TEST REPORT

ACCORDING TO IES LM-80-2015
For

Lumileds Holding B.V.

370 W. Trimble Road, San Jose, CA 95131, USA

Model: L128-2790RB35000D1

Report Type: 9000 Hours Test Report	**Product Type:** LED Package
Reviewed By:	Pote Wang
Report Number:	R2DG191218051-10-M1
Test Date:	2016-03-31 to 2017-04-10
Report Date:	2022-03-10
Approved by:	Bill Xiong / EE Engineer
Revised Note:	The previous report R2DG191218051-10 is replaced by this report on 2022-03-10
Prepared By:	Bay Area Compliance Laboratories Corp. (Dongguan) No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China. Tel: +86-0769-86858888 Fax:+86-0769-86858588

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1 - General Information

1.1 Description of LED Light Sources

Sample Size:

60 PCS test samples were in good condition and received on 2016-03-29. The samples were numbered from 1 to 30 and 31 to 60.

Manufacturer:	Lumileds Holding B.V.
Part Number:	L128-2790RB35000D1
Part Type:	LED Package
#Drive Level:	CC 150mA
#Nominal CCT:	2700K
#Power:	1 W
#Average Current Density per LED die:	930 mA/mm^2
#Average Power Density per LED die:	0.988 W/mm^2
#CRI:	90
#Die Spacing:	0.15 mm

Note:

1. The applicant Lumileds Holding B.V. declare that their products with model L128-2790RB35000D1 are the same to the products in report# R2DG190409050-10 and is authorized by original applicant to use their test data.

2. All the data in previous report (R2DG190409050-10) is shared in this report.

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 model	Total Input Current (mA)	Power(W)	CCT (K)	Number of dies	Driver current per die (mA)	Current Density per Die(mA/mm^2)	Power Density per PCB (W/mm^2)	Die Spacing (mm)
L128-2790RB35000D1	L128-xxxxRB35xxxxx	150	1	2200 - 6500	2	150	930	0.102	0.15

NOTES:

1. The first and second x denote designates nominal CCT (22=2200K,27=2700K, 30=3000K, 35=3500K, 40=4000K,45=4500K,50=5000K,57=5700K,60=6000K,65=6500K).
2. The three and four x is a different product solution (Color coordinate and applications and special solution etc…).
3. The last five x denote designates= Lumileds internal codes (000A1, 000B1, 000C1, etc.=shares the same base part).
4. The materials and workmanship of all series models are consistent with the test model.

1.2 Standards Used:

- IESNA LM-80-15: IES Approved Method for Measuring Lumen Maintenance of LED Light Sources.
- 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	Test Range	Calibration date	Calibration due date
Integral Sphere	EVERFINE	Diameter 0.3m	1011119	0.3m	2017-03-09	2018-03-08
Programmable Test Power for LEDs	EVERFINE	LED300E	1008002	15V/2000mA	2017-03-03	2018-03-02
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	380-780nm	2017-03-09	2018-03-08
Standard Light Source	EVERFINE	D062	1011093	3000K	2016-09-13	2017-09-12
Precision digital stabilized DC power supply	EVERFINE	WY605-V110	G115987CJ7321114	300VA	2017-03-03	2018-03-02
Multilayer aging machine	BACL	B2-270	20022	25°C~130°C	2016-12-08	2017-12-07
Multilayer aging machine	BACL	B2-270	20013	25°C~130°C	2016-09-01	2017-09-01
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090008	(50/15A)	2016-07-07	2017-07-06

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 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=21K (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: 85°C,150mA

Part Number:	L128-2790RB35000D1
Number of Units:	30
Case Temperature:	>83°C
Ambient Temperature:	>80°C
Life Test Drive Current:	150mA
Measurement Current:	150mA

Data Set 2: 105°C,150mA

Part Number:	L128-2790RB35000D1
Number of Units:	30
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	Reported TM-21 L_{70} Lifetime
1	30	0	1000	9000	>54,000hours
2	30	0	1000	9000	>54,000hours

Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000	2000	3000	4000	5000	6000	7000	8000	9000
1	100.19%	99.94%	99.74%	99.43%	99.13%	98.85%	98.64%	98.37%	98.10%
2	100.11%	99.71%	99.42%	99.00%	98.60%	98.19%	97.91%	97.59%	97.28%

Average Color Maintenance

Data Set:	1000	2000	3000	4000	5000	6000	7000	8000	9000
1	0.0003	0.0007	0.0009	0.0010	0.0013	0.0016	0.0018	0.0022	0.0024
2	0.0004	0.0007	0.0009	0.0013	0.0016	0.0018	0.0020	0.0024	0.0027

3 - Test Data

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

No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	119.4	100.25	99.83	99.58	99.16	98.83	98.66	98.58	98.24	97.91
2	119.6	100.17	99.92	99.67	99.50	99.08	98.83	98.75	98.41	98.08
3	119.1	100.08	99.75	99.66	99.33	98.99	98.74	98.66	98.49	98.15
4	121.3	100.16	99.84	99.51	99.26	98.85	98.52	98.27	98.02	97.86
5	117.1	100.26	99.91	99.83	99.49	99.15	98.89	98.72	98.38	98.04
6	120.2	100.33	100.08	99.75	99.50	99.25	99.00	98.92	98.59	98.42
7	121.2	100.17	99.92	99.83	99.42	99.09	98.93	98.68	98.43	98.27
8	121.7	100.08	99.67	99.42	99.01	98.85	98.60	98.52	98.27	98.03
9	122.1	100.16	99.84	99.75	99.51	99.10	98.85	98.53	98.20	97.95
10	121.3	100.33	100.16	100.08	99.84	99.51	99.18	98.85	98.60	98.27
11	122.2	100.16	99.75	99.51	99.10	98.85	98.69	98.53	98.20	98.04
12	121.5	100.08	99.92	99.75	99.42	99.09	98.85	98.60	98.35	98.11
13	120.0	100.33	100.25	100.17	99.92	99.67	99.33	99.08	98.67	98.25
14	118.4	100.17	99.92	99.83	99.49	99.32	99.07	98.99	98.73	98.48
15	121.5	100.25	100.08	99.84	99.51	99.26	99.18	99.01	98.68	98.52
16	118.0	100.17	99.83	99.58	99.24	99.07	98.90	98.64	98.39	98.05
17	119.6	100.33	100.17	99.83	99.50	99.25	99.00	98.75	98.49	98.24
18	122.2	99.92	99.59	99.35	99.02	98.69	98.53	98.20	98.04	97.71
19	121.1	100.17	99.92	99.75	99.50	99.26	98.93	98.60	98.27	97.94
20	120.4	100.33	100.17	99.92	99.58	99.34	99.17	98.92	98.67	98.50
21	121.6	100.16	99.84	99.67	99.42	99.10	98.85	98.68	98.44	98.19
22	120.8	100.17	99.83	99.59	99.25	99.01	98.68	98.43	98.10	97.85
23	120.3	100.25	100.08	99.83	99.58	99.17	99.00	98.75	98.42	98.00
24	121.9	100.16	99.92	99.75	99.43	99.02	98.52	98.28	98.11	97.79
25	122.2	100.25	100.16	99.92	99.43	99.10	98.69	98.36	98.12	97.87
26	119.8	100.33	100.17	100.08	99.58	99.33	98.91	98.66	98.33	98.16
27	120.2	100.25	100.08	99.83	99.67	99.50	99.25	98.84	98.59	98.34
28	122.3	100.08	99.67	99.43	99.18	99.02	98.61	98.20	98.12	97.79
29	121.0	100.17	100.08	99.75	99.34	98.93	98.51	98.43	98.18	97.93
30	120.6	100.08	99.92	99.83	99.59	99.25	98.76	98.67	98.42	98.18
Ave.	120.6	100.19	99.94	99.74	99.43	99.13	98.85	98.64	98.37	98.10
Med.	120.9	100.17	99.92	99.75	99.46	99.10	98.85	98.66	98.38	98.06
st dev	1.3275	0.0986	0.1723	0.1950	0.2111	0.2196	0.2304	0.2355	0.2061	0.2215
Min.	117.1	99.92	99.59	99.35	99.01	98.69	98.51	98.20	98.02	97.71
Max.	122.3	100.33	100.25	100.17	99.92	99.67	99.33	99.08	98.73	98.52

TM-21 Projection:

Test Duration: 9,000 hours

Failures Observed: 0

α: 2.644E-06

β: 1.005

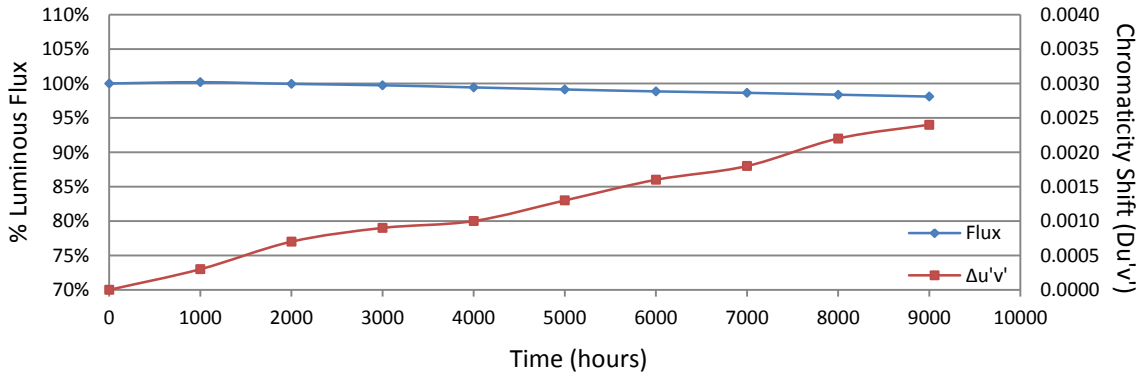
Reported L_{70}: >54,000 hours

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

No.	Forward Voltage (V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	6.381	6.405	6.358	6.373	6.375	6.368	6.373	6.382	6.395	6.372
2	6.369	6.405	6.689	6.370	6.364	6.366	6.372	6.380	6.394	6.370
3	6.369	6.428	6.333	6.363	6.358	6.357	6.361	6.372	6.389	6.365
4	6.367	6.354	6.345	6.370	6.363	6.365	6.371	6.376	6.386	6.365
5	6.342	6.303	6.335	6.346	6.340	6.335	6.335	6.346	6.352	6.333
6	6.404	6.380	6.454	6.415	6.378	6.383	6.387	6.400	6.408	6.388
7	6.341	6.513	6.348	6.341	6.329	6.336	6.340	6.362	6.353	6.340
8	6.489	6.413	6.439	6.400	6.385	6.384	6.383	6.414	6.413	6.586
9	6.424	6.386	6.474	6.398	6.397	6.397	6.397	6.423	6.420	6.400
10	6.385	6.339	6.384	6.368	6.369	6.365	6.369	6.392	6.395	6.372
11	6.404	6.359	6.393	6.376	6.375	6.374	6.381	6.387	6.401	6.377
12	6.380	6.397	6.374	6.361	6.357	6.359	6.360	6.373	6.383	6.354
13	6.396	6.400	6.333	6.402	6.378	6.379	6.382	6.397	6.403	6.384
14	6.385	6.430	6.368	6.379	6.372	6.371	6.370	6.390	6.397	6.368
15	6.403	6.427	6.334	6.387	6.386	6.385	6.387	6.399	6.406	6.390
16	6.400	6.356	6.439	6.365	6.359	6.363	6.363	6.376	6.387	6.364
17	6.382	6.377	6.346	6.426	6.378	6.374	6.382	6.392	6.401	6.375
18	6.378	6.400	6.420	6.376	6.374	6.373	6.378	6.385	6.403	6.375
19	6.405	6.377	6.335	6.418	6.381	6.381	6.387	6.403	6.413	6.397
20	6.393	6.358	6.346	6.388	6.380	6.384	6.384	6.398	6.408	6.384
21	6.385	6.369	6.340	6.385	6.383	6.383	6.382	6.393	6.400	6.378
22	6.396	6.348	6.380	6.389	6.381	6.387	6.392	6.400	6.411	6.389
23	6.386	6.380	6.384	6.377	6.381	6.376	6.383	6.396	6.401	6.379
24	6.403	6.400	6.383	6.420	6.396	6.400	6.409	6.408	6.424	6.402
25	6.395	6.381	6.389	6.393	6.387	6.390	6.394	6.407	6.416	6.399
26	6.375	6.306	6.355	6.377	6.369	6.375	6.375	6.391	6.401	6.374
27	6.392	6.450	6.373	6.394	6.383	6.383	6.381	6.396	6.405	6.378
28	6.390	6.434	6.408	6.391	6.384	6.381	6.387	6.397	6.413	6.385
29	6.338	6.336	6.376	6.337	6.331	6.331	6.333	6.339	6.352	6.330
30	6.382	6.365	6.422	6.434	6.374	6.375	6.374	6.391	6.400	6.371
Ave.	6.388	6.386	6.389	6.384	6.372	6.373	6.376	6.389	6.398	6.381
Med.	6.386	6.381	6.375	6.382	6.377	6.375	6.381	6.392	6.401	6.376
st dev	0.0273	0.0431	0.0688	0.0239	0.0165	0.0166	0.0172	0.0181	0.0182	0.0425
Min.	6.338	6.303	6.333	6.337	6.329	6.331	6.333	6.339	6.352	6.330
Max.	6.489	6.513	6.689	6.434	6.397	6.400	6.409	6.423	6.424	6.586

3.3 Data Set 1, 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
1	0.2627	0.5273	2696	0.0004	0.0006	0.0009	0.0012	0.0016	0.0020	0.0023	0.0024	0.0026
2	0.2642	0.5245	2677	0.0004	0.0006	0.0008	0.0010	0.0012	0.0015	0.0020	0.0022	0.0024
3	0.2657	0.5263	2639	0.0004	0.0007	0.0008	0.0009	0.0012	0.0016	0.0019	0.0020	0.0023
4	0.2627	0.5205	2724	0.0004	0.0007	0.0009	0.0011	0.0014	0.0017	0.0021	0.0024	0.0027
5	0.2634	0.5267	2683	0.0003	0.0005	0.0007	0.0010	0.0014	0.0016	0.0020	0.0023	0.0026
6	0.2670	0.5268	2612	0.0002	0.0005	0.0007	0.0008	0.0011	0.0014	0.0014	0.0021	0.0022
7	0.2612	0.5208	2756	0.0003	0.0007	0.0010	0.0012	0.0015	0.0018	0.0019	0.0024	0.0025
8	0.2638	0.5231	2689	0.0003	0.0005	0.0008	0.0009	0.0013	0.0015	0.0017	0.0021	0.0022
9	0.2608	0.5210	2763	0.0004	0.0009	0.0011	0.0013	0.0016	0.0018	0.0018	0.0025	0.0025
10	0.2636	0.5227	2696	0.0003	0.0007	0.0009	0.0009	0.0013	0.0015	0.0016	0.0021	0.0022
11	0.2628	0.5233	2711	0.0003	0.0007	0.0007	0.0009	0.0012	0.0014	0.0016	0.0020	0.0021
12	0.2605	0.5201	2775	0.0004	0.0008	0.0011	0.0011	0.0016	0.0017	0.0019	0.0025	0.0025
13	0.2630	0.5207	2716	0.0003	0.0006	0.0008	0.0010	0.0013	0.0016	0.0017	0.0025	0.0024
14	0.2638	0.5210	2698	0.0005	0.0008	0.0010	0.0011	0.0014	0.0016	0.0018	0.0023	0.0023
15	0.2635	0.5243	2692	0.0003	0.0006	0.0008	0.0010	0.0013	0.0016	0.0017	0.0021	0.0023
16	0.2621	0.5237	2724	0.0003	0.0005	0.0009	0.0009	0.0012	0.0015	0.0016	0.0021	0.0022
17	0.2657	0.5233	2649	0.0002	0.0005	0.0008	0.0006	0.0010	0.0012	0.0014	0.0018	0.0021
18	0.2626	0.5219	2721	0.0004	0.0007	0.0011	0.0011	0.0014	0.0016	0.0017	0.0022	0.0024
19	0.2624	0.5213	2727	0.0004	0.0009	0.0012	0.0014	0.0017	0.0020	0.0021	0.0027	0.0028
20	0.2642	0.5229	2682	0.0004	0.0007	0.0011	0.0011	0.0015	0.0016	0.0018	0.0025	0.0025
21	0.2620	0.5230	2728	0.0004	0.0008	0.0010	0.0011	0.0014	0.0017	0.0018	0.0022	0.0025
22	0.2656	0.5262	2641	0.0003	0.0007	0.0009	0.0007	0.0011	0.0014	0.0016	0.0020	0.0021
23	0.2651	0.5250	2655	0.0002	0.0005	0.0007	0.0007	0.0011	0.0014	0.0016	0.0020	0.0021
24	0.2628	0.5224	2715	0.0003	0.0005	0.0009	0.0009	0.0012	0.0013	0.0014	0.0020	0.0021
25	0.2617	0.5223	2738	0.0004	0.0006	0.0010	0.0011	0.0014	0.0017	0.0018	0.0023	0.0025
26	0.2644	0.5221	2681	0.0003	0.0006	0.0009	0.0010	0.0013	0.0015	0.0017	0.0022	0.0023
27	0.2641	0.5250	2676	0.0004	0.0008	0.0011	0.0011	0.0015	0.0017	0.0018	0.0023	0.0024
28	0.2640	0.5260	2674	0.0004	0.0006	0.0008	0.0008	0.0012	0.0014	0.0017	0.0021	0.0023
29	0.2636	0.5228	2696	0.0003	0.0005	0.0007	0.0007	0.0012	0.0014	0.0017	0.0020	0.0022
30	0.2647	0.5207	2680	0.0004	0.0007	0.0011	0.0011	0.0014	0.0017	0.0019	0.0026	0.0027
Ave.	0.2635	0.5233	2697	0.0003	0.0007	0.0009	0.0010	0.0013	0.0016	0.0018	0.0022	0.0024
Med.	0.2636	0.5230	2696	0.0003	0.0007	0.0009	0.0010	0.0013	0.0016	0.0018	0.0022	0.0024
st dev	0.0015	0.0021	37.4163	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2605	0.5201	2612	0.0002	0.0005	0.0007	0.0006	0.0010	0.0012	0.0014	0.0018	0.0021
Max.	0.2670	0.5273	2775	0.0005	0.0009	0.0012	0.0014	0.0017	0.0020	0.0023	0.0027	0.0028



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

No.	Φ(lm)	Lumen Maintenance (%)								
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
31	118.1	100.25	99.92	99.83	99.41	99.07	98.81	98.48	98.14	97.71
32	116.8	100.09	99.66	99.32	98.97	98.46	98.20	97.95	97.52	97.26
33	120.7	100.08	99.75	99.50	99.17	98.67	98.26	98.09	97.68	97.43
34	118.4	100.17	99.83	99.58	99.16	98.73	98.31	98.06	97.72	97.38
35	122.5	100.16	99.67	99.51	99.18	98.86	98.29	98.04	97.71	97.47
36	119.3	100.17	99.66	99.58	99.08	98.66	98.32	98.07	97.82	97.49
37	121.8	99.92	99.34	99.10	98.60	98.11	97.70	97.37	97.04	96.72
38	120.9	100.08	99.83	99.59	99.17	98.68	98.18	97.77	97.44	97.19
39	122.1	100.16	99.59	99.26	98.85	98.53	98.12	97.79	97.30	97.13
40	120.0	100.08	99.50	99.33	99.00	98.58	98.42	98.00	97.67	97.25
41	117.3	100.17	99.66	99.32	98.89	98.55	98.29	98.04	97.70	97.36
42	121.4	100.08	99.59	99.51	98.93	98.60	98.35	98.02	97.78	97.45
43	119.8	99.92	99.83	99.58	99.08	98.75	98.16	97.91	97.58	97.33
44	123.1	100.08	99.76	99.51	99.11	98.78	98.21	97.97	97.64	97.40
45	117.8	100.17	99.92	99.66	99.41	98.98	98.39	98.22	97.88	97.62
46	118.7	100.08	99.75	99.49	99.07	98.74	98.40	98.15	97.89	97.56
47	122.5	99.92	99.43	99.18	98.86	98.37	98.04	97.96	97.71	97.47
48	116.0	100.17	99.83	99.57	99.05	98.62	98.10	98.02	97.76	97.50
49	121.3	100.08	99.75	99.51	99.01	98.43	97.94	97.61	97.44	97.03
50	120.2	100.17	99.92	99.67	99.17	98.75	98.17	97.75	97.34	97.00
51	116.7	100.09	99.83	99.49	99.06	98.63	98.29	97.86	97.51	97.09
52	119.6	100.17	99.92	99.75	99.33	98.83	98.33	97.91	97.58	97.24
53	120.8	100.08	99.59	99.17	98.76	98.51	98.10	97.85	97.43	97.02
54	121.9	100.25	99.84	99.43	99.18	98.85	98.36	97.95	97.70	97.37
55	121.7	100.08	99.75	99.42	98.93	98.52	98.11	97.70	97.53	97.12
56	122.0	100.25	99.92	99.67	99.26	98.69	98.28	98.03	97.70	97.38
57	117.2	100.09	99.83	99.40	98.98	98.55	98.04	97.61	97.27	96.93
58	121.5	100.16	99.59	99.01	98.68	98.27	98.02	97.78	97.45	97.20
59	116.6	99.91	99.23	98.71	98.28	98.03	97.86	97.68	97.34	97.00
60	119.3	100.17	99.66	99.08	98.49	98.16	97.74	97.57	97.32	97.15
Ave.	119.9	100.11	99.71	99.42	99.00	98.60	98.19	97.91	97.59	97.28
Med.	120.1	100.09	99.75	99.50	99.05	98.62	98.21	97.95	97.61	97.29
st dev	2.0787	0.0932	0.1747	0.2415	0.2541	0.2409	0.2193	0.2202	0.2261	0.2267
Min.	116.0	99.91	99.23	98.71	98.28	98.03	97.70	97.37	97.04	96.72
Max.	123.1	100.25	99.92	99.83	99.41	99.07	98.81	98.48	98.14	97.71

TM-21 Projection:

Test Duration: 9,000 hours

Failures Observed: 0

α: 3.468E-06

β: 1.003

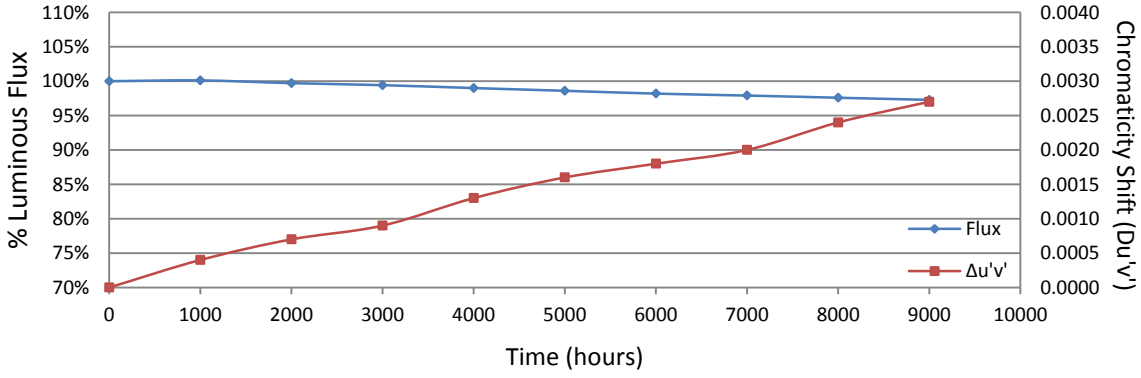
Reported L_{70}: >54,000 hours

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

No.	Forward Voltage (V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
31	6.348	6.378	6.344	6.449	6.346	6.341	6.346	6.366	6.366	6.340
32	6.377	6.397	6.418	6.383	6.372	6.372	6.375	6.387	6.393	6.370
33	6.377	6.449	6.358	6.377	6.369	6.377	6.373	6.386	6.400	6.370
34	6.379	6.435	6.403	6.377	6.378	6.377	6.379	6.394	6.399	6.372
35	6.381	6.358	6.476	6.373	6.377	6.377	6.374	6.395	6.407	6.375
36	6.382	6.391	6.394	6.376	6.381	6.381	6.385	6.391	6.407	6.380
37	6.391	6.436	6.383	6.384	6.384	6.396	6.391	6.403	6.414	6.389
38	6.352	6.308	6.364	6.354	6.353	6.350	6.355	6.367	6.377	6.356
39	6.397	6.360	6.435	6.399	6.400	6.391	6.395	6.412	6.422	6.426
40	6.360	6.330	6.421	6.353	6.360	6.357	6.360	6.366	6.377	6.365
41	6.403	6.349	6.445	6.388	6.387	6.384	6.391	6.398	6.404	6.384
42	6.402	6.359	6.476	6.396	6.398	6.389	6.395	6.405	6.415	6.392
43	6.378	6.366	6.409	6.372	6.378	6.376	6.381	6.387	6.390	6.376
44	6.395	6.461	6.355	6.447	6.394	6.390	6.395	6.409	6.404	6.389
45	6.336	6.308	6.305	6.335	6.340	6.331	6.332	6.344	6.342	6.329
46	6.372	6.381	6.353	6.367	6.369	6.360	6.365	6.380	6.382	6.361
47	6.412	6.487	6.517	6.406	6.408	6.403	6.405	6.414	6.426	6.402
48	6.374	6.557	6.359	6.380	6.368	6.369	6.374	6.383	6.381	6.366
49	6.384	6.784	6.404	6.390	6.375	6.371	6.378	6.391	6.398	6.379
50	6.362	6.340	6.414	6.347	6.350	6.356	6.352	6.361	6.366	6.351
51	6.360	6.346	6.381	6.344	6.342	6.341	6.343	6.346	6.349	6.334
52	6.372	6.331	6.486	6.368	6.367	6.367	6.376	6.378	6.388	6.368
53	6.394	6.339	6.426	6.372	6.377	6.374	6.379	6.385	6.389	6.368
54	6.413	6.386	6.547	6.398	6.399	6.399	6.397	6.410	6.413	6.393
55	6.402	6.389	6.459	6.400	6.397	6.390	6.398	6.405	6.413	6.390
56	6.389	6.379	6.407	6.368	6.376	6.373	6.372	6.379	6.390	6.372
57	6.390	6.367	6.575	6.369	6.360	6.359	6.361	6.374	6.373	6.378
58	6.403	6.344	6.428	6.365	6.367	6.364	6.375	6.383	6.388	6.364
59	6.382	6.378	6.359	6.368	6.410	6.373	6.377	6.384	6.383	6.368
60	6.347	6.341	6.438	6.352	6.350	6.343	6.354	6.354	6.365	6.340
Ave.	6.380	6.394	6.418	6.379	6.374	6.371	6.374	6.385	6.391	6.372
Med.	6.382	6.373	6.412	6.375	6.376	6.373	6.376	6.386	6.390	6.371
st dev	0.0198	0.0915	0.0614	0.0257	0.0193	0.0183	0.0180	0.0189	0.0207	0.0205
Min.	6.336	6.308	6.305	6.335	6.340	6.331	6.332	6.344	6.342	6.329
Max.	6.413	6.784	6.575	6.449	6.410	6.403	6.405	6.414	6.426	6.426

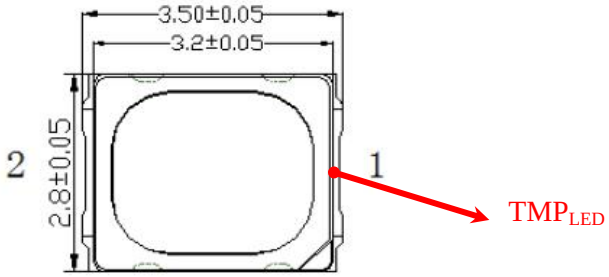
3.6 Data Set 2, 105°C, 150mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')								
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
31	0.2646	0.5260	2663	0.0004	0.0006	0.0010	0.0012	0.0014	0.0016	0.0016	0.0022	0.0025
32	0.2624	0.5190	2738	0.0004	0.0006	0.0009	0.0014	0.0017	0.0019	0.0020	0.0026	0.0029
33	0.2621	0.5222	2729	0.0003	0.0006	0.0006	0.0013	0.0016	0.0018	0.0017	0.0024	0.0028
34	0.2660	0.5245	2640	0.0004	0.0006	0.0007	0.0013	0.0016	0.0018	0.0019	0.0025	0.0029
35	0.2623	0.5224	2724	0.0005	0.0007	0.0009	0.0014	0.0017	0.0018	0.0019	0.0024	0.0028
36	0.2684	0.5288	2577	0.0003	0.0004	0.0006	0.0011	0.0014	0.0015	0.0016	0.0021	0.0025
37	0.2672	0.5289	2601	0.0008	0.0013	0.0015	0.0017	0.0020	0.0022	0.0023	0.0028	0.0030
38	0.2627	0.5209	2722	0.0004	0.0008	0.0011	0.0016	0.0018	0.0020	0.0022	0.0027	0.0030
39	0.2631	0.5236	2704	0.0004	0.0008	0.0009	0.0016	0.0018	0.0020	0.0022	0.0027	0.0029
40	0.2629	0.5246	2703	0.0004	0.0008	0.0009	0.0014	0.0018	0.0019	0.0021	0.0026	0.0029
41	0.2619	0.5216	2737	0.0004	0.0008	0.0011	0.0015	0.0018	0.0019	0.0021	0.0026	0.0030
42	0.2662	0.5250	2634	0.0005	0.0007	0.0009	0.0013	0.0017	0.0019	0.0021	0.0024	0.0026
43	0.2624	0.5190	2737	0.0005	0.0010	0.0011	0.0016	0.0020	0.0020	0.0022	0.0027	0.0031
44	0.2619	0.5229	2731	0.0004	0.0007	0.0009	0.0014	0.0017	0.0019	0.0021	0.0025	0.0029
45	0.2637	0.5237	2690	0.0004	0.0006	0.0007	0.0011	0.0014	0.0016	0.0018	0.0021	0.0025
46	0.2656	0.5253	2645	0.0004	0.0008	0.0009	0.0014	0.0017	0.0018	0.0020	0.0024	0.0028
47	0.2627	0.5231	2713	0.0004	0.0006	0.0009	0.0012	0.0015	0.0017	0.0018	0.0022	0.0025
48	0.2666	0.5259	2622	0.0004	0.0006	0.0009	0.0012	0.0016	0.0017	0.0019	0.0023	0.0026
49	0.2640	0.5233	2686	0.0004	0.0006	0.0010	0.0013	0.0016	0.0018	0.0020	0.0024	0.0028
50	0.2633	0.5204	2711	0.0004	0.0006	0.0009	0.0012	0.0016	0.0017	0.0019	0.0023	0.0026
51	0.2669	0.5277	2611	0.0004	0.0006	0.0009	0.0011	0.0015	0.0017	0.0018	0.0021	0.0025
52	0.2662	0.5245	2635	0.0003	0.0006	0.0009	0.0013	0.0016	0.0018	0.0022	0.0025	0.0029
53	0.2615	0.5250	2730	0.0005	0.0007	0.0011	0.0013	0.0017	0.0018	0.0021	0.0024	0.0028
54	0.2644	0.5248	2671	0.0003	0.0004	0.0009	0.0012	0.0015	0.0017	0.0020	0.0022	0.0027
55	0.2617	0.5226	2737	0.0004	0.0006	0.0009	0.0011	0.0014	0.0016	0.0019	0.0022	0.0025
56	0.2626	0.5234	2714	0.0004	0.0006	0.0008	0.0011	0.0014	0.0016	0.0019	0.0021	0.0025
57	0.2619	0.5209	2739	0.0004	0.0006	0.0009	0.0012	0.0015	0.0017	0.0020	0.0024	0.0027
58	0.2623	0.5218	2727	0.0005	0.0007	0.0011	0.0013	0.0016	0.0019	0.0021	0.0025	0.0029
59	0.2644	0.5241	2673	0.0004	0.0007	0.0011	0.0014	0.0016	0.0019	0.0021	0.0025	0.0029
60	0.2638	0.5220	2694	0.0004	0.0005	0.0008	0.0011	0.0014	0.0016	0.0018	0.0022	0.0026
Ave.	0.2639	0.5236	2688	0.0004	0.0007	0.0009	0.0013	0.0016	0.0018	0.0020	0.0024	0.0027
Med.	0.2632	0.5235	2704	0.0004	0.0006	0.0009	0.0013	0.0016	0.0018	0.0020	0.0024	0.0028
st dev	0.0019	0.0025	47.3861	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2615	0.5190	2577	0.0003	0.0004	0.0006	0.0011	0.0014	0.0015	0.0016	0.0021	0.0025
Max.	0.2684	0.5289	2739	0.0008	0.0013	0.0015	0.0017	0.0020	0.0022	0.0023	0.0028	0.0031



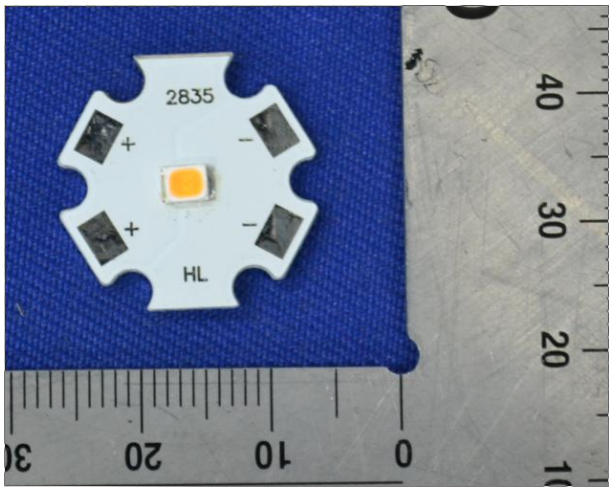
4 - EUT Photo

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 EUT Photo



5 - Report Revision

Report Number	Report Date	Contents
R2DG191218051-10	2019-12-19	Original report.
R2DG191218051-10-M1	2022-03-10	Update the Family products covered.

Directions

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.
2. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
3. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K=2 with the 95% confidence interval.
5. This report cannot be reproduced except in full, without prior written approval of the Company.
6. 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.

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