



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-2835HW-2C-S1-08-PCT-HR5

| | | | |
|---|--|-------------------------------------|--|
| Report Type: 6000 Hours Test Report | | Product Type: LED Package | |
| Test Engineer: | Pote Wang | <i>Pote Wang</i> | |
| Report Number: | RSZ181027501-10-M1 | | |
| Test Date: | 2018-10-27 to 2019-07-04 | | |
| Report Date: | 2019-08-07 | | |
| Reviewed By: | Bill Xiong / EE Engineer | <i>Bill Xiong</i> | |
| Revised Note: | The previous report RSZ181027501-10 is replaced by this report on 2019-08-07 | | |
| Test Facility: | Test facility was located at No.69,Pulongcun ,Puxihu Industrial Area, Tangxia , Dongguan, Guangdong, China. | | |
| Prepared By: | Bay Area Compliance Laboratories Corp. (Dongguan). No.69,Pulongcun ,Puxihu Industrial Area, Tangxia , Dongguan, Guangdong, China. Tel: +86-0769-86858888 Fax:+86-0769-86858588 | | |
| Accreditation: | 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).

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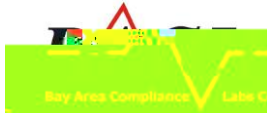
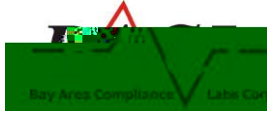


TABLE OF CONTENTS

| | |
|---|-----------|
| 1 - General Information | 3 |
| 1.1 Description of LED Light Sources | 3 |
| 1.2 Standards and Reference Documentations | 5 |
| 1.3 Testing Equipment | 5 |
| 1.4 Drive Level | 5 |
| 1.5 Ambient Conditions for Maintenance Test..... | 5 |
| 1.6 Photometric Measurement Method and Uncertainty..... | 5 |
| 1.7 Statement of Traceability | 6 |
| 1.8 Sample Set..... | 7 |
| 2 - Summary of Test Result | 8 |
| 3 - Test Data | 9 |
| 3.1 Data Set 1, 85°C, 150mA (Lumen Maintenance) | 9 |
| 3.2 Data Set 1, 85°C, 150mA (Forward Voltage)..... | 10 |
| 3.3 Data Set 1, 85°C, 150mA (Chromaticity Shift)..... | 11 |
| 3.4 Data Set 2, 105°C, 150mA (Lumen Maintenance) | 12 |
| 3.5 Data Set 2, 105°C, 150mA (Forward Voltage)..... | 13 |
| 3.6 Data Set 2, 105°C, 150mA (Chromaticity Shift)..... | 14 |
| 4 - DUT Photo | 15 |
| 4.1 Mechanical Dimensions | 15 |
| 4.2 DUT Photo..... | 15 |
| 5 - Report Revision | 16 |



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| | | | | | | | | | |
|--|----|-------|---|---|--------|--------|-----|------|-----|
| HL-AS-2835HW-S1-08L-PCT-HR5(R9) | 90 | 2700K | 1 | 1 | 0.0510 | 861.11 | 150 | / | 150 |
| HL-AS-2835DW-S1-08-PCT-HR5 | 90 | 2700K | 1 | 1 | 0.0510 | 861.11 | 150 | / | 150 |
| HL-AS-2835DW-S1-08-PCT-HR5(R9) | 90 | 2700K | 1 | 1 | 0.0510 | 861.11 | 150 | / | 150 |
| HL-AS-2835DW-S1-08L-PCT-HR5 | 90 | 2700K | 1 | 1 | 0.0510 | 861.11 | 150 | / | 150 |
| HL-AS-2835DW-S1-08L-PCT-HR5(R9) | 90 | 2700K | 1 | 1 | 0.0510 | 861.11 | 150 | / | 150 |
| HL-AS-2835D90W-2C-S1-08-PCT-HR5-CS-KY | 90 | 2700K | 2 | 1 | 0.1021 | 301.84 | 150 | 0.15 | 150 |
| HL-AS-2835D90W-2C-S1-08-PCT-HR5 -KY | 90 | 2700K | 2 | 1 | 0.1021 | 301.84 | 150 | 0.15 | 150 |
| HL-AS-2835D90W-2C-S1-08L-PCT-HR5-CS-KY | 90 | 2700K | 2 | 1 | 0.1021 | 301.84 | 150 | 0.15 | 150 |
| HL-AS-2835D90W-2C-S1-08L-PCT-HR5 -KY | 90 | 2700K | 2 | 1 | 0.1021 | 301.84 | 150 | 0.15 | 150 |
| HL-AS-2835DW-2C-S1-08-PCT-HR5-CS-KY | 90 | 2700K | 2 | 1 | 0.1021 | 301.84 | 150 | 0.15 | 150 |
| HL-AS-2835DW-2C-S1-08-PCT-HR5 -KY | 90 | 2700K | 2 | 1 | 0.1021 | 301.84 | 150 | 0.15 | 150 |
| HL-AS-2835DW-2C-S1-08L-PCT-HR5-CS-KY | 90 | 2700K | 2 | 1 | 0.1021 | 301.84 | 150 | 0.15 | 150 |
| HL-AS-2835DW-2C-S1-08L-PCT-HR5 -KY | 90 | 2700K | 2 | 1 | 0.1021 | 301.84 | 150 | 0.15 | 150 |
| SL-*D2835FTA-21EA* | 90 | 2700K | 2 | 1 | 0.1021 | 861.11 | 150 | 0.15 | 150 |
| SL-*D2835FTA-21EA*H | 90 | 2700K | 2 | 1 | 0.1021 | 861.11 | 150 | | |

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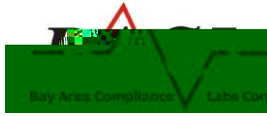
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1.8 Sample Set

Data Set 1: 85°C, 150mA

Part Number: HL-AS-2835HW-2C-S1-08-PCT-HR5
Number of Units: 25
Case Temperature: >83°C
Ambient Temperature: >80°C
Life Test Drive Current: 150mA
Measurement Current: 150mA

Data Set 2: 105°C, 150mA

Part Number: HL-AS-2835HW-2C-S1-08-PCT-HR5
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 | | | Reported TM -21 L ₇₀ Lifetime |
|-----------|-------------|--------------------|---------------|---------------|-----------|-------|--|
| 1 | 25 | 0 | 1000hrs | 6000hrs | 2.352E-06 | 1.003 | >36000 hours |
| 2 | 25 | 0 | 1000hrs | 6000hrs | 3.077E-06 | 1.003 | >36000 hours |

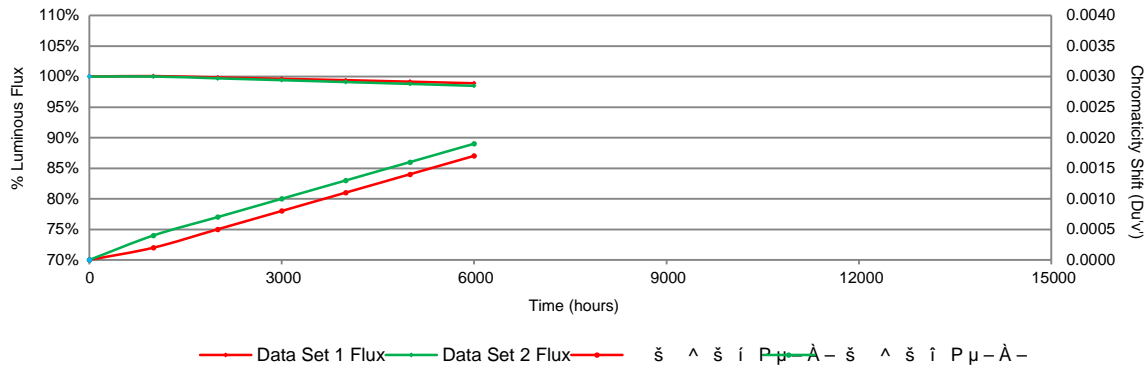
Average Lumen Maintenance (Percentage of Initial Luminous Flux)

| Data Set: | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
|-----------|---------|---------|---------|---------|---------|---------|
| 1 | 100.08% | 99.85% | 99.63% | 99.41% | 99.16% | 98.90% |
| 2 | 100.02% | 99.72% | 99.42% | 99.11% | 98.81% | 98.49% |

Average Chromaticity Shift

| Data Set: | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
|-----------|---------|---------|---------|---------|---------|---------|
| 1 | 0.0002 | 0.0005 | 0.0008 | 0.0011 | 0.0014 | 0.0017 |
| 2 | 0.0004 | 0.0007 | 0.001 | 0.0013 | 0.0016 | 0.0019 |

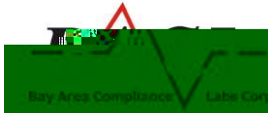
Average Lumen Maintenance and Chromaticity Shift VS. Time



3 - Test Data

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

| No. | Lumen Maintenance (%) | | | | | | |
|--------|-----------------------|---------|---------|---------|---------|---------|---------|
| | 0hr(Initial) | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 1 | 112.1 | 99.91 | 99.73 | 99.46 | 99.38 | 98.93 | 98.75 |
| 2 | 108.8 | 100.18 | 99.82 | 99.45 | 99.26 | 99.08 | 98.62 |
| 3 | 112.8 | 100.09 | 99.91 | 99.73 | 99.47 | 99.29 | 98.94 |
| 4 | 111.8 | 100.18 | 99.91 | 99.55 | 99.28 | 99.02 | 98.75 |
| 5 | 111.9 | 100.09 | 100.00 | 99.91 | 99.64 | 99.37 | 99.29 |
| 6 | 113.0 | 100.35 | 100.09 | 99.82 | 99.73 | 99.56 | 99.38 |
| 7 | 109.9 | 100.18 | 100.09 | 100.00 | 99.73 | 99.45 | 99.09 |
| 8 | 110.5 | 100.27 | 99.82 | 99.64 | 99.55 | 99.37 | 99.19 |
| 9 | 111.5 | 100.27 | 100.09 | 99.82 | 99.55 | 99.37 | 99.01 |
| 10 | 110.7 | 100.18 | 100.00 | 99.73 | 99.64 | 99.19 | 99.01 |
| 11 | 111.7 | 100.18 | 100.09 | 99.91 | 99.64 | 99.37 | 99.10 |
| 12 | 112.0 | 99.82 | 99.64 | 99.38 | 99.29 | 99.11 | 98.84 |
| 13 | 110.6 | 100.27 | 100.09 | 100.00 | 99.91 | 99.73 | 99.37 |
| 14 | 111.1 | 100.18 | 100.00 | 99.91 | 99.82 | 99.55 | 99.28 |
| 15 | 109.6 | 99.82 | 99.54 | 99.09 | 98.81 | 98.63 | 98.36 |
| 16 | 112.0 | 99.91 | 99.46 | 99.20 | 98.93 | 98.66 | 98.48 |
| 17 | 110.8 | 100.09 | 99.64 | 99.37 | 99.10 | 98.83 | 98.47 |
| 18 | 111.6 | 99.82 | 99.46 | 99.10 | 98.84 | 98.66 | 98.48 |
| 19 | 112.5 | 100.09 | 99.82 | 99.47 | 99.02 | 98.93 | 98.76 |
| 20 | 111.7 | 99.91 | 99.73 | 99.64 | 99.37 | 99.10 | 98.75 |
| 21 | 111.7 | 100.09 | 99.82 | 99.55 | 99.46 | 99.28 | 99.19 |
| 22 | 111.6 | 100.09 | 99.91 | 99.82 | 99.46 | 99.28 | 98.84 |
| 23 | 112.2 | 100.27 | 100.09 | 100.00 | 99.64 | 99.20 | 99.02 |
| 24 | 111.7 | 99.91 | 99.64 | 99.37 | 99.10 | 98.84 | 98.48 |
| 25 | 112.3 | 99.91 | 99.82 | 99.73 | 99.55 | 99.29 | 99.11 |
| Avg. | 111.4 | 100.08 | 99.85 | 99.63 | 99.41 | 99.16 | 98.90 |
| Med. | 111.7 | 100.09 | 99.82 | 99.64 | 99.46 | 99.20 | 98.94 |
| st dev | 1.0 | 0.16 | 0.20 | 0.28 | 0.30 | 0.30 | 0.31 |
| Min. | 108.8 | 99.82 | 99.46 | 99.09 | 98.81 | 98.63 | 98.36 |
| Max. | 113.0 | 100.35 | 100.09 | 100.00 | 99.91 | 99.73 | 99.38 |



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3.2 Data Set 1, 85°C, 150mA (Forward Voltage)



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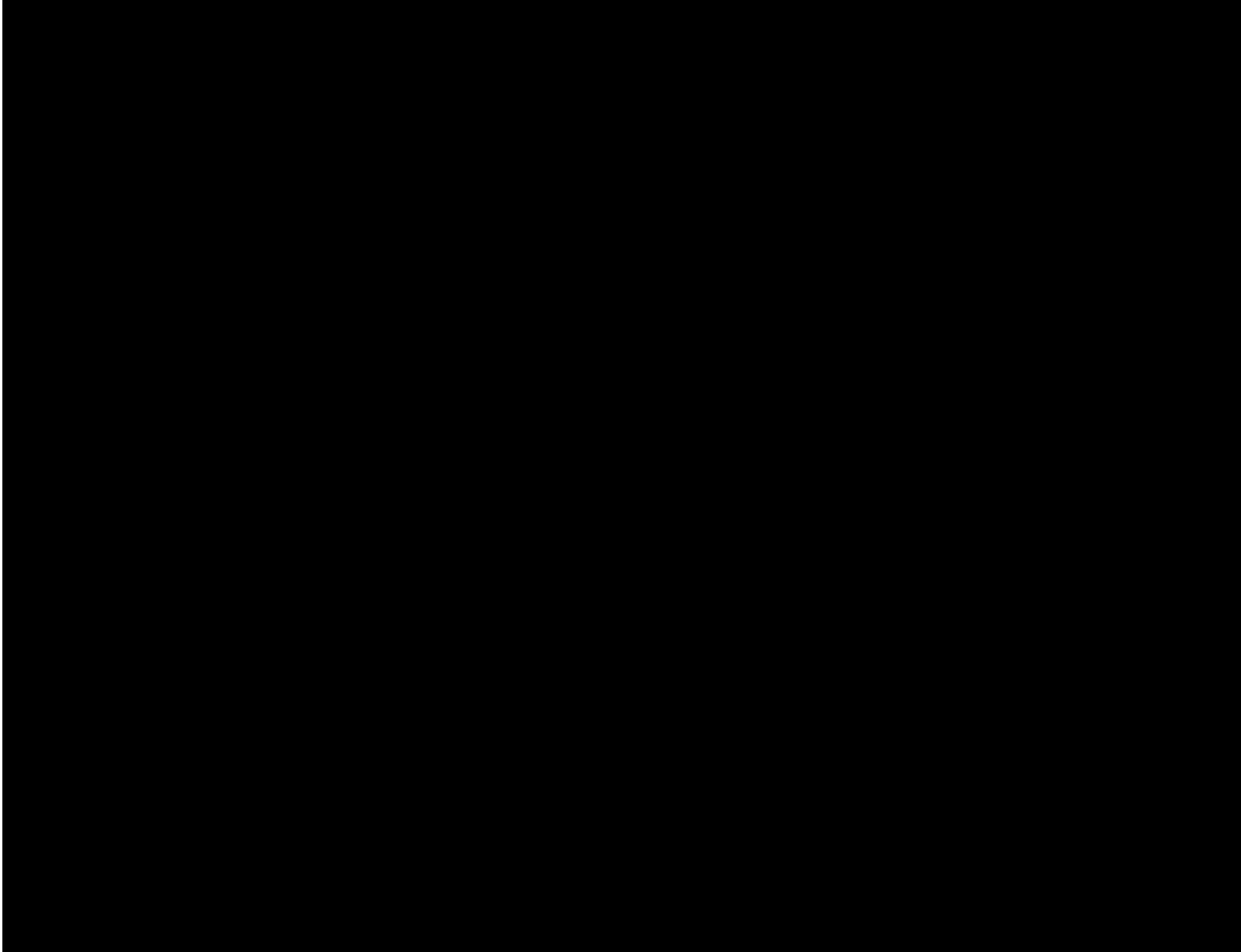
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nce)

| tenance (%) | | |
|-------------|---------|---------|
| 4000hrs | 5000hrs | 6000hrs |
| 99.19 | 99.01 | 98.74 |
| 99.10 | 98.74 | 98.38 |
| 98.93 | 98.57 | 98.03 |
| 99.01 | 98.65 | 98.20 |
| 99.10 | 98.74 | 98.29 |
| 99.10 | 99.01 | 98.65 |
| 98.92 | 98.64 | 98.28 |
| 99.18 | 98.91 | 98.54 |
| 98.66 | 98.48 | 98.39 |
| 98.91 | 98.55 | 98.19 |
| 99.01 | 98.56 | 98.29 |
| 99.18 | 98.91 | 98.54 |
| 98.98 | 98.71 | 98.34 |
| 99.46 | 99.19 | 99.01 |
| 99.82 | 99.54 | 99.26 |
| 98.65 | 98.38 | 98.02 |
| 98.84 | 98.57 | 98.30 |
| 99.28 | 98.73 | 98.46 |
| 99.09 | 98.82 | 98.46 |
| 98.93 | 98.75 | 98.39 |
| 99.20 | 98.84 | 98.66 |
| 99.28 | 98.92 | 98.83 |
| 99.36 | 98.99 | 98.62 |
| 99.46 | 99.28 | 98.92 |
| 99.19 | 98.83 | 98.56 |
| 99.11 | 98.81 | 98.49 |



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3.6 Data Set 2, 105°C, 150mA (Chromaticity Shift)

| No. | | | CCT(K) | | | | | | |
|-----|--------------|--------|--------|---------|---------|---------|---------|---------|---------|
| | 0hr(Initial) | | | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 26 | 0.2624 | 0.5307 | 2689 | 0.0002 | 0.0004 | 0.0006 | 0.0009 | 0.0011 | 0.0014 |

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