

CL-L261 LM-80 Report

December 15,2009

1. Number of LED sources

25pcs per test.

2. Description of LED sources

Single LED package containing wire bonded InGaN die covered in phosphor and attached to MCPCB
The report is applied to the following products.
CL-L261-U1L-A, CL-L261-U1N-A,CL-L261-U1D-A

3. Description of Auxillary Equipment.

LED+Sn-Ag-Cu Solder + Substrate for Testing

4. Operating Cycle.

DC driving.

5. Ambient Conditions

25 ° C, 30% relative humidity, stagnant air.

6. Case Temperature (Tc)

Table-1 LM-80 Test condition

Tc (deg C)	Drive current(mA)	Relative humidity	Average Lumen Maintenance
85	20	8%	96.9%
55	20	17%	98.6%
25	20	28%	99.5%

7. Drive Current

20 mA.

8. Initial Luminous flux and forward voltage

Typ 6.4lm,Typ 3.2V. (CL-L261-U1L-A)

9. Lumen Maintenance DATA

Refer to Table-2, Table-4and Chart-1-1,1-2,1-3 .

Table-2 LM list

Tc (deg C)	Chart
85	1-1
55	1-2
25	1-3

10. Observation of LED Light Source failures

No crack or abnormality was observed.

11. LED light source monitoring interval

1000H.

12. Photometric measurement uncertainty
 $\pm 2\%$ lumens, ± 0.004 (x,y).

13. Chromaticity shift

Refer to Tabale-3 ,Chart-2-1,2-2,2-3 and Chart-3-1,3-2,3-3

Table-3 Chromaticity shift list

Tc (deg C)	Chart	Chart
85	2-1	3-1
55	2-2	3-2
25	2-3	3-3

Table-4 Lumen Maintenance-Lifetime

		Lifetime(H)	0	1000	2000	3000	4000	5000	6000
Tc=85 deg C	Lumen Maintenance (%)	max	100	101.1	100.4	99.8	99.7	99.7	99.6
		ave	100	99.3	98.9	98.4	97.9	97.4	96.9
		min	100	97.8	97.2	96.4	95.6	95.4	95.0
		sigma	0	0.669	0.650	0.679	0.798	0.901	0.985
Tc=55 deg C	Lumen Maintenance (%)	max	100	100.8	100.7	100.5	100.5	100.7	100.7
		ave	100	99.6	99.4	99.2	99.0	98.8	98.6
		min	100	98.3	98.3	98.4	98.2	97.6	97.3
		sigma	0	0.549	0.522	0.513	0.585	0.681	0.815
Tc=25 deg C	Lumen Maintenance (%)	max	100	100.5	100.4	101.0	101.1	101.2	101.3
		ave	100	99.7	99.7	99.6	99.6	99.6	99.5
		min	100	98.3	98.2	98.2	98.1	98.0	98.0
		sigma	0	0.571	0.562	0.619	0.630	0.662	0.663

Chart1-1 Lumen Maintenance -Lifetime
 $T_c=85 \text{ deg C}$ $I_F=20\text{mA}$ $T_j=111 \text{ deg C}$

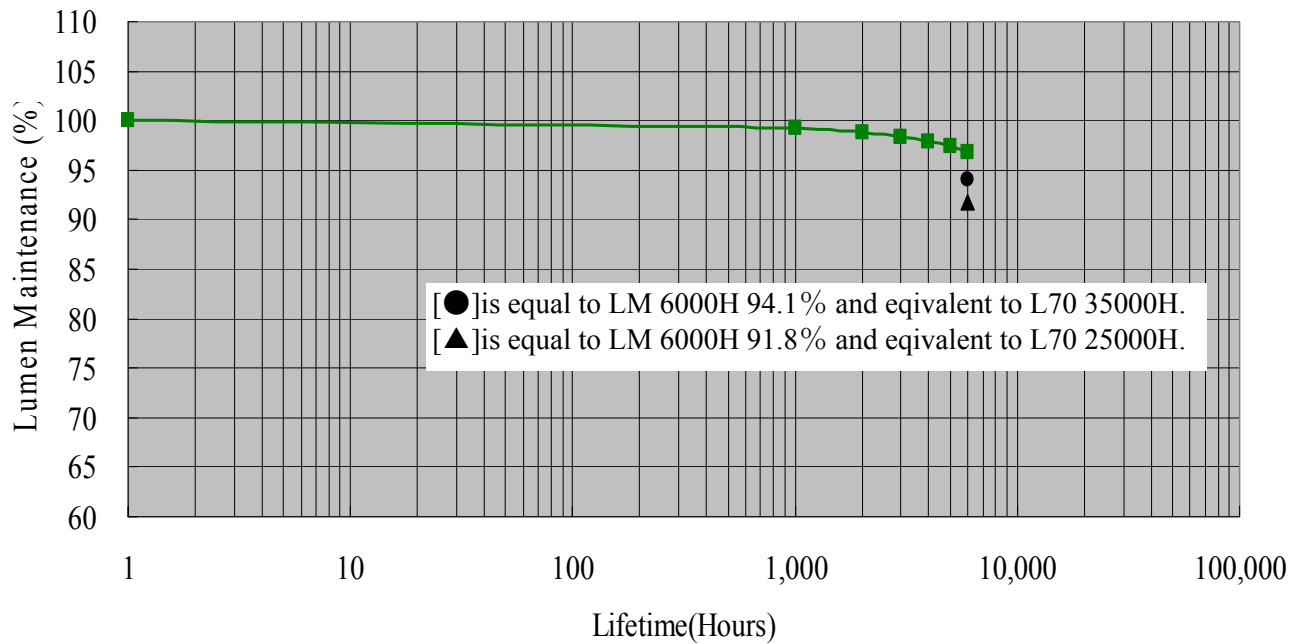


Chart1-2 Lumen Maintenance -Lifetime
 $T_c=55 \text{ deg C}$ $I_F=20\text{mA}$ $T_j=82 \text{ deg C}$

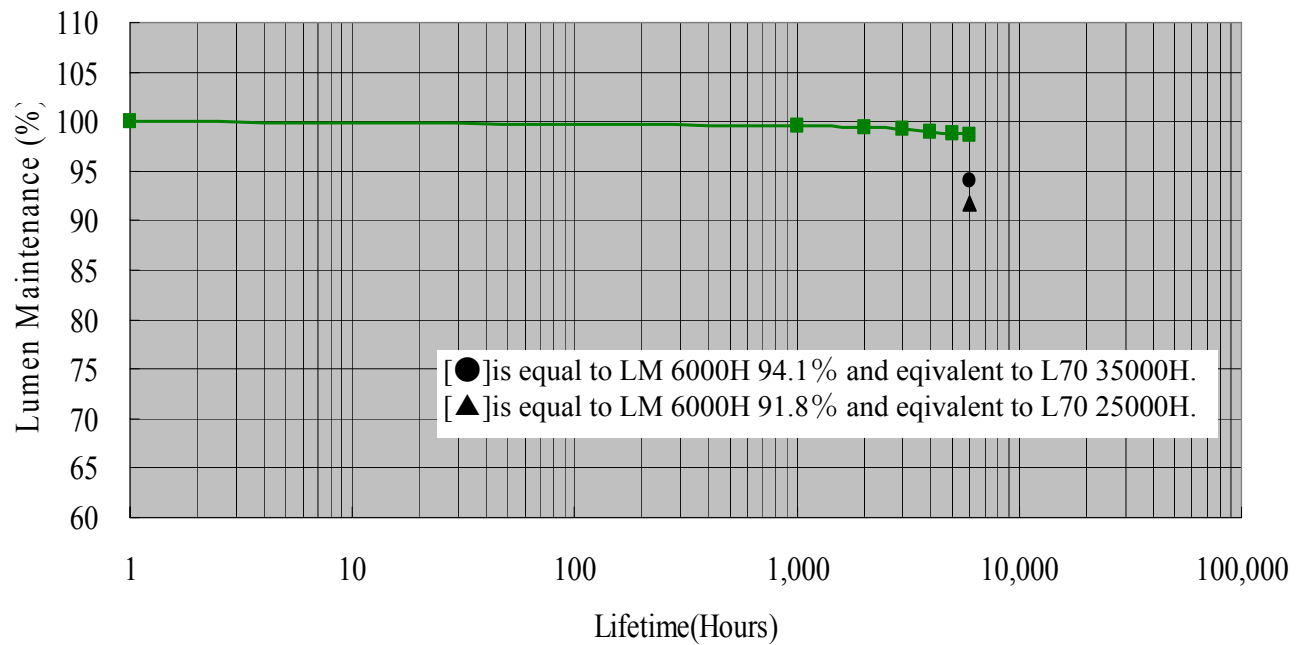


Chart1-3 Lumen Maintenance -Lifetime

Tc=25 deg C IF=20mA Tj=52 deg C

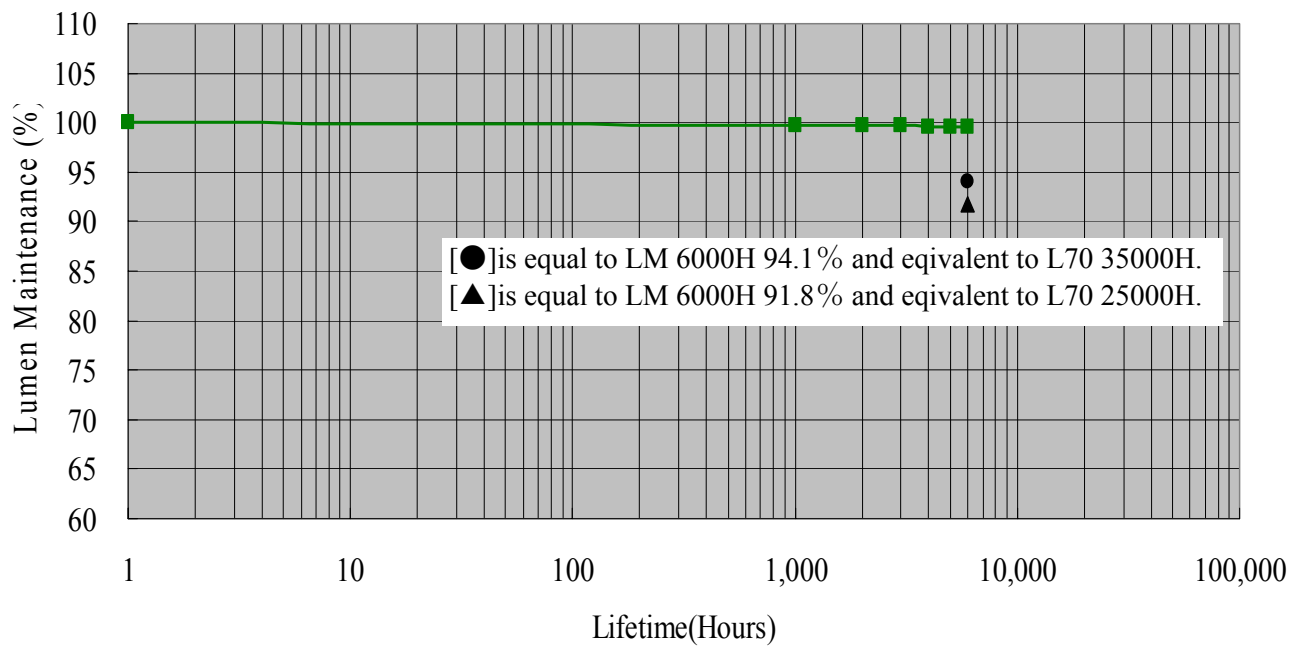


Chart 2-1 Chromaticity shift

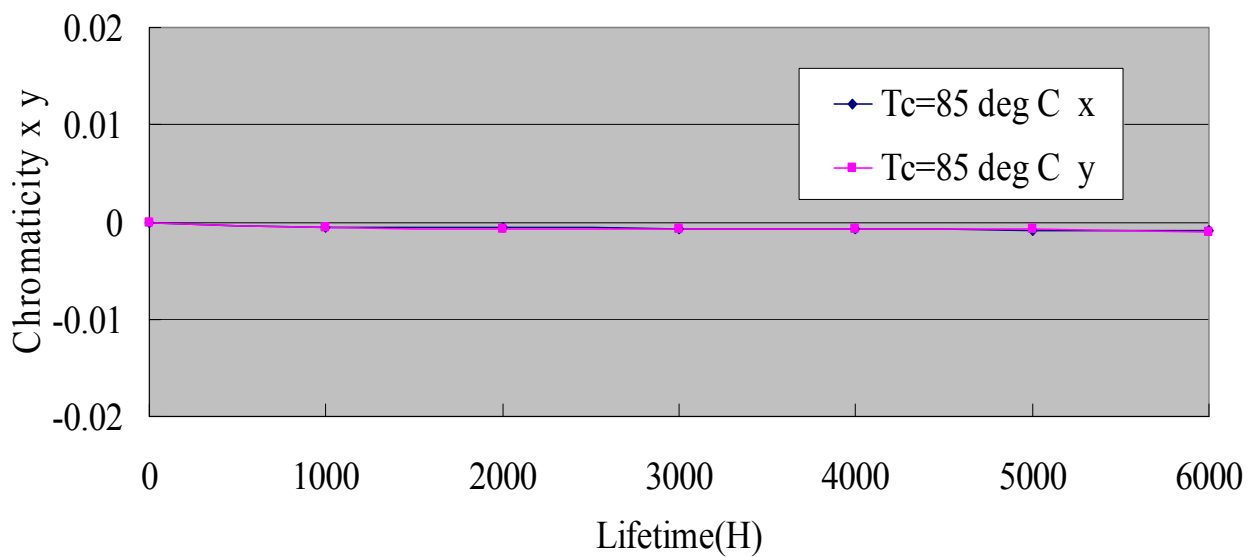


Chart 2-2 Chromaticity shift

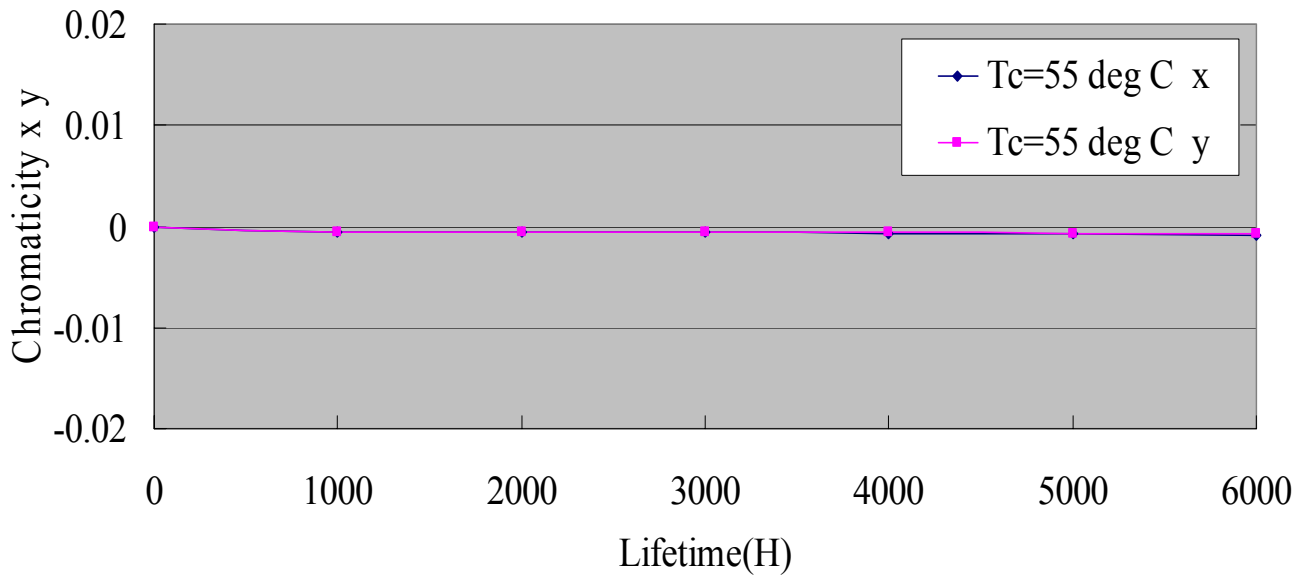


Chart 2-3 Chromaticity shift

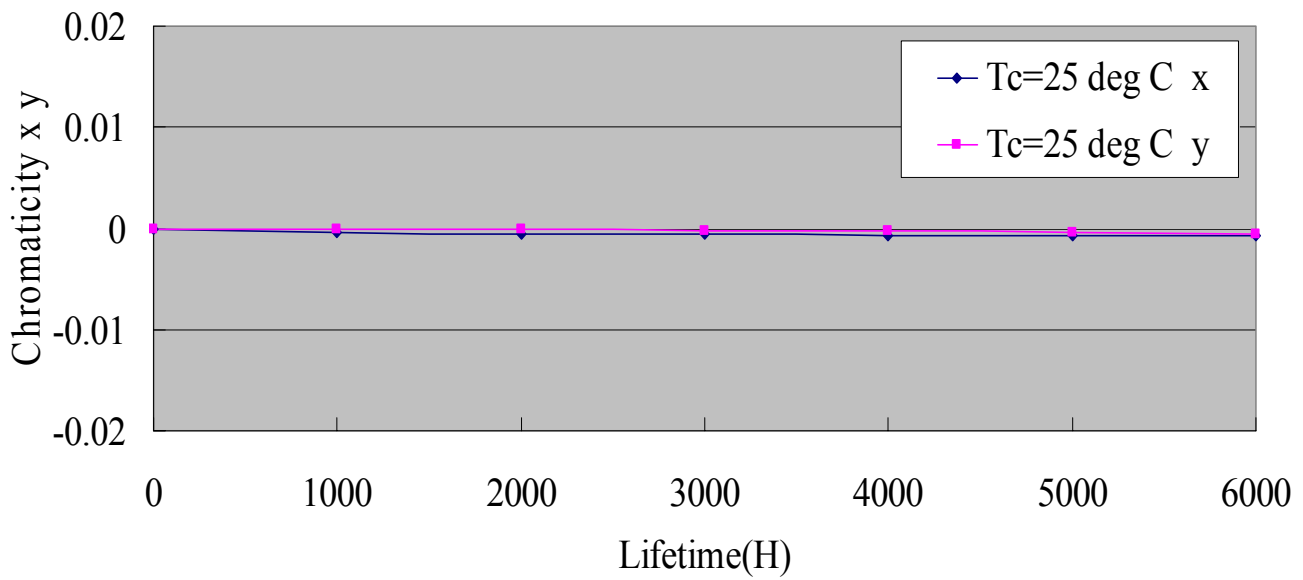


Chart 3-1 Chromaticity shift

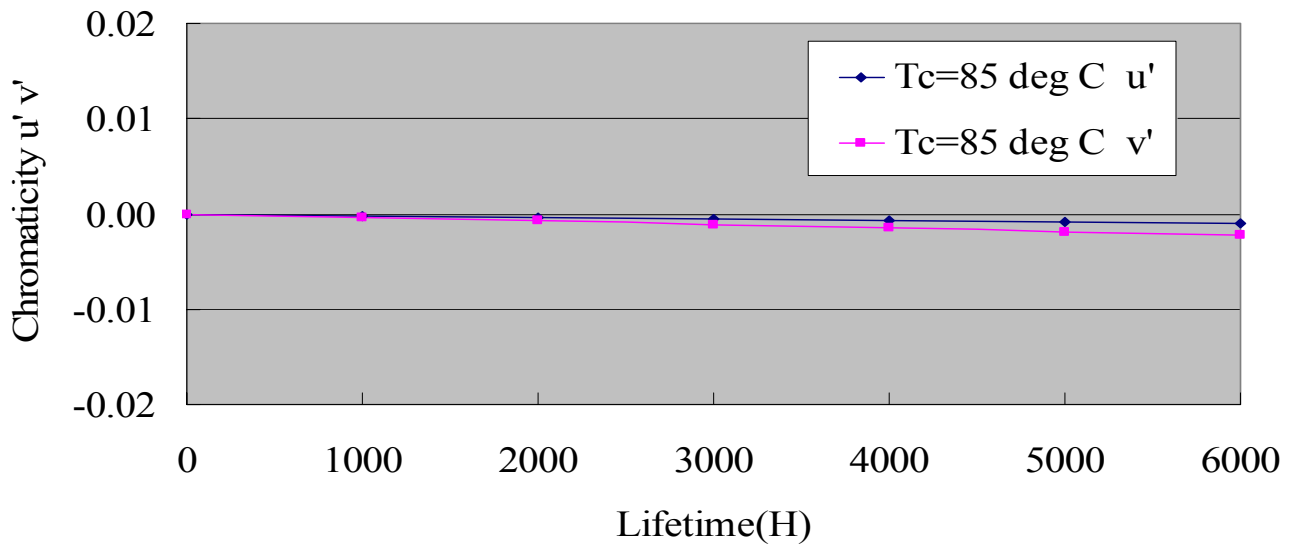


Chart 3-2 Chromaticity shift

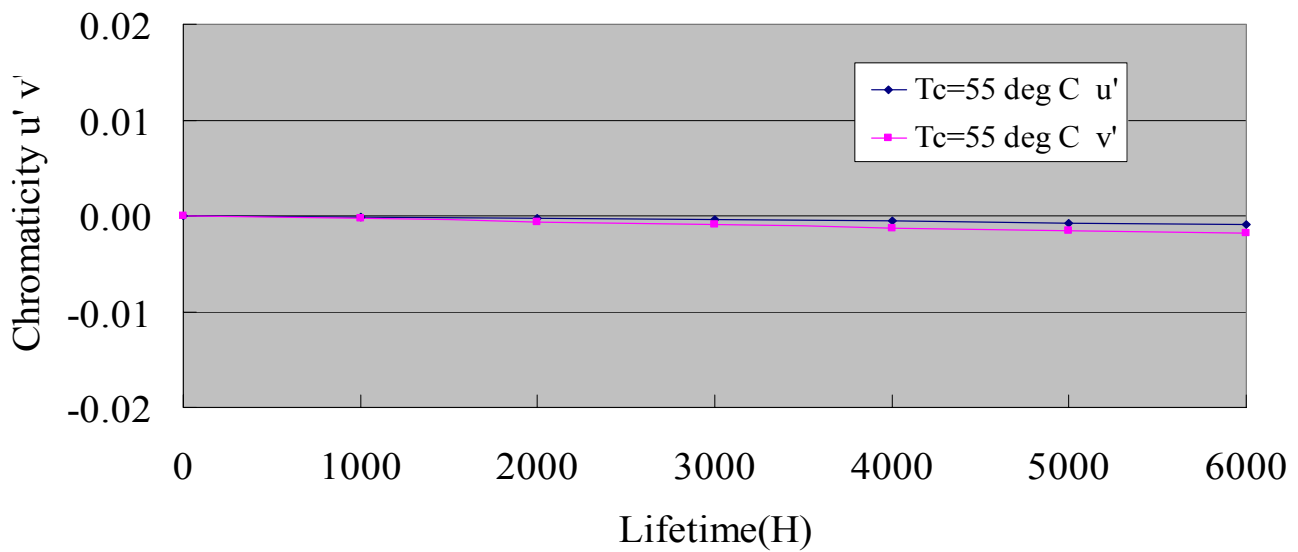


Chart 3-3 Chromaticity shift

