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CNAS L7329

Laboratory of Shineon Innovation  
Technology Co., Ltd.

## TEST REPORT

According to ANSI/IES LM-80-15

For

### EVERSTAR OPTOELECTRONICS PVT.LTD

809,810, 8th Floor, Tower-B, Lodha Supremus, Kolshet Road, Thane West- 400607 India

**Model: ES-E5050-506V-827**

<b>Report Type:</b> 9000 Hours Test Report		<b>Product Type:</b> LED Package	
<b>Test Engineer:</b>	Leiyang		
<b>Report Number:</b>	LS2002101-9000		
<b>Test Date:</b>	2020-2-11 to 2021-4-17		
<b>Report Date:</b>	2021-8-10		
<b>Reviewed By:</b>	Youxing Yuan	 21.8.18.	
<b>Prepared By:</b>	Laboratory of Shineon Innovation Technology Co., Ltd. (CNAS L7329)		
<b>Test Facility:</b>	Test facility was located at 3/F, Building 3, Digital Plant, No.58, Jinghai 5th Road, BDA, Beijing, China		
<b>Accreditation:</b>	China National Accreditation Service for Conformity Assessment (CNAS)		

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 Laboratory of Shineon Innovation Technology Co., Ltd.



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## 1. GENERAL INFORMATION

### 1.1 Description of LED Light Sources

#### Sample size:

50PCS samples were received on 2020-02-10. The samples were numbered from 1 to 25 and 26 to 50.

Manufacturer: EVERSTAR OPTOELECTRONICS PVT.LTD  
Part number: ES-E5050-506V-827  
Part type: LED package  
Drive level: DC 1000mA  
Nominal CCT: 2700K  
Power: 6W  
CRI: 80  
Die Spacing: 0.15mm

#### Sampling Method:

LED samples for ANSI/IES LM-80 testing consist of units built from a minimum of three manufacturing lots with each manufacturing lot built from different 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:

Tested model	Multiple model	Total Input Current (mA)	Power (W)	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)
ES-E5050-506V-827	ES-E5050-506V-***	1000	6	10	200	413.22	0.24	0.15

Notes:

1. The test model is 2700k.
2. The first \* means sorting version.
3. The second and third \* means CCT, it can be 2700K,3000K,3500K,4000K,4500K,5000K,5700K,6500K.

Notes:

1. The applicant EVERSTAR OPTOELECTRONICS PVT.LTD declares that their products with model ES-E5050-506V-827 are the same to the products in report# LS2002111 and is authorized by original applicant to use their test data.
2. All the data in previous report (LS2002111) is shared in this report.





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## 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® Requirements for the Use of LM-80 data

## 1.3 Testing Equipment

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Programmable Test Power for LEDs	EVERFINE	LED300E-P	912005	15V/2000mA	2020.9	2021.9
Standard Light Source	EVERFINE	D062	1001006	-	2020.7	2021.7
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	P185400CA8371141	380-780nm	2020.1	2022.1
LM-80 Aging equipment	UCRD	UFS-8036C	400134	-	2020.7	2021.7
DC source	ITECH	ITECH6720	P-105,P106/P-107, P-108	60V/5000mA	2020.6	2021.6

## 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 TMP location.

During life testing, TMP LED of the coldest LED 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



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temperature that was greater than or equal to  $5^{\circ}\text{C}$  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  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , RH <65%.

## 1.6 Photometric Measurement Method and Uncertainty

Integrating sphere and spectroradiometer is used to measure luminous flux and chromaticity coordinate  $u', v'$ . 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  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , 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  $U=1.981\%$  ( $K=2$ ), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is  $U=20.4\text{K}$  ( $K=2$ ), at the 95% confidence level.

The uncertainty of the temperature is  $U=0.698^{\circ}\text{C}$  ( $K=2$ ), at the 95% confidence level.

## 1.7 Statement of Traceability

Laboratory of Shineon Innovation Technology Co., Ltd. Attested that all calibration has been performed using suitable standards traceable to National Institute of Metrology, China.

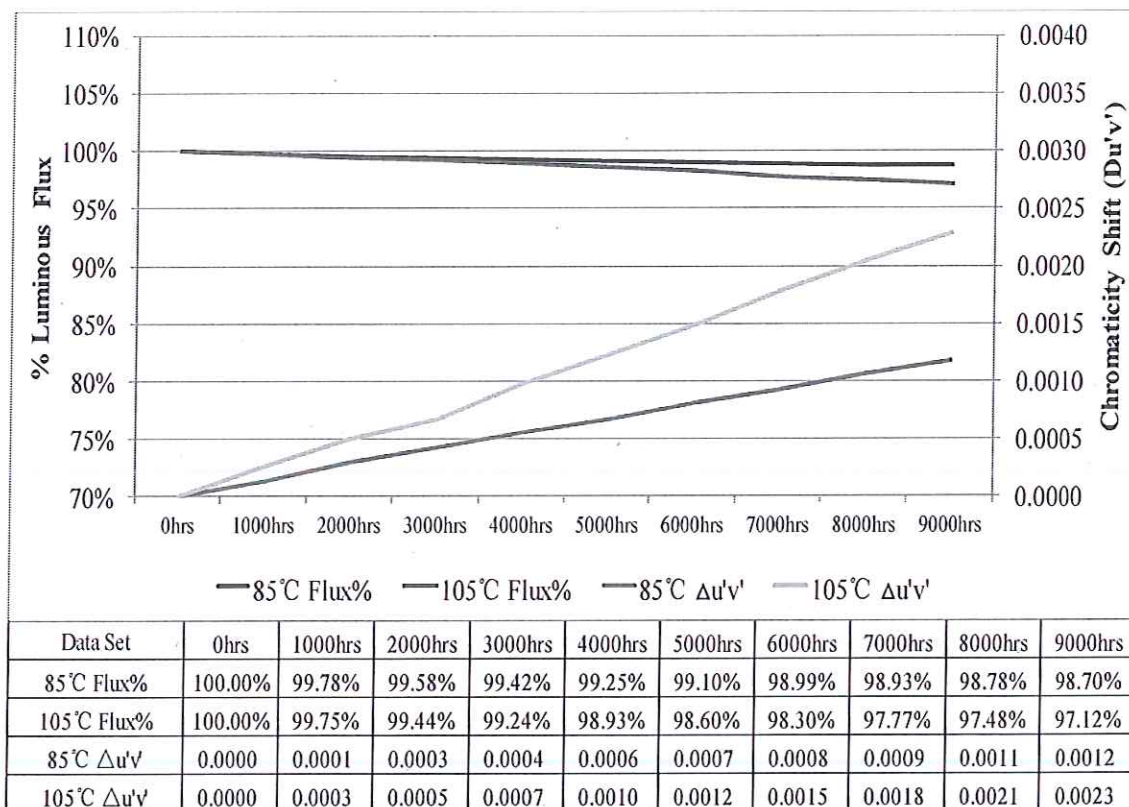


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## 1.8 Sample Set

Part Number:	ES-E5050-506V-827	
Data Set	Data Set 1	Data Set 2
Parameter	85°C, 1000mA	105°C, 1000mA
Sample size	25	25
Case Temperature	>83°C	>103°C
Ambient Temperature	>80°C	>100°C
Life Test Drive Current	1000mA	1000mA
Measurement Current	1000mA	1000mA
Failures Observed	0	0
Test Interval	1000h	1000h
Test Duration	9000h	9000h
Reported TM-21 L70 Lifetime	>54000 hours	>54000 hours
Reported TM-21 L90 Lifetime	>54000 hours	29000 hours







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## 2 - Test Data

### 2.1 Data Set 1, 85°C, 1000 mA (Lumen Maintenance)

No.	Φ (lm)	Lumen Maintenance (%)								
	0hr (Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	901.50	99.90	99.73	99.43	99.37	99.15	99.07	99.05	98.98	99.00
2	904.50	99.87	99.68	99.52	99.35	99.18	99.03	99.06	98.84	98.85
3	904.70	99.68	99.56	99.19	99.25	99.02	98.81	98.81	98.74	98.73
4	903.60	99.78	99.62	99.36	99.30	99.16	98.98	98.96	98.78	98.79
5	908.60	99.76	99.49	99.50	99.22	99.17	99.08	99.05	98.83	98.76
6	901.50	99.77	99.49	99.27	99.08	98.99	98.89	98.86	98.77	98.76
7	907.30	99.97	99.55	99.57	99.24	99.10	98.92	98.96	98.89	98.69
8	904.80	99.96	99.68	99.56	99.34	99.28	99.06	99.26	98.93	98.97
9	905.30	99.57	99.57	99.43	99.25	99.20	98.97	99.05	98.82	98.80
10	912.50	99.64	99.68	99.41	99.15	99.13	98.90	98.84	98.71	98.64
11	905.80	99.62	99.51	99.35	99.17	99.13	99.00	98.93	98.65	98.72
12	912.70	99.72	99.53	99.33	99.16	99.05	98.88	98.83	98.62	98.40
13	911.20	99.68	99.46	99.50	99.11	98.97	98.85	98.80	98.69	98.63
14	909.10	99.85	99.60	99.62	99.27	99.09	99.03	99.03	98.72	98.75
15	916.60	99.78	99.57	99.42	99.35	98.89	98.91	98.67	98.57	98.47
16	910.70	99.96	99.53	99.35	99.25	99.14	99.02	98.90	98.80	98.76
17	908.50	99.50	99.36	99.09	99.11	98.83	98.78	98.65	98.55	98.30
18	916.80	99.96	99.66	99.53	99.41	99.24	99.19	99.02	98.83	98.82
19	907.90	99.77	99.64	99.49	99.30	99.26	99.16	98.98	98.85	98.76
20	921.70	99.73	99.62	99.35	99.15	98.95	98.95	98.90	98.83	98.56
21	907.10	99.81	99.68	99.44	99.27	99.00	99.08	98.86	98.77	98.64
22	911.70	99.87	99.68	99.56	99.42	99.19	99.23	99.13	98.98	98.90
23	908.20	99.97	99.64	99.63	99.49	99.41	99.33	99.14	99.15	98.94
24	909.40	99.51	99.43	99.14	98.87	98.72	98.54	98.41	98.36	98.15
25	908.50	99.91	99.63	99.42	99.33	99.23	99.13	99.06	98.94	98.81
Avg	908.81	99.78	99.58	99.42	99.25	99.10	98.99	98.93	98.78	98.70
Med.	908.50	99.78	99.60	99.43	99.25	99.13	99.00	98.96	98.80	98.76
st. dev	4.79	0.14	0.09	0.14	0.13	0.15	0.16	0.18	0.16	0.20
Min.	901.50	99.50	99.36	99.09	98.87	98.72	98.54	98.41	98.36	98.15
Max.	921.70	99.97	99.73	99.63	99.49	99.41	99.33	99.26	99.15	99.00



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## 2.2 Data Set 1, 85°C, 1000 mA (Forward Voltage)

No.	Forward Voltage(V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
2	6.28	6.28	6.27	6.28	6.27	6.27	6.27	6.27	6.27	6.27
3	6.33	6.33	6.32	6.33	6.32	6.32	6.32	6.32	6.32	6.32
4	6.32	6.32	6.32	6.32	6.32	6.32	6.31	6.32	6.32	6.32
5	6.28	6.27	6.27	6.27	6.27	6.27	6.27	6.27	6.27	6.27
6	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30
7	6.33	6.33	6.33	6.33	6.33	6.33	6.32	6.33	6.33	6.33
8	6.28	6.28	6.27	6.28	6.27	6.27	6.27	6.28	6.27	6.27
9	6.27	6.27	6.27	6.27	6.27	6.27	6.26	6.27	6.26	6.27
10	6.37	6.36	6.36	6.36	6.36	6.36	6.36	6.36	6.36	6.36
11	6.37	6.37	6.36	6.36	6.36	6.36	6.36	6.36	6.36	6.36
12	6.35	6.35	6.35	6.35	6.35	6.35	6.34	6.34	6.34	6.34
13	6.29	6.29	6.28	6.28	6.29	6.28	6.28	6.28	6.28	6.28
14	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
15	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.24	6.25
16	6.32	6.32	6.32	6.32	6.32	6.32	6.32	6.32	6.32	6.32
17	6.34	6.34	6.34	6.34	6.34	6.33	6.33	6.34	6.33	6.33
18	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29
19	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.37
20	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29
21	6.28	6.28	6.28	6.28	6.55	6.28	6.28	6.28	6.28	6.28
22	6.27	6.27	6.27	6.27	6.27	6.26	6.29	6.27	6.27	6.27
23	6.37	6.37	6.36	6.36	6.36	6.36	6.36	6.36	6.36	6.36
24	6.36	6.36	6.36	6.36	6.36	6.36	6.36	6.36	6.36	6.36
25	6.32	6.32	6.32	6.32	6.32	6.31	6.31	6.31	6.32	6.32
Avg	6.31	6.31	6.31	6.31	6.32	6.31	6.31	6.31	6.31	6.31
Med.	6.31	6.31	6.31	6.31	6.32	6.31	6.31	6.31	6.31	6.31
st.dev	0.04	0.04	0.04	0.04	0.06	0.04	0.03	0.04	0.04	0.04
Min.	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.24	6.25
Max.	6.37	6.37	6.37	6.37	6.55	6.37	6.37	6.37	6.37	6.37





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## 2.3 Data Set 1, 85°C, 1000 mA (Chromaticity Shift)

No.	u'	v'	CCT (k)	$\Delta u' v'$								
	0hr (Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	0.2612	0.5242	2740	0.0002	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0011	0.0012
2	0.2615	0.5239	2735	0.0001	0.0004	0.0004	0.0006	0.0007	0.0009	0.0010	0.0011	0.0012
3	0.2608	0.5243	2748	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008	0.0009	0.0011	0.0011
4	0.2605	0.5257	2750	0.0001	0.0002	0.0004	0.0006	0.0007	0.0008	0.0009	0.0011	0.0011
5	0.2592	0.5242	2784	0.0001	0.0003	0.0004	0.0005	0.0006	0.0008	0.0009	0.0011	0.0012
6	0.2596	0.5246	2773	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0012
7	0.2603	0.5249	2758	0.0002	0.0004	0.0004	0.0006	0.0007	0.0009	0.0010	0.0011	0.0012
8	0.2598	0.5247	2768	0.0001	0.0002	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0011
9	0.2605	0.5245	2755	0.0001	0.0004	0.0004	0.0005	0.0007	0.0008	0.0009	0.0011	0.0012
10	0.2594	0.5247	2778	0.0001	0.0003	0.0004	0.0006	0.0008	0.0009	0.0010	0.0011	0.0012
11	0.2601	0.5242	2764	0.0001	0.0002	0.0004	0.0005	0.0006	0.0008	0.0009	0.0011	0.0012
12	0.2615	0.525	2730	0.0001	0.0004	0.0004	0.0006	0.0007	0.0009	0.0010	0.0011	0.0013
13	0.2603	0.5249	2757	0.0002	0.0003	0.0004	0.0006	0.0006	0.0009	0.0009	0.0011	0.0012
14	0.2607	0.525	2749	0.0001	0.0004	0.0004	0.0006	0.0007	0.0009	0.0009	0.0011	0.0012
15	0.2526	0.518	2972	0.0002	0.0004	0.0005	0.0007	0.0008	0.0009	0.0011	0.0012	0.0013
16	0.2605	0.5247	2753	0.0001	0.0003	0.0004	0.0005	0.0007	0.0009	0.0009	0.0010	0.0012
17	0.2598	0.5258	2763	0.0001	0.0002	0.0003	0.0005	0.0006	0.0008	0.0009	0.0010	0.0012
18	0.2605	0.525	2752	0.0001	0.0003	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0012
19	0.2608	0.5253	2744	0.0001	0.0002	0.0004	0.0005	0.0005	0.0008	0.0009	0.0010	0.0012
20	0.2524	0.5183	2975	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008	0.0010	0.0011	0.0012
21	0.2603	0.5248	2757	0.0001	0.0002	0.0004	0.0004	0.0007	0.0008	0.0009	0.0010	0.0011
22	0.261	0.5251	2742	0.0001	0.0004	0.0004	0.0006	0.0008	0.0008	0.0009	0.0011	0.0012
23	0.2592	0.5243	2784	0.0001	0.0002	0.0004	0.0004	0.0007	0.0008	0.0009	0.0010	0.0011
24	0.2601	0.5255	2759	0.0000	0.0002	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0012
25	0.2608	0.5249	2746	0.0001	0.0003	0.0005	0.0005	0.0006	0.0009	0.0009	0.0011	0.0012
Avg	0.2597	0.5243	2773	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008	0.0009	0.0011	0.0012
Med.	0.2603	0.5247	2757	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008	0.0009	0.0011	0.0012
st. dev	0.0023	0.0019	61.8	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	0.2524	0.5180	2730	0.0000	0.0002	0.0003	0.0004	0.0005	0.0008	0.0009	0.0010	0.0011
Max.	0.2615	0.5258	2975	0.0002	0.0004	0.0005	0.0007	0.0008	0.0009	0.0011	0.0012	0.0013



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## 2.4 Data Set 2, 105°C, 1000 mA (Lumen Maintenance)

No.	Φ (lm)	Lumen Maintenance (%)								
	0hr (Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	915.90	99.92	99.59	99.37	99.38	99.19	98.83	98.18	98.01	97.52
2	916.50	99.84	99.71	99.38	99.13	99.07	98.84	98.46	98.21	97.85
3	923.60	99.81	99.70	99.40	99.06	98.90	98.57	98.06	97.95	97.61
4	921.40	99.73	99.56	99.27	99.04	98.75	98.48	97.93	97.71	97.20
5	914.90	99.80	99.36	99.29	98.91	98.52	98.27	97.87	97.53	97.17
6	922.00	99.69	99.45	99.30	99.02	98.71	98.39	97.99	97.67	97.01
7	917.90	99.64	99.28	99.10	98.90	98.69	98.29	97.81	97.61	97.20
8	920.10	99.73	99.34	99.20	99.00	98.65	98.29	97.86	97.52	97.34
9	922.90	99.71	99.40	99.30	98.96	98.68	98.39	98.00	97.81	97.46
10	920.50	99.73	99.46	99.32	99.02	98.41	98.12	97.77	97.47	97.19
11	914.50	99.75	99.38	99.26	98.59	98.32	98.09	97.82	97.46	97.21
12	918.90	99.64	99.37	99.11	98.91	98.51	98.15	97.63	97.33	96.62
13	918.60	99.78	99.63	99.44	99.07	98.86	98.53	98.19	97.93	97.74
14	921.40	99.79	99.37	99.22	98.97	98.69	98.43	98.10	97.95	97.75
15	915.30	99.84	99.60	99.33	99.07	98.67	98.34	98.01	97.78	97.40
16	919.90	99.76	98.97	98.89	98.74	98.42	98.16	94.21	94.33	94.41
17	924.90	99.66	99.39	99.12	98.98	98.69	98.16	97.59	97.51	97.19
18	917.10	99.77	99.45	99.26	98.99	98.70	98.43	97.88	97.57	97.19
19	915.20	99.69	99.40	99.24	98.65	98.44	97.86	97.64	97.16	96.89
20	922.80	99.72	99.47	99.23	98.97	98.53	98.28	98.01	97.84	97.40
21	913.30	99.91	99.59	99.26	98.72	98.22	97.91	97.76	97.11	96.97
22	912.10	99.73	99.62	99.38	98.71	98.39	98.36	98.04	97.40	97.06
23	923.60	99.62	99.24	99.05	98.86	98.33	98.09	97.81	97.39	96.42
24	913.40	99.79	99.44	99.20	99.14	98.68	98.38	98.00	97.65	97.28
25	924.80	99.77	99.42	99.30	98.82	98.53	98.27	97.93	97.69	97.45
Avg	918.98	99.75	99.44	99.24	98.93	98.60	98.30	97.77	97.48	97.12
Med.	919.40	99.74	99.43	99.26	98.97	98.66	98.29	97.91	97.59	97.20
st. dev	3.92	0.07	0.16	0.12	0.15	0.20	0.21	0.78	0.72	0.67
Min.	912.10	99.62	98.97	98.89	98.59	98.22	97.86	94.21	94.33	94.41
Max.	924.90	99.91	99.71	99.44	99.14	99.07	98.84	98.46	98.21	97.85





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## 2.5 Data Set 2, 105°C, 1000 mA (Forward Voltage)

No.	Forward Voltage(V)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	6.32	6.32	6.32	6.32	6.33	6.33	6.32	6.32	6.32	6.32
2	6.25	6.25	6.24	6.25	6.25	6.25	6.24	6.26	6.24	6.24
3	6.32	6.31	6.32	6.32	6.31	6.32	6.31	6.31	6.31	6.31
4	6.31	6.31	6.31	6.31	6.30	6.31	6.30	6.30	6.30	6.30
5	6.29	6.28	6.28	6.29	6.28	6.45	6.28	6.28	6.28	6.28
6	6.37	6.36	6.36	6.37	6.36	6.36	6.36	6.36	6.36	6.36
7	6.29	6.29	6.28	6.29	6.28	6.29	6.28	6.28	6.28	6.28
8	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29
9	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.32	6.32
10	6.31	6.31	6.31	6.32	6.31	6.31	6.31	6.31	6.31	6.31
11	6.30	6.29	6.29	6.30	6.29	6.30	6.29	6.37	6.29	6.29
12	6.26	6.26	6.26	6.27	6.26	6.27	6.26	6.26	6.26	6.26
13	6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.27	6.27	6.27
14	6.27	6.27	6.26	6.28	6.27	6.28	6.27	6.27	6.27	6.26
15	6.29	6.29	6.29	6.31	6.29	6.29	6.29	6.29	6.29	6.28
16	6.30	6.30	6.30	6.31	6.30	6.30	6.30	6.30	6.30	6.30
17	6.27	6.28	6.27	6.28	6.28	6.28	6.27	6.27	6.27	6.30
18	6.30	6.30	6.30	6.32	6.30	6.30	6.30	6.30	6.30	6.30
19	6.34	6.35	6.34	6.35	6.35	6.35	6.35	6.34	6.34	6.34
20	6.34	6.34	6.34	6.35	6.34	6.34	6.34	6.34	6.34	6.34
21	6.36	6.36	6.36	6.36	6.36	6.37	6.36	6.36	6.35	6.35
22	6.31	6.31	6.31	6.32	6.31	6.31	6.32	6.31	6.31	6.31
23	6.30	6.30	6.30	6.33	6.30	6.30	6.31	6.30	6.30	6.30
24	6.32	6.31	6.31	6.33	6.32	6.31	6.31	6.31	6.31	6.31
25	6.28	6.28	6.28	6.29	6.28	6.28	6.28	6.28	6.28	6.28
Avg	6.30	6.30	6.30	6.31	6.30	6.31	6.30	6.30	6.30	6.30
Med.	6.30	6.30	6.30	6.31	6.30	6.30	6.30	6.30	6.30	6.30
st.dev	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03
Min.	6.25	6.25	6.24	6.25	6.25	6.25	6.24	6.26	6.24	6.24
Max.	6.37	6.36	6.36	6.37	6.36	6.45	6.36	6.37	6.36	6.36





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## 2.6 Data Set 2, 105°C, 1000 mA (Chromaticity Shift)

No.	u'	v'	CCT (k)	$\Delta u' v'$								
	0hr (Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs
1	0.2615	0.5249	2731	0.0003	0.0005	0.0006	0.0009	0.0012	0.0015	0.0017	0.0020	0.0023
2	0.2605	0.5266	2745	0.0002	0.0004	0.0006	0.0008	0.0012	0.0014	0.0016	0.0018	0.0021
3	0.2601	0.525	2760	0.0002	0.0005	0.0006	0.0010	0.0012	0.0015	0.0017	0.0020	0.0022
4	0.2597	0.5245	2772	0.0002	0.0004	0.0006	0.0010	0.0012	0.0014	0.0018	0.0021	0.0023
5	0.2607	0.5261	2743	0.0003	0.0006	0.0007	0.0011	0.0013	0.0016	0.0019	0.0020	0.0023
6	0.2604	0.5259	2749	0.0002	0.0004	0.0005	0.0008	0.0010	0.0013	0.0016	0.0018	0.0021
7	0.2609	0.5255	2742	0.0003	0.0004	0.0007	0.0010	0.0012	0.0015	0.0017	0.0020	0.0022
8	0.2608	0.5257	2743	0.0002	0.0005	0.0006	0.0009	0.0012	0.0015	0.0017	0.0020	0.0022
9	0.2606	0.5261	2746	0.0002	0.0005	0.0006	0.0009	0.0013	0.0014	0.0017	0.0019	0.0022
10	0.2605	0.5261	2747	0.0003	0.0004	0.0007	0.0009	0.0012	0.0015	0.0018	0.0020	0.0023
11	0.2609	0.5262	2738	0.0002	0.0004	0.0006	0.0010	0.0012	0.0014	0.0016	0.0019	0.0022
12	0.2608	0.5259	2742	0.0002	0.0004	0.0006	0.0009	0.0011	0.0014	0.0017	0.0020	0.0022
13	0.2609	0.5261	2738	0.0002	0.0004	0.0006	0.0009	0.0012	0.0014	0.0016	0.0020	0.0022
14	0.2598	0.5256	2765	0.0003	0.0005	0.0008	0.0010	0.0012	0.0015	0.0017	0.0019	0.0022
15	0.2605	0.5259	2749	0.0002	0.0004	0.0006	0.0009	0.0012	0.0014	0.0017	0.0020	0.0022
16	0.2615	0.526	2728	0.0003	0.0007	0.0009	0.0012	0.0014	0.0017	0.0033	0.0035	0.0036
17	0.2578	0.5233	2820	0.0004	0.0006	0.0008	0.0010	0.0013	0.0016	0.0018	0.0020	0.0024
18	0.2607	0.5262	2743	0.0003	0.0005	0.0007	0.0009	0.0012	0.0015	0.0017	0.0020	0.0023
19	0.2618	0.5262	2720	0.0003	0.0004	0.0007	0.0010	0.0013	0.0016	0.0018	0.0021	0.0024
20	0.2605	0.5263	2746	0.0002	0.0004	0.0006	0.0010	0.0013	0.0015	0.0017	0.0019	0.0022
21	0.261	0.5261	2736	0.0002	0.0005	0.0006	0.0011	0.0013	0.0017	0.0018	0.0021	0.0024
22	0.2601	0.5259	2756	0.0004	0.0006	0.0008	0.0012	0.0014	0.0016	0.0018	0.0022	0.0026
23	0.2601	0.5257	2757	0.0002	0.0005	0.0007	0.0010	0.0012	0.0014	0.0017	0.0020	0.0023
24	0.2609	0.5257	2740	0.0002	0.0004	0.0006	0.0009	0.0012	0.0014	0.0016	0.0020	0.0022
25	0.2607	0.5254	2746	0.0002	0.0005	0.0006	0.0010	0.0013	0.0014	0.0017	0.0020	0.0022
Avg	0.2605	0.5257	2748	0.0003	0.0005	0.0007	0.0010	0.0012	0.0015	0.0018	0.0021	0.0023
Med.	0.2607	0.5259	2745	0.0002	0.0005	0.0006	0.0010	0.0012	0.0015	0.0017	0.0020	0.0022
st. dev	0.0008	0.0007	18.7	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0003	0.0003	0.0003
Min.	0.2578	0.5233	2720	0.0002	0.0004	0.0005	0.0008	0.0010	0.0013	0.0016	0.0018	0.0021
Max.	0.2618	0.5266	2820	0.0004	0.0007	0.0009	0.0012	0.0014	0.0017	0.0033	0.0035	0.0036

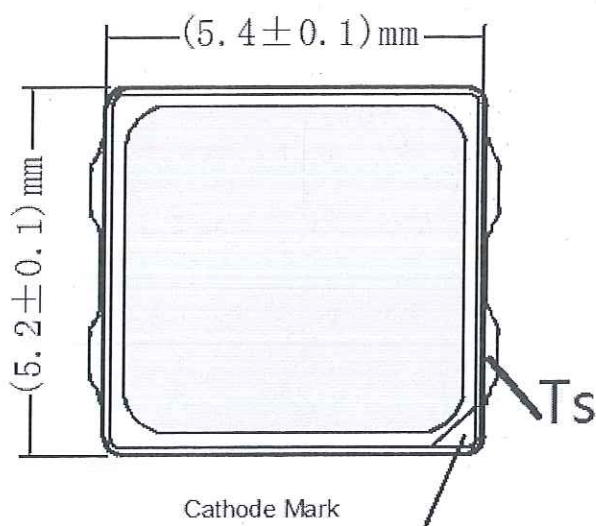


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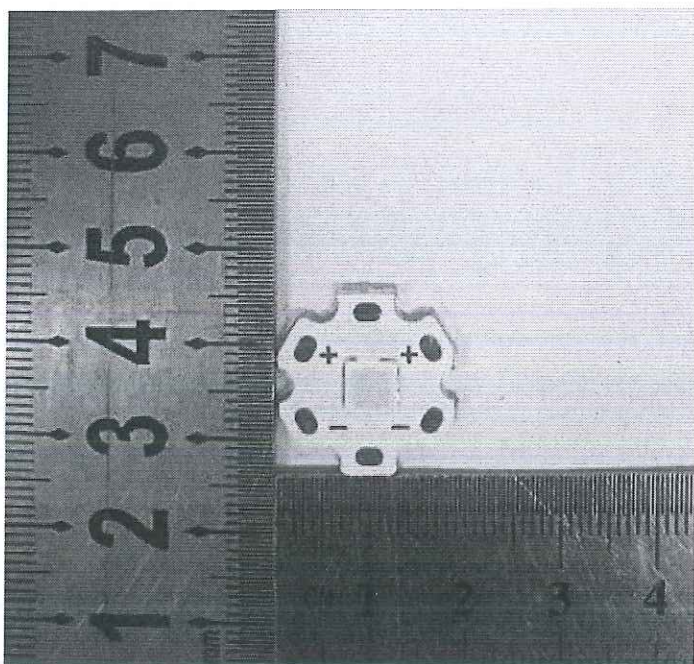
### 3 – DUT PHOTO

#### 3.1 Mechanical Dimensions ( $T_a = 25^\circ\text{C}$ )



All dimensions are in millimeters.

#### 3.2 DUT Photo



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