TEST REPORT

According to ANSI/IES LM-80-15
For

Shenzhen Runlite Technology Co.,Ltd

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

Model: P28351-W27SJ3K1FD4D8-0000-AA

Report Type: 9000 Hours Test Report	**Product Type:** LED Package
Test Engineer:	Pote Wang
Report Number:	RSZ180326516-10-9000
Test Date:	2018-04-04 to 2019-04-21
Report Date:	2019-05-20
Reviewed By:	Bill Xiong / EE Engineer
Test Facility:	Test facility was located at No.69,Pulongcun ,Puxinhu Industrial Area, Tangxia , Dongguan, Guangdong, China.
Prepared By:	Bay Area Compliance Laboratories Corp. (Dongguan). No.69,Pulongcun ,Puxinhu Industrial Area, Tangxia , Dongguan, Guangdong, China. Tel: +86-0769-86858888 Fax:+86-0769-86858588
Accreditation:	The IAS Accreditation Number TL-460.

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1 - General Information

1.1 Description of LED Light Sources

Sample Size:

75 PCS samples were received on 2018-03-26. The samples were numbered from 1 to 25, 26 to 50 and 51 to 75.

Manufacturer:	Shenzhen Runlite Technology Co.,Ltd
Part Number:	P28351-W27SJ3K1FD4D8-0000-AA
Part Type:	LED Package
Drive Level:	DC 150mA
Nominal CCT:	2700K
Power:	1W
Average Current Density per LED die:	1435.19mA/mm^2
Average Power Density per LED die:	4.784W/mm^2
CRI:	80
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:

Model Name	CCT (K)	Series	Parallel	Power density (W/mm^2)	Current density per LED die (mA/mm^2)	Current per die (mA)	Distance between of dies(mm)	Current (mA)
P28351-W27SJ3K1FD4D8-0000-AA	2700	2	1	0.102	1435.19	150	0.20	150
X2835X-W22XXXXXXXXX-XXXX-AA	2200	2	1	0.102	1435.19	150	0.20	150
X2835X-W25XXXXXXXXX-XXXX-AA	2500	2	1	0.102	1435.19	150	0.20	150
X2835X-W27XXXXXXXXX-XXXX-AA	2700	2	1	0.102	1435.19	150	0.20	150
X2835X-W29XXXXXXXXX-XXXX-AA	3000	2	1	0.102	1435.19	150	0.20	150
X2835X-W34XXXXXXXXX-XXXX-AA	3400	2	1	0.102	1435.19	150	0.20	150
X2835X-W36XXXXXXXXX-XXXX-AA	3600	2	1	0.102	1435.19	150	0.20	150

Model Name	CCT (K)	Series	Parallel	Power density (W/mm^2)	Current density per LED die (mA/mm^2)	Current per die (mA)	Distance between of dies(mm)	Current (mA)
X2835X-W41XXXXXXXXX-XXXX-AA	4000	2	1	0.102	1435.19	150	0.20	150
X2835X-W44XXXXXXXXX-XXXX-AA	4400	2	1	0.102	1435.19	150	0.20	150
X2835X-W49XXXXXXXXX-XXXX-AA	4900	2	1	0.102	1435.19	150	0.20	150
X2835X-W50XXXXXXXXX-XXXX-AA	5000	2	1	0.102	1435.19	150	0.20	150
X2835X-W52XXXXXXXXX-XXXX-AA	5200	2	1	0.102	1435.19	150	0.20	150
X2835X-W58XXXXXXXXX-XXXX-AA	5800	2	1	0.102	1435.19	150	0.20	150
X2835X-W62XXXXXXXXX-XXXX-AA	6200	2	1	0.102	1435.19	150	0.20	150
X2835X-W64XXXXXXXXX-XXXX-AA	6500	2	1	0.102	1435.19	150	0.20	150
X2835X-W68XXXXXXXXX-XXXX-AA	6800	2	1	0.102	1435.19	150	0.20	150
X2835X-W73XXXXXXXXX-XXXX-AA	7300	2	1	0.102	1435.19	150	0.20	150
X2835X-W86XXXXXXXXX-XXXX-AA	8600	2	1	0.102	1435.19	150	0.20	150
X2835X-W22XXXXXXXXX-XXXX-AB	2200	1	2	0.102	1435.19	150	0.20	300
X2835X-W25XXXXXXXXX-XXXX-AB	2500	1	2	0.102	1435.19	150	0.20	300
X2835X-W27XXXXXXXXX-XXXX-AB	2700	1	2	0.102	1435.19	150	0.20	300
X2835X-W29XXXXXXXXX-XXXX-AB	3000	1	2	0.102	1435.19	150	0.20	300
X2835X-W34XXXXXXXXX-XXXX-AB	3400	1	2	0.102	1435.19	150	0.20	300
X2835X-W36XXXXXXXXX-XXXX-AB	3600	1	2	0.102	1435.19	150	0.20	300

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X2835X-W41XXXXXXXXX-XXXX-AB	4000	1	2	0.102	1435.19	150	0.20	300
X2835X-W44XXXXXXXXX-XXXX-AB	4400	1	2	0.102	1435.19	150	0.20	300
X2835X-W49XXXXXXXXX-XXXX-AB	4900	1	2	0.102	1435.19	150	0.20	300
X2835X-W50XXXXXXXXX-XXXX-AB	5000	1	2	0.102	1435.19	150	0.20	300
X2835X-W52XXXXXXXXX-XXXX-AB	5200	1	2	0.102	1435.19	150	0.20	300
X2835X-W58XXXXXXXXX-XXXX-AB	5800	1	2	0.102	1435.19	150	0.20	300
X2835X-W62XXXXXXXXX-XXXX-AB	6200	1	2	0.102	1435.19	150	0.20	300
X2835X-W64XXXXXXXXX-XXXX-AB	6500	1	2	0.102	1435.19	150	0.20	300
X2835X-W68XXXXXXXXX-XXXX-AB	6800	1	2	0.102	1435.19	150	0.20	300
X2835X-W73XXXXXXXXX-XXXX-AB	7300	1	2	0.102	1435.19	150	0.20	300
X2835X-W86XXXXXXXXX-XXXX-AB	8600	1	2	0.102	1435.19	150	0.20	300
X2835X-W22XXXXXXXXX-XXXX-AC	2200	1	1	0.05	1435.19	150	N/A	150
X2835X-W25XXXXXXXXX-XXXX-AC	2500	1	1	0.05	1435.19	150	N/A	150
X2835X-W27XXXXXXXXX-XXXX-AC	2700	1	1	0.05	1435.19	150	N/A	150
X2835X-W29XXXXXXXXX-XXXX-AC	3000	1	1	0.05	1435.19	150	N/A	150
X2835X-W34XXXXXXXXX-XXXX-AC	3400	1	1	0.05	1435.19	150	N/A	150
X2835X-W36XXXXXXXXX-XXXX-AC	3600	1	1	0.05	1435.19	150	N/A	150

Model Name	CCT (K)	Series	Parallel	Power density (W/mm^2)	Current density per LED die (mA/mm^2)	Current per die (mA)	Distance between of dies(mm)	Current (mA)
X2835X-W41XXXXXXXXX-XXXX-AC	4000	1	1	0.05	1435.19	150	N/A	150
X2835X-W44XXXXXXXXX-XXXX-AC	4400	1	1	0.05	1435.19	150	N/A	150
X2835X-W49XXXXXXXXX-XXXX-AC	4900	1	1	0.05	1435.19	150	N/A	150
X2835X-W50XXXXXXXXX-XXXX-AC	5000	1	1	0.05	1435.19	150	N/A	150
X2835X-W52XXXXXXXXX-XXXX-AC	5200	1	1	0.05	1435.19	150	N/A	150
X2835X-W58XXXXXXXXX-XXXX-AC	5800	1	1	0.05	1435.19	150	N/A	150
X2835X-W62XXXXXXXXX-XXXX-AC	6200	1	1	0.05	1435.19	150	N/A	150
X2835X-W64XXXXXXXXX-XXXX-AC	6500	1	1	0.05	1435.19	150	N/A	150
X2835X-W68XXXXXXXXX-XXXX-AC	6800	1	1	0.05	1435.19	150	N/A	150
X2835X-W73XXXXXXXXX-XXXX-AC	7300	1	1	0.05	1435.19	150	N/A	150
X2835X-W86XXXXXXXXX-XXXX-AC	8600	1	1	0.05	1435.19	150	N/A	150

Note:

Table “X” means internal code number, it can be Numbers or letters. AA/AB/AC is not the part of our products code rules, we only use it to distinguish the parallel and series mode of the chip.

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® 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	2019-03-18	2020-03-17
Programmable Test Power for LEDs	EVERFINE	LED300E	1008002	2019-03-26	2020-03-25

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	2019-03-18	2020-03-17
Standard Light Source	EVERFINE	D062	G100278CJ7351206	2018-12-24	2019-12-24
Precision digital stabilized DC power supply	EVERFINE	WY605-V110	G115987CJ7321114	2019-03-26	2020-03-25
Multilayer aging machine	BACL	B2-270	20023	2019-03-13	2020-03-12
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090005	2019-03-26	2020-03-25
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090003	2018-05-04	2019-05-04
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090006	2019-03-26	2020-03-25

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 ±3% of the specified value of the manufacturer during maintenance test, and was within ±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 ±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 ± 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'. 2π measurement was used and sample was drived by DC power supply. The forward current was regulated to within ±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 ± 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=1.6% (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=1.6 (K=2), at the 95% confidence level.

The uncertainty of the temperature is U=0.8671°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, 150mA

Part Number:	P28351-W27SJ3K1FD4D8-0000-AA
Number of Units:	25
Case Temperature:	>53°C
Ambient Temperature:	>50°C
Life Test Drive Current:	150mA
Measurement Current:	150mA

Data Set 2: 85°C, 150mA

Part Number:	P28351-W27SJ3K1FD4D8-0000-AA
Number of Units:	25
Case Temperature:	>83°C
Ambient Temperature:	>80°C
Life Test Drive Current:	150mA
Measurement Current:	150mA

Data Set 3: 105°C, 150mA

Part Number:	P28351-W27SJ3K1FD4D8-0000-AA
Number of Units:	25
Case Temperature:	>103°C
Ambient Temperature:	>100°C
Life Test Drive Current:	150mA
Measurement Current:	150mA

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	25	0	1000hrs	9000hrs	2.623E-06	1.002	>54000hrs	41000hrs
2	25	0	1000hrs	9000hrs	2.909E-06	0.999	>54000hrs	36000hrs
3	25	0	1000hrs	9000hrs	3.704E-06	1.000	>54000hrs	28000hrs

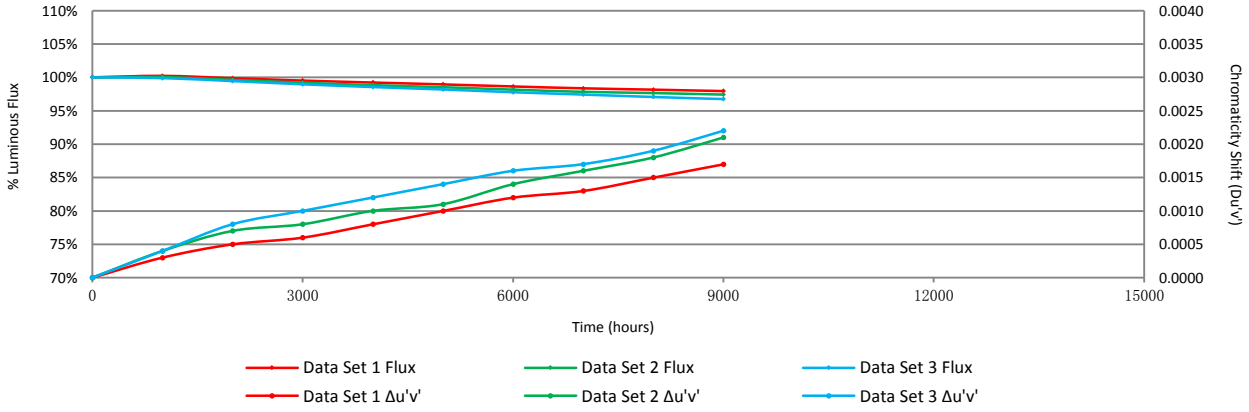
Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	100.22%	99.87%	99.51%	99.22%	98.94%	98.63%	98.35%	98.15%	97.94%
2	100.04%	99.63%	99.20%	98.84%	98.53%	98.17%	97.84%	97.66%	97.43%
3	99.88%	99.44%	98.96%	98.55%	98.19%	97.78%	97.43%	97.07%	96.76%

Average Chromaticity Shift

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	0.0003	0.0005	0.0006	0.0008	0.0010	0.0012	0.0013	0.0015	0.0017
2	0.0004	0.0007	0.0008	0.0010	0.0011	0.0014	0.0016	0.0018	0.0021
3	0.0004	0.0008	0.0010	0.0012	0.0014	0.0016	0.0017	0.0019	0.0022

Average Lumen Maintenance and Chromaticity Shift VS. Time



3 - Test Data

3.1 Data Set 1, 55°C, 150mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	132.0	100.15	99.85	99.47	99.17	98.86	98.48	98.18	98.03	97.80
2	133.1	100.30	99.92	99.40	99.17	98.87	98.57	98.35	98.12	97.82
3	129.4	100.23	100.08	99.85	99.54	99.30	99.07	98.76	98.53	98.38
4	130.4	100.15	99.85	99.23	98.85	98.54	98.31	98.16	98.01	97.85
5	131.7	100.23	99.70	99.24	99.01	98.79	98.41	98.03	97.80	97.57
6	131.3	100.30	99.92	99.62	99.47	99.16	98.93	98.71	98.40	98.10
7	132.3	100.08	99.70	99.17	98.87	98.72	98.34	97.96	97.73	97.51
8	127.7	100.31	99.84	99.69	99.30	98.98	98.75	98.67	98.43	98.28
9	132.0	100.15	99.70	99.32	98.94	98.64	98.26	98.03	97.88	97.65
10	133.5	100.30	99.85	99.55	99.25	98.95	98.65	98.28	98.20	97.98
11	129.3	100.31	99.92	99.46	99.23	98.84	98.53	98.38	98.22	98.07
12	129.1	100.23	99.92	99.54	99.38	99.07	98.76	98.61	98.37	98.30
13	130.7	100.31	99.92	99.62	99.16	99.01	98.70	98.39	98.24	98.09
14	129.7	100.15	99.85	99.38	99.15	98.92	98.54	98.30	98.00	97.84
15	127.4	100.31	100.16	99.92	99.69	99.45	99.22	98.98	98.82	98.51
16	131.2	100.08	99.85	99.39	99.09	98.86	98.70	98.55	98.40	98.25
17	131.3	100.15	100.08	99.77	99.47	99.24	98.93	98.71	98.48	98.17
18	130.9	100.31	99.92	99.69	99.39	99.08	98.78	98.17	97.94	97.71
19	130.6	100.15	99.77	99.54	99.08	98.70	98.32	98.24	98.09	97.78
20	128.9	100.31	99.92	99.53	99.30	98.99	98.76	98.22	97.98	97.75
21	132.1	100.23	99.85	99.55	99.17	98.86	98.41	98.11	98.03	97.73
22	132.4	100.08	99.85	99.55	99.32	99.09	98.72	98.04	97.89	97.73
23	133.3	100.30	99.77	99.40	99.17	98.95	98.65	98.27	98.12	97.90
24	132.4	100.23	99.85	99.32	98.94	98.64	98.26	97.96	97.66	97.51
25	131.8	100.08	99.70	99.47	99.32	99.01	98.71	98.63	98.48	98.33
Avg.	131.0	100.22	99.87	99.51	99.22	98.94	98.63	98.35	98.15	97.94
Med.	131.3	100.23	99.85	99.53	99.17	98.95	98.65	98.28	98.12	97.85
st dev	1.7	0.09	0.12	0.19	0.21	0.22	0.25	0.28	0.28	0.29
Min.	127.4	100.08	99.70	99.17	98.85	98.54	98.26	97.96	97.66	97.51
Max.	133.5	100.31	100.16	99.92	99.69	99.45	99.22	98.98	98.82	98.51

3.2 Data Set 1, 55°C, 150mA (Forward Voltage)

No.	Forward Voltage (V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	6.285	6.297	6.273	6.259	6.281	6.281	6.326	6.257	6.281	6.348
2	6.296	6.290	6.274	6.259	6.279	6.304	6.327	6.367	6.279	6.343
3	6.285	6.292	6.273	6.257	6.272	6.340	6.328	6.365	6.277	6.335
4	6.276	6.284	6.266	6.255	6.265	6.269	6.312	6.291	6.273	6.335
5	6.357	6.361	6.339	6.322	6.336	6.341	6.416	6.422	6.348	6.402
6	6.340	6.349	6.326	6.311	6.333	6.345	6.374	6.345	6.338	6.393
7	6.283	6.292	6.276	6.260	6.273	6.281	6.344	6.322	6.282	6.347
8	6.291	6.296	6.283	6.263	6.279	6.282	6.288	6.340	6.285	6.380
9	6.361	6.382	6.363	6.341	6.358	6.365	6.409	6.375	6.357	6.419
10	6.273	6.283	6.266	6.253	6.269	6.270	6.313	6.287	6.270	6.328
11	6.298	6.300	6.292	6.278	6.294	6.297	6.306	6.317	6.320	6.356
12	6.346	6.363	6.337	6.325	6.343	6.345	6.391	6.409	6.377	6.434
13	6.315	6.326	6.312	6.293	6.304	6.331	6.397	6.314	6.316	6.371
14	6.277	6.303	6.274	6.261	6.269	6.275	6.318	6.280	6.282	6.334
15	6.289	6.302	6.288	6.273	6.284	6.291	6.346	6.309	6.290	6.344
16	6.278	6.285	6.271	6.253	6.264	6.271	6.354	6.285	6.273	6.330
17	6.271	6.273	6.253	6.242	6.256	6.261	6.288	6.345	6.262	6.323
18	6.320	6.323	6.311	6.293	6.303	6.313	6.378	6.317	6.310	6.372
19	6.282	6.290	6.268	6.259	6.269	6.279	6.270	6.276	6.273	6.334
20	6.311	6.316	6.301	6.287	6.304	6.312	6.358	6.314	6.309	6.362
21	6.290	6.298	6.282	6.268	6.283	6.286	6.341	6.304	6.283	6.344
22	6.278	6.289	6.267	6.252	6.269	6.276	6.298	6.280	6.274	6.266
23	6.366	6.377	6.365	6.352	6.361	6.365	6.398	6.397	6.371	6.423
24	6.273	6.283	6.267	6.253	6.266	6.274	6.308	6.341	6.277	6.327
25	6.287	6.294	6.276	6.265	6.277	6.285	6.317	6.357	6.285	6.290
Avg.	6.301	6.310	6.292	6.277	6.292	6.302	6.340	6.329	6.300	6.354
Med.	6.289	6.297	6.276	6.263	6.279	6.286	6.328	6.317	6.283	6.344
st dev	0.030	0.032	0.032	0.030	0.031	0.032	0.041	0.044	0.034	0.039
Min.	6.271	6.273	6.253	6.242	6.256	6.261	6.270	6.257	6.262	6.266
Max.	6.366	6.382	6.365	6.352	6.361	6.365	6.416	6.422	6.377	6.434

3.3 Data Set 1, 55°C, 150mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')								
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	0.2598	0.5273	2756	0.0002	0.0005	0.0006	0.0009	0.0012	0.0014	0.0019	0.0020	0.0025
2	0.2595	0.5259	2771	0.0005	0.0006	0.0006	0.0007	0.0008	0.0010	0.0016	0.0020	0.0023
3	0.2594	0.5232	2785	0.0004	0.0005	0.0006	0.0008	0.0010	0.0011	0.0015	0.0017	0.0018
4	0.2589	0.5234	2795	0.0003	0.0006	0.0009	0.0011	0.0013	0.0015	0.0011	0.0013	0.0021
5	0.2589	0.5260	2781	0.0003	0.0005	0.0008	0.0010	0.0013	0.0016	0.0016	0.0017	0.0021
6	0.2591	0.5274	2772	0.0004	0.0006	0.0008	0.0010	0.0011	0.0013	0.0016	0.0018	0.0023
7	0.2593	0.5250	2778	0.0004	0.0006	0.0005	0.0007	0.0008	0.0012	0.0013	0.0016	0.0018
8	0.2595	0.5219	2788	0.0004	0.0008	0.0006	0.0009	0.0011	0.0013	0.0018	0.0021	0.0025
9	0.2575	0.5272	2808	0.0003	0.0006	0.0005	0.0006	0.0007	0.0008	0.0012	0.0014	0.0024
10	0.2572	0.5247	2825	0.0003	0.0006	0.0007	0.0009	0.0010	0.0012	0.0011	0.0012	0.0017
11	0.2579	0.5250	2808	0.0003	0.0005	0.0004	0.0006	0.0008	0.0011	0.0011	0.0014	0.0021
12	0.2597	0.5268	2762	0.0004	0.0006	0.0007	0.0010	0.0012	0.0015	0.0016	0.0016	0.0022
13	0.2585	0.5213	2813	0.0001	0.0004	0.0006	0.0008	0.0011	0.0014	0.0013	0.0014	0.0016
14	0.2592	0.5216	2797	0.0004	0.0008	0.0009	0.0010	0.0011	0.0011	0.0014	0.0016	0.0016
15	0.2587	0.5230	2801	0.0004	0.0003	0.0006	0.0008	0.0010	0.0011	0.0010	0.0013	0.0019
16	0.2583	0.5252	2799	0.0002	0.0003	0.0005	0.0007	0.0008	0.0011	0.0010	0.0012	0.0015
17	0.2587	0.5249	2791	0.0002	0.0003	0.0003	0.0004	0.0005	0.0006	0.0004	0.0006	0.0004
18	0.2588	0.5255	2788	0.0000	0.0003	0.0004	0.0006	0.0008	0.0011	0.0008	0.0011	0.0011
19	0.2583	0.5265	2794	0.0001	0.0001	0.0006	0.0008	0.0010	0.0013	0.0013	0.0014	0.0016
20	0.2601	0.5247	2761	0.0000	0.0003	0.0004	0.0005	0.0008	0.0011	0.0013	0.0016	0.0014
21	0.2582	0.5258	2798	0.0004	0.0004	0.0004	0.0004	0.0006	0.0008	0.0006	0.0008	0.0008
22	0.2583	0.5249	2800	0.0003	0.0005	0.0006	0.0008	0.0009	0.0011	0.0013	0.0014	0.0007
23	0.2578	0.5262	2805	0.0004	0.0006	0.0008	0.0009	0.0011	0.0013	0.0015	0.0017	0.0014
24	0.2586	0.5263	2788	0.0004	0.0007	0.0010	0.0013	0.0013	0.0015	0.0017	0.0019	0.0015
25	0.2584	0.5252	2796	0.0002	0.0005	0.0008	0.0011	0.0014	0.0017	0.0014	0.0017	0.0018
Avg.	0.2587	0.5250	2790	0.0003	0.0005	0.0006	0.0008	0.0010	0.0012	0.0013	0.0015	0.0017
Med.	0.2587	0.5252	2794	0.0003	0.0005	0.0006	0.0008	0.0010	0.0012	0.0013	0.0016	0.0018
st dev	0.0007	0.0017	17	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006
Min.	0.2572	0.5213	2756	0.0000	0.0001	0.0003	0.0004	0.0005	0.0006	0.0004	0.0006	0.0004
Max.	0.2601	0.5274	2825	0.0005	0.0008	0.0010	0.0013	0.0014	0.0017	0.0019	0.0021	0.0025

3.4 Data Set 2, 85°C, 150mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	134.7	100.22	99.78	99.26	98.96	98.59	98.14	97.85	97.62	97.25
27	130.4	100.15	99.77	99.23	98.93	98.77	98.47	98.24	98.01	97.78
28	129.9	99.92	99.46	99.15	98.69	98.31	98.00	97.69	97.54	97.38
29	131.6	100.08	99.70	99.32	99.01	98.78	98.48	98.18	98.10	97.80
30	130.2	100.15	99.69	99.39	98.92	98.62	98.31	98.08	97.93	97.54
31	131.0	99.92	99.62	99.16	98.93	98.63	98.32	97.94	97.71	97.56
32	132.0	99.85	99.39	99.02	98.48	98.11	97.65	96.97	96.82	96.59
33	130.7	100.15	99.85	99.39	99.01	98.62	98.16	97.48	97.25	97.02
34	130.9	99.85	99.62	99.16	99.01	98.70	98.32	97.71	97.40	97.25
35	132.9	100.08	99.62	99.25	98.80	98.57	98.27	98.19	97.97	97.74
36	130.4	100.23	99.92	99.39	99.00	98.85	98.62	98.16	98.01	97.93
37	133.2	99.85	99.32	98.87	98.50	98.20	97.75	97.30	97.15	97.00
38	133.2	100.15	99.70	99.47	99.02	98.57	98.35	97.97	97.82	97.67
39	132.9	100.08	99.77	99.32	99.10	98.80	98.50	98.19	97.97	97.74
40	129.3	100.23	100.08	99.69	99.30	98.92	98.53	98.45	98.22	97.99
41	130.4	100.08	99.62	99.00	98.77	98.54	98.24	98.08	97.85	97.70
42	129.7	99.92	99.38	98.92	98.61	98.38	98.00	97.53	97.38	97.15
43	131.4	99.85	99.39	98.71	98.25	97.87	97.41	96.96	96.80	96.65
44	130.0	100.15	99.62	99.08	98.77	98.46	98.23	97.85	97.69	97.46
45	130.5	100.08	99.69	99.39	99.08	98.77	98.39	98.24	98.08	97.85
46	129.5	100.23	99.69	99.31	98.92	98.53	98.15	98.07	97.84	97.68
47	131.3	99.92	99.54	99.16	98.78	98.40	98.02	97.64	97.56	97.18
48	128.0	100.16	99.92	99.53	99.22	98.83	98.28	98.20	98.05	97.89
49	132.2	99.92	99.39	99.02	98.56	98.26	97.73	97.35	97.13	96.90
50	130.3	99.85	99.31	98.77	98.47	98.08	97.85	97.70	97.54	97.16
Avg.	131.1	100.04	99.63	99.20	98.84	98.53	98.17	97.84	97.66	97.43
Med.	130.7	100.08	99.62	99.23	98.92	98.57	98.24	97.94	97.71	97.54
st dev	1.5	0.14	0.20	0.24	0.26	0.27	0.30	0.40	0.40	0.40
Min.	128.0	99.85	99.31	98.71	98.25	97.87	97.41	96.96	96.80	96.59
Max.	134.7	100.23	100.08	99.69	99.30	98.92	98.62	98.45	98.22	97.99

3.5 Data Set 2, 85°C, 150mA (Forward Voltage)

No.	Forward Voltage (V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	6.302	6.346	6.300	6.283	6.298	6.304	6.352	6.382	6.350	6.357
27	6.280	6.288	6.273	6.257	6.273	6.275	6.354	6.333	6.333	6.335
28	6.283	6.284	6.275	6.259	6.277	6.280	6.344	6.371	6.339	6.334
29	6.272	6.272	6.265	6.251	6.266	6.263	6.330	6.333	6.321	6.323
30	6.284	6.284	6.271	6.261	6.275	6.278	6.337	6.337	6.328	6.343
31	6.287	6.290	6.279	6.265	6.279	6.284	6.345	6.378	6.335	6.344
32	6.316	6.276	6.262	6.250	6.267	6.284	6.282	6.339	6.317	6.345
33	6.283	6.280	6.268	6.255	6.270	6.273	6.287	6.247	6.323	6.333
34	6.280	6.298	6.268	6.257	6.275	6.274	6.346	6.345	6.335	6.339
35	6.269	6.269	6.265	6.249	6.266	6.266	6.341	6.347	6.317	6.331
36	6.280	6.288	6.272	6.266	6.275	6.282	6.348	6.318	6.337	6.347
37	6.264	6.291	6.262	6.250	6.262	6.267	6.333	6.266	6.336	6.322
38	6.297	6.298	6.293	6.277	6.290	6.292	6.354	6.300	6.341	6.358
39	6.385	6.365	6.350	6.343	6.354	6.360	6.410	6.444	6.373	6.422
40	6.270	6.342	6.264	6.250	6.260	6.268	6.347	6.274	6.313	6.330
41	6.304	6.305	6.297	6.283	6.292	6.304	6.299	6.327	6.346	6.373
42	6.338	6.339	6.336	6.318	6.330	6.335	6.354	6.409	6.388	6.409
43	6.277	6.281	6.272	6.257	6.268	6.279	6.364	6.287	6.326	6.336
44	6.274	6.280	6.272	6.256	6.270	6.280	6.277	6.359	6.328	6.337
45	6.296	6.299	6.289	6.274	6.284	6.294	6.291	6.302	6.305	6.317
46	6.273	6.302	6.267	6.250	6.263	6.269	6.277	6.287	6.276	6.333
47	6.338	6.342	6.333	6.320	6.330	6.336	6.429	6.408	6.384	6.404
48	6.302	6.299	6.289	6.270	6.286	6.292	6.362	6.379	6.339	6.348
49	6.341	6.346	6.330	6.312	6.332	6.342	6.409	6.409	6.383	6.396
50	6.307	6.285	6.274	6.255	6.269	6.284	6.372	6.350	6.308	6.344
Avg.	6.296	6.310	6.285	6.271	6.284	6.291	6.342	6.341	6.335	6.350
Med.	6.284	6.291	6.273	6.259	6.275	6.282	6.346	6.339	6.335	6.343
st dev	0.029	0.047	0.026	0.026	0.025	0.026	0.040	0.050	0.026	0.028
Min.	6.264	6.269	6.262	6.249	6.260	6.263	6.277	6.247	6.276	6.317
Max.	6.385	6.446	6.350	6.343	6.354	6.360	6.429	6.444	6.388	6.422

3.6 Data Set 2, 85°C, 150mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')								
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
26	0.2589	0.5239	2792	0.0004	0.0006	0.0009	0.0010	0.0011	0.0013	0.0011	0.0014	0.0015
27	0.2594	0.5261	2770	0.0005	0.0011	0.0013	0.0015	0.0017	0.0020	0.0018	0.0019	0.0018
28	0.2591	0.5255	2781	0.0005	0.0007	0.0008	0.0009	0.0011	0.0013	0.0016	0.0018	0.0019
29	0.2589	0.5244	2790	0.0005	0.0011	0.0012	0.0013	0.0015	0.0016	0.0019	0.0021	0.0021
30	0.2591	0.5260	2777	0.0004	0.0008	0.0009	0.0012	0.0014	0.0016	0.0018	0.0020	0.0020
31	0.2585	0.5248	2797	0.0004	0.0007	0.0008	0.0009	0.0010	0.0013	0.0017	0.0020	0.0020
32	0.2581	0.5259	2800	0.0003	0.0008	0.0004	0.0006	0.0008	0.0010	0.0016	0.0019	0.0022
33	0.2599	0.5249	2767	0.0006	0.0008	0.0009	0.0011	0.0013	0.0015	0.0019	0.0021	0.0022
34	0.2599	0.5262	2760	0.0005	0.0008	0.0010	0.0011	0.0014	0.0016	0.0017	0.0020	0.0026
35	0.2577	0.5253	2811	0.0004	0.0009	0.0005	0.0008	0.0011	0.0013	0.0014	0.0016	0.0023
36	0.2579	0.5266	2801	0.0005	0.0008	0.0009	0.0011	0.0013	0.0016	0.0020	0.0021	0.0026
37	0.2581	0.5260	2799	0.0003	0.0004	0.0005	0.0006	0.0007	0.0009	0.0013	0.0014	0.0017
38	0.2592	0.5254	2779	0.0001	0.0004	0.0006	0.0007	0.0009	0.0010	0.0014	0.0015	0.0019
39	0.2585	0.5257	2792	0.0004	0.0006	0.0008	0.0011	0.0013	0.0016	0.0021	0.0023	0.0025
40	0.2579	0.5265	2802	0.0005	0.0006	0.0005	0.0008	0.0011	0.0013	0.0018	0.0021	0.0024
41	0.2584	0.5258	2794	0.0001	0.0003	0.0004	0.0007	0.0009	0.0011	0.0013	0.0015	0.0018
42	0.2576	0.5265	2809	0.0002	0.0004	0.0004	0.0005	0.0006	0.0007	0.0008	0.0011	0.0015
43	0.2576	0.5242	2820	0.0004	0.0007	0.0009	0.0011	0.0013	0.0015	0.0020	0.0021	0.0025
44	0.2587	0.5258	2787	0.0001	0.0005	0.0005	0.0006	0.0008	0.0009	0.0015	0.0016	0.0020
45	0.2581	0.5219	2819	0.0002	0.0007	0.0009	0.0011	0.0012	0.0014	0.0017	0.0019	0.0025
46	0.2588	0.5257	2785	0.0003	0.0006	0.0007	0.0009	0.0011	0.0014	0.0019	0.0021	0.0025
47	0.2584	0.5263	2792	0.0002	0.0006	0.0008	0.0010	0.0012	0.0013	0.0016	0.0017	0.0022
48	0.2589	0.5240	2791	0.0003	0.0006	0.0008	0.0011	0.0014	0.0016	0.0018	0.0019	0.0024
49	0.2589	0.5278	2775	0.0004	0.0006	0.0009	0.0010	0.0012	0.0014	0.0016	0.0017	0.0023
50	0.2582	0.5228	2813	0.0004	0.0006	0.0008	0.0011	0.0013	0.0015	0.0017	0.0018	0.0018
Avg.	0.2586	0.5254	2792	0.0004	0.0007	0.0008	0.0010	0.0011	0.0014	0.0016	0.0018	0.0021
Med.	0.2585	0.5257	2792	0.0004	0.0006	0.0008	0.0010	0.0012	0.0014	0.0017	0.0019	0.0022
st dev	0.0006	0.0013	16	0.0001	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003
Min.	0.2576	0.5219	2760	0.0001	0.0003	0.0004	0.0005	0.0006	0.0007	0.0008	0.0011	0.0015
Max.	0.2599	0.5278	2820	0.0006	0.0011	0.0013	0.0015	0.0017	0.0020	0.0021	0.0023	0.0026

3.7 Data Set 3, 105°C, 150mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
51	130.3	99.92	99.31	98.70	98.31	98.00	97.77	97.62	97.39	97.08
52	129.3	100.08	99.77	99.54	98.99	98.69	98.30	97.91	97.53	97.14
53	131.0	99.85	99.62	99.24	98.70	98.24	97.86	97.33	96.95	96.56
54	130.7	100.15	99.54	99.16	99.01	98.78	98.24	97.70	97.40	97.17
55	133.3	99.92	99.40	99.02	98.72	98.42	98.05	97.67	97.37	96.92
56	129.4	99.69	99.23	98.84	98.53	98.15	97.84	97.68	97.37	96.91
57	128.0	99.84	99.38	98.75	98.44	98.20	97.81	97.50	97.11	96.88
58	131.4	99.62	99.24	98.71	98.33	97.95	97.49	97.18	96.96	96.73
59	131.8	99.92	99.32	98.63	97.95	97.65	97.27	96.89	96.59	96.13
60	129.9	99.77	99.31	98.92	98.54	98.08	97.69	97.15	96.84	96.46
61	131.9	99.62	99.09	98.41	98.18	97.88	97.65	97.50	97.04	96.74
62	131.3	99.77	99.31	98.63	98.17	97.79	97.33	97.03	96.65	96.27
63	128.6	99.84	99.61	99.07	98.60	98.13	97.67	97.20	96.89	96.66
64	128.5	100.08	99.53	98.99	98.60	98.21	97.74	97.43	97.04	96.81
65	131.2	99.85	99.31	98.78	98.40	98.17	97.79	97.71	97.33	97.03
66	132.7	100.08	99.70	99.17	98.94	98.64	98.19	97.66	97.14	96.83
67	131.3	99.92	99.39	99.09	98.55	98.32	97.79	97.41	97.03	96.80
68	132.7	99.85	99.40	98.94	98.49	98.12	97.81	97.51	97.06	96.83
69	129.7	99.92	99.38	98.84	98.46	98.15	97.61	97.30	96.84	96.53
70	131.7	99.85	99.54	98.94	98.48	98.10	97.65	97.11	96.66	96.36
71	129.2	100.08	99.77	99.46	99.07	98.68	98.30	98.14	97.76	97.45
72	130.6	99.77	99.23	98.85	98.47	98.09	97.55	97.40	97.09	96.78
73	131.2	99.85	99.31	98.86	98.48	97.94	97.56	97.26	96.95	96.65
74	130.1	99.77	99.39	99.08	98.46	98.00	97.62	97.00	96.62	96.39
75	131.8	100.08	99.85	99.39	98.86	98.33	97.95	97.42	97.12	96.81
Avg.	130.7	99.88	99.44	98.96	98.55	98.19	97.78	97.43	97.07	96.76
Med.	131.0	99.85	99.39	98.94	98.49	98.15	97.77	97.42	97.04	96.80
st dev	1.4	0.14	0.19	0.27	0.27	0.28	0.27	0.30	0.30	0.30
Min.	128.0	99.62	99.09	98.41	97.95	97.65	97.27	96.89	96.59	96.13
Max.	133.3	100.15	99.85	99.54	99.07	98.78	98.30	98.14	97.76	97.45

3.8 Data Set 3, 105°C, 150mA (Forward Voltage)

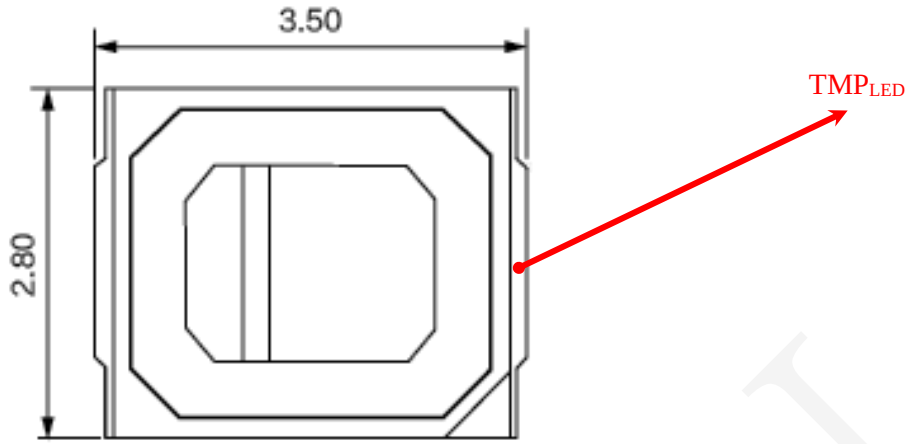
No.	Forward Voltage (V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
51	6.275	6.282	6.269	6.259	6.271	6.277	6.333	6.286	6.324	6.363
52	6.349	6.358	6.342	6.327	6.342	6.326	6.349	6.410	6.403	6.415
53	6.341	6.351	6.339	6.330	6.333	6.350	6.344	6.345	6.390	6.383
54	6.266	6.287	6.259	6.247	6.260	6.275	6.269	6.266	6.319	6.333
55	6.364	6.371	6.360	6.344	6.363	6.373	6.436	6.358	6.416	6.451
56	6.273	6.297	6.265	6.252	6.261	6.276	6.278	6.266	6.324	6.337
57	6.287	6.291	6.277	6.267	6.277	6.290	6.356	6.284	6.332	6.356
58	6.347	6.352	6.331	6.316	6.329	6.340	6.400	6.369	6.385	6.406
59	6.286	6.251	6.278	6.260	6.275	6.291	6.298	6.298	6.336	6.372
60	6.297	6.304	6.294	6.276	6.287	6.298	6.278	6.329	6.348	6.362
61	6.281	6.288	6.270	6.259	6.274	6.282	6.313	6.281	6.330	6.338
62	6.284	6.291	6.278	6.266	6.277	6.284	6.316	6.288	6.335	6.342
63	6.269	6.278	6.265	6.246	6.260	6.266	6.341	6.346	6.316	6.350
64	6.352	6.358	6.343	6.326	6.340	6.354	6.419	6.405	6.403	6.416
65	6.334	6.381	6.324	6.306	6.324	6.337	6.402	6.378	6.378	6.402
66	6.291	6.295	6.284	6.268	6.279	6.291	6.359	6.286	6.340	6.334
67	6.280	6.286	6.275	6.260	6.342	6.278	6.311	6.282	6.331	6.339
68	6.477	6.464	6.347	6.335	6.347	6.357	6.496	6.487	6.409	6.406
69	6.620	6.580	6.263	6.253	6.268	6.272	6.275	6.275	6.271	6.304
70	6.314	6.307	6.295	6.276	6.295	6.301	6.339	6.332	6.351	6.353
71	6.339	6.345	6.334	6.318	6.338	6.336	6.338	6.332	6.388	6.397
72	6.343	6.349	6.335	6.319	6.339	6.345	6.398	6.386	6.391	6.398
73	6.299	6.304	6.291	6.271	6.291	6.294	6.284	6.328	6.347	6.358
74	6.350	6.359	6.337	6.324	6.342	6.346	6.440	6.374	6.393	6.409
75	6.349	6.306	6.289	6.272	6.296	6.292	6.378	6.319	6.347	6.355
Avg.	6.331	6.333	6.302	6.287	6.304	6.309	6.350	6.332	6.356	6.371
Med.	6.314	6.306	6.291	6.272	6.295	6.294	6.341	6.329	6.347	6.362
st dev	0.076	0.069	0.033	0.033	0.034	0.033	0.059	0.055	0.037	0.035
Min.	6.266	6.251	6.259	6.246	6.260	6.266	6.269	6.266	6.271	6.304
Max.	6.620	6.580	6.360	6.344	6.363	6.373	6.496	6.487	6.416	6.451

3.9 Data Set 3, 105°C, 150mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')								
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
51	0.2599	0.5263	2758	0.0004	0.0006	0.0007	0.0009	0.0010	0.0013	0.0014	0.0017	0.0022
52	0.2590	0.5266	2777	0.0006	0.0009	0.0011	0.0013	0.0014	0.0016	0.0016	0.0017	0.0020
53	0.2591	0.5264	2777	0.0004	0.0009	0.0011	0.0013	0.0015	0.0016	0.0019	0.0021	0.0026
54	0.2591	0.5249	2782	0.0006	0.0009	0.0011	0.0013	0.0014	0.0016	0.0017	0.0020	0.0024
55	0.2586	0.5272	2784	0.0003	0.0007	0.0009	0.0010	0.0012	0.0013	0.0014	0.0017	0.0022
56	0.2580	0.5251	2806	0.0005	0.0008	0.0010	0.0013	0.0015	0.0016	0.0017	0.0019	0.0026
57	0.2593	0.5217	2793	0.0004	0.0005	0.0008	0.0009	0.0011	0.0013	0.0014	0.0018	0.0021
58	0.2592	0.5257	2778	0.0005	0.0008	0.0009	0.0011	0.0013	0.0015	0.0019	0.0021	0.0019
59	0.2577	0.5250	2813	0.0005	0.0007	0.0009	0.0010	0.0011	0.0013	0.0015	0.0017	0.0018
60	0.2604	0.5232	2761	0.0005	0.0011	0.0012	0.0013	0.0014	0.0017	0.0017	0.0020	0.0022
61	0.2586	0.5259	2789	0.0004	0.0005	0.0010	0.0012	0.0014	0.0016	0.0018	0.0021	0.0024
62	0.2590	0.5255	2781	0.0004	0.0006	0.0008	0.0010	0.0012	0.0014	0.0021	0.0023	0.0026
63	0.2583	0.5256	2798	0.0004	0.0008	0.0009	0.0012	0.0015	0.0018	0.0021	0.0023	0.0022
64	0.2585	0.5265	2789	0.0004	0.0006	0.0008	0.0010	0.0011	0.0014	0.0018	0.0021	0.0021
65	0.2585	0.5248	2796	0.0004	0.0008	0.0010	0.0011	0.0012	0.0015	0.0015	0.0017	0.0022
66	0.2598	0.5269	2758	0.0003	0.0010	0.0011	0.0012	0.0015	0.0016	0.0016	0.0019	0.0021
67	0.2582	0.5260	2798	0.0006	0.0008	0.0009	0.0012	0.0013	0.0016	0.0016	0.0019	0.0020
68	0.2593	0.5260	2774	0.0004	0.0011	0.0013	0.0015	0.0018	0.0020	0.0016	0.0018	0.0021
69	0.2590	0.5250	2785	0.0005	0.0009	0.0011	0.0014	0.0017	0.0020	0.0019	0.0021	0.0023
70	0.2592	0.5263	2775	0.0005	0.0008	0.0010	0.0013	0.0015	0.0017	0.0021	0.0022	0.0025
71	0.2579	0.5263	2803	0.0007	0.0013	0.0015	0.0017	0.0018	0.0021	0.0023	0.0025	0.0030
72	0.2592	0.5258	2776	0.0002	0.0005	0.0008	0.0009	0.0012	0.0014	0.0012	0.0014	0.0019
73	0.2590	0.5255	2781	0.0007	0.0013	0.0014	0.0016	0.0018	0.0020	0.0018	0.0019	0.0023
74	0.2576	0.5254	2813	0.0001	0.0007	0.0009	0.0012	0.0013	0.0016	0.0015	0.0017	0.0018
75	0.2575	0.5255	2814	0.0001	0.0008	0.0011	0.0013	0.0016	0.0019	0.0019	0.0019	0.0024
Avg.	0.2588	0.5256	2786	0.0004	0.0008	0.0010	0.0012	0.0014	0.0016	0.0017	0.0019	0.0022
Med.	0.2590	0.5257	2784	0.0004	0.0008	0.0010	0.0012	0.0014	0.0016	0.0017	0.0019	0.0022
st dev	0.0007	0.0011	16	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0003
Min.	0.2575	0.5217	2758	0.0001	0.0005	0.0007	0.0009	0.0010	0.0013	0.0012	0.0014	0.0018
Max.	0.2604	0.5272	2814	0.0007	0.0013	0.0015	0.0017	0.0018	0.0021	0.0023	0.0025	0.0030

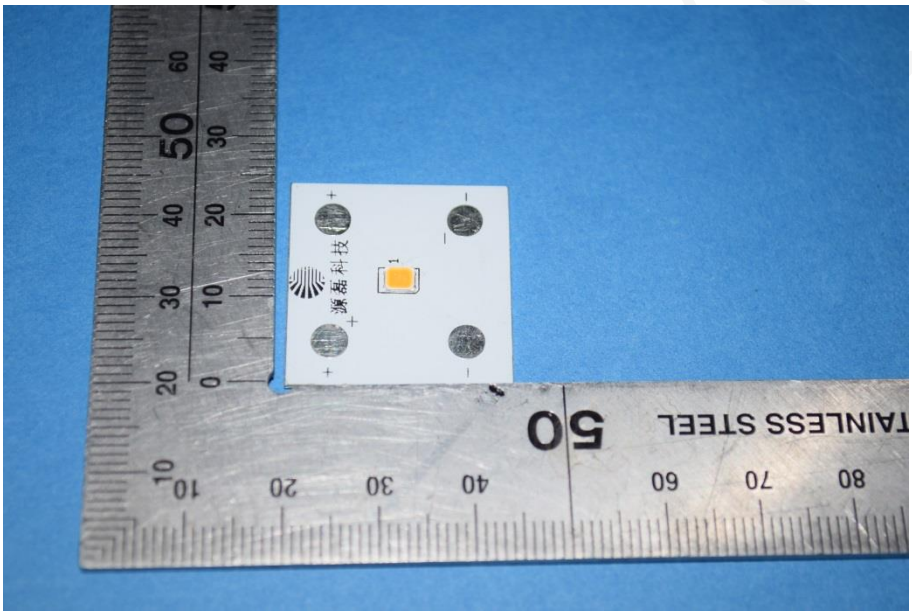
4 - DUT Photo

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 DUT Photo



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