



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 : 3030B
(STWxC2SB)**

Test Date : July. 29, 2014 ~ Jul. 22, 2015

Report Date : Aug. 05, 2015

Report Number : I-140721-12-K-03

Revision Number : 03

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

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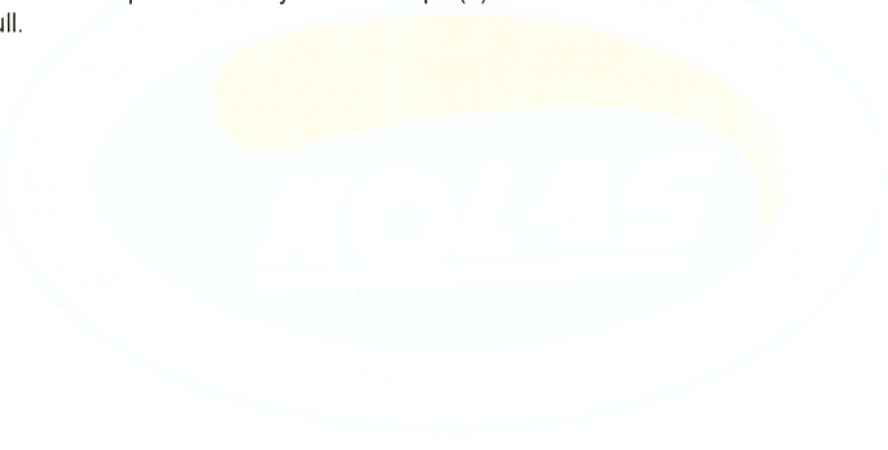
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1. Summary

1.1 Test Result

Items	Condition 1	Condition 2	Condition 3
Required Temperature	55 °C	85 °C	105 °C
Number of LED light sources tested (ea)	25	25	25
Test Duration (h)	7 000	7 000	7 000
Drive Current (mA)	200	200	200
Actual Case Temperature (°C)	53.1	83.1	103.0
Actual Ambient Temperature (°C)	51.0	80.5	100.7
Air flow velocity (m/s)	0.83	0.49	0.14
Average Initial Luminous Flux (lm)	120.996	121.424	120.773
Average Initial CCT (K)	2 675	2 664	2 662
Average Initial Volatge (V)	6.52	6.52	6.52
Average Lumen maintenance (%)	99.1	96.1	90.2
Average Chromaticity Shift	0.003 0	0.005 5	0.005 8

※ 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.





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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 53.1 °C
- 25 Packages tested at actual case temperature 83.1 °C
- 25 Packages tested at actual case temperature 103.0 °C

2.2 Description of LED light Sources

- LED Package Part Number : STWxC2SB
- LED Forward Current [IF] : 200 mA
- LED Package Dimension : 3.0 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 : 200 mA
 - Typical Voltage : 6.52 V
- All tested LED packages are driven with a constant direct current.

2.5 Ambient conditions including airflow, temperature and relative humidity

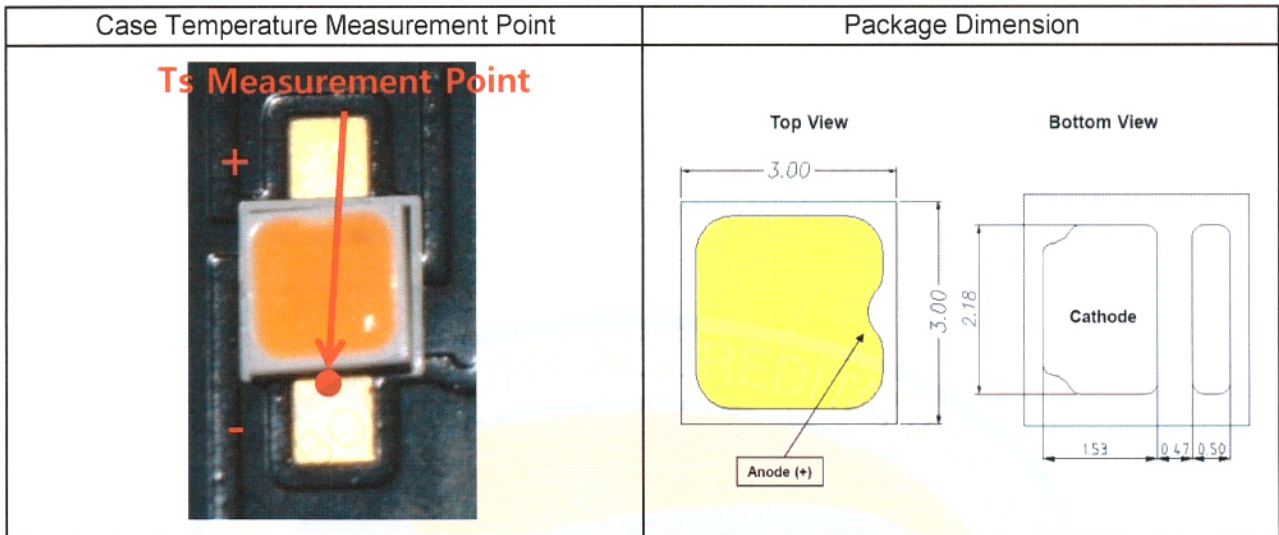
- Controlled ambient conditions

Ambient temperature	- 5 °C
Air flow velocity	< 1 m/s
Relative humidity	< 65% R.H.



2.6 Case Temperature (Test Point temperature)

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



(STWxC2SA)

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 and 7 000 h

2.11 Photometric measurement uncertainty

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

2.12 Chromaticity shift over the measurement time

- See the Test Data.





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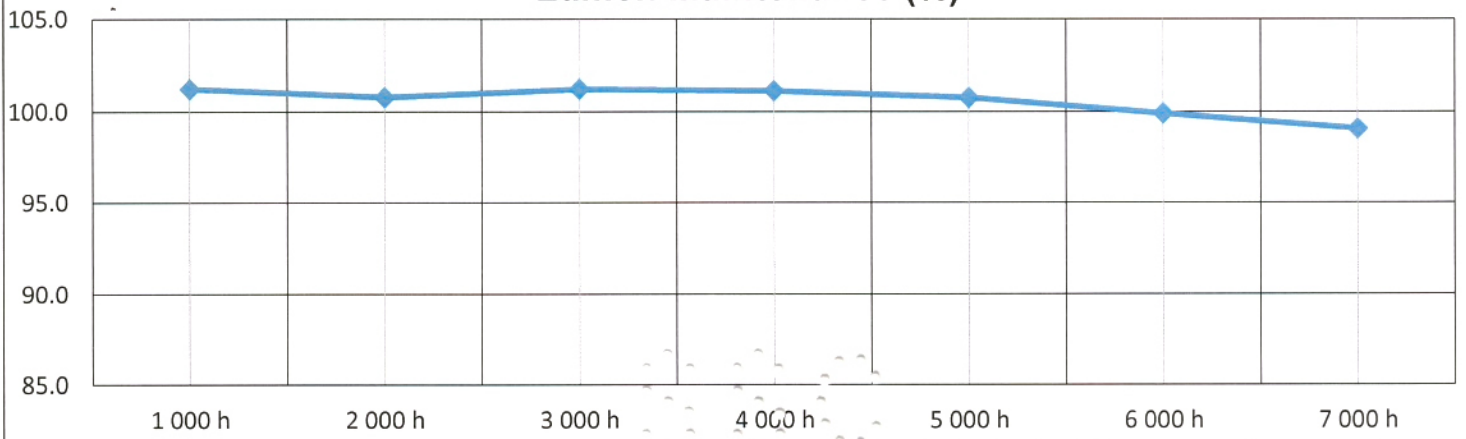
3. Test Data

3.1 Condition 1 : [Ts = 55 °C]

[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
1	6.50	122.241	2 697	100.9	100.0	100.9	100.6	100.6	99.9	98.8
2	6.53	123.694	2 670	101.4	100.9	101.0	100.6	100.4	99.4	98.6
3	6.52	123.466	2 632	101.4	101.2	101.6	101.0	100.8	99.5	98.9
4	6.54	122.796	2 672	101.9	101.2	102.0	102.0	102.2	101.5	100.4
5	6.50	123.180	2 674	101.3	101.1	101.3	101.4	100.7	100.0	98.9
6	6.49	122.200	2 670	101.4	101.0	101.2	100.8	100.8	99.9	99.1
7	6.51	120.349	2 668	101.0	100.4	101.4	101.2	100.8	100.7	99.7
8	6.51	114.299	2 660	101.4	100.9	101.4	102.5	101.6	101.5	100.4
9	6.54	121.686	2 674	101.2	100.5	101.1	99.6	100.1	98.5	98.1
10	6.50	123.177	2 651	101.5	100.5	101.2	101.0	100.2	99.0	98.8
11	6.56	123.173	2 690	101.2	100.4	101.5	101.7	100.9	100.3	99.1
12	6.54	123.635	2 658	101.4	101.0	101.2	101.0	100.3	99.9	99.0
13	6.52	122.101	2 684	101.4	101.0	101.2	101.1	100.7	99.5	98.8
14	6.53	121.419	2 676	101.1	100.8	101.5	102.0	101.1	100.9	99.5
15	6.52	117.380	2 696	100.7	100.0	100.9	101.5	101.0	100.9	100.3
16	6.50	109.346	2 697	101.4	100.8	101.6	102.5	102.9	102.5	101.8
17	6.52	113.784	2 681	101.1	101.1	101.0	99.4	99.6	98.2	97.5
18	6.55	120.173	2 680	100.7	100.5	101.2	99.7	100.3	98.7	98.0
19	6.51	124.395	2 676	100.4	100.0	100.7	100.3	100.5	98.7	98.6
20	6.51	125.510	2 688	100.7	100.6	101.1	100.8	100.3	99.0	98.4
21	6.53	124.499	2 661	101.4	101.0	101.0	101.4	100.3	99.6	98.5
22	6.51	123.385	2 672	101.5	101.2	100.9	101.5	100.7	99.3	98.4
23	6.51	121.909	2 678	101.5	101.1	101.2	101.6	100.9	100.2	99.0
24	6.52	119.584	2 684	101.4	101.3	101.5	101.6	100.9	100.3	99.7
25	6.54	117.509	2 693	101.0	100.5	100.8	101.2	100.4	100.2	99.4
Max.	6.56	125.510	2 697	101.9	101.3	102.0	102.5	102.9	102.5	101.8
Ave.	6.52	120.996	2 675	101.2	100.8	101.2	101.1	100.8	99.9	99.1
Min.	6.49	109.346	2 632	100.4	100.0	100.7	99.4	99.6	98.2	97.5
Med.	6.52	122.200	2 676	101.4	100.9	101.2	101.2	100.7	99.9	98.9
Std.	0.02	3.843	15	0.3	0.4	0.3	0.8	0.7	1.0	0.9

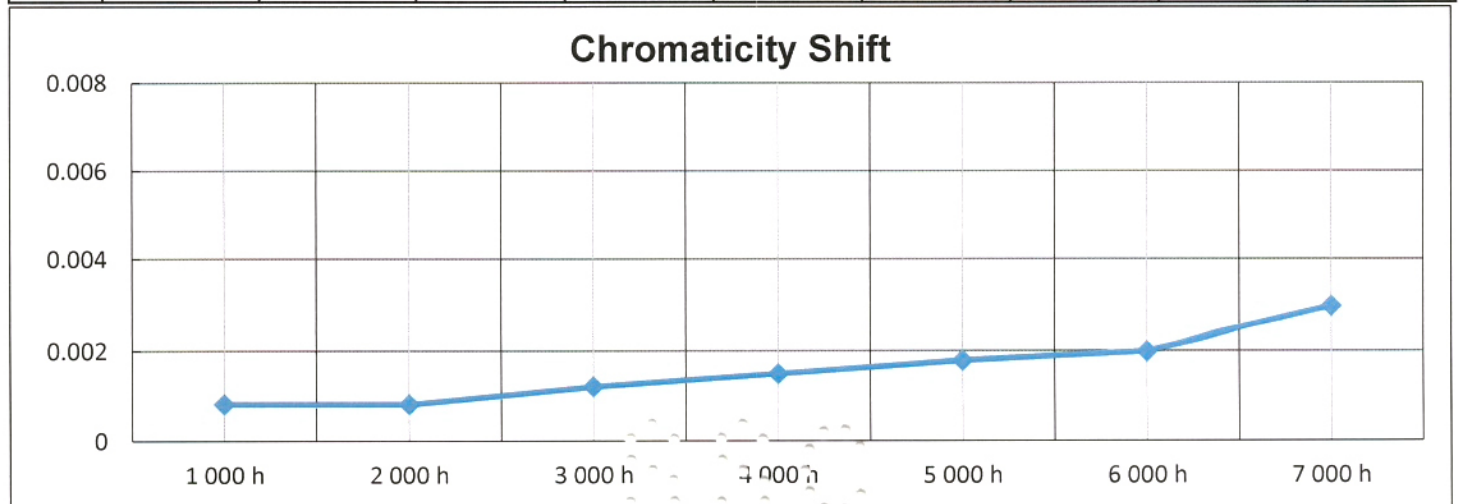
Lumen Maintenance (%)





[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
1	0.263	0.524	0.000 7	0.000 8	0.001 4	0.001 6	0.002 0	0.002 2	0.002 9
2	0.264	0.527	0.000 7	0.000 8	0.001 1	0.001 4	0.001 8	0.002 1	0.003 1
3	0.266	0.528	0.000 6	0.000 8	0.001 2	0.001 5	0.001 9	0.002 1	0.003 2
4	0.264	0.526	0.000 6	0.000 7	0.001 2	0.001 6	0.002 0	0.002 2	0.003 1
5	0.264	0.527	0.000 6	0.000 7	0.001 1	0.001 6	0.001 9	0.002 3	0.003 1
6	0.264	0.528	0.000 8	0.000 8	0.001 1	0.001 2	0.001 8	0.002 1	0.003 1
7	0.264	0.528	0.000 8	0.000 9	0.001 2	0.001 4	0.001 8	0.002 1	0.003 1
8	0.265	0.527	0.000 8	0.000 9	0.001 2	0.001 7	0.002 2	0.002 5	0.003 3
9	0.264	0.528	0.000 8	0.000 7	0.001 0	0.001 1	0.001 7	0.002 0	0.003 1
10	0.265	0.528	0.000 6	0.000 7	0.001 2	0.001 6	0.001 8	0.002 0	0.003 1
11	0.263	0.526	0.000 8	0.000 8	0.001 4	0.001 8	0.002 1	0.002 6	0.003 5
12	0.264	0.528	0.000 7	0.000 8	0.001 1	0.001 5	0.001 7	0.002 0	0.002 8
13	0.263	0.527	0.000 6	0.000 8	0.001 2	0.001 6	0.002 0	0.002 4	0.003 5
14	0.264	0.526	0.000 7	0.000 8	0.001 3	0.001 8	0.002 1	0.002 5	0.003 5
15	0.263	0.526	0.000 9	0.000 8	0.001 2	0.001 6	0.001 9	0.002 2	0.003 3
16	0.263	0.526	0.000 9	0.000 8	0.001 2	0.001 6	0.002 2	0.002 4	0.003 5
17	0.264	0.526	0.001 1	0.001 0	0.001 2	0.001 4	0.001 7	0.001 8	0.002 8
18	0.264	0.526	0.000 9	0.000 8	0.001 1	0.001 1	0.001 5	0.001 5	0.002 5
19	0.264	0.526	0.000 8	0.000 9	0.001 2	0.001 5	0.001 9	0.001 9	0.003 0
20	0.263	0.527	0.000 9	0.000 9	0.001 2	0.001 4	0.001 7	0.001 6	0.002 4
21	0.265	0.526	0.001 1	0.001 0	0.001 2	0.001 5	0.001 6	0.001 9	0.002 6
22	0.264	0.528	0.001 0	0.000 9	0.001 1	0.001 5	0.001 7	0.001 7	0.002 5
23	0.264	0.527	0.000 9	0.000 9	0.001 1	0.001 5	0.001 7	0.001 8	0.002 6
24	0.263	0.527	0.001 1	0.000 9	0.001 0	0.001 3	0.001 4	0.001 4	0.002 2
25	0.263	0.527	0.001 0	0.000 9	0.001 1	0.001 4	0.001 6	0.001 7	0.002 5
Max.	0.266	0.528	0.001 1	0.001 0	0.001 4	0.001 8	0.002 2	0.002 6	0.003 5
Ave.	0.264	0.527	0.000 8	0.000 8	0.001 2	0.001 5	0.001 8	0.002 0	0.003 0
Min.	0.263	0.524	0.000 6	0.000 7	0.001 0	0.001 1	0.001 4	0.001 4	0.002 2
Med.	0.264	0.527	0.000 8	0.000 8	0.001 2	0.001 5	0.001 8	0.002 1	0.003 1
Std.	0.001	0.001	0.000 2	0.000 1	0.000 1	0.000 2	0.000 2	0.000 3	0.000 4





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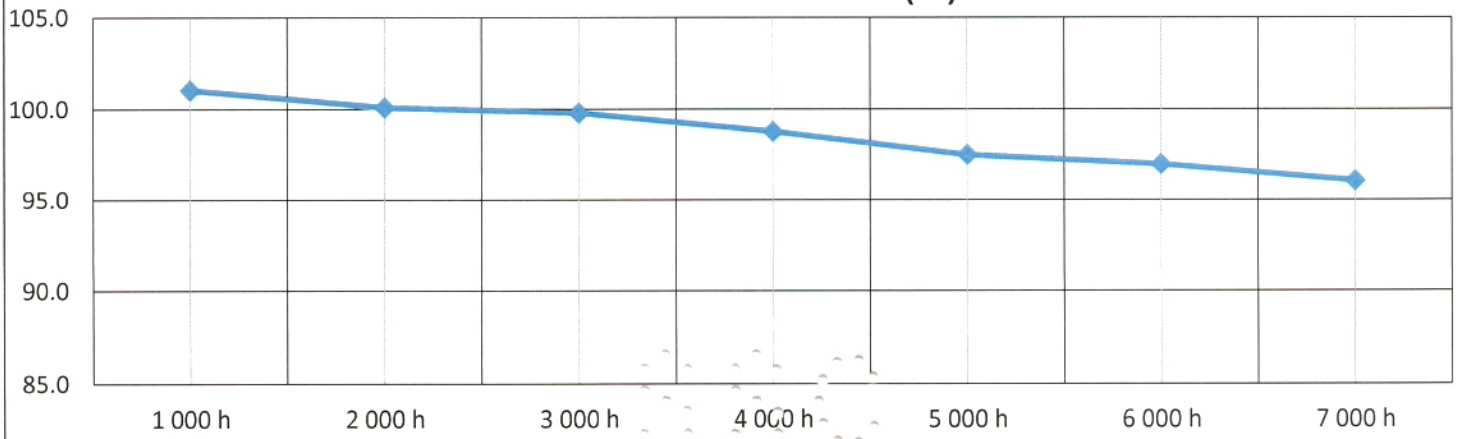


3.2 Condition 2 : [Ts = 85 °C]

[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
1	6.48	113.091	2 659	99.9	99.2	99.7	98.9	96.4	94.1	94.1
2	6.51	119.951	2 647	100.3	99.2	99.7	98.1	97.0	96.0	95.0
3	6.50	121.150	2 654	100.5	99.6	99.6	98.3	96.5	96.9	95.8
4	6.54	123.094	2 665	101.1	100.0	99.9	98.7	97.7	96.9	96.2
5	6.51	123.255	2 672	101.1	100.3	100.0	99.2	97.5	97.4	96.6
6	6.54	124.092	2 642	101.3	100.1	99.3	95.3	93.6	93.5	93.4
7	6.52	124.650	2 678	100.5	100.0	99.4	98.6	97.9	97.8	96.9
8	6.51	123.051	2 654	101.5	100.3	99.6	98.4	97.1	96.1	95.4
9	6.53	124.363	2 658	101.4	100.0	99.2	98.5	97.8	97.0	96.5
10	6.53	117.908	2 652	100.5	99.3	99.3	97.1	95.8	94.9	94.6
11	6.55	122.626	2 686	100.4	99.5	99.2	98.1	96.9	96.8	96.1
12	6.50	124.096	2 680	101.5	100.6	100.3	98.9	97.7	97.7	96.7
13	6.55	122.513	2 633	102.2	100.8	101.0	99.9	98.7	98.4	97.4
14	6.50	121.459	2 667	100.8	99.7	99.2	97.8	97.1	97.7	95.9
15	6.53	115.760	2 659	101.0	99.5	99.4	98.6	97.5	96.1	94.8
16	6.49	114.946	2 647	101.9	100.9	100.2	99.9	98.1	97.6	96.9
17	6.53	123.387	2 680	100.7	100.1	99.6	99.2	98.2	98.4	96.9
18	6.50	122.976	2 656	101.2	100.5	100.2	100.5	98.3	98.0	97.4
19	6.56	124.270	2 673	101.0	100.4	99.6	98.8	97.1	96.4	95.4
20	6.55	122.046	2 661	101.3	100.8	101.2	100.9	100.4	98.7	98.1
21	6.53	125.229	2 688	101.2	100.2	99.9	98.7	98.0	97.3	96.4
22	6.51	121.569	2 692	100.9	100.4	99.7	99.1	98.6	97.6	97.1
23	6.54	122.642	2 654	100.8	99.8	99.4	98.7	97.0	97.4	95.3
24	6.52	121.161	2 651	101.3	100.3	100.2	99.8	98.3	97.7	96.1
25	6.51	116.306	2 687	100.4	100.0	99.8	99.0	98.3	98.5	97.2
Max.	6.56	125.229	2 692	102.2	100.9	101.2	100.9	100.4	98.7	98.1
Ave.	6.52	121.424	2 664	101.0	100.1	99.8	98.8	97.5	97.0	96.1
Min.	6.48	113.091	2 633	99.9	99.2	99.2	95.3	93.6	93.5	93.4
Med.	6.52	122.626	2 659	101.0	100.1	99.7	98.7	97.7	97.4	96.2
Std.	0.02	3.290	16	0.5	0.5	0.5	1.1	1.2	1.3	1.1

Lumen Maintenance (%)

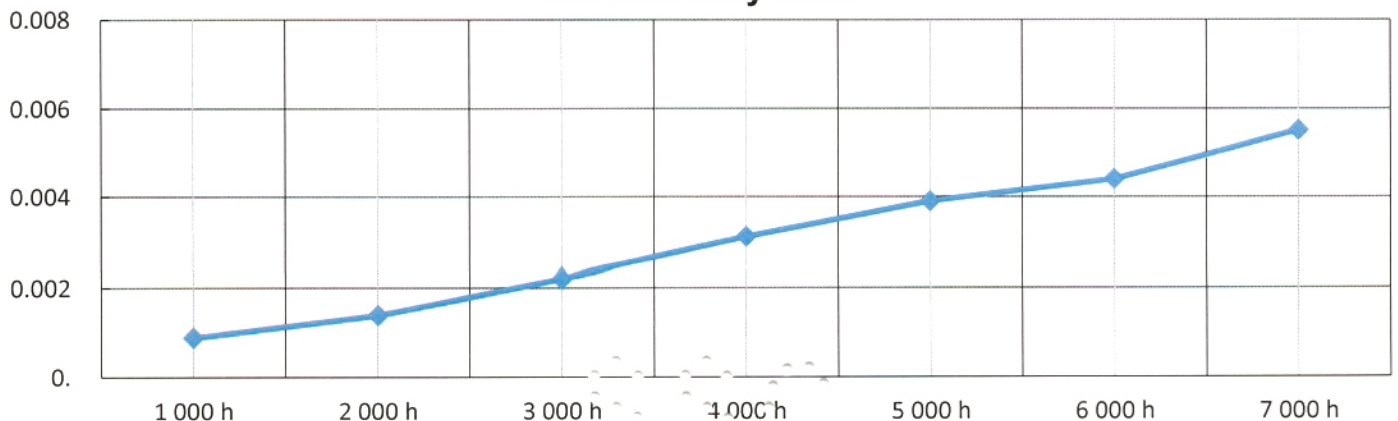




[CHROMATICITY SHIFT]

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
1	0.265	0.527	0.001 0	0.001 7	0.002 5	0.003 5	0.004 3	0.004 6	0.005 6
2	0.265	0.528	0.000 9	0.001 4	0.002 3	0.003 0	0.004 0	0.004 5	0.005 4
3	0.265	0.527	0.001 1	0.001 5	0.002 3	0.003 2	0.004 0	0.004 7	0.005 8
4	0.264	0.527	0.001 0	0.001 5	0.002 4	0.003 3	0.004 3	0.004 6	0.005 7
5	0.264	0.527	0.001 0	0.001 5	0.002 4	0.003 5	0.004 2	0.004 8	0.005 8
6	0.265	0.528	0.001 0	0.001 3	0.002 0	0.002 8	0.003 4	0.003 7	0.004 7
7	0.264	0.527	0.000 8	0.001 3	0.002 0	0.002 8	0.003 6	0.004 2	0.005 3
8	0.265	0.527	0.001 0	0.001 4	0.002 1	0.003 0	0.003 9	0.004 2	0.005 3
9	0.264	0.528	0.001 0	0.001 4	0.002 1	0.003 1	0.003 9	0.004 3	0.005 4
10	0.265	0.527	0.000 8	0.001 4	0.002 2	0.003 1	0.004 0	0.004 5	0.005 5
11	0.263	0.526	0.000 9	0.001 4	0.002 1	0.003 0	0.003 8	0.004 4	0.005 6
12	0.263	0.528	0.000 8	0.001 3	0.002 1	0.002 9	0.003 8	0.004 3	0.005 3
13	0.266	0.528	0.000 8	0.001 4	0.002 3	0.003 3	0.004 1	0.004 5	0.005 6
14	0.264	0.527	0.000 9	0.001 4	0.002 2	0.003 1	0.003 9	0.004 7	0.005 6
15	0.264	0.529	0.001 0	0.001 2	0.002 0	0.002 7	0.003 7	0.004 0	0.004 9
16	0.265	0.526	0.001 1	0.001 6	0.002 3	0.003 3	0.004 2	0.004 8	0.006 1
17	0.264	0.526	0.000 8	0.001 4	0.002 0	0.002 9	0.003 7	0.004 3	0.005 3
18	0.264	0.529	0.000 8	0.001 3	0.001 9	0.002 9	0.003 4	0.003 9	0.005 0
19	0.264	0.526	0.001 0	0.001 5	0.002 2	0.003 1	0.003 9	0.004 3	0.005 4
20	0.265	0.525	0.001 0	0.001 5	0.002 5	0.003 4	0.004 3	0.004 7	0.005 9
21	0.263	0.527	0.000 9	0.001 3	0.002 0	0.002 7	0.003 7	0.004 1	0.005 2
22	0.263	0.527	0.001 0	0.001 6	0.002 2	0.003 1	0.004 2	0.004 5	0.005 8
23	0.265	0.527	0.001 2	0.001 5	0.002 1	0.003 0	0.003 8	0.004 5	0.005 3
24	0.265	0.528	0.000 9	0.001 2	0.001 9	0.003 0	0.003 9	0.004 2	0.005 2
25	0.263	0.526	0.001 0	0.001 4	0.002 1	0.003 0	0.004 1	0.004 6	0.005 7
Max.	0.266	0.529	0.001 2	0.001 7	0.002 5	0.003 5	0.004 3	0.004 8	0.006 1
Ave.	0.264	0.527	0.000 9	0.001 4	0.002 2	0.003 1	0.003 9	0.004 4	0.005 5
Min.	0.263	0.525	0.000 8	0.001 2	0.001 9	0.002 7	0.003 4	0.003 7	0.004 7
Med.	0.264	0.527	0.001 0	0.001 4	0.002 1	0.003 0	0.003 9	0.004 5	0.005 4
Std.	0.001	0.001	0.000 1	0.000 1	0.000 2	0.000 2	0.000 3	0.000 3	0.000 3

Chromaticity Shift





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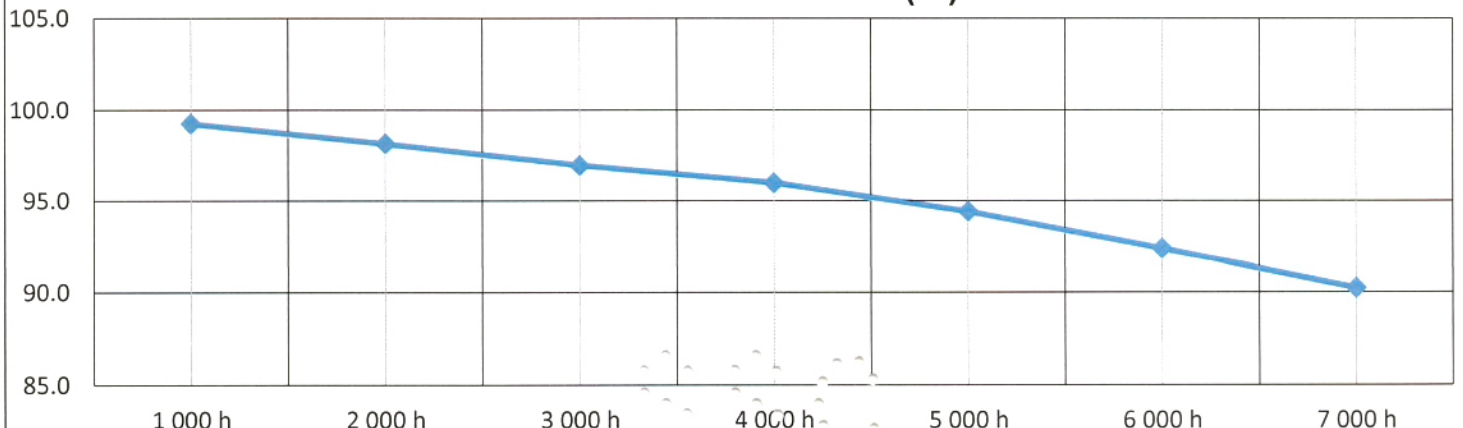


3.3 Condition 3 : [Ts = 105 °C]

[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
1	6.51	114.697	2 686	97.8	96.3	95.4	94.9	93.0	90.4	86.9
2	6.53	120.484	2 644	99.6	98.4	96.9	95.6	94.2	91.5	87.5
3	6.54	122.488	2 680	98.2	97.0	96.0	94.2	93.1	90.0	88.0
4	6.56	121.421	2 653	98.4	97.2	96.2	94.8	93.3	91.2	87.7
5	6.54	122.688	2 678	99.7	98.5	96.5	95.5	94.1	91.4	89.0
6	6.53	123.796	2 680	99.4	98.7	96.6	95.1	94.2	92.1	90.0
7	6.52	123.252	2 655	99.6	99.0	97.2	95.7	93.7	92.1	89.0
8	6.51	121.213	2 647	99.2	98.7	96.7	96.8	95.1	93.7	92.4
9	6.52	121.029	2 663	99.8	98.4	96.8	96.3	95.2	93.1	91.2
10	6.53	116.751	2 677	99.7	98.5	96.2	95.8	93.6	91.3	89.8
11	6.52	117.337	2 617	97.7	96.4	95.3	94.6	93.2	92.1	89.2
12	6.54	120.750	2 650	98.4	97.3	96.1	94.9	92.8	89.8	87.3
13	6.53	124.023	2 653	98.7	97.1	95.6	95.1	93.3	90.0	87.6
14	6.52	123.322	2 625	98.4	97.2	96.5	95.3	93.1	90.1	87.8
15	6.48	120.203	2 707	99.0	97.8	97.2	96.6	94.2	91.3	89.2
16	6.51	116.662	2 627	98.5	97.7	98.8	97.8	96.5	95.0	91.8
17	6.54	117.880	2 697	98.8	97.2	96.7	96.5	94.3	92.9	90.8
18	6.51	122.248	2 673	99.9	99.0	96.0	94.6	93.7	91.9	91.5
19	6.49	127.378	2 716	100.1	98.6	95.3	94.1	92.8	91.5	91.0
20	6.49	122.895	2 628	99.8	99.4	98.2	97.3	95.5	93.7	92.2
21	6.52	122.712	2 608	100.1	99.0	97.7	96.7	94.9	93.7	92.8
22	6.54	122.485	2 696	99.9	99.2	97.7	97.0	96.2	94.5	93.6
23	6.55	119.288	2 628	99.7	98.9	98.8	98.1	97.3	95.2	94.0
24	6.49	121.419	2 694	99.7	98.5	97.3	95.9	93.8	92.8	89.9
25	6.51	112.895	2 675	99.6	98.5	100.7	99.1	97.4	96.7	95.3
Max.	6.56	127.378	2 716	100.1	99.4	100.7	99.1	97.4	96.7	95.3
Ave.	6.52	120.773	2 662	99.2	98.1	96.9	95.9	94.3	92.3	90.2
Min.	6.48	112.895	2 608	97.7	96.3	95.3	94.1	92.8	89.8	86.9
Med.	6.52	121.419	2 663	99.6	98.5	96.7	95.7	94.1	92.1	89.9
Std.	0.02	3.240	30	0.7	0.9	1.2	1.3	1.4	1.8	2.3

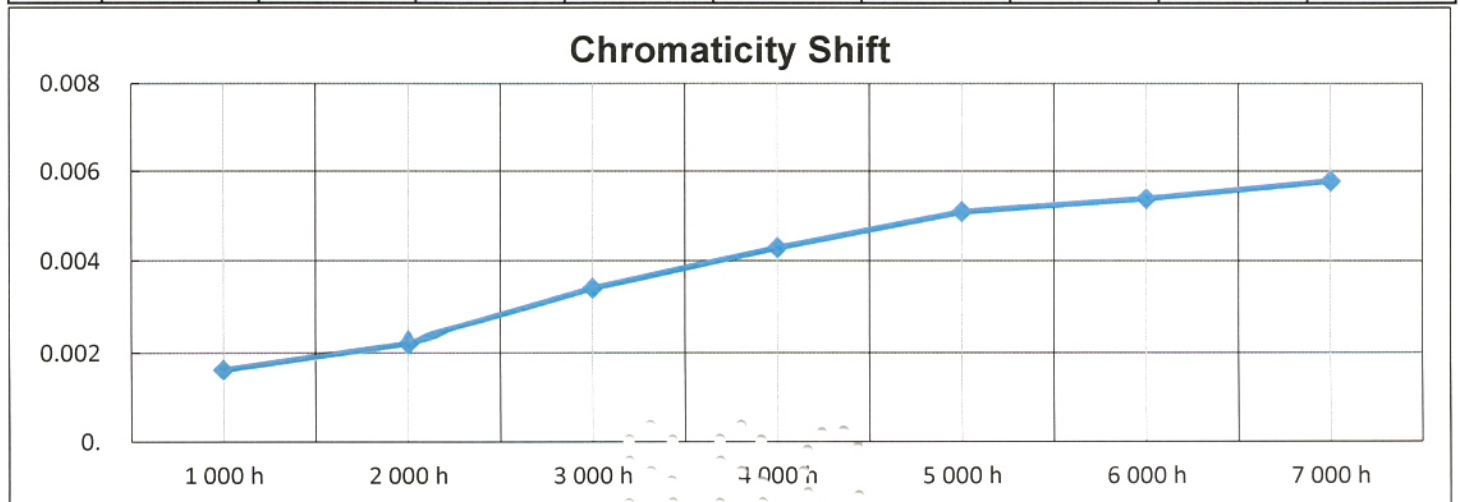
Lumen Maintenance (%)





[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
1	0.264	0.525	0.001 8	0.002 4	0.003 5	0.004 5	0.005 4	0.005 6	0.005 7
2	0.265	0.527	0.001 5	0.002 0	0.003 1	0.004 0	0.004 9	0.005 0	0.005 2
3	0.264	0.526	0.001 7	0.002 4	0.003 5	0.004 3	0.005 2	0.005 3	0.005 5
4	0.265	0.528	0.001 6	0.002 3	0.003 4	0.004 2	0.004 8	0.005 3	0.005 4
5	0.264	0.527	0.001 5	0.002 1	0.003 2	0.004 3	0.005 1	0.005 4	0.005 9
6	0.264	0.526	0.001 5	0.002 1	0.003 2	0.004 0	0.004 8	0.005 0	0.005 3
7	0.265	0.528	0.001 6	0.002 2	0.003 3	0.004 1	0.004 9	0.005 2	0.005 4
8	0.265	0.528	0.001 6	0.002 1	0.003 1	0.004 3	0.004 9	0.005 3	0.005 9
9	0.264	0.528	0.001 5	0.002 0	0.003 0	0.003 8	0.004 8	0.005 0	0.005 5
10	0.264	0.527	0.001 6	0.002 2	0.003 3	0.004 3	0.005 0	0.005 1	0.005 3
11	0.266	0.528	0.001 6	0.002 2	0.003 1	0.004 1	0.004 9	0.005 4	0.005 8
12	0.265	0.527	0.001 6	0.002 2	0.003 3	0.004 3	0.005 2	0.005 3	0.005 3
13	0.265	0.527	0.001 6	0.002 3	0.003 4	0.004 5	0.005 2	0.005 4	0.005 5
14	0.266	0.527	0.001 7	0.002 3	0.004 6	0.005 4	0.006 3	0.006 4	0.006 5
15	0.262	0.526	0.001 7	0.002 3	0.003 7	0.005 0	0.005 6	0.005 6	0.005 7
16	0.266	0.528	0.001 7	0.002 3	0.003 8	0.004 5	0.005 2	0.005 5	0.005 8
17	0.263	0.525	0.001 9	0.002 4	0.004 3	0.005 4	0.005 8	0.006 0	0.006 4
18	0.264	0.524	0.001 5	0.002 0	0.005 0	0.005 8	0.006 7	0.007 0	0.007 8
19	0.262	0.527	0.001 5	0.002 0	0.002 0	0.002 9	0.003 8	0.004 2	0.005 0
20	0.266	0.527	0.001 4	0.002 0	0.003 8	0.004 6	0.005 4	0.005 8	0.006 5
21	0.267	0.528	0.001 4	0.001 9	0.003 0	0.003 7	0.004 4	0.004 9	0.005 6
22	0.263	0.527	0.001 5	0.002 0	0.002 9	0.003 9	0.004 8	0.005 1	0.005 7
23	0.266	0.528	0.001 4	0.002 0	0.003 1	0.004 0	0.004 8	0.005 1	0.005 8
24	0.263	0.525	0.001 5	0.002 0	0.004 3	0.005 3	0.006 1	0.006 5	0.006 9
25	0.264	0.527	0.001 6	0.002 1	0.002 5	0.003 2	0.004 0	0.004 5	0.005 1
Max.	0.267	0.528	0.001 9	0.002 4	0.005 0	0.005 8	0.006 7	0.007 0	0.007 8
Ave.	0.264	0.527	0.001 6	0.002 2	0.003 4	0.004 3	0.005 1	0.005 4	0.005 8
Min.	0.262	0.524	0.001 4	0.001 9	0.002 0	0.002 9	0.003 8	0.004 2	0.005 0
Med.	0.264	0.527	0.001 6	0.002 1	0.003 3	0.004 3	0.005 0	0.005 3	0.005 7
Std.	0.001	0.001	0.000 1	0.000 2	0.000 6	0.000 7	0.000 6	0.000 6	0.000 6





SEOUL SEMICONDUCTOR

4. Revision History

Revision No.	Revision Date	Contents
01	Mar. 24, 2015	First Issued
02	May. 11, 2015	Second Issued at 6 000 h
03	Aug. 05, 2015	Third Issued at 7 000 h

