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## 1 - General Information

### 1.1 Description of LED Light Sources<sup>#</sup>

#### Sample Size:

50 PCS es samples ere in good condition and received on 2022-07-25. The samples ere n umbered from 1 o 25 and 26 o 50.

Man fac rer: Hongli Zhjh i Gro p Co.,L d, G angzho Branch  
 Par N mber: HL-A-3014H416W-S1-08HL-HR3  
 Par T pe: LED Package  
 Dri e Le el: DC 30mA  
 Nominal CCT: 2700K  
 Po er: 0.102W  
 A erage C rren Densi per LED die: 387.5mA/mm<sup>2</sup>  
 A erage Po er Densi per LED die: 1.318W/mm<sup>2</sup>  
 CRI: 80  
 Die Spacing: /

#### Sampling Method:

LED samples for IESNA LM-80 es ing consist of ni sb il from a minim m of hree man fac ring lo s i h each man fac ring lo sb il from differen afer lo sb il on non-consec i e da s. These man fac ring lo s are picked o represen a ide parametric dis rib ion.

#### Family products covered by this report:

According o ENERGY STAR<sup>®</sup> Requirements for the Use of LM-80 Data, he follo ing prod c s can be co ered b his repor base on he informa ion and declara ion pro ided b man fac rer. The informa ion of these models sho s ha he co ered prod c s mee all sec ion 4 req iremen s of ENERGY STAR<sup>®</sup> Requirements for the Use of LM-80 Data (Sep ember 28, 2017)

This repor co ers he follo ing models:

| Series Name    | Model Name                        | CRI (typ.) | Total Input Current (mA) | Power (W) | CCT (K)   | Number of dies | Driver current per die (mA) | Current Density per Die (mA/mm <sup>2</sup> ) | Power Density per PCB (W/mm <sup>2</sup> ) | Die Spacing (mm) |
|----------------|-----------------------------------|------------|--------------------------|-----------|-----------|----------------|-----------------------------|---|--|------------------|
| Test model     | HL-A-3014H416W-S1-08HL-HR3        | 80         | 30                       | 0.102     | 2700      | 1              | 30                          | 387.5   | 0.0476                                     | /                |
| Multiple model | HL-A-3014H***W-S1-08**HR***       | 70-80      | 30                       | 0.102     | 2700-6500 | 1              | 30                          | 387.5   | 0.0476                                     | /                |
|                | HL-A-3014H***W-S1-08**HR*(R9)-*** | 70-80      | 30                       | 0.102     | 2700-6500 | 1              | 30                          | 387.5   | 0.0476                                     | /                |
|                | HL-A-3014H***W-S1-08**HR*-***     | 70-80      | 30                       | 0.102     | 2700-6500 | 1              | 30                          | 387.5   | 0.0476                                     | /                |
|                | HL-A-3014D***W-S1-08**HR*-***     | 70-80      | 30                       | 0.102     | 2700-6500 | 1              | 30                          | 387.5   | 0.0476                                     | /                |

No e:

a -A-3014H\*\*\*W-S1-08\*\*HR\*\*\*, " " a a f w :  
 1 - f \*\*\* f 1 999 a f w :  
 2 - \*\* a f he bonding ire s le.  
 3 - \* 1 2 3 1 239.1 1.9333 3.33 0.0009 0.0011 0 0.09.2  
 2 \* f 1 192 a .0009 0.0011 0 0

- \*ENERGY STAR Requirements for the Use of LM-80 Data (This standard is not accredited by NVLAP)

### 1.3 Testing Equipment

| Device  | Manufacture    | Model No    | Serial No        | Calibration date | Calibration due date |
|---|----------------|-------------|------------------|------------------|----------------------|
| 0.5m integrating sphere                           | EVERFINE       | AIS-2       | G185304TA1381172 | 2022-11-18       | 2023-11-17           |
| LED Test Source                                   | EVERFINE       | LTS-300     | P185616CD1371113 | 2022-11-18       | 2023-11-17           |
| High Accuracy Arra Specroradiometer               | EVERFINE       | HAAS-2000   | P600674CM1381123 | 2022-06-07       | 2023-06-06           |
| Standard Light Source                             | EVERFINE       | D062        | 1011093          | 2021-10-15       | 2023-10-14           |
| Militer aging machine                             | BACL           | B2-270      | 20015            | 2022-10-19       | 2023-10-18           |
| Program-controlled D.C. Stabilized Voltage Supply | Hansheng Power | HSPY-200-01 | N/A              | 2022-10-19       | 2023-10-18           |

### 1.4 Drive Level

Samples are driven with a constant direct current (DC) driving maintenance

## 1.8 Sample Set

### Data Set 1: 55°C, 30mA

Part Number: HL-A-3014H416W-S1-08HL-HR3  
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: HL-A-3014H416W-S1-08HL-HR3  
Number of Units: 25  
Case Temperature: >83 C  
Ambient Temperature: >80 C  
Life Test Drive Current: 30mA  
Measurement Current: 30mA

## 2 - Summary of Test Result

| Data Set: | Sample Size | Failures Observed: | Test Interval | Test Duration | $\alpha$  | $\beta$ | Reported TM-21 L <sub>70</sub> Lifetime |
|-----------|-------------|--------------------|---------------|---------------|-----------|---------|---|
| 1         | 25          | 0                  | 1000hrs       | 6000hrs       | 1.983E-06 | 1.004   | >36000 hrs                              |
| 2         | 25          | 0                  | 1000hrs       | 6000hrs       | 2.174E-06 | 1.004   | >36000 hrs                              |

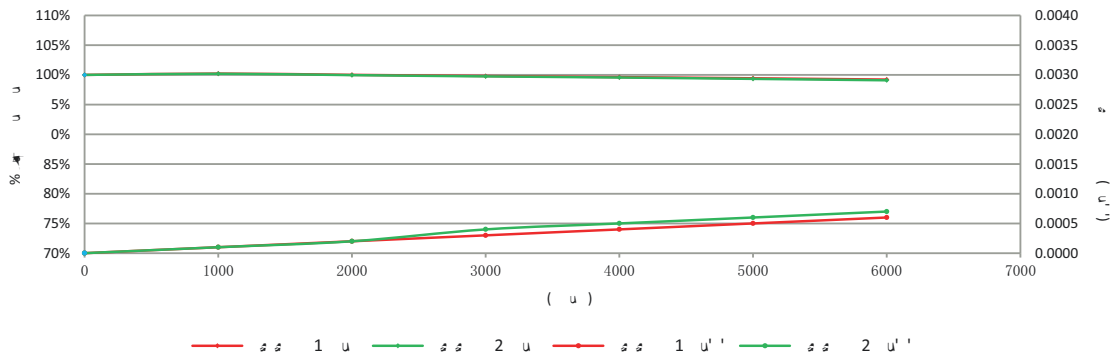
Average Mean Maintenance (Percentage of Initial Minimum Stress)

| Data Set: | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
|-----------|---------|---------|---------|---------|---------|---------|
| 1         | 100.22% | 100.01% | 99.81%  | 99.63%  | 99.43%  | 99.22%  |
| 2         | 100.19% | 99.96%  | 99.75%  | 99.56%  | 99.33%  | 99.09%  |

Average Chromatic Shift

| Data Set: | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
|-----------|---------|---------|---------|---------|---------|---------|
| 1         | 0.0001  | 0.0002  | 0.0003  | 0.0004  | 0.0005  | 0.0006  |
| 2         | 0.0001  | 0.0002  | 0.0004  | 0.0005  | 0.0006  | 0.0007  |

Average Mean Maintenance and Chromatic Shift VS. Time





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

| No.  | Forward Voltage (V) |         |         |         |         |         |         |
|------|---------------------|---------|---------|---------|---------|---------|---------|
|      | 0hr(Initial)        | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 1    | 2.889               | 2.888   | 2.888   | 2.888   | 2.888   | 2.888   | 2.889   |
| 2    | 2.873               | 2.872   | 2.873   | 2.873   | 2.872   | 2.873   | 2.877   |
| 3    | 2.881               | 2.882   | 2.883   | 2.883   | 2.880   | 2.881   | 2.886   |
| 4    | 2.870               | 2.887   | 2.887   | 2.891   | 2.886   | 2.888   | 2.889   |
| 5    | 2.879               | 2.881   | 2.882   | 2.883   | 2.880   | 2.883   | 2.882   |
| 6    | 2.878               | 2.877   | 2.877   | 2.881   | 2.877   | 2.878   | 2.878   |
| 7    | 2.884               | 2.882   | 2.883   | 2.885   | 2.883   | 2.886   | 2.885   |
| 8    | 2.877               | 2.877   | 2.879   | 2.881   | 2.880   | 2.879   | 2.881   |
| 9    | 2.886               | 2.888   | 2.888   | 2.891   | 2.886   | 2.888   | 2.889   |
| 10   | 2.876               | 2.879   | 2.882   | 2.883   | 2.880   | 2.880   | 2.880   |
| 11   | 2.879               | 2.880   | 2.883   | 2.883   | 2.884   | 2.883   | 2.882   |
| 12   | 2.883               | 2.885   | 2.886   | 2.887   | 2.888   | 2.887   | 2.888   |
| 13   | 2.878               | 2.879   | 2.881   | 2.882   | 2.882   | 2.881   | 2.880   |
| 14   | 2.883               | 2.885   | 2.888   | 2.887   | 2.884   | 2.885   | 2.885   |
| 15   | 2.877               | 2.877   | 2.878   | 2.879   | 2.879   | 2.878   | 2.879   |
| 16   | 2.870               | 2.872   | 2.874   | 2.874   | 2.874   | 2.873   | 2.873   |
| 17   | 2.879               | 2.880   | 2.880   | 2.885   | 2.882   | 2.882   | 2.881   |
| 18   | 2.879               | 2.880   | 2.880   | 2.884   | 2.881   | 2.882   | 2.881   |
| 19   | 2.885               | 2.887   | 2.888   | 2.890   | 2.890   | 2.888   | 2.888   |
| 20   | 2.885               | 2.885   | 2.887   | 2.889   | 2.888   | 2.886   | 2.887   |
| 21   | 2.888               | 2.888   | 2.891   | 2.889   | 2.895   | 2.892   | 2.890   |
| 22   | 2.879               | 2.881   | 2.879   | 2.883   | 2.886   | 2.884   | 2.885   |
| 23   | 2.886               | 2.884   | 2.887   | 2.886   | 2.889   | 2.889   | 2.892   |
| 24   | 2.884               | 2.886   | 2.888   | 2.886   | 2.888   | 2.889   | 2.899   |
| 25   | 2.866               | 2.866   | 2.867   | 2.867   | 2.877   | 2.871   | 2.875   |
| Avg. | 2.880               | 2.881   | 2.882   | 2.884   | 2.883   | 2.883   | 2.884   |
| Med. | 2.879               | 2.881   | 2.883   | 2.884   | 2.883   | 2.883   | 2.885   |
| std  | 0.006               | 0.006   | 0.006   | 0.006   | 0.005   | 0.005   | 0.006   |
| Min. | 2.866               | 2.866   | 2.867   | 2.867   | 2.872   | 2.871   | 2.873   |
| Max. | 2.889               | 2.888   | 2.891   | 2.891   | 2.895   | 2.892   | 2.899   |



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

| No.  | Initial      |        | CCT(K) | Chromaticity Shift (Δu', Δv') |         |         |         |         |         |
|------|--------------|--------|--------|-------------------------------|---------|---------|---------|---------|---------|
|      | 0hr(Initial) |        |        | 1000hrs                       | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 1    | 0.2550       | 0.5286 | 2859   | 0.0001                        | 0.0002  | 0.0001  | 0.0004  | 0.0006  | 0.0007  |
| 2    | 0.2552       | 0.5267 | 2861   | 0.0001                        | 0.0002  | 0.0004  | 0.0007  | 0.0008  | 0.0009  |
| 3    | 0.2608       | 0.5297 | 2725   | 0.0001                        | 0.0002  | 0.0004  | 0.0004  | 0.0005  | 0.0007  |
| 4    | 0.2623       | 0.5257 | 2710   | 0.0002                        | 0.0003  | 0.0002  | 0.0003  | 0.0004  | 0.0006  |
| 5    | 0.2594       | 0.5328 | 2741   | 0.0001                        | 0.0002  | 0.0005  | 0.0005  | 0.0005  | 0.0006  |
| 6    | 0.2567       | 0.5249 | 2836   | 0.0001                        | 0.0002  | 0.0003  | 0.0003  | 0.0005  | 0.0006  |
| 7    | 0.2591       | 0.5267 | 2774   | 0.0001                        | 0.0002  | 0.0002  | 0.0003  | 0.0004  | 0.0005  |
| 8    | 0.2570       | 0.5296 | 2806   | 0.0001                        | 0.0002  | 0.0002  | 0.0003  | 0.0004  | 0.0005  |
| 9    | 0.2550       | 0.5291 | 2853   | 0.0001                        | 0.0002  | 0.0001  | 0.0002  | 0.0004  | 0.0005  |
| 10   | 0.2587       | 0.5323 | 2760   | 0.0001                        | 0.0002  | 0.0001  | 0.0001  | 0.0003  | 0.0004  |
| 11   | 0.2561       | 0.5283 | 2832   | 0.0001                        | 0.0002  | 0.0001  | 0.0003  | 0.0005  | 0.0006  |
| 12   | 0.2594       | 0.5281 | 2762   | 0.0001                        | 0.0002  | 0.0001  | 0.0003  | 0.0005  | 0.0006  |
| 13   | 0.2588       | 0.5261 | 2783   | 0.0001                        | 0.0002  | 0.0003  | 0.0003  | 0.0004  | 0.0006  |
| 14   | 0.2552       | 0.5297 | 2846   | 0.0001                        | 0.0002  | 0.0004  | 0.0004  | 0.0005  | 0.0006  |
| 15   | 0.2588       | 0.5283 | 2775   | 0.0001                        | 0.0002  | 0.0004  | 0.0003  | 0.0004  | 0.0005  |
| 16   | 0.2549       | 0.5292 | 2856   | 0.0002                        | 0.0003  | 0.0002  | 0.0002  | 0.0004  | 0.0004  |
| 17   | 0.2592       | 0.5324 | 2748   | 0.0001                        | 0.0002  | 0.0003  | 0.0003  | 0.0004  | 0.0004  |
| 18   | 0.2599       | 0.5328 | 2732   | 0.0001                        | 0.0002  | 0.0002  | 0.0002  | 0.0004  | 0.0005  |
| 19   | 0.2592       | 0.5274 | 2770   | 0.0001                        | 0.0002  | 0.0004  | 0.0004  | 0.0005  | 0.0005  |
| 20   | 0.2552       | 0.5296 | 2846   | 0.0002                        | 0.0003  | 0.0002  | 0.0002  | 0.0003  | 0.0004  |
| 21   | 0.2560       | 0.5288 | 2833   | 0.0001                        | 0.0002  | 0.0003  | 0.0004  | 0.0003  | 0.0004  |
| 22   | 0.2572       | 0.5273 | 2814   | 0.0001                        | 0.0002  | 0.0002  | 0.0004  | 0.0004  | 0.0006  |
| 23   | 0.2574       | 0.5268 | 2812   | 0.0001                        | 0.0002  | 0.0004  | 0.0007  | 0.0006  | 0.0009  |
| 24   | 0.2563       | 0.5271 | 2835   | 0.0001                        | 0.0002  | 0.0003  | 0.0006  | 0.0006  | 0.0007  |
| 25   | 0.2610       | 0.5321 | 2712   | 0.0001                        | 0.0002  | 0.0004  | 0.0005  | 0.0005  | 0.0006  |
| Avg. | 0.2578       | 0.5288 | 2795   | 0.0001                        | 0.0002  | 0.0003  | 0.0004  | 0.0005  | 0.0006  |
| Med. | 0.2574       | 0.5286 | 2806   | 0.0001                        | 0.0002  | 0.0003  | 0.0003  | 0.0004  | 0.0006  |
| std  | 0.0022       | 0.0023 | 50     | 0.0000                        | 0.0000  | 0.0001  | 0.0001  | 0.0001  | 0.0001  |
| Min. | 0.2549       | 0.5249 | 2710   | 0.0001                        | 0.0002  | 0.0001  | 0.0001  | 0.0003  | 0.0004  |
| Max. | 0.2623       | 0.5328 | 2861   | 0.0002                        | 0.0003  | 0.0005  | 0.0007  | 0.0008  | 0.0009  |

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

| No.  | θ (Initial) | Lumen Maintenance (%) |         |         |         |         |         |
|------|-------------|-----------------------|---------|---------|---------|---------|---------|
|      |             | 1000hrs               | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 26   | 11.76       | 100.26                | 99.91   | 99.74   | 99.49   | 99.15   | 98.98   |
| 27   | 11.66       | 100.17                | 99.91   | 99.66   | 99.40   | 99.23   | 98.97   |
| 28   | 11.42       | 100.35                | 100.09  | 99.91   | 99.74   | 99.56   | 99.21   |
| 29   | 11.67       | 100.09                | 99.91   | 99.83   | 99.74   | 99.40   | 99.23   |
| 30   | 11.69       | 100.34                | 100.17  | 99.83   | 99.66   | 99.49   | 99.23   |
| 31   | 11.35       | 100.35                | 100.09  | 99.82   | 99.65   | 99.38   | 99.12   |
| 32   | 11.47       | 100.17                | 99.83   | 99.65   | 99.48   | 99.22   | 99.04   |
| 33   | 11.49       | 100.26                | 100.09  | 99.83   | 99.56   | 99.30   | 99.04   |
| 34   | 11.82       | 100.25                | 99.92   | 99.58   | 99.41   | 99.15   | 98.90   |
| 35   | 11.36       | 100.18                | 99.82   | 99.56   | 99.38   | 99.21   | 99.03   |
| 36   | 11.88       | 100.17                | 99.83   | 99.58   | 99.41   | 99.24   | 99.07   |
| 37   | 11.57       | 100.26                | 99.91   | 99.65   | 99.39   | 99.22   | 99.05   |
| 38   | 11.61       | 100.09                | 99.83   | 99.66   | 99.40   | 99.22   | 98.97   |
| 39   | 11.86       | 100.34                | 100.17  | 99.92   | 99.66   | 99.41   | 99.16   |
| 40   | 11.51       | 100.26                | 100.09  | 99.74   | 99.57   | 99.30   | 99.13   |
| 41   | 11.66       | 100.34                | 100.09  | 99.83   | 99.66   | 99.40   | 99.14   |
| 42   | 11.42       | 99.82                 | 99.74   | 99.65   | 99.56   | 99.47   | 99.12   |
| 43   | 12.16       | 100.25                | 100.16  | 99.92   | 99.59   | 99.34   | 99.10   |
| 44   | 11.62       | 100.09                | 99.91   | 99.83   | 99.66   | 99.40   | 99.14   |
| 45   | 11.60       | 100.26                | 100.17  | 99.91   | 99.66   | 99.40   | 99.05   |
| 46   | 11.84       | 99.92                 | 99.83   | 99.75   | 99.66   | 99.41   | 99.16   |
| 47   | 11.60       | 100.26                | 99.91   | 99.74   | 99.57   | 99.31   | 99.05   |
| 48   | 11.52       | 99.83                 | 99.65   | 99.57   | 99.48   | 99.31   | 99.05   |
| 49   | 11.73       | 100.34                | 100.09  | 99.83   | 99.66   | 99.40   | 99.15   |
| 50   | 11.68       | 100.17                | 99.91   | 99.74   | 99.57   | 99.32   | 99.06   |
| Avg. | 11.64       | 100.19                | 99.96   | 99.75   | 99.56   | 99.33   | 99.09   |
| Med. | 11.62       | 100.25                | 99.91   | 99.74   | 99.57   | 99.32   | 99.07   |
| std  | 0.19        | 0.15                  | 0.15    | 0.12    | 0.11    | 0.11    | 0.08    |
| Min. | 11.35       | 99.82                 | 99.65   | 99.56   | 99.38   | 99.15   | 98.90   |
| Max. | 12.16       | 100.35                | 100.17  | 99.92   | 99.74   | 99.56   | 99.23   |

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

| No.  | Forward Voltage (V) |         |         |         |         |         |         |
|------|---------------------|---------|---------|---------|---------|---------|---------|
|      | 0hr(Initial)        | 1000hrs | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 26   | 2.893               | 2.895   | 2.897   | 2.899   | 2.900   | 2.896   | 2.898   |
| 27   | 2.881               | 2.884   | 2.883   | 2.888   | 2.889   | 2.887   | 2.886   |
| 28   | 2.890               | 2.890   | 2.896   | 2.895   | 2.895   | 2.893   | 2.893   |
| 29   | 2.893               | 2.896   | 2.898   | 2.898   | 2.900   | 2.899   | 2.899   |
| 30   | 2.882               | 2.885   | 2.884   | 2.886   | 2.885   | 2.889   | 2.886   |
| 31   | 2.874               | 2.876   | 2.877   | 2.880   | 2.878   | 2.880   | 2.878   |
| 32   | 2.874               | 2.878   | 2.879   | 2.879   | 2.879   | 2.879   | 2.877   |
| 33   | 2.891               | 2.897   | 2.897   | 2.893   | 2.895   | 2.896   | 2.897   |
| 34   | 2.883               | 2.888   | 2.887   | 2.887   | 2.889   | 2.888   | 2.887   |
| 35   | 2.885               | 2.888   | 2.887   | 2.890   | 2.890   | 2.889   | 2.890   |
| 36   | 2.886               | 2.890   | 2.891   | 2.889   | 2.891   | 2.890   | 2.888   |
| 37   | 2.875               | 2.880   | 2.880   | 2.882   | 2.881   | 2.879   | 2.881   |
| 38   | 2.877               | 2.882   | 2.882   | 2.883   | 2.881   | 2.880   | 2.883   |
| 39   | 2.879               | 2.883   | 2.886   | 2.884   | 2.884   | 2.883   | 2.885   |
| 40   | 2.883               | 2.886   | 2.887   | 2.887   | 2.890   | 2.887   | 2.887   |
| 41   | 2.873               | 2.878   | 2.878   | 2.877   | 2.882   | 2.878   | 2.879   |
| 42   | 2.878               | 2.883   | 2.883   | 2.882   | 2.887   | 2.884   | 2.886   |
| 43   | 2.893               | 2.892   | 2.890   | 2.891   | 2.895   | 2.895   | 2.893   |
| 44   | 2.889               | 2.889   | 2.888   | 2.889   | 2.890   | 2.888   | 2.888   |
| 45   | 2.874               | 2.876   | 2.877   | 2.875   | 2.876   | 2.877   | 2.877   |
| 46   | 2.883               | 2.884   | 2.883   | 2.883   | 2.884   | 2.883   | 2.884   |
| 47   | 2.884               | 2.885   | 2.887   | 2.885   | 2.886   | 2.887   | 2.887   |
| 48   | 2.887               | 2.886   | 2.885   | 2.889   | 2.887   | 2.889   | 2.887   |
| 49   | 2.893               | 2.893   | 2.890   | 2.895   | 2.892   | 2.892   | 2.895   |
| 50   | 2.888               | 2.889   | 2.890   | 2.888   | 2.889   | 2.889   | 2.889   |
| Avg. | 2.884               | 2.886   | 2.886   | 2.887   | 2.888   | 2.887   | 2.887   |
| Med. | 2.883               | 2.886   | 2.887   | 2.887   | 2.889   | 2.888   | 2.887   |
| std  | 0.007               | 0.006   | 0.006   | 0.006   | 0.006   | 0.006   | 0.006   |
| Min. | 2.873               | 2.876   | 2.877   | 2.875   | 2.876   | 2.877   | 2.877   |
| Max. | 2.893               | 2.897   | 2.898   | 2.899   | 2.900   | 2.899   | 2.899   |

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

| No.  | Initial |         | CCT(K) | Chromaticity Shift ( $\Delta u', \Delta v'$ ) |         |         |         |         |         |
|------|---------|---------|--------|---|---------|---------|---------|---------|---------|
|      | 0hr     | Initial |        | 1000hrs                                       | 2000hrs | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
| 26   | 0.2560  | 0.5308  | 2823   | 0.0001  | 0.0002  | 0.0002  | 0.0004  | 0.0004  | 0.0007  |
| 27   | 0.2563  | 0.5274  | 2832   | 0.0001  | 0.0002  | 0.0003  | 0.0006  | 0.0007  | 0.0009  |
| 28   | 0.2605  | 0.5320  | 2723   | 0.0001  | 0.0002  | 0.0004  | 0.0005  | 0.0006  | 0.0008  |
| 29   | 0.2589  | 0.5273  | 2776   | 0.0001  | 0.0002  | 0.0004  | 0.0006  | 0.0008  | 0.0010  |
| 30   | 0.2551  | 0.5271  | 2861   | 0.0001  | 0.0002  | 0.0003  | 0.0005  | 0.0006  | 0.0008  |
| 31   | 0.2620  | 0.5303  | 2699   | 0.0001  | 0.0002  | 0.0003  | 0.0005  | 0.0003  | 0.0004  |
| 32   | 0.2582  | 0.5267  | 2794   | 0.0001  | 0.0002  | 0.0003  | 0.0005  | 0.0006  | 0.0008  |
| 33   | 0.2584  | 0.5261  | 2793   | 0.0001  | 0.0002  | 0.0003  | 0.0006  | 0.0006  | 0.0009  |
| 34   | 0.2631  | 0.5312  | 2673   | 0.0001  | 0.0002  | 0.0004  | 0.0006  | 0.0006  | 0.0008  |
| 35   | 0.2618  | 0.5298  | 2705   | 0.0001  | 0.0002  | 0.0003  | 0.0005  | 0.0004  | 0.0006  |
| 36   | 0.2547  | 0.5306  | 2853   | 0.0001  | 0.0002  | 0.0003  | 0.0004  | 0.0006  | 0.0007  |
| 37   | 0.2561  | 0.5260  | 2844   | 0.0001  | 0.0002  | 0.0004  | 0.0005  | 0.0007  | 0.0007  |
| 38   | 0.2596  | 0.5302  | 2749   | 0.0001  | 0.0002  | 0.0006  | 0.0004  | 0.0006  | 0.0007  |
| 39   | 0.2556  | 0.5305  | 2833   | 0.0002  | 0.0003  | 0.0002  | 0.0004  | 0.0006  | 0.0006  |
| 40   | 0.2567  | 0.5269  | 2826   | 0.0001  | 0.0002  | 0.0004  | 0.0004  | 0.0006  | 0.0006  |
| 41   | 0.2566  | 0.5268  | 2830   | 0.0001  | 0.0002  | 0.0004  | 0.0005  | 0.0007  | 0.0008  |
| 42   | 0.2582  | 0.5311  | 2774   | 0.0001  | 0.0002  | 0.0004  | 0.0005  | 0.0007  | 0.0008  |
| 43   | 0.2550  | 0.5307  | 2845   | 0.0001  | 0.0002  | 0.0003  | 0.0005  | 0.0005  | 0.0006  |
| 44   | 0.2596  | 0.5327  | 2739   | 0.0001  | 0.0002  | 0.0003  | 0.0005  | 0.0006  | 0.0006  |
| 45   | 0.2585  | 0.5272  | 2786   | 0.0001  | 0.0002  | 0.0003  | 0.0005  | 0.0006  | 0.0006  |
| 46   | 0.2582  | 0.5286  | 2784   | 0.0001  | 0.0002  | 0.0005  | 0.0006  | 0.0007  | 0.0007  |
| 47   | 0.2623  | 0.5308  | 2690   | 0.0001  | 0.0002  | 0.0004  | 0.0005  | 0.0006  | 0.0006  |
| 48   | 0.2603  | 0.5284  | 2741   | 0.0001  | 0.0002  | 0.0005  | 0.0006  | 0.0007  | 0.0008  |
| 49   | 0.2582  | 0.5261  | 2797   | 0.0001  | 0.0002  | 0.0004  | 0.0004  | 0.0008  | 0.0008  |
| 50   | 0.2599  | 0.5328  | 2732   | 0.0001  | 0.0002  | 0.0004  | 0.0005  | 0.0006  | 0.0004  |
| Avg. | 0.2584  | 0.5291  | 2780   | 0.0001  | 0.0002  | 0.0004  | 0.0005  | 0.0006  | 0.0007  |
| Med. | 0.2582  | 0.5298  | 2786   | 0.0001  | 0.0002  | 0.0004  | 0.0005  | 0.0006  | 0.0007  |
| std  | 0.0024  | 0.0022  | 56     | 0.0000  | 0.0000  | 0.0001  | 0.0001  | 0.0001  | 0.0001  |
| Min. | 0.2547  | 0.5260  | 2673   | 0.0001  | 0.0002  | 0.0002  | 0.0004  | 0.0003  | 0.0004  |
| Max. | 0.2631  | 0.5328  | 2861   | 0.0002  | 0.0003  | 0.0006  | 0.0006  | 0.0008  | 0.0010  |

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