TEST REPORT

According to ANSI/IES LM-80-15
For

Hongli Zhihui Group Co.,Ltd. Guangzhou Branch

Room 316, Building 2, No.1, Xianke Yi Road, Huadong Town, Huadu District, Guangzhou, China

Model: HL-A-5730D1W-S1-08-HR3(LY)

Report Type: 10000 Hours Test Report	**Product Type:** LED Package
Reviewed By:	Pote Wang
Report Number:	SZ2220402-12252E-10-10000
Test Date:	2022-04-09 to 2023-07-06
Report Date:	2023-07-11
Approved by:	Blake Zhang / EE Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 5/F(B-West) -7/F, the 3rd Phase of Wan Li Industrial Building D, Shihua Road, Futian Free Trade Zone Shenzhen, Guangdong, China. Tel: +86-755-33320018 Fax: +86-755-33320008
Test Facility:	Test facility was located at No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

Note: 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.(Shenzhen). This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, or any agency of the U.S. Government.

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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 2022-04-02. The samples were numbered from 1 to 25 and 26 to 50.

Manufacturer:	Hongli Zhihui Group Co.,Ltd. Guangzhou Branch
Part Number:	HL-A-5730D1W-S1-08-HR3(LY)
Part Type:	LED Package
Drive Level:	DC 150mA
Nominal CCT:	2700K
Power:	0.510W
Average Current Density per LED die:	775.002mA/mm^2
Average Power Density per LED die:	2.635W/mm^2
CRI:	80
Die Spacing:	/

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:

Series Name	Model Name	CRI (typ.)	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)
Test model	HL-A-5730D1W-S1-08-HR3(LY)	80	150	0.51	2700	1	150	775.002	0.0298	/
Multiple model	HL-A-5730D***W-S1-08*-HR*(LY)-***	70-80	150	0.51	2700-6500	1	150	775.002	0.0298	/
Multiple model	HL-A-5730H***W-S1-08*-HR*(LY)-***	70-80	150	0.51	2700-6500	1	150	775.002	0.0298	/

Note:

The model name begins with "HL", such as “HL-A-5730D***W-S1-08**-HR*(LY)-***”, " *" is described in detail as follows:

1. The first “***” is the number from 1 to 999 which stands for the brightness level.
2. The second “*” is the letter L or None which stands for the bonding wire style.
3. The third “*” is the number 1 or 2 or 3 which stands for the CRI style
4. The fourth “***” is the letter which stands for the customer code.

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

1.3 Testing Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
0.5m integrating sphere	EVERFINE	AIS-2	G185304TA1381172	2022-11-18	2023-11-17
LED Test Source	EVERFINE	LTS-300	P185616CD1371113	2022-11-18	2023-11-17
High Accuracy Array Spectroradiometer	EVERFINE	HAAS-2000	P600674CM1381123	2022-11-18	2023-11-17
Standard Light Source	EVERFINE	D062	1011093	2021-09-15	2023-09-14
Multilayer aging machine	BACL	B2-270	20005	2022-10-19	2023-10-18
Program-controlled D.C. Stabilized Voltage Supply	Hanshenpuyuan	HSPY-60-03	N/A	2022-11-18	2023-11-17

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 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. (Shenzhen) 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:	HL-A-5730D1W-S1-08-HR3(LY)
Number of Units:	25
Case Temperature:	>53°C
Ambient Temperature:	>50°C
Life Test Drive Current:	150mA
Measurement Current:	150mA

Data Set 2: 105°C, 150mA

Part Number:	HL-A-5730D1W-S1-08-HR3(LY)
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
1	25	0	1000hrs	10000hrs	2.052E-06	1.004	>60,000 hours
2	25	0	1000hrs	10000hrs	2.639E-06	1.005	>60,000 hours

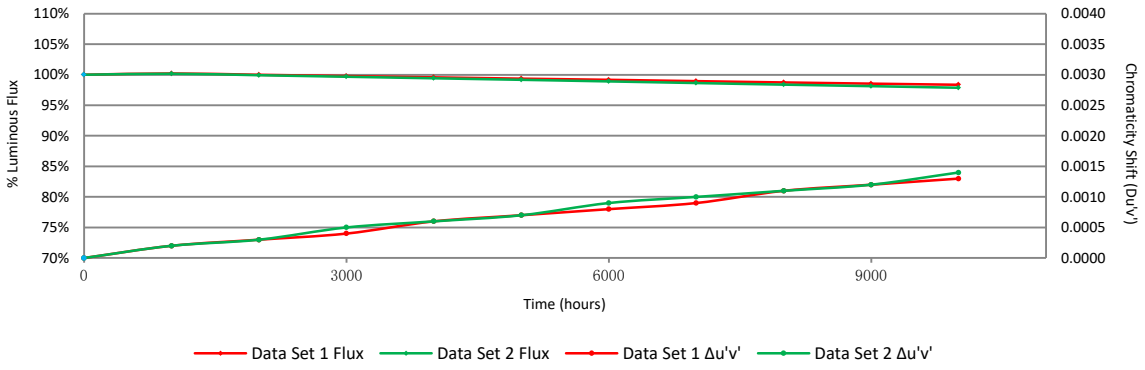
Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	100.21%	99.99%	99.78%	99.57%	99.36%	99.17%	98.95%	98.74%	98.54%	98.36%
2	100.16%	99.92%	99.67%	99.42%	99.17%	98.91%	98.64%	98.38%	98.13%	97.87%

Average Chromaticity Shift

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	0.0002	0.0003	0.0004	0.0006	0.0007	0.0008	0.0009	0.0011	0.0012	0.0013
2	0.0002	0.0003	0.0005	0.0006	0.0007	0.0009	0.0010	0.0011	0.0012	0.0014

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	10000hrs
1	62.59	100.29	100.02	99.94	99.71	99.50	99.34	99.22	99.09	98.96	98.83
2	61.93	100.31	100.10	99.89	99.71	99.61	99.39	99.24	99.10	98.95	98.72
3	62.58	100.11	99.92	99.60	99.30	99.15	98.88	98.63	98.40	98.23	98.07
4	62.40	99.97	99.76	99.58	99.46	99.20	99.02	98.80	98.57	98.37	98.21
5	62.90	100.08	99.95	99.60	99.44	99.28	99.05	98.86	98.62	98.39	98.24
6	58.45	100.39	100.10	99.79	99.56	99.33	99.23	98.96	98.84	98.58	98.36
7	61.90	100.03	99.89	99.82	99.61	99.43	99.18	98.89	98.66	98.38	98.19
8	63.25	100.27	100.05	99.70	99.40	99.19	98.99	98.69	98.51	98.37	98.15
9	62.25	100.29	100.10	99.61	99.41	99.10	98.96	98.83	98.57	98.36	98.18
10	62.30	100.27	100.03	99.78	99.70	99.52	99.31	99.09	98.81	98.56	98.36
11	63.12	100.11	99.90	99.60	99.46	99.33	99.10	98.84	98.69	98.59	98.43
12	62.78	100.35	100.16	99.76	99.57	99.35	99.20	98.95	98.82	98.69	98.55
13	62.61	100.27	100.06	100.03	99.86	99.66	99.46	99.30	99.09	98.79	98.56
14	63.41	100.13	99.86	99.68	99.57	99.40	99.26	99.09	98.96	98.77	98.52
15	63.21	100.22	99.98	99.92	99.73	99.54	99.34	99.18	98.91	98.62	98.39
16	62.76	100.38	100.22	100.16	100.05	99.78	99.51	99.30	99.03	98.77	98.66
17	63.12	100.19	100.13	99.81	99.65	99.41	99.27	99.07	98.84	98.72	98.56
18	62.37	100.27	100.10	99.76	99.52	99.36	99.15	98.99	98.80	98.57	98.43
19	59.86	100.32	99.98	99.97	99.63	99.40	99.21	98.90	98.58	98.48	98.36
20	63.32	100.28	99.94	99.89	99.53	99.21	98.99	98.75	98.47	98.33	98.12
21	62.28	100.32	100.10	99.65	99.44	99.18	98.97	98.76	98.57	98.30	98.17
22	62.72	100.08	99.82	99.65	99.44	99.30	99.00	98.79	98.61	98.45	98.33
23	62.47	100.08	99.86	99.66	99.44	99.25	99.15	98.96	98.74	98.64	98.43
24	63.59	100.05	99.94	99.92	99.64	99.37	99.20	98.99	98.68	98.40	98.19
25	63.47	100.08	99.80	99.68	99.53	99.21	99.01	98.72	98.50	98.28	98.03
Avg.	62.47	100.21	99.99	99.78	99.57	99.36	99.17	98.95	98.74	98.54	98.36
Med.	62.61	100.27	99.98	99.76	99.56	99.35	99.18	98.95	98.69	98.56	98.36
st dev	1.12	0.12	0.12	0.15	0.16	0.17	0.17	0.19	0.21	0.21	0.21
Min.	58.45	99.97	99.76	99.58	99.30	99.10	98.88	98.63	98.40	98.23	98.03
Max.	63.59	100.39	100.22	100.16	100.05	99.78	99.51	99.30	99.10	98.96	98.83

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	10000hrs
1	3.227	3.222	3.241	3.242	3.246	3.249	3.246	3.247	3.247	3.248	3.247
2	3.215	3.236	3.232	3.237	3.234	3.234	3.232	3.229	3.232	3.235	3.235
3	3.181	3.202	3.203	3.203	3.200	3.202	3.199	3.208	3.199	3.202	3.201
4	3.233	3.231	3.251	3.243	3.249	3.252	3.251	3.257	3.248	3.252	3.251
5	3.190	3.206	3.207	3.216	3.203	3.208	3.207	3.201	3.202	3.205	3.205
6	3.185	3.204	3.205	3.241	3.201	3.214	3.202	3.246	3.201	3.203	3.202
7	3.225	3.222	3.245	3.247	3.241	3.250	3.242	3.246	3.240	3.241	3.243
8	3.236	3.234	3.228	3.235	3.249	3.239	3.250	3.256	3.251	3.251	3.252
9	3.221	3.224	3.240	3.254	3.237	3.250	3.237	3.231	3.242	3.238	3.247
10	3.182	3.205	3.204	3.227	3.200	3.213	3.202	3.204	3.201	3.201	3.202
11	3.185	3.219	3.207	3.225	3.202	3.214	3.206	3.216	3.202	3.201	3.202
12	3.184	3.214	3.207	3.218	3.201	3.210	3.202	3.219	3.201	3.202	3.203
13	3.194	3.207	3.214	3.221	3.210	3.218	3.214	3.225	3.207	3.210	3.215
14	3.229	3.223	3.255	3.258	3.248	3.260	3.253	3.253	3.249	3.250	3.251
15	3.180	3.215	3.197	3.219	3.196	3.208	3.199	3.208	3.196	3.198	3.199
16	3.180	3.202	3.200	3.200	3.199	3.205	3.200	3.215	3.195	3.200	3.199
17	3.200	3.227	3.221	3.223	3.219	3.226	3.219	3.215	3.216	3.219	3.226
18	3.219	3.236	3.238	3.232	3.237	3.261	3.238	3.227	3.238	3.236	3.240
19	3.192	3.210	3.211	3.216	3.212	3.234	3.213	3.238	3.210	3.208	3.217
20	3.225	3.224	3.246	3.236	3.245	3.252	3.245	3.255	3.243	3.244	3.247
21	3.218	3.214	3.234	3.242	3.232	3.245	3.235	3.231	3.231	3.231	3.238
22	3.197	3.220	3.217	3.223	3.214	3.222	3.217	3.219	3.215	3.215	3.228
23	3.219	3.220	3.234	3.241	3.232	3.239	3.235	3.233	3.231	3.232	3.235
24	3.185	3.206	3.200	3.207	3.200	3.204	3.204	3.215	3.199	3.201	3.213
25	3.222	3.224	3.242	3.242	3.240	3.243	3.243	3.231	3.238	3.241	3.243
Avg.	3.205	3.218	3.223	3.230	3.222	3.230	3.224	3.229	3.221	3.223	3.226
Med.	3.200	3.220	3.221	3.232	3.219	3.234	3.219	3.229	3.216	3.219	3.228
st dev	0.020	0.011	0.019	0.015	0.020	0.019	0.019	0.017	0.020	0.020	0.020
Min.	3.180	3.202	3.197	3.200	3.196	3.202	3.199	3.201	3.195	3.198	3.199
Max.	3.236	3.236	3.255	3.258	3.249	3.261	3.253	3.257	3.251	3.252	3.252

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	10000hrs
1	0.2614	0.5305	2711	0.0001	0.0002	0.0003	0.0004	0.0006	0.0008	0.0010	0.0012	0.0014	0.0015
2	0.2597	0.5277	2757	0.0001	0.0003	0.0004	0.0005	0.0006	0.0006	0.0006	0.0008	0.0010	0.0010
3	0.2598	0.5252	2765	0.0002	0.0003	0.0004	0.0005	0.0007	0.0007	0.0008	0.0011	0.0011	0.0012
4	0.2610	0.5303	2720	0.0003	0.0004	0.0005	0.0006	0.0005	0.0007	0.0009	0.0011	0.0012	0.0012
5	0.2586	0.5264	2787	0.0002	0.0003	0.0004	0.0005	0.0006	0.0006	0.0009	0.0010	0.0012	0.0012
6	0.2611	0.5314	2712	0.0002	0.0004	0.0004	0.0005	0.0008	0.0007	0.0009	0.0011	0.0013	0.0014
7	0.2590	0.5279	2772	0.0001	0.0003	0.0004	0.0005	0.0008	0.0011	0.0011	0.0011	0.0011	0.0012
8	0.2591	0.5275	2772	0.0002	0.0004	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0013	0.0014
9	0.2591	0.5269	2773	0.0001	0.0002	0.0003	0.0004	0.0006	0.0007	0.0009	0.0010	0.0011	0.0013
10	0.2623	0.5290	2697	0.0003	0.0005	0.0006	0.0008	0.0009	0.0010	0.0009	0.0011	0.0012	0.0013
11	0.2608	0.5299	2725	0.0003	0.0005	0.0007	0.0008	0.0009	0.0012	0.0010	0.0013	0.0014	0.0016
12	0.2611	0.5306	2717	0.0001	0.0002	0.0004	0.0005	0.0006	0.0006	0.0007	0.0010	0.0011	0.0013
13	0.2599	0.5272	2755	0.0001	0.0002	0.0004	0.0006	0.0009	0.0009	0.0010	0.0009	0.0013	0.0014
14	0.2600	0.5298	2743	0.0002	0.0003	0.0004	0.0005	0.0009	0.0011	0.0013	0.0015	0.0014	0.0017
15	0.2601	0.5309	2735	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008	0.0010	0.0011	0.0012	0.0016
16	0.2607	0.5305	2725	0.0001	0.0002	0.0004	0.0005	0.0006	0.0007	0.0010	0.0011	0.0012	0.0014
17	0.2559	0.5297	2830	0.0001	0.0002	0.0003	0.0004	0.0004	0.0005	0.0006	0.0009	0.0009	0.0012
18	0.2601	0.5293	2743	0.0001	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0011	0.0011	0.0013
19	0.2619	0.5294	2704	0.0002	0.0003	0.0004	0.0005	0.0008	0.0008	0.0011	0.0012	0.0012	0.0013
20	0.2588	0.5307	2764	0.0003	0.0005	0.0006	0.0008	0.0011	0.0013	0.0014	0.0015	0.0015	0.0016
21	0.2571	0.5260	2821	0.0001	0.0003	0.0004	0.0005	0.0006	0.0008	0.0009	0.0009	0.0012	0.0012
22	0.2598	0.5280	2755	0.0002	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0012	0.0013
23	0.2604	0.5291	2737	0.0001	0.0003	0.0005	0.0006	0.0008	0.0008	0.0008	0.0010	0.0011	0.0011
24	0.2572	0.5300	2800	0.0001	0.0003	0.0003	0.0004	0.0006	0.0008	0.0007	0.0009	0.0013	0.0013
25	0.2604	0.5294	2735	0.0002	0.0004	0.0005	0.0006	0.0005	0.0008	0.0009	0.0009	0.0009	0.0011
Avg.	0.2598	0.5289	2750	0.0002	0.0003	0.0004	0.0006	0.0007	0.0008	0.0009	0.0011	0.0012	0.0013
Med.	0.2600	0.5294	2743	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008	0.0009	0.0011	0.0012	0.0013
st dev	0.0015	0.0017	35	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002
Min.	0.2559	0.5252	2697	0.0001	0.0002	0.0003	0.0004	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010
Max.	0.2623	0.5314	2830	0.0003	0.0005	0.0007	0.0008	0.0011	0.0013	0.0014	0.0015	0.0015	0.0017

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	10000hrs
26	64.23	100.20	99.72	99.64	99.49	99.16	98.86	98.60	98.40	98.19	98.01
27	62.64	100.22	99.98	99.81	99.51	99.27	98.98	98.71	98.42	98.16	97.94
28	62.41	100.10	99.95	99.81	99.55	99.28	99.02	98.75	98.43	98.14	97.79
29	63.15	100.10	99.94	99.86	99.65	99.35	99.07	98.76	98.46	98.27	98.07
30	62.63	100.21	99.94	99.65	99.39	99.11	98.85	98.69	98.36	98.02	97.70
31	61.76	100.18	99.82	99.74	99.50	99.22	98.96	98.66	98.33	98.09	97.85
32	59.00	100.03	99.69	99.61	99.36	99.08	98.88	98.64	98.44	98.10	97.90
33	63.09	100.22	99.90	99.78	99.48	99.22	98.95	98.73	98.49	98.24	97.99
34	60.87	100.11	99.90	99.62	99.44	99.18	98.95	98.74	98.54	98.28	98.05
35	62.50	100.29	99.95	99.78	99.41	99.20	98.88	98.61	98.42	98.22	97.97
36	63.93	100.22	99.84	99.62	99.33	99.14	98.92	98.62	98.31	98.04	97.81
37	63.59	100.13	100.02	99.78	99.47	99.32	99.10	98.79	98.54	98.35	98.03
38	62.09	100.29	99.94	99.77	99.58	99.31	99.05	98.76	98.53	98.33	98.12
39	62.05	100.26	99.90	99.55	99.24	99.10	98.81	98.50	98.29	98.10	97.76
40	61.79	100.10	99.85	99.61	99.42	99.24	99.00	98.71	98.41	98.19	97.94
41	63.00	100.21	99.79	99.68	99.59	99.32	99.11	98.81	98.56	98.29	98.00
42	63.37	100.05	99.84	99.61	99.27	99.07	98.82	98.50	98.23	97.93	97.73
43	63.14	100.05	99.97	99.64	99.40	99.18	98.97	98.64	98.42	98.15	97.81
44	62.93	100.32	100.19	99.81	99.62	99.38	99.16	98.86	98.55	98.32	98.12
45	63.66	100.13	100.03	99.54	99.28	99.07	98.77	98.57	98.32	98.07	97.85
46	62.81	100.06	99.97	99.51	99.20	98.87	98.61	98.30	97.98	97.63	97.34
47	62.94	100.11	100.02	99.67	99.46	99.14	98.87	98.55	98.24	97.97	97.73
48	62.16	100.06	99.84	99.50	99.24	99.00	98.76	98.54	98.36	98.15	97.91
49	63.38	100.16	99.92	99.56	99.29	98.97	98.67	98.45	98.23	97.96	97.65
50	62.26	100.16	100.02	99.68	99.23	98.97	98.73	98.44	98.17	97.99	97.74
Avg.	62.62	100.16	99.92	99.67	99.42	99.17	98.91	98.64	98.38	98.13	97.87
Med.	62.81	100.16	99.94	99.65	99.42	99.18	98.92	98.64	98.41	98.15	97.90
st dev	1.07	0.08	0.11	0.10	0.13	0.13	0.14	0.13	0.14	0.16	0.18
Min.	59.00	100.03	99.69	99.50	99.20	98.87	98.61	98.30	97.98	97.63	97.34
Max.	64.23	100.32	100.19	99.86	99.65	99.38	99.16	98.86	98.56	98.35	98.12

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

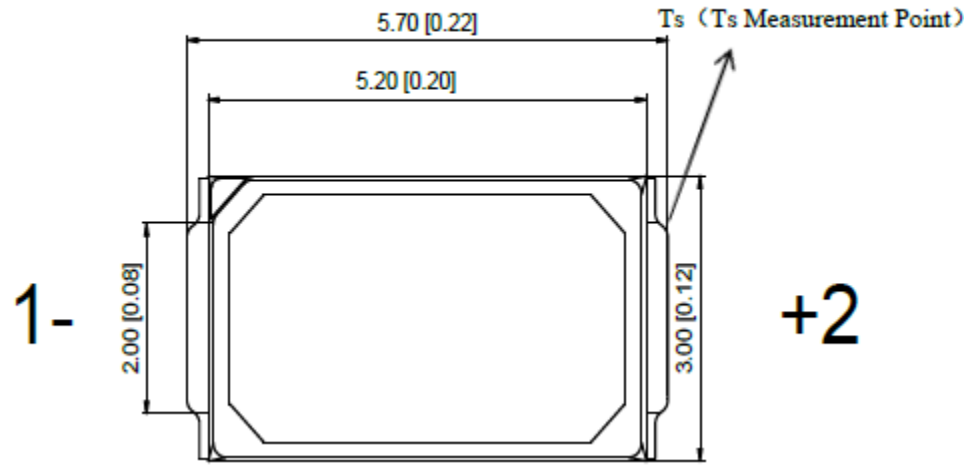
No.	Forward Voltage (V)										
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
26	3.220	3.229	3.222	3.226	3.236	3.240	3.254	3.221	3.242	3.236	3.242
27	3.218	3.214	3.239	3.232	3.230	3.236	3.234	3.244	3.232	3.232	3.236
28	3.204	3.218	3.218	3.221	3.214	3.222	3.222	3.227	3.218	3.217	3.221
29	3.200	3.202	3.218	3.218	3.214	3.221	3.222	3.258	3.226	3.217	3.254
30	3.225	3.222	3.222	3.227	3.240	3.247	3.245	3.247	3.240	3.239	3.231
31	3.200	3.211	3.212	3.215	3.208	3.218	3.210	3.224	3.213	3.210	3.234
32	3.228	3.220	3.223	3.223	3.239	3.253	3.243	3.252	3.241	3.240	3.226
33	3.197	3.210	3.212	3.214	3.208	3.218	3.222	3.216	3.207	3.211	3.220
34	3.175	3.179	3.193	3.192	3.188	3.195	3.215	3.198	3.207	3.190	3.213
35	3.218	3.229	3.231	3.231	3.227	3.234	3.250	3.247	3.229	3.230	3.233
36	3.229	3.226	3.228	3.229	3.244	3.251	3.244	3.255	3.245	3.248	3.245
37	3.192	3.223	3.206	3.206	3.203	3.207	3.227	3.215	3.203	3.207	3.214
38	3.200	3.204	3.216	3.218	3.215	3.217	3.216	3.221	3.222	3.215	3.228
39	3.194	3.218	3.213	3.212	3.208	3.214	3.213	3.214	3.216	3.208	3.212
40	3.209	3.229	3.230	3.228	3.226	3.228	3.226	3.228	3.236	3.226	3.240
41	3.220	3.219	3.221	3.227	3.240	3.243	3.256	3.245	3.246	3.240	3.247
42	3.180	3.198	3.198	3.201	3.195	3.198	3.215	3.203	3.204	3.197	3.211
43	3.189	3.212	3.206	3.213	3.205	3.207	3.212	3.212	3.218	3.204	3.219
44	3.213	3.237	3.237	3.235	3.231	3.230	3.207	3.230	3.237	3.231	3.246
45	3.197	3.222	3.217	3.224	3.215	3.216	3.234	3.214	3.221	3.215	3.241
46	3.181	3.200	3.198	3.199	3.196	3.196	3.205	3.199	3.200	3.198	3.201
47	3.183	3.204	3.202	3.204	3.200	3.201	3.210	3.198	3.208	3.199	3.213
48	3.223	3.222	3.221	3.223	3.238	3.238	3.254	3.238	3.242	3.237	3.242
49	3.230	3.228	3.231	3.230	3.247	3.246	3.236	3.244	3.250	3.248	3.251
50	3.182	3.212	3.239	3.200	3.197	3.201	3.212	3.198	3.200	3.197	3.207
Avg.	3.204	3.216	3.218	3.218	3.219	3.223	3.227	3.226	3.224	3.220	3.229
Med.	3.200	3.218	3.218	3.221	3.215	3.221	3.222	3.224	3.222	3.217	3.231
st dev	0.017	0.013	0.013	0.012	0.018	0.018	0.016	0.019	0.016	0.018	0.015
Min.	3.175	3.179	3.193	3.192	3.188	3.195	3.205	3.198	3.200	3.190	3.201
Max.	3.230	3.237	3.239	3.235	3.247	3.253	3.256	3.258	3.250	3.248	3.254

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	10000hrs
26	0.2580	0.5291	2787	0.0002	0.0004	0.0006	0.0007	0.0006	0.0009	0.0009	0.0011	0.0011	0.0013
27	0.2611	0.5293	2722	0.0001	0.0003	0.0005	0.0006	0.0006	0.0006	0.0009	0.0009	0.0010	0.0011
28	0.2603	0.5273	2747	0.0003	0.0004	0.0006	0.0007	0.0008	0.0009	0.0008	0.0010	0.0013	0.0013
29	0.2585	0.5292	2776	0.0003	0.0003	0.0004	0.0006	0.0009	0.0008	0.0009	0.0010	0.0011	0.0014
30	0.2587	0.5286	2775	0.0002	0.0003	0.0005	0.0006	0.0008	0.0008	0.0010	0.0011	0.0012	0.0015
31	0.2641	0.5281	2664	0.0003	0.0004	0.0005	0.0006	0.0008	0.0007	0.0009	0.0009	0.0012	0.0014
32	0.2624	0.5272	2703	0.0001	0.0003	0.0005	0.0006	0.0007	0.0009	0.0010	0.0011	0.0012	0.0013
33	0.2597	0.5313	2743	0.0003	0.0004	0.0007	0.0008	0.0009	0.0009	0.0011	0.0011	0.0013	0.0016
34	0.2586	0.5327	2758	0.0001	0.0002	0.0004	0.0005	0.0007	0.0008	0.0008	0.0010	0.0012	0.0016
35	0.2593	0.5306	2754	0.0003	0.0004	0.0005	0.0006	0.0009	0.0011	0.0013	0.0013	0.0013	0.0016
36	0.2586	0.5308	2767	0.0003	0.0004	0.0006	0.0007	0.0009	0.0009	0.0010	0.0011	0.0013	0.0014
37	0.2597	0.5320	2739	0.0001	0.0003	0.0005	0.0006	0.0007	0.0007	0.0009	0.0008	0.0009	0.0012
38	0.2615	0.5314	2705	0.0001	0.0003	0.0005	0.0006	0.0008	0.0009	0.0011	0.0012	0.0013	0.0015
39	0.2581	0.5279	2790	0.0002	0.0004	0.0006	0.0007	0.0009	0.0011	0.0012	0.0011	0.0014	0.0016
40	0.2598	0.5271	2758	0.0002	0.0003	0.0004	0.0005	0.0009	0.0011	0.0011	0.0009	0.0012	0.0014
41	0.2606	0.5316	2722	0.0001	0.0002	0.0004	0.0005	0.0008	0.0009	0.0011	0.0010	0.0013	0.0013
42	0.2592	0.5296	2761	0.0001	0.0004	0.0005	0.0006	0.0006	0.0009	0.0010	0.0011	0.0012	0.0013
43	0.2608	0.5270	2736	0.0001	0.0003	0.0005	0.0006	0.0006	0.0008	0.0009	0.0011	0.0011	0.0011
44	0.2607	0.5304	2725	0.0002	0.0003	0.0004	0.0005	0.0004	0.0007	0.0010	0.0011	0.0011	0.0012
45	0.2597	0.5284	2754	0.0002	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0015	0.0013	0.0014
46	0.2623	0.5294	2697	0.0001	0.0003	0.0006	0.0007	0.0008	0.0011	0.0012	0.0014	0.0013	0.0014
47	0.2596	0.5301	2749	0.0001	0.0001	0.0004	0.0006	0.0006	0.0009	0.0011	0.0013	0.0012	0.0013
48	0.2600	0.5285	2747	0.0001	0.0002	0.0004	0.0005	0.0004	0.0006	0.0008	0.0012	0.0010	0.0013
49	0.2604	0.5288	2739	0.0002	0.0003	0.0004	0.0005	0.0006	0.0009	0.0009	0.0012	0.0012	0.0014
50	0.2634	0.5312	2668	0.0003	0.0004	0.0006	0.0007	0.0008	0.0010	0.0011	0.0014	0.0014	0.0016
Avg.	0.2602	0.5295	2739	0.0002	0.0003	0.0005	0.0006	0.0007	0.0009	0.0010	0.0011	0.0012	0.0014
Med.	0.2598	0.5293	2747	0.0002	0.0003	0.0005	0.0006	0.0008	0.0009	0.0010	0.0011	0.0012	0.0014
st dev	0.0016	0.0016	33	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0001	0.0001
Min.	0.2580	0.5270	2664	0.0001	0.0001	0.0004	0.0005	0.0004	0.0006	0.0008	0.0008	0.0009	0.0011
Max.	0.2641	0.5327	2790	0.0003	0.0004	0.0007	0.0008	0.0009	0.0011	0.0013	0.0015	0.0014	0.0016

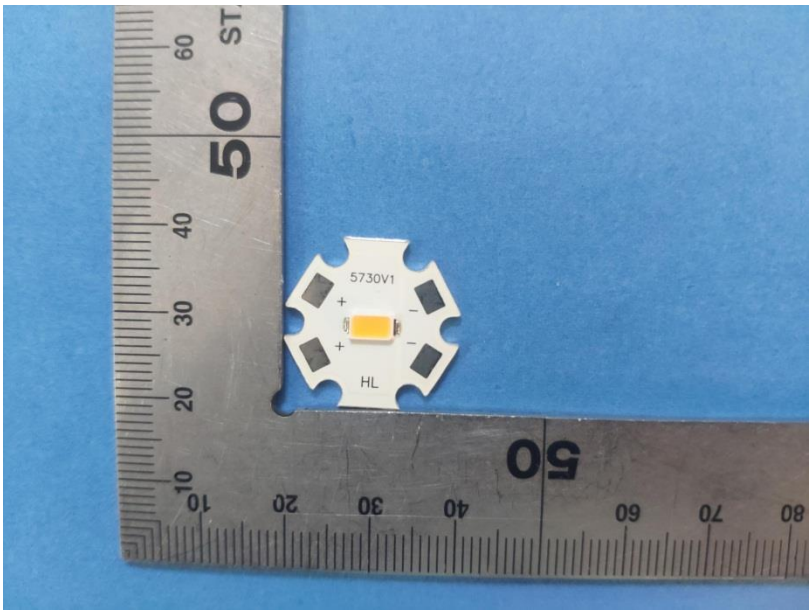
4 - DUT Photo

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 DUT Photo



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