



TEST REPORT



ACCORDING TO IES LM-80-2015

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-ES-3032DW-3C-S1-HR3

| | |
|---|---|
| Report Type: 9000 Hours Test Report | Product Type: LED Package |
| Test Engineer: Pote Wang |  |
| Report Number: | RSZ160804502-10-M1 |
| Test Date: | 2016-08-07 to 2017-08-27 |
| Report Date: | 2019-01-14 |
| Revised Note: | The previous report RSZ160804502-10 is replaced by this report on 2019-01-14 |
| Reviewed By: Daniel Duan / EE Manager |  |
| 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 |

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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1 - General Information

1.1 Description of LED Light Sources

Sample Size:

75 PCS samples were received on 2016-08-04. The samples were numbered from 1 to 25, 26 to 50 and 51 to 75.

| | |
|--------------------------------------|---|
| Manufacturer: | Hongli Zhihui Group Co.,Ltd. Guangzhou Branch |
| Part Number: | HL-ES-3032DW-3C-S1-HR3 |
| Part Type: | LED Package |
| Drive Level: | CC 150mA |
| Nominal CCT: | 2700K |
| Power: | 1.62W |
| Average Current Density per LED die: | 639.31mA/mm ² |
| Average Power Density per LED die: | 2.3 W/mm ² |
| CRI: | 80 |
| Die Spacing: | 0.15mm |

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)

| Testing Products | Multiple Models | Details |
|------------------------|------------------------------|---|
| HL-ES-3032DW-3C-S1-HR3 | HL-ES-3032DW-3C-S1-HR3(R9) | Only different Model name for different market. |
| | HL-ES-PU3032DW-3C-S1-HR3 | |
| | HL-ES-PU3032DW-3C-S1-HR3(R9) | |
| | HL-ES-3032HW-3C-S1-HR3 | |
| | HL-ES-3032HW-3C-S1-HR3(R9) | |
| | HL-ES-PU3032HW-3C-S1-HR3 | |
| | HL-ES-PU3032HW-3C-S1-HR3(R9) | |

Disclaimer:

The truthfulness and accuracy of all the technical information above for the covered LED products is ensured by manufacturer of LED light source. Bay Area Compliance Laboratories any guarantees for the truthfulness of the technical information.

1.2 Standards Used:

IESNA 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 | Test Range | Calibration date | Calibration due date |
|--|-------------|---------------|----------------------|------------|------------------|----------------------|
| 0.3m integrating sphere | EVERFINE | Diameter 0.3m | 1011119 | 0.3m | 2017-03-09 | 2018-03-09 |
| Programmable Test Power for LEDs | EVERFINE | LED300E | 1008002 | 15V/2000mA | 2017-03-03 | 2018-03-03 |
| High accuracy array spectroradiometer | EVERFINE | HAAS-2000 | 1012016T | 380-780nm | 2017-03-09 | 2018-03-09 |
| Standard Light Source | EVERFINE | D062 | 1011093 | 3000K | 2016-09-13 | 2017-09-13 |
| Precision digital stabilized DC power supply | EVERFINE | WY605-V110 | G115987CJ73 21114 | 300VA | 2017-03-03 | 2018-03-03 |
| Multilayer aging machine | BACL | B3-900 | 20030 | 25°C~130°C | 2017-03-03 | 2018-03-03 |
| Digital CC&CV DC Power Supply | EVERFINE | WY5015 | 11090005 | (50V/15A) | 2017-03-03 | 2018-03-03 |

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 $\pm 3\%$ of the specified value of the manufacturer during maintenance test, and was within $\pm 0.5\%$ 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 ^{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

Samples were connected to DC power supply in series circuits with a constant current. The forward current was regulated to within $\pm 3\%$ 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 $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, RH <65%.

1.6 Photometric Measurement Method and Uncertainty

Integrating sphere and spectroradiometer is used to measure luminous flux and chromaticity coordinate uv . 2 measurement was used and sample was driven by DC power supply. Luminous flux and chromaticity coordinate was scaled by halogen reference lamp. The ambient temperature during test was set to $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, RH <65%.

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 $U=21\text{K}$ ($K=2$), 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).

1.8 Sample Set

Data Set 1: 85°C, 150mA

Part Number: HL-ES-3032DW-3C-S1-HR3
Number of Units: 30
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-ES-3032DW-3C-S1-HR3
Number of Units: 30
Case Temperature: >103°C
Ambient Temperature: >100°C
Life Test Drive Current: 150mA
Measurement Current: 150mA

Data Set 3: 115°C,150mA

Part Number: HL-ES-3032DW-3C-S1-HR3
Number of Units: 30
Case Temperature: >113°C
Ambient Temperature: >110°C
Life Test Drive Current: 150mA
Measurement Current: 150mA

3 - Test Data

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

| No. | 0hr(Initial) | Lumen Maintenance (%) | | | | | | | | |
|-----|--------------|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs | 7000hrs | 8000hrs | 9000hrs |
| 1 | 192.6 | 100.31 | 100.10 | 99.74 | 99.48 | 99.22 | 98.91 | 98.70 | 98.44 | 98.08 |
| 2 | 185.6 | 100.38 | 100.22 | 99.89 | 99.78 | 99.68 | 99.52 | 99.25 | 99.03 | 98.81 |
| 3 | 190.1 | 100.47 | 100.11 | 99.79 | 99.63 | 99.37 | 99.16 | 98.90 | 98.84 | 98.58 |
| 4 | 188.8 | 100.16 | 99.89 | 99.63 | 99.31 | 99.10 | 98.73 | 98.46 | 98.20 | 98.04 |
| 5 | 190.1 | 100.26 | 99.84 | 99.47 | 99.37 | 99.16 | 98.84 | 98.53 | 98.26 | 98.00 |
| 6 | 186.8 | 100.48 | 100.32 | 100.21 | 100.05 | 99.73 | 99.46 | 99.41 | 99.25 | 98.88 |
| 7 | 185.8 | 100.43 | 100.22 | 99.89 | 99.68 | 99.46 | 99.25 | 99.09 | 98.92 | 98.76 |
| 8 | 188.5 | 100.27 | 99.89 | 99.63 | 99.31 | 99.10 | 98.94 | 98.67 | 98.41 | 98.30 |
| 9 | 186.5 | 100.11 | 99.79 | 99.41 | 99.14 | 98.93 | 98.55 | 98.18 | 97.91 | 97.53 |
| 10 | 190.9 | 100.31 | 100.10 | 99.84 | 99.58 | 99.32 | 99.00 | 98.85 | 98.59 | 98.22 |
| 11 | 189.2 | 100.21 | 99.89 | 99.68 | 99.52 | 99.31 | 99.05 | 98.78 | 98.57 | 98.31 |
| 12 | 188.6 | 100.32 | 100.05 | 99.79 | 99.42 | 99.15 | 98.83 | 98.41 | 98.25 | 98.09 |
| 13 | 187.4 | 100.37 | 100.16 | 99.95 | 99.79 | 99.63 | 99.36 | 99.15 | 99.04 | 98.93 |
| 14 | 188.4 | 100.21 | 99.95 | 99.63 | 99.31 | | 98.78 | 98.46 | 98.20 | 97.98 |
| 15 | | | 100.05 | 99.68 | 99.42 | 99.00 | 98.73 | 98.47 | 98.15 | 97.89 |
| 16 | 186.2 | 100.16 | | 99.41 | 99.03 | 98.76 | | 98.12 | 97.96 | 97.74 |
| 17 | 191.0 | 100.26 | 99.90 | 99.63 | 99.37 | 99.10 | 98.95 | 98.69 | 98.48 | 98.22 |
| | | | 100.32 | 100.11 | | 99.41 | 99.20 | | 98.72 | 98.24 |
| | | 100.27 | 99.90 | 99.63 | 99.37 | 99.10 | | 98.57 | | 98.09 |

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

| No. | | | CCT(K) | | | | | | | | | | |
|-----|--------------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|
| | Ohr(Initial) | | | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs | 7000hrs | 8000hrs | 9000hrs | |
| 1 | 0.2568 | 0.5288 | 2816 | 0.0005 | 0.0008 | 0.0011 | 0.0012 | 0.0015 | 0.0017 | 0.0019 | 0.0020 | 0.0023 | |
| 2 | 0.2598 | 0.5296 | 2747 | 0.0002 | 0.0006 | 0.0009 | 0.0010 | 0.0014 | 0.0016 | 0.0018 | 0.0019 | 0.0023 | |
| 3 | 0.2579 | 0.5279 | 2796 | 0.0003 | 0.0006 | 0.0009 | 0.0011 | 0.0013 | 0.0016 | 0.0017 | 0.0018 | 0.0021 | |
| 4 | 0.2575 | 0.5269 | 2809 | 0.0002 | 0.0005 | 0.0008 | 0.0012 | 0.0013 | 0.0016 | 0.0017 | 0.0018 | 0.0021 | |
| 5 | 0.2566 | 0.5265 | 2830 | 0.0002 | 0.0005 | 0.0009 | 0.0010 | 0.0013 | 0.0016 | 0.0018 | 0.0018 | 0.0020 | |
| 6 | 0.2595 | 0.5293 | 2754 | 0.0002 | 0.0005 | 0.0009 | 0.0010 | 0.0013 | 0.0015 | 0.0017 | 0.0016 | 0.0019 | |
| 7 | 0.2564 | 0.5281 | 2826 | 0.0003 | 0.0006 | 0.0010 | 0.0013 | 0.0014 | 0.0018 | 0.0019 | 0.0021 | 0.0022 | |
| 8 | 0.2549 | 0.5293 | 2854 | 0.0002 | 0.0005 | 0.0007 | 0.0011 | 0.0013 | 0.0016 | 0.0017 | 0.0019 | 0.0020 | |
| 9 | 0.2607 | 0.5298 | 2728 | 0.0002 | 0.0005 | 0.0007 | 0.0011 | 0.0013 | 0.0015 | 0.0017 | 0.0018 | 0.0019 | |
| 10 | 0.2558 | 0.5271 | 2845 | 0.0002 | 0.0005 | 0.0007 | 0.0010 | 0.0013 | 0.0015 | 0.0017 | 0.0020 | 0.0021 | |
| 11 | 0.2568 | 0.5270 | 2823 | 0.0002 | 0.0006 | 0.0010 | 0.0012 | 0.0014 | 0.0017 | 0.0019 | 0.0021 | 0.0021 | |
| 12 | 0.2570 | 0.5264 | 2823 | 0.0002 | 0.0005 | 0.0009 | 0.0012 | 0.0013 | 0.0016 | 0.0018 | 0.0020 | 0.0022 | |
| 13 | 0.2584 | 0.5300 | 2775 | 0.0003 | 0.0006 | 0.0010 | 0.0013 | 0.0014 | 0.0017 | 0.0019 | 0.0021 | 0.0024 | |
| 14 | 0.2563 | 0.5283 | 2828 | 0.0002 | 0.0005 | 0.0007 | 0.0011 | 0.0013 | 0.0015 | 0.0018 | 0.0019 | 0.0021 | |
| 15 | 0.2578 | 0.5270 | 2803 | 0.0003 | 0.0006 | 0.0009 | 0.0011 | 0.0014 | 0.0016 | 0.0019 | 0.0021 | 0.0022 | |
| 16 | 0.2577 | 0.5273 | 2803 | 0.0002 | 0.0005 | 0.0007 | 0.0010 | 0.0012 | 0.0015 | 0.0017 | 0.0020 | 0.0022 | |
| 17 | 0.2556 | 0.5280 | 2845 | 0.0002 | 0.0006 | 0.0009 | 0.0011 | 0.0013 | 0.0016 | 0.0018 | 0.0021 | 0.0023 | |
| 18 | 0.2577 | 0.5286 | 2797 | 0.0003 | 0.0005 | 0.0009 | 0.0011 | 0.0013 | 0.0016 | 0.0018 | 0.0021 | 0.0022 | |
| 19 | 0.2579 | 0.5265 | 2801 | 0.0002 | 0.0006 | 0.0008 | 0.0011 | 0.0014 | 0.0016 | 0.0018 | 0.0020 | | |

3.4 Data Set 2, 105°C, 150mA (Lumen Maintenance)

| No. | Ohr(Initial) | Lumen Maintenance (%) | | | | | | | | |
|--------|--------------|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs | 7000hrs | 8000hrs | 9000hrs |
| 31 | 189.0 | 100.21 | 99.84 | 99.42 | 99.10 | 98.84 | 98.52 | 98.15 | 97.94 | 97.72 |
| 32 | 186.0 | 100.16 | 99.78 | 99.52 | 99.14 | 98.82 | 98.60 | 98.17 | 97.90 | 97.69 |
| 33 | 189.4 | 100.11 | 99.74 | 99.21 | 98.79 | 98.47 | 98.26 | 97.94 | 97.78 | 97.62 |
| 34 | 187.0 | 100.16 | 99.73 | 99.30 | 98.93 | 98.72 | 98.45 | 98.02 | 97.75 | 97.43 |
| 35 | 186.1 | 100.21 | 99.84 | 99.36 | 99.03 | 98.71 | 98.44 | 98.17 | 97.90 | 97.47 |
| 36 | 190.9 | 100.05 | 99.90 | 99.42 | 99.06 | 98.85 | 98.64 | 98.32 | 98.06 | 97.70 |
| 37 | 189.5 | 100.11 | 99.89 | 99.63 | 99.37 | 98.89 | 98.63 | 98.21 | 97.89 | 97.63 |
| 38 | 188.3 | 99.95 | 99.58 | 99.31 | 99.10 | 98.78 | 98.62 | 98.25 | 97.82 | 97.50 |
| 39 | 189.2 | 100.21 | 99.84 | 99.37 | 99.05 | 98.63 | 98.41 | 98.31 | 97.89 | 97.62 |
| 40 | 191.6 | 100.16 | 99.74 | 99.37 | 99.06 | 98.70 | 98.38 | 98.17 | 97.96 | 97.44 |
| 41 | 184.4 | 100.22 | 99.84 | 99.35 | 99.08 | 98.92 | 98.54 | 98.26 | 98.05 | 97.83 |
| 42 | 190.7 | 100.16 | 99.90 | 99.48 | 99.16 | 98.85 | 98.48 | 98.11 | 97.80 | 97.59 |
| 43 | 183.4 | 100.05 | 99.78 | 99.62 | 99.18 | 98.85 | 98.53 | 98.26 | 97.87 | 97.38 |
| 44 | 187.5 | 100.11 | 99.63 | 99.31 | 99.04 | 98.72 | 98.35 | 98.24 | 97.87 | 97.44 |
| 45 | 190.3 | 100.16 | 99.79 | 99.42 | 99.16 | 98.84 | 98.42 | 98.16 | 97.95 | 97.69 |
| 46 | 186.2 | 100.27 | 99.84 | 99.52 | 99.19 | 98.98 | 98.50 | 98.23 | 98.12 | 97.91 |
| 47 | 186.8 | 100.05 | 99.79 | 99.46 | 99.14 | 98.82 | 98.45 | 98.07 | 97.75 | 97.43 |
| 48 | 185.9 | 100.16 | 99.78 | 99.62 | 99.25 | 99.09 | 98.82 | 98.44 | 98.22 | 97.96 |
| 49 | 193.4 | 100.05 | 99.69 | 99.33 | 98.97 | 98.71 | 98.29 | 98.04 | 97.72 | 97.47 |
| 50 | 186.4 | 100.21 | 99.89 | 99.62 | 99.30 | 99.09 | 98.82 | 98.66 | 98.34 | 98.12 |
| 51 | 185.1 | 100.05 | 99.78 | 99.51 | 99.19 | 98.97 | 98.65 | 98.54 | 98.38 | 98.11 |
| 52 | 186.4 | 100.16 | 99.84 | 99.52 | 99.30 | 99.03 | 98.82 | 98.66 | 98.44 | 98.12 |
| 53 | 185.4 | 100.05 | 99.68 | 99.41 | 99.08 | 98.76 | 98.44 | 98.06 | 97.84 | 97.68 |
| 54 | 189.6 | 100.16 | 99.89 | 99.58 | 99.16 | 98.95 | 98.68 | 98.42 | 98.26 | 98.00 |
| 55 | 187.8 | 99.95 | 99.63 | 99.31 | 99.15 | 98.83 | 98.56 | 98.35 | 98.19 | 97.87 |
| 56 | 189.1 | 100.16 | 99.74 | 99.26 | 98.84 | 98.47 | 98.10 | 97.78 | 97.51 | 97.36 |
| 57 | 189.1 | 100.26 | 99.95 | 99.68 | 99.37 | 99.00 | 98.68 | 98.31 | 98.04 | 97.78 |
| 58 | 187.4 | 100.16 | 99.84 | 99.63 | 99.36 | 99.04 | 98.61 | 98.29 | 97.97 | 97.76 |
| 59 | 188.1 | 100.27 | 99.89 | 99.57 | 99.31 | 98.94 | 98.62 | 98.35 | 98.03 | 97.71 |
| 60 | 187.9 | 100.16 | 99.73 | 99.47 | 99.10 | 98.78 | 98.46 | 98.24 | 97.92 | 97.71 |
| Ave. | 187.9 | 100.14 | 99.79 | 99.45 | 99.13 | 98.83 | 98.52 | 98.24 | 97.97 | 97.69 |
| Med. | 187.9 | 100.16 | 99.79 | 99.44 | 99.14 | 98.84 | 98.52 | 98.24 | 97.93 | 97.69 |
| st dev | 2.2550 | 0.0835 | 0.0918 | 0.1293 | 0.1434 | 0.1567 | 0.1657 | 0.1909 | 0.2101 | 0.2232 |
| Min. | 183.4 | 99.95 | 99.58 | 99.21 | 98.79 | 98.47 | 98.10 | 97.78 | 97.51 | 97.36 |
| Max. | 193.4 | 100.27 | 99.95 | 99.68 | 99.37 | 99.09 | 98.82 | 98.66 | 98.44 | 98.12 |

TM-21 Projection:

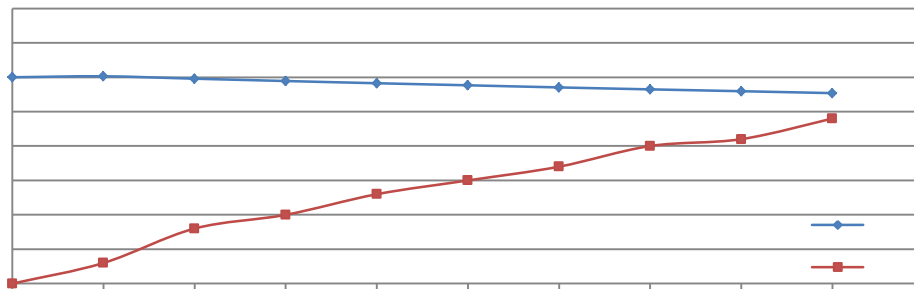
Test Duration: 9,000 hours
Failures Observed: 0
 2.921E-06
 1.003
Reported L₇₀: >54,000 hours

3.5 Data Set 2, 105°C, 150mA (Forward Voltage)

| No. | Forward Voltage (V) | | | | | | | | | |
|--------|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 0hr(Initial) | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs | 7000hrs | 8000hrs | 9000hrs |
| 31 | 9.410 | 9.413 | 9.414 | 9.428 | 9.442 | 9.448 | 9.425 | 9.401 | 9.414 | 9.402 |
| 32 | 9.375 | 9.377 | 9.383 | 9.389 | 9.393 | 9.410 | 9.395 | 9.378 | 9.385 | 9.377 |
| 33 | 9.398 | 9.405 | 9.407 | 9.420 | 9.418 | 9.434 | 9.414 | 9.398 | 9.414 | 9.394 |
| 34 | 9.382 | 9.382 | 9.383 | 9.400 | 9.406 | 9.415 | 9.406 | 9.383 | 9.385 | 9.383 |
| 35 | 9.417 | 9.413 | 9.421 | 9.436 | 9.432 | 9.456 | 9.433 | 9.414 | 9.414 | 9.417 |
| 36 | 9.446 | 9.439 | 9.449 | 9.459 | 9.465 | 9.478 | 9.482 | 9.438 | 9.446 | 9.441 |
| 37 | 9.352 | 9.348 | 9.355 | 9.358 | 9.358 | 9.384 | 9.361 | 9.339 | 9.351 | 9.341 |
| 38 | 9.393 | 9.401 | 9.408 | 9.410 | 9.418 | 9.428 | 9.418 | 9.389 | 9.396 | 9.391 |
| 39 | 9.448 | 9.451 | 9.457 | 9.463 | 9.466 | 9.486 | 9.456 | 9.442 | 9.445 | 9.441 |
| 40 | 9.434 | 9.442 | 9.445 | 9.454 | 9.449 | 9.466 | 9.451 | 9.436 | 9.436 | 9.439 |
| 41 | 9.409 | 9.407 | 9.413 | 9.419 | 9.423 | 9.435 | 9.429 | 9.406 | 9.401 | 9.408 |
| 42 | 9.432 | 9.440 | 9.450 | 9.451 | 9.458 | 9.480 | 9.454 | 9.435 | 9.436 | 9.444 |
| 43 | 9.403 | 9.394 | 9.409 | 9.423 | 9.413 | 9.425 | 9.413 | 9.394 | 9.400 | 9.406 |
| 44 | 9.434 | 9.439 | 9.442 | 9.463 | 9.454 | 9.477 | 9.450 | 9.430 | 9.434 | 9.426 |
| 45 | 9.520 | 9.443 | 9.445 | 9.461 | 9.457 | 9.476 | 9.459 | 9.435 | 9.429 | 9.428 |
| 46 | 9.562 | 9.489 | 9.494 | 9.505 | 9.499 | 9.515 | 9.494 | 9.474 | 9.475 | 9.483 |
| 47 | 9.472 | 9.480 | 9.486 | 9.499 | 9.496 | 9.510 | 9.485 | 9.460 | 9.470 | 9.457 |
| 48 | 9.534 | 9.466 | 9.465 | 9.478 | 9.480 | 9.495 | 9.468 | 9.451 | 9.485 | 9.447 |
| 49 | 9.543 | 9.544 | 9.549 | 9.558 | 9.556 | 9.572 | 9.548 | 9.540 | 9.540 | 9.537 |
| 50 | 9.508 | 9.434 | 9.444 | 9.458 | 9.460 | 9.475 | 9.441 | 9.443 | 9.444 | 9.425 |
| 51 | 9.532 | 9.447 | 9.452 | 9.465 | 9.464 | 9.471 | 9.449 | 9.441 | 9.436 | 9.430 |
| 52 | 9.558 | 9.466 | 9.470 | 9.478 | 9.480 | 9.501 | 9.478 | 9.462 | 9.463 | 9.462 |
| 53 | 9.873 | 9.473 | 9.471 | 9.494 | 9.488 | 9.511 | 9.478 | 9.461 | 9.467 | 9.453 |
| 54 | 9.529 | 9.378 | 9.387 | 9.399 | 9.403 | 9.411 | 9.384 | 9.366 | 9.369 | 9.369 |
| 55 | 9.569 | 9.426 | 9.428 | 9.443 | 9.444 | 9.454 | 9.439 | 9.413 | 9.422 | 9.411 |
| 56 | 9.509 | 9.510 | 9.521 | 9.529 | 9.527 | 9.558 | 9.522 | 9.504 | 9.508 | 9.506 |
| 57 | 9.519 | 9.381 | 9.378 | 9.398 | 9.405 | 9.408 | 9.386 | 9.370 | 9.378 | 9.366 |
| 58 | 9.577 | 9.433 | 9.428 | 9.453 | 9.451 | 9.475 | 9.435 | 9.428 | 9.429 | 9.428 |
| 59 | 9.509 | 9.422 | 9.434 | 9.439 | 9.439 | 9.454 | 9.431 | 9.412 | 9.424 | 9.420 |
| 60 | 9.507 | 9.420 | 9.417 | 9.438 | 9.447 | 9.459 | 9.420 | 9.404 | 9.409 | 9.411 |
| Ave. | 9.485 | 9.432 | 9.437 | 9.449 | 9.450 | 9.466 | 9.443 | 9.425 | 9.430 | 9.425 |
| Med. | 9.490 | 9.434 | 9.438 | 9.452 | 9.450 | 9.469 | 9.440 | 9.429 | 9.429 | 9.426 |
| st dev | 0.0986 | 0.0423 | 0.0425 | 0.0427 | 0.0409 | 0.0431 | 0.0406 | 0.0417 | 0.0411 | 0.0410 |
| Min. | 9.352 | 9.348 | 9.355 | 9.358 | 9.358 | 9.384 | 9.361 | 9.339 | 9.351 | 9.341 |
| Max. | 9.873 | 9.544 | 9.549 | 9.558 | 9.556 | 9.572 | 9.548 | 9.540 | 9.540 | 9.537 |

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

| No. | CCT(K) | | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs | 7000hrs | 8000hrs | 9000hrs | |
|--------|--------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| | Ohr(Initial) | | | | | | | | | | | |
| 31 | 0.2583 | 0.5285 | 2783 | 0.0003 | 0.0008 | 0.0012 | 0.0014 | 0.0015 | 0.0019 | 0.0020 | 0.0021 | 0.0025 |
| 32 | 0.2563 | 0.5287 | 2826 | 0.0002 | 0.0008 | 0.0011 | 0.0014 | 0.0015 | 0.0017 | 0.0020 | 0.0020 | 0.0024 |
| 33 | 0.2568 | 0.5273 | 2822 | 0.0004 | 0.0008 | 0.0010 | 0.0013 | 0.0016 | 0.0017 | 0.0020 | 0.0021 | 0.0024 |
| 34 | 0.2582 | 0.5288 | 2785 | 0.0002 | 0.0007 | 0.0009 | 0.0013 | 0.0014 | 0.0016 | 0.0019 | 0.0021 | 0.0023 |
| 35 | 0.2561 | 0.5277 | 2835 | 0.0002 | 0.0007 | 0.0009 | 0.0013 | 0.0014 | 0.0016 | 0.0019 | 0.0021 | 0.0023 |
| 36 | 0.2569 | 0.5268 | 2823 | 0.0004 | 0.0008 | 0.0011 | 0.0014 | 0.0015 | 0.0018 | 0.0020 | 0.0022 | 0.0025 |
| 37 | 0.2579 | 0.5291 | 2789 | 0.0003 | 0.0008 | 0.0010 | 0.0013 | 0.0015 | 0.0017 | 0.0019 | 0.0021 | 0.0023 |
| 38 | 0.2574 | 0.5285 | 2803 | 0.0003 | 0.0008 | 0.0010 | 0.0013 | 0.0015 | 0.0018 | 0.0020 | 0.0022 | 0.0024 |
| 39 | 0.2572 | 0.5279 | 2811 | 0.0004 | 0.0008 | 0.0010 | 0.0013 | 0.0015 | 0.0018 | 0.0020 | 0.0022 | 0.0024 |
| 40 | 0.2566 | 0.5266 | 2831 | 0.0002 | 0.0007 | 0.0010 | 0.0012 | 0.0015 | 0.0017 | 0.0019 | 0.0022 | 0.0023 |
| 41 | 0.2591 | 0.5284 | 2766 | 0.0003 | 0.0008 | 0.0010 | 0.0013 | 0.0016 | 0.0018 | 0.0020 | 0.0022 | 0.0024 |
| 42 | 0.2579 | 0.5267 | 2802 | 0.0003 | 0.0007 | 0.0010 | 0.0013 | 0.0015 | 0.0017 | 0.0020 | 0.0022 | 0.0024 |
| 43 | 0.2584 | 0.5266 | 2790 | 0.0002 | 0.0007 | 0.0009 | 0.0012 | 0.0015 | 0.0017 | 0.0019 | 0.0022 | 0.0023 |
| 44 | 0.2572 | 0.5269 | 2816 | 0.0003 | 0.0008 | 0.0010 | 0.0013 | 0.0015 | 0.0017 | 0.0020 | 0.0022 | 0.0025 |
| 45 | 0.2567 | 0.5272 | 2825 | 0.0002 | 0.0007 | 0.0009 | 0.0012 | 0.0014 | 0.0016 | 0.0019 | 0.0021 | 0.0024 |
| 46 | 0.2597 | 0.5288 | 2752 | 0.0003 | 0.0007 | 0.0009 | 0.0012 | 0.0015 | 0.0016 | 0.0019 | 0.0022 | 0.0023 |
| 47 | 0.2565 | 0.5271 | 2830 | 0.0004 | 0.0008 | 0.0010 | 0.0013 | 0.0015 | 0.0017 | 0.0020 | 0.0022 | 0.0025 |
| 48 | 0.2577 | 0.5292 | 2794 | 0.0003 | 0.0008 | 0.0010 | 0.0013 | 0.0015 | 0.0017 | 0.0020 | 0.0023 | 0.0025 |
| 49 | 0.2553 | 0.5268 | 2859 | 0.0004 | 0.0009 | 0.0011 | 0.0013 | 0.0015 | 0.0018 | 0.0020 | 0.0022 | 0.0024 |
| 50 | 0.2572 | 0.5290 | 2805 | 0.0003 | 0.0007 | 0.0012 | 0.0014 | 0.0015 | 0.0017 | 0.0019 | 0.0022 | 0.0024 |
| 51 | 0.2590 | 0.5281 | 2770 | 0.0004 | 0.0008 | 0.0010 | 0.0013 | 0.0015 | 0.0017 | 0.0020 | 0.0022 | 0.0025 |
| 52 | 0.2584 | 0.5306 | 2772 | 0.0002 | 0.0007 | 0.0009 | 0.0011 | 0.0014 | 0.0017 | 0.0018 | 0.0022 | 0.0022 |
| 53 | 0.2582 | 0.5268 | 2793 | 0.0003 | 0.0007 | 0.0009 | 0.0013 | 0.0014 | 0.0017 | 0.0019 | 0.0021 | 0.0023 |
| 54 | 0.2562 | 0.5272 | 2836 | 0.0004 | 0.0008 | 0.0010 | 0.0014 | 0.0015 | 0.0018 | 0.0020 | 0.0022 | 0.0023 |
| 55 | 0.2572 | 0.5289 | 2806 | 0.0003 | 0.0007 | 0.0010 | 0.0012 | 0.0014 | 0.0017 | 0.0019 | 0.0022 | 0.0023 |
| 56 | 0.2581 | 0.5269 | 2796 | 0.0003 | 0.0007 | 0.0009 | 0.0013 | 0.0014 | 0.0017 | 0.0019 | 0.0021 | 0.0023 |
| 57 | 0.2569 | 0.5267 | 2824 | 0.0003 | 0.0009 | 0.0010 | 0.0013 | 0.0015 | 0.0019 | 0.0021 | 0.0022 | 0.0025 |
| 58 | 0.2583 | 0.5287 | 2783 | 0.0003 | 0.0007 | 0.0009 | 0.0013 | 0.0014 | 0.0017 | 0.0019 | 0.0021 | 0.0024 |
| 59 | 0.2551 | 0.5285 | 2854 | 0.0003 | 0.0007 | 0.0010 | 0.0012 | 0.0014 | 0.0017 | 0.0019 | 0.0022 | 0.0023 |
| 60 | 0.2593 | 0.5295 | 2758 | 0.0002 | 0.0008 | 0.0010 | 0.0012 | 0.0015 | 0.0018 | 0.0020 | 0.0022 | 0.0024 |
| Ave. | 0.2575 | 0.5280 | 2805 | 0.0003 | 0.0008 | 0.0010 | 0.0013 | 0.0015 | 0.0017 | 0.0020 | 0.0021 | 0.0024 |
| Med. | 0.2573 | 0.5280 | 2804 | 0.0003 | 0.0008 | 0.0010 | 0.0013 | 0.0015 | 0.0017 | 0.0020 | 0.0022 | 0.0024 |
| st dev | 0.0011 | 0.0011 | 27.2340 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| Min. | 0.2551 | 0.5266 | 2752 | 0.0002 | 0.0007 | 0.0009 | 0.0011 | 0.0014 | 0.0016 | 0.0018 | 0.0020 | 0.0022 |
| Max. | 0.2597 | 0.5306 | 2859 | 0.0004 | 0.0009 | 0.0012 | 0.0014 | 0.0016 | 0.0019 | 0.0021 | 0.0023 | 0.0025 |



3.7 Data Set 3, 115°C, 150mA (Lumen Maintenance)

| No. | Ohr(Initial) | Lumen Maintenance (%) | | | | | | | | |
|--------|--------------|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs | 7000hrs | 8000hrs | 9000hrs |
| 61 | 186.6 | 99.95 | 99.57 | 99.20 | 98.87 | 98.55 | 98.29 | 97.96 | 97.70 | 97.53 |
| 62 | 189.6 | 99.84 | 99.47 | 99.05 | 98.58 | 98.36 | 98.10 | 97.89 | 97.57 | 97.26 |
| 63 | 185.4 | 100.11 | 99.46 | 99.14 | 98.65 | 98.27 | 97.90 | 97.63 | 97.52 | 97.25 |
| 64 | 185.7 | 99.89 | 99.41 | 98.87 | 98.55 | 98.28 | 97.79 | 97.52 | 97.20 | 96.98 |
| 65 | 188.1 | 100.11 | 99.63 | 99.10 | 98.72 | 98.30 | 97.87 | 97.66 | 97.40 | 97.24 |
| 66 | 188.5 | 99.95 | 99.68 | 99.10 | 98.62 | 98.14 | 97.77 | 97.35 | 97.08 | 96.71 |
| 67 | 189.2 | 100.16 | 99.58 | 99.15 | 98.73 | 98.36 | 97.89 | 97.46 | 97.15 | 96.83 |
| 68 | 185.7 | 100.05 | 99.62 | 99.25 | 98.82 | 98.38 | 98.12 | 97.68 | 97.36 | 97.09 |
| 69 | 185.2 | 99.95 | 99.51 | 98.97 | 98.43 | 98.06 | 97.79 | 97.46 | 97.14 | 96.76 |
| 70 | 188.2 | 99.84 | 99.47 | 99.15 | 98.83 | 98.51 | 98.19 | 97.93 | 97.72 | 97.34 |
| 71 | 187.1 | 100.05 | 99.57 | 99.14 | 98.82 | 98.56 | 98.18 | 97.97 | 97.65 | 97.22 |
| 72 | 187.1 | 99.95 | 99.47 | 99.09 | 98.72 | 98.50 | 98.13 | 97.86 | 97.59 | 97.33 |
| 73 | 188.8 | 99.84 | 99.31 | 98.89 | 98.52 | 98.25 | 98.04 | 97.72 | 97.46 | 97.19 |
| 74 | 185.6 | 99.95 | 99.41 | 98.98 | 98.60 | 98.38 | 98.01 | 97.74 | 97.47 | 97.20 |
| 75 | 190.4 | 99.84 | 99.37 | 98.90 | 98.48 | 98.27 | 97.79 | 97.43 | 97.06 | 96.69 |
| 76 | 188.9 | 100.05 | 99.74 | 99.36 | 98.94 | 98.57 | 98.36 | 98.09 | 97.72 | 97.46 |
| 77 | 186.6 | 100.16 | 99.57 | 99.30 | 98.82 | 98.29 | 98.02 | 97.70 | 97.53 | 97.21 |
| 78 | 189.4 | 99.84 | 99.47 | 99.21 | 98.79 | 98.36 | 97.84 | 97.47 | 97.15 | 96.94 |
| 79 | 186.2 | 100.05 | 99.52 | 99.09 | 98.87 | 98.50 | 98.07 | 97.58 | 97.31 | 97.05 |
| 80 | 186.9 | 99.95 | 99.52 | 98.93 | 98.56 | 98.23 | 97.91 | 97.54 | 97.27 | 97.06 |
| 81 | 186.7 | 100.05 | 99.46 | 99.09 | 98.61 | 98.29 | 97.91 | 97.59 | 97.21 | 96.95 |
| 82 | 183.0 | 99.89 | 99.51 | 99.18 | 98.63 | 98.25 | 97.92 | 97.54 | 97.10 | 96.72 |
| 83 | 191.3 | 99.90 | 99.48 | 99.06 | 98.69 | 98.27 | 98.12 | 97.75 | 97.44 | 97.07 |
| 84 | 187.7 | 99.89 | 99.57 | 99.09 | 98.67 | 98.24 | 98.03 | 97.76 | 97.60 | 97.12 |
| 85 | 188.4 | 99.95 | 99.58 | 99.15 | 98.78 | 98.30 | 98.04 | 97.66 | 97.29 | 97.03 |
| 86 | 189.2 | 99.68 | 99.15 | 98.73 | 98.31 | 97.89 | 97.46 | 97.25 | 96.93 | 96.41 |
| 87 | 187.3 | 100.11 | 99.68 | 99.36 | 98.99 | 98.56 | 98.29 | 97.92 | 97.76 | 97.28 |
| 88 | 186.9 | 100.16 | 99.73 | 99.25 | 98.88 | 98.56 | 98.29 | 98.07 | 97.86 | 97.70 |
| 89 | 185.5 | 100.11 | 99.57 | 99.08 | 98.71 | 98.54 | 98.11 | 97.90 | 97.57 | 97.04 |
| 90 | 188.6 | 100.05 | 99.52 | 99.20 | 98.73 | 98.52 | 98.25 | 97.93 | 97.56 | 97.24 |
| Ave. | 187.5 | 99.98 | 99.52 | 99.10 | 98.70 | 98.35 | 98.02 | 97.70 | 97.41 | 97.10 |
| Med. | 187.2 | 99.95 | 99.52 | 99.10 | 98.71 | 98.33 | 98.03 | 97.69 | 97.45 | 97.11 |
| st dev | 1.7930 | 0.1198 | 0.1216 | 0.1453 | 0.1562 | 0.1644 | 0.1982 | 0.2185 | 0.2438 | 0.2730 |
| Min. | 183.0 | 99.68 | 99.15 | 98.73 | 98.31 | 97.89 | 97.46 | 97.25 | 96.93 | 96.41 |
| Max. | 191.3 | 100.16 | 99.74 | 99.36 | 98.99 | 98.57 | 98.36 | 98.09 | 97.86 | 97.70 |

TM-21 Projection:

Test Duration: 9,000 hours

Failures Observed: 0

3.251E-06

1.000

Reported L₇₀: >54,000 hours

3.8 Data Set 3, 115°C, 150mA (Forward Voltage)

| No. | Forward Voltage (V) | | | | | | | | | |
|-----|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 0hr(Initial) | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs | 7000hrs | 8000hrs | 9000hrs |
| 61 | 9.519 | 9.437 | 9.446 | | | | | | | |

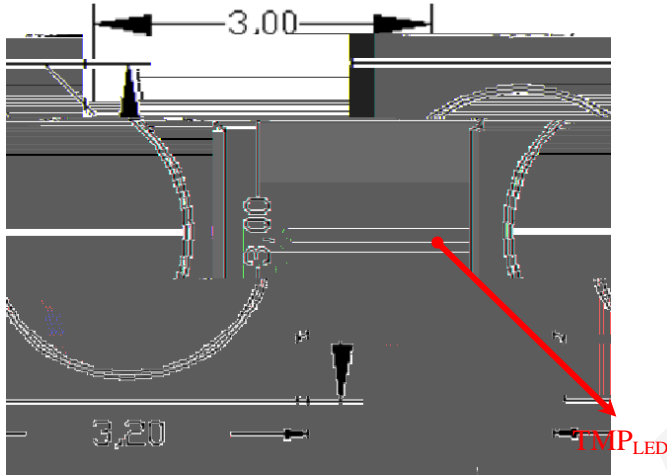
FINAL

3.9 Data Set 3, 115°C, 150mA (Chromaticity Shift)

| No. | | | CCT(K) | | | | | | | | | | |
|--------|--------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|
| | Ohr(Initial) | | | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs | 7000hrs | 8000hrs | 9000hrs | |
| 61 | 0.2589 | 0.5278 | 2774 | 0.0004 | 0.0009 | 0.0013 | 0.0016 | 0.0017 | 0.0020 | 0.0022 | 0.0022 | 0.0026 | |
| 62 | 0.2585 | 0.5296 | 2775 | 0.0004 | 0.0009 | 0.0011 | 0.0015 | 0.0017 | 0.0019 | 0.0022 | 0.0022 | 0.0026 | |
| 63 | 0.2582 | 0.5286 | 2785 | 0.0004 | 0.0009 | 0.0012 | 0.0016 | 0.0018 | 0.0019 | 0.0022 | 0.0023 | 0.0024 | |
| 64 | 0.2586 | 0.5283 | 2779 | 0.0004 | 0.0010 | 0.0013 | 0.0016 | 0.0018 | 0.0019 | 0.0021 | 0.0023 | 0.0027 | |
| 65 | 0.2569 | 0.5283 | 2816 | 0.0005 | 0.0010 | 0.0012 | 0.0015 | 0.0017 | 0.0020 | 0.0022 | 0.0022 | 0.0025 | |
| 66 | 0.2587 | 0.5288 | 2774 | 0.0004 | 0.0009 | 0.0012 | 0.0015 | 0.0017 | 0.0019 | 0.0022 | 0.0024 | 0.0025 | |
| 67 | 0.2576 | 0.5290 | 2797 | 0.0004 | 0.0009 | 0.0011 | 0.0015 | 0.0017 | 0.0019 | 0.0022 | 0.0024 | 0.0026 | |
| 68 | 0.2584 | 0.5293 | 2779 | 0.0004 | 0.0009 | 0.0012 | 0.0015 | 0.0017 | 0.0019 | 0.0022 | 0.0024 | 0.0026 | |
| 69 | 0.2556 | 0.5288 | 2840 | 0.0003 | 0.0009 | 0.0011 | 0.0014 | 0.0016 | 0.0018 | 0.0019 | 0.0022 | 0.0022 | |
| 70 | 0.2584 | 0.5294 | 2776 | 0.0005 | 0.0010 | 0.0012 | 0.0016 | 0.0018 | 0.0019 | 0.0021 | 0.0024 | 0.0026 | |
| 71 | 0.2582 | 0.5294 | 2782 | 0.0004 | 0.0009 | 0.0011 | 0.0015 | 0.0017 | 0.0018 | 0.0020 | 0.0024 | 0.0026 | |
| 72 | 0.2576 | 0.5275 | 2803 | 0.0006 | 0.0009 | 0.0009 | 0.0012 | 0.0017 | 0.0018 | 0.0021 | 0.0024 | 0.0026 | |
| 73 | 0.2569 | 0.5281 | 2816 | 0.0005 | 0.0010 | 0.0012 | 0.0016 | 0.0017 | 0.0019 | 0.0021 | 0.0025 | 0.0027 | |
| 74 | 0.2578 | 0.5299 | 2788 | 0.0004 | 0.0009 | 0.0012 | 0.0014 | 0.0016 | 0.0018 | 0.0020 | 0.0024 | 0.0026 | |
| 75 | 0.2558 | 0.5271 | 2845 | 0.0005 | 0.0009 | 0.0012 | 0.0016 | 0.0016 | 0.0018 | 0.0021 | 0.0025 | 0.0027 | |
| 76 | 0.2561 | 0.5273 | 2837 | 0.0004 | 0.0009 | 0.0011 | 0.0014 | 0.0016 | 0.0018 | 0.0020 | 0.0023 | 0.0026 | |
| 77 | 0.2579 | 0.5297 | 2786 | 0.0004 | 0.0009 | 0.0012 | 0.0015 | 0.0017 | 0.0019 | 0.0021 | 0.0024 | 0.0025 | |
| 78 | 0.2584 | 0.5289 | 2780 | 0.0004 | 0.0009 | 0.0011 | 0.0015 | 0.0016 | 0.0018 | 0.0020 | 0.0024 | 0.0026 | |
| 79 | 0.2569 | 0.5279 | 2817 | 0.0006 | 0.0010 | 0.0013 | 0.0016 | 0.0018 | 0.0020 | 0.0022 | 0.0025 | 0.0027 | |
| 80 | 0.2588 | 0.5289 | 2771 | 0.0004 | 0.0009 | 0.0011 | 0.0015 | 0.0017 | 0.0018 | 0.0020 | 0.0023 | 0.0025 | |
| 81 | 0.2574 | 0.5283 | 2804 | 0.0004 | 0.0010 | 0.0012 | 0.0016 | 0.0018 | 0.0019 | 0.0022 | 0.0024 | 0.0026 | |
| 82 | 0.2597 | 0.5279 | 2757 | 0.0004 | 0.0009 | 0.0011 | 0.0015 | 0.0017 | 0.0019 | 0.0021 | 0.0011 | 0.0026 | |
| 83 | 0.2565 | 0.5271 | 2830 | 0.0005 | 0.0010 | 0.0012 | 0.0016 | 0.0018 | 0.0019 | 0.0022 | 0.0026 | 0.0027 | |
| 84 | 0.2561 | 0.5275 | 2836 | 0.0004 | 0.0009 | 0.0012 | 0.0016 | 0.0018 | 0.0019 | 0.0021 | 0.0025 | 0.0026 | |
| 85 | 0.2581 | 0.5272 | 2795 | 0.0005 | 0.0010 | 0.0012 | 0.0016 | 0.0018 | 0.0019 | 0.0022 | 0.0025 | 0.0027 | |
| 86 | 0.2559 | 0.5265 | 2846 | 0.0005 | 0.0009 | 0.0012 | 0.0016 | 0.0017 | 0.0018 | 0.0021 | 0.0024 | 0.0026 | |
| 87 | 0.2579 | 0.5291 | 2791 | 0.0005 | 0.0010 | 0.0013 | 0.0016 | 0.0019 | 0.0021 | 0.0022 | 0.0025 | 0.0031 | |
| 88 | 0.2581 | 0.5296 | 2783 | 0.0005 | 0.0010 | 0.0013 | 0.0016 | 0.0017 | 0.0020 | 0.0023 | 0.0025 | 0.0031 | |
| 89 | 0.2579 | 0.5292 | 2790 | 0.0005 | 0.0011 | 0.0014 | 0.0017 | 0.0019 | 0.0021 | 0.0025 | 0.0027 | 0.0031 | |
| 90 | 0.2585 | 0.5295 | 2776 | 0.0005 | 0.0012 | 0.0014 | 0.0017 | 0.0020 | 0.0021 | 0.0025 | 0.0025 | 0.0031 | |
| Ave. | 0.2577 | 0.5285 | 2798 | 0.0004 | 0.0010 | 0.0012 | 0.0015 | 0.0018 | 0.0019 | 0.0021 | 0.0024 | 0.0026 | |
| Med. | 0.2579 | 0.5287 | 2789 | 0.0004 | 0.0009 | 0.0012 | 0.0016 | 0.0017 | 0.0019 | 0.0021 | 0.0024 | 0.0026 | |
| st dev | 0.0011 | 0.0009 | 25.2253 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0003 | 0.0002 | |
| Min. | 0.2556 | 0.5265 | 2757 | 0.0003 | 0.0009 | 0.0009 | 0.0012 | 0.0016 | 0.0018 | 0.0019 | | | |

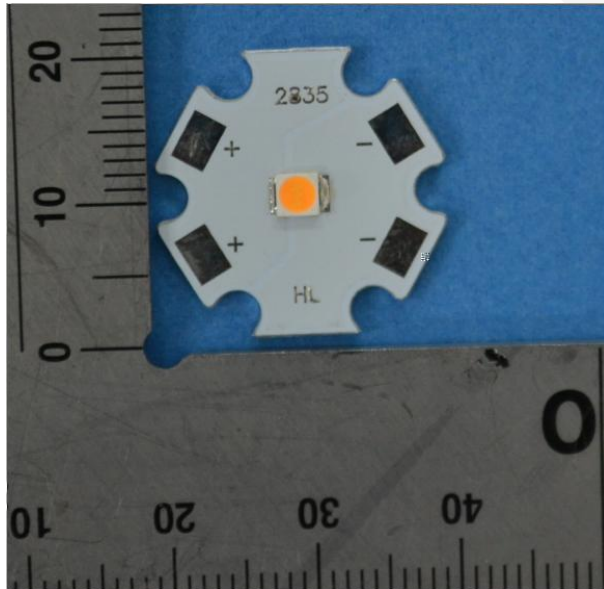
4 - EUT Photo

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 EUT Photo



4.3 Report Revision

| Report Number | Report Date | Contents |
|--------------------|-------------|--|
| RSZ160804502-10 | 2017-09-04 | Original report. |
| RSZ160804502-10-M1 | 2019-01-14 | Update the Logo of lab on the Page1 Update Company name and address on page 1. Add DUT Characteristics on page 3 according to ENERGY STAR requirements |

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