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-C3535F26B3EA-ZW

Report Type: 6000 Hours Test Report	**Product Type:** LED Package
Reviewed By:	Pote Wang
Report Number:	RSZ190428536-10-6000
Test Date:	2020-01-09 to 2020-10-20
Report Date:	2020-10-26
Approved by:	Blake Zhang / 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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1.3 Testing Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
0.5m integrating sphere	EVERFINE	AIS-2	G185304TA1381172	2019-10-22	2020-10-21
LED Test Source	EVERFINE	LTS-300	P185616CD1371113	2020-07-23	2021-07-22
High Accuracy Array Spectroradiometer	EVERFINE	HAAS-2000	P600674CM1381123	2019-10-22	2020-10-21
Standard Light Source	EVERFINE	D062	1011093	2019-11-19	2020-11-18
Multilayer aging machine	BACL	B2-270	20013	2020-03-11	2021-03-10
Programmable D.C. power supply	Xinnuoer	ATP-5005	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 FROGHVW '87V¶ FDVH 703$_{LED}$ 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 $670 (7DEOH ³6SHFLDO /LPLWV´

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. 2 Œ 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 385 261.8 Tm[ )]TJETBT1 0 0 1 387.34 261.8 Tm 0.00312 Tc[and)]TJETBT2]TJduring test was and

1.8 Sample Set

Data Set 1: 85°C, 700mA

Part Number:	HL-C3535F26B3EA-ZW
Number of Units:	30
Case Temperature:	>83°C
Ambient Temperature:	>80°C
Life Test Drive Current:	700mA
Measurement Current:	700mA

Data Set 2: 105°C, 700mA

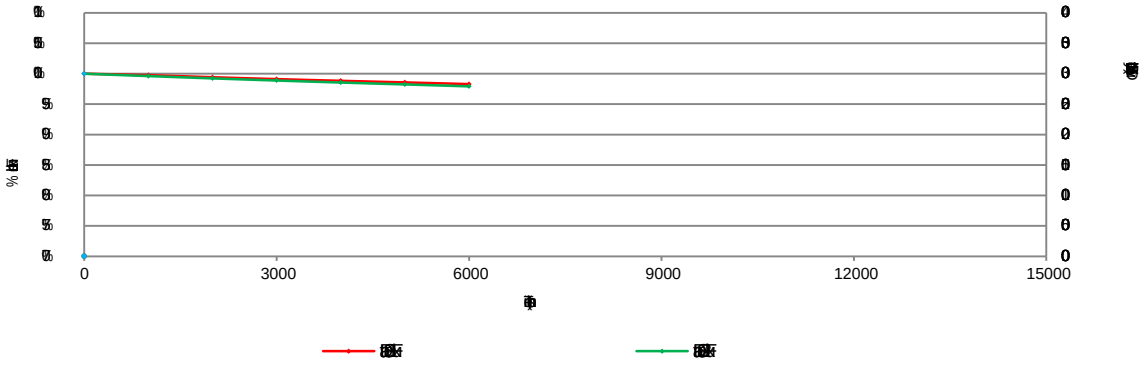
Part Number:	HL-C3535F26B3EA-ZW
Number of Units:	30
Case Temperature:	>103°C
Ambient Temperature:	>100°C
Life Test Drive Current:	700mA
Measurement Current:	700mA

2 - Summary of Test Result

Data Set:	Sample Size	Failures Observed:	Test Interval	Test Duration	.		Reported TM-21 Q_{70} Lifetime	Reported TM-21 Q_{90} Lifetime
1	30	0	1000hrs	6000hrs	2.923E-06	1.000	>36000 hours	>36000 hours
2	30	0	1000hrs	6000hrs	3.399E-06	0.999	>36000 hours	31000 hours

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

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	99.75%	99.42%	99.11%	98.83%	98.57%	98.29%
2	99.61%	99.23%	98.88%	98.55%	98.24%	97.92%



3.2 Data Set 1, 85°C, 700mA (Forward Voltage)

No.	Forward Voltage (V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	3.434	3.451	3.462	3.469	3.480	3.456	3.483
2	3.433	3.455	3.460	3.461	3.459	3.447	3.496
3	3.438	3.444	3.464	3.491	3.453	3.445	3.489
4	3.415	3.431	3.440	3.468	3.479	3.430	3.474
5	3.421	3.412	3.430	3.495	3.426	3.420	3.474
6	3.445	3.449	3.455	3.481	3.475	3.454	3.502
7	3.438	3.444	3.458	3.454	3.477	3.448	3.475
8	3.434	3.434	3.452	3.477	3.468	3.442	3.481
9	3.436	3.432	3.443	3.491	3.481	3.436	3.464
10	3.436	3.439	3.459	3.487	3.468	3.453	3.471
11	3.447	3.441	3.451	3.472	3.455	3.481	3.506
12	3.428	3.431	3.446	3.459	3.457	3.447	3.458
13	3.436	3.430	3.434	3.460	3.468	3.460	3.459
14	3.431	3.433	3.439	3.457	3.482	3.450	3.469
15	3.435	3.433	3.453	3.458	3.472	3.443	3.467
16	3.423	3.427	3.433	3.460	3.492	3.439	3.454
17	3.424	3.431	3.441	3.459	3.484	3.448	3.466
18	3.432	3.430	3.443	3.495	3.480	3.445	3.457
19	3.451	3.442	3.446	3.478	3.470	3.463	3.462
20	3.422	3.427	3.440	3.460	3.450	3.440	3.454
21	3.463	3.436	3.440	3.472	3.457	3.446	3.459
22	3.441	3.443	3.451	3.481	3.471	3.460	3.468
23	3.446	3.434	3.438	3.451	3.460	3.447	3.476
24	3.439	3.442	3.452	3.468	3.469	3.454	3.497
25	3.429	3.431	3.438	3.464	3.465	3.450	3.459
26	3.433	3.438	3.453	3.481	3.478	3.458	3.476
27	3.426	3.428	3.440	3.445	3.446	3.442	3.466
28	3.435	3.439	3.446	3.463	3.465	3.456	3.484
29	3.434	3.432	3.444	3.455	3.457	3.451	3.471
30	3.439	3.441	3.457	3.459	3.461	3.452	3.478
Avg.	3.435	3.436	3.447	3.469	3.467	3.449	3.473
Med.	3.435	3.434	3.446	3.466	3.468	3.448	3.471
st dev	0.010	0.009	0.009	0.014	0.014	0.011	0.014
Min.	3.415	3.412	3.430	3.445	3.426	3.420	3.454
Max.	3.463	3.455	3.464	3.495	3.492	3.481	3.506

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.
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