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-2835H421BC-S1-08

Report Type: 9000 Hours Test Report	**Product Type:** LED Package
Reviewed By:	Pote Wang
Report Number:	RSZ190428533-10-9000
Test Date:	2020-01-04 to 2021-02-26
Report Date:	2021-03-09
Approved by:	Blake Zhang / EE Engineer
Test Facility:	Test facility was located at No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.
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
Accreditation:	The IAS Accreditation Number TL-460.

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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 2019-04-28. The samples were numbered from 1 to 30 and 31 to 60.

#Manufacturer:	Hongli Zhihui Group Co.,Ltd. Guangzhou Branch
#Part Number:	HL-A-2835H421BC-S1-08
#Part Type:	LED Package
#Drive Level:	DC 60mA
#Wavelength:	457nm
#Power:	0.18W
#Average Current Density per LED die:	322.140mA/mm^2
#Average Power Density per LED die:	0.996 W/mm^2
#CRI:	NA
#Die Spacing:	NA

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:

Test Model Number	Multiple Models	Details
HL-A-2835H421BC-S1-08	HL-A-2835H***BC-S1-08	1. Different Model name for different market. 2. "***" is a number from 1 to 999 which stand for the brightness level. 3."**" is a number from 1 to 99 which stand for the brightness level
	HL-A-2835H***BC-S1-08L	
	HL-A-2835H***BC-S1-08HL	
	HL-A-2835H***BC-S1-08-PCT	
	HL-A-2835H***BC-S1-08L-PCT	
	HL-AS-2835H***BC-S1-08-PCT	
	HL-AS-2835H***BC-S1-08L-PCT	
	HL-A-2835D**BC-S1-08	
	HL-A-2835D**BC-S1-08L	
	HL-A-2835D**BC-S1-08HL	
	HL-A-2835D**BC-S1-08-PCT	
	HL-A-2835D**BC-S1-08L-PCT	
	HL-AS-2835D**BC-S1-08-PCT	
	HL-AS-2835D**BC-S1-08L-PCT	

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
- ANSI/ASABE S640 JUL2017 Quantities and Units of Electromagnetic Radiation for Plants (Photosynthetic Organisms) (This standard was not accredited by IAS)
- ANSI/ASABE S642 SEP2018: Recommended Methods for Measurement and Testing of LED Products for Plant Growth and Development (This standard was not accredited by IAS)

1.3 Testing Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
High Accuracy Array Spectroradiometer	EVERFINE	HAAS 2000	P600674CM5391140	2020-10-22	2021-10-21
0.5M Integrating Sphere	EVERFINE	0.5m	NA	2020-10-22	2021-10-21
LED Test Source	EVERFINE	LTS-300	P185616CJ1391143	2020-10-21	2021-10-20
Standard Light Source	EVERFINE	D062	1011093	2020-10-20	2021-10-19
Multilayer aging machine	BACL	N/A	N/A	2021-02-24	2022-02-23
Program-controlled D.C. Stabilized Voltage Supply	Hanshenpuyuan	HSPY-60-03	N/A	2020-07-01	2021-06-30

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 spectral power distribution and photon flux. 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.

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, 60mA

Part Number:	HL-A-2835H421BC-S1-08
Number of Units:	30
Case Temperature:	>83°C
Ambient Temperature:	>80°C
Life Test Drive Current:	60mA
Measurement Current:	60mA

Data Set 2: 105°C, 60mA

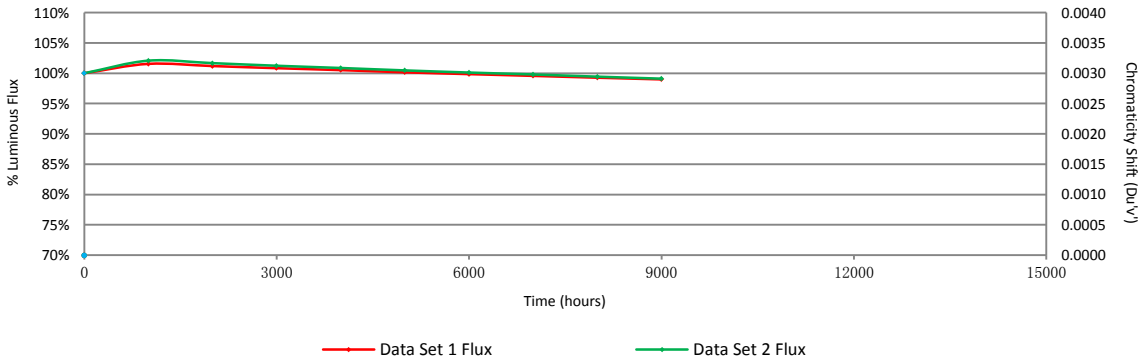
Part Number:	HL-A-2835H421BC-S1-08
Number of Units:	30
Case Temperature:	>103°C
Ambient Temperature:	>100°C
Life Test Drive Current:	60mA
Measurement Current:	60mA

2 - Summary of Test Result

Data Set:	Sample Size	Failures Observed:	Test Interval	Test Duration	α	β	Reported TM-21 Q_{70} Lifetime	Reported TM-21 Q_{90} Lifetime
1	30	0	1000hrs	9000hrs	3.040E-06	1.017	>54000 hours	40000 hours
2	30	0	1000hrs	9000hrs	3.490E-06	1.022	>54000 hours	37000 hours

Average Photon Flux Maintenance, Photosynthetic 400-700nm (PFM_P) (Percentage of Initial)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	101.54%	101.18%	100.83%	100.51%	100.15%	99.85%	99.56%	99.26%	98.98%
2	102.07%	101.66%	101.23%	100.86%	100.46%	100.11%	99.79%	99.43%	99.10%



3 - Test Data

3.1 Data Set 1, 85°C, 60mA (400-700nm Photon Flux Maintenance)

No.	Φ_p (μmol × s^{-1})	400-700nm Photon Flux Maintenance (%)								
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	0.4292	101.79	101.54	101.19	100.89	100.47	100.09	99.88	99.56	99.23
2	0.4283	101.75	101.40	101.12	100.89	100.51	100.07	99.88	99.70	99.53
3	0.4279	102.03	101.61	101.29	101.03	100.70	100.33	99.84	99.49	99.30
4	0.4304	102.07	101.72	101.51	101.09	100.74	100.42	100.30	99.93	99.67
5	0.4321	101.85	101.43	101.00	100.69	100.28	99.95	99.19	98.89	98.52
6	0.4278	101.92	101.54	101.26	100.91	100.61	100.30	100.28	99.93	99.67
7	0.4299	101.51	101.12	100.74	100.37	100.07	99.77	99.12	98.79	98.42
8	0.4146	100.68	100.31	99.93	99.69	99.40	99.18	99.16	98.91	98.63
9	0.4210	100.97	100.55	100.31	100.14	99.81	99.64	99.26	98.86	98.62
10	0.4286	101.94	101.59	101.19	100.89	100.56	100.21	99.84	99.46	99.09
11	0.4291	100.56	100.12	99.88	99.74	99.44	99.18	98.79	98.51	98.21
12	0.4301	99.40	99.07	98.88	98.49	98.21	97.88	97.84	97.61	97.28
13	0.4263	101.67	101.31	100.94	100.54	100.12	99.81	99.72	99.53	99.25
14	0.4296	101.33	101.07	100.61	100.30	99.95	99.81	99.67	99.42	99.12
15	0.4227	102.44	102.20	101.82	101.47	101.14	100.78	100.66	100.35	100.05
16	0.4276	101.17	100.65	100.28	99.95	99.67	99.49	98.92	98.76	98.46
17	0.4206	100.50	100.19	99.79	99.52	99.22	99.05	98.69	98.29	98.12
18	0.4254	100.96	100.75	100.35	100.07	99.62	99.32	98.90	98.66	98.40
19	0.4244	101.70	101.30	100.90	100.52	100.19	99.95	99.91	99.60	99.29
20	0.4268	101.34	100.84	100.54	100.14	99.74	99.46	99.32	99.06	98.88
21	0.4258	102.40	102.04	101.62	101.15	100.75	100.33	99.95	99.62	99.37
22	0.4260	100.96	100.66	100.23	99.91	99.60	99.30	99.01	98.73	98.50
23	0.4238	101.68	101.27	100.97	100.61	100.21	99.95	99.65	99.24	98.99
24	0.4292	102.19	101.75	101.40	100.96	100.49	100.12	99.86	99.56	99.21
25	0.4273	101.45	101.17	100.89	100.59	100.19	99.95	99.39	99.16	98.90
26	0.4257	101.79	101.39	100.94	100.56	100.23	100.02	99.79	99.46	99.18
27	0.4289	102.45	101.96	101.61	101.31	100.84	100.47	99.77	99.39	99.04
28	0.4204	101.19	100.81	100.36	100.05	99.81	99.45	99.41	99.19	98.91
29	0.4273	102.20	101.85	101.38	101.12	100.73	100.33	100.07	99.81	99.51
30	0.4241	102.48	102.22	101.98	101.58	101.27	100.92	100.66	100.31	99.95
Avg.	0.4264	101.54	101.18	100.83	100.51	100.15	99.85	99.56	99.26	98.98
Med.	0.4273	101.69	101.30	100.94	100.57	100.20	99.95	99.70	99.41	99.07
st dev	0.0037	0.69	0.70	0.68	0.66	0.64	0.60	0.61	0.59	0.59
Min.	0.4146	99.40	99.07	98.88	98.49	98.21	97.88	97.84	97.61	97.28
Max.	0.4321	102.48	102.22	101.98	101.58	101.27	100.92	100.66	100.35	100.05

3.2 Data Set 1, 85°C, 60mA (Forward Voltage)

No.	Forward Voltage (V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	2.886	2.897	2.889	2.891	2.893	2.895	2.893	2.899	2.904	2.901
2	2.885	2.898	2.890	2.890	2.893	2.895	2.894	2.896	2.904	2.899
3	2.882	2.894	2.886	2.888	2.888	2.890	2.889	2.893	2.899	2.896
4	2.886	2.899	2.891	2.894	2.897	2.898	2.893	2.899	2.905	2.900
5	2.885	2.898	2.890	2.893	2.894	2.894	2.894	2.897	2.904	2.901
6	2.885	2.898	2.889	2.893	2.894	2.895	2.893	2.896	2.902	2.900
7	2.887	2.902	2.894	2.897	2.896	2.902	2.896	2.899	2.905	2.901
8	2.885	2.899	2.890	2.892	2.895	2.897	2.895	2.898	2.903	2.900
9	2.885	2.899	2.891	2.891	2.894	2.894	2.894	2.897	2.904	2.899
10	2.887	2.900	2.892	2.892	2.896	2.896	2.895	2.897	2.904	2.900
11	2.884	2.895	2.890	2.890	2.893	2.894	2.894	2.895	2.901	2.898
12	2.884	2.893	2.883	2.876	2.879	2.881	2.877	2.892	2.901	2.896
13	2.885	2.896	2.891	2.895	2.895	2.896	2.895	2.895	2.904	2.898
14	2.883	2.894	2.889	2.894	2.891	2.895	2.894	2.895	2.900	2.898
15	2.882	2.895	2.890	2.894	2.891	2.894	2.895	2.895	2.903	2.898
16	2.884	2.893	2.890	2.891	2.893	2.893	2.896	2.895	2.904	2.898
17	2.885	2.895	2.892	2.895	2.894	2.896	2.894	2.897	2.902	2.900
18	2.883	2.893	2.890	2.888	2.891	2.892	2.891	2.892	2.900	2.896
19	2.883	2.895	2.892	2.890	2.892	2.893	2.893	2.895	2.902	2.898
20	2.884	2.894	2.890	2.889	2.891	2.895	2.893	2.895	2.902	2.897
21	2.884	2.897	2.895	2.890	2.877	2.878	2.894	2.895	2.903	2.899
22	2.885	2.896	2.893	2.893	2.891	2.895	2.892	2.893	2.901	2.898
23	2.884	2.898	2.895	2.895	2.894	2.895	2.893	2.896	2.904	2.900
24	2.883	2.896	2.893	2.894	2.892	2.893	2.891	2.893	2.903	2.898
25	2.885	2.897	2.893	2.895	2.895	2.896	2.896	2.897	2.903	2.898
26	2.885	2.896	2.893	2.893	2.896	2.893	2.895	2.896	2.904	2.897
27	2.886	2.899	2.894	2.897	2.897	2.896	2.895	2.899	2.904	2.899
28	2.884	2.895	2.891	2.891	2.897	2.898	2.893	2.896	2.903	2.906
29	2.884	2.894	2.890	2.889	2.896	2.892	2.892	2.892	2.901	2.895
30	2.886	2.897	2.894	2.891	2.899	2.896	2.896	2.897	2.904	2.898
Avg.	2.885	2.896	2.891	2.892	2.893	2.894	2.893	2.896	2.903	2.899
Med.	2.885	2.896	2.891	2.892	2.894	2.895	2.894	2.896	2.903	2.898
st dev	0.001	0.002	0.003	0.004	0.005	0.005	0.003	0.002	0.002	0.002
Min.	2.882	2.893	2.883	2.876	2.877	2.878	2.877	2.892	2.899	2.895
Max.	2.887	2.902	2.895	2.897	2.899	2.902	2.896	2.899	2.905	2.906

3.3 Data Set 1, 85°C, 60mA (Wavelength)

No.	Wavelength (nm)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	454.3	453.8	454.3	454.3	454.3	454.1	454.0	453.9	453.6	454.0
2	454.3	454.0	454.3	454.3	454.2	454.3	454.4	454.4	453.6	454.0
3	454.7	453.6	454.4	454.3	454.4	454.3	454.4	454.2	454.0	454.0
4	454.1	453.9	454.2	454.0	453.6	454.3	453.9	453.6	453.6	454.0
5	454.3	453.6	454.0	454.2	454.2	453.6	454.0	453.6	453.6	454.0
6	454.1	453.7	454.4	454.3	454.3	454.0	454.0	453.6	453.9	454.0
7	453.9	453.3	454.3	453.9	453.8	453.9	453.6	453.8	453.3	454.0
8	454.2	453.6	454.2	454.2	454.0	454.3	454.0	453.6	453.6	454.0
9	454.3	453.8	454.5	454.2	453.9	454.3	454.0	454.3	454.0	454.1
10	453.6	454.0	454.3	454.3	453.7	454.0	454.1	454.0	453.6	454.0
11	454.4	453.8	454.3	454.0	454.4	454.3	454.0	454.3	453.6	454.0
12	454.2	453.6	454.3	454.5	454.4	454.3	454.4	454.0	453.6	454.0
13	454.2	454.3	454.0	454.3	454.3	454.1	454.3	454.0	454.2	454.1
14	454.4	454.1	454.3	454.2	454.1	454.3	454.3	454.0	453.6	454.0
15	454.4	454.1	454.2	454.7	454.3	454.1	454.2	454.3	453.7	454.0
16	454.4	454.1	454.1	454.0	454.4	454.3	454.3	454.0	453.8	454.0
17	454.3	453.9	454.3	454.4	453.8	454.3	453.9	454.3	454.0	454.0
18	454.4	454.2	454.0	454.1	454.0	454.1	454.1	453.7	454.0	454.1
19	454.2	454.0	454.3	454.3	454.3	454.2	454.0	453.7	453.6	453.9
20	454.4	454.4	454.4	454.3	454.2	454.2	453.8	454.1	453.6	454.1
21	454.0	454.3	453.7	454.2	454.3	454.4	453.8	454.3	453.6	454.0
22	454.2	454.3	454.3	454.0	454.7	454.3	453.9	454.3	453.6	454.0
23	454.6	453.6	454.0	454.3	454.1	454.2	454.3	454.4	453.6	454.0
24	454.0	454.3	454.3	454.0	454.2	454.0	454.1	453.9	453.9	454.0
25	454.3	454.2	454.2	454.2	453.7	454.2	454.3	454.2	454.0	454.0
26	454.4	454.1	454.0	453.6	454.1	454.4	453.8	454.2	453.9	454.0
27	454.2	453.9	454.3	453.7	454.2	454.3	453.8	453.6	453.6	454.0
28	454.1	453.6	454.3	454.3	453.7	454.3	454.2	454.3	453.6	454.0
29	454.4	454.3	454.2	454.0	454.2	454.1	453.7	454.0	453.7	454.0
30	453.8	453.6	454.2	454.2	453.6	454.1	454.2	454.0	453.9	454.0
Avg.	454.2	453.9	454.2	454.2	454.1	454.2	454.1	454.0	453.7	454.0
Med.	454.3	454.0	454.3	454.2	454.2	454.3	454.0	454.0	453.6	454.0
st dev	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.0
Min.	453.6	453.3	453.7	453.6	453.6	453.6	453.6	453.6	453.3	453.9
Max.	454.7	454.4	454.5	454.7	454.7	454.4	454.4	454.4	454.2	454.1

3.4 Data Set 2, 105°C, 60mA (400-700nm Photon Flux Maintenance)

No.	Φ_p (μmol × s^{-1})	400-700nm Photon Flux Maintenance (%)								
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
31	0.4265	102.79	102.34	101.81	101.45	100.94	100.52	100.26	99.88	99.51
32	0.4220	102.46	101.99	101.56	101.21	100.83	100.43	99.93	99.69	99.50
33	0.4321	101.78	101.41	100.90	100.60	100.23	99.79	99.28	98.87	98.52
34	0.4267	102.37	101.92	101.59	101.29	100.89	100.59	100.14	99.74	99.53
35	0.4281	101.82	101.35	100.96	100.56	100.19	99.81	99.37	99.07	98.69
36	0.4267	102.13	101.87	101.50	101.17	100.77	100.42	100.28	99.91	99.67
37	0.4274	102.22	101.87	101.36	100.87	100.37	99.93	99.65	99.34	99.04
38	0.4199	102.79	102.36	102.00	101.60	101.12	100.76	100.24	99.90	99.52
39	0.4207	102.73	102.35	101.85	101.52	101.14	100.83	100.59	100.10	99.74
40	0.4311	101.46	101.09	100.63	100.23	99.88	99.51	99.19	98.79	98.45
41	0.4221	102.68	102.32	101.78	101.49	101.04	100.66	100.14	99.69	99.41
42	0.4193	102.00	101.55	101.17	100.72	100.26	99.95	99.74	99.50	99.09
43	0.4289	102.33	101.84	101.42	100.96	100.51	100.09	99.91	99.53	99.14
44	0.4200	101.74	101.26	100.93	100.48	100.17	99.86	99.74	99.48	99.17
45	0.4268	101.97	101.62	101.12	100.66	100.19	99.81	99.27	98.83	98.50
46	0.4262	101.69	101.17	100.84	100.49	100.02	99.67	99.46	99.08	98.64
47	0.4255	102.47	102.00	101.57	101.20	100.78	100.38	100.09	99.65	99.25
48	0.4272	102.22	101.69	101.31	100.87	100.54	100.21	99.91	99.53	99.27
49	0.4297	102.09	101.70	101.30	100.95	100.42	100.02	99.37	99.00	98.63
50	0.4233	101.80	101.42	100.99	100.73	100.38	100.09	99.81	99.43	99.24
51	0.4264	101.52	101.06	100.66	100.33	99.98	99.77	99.44	99.04	98.69
52	0.4260	100.99	100.63	100.21	99.91	99.58	99.25	99.04	98.78	98.54
53	0.4300	101.12	100.74	100.33	100.07	99.77	99.37	99.23	98.86	98.42
51	0.4235	102.27	101.75	101.28	100.94	100.64	100.38	100.17	99.93	99.67
55	0.4217	102.87	102.51	101.99	101.64	101.23	100.85	100.55	100.21	99.88
56	0.4262	102.02	101.50	101.01	100.70	100.31	100.05	99.67	99.46	99.23
57	0.4246	102.71	102.36	101.93	101.44	101.01	100.61	100.14	99.72	99.27
58	0.4307	100.93	100.67	100.23	99.98	99.58	99.33	98.96	98.51	98.21
59	0.4304	101.77	101.42	101.00	100.65	100.35	100.07	99.95	99.70	99.33
60	0.4270	102.34	101.94	101.57	101.10	100.77	100.37	100.12	99.72	99.32
Avg.	0.4259	102.07	101.66	101.23	100.86	100.46	100.11	99.79	99.43	99.10
Med.	0.4265	102.11	101.69	101.29	100.87	100.40	100.08	99.86	99.52	99.23
st dev	0.0035	0.53	0.52	0.51	0.49	0.46	0.45	0.45	0.45	0.46
Min.	0.4193	100.93	100.63	100.21	99.91	99.58	99.25	98.96	98.51	98.21
Max.	0.4321	102.87	102.51	102.00	101.64	101.23	100.85	100.59	100.21	99.88

3.5 Data Set 2, 105°C, 60mA (Forward Voltage)

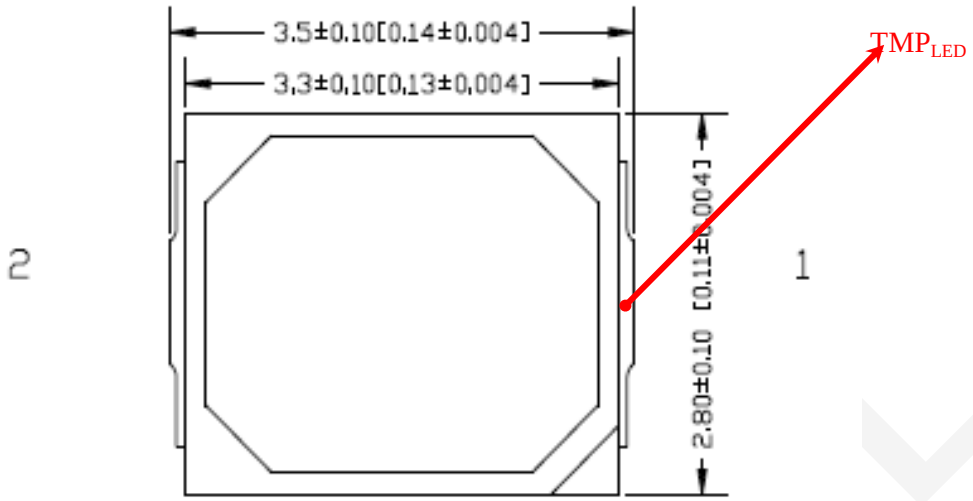
No.	Forward Voltage (V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
31	2.883	2.900	2.893	2.893	2.897	2.896	2.894	2.897	2.906	2.899
32	2.881	2.899	2.892	2.891	2.896	2.891	2.892	2.895	2.902	2.903
33	2.886	2.900	2.895	2.895	2.901	2.896	2.895	2.899	2.905	2.901
34	2.884	2.899	2.891	2.893	2.899	2.903	2.893	2.898	2.903	2.898
35	2.882	2.897	2.893	2.892	2.895	2.893	2.893	2.896	2.903	2.898
36	2.884	2.897	2.893	2.893	2.897	2.894	2.893	2.898	2.904	2.899
37	2.885	2.898	2.894	2.893	2.898	2.894	2.893	2.897	2.905	2.900
38	2.884	2.896	2.894	2.891	2.898	2.894	2.893	2.895	2.903	2.898
39	2.883	2.897	2.892	2.891	2.898	2.898	2.893	2.897	2.901	2.898
40	2.883	2.896	2.890	2.891	2.896	2.901	2.893	2.895	2.902	2.899
41	2.884	2.895	2.892	2.893	2.895	2.893	2.894	2.895	2.902	2.898
42	2.881	2.895	2.891	2.893	2.897	2.893	2.892	2.893	2.902	2.898
43	2.883	2.893	2.891	2.893	2.897	2.910	2.891	2.893	2.902	2.896
44	2.884	2.894	2.891	2.895	2.896	2.894	2.894	2.895	2.903	2.897
45	2.883	2.894	2.888	2.891	2.894	2.894	2.891	2.893	2.900	2.897
46	2.883	2.894	2.891	2.894	2.894	2.893	2.898	2.895	2.902	2.898
47	2.885	2.895	2.890	2.892	2.894	2.893	2.892	2.895	2.902	2.898
48	2.882	2.893	2.889	2.890	2.893	2.890	2.890	2.895	2.900	2.897
49	2.884	2.893	2.892	2.893	2.898	2.894	2.893	2.895	2.902	2.898
50	2.883	2.896	2.894	2.895	2.895	2.895	2.895	2.897	2.905	2.899
51	2.884	2.895	2.893	2.897	2.895	2.894	2.894	2.898	2.903	2.898
52	2.883	2.894	2.891	2.891	2.893	2.893	2.891	2.892	2.902	2.896
53	2.883	2.893	2.891	2.891	2.895	2.893	2.894	2.896	2.902	2.896
51	2.880	2.891	2.889	2.891	2.893	2.891	2.892	2.892	2.901	2.895
55	2.883	2.894	2.892	2.894	2.894	2.895	2.895	2.895	2.905	2.898
56	2.885	2.896	2.891	2.900	2.896	2.899	2.896	2.897	2.906	2.899
57	2.881	2.893	2.888	2.896	2.892	2.891	2.893	2.893	2.902	2.895
58	2.882	2.892	2.889	2.896	2.901	2.893	2.897	2.896	2.903	2.896
59	2.884	2.894	2.890	2.895	2.895	2.893	2.895	2.897	2.906	2.896
60	2.883	2.896	2.893	2.896	2.895	2.896	2.896	2.897	2.907	2.900
Avg.	2.883	2.895	2.891	2.893	2.896	2.895	2.894	2.896	2.903	2.898
Med.	2.883	2.895	2.891	2.893	2.896	2.894	2.893	2.895	2.903	2.898
st dev	0.001	0.002	0.002	0.002	0.002	0.004	0.002	0.002	0.002	0.002
Min.	2.880	2.891	2.888	2.890	2.892	2.890	2.890	2.892	2.900	2.895
Max.	2.886	2.900	2.895	2.900	2.901	2.910	2.898	2.899	2.907	2.903

3.6 Data Set 2, 105°C, 60mA (Wavelength)

No.	Wavelength (nm)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
31	454.3	453.6	454.4	454.2	454.3	454.2	454.3	454.4	453.8	454.0
32	454.3	454.3	454.1	454.4	453.8	454.3	454.2	454.3	454.1	454.0
33	454.1	453.5	454.3	454.0	453.6	453.8	454.0	454.3	453.5	454.0
34	454.3	454.1	454.4	454.3	454.0	454.3	454.0	454.2	453.8	454.3
35	453.6	454.2	453.9	454.2	454.3	454.3	454.0	454.3	453.7	453.8
36	454.2	454.0	454.4	454.0	454.4	454.3	454.3	454.3	454.0	454.0
37	454.0	454.3	454.2	454.3	454.2	454.2	454.3	453.6	453.7	454.0
38	453.6	454.2	454.3	454.4	454.3	454.2	454.1	453.8	454.2	454.2
39	454.4	454.0	453.7	454.3	454.0	454.3	454.2	454.1	453.6	454.0
40	454.2	454.2	454.3	454.0	454.2	453.7	453.8	453.9	453.8	454.0
41	454.3	453.6	454.3	454.3	453.8	454.0	454.2	454.2	453.6	454.1
42	454.0	454.0	454.3	454.0	454.0	454.2	454.3	454.3	453.9	454.0
43	454.2	454.3	453.9	454.2	454.2	454.3	454.3	454.3	453.6	454.0
44	454.4	454.2	454.2	454.3	454.4	454.4	454.3	454.4	453.6	454.0
45	454.3	454.1	454.3	454.3	454.0	454.2	453.9	454.3	453.6	454.0
46	454.0	454.0	454.0	454.3	453.8	454.3	454.4	454.2	453.6	454.0
47	454.4	454.3	454.3	454.2	454.2	453.9	454.2	454.0	453.6	454.2
48	454.1	453.7	454.3	454.5	454.0	454.0	454.2	454.3	453.9	454.0
49	453.6	454.1	454.2	453.8	453.6	454.3	453.6	454.2	453.6	453.9
50	454.3	454.3	454.2	454.0	454.0	454.5	454.2	454.2	453.6	454.0
51	454.3	454.0	454.4	454.0	454.6	453.9	454.3	454.3	453.6	454.0
52	454.1	453.6	454.4	454.4	454.3	454.4	454.3	454.2	454.0	454.0
53	454.4	454.3	454.3	454.3	454.5	454.4	454.0	454.1	453.9	454.0
51	454.3	454.3	454.3	454.4	454.4	454.0	453.8	454.1	453.7	454.0
55	454.4	454.0	454.3	454.2	454.4	453.9	454.0	453.8	453.6	454.1
56	454.0	453.7	454.3	454.3	454.3	454.0	453.9	454.0	453.6	454.0
57	454.4	454.4	454.2	454.3	454.2	454.3	454.0	454.2	454.2	454.0
58	454.0	454.3	454.7	454.3	454.2	454.0	454.3	454.4	453.8	454.1
59	454.3	454.1	454.0	454.0	453.8	454.0	453.6	454.2	453.5	454.0
60	454.1	454.0	454.3	454.2	454.3	454.2	454.0	453.9	453.8	454.0
Avg.	454.2	454.1	454.2	454.2	454.1	454.2	454.1	454.2	453.8	454.0
Med.	454.3	454.1	454.3	454.3	454.2	454.2	454.2	454.2	453.7	454.0
st dev	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1
Min.	453.6	453.5	453.7	453.8	453.6	453.7	453.6	453.6	453.5	453.8
Max.	454.4	454.4	454.7	454.5	454.6	454.5	454.4	454.4	454.2	454.3

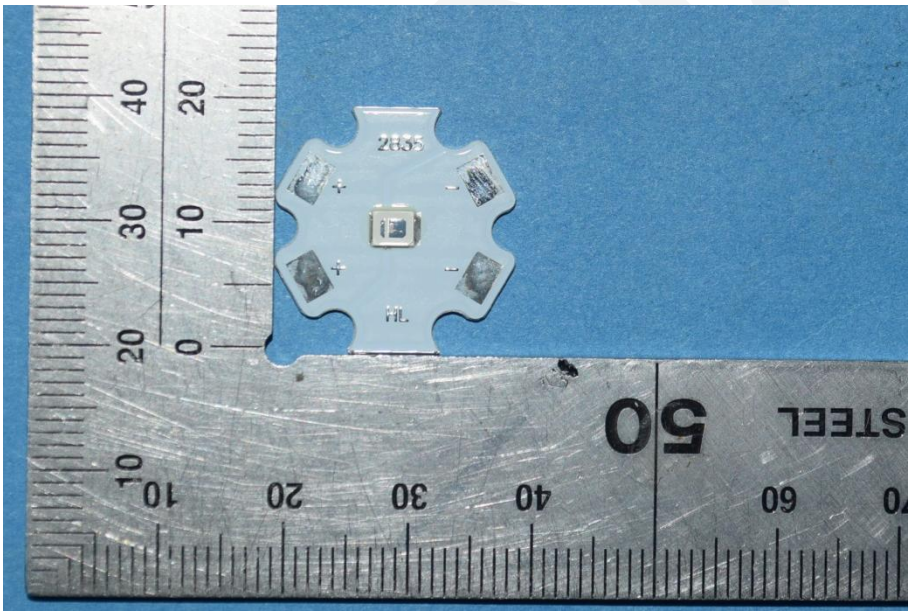
4 - DUT Photo

4.1 #Mechanical Dimensions



All dimensions are in millimeter

4.2 DUT Photo



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.
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