



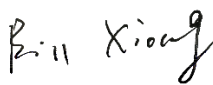
# TEST REPORT

According to ANSI/IES LM-80-15  
For

## HongliZhihui Group Co.,Ltd. Guangzhou Branch

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

**Model:A2835W1H2-D01-7D2AA1**

<b>Report Type:</b> 6000 Hours Test Report		<b>Product Type:</b> LED Package	
<b>Test Engineer:</b>	Pote Wang		
<b>Report Number:</b>	RSZ180319504-10		
<b>Test Date:</b>	2018-04-05 to 2018-12-15		
<b>Report Date:</b>	2018-12-25		
<b>Reviewed By:</b>	Bill Xiong / EE Engineer		
<b>Test Facility:</b>	Test facility was located at No.69,Pulongcun,Puxinhu Industrial Area, Tangxia , Dongguan, Guangdong, China.		
<b>Prepared By:</b>	Bay Area Compliance Laboratories Corp. (Dongguan). No.69,Pulongcun ,Puxinhu Industrial Area, Tangxia , Dongguan, Guangdong, China. Tel: +86-0769-86858888 Fax:+86-0769-86858588		
<b>Accreditation:</b>	The IAS Accreditation Number TL-460.		

**Note:** The test data was only valid for the test sample(s). 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. (Dongguan).

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.



## TABLE OF CONTENTS

<b>1 - General Information</b> .....	<b>3</b>
1.1 Description of LED Light Sources .....	3
1.2 Standards and Reference Documentations .....	4
1.3 Testing Equipment .....	4
1.4 Drive Level .....	4
1.5 Ambient Conditions for Maintenance Test.....	4
1.6 Photometric Measurement Method and Uncertainty.....	5
1.7 Statement of Traceability .....	5
1.8 Sample Set.....	6
<b>2 - Summary of Test Result</b> .....	<b>7</b>
<b>3 - Test Data</b> .....	<b>8</b>
3.1 Data Set 1, 55°C, 80mA(Lumen Maintenance).....	8
3.2 Data Set 1, 55°C, 80mA (Forward Voltage).....	9
3.3 Data Set 1, 55°C, 80mA(Chromaticity ShiET]TJBT1ETBT1 0 0 1 305.69 47367.Tm[ ])TJETBT1 0 0 1 196.7 4504	

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**Note:**

Multiple model SL-\*Z2835FAB-11CA\*, and so on, the first temperature (I means 2200-3700K, N means 3700-4700K, W means above 4700K), the second \* is a different product solution (color coordinate and applications and special solution

Multiple model SL-\*\*Z2835FTA-11CA\*\*\*C-APH\*\*\*/SL-\*\*Z2835FAA-11CA\*\*\*C-APH\*\*\*/SL-\*\*Z2835FAB-11CA\*\*\*C-APH\*\*, the first 99J ((3((&&A"(-3(-&&A")&3)&&&A")+3)+&&A"\*&3\*&&&A"+&3+&&&A"+-3+-&&A", +3, +&&A, The m color coordinate , the last ates version numbers, Use 001 002 003 expression.

**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
- 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	Calibration date	Calibration due date
0.3m integrating sphere	EVERFINE	Diameter 0.3m	1011119	2018-03-18	2019-03-18
Programmable Test Power for LEDs	EVERFINE	LED300E	1008002	2018-03-26	2019-03-26
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	2018-03-18	2019-03-18
Standard Light Source	EVERFINE	D062	1011064	2018-01-15	2019-01-15
Precision digital stabilized DC power supply	EVERFINE	WY605-V110	G115987CJ7321114	2018-03-26	2019-03-26
Multilayer aging machine	BACL	B2-270	20024	2018-03-13	2019-03-13
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090007	2018-03-26	2019-03-26
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090004	2018-03-26	2019-03-26

**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 : KJ JCF<sub>LED</sub>) location, while the other is mounted at a distance of 5 mm above the TMP location.

During life testing, TMP<sub>LED</sub> 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 71 JC ()&J I B .

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 driven by DC power supply. The forward current was regulated to within  $\pm 0.5\%$  of the nominal value. The test system was calibrated by halogen reference lamp. The ambient temperature during test was set to  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , 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 (luminous flux) measurements is  $U=1.6\%$  ( $K=2$ ), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is  $U=20\text{K}$  ( $K=2$ ), at the 95% confidence level. The uncertainty of the CRI is  $U=1.6$  ( $K=2$ ), at the 95% confidence level.

The uncertainty of the temperature is  $U=0.8671^{\circ}\text{C}$  ( $K=2$ ), 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).

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# Bay Area Compliance Laboratories Corp. (Dongguan)

No.69,Pulongcun, Puxinhu Industrial AreaTangxia,  
Dongguan, Guangdong, China.  
The IAS Accreditation NumberTL-460

## 344 D

No.
31
32
33
34

	0hrs	6000hrs
	63	98.35
	71	98.55
	61	98.22
	30	97.83
	00	98.80

	98.40	98.20	97.93
	98.69	98.10	97.46
	98.76	98.37	97.84
	98.67	98.44	97.67
	98.94	98.58	98.16
	98.67	98.47	98.28
	98.48		
	98.67	98.45	98.08

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**3.5 Data Set 2, 85°C, 80mA (Forward Voltage)**

No.	Forward Voltage (V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
31	3.191	3.196	3.201	3.178	3.185	3.206	3.208
32	3.182	3.187	3.192	3.167	3.177	3.184	3.195
33	3.176	3.179	3.180	3.155	3.169	3.208	3.204
34	3.198	3.197	3.200	3.180	3.191	3.218	3.192
35	3.217	3.221	3.220	3.204	3.214	3.239	3.214
36	3.180	3.182	3.184	3.162	3.175	3.173	3.188
37	3.203	3.204	3.209	3.191	3.204	3.204	3.205
38	3.180	3.185	3.185	3.167	3.176	3.174	3.176
39	3.189	3.187	3.190	3.172	3.179	3.182	3.190
40	3.194	3.198	3.195	3.176	3.185	3.188	3.208
41	3.201	3.198	3.202	3.184	3.193	3.193	3.201
42	3.202	3.204	3.204	3.175	3.196	3.197	3.203
43	3.197	3.198	3.202	3.185	3.197	3.194	3.206
44	3.193	3.190	3.194	3.176	3.185	3.182	3.208
45	3.175	3.179	3.181	3.160	3.172	3.168	3.170
46	3.207	3.208	3.210	3.191	3.203	3.200	3.206
47	3.179	3.181	3.180	3.159	3.172	3.170	3.180
48	3.179	3.180	3.181	3.159	3.176	3.170	3.190
49	3.185	3.190	3.188	3.169	3.181	3.177	3.205
50	3.200	3.205	3.202	3.185	3.199	3.192	3.206
51	3.214	3.216	3.218	3.200	3.212	3.209	3.229
52	3.204	3.208	3.205	3.185	3.200	3.194	3.219
53	3.201	3.202	3.204	3.183	3.201	3.197	3.220
54	3.170	3.178	3.187	3.153	3.169	3.165	3.198
55	3.175	3.176	3.188	3.154	3.170	3.163	3.194
56	3.175	3.175	3.188	3.152	3.167	3.165	3.195
57	3.181	3.186	3.191	3.165	3.180	3.175	3.187
58	3.171	3.172	3.187	3.153	3.164	3.162	3.180
59	3.173	3.174	3.181	3.183	3.169	3.164	3.171
60	3.196	3.197	3.211	3.175	3.197	3.194	3.201
Av							



**3.6 Data Set 2, 85°C, 80mA(Chromaticity Shift)**

No.			CCT(K)	9 I					
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
31	0.2604	0.5227	2764	0.0003	0.0008	0.0007	0.0005	0.0009	0.0011
32	0.2609	0.5232	2752	0.0003	0.0007	0.0008	0.0005	0.0014	0.0025
33	0.2610	0.5208	2760	0.0002	0.0007	0.0009	0.0004	0.0016	0.0015
34	0.2598	0.5222	2779	0.0003	0.0006	0.0008	0.0009	0.0016	0.0017
35	0.2609	0.5225	2753	0.0003	0.0007	0.0011	0.0008	0.0012	0.0015
36	0.2604	0.5225	2766	0.0004	0.0009	0.0013	0.0011	0.0011	0.0017
37	0.2593	0.5214	2794	0.0002	0.0007	0.0011	0.0009	0.0016	0.0015
38	0.2603	0.5222	2768	0.0004	0.0007	0.0012	0.0010	0.0012	0.0016
39	0.2606	0.5218	2765	0.0004	0.0007	0.0011	0.0011	0.0015	0.0016
40	0.2599	0.5223	2776	0.0001	0.0006	0.0009	0.0009	0.0014	0.0016
41	0.2605	0.5225	2762	0.0002	0.0005	0.0008	0.0007	0.0011	0.0018
42	0.2598	0.5223	2780	0.0003	0.0006	0.0011	0.0008	0.0012	0.0017

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