SEOUL SEMICONDUCTOR

IES LM-80-08 TEST REPORT

Measuring Lumen Maintenance of LED Light Sources

Manufacturer : Seoul Semiconductor Co., Ltd.

1B-25, 727, Wonsi-dong, Danwon-gu, Ansan-city, Gyeonggi-do, Korea

Classification : LED Package

Test Sample : 5630D (STWxQ14D)

Test Date : Apr. 29, 2014 ~ Jun. 26, 2015

Report Date : July. 03, 2015

Report Number : I-140420-07-K-04

Revision Number : 04

Tested by		Reviewed by	
In Hoi Sim	(signature)	Jung Hee Lee	(signature)
Engineer		Technical Manager	

The above test certificate is the accredited test results by Korea Laboratory Accreditation Scheme, which signed the ILAC-MRA

SEOUL SEMICONDUCTOR CO., LTD

Accredited by KOLAS, Republic of KOREA

2. General Information : IES LM-80-08 Test Report Requirement

2.1 Number of LED Light Sources tested

- 25 Packages tested at actual case temperature 54.2 ℃
- 25 Packages tested at actual case temperature 84.2 ℃
- 25 Packages tested at actual case temperature 104.0 ℃

2.2 Description of LED light Sources

- LED Package Part Number : STWxQ14D
- LED Forward Current [IF] : 210 mA
- LED Package Dimension : 5.6 mm X 3.0 mm

2.3 Description of Auxiliary equipment

- Temperature controlling chamber for LED package/array/module consists of the water cooling heat-sink plates to control the case temperature of each device and of the power supply required by LM-80 test conditions.

- Photometric measurement tester for LED package/array/module consists of the integrating sphere with temperature controlling system(TEC) and of programmable current source meter.

2.4 Operating Cycle

- Drive Current : 210 mA
- Typical Voltage : 3.23 V
  All tested LED packages are driven with a constant direct current.

2.5 Ambient conditions including airflow, temperature and relative humidity

- Controlled ambient conditions

Ambient temperature	- 5 ℃
Air flow velocity	< 1 m/s
Relative humidity	< 65 RH

1. Summary

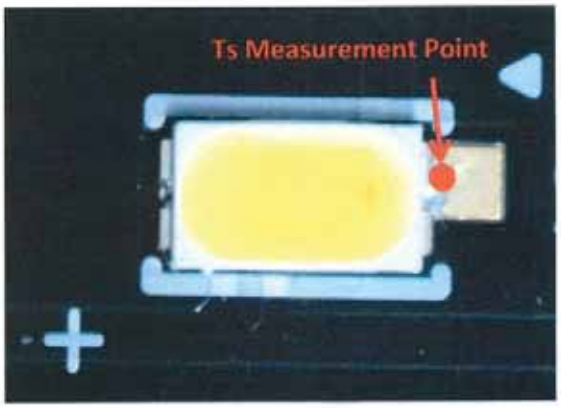
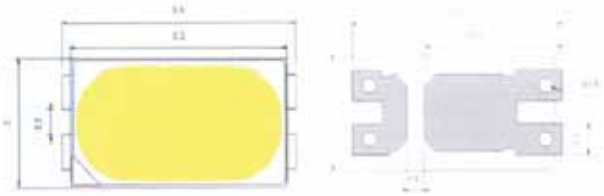
1.1 Test Result

Items	Condition 1	Condition 2	Condition 3
Required Temperature	55 ℃	85 ℃	105 ℃
Number of LED light sources tested (ea)	25	25	25
Test Duration (h)	9 000	9 000	9 000
Drive Current (mA)	210	210	210
Actual Case Temperature (℃)	54.2	84.2	104.0
Actual Ambient Temperature (℃)	51.5	80.9	101.1
Air flow velocity (m/s)	0.92	0.87	0.84
Average Initial Luminous Flux (lm)	74.941	75.107	74.609
Average Initial CCT (K)	2 817	2 808	2 806
Average Initial Volatge (V)	3.23	3.23	3.23
Average Lumen maintenance (%)	97.8	94.4	86.5
Average Chromaticity Shift	0.000 8	0.002 0	0.003 6

※ The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full.

2.6 Case Temperature (Test Point temperature)

- LED temperature measurement point is shown in the picture below.

Case Temperature Measurement Point	Package Dimension
	

2.7 Drive Current of the LED light source during lifetime test

- See the Test Result.

2.8 Lumen maintenance data for each individual LED light source

- See the Test Data.

2.9 Observation of LED light source failures

- No failures

2.10 LED Light source monitoring interval

- All tested package measurement at each case temperature conditions have 1 000 h interval.
  0, 1 000, 2 000, 3 000, 4 000, 5 000, 6 000, 7 000, 8 000 and 9 000 h

2.11 Photometric measurement uncertainty

- Seoul Semiconductor maintain a tolerance of ± 3.0 % on flux measurements for LM-80 testing

2.12 Chromaticity shift over the measurement time

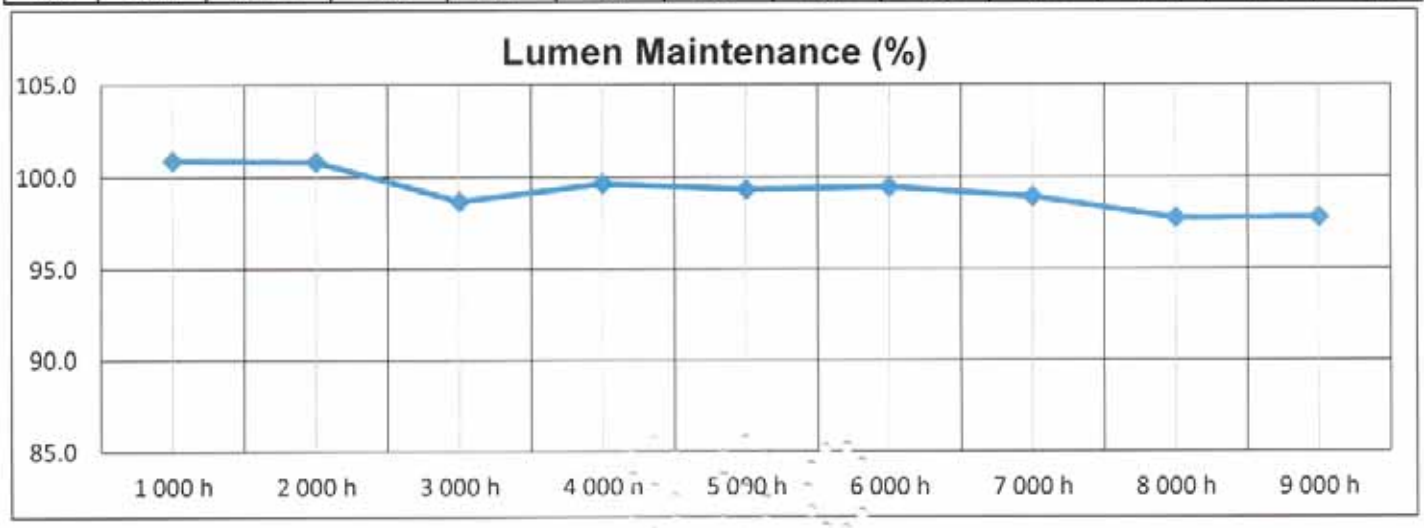
- See the Test Data.

3. Test Data

3.1 Condition 1 : [Ts = 55 ℃]

[LUMEN MAINTENANCE]

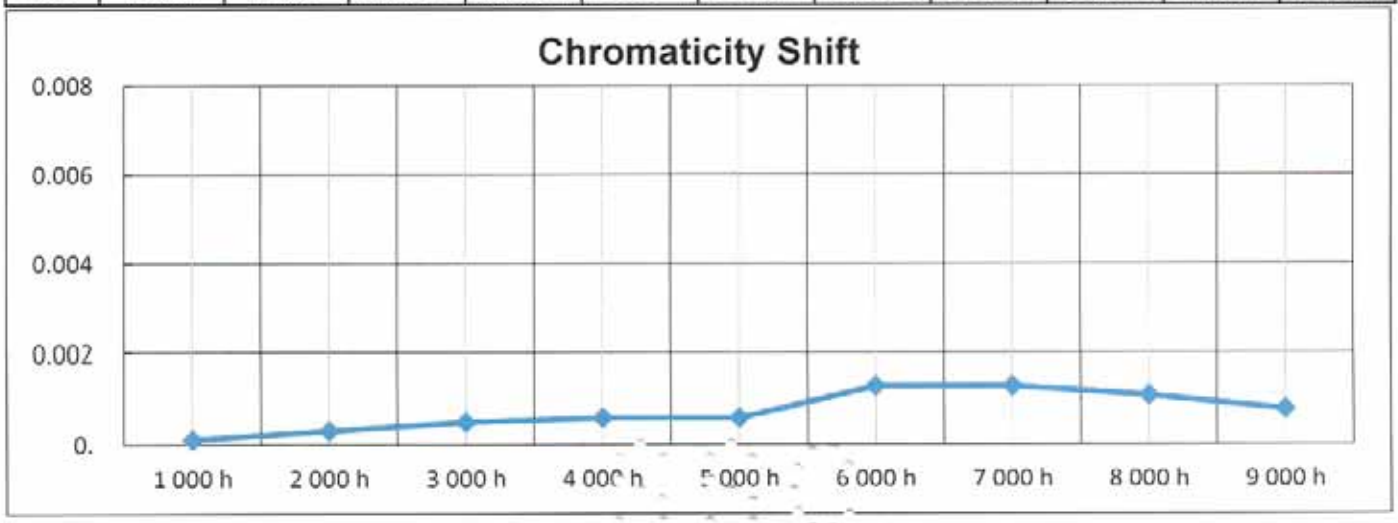
No.	Vf(V)	Flux(lm)	CCT(K)	Lumen Maintenance (%)								
	0 h			1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h	7 000 h	8 000 h	9 000 h
1	3.23	75.181	2 762	100.6	100.8	98.5	99.7	99.7	99.3	98.8	98.0	97.7
2	3.21	74.881	2 796	100.4	100.7	98.4	99.6	99.5	99.1	98.8	98.1	97.9
3	3.21	75.417	2 856	100.6	100.7	98.3	99.4	99.2	98.8	98.5	97.7	97.5
4	3.20	75.262	2 844	100.5	100.9	98.3	99.6	99.6	99.1	98.9	98.3	98.1
5	3.22	75.432	2 808	100.5	100.7	98.4	99.9	99.7	99.5	99.1	98.5	98.4
6	3.22	75.061	2 761	100.7	100.8	98.5	99.9	99.5	99.2	98.8	98.2	98.1
7	3.23	74.949	2 860	100.4	100.7	98.3	99.5	99.5	99.1	98.7	98.1	97.9
8	3.22	75.421	2 795	100.6	100.8	98.3	99.5	99.6	99.3	98.7	98.0	97.7
9	3.22	75.524	2 861	100.6	100.8	98.4	99.6	99.5	99.2	98.7	98.1	98.1
10	3.23	75.414	2 747	100.4	100.6	98.4	99.5	99.7	99.4	98.9	98.2	98.1
11	3.24	75.365	2 801	100.7	100.7	98.4	99.5	99.5	99.0	98.6	97.8	97.7
12	3.24	74.504	2 834	100.4	100.6	98.3	99.6	99.6	99.2	98.8	98.1	97.9
13	3.22	74.838	2 846	101.2	100.9	98.4	99.8	99.8	100.0	99.9	97.6	98.5
14	3.22	74.427	2 803	101.2	100.8	98.9	99.6	99.1	99.7	99.2	97.5	97.6
15	3.23	75.075	2 800	101.4	101.0	99.2	99.8	99.3	99.9	99.1	97.7	97.8
16	3.23	74.514	2 807	101.2	100.8	98.8	99.4	99.0	99.5	98.7	97.2	97.4
17	3.22	74.990	2 818	101.3	100.8	99.0	99.6	99.1	99.7	99.0	97.6	97.8
18	3.22	73.440	2 860	101.0	101.0	98.8	99.5	99.1	99.7	99.0	97.6	97.8
19	3.23	74.882	2 822	101.1	101.0	98.9	99.6	99.0	99.7	99.0	97.5	97.5
20	3.23	74.223	2 861	101.3	100.9	99.1	99.7	99.2	99.8	99.0	97.5	97.5
21	3.22	74.620	2 838	101.2	100.8	99.0	99.7	99.1	99.8	99.2	97.7	98.1
22	3.24	74.983	2 820	101.2	100.9	99.0	99.5	98.7	99.4	98.6	97.2	97.5
23	3.24	75.224	2 840	101.1	100.8	98.9	99.5	98.9	99.6	98.9	97.3	97.5
24	3.25	75.136	2 798	101.0	100.8	98.9	99.6	98.8	99.6	98.9	97.4	97.6
25	3.25	74.762	2 784	101.3	101.2	99.4	100.1	99.4	100.2	99.5	98.0	98.1
Max.	3.25	75.524	2 861	101.4	101.2	99.4	100.1	99.8	100.2	99.9	98.5	98.5
Ave.	3.23	74.941	2 817	100.9	100.8	98.7	99.6	99.3	99.5	98.9	97.8	97.8
Min.	3.20	73.440	2 747	100.4	100.6	98.3	99.4	98.7	98.8	98.5	97.2	97.4
Med.	3.23	74.990	2 818	101.0	100.8	98.5	99.6	99.4	99.5	98.9	97.7	97.8
Std.	0.01	0.471	33	0.4	0.1	0.3	0.2	0.3	0.4	0.3	0.4	0.3



SEOUL SEMICONDUCTOR

[CHROMATICITY SHIFT]

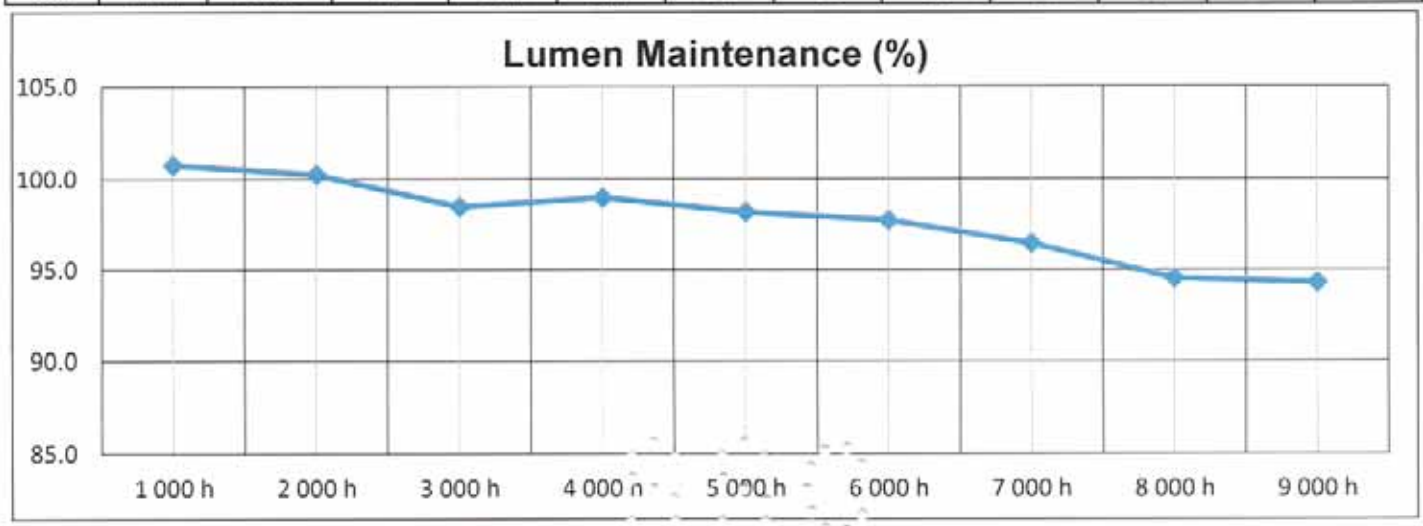
No.	u'	v'	Chromaticity Shift								
	0 h		1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h	7 000 h	8 000 h	9 000 h
1	0.260	0.527	0.000 1	0.000 2	0.000 6	0.000 7	0.000 7	0.001 4	0.001 2	0.001 3	0.001 0
2	0.259	0.524	0.000 0	0.000 1	0.000 3	0.000 4	0.000 4	0.001 1	0.001 0	0.001 0	0.000 5
3	0.257	0.523	0.000 2	0.000 2	0.000 5	0.000 7	0.000 7	0.001 5	0.001 5	0.001 2	0.000 9
4	0.258	0.523	0.000 0	0.000 3	0.000 5	0.000 5	0.000 5	0.001 3	0.001 2	0.001 1	0.000 7
5	0.259	0.524	0.000 1	0.000 3	0.000 4	0.000 6	0.000 6	0.001 3	0.001 1	0.000 7	0.000 5
6	0.261	0.525	0.000 2	0.000 2	0.000 4	0.000 4	0.000 2	0.000 8	0.000 7	0.000 9	0.000 7
7	0.257	0.522	0.000 1	0.000 2	0.000 4	0.000 6	0.000 7	0.001 3	0.001 2	0.001 1	0.000 9
8	0.259	0.524	0.000 2	0.000 5	0.000 6	0.000 8	0.001 0	0.001 7	0.001 4	0.001 4	0.001 1
9	0.257	0.522	0.000 1	0.000 4	0.000 5	0.000 8	0.000 7	0.001 3	0.001 4	0.001 1	0.000 9
10	0.261	0.528	0.000 0	0.000 4	0.000 6	0.000 6	0.000 6	0.001 3	0.001 2	0.001 1	0.000 8
11	0.259	0.524	0.000 1	0.000 1	0.000 4	0.000 6	0.000 5	0.001 1	0.001 3	0.001 2	0.000 9
12	0.258	0.522	0.000 0	0.000 1	0.000 4	0.000 4	0.000 3	0.001 3	0.001 1	0.001 0	0.000 7
13	0.257	0.523	0.000 0	0.000 3	0.000 7	0.000 7	0.000 7	0.001 3	0.001 4	0.001 0	0.000 9
14	0.259	0.524	0.000 2	0.000 4	0.000 5	0.000 8	0.000 7	0.001 6	0.001 3	0.001 0	0.000 9
15	0.259	0.525	0.000 2	0.000 2	0.000 3	0.000 4	0.000 5	0.001 0	0.001 1	0.000 8	0.000 6
16	0.259	0.524	0.000 1	0.000 4	0.000 6	0.000 6	0.000 6	0.001 6	0.001 3	0.001 1	0.001 1
17	0.258	0.525	0.000 1	0.000 3	0.000 6	0.000 8	0.000 8	0.001 5	0.001 5	0.001 1	0.000 9
18	0.257	0.522	0.000 3	0.000 2	0.000 4	0.000 5	0.000 5	0.001 3	0.001 4	0.001 0	0.000 9
19	0.259	0.520	0.000 1	0.000 2	0.000 5	0.000 5	0.000 6	0.001 5	0.001 4	0.001 1	0.001 0
20	0.257	0.522	0.000 1	0.000 2	0.000 5	0.000 7	0.000 7	0.001 5	0.001 3	0.001 1	0.000 8
21	0.258	0.521	0.000 2	0.000 2	0.000 4	0.000 6	0.000 4	0.001 6	0.001 3	0.001 1	0.000 9
22	0.259	0.522	0.000 1	0.000 1	0.000 6	0.000 9	0.000 8	0.001 5	0.001 5	0.001 2	0.001 0
23	0.258	0.522	0.000 0	0.000 3	0.000 6	0.000 6	0.000 7	0.001 3	0.001 4	0.001 3	0.000 8
24	0.259	0.525	0.000 1	0.000 2	0.000 4	0.000 6	0.000 6	0.001 1	0.001 2	0.000 8	0.000 7
25	0.260	0.526	0.000 1	0.000 3	0.000 4	0.000 8	0.000 6	0.001 3	0.001 1	0.001 0	0.000 9
Max.	0.261	0.528	0.000 3	0.000 5	0.000 7	0.000 9	0.001 0	0.001 7	0.001 5	0.001 4	0.001 1
Ave.	0.259	0.524	0.000 1	0.000 3	0.000 5	0.000 6	0.000 6	0.001 3	0.001 3	0.001 1	0.000 8
Min.	0.257	0.520	0.000 0	0.000 1	0.000 3	0.000 4	0.000 2	0.000 8	0.000 7	0.000 7	0.000 5
Med.	0.259	0.524	0.000 1	0.000 2	0.000 5	0.000 6	0.000 6	0.001 3	0.001 3	0.001 1	0.000 9
Std.	0.001	0.002	0.000 1	0.000 1	0.000 1	0.000 1	0.000 2	0.000 2	0.000 2	0.000 2	0.000 2



3.2 Condition 2 : [Ts = 85 ℃]

[LUMEN MAINTENANCE]

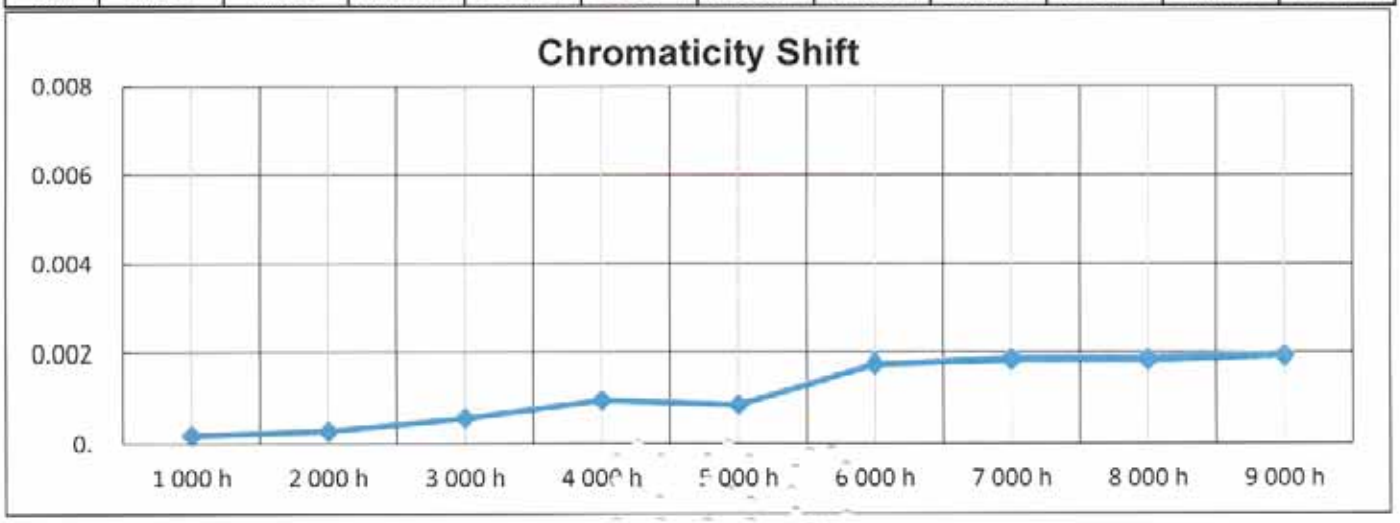
No.	Vf(V)	Flux(lm)	CCT(K)	Lumen Maintenance (%)								
	0 h			1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h	7 000 h	8 000 h	9 000 h
1	3.24	75.398	2 850	101.3	101.2	99.2	99.4	98.9	98.2	96.7	95.4	95.2
2	3.23	74.907	2 768	101.2	100.9	99.0	99.5	99.1	98.1	97.0	95.8	95.6
3	3.22	74.627	2 822	101.2	100.9	99.0	99.3	98.9	98.2	96.9	95.8	95.6
4	3.22	74.775	2 810	101.2	101.1	98.9	99.4	99.0	98.1	97.1	95.8	95.7
5	3.22	74.904	2 811	101.1	100.8	99.0	99.5	99.0	98.2	97.0	95.8	95.5
6	3.21	73.850	2 842	101.1	100.8	98.6	98.7	98.0	96.8	95.5	93.8	93.1
7	3.22	74.629	2 803	101.4	101.2	99.1	99.5	99.1	98.3	97.1	95.9	95.7
8	3.21	75.132	2 802	101.0	100.8	98.6	99.1	98.6	97.7	96.7	95.5	95.3
9	3.23	74.530	2 847	101.1	101.0	98.9	99.3	98.8	97.5	96.6	95.2	94.9
10	3.22	74.817	2 797	101.1	100.7	98.5	98.7	98.1	97.4	96.2	92.8	95.0
11	3.23	75.247	2 783	101.2	101.0	99.0	99.4	98.9	98.3	97.1	95.9	95.8
12	3.24	74.371	2 761	100.9	100.9	99.0	99.5	99.2	98.3	97.0	95.7	95.9
13	3.22	75.078	2 833	100.4	100.4	97.6	98.9	98.1	97.9	97.2	94.6	95.0
14	3.24	75.593	2 807	100.5	99.7	98.4	99.0	98.1	98.0	96.6	94.2	93.7
15	3.22	74.400	2 814	100.8	99.6	98.1	98.5	97.1	96.9	95.3	92.9	92.4
16	3.24	75.794	2 779	100.5	99.7	98.3	98.8	97.7	97.7	96.3	94.2	93.7
17	3.23	75.553	2 828	100.4	99.4	98.1	98.7	97.8	97.7	96.3	94.1	93.6
18	3.24	75.881	2 769	100.5	99.5	98.2	98.8	97.8	97.8	96.5	94.3	93.9
19	3.23	75.699	2 803	100.6	99.7	98.5	98.9	97.7	97.8	96.4	94.2	93.7
20	3.24	76.030	2 760	100.5	99.5	98.3	98.8	97.9	97.9	96.6	93.8	93.5
21	3.22	74.931	2 789	100.4	99.4	98.2	98.6	97.5	97.4	95.9	93.7	93.1
22	3.24	76.135	2 806	100.6	99.7	98.4	98.9	97.9	97.9	96.6	94.3	93.8
23	3.24	75.676	2 843	100.7	99.8	98.4	98.9	97.8	97.7	96.3	93.9	93.5
24	3.24	75.648	2 823	99.9	99.5	97.9	98.6	97.4	97.2	95.9	93.5	93.0
25	3.25	74.072	2 839	100.3	99.6	98.1	98.7	97.4	97.6	96.1	93.8	93.3
Max.	3.25	76.135	2 850	101.4	101.2	99.2	99.5	99.2	98.3	97.2	95.9	95.9
Ave.	3.23	75.107	2 808	100.8	100.3	98.5	99.0	98.2	97.8	96.5	94.6	94.4
Min.	3.21	73.850	2 760	99.9	99.4	97.6	98.5	97.1	96.8	95.3	92.8	92.4
Med.	3.23	75.078	2 807	100.8	100.4	98.5	98.9	98.1	97.8	96.6	94.3	93.9
Std.	0.01	0.622	27	0.4	0.7	0.4	0.3	0.6	0.4	0.5	1.0	1.1



SEOUL SEMICONDUCTOR

[CHROMATICITY SHIFT]

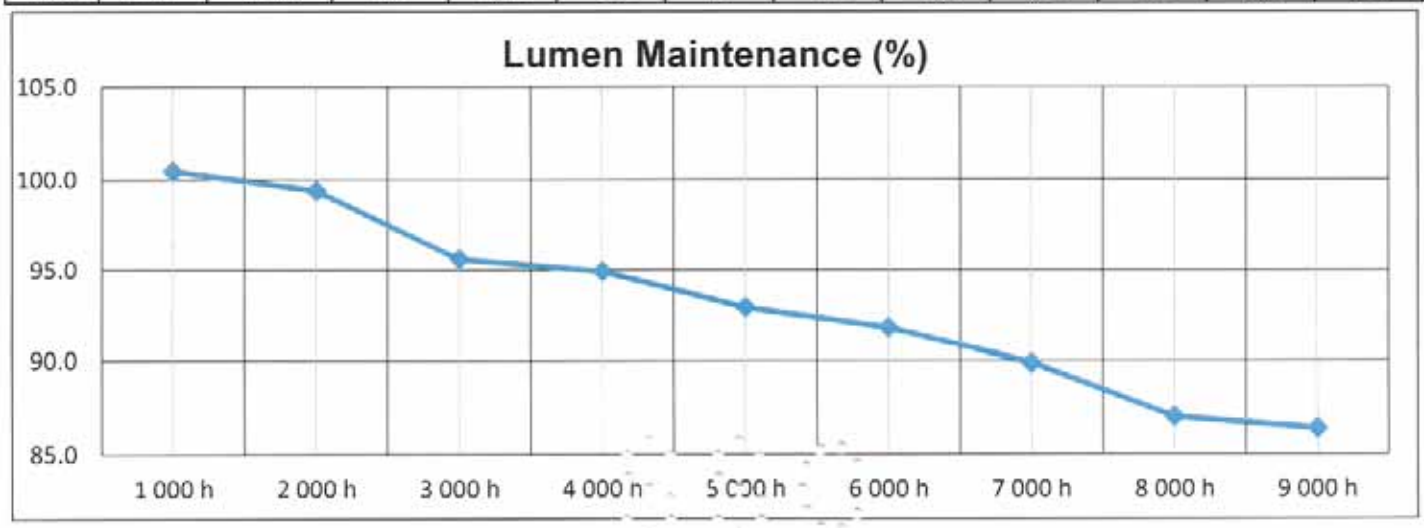
No.	u'	v'	Chromaticity Shift								
	0 h		1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h	7 000 h	8 000 h	9 000 h
1	0.258	0.522	0.000 1	0.000 2	0.000 4	0.000 9	0.000 5	0.001 9	0.002 0	0.001 8	0.001 9
2	0.260	0.527	0.000 2	0.000 4	0.000 6	0.001 0	0.000 6	0.001 7	0.001 7	0.001 8	0.001 8
3	0.258	0.524	0.000 3	0.000 5	0.000 8	0.001 2	0.001 0	0.002 1	0.002 1	0.002 1	0.002 2
4	0.259	0.524	0.000 1	0.000 2	0.000 4	0.000 9	0.000 8	0.001 6	0.001 9	0.001 7	0.001 8
5	0.259	0.525	0.000 2	0.000 4	0.000 5	0.000 9	0.000 7	0.001 6	0.001 8	0.001 9	0.001 9
6	0.258	0.522	0.000 2	0.000 3	0.000 9	0.001 2	0.001 2	0.002 1	0.002 3	0.002 3	0.002 3
7	0.259	0.525	0.000 0	0.000 1	0.000 5	0.000 8	0.000 7	0.001 6	0.001 9	0.001 6	0.001 7
8	0.259	0.524	0.000 2	0.000 4	0.000 6	0.000 9	0.000 8	0.001 5	0.001 8	0.001 7	0.002 0
9	0.258	0.522	0.000 0	0.000 1	0.000 5	0.000 9	0.000 9	0.001 8	0.002 1	0.001 9	0.002 2
10	0.259	0.526	0.000 1	0.000 3	0.000 5	0.000 9	0.000 9	0.001 8	0.001 9	0.000 9	0.002 0
11	0.260	0.527	0.000 1	0.000 2	0.000 5	0.000 8	0.001 0	0.001 6	0.001 6	0.001 9	0.001 8
12	0.260	0.528	0.000 2	0.000 4	0.000 6	0.001 0	0.001 0	0.001 6	0.001 8	0.001 8	0.001 9
13	0.258	0.522	0.000 1	0.000 4	0.000 5	0.001 0	0.000 9	0.001 7	0.001 9	0.001 8	0.002 0
14	0.259	0.525	0.000 1	0.000 3	0.000 5	0.000 9	0.000 9	0.001 8	0.001 9	0.001 8	0.001 8
15	0.259	0.523	0.000 0	0.000 4	0.000 6	0.001 0	0.000 9	0.002 1	0.002 2	0.002 3	0.002 2
16	0.260	0.525	0.000 1	0.000 3	0.000 8	0.000 9	0.000 9	0.001 9	0.001 9	0.001 8	0.001 9
17	0.258	0.524	0.000 2	0.000 3	0.000 5	0.000 8	0.000 8	0.001 8	0.001 9	0.001 9	0.001 9
18	0.261	0.525	0.000 1	0.000 4	0.000 5	0.001 0	0.000 9	0.001 8	0.001 8	0.001 7	0.001 9
19	0.259	0.523	0.000 3	0.000 4	0.000 7	0.001 1	0.000 9	0.002 1	0.002 0	0.002 0	0.002 1
20	0.261	0.525	0.000 3	0.000 4	0.000 8	0.000 9	0.000 6	0.001 6	0.001 7	0.001 7	0.001 8
21	0.260	0.525	0.000 1	0.000 3	0.000 7	0.001 0	0.000 8	0.001 9	0.002 0	0.001 9	0.001 9
22	0.259	0.523	0.000 0	0.000 4	0.000 4	0.000 9	0.000 7	0.001 6	0.001 8	0.001 7	0.001 7
23	0.258	0.522	0.000 3	0.000 5	0.000 8	0.001 0	0.000 7	0.002 1	0.002 1	0.002 0	0.002 1
24	0.259	0.523	0.000 3	0.000 5	0.000 6	0.000 9	0.001 0	0.002 1	0.002 1	0.001 8	0.002 2
25	0.258	0.520	0.000 2	0.000 3	0.000 7	0.001 1	0.000 9	0.001 9	0.002 2	0.002 3	0.002 3
Max.	0.261	0.528	0.000 3	0.000 5	0.000 9	0.001 2	0.001 2	0.002 1	0.002 3	0.002 3	0.002 3
Ave.	0.259	0.524	0.000 2	0.000 3	0.000 6	0.001 0	0.000 9	0.001 8	0.001 9	0.001 9	0.002 0
Min.	0.258	0.520	0.000 0	0.000 1	0.000 4	0.000 8	0.000 5	0.001 5	0.001 6	0.000 9	0.001 7
Med.	0.259	0.524	0.000 1	0.000 4	0.000 6	0.000 9	0.000 9	0.001 8	0.001 9	0.001 8	0.001 9
Std.	0.001	0.002	0.000 1	0.000 1	0.000 1	0.000 1	0.000 1	0.000 2	0.000 2	0.000 3	0.000 2



3.3 Condition 3 : [Ts = 105 ℃]

[LUMEN MAINTENANCE]

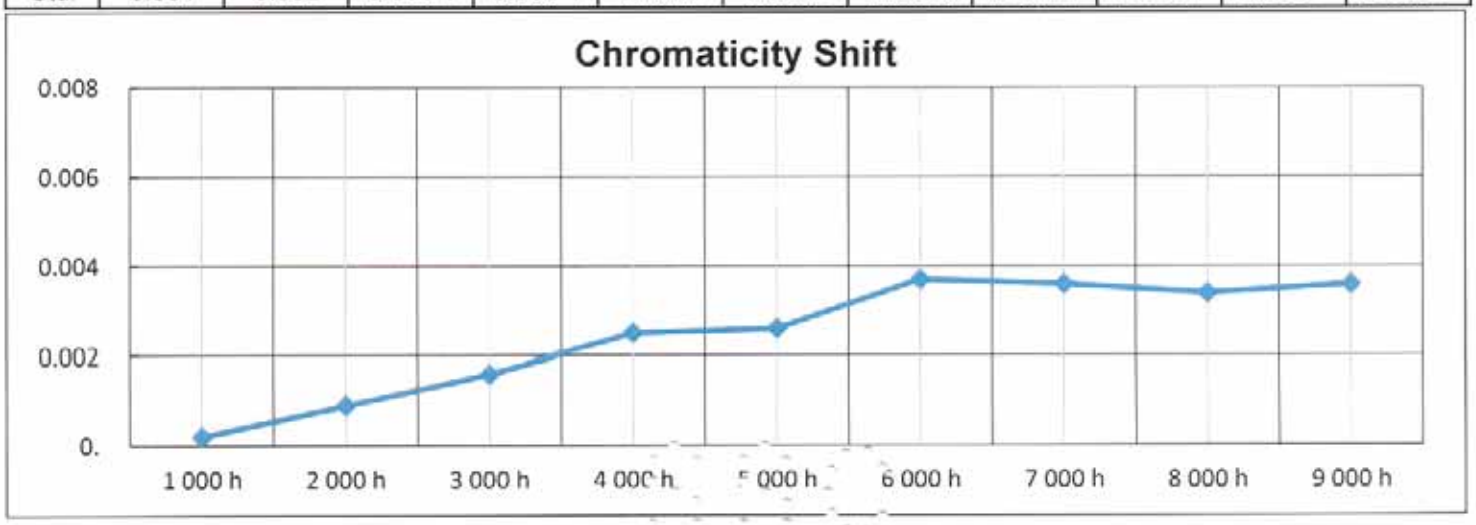
No.	Vf(V)	Flux(lm)	CCT(K)	Lumen Maintenance (%)								
	0 h			1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h	7 000 h	8 000 h	9 000 h
1	3.20	70.374	2 770	100.4	99.1	98.5	94.6	94.4	90.9	89.1	85.4	85.5
2	3.23	74.835	2 772	100.5	99.5	95.5	94.4	92.7	91.1	89.0	86.7	86.0
3	3.22	74.801	2 827	100.5	99.5	95.7	95.2	93.5	92.3	90.2	87.5	86.8
4	3.24	74.877	2 752	100.5	99.5	95.2	94.6	92.7	91.2	89.1	86.6	85.9
5	3.22	74.773	2 774	100.6	99.6	95.2	94.5	92.6	91.3	89.3	86.7	85.9
6	3.22	74.535	2 791	100.6	99.6	95.8	95.5	93.7	92.6	90.5	85.0	85.7
7	3.22	75.303	2 786	100.6	99.7	95.8	95.3	93.4	92.2	90.1	87.7	86.9
8	3.21	75.307	2 807	100.8	99.8	95.6	95.2	93.2	91.8	89.7	87.3	86.4
9	3.22	74.708	2 779	100.6	99.7	95.5	94.9	92.9	91.4	89.7	87.1	86.5
10	3.22	74.867	2 845	100.3	99.3	95.2	94.9	92.9	91.8	89.7	87.0	86.4
11	3.22	74.275	2 804	100.5	99.5	95.6	95.1	93.5	92.4	90.4	88.0	87.2
12	3.23	74.059	2 805	100.3	99.3	95.3	94.5	92.9	91.7	89.6	87.1	86.3
13	3.24	73.165	2 798	99.5	98.6	94.5	94.0	92.5	90.9	88.8	86.2	85.4
14	3.21	73.956	2 815	100.0	99.0	95.2	95.4	93.5	93.3	92.2	88.6	87.8
15	3.23	74.274	2 824	100.6	99.4	95.5	94.8	92.3	91.5	89.5	86.3	85.4
16	3.23	75.551	2 804	100.6	99.5	96.0	95.7	93.5	92.8	90.9	87.7	87.0
17	3.23	75.560	2 805	100.6	99.5	95.7	95.1	92.6	91.9	90.1	87.3	86.8
18	3.23	75.393	2 797	100.6	99.4	95.6	94.9	92.6	91.7	90.0	87.1	86.8
19	3.23	75.205	2 864	100.4	98.9	95.3	94.8	92.4	91.9	90.0	87.4	86.9
20	3.24	75.503	2 800	100.3	99.3	95.5	95.0	92.6	91.8	89.8	87.4	86.6
21	3.23	75.627	2 853	100.6	99.3	95.6	94.9	92.6	92.0	90.1	87.6	86.9
22	3.22	73.329	2 839	100.4	99.1	95.3	94.6	92.4	91.7	90.1	87.4	86.9
23	3.24	75.381	2 784	100.5	99.5	95.8	95.0	92.5	91.7	89.7	87.3	86.5
24	3.23	74.600	2 850	100.2	99.2	95.6	95.4	93.1	92.7	91.0	88.1	87.3
25	3.25	74.960	2 796	100.3	99.1	95.3	94.7	92.1	91.3	89.3	86.4	85.6
Max.	3.25	75.627	2 864	100.8	99.8	98.5	95.7	94.4	93.3	92.2	88.6	87.8
Ave.	3.23	74.609	2 806	100.4	99.4	95.6	94.9	92.9	91.8	89.9	87.1	86.5
Min.	3.20	70.374	2 752	99.5	98.6	94.5	94.0	92.1	90.9	88.8	85.0	85.4
Med.	3.23	74.835	2 804	100.5	99.4	95.5	94.9	92.7	91.8	89.8	87.3	86.5
Std.	0.01	1.102	28	0.3	0.3	0.7	0.4	0.5	0.6	0.7	0.8	0.6



SEOUL SEMICONDUCTOR

[CHROMATICITY SHIFT]

No.	u'	v'	Chromaticity Shift								
	0 h		1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h	7 000 h	8 000 h	9 000 h
1	0.260	0.525	0.000 6	0.001 2	0.002 1	0.003 0	0.002 7	0.003 8	0.003 8	0.003 6	0.003 6
2	0.260	0.526	0.000 2	0.001 0	0.001 7	0.002 4	0.002 8	0.003 8	0.004 1	0.003 7	0.004 0
3	0.258	0.523	0.000 2	0.000 7	0.001 4	0.002 4	0.002 4	0.003 1	0.003 0	0.002 9	0.003 0
4	0.261	0.527	0.000 4	0.001 0	0.002 0	0.002 9	0.003 0	0.004 0	0.003 9	0.003 6	0.003 7
5	0.260	0.526	0.000 1	0.000 8	0.001 7	0.002 7	0.002 8	0.004 0	0.003 9	0.003 7	0.003 8
6	0.260	0.525	0.000 1	0.000 7	0.001 5	0.002 3	0.002 2	0.003 4	0.003 2	0.002 8	0.006 3
7	0.260	0.524	0.000 2	0.000 7	0.001 5	0.002 2	0.002 7	0.003 7	0.003 4	0.003 2	0.003 4
8	0.259	0.525	0.000 2	0.000 8	0.001 6	0.002 6	0.003 4	0.004 5	0.004 5	0.004 2	0.004 1
9	0.260	0.526	0.000 1	0.001 0	0.001 6	0.002 6	0.002 6	0.003 8	0.003 5	0.003 4	0.003 6
10	0.258	0.522	0.000 1	0.000 7	0.001 4	0.002 2	0.003 3	0.004 2	0.004 0	0.003 5	0.003 6
11	0.259	0.525	0.000 3	0.001 0	0.001 5	0.002 4	0.003 2	0.004 1	0.004 0	0.003 7	0.003 8
12	0.259	0.523	0.000 3	0.000 8	0.001 4	0.002 0	0.002 3	0.003 3	0.003 3	0.003 1	0.003 1
13	0.259	0.524	0.000 3	0.001 0	0.001 8	0.002 7	0.002 7	0.003 8	0.003 7	0.003 8	0.003 6
14	0.259	0.522	0.000 4	0.000 9	0.001 6	0.002 3	0.002 2	0.003 0	0.003 1	0.003 0	0.002 9
15	0.258	0.524	0.000 2	0.000 9	0.001 7	0.002 7	0.002 9	0.004 1	0.003 9	0.003 7	0.003 8
16	0.259	0.526	0.000 2	0.000 7	0.001 4	0.002 1	0.002 1	0.003 0	0.002 8	0.002 7	0.002 7
17	0.259	0.525	0.000 3	0.000 9	0.001 9	0.002 6	0.002 4	0.003 6	0.003 5	0.003 4	0.003 3
18	0.260	0.523	0.000 1	0.000 8	0.001 5	0.002 3	0.002 4	0.003 4	0.003 4	0.003 0	0.003 2
19	0.257	0.523	0.000 4	0.001 1	0.001 7	0.002 5	0.002 8	0.003 7	0.003 8	0.003 4	0.003 5
20	0.259	0.523	0.000 2	0.001 1	0.001 7	0.002 7	0.002 4	0.003 8	0.003 7	0.003 6	0.003 4
21	0.257	0.523	0.000 1	0.000 8	0.001 5	0.002 5	0.002 5	0.003 6	0.003 5	0.003 4	0.003 0
22	0.258	0.521	0.000 1	0.000 9	0.001 7	0.002 5	0.002 7	0.003 7	0.003 9	0.003 5	0.003 5
23	0.260	0.525	0.000 2	0.001 0	0.001 4	0.002 4	0.002 3	0.003 5	0.003 6	0.003 2	0.003 3
24	0.258	0.521	0.000 4	0.001 0	0.001 6	0.002 4	0.002 5	0.003 5	0.003 3	0.003 1	0.003 1
25	0.260	0.523	0.000 1	0.001 0	0.001 8	0.002 6	0.002 7	0.004 0	0.003 8	0.003 7	0.003 7
Max.	0.261	0.527	0.000 6	0.001 2	0.002 1	0.003 0	0.003 4	0.004 5	0.004 5	0.004 2	0.006 3
Ave.	0.259	0.524	0.000 2	0.000 9	0.001 6	0.002 5	0.002 6	0.003 7	0.003 6	0.003 4	0.003 6
Min.	0.257	0.521	0.000 1	0.000 7	0.001 4	0.002 0	0.002 1	0.003 0	0.002 8	0.002 7	0.002 7
Med.	0.259	0.524	0.000 2	0.000 9	0.001 6	0.002 5	0.002 7	0.003 7	0.003 7	0.003 4	0.003 5
Std.	0.001	0.002	0.000 1	0.000 1	0.000 2	0.000 2	0.000 3	0.000 4	0.000 4	0.000 4	0.000 7



4. Revision History

Revision No.	Revision Date	Contents
01	Feb. 06, 2015	First Issued
02	Mar. 24, 2015	The Second issued : Add the 7 000 h test data
03	May. 07, 2015	The Third issued : Add the 8 000 h test data
04	Jul. 03, 2015	The Fourth issued : Add the 9 000 h test data