

# IES LM-80 Test Report

**Report Issue Date :** February 03, 2017      **Report Number :** I-160223-21-I-01  
**Testing Start Date :** April 15, 2016      **Testing Completion Date :** January 03, 2017  
**Revision Number :** 01      **Test Duration :** 6 000 h

## Manufacturer Information :

**Applicant :** Seoul Semiconductor Co., LTD  
**Address :** 97-11, Sandan-ro 163, Danwon-gu, Ansan, Gyeonggi-do, Korea 15429

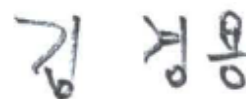
## Description of Test Samples :

**Classification :** LED Package  
**PKG Name :** MJT COB  
**Part Number :** SAWx1566-xx  
**Drive Current :** 1160 mA

## Test Procedure :

IES LM-80-08 Approved Method for Measuring Lumen Maintenance of LED Light Sources

Tested by



KyungYong KIM, Research Engineer

Approved by

YoungJoon WON, Laboratory Manager



Seoul Semiconductor Testing Laboratory(TL-688) is accredited to ISO/IEC 17025:2005 for the above test procedure by IAS, USA which is a signatory to ILAC-MRA.

## Seoul Semiconductor Testing Laboratory

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## Applicable Series Model Numbers

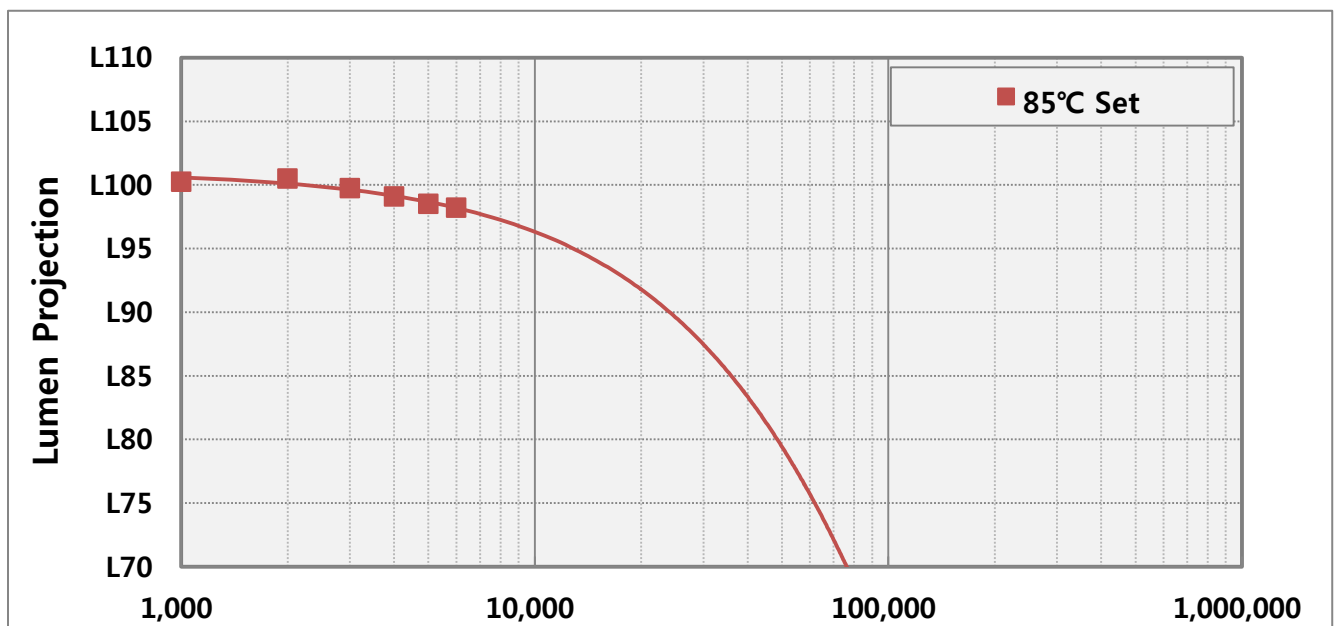
This LM-80 report is applicable to the following

Model	Current	Typical Vf	Power	Current per Die	Power Density	Current Density	CCT
SAWx1566-xx Tested	1160 mA	36 V	42 W	193 mA	0.11 W/mm <sup>2</sup>	229 mA/mm <sup>2</sup>	≥2200 K
SDWx1F1D-xx	190 mA	36 V	7 W	190 mA	0.04 W/mm <sup>2</sup>	225 mA/mm <sup>2</sup>	≥2200 K
SAWx0661A-xx	190 mA	36 V	7 W	190 mA	0.04 W/mm <sup>2</sup>	225 mA/mm <sup>2</sup>	≥2200 K
SAWx1062A-xx	385 mA	36 V	14 W	193 mA	0.08 W/mm <sup>2</sup>	228 mA/mm <sup>2</sup>	≥2200 K
SAWx1063A-xx	580 mA	36 V	21 W	193 mA	0.11 W/mm <sup>2</sup>	229 mA/mm <sup>2</sup>	≥2200 K
SAWx1564A-xx	770 mA	36 V	28 W	193 mA	0.08 W/mm <sup>2</sup>	228 mA/mm <sup>2</sup>	≥2200 K
SAWx1565A-xx	965 mA	36 V	35 W	193 mA	0.10 W/mm <sup>2</sup>	228 mA/mm <sup>2</sup>	≥2200 K
SAWx2296A-xx	1160 mA	53 V	61 W	193 mA	0.08 W/mm <sup>2</sup>	229 mA/mm <sup>2</sup>	≥2200 K
SAWx2298A-xx	1545 mA	53 V	82 W	193 mA	0.11 W/mm <sup>2</sup>	229 mA/mm <sup>2</sup>	≥2200 K
SAWx22AAA-xx	1545 mA	58 V	90 W	155 mA	0.11 W/mm <sup>2</sup>	183 mA/mm <sup>2</sup>	≥2200 K
SAWx33EAA-xx	1930 mA	83 V	160 W	193 mA	0.11 W/mm <sup>2</sup>	228 mA/mm <sup>2</sup>	≥2200 K
SAWx33GCA-xx	1785 mA	93 V	166 W	149 mA	0.11 W/mm <sup>2</sup>	176 mA/mm <sup>2</sup>	≥2200 K
SDWxAF1E-xx	2050 mA	140 V	287 W	171 mA	0.11 W/mm <sup>2</sup>	202 mA/mm <sup>2</sup>	≥2200 K

## 1. Test Summary

Items	Nominal Case Temperature		
		85 °C	
Number of LED tested		12	
Drive Current		1 160 mA	
Measurment Current		1 160 mA	
Test Duration		6 000 h	
Actual Case Temperature		≥83.0 °C	
Actual Ambient Temperature		≥82.0 °C	
Air Flow Velocity		≤0.49 m/s	
Averaged Initial Luminous Flux		5455.0 lm	
Averaged Initial CCT		2642 K	
Averaged Forward Voltage		35.70 V	
Averaged Lumen Maintenance		98.2 %	
Averaged Chromacity Shift		0.002 0	
α		-1.148E-06	
B		0.990	
TM-21 Projection L <sub>70</sub>		>33000	
TM-21 Projection L <sub>80</sub>		>33000	
TM-21 Projection L <sub>90</sub>		>33000	

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





**Drive Current of the LED Light Source During Lifetime Test**

See the Test Summary

**Initial Luminous Flux and Forward Voltage at Photometric Measurement Current**

See the Test Summary

**Lumen Maintenance Data for Each Individual LED Light Source Along with Median Value, Standard Deviation, Minimum and Maximum Lumen Maintenance Value for All of the LED Light Sources**

See the table of each data set

**Observation of LED light Sources Failures**

No failure observed

**LED Light Source Monitoring Interval**

See the table of each data set

**Photometric Measurement Uncertainty**

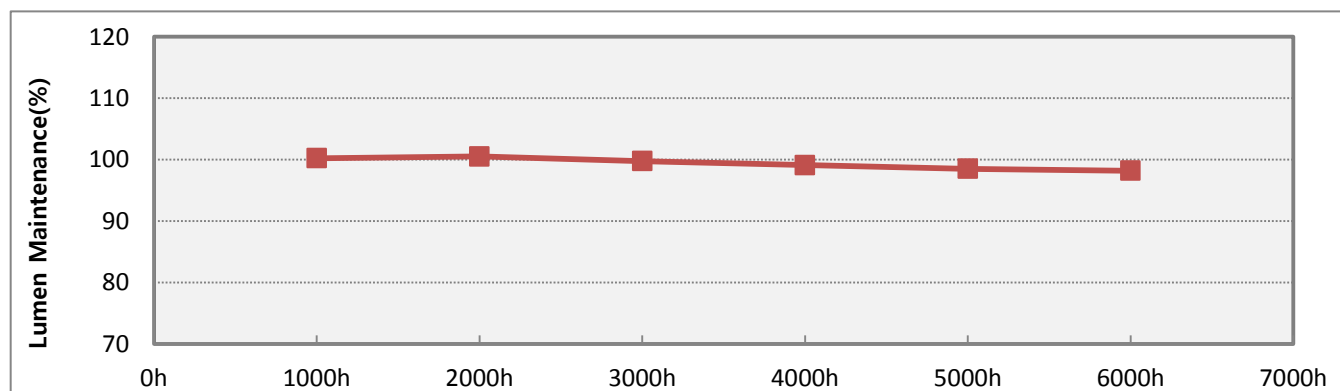
Seoul Semiconducrr maintain a tolerance of  $\pm 3.04 \%$  at 95% confidence level ( $k = 2$ )

**Chromaticity Shift Over the Measurement Time**

See the table of each data set

### 3. 85°C Data Set

No.	Initial Characteristics			Lumen Maintenance								
	Vf (V)	Flux (lm)	CCT (K)	1000 h	2000 h	3000 h	4000 h	5000 h	6000 h			
01	35.73	5442.64	2608	99.3	99.9	98.6	97.9	97.2	96.7			
02	35.81	5492.76	2644	100.7	100.7	100.6	100.0	99.5	99.6			
03	35.81	5476.95	2640	101.0	101.0	100.5	100.0	99.7	99.4			
04	35.80	5472.78	2633	100.2	100.4	99.7	99.1	98.4	98.1			
05	35.63	5442.39	2650	99.9	100.4	99.5	98.7	97.8	97.0			
06	35.68	5491.58	2763	100.6	100.4	99.9	99.6	99.0	99.0			
07	35.72	5415.58	2620	99.9	100.4	99.5	99.1	98.7	98.6			
08	35.70	5459.56	2636	100.7	100.7	100.4	100.0	100.1	100.1			
09	35.64	5467.38	2627	99.6	100.2	99.0	98.1	97.6	96.9			
10	35.73	5445.38	2622	100.5	100.5	99.8	99.0	98.3	97.9			
11	35.59	5428.96	2639	100.1	100.5	99.5	98.3	97.6	97.1			
12	35.56	5424.11	2626	100.2	100.9	99.9	99.2	98.4	98.1			
Ave.	35.70	5455.01	2642	100.2	100.5	99.7	99.1	98.5	98.2			
Med.	35.71	5452.47	2634	100.2	100.5	99.8	99.1	98.4	98.1			
Min.	35.56	5415.58	2608	99.3	99.9	98.6	97.9	97.2	96.7			
Max.	35.81	5492.76	2763	101.0	101.0	100.6	100.0	100.1	100.1			
σ	0.08	25.81	40	0.5	0.3	0.6	0.7	0.9	1.2			



### 3. 85°C Data Set

No.	Initial Characteristics		Chromaticity Shift du'v'								
	CIE1976 u'	CIE1976 v'	1000 h	2000 h	3000 h	4000 h	5000 h	6000 h			
01	0.2663	0.5316	0.0014	0.0010	0.0015	0.0019	0.0021	0.0022			
02	0.2643	0.5323	0.0009	0.0007	0.0009	0.0011	0.0013	0.0012			
03	0.2646	0.5321	0.0009	0.0007	0.0009	0.0012	0.0013	0.0013			
04	0.2649	0.5325	0.0010	0.0008	0.0011	0.0014	0.0016	0.0018			
05	0.2641	0.5322	0.0012	0.0008	0.0013	0.0017	0.0020	0.0022			
06	0.2604	0.5229	0.0011	0.0009	0.0012	0.0013	0.0015	0.0014			
07	0.2662	0.5287	0.0011	0.0008	0.0011	0.0013	0.0014	0.0015			
08	0.2656	0.5279	0.0010	0.0008	0.0009	0.0011	0.0011	0.0010			
09	0.2652	0.5323	0.0021	0.0017	0.0023	0.0026	0.0029	0.0030			
10	0.2654	0.5325	0.0018	0.0015	0.0020	0.0023	0.0025	0.0026			
11	0.2647	0.5317	0.0020	0.0017	0.0022	0.0026	0.0028	0.0030			
12	0.2652	0.5326	0.0020	0.0016	0.0021	0.0024	0.0027	0.0028			
Ave.	0.2647	0.5308	0.0014	0.0011	0.0015	0.0018	0.0019	0.0020			
Med.	0.2650	0.5322	0.0011	0.0009	0.0012	0.0016	0.0018	0.0020			
Min.	0.2604	0.5229	0.0009	0.0007	0.0009	0.0011	0.0011	0.0010			
Max.	0.2663	0.5326	0.0021	0.0017	0.0023	0.0026	0.0029	0.0030			
σ	0.0015	0.0029	0.0005	0.0004	0.0005	0.0006	0.0006	0.0007			

