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-AS-PU2835DW-S1-08-PCT-HR3

Report Type: 10000 Hours Test Report	**Product Type:** LED Package
Test Engineer:	Pote Wang
Report Number:	RSZ170118517-10-10000
Test Date:	2017-01-18 to 2020-09-26
Report Date:	2020-09-27
Reviewed By:	Blake Zhang / EE Engineer Blake Zhang
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.

TABLE OF CONTENTS

1 - General Information

1.1 Description of LED Light Sources

Sample Size:

50 PCS test samples were in good condition and received on 2017-01-18. The samples were numbered from 1 to 25 and 26 to 50.

#Manufacturer:	Hongli Zhihui Group Co.,Ltd. Guangzhou Branch
#Part Number:	HL-AS-PU <</MCID 4/Lang (en-US)>> BDC q67.44 6004/Lang (en-US)>> BDC q32 -0.00156 T

Test Model Number

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Precision digital stabilized DC power supply	EVERFINE	WY605-V110	G115987CJ7321114	2020-03-16	2021-03-15
Multilayer aging machine	BACL	B2-270	20015	2020-03-11	2021-03-10
Multilayer aging machine	BACL	B2-270	20005	2020-03-11	2021-03-10
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11060002	2020-07-01	2021-06-30
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090007	2020-03-16	2021-03-15

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 $_{LED}$) 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

.

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 . 2 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. (Dongguan) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

2 - Summary of Test Result

Data Set:	Sample Size	Failures Observed:	Test Interval	Test Duration			Reported TM-21 L_{70} Lifetime	Reported TM-21 L_{90} Lifetime
1	25	0	1000hrs	10000hrs	2.069E-06	1.000	>60000 hours	51000 hours
2	25	0	1000hrs	10000hrs	2.844E-06	1.001	>60000 hours	37000 hours

Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	99.98%	99.74%	99.48%							

3 - Test Data

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

No.		Lumen Maintenance (%)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	71.63	99.93	99.64	99.41	99.25	99.11	98.95	98.79	98.62	98.49	98.27
2	70.86	99.75	99.52	99.29	98.96	98.70	98.48	98.39	98.21	98.01	97.66
3	70.66	100.04	99.75	99.41	99.19	98.98	98.74	98.71	98.47	98.23	97.86
4	70.61	99.99	99.67	99.49	99.16	99.01	98.80	98.67	98.46	98.16	98.09
5	71.91	99.90	99.67	99.26	98.87	98.69	98.47	98.23	98.18	98.05	97.65
6	71.61	100.04	99.92	99.48	99.15	98.84	98.70	98.59	98.39	98.20	97.85
7	72.54	99.96	99.85	99.72	99.53	99.23	98.91	98.70	98.51	98.33	98.26
8	70.90	100.17	99.84	99.70	99.61	99.37	98.96	98.83	98.62	98.41	98.00
9	72.38	100.01	99.93	99.75	99.49	99.12	98.94	98.88	98.65	98.40	98.12
10	70.64	99.94	99.73	99.35	99.11	98.88	98.67	98.49	98.43	98.20	97.99
11	70.43	99.96	99.70	99.45	99.19	98.86	98.62	98.44	98.24	97.88	97.64
12	71.87	100.04	99.72	99.25	99.04	98.83	98.55	98.51	98.27	98.01	97.76
13	70.87	100.07	99.73	99.37	99.20	98.96	98.65	98.50	98.48	98.15	98.07
14	70.96	100.03	99.72	99.52	99.21	99.00	98.73	98.68	98.45	98.22	97.87
15	71.16	100.07	99.86	99.59	99.26	99.11	98.78	98.59	98.38	98.07	97.86
16	72.02	99.89	99.60	99.42	99.24	99.00	98.78	98.56	98.31	98.07	97.75
17	71.44	100.04	99.75	99.59	99.43	99.24	98.92	98.87	98.42	98.08	98.01
18	71.04	99.97	99.80	99.55	99.28	99.03	98.80	98.65	98.56		

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	10000hrs
1	3.049	3.037	3.036	3.040	3.040	3.204	3.040	3.050	3.045	3.051	3.052
2	3.066	3.045	3.042	3.050	3.046	3.073	3.043	3.057	3.050	3.059	3.061
3	3.039	3.036	3.037	3.047	3.033	3.043	3.036	3.038	3.042	3.048	3.047
4	3.042	3.033	3.039	3.054	3.035	3.043	3.036	3.039	3.044	3.047	3.041
5	3.043	3.032	3.037	3.069	3.033	3.044	3.033	3.037	3.045	3.046	3.041
6	3.049	3.043	3.037	3.046	3.038	3.048	3.038	3.047	3.049	3.111	3.052
7	3.061	3.060	3.048	3.063	3.047	3.061	3.048	3.060	3.060	3.066	3.058
8	3.042	3.042	3.036	3.044	3.036	3.043	3.034	3.055	3.046	3.078	3.041
9	3.044	3.044	3.038	3.044	3.038	3.074	3.039	3.049	3.049	3.053	3.044
10	3.035	3.031	3.027	3.046	3.027	3.034	3.026	3.039	3.036	3.040	3.039
11	3.047	3.046	3.042	3.046	3.041	3.065	3.040	3.048	3.050	3.053	3.050
12	3.052	3.062	3.047	3.055	3.054	3.082	3.046	3.051	3.058	3.061	3.061
13	3.080	3.037	3.032	3.031	3.031	3.040	3.029	3.035	3.040	3.042	3.053
14	3.046	3.054	3.045	3.045	3.042	3.048	3.044	3.100	3.054	3.055	3.075
15	3.037	3.036	3.031	3.035	3.033	3.037	3.031	3.095	3.040	3.045	3.050
16	3.048	3.043	3.044	3.045	3.047	3.052	3.043	3.051	3.051	3.056	3.059
17	3.055	3.049	3.048	3.052	3.065	3.062	3.050	3.055	3.057	3.061	3.060
18	3.043	3.039	3.039	3.039	3.056	3.049	3.043	3.043	3.048	3.052	3.055
19	3.048	3.048	3.044	3.046	3.053	3.072	3.052	3.053	3.051	3.055	3.049
20	3.034	3.028	3.032	3.029	3.036	3.030	3.031	3.033	3.037	3.042	3.038
21	3.060	3.081	3.064	3.056	3.056	3.058	3.067	3.063	3.068	3.069	3.067
22	3.041	3.050	3.041	3.039	3.044	3.041	3.053	3.045	3.049	3.051	3.042
23	3.039	3.045	3.045	3.039	3.033	3.060	3.036	3.040	3.046	3.046	3.043
24	3.039	3.056	3.039	3.034	3.031	3.040	3.041	3.037	3.043	3.043	3.047
25	3.05 1 88.										

3.3 Data Set 1, 85°C, 150mA (Chromaticity Shift)

No.			CCT(K)									
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs

3.4 Data Set 2, 115°C, 150mA (Lumen Maintenance)

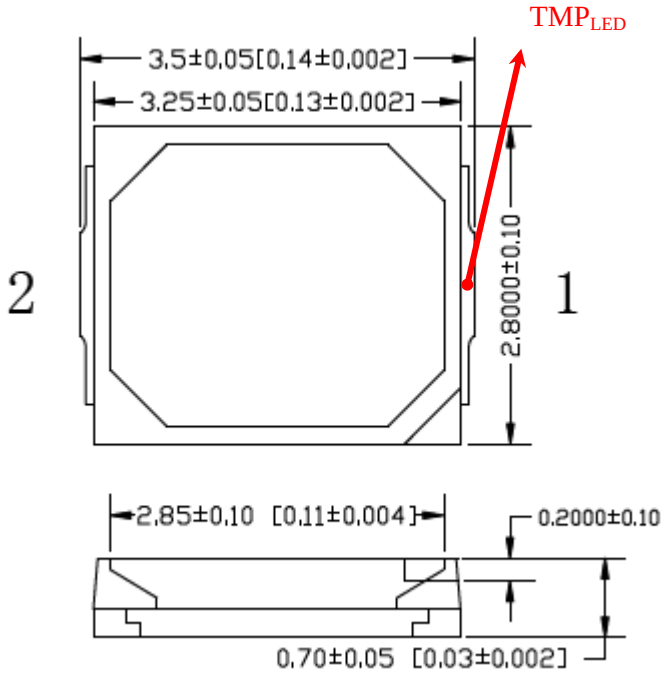
No.		Lumen Maintenance (%)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
26	72.99	99.82	99.49	99.14	98.86	98.58	98.31	98.05	97.79	97.52	97.34
27	71.52	99.92	99.65	99.34	99.11	98.78	98.59	98.42	98.08	97.85	97.61
28	71.29	99.78	99.47	99.21	98.92	98.56	98.32	98.12	97.81	97.46	97.21
29	71.75	99.80	99.61	99.29	99.00	98.72	98.47	98.22	97.97	97.73	97.28
30	71.32	99.64	99.38	99.10	98.82	98.50	98.18	98.04	97.78	97.53	97.07
31	71.12	99.73	99.56	99.30	98.90	98.50	98.14	97.79	97.68	97.48	97.29
32	72.28	99.72	99.39	99.13	98.95	98.56	98.17	97.84	97.57	97.25	96.89
33	69.57	99.86	99.67	99.35	99.14	98.81	98.36	98.06	97.79	97.31	97.08
34	71.17	99.76	99.55	[redacted]							
35	71.38	99.65	99.34	99.13	98.84	98.63	98.30	98.07	97.62	97.31	96.90
36	72.05	99.58	99.21	98.96	98.72	98.40	98.17	97.97			

3.6 Data Set 2, 115°C, 150mA (Chromaticity Shift)

No.		CCT(K)	

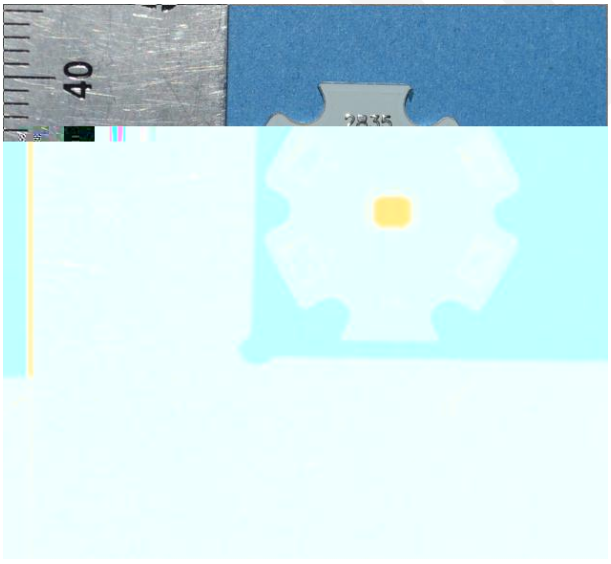
4 - DUT Photo

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 DUT Photo



Directions

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