 L <sub>70</sub> Lifetime	Reported TM-21 L <sub>90</sub> Lifetime
1	25	0	1000hrs	9000hrs	2.417E-06	1.002	>54000hrs	44000hrs
2	25	0	1000hrs	9000hrs	2.908E-06	0.998	>54000hrs	36000hrs

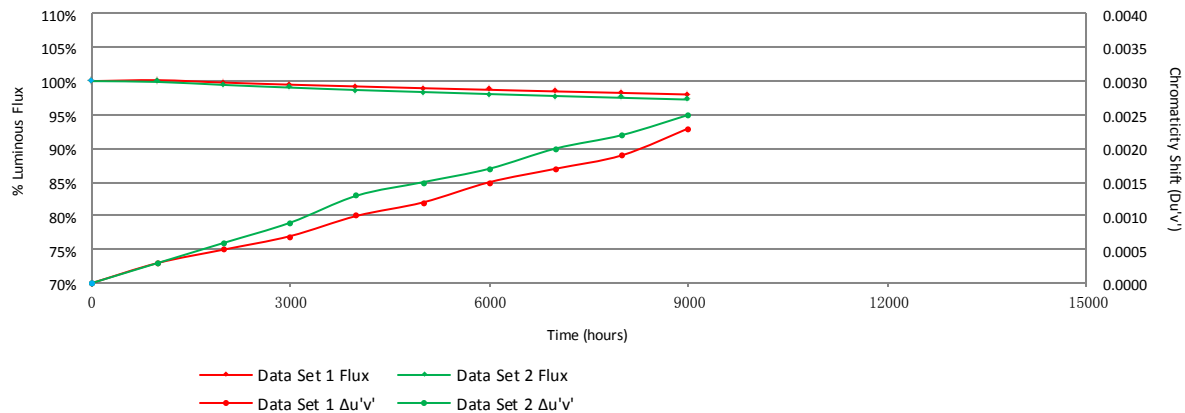
### Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	100.14%	99.78%	99.47%	99.21%	98.95%	98.71%	98.47%	98.25%	98.01%
2	99.88%	99.43%	99.04%	98.68%	98.38%	98.08%	97.79%	97.52%	97.26%

### Average Chromaticity Shift

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	0.0003	0.0005	0.0007	0.0010	0.0012	0.0015	0.0017	0.0019	0.0023
2	0.0003	0.0006	0.0009	0.0013	0.0015	0.0017	0.002	0.0022	0.0025

### Average Lumen Maintenance and Chromaticity Shift VS. Time



### 3 - Test Data

#### 3.1 Data Set 1, 85°C, 150mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)								
	Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	139.4	100.07	99.86	99.35	99.07	98.92	98.57	98.35	98.13	97.92
2	138.8	100.29	100.07	99.78	99.57	99.06	98.85	98.63	98.27	98.20
3	138.6	100.29	99.71	99.42	98.99	98.63	98.41	97.98	97.76	97.69
4	141.2	99.86	99.58	99.22	98.94	98.73	98.44	98.30	98.02	97.66
5	139.9	99.71	99.57	99.00	98.71	98.36	98.00	97.86	97.64	97.43
6	138.9	100.29	100.07	99.71	99.35	99.06	98.70	98.42	98.13	97.84
7	138.0	99.93	99.78	99.49	99.20	99.06	98.70	98.48	98.19	97.90
8	139.2	100.22	99.86	99.64	99.50	99.21	98.71	98.49	98.28	98.06
9	137.3	100.15	99.64	99.27	98.91	98.83	98.47	98.18	98.03	97.89
10	138.7	100.07	99.57	99.28	98.92	98.63	98.41	98.05	97.91	97.76
11	140.3	100.29	99.93	99.57	99.29	99.07	98.93	98.72	98.57	97.93
12	138.4	100.29	99.71	99.35	99.21	98.99	98.92	98.63	98.41	98.27
13	139.8	99.86	99.36	99.21	98.93	98.78	98.57	98.50	98.35	98.07
14	136.4	100.07	99.85	99.56	99.19	98.83	98.75	98.53	98.31	98.09
15	140.5	100.14	99.79	99.43	99.15	99.07	98.79	98.58	98.43	98.36
16	141.4	100.21	99.93	99.72	99.36	99.01	98.80	98.51	98.37	98.02
17	142.1	100.28	99.72	99.44	99.30	99.09	98.87	98.52	98.31	98.10
18	140.0	100.21	99.79	99.43	99.14	98.79	98.57	98.43	98.21	98.00
19	140.0	100.29	99.86	99.71	99.57	99.29	98.93	98.71	98.50	98.21
20	141.5	100.14	99.65	99.43	99.36	99.08	99.01	98.73	98.59	97.95
21	141.2	100.35	100.14	99.86	99.65	99.58	99.43	99.36	99.22	99.01
22	140.0	100.21	99.93	99.71	99.64	99.43	99.29	99.07	98.79	98.50
23	141.5	100.14	99.79	99.51	99.15	98.87	98.66	98.30	98.02	98.02
24	140.1	100.07	99.79	99.43	99.21	98.86	98.36	98.14	97.93	97.72
25	140.5	100.07	99.64	99.29	98.93	98.65	98.51	98.29	97.94	97.72
Av g.	139.7	100.14	99.78	99.47	99.21	98.95	98.71	98.47	98.25	98.01
Med.	140.0	100.15	99.79	99.43	99.20	98.99	98.70	98.49	98.27	98.00
st dev	1.4	0.16	0.18	0.21	0.25	0.27	0.30	0.32	0.34	0.32
Min.	136.4	99.71	99.36	99.00	98.71	98.36	98.00	97.86	97.64	97.43
Max.	142.1	100.35	100.14	99.86	99.65	99.58	99.43	99.36	99.22	99.01

**3.2 Data Set 1, 85°C, 150mA (Forward Voltage)**

No.	Forward Voltage (V)									
	Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	6.091	6.029	6.139	5.954	5.969	5.966	6.054	6.035	5.995	5.997
2	6.199	6.107	6.136	6.047	6.101	6.038	6.110	6.062	6.067	6.029
3	6.129	6.022	6.025	5.976	6.065	5.959	6.052	5.994	5.984	5.986
4	6.092	6.034	6.059	5.965	6.118	5.973	6.072	6.002	5.994	5.989
5	6.130	6.032	6.040	5.983	6.071	5.970	6.065	6.009	5.998	6.006
6	6.132	6.037	6.047	6.077	6.104	5.973	6.060	6.008	5.996	5.981
7	6.131	6.032	6.124	6.128	6.072	5.977	6.083	6.005	5.997	6.009
8	6.140	6.082	6.112	6.131	6.050	6.018	6.040	6.051	6.046	6.022
9	6.203	6.111	6.203	6.106	6.046	6.044	6.054	6.078	6.079	6.067
10	6.082	6.028	6.042	6.024	6.030	5.971	6.067	6.001	5.995	6.009
11	6.007	6.031	6.059	6.085	6.090	5.969	6.049	6.000	5.996	5.967
12	6.020	6.021	6.027	5.977	6.104	5.966	6.049	5.994	5.986	6.008
13	6.030	6.035	6.039	6.079	6.074	5.972	6.058	6.007	5.998	5.983
14	6.101	6.089	6.088	6.059	6.107	6.025	6.101	6.063	6.060	6.001
15	6.052	6.031	6.095	5.964	6.022	6.071	6.059	6.011	6.004	6.017
16	6.127	6.020	6.052	5.976	6.021	5.965	6.045	5.997	5.994	5.985
17	6.080	6.027	6.037	5.967	6.029	6.018	6.055	6.001	5.995	5.994
18	6.101	6.015	6.043	5.997	6.093	5.991	6.041	5.992	5.980	6.008
19	6.105	6.033	6.035	5.971	6.104	6.066	6.056	6.006	5.995	5.992
20	6.101	6.017	6.025	5.959	6.097	6.015	6.042	6.000	5.984	5.987
21	6.100	6.024	6.030	5.961	5.982	6.012	6.055	5.997	5.996	6.062
22	6.085	6.015	6.064	5.957	6.104	5.995	6.043	5.995	5.985	6.026
23	6.097	6.034	6.039	5.971	5.984	6.025	6.060	6.011	5.999	6.003
24	6.189	6.095	6.096	6.032	6.050	6.089	6.104	6.103	6.057	6.056
25	6.003	6.025	6.029	5.967	5.983	6.031	6.054	6.003	5.988	6.006
Av g.	6.101	6.041	6.067	6.013	6.059	6.004	6.061	6.017	6.007	6.008
Med.	6.101	6.031	6.047	5.977	6.071	5.995	6.055	6.005	5.996	6.006
st dev	0.053	0.030	0.046	0.059	0.046	0.038	0.019	0.030	0.029	0.025
Min.	6.003	6.015	6.025	5.954	5.969	5.959	6.040	5.992	5.980	5.967
Max.	6.203	6.111	6.203	6.131	6.118	6.089	6.110	6.103	6.079	6.067



**3.3 Data Set 1, 85°C, 150mA (Chromaticity Shift)**

No.	u'	v'	CCT(K)	Chromaticity Shift ( $\Delta u'v'$ )								
				0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs
1	0.2492	0.5215	3034	0.0003	0.0004	0.0007	0.0011	0.0013	0.0016	0.0020	0.0022	0.0026
2	0.2509	0.5205	2999	0.0002	0.0003	0.0006	0.0009	0.0010	0.0015	0.0018	0.0021	0.0024
3	0.2474	0.5200	3088	0.0001	0.0003	0.0004	0.0008	0.0011	0.0013	0.0015	0.0017	0.0023
4	0.2502	0.5223	3004	0.0003	0.0002	0.0005	0.0009	0.0013	0.0014	0.0017	0.0019	0.0024
5	0.2490	0.5205	3044	0.0004	0.0003	0.0004	0.0006	0.0010	0.0014	0.0016	0.0019	0.0025
6	0.2494	0.5219	3027	0.0003	0.0004	0.0005	0.0007	0.0008	0.0014	0.0017	0.0020	0.0026
7	0.2487	0.5203	3053	0.0003	0.0003	0.0005	0.0006	0.0008	0.0010	0.0013	0.0015	0.0024
8	0.2501	0.5231	3001	0.0004	0.0006	0.0008	0.0009	0.0011	0.0011	0.0013	0.0016	0.0025
9	0.2500	0.5202	3022	0.0002	0.0004	0.0008	0.0009	0.0011	0.0011	0.0013	0.0014	0.0024
10	0.2487	0.5219	3043	0.0003	0.0004	0.0007	0.0010	0.0011	0.0011	0.0013	0.0015	0.0024
11	0.2502	0.5221	3004	0.0001	0.0004	0.0006	0.0011	0.0013	0.0014	0.0014	0.0016	0.0023
12	0.2505	0.5197	3014	0.0003	0.0006	0.0008	0.0012	0.0014	0.0016	0.0018	0.0019	0.0017
13	0.2501	0.5221	3008	0.0004	0.0005	0.0008	0.0010	0.0013	0.0015	0.0017	0.0019	0.0017
14	0.2478	0.5210	3072	0.0001	0.0003	0.0005	0.0009	0.0013	0.0015	0.0017	0.0020	0.0018
15	0.2480	0.5203	3071	0.0002	0.0004	0.0006	0.0010	0.0013	0.0015	0.0019	0.0021	0.0021
16	0.2494	0.5226	3021	0.0003	0.0005	0.0006	0.0011	0.0013	0.0017	0.0019	0.0021	0.0021
17	0.2491	0.5213	3037	0.0004	0.0008	0.0010	0.0012	0.0016	0.0019	0.0021	0.0024	0.0025
18	0.2502	0.5207	3013	0.0004	0.0007	0.0009	0.0010	0.0012	0.0016	0.0019	0.0021	0.0022
19	0.2508	0.5205	2999	0.0003	0.0005	0.0008	0.0011	0.0013	0.0017	0.0020	0.0023	0.0024
20	0.2494	0.5233	3016	0.0002	0.0005	0.0006	0.0009	0.0011	0.0015	0.0018	0.0021	0.0022
21	0.2504	0.5226	2997	0.0002	0.0005	0.0007	0.0010	0.0013	0.0016	0.0019	0.0022	0.0024
22	0.2504	0.5213	3004	0.0006	0.0006	0.0007	0.0009	0.0012	0.0014	0.0016	0.0019	0.0022
23	0.2486	0.5212	3050	0.0005	0.0006	0.0009	0.0011	0.0013	0.0016	0.0019	0.0021	0.0024
24	0.2503	0.5205	3013	0.0004	0.0006	0.0008	0.0011	0.0013	0.0014	0.0017	0.0019	0.0021
25	0.2511	0.5225	2979	0.0003	0.0007	0.0009	0.0011	0.0013	0.0015	0.0017	0.0020	0.0021
Av g.	0.2496	0.5214	3025	0.0003	0.0005	0.0007	0.0010	0.0012	0.0015	0.0017	0.0019	0.0023
Med.	0.2500	0.5213	3016	0.0003	0.0005	0.0007	0.0010	0.0013	0.0015	0.0017	0.0020	0.0024
st dev	0.0010	0.0010	27	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002
Min.	0.2474	0.5197	2979	0.0001	0.0002	0.0004	0.0006	0.0008	0.0010	0.0013	0.0014	0.0017
Max.	0.2511	0.5233	3088	0.0006	0.0008	0.0010	0.0012	0.0016	0.0019	0.0021	0.0024	0.0026

**3.4 Data Set 2, 105°C, 150mA (Lumen Maintenance)**

No.	Φ(lm)	Lumen Maintenance (%)								
	Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	141.3	100.21	100.07	99.72	99.43	99.08	99.01	98.66	98.44	98.16
27	140.1	100.29	99.93	99.64	99.29	98.93	98.72	98.50	98.36	98.29
28	140.8	99.93	99.50	99.15	98.79	98.58	98.15	97.73	97.51	97.44
29	140.4	100.07	99.50	99.07	98.86	98.58	98.36	98.08	97.72	97.51
30	139.0	99.86	99.35	98.99	98.56	98.27	97.84	97.41	97.12	97.05
31	140.6	99.93	99.50	99.36	98.93	98.44	98.08	97.87	97.44	97.23
32	139.0	99.93	99.42	99.06	98.85	98.56	98.20	97.99	97.70	97.34
33	140.7	100.07	99.64	99.29	98.93	98.72	98.29	98.15	97.94	97.80
34	140.5	100.21	99.64	99.43	99.15	98.93	98.36	98.01	97.65	97.30
35	138.6	99.57	99.28	98.99	98.56	98.34	98.05	97.69	97.40	97.04
36	142.3	99.72	99.37	99.16	98.81	98.52	98.10	97.82	97.68	97.33
37	140.7	99.79	99.22	99.00	98.65	98.44	98.08	97.73	97.51	97.30
38	140.8	99.86	99.43	99.15	98.79	98.44	97.87	97.51	97.16	97.02
39	139.5	99.78	99.57	99.28	98.85	98.64	98.49	98.28	98.06	97.78
40	140.8	99.79	99.57	99.15	98.72	98.51	98.37	98.15	97.87	97.59
41	140.3	99.86	99.50	99.07	98.72	98.43	98.08	97.72	97.51	97.29
42	140.3	99.79	99.29	98.79	98.36	98.15	98.08	97.79	97.43	97.29
43	142.1	99.72	99.23	98.66	98.31	98.03	97.82	97.40	97.04	96.76
44	142.2	99.86	99.37	98.95	98.52	98.10	97.61	97.26	96.98	96.69
45	140.7	99.79	99.15	98.58	98.15	97.87	97.58	97.30	96.94	96.66
46	141.5	99.86	99.22	98.73	98.16	97.81	97.60	97.31	97.03	96.68
47	141.4	99.79	99.22	98.73	98.30	98.09	97.88	97.67	97.38	96.96
48	142.1	99.65	99.16	98.73	98.38	98.03	97.89	97.68	97.40	97.04
49	141.7	99.72	99.29	98.66	98.45	98.02	97.88	97.53	97.32	96.97
50	139.9	99.86	99.29	98.71	98.36	98.00	97.71	97.50	97.36	96.93
Avg.	140.7	99.88	99.43	99.04	98.68	98.38	98.08	97.79	97.52	97.26
Med.	140.7	99.86	99.37	99.06	98.72	98.44	98.08	97.73	97.44	97.29
st dev	1.0	0.18	0.23	0.30	0.33	0.34	0.35	0.37	0.40	0.43
Min.	138.6	99.57	99.15	98.58	98.15	97.81	97.58	97.26	96.94	96.66
Max.	142.3	100.29	100.07	99.72	99.43	99.08	99.01	98.66	98.44	98.29

**3.5 Data Set 2, 105°C, 150mA (Forward Voltage)**

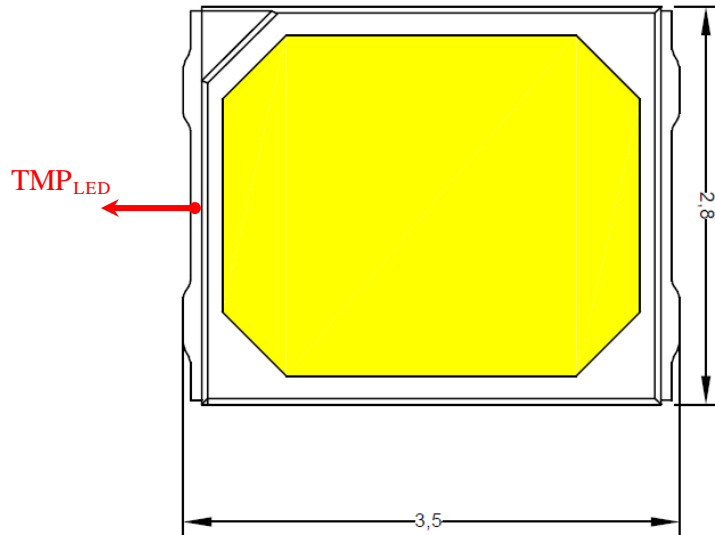
No.	Forward Voltage (V)									
	Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	6.133	6.030	6.038	5.981	5.972	6.095	6.063	6.006	5.997	6.007
27	6.150	6.037	6.033	5.984	5.995	6.102	6.068	6.006	5.995	6.004
28	6.106	6.018	6.022	5.957	6.044	6.081	6.046	5.989	5.982	6.002
29	6.149	6.030	6.032	5.976	6.002	6.046	6.060	6.003	5.990	6.009
30	6.103	6.031	6.031	5.976	6.003	6.001	6.059	6.003	5.988	6.008
31	6.030	6.032	6.030	5.965	5.969	6.108	6.059	6.001	5.992	6.002
32	6.111	6.119	6.100	6.041	6.060	6.104	6.107	6.076	6.069	6.057
33	6.027	6.035	6.029	5.967	5.976	5.988	6.066	6.004	5.994	6.003
34	6.101	6.099	6.097	6.030	6.047	6.096	6.124	6.075	6.061	6.009
35	6.102	6.029	6.036	5.985	6.005	6.101	6.061	6.006	5.993	6.009
36	6.067	6.020	6.024	5.978	5.976	6.043	6.051	5.997	5.983	6.003
37	6.111	6.027	6.029	5.981	5.986	6.052	6.058	5.998	5.988	6.002
38	6.083	6.016	6.024	5.954	5.995	6.103	6.047	5.990	5.980	5.997
39	6.158	6.091	6.088	6.023	6.030	6.036	6.117	6.065	6.055	6.042
40	6.088	6.030	6.035	5.960	5.971	5.965	6.059	6.008	5.993	6.001
41	6.120	6.025	6.030	5.974	5.977	5.959	6.060	6.001	5.988	5.992
42	6.089	6.013	6.018	5.946	5.956	5.948	6.047	5.989	5.976	5.982
43	6.118	6.022	6.032	5.952	5.960	5.957	6.058	6.000	5.985	5.994
44	6.068	6.018	6.022	5.951	6.005	6.005	6.049	5.994	5.980	5.986
45	6.075	6.019	6.055	5.959	5.964	5.947	6.054	5.996	5.984	6.002
46	6.083	6.035	6.050	5.969	5.977	5.964	6.068	6.013	5.996	6.000
47	6.086	6.032	6.038	5.966	5.985	5.962	6.063	6.006	5.993	6.004
48	6.120	6.029	6.033	5.970	5.968	5.958	6.065	6.001	5.989	6.003
49	6.185	6.097	6.095	6.032	6.037	6.026	6.104	6.075	6.059	6.041
50	6.122	6.094	6.096	6.027	6.031	6.019	6.130	6.071	6.055	6.047
Av g.	6.103	6.041	6.045	5.980	5.996	6.027	6.070	6.015	6.003	6.008
Med.	6.103	6.030	6.033	5.974	5.986	6.026	6.060	6.003	5.992	6.003
st dev	0.037	0.031	0.027	0.028	0.030	0.059	0.025	0.030	0.030	0.019
Min.	6.027	6.013	6.018	5.946	5.956	5.947	6.046	5.989	5.976	5.982
Max.	6.185	6.119	6.100	6.041	6.060	6.108	6.130	6.076	6.069	6.057

**3.6 Data Set 2, 105°C, 150mA (Chromaticity Shift)**

No.	u'	v'	CCT(K)	Chromaticity Shift ( $\Delta u'v'$ )								
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	0.2492	0.5215	3034	0.0003	0.0006	0.0008	0.0011	0.0013	0.0014	0.0017	0.0020	0.0022
27	0.2494	0.5218	3026	0.0004	0.0007	0.0009	0.0013	0.0014	0.0015	0.0018	0.0021	0.0023
28	0.2502	0.5192	3023	0.0005	0.0009	0.0011	0.0013	0.0014	0.0017	0.0019	0.0021	0.0023
29	0.2493	0.5218	3028	0.0003	0.0007	0.0009	0.0014	0.0014	0.0016	0.0018	0.0021	0.0023
30	0.2511	0.5226	2980	0.0005	0.0007	0.0011	0.0014	0.0015	0.0016	0.0017	0.0020	0.0023
31	0.2509	0.5232	2981	0.0004	0.0008	0.0009	0.0014	0.0015	0.0017	0.0020	0.0021	0.0024
32	0.2489	0.5205	3048	0.0004	0.0008	0.0010	0.0014	0.0015	0.0018	0.0020	0.0023	0.0025
33	0.2496	0.5216	3023	0.0002	0.0005	0.0007	0.0011	0.0013	0.0015	0.0018	0.0019	0.0022
34	0.2502	0.5199	3018	0.0005	0.0009	0.0011	0.0015	0.0016	0.0018	0.0020	0.0023	0.0024
35	0.2505	0.5203	3008	0.0008	0.0009	0.0012	0.0015	0.0016	0.0019	0.0021	0.0024	0.0026
36	0.2505	0.5219	2998	0.0004	0.0006	0.0008	0.0012	0.0014	0.0015	0.0017	0.0020	0.0022
37	0.2501	0.5209	3014	0.0006	0.0009	0.0011	0.0015	0.0017	0.0017	0.0020	0.0023	0.0025
38	0.2494	0.5207	3035	0.0002	0.0008	0.0009	0.0013	0.0016	0.0018	0.0021	0.0023	0.0025
39	0.2497	0.5206	3027	0.0001	0.0007	0.0009	0.0013	0.0015	0.0017	0.0021	0.0023	0.0024
40	0.2503	0.5216	3005	0.0001	0.0006	0.0009	0.0012	0.0014	0.0017	0.0019	0.0022	0.0024
41	0.2490	0.5203	3045	0.0001	0.0005	0.0011	0.0013	0.0014	0.0016	0.0019	0.0021	0.0023
42	0.2486	0.5207	3054	0.0002	0.0005	0.0011	0.0015	0.0018	0.0019	0.0022	0.0025	0.0026
43	0.2505	0.5209	3004	0.0001	0.0005	0.0010	0.0014	0.0016	0.0018	0.0021	0.0024	0.0026
44	0.2501	0.5208	3014	0.0001	0.0004	0.0008	0.0014	0.0016	0.0017	0.0020	0.0023	0.0025
45	0.2491	0.5206	3041	0.0002	0.0006	0.0010	0.0014	0.0017	0.0019	0.0021	0.0024	0.0026
46	0.2505	0.5234	2990	0.0002	0.0006	0.0008	0.0013	0.0018	0.0019	0.0022	0.0024	0.0026
47	0.2503	0.5209	3008	0.0002	0.0004	0.0007	0.0010	0.0014	0.0018	0.0021	0.0024	0.0025
48	0.2498	0.5221	3014	0.0001	0.0004	0.0007	0.0009	0.0011	0.0018	0.0022	0.0024	0.0026
49	0.2494	0.5213	3029	0.0001	0.0006	0.0007	0.0009	0.0011	0.0014	0.0018	0.0022	0.0028
50	0.2496	0.5201	3034	0.0001	0.0006	0.0009	0.0010	0.0011	0.0014	0.0017	0.0019	0.0025
Avg.	0.2498	0.5212	3019	0.0003	0.0006	0.0009	0.0013	0.0015	0.0017	0.0020	0.0022	0.0025
Med.	0.2498	0.5209	3023	0.0002	0.0006	0.0009	0.0013	0.0015	0.0017	0.0020	0.0023	0.0025
st dev	0.0007	0.0010	20	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001
Min.	0.2486	0.5192	2980	0.0001	0.0004	0.0007	0.0009	0.0011	0.0014	0.0017	0.0019	0.0022
Max.	0.2511	0.5234	3054	0.0008	0.0009	0.0012	0.0015	0.0018	0.0019	0.0022	0.0025	0.0028

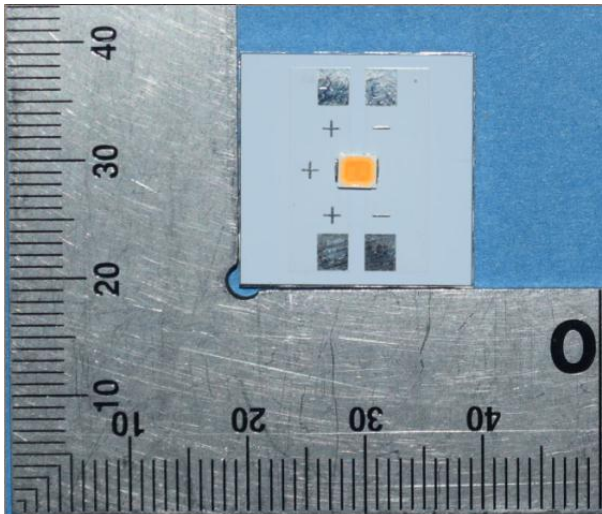
#### 4 - DUT Photo

##### 4.1 #Mechanical Dimensions



All dimensions are in millimeter

##### 4.2 DUT Photo





**Bay Area Compliance Laboratories Corp. (Dongguan)**

No.69, Pulongcun, Puxinhu Industrial Area Tangxia ,  
Dongguan, Guangdong, China.  
The IAS Accreditation Number TL-460

FINAL

## Report Revision

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Report Number	Report Date	Contents
R2DG190109051-10-9000	2020-04-20	Original report.
R2DG190109051-10-9000-M1	2020-10-19	Add the brand information on page 3.

FUNVAL

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**Directions**

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1. The information marked "superscript #" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
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\*\*\*\*\*END OF REPORT\*\*\*\*\*