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1 - General Information

1.1 Description of LED Light Sources

Sample Size:

75 PCS samples were received on 2017-03-17. The samples were numbered from 1 to 25, 26 to 50 and 51 to 75.

| | |
|--------------------------------------|--|
| Manufacturer: | Shenzhen Refond Optoelectronic Co., Ltd. |
| Part Number: | 3528 |
| Part Type: | LED Package |
| Drive Level: | DC 30mA |
| Nominal CCT: | 2700K |
| Power: | 0.1W |
| Average Current Density per LED die: | 344mA/mm ² |
| Average Power Density per LED die: | 1.15 W/mm ² |
| CRI: | 90 |
| Die Spacing: | N/A |

Sampling Method:

LED samples for IESNA LM-80 testing consist of units built from a minimum of three manufacturing lots with each manufacturing lot built from different wafer lots built on non-consecutive days.

These manufacturing lots are picked to represent a wide parametric distribution.

1.2 Standards Used:

- ANSI/IES LM-80-15: IES Approved Method for Measuring Lumen Maintenance of LED Light Sources.
- CIE 127:2007: Measurement of LEDs (This standard was not accredited by IAS)
- 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 | 20022 | 2018-03-13 | 2019-03-13 |
| Digital CC&CV DC Power Supply | EVERFINE | WY5015 | 11060010 | 2018-03-26 | 2019-03-26 |
| Digital CC&CV DC Power Supply | EVERFINE | WY5015 | 11090008 | 2017-07-07 | 2018-07-07 |
| Digital CC&CV DC Power Supply | EVERFINE | WY5015 | 11060002 | 2017-07-07 | 2018-07-07 |



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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 soldered to the coldest DUTs' case (TMP_{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.

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1.8 Sample Set

Data Set 1: 55°C, 30mA

Part Number: 3528
Number of Units: 25
Case Temperature: >53°C
Ambient Temperature: >50°C
Life Test Drive Current: 30mA
Measurement Current: 30mA

Data Set 2: 85°C, 30mA

Part Number: 3528
Number of Units: 25
Case Temperature: >83°C
Ambient Temperature: >80°C
Life Test Drive Current: 30mA
Measurement Current: 30mA

Data Set 3: 105°C, 30mA

Part Number: 3528
Number of Units: 25
Case Temperature: >103°C
Ambient Temperature: >100°C
Life Test Drive Current: 30mA
Measurement Current: 30mA

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3.2 Data Set 1, 55°C, 30mA (Forward Voltage)

| No. | Forward Voltage (V) | | | | | | |
|--------|---------------------|---------|---------|---------|---------|---------|---------|
| | 0hr(Initial) | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 1 | 2.714 | 2.710 | 2.709 | 2.708 | 2.712 | 2.710 | 2.708 |
| 2 | 2.736 | 2.735 | 2.730 | 2.732 | 2.736 | 2.732 | 2.733 |
| 3 | 2.726 | 2.731 | 2.729 | 2.731 | 2.731 | 2.735 | 2.730 |
| 4 | 2.734 | 2.738 | 2.734 | 2.737 | 2.738 | 2.738 | 2.738 |
| 5 | 2.728 | 2.726 | 2.721 | 2.724 | 2.725 | 2.724 | 2.725 |
| 6 | 2.718 | 2.723 | 2.718 | 2.720 | 2.723 | 2.726 | 2.722 |
| 7 | 2.718 | 2.721 | 2.717 | 2.719 | 2.721 | 2.721 | 2.720 |
| 8 | 2.726 | 2.729 | 2.724 | 2.726 | 2.729 | 2.727 | 2.729 |
| 9 | 2.723 | 2.726 | 2.720 | 2.724 | 2.726 | 2.725 | 2.725 |
| 10 | 2.727 | 2.731 | 2.724 | 2.727 | 2.730 | 2.728 | 2.730 |
| 11 | 2.723 | 2.725 | 2.720 | 2.724 | 2.725 | 2.724 | 2.725 |
| 12 | 2.726 | 2.728 | 2.721 | 2.726 | 2.728 | 2.727 | 2.727 |
| 13 | 2.729 | 2.732 | 2.726 | 2.730 | 2.732 | 2.731 | 2.731 |
| 14 | 2.725 | 2.728 | 2.724 | 2.727 | 2.729 | 2.728 | 2.727 |
| 15 | 2.721 | 2.725 | 2.721 | 2.723 | 2.726 | 2.725 | 2.724 |
| 16 | 2.724 | 2.728 | 2.721 | 2.725 | 2.728 | 2.726 | 2.726 |
| 17 | 2.720 | 2.724 | 2.718 | 2.723 | 2.725 | 2.724 | 2.723 |
| 18 | 2.725 | 2.728 | 2.725 | 2.727 | 2.729 | 2.728 | 2.727 |
| 19 | 2.719 | 2.723 | 2.718 | 2.720 | 2.724 | 2.722 | 2.722 |
| 20 | 2.708 | 2.711 | 2.707 | 2.710 | 2.712 | 2.712 | 2.710 |
| 21 | 2.719 | 2.723 | 2.718 | 2.720 | 2.723 | 2.722 | 2.722 |
| 22 | 2.722 | 2.723 | 2.720 | 2.723 | 2.725 | 2.724 | 2.722 |
| 23 | 2.714 | 2.717 | 2.712 | 2.714 | 2.717 | 2.721 | 2.716 |
| 24 | 2.709 | 2.712 | 2.709 | 2.711 | 2.713 | 2.712 | 2.712 |
| 25 | 2.721 | 2.724 | 2.720 | 2.722 | 2.725 | 2.728 | 2.724 |
| Avg. | 2.722 | 2.725 | 2.720 | 2.723 | 2.725 | 2.725 | 2.724 |
| Med. | 2.723 | 2.725 | 2.720 | 2.724 | 2.725 | 2.725 | 2.725 |
| st dev | 0.007 | 0.007 | 0.006 | 0.007 | 0.007 | 0.007 | 0.007 |
| Min. | 2.708 | 2.710 | 2.707 | 2.708 | 2.712 | 2.710 | 2.708 |
| Max. | 2.736 | 2.738 | 2.734 | 2.737 | 2.738 | 2.738 | 2.738 |



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3.3 Data Set 1, 55°C, 30mA (Chromaticity Shift)

| No. | u' | v' | CCT(K) | Chromaticity Shift ($\Delta u'v'$) | | | | | |
|-----|--------------|--------|--------|--------------------------------------|---------|---------|---------|---------|---------|
| | 0hr(Initial) | | | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 1 | 0.2607 | 0.5249 | 2748 | 0.0004 | 0.0006 | 0.0006 | 0.0009 | 0.0011 | 0.0010 |
| 2 | 0.2613 | 0.5252 | 2734 | 0.0003 | 0.0006 | 0.0008 | 0.0010 | 0.0013 | 0.0014 |
| 3 | 0.2608 | 0.5257 | 2742 | 0.0005 | 0.0006 | 0.0009 | 0.0009 | 0.0011 | 0.0013 |
| 4 | 0.2623 | 0.5251 | 2713 | 0.0003 | 0.0006 | 0.0008 | 0.0011 | 0.0013 | 0.0013 |
| 5 | 0.2615 | 0.5244 | 2733 | 0.0005 | 0.0005 | 0.0007 | 0.0010 | 0.0010 | 0.0012 |
| 6 | 0.2619 | 0.5239 | 2726 | 0.0004 | 0.0007 | 0.0009 | 0.0012 | 0.0014 | 0.0015 |

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3.4 Data Set 2, 85°C, 30mA (Lumen Maintenance)

| No. | Φ(lm) | Lumen Maintenance (%) | | | | | |
|--------|--------------|-----------------------|---------|---------|---------|---------|---------|
| | Ohr(Initial) | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 26 | 12.06 | 100.08 | 99.83 | 99.67 | 99.34 | 99.09 | 98.92 |
| 27 | 12.00 | 99.75 | 99.42 | 99.33 | 99.17 | 98.92 | 98.75 |
| 28 | 11.12 | 100.09 | 99.91 | 99.46 | 99.10 | 98.83 | 98.56 |
| 29 | 12.07 | 99.92 | 99.67 | 99.34 | 99.17 | 98.92 | 98.76 |
| 30 | 12.01 | 99.92 | 99.75 | 99.58 | 99.33 | 99.00 | 98.83 |
| 31 | 12.11 | 99.92 | 99.75 | 99.67 | 99.34 | 99.09 | 98.76 |
| 32 | 11.65 | 99.91 | 99.74 | 99.48 | 99.31 | 99.06 | 98.88 |
| 33 | 11.91 | 100.08 | 99.92 | 99.75 | 99.50 | 99.16 | 98.74 |
| 34 | 11.96 | 100.08 | 99.75 | 99.50 | 99.33 | 99.08 | 98.66 |
| 35 | 10.92 | 99.82 | 99.54 | 99.27 | 98.81 | 98.44 | 98.17 |
| 36 | 11.93 | 100.08 | 99.83 | 99.50 | 99.33 | 99.08 | 98.91 |
| 37 | 11.06 | 100.18 | 100.09 | 99.91 | 99.64 | 99.46 | 99.28 |
| 38 | 12.06 | 100.08 | 99.67 | 99.42 | 99.09 | 98.84 | 98.59 |
| 39 | 10.82 | 100.18 | 99.82 | 99.63 | 99.45 | 99.26 | 98.89 |
| 40 | 12.15 | 100.25 | 99.92 | 99.59 | 99.34 | 99.18 | 99.01 |
| 41 | 10.92 | 100.09 | 99.91 | 99.54 | 99.27 | 99.08 | 98.81 |
| 42 | 11.52 | 100.09 | 99.83 | 99.65 | 99.39 | 99.22 | 98.96 |
| 43 | 11.72 | 99.91 | 99.66 | 99.49 | 99.32 | 99.15 | 98.89 |
| 44 | 12.16 | 100.16 | 99.84 | 99.59 | 99.42 | 99.18 | 98.93 |
| 45 | 12.11 | 100.17 | 99.83 | 99.59 | 99.34 | 99.09 | 99.01 |
| 46 | 11.72 | 99.83 | 99.57 | 99.32 | 98.98 | 98.81 | 98.63 |
| 47 | 10.82 | 100.09 | 99.91 | 99.63 | 99.26 | 98.89 | 98.61 |
| 48 | 12.11 | 99.92 | 99.67 | 99.50 | 99.34 | 99.26 | 99.09 |
| 49 | 11.95 | 100.17 | 99.83 | 99.67 | 99.58 | 99.33 | 98.91 |
| 50 | 12.19 | 100.08 | 99.84 | 99.43 | 99.18 | 98.85 | 98.61 |
| Avg. | 11.72 | 100.03 | 99.78 | 99.54 | 99.29 | 99.05 | 98.81 |
| Med. | 11.95 | 100.08 | 99.83 | 99.54 | 99.33 | 99.08 | 98.83 |
| st dev | 0.48 | 0.1326 | 0.1431 | 0.1470 | 0.1790 | 0.2085 | 0.2174 |
| Min. | 10.82 | 99.75 | 99.42 | 99.27 | 98.81 | 98.44 | 98.17 |
| Max. | 12.19 | 100.25 | 100.09 | 99.91 | 99.64 | 99.46 | 99.28 |



3.5 Data Set 2, 85°C, 30mA (Forward Voltage)

| No. | Forward Voltage (V) | | | | | | |
|--------|---------------------|---------|---------|---------|---------|---------|---------|
| | 0hr(Initial) | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 26 | 2.707 | 2.709 | 2.706 | 2.708 | 2.713 | 2.712 | 2.710 |
| 27 | 2.722 | 2.724 | 2.720 | 2.723 | 2.726 | 2.726 | 2.724 |
| 28 | 2.721 | 2.724 | 2.720 | 2.724 | 2.726 | 2.726 | 2.723 |
| 29 | 2.727 | 2.728 | 2.725 | 2.728 | 2.731 | 2.730 | 2.730 |
| 30 | 2.723 | 2.725 | 2.723 | 2.725 | 2.728 | 2.728 | 2.726 |
| 31 | 2.712 | 2.716 | 2.711 | 2.714 | 2.717 | 2.717 | 2.716 |
| 32 | 2.717 | 2.720 | 2.717 | 2.719 | 2.722 | 2.722 | 2.720 |
| 33 | 2.727 | 2.730 | 2.727 | 2.730 | 2.732 | 2.731 | 2.730 |
| 34 | 2.722 | 2.725 | 2.721 | 2.722 | 2.726 | 2.726 | 2.725 |
| 35 | 2.722 | 2.725 | 2.723 | 2.724 | 2.726 | 2.726 | 2.725 |
| 36 | 2.722 | 2.725 | 2.721 | 2.722 | 2.726 | 2.726 | 2.725 |
| 37 | 2.710 | 2.713 | 2.750 | 2.847 | 2.726 | 2.851 | 2.852 |
| 38 | 2.723 | 2.728 | 2.750 | 2.849 | 2.854 | 2.852 | 2.850 |
| 39 | 2.717 | 2.719 | 2.716 | 2.717 | 2.721 | 2.723 | 2.720 |
| 40 | 2.721 | 2.725 | 2.721 | 2.723 | 2.727 | 2.727 | 2.724 |
| 41 | 2.719 | 2.721 | 2.718 | 2.720 | 2.724 | 2.727 | 2.723 |
| 42 | 2.721 | 2.724 | 2.719 | 2.721 | 2.725 | 2.725 | 2.724 |
| 43 | 2.725 | 2.728 | 2.725 | 2.725 | 2.729 | 2.731 | 2.728 |
| 44 | 2.720 | 2.724 | 2.720 | 2.722 | 2.725 | 2.737 | 2.723 |
| 45 | 2.719 | 2.724 | 2.718 | 2.719 | 2.724 | 2.725 | 2.722 |
| 46 | 2.708 | 2.711 | 2.707 | 2.710 | 2.713 | 2.714 | 2.710 |
| 47 | 2.719 | 2.723 | 2.719 | 2.719 | 2.723 | 2.723 | 2.722 |
| 48 | 2.706 | 2.708 | 2.706 | 2.706 | 2.710 | 2.710 | 2.709 |
| 49 | 2.719 | 2.722 | 2.717 | 2.720 | 2.723 | 2.723 | 2.720 |
| 50 | 2.725 | 2.728 | 2.725 | 2.728 | 2.731 | 2.731 | 2.729 |
| Avg. | 2.719 | 2.722 | 2.721 | 2.720 | 2.729 | 2.735 | 2.732 |
| Med. | 2.721 | 2.724 | 2.720 | 2.728 | 2.726 | 2.726 | 2.724 |
| st dev | 0.006 | 0.006 | 0.010 | 0.036 | 0.027 | 0.036 | 0.036 |
| Min. | 2.706 | 2.708 | 2.706 | 2.706 | 2.710 | 2.710 | 2.709 |
| Max. | 2.727 | 2.730 | 2.750 | 2.849 | 2.854 | 2.852 | 2.852 |



3.6 Data Set 2, 85°C, 30mA (Chromaticity Shift)

| No. | u' | v' | CCT(K) | Chromaticity Shift ($\Delta u'v'$) | | | | | |
|-----|--------------|--------|--------|--------------------------------------|---------|---------|---------|---------|---------|
| | 0hr(Initial) | | | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 26 | 0.2613 | 0.5256 | 2732 | 0.0004 | 0.0006 | 0.0008 | 0.0012 | 0.0016 | 0.0018 |
| 27 | 0.2617 | 0.5254 | 2724 | 0.0005 | 0.0006 | 0.0008 | 0.0013 | 0.0016 | 0.0017 |
| 28 | 0.2607 | 0.5230 | 2756 | 0.0004 | 0.0007 | 0.0009 | 0.0013 | 0.0017 | 0.0018 |
| 29 | 0.2613 | 0.5252 | 2734 | 0.0005 | 0.0006 | 0.0008 | 0.0013 | 0.0016 | 0.0018 |
| 30 | 0.2601 | 0.5247 | 2763 | 0.0005 | 0.0006 | 0.0008 | 0.0013 | 0.0017 | 0.0018 |
| 31 | 0.2601 | 0.5246 | 2762 | 0.0005 | 0.0006 | 0.0008 | 0.0012 | 0.0014 | 0.0017 |
| 32 | 0.2610 | 0.5229 | 2750 | 0.0003 | 0.0008 | 0.0009 | 0.0014 | 0.0017 | 0.0019 |
| 33 | 0.2616 | 0.5258 | 2724 | 0.0004 | 0.0007 | 0.0008 | 0.0013 | 0.0015 | 0.0018 |
| 34 | 0.2604 | 0.5245 | 2757 | 0.0005 | 0.0006 | 0.0008 | 0.0012 | 0.0015 | 0.0017 |
| 35 | 0.2626 | 0.5237 | 2712 | 0.0004 | 0.0008 | 0.0011 | 0.0018 | 0.0023 | 0.0025 |
| 36 | 0.2609 | 0.5240 | 2747 | 0.0005 | 0.0007 | 0.0009 | 0.0012 | 0.0016 | 0.0017 |
| 37 | 0.2602 | 0.5233 | 2766 | 0.0005 | 0.0004 | 0.0005 | 0.0011 | 0.0014 | 0.0013 |
| 38 | 0.2621 | 0.5252 | 2717 | 0.0004 | 0.0006 | 0.0007 | 0.0010 | 0.0013 | 0.0016 |
| 39 | 0.2622 | 0.5232 | 2724 | 0.0005 | 0.0007 | 0.0010 | 0.0015 | 0.0018 | 0.0021 |
| 40 | 0.2614 | 0.5254 | 2731 | 0.0005 | 0.0006 | 0.0008 | 0.0012 | 0.0015 | 0.0017 |
| 41 | 0.2622 | 0.5217 | 2730 | 0.0005 | 0.0005 | 0.0006 | 0.0008 | 0.0010 | 0.0013 |
| 42 | 0.2615 | 0.5229 | 2739 | 0.0004 | 0.0007 | 0.0008 | 0.0012 | 0.0016 | 0.0017 |
| 43 | 0.2616 | 0.5241 | 2733 | 0.0004 | 0.0008 | 0.0009 | 0.0015 | 0.0017 | 0.0020 |
| 44 | 0.2606 | 0.5254 | 2747 | 0.0005 | 0.0006 | 0.0008 | 0.0012 | 0.0015 | 0.0018 |
| 45 | 0.2610 | 0.5246 | 2744 | 0.0004 | 0.0006 | 0.0007 | 0.0011 | 0.0015 | 0.0017 |
| 46 | 0.2597 | 0.5227 | 2779 | 0.0004 | 0.0008 | 0.0009 | 0.0014 | 0.0017 | 0.0019 |
| 47 | 0.2630 | 0.5251 | 2698 | 0.0005 | 0.0007 | 0.0009 | 0.0013 | 0.0016 | 0.0018 |
| 48 | 0.2597 | 0.5247 | 2771 | 0.0005 | 0.0006 | 0.0008 | 0.0012 | 0.0015 | 0.0017 |
| 49 | 0.2613 | 0.5252 | 2734 | 0.0006 | 0.0007 | 0.0009 | 0.0012 | 0.0016 | 0.0017 |



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3.7 Data Set 3, 105°C, 30mA (Lumen Maintenance)

| No. | Φ(lm) | Lumen Maintenance (%) | | | | | |
|-----|--------------|-----------------------|---------|---------|---------|---------|---------|
| | Ohr(Initial) | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 51 | 11.12 | 99.82 | 99.46 | 99.01 | 98.65 | 98.29 | 98.20 |
| 52 | 11.07 | 99.82 | 99.55 | 99.19 | 98.92 | 98.64 | 98.37 |
| 53 | 11.82 | 99.92 | 99.66 | 99.41 | 99.24 | 98.90 | 98.73 |
| 54 | 12.00 | 99.92 | 99.75 | 99.42 | 99.17 | 98.83 | 98.58 |
| 55 | 12.09 | 99.75 | 99.50 | 99.42 | 99.17 | 98.92 | 98.76 |
| 56 | 11.03 | 99.73 | 99.46 | 99.00 | 98.64 | 98.28 | 98.10 |
| 57 | 11.92 | 99.92 | 99.66 | 99.50 | 99.24 | 99.08 | 98.83 |



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3.8 Data Set 3, 105°C, 30mA (Forward Voltage)

| No. | Forward Voltage (V) | | | | | | |
|--------|---------------------|---------|---------|---------|---------|---------|---------|
| | 0hr(Initial) | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 51 | 2.722 | 2.726 | 2.723 | 2.726 | 2.727 | 2.727 | 2.725 |
| 52 | 2.720 | 2.726 | 2.720 | 2.723 | 2.728 | 2.723 | 2.725 |
| 53 | 2.727 | 2.730 | 2.727 | 2.728 | 2.732 | 2.731 | 2.731 |
| 54 | 2.720 | 2.725 | 2.720 | 2.722 | 2.725 | 2.722 | 2.723 |
| 55 | 2.725 | 2.728 | 2.724 | 2.728 | 2.729 | 2.728 | 2.726 |
| 56 | 2.723 | 2.726 | 2.721 | 2.725 | 2.727 | 2.725 | 2.725 |
| 57 | 2.710 | 2.714 | 2.709 | 2.713 | 2.715 | 2.714 | 2.713 |
| 58 | 2.727 | 2.732 | 2.728 | 2.731 | 2.733 | 2.734 | 2.731 |
| 59 | 2.721 | 2.724 | 2.719 | 2.723 | 2.725 | 2.724 | 2.722 |
| 60 | 2.720 | 2.722 | 2.718 | 2.720 | 2.724 | 2.722 | 2.720 |
| 61 | 2.718 | 2.721 | 2.716 | 2.720 | 2.722 | 2.721 | 2.720 |
| 62 | 2.722 | 2.723 | 2.719 | 2.721 | 2.725 | 2.724 | 2.722 |
| 63 | 2.718 | 2.722 | 2.717 | 2.720 | 2.724 | 2.723 | 2.721 |
| 64 | 2.723 | 2.726 | 2.722 | 2.726 | 2.728 | 2.726 | 2.726 |
| 65 | 2.726 | 2.726 | 2.721 | 2.724 | 2.727 | 2.726 | 2.724 |
| 66 | 2.729 | 2.732 | 2.727 | 2.730 | 2.733 | 2.732 | 2.731 |
| 67 | 2.723 | 2.724 | 2.720 | 2.723 | 2.725 | 2.725 | 2.722 |
| 68 | 2.730 | 2.732 | 2.728 | 2.734 | 2.735 | 2.735 | 2.732 |
| 69 | 2.720 | 2.720 | 2.718 | 2.721 | 2.724 | 2.723 | 2.721 |
| 70 | 2.735 | 2.738 | 2.732 | 2.737 | 2.739 | 2.740 | 2.737 |
| 71 | 2.727 | 2.730 | 2.726 | 2.730 | 2.734 | 2.732 | 2.730 |
| 72 | 2.720 | 2.725 | 2.720 | 2.723 | 2.725 | 2.725 | 2.723 |
| 73 | 2.725 | 2.728 | 2.724 | 2.728 | 2.730 | 2.729 | 2.728 |
| 74 | 2.724 | 2.726 | 2.723 | 2.725 | 2.728 | 2.727 | 2.726 |
| 75 | 2.721 | 2.723 | 2.720 | 2.722 | 2.725 | 2.724 | 2.724 |
| Avg. | 2.723 | 2.726 | 2.722 | 2.725 | 2.728 | 2.726 | 2.725 |
| Med. | 2.723 | 2.726 | 2.721 | 2.724 | 2.727 | 2.725 | 2.725 |
| st dev | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| Min. | 2.710 | 2.714 | 2.709 | 2.713 | 2.715 | 2.714 | 2.713 |
| Max. | 2.735 | 2.738 | 2.732 | 2.737 | 2.739 | 2.740 | 2.737 |



Bay Area Compliance Laboratories Corp. (Dongguan)

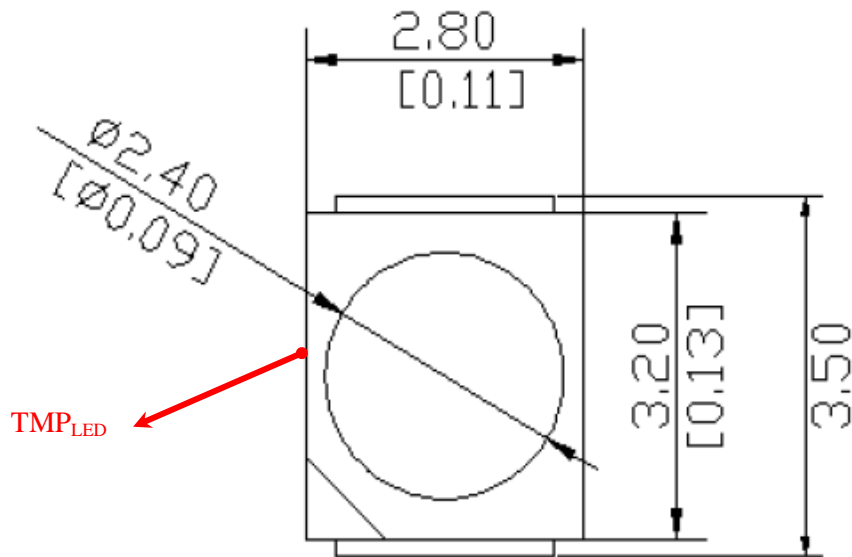
No.69, Pulongcun, Puxinhu Industrial Area Tangxia ,
Dongguan, Guangdong, China.
The IAS Accreditation Number TL-460

3.9 Data Set 3, 1000mA (Chromaticity Shift)

| No. | u' | v' | CCT(K) | Chromaticity Shift ($\Delta u'v'$) | | | | | |
|-----|--------|--------|--------|--------------------------------------|---------|---------|---------|---------|---------|
| | | | | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 51 | 0.2612 | 0.5241 | 2745 | 0.0010 | 0.0008 | 0.0006 | 0.0012 | 0.0015 | 0.0015 |
| 52 | 0.2628 | 0.5241 | 2704 | 0.0008 | 0.0009 | 0.0006 | 0.0010 | 0.0015 | 0.0014 |
| 53 | 0.2623 | 0.5241 | 2713 | 0.0003 | 0.0005 | 0.0006 | 0.0017 | 0.0023 | 0.0025 |
| 54 | 0.2610 | 0.5241 | 2744 | 0.0005 | 0.0004 | 0.0004 | 0.0014 | 0.0020 | 0.0023 |
| 55 | 0.2603 | 0.5251 | 2757 | 0.0004 | 0.0005 | 0.0005 | 0.0015 | 0.0020 | 0.0024 |
| 56 | 0.2602 | 0.5224 | 2769 | 0.0005 | 0.0006 | 0.0005 | 0.0014 | 0.0019 | 0.0024 |
| 57 | 0.2624 | 0.5260 | 2707 | 0.0005 | 0.0007 | 0.0008 | 0.0015 | 0.0019 | 0.0023 |
| 58 | 0.2601 | 0.5247 | 2762 | 0.0003 | 0.0008 | 0.0010 | 0.0017 | 0.0021 | 0.0025 |
| 59 | 0.2619 | 0.5254 | 2721 | 0.0004 | 0.0005 | 0.0006 | 0.0014 | 0.0017 | 0.0023 |
| 60 | 0.2618 | 0.5231 | 2731 | 0.0005 | 0.0006 | 0.0008 | 0.0014 | 0.0017 | 0.0023 |
| | | | 2639 | 0.0005 | 0.0007 | 0.0008 | 0.0015 | 0.0018 | 0.0023 |

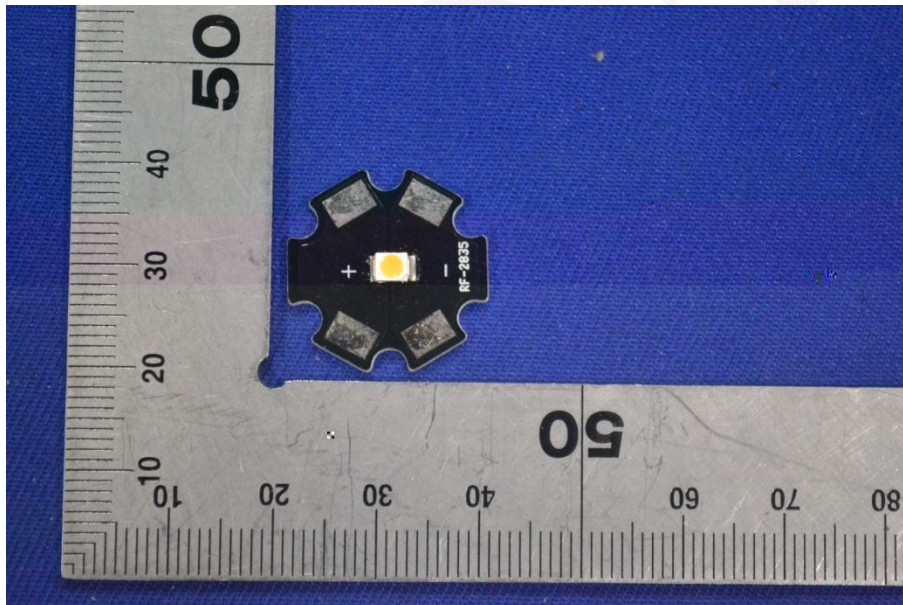
4 - DUT Photo

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 DUT Photo



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