



IES LM-80-08 TEST REPORT

PROJECT NUMBER	KILT1304-U01296-1	DATE : 2014. 02. 27
PROJECT TYPE	LED PKG	
MODEL NAME	SPHWH1L3D3XXXXXXXXX	
REQUESTED BY	SAMSUNG ELECTRONICS Co., Ltd.	
ADDRESS	San #24 Nongseo-Dong, Giheung-Gu, Uongin-city, Gyeonggi-Do 446-711, Korea	
DESCRIPTION OF SAMPLES	The samples were received by KILT on May 27, 2013 and were tested as received under undamaged condition.	
TEST DATES	May 31, 2013 through February 9, 2014	

Test Conditions and Summary of Results

Test condition	Relative Humidity	Drive Current	Case Temperature (Ts)	Ambient Temperature (Ta)	Average Lumen Maintenance at 6,000 H'rs	Average Chromaticity Shift at 6,000 H'rs
	[%]	[A]	[°C]	[°C]	[%]	[$\Delta u'v'$]
1	11.3	1.0	55.1	54.6	94.3	0.0033
2	6.7	1.0	85.0	84.5	93.5	0.0031
3	4.5	1.0	105.0	104.6	92.2	0.0031

Division	Name	Title	Confirm
Prepared by	Junseok Oh	Research Engineer	
Reviewed by	Sangkyoo Jeon	Technical Manager	

1. Number of LED light sources tested

- 25 Packages tested at actual case temperature 55.1 °C
- 25 Packages tested at actual case temperature 85.0 °C
- 25 Packages tested at actual case temperature 105.0 °C

Samples have been selected to be representative of the overall population being tested.

2. Description of LED light sources

- SAMSUNG ELECTRONICS LED Package: SPHWH1L3D3XXXXXXXXX
IF = 1 A CCT (Nominal) = 3000 K
- Package Dimension: 3.5 mm X 3.5 mm

3. Description of auxiliary equipment

- Temperature controlling chamber for LED package/array/module
This chamber consists of the water cooling heat-sink plates to control the case temperature of each device and the power supply required by LM-80 test conditions.
- Photometric measurement tester for LED package/array/module
This test equipment consists of the integrating sphere in conjunction with the temperature controlling plate and programmable current-source meter.

4. Operating Cycle

- Number of units : 25 at 55.1 °C / 25 at 85.0 °C / 25 at 105.0 °C
- Drive current : 1.0 A
- Typical Voltage : 3.5 V

LED packages are driven with a constant direct current.

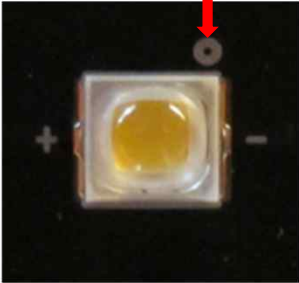
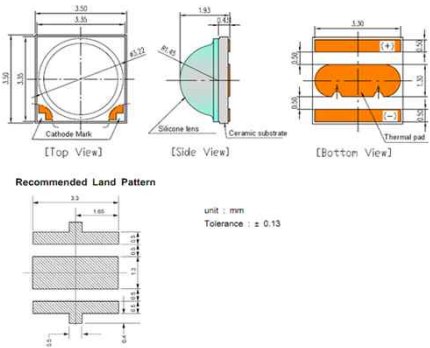
5. Ambient Conditions including airflow, temperature and relative humidity

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

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.

6. Case Temperature (Test Point Temperature)

LED temperature measurement point is shown in the picture below.

TEST POINT	PKG DIMENSION
	 <p>unit : mm Tolerance : ± 0.13</p>

7. Drive Current of the LED light source during lifetime test

See sub-clause 8.1, 8.2, and 8.3.

8. Lumen Maintenance data and Chromaticity shift reported over the measurement

See each table.

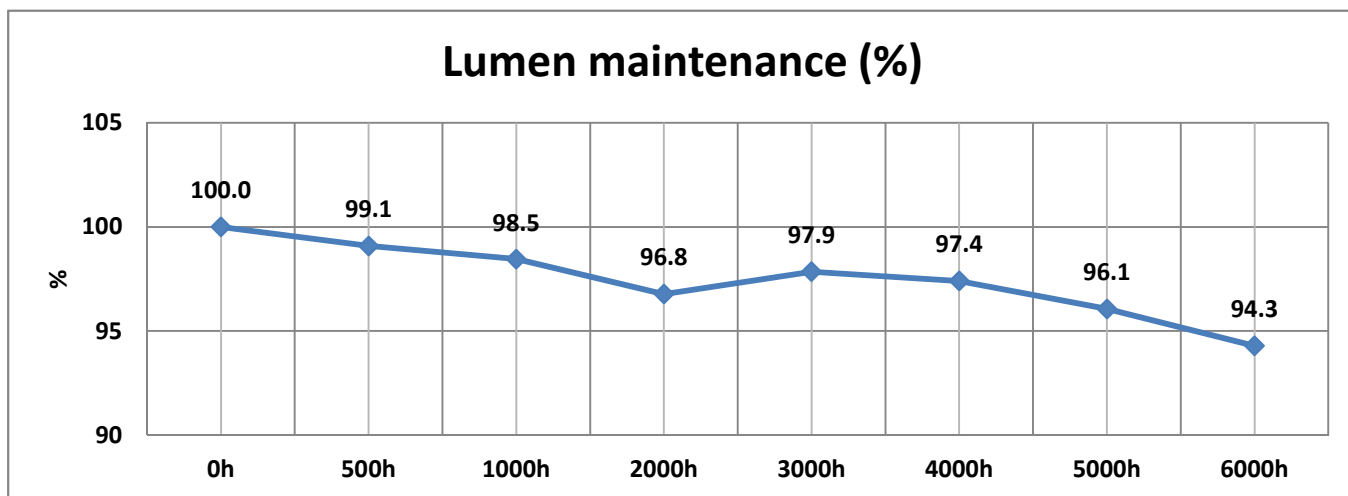
During the test of luminous flux and chromaticity, ambient temperature was set to 25 °C ± 2 °C.

8.1. TEST CONDITION 1 [55.1°C, IF = 1.0 A]

- Measurement Current : 1.0 A

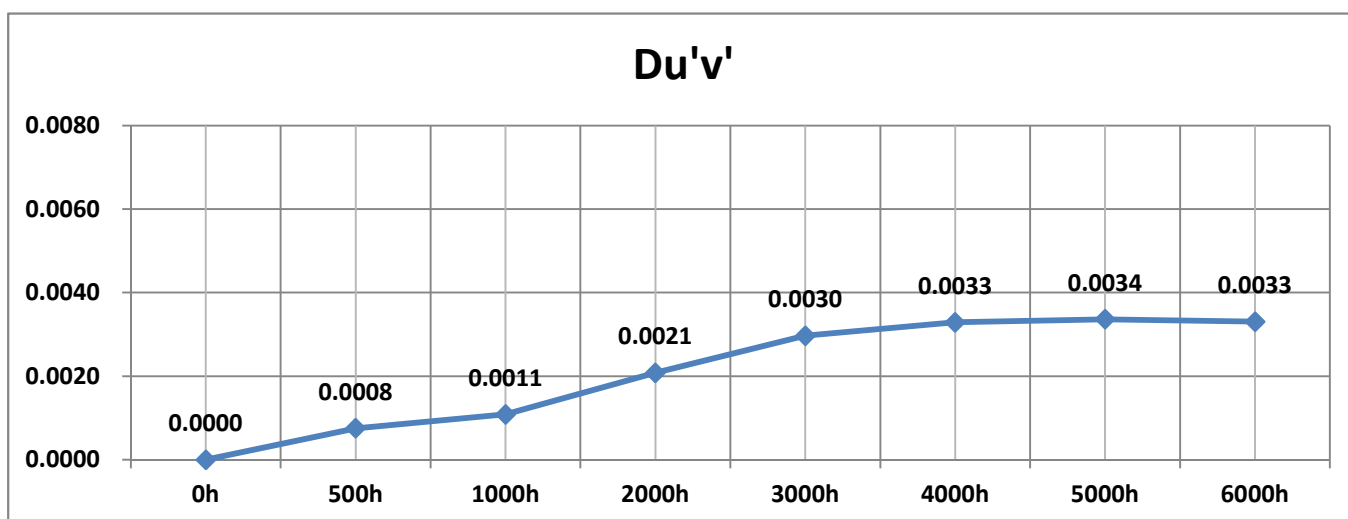
[LUMEN MAINTENANCE]

No.	Φ_v	V_F	Lumen Maintenance [%]							
	[lm]	[V]	0h	500h	1000h	2000h	3000h	4000h	5000h	6000h
	0h (Initial)	0h	500h	1000h	2000h	3000h	4000h	5000h	6000h	
1	175.4	3.4	100.0	98.7	98.0	96.8	98.3	96.4	95.6	94.0
2	176.4	3.6	100.0	99.0	98.4	96.8	97.7	97.3	95.6	94.0
3	172.1	3.8	100.0	99.2	97.7	96.6	96.9	97.0	95.5	93.9
4	173.3	3.3	100.0	98.9	98.2	96.5	97.4	97.4	95.9	94.2
5	171.6	3.5	100.0	98.8	98.1	96.2	97.6	96.9	95.4	93.8
6	175.8	3.8	100.0	99.1	98.2	96.6	97.8	97.3	96.1	94.0
7	175.0	3.3	100.0	98.5	98.5	96.3	97.7	97.4	96.3	94.7
8	168.0	3.6	100.0	103.3	102.3	100.7	102.0	101.7	100.1	98.5
9	174.7	3.8	100.0	98.8	98.2	96.3	97.5	97.2	95.2	93.1
10	179.3	3.3	100.0	98.9	98.3	96.1	97.3	97.1	95.9	93.7
11	172.2	3.6	100.0	98.9	97.8	96.3	97.3	96.8	95.6	93.6
12	174.8	3.8	100.0	99.7	99.1	97.5	98.7	97.7	96.6	94.7
13	175.8	3.3	100.0	99.1	98.1	96.1	97.4	97.3	95.9	94.3
14	178.3	3.5	100.0	99.0	98.7	96.7	97.6	97.4	96.0	94.5
15	172.5	3.8	100.0	99.3	98.9	97.4	98.6	98.0	96.7	95.0
16	173.3	3.0	100.0	98.7	98.5	96.8	97.6	97.0	95.9	94.2
17	168.3	3.3	100.0	98.7	98.2	96.8	97.7	96.9	95.6	94.3
18	178.0	3.6	100.0	98.7	98.4	96.8	97.6	97.3	96.3	94.4
19	174.5	3.0	100.0	99.0	98.5	97.2	98.2	97.9	96.6	94.7
20	174.7	3.3	100.0	98.9	98.4	97.0	97.9	97.2	95.9	93.8
21	171.8	3.6	100.0	99.0	98.5	96.4	97.4	97.5	96.2	94.1
22	171.9	3.0	100.0	99.1	98.3	96.8	97.7	97.1	95.7	93.9
23	176.6	3.3	100.0	98.9	98.4	96.7	97.8	97.5	95.9	94.1
24	174.9	3.6	100.0	98.2	97.9	96.2	97.3	96.6	95.3	93.7
25	178.1	3.0	100.0	98.5	97.6	95.8	97.4	97.1	95.4	94.0
Ave.	174.3	3.4	100.0	99.1	98.5	96.8	97.9	97.4	96.1	94.3
Med.	174.7	3.5	100.0	98.9	98.3	96.7	97.6	97.3	95.9	94.1
σ	2.8	0.3	0.0	0.9	0.9	0.9	0.9	1.0	0.9	0.9
Min.	168.0	3.0	100.0	98.2	97.6	95.8	96.9	96.4	95.2	93.1
Max	179.3	3.8	100.0	103.3	102.3	100.7	102.0	101.7	100.1	98.5



[CHROMATICITY SHIFT]

No.	CCT [K]	Chromaticity Shift $\Delta u'v'$							
	0h (Initial)	0h	500h	1000h	2000h	3000h	4000h	5000h	6000h
1	3051	0.0000	0.0009	0.0014	0.0022	0.0032	0.0036	0.0038	0.0037
2	3117	0.0000	0.0007	0.0009	0.0020	0.0028	0.0032	0.0033	0.0032
3	3138	0.0000	0.0008	0.0012	0.0023	0.0026	0.0033	0.0034	0.0033
4	3094	0.0000	0.0009	0.0012	0.0022	0.0032	0.0034	0.0035	0.0033
5	3072	0.0000	0.0008	0.0011	0.0021	0.0030	0.0033	0.0034	0.0033
6	3103	0.0000	0.0007	0.0011	0.0021	0.0030	0.0033	0.0034	0.0034
7	3061	0.0000	0.0008	0.0010	0.0021	0.0030	0.0033	0.0033	0.0033
8	3166	0.0000	0.0008	0.0013	0.0022	0.0031	0.0032	0.0034	0.0034
9	3126	0.0000	0.0007	0.0011	0.0022	0.0031	0.0034	0.0034	0.0034
10	3100	0.0000	0.0008	0.0009	0.0021	0.0029	0.0032	0.0034	0.0033
11	3121	0.0000	0.0006	0.0009	0.0019	0.0028	0.0031	0.0031	0.0032
12	3079	0.0000	0.0007	0.0009	0.0020	0.0029	0.0033	0.0033	0.0033
13	3103	0.0000	0.0008	0.0012	0.0021	0.0031	0.0033	0.0034	0.0033
14	3111	0.0000	0.0007	0.0009	0.0020	0.0030	0.0033	0.0034	0.0033
15	3093	0.0000	0.0006	0.0013	0.0021	0.0030	0.0034	0.0034	0.0033
16	3095	0.0000	0.0006	0.0008	0.0019	0.0027	0.0030	0.0030	0.0030
17	3103	0.0000	0.0007	0.0010	0.0021	0.0028	0.0033	0.0033	0.0032
18	3080	0.0000	0.0007	0.0010	0.0020	0.0031	0.0035	0.0034	0.0035
19	3062	0.0000	0.0006	0.0012	0.0023	0.0031	0.0033	0.0034	0.0033
20	3112	0.0000	0.0007	0.0009	0.0020	0.0029	0.0030	0.0031	0.0032
21	3068	0.0000	0.0007	0.0011	0.0021	0.0029	0.0031	0.0033	0.0032
22	3070	0.0000	0.0008	0.0014	0.0022	0.0031	0.0034	0.0035	0.0034
23	3108	0.0000	0.0007	0.0009	0.0019	0.0029	0.0032	0.0033	0.0033
24	3130	0.0000	0.0011	0.0012	0.0021	0.0031	0.0034	0.0035	0.0035
25	3125	0.0000	0.0009	0.0011	0.0020	0.0029	0.0032	0.0033	0.0032
Ave.	3100	0.0000	0.0008	0.0011	0.0021	0.0030	0.0033	0.0034	0.0033
Med	3103	0.0000	0.0007	0.0011	0.0021	0.0030	0.0033	0.0034	0.0033
σ	27	0.0000	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	3051	0.0000	0.0006	0.0008	0.0019	0.0026	0.0030	0.0030	0.0030
Max	3166	0.0000	0.0011	0.0014	0.0023	0.0032	0.0036	0.0038	0.0037

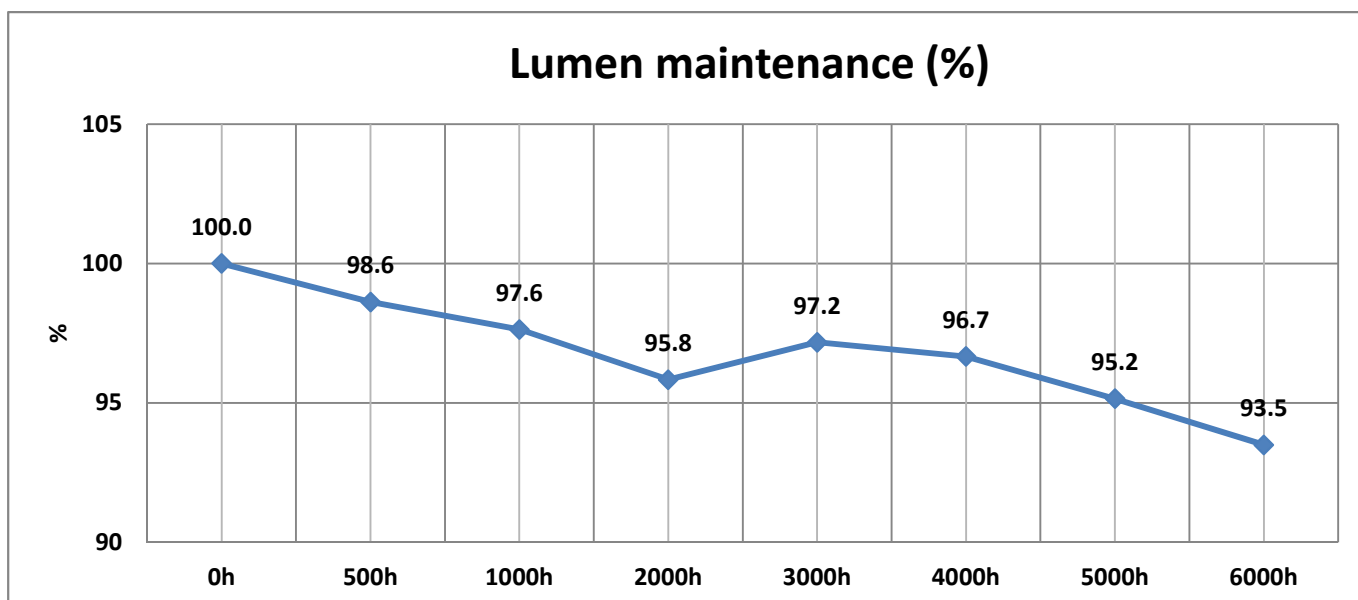


8.2. TEST CONDITION 2 [85.0 °C, IF = 1.0 A]

- Measurement Current : 1.0 A

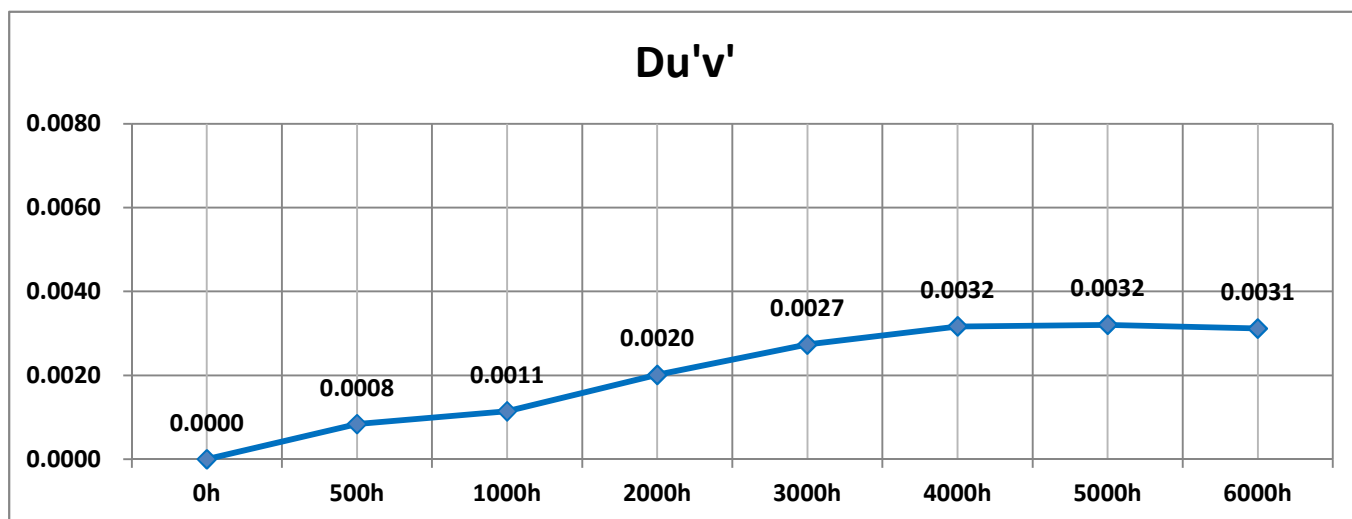
[LUMEN MAINTENANCE]

No.	Φ_v	V_F	Lumen Maintenance [%]								
	[lm]	[V]	0h (Initial)	0h	500h	1000h	2000h	3000h	4000h	5000h	6000h
	1	177.8	3.3	100.0	98.3	97.7	96.1	97.0	96.8	94.9	93.1
2	176.4	3.6	100.0	98.7	97.7	96.1	96.8	96.8	95.5	93.8	
3	171.1	3.7	100.0	98.7	97.8	95.9	96.8	96.3	95.1	93.2	
4	171.8	3.3	100.0	98.7	97.7	95.4	96.8	96.7	95.0	93.5	
5	173.9	3.5	100.0	99.0	97.9	96.2	97.2	96.4	95.5	93.3	
6	178.5	3.8	100.0	98.4	97.9	95.9	97.3	96.7	95.3	93.8	
7	177.3	3.2	100.0	98.7	97.6	96.0	97.5	97.2	95.4	93.8	
8	174.1	3.5	100.0	98.9	97.7	96.0	97.3	97.1	95.5	93.5	
9	178.2	3.7	100.0	98.5	97.5	95.6	96.2	96.9	95.0	93.3	
10	179.2	3.3	100.0	98.3	97.3	95.7	96.9	96.4	95.0	93.3	
11	177.3	3.6	100.0	98.4	97.3	95.8	97.1	96.3	95.1	93.3	
12	175.7	3.8	100.0	98.5	97.4	95.4	97.1	97.0	95.1	93.8	
13	172.3	3.2	100.0	98.6	97.2	95.7	96.9	96.3	94.6	93.1	
14	174.5	3.6	100.0	98.6	97.4	95.7	97.1	96.3	94.9	93.2	
15	179.6	3.8	100.0	98.7	97.3	95.4	97.3	96.5	94.8	93.1	
16	176.2	3.3	100.0	98.5	97.8	95.6	97.6	97.0	95.2	94.0	
17	174.0	3.6	100.0	98.5	97.6	95.8	97.2	96.5	95.2	93.4	
18	170.4	3.6	100.0	98.8	97.9	96.2	97.4	96.4	95.0	93.5	
19	175.6	3.3	100.0	98.7	97.8	96.1	97.5	97.1	95.3	93.7	
20	176.8	3.6	100.0	98.6	97.9	96.0	97.5	96.7	95.7	93.7	
21	173.3	3.6	100.0	98.7	97.7	96.0	97.3	96.7	95.3	93.7	
22	179.4	3.3	100.0	98.6	97.5	95.7	97.4	96.7	94.8	93.5	
23	171.0	3.6	100.0	98.4	97.5	95.8	97.1	96.0	94.7	93.3	
24	175.6	3.6	100.0	98.6	97.9	95.7	97.3	96.9	95.7	93.4	
25	176.9	3.2	100.0	99.1	97.9	96.0	97.6	96.8	95.3	94.0	
Ave.	175.5	3.5	100.0	98.6	97.6	95.8	97.2	96.7	95.2	93.5	
Med.	175.7	3.6	100.0	98.6	97.7	95.8	97.2	96.7	95.1	93.5	
σ	2.7	0.2	0.0	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
Min.	170.4	3.2	100.0	98.3	97.2	95.4	96.2	96.0	94.6	93.1	
Max	179.6	3.8	100.0	99.1	97.9	96.2	97.6	97.2	95.7	94.0	



[CHROMATICITY SHIFT]

No.	CCT [K]	Chromaticity Shift $\Delta u'v'$							
	0h (Initial)	0h	500h	1000h	2000h	3000h	4000h	5000h	6000h
1	3114	0.0000	0.0006	0.0010	0.0018	0.0026	0.0031	0.0031	0.0032
2	3076	0.0000	0.0008	0.0013	0.0021	0.0026	0.0031	0.0030	0.0029
3	3087	0.0000	0.0008	0.0010	0.0020	0.0028	0.0031	0.0032	0.0032
4	3060	0.0000	0.0008	0.0011	0.0019	0.0028	0.0030	0.0031	0.0030
5	3110	0.0000	0.0010	0.0013	0.0021	0.0028	0.0033	0.0033	0.0033
6	3168	0.0000	0.0006	0.0010	0.0019	0.0026	0.0032	0.0031	0.0030
7	3096	0.0000	0.0008	0.0011	0.0020	0.0026	0.0031	0.0032	0.0031
8	3041	0.0000	0.0008	0.0011	0.0021	0.0028	0.0033	0.0032	0.0032
9	3104	0.0000	0.0008	0.0011	0.0022	0.0028	0.0032	0.0033	0.0032
10	3131	0.0000	0.0010	0.0012	0.0021	0.0028	0.0032	0.0033	0.0031
11	3118	0.0000	0.0009	0.0014	0.0022	0.0031	0.0036	0.0036	0.0035
12	3047	0.0000	0.0009	0.0013	0.0020	0.0028	0.0033	0.0033	0.0032
13	3073	0.0000	0.0008	0.0012	0.0018	0.0028	0.0031	0.0031	0.0030
14	3074	0.0000	0.0009	0.0012	0.0021	0.0029	0.0032	0.0034	0.0032
15	3071	0.0000	0.0007	0.0011	0.0021	0.0027	0.0032	0.0031	0.0032
16	3109	0.0000	0.0008	0.0010	0.0019	0.0026	0.0030	0.0032	0.0031
17	3059	0.0000	0.0007	0.0010	0.0020	0.0026	0.0030	0.0030	0.0030
18	3072	0.0000	0.0009	0.0009	0.0018	0.0025	0.0030	0.0030	0.0028
19	3084	0.0000	0.0009	0.0011	0.0021	0.0027	0.0031	0.0032	0.0031
20	3107	0.0000	0.0009	0.0012	0.0020	0.0027	0.0032	0.0032	0.0031
21	3045	0.0000	0.0010	0.0012	0.0020	0.0027	0.0031	0.0032	0.0030
22	3129	0.0000	0.0009	0.0012	0.0020	0.0028	0.0032	0.0033	0.0031
23	3062	0.0000	0.0011	0.0012	0.0021	0.0028	0.0033	0.0033	0.0032
24	3067	0.0000	0.0009	0.0012	0.0020	0.0028	0.0032	0.0033	0.0033
25	3118	0.0000	0.0008	0.0011	0.0019	0.0026	0.0031	0.0031	0.0030
Ave.	3089	0.0000	0.0008	0.0011	0.0020	0.0027	0.0032	0.0032	0.0031
Med	3084	0.0000	0.0008	0.0011	0.0020	0.0028	0.0032	0.0032	0.0031
σ	31	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	3041	0.0000	0.0006	0.0009	0.0018	0.0025	0.0030	0.0030	0.0028
Max	3168	0.0000	0.0011	0.0014	0.0022	0.0031	0.0036	0.0036	0.0035

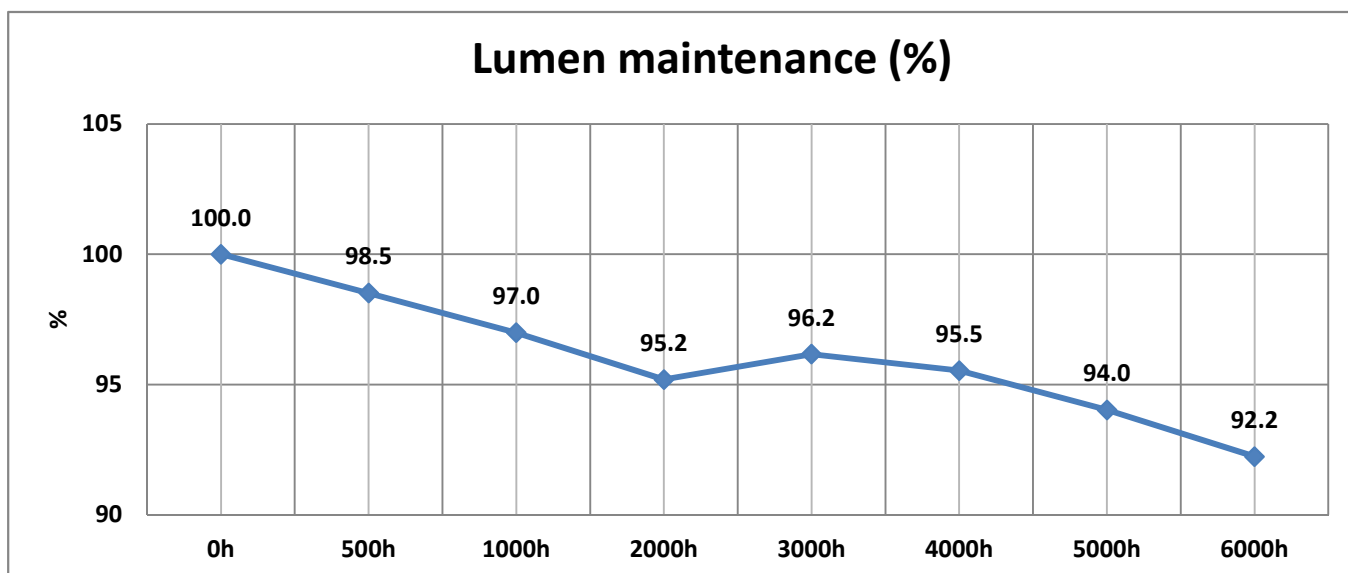


8.3. TEST CONDITION 3 [105.0 °C, IF = 1.0 A]

- Measurement Current : 1.0 A

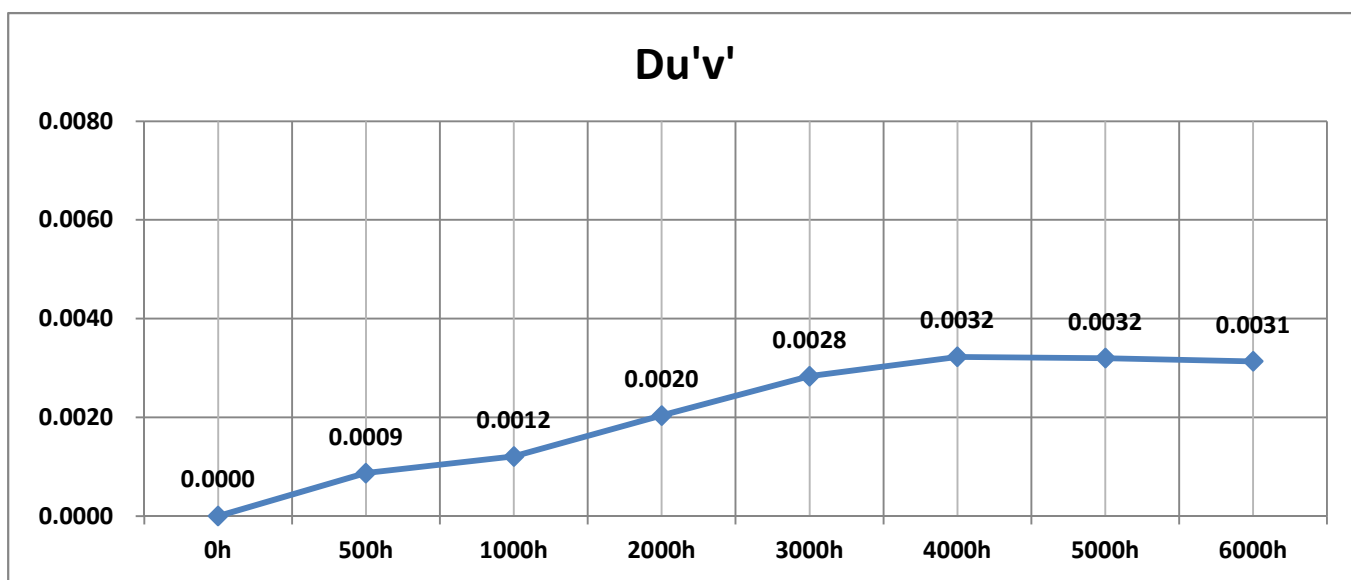
[LUMEN MAINTENANCE]

No.	Φ_v	V_F	Lumen Maintenance [%]								
	[lm]	[V]	0h (Initial)	0h	500h	1000h	2000h	3000h	4000h	5000h	6000h
	1	179.8	3.2	100.0	98.4	97.3	95.7	96.9	95.6	93.9	92.7
2	171.3	3.4	100.0	97.3	95.3	93.2	94.6	94.0	92.4	90.9	
3	172.0	3.7	100.0	98.7	97.3	95.7	96.8	95.8	94.3	92.5	
4	169.0	3.2	100.0	97.4	96.0	94.1	95.5	94.8	93.3	91.2	
5	171.0	3.4	100.0	99.0	97.5	95.6	96.9	95.9	94.7	92.8	
6	171.0	3.6	100.0	98.8	97.5	95.7	96.5	96.0	94.3	92.3	
7	174.7	3.2	100.0	98.7	97.4	95.8	97.0	96.2	94.8	92.7	
8	167.9	3.4	100.0	98.8	97.5	95.8	96.8	96.0	94.6	92.8	
9	173.2	3.6	100.0	98.8	97.3	95.6	96.1	95.8	94.6	92.7	
10	177.1	3.2	100.0	98.4	96.8	94.4	95.7	94.7	93.1	91.5	
11	173.9	3.3	100.0	98.8	97.4	95.9	96.9	96.4	95.1	93.1	
12	167.8	3.6	100.0	96.1	93.9	92.0	90.1	91.7	90.1	88.3	
13	171.2	3.2	100.0	98.2	96.9	95.3	96.1	95.6	93.9	92.2	
14	175.7	3.4	100.0	98.7	97.2	95.6	96.6	96.1	94.9	93.0	
15	172.4	3.5	100.0	98.8	96.3	94.9	95.2	95.0	93.1	91.1	
16	174.9	3.4	100.0	98.2	96.5	94.2	94.8	94.1	92.2	89.9	
17	175.3	3.6	100.0	99.3	97.6	95.9	97.3	96.4	95.0	93.5	
18	174.6	3.8	100.0	99.0	97.6	95.6	96.7	96.3	94.6	92.5	
19	177.0	3.3	100.0	98.8	97.4	95.5	96.8	96.1	94.4	93.0	
20	177.1	3.6	100.0	98.5	97.2	95.5	96.7	95.8	94.3	92.5	
21	182.1	3.9	100.0	98.9	97.4	95.7	96.9	96.1	94.8	92.8	
22	174.5	3.3	100.0	99.0	97.5	95.4	96.7	95.9	94.6	92.9	
23	172.0	3.5	100.0	98.8	97.3	95.8	96.8	96.0	94.8	92.9	
24	169.6	3.8	100.0	98.7	97.2	95.6	96.9	96.0	94.4	92.8	
25	179.6	3.3	100.0	98.6	97.3	95.2	96.7	95.9	94.5	93.1	
Ave.	173.8	3.4	100.0	98.5	97.0	95.2	96.2	95.5	94.0	92.2	
Med.	173.9	3.4	100.0	98.7	97.3	95.6	96.7	95.9	94.4	92.7	
σ	3.6	0.2	0.0	0.7	0.8	0.9	1.4	1.0	1.1	1.2	
Min.	167.8	3.2	100.0	96.1	93.9	92.0	90.1	91.7	90.1	88.3	
Max	182.1	3.9	100.0	99.3	97.6	95.9	97.3	96.4	95.1	93.5	



[CHROMATICITY SHIFT]

No.	CCT [K]	Chromaticity Shift $\Delta u'v'$							
	0h (Initial)	0h	500h	1000h	2000h	3000h	4000h	5000h	6000h
1	3141	0.0000	0.0008	0.0010	0.0017	0.0026	0.0029	0.0031	0.0028
2	3060	0.0000	0.0010	0.0017	0.0024	0.0031	0.0036	0.0036	0.0036
3	3149	0.0000	0.0008	0.0012	0.0021	0.0028	0.0031	0.0031	0.0030
4	3109	0.0000	0.0010	0.0015	0.0023	0.0031	0.0034	0.0035	0.0035
5	3065	0.0000	0.0006	0.0010	0.0019	0.0027	0.0030	0.0030	0.0031
6	3092	0.0000	0.0009	0.0013	0.0020	0.0027	0.0031	0.0031	0.0029
7	3122	0.0000	0.0009	0.0012	0.0019	0.0030	0.0033	0.0032	0.0032
8	3087	0.0000	0.0010	0.0012	0.0020	0.0028	0.0031	0.0032	0.0031
9	3048	0.0000	0.0007	0.0011	0.0018	0.0026	0.0030	0.0030	0.0029
10	3104	0.0000	0.0009	0.0011	0.0020	0.0030	0.0033	0.0033	0.0033
11	3119	0.0000	0.0007	0.0010	0.0018	0.0026	0.0029	0.0029	0.0029
12	3098	0.0000	0.0013	0.0017	0.0026	0.0034	0.0038	0.0038	0.0039
13	3075	0.0000	0.0010	0.0013	0.0022	0.0029	0.0033	0.0033	0.0032
14	3076	0.0000	0.0011	0.0013	0.0022	0.0028	0.0032	0.0032	0.0031
15	3139	0.0000	0.0009	0.0013	0.0021	0.0027	0.0033	0.0031	0.0031
16	3077	0.0000	0.0009	0.0014	0.0025	0.0032	0.0037	0.0036	0.0037
17	3116	0.0000	0.0008	0.0010	0.0019	0.0026	0.0031	0.0030	0.0030
18	3077	0.0000	0.0007	0.0010	0.0018	0.0027	0.0031	0.0031	0.0028
19	3170	0.0000	0.0009	0.0010	0.0020	0.0028	0.0031	0.0031	0.0030
20	3108	0.0000	0.0009	0.0013	0.0021	0.0029	0.0034	0.0033	0.0031
21	3149	0.0000	0.0008	0.0011	0.0019	0.0028	0.0032	0.0031	0.0031
22	3040	0.0000	0.0008	0.0012	0.0021	0.0028	0.0033	0.0032	0.0031
23	3106	0.0000	0.0008	0.0010	0.0019	0.0026	0.0031	0.0030	0.0030
24	3076	0.0000	0.0007	0.0010	0.0018	0.0027	0.0032	0.0030	0.0029
25	3168	0.0000	0.0008	0.0011	0.0019	0.0028	0.0031	0.0031	0.0030
Ave.	3103	0.0000	0.0009	0.0012	0.0020	0.0028	0.0032	0.0032	0.0031
Med	3104	0.0000	0.0009	0.0012	0.0020	0.0028	0.0032	0.0031	0.0031
σ	35	0.0000	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003
Min.	3040	0.0000	0.0006	0.0010	0.0017	0.0026	0.0029	0.0029	0.0028
Max	3170	0.0000	0.0013	0.0017	0.0026	0.0034	0.0038	0.0038	0.0039



9. TM-21-11 Report : Projecting Long Term Lumen Maintenance of LED Light Source

- Calculator results have been validated by NIST

Table 1 : Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)		- Manufacturer : SAMSUNG ELECTRONICS Co., Ltd. - Model : SPHWH1L3D3XXXXXXXX			
Test Condition 1 - 55.1 °C Case Temp		Test Condition 2 - 85.0 °C Case Temp		Test Condition 3 - 105.0 °C Case Temp	
Sample size	25	Sample size	25	Sample size	25
Number of failures	0	Number of failures	0	Number of failures	0
DUT drive current used in the test (mA)	1000	DUT drive current used in the test (mA)	1000	DUT drive current used in the test (mA)	1000
Test duration (hours)	6000	Test duration (hours)	6000	Test duration (hours)	6000
Test duration used for projection (hour to hour)	1,000 - 6,000	Test duration used for projection (hour to hour)	1,000 - 6,000	Test duration used for projection (hour to hour)	1,000 - 6,000
Tested case temperature (°C)	55.1	Tested case temperature (°C)	85	Tested case temperature (°C)	105
α	6.993E-06	α	6.817E-06	α	8.546E-06
B	0.992	B	0.983	B	0.979
Calculated L70(6k) (hours)	50,000	Calculated L70(6k) (hours)	50,000	Calculated L70(6k) (hours)	39,000
Reported L70(6k) (hours)	>36000	Reported L70(6k) (hours)	>36000	Reported L70(6k) (hours)	>36000

10. Observation of Failures

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

11. LED Light source monitoring interval

Measurements have been taken after the following durations:

Ts = 55.1 °C

0, 500, 1000, 2000, 3000, 4000, 5000 and 6000 hours

Ts = 85.0 °C

0, 500, 1000, 2000, 3000, 4000, 5000 and 6000 hours

Ts = 105.0 °C

0, 500, 1000, 2000, 3000, 4000, 5000 and 6000 hours

12. Photometric Measurement Uncertainty

The testers are calibrated monthly and the calibration data ensures ± 2 % uncertainty of measurement.