



# 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-AM-2835H429W-2C-S1-08-  
HR5-DT**

<b>Report Type:</b> 6000 Hours Test Report		<b>Product Type:</b> LED Package	
<b>Reviewed By:</b>	Pote Wang	<i>Pote Wang</i>	
<b>Report Number:</b>	SZ2230619-35090E-EE-6000		
<b>Test Date:</b>	2023-06-20 to 2024-03-13		
<b>Report Date:</b>	2024-04-09		
<b>Approved by:</b>	Blake Zhang / EE Engineer		
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## 1 - General Information

### 1.1 Description of LED Light Sources

#### Sample Size:

50 PCS test samples were in good condition and received on 2023-06-19. The samples were numbered from 1 to 25 and 26 to 50.

Manufacturer:	Hongli Zhihui Group Co.,Ltd. Guangzhou Branch
Part Number:	HL-AM-2835H429W-2C-S1-08-HR5-DT
Part Type:	LED Package
#Drive Level:	DC 30mA
#Nominal CCT:	2700K
#Power:	0.2W
#Average Current Density per LED die:	369.048 mA/mm <sup>2</sup>
#Average Power Density per LED die:	2.46 W/mm <sup>2</sup>
#CRI:	90
#Die Spacing:	0.2mm

#### 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.

#### 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)

This report covers the following models:

Model type	Model name	CRI (typ.)	CCT (typ.)	Series	Parallel	Power density (W/mm <sup>2</sup> )	Current density per LED die (mA/mm <sup>2</sup> )	Current per die (mA)	Distance between of dies (mm)	Current (mA)
Test model	HL-AM-2835H429W-2C-S1-08-HR5-DT	90	2700K	2	1	0.03983	369.048	30	0.20	30
Multiple models	HL-**-2835H***W-2C-***-S1-08**-HR*_*_*_*_*	80-90	2200K-6500K	2	1	0.03983	369.048	30	0.20	30
Multiple models	HL-**-2835D***W-2C-***-S1-08**-HR*_*_*_*_*	80-90	2200K-6500K	2	1	0.03983	369.048	30	0.20	30

#### Note:

The model name begins with "HL", such as "HL\_\*\*-2835H\*\*\*W-\*\*\*-S1-08\*\*-HR\*\_\*\_\*\_\*\_\*", " \*" is described in detail as follows:

1. The first"\*\*\*" is a letter AS or AM or A which stands for the Market demand.
2. The second"\*\*\*\*" is a number from 1 to 999 which stands for the brightness level.
3. The third "\*\*\*\*" which stands for the Zener chip code or None, no impact on product performances , Zener chip code refers to the electrostatic capacity.
4. The fourth"\*\*\*"is the letter L or HL or None which stands for the bonding wire style
5. The fifth"\*\*\*"is the number 3 or 4 or 5 which stands for the different CRI style.
6. The sixth"\*\*\*"is the letter, which stands for the different direction of application or None.
7. The seventh"\*\*\*\*"is the letter, which stands for the customer code or None.

## 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<sup>®</sup> 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
High Accuracy Array Spectroradiometer	EVERFINE	HAAS 2000	P600674CM5391140	2023-09-02	2024-09-11
0.5M Integrating Sphere	EVERFINE	0.5m	NA	2023-09-02	2024-09-11
LED Test Source	EVERFINE	LTS-300	P185616CJ1391143	2023-09-02	2024-09-11
Standard Light Source	EVERFINE	D062	M133799CM1381112	2023-05-12	2025-05-11
Multilayer aging machine	BACL	B2-270	20015	2023-10-13	2024-10-12
High power LED aging dc power supply	BACL	B06010	90022	2023-09-02	2024-09-01

## 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  $2^{\circ}C$  below the corresponding nominal case temperature. Surrounding air was maintained at a temperature that was greater than or equal to  $5^{\circ}C$  below the corresponding nominal case temperature. Thermocouples were shielded from direct DUT optical radiation and comply with ASTM E230 Table 1 "Special Limits".

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  $25^{\circ}C \pm 2^{\circ}C$ , RH <65%.

## 1.6 Photometric Measurement Method and Uncertainty

Integrating sphere and spectroradiometer is used to measure luminous flux and chromaticity coordinate  $u'v'$ .  $2\pi$  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  $25^{\circ}C \pm 2^{\circ}C$ , 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 measurements is  $U=1.59\%$  ( $K=2$ ), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is  $U=21K$  ( $K=2$ ), at the 95% confidence level.

The uncertainty of the temperature is  $U=0.8671^{\circ}C$  ( $K=2$ ), 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: 55°C, 30mA

Part Number: HL-AM-2835H429W-2C-S1-08-HR5-DT

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-AM-2835H429W-2C-S1-08-HR5-DT

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	2.307E-06	1.004	>36000 hours
2	25	0	1000hrs	6000hrs	2.624E-06	1.003	>36000 hours

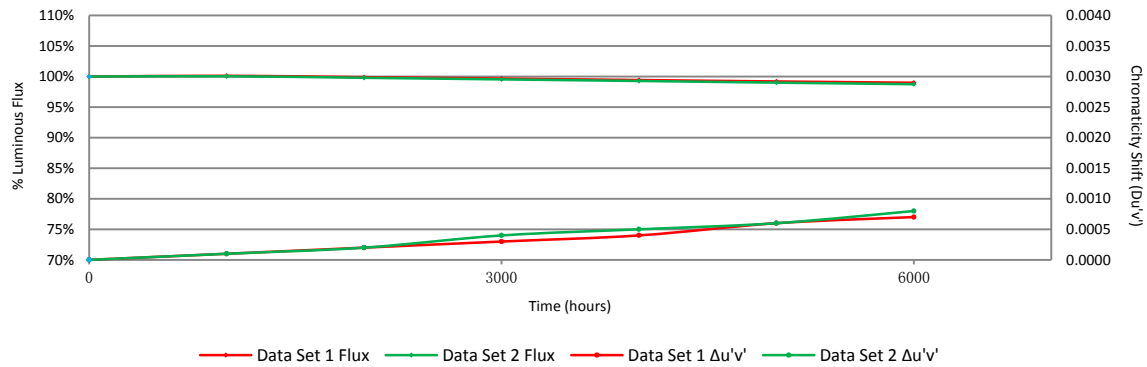
Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	100.13%	99.90%	99.67%	99.43%	99.20%	98.99%
2	100.05%	99.80%	99.54%	99.28%	99.01%	98.75%

Average Chromaticity Shift

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	0.0001	0.0002	0.0003	0.0004	0.0006	0.0007
2	0.0001	0.0002	0.0004	0.0005	0.0006	0.0008

Average Lumen Maintenance and Chromaticity Shift VS. Time



### 3 - Test Data

#### 3.1 Data Set 1, 55°C, 30mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)					
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	22.07	100.23	100.05	99.77	99.64	99.46	99.18
2	22.08	99.91	99.59	99.37	99.00	98.69	98.41
3	22.47	99.78	99.47	99.24	99.11	98.75	98.35
4	22.26	100.09	99.82	99.60	99.42	99.19	98.88
5	22.24	99.96	99.60	99.42	99.06	98.97	98.65
6	22.09	100.14	99.77	99.68	99.55	99.23	98.96
7	22.17	100.14	99.86	99.55	99.32	99.01	98.78
8	22.13	100.18	99.82	99.50	99.28	99.01	98.60
9	22.50	100.04	99.73	99.56	99.20	98.98	98.76
10	22.46	100.13	99.78	99.55	99.29	99.07	98.98
11	22.27	100.09	99.82	99.46	99.10	98.74	98.61
12	21.98	100.23	100.09	99.91	99.68	99.50	99.23
13	22.22	100.14	99.77	99.59	99.32	99.10	98.96
14	22.63	100.13	100.04	99.78	99.43	99.34	99.03
15	22.28	100.09	99.78	99.55	99.28	99.10	99.01
16	22.51	100.22	99.96	99.78	99.38	98.93	98.89
17	23.01	100.09	99.83	99.61	99.52	99.09	98.91
18	22.32	100.09	100.04	99.82	99.60	99.28	99.15
19	22.25	100.27	100.09	100.04	99.82	99.55	99.51
20	22.33	100.22	100.04	99.78	99.64	99.60	99.46
21	21.75	100.32	100.18	99.91	99.86	99.77	99.63
22	22.18	100.18	100.14	99.77	99.68	99.41	99.14
23	21.76	100.32	100.18	100.09	99.82	99.68	99.49
24	22.28	100.22	100.04	99.82	99.60	99.46	99.24
25	22.11	100.14	99.91	99.50	99.28	99.19	98.87
Avg.	22.25	100.13	99.90	99.67	99.43	99.20	98.99
Med.	22.25	100.14	99.86	99.61	99.42	99.19	98.96
st dev	0.26	0.12	0.19	0.21	0.25	0.30	0.33
Min.	21.75	99.78	99.47	99.24	99.00	98.69	98.35
Max.	23.01	100.32	100.18	100.09	99.86	99.77	99.63

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

No.	Forward Voltage (V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	5.675	5.687	5.673	5.679	5.685	5.685	5.682
2	5.663	5.672	5.665	5.666	5.670	5.669	5.666
3	5.654	5.668	5.665	5.655	5.652	5.648	5.645
4	5.679	5.690	5.684	5.683	5.687	5.685	5.683
5	5.665	5.692	5.684	5.652	5.654	5.652	5.653
6	5.653	5.664	5.660	5.663	5.662	5.660	5.661
7	5.676	5.687	5.682	5.687	5.686	5.684	5.682
8	5.675	5.687	5.681	5.685	5.685	5.685	5.681
9	5.660	5.736	5.731	5.736	5.736	5.734	5.733
10	5.670	5.693	5.689	5.672	5.674	5.668	5.662
11	5.659	5.748	5.742	5.737	5.732	5.728	5.725
12	5.663	5.673	5.669	5.672	5.672	5.674	5.670
13	5.685	5.693	5.687	5.693	5.692	5.697	5.689
14	5.683	5.695	5.688	5.692	5.691	5.697	5.690
15	5.685	5.695	5.688	5.694	5.693	5.698	5.690
16	5.694	5.706	5.698	5.705	5.703	5.708	5.708
17	5.681	5.743	5.735	5.741	5.739	5.744	5.743
18	5.692	5.703	5.697	5.702	5.703	5.707	5.702
19	5.685	5.695	5.690	5.692	5.694	5.698	5.697
20	5.659	5.723	5.716	5.719	5.720	5.725	5.724
21	5.653	5.662	5.656	5.660	5.661	5.664	5.662
22	5.667	5.677	5.672	5.677	5.679	5.681	5.675
23	5.663	5.674	5.668	5.670	5.671	5.674	5.671
24	5.690	5.700	5.693	5.698	5.702	5.700	5.699
25	5.660	5.669	5.662	5.667	5.672	5.670	5.668
Avg.	5.672	5.693	5.687	5.688	5.689	5.689	5.686
Med.	5.670	5.692	5.684	5.685	5.686	5.685	5.682
st dev	0.013	0.023	0.023	0.025	0.024	0.025	0.025
Min.	5.653	5.662	5.656	5.652	5.652	5.648	5.645
Max.	5.694	5.748	5.742	5.741	5.739	5.744	5.743



### 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
1	0.2618	0.5288	2709	0.0002	0.0003	0.0003	0.0004	0.0006	0.0008
2	0.2633	0.5285	2680	0.0003	0.0004	0.0004	0.0005	0.0006	0.0007
3	0.2602	0.5297	2737	0.0001	0.0002	0.0003	0.0004	0.0006	0.0008
4	0.2609	0.5262	2738	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005
5	0.2628	0.5296	2685	0.0001	0.0002	0.0004	0.0004	0.0006	0.0007
6	0.2634	0.5299	2671	0.0000	0.0001	0.0003	0.0003	0.0005	0.0006
7	0.2621	0.5268	2709	0.0001	0.0002	0.0003	0.0004	0.0006	0.0007
8	0.2648	0.5268	2654	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008
9	0.2620	0.5282	2708	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008
10	0.2632	0.5298	2675	0.0004	0.0005	0.0006	0.0006	0.0007	0.0008
11	0.2645	0.5283	2656	0.0001	0.0002	0.0004	0.0005	0.0007	0.0008
12	0.2620	0.5281	2708	0.0001	0.0001	0.0003	0.0004	0.0005	0.0006
13	0.2630	0.5285	2685	0.0001	0.0001	0.0003	0.0004	0.0005	0.0006
14	0.2631	0.5294	2679	0.0001	0.0001	0.0001	0.0004	0.0005	0.0006
15	0.2613	0.5283	2722	0.0001	0.0003	0.0003	0.0004	0.0006	0.0007
16	0.2614	0.5301	2712	0.0002	0.0002	0.0003	0.0004	0.0006	0.0008
17	0.2633	0.5286	2680	0.0001	0.0003	0.0004	0.0004	0.0006	0.0008
18	0.2636	0.5286	2674	0.0001	0.0004	0.0005	0.0005	0.0006	0.0008
19	0.2638	0.5294	2666	0.0003	0.0002	0.0003	0.0004	0.0006	0.0007
20	0.2626	0.5282	2694	0.0001	0.0002	0.0003	0.0005	0.0006	0.0007
21	0.2633	0.5254	2691	0.0001	0.0002	0.0003	0.0004	0.0006	0.0007
22	0.2624	0.5288	2695	0.0000	0.0001	0.0003	0.0003	0.0004	0.0006
23	0.2649	0.5281	2649	0.0002	0.0002	0.0004	0.0005	0.0006	0.0007
24	0.2629	0.5285	2688	0.0001	0.0002	0.0004	0.0005	0.0006	0.0007
25	0.2618	0.5277	2713	0.0001	0.0003	0.0004	0.0005	0.0006	0.0007
Avg.	0.2627	0.5284	2691	0.0001	0.0002	0.0003	0.0004	0.0006	0.0007
Med.	0.2629	0.5285	2688	0.0001	0.0002	0.0003	0.0004	0.0006	0.0007
st dev	0.0012	0.0012	24	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	0.2602	0.5254	2649	0.0000	0.0001	0.0001	0.0003	0.0004	0.0005
Max.	0.2649	0.5301	2738	0.0004	0.0005	0.0006	0.0006	0.0007	0.0008

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

No.	Φ(lm)	Lumen Maintenance (%)					
	Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
26	21.87	100.14	99.95	99.91	99.63	99.36	99.13
27	21.91	100.05	99.86	99.68	99.32	99.09	98.95
28	22.38	100.09	99.96	99.87	99.60	99.29	98.93
29	22.65	100.09	99.74	99.43	99.34	99.21	98.94
30	22.49	100.04	99.96	99.60	99.29	99.02	98.98
31	21.69	100.14	99.95	99.63	99.59	99.17	98.80
32	22.35	99.96	99.91	99.64	99.24	99.02	98.75
33	22.46	100.13	99.82	99.64	99.33	99.15	98.80
34	22.30	100.09	100.04	99.60	99.24	98.92	98.70
35	22.05	100.05	99.64	99.55	99.14	98.87	98.64
36	22.17	100.05	99.86	99.50	99.19	99.01	98.78
37	22.68	99.91	99.74	99.38	99.03	98.72	98.50
38	22.27	100.04	99.69	99.64	99.33	99.10	98.92
39	22.11	99.91	99.86	99.68	99.37	99.28	99.05
40	22.32	99.87	99.51	99.10	98.97	98.88	98.75
41	21.94	100.05	99.77	99.45	99.23	98.86	98.63
42	21.81	100.18	99.86	99.50	99.27	98.95	98.72
43	22.27	100.09	99.78	99.37	99.28	98.88	98.65
44	22.37	99.96	99.69	99.33	98.93	98.57	98.26
45	22.32	100.09	99.78	99.51	99.33	99.01	98.66
46	22.18	100.18	99.73	99.46	99.41	99.05	98.65
47	22.28	100.09	99.82	99.69	99.24	98.88	98.47
48	22.01	100.05	99.68	99.32	99.27	99.18	98.82
49	22.09	100.09	99.77	99.59	99.32	99.09	98.78
50	22.32	100.04	99.55	99.33	99.06	98.70	98.43
Avg.	22.21	100.05	99.80	99.54	99.28	99.01	98.75
Med.	22.27	100.05	99.78	99.55	99.28	99.02	98.75
st dev	0.25	0.08	0.13	0.18	0.17	0.19	0.20
Min.	21.69	99.87	99.51	99.10	98.93	98.57	98.26
Max.	22.68	100.18	100.04	99.91	99.63	99.36	99.13

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

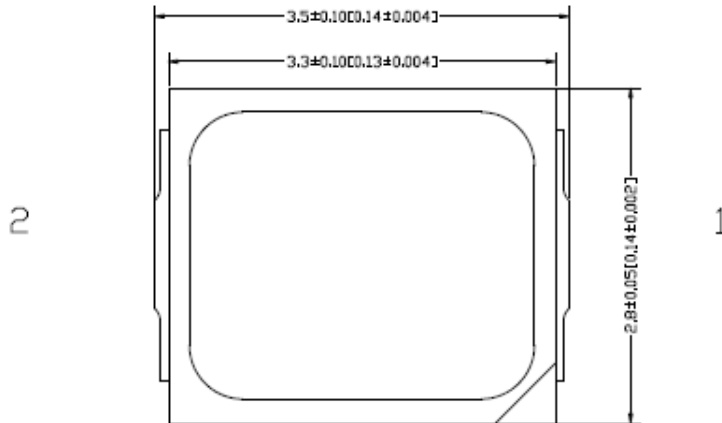
No.	Forward Voltage (V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
26	5.679	5.693	5.687	5.690	5.694	5.693	5.691
27	5.654	5.666	5.658	5.662	5.667	5.666	5.662
28	5.694	5.706	5.699	5.702	5.704	5.705	5.704
29	5.719	5.732	5.722	5.726	5.731	5.727	5.729
30	5.644	5.689	5.748	5.742	5.744	5.753	5.748
31	5.648	5.658	5.651	5.655	5.656	5.657	5.657
32	5.730	5.741	5.733	5.736	5.739	5.740	5.740
33	5.691	5.706	5.700	5.700	5.703	5.708	5.708
34	5.688	5.700	5.695	5.694	5.697	5.704	5.703
35	5.647	5.657	5.651	5.652	5.654	5.660	5.660
36	5.666	5.679	5.676	5.673	5.674	5.679	5.681
37	5.650	5.698	5.682	5.677	5.672	5.668	5.665
38	5.678	5.695	5.690	5.685	5.687	5.696	5.693
39	5.668	5.683	5.678	5.674	5.678	5.682	5.682
40	5.708	5.724	5.717	5.716	5.718	5.722	5.721
41	5.663	5.680	5.673	5.673	5.672	5.679	5.678
42	5.659	5.673	5.668	5.665	5.667	5.671	5.674
43	5.676	5.691	5.686	5.684	5.685	5.691	5.693
44	5.725	5.740	5.732	5.734	5.734	5.741	5.741
45	5.725	5.740	5.731	5.734	5.734	5.739	5.741
46	5.686	5.701	5.694	5.694	5.692	5.697	5.698
47	5.692	5.708	5.702	5.700	5.699	5.704	5.703
48	5.665	5.681	5.675	5.674	5.675	5.679	5.739
49	5.669	5.686	5.680	5.679	5.679	5.684	5.682
50	5.677	5.695	5.688	5.686	5.687	5.694	5.693
Avg.	5.680	5.697	5.693	5.692	5.694	5.698	5.699
Med.	5.677	5.695	5.688	5.686	5.687	5.694	5.693
st dev	0.026	0.024	0.026	0.026	0.026	0.027	0.028
Min.	5.644	5.657	5.651	5.652	5.654	5.657	5.657
Max.	5.730	5.741	5.748	5.742	5.744	5.753	5.748

**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	0.2605	0.5294	2734	0.0001	0.0003	0.0004	0.0005	0.0006	0.0008
27	0.2646	0.5285	2654	0.0002	0.0003	0.0005	0.0007	0.0008	0.0009
28	0.2625	0.5290	2693	0.0001	0.0001	0.0002	0.0004	0.0006	0.0007
29	0.2614	0.5297	2713	0.0000	0.0001	0.0003	0.0004	0.0006	0.0007
30	0.2620	0.5301	2700	0.0001	0.0002	0.0004	0.0005	0.0007	0.0008
31	0.2651	0.5276	2647	0.0002	0.0002	0.0002	0.0004	0.0005	0.0006
32	0.2631	0.5289	2681	0.0000	0.0001	0.0002	0.0004	0.0004	0.0005
33	0.2601	0.5291	2743	0.0001	0.0003	0.0003	0.0004	0.0006	0.0007
34	0.2604	0.5286	2738	0.0001	0.0002	0.0003	0.0004	0.0004	0.0005
35	0.2598	0.5288	2760	0.0001	0.0002	0.0003	0.0005	0.0006	0.0008
36	0.2639	0.5275	2671	0.0001	0.0004	0.0005	0.0006	0.0007	0.0008
37	0.2636	0.5296	2669	0.0001	0.0001	0.0004	0.0006	0.0007	0.0008
38	0.2623	0.5295	2697	0.0002	0.0003	0.0004	0.0006	0.0007	0.0008
39	0.2627	0.5284	2691	0.0000	0.0001	0.0003	0.0005	0.0006	0.0008
40	0.2635	0.5267	2683	0.0001	0.0002	0.0004	0.0005	0.0007	0.0008
41	0.2631	0.5258	2694	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008
42	0.2634	0.5286	2676	0.0001	0.0001	0.0003	0.0004	0.0005	0.0007
43	0.2629	0.5274	2692	0.0002	0.0002	0.0004	0.0006	0.0008	0.0009
44	0.2628	0.5281	2692	0.0002	0.0002	0.0004	0.0005	0.0006	0.0007
45	0.2617	0.5288	2711	0.0001	0.0001	0.0003	0.0004	0.0006	0.0008
46	0.2620	0.5282	2707	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008
47	0.2617	0.5270	2718	0.0001	0.0003	0.0004	0.0005	0.0008	0.0009
48	0.2630	0.5280	2688	0.0000	0.0003	0.0005	0.0006	0.0007	0.0009
49	0.2613	0.5280	2723	0.0002	0.0003	0.0005	0.0006	0.0007	0.0008
50	0.2623	0.5292	2698	0.0001	0.0003	0.0004	0.0006	0.0007	0.0009
Avg.	0.2624	0.5283	2699	0.0001	0.0002	0.0004	0.0005	0.0006	0.0008
Med.	0.2625	0.5285	2694	0.0001	0.0002	0.0004	0.0005	0.0006	0.0008
st dev	0.0013	0.0011	27	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	0.2598	0.5258	2647	0.0000	0.0001	0.0002	0.0004	0.0004	0.0005
Max.	0.2651	0.5301	2760	0.0002	0.0004	0.0005	0.0007	0.0008	0.0009

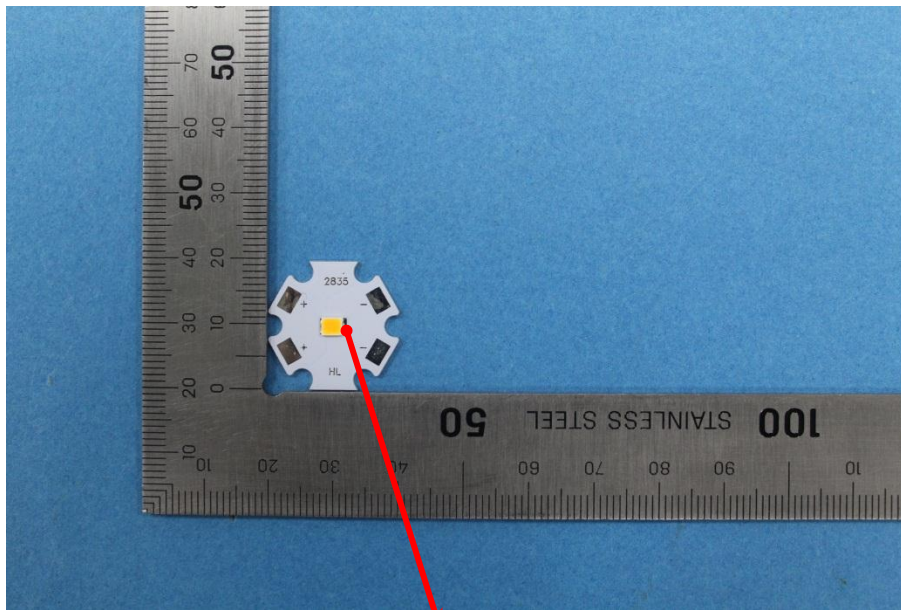
## 4 - DUT Photo

### 4.1 Mechanical Dimensions



All dimensions are in millimeter

### 4.2 DUT Photo



TMP<sub>LED</sub>

## Directions

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1. The information marked "superscript #" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
3. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor  $K=2$  with the 95% confidence interval.
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\*\*\*\*\*END OF REPORT\*\*\*\*\*