



Test Report Of ANSI/IES LM-80-15

Approved Method for Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules

Report Number..... : N02A23050703L00101

Client..... : SHENZHEN COREHY TECHNOLOGY CO.,LTD.

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Shiyan Street, Bao'an District, Shenzhen

Test Model..... : XHY-BT0508CSP-30K

Brand Name..... : COREHY TECHNOLOGY

Testing Laboratory... : Guangdong Meide Testing Technology Co., Ltd.

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Testing Location..... : As above

Date of receipt..... : 2022-08-11

Date of test : 2022-08-11 to 2023-06-07

Date of report..... : 2023-06-07

Tested by:

Jarvis Zhang

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Checked by:

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Sandy Chen/ Project Engineer

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Jessie Li

Jessie Li/ Technical Manager



Note 1: 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 use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

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1.General Information

1.1 Description of LED Light Sources

Sample Size:

75 pcs samples were received on 2022-08-11. The samples were numbered from S1 to S75.

Manufacture: SHENZHEN COREHY TECHNOLOGY CO.,LTD.

Tested subcomponent series: CSP LED

Part Number: XHY-BT0508CSP-30K

Part Type: LED Package

Drive Level: DC20mA

Tested CCT: 2700K

Nominal CCT: 2200K-100000K

Power: 0.06W

CRI: 90

Sampling Method:

LED samples for IESNA LM-80 testing consist of units built from 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 name	CCT (K)	Current (mA)	Power (W)	Variations
Test Model XHY-BT0508CSP-30K	2600-2750	20	0.06	Only the model and color temperature are different
XHY-BT0508CSP-27K	2300-2500	20	0.06	
XHY-BT0508CSP-40K	3500-3700	20	0.06	
XHY-BT0508CSP-50K	4100-4300	20	0.06	
XHY-BT0508CSP-65K	5000-5300	20	0.06	
XHY-BT0508CSP-63K	5000-5300	20	0.06	
XHY-BC0508DX-27K	2900-3100	20	0.06	
XHY-BC0508DX-30K	3500-3700	20	0.06	
XHY-BT0508CSP-95K	8000-10000	20	0.06	
XHY-BT0508CSP-CW	10000-100000	20	0.06	

Disclaimer:

The truthfulness and accuracy of all the technical information above for the covered LED products is ensured by manufacturer of LED light source. Guangdong Meide Testing Technology Co., Ltd. isn't responsible or gives any guarantees for the truthfulness of the technical information.

1.2 Standards Used

ANSI/IES LM-80-15 IES Approved Method for Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules

ENERGY STAR® Requirements for the use of LM-80 Data(This standard was not accredited by NVLAP)

1.3 Test equipment list

Test Equipment	Serial No	Model No	Calibration due date
Integrating Sphere System	MD-E033	0.5m	2024/05/17
Standard Light Source	MD-E034	D062	2024/05/17
High Accuracy Array Spectroradio Meter	MD-E011	HAAS-3000	2023/09/17
Digital Power Meter	MD-E008	PF310	2023/09/17
Precision digital stabilized DC power supply	MD-E009	WY305	2023/09/17
Temperature Tester	MD-E038	UFS-D8036	2023/08/28

Statement of Traceability: Guangdong Meide Testing Technology Co., Ltd. attested that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit(SI).

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

1.6 Photometric Measurement Method

Integrating sphere and spectroradiometer is used to measure luminous flux and chromaticity coordinate $u'v'$. 2π 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 $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, $\text{RH} < 65\%$. The temperature measurement point was located in the sphere and the temperature was detected by a temperature probe. The uncertainty of the light output (luminous flux) measurements is $U=2.1\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=18\text{K}$ ($K=2$), at the 95% confidence level. The uncertainty of the temperature is $U=0.5^{\circ}\text{C}$ ($K=2$), at the 95% confidence level.

1.7 Sample Set

Data Set 1:55°C,20mA	
Part number:	XHY-BT0508CSP-30K
Number of Units:	25
Case Temperature(T _S):	>53°C
Ambient Temperature(T _A):	>50°C
Life Test Drive Current:	20mA
Measurement Current:	20mA

Data Set 2:85°C,20mA	
Part number:	XHY-BT0508CSP-30K
Number of Units:	25
Case Temperature(T _S):	>83°C
Ambient Temperature(T _A):	>80°C
Life Test Drive Current:	20mA
Measurement Current:	20mA

Data Set 3:105°C,20mA	
Part number:	XHY-BT0508CSP-30K
Number of Units:	25
Case Temperature(T _S):	>103°C
Ambient Temperature(T _A):	>100°C
Life Test Drive Current:	20mA
Measurement Current:	20mA

2. SUMMARY OF TEST RESULT

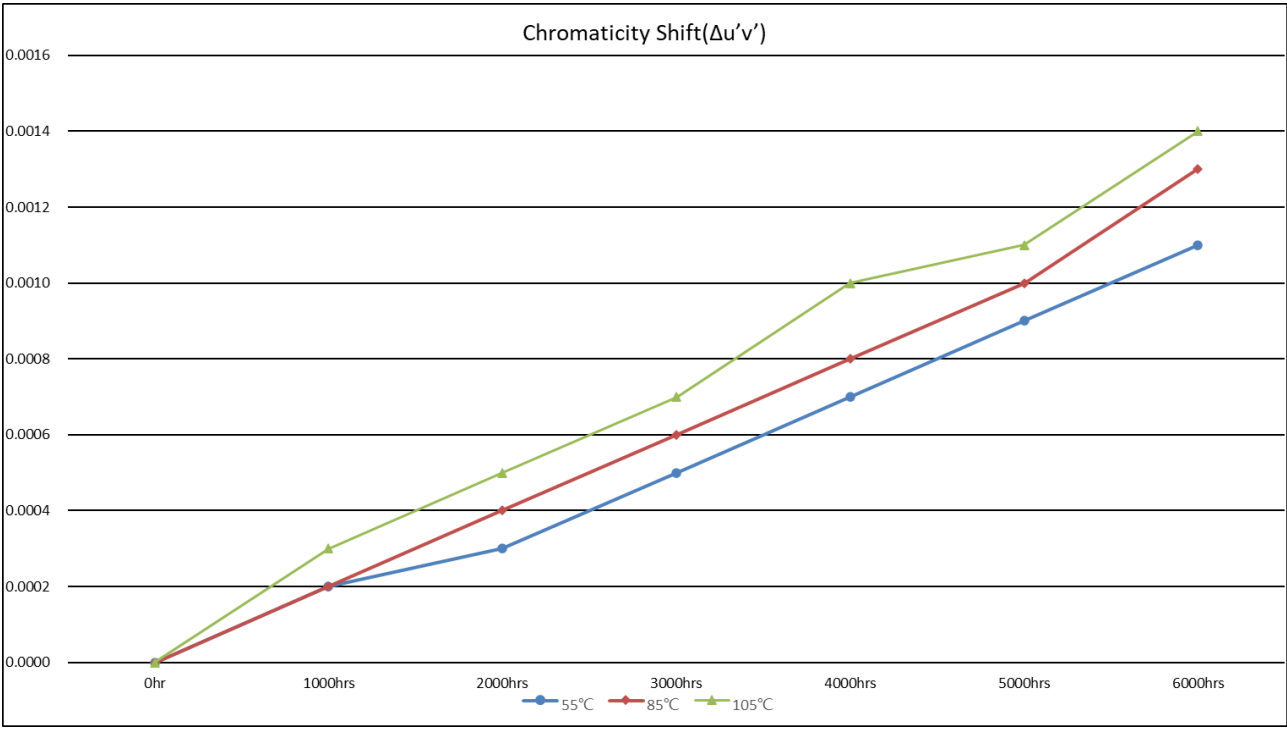
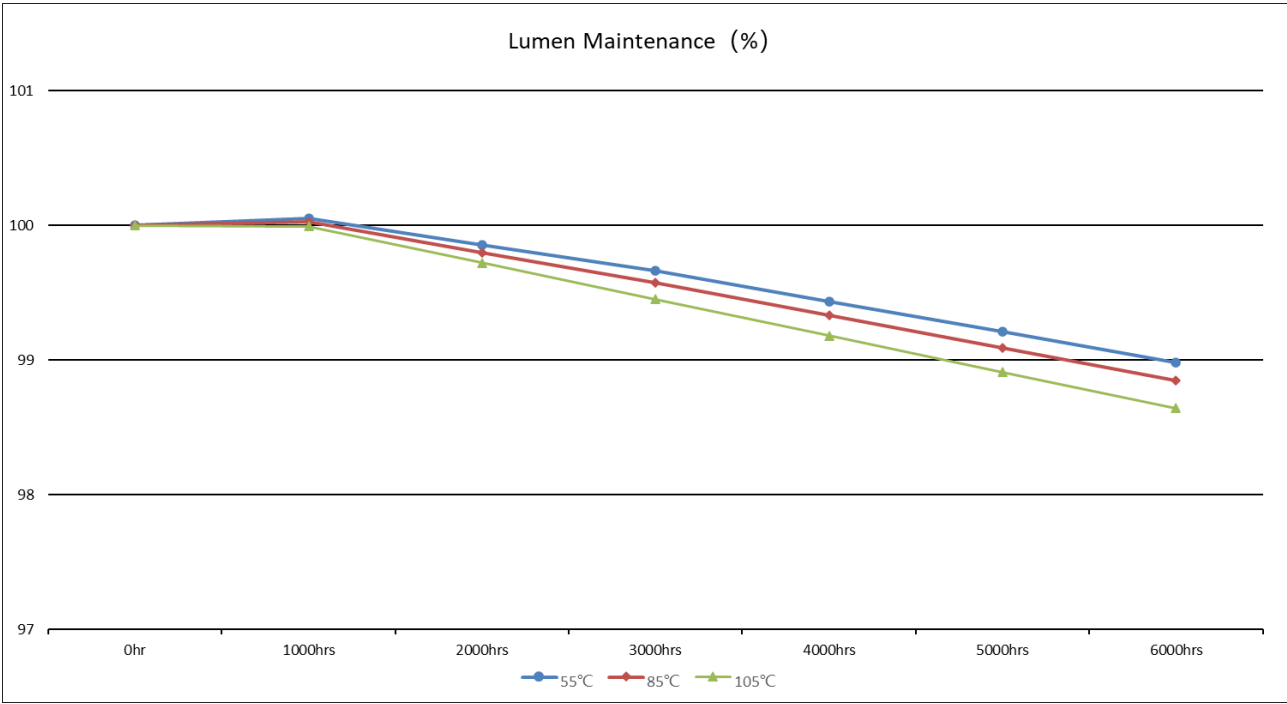
Data Set:	Sample Size	Failures Observed:	Test Interval	Test Duration	α	B	Reported TM-21 L ₇₀ Lifetime	Reported TM-21 L ₉₀ Lifetime
1	25	0	1000hrs	6000hrs	2.159E-06	1.003	>36000hours	>36000hours
2	25	0	1000hrs	6000hrs	2.376E-06	1.003	>36000hours	>36000hours
3	25	0	1000hrs	6000hrs	2.719E-06	1.003	>36000hours	>36000hours

Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	100.05%	99.86%	99.66%	99.44%	99.21%	98.98%
2	100.03%	99.80%	99.57%	99.33%	99.09%	98.85%
3	99.99%	99.72%	99.45%	99.18%	98.91%	98.64%

Average Chromaticity Shift ($\Delta u'v'$)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011
2	0.0002	0.0004	0.0006	0.0008	0.0010	0.0013
3	0.0003	0.0005	0.0007	0.0010	0.0011	0.0014



3.Test Data**3.1 Data Set 1, 55°C,20mA (Lumen Maintenance)**

Sample Number	Φ (lm)	Lumen Maintenance (%)					
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
S1	6.92	100.06	99.84	99.63	99.40	99.18	98.95
S2	6.93	100.04	99.82	99.65	99.43	99.20	98.97
S3	6.94	100.06	99.84	99.67	99.45	99.22	98.99
S4	6.94	100.06	99.88	99.70	99.47	99.24	99.01
S5	6.95	100.05	99.84	99.62	99.39	99.17	98.95
S6	6.96	100.06	99.85	99.67	99.44	99.21	98.99
S7	6.94	100.08	99.87	99.65	99.42	99.20	98.97
S8	6.96	100.04	99.83	99.62	99.38	99.16	98.93
S9	6.99	100.05	99.84	99.66	99.43	99.21	98.98
S10	6.98	100.08	99.90	99.69	99.46	99.24	99.01
S11	6.97	100.07	99.89	99.68	99.44	99.22	98.99
S12	6.94	100.05	99.87	99.66	99.43	99.20	98.98
S13	6.94	100.03	99.82	99.61	99.39	99.17	98.94
S14	6.94	100.06	99.88	99.67	99.45	99.22	98.99
S15	6.96	100.07	99.90	99.72	99.50	99.27	99.04
S16	6.96	100.03	99.86	99.68	99.45	99.23	99.01
S17	6.96	100.04	99.86	99.65	99.43	99.21	98.98
S18	6.96	100.03	99.86	99.68	99.46	99.22	98.99
S19	6.95	100.06	99.85	99.67	99.45	99.22	98.99
S20	6.95	100.06	99.88	99.67	99.44	99.22	98.98
S21	6.99	100.04	99.86	99.69	99.46	99.23	99.00
S22	6.96	100.03	99.82	99.65	99.42	99.20	98.97
S23	6.96	100.06	99.88	99.70	99.47	99.25	99.02
S24	6.99	100.06	99.84	99.63	99.41	99.18	98.95
S25	6.96	100.04	99.83	99.65	99.42	99.20	98.97
Ave.	6.96	100.05	99.86	99.66	99.44	99.21	98.98
Med.	6.96	100.06	99.86	99.67	99.44	99.21	98.98
St dev	0.0175	0.0141	0.0244	0.0278	0.0279	0.0263	0.0254
Min.	6.92	100.03	99.82	99.61	99.38	99.16	98.93
Max.	6.99	100.08	99.90	99.72	99.50	99.27	99.04

3.2 Data Set 1, 55°C,20mA (Forward Voltage)

Sample Number	Forward Voltage(V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
S1	2.82	2.81	2.81	2.79	2.78	2.81	2.81
S2	2.82	2.77	2.78	2.80	2.79	2.80	2.77
S3	2.79	2.75	2.76	2.78	2.79	2.74	2.73
S4	2.82	2.80	2.80	2.82	2.78	2.80	2.80
S5	2.82	2.76	2.79	2.83	2.78	2.76	2.78
S6	2.83	2.81	2.79	2.80	2.81	2.80	2.80
S7	2.84	2.81	2.80	2.82	2.78	2.84	2.84
S8	2.82	2.80	2.80	2.80	2.82	2.79	2.80
S9	2.82	2.78	2.76	2.81	2.82	2.77	2.80
S10	2.82	2.78	2.76	2.82	2.78	2.78	2.77
S11	2.82	2.76	2.77	2.80	2.78	2.80	2.80
S12	2.82	2.78	2.81	2.80	2.76	2.81	2.83
S13	2.83	2.81	2.81	2.77	2.77	2.77	2.81
S14	2.82	2.79	2.81	2.79	2.81	2.81	2.76
S15	2.79	2.75	2.75	2.79	2.77	2.78	2.77
S16	2.82	2.80	2.77	2.79	2.79	2.78	2.82
S17	2.83	2.80	2.81	2.78	2.83	2.81	2.79
S18	2.82	2.77	2.78	2.80	2.77	2.80	2.80
S19	2.82	2.80	2.80	2.81	2.78	2.78	2.78
S20	2.82	2.80	2.81	2.78	2.78	2.83	2.76
S21	2.82	2.81	2.78	2.78	2.80	2.76	2.78
S22	2.83	2.80	2.82	2.77	2.82	2.82	2.77
S23	2.82	2.76	2.82	2.80	2.80	2.78	2.81
S24	2.81	2.75	2.77	2.80	2.78	2.80	2.77
S25	2.83	2.79	2.81	2.79	2.79	2.83	2.77
Ave.	2.82	2.79	2.79	2.80	2.79	2.79	2.79
Med.	2.82	2.79	2.80	2.80	2.78	2.80	2.79
St dev	0.0113	0.0213	0.0219	0.0148	0.0178	0.0238	0.0248
Min.	2.79	2.75	2.75	2.77	2.76	2.74	2.73
Max.	2.84	2.81	2.82	2.83	2.83	2.84	2.84

3.3 Data Set 1, 55°C,20mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)					
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
S1	0.2620	0.5245	2721	0.0002	0.0003	0.0004	0.0007	0.0009	0.0011
S2	0.2618	0.5247	2725	0.0001	0.0003	0.0004	0.0007	0.0009	0.0010
S3	0.2622	0.5247	2717	0.0002	0.0003	0.0004	0.0007	0.0009	0.0010
S4	0.2628	0.5259	2700	0.0001	0.0002	0.0003	0.0006	0.0008	0.0010
S5	0.2622	0.5262	2712	0.0002	0.0003	0.0004	0.0007	0.0009	0.0011
S6	0.2645	0.5266	2661	0.0002	0.0003	0.0004	0.0007	0.0009	0.0011
S7	0.2642	0.5263	2670	0.0001	0.0003	0.0005	0.0006	0.0008	0.0011
S8	0.2649	0.5281	2649	0.0002	0.0003	0.0004	0.0005	0.0008	0.0010
S9	0.2645	0.5278	2657	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008
S10	0.2650	0.5277	2647	0.0001	0.0002	0.0004	0.0005	0.0007	0.0010
S11	0.2651	0.5276	2647	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013
S12	0.2643	0.5261	2668	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013
S13	0.2647	0.5272	2657	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009
S14	0.2645	0.5268	2662	0.0002	0.0003	0.0005	0.0007	0.0010	0.0012
S15	0.2645	0.5264	2663	0.0001	0.0002	0.0004	0.0005	0.0007	0.0010
S16	0.2641	0.5263	2670	0.0001	0.0002	0.0004	0.0006	0.0007	0.0009
S17	0.2637	0.5234	2691	0.0002	0.0004	0.0007	0.0009	0.0011	0.0014
S18	0.2635	0.5231	2697	0.0001	0.0003	0.0005	0.0008	0.0010	0.0011
S19	0.2637	0.5237	2689	0.0002	0.0004	0.0007	0.0008	0.0010	0.0013
S20	0.2635	0.5230	2696	0.0002	0.0003	0.0004	0.0005	0.0008	0.0010
S21	0.2637	0.5247	2685	0.0001	0.0003	0.0004	0.0007	0.0008	0.0010
S22	0.2634	0.5232	2699	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011
S23	0.2640	0.5249	2678	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011
S24	0.2643	0.5244	2674	0.0002	0.0004	0.0006	0.0008	0.0011	0.0013
S25	0.2638	0.5239	2687	0.0002	0.0003	0.0005	0.0006	0.0008	0.0011
Ave.	0.2638	0.5255	2681	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011
Med.	0.2640	0.5259	2678	0.0002	0.0003	0.0004	0.0007	0.0009	0.0011
St dev	0.0009	0.0016	23.4669	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	0.2618	0.5230	2647	0.0001	0.0002	0.0003	0.0005	0.0007	0.0008
Max.	0.2651	0.5281	2725	0.0002	0.0004	0.0007	0.0009	0.0011	0.0014

3.4 Data Set 2, 85°C,20mA (Lumen Maintenance)

Sample Number	$\Phi(\text{lm})$	Lumen Maintenance (%)					
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
S26	6.97	100.01	99.80	99.56	99.30	99.05	98.79
S27	6.99	100.05	99.84	99.64	99.39	99.18	98.93
S28	6.96	100.01	99.77	99.57	99.35	99.10	98.84
S29	7.00	100.02	99.81	99.57	99.36	99.11	98.89
S30	6.97	100.00	99.76	99.52	99.26	99.05	98.80
S31	6.96	100.02	99.78	99.57	99.32	99.07	98.82
S32	6.98	100.01	99.80	99.60	99.38	99.17	98.91
S33	6.97	100.04	99.84	99.64	99.39	99.13	98.92
S34	6.99	100.04	99.84	99.63	99.38	99.16	98.95
S35	6.96	100.03	99.78	99.58	99.33	99.12	98.90
S36	6.97	100.03	99.79	99.54	99.29	99.04	98.82
S37	6.98	100.03	99.78	99.58	99.32	99.11	98.85
S38	6.95	100.01	99.77	99.52	99.27	99.01	98.80
S39	6.95	100.03	99.79	99.55	99.30	99.05	98.79
S40	6.96	100.04	99.84	99.63	99.38	99.12	98.87
S41	6.99	100.03	99.83	99.58	99.37	99.11	98.87
S42	6.99	100.01	99.81	99.56	99.31	99.07	98.81
S43	6.97	100.05	99.80	99.60	99.39	99.17	98.92
S44	6.94	100.02	99.78	99.54	99.28	99.03	98.78
S45	6.95	100.05	99.84	99.60	99.34	99.09	98.84
S46	6.98	100.03	99.82	99.58	99.33	99.08	98.82
S47	6.98	100.02	99.81	99.57	99.36	99.10	98.89
S48	6.96	100.02	99.78	99.53	99.32	99.06	98.81
S49	6.98	100.03	99.79	99.54	99.29	99.07	98.82
S50	6.97	100.00	99.76	99.55	99.30	99.05	98.80
Ave.	6.97	100.03	99.80	99.57	99.33	99.09	98.85
Med.	6.97	100.03	99.80	99.57	99.33	99.09	98.84
St dev	0.0145	0.0143	0.0268	0.0347	0.0394	0.0461	0.0507
Min.	6.94	100.00	99.76	99.52	99.26	99.01	98.78
Max.	7.00	100.05	99.84	99.64	99.39	99.18	98.95

3.5 Data Set 2, 85°C,20mA (Forward Voltage)

Sample Number	Forward Voltage(V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
S26	2.84	2.80	2.79	2.81	2.82	2.82	2.83
S27	2.80	2.78	2.75	2.77	2.75	2.77	2.78
S28	2.84	2.83	2.82	2.82	2.82	2.80	2.79
S29	2.83	2.79	2.80	2.81	2.81	2.78	2.80
S30	2.83	2.81	2.81	2.79	2.79	2.83	2.80
S31	2.85	2.82	2.82	2.82	2.82	2.82	2.80
S32	2.83	2.82	2.84	2.81	2.79	2.80	2.82
S33	2.83	2.81	2.82	2.80	2.80	2.81	2.80
S34	2.83	2.80	2.80	2.78	2.83	2.80	2.78
S35	2.83	2.79	2.82	2.81	2.82	2.80	2.78
S36	2.82	2.80	2.78	2.78	2.80	2.78	2.79
S37	2.79	2.75	2.76	2.75	2.78	2.76	2.75
S38	2.82	2.81	2.80	2.78	2.82	2.80	2.81
S39	2.83	2.81	2.82	2.81	2.81	2.80	2.79
S40	2.83	2.81	2.78	2.80	2.78	2.82	2.80
S41	2.82	2.81	2.81	2.81	2.77	2.78	2.79
S42	2.82	2.82	2.79	2.79	2.78	2.80	2.78
S43	2.82	2.78	2.77	2.80	2.79	2.80	2.79
S44	2.84	2.81	2.80	2.83	2.81	2.79	2.81
S45	2.82	2.82	2.79	2.82	2.79	2.82	2.79
S46	2.81	2.78	2.77	2.81	2.80	2.77	2.80
S47	2.80	2.78	2.76	2.78	2.76	2.76	2.77
S48	2.81	2.79	2.81	2.80	2.78	2.77	2.78
S49	2.80	2.76	2.80	2.76	2.78	2.79	2.76
S50	2.82	2.77	2.77	2.82	2.80	2.81	2.81
Ave.	2.82	2.80	2.79	2.80	2.80	2.80	2.79
Med.	2.82	2.80	2.80	2.80	2.80	2.80	2.79
St dev	0.0145	0.0214	0.0215	0.0202	0.0200	0.0194	0.0178
Min.	2.79	2.75	2.75	2.75	2.75	2.76	2.75
Max.	2.85	2.83	2.84	2.83	2.83	2.83	2.83

3.6 Data Set 2, 85°C,20mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)					
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
S26	0.2667	0.5277	2614	0.0001	0.0004	0.0006	0.0008	0.0009	0.0011
S27	0.2666	0.5274	2616	0.0001	0.0002	0.0003	0.0005	0.0008	0.0011
S28	0.2667	0.5281	2612	0.0002	0.0003	0.0005	0.0006	0.0008	0.0011
S29	0.2672	0.5286	2602	0.0001	0.0002	0.0003	0.0007	0.0010	0.0011
S30	0.2670	0.5291	2603	0.0003	0.0006	0.0007	0.0010	0.0012	0.0015
S31	0.2663	0.5273	2622	0.0003	0.0004	0.0006	0.0008	0.0009	0.0013
S32	0.2665	0.5271	2620	0.0001	0.0004	0.0005	0.0007	0.0009	0.0010
S33	0.2667	0.5279	2614	0.0002	0.0003	0.0005	0.0007	0.0010	0.0014
S34	0.2663	0.5273	2623	0.0003	0.0004	0.0006	0.0007	0.0010	0.0013
S35	0.2657	0.5240	2648	0.0001	0.0002	0.0005	0.0007	0.0011	0.0014
S36	0.2653	0.5237	2656	0.0001	0.0003	0.0006	0.0008	0.0009	0.0013
S37	0.2656	0.5237	2651	0.0002	0.0004	0.0007	0.0011	0.0014	0.0018
S38	0.2657	0.5242	2647	0.0001	0.0002	0.0005	0.0007	0.0008	0.0009
S39	0.2658	0.5245	2644	0.0001	0.0004	0.0007	0.0009	0.0011	0.0013
S40	0.2654	0.5235	2655	0.0002	0.0003	0.0006	0.0009	0.0012	0.0014
S41	0.2662	0.5250	2634	0.0003	0.0004	0.0007	0.0008	0.0010	0.0012
S42	0.2656	0.5253	2644	0.0001	0.0004	0.0007	0.0008	0.0011	0.0014
S43	0.2660	0.5254	2637	0.0003	0.0006	0.0009	0.0010	0.0012	0.0014
S44	0.2653	0.5237	2657	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011
S45	0.2649	0.5243	2662	0.0002	0.0003	0.0004	0.0006	0.0008	0.0010
S46	0.2652	0.5246	2654	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013
S47	0.2658	0.5256	2639	0.0002	0.0004	0.0007	0.0010	0.0013	0.0016
S48	0.2651	0.5248	2656	0.0001	0.0004	0.0005	0.0007	0.0011	0.0013
S49	0.2649	0.5242	2663	0.0003	0.0004	0.0007	0.0009	0.0010	0.0012
S50	0.2653	0.5251	2652	0.0003	0.0006	0.0009	0.0012	0.0014	0.0018
Ave.	0.2659	0.5257	2637	0.0002	0.0004	0.0006	0.0008	0.0010	0.0013
Med.	0.2658	0.5251	2644	0.0002	0.0004	0.0006	0.0008	0.0010	0.0013
St dev	0.0007	0.0018	19.3692	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
Min.	0.2649	0.5235	2602	0.0001	0.0002	0.0003	0.0005	0.0008	0.0009
Max.	0.2672	0.5291	2663	0.0003	0.0006	0.0009	0.0012	0.0014	0.0018

3.7 Data Set 3, 105°C, 20mA (Lumen Maintenance)

Sample Number	$\Phi(\text{lm})$	Lumen Maintenance (%)					
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
S51	6.96	99.99	99.70	99.44	99.19	98.91	98.63
S52	6.98	100.01	99.73	99.45	99.19	98.92	98.64
S53	6.99	100.02	99.73	99.45	99.18	98.90	98.62
S54	6.98	99.99	99.71	99.43	99.15	98.88	98.62
S55	6.99	99.96	99.69	99.43	99.16	98.88	98.60
S56	7.01	99.97	99.71	99.43	99.16	98.88	98.62
S57	7.02	99.97	99.71	99.43	99.16	98.88	98.60
S58	6.97	99.96	99.68	99.39	99.12	98.84	98.59
S59	6.95	100.00	99.74	99.48	99.20	98.93	98.65
S60	6.94	99.99	99.71	99.45	99.17	98.91	98.66
S61	6.96	99.99	99.72	99.46	99.21	98.95	98.67
S62	6.97	100.01	99.75	99.49	99.21	98.94	98.68
S63	6.96	100.03	99.75	99.47	99.19	98.93	98.66
S64	6.97	100.02	99.73	99.47	99.20	98.92	98.66
S65	7.00	100.00	99.71	99.43	99.17	98.90	98.63
S66	6.95	100.01	99.74	99.48	99.21	98.95	98.67
S67	6.96	100.01	99.75	99.46	99.19	98.92	98.66
S68	6.99	99.96	99.70	99.44	99.16	98.89	98.61
S69	6.98	100.03	99.77	99.50	99.23	98.96	98.70
S70	7.06	100.00	99.72	99.44	99.18	98.92	98.65
S71	7.05	100.03	99.75	99.49	99.21	98.93	98.67
S72	7.06	99.99	99.73	99.47	99.19	98.93	98.67
S73	6.98	99.96	99.70	99.44	99.17	98.89	98.62
S74	6.97	99.98	99.70	99.42	99.16	98.89	98.63
S75	6.98	100.00	99.72	99.46	99.20	98.92	98.67
Ave.	6.98	99.99	99.72	99.45	99.18	98.91	98.64
Med.	6.98	100.00	99.72	99.45	99.19	98.92	98.65
St dev	0.0328	0.0218	0.0212	0.0251	0.0244	0.0272	0.0287
Min.	6.94	99.96	99.68	99.39	99.12	98.84	98.59
Max.	7.06	100.03	99.77	99.50	99.23	98.96	98.70

3.8 Data Set 3, 105°C,20mA (Forward Voltage)

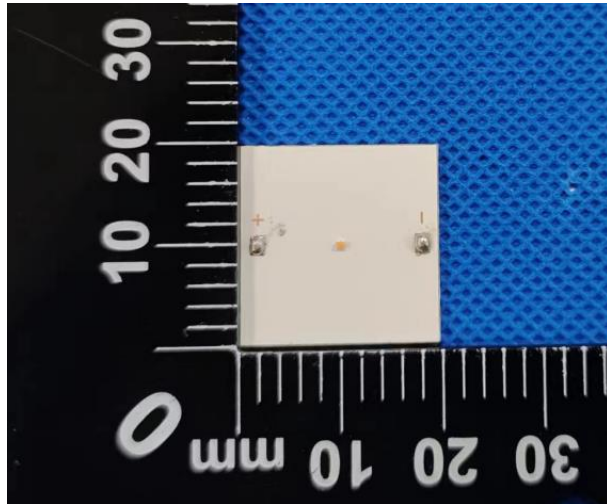
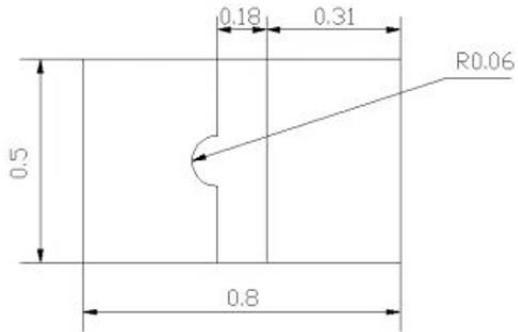
Sample Number	Forward Voltage(V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
S51	2.82	2.78	2.79	2.82	2.81	2.78	2.79
S52	2.82	2.82	2.81	2.80	2.79	2.81	2.79
S53	2.81	2.82	2.78	2.81	2.78	2.81	2.81
S54	2.81	2.82	2.80	2.78	2.79	2.82	2.78
S55	2.81	2.82	2.81	2.82	2.79	2.79	2.81
S56	2.81	2.77	2.81	2.79	2.81	2.78	2.78
S57	2.81	2.77	2.79	2.81	2.80	2.82	2.79
S58	2.81	2.79	2.77	2.78	2.77	2.79	2.81
S59	2.83	2.81	2.80	2.80	2.82	2.80	2.83
S60	2.82	2.79	2.81	2.79	2.81	2.81	2.79
S61	2.82	2.79	2.81	2.83	2.83	2.79	2.82
S62	2.81	2.78	2.78	2.82	2.78	2.78	2.82
S63	2.82	2.82	2.83	2.82	2.80	2.82	2.83
S64	2.82	2.78	2.79	2.78	2.80	2.79	2.80
S65	2.82	2.80	2.80	2.79	2.79	2.79	2.82
S66	2.83	2.85	2.80	2.83	2.82	2.80	2.81
S67	2.83	2.82	2.80	2.79	2.81	2.82	2.79
S68	2.81	2.79	2.82	2.82	2.80	2.82	2.80
S69	2.81	2.80	2.78	2.80	2.79	2.80	2.80
S70	2.83	2.82	2.82	2.83	2.80	2.80	2.80
S71	2.83	2.84	2.84	2.83	2.80	2.83	2.84
S72	2.83	2.81	2.81	2.84	2.82	2.81	2.80
S73	2.82	2.82	2.83	2.80	2.79	2.78	2.80
S74	2.82	2.81	2.80	2.83	2.79	2.79	2.79
S75	2.82	2.83	2.83	2.84	2.79	2.80	2.84
Ave.	2.82	2.81	2.80	2.81	2.80	2.80	2.81
Med.	2.82	2.81	2.80	2.81	2.80	2.80	2.80
St dev	0.0078	0.0216	0.0178	0.0188	0.0144	0.0155	0.0173
Min.	2.81	2.77	2.77	2.78	2.77	2.78	2.78
Max.	2.83	2.85	2.84	2.84	2.83	2.83	2.84

3.9 Data Set 3, 105°C,20mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)					
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
S51	0.2651	0.5254	2654	0.0002	0.0007	0.0006	0.0009	0.0011	0.0013
S52	0.2649	0.5250	2659	0.0003	0.0005	0.0006	0.0010	0.0010	0.0013
S53	0.2647	0.5246	2665	0.0005	0.0006	0.0008	0.0011	0.0011	0.0014
S54	0.2649	0.5252	2659	0.0004	0.0003	0.0007	0.0011	0.0011	0.0013
S55	0.2647	0.5244	2665	0.0002	0.0005	0.0007	0.0010	0.0009	0.0013
S56	0.2655	0.5260	2645	0.0003	0.0005	0.0008	0.0008	0.0011	0.0013
S57	0.2649	0.5262	2656	0.0003	0.0006	0.0007	0.0010	0.0009	0.0012
S58	0.2653	0.5263	2647	0.0004	0.0004	0.0006	0.0009	0.0010	0.0012
S59	0.2647	0.5246	2666	0.0004	0.0005	0.0009	0.0010	0.0013	0.0016
S60	0.2660	0.5263	2632	0.0004	0.0005	0.0008	0.0009	0.0013	0.0016
S61	0.2659	0.5263	2634	0.0003	0.0006	0.0008	0.0011	0.0011	0.0014
S62	0.2657	0.5259	2641	0.0004	0.0006	0.0008	0.0011	0.0014	0.0016
S63	0.2659	0.5264	2634	0.0004	0.0004	0.0007	0.0009	0.0009	0.0011
S64	0.2657	0.5258	2640	0.0006	0.0007	0.0006	0.0010	0.0013	0.0016
S65	0.2660	0.5275	2628	0.0004	0.0006	0.0008	0.0011	0.0009	0.0012
S66	0.2656	0.5259	2642	0.0004	0.0006	0.0007	0.0011	0.0011	0.0015
S67	0.2661	0.5267	2630	0.0004	0.0007	0.0007	0.0009	0.0010	0.0014
S68	0.2665	0.5272	2620	0.0003	0.0005	0.0007	0.0010	0.0010	0.0012
S69	0.2661	0.5276	2626	0.0004	0.0005	0.0008	0.0012	0.0011	0.0014
S70	0.2645	0.5269	2660	0.0003	0.0006	0.0007	0.0010	0.0009	0.0012
S71	0.2645	0.5272	2660	0.0003	0.0006	0.0007	0.0009	0.0011	0.0015
S72	0.2648	0.5283	2650	0.0004	0.0005	0.0007	0.0010	0.0012	0.0015
S73	0.2616	0.5269	2721	0.0004	0.0004	0.0009	0.0012	0.0010	0.0012
S74	0.2611	0.5258	2735	0.0004	0.0005	0.0006	0.0011	0.0012	0.0015
S75	0.2609	0.5249	2744	0.0003	0.0005	0.0008	0.0009	0.0013	0.0015
Ave.	0.2649	0.5261	2657	0.0003	0.0005	0.0007	0.0010	0.0011	0.0014
Med.	0.2651	0.5262	2650	0.0004	0.0005	0.0007	0.0010	0.0011	0.0014
St dev	0.0015	0.0010	32.0379	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	0.2609	0.5244	2620	0.0002	0.0003	0.0006	0.0008	0.0009	0.0011
Max.	0.2665	0.5283	2744	0.0006	0.0007	0.0009	0.0012	0.0014	0.0016

4 . EUT PHOTO

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 EUT Photo

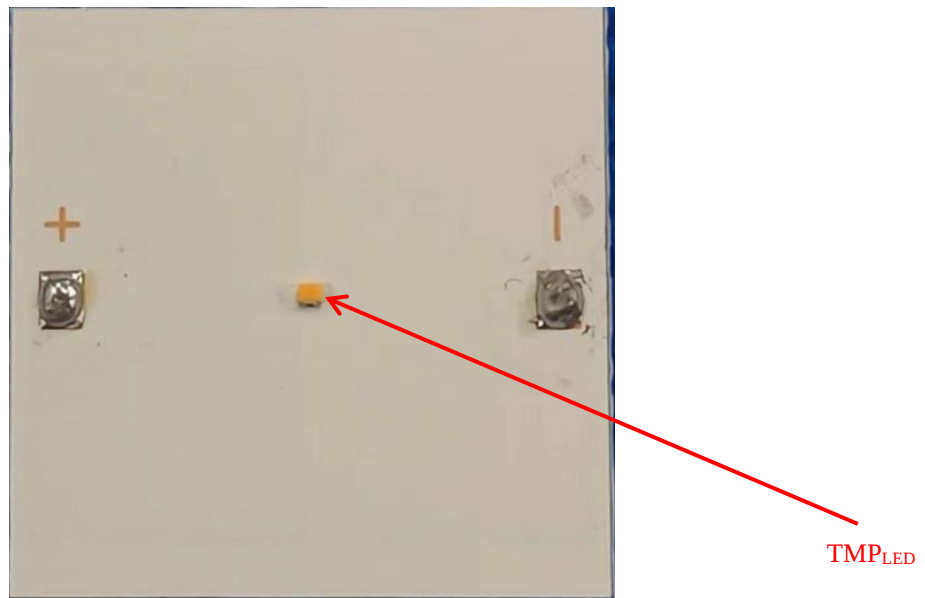


Figure 1 for XHY-BT0508CSP-30K

---End of Report---