



# TEST REPORT

## Of IESNA LM-80-15

<b>Kunde:</b> <i>Client:</i>	Aurora (Shanghai) Technology Co., Ltd
<b>Adresse:</b> <i>Address:</i>	Room 221, 2F, Building 6, No.7001, Zhongchun Road, Minhang District, Shanghai
<b>Hersteller:</b> <i>Manufacturer:</i>	Aurora (Shanghai) Technology Co., Ltd
<b>Adresse:</b> <i>Address:</i>	Room 221, 2F, Building 6, No.7001, Zhongchun Road, Minhang District, Shanghai
<b>Name der Marke:</b> <i>Brand Name:</i>	N/A
<b>Beschreibung des Produkts:</b> <i>Product Description:</i>	Lamp bead
<b>Modelle:</b> <i>Models:</i>	IS0002-LED07-3090-36D
<b>Bewertung:</b> <i>Rating:</i>	DC36V, 450mA, 16.5W (Lamp bead), AC220V 7W (LED Recessed spot Light)Main test lamp beads
<b>Verfahren:</b> <i>Method:</i>	Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Please see the following test data

<b>Datum der Prüfung:</b> <i>Date of Test:</i>	<b>Datum der Emission:</b> <i>Date of Issue:</i>	<b>Klassifizierung:</b> <i>Classification:</i>	<b>Gegenstand der Prüfung:</b> <i>Test item:</i>
2022-07-01~2023-07-25	2023-07-27	Commission Test	LM-80 Test

**Prüflabor (Testlabor) / Testing Laboratory:**

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

Add: 101-201, No.39 Buliding, Xialang Industrial Zone, Heshuikou Community, Matian Street Guangming New District, Shenzhen,Guangdong Prov. 518000 China.

**Compiled von/Compiled by:**

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Zero Huang/ Project Engineer

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Ian Luo

Ian Luo/ Director

**Genehmigt von/Approved by:**

Jesse Liu

Jesse Liu/ Manager

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Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

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# Test Summary

Life test condition			Summary of result				
Test condition	Current (mA)	Case temperature (°C)	Test duration (h)	Average lumen maintenance (%)	Maximum chromaticity shift ( $\Delta u'v'$ )	Average power density per LED die (W/mm <sup>2</sup> )	Average current density per LED die (mA/mm <sup>2</sup> )
1	450	55	9000	97.15%	0.0026	/	/
2	450	85	9000	96.87%	0.0030		
3	450	105	9000	96.53%	0.0032		

### 1. Number of LED Light Sources tested

- 25 Packages tested at actual case temperature 55.9°C
- 25 Packages tested at actual case temperature 85.7°C
- 25 Packages tested at actual case temperature 104.8°C

### 2. Description of LED Light Sources

- Part Number: IS0002-LED07-3090-36D
- Part Type: Lamp bead
- IF =450mA, CCT(Nominal) =3000K

### 3. Description of auxiliary equipment

- 1) EVERFINE LT-200A Accelerated Aging-Life Test System for LEDs
- 2) Instrument Integrating sphere 0.5m
- 3) SENSING SPR-3000 Photometric, Colorimetric& Electric System for Light Sources

### 4. Operating time

LED packages are driven with a constant direct current.

- Number of units : 25 at 55°C, 85°C and 105°C
- Drive current : 450mA
- Typical voltage : 36V





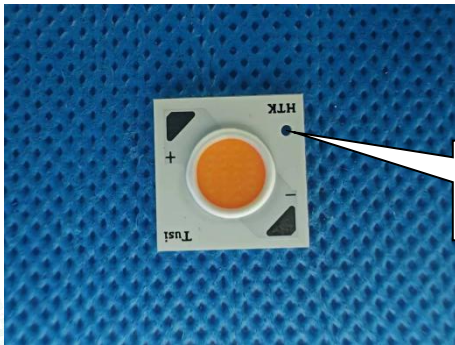
**5. Ambient conditions including airflow, temperature and relative humidity**

The minimal airflow is maintained in chamber.

The ambient temperature around the LED packages inside chamber is controlled by air flowing and the thermocouple readings are monitored.

- Case temperature : Contorlled to -2°C
- Surrounding air temperature : Contorlled to -5°C
- Relative humidity : < 65%RH

**6. Case temperature (Test point temperature)**



Ts Measurement Point

**7. Drive current of the LED Light Sources during lifetime test**

See Sub-clause 9.1, 9.2 and 9.3

**8. Initial luminous flux and forward voltage**

See the table

**9. Lumen maintenance data for each individual LED Light Sources**

See the table

Quantity	Model	Serial Number
25	IS0002-LED07-3090-36D	A01-A25 (55°C)
25	IS0002-LED07-3090-36D	B01-B25 (85°C)
25	IS0002-LED07-3090-36D	C01-C25 (105°C)





9.1 Test condition 1: 55 °C, Drive Current : 450mA

Item	VF(V)	Flux(lm)	Ra	T=55°C Luminous Maintenance (%)								
				0 h	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h
A01	39.84	1673.6	97.8	100.14	99.81	99.45	99.08	98.75	98.44	97.95	97.59	97.20
A02	39.99	1674.9	97.7	100.09	99.76	99.40	99.10	98.68	98.32	97.81	97.54	97.15
A03	39.98	1669.9	98.3	100.02	99.71	99.39	99.04	98.79	98.36	97.96	97.55	97.29
A04	39.74	1674.4	98.1	100.05	99.79	99.34	99.00	98.71	98.32	97.92	97.45	97.14
A05	39.75	1674.8	98.4	99.91	99.76	99.32	99.08	98.77	98.24	98.22	97.53	97.19
A06	39.98	1674.6	97.5	99.99	99.74	99.42	99.03	98.69	98.32	97.94	97.56	97.20
A07	39.97	1671.3	98.6	100.09	99.82	99.46	99.11	98.74	98.38	98.06	97.49	97.28
A08	39.95	1676.6	98.3	99.98	99.78	99.40	99.10	98.67	98.29	98.21	97.47	97.23
A09	39.94	1676.4	97.6	100.25	100.02	99.58	99.14	98.66	98.26	98.14	97.53	97.19
A10	39.63	1674.8	97.8	99.99	99.86	99.52	99.02	98.67	98.39	98.06	97.49	97.06
A11	39.72	1676.1	98.3	100.08	99.81	99.46	99.08	98.61	98.30	97.92	97.54	97.04
A12	40.21	1671.0	98.1	100.09	99.88	99.51	99.05	98.66	98.35	97.96	97.45	97.22
A13	39.76	1669.9	97.9	99.97	99.86	99.49	99.10	98.58	98.26	97.84	97.47	97.07
A14	40.10	1676.0	98.2	99.92	99.74	99.41	99.04	98.64	98.22	97.98	97.56	97.13
A15	40.14	1675.1	97.6	100.04	99.86	99.52	99.08	98.57	98.36	97.81	97.45	97.06
A16	39.95	1671.3	98.4	100.09	99.75	99.40	99.04	98.64	98.37	97.92	97.47	97.06
A17	39.69	1676.7	98.5	100.17	99.86	99.49	99.10	98.56	98.33	97.82	97.52	97.23
A18	40.11	1672.4	97.4	99.99	99.77	99.42	99.05	98.61	98.32	97.84	97.55	97.18
A19	39.94	1675.7	98.3	100.12	99.80	99.45	99.07	98.67	98.39	97.95	97.49	97.16
A20	40.05	1676.4	98.1	100.17	99.86	99.52	99.10	98.58	98.37	97.85	97.55	97.09
A21	39.69	1670.8	97.6	99.91	99.79	99.48	99.04	98.63	98.23	97.85	97.47	97.11
A22	40.15	1675.7	97.7	99.99	99.77	99.39	99.08	98.56	98.28	97.91	97.48	97.07
A23	40.01	1675.2	98.6	100.07	99.84	99.51	99.06	98.62	98.39	98.07	97.52	97.22
A24	40.10	1670.2	97.5	100.11	99.83	99.47	99.10	98.58	98.25	97.82	97.49	97.13
A25	39.69	1671.1	98.4	100.17	99.84	99.46	99.10	98.53	98.34	98.06	97.50	97.16
Avg.	39.92	1673.8	98.0	100.06	99.81	99.45	99.07	98.65	98.32	97.95	97.51	97.15
Med.	39.95	1674.8	98.1	100.07	99.81	99.46	99.08	98.64	98.32	97.94	97.50	97.16
ST dev.	0.1713	2.3998	0.3803	0.0888	0.0636	0.0615	0.0334	0.0694	0.0583	0.1207	0.0402	0.0717
Max.	40.21	1676.7	98.6	100.25	100.02	99.58	99.14	98.79	98.44	98.22	97.59	97.29
Min.	39.63	1669.9	97.4	99.91	99.71	99.32	99.00	98.53	98.22	97.81	97.45	97.04





9.1.1 Test condition 1: 55 °C, Drive Current : 450mA

No.	T=55°C Chromaticity Shift ( $\Delta u'v'$ )											
	0 h			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
	u'	v'	CCT(K)									
A01	0.2509	0.5183	3011	0.0000	0.0007	0.0007	0.0011	0.0014	0.0019	0.0021	0.0022	0.0024
A02	0.2508	0.5183	3013	0.0002	0.0006	0.0007	0.0012	0.0014	0.0018	0.0020	0.0024	0.0027
A03	0.2512	0.5184	3002	0.0003	0.0006	0.0007	0.0012	0.0014	0.0016	0.0020	0.0024	0.0025
A04	0.2508	0.5183	3012	0.0003	0.0005	0.0008	0.0011	0.0012	0.0019	0.0021	0.0024	0.0028
A05	0.2514	0.5185	2996	0.0001	0.0005	0.0006	0.0011	0.0013	0.0016	0.0020	0.0023	0.0026
A06	0.2510	0.5184	3007	0.0003	0.0005	0.0008	0.0010	0.0014	0.0016	0.0020	0.0024	0.0025
A07	0.2509	0.5183	3009	0.0000	0.0006	0.0009	0.0012	0.0014	0.0017	0.0022	0.0022	0.0026
A08	0.2511	0.5184	3003	0.0004	0.0007	0.0007	0.0010	0.0014	0.0018	0.0022	0.0025	0.0026
A09	0.2511	0.5184	3004	0.0002	0.0005	0.0007	0.0011	0.0011	0.0019	0.0021	0.0022	0.0026
A10	0.2513	0.5185	2998	0.0003	0.0005	0.0006	0.0012	0.0014	0.0017	0.0020	0.0023	0.0028
A11	0.2509	0.5183	3011	0.0003	0.0007	0.0007	0.0010	0.0013	0.0018	0.0021	0.0024	0.0026
A12	0.2510	0.5184	3007	0.0001	0.0004	0.0010	0.0011	0.0012	0.0016	0.0022	0.0024	0.0026
A13	0.2509	0.5183	3009	0.0003	0.0008	0.0008	0.0010	0.0012	0.0017	0.0020	0.0023	0.0026
A14	0.2513	0.5185	2997	0.0003	0.0006	0.0006	0.0012	0.0012	0.0019	0.0022	0.0023	0.0027
A15	0.2510	0.5183	3008	0.0002	0.0006	0.0009	0.0010	0.0013	0.0018	0.0019	0.0024	0.0026
A16	0.2510	0.5184	3006	0.0002	0.0007	0.0009	0.0010	0.0012	0.0018	0.0021	0.0023	0.0024
A17	0.2511	0.5184	3004	0.0001	0.0006	0.0006	0.0010	0.0012	0.0018	0.0022	0.0025	0.0027
A18	0.2512	0.5184	3001	0.0003	0.0008	0.0008	0.0012	0.0014	0.0016	0.0020	0.0022	0.0025
A19	0.2510	0.5183	3008	0.0004	0.0005	0.0006	0.0011	0.0014	0.0019	0.0020	0.0022	0.0027
A20	0.2509	0.5183	3011	0.0003	0.0006	0.0009	0.0010	0.0013	0.0018	0.0019	0.0022	0.0027
A21	0.2513	0.5185	2998	0.0000	0.0005	0.0007	0.0010	0.0013	0.0017	0.0021	0.0021	0.0028
A22	0.2512	0.5185	3000	0.0003	0.0005	0.0009	0.0012	0.0012	0.0015	0.0021	0.0023	0.0027
A23	0.2509	0.5183	3010	0.0002	0.0006	0.0009	0.0009	0.0013	0.0018	0.0019	0.0025	0.0027
A24	0.2512	0.5184	3001	0.0002	0.0007	0.0009	0.0009	0.0012	0.0018	0.0021	0.0022	0.0027
A25	0.2510	0.5184	3006	0.0001	0.0004	0.0006	0.0011	0.0012	0.0017	0.0018	0.0024	0.0025
Avg.	0.2511	0.5184	3005	0.0002	0.0006	0.0008	0.0011	0.0013	0.0017	0.0021	0.0023	0.0026
Med.	0.2510	0.5184	3006	0.0002	0.0006	0.0007	0.0011	0.0013	0.0018	0.0021	0.0023	0.0026
ST dev.	0.0002	0.0001	5.0787	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Max.	0.2514	0.5185	3013	0.0004	0.0008	0.0010	0.0012	0.0014	0.0019	0.0022	0.0025	0.0028
Min.	0.2508	0.5183	2996	0.0000	0.0004	0.0006	0.0009	0.0011	0.0015	0.0018	0.0021	0.0024



**9.2 Test condition 2: 85 °C, Drive Current : 450mA**

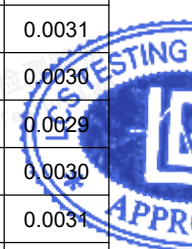
Item	V <sub>F</sub> (V)	Flux(lm)	Ra	T=85°C Luminous Maintenance (%)								
				0 h	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h
B01	39.96	1673.0	97.8	99.95	99.62	99.21	98.93	98.50	98.01	97.59	97.22	96.95
B02	39.68	1674.4	98.0	100.13	99.68	99.28	98.87	98.48	98.08	97.64	97.27	96.92
B03	39.99	1669.3	98.0	100.05	99.66	99.26	98.89	98.47	98.02	97.63	97.24	96.92
B04	39.72	1674.0	98.6	99.94	99.59	99.25	98.88	98.50	98.08	97.60	97.21	96.86
B05	39.76	1674.4	98.6	99.90	99.61	99.27	98.82	98.46	97.91	97.67	97.25	96.83
B06	40.02	1673.9	97.3	100.05	99.67	99.26	98.83	98.47	98.06	97.62	97.29	96.87
B07	39.97	1670.8	98.8	100.02	99.69	99.25	98.87	98.46	98.02	97.58	97.18	96.84
B08	39.98	1676.2	98.5	99.95	99.61	99.30	98.89	98.47	98.00	97.64	97.21	96.83
B09	39.92	1676.0	97.3	99.94	99.62	99.24	98.85	98.48	97.89	97.55	97.25	96.91
B10	39.61	1674.2	97.6	99.99	99.72	99.26	98.93	98.53	98.04	97.59	97.20	96.86
B11	39.73	1675.5	98.9	99.95	99.61	99.20	98.86	98.46	97.98	97.64	97.21	96.78
B12	40.24	1670.5	97.7	99.97	99.67	99.28	98.87	98.47	98.01	97.67	97.25	96.77
B13	39.77	1669.4	98.4	99.87	99.60	99.25	98.82	98.48	97.92	97.63	97.30	96.90
B14	40.08	1675.6	98.7	99.93	99.65	99.27	98.83	98.49	97.90	97.66	97.18	96.91
B15	40.16	1674.5	97.4	99.94	99.69	99.26	98.81	98.40	97.91	97.68	97.20	96.85
B16	39.92	1670.7	98.8	99.92	99.70	99.31	98.87	98.49	97.99	97.67	97.21	96.90
B17	39.65	1676.3	98.7	99.95	99.68	99.30	98.86	98.45	98.02	97.62	97.24	96.86
B18	40.13	1671.8	97.9	99.96	99.61	99.25	98.90	98.46	98.04	97.55	97.22	96.88
B19	39.95	1675.3	97.9	99.99	99.62	99.23	98.92	98.44	97.95	97.59	97.25	96.90
B20	40.00	1675.8	98.8	100.01	99.58	99.27	98.82	98.40	98.03	97.64	97.30	96.84
B21	39.68	1670.2	98.0	99.97	99.63	99.26	98.91	98.38	97.91	97.65	97.18	96.86
B22	40.16	1675.3	97.4	99.98	99.58	99.25	98.86	98.46	98.02	97.58	97.24	96.88
B23	39.99	1674.5	98.5	99.96	99.56	99.23	98.87	98.39	98.08	97.63	97.22	96.92
B24	40.07	1669.7	97.9	100.02	99.65	99.21	98.90	98.47	97.90	97.62	97.21	96.85
B25	39.68	1670.4	98.6	99.97	99.73	99.34	98.89	98.53	98.03	97.79	97.44	96.92
Avg.	39.91	1673.3	98.2	99.97	99.64	99.26	98.87	98.46	97.99	97.63	97.24	96.87
Med.	39.96	1674.2	98.0	99.96	99.63	99.26	98.87	98.47	98.01	97.63	97.22	96.87
ST dev.	0.1836	2.4147	0.5322	0.0537	0.0462	0.0319	0.0350	0.0383	0.0625	0.0493	0.0543	0.0441
Max.	40.24	1676.3	98.9	100.13	99.73	99.34	98.93	98.53	98.08	97.79	97.44	96.95
Min.	39.61	1669.3	97.3	99.87	99.56	99.20	98.81	98.38	97.89	97.55	97.18	96.77





9.2.1 Test condition 2: 85 °C, Drive Current : 450mA

No.	T=85°CChromaticity Shift ( $\Delta u'v'$ )											
	0 h			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
	u'	v'	CCT(K)									
B01	0.2506	0.5182	3019	0.0004	0.0007	0.0010	0.0015	0.0015	0.0018	0.0023	0.0027	0.0028
B02	0.2506	0.5182	3019	0.0005	0.0006	0.0008	0.0011	0.0013	0.0018	0.0024	0.0026	0.0028
B03	0.2508	0.5183	3013	0.0002	0.0006	0.0007	0.0010	0.0013	0.0015	0.0023	0.0028	0.0029
B04	0.2506	0.5182	3019	0.0002	0.0008	0.0010	0.0012	0.0018	0.0019	0.0021	0.0023	0.0027
B05	0.2510	0.5183	3008	0.0003	0.0006	0.0010	0.0013	0.0016	0.0022	0.0023	0.0026	0.0029
B06	0.2507	0.5182	3016	0.0004	0.0011	0.0012	0.0013	0.0018	0.0021	0.0024	0.0029	0.0031
B07	0.2506	0.5182	3020	0.0002	0.0007	0.0009	0.0013	0.0015	0.0017	0.0021	0.0027	0.0027
B08	0.2509	0.5183	3011	0.0004	0.0009	0.0012	0.0012	0.0016	0.0017	0.0022	0.0026	0.0028
B09	0.2507	0.5182	3018	0.0004	0.0010	0.0011	0.0013	0.0019	0.0023	0.0025	0.0030	0.0030
B10	0.2507	0.5182	3015	0.0005	0.0008	0.0010	0.0014	0.0017	0.0018	0.0024	0.0031	0.0034
B11	0.2507	0.5182	3018	0.0002	0.0006	0.0007	0.0011	0.0014	0.0019	0.0021	0.0026	0.0029
B12	0.2508	0.5182	3014	0.0001	0.0005	0.0010	0.0016	0.0017	0.0017	0.0025	0.0027	0.0028
B13	0.2506	0.5181	3021	0.0004	0.0008	0.0010	0.0013	0.0015	0.0021	0.0027	0.0028	0.0029
B14	0.2510	0.5184	3007	0.0001	0.0008	0.0011	0.0013	0.0018	0.0022	0.0027	0.0029	0.0031
B15	0.2508	0.5182	3014	0.0004	0.0006	0.0011	0.0015	0.0015	0.0020	0.0022	0.0029	0.0030
B16	0.2507	0.5182	3017	0.0002	0.0006	0.0010	0.0016	0.0017	0.0021	0.0024	0.0028	0.0029
B17	0.2508	0.5183	3013	0.0006	0.0009	0.0011	0.0011	0.0018	0.0019	0.0025	0.0026	0.0030
B18	0.2508	0.5183	3013	0.0001	0.0007	0.0009	0.0012	0.0017	0.0020	0.0027	0.0028	0.0031
B19	0.2505	0.5181	3022	0.0003	0.0005	0.0007	0.0012	0.0016	0.0021	0.0024	0.0029	0.0031
B20	0.2504	0.5180	3027	0.0003	0.0006	0.0007	0.0011	0.0013	0.0018	0.0025	0.0030	0.0034
B21	0.2510	0.5183	3008	0.0004	0.0009	0.0010	0.0011	0.0017	0.0025	0.0027	0.0027	0.0031
B22	0.2510	0.5183	3008	0.0006	0.0008	0.0011	0.0014	0.0018	0.0022	0.0025	0.0029	0.0032
B23	0.2506	0.5182	3020	0.0002	0.0005	0.0008	0.0015	0.0016	0.0023	0.0023	0.0027	0.0031
B24	0.2508	0.5183	3013	0.0003	0.0008	0.0011	0.0012	0.0019	0.0022	0.0027	0.0028	0.0030
B25	0.2508	0.5183	3012	0.0003	0.0008	0.0010	0.0014	0.0015	0.0020	0.0024	0.0026	0.0030
Avg.	0.2507	0.5182	3015	0.0003	0.0007	0.0010	0.0013	0.0016	0.0020	0.0024	0.0028	0.0030
Med.	0.2507	0.5182	3015	0.0003	0.0007	0.0010	0.0013	0.0016	0.0020	0.0024	0.0028	0.0030
ST dev.	0.0002	0.0001	5.0000	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Max.	0.2510	0.5184	3027	0.0006	0.0011	0.0012	0.0016	0.0019	0.0025	0.0027	0.0031	0.0034
Min.	0.2504	0.5180	3007	0.0001	0.0005	0.0007	0.0010	0.0013	0.0015	0.0021	0.0023	0.0027



**9.3 Test condition 3: 105 °C, Drive Current : 450mA**

Item	V <sub>F</sub> (V)	Flux(lm)	Ra	T=105°C Luminous Maintenance (%)								
				0 h	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h
C01	39.96	1674.8	97.6	99.84	99.41	99.01	98.71	98.10	97.68	97.29	96.89	96.49
C02	39.67	1673.8	97.7	99.88	99.50	99.02	98.76	98.09	97.73	97.29	96.91	96.52
C03	39.99	1668.7	98.3	99.92	99.49	98.95	98.74	98.04	97.66	97.28	96.83	96.63
C04	39.72	1673.6	98.7	99.83	99.37	98.96	98.75	98.04	97.71	97.31	96.90	96.61
C05	39.75	1673.9	98.2	99.85	99.44	98.98	98.71	98.05	97.69	97.19	96.85	96.43
C06	39.99	1673.5	97.3	99.82	99.38	99.02	98.73	98.01	97.75	97.23	96.87	96.41
C07	39.98	1670.1	98.7	99.92	99.46	99.01	98.72	98.00	97.73	97.20	96.91	96.55
C08	39.97	1675.6	98.8	99.87	99.47	99.05	98.71	97.99	97.73	97.21	96.88	96.53
C09	39.91	1675.4	97.8	99.91	99.50	99.03	98.76	98.07	97.71	97.26	96.89	96.57
C10	39.61	1673.8	97.3	99.92	99.46	99.05	98.72	98.01	97.67	97.24	96.86	96.47
C11	39.72	1675.0	98.3	99.83	99.39	99.07	98.75	98.67	97.63	97.22	96.83	96.50
C12	40.24	1670.1	97.8	99.90	99.44	99.06	98.74	98.02	97.66	97.30	96.81	96.51
C13	39.76	1669.0	98.0	99.82	99.51	99.00	98.73	97.98	97.68	97.33	96.85	96.61
C14	40.07	1675.0	98.4	99.80	99.45	99.08	98.71	98.05	97.66	97.22	96.86	96.67
C15	40.13	1674.0	98.0	99.92	99.42	99.04	98.70	98.00	97.64	97.21	96.84	96.59
C16	39.92	1670.2	98.3	99.97	99.51	99.06	98.75	98.03	97.71	97.24	96.92	96.68
C17	39.66	1675.9	98.1	99.89	99.53	98.98	98.77	98.08	97.68	97.29	96.88	96.43
C18	40.12	1671.2	98.5	99.84	99.37	99.07	98.70	98.04	97.69	97.24	96.86	96.61
C19	39.95	1674.8	98.2	99.81	99.35	98.99	98.71	98.05	97.72	97.21	96.90	96.52
C20	39.99	1675.4	98.4	99.82	99.38	99.01	98.70	98.00	97.64	97.27	96.92	96.59
C21	39.68	1669.6	97.8	99.88	99.50	99.06	98.68	98.03	97.66	97.24	96.88	96.39
C22	40.15	1674.9	97.7	99.92	99.39	98.99	98.75	98.05	97.67	97.27	96.93	96.49
C23	39.99	1673.9	98.6	99.89	99.44	99.01	98.73	98.07	97.71	97.32	96.92	96.59
C24	40.07	1669.3	97.8	99.84	99.47	99.05	98.71	98.08	97.65	97.21	96.85	96.46
C25	39.68	1670.0	98.7	99.89	99.51	99.00	98.65	98.52	97.73	97.22	96.87	96.43
Avg.	39.91	1672.8	98.1	99.87	99.45	99.02	98.72	98.08	97.69	97.25	96.88	96.53
Med.	39.96	1673.8	98.2	99.88	99.45	99.02	98.72	98.04	97.68	97.24	96.88	96.52
ST dev.	0.1808	2.4487	0.4340	0.0450	0.0538	0.0361	0.0277	0.1589	0.0337	0.0408	0.0325	0.0820
Max.	40.24	1675.9	98.8	99.97	99.53	99.08	98.77	98.67	97.75	97.33	96.93	96.68
Min.	39.61	1668.7	97.3	99.80	99.35	98.95	98.65	97.98	97.63	97.19	96.81	96.39







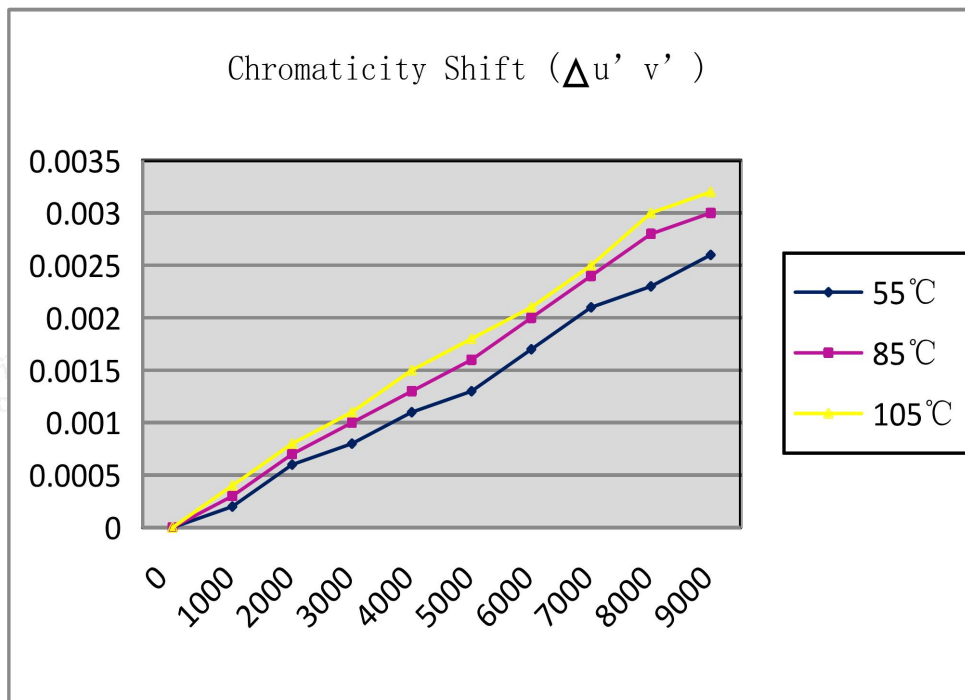
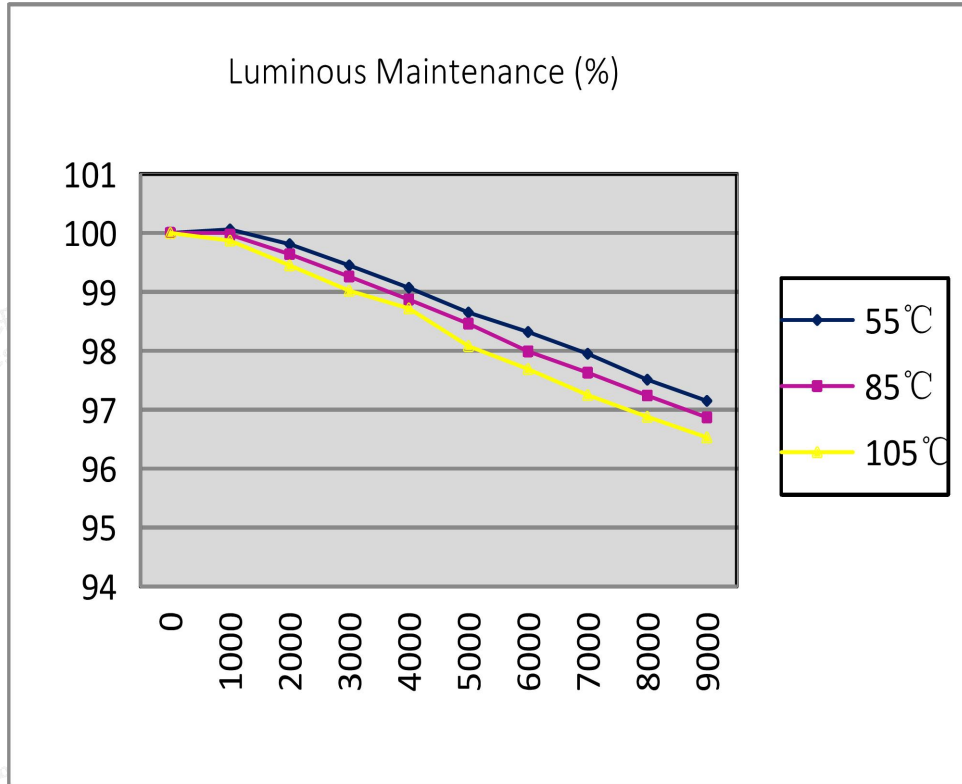
9.3.1 Test condition 3: 105 °C, Drive Current : 450mA

No.	T=105°C Chromaticity Shift ( $\Delta u'v'$ )											
	0 h			1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h
	u'	v'	CCT(K)									
C01	0.2501	0.5179	3035	0.0003	0.0008	0.0012	0.0016	0.0016	0.0019	0.0023	0.0024	0.0031
C02	0.2503	0.5180	3030	0.0002	0.0006	0.0013	0.0014	0.0016	0.0021	0.0025	0.0030	0.0033
C03	0.2505	0.5181	3024	0.0006	0.0010	0.0013	0.0013	0.0017	0.0021	0.0023	0.0032	0.0032
C04	0.2501	0.5179	3035	0.0003	0.0011	0.0012	0.0015	0.0020	0.0023	0.0028	0.0032	0.0033
C05	0.2505	0.5181	3022	0.0004	0.0009	0.0010	0.0014	0.0016	0.0018	0.0023	0.0028	0.0030
C06	0.2504	0.5181	3026	0.0006	0.0008	0.0010	0.0014	0.0015	0.0019	0.0025	0.0031	0.0031
C07	0.2501	0.5179	3035	0.0003	0.0007	0.0013	0.0016	0.0017	0.0022	0.0024	0.0029	0.0032
C08	0.2505	0.5181	3024	0.0006	0.0008	0.0011	0.0015	0.0018	0.0020	0.0025	0.0028	0.0030
C09	0.2501	0.5179	3034	0.0004	0.0008	0.0008	0.0015	0.0019	0.0024	0.0024	0.0029	0.0031
C10	0.2502	0.5180	3033	0.0004	0.0011	0.0013	0.0015	0.0021	0.0022	0.0027	0.0030	0.0034
C11	0.2500	0.5179	3038	0.0007	0.0008	0.0011	0.0013	0.0016	0.0019	0.0025	0.0029	0.0034
C12	0.2503	0.5180	3028	0.0002	0.0008	0.0011	0.0017	0.0017	0.0018	0.0026	0.0026	0.0032
C13	0.2502	0.5180	3033	0.0003	0.0005	0.0010	0.0014	0.0017	0.0021	0.0026	0.0032	0.0033
C14	0.2506	0.5181	3021	0.0002	0.0008	0.0010	0.0015	0.0016	0.0022	0.0024	0.0028	0.0030
C15	0.2503	0.5180	3030	0.0005	0.0009	0.0011	0.0018	0.0019	0.0021	0.0022	0.0029	0.0032
C16	0.2504	0.5180	3027	0.0003	0.0007	0.0014	0.0014	0.0018	0.0022	0.0028	0.0033	0.0033
C17	0.2504	0.5181	3025	0.0003	0.0009	0.0011	0.0013	0.0018	0.0021	0.0026	0.0029	0.0030
C18	0.2505	0.5181	3023	0.0005	0.0006	0.0010	0.0013	0.0017	0.0023	0.0029	0.0032	0.0035
C19	0.2500	0.5179	3037	0.0004	0.0006	0.0012	0.0017	0.0020	0.0020	0.0024	0.0030	0.0032
C20	0.2500	0.5179	3038	0.0003	0.0005	0.0011	0.0017	0.0018	0.0018	0.0026	0.0029	0.0033
C21	0.2505	0.5181	3024	0.0003	0.0009	0.0015	0.0016	0.0017	0.0022	0.0028	0.0033	0.0034
C22	0.2506	0.5181	3021	0.0006	0.0008	0.0013	0.0017	0.0017	0.0020	0.0027	0.0033	0.0036
C23	0.2501	0.5179	3035	0.0005	0.0007	0.0009	0.0015	0.0016	0.0024	0.0027	0.0033	0.0033
C24	0.2504	0.5181	3025	0.0003	0.0008	0.0011	0.0016	0.0018	0.0022	0.0024	0.0031	0.0034
C25	0.2503	0.5180	3030	0.0005	0.0009	0.0013	0.0017	0.0020	0.0021	0.0022	0.0028	0.0033
Avg.	0.2503	0.5180	3029	0.0004	0.0008	0.0011	0.0015	0.0018	0.0021	0.0025	0.0030	0.0032
Med.	0.2503	0.5180	3030	0.0004	0.0008	0.0011	0.0015	0.0017	0.0021	0.0025	0.0030	0.0033
ST dev.	0.0002	0.0001	5.6326	0.0001	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002
Max.	0.2506	0.5181	3038	0.0007	0.0011	0.0015	0.0018	0.0021	0.0024	0.0029	0.0033	0.0036
Min.	0.2500	0.5179	3021	0.0002	0.0005	0.0008	0.0013	0.0015	0.0018	0.0022	0.0024	0.0030





9.4 Chart





10. Observation of failures

No optical, Electrical or mechanical failure of any LED Package was seen during the lifetime testing.

11. Photometric measurement uncertainty

2%

12. TM-21-18 report: Projecting long term lumen maintenance of LED Light Sources

	Test Condition 1 - 55°C Case Temp	Test Condition 1 - 85°C Case Temp	Test Condition 1 -105°C Case Temp
Test Duration:	9000 hours	9000 hours	9000 hours
Failures Observed:	0	0	0
$\alpha$ :	3.900E-06	4.093E-06	4.485E-06
$\beta$ :	1.006	1.005	1.004
Reported L <sub>70</sub> :	>54000	>54000	>54000
Reported L <sub>80</sub> :	>54000	>54000	51000
Reported L <sub>90</sub> :	29000	27000	24000



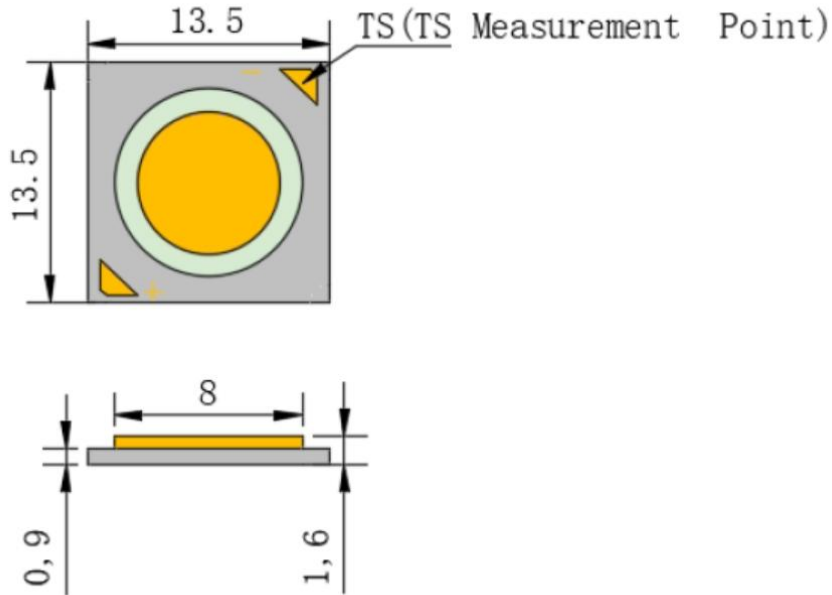
**13. ENERGY STAR® LM-80 Cover Sheet**

<b>Administrative Information</b>	
Tested subcomponent series:	-
Tested subcomponent model number:	IS0002-LED07-3090-36D
Report issue date:	July 27, 2023
Report revision date (if applicable):	-
Testing start date:	July 01, 2022
Testing completion date:	July 25, 2023
DUT 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. Each Sample is soldered to all of the reliability stress boards for a given set of IESNA LM-80 tests.
<b>DUT Identification</b>	
DUT manufacturer's name:	Aurora (Shanghai) Technology Co., Ltd
DUT identification, e.g., model number:	IS0002-LED07-3090-36D
Description of DUT, including if the DUT is an LED package or module:	Lamp bead
<b>DUT Characteristics</b>	
Total input power (W):	16.5
Average current density per LED die (mA/mm <sup>2</sup> ):	/
Average power density per LED die (W/mm <sup>2</sup> ):	/
Representative CRI (Ra) of the tested sample set:	90
Minimum die edge to die edge spacing:	-





14. Mechanical Dimensions



15. Photo of samples:



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

