Cree® LED Components IES LM-80-2008 Testing Results

Revision: 48 (September 20, 2018)

NVLAP® TESTING

NVLAP Lab Code 500041-0

TABLE OF CONTENTS

Introduction 2
NVLAP® Accreditation for LM-80-2008 Testing 2
LED Modules (Rev 3) 3
XLamp® CMA1516 White LEDs (Rev 4) 5
XLamp® CMA1825 White LEDs (Rev 4) 6
XLamp® CMA1840 White LEDs (Rev 4) 7
XLamp® CMA2550 White LEDs (Rev 4) 8
XLamp® CMA3090 White LEDs (Rev 4) 9
XLamp® CMT1407 White LEDs (Rev 4) 10
XLamp® CMT1412 White LEDs (Rev 4) 11
XLamp® CMT1420 White LEDs (Rev 4) 12
XLamp® CMT1922 White LEDs (Rev 4) 13
XLamp® CMT1925 White LEDs (Rev 4) 14
XLamp® CMT1930 White LEDs (Rev 4) 15
XLamp® CMT1945 White LEDs (Rev 4) 16
XLamp® CMT2850 White LEDs (Rev 4) 17
XLamp® CMT2870 White LEDs (Rev 4) 18
XLamp® CMT2890 White LEDs (Rev 4) 19
XLamp® CXA1304 White LEDs (Rev 4) 20
XLamp® CXA1310 White LEDs (Rev 2) 21
XLamp® CXA1507 White LEDs (Rev 2) 22
XLamp® CXA1510 White LEDs (Rev 4) 23
XLamp® CXA1512 White LEDs (Rev 4) 24
XLamp® CXA1816 White LEDs (Rev 4) 25
XLamp® CXA1820 White LEDs (Rev 4) 26
XLamp® CXA1830 White LEDs (Rev 4) 27
XLamp® CXA2520 White LEDs (Rev 4) 28
XLamp® CXA2530 White LEDs (Rev 4) 29
XLamp® CXA2540 White LEDs (Rev 4) 30
XLamp® CXA3050 White LEDs (Rev 4) 31
XLamp® CXA3070 White LEDs (Rev 0) 32
XLamp® CXA3590 White LEDs (Rev 0) 33
XLamp® CXB1304 White LEDs (Rev 8) 34
XLamp® CXB1310 White LEDs (Rev 5) 35
XLamp® CXB1507 White LEDs (Rev 8) 36
XLamp® CXB1512 White LEDs (Rev 8) 37
XLamp® CXB1520 White LEDs (Rev 5) 38
XLamp® CXB1816 White LEDs (Rev 8) 39
XLamp® CXB1820 White LEDs (Rev 8) 40
XLamp® CXB1830 White LEDs (Rev 8) 41
XLamp® CXB2530 White LEDs (Rev 8) 42
XLamp® CXB2540 White LEDs (Rev 8) 43
XLamp® CXB3050 White LEDs (Rev 8) 44
XLamp® CXB3070 White LEDs (Rev 8) 45
XLamp® CXB3590 White LEDs (Rev 8) 46
XLamp® MC-E White LEDs (Rev 1) 47
XLamp® MHB-A White LEDs (Rev 13) 48
XLamp® MHB-B White LEDs (Rev 13) 49
XLamp® MHD-E White LEDs (Rev 13) 50
XLamp® MHD-G White LEDs (Rev 13) 51
XLamp® MK-R White LEDs (Rev 2) 52
XLamp® MK-R2 White LEDs (Rev 2) 53
XLamp® ML-B White LEDs (Rev 1) 54
XLamp® ML-C & ML-E White LEDs (Rev 1) 55
XLamp® ML-E White LEDs (Rev 1) 56
XLamp® MT-G2 EasyWhite® LEDs (Rev 3) 57
XLamp® MX-3 White LEDs (Rev 0) 58
XLamp® MX-6 White LEDs (Rev 2) 59
XLamp® XB-D White LEDs (Rev 2) 60
XLamp® XB-H White LEDs (Rev 1) 61
XLamp® XD16 White LEDs (Rev 0) 62
XLamp® XH-B White LEDs (Rev 3) 63
XLamp® XH-G White LEDs (Rev 3) 64
XLamp® XHP35 White LEDs (Rev 4) 65
XLamp® XHP35.2 White LEDs (Rev 0) 66
XLamp® XHP50 White LEDs (Rev 4) 67
XLamp® XHP50.2 White LEDs (Rev 2) 68
XLamp® XHP70 White LEDs (Rev 7) 69
XLamp® XHP70.2 White LEDs (Rev 1) 70
XLamp® XM-L™ EasyWhite® LEDs (Rev 1) 71
XLamp® XM-L™ White LEDs (Rev 2) 72
XLamp® XM-L2 White LEDs (Rev 3B) 73
XLamp® XP-E High Efficiency White LEDs (Rev 4) 74
XLamp® XP-E Far Red & Photo Red LEDs (Rev 1) 75
XLamp® XP-E White LEDs (Rev 3) 76
XLamp® XP-E2 Red, Red-Orange, Amber, Phosphor-Converted Amber, Green & Blue LEDs (Rev 2) 77
XLamp® XP-E2 White LEDs (Rev 1) 79
XLamp® XP-G White LEDs (Rev 7) 80
XLamp® XP-G2 High-Efficacy White LEDs (Rev 0) 81
XLamp® XP-G2 White LEDs (Rev 9) 82
XLamp® XP-G3 Royal Blue LEDs (Rev 1) 84
XLamp® XP-G3 S Line LEDs (Rev 0) 85
XLamp® XP-G3 White LEDs (Rev 9) 86
XLamp® XP-L White LEDs (Rev 8) 88
XLamp® XP-L2 White LEDs (Rev 6) 89
XLamp® XQ-A Red, Red-Orange, Phosphor-Converted Amber, Green, Blue & Royal Blue LEDs (Rev 0) 90
XLamp® XQ-A White LEDs (Rev 0) 92
XLamp® XQ-D White LEDs (Rev 0) 93
XLamp® XQ-E Red, Red-Orange, Phosphor-Converted Amber, Green, Blue & Royal Blue LEDs (Rev 1) 94
XLamp® XQ-E White LEDs (Rev 0) 96
XLamp® XR-E White LEDs (Rev 1) 97
XLamp® XT-E White LEDs (Rev 11) 99

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INTRODUCTION

This document provides the results of Cree's IES LM-80-2008 and LM-80-2015 ("LM-80") testing on its LED components. Cree is providing this data so that the public can verify the reliability of Cree LEDs as part of a complete LED lighting system.

Note that this document provides only the end results of the LM-80 tests. This is not a complete LM-80 report. Do not use this document to submit luminaires or lamps to an agency. Cree customers who need the full LM-80 reports should contact their Cree sales representative.

Cree's customers who wish to share LM-80 results with their customers have permission to link to this document from their website. This document is subject to change without notice, so please do not link to a local copy.

NVLAP® ACCREDITATION FOR LM-80-2008 TESTING

Cree's SSL testing laboratory in Durham, NC, USA is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP®) to perform IES LM-80-2008 and LM-80-2015 testing. All LM-80-2008 and LM-80-2015 results produced by Cree are generated in Cree's accredited laboratory. Full details on Cree's NVLAP accreditation are available here:

https://www-s.nist.gov/niws/index.cfm?event=directory.search#no-back

Lab Name: Cree SSL Laboratory

Lab Code: 500041-0

This report must not be used to claim product certification, approval, or endorsement by the NVLAP, the National Institute of Standards and Technology (NIST) or any other agency of the federal government.

LED MODULES (REV 3)

Revision: 3 (March 12, 2014)

Description Of LED Light Sources

Module Family	Nominal Light Output	Applicable Order Codes	Maximum LED Current*	Maximum Tc**	Maximum LED Tsp
LMR2	650 lm	LMR020-0650-xxxx-xxxxxTW	450 mA	74 °C	85 °C
LMR4	700 lm	LMR040-0700-xxxx-xxxxxTW	450 mA	77 °C	85 °C
	1000 lm	LMR040-1000-xxxx-xxxxxTW	450 mA	75 °C	85 °C
LMH2	850 lm	LMH020-0850-xxxx-xxxxxTW	440 mA	77 °C	85 °C
	1250 lm	LMH020-1250-xxxx-xxxxxTW	440 mA	75 °C	85 °C
	2000 lm	LMH020-2000-xxxx-xxxxxTW	450 mA	70 °C	85 °C
	3000 lm	LMH020-3000-xxxx-xxxxxTW	450 mA	68 °C	85 °C

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	85 °C	85 °C	White: 700 mA Single-Color: 1000 mA	2700 K	25	7,056 hrs	L90(7k) > 42,300 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
1+	85 °C	85 °C	White: 700 mA Single-Color: 1000 mA	2700 K	21	16,128 hrs	L90(16k) = 27,200 hrs L80(16k) = 57,400 hrs L70(16k) = 91,600 hrs

Notes:

* Maximum LED Current: These values are the maximum current that the white and single-color LEDs will receive during operation in the specified module.

** Maximum Tc: There is no practical way to directly measure LED Tsp inside Cree's module without adversely affecting the module's optical, thermal or mechanical properties. Therefore, Cree has characterized samples of our LED modules for the temperature difference between LED Tsp and the Cree-specified Tc measurement point on the outside of the module. Cree recommends using the external Tc measurement point and the maximum Tc values listed in the table above.

LED MODULES (REV 3) - CONTINUED

Description Of Additional LED Light Sources

The following data sets apply to the additional Cree LED modules in the table below:

Module Family	Data Set	Nominal Light Output	Applicable Order Codes	Maximum LED Current*	Maximum Tc**	Maximum LED Tsp
LMH2	2	4000 lm	LMH020-4000-xxxx-xxxxxTW	470 mA	75 °C	105 °C
LMH2	3	4000 lm	LMH020-4000-xxxx-xxxxxTW	470 mA	55 °C	85 °C
		6000 lm	LMH020-6000-xxxx-xxxxxTW	850 mA	78 °C	85 °C
		8000 lm	LMH020-8000-xxxx-xxxxxTW	1000 mA	75 °C	85 °C

No failures occurred during testing.

Additional Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
2	105 °C	105 °C	White: 700 mA Single-Color: 1000 mA	3500 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3	85 °C	85 °C	White: 1000 mA Single-Color: 1000 mA	3500 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

Notes:

* Maximum LED Current: These values are the maximum current that the white and single-color LEDs will receive during operation in the specified module.

** Maximum Tc: There is no practical way to directly measure LED Tsp inside Cree's module without adversely affecting the module's optical, thermal or mechanical properties. Therefore, Cree has characterized samples of our LED modules for the temperature difference between LED Tsp and the Cree-specified Tc measurement point on the outside of the module. Cree recommends using the external Tc measurement point and the maximum Tc values listed in the table above.

XLAMP® CMA1516 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp® CMA1516 White LEDs (Series: CMA1516)

This LM-80 report is applicable to the following order codes:

CMA1516 36 V CMA1516-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	560 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	10,000 hrs	L90(10k) > 55,000 hrs L80(10k) > 55,000 hrs L70(10k) > 55,000 hrs
85 °C	840 mA	CMT1420 36-V @ 85 °C, 1050 mA	3000 K	83	10	6,048 hrs	L90(6k) > 33,300 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs

XLAMP® CMA1825 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMA1825 White LEDs (Series: CMA1825)

This LM-80 report is applicable to the following order codes:
CMA1825 36 V CMA1825-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	731 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	10,000 hrs	L90(10k) > 55,000 hrs L80(10k) > 55,000 hrs L70(10k) > 55,000 hrs
85 °C	1067 mA	CMT1420 36-V @ 85 °C, 1050 mA	3000 K	83	10	6,048 hrs	L90(6k) > 33,300 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs

XLAMP® CMA1840 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMA1840 White LEDs (Series: CMA1840)

This LM-80 report is applicable to the following order codes:

CMA1840 36 V CMA1840-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	1120 mA	CMA3090 72-V @ 105 °C, 1600 mA	3000 K	84	10	6,552 hrs	L90(7k) = 11,900 hrs L80(7k) = 25,100 hrs L70(7k) > 36,000 hrs
85 °C	1260 mA	CMA3090 72-V @ 85 °C, 1800 mA	3000 K	83	10	8,568 hrs	L90(9k) = 15,800 hrs L80(9k) = 36,700 hrs L70(9k) > 47,100 hrs

XLAMP® CMA2550 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMA2550 White LEDs (Series: CMA2550)

This LM-80 report is applicable to the following order codes:

CMA2550 36 V CMA2550-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	1920 mA	CMA3090 72-V @ 105 °C, 1600 mA	3000 K	84	10	6,552 hrs	L90(7k) = 11,900 hrs L80(7k) = 25,100 hrs L70(7k) > 36,000 hrs
85 °C	2160 mA	CMA3090 72-V @ 85 °C, 1800 mA	3000 K	83	10	8,568 hrs	L90(9k) = 15,800 hrs L80(9k) = 36,700 hrs L70(9k) > 47,100 hrs

XLAMP® CMA3090 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMA3090 White LEDs (Series: CMA3090)

This LM-80 report is applicable to the following order codes:

CMA3090 48 V CMA3090-xxxx-xxxQxxxxxxx

CMA3090 72 V CMA3090-xxxx-xxxRxxxxxxx

No failures occurred during testing.

CMA3090 48-V

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	2400 mA	CMA3090 72-V @ 105 °C, 1600 mA	3000 K	84	10	6,552 hrs	L90(7k) = 11,900 hrs L80(7k) = 25,100 hrs L70(7k) > 36,000 hrs
85 °C	2700 mA	CMA3090 72-V @ 85 °C, 1800 mA	3000 K	83	10	8,568 hrs	L90(9k) = 15,800 hrs L80(9k) = 36,700 hrs L70(9k) > 47,100 hrs

CMA3090 72-V

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	1600 mA	CMA3090 72-V @ 105 °C, 1600 mA	3000 K	84	10	6,552 hrs	L90(7k) = 11,900 hrs L80(7k) = 25,100 hrs L70(7k) > 36,000 hrs
85 °C	1800 mA	CMA3090 72-V @ 85 °C, 1800 mA	3000 K	83	10	8,568 hrs	L90(9k) = 15,800 hrs L80(9k) = 36,700 hrs L70(9k) > 47,100 hrs

XLAMP® CMT1407 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMT1407 White LEDs (Series: CMT1407)

This LM-80 report is applicable to the following order codes:

CMT1407 36 V CMT1407-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	280 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	10,000 hrs	L90(10k) > 55,000 hrs L80(10k) > 55,000 hrs L70(10k) > 55,000 hrs
85 °C	420 mA	CMT1420 36-V @ 85 °C, 1050 mA	3000 K	83	10	6,048 hrs	L90(6k) > 33,300 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs

XLAMP® CMT1412 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMT1412 White LEDs (Series: CMT1412)

This LM-80 report is applicable to the following order codes:

CMT1412 36 V CMT1412-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	420 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	10,000 hrs	L90(10k) > 55,000 hrs L80(10k) > 55,000 hrs L70(10k) > 55,000 hrs
85 °C	630 mA	CMT1420 36-V @ 85 °C, 1050 mA	3000 K	83	10	6,048 hrs	L90(6k) > 33,300 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs

XLAMP® CMT1420 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMT1420 White LEDs (Series: CMT1420)

This LM-80 report is applicable to the following order codes:

CMT1420 36 V CMT1420-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Test Summary

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	700 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	10,000 hrs	L90(10k) > 55,000 hrs L80(10k) > 55,000 hrs L70(10k) > 55,000 hrs
85 °C	1050 mA	CMT1420 36-V @ 85 °C, 1050 mA	3000 K	83	10	6,048 hrs	L90(6k) > 33,300 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs

XLAMP® CMT1922 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMT1922 White LEDs (Series: CMT1922)

This LM-80 report is applicable to the following order codes:

CMT1922 36 V CMT1922-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	697 mA	CMA3090 72-V @ 105 °C, 1600 mA	3000 K	84	10	6,552 hrs	L90(7k) = 11,900 hrs L80(7k) = 25,100 hrs L70(7k) > 36,000 hrs
85 °C	785 mA	CMA3090 72-V @ 85 °C, 1800 mA	3000 K	83	10	8,568 hrs	L90(9k) = 15,800 hrs L80(9k) = 36,700 hrs L70(9k) > 47,100 hrs

XLAMP® CMT1925 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMT1925 White LEDs (Series: CMT1925)

This LM-80 report is applicable to the following order codes:

CMT1925 36 V CMT1925-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	814 mA	CMA3090 72-V @ 105 °C, 1600 mA	3000 K	84	10	6,552 hrs	L90(7k) = 11,900 hrs L80(7k) = 25,100 hrs L70(7k) > 36,000 hrs
85 °C	915 mA	CMA3090 72-V @ 85 °C, 1800 mA	3000 K	83	10	8,568 hrs	L90(9k) = 15,800 hrs L80(9k) = 36,700 hrs L70(9k) > 47,100 hrs

XLAMP® CMT1930 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMT1930 White LEDs (Series: CMT1930)

This LM-80 report is applicable to the following order codes:

CMT1930 36 V CMT1930-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	960 mA	CMA3090 72-V @ 105 °C, 1600 mA	3000 K	84	10	6,552 hrs	L90(7k) = 11,900 hrs L80(7k) = 25,100 hrs L70(7k) > 36,000 hrs
85 °C	1080 mA	CMA3090 72-V @ 85 °C, 1800 mA	3000 K	83	10	8,568 hrs	L90(9k) = 15,800 hrs L80(9k) = 36,700 hrs L70(9k) > 47,100 hrs

XLAMP® CMT1945 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMT1945 White LEDs (Series: CMT1945)

This LM-80 report is applicable to the following order codes:

CMT1945 36 V CMT1945-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	1280 mA	CMA3090 72-V @ 105 °C, 1600 mA	3000 K	84	10	6,552 hrs	L90(7k) = 11,900 hrs L80(7k) = 25,100 hrs L70(7k) > 36,000 hrs
85 °C	1440 mA	CMA3090 72-V @ 85 °C, 1800 mA	3000 K	83	10	8,568 hrs	L90(9k) = 15,800 hrs L80(9k) = 36,700 hrs L70(9k) > 47,100 hrs

XLAMP® CMT2850 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMT2850 White LEDs (Series: CMT2850)

This LM-80 report is applicable to the following order codes:

CMT2850 36 V CMT2850-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	2080 mA	CMA3090 72-V @ 105 °C, 1600 mA	3000 K	84	10	6,552 hrs	L90(7k) = 11,900 hrs L80(7k) = 25,100 hrs L70(7k) > 36,000 hrs
85 °C	2340 mA	CMA3090 72-V @ 85 °C, 1800 mA	3000 K	83	10	8,568 hrs	L90(9k) = 15,800 hrs L80(9k) = 36,700 hrs L70(9k) > 47,100 hrs

XLAMP® CMT2870 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMT2870 White LEDs (Series: CMT2870)

This LM-80 report is applicable to the following order codes:

CMT2870 54 V CMT2870-xxxx-xxxPxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	1760 mA	CMA3090 72-V @ 105 °C, 1600 mA	3000 K	84	10	6,552 hrs	L90(7k) = 11,900 hrs L80(7k) = 25,100 hrs L70(7k) > 36,000 hrs
85 °C	1980 mA	CMA3090 72-V @ 85 °C, 1800 mA	3000 K	83	10	8,568 hrs	L90(9k) = 15,800 hrs L80(9k) = 36,700 hrs L70(9k) > 47,100 hrs

XLAMP® CMT2890 WHITE LEDS (REV 4)

Revision: 4 (August 13, 2018)

Description Of LED Light Sources

XLamp CMT2890 White LEDs (Series: CMT2890)

This LM-80 report is applicable to the following order codes:

CMT2890 54 V CMT2890-xxxx-xxxPxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	2030 mA	CMA3090 72-V @ 105 °C, 1600 mA	3000 K	84	10	6,552 hrs	L90(7k) = 11,900 hrs L80(7k) = 25,100 hrs L70(7k) > 36,000 hrs
85 °C	2286 mA	CMA3090 72-V @ 85 °C, 1800 mA	3000 K	83	10	8,568 hrs	L90(9k) = 15,800 hrs L80(9k) = 36,700 hrs L70(9k) > 47,100 hrs

XLAMP® CXA1304 WHITE LEDS (REV 4)

Revision: 4 (September 11, 2015)

Description Of LED Light Sources

XLamp CXA1304 White LEDs (Series: CXA1304)

This LM-80 report is applicable to the following order codes:

CXA1304 9 V CXA1304-xxxx-xxxCxxxxxxx
CXA1304 18 V CXA1304-xxxx-xxxFxxxxxxx
CXA1304 36 V CXA1304-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3050-4+	105 °C	105 °C	1500 mA	3000 K	22	10,080 hrs	L90(10k) = 35,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
3050-5	85 °C	85 °C	1700 mA	3000 K	25	10,584 hrs	L90(10k) = 50,700 hrs L80(10k) > 63,500 hrs L70(10k) > 63,500 hrs
3050-6	85 °C	85 °C	2250 mA	3000 K	25	7,056 hrs	L90(7k) = 37,400 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
3050-3	55 °C	55 °C	2500 mA	3000 K	25	10,080 hrs	L90(10k) = 55,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR® September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents			
			Data Set 3050-4(+) (105 °C)	Data Set 3050-5 (85 °C)	Data Set 3050-6 (85 °C)	Data Set 3050-3 (55 °C)
CXA1304	9 V	CXA1304-xxxx-xxxCxxxxxxx	460 mA	524 mA	692 mA	768 mA
CXA1304	18 V	CXA1304-xxxx-xxxFxxxxxxx	230 mA	262 mA	346 mA	384 mA
CXA1304	36 V	CXA1304-xxxx-xxxNxxxxxxx	115 mA	131 mA	173 mA	192 mA
CXA3050	**36 V**	**CXA3050-xxxx-xxxNxxxxxxx**	**1500 mA**	**1700 mA**	**2250 mA**	**2500 mA**

XLAMP® CXA1310 WHITE LEDS (REV 2)

Revision: 2 (February 24, 2017)

Description Of LED Light Sources

XLamp CXA1310 White LEDs (Series: CXA1310)

This LM-80 report is applicable to the following order codes:

CXA1310 18 V CXA1310-xxxx-xxxFxxxxxxx

CXA1310 36 V CXA1310-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1520-1	105 °C	105 °C	500 mA	3000 K	24	8,568 hrs	L90(9k) = 37,300 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
1520-2	85 °C	85 °C	700 mA	3000 K	21	9,072 hrs	L90(9k) = 52,200 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents	
			Data Set 1520-1 (105 °C)	Data Set 1520-2 (85 °C)
CXA1310	18 V	CXA1310-xxxx-xxxFxxxxxxx	600 mA	840 mA
CXA1310	36 V	CXA1310-xxxx-xxxNxxxxxxx	300 mA	420 mA
CXA1520	**36 V**	**CXA1520-xxxx-xxxNxxxxxxx**	**500 mA**	**700 mA**

XLAMP® CXA1507 WHITE LEDS (REV 2)

Revision: 2 (March 19, 2014)

Description Of LED Light Sources

XLamp CXA1507 White LEDs (Series: CXA1507)

This LM-80 report is applicable to the following order codes:

CXA1507 18 V CXA1507-xxxx-xxxFxxxxxxx

CXA1507 36 V CXA1507-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	55 °C	55 °C	200 mA (36 V) 400 mA (18 V)	3000 K	25	6,048 hrs	L95(6k) = 24,700 hrs L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
2	85 °C	85 °C	200 mA (36 V) 400 mA (18 V)	3000 K	25	6,048 hrs	L95(6k) = 26,600 hrs L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3	105 °C	105 °C	200 mA (36 V) 400 mA (18 V)	3000 K	25	6,048 hrs	L95(6k) = 19,700 hrs L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3+	105 °C	105 °C	200 mA (36 V) 400 mA (18 V)	3000 K	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
4	55 °C	55 °C	375 mA (36 V) 750 mA (18 V)	3000 K	25	6,048 hrs	L90(6k) = 30,200 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
4+	55 °C	55 °C	375 mA (36 V) 750 mA (18 V)	3000 K	24	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
5	85 °C	85 °C	375 mA (36 V) 750 mA (18 V)	3000 K	25	7,056 hrs	L90(7k) = 39,600 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
5+	85 °C	85 °C	375 mA (36 V) 750 mA (18 V)	3000 K	20	9,072 hrs	L90(9k) > 54,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs

XLAMP® CXA1510 WHITE LEDS (REV 4)

Revision: 4 (September 11, 2015)

Description Of LED Light Sources

XLamp CXA1510 White LEDs (Series: CXA1510)

This LM-80 report is applicable to the following order codes:

CXA1510 18 V CXA1510-xxxx-xxxFxxxxxxx

CXA1510 36 V CXA1510-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3050-4+	105 °C	105 °C	1500 mA	3000 K	22	10,080 hrs	L90(10k) = 35,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
3050-5	85 °C	85 °C	1700 mA	3000 K	25	10,584 hrs	L90(10k) = 50,700 hrs L80(10k) > 63,500 hrs L70(10k) > 63,500 hrs
3050-6	85 °C	85 °C	2250 mA	3000 K	25	7,056 hrs	L90(7k) = 37,400 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
3050-3	55 °C	55 °C	2500 mA	3000 K	25	10,080 hrs	L90(10k) = 55,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents			
			Data Set 3050-4(+) (105 °C)	Data Set 3050-5 (85 °C)	Data Set 3050-6 (85 °C)	Data Set 3050-3 (55 °C)
CXA1510	18 V	CXA1510-xxxx-xxxFxxxxxxx	468 mA	530 mA	702 mA	780 mA
CXA1510	36 V	CXA1510-xxxx-xxxNxxxxxxx	234 mA	265 mA	351 mA	390 mA
CXA3050	**36 V**	**CXA3050-xxxx-xxxNxxxxxxx**	**1500 mA**	**1700 mA**	**2250 mA**	**2500 mA**

XLAMP® CXA1512 WHITE LEDS (REV 4)

Revision: 4 (September 11, 2015)

Description Of LED Light Sources

XLamp CXA1512 White LEDs (Series: CXA1512)

This LM-80 report is applicable to the following order codes:

CXA1512 18 V CXA1512-xxxx-xxxFxxxxxxx

CXA1512 36 V CXA1512-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3050-4+	105 °C	105 °C	1500 mA	3000 K	22	10,080 hrs	L90(10k) = 35,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
3050-5	85 °C	85 °C	1700 mA	3000 K	25	10,584 hrs	L90(10k) = 50,700 hrs L80(10k) > 63,500 hrs L70(10k) > 63,500 hrs
3050-6	85 °C	85 °C	2250 mA	3000 K	25	7,056 hrs	L90(7k) = 37,400 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
3050-3	55 °C	55 °C	2500 mA	3000 K	25	10,080 hrs	L90(10k) = 55,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents			
			Data Set 3050-4(+) (105 °C)	Data Set 3050-5 (85 °C)	Data Set 3050-6 (85 °C)	Data Set 3050-3 (55 °C)
CXA1512	18 V	CXA1512-xxxx-xxxFxxxxxxx	692 mA	784 mA	1038 mA	1154 mA
CXA1512	36 V	CXA1512-xxxx-xxxNxxxxxxx	346 mA	392 mA	519 mA	577 mA
CXA3050	**36 V**	**CXA3050-xxxx-xxxNxxxxxxx**	**1500 mA**	**1700 mA**	**2250 mA**	**2500 mA**

XLAMP® CXA1816 WHITE LEDS (REV 4)

Revision: 4 (September 11, 2015)

Description Of LED Light Sources

XLamp CXA1816 White LEDs (Series: CXA1816)

This LM-80 report is applicable to the following order codes:
CXA1816-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3050-4+	105 °C	105 °C	1500 mA	3000 K	22	10,080 hrs	L90(10k) = 35,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
3050-5	85 °C	85 °C	1700 mA	3000 K	25	10,584 hrs	L90(10k) = 50,700 hrs L80(10k) > 63,500 hrs L70(10k) > 63,500 hrs
3050-6	85 °C	85 °C	2250 mA	3000 K	25	7,056 hrs	L90(7k) = 37,400 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
3050-3	55 °C	55 °C	2500 mA	3000 K	25	10,080 hrs	L90(10k) = 55,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents			
			Data Set 3050-4(+) (105 °C)	Data Set 3050-5 (85 °C)	Data Set 3050-6 (85 °C)	Data Set 3050-3 (55 °C)
CXA1816	36 V	CXA1816-xxxx-xxxNxxxxxxx	462 mA	523 mA	692 mA	769 mA
CXA3050	**36 V**	**CXA3050-xxxx-xxxNxxxxxxx**	**1500 mA**	**1700 mA**	**2250 mA**	**2500 mA**

XLAMP® CXA1820 WHITE LEDS (REV 4)

Revision: 4 (September 11, 2015)

Description Of LED Light Sources

XLamp CXA1820 White LEDs (Series: CXA1820)

This LM-80 report is applicable to the following order codes:
CXA1820-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3050-4+	105 °C	105 °C	1500 mA	3000 K	22	10,080 hrs	L90(10k) = 35,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
3050-5	85 °C	85 °C	1700 mA	3000 K	25	10,584 hrs	L90(10k) = 50,700 hrs L80(10k) > 63,500 hrs L70(10k) > 63,500 hrs
3050-6	85 °C	85 °C	2250 mA	3000 K	25	7,056 hrs	L90(7k) = 37,400 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
3050-3	55 °C	55 °C	2500 mA	3000 K	25	10,080 hrs	L90(10k) = 55,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents			
			Data Set 3050-4(+) (105 °C)	Data Set 3050-5 (85 °C)	Data Set 3050-6 (85 °C)	Data Set 3050-3 (55 °C)
CXA1820	36 V	CXA1820-xxxx-xxxNxxxxxxx	577 mA	654 mA	865 mA	962 mA
CXA3050	**36 V**	**CXA3050-xxxx-xxxNxxxxxxx**	**1500 mA**	**1700 mA**	**2250 mA**	**2500 mA**

XLAMP® CXA1830 WHITE LEDS (REV 4)

Revision: 4 (September 11, 2015)

Description Of LED Light Sources

XLamp CXA1830 White LEDs (Series: CXA1830)

This LM-80 report is applicable to the following order codes:
CXA1830-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3050-4+	105 °C	105 °C	1500 mA	3000 K	22	10,080 hrs	L90(10k) = 35,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
3050-5	85 °C	85 °C	1700 mA	3000 K	25	10,584 hrs	L90(10k) = 50,700 hrs L80(10k) > 63,500 hrs L70(10k) > 63,500 hrs
3050-6	85 °C	85 °C	2250 mA	3000 K	25	7,056 hrs	L90(7k) = 37,400 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
3050-3	55 °C	55 °C	2500 mA	3000 K	25	10,080 hrs	L90(10k) = 55,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents			
			Data Set 3050-4(+) (105 °C)	Data Set 3050-5 (85 °C)	Data Set 3050-6 (85 °C)	Data Set 3050-3 (55 °C)
CXA1830	36 V	CXA1830-xxxx-xxxNxxxxxxx	662 mA	743 mA	977 mA	1087 mA
CXA3050	**36 V**	**CXA3050-xxxx-xxxNxxxxxxx**	**1500 mA**	**1700 mA**	**2250 mA**	**2500 mA**

XLAMP® CXA2520 WHITE LEDS (REV 4)

Revision: 4 (September 11, 2015)

Description Of LED Light Sources

XLamp CXA2520 White LEDs (Series: CXA2520)

This LM-80 report is applicable to the following order codes:
CXA2520-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3050-4+	105 °C	105 °C	1500 mA	3000 K	22	10,080 hrs	L90(10k) = 35,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
3050-5	85 °C	85 °C	1700 mA	3000 K	25	10,584 hrs	L90(10k) = 50,700 hrs L80(10k) > 63,500 hrs L70(10k) > 63,500 hrs
3050-6	85 °C	85 °C	2250 mA	3000 K	25	7,056 hrs	L90(7k) = 37,400 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
3050-3	55 °C	55 °C	2500 mA	3000 K	25	10,080 hrs	L90(10k) = 55,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents			
			Data Set 3050-4(+) (105 °C)	Data Set 3050-5 (85 °C)	Data Set 3050-6 (85 °C)	Data Set 3050-3 (55 °C)
CXA2520	36 V	CXA2520-xxxx-xxxNxxxxxxx	624 mA	707 mA	936 mA	1040 mA
CXA3050	**36 V**	**CXA3050-xxxx-xxxNxxxxxxx**	**1500 mA**	**1700 mA**	**2250 mA**	**2500 mA**

XLAMP® CXA2530 WHITE LEDS (REV 4)

Revision: 4 (September 11, 2015)

Description Of LED Light Sources

XLamp CXA2530 White LEDs (Series: CXA2530)

This LM-80 report is applicable to the following order codes:
CXA2530-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3050-4+	105 °C	105 °C	1500 mA	3000 K	22	10,080 hrs	L90(10k) = 35,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
3050-5	85 °C	85 °C	1700 mA	3000 K	25	10,584 hrs	L90(10k) = 50,700 hrs L80(10k) > 63,500 hrs L70(10k) > 63,500 hrs
3050-6	85 °C	85 °C	2250 mA	3000 K	25	7,056 hrs	L90(7k) = 37,400 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
3050-3	55 °C	55 °C	2500 mA	3000 K	25	10,080 hrs	L90(10k) = 55,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents			
			Data Set 3050-4(+) (105 °C)	Data Set 3050-5 (85 °C)	Data Set 3050-6 (85 °C)	Data Set 3050-3 (55 °C)
CXA2530	36 V	CXA2530-xxxx-xxxNxxxxxxx	808 mA	915 mA	1212 mA	1346 mA
CXA3050	**36 V**	**CXA3050-xxxx-xxxNxxxxxxx**	**1500 mA**	**1700 mA**	**2250 mA**	**2500 mA**

XLAMP® CXA2540 WHITE LEDS (REV 4)

Revision: 4 (September 11, 2015)

Description Of LED Light Sources

XLamp CXA2540 White LEDs (Series: CXA2540)

This LM-80 report is applicable to the following order codes:
CXA2540-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3050-4+	105 °C	105 °C	1500 mA	3000 K	22	10,080 hrs	L90(10k) = 35,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
3050-5	85 °C	85 °C	1700 mA	3000 K	25	10,584 hrs	L90(10k) = 50,700 hrs L80(10k) > 63,500 hrs L70(10k) > 63,500 hrs
3050-6	85 °C	85 °C	2250 mA	3000 K	25	7,056 hrs	L90(7k) = 37,400 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
3050-3	55 °C	55 °C	2500 mA	3000 K	25	10,080 hrs	L90(10k) = 55,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents			
			Data Set 3050-4(+) (105 °C)	Data Set 3050-5 (85 °C)	Data Set 3050-6 (85 °C)	Data Set 3050-3 (55 °C)
CXA2540	36 V	CXA2540-xxxx-xxxNxxxxxxx	1139 mA	1281 mA	1693 mA	1903 mA
CXA3050	**36 V**	**CXA3050-xxxx-xxxNxxxxxxx**	**1500 mA**	**1700 mA**	**2250 mA**	**2500 mA**

XLAMP® CXA3050 WHITE LEDS (REV 4)

Revision: 4 (September 11, 2015)

Description Of LED Light Sources

XLamp CXA3050 White LEDs (Series: CXA3050)

This LM-80 report is applicable to the following order codes:
CXA3050-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3050-4	105 °C	105 °C	1500 mA	3000 K	25	8,064 hrs	L90(8k) = 27,000 hrs L80(8k) > 48,400 hrs L70(8k) > 48,400 hrs
3050-4+	105 °C	105 °C	1500 mA	3000 K	22	10,080 hrs	L90(10k) = 35,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
3050-5	85 °C	85 °C	1700 mA	3000 K	25	10,584 hrs	L90(10k) = 50,700 hrs L80(10k) > 63,500 hrs L70(10k) > 63,500 hrs
3050-6	85 °C	85 °C	2250 mA	3000 K	25	7,056 hrs	L90(7k) = 37,400 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
3050-3	55 °C	55 °C	2500 mA	3000 K	25	10,080 hrs	L90(10k) = 55,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

XLAMP® CXA3070 WHITE LEDS (REV 0)

Revision: 0 (September 5, 2014)

Description Of LED Light Sources

XLamp CXA3070 White LEDs (Series: CXA3070)

This LM-80 report is applicable to the following order codes:
CXA3070-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3590-1	105 °C	105 °C	1050 mA	3000 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3590-2	85 °C	85 °C	1400 mA	3000 K	25	6,046 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents	
			Data Set 3590-1 (105 °C)	Data Set 3590-2 (85° C)
CXA3070	36 V	CXA3070-xxxx-xxxNxxxxxxx	1335 mA	1794 mA
CXA3590	**72 V**	**CXA3590-xxxx-xxxRxxxxxxx**	**1050 mA**	**1400 mA**

XLAMP® CXA3590 WHITE LEDS (REV 0)

Revision: 0 (September 5, 2014)

Description Of LED Light Sources

XLamp CXA3590 White LEDs (Series: CXA3590)

This LM-80 report is applicable to the following order codes:

CXA3590 36 V CXA3590-xxxx-xxxNxxxxxxx

CXA3590 72 V CXA3590-xxxx-xxxRxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3590-1	105 °C	105 °C	1050 mA	3000 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3590-2	85 °C	85 °C	1400 mA	3000 K	25	6,046 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents	
			Data Set 3590-1 (105 °C)	Data Set 3590-2 (85° C)
CXA3590	36 V	CXA3590-xxxx-xxxNxxxxxxx	2100 mA	2800 mA
CXA3590	**72 V**	**CXA3590-xxxx-xxxRxxxxxxx**	**1050 mA**	**1400 mA**

XLAMP® CXB1304 WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp CXB1304 White LEDs (Series: CXB1304)

This LM-80 report is applicable to the following order codes:

CXB1304 9 V CXB1304-xxxx-xxxCxxxxxxx
CXB1304 18 V CXB1304-xxxx-xxxFxxxxxxx
CXB1304 36 V CXB1304-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B2530-1	105 °C	105 °C	1200 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
B2530-2	85 °C	85 °C	1600 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 products. The tested products are listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents	
			Data Set B2530-1 (105 °C)	Data Set B2530-2 (85 °C)
CXB1304	9 V	CXB1304-xxxx-xxxCxxxxxxx	684 mA	916 mA
CXB1304	18 V	CXB1304-xxxx-xxxFxxxxxxx	342 mA	458 mA
CXB1304	36 V	CXB1304-xxxx-xxxNxxxxxxx	171 mA	229 mA
CXB2530	**36 V**	**CXB2530-xxxx-xxxNxxxxxxx**	**1200 mA**	**1600 mA**

XLAMP® CXB1310 WHITE LEDS (REV 5)

Revision: 5 (June 20, 2018)

Description Of LED Light Sources

XLamp CXB1310 White LEDs (Series: CXB1310)

This LM-80 report is applicable to the following order codes:

CXB1310 18 V CXB1310-xxxx-xxxFxxxxxxx

CXB1310 36 V CXB1310-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B1310-2	105 °C	105 °C	900 mA (18 V) 450 mA (36 V)	3000K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs
B1310-4	85 °C	85 °C	1400 mA (18 V) 700 mA (36 V)	3000K	10	12,096 hrs	L90(12k) > 66,500 hrs L80(12k) > 66,500 hrs L70(12k) > 66,500 hrs

XLAMP® CXB1507 WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp CXB1507 White LEDs (Series: CXB1507)

This LM-80 report is applicable to the following order codes:

CXB1507 18 V CXB1507-xxxx-xxxFxxxxxxx

CXB1507 36 V CXB1507-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Arrays

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B2530-1	105 °C	105 °C	1200 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
B3050-2	85 °C	85 °C	2500 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested products are listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents	
			Data Set B2530-1 (105 °C)	Data Set B3050-2 (85 °C)
CXB1507	18 V	CXB1507-xxxx-xxxFxxxxxxx	686 mA	750 mA
CXB1507	36 V	CXB1507-xxxx-xxxNxxxxxxx	343 mA	375 mA
CXB2530	**36 V**	**CXB2530-xxxx-xxxNxxxxxxx**	**1200 mA**	
CXB3050	**36 V**	**CXB3050-xxxx-xxxNxxxxxxx**		**2500 mA**

XLAMP® CXB1512 WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp CXB1512 White LEDs (Series: CXB1512)

This LM-80 report is applicable to the following order codes:

CXB1512 18 V CXB1512-xxxx-xxxFxxxxxxx

CXB1512 36 V CXB1512-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B3050-1	105 °C	105 °C	1500 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
B3050-2	85 °C	85 °C	2500 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents	
			Data Set B3050-1 (105 °C)	Data Set B3050-2 (85 °C)
CXB1512	18 V	CXB1512-xxxx-xxxFxxxxxxx	900 mA	1200 mA
CXB1512	36 V	CXB1512-xxxx-xxxNxxxxxxx	450 mA	600 mA
CXB3050	**36 V**	**CXB3050-xxxx-xxxNxxxxxxx**	**1500 mA**	**2500 mA**

XLAMP® CXB1520 WHITE LEDS (REV 5)

Revision: 5 (June 20, 2018)

Description Of LED Light Sources

XLamp CXB1520 White LEDs (Series: CXB1520)

This LM-80 report is applicable to the following order codes:
CXB1520-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B1520-1	85 °C	85 °C	900 mA	3000 K	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
B1520-2	105 °C	105 °C	900 mA	3000 K	20	10,080 hrs	L90(10k) = 44,900 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
B1520-3	85 °C	85 °C	1200 mA	3000 K	15	8,064 hrs	L90(8k) > 44,400 hrs L80(8k) > 44,400 hrs L70(8k) > 44,400 hrs
B1520-4	85 °C	85 °C	1400 mA	2700 K & 3000 K	15	8,064 hrs	L90(8k) > 44,400 hrs L80(8k) > 44,400 hrs L70(8k) > 44,400 hrs

XLAMP® CXB1816 WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp CXB1816 White LEDs (Series: CXB1816)

This LM-80 report is applicable to the following order codes:
CXB1816-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B2530-1	105 °C	105 °C	1200 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
B2530-2	85 °C	85 °C	1600 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 products. The tested products are listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents	
			Data Set B2530-1 (105 °C)	Data Set B2530-2 (85 °C)
CXB1816	36 V	CXB1816-xxxx-xxxNxxxxxxx	673 mA	900 mA
CXB2530	**36V**	**CXB2530-xxxx-xxxNxxxxxxx**	**1200 mA**	**1600 mA**

XLAMP® CXB1820 WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp CXB1820 White LEDs (Series: CXB1820)

This LM-80 report is applicable to the following order codes:
CXB1820-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Arrays

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B2530-1	105 °C	105 °C	1200 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
B3070-1	105 °C	105 °C	2250 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs
B3050-2	85 °C	85 °C	2500 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested products are listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents		
			Data Set 2530-1 (105 °C)	Data Set B3050-2 (85 °C)	Data Set B3070-1 (105 °C)
CXB1820	36 V	CXB1820-xxxx-xxxNxxxxxxx	681 mA	1044 mA	727 mA
CXB2530	**36 V**	**CXB2530-xxxx-xxxNxxxxxxx**	**1200 mA**		
CXB3050	**36 V**	**CXB3050-xxxx-xxxNxxxxxxx**		**2500 mA**	
CXB3070	**36 V**	**CXB3070-xxxx-xxxNxxxxxxx**			**2250 mA**

XLAMP® CXB1830 WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp CXB1830 White LEDs (Series: CXB1830)

This LM-80 report is applicable to the following order codes:
CXB1830-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Arrays

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B2530-1	105 °C	105 °C	1200 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
B3070-1	105 °C	105 °C	2250 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs
B3070-2	85 °C	85 °C	2800 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested products are listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents		
			Data Set 2530-1 (105 °C)	Data Set B3070-1 (105 °C)	Data Set B3070-2 (85 °C)
CXB1830	36 V	CXB1830-xxxx-xxxNxxxxxxx	707 mA	984 mA	1227 mA
CXB2530	**36 V**	**CXB2530-xxxx-xxxNxxxxxxx**	**1200 mA**		
CXB3070	**36 V**	**CXB3070-xxxx-xxxNxxxxxxx**		**2250 mA**	**2800 mA**

XLAMP® CXB2530 WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp CXB2530 White LEDs (Series: CXB2530)

This LM-80 report is applicable to the following order codes:
CXB2530-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B2530-1	105 °C	105 °C	1200 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
B2530-2	85 °C	85 °C	1600 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs

XLAMP® CXB2540 WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp CXB2540 White LEDs (Series: CXB2540)

This LM-80 report is applicable to the following order codes:
CXB2540-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Arrays

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B3050-1	105 °C	105 °C	1500 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
B3070-1	105 °C	105 °C	2250 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs
B3050-2	85 °C	85 °C	2500 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested products are listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents		
			Data Set B3050-1 (105 °C)	Data Set B3050-2 (85 °C)	Data Set B3070-1 (105 °C)
CXB2540	36 V	CXB2540-xxxx-xxxNxxxxxxx	1146 mA	1923 mA	1262 mA
CXB3050	**36V**	**CXB3050-xxxx-xxxNxxxxxxx**	**1500 mA**	**2500 mA**	
CXB3070	**36 V**	**CXB3070-xxxx-xxxNxxxxxxx**			**2250 mA**

XLAMP® CXB3050 WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp CXB3050 White LEDs (Series: CXB3050)

This LM-80 report is applicable to the following order codes:
CXB3050-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B3050-1	105 °C	105 °C	1500 mA	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
B3050-2	85 °C	85 °C	2500 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B3070-1	105 °C	105 °C	2250 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Current
			Data Set B3070-1 (105 °C)
CXB3050	36 V	CXB3050-xxxx-xxxNxxxxxxx	1641 mA
CXB3070	**36 V**	**CXB3070-xxxx-xxxNxxxxxxx**	**2250 mA**

XLAMP® CXB3070 WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp CXB3070 White LEDs (Series: CXB3070)

This LM-80 report is applicable to the following order codes:
CXB3070-xxxx-xxxxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B3070-1	105 °C	105 °C	2250 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs
B3070-2	85 °C	85 °C	2800 mA	3000 K	10	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs

Results Summary For Tested LED Array

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B3590-1	105 °C	105 °C	2100 mA (36 V) 1050 mA (72 V)	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
B3590-2	85 °C	85 °C	2800 mA (36 V) 1400 mA (72 V)	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs

Scaling For Applicable Products

The data sets cited below meet all the criteria for one LM-80 data set to apply to a range of LED arrays, as defined in the ENERGY STAR September 9, 2011 guidelines, Section 3.7.d. The table below defines the current values that apply to each product when scaled from the tested LM-80 product. The tested product is listed in bold text below.

Product Name	Voltage Class	Product Order Code	Applicable Currents	
			Data Set B3590-1 (105 °C)	Data Set B3590-2 (85 °C)
CXB3070	36 V	CXB3070-xxxx-xxxNxxxxxxx	1321 mA	1764 mA
CXB3590	**72 V**	**CXB3590-xxxx-xxxRxxxxxxx**	**1050 mA**	**1400 mA**

XLAMP® CXB3590 WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp CXB3590 White LEDs (Series: CXB3590)

This LM-80 report is applicable to the following order codes:

CXB3590 36 V CXB3590-xxxx-xxxNxxxxxxx

CXB3590 72 V CXB3590-xxxx-xxxRxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
B3590-1	105 °C	105 °C	2100 mA (36 V) 1050 mA (72 V)	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
B3590-2	85 °C	85 °C	2800 mA (36 V) 1400 mA (72 V)	3000 K	10	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs

XLAMP® MC-E WHITE LEDS (REV 1)

Revision: 1 (December 8, 2010)

Description Of LED Light Sources

XLamp MC-E White LEDs (Series: MCE4WT)
XLamp MC-E EasyWhite® LEDs (Series: MCEEZW)

This LM-80 report is applicable to the following order codes:
MC-E White: MCE4WT-A2-xxxx-xxxxxx
MC-E EasyWhite: MCEEZW-A1-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	45 °C	45 °C	350 mA	3000 K	26	6,048 hrs	L90(6k) > 25,700 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3	55 °C	55 °C	350 mA	3000 K	26	6,048 hrs	L90(6k) = 28,800 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
5	85 °C	85 °C	350 mA	3000 K	26	6,048 hrs	L90(6k) = 23,100 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
2	45 °C	45 °C	700 mA	3000 K	26	6,048 hrs	L90(6k) = 23,600 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
4	55 °C	55 °C	700 mA	3000 K	26	6,048 hrs	L90(6k) = 11,700 hrs L80(6k) = 21,900 hrs L70(6k) = 33.400 hrs
6	85 °C	85 °C	700 mA	3000 K	26	6,048 hrs	L90(6k) = 7,660 hrs L80(6k) = 13,900 hrs L70(6k) = 20,900 hrs

XLAMP® MHB-A WHITE LEDS (REV 13)

Revision: 13 (May 17, 2018)

Description Of LED Light Sources

XLamp MHB-A White LEDs (Series: MHBAWT)

This LM-80 report is applicable to the following order codes:

MHB-A 9 V: MHBAWT-xxxx-xxxCxxxxxxx

MHB-A 18 V: MHBAWT-xxxx-xxxFxxxxxxx

MHB-A 36 V: MHBAWT-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
MHBA-2	105 °C	105 °C	320 mA (9 V) 160 mA (18 V) 80 mA (36 V)	3000 K	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
MHBA-2+	105 °C	105 °C	320 mA (9 V) 160 mA (18 V) 80 mA (36 V)	3000 K	20	14,112 hrs	L90(14k) > 84,700 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
MHBA-3	85 °C	85 °C	500 mA (9 V) 250 mA (18 V) 125 mA (36 V)	3000 K	24	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
MHBA-3+	85 °C	85 °C	500 mA (9 V) 250 mA (18 V) 125 mA (36 V)	3000 K	21	14,112 hrs	L90(14k) > 84,700 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
MHBA-1	105 °C	105 °C	500 mA (9 V) 250 mA (18 V) 125 mA (36 V)	3000 K	23	8,568 hrs	L90(9k) = 30,200 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
MHBA-4	85 °C	85 °C	700 mA (9 V) 350 mA (18 V) 175 mA (36 V)	3000 K	20	8,568 hrs	L90(9k) = 21,400 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs

XLAMP® MHB-B WHITE LEDS (REV 13)

Revision: 13 (May 17, 2018)

Description Of LED Light Sources

XLamp MHB-B White LEDs (Series: MHBBWT)

This LM-80 report is applicable to the following order codes:

MHB-B 9 V: MHBBWT-xxxx-xxxCxxxxxxx

MHB-B 18 V: MHBBWT-xxxx-xxxFxxxxxxx

MHB-B 36 V: MHBBWT-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
MHBB-2	105 °C	105 °C	320 mA (9 V) 160 mA (18 V) 80 mA (36 V)	3000 K	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
MHBB-3	85 °C	85 °C	500 mA (9 V) 250 mA (18 V) 125 mA (36 V)	3000 K	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
MHBB-1	105 °C	105 °C	500 mA (9 V) 250 mA (18 V) 125 mA (36 V)	3000 K	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
MHBB-5	105 °C	105 °C	600 mA (9 V) 390 mA (18 V) 150 mA (36 V)	3000 K	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
MHBB-4	85 °C	85 °C	700 mA (9 V) 350 mA (18 V) 175 mA (36 V)	3000 K	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

XLAMP® MHD-E WHITE LEDS (REV 13)

Revision: 13 (May 17, 2018)

Description Of LED Light Sources

XLamp MHD-E White LEDs (Series: MHDEWT)

This LM-80 report is applicable to the following order codes:

MHD-E 9 V: MHDEWT-xxxx-xxxCxxxxxxx

MHD-E 18 V: MHDEWT-xxxx-xxxFxxxxxxx

MHD-E 36 V: MHDEWT-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
MHDE-1	105 °C	105 °C	600 mA (9 V) 300 mA (18 V) 150 mA (36 V)	3000 K	20	11,592 hrs	L90(12k) > 69,600 hrs L80(12k) > 69,600 hrs L70(12k) > 69,600 hrs
MHDE-2	85 °C	85 °C	1000 mA (9 V) 500 mA (18 V) 250 mA (36 V)	3000 K	20	11,592 hrs	L90(12k) > 69,600 hrs L80(12k) > 69,600 hrs L70(12k) > 69,600 hrs

XLAMP® MHD-G WHITE LEDS (REV 13)

Revision: 13 (May 17, 2018)

Description Of LED Light Sources

XLamp MHD-G White LEDs (Series: MHDGWT)

This LM-80 report is applicable to the following order codes:

MHD-G 18 V: MHDGWT-xxxx-xxxFxxxxxxx

MHD-G 36 V: MHDGWT-xxxx-xxxNxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
MHDG-1	105 °C	105 °C	400 mA (18 V) 200 mA (36 V)	3000 K	20	8,064 hrs	L90(8k) > 48,400 hrs L80(8k) > 48,400 hrs L70(8k) > 48,400 hrs
MHDG-1+	105 °C	105 °C	400 mA (18 V) 200 mA (36 V)	3000K	18	12,096 hrs	L90(12k) = 44,900 hrs L80(12k) > 66,500 hrs L70(12k) > 66,500 hrs
MHDG-4	85 °C	85 °C	500 mA (18 V) 250 mA (36 V)	3000K	25	11,592 hrs	L90(6k) > 69,600 hrs L80(6k) > 69,600 hrs L70(6k) > 69,600 hrs
MHDG-5	105 °C	105 °C	500 mA (18 V) 250 mA (36 V)	3000K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
MHDG-2	105 °C	105 °C	700 mA (18 V) 350 mA (36 V)	3000 K	20	6,048 hrs	L90(6k) = 11,500 hrs L80(6k) = 28,400 hrs L70(6k) > 36,300 hrs
MHDG-3	85 °C	85 °C	800 mA (18 V) 400 mA (36 V)	3000 K	20	8,568 hrs	L90(9k) = 24,600 hrs L80(9k) = 51,400 hrs L70(9k) > 51,400 hrs

XLAMP® MK-R WHITE LEDS (REV 2)

Revision: 2 (May 12, 2015)

Description Of LED Light Sources

XLamp MK-R White LEDs (Series: MKRAWT)

This LM-80 report is applicable to the following order codes:

MK-R 6 V: MKRAWT-xx-xxxx-xBxxxxxxxxx

MK-R 12 V: MKRAWT-xx-xxxx-xDxxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3	125 °C	125 °C	700 mA (6 V) 350 mA (12 V)	3000 K	25	11,088 hrs	L90(11k) > 66,500 hrs L80(11k) > 66,500 hrs L70(11k) > 66,500 hrs
8	105 °C	105 °C	1000 mA (6 V) 500 mA (12 V)	3000 K	25	13,104 hrs	L90(13k) = 34,800 hrs L80(13k) = 75,600 hrs L70(13k) > 78,600 hrs
9	85 °C	85 °C	1400 mA (6 V) 700 mA (12 V)	3000 K	25	13,104 hrs	L90(13k) = 36,400 hrs L80(13k) > 78,600 hrs L70(13k) > 78,600 hrs
4	105 °C	105 °C	1400 mA (6 V) 700 mA (12 V)	3000 K	25	10,080 hrs	L90(10k) = 26,900 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
5	85 °C	85 °C	2000 mA (6 V) 1000 mA (12 V)	3000 K	25	11,088 hrs	L90(11k) = 30,500 hrs L80(11k) = 62,200 hrs L70(11k) > 66,500 hrs
6	55 °C	55 °C	2500 mA (6 V) 1250 mA (12 V)	3000 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
6+	55 °C	55 °C	2500 mA (6 V) 1250 mA (12 V)	3000 K	21	7,056 hrs	L90(7k) > 42,300 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
7	85 °C	85 °C	2500 mA (6 V) 1250 mA (12 V)	3000 K	25	6,048 hrs	L90(6k) = 33,900 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
7+	85 °C	85 °C	2500 mA (6 V) 1250 mA (12 V)	3000 K	22	8,064 hrs	L90(8k) = 19,800 hrs L80(8k) = 42,600 hrs L70(8k) > 48,400 hrs

XLAMP® MK-R2 WHITE LEDS (REV 2)

Revision: 2 (October 5, 2017)

Description Of LED Light Sources

XLamp MK-R White LEDs (Series: MKRBWT)

This LM-80 report is applicable to the following order codes:
MKRBWT-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	55 °C	55 °C	200 mA	3000 K	20	8,568 hrs	L90(9k) > 51,400 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
2	85 °C	85 °C	200 mA	3000 K	20	12,096 hrs	L90(12k) = 44,100 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
3	105 °C	105 °C	200 mA	3000 K	20	12,096 hrs	L90(12k) = 16,000 hrs L80(12k) = 41,300 hrs L70(12k) = 69,900 hrs
4	85 °C	85 °C	300 mA	3000 K	20	12,096 hrs	L90(12k) = 20,900 hrs L80(12k) = 44,500 hrs L70(12k) = 71,200 hrs

XLAMP® ML-B WHITE LEDS (REV 1)

Revision: 1 (May 1, 2012)

Description Of LED Light Sources

XLamp ML-B White LEDs (Series: MLBAWT)

This LM-80 report is applicable to the following order codes:
MLBAWT-xx-xxxx-xxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	45 °C	45 °C	80 mA	2700 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
2	55 °C	55 °C	80 mA	2700 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3	85 °C	85 °C	80 mA	2700 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
4	85 °C	85 °C	175 mA	2700 K	25	8,064 hrs	L90(8k) = 12,300 hrs L80(8k) = 23,600 hrs L70(8k) = 36,300 hrs

XLAMP® ML-C & ML-E WHITE LEDS (REV 1)

Revision: 1 (March 19, 2012)

Description Of LED Light Sources

XLamp ML-C White LEDs (Parallel (MLCAWT) & Series (MLCSWT) Configurations)
XLamp ML-E White LEDs (Parallel (MLEAWT) & Series (MLESWT) Configurations)

This LM-80 report is applicable to the following order codes:

ML-C Parallel: MLCAWT-xx-xxxx-xxxxxx
ML-C Series: MLCSWT-xx-xxxx-xxxxxx
ML-E Parallel: MLEAWT-xx-xxxx-xxxxxx
ML-E Series : MLESWT-xx-xxxx-xxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	45 °C	45 °C	116 mA (MLCAWT) 58 mA (MLCSWT) 175 mA (MLEAWT) 58 mA (MLESWT)	2700 K	26	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
2	55 °C	55 °C	116 mA (MLCAWT) 58 mA (MLCSWT) 175 mA (MLEAWT) 58 mA (MLESWT)	2700 K	26	6,048 hrs	L90(6k) = 25,600 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3	85 °C	85 °C	116 mA (MLCAWT) 58 mA (MLCSWT) 175 mA (MLEAWT) 58 mA (MLESWT)	2700 K	26	6,048 hrs	L90(6k) = 13,600 hrs L80(6k) = 27,200 hrs L70(6k) > 36,300 hrs

XLAMP® ML-E WHITE LEDS (REV 1)

Revision: 1 (June 14, 2013)

Description Of LED Light Sources

XLamp ML-E White LEDs (Series: MLEAWT)

This LM-80 report is applicable to the following order codes:
MLEAWT-xx-xxxx-xxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
P2	55 °C	55 °C	175 mA	3000 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
P3	85 °C	85 °C	175 mA	3000 K	25	6,552 hrs	L90(7k) = 24,700 hrs L80(7k) > 39,300 hrs L70(7k) > 39,300 hrs
P3+	85 °C	85 °C	175 mA	3000 K	20	10,584 hrs	L90(11k) = 17,100 hrs L80(11k) = 29,900 hrs L70(11k) = 44,300 hrs
P1	105 °C	105 °C	175 mA	3000 K	25	6,048 hrs	L90(6k) = 10,200 hrs L80(6k) = 18,700 hrs L70(6k) = 28,300 hrs
P4	55 °C	55 °C	350 mA	3000 K	25	6,048 hrs	L90(6k) = 23,000 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
P5	85 °C	85 °C	350 mA	3000 K	25	6,048 hrs	L90(6k) = 9,450 hrs L80(6k) = 18,600 hrs L70(6k) = 28,900 hrs

XLAMP® MT-G2 EASYWHITE® LEDS (REV 3)

Revision: 3 (June 15, 2014)

Description Of LED Light Sources

XLamp MT-G2 EasyWhite LEDs (Series: MTGBEZ)

This LM-80 report is applicable to the following order codes:

MT-G2 6 V: MTGBEZ-xx-xxxx-xBxxxxxxx

MT-G2 9V: MTGBEZ-xx-xxxx-xCxxxxxxx

MT-G2 36 V: MTGBZW-xx-xxxx-xNxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	85 °C	85 °C	3000 mA (6 V) 2000 mA (9 V) 500 mA (36 V)	3000 K	25	6,048 hrs	L90(6k) = 12,000 hrs L80(6k) = 26,600 hrs L70(6k) > 36,300 hrs
1+	85 °C	85 °C	3000 mA (6 V) 2000 mA (9 V) 500 mA (36 V)	3000 K	15	13,104 hrs	L90(13k) = 22,300 hrs L80(13k) = 59,200 hrs L70(13k) > 72,100 hrs
2	105 °C	105 °C	3000 mA (6 V) 2000 mA (9 V) 500 mA (36 V)	3000 K	26	6,048 hrs	L90(6k) = 6,060 hrs L80(6k) = 15,400 hrs L70(6k) = 26,000 hrs
2+	105 °C	105 °C	3000 mA (6 V) 2000 mA (9 V) 500 mA (36 V)	3000 K	20	7,056 hrs	L70(7k) = 27,700 hrs

XLAMP® MX-3 WHITE LEDS (REV 0)

Revision: 0 (March 29, 2011)

Description Of LED Light Sources

XLamp MX-3 White LEDs (Series: MX3AWT)

This LM-80 report is applicable to the following order codes:

MX-3 Parallel: MX3AWT-xx-xxxx-xxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	45 °C	45 °C	400 mA	2700 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
2	55 °C	55 °C	400 mA	2700 K	25	6,048 hrs	L90(6k) = 21,700 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3	85 °C	85 °C	400 mA	2700 K	25	6,048 hrs	L90(6k) = 16,600 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

XLAMP® MX-6 WHITE LEDS (REV 2)

Revision: 2 (September 2, 2011)

Description Of LED Light Sources

XLamp MX-6 White LEDs (Series: MX6AWT)

This LM-80 report is applicable to the following order codes:

MX-6 Parallel: MX6AWT-xx-xxxx-xxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	45 °C	45 °C	350 mA	2700 K	26	6,048 hrs	L90(6k) = 15,700 hrs L80(6k) = 29,400 hrs L70(6k) > 36,300 hrs
2	55 °C	55 °C	350 mA	2700 K	28	6,048 hrs	L90(6k) = 27,900 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3	85 °C	85 °C	350 mA	3000 K	30	6,048 hrs	L90(6k) = 12,100 hrs L80(6k) = 23,100 hrs L70(6k) = 35,600 hrs
4	45 °C	45 °C	600 mA	2700 K	25	6,048 hrs	L90(6k) = 28,400 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
5	55 °C	55 °C	600 mA	2700 K	25	6,048 hrs	L90(6k) = 19,500 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
6	85 °C	85 °C	600 mA	2700 K	25	6,048 hrs	L90(6k) = 11,100 hrs L80(6k) = 22,000 hrs L70(6k) = 34,400 hrs

XLAMP® XB-D WHITE LEDS (REV 2)

Revision: 2 (October 10, 2013)

Description Of LED Light Sources

XLamp XB-D White LEDs (Series: XBDAWT)

This LM-80 report is applicable to the following order codes:
XBDAWT-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
7	85 °C	85 °C	500 mA	3000 K	25	10,080 hrs	L95(10k) = 29,400 hrs L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
3	105 °C	105 °C	700 mA	3000 K	25	10,080 hrs	L90(10k) = 56,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
4	55 °C	55 °C	1000 mA	3000 K	25	10,080 hrs	L90(10k) = 45,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
5	85 °C	85 °C	1000 mA	3000 K	24	10,080 hrs	L90(10k) = 33,400 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
6	105 °C	105 °C	1000 mA	3000 K	25	6,048 hrs	L90(6k) = 12,800 hrs L80(6k) = 29,100 hrs L70(6k) > 36,300 hrs

XLAMP® XB-H WHITE LEDS (REV 1)

Revision: 1 (January 5, 2015)

Description Of LED Light Sources

XLamp XB-H White LEDs (Series: XBHAWT)

This LM-80 report is applicable to the following order codes:
XBHAWT-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	105 °C	105 °C	700 mA	3000 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
4	85 °C	85 °C	1000 mA	3000 K	25	6,048 hrs	L90(6k) = 35,900 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
2	105 °C	105 °C	1000 mA	3000 K	25	6,048 hrs	L90(6k) = 35,100 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3	85 °C	85 °C	1500 mA	3000 K	25	6,048 hrs	L90(6k) = 28,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

XLAMP® XD16 WHITE LEDS (REV 0)

Revision: 0 (May 1, 2018)

Description Of LED Light Sources

XLamp XB-H White LEDs (Series: XD16AWT)

This LM-80 report is applicable to the following order codes:
XD16AWT-Hx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
85 °C	500 mA	XD16 4000 K @ 85 °C, 500 mA	4000 K	71	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
105 °C	500 mA	XD16 4000 K @ 105 °C, 500 mA	4000 K	71	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
85 °C	1000 mA	XD16 4000 K @ 85 °C, 1000 mA	4000 K	71	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
105 °C	1000 mA	XD16 4000 K @ 105 °C, 1000 mA	4000 K	71	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
85 °C	1500 mA	XD16 4000 K @ 85 °C, 1500 mA	4000 K	71	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

XLAMP® XH-B WHITE LEDS (REV 3)

Revision: 3 (October 20, 2016)

Description Of LED Light Sources

XLamp XH-B White LEDs (Series: XHBAWT)

This LM-80 report is applicable to the following order codes:
XHBAWT-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	85 °C	85 °C	80 mA	3000 K	25	14,112 hrs	L90(14k) = 70,100 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
2	105 °C	105 °C	80 mA	3000 K	25	6,552 hrs	L90(7k) > 39,300 hrs L80(7k) > 39,300 hrs L70(7k) > 39,300 hrs
2+	105 °C	105 °C	80 mA	3000 K	24	14,112 hrs	L90(14k) = 45,100 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
4	85 °C	85 °C	125 mA	3000 K	25	23,184 hrs	L90(23k) > 139,000 hrs L80(23k) > 139,000 hrs L70(23k) > 139,000 hrs
5	105 °C	105 °C	125 mA	3000 K	25	23,184 hrs	L90(23k) = 44,100 hrs L80(23k) = 119,000 hrs L70(23k) > 139,000 hrs

XLAMP® XH-G WHITE LEDS (REV 3)

Revision: 3 (May 13, 2015)

Description Of LED Light Sources

XLamp XH-G White LEDs (Series: XHGAWT)

This LM-80 report is applicable to the following order codes:
XHGAWT-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	85 °C	85 °C	80 mA	3000 K	25	14,616 hrs	L90(15k) = 77,500 hrs L80(15k) > 87,700 hrs L70(15k) > 87,700 hrs
2	105 °C	105 °C	80 mA	3000 K	15	14,112 hrs	L90(14k) > 77,600 hrs L80(14k) > 77,600 hrs L70(14k) > 77,600 hrs
3	85 °C	85 °C	175 mA	3000 K	25	14,112 hrs	L90(14k) = 56,600 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
4	105 °C	105 °C	175 mA	3000 K	25	14,112 hrs	L90(14k) = 30,500 hrs L80(14k) = 66,000 hrs L70(14k) > 84,700 hrs
5	85 °C	85 °C	350 mA	3000 K	25	6,552 hrs	L90(7k) = 24,300 hrs L80(7k) > 39,300 hrs L70(7k) > 39,300 hrs

XLAMP® XHP35 WHITE LEDS (REV 4)

Revision: 4 (March 8, 2017)

Description Of LED Light Sources

XLamp XHP35 White LEDs (Series: XHP35A)

This LM-80 report is applicable to the following order codes:
XHP35A-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
4	85 °C	85 °C	350 mA	3000 K	25	7,056 hrs	L90(7k) > 42,300 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
4+	85 °C	85 °C	350 mA	3000 K	23	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
5	105 °C	105 °C	350 mA	3000 K	25	9,576 hrs	L90(10k) = 38,800 hrs L80(10k) > 57,500 hrs L70(10k) > 57,500 hrs
5+	105 °C	105 °C	350 mA	3000 K	22	10,080 hrs	L90(10k) = 37,700 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
6	125 °C	125 °C	350 mA	3000 K	20	9,072 hrs	L90(9k) = 26,300 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
7	85 °C	85 °C	525 mA	3000 K	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
8	105 °C	105 °C	525 mA	3000 K	25	10,080 hrs	L90(10k) = 26,000 hrs L80(10k) > 55,100 hrs L70(10k) > 60,500 hrs
9	125 °C	125 °C	525 mA	3000 K	20	6,048 hrs	L90(6k) = 16,000 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
1	85 °C	85 °C	700 mA	3000 K	24	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
2	105 °C	105 °C	700 mA	3000 K	25	9,072 hrs	L90(9k) = 38,900 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
3	85 °C	85 °C	1050 mA	3000 K	21	8,568 hrs	L90(9k) = 33,200 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
10	105 °C	105 °C	1050 mA	3000 K	25	6,048 hrs	L90(6k) = 24,700 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

XLAMP® XHP35.2 WHITE LEDS (REV 0)

Revision: 0 (July 31, 2018)

Description Of LED Light Sources

XLamp XHP35.2 White LEDs (Series: XHP35B)

This LM-80 report is applicable to the following order codes:
XHP35B-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
85 °C	449 mA (12-V)	XHP50.2 6-V @ 85 °C, 1400 mA	3000 K	82	25	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
105 °C	449 mA (12-V)	XHP50.2 6-V @ 105 °C, 1400 mA	3000 K	82	25	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
125 °C	449 mA (12-V)	XHP50.2 6-V @ 125 °C, 1400 mA	3000 K	82	25	7,560 hrs	L90(8k) = 12,500 hrs L80(8k) = 35,200 hrs L70(8k) > 45,400 hrs
85 °C	674 mA (12-V)	XHP50.2 6-V @ 85 °C, 2100 mA	3000 K	81	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
105 °C	674 mA (12-V)	XHP50.2 6-V @ 105 °C, 2100 mA	3000 K	82	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
85 °C	963 mA (12-V)	XHP50.2 12-V @ 85 °C, 1500 mA	3000 K	81	25	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs

XLAMP® XHP50 WHITE LEDS (REV 4)

Revision: 4 (February 15, 2017)

Description Of LED Light Sources

XLamp XHP50 White LEDs (Series: XHP50A)

This LM-80 report is applicable to the following order codes:
XHP50A-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
XHP50-3	85 °C	85 °C	1400 mA (6 V) 700 mA (12 V)	3000 K	24	14,112 hrs	L90(14k) > 84,700 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
XHP50-4	105 °C	105 °C	1400 mA (6 V) 700 mA (12 V)	3000 K	25	12,096 hrs	L90(12k) = 56,700 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
XHP50-5	125 °C	125 °C	1400 mA (6 V) 700 mA (12 V)	3000 K	20	10,080 hrs	L90(10k) = 21,700 hrs L80(10k) = 52,900 hrs L70(10k) > 60,500 hrs
XHP50-6	85 °C	85 °C	2100 mA (6 V) 1050 mA (12 V)	3000 K	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
XHP50-6+	85 °C	85 °C	2100 mA (6 V) 1050 mA (12 V)	3000 K	24	14,112 hrs	L90(14k) > 84,700 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
XHP50-7	105 °C	105 °C	2100 mA (6 V) 1050 mA (12 V)	3000 K	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
XHP50-8	85 °C	85 °C	3000 mA (6 V) 1500 mA (12 V)	3000 K	25	6,048 hrs	L90(6k) = 29,900 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
XHP50-8+	85 °C	85 °C	3000 mA (6 V) 1500 mA (12 V)	3000 K	23	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

XLAMP® XHP50.2 WHITE LEDS (REV 2)

Revision: 2 (July 31, 2018)

Description Of LED Light Sources

XLamp XHP50.2 White LEDs (Series: XHP50B)

This LM-80 report is applicable to the following order codes:
XHP50B-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Data Set	Nominal Case & Ambient Temperature	Drive Current	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	85 °C	1400 mA (6-V) 700 mA (12-V)	3000 K	82	25	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
2	105 °C	1400 mA (6-V) 700 mA (12-V)	3000 K	82	25	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
3	125 °C	1400 mA (6-V) 700 mA (12-V)	3000 K	82	25	7,560 hrs	L90(8k) = 12,500 hrs L80(8k) = 35,200 hrs L70(8k) > 45,400 hrs
4	85 °C	2100 mA (6-V) 1050 mA (12-V)	3000 K	81	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
5	105 °C	2100 mA (6-V) 1050 mA (12-V)	3000 K	82	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
6	85 °C	3000 mA (6-V) 1500 mA (12-V)	3000 K	81	25	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs

XLAMP® XHP70 WHITE LEDS (REV 7)

Revision: 7 (November 20, 2017)

Description Of LED Light Sources

XLamp XHP70 White LEDs (Series: XHP70A)

This LM-80 report is applicable to the following order codes:
XHP70A-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
4	85 °C	85 °C	2100 mA (6 V) 1050 mA (12 V)	3000 K	25	11,592 hrs	L90(12k) > 69,600 hrs L80(12k) > 69,600 hrs L70(12k) > 69,600 hrs
4+	85 °C	85 °C	2100 mA (6 V) 1050 mA (12 V)	3000 K	25	19,656 hrs	L90(20k) > 118,000 hrs L80(20k) > 118,000 hrs L70(20k) > 118,000 hrs
1	105 °C	105 °C	2100 mA (6 V) 1050 mA (12 V)	3000 K	20	8,064 hrs	L90(8k) > 48,400 hrs L80(8k) > 48,400 hrs L70(8k) > 48,400 hrs
1+	105 °C	105 °C	2100 mA (6 V) 1050 mA (12 V)	3000 K	16	13,104 hrs	L90(13k) > 72,100 hrs L80(13k) > 72,100 hrs L70(13k) > 72,100 hrs
2	125 °C	125 °C	2100 mA (6 V) 1050 mA (12 V)	3000 K	20	8,568 hrs	L90(9k) > 51,400 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
5	85 °C	85 °C	3000 mA (6 V) 1500 mA (12 V)	3000 K	25	20,160 hrs	L90(20k) > 121,000 hrs L80(20k) > 121,000 hrs L70(20k) > 121,000 hrs
3	105 °C	105 °C	3000 mA (6 V) 1500 mA (12 V)	3000 K	20	9,072 hrs	L90(9k) > 54,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
3+	105 °C	105 °C	3000 mA (6 V) 1500 mA (12 V)	3000 K	17	14,616 hrs	L90(15k) = 39,300 hrs L80(15k) > 80,400 hrs L70(15k) > 80,400 hrs
6	85 °C	85 °C	4200 mA (6 V) 2100 mA (12 V)	3000 K	25	14,616 hrs	L90(15k) > 87,700 hrs L80(15k) > 87,700 hrs L70(15k) > 87,700 hrs
7	105 °C	105 °C	4200 mA (6 V) 2100 mA (12 V)	3000 K	25	10,584 hrs	L90(11k) = 52,400 hrs L80(11k) > 63,500 hrs L70(11k) > 63,500 hrs
8	85 °C	85 °C	4800 mA (6 V) 2400 mA (12 V)	3000 K	20	11,592 hrs	L90(12k) > 69,600 hrs L80(12k) > 69,600 hrs L70(12k) > 69,600 hrs

XLAMP® XHP70.2 WHITE LEDS (REV 1)

Revision: 1 (May 29, 2018)

Description Of LED Light Sources

XLamp XHP70 White LEDs (Series: XHP70B)

This LM-80 report is applicable to the following order codes:
XHP70B-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
85 °C	2100 mA (6 V) 1050 mA (12 V)	XHP70.2 6-V @ 85 °C, 2100 mA	3000 K	83	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
105 °C	2100 mA (6 V) 1050 mA (12 V)	XHP70.2 6-V @ 105 °C, 2100 mA	3000 K	83	20	6,552 hrs	L90(7k) > 39,300 hrs L80(7k) > 39,300 hrs L70(7k) > 39,300 hrs
125 °C	2100 mA (6 V) 1050 mA (12 V)	XHP70.2 12-V @ 125 °C, 1050 mA	3000 K	83	20	6,048 hrs	L90(6k) = 12,500 hrs L80(6k) = 30,100 hrs L70(6k) > 36,300 hrs
85 °C	3000 mA (6 V) 1500 mA (12 V)	XHP70.2 12-V @ 85 °C, 1500 mA	3000 K	82	20	6,552 hrs	L90(7k) > 39,300 hrs L80(7k) > 39,300 hrs L70(7k) > 39,300 hrs
105 °C	3000 mA (6 V) 1500 mA (12 V)	XHP70.2 12-V @ 105 °C, 1500 mA	3000 K	82	20	6,552 hrs	L90(7k) > 39,300 hrs L80(7k) > 39,300 hrs L70(7k) > 39,300 hrs
85 °C	4200 mA (6 V) 2100 mA (12 V)	XHP70.2 12-V @ 85 °C, 2100 mA	3000 K	82	20	6,552 hrs	L90(7k) > 39,300 hrs L80(7k) > 39,300 hrs L70(7k) > 39,300 hrs
85 °C	4800 mA (6 V) 2400 mA (12 V)	XHP70.2 12-V @ 85 °C, 2400 mA	3000 K	82	20	6,552 hrs	L90(7k) > 39,300 hrs L80(7k) > 39,300 hrs L70(7k) > 39,300 hrs

XLAMP® XM-L™ EASYWHITE® LEDS (REV 1)

Revision: 1 (August 8, 2013)

Description Of LED Light Sources

XLamp XM-L™ EasyWhite LEDs (Series: XMLEZW)

This LM-80 report is applicable to the following order codes:

XM-L EZW 6 V: XMLEZW-xx-xxxx-xBxxxxxxx

XM-L EZW 12 V: XMLEZW-xx-xxxx-xDxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3	105 °C	105 °C	700 mA (6 V) 350 mA (12 V)	2700 K	25	15,120 hrs	L95(15k) = 28,700 hrs L90(15k) > 90,700 hrs L80(15k) > 90,700 hrs L70(15k) > 90,700 hrs
6	105 °C	105 °C	1000 mA (6 V) 500 mA (12 V)	3000 K	25	7,056 hrs	L95(7k) = 42,200 hrs L90(7k) > 42,300 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
7	85 °C	85 °C	1500 mA (6 V) 750 mA (12 V)	3000 K	25	6,048 hrs	L95(6k) = 19,400 hrs L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

XLAMP® XM-L™ WHITE LEDS (REV 2)

Revision: 2 (October 31, 2012)

Description Of LED Light Sources

XLamp XM-L White LEDs (Series: XMLAWT)

This LM-80 report is applicable to the following order codes:
XMLAWT-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
4	55 °C	55 °C	1500 mA	2700 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
5	85 °C	85 °C	1500 mA	2700 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
5+	85 °C	85 °C	1500 mA	2700 K	23	12,096 hrs	L90(12k) = 29,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
6	105 °C	105 °C	1500 mA	2700 K	25	10,080 hrs	L90(10k) = 27,700 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
6+	105 °C	105 °C	1500 mA	2700 K	23	12,096 hrs	L90(12k) = 25,900 hrs L80(12k) = 59,800 hrs L70(12k) > 72,600 hrs
7	55 °C	55 °C	2000 mA	3000 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
7+	55 °C	55 °C	2000 mA	3000 K	11	11,088 hrs	L90(11k) > 61,000 hrs L80(11k) > 61,000 hrs L70(11k) > 61,000 hrs
8	85 °C	85 °C	2000 mA	3000 K	25	9,072 hrs	L90(9k) = 38,300 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
8+	85 °C	85 °C	2000 mA	3000 K	21	12,096 hrs	L90(12k) = 24,800 hrs L80(12k) = 52,600 hrs L70(12k) > 72,600 hrs
9	105 °C	105 °C	2000 mA	3000 K	25	6,048 hrs	L90(6k) = 21,600 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
9+	105 °C	105 °C	2000 mA	3000 K	14	8,568 hrs	L90(9k) = 15,900 hrs L80(9k) = 33,700 hrs L70(9k) > 47,100 hrs
10	85 °C	85 °C	3000 mA	3000 K	25	6,048 hrs	L90(6k) = 11,100 hrs L80(6k) = 25,000 hrs L70(6k) > 36,300 hrs

XLAMP® XM-L2 WHITE LEDS (REV 3B)

Revision: 3B (March 23, 2015)

Description Of LED Light Sources

XLamp XM-L2 White LEDs (Series: XMLBWT)

This LM-80 report is applicable to the following order codes:
XMLBWT-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	85 °C	85 °C	1500 mA	2700 K	25	7,560 hrs	L95(8k) > 45,400 hrs L90(8k) > 45,400 hrs L80(8k) > 45,400 hrs L70(8k) > 45,400 hrs
1+	85 °C	85 °C	1500 mA	2700 K	23	12,096 hrs	L95(12k) = 30,100 hrs L90(12k) = 60,900 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
2	105 °C	105 °C	1500 mA	2700 K	25	8,568 hrs	L95(9k) = 19,600 hrs L90(9k) = 43,900 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
8	55 °C	55 °C	2100 mA	2700 K	25	9,072 hrs	L95(9k) > 54,400 hrs L90(9k) >54,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
8+	55 °C	55 °C	2100 mA	2700 K	17	12,096 hrs	L95(12k) > 66,500 hrs L90(12k) > 66,500 hrs L80(12k) > 66,500 hrs L70(12k) > 66,500 hrs
10	105 °C	105 °C	2100 mA	3000 K	25	6,048 hrs	L95(6k) = 14,900 hrs L90(6k) > 36,600 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
9	55 °C	55 °C	3000 mA	2700 K	25	6,048 hrs	L95(6k) = 16,800 hrs L90(6k) = 35,600 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
11	85 °C	85 °C	3000 mA	3000 K	25	6,048 hrs	L95(6k) = 7,950 hrs L90(6k) = 17,100 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

XLAMP® XP-E HIGH EFFICIENCY WHITE LEDS (REV 4)

Revision: 4 (April 25, 2012)

Description Of LED Light Sources

XLamp XP-E High Efficiency White LEDs (Series: XPEHEW)

This LM-80 report is applicable to the following order codes:
XPEHEW-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
11	85 °C	85 °C	350 mA	3000 K	25	10,080 hrs	L90(10k) = 32,800 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
12	105 °C	105 °C	350 mA	3000 K	25	6,048 hrs	L90(6k) = 15,600 hrs L70(6k) = 34,100 hrs L70(6k) > 36,300 hrs
8	55 °C	55 °C	500 mA	2700 K	25	8,064 hrs	L90(8k) > 48,400 hrs L80(8k) > 48,400 hrs L70(8k) > 48,400 hrs
9	85 °C	85 °C	500 mA	2700 K	25	8,064 hrs	L90(8k) = 28,400 hrs L80(8k) > 48,400 hrs L70(8k) > 48,400 hrs
10	85 °C	85 °C	700 mA	3000 K	25	9,072 hrs	L90(9k) = 21,900 hrs L80(9k) = 44,100 hrs L70(9k) > 54,400 hrs

XLAMP® XP-E FAR RED & PHOTO RED LEDS (REV 1)

Revision: 1 (January 31, 2018)

Description Of LED Light Sources

XLamp XP-E Far Red LEDs (Series: XPEFAR)
XLamp XP-E Photo Red LEDs (Series: XPEPHR)

This LM-80 report is applicable to the following order codes:
XPEFAR-xx-xxxx-xxxxx
XPEPHR-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

LED Color	Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	Sample Count	Test Duration	Reported TM-21 Lifetimes
Far Red	730-1	85 °C	85 °C	700 mA	20	10,080 hrs	R90(10k) > 60,500 hrs R80(10k) > 60,500 hrs R70(10k) > 60,500 hrs
Photo Red	660-1	85 °C	85 °C	1000 mA	15	12,096 hrs	R95(12k) > 66,500 hrs R90(12k) > 66,500 hrs R80(12k) > 66,500 hrs R70(12k) > 66,500 hrs
	660-2	105 °C	105 °C	1000 mA	15	12,096 hrs	R95(12k) > 66,500 hrs R90(12k) > 66,500 hrs R80(12k) > 66,500 hrs R70(12k) > 66,500 hrs
	660-3	85 °C	85 °C	1000 mA	15	12,096 hrs	R95(12k) > 66,500 hrs R90(12k) > 66,500 hrs R80(12k) > 66,500 hrs R70(12k) > 66,500 hrs
	660-4	105 °C	105 °C	1000 mA	15	12,096 hrs	R95(12k) > 66,500 hrs R90(12k) > 66,500 hrs R80(12k) > 66,500 hrs R70(12k) > 66,500 hrs

XLAMP® XP-E WHITE LEDS (REV 3)

Revision: 3 (November 9, 2011)

Description Of LED Light Sources

XLamp XP-E White LEDs (Series: XPEWHT)

This LM-80 report is applicable to the following order codes:
XPEWHT-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
8	55 °C	55 °C	350 mA	2700 K	25	10,080 hrs	L90(10k) = 56,800 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
9	85 °C	85 °C	350 mA	2700 K	25	10,080 hrs	L90(10k) = 39,700 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
10	105 °C	105 °C	350 mA	2700 K	25	6,048 hrs	L90(6k) = 19,400 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
5	45 °C	45 °C	700 mA	2700 K	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
6	55 °C	55 °C	700 mA	2700 K	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
7	85 °C	85 °C	700 mA	2700 K	25	10,080 hrs	L90(10k) = 28,300 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

XLAMP® XP-E2 RED, RED-ORANGE, AMBER, PHOSPHOR-CONVERTED AMBER, GREEN & BLUE LEDS (REV 2)

Revision: 2 (April 26, 2016)

Description Of LED Light Sources

XLamp XP-E2 Red LEDs (Series: XPEBRD)
XLamp XP-E2 Red-Orange LEDs (Series: XPEBRO)
XLamp XP-E2 Amber LEDs (Series: XPEBAM)
XLamp XP-E2 Phosphor-Converted Amber LEDs (Series: XPEBPA)
XLamp XP-E2 Green LEDs (Series: XPEBGR)
XLamp XP-E2 Blue LEDs (Series: XPEBBL)

This LM-80 report is applicable to the following order codes:
XPEBRD-xx-xxxx-xxxxx
XPEBRO-xx-xxxx-xxxxx
XPEBAM-xx-xxxx-xxxxx
XPEBPA-xx-xxxx-xxxxx
XPEBGR-xx-xxxx-xxxxx
XPEBBL-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

LED Color	Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	Sample Count	Test Duration	Reported TM-21 Lifetimes
Red, Red-Orange	R3	85 °C	85 °C	1000 mA	20	17,136 hrs	L90(17k) = 68,900 hrs L80(17k) > 103,000 hrs L70(17k) > 103,000 hrs
	R2	105 °C	105 °C	1000 mA	25	12,096 hrs	L90(12k) = 55,700 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
Amber	A1	85 °C	85 °C	1000 mA	14	6,048 hrs	L90(6k) > 33,300 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs
	A2	105 °C	105 °C	1000 mA	13	6,048 hrs	L90(6k) > 33,300 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs
Phosphor-Converted Amber	PCA1	85 °C	85 °C	1000 mA	20	11,592 hrs	L90(12k) = 13,200 hrs L80(12k) = 30,900 hrs L70(12k) = 51,000 hrs
	PCA2	105 °C	105 °C	1000 mA	19	6,048 hrs	L90(6k) = 10,700 hrs L80(6k) = 21,800 hrs L70(6k) = 34,400 hrs

XLAMP® XP-E2 RED, RED-ORANGE, AMBER, PHOSPHOR-CONVERTED AMBER, GREEN & BLUE LEDS (REV 2) - CONTINUED

LED Color	Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	Sample Count	Test Duration	Reported TM-21 Lifetimes
Green	G2	105 °C	105 °C	500 mA	20	8,568 hrs	L90(9k) > 51,400 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
	G3	85 °C	85 °C	1000 mA	20	8,568 hrs	L90(9k) > 51,400 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
Blue	B2	105 °C	105 °C	500 mA	20	7,560 hrs	L90(8k) > 45,400 hrs L80(8k) > 45,400 hrs L70(8k) > 45,400 hrs
	B3	85 °C	85 °C	1000 mA	20	8,568 hrs	L90(9k) > 51,400 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs

XLAMP® XP-E2 WHITE LEDS (REV 1)

Revision: 1 (February 25, 2014)

Description Of LED Light Sources

XLamp XP-E2 White LEDs (Series: XPEBWT)

This LM-80 report is applicable to the following order codes:
XPEBWT-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3	85 °C	85 °C	350 mA	3000 K	25	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
3+	85 °C	85 °C	350 mA	3000 K	18	9,072 hrs	L90(9k) > 49,900 hrs L80(9k) > 49,900 hrs L70(9k) > 49,900 hrs
1	105 °C	105 °C	350 mA	3000 K	25	9,072 hrs	L90(9k) > 54,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
4	55 °C	55 °C	700 mA	3000 K	25	7,056 hrs	L90(7k) > 42,300 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
2	85 °C	85 °C	700 mA	3000 K	25	7,056 hrs	L90(7k) = 18,300 hrs L80(7k) = 37,100 hrs L70(7k) > 42,300 hrs
5	105 °C	105 °C	700 mA	3000 K	25	6,048 hrs	L90(6k) = 17,100 hrs L80(6k) = 35,900 hrs L70(6k) > 36,300 hrs

XLAMP® XP-G WHITE LEDS (REV 7)

Revision: 7 (March 18, 2014)

Description Of LED Light Sources

XLamp XP-G White LEDs (Series: XPGWHT)

This LM-80 report is applicable to the following order codes:
XPGWHT-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
17	55 °C	55 °C	1000 mA	3000 K	25	6,048 hrs	L95(6k) > 36,300 hrs L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
13	85 °C	85 °C	1000 mA	3000 K	25	13,608 hrs	L95(14k) > 81,600 hrs L90(14k) > 81,600 hrs L80(14k) > 81,600 hrs L70(14k) > 81,600 hrs
14	105 °C	105 °C	1000 mA	3000 K	25	12,096 hrs	L95(12k) > 72,600 hrs L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
15	55 °C	55 °C	1500 mA	3000 K	25	12,096 hrs	L95(12k) > 72,600 hrs L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
16	85 °C	85 °C	1500 mA	3000 K	25	12,096 hrs	L95(12k) > 72,600 hrs L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs

XLAMP® XP-G2 HIGH-EFFICACY WHITE LEDS (REV 0)

Revision: 0 (July 19, 2018)

Description Of LED Light Sources

XLamp XP-G2 High-Efficacy LEDs (Series: XPGBWT)

This LM-80 report is applicable to the following order codes:
XPGBWT-xE-xxxx-xxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
85 °C	1050 mA	XP-G2 High Efficacy @ 85 °C, 1050 mA	4000 K	71	20	3,024 hrs	N/A

Test Summary

Cree classifies these LED packages as “successors to previously tested subcomponents” (Section 5) per Sep 28, 2017 ENERGY STAR guidelines. The XLamp XP-G2 High-Eficacy White LED is a successor to the previously tested XLamp XP-G2 White LED. The table below shows the relevant tested case temperature value equal to that of the XLamp XP-G2 High-Efficacy White LED.

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
17	85 °C	85 °C	1000 mA	3000 K	20	9,072 hrs	L90(9k) > 54,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs

XLAMP® XP-G2 WHITE LEDS (REV 9)

Revision: 9 (May 29, 2018)

Description Of LED Light Sources

XLamp XP-G2 White LEDs (Series: XPGBWT)

This LM-80 report is applicable to the following order codes:
XPGBWT-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
11	125 °C	125 °C	350 mA	3000 K	25	9,072 hrs	L90(9k) > 54,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
9	85 °C	85 °C	500 mA	3000 K	25	10,584 hrs	L90(11k) > 63,500 hrs L80(11k) > 63,500 hrs L70(11k) > 63,500 hrs
9+	85 °C	85 °C	500 mA	3000 K	20	13,608 hrs	L90(14k) > 81,600 hrs L80(14k) > 81,600 hrs L70(14k) > 81,600 hrs
10	105 °C	105 °C	500 mA	3000 K	25	11,088 hrs	L90(11k) > 66,500 hrs L80(11k) > 66,500 hrs L70(11k) > 66,500 hrs
10+	105 °C	105 °C	500 mA	3000 K	19	14,112 hrs	L90(14k) > 77,600 hrs L80(14k) > 77,600 hrs L70(14k) > 77,600 hrs
15	105° C	105 °C	700 mA	3000 K	20	8,568 hrs	L90(8.5k) > 51,400 hrs L80(8.5k) > 51,400 hrs L70(8.5k) > 51,400 hrs
3	55 °C	55 °C	1000 mA	3000 K	25	9,072 hrs	L90(9k) > 54,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
3+	55 °C	55 °C	1000 mA	3000 K	20	10,080 hrs	L90(10k) = 49,700 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
16	85° C	85 °C	1000 mA	4000 K	20	8,568 hrs	L90(8.5k) > 51,400 hrs L80(8.5k) > 51,400 hrs L70(8.5k) > 51,400 hrs
17	85° C	85 °C	1000 mA	3000 K	20	9,072 hrs	L90(9k) > 54,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
18	105 °C	105 °C	1000 mA	3000 K	20	8,568 hrs	L90(8.5k) > 51,400 hrs L80(8.5k) > 51,400 hrs L70(8.5k) > 51,400 hrs
13	55 °C	55 °C	1500 mA	3000 K	25	7,560 hrs	L90(7.5k) = 36,400 hrs L80(7.5k) > 45,400 hrs L70(7.5k) > 45,400 hrs

XLAMP® XP-G2 WHITE LEDS (REV 8) - CONTINUED

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
7	85 °C	85 °C	1500 mA	3000 K	25	6,048 hrs	L90(6k) = 24,500 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

XLAMP® XP-G3 ROYAL BLUE LEDS (REV 1)

Revision: 1 (August 1, 2018)

Description Of LED Light Sources

XLamp XP-G3 Royal Blue LEDs (Series: XPGDRY)

This LM-80 report is applicable to the following order codes:
XPGDRY-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

LED Color	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	Sample Count	Test Duration	Reported TM-21 Lifetimes
Royal Blue	85 °C	85 °C	350 mA	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
	105 °C	105 °C	700 mA	20	6,048 hrs	L90(6k) = 30,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
	85 °C	85 °C	700 mA	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
	105 °C	105 °C	700 mA	20	6,048 hrs	L90(6k) = 26,400 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
	85 °C	85 °C	1500 mA	16	10,080 hrs	L90(10k) > 55,400 hrs L80(10k) > 55,400 hrs L70(10k) > 55,400 hrs
	105 °C	105 °C	2000 mA	16	6,048 hrs	L90(6k) = 27,700 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs

XLAMP® XP-G3 S LINE LEDS (REV 0)

Revision: 0 (May 14, 2018)

Description Of LED Light Sources

XLamp XP-G3 S Line LEDs (Series: XPGDWT)

This LM-80 report is applicable to the following order codes:
XPGDWT-xS-xxxx-xxxxx

No failures occurred during testing.

Results Summary For Tested LED Array

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	Reported TM-21 Lifetimes
105 °C	700 mA	XP-G3 S Line @ 105 °C, 700 mA	3000 K	70	25	3,024 hrs	N/A
85 °C	1500 mA	XP-G3 S Line @ 85 °C, 1500 mA	3000 K	81	25	3,024 hrs	N/A

Test Summary

Cree classifies these LED packages as “successors to previously tested subcomponents” (Section 5) per Sep 28, 2017 ENERGY STAR guidelines. The XLamp XP-G3 S Line White LED is a successor to the previously tested XLamp XP-G2 White LED. The table below shows the relevant tested case temperature values equal to those of the XLamp XP-G3 S Line White LED.

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
15	105 °C	105 °C	700 mA	3000 K	20	8,568 hrs	L90(8.5k) > 51,400 hrs L80(8.5k) > 51,400 hrs L70(8.5k) > 51,400 hrs
7	85 °C	85 °C	1500 mA	3000 K	25	6,048 hrs	L90(6k) = 24,500 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

XLAMP® XP-G3 WHITE LEDS (REV 9)

Revision: 9 (May 30, 2018)

Description Of LED Light Sources

XLamp XP-G3 White LEDs (Series: XPGDWT)

This LM-80 report is applicable to the following order codes:
XPGDWT-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3	85 °C	85 °C	350 mA	3000 K	25	14,112 hrs	L90(14k) > 84,700 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
4	105 °C	105 °C	350 mA	3000 K	25	13,608 hrs	L90(14k) > 81,600 hrs L80(14k) > 81,600 hrs L70(14k) > 81,600 hrs
5	120 °C	120 °C	350 mA	3000 K	25	8,568 hrs	L90(9k) > 51,400 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
6	85 °C	85 °C	700 mA	3000 K	25	17,136 hrs	L90(17k) > 103,000 hrs L80(17k) > 103,000 hrs L70(17k) > 103,000 hrs
7	105 °C	105 °C	700 mA	3000 K	25	12,600 hrs	L90(13k) > 75,600 hrs L80(13k) > 75,600 hrs L70(13k) > 75,600 hrs
8	120 °C	120 °C	700 mA	3000 K	25	8,568 hrs	L90(9k) = 39,600 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
9	85 °C	85 °C	1050 mA	3000 K	25	14,112 hrs	L90(14k) > 84,700 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
15	105 °C	105 °C	1050 mA	3000 K	25	8,064 hrs	L90(8k) > 48,400 hrs L80(8k) > 48,400 hrs L70(8k) > 48,400 hrs
10	105 °C	105 °C	1050 mA	4000 K	20	11,592 hrs	L90(12k) = 36,700 hrs L80(12k) > 69,600 hrs L70(12k) > 69,600 hrs
11	85 °C	85 °C	1500 mA	3000 K	25	17,136 hrs	L90(17k) > 103,000 hrs L80(17k) > 103,000 hrs L70(17k) > 103,000 hrs
14	105 °C	105 °C	1500 mA	3000 K	23	10,080 hrs	L90(10k) = 27,900 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
12	120° C	120 °C	1500 mA	3000 K	20	6,048 hrs	L90(6k) = 7,830 hrs L80(6k) = 20,800 hrs L70(6k) = 35,500 hrs

XLAMP® XP-G3 WHITE LEDS (REV 8) - CONTINUED

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
13	85 °C	85 °C	2000 mA	3000 K	25	6,048 hrs	L90(6k) = 17,500 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

XLAMP® XP-L WHITE LEDS (REV 8)

Revision: 8 (February 8, 2018)

Description Of LED Light Sources

XLamp XP-L White LEDs (Series: XPLAWT)

This LM-80 report is applicable to the following order codes:
XPLAWT-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
6	105 °C	105 °C	1050 mA	3000 K	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
5	85 °C	85 °C	1500 mA	3000 K	20	18,144 hrs	L90(18k) > 109,000 hrs L80(18k) > 109,000 hrs L70(18k) > 109,000 hrs
3	105 °C	105 °C	1500 mA	3000 K	25	11,592 hrs	L90(12k) = 66,600 hrs L80(12k) > 69,600 hrs L70(12k) > 69,600 hrs
4	85 °C	85 °C	2100 mA	3000 K	25	10,080 hrs	L90(10k) = 42,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
1	105 °C	105 °C	2100 mA	3000 K	25	6,048 hrs	L90(6k) = 24,000 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
2	85 °C	85 °C	3000 mA	3000 K	25	6,048 hrs	L90(6k) = 16,300 hrs L80(6k) = 35,800 hrs L70(6k) > 36,300 hrs

XLAMP® XP-L2 WHITE LEDS (REV 6)

Revision: 6 (March 5, 2018)

Description Of LED Light Sources

XLamp XP-L2 White LEDs (Series: XPLBWT)

This LM-80 report is applicable to the following order codes:
XPLBWT-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
7	105 °C	105 °C	1050 mA	3000 K	25	9,072 hrs	L90(9k) >54,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
4	85 °C	85 °C	1500 mA	3000 K	25	9,576 hrs	L90(10k) > 57,500 hrs L80(10k) > 57,500 hrs L70(10k) > 57,500 hrs
5	105 °C	105 °C	1500 mA	3000 K	25	11,592 hrs	L90(12k) = 40,900 hrs L80(12k) > 69,600 hrs L70(12k) > 69,600 hrs
2	85 °C	85 °C	2100 mA	3000 K	25	12,600 hrs	L90(13k) = 61,900 hrs L80(13k) > 75,600 hrs L70(13k) > 75,600 hrs
8	105 °C	105 °C	2100 mA	3000 K	20	10,080 hrs	L90(10k) = 55,600 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
6	85 °C	85 °C	3000 mA	3000 K	20	10,080 hrs	L90(10k) = 33,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

XLAMP® XQ-A RED, RED-ORANGE, PHOSPHOR-CONVERTED AMBER, GREEN, BLUE & ROYAL BLUE LEDS (REV 0)

Revision: 0 (September 16, 2016)

Description Of LED Light Sources

XLamp XQ-A Red LEDs (Series: XQARED)
XLamp XQ-A Red-Orange LEDs (Series: XQARDO)
XLamp XQ-A Phosphor-Converted Amber LEDs (Series: XQAAPA)
XLamp XQ-A Green LEDs (Series: XQAGRN)
XLamp XQ-A Blue LEDs (Series: XQABLU)
XLamp XQ-A Royal Blue LEDs (Series: XQAROY)

This LM-80 report is applicable to the following order codes:
XQARED-xx-xxxx-xxxxxxxxx
XQARDO-xx-xxxx-xxxxxxxxx
XQAAPA-xx-xxxx-xxxxxxxxx
XQAGRN-xx-xxxx-xxxxxxxxx
XQABLU-xx-xxxx-xxxxxxxxx
XQAROY-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

LED Color	Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	Sample Count	Test Duration	Reported TM-21 Lifetimes
Red, Red-Orange	R1	105 °C	105 °C	250 mA	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
Phosphor-Converted Amber	PCA1	105 °C	105 °C	250 mA	20	6,048 hrs	L90(6k) = 28,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
Green	G1	85 °C	85 °C	250 mA	20	6,048 hrs	L90(6k) = 5,400 hrs L80(6k) = 19,100 hrs L70(6k) = 34,500 hrs
	G2	105 °C	105 °C	250 mA	20	6,048 hrs	L90(6k) = 990 hrs L80(6k) = 9,490 hrs L70(6k) = 20,400 hrs
Blue	B1	85 °C	85 °C	250 mA	10	6,048 hrs	L90(6k) > 33,300 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs
	B2	105 °C	105 °C	250 mA	10	6,048 hrs	L90(6k) = 24,800 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs

XLAMP® XQ-A RED, RED-ORANGE, PHOSPHOR-CONVERTED AMBER, GREEN, BLUE & ROYAL BLUE LEDS (REV 0) - CONTINUED

LED Color	Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	Sample Count	Test Duration	Reported TM-21 Lifetimes
Royal Blue	RB1	85 °C	85 °C	250 mA	10	6,048 hrs	L90(6k) > 33,300 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs
	RB2	105 °C	105 °C	250 mA	10	6,048 hrs	L90(6k) = 19,200 hrs L80(6k) > 33,300 hrs L70(6k) > 33,300 hrs

XLAMP® XQ-A WHITE LEDS (REV 0)

Revision: 0 (September 15, 2016)

Description Of LED Light Sources

XLamp XQ-A White LEDs (Series: XQAAWT)

This LM-80 report is applicable to the following order codes:
XQAAWT-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	85 °C	85 °C	250 mA	3000 K	20	6,048 hrs	L90(6k) = 30,900 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
2	105 °C	105 °C	250 mA	3000 K	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

XLAMP® XQ-D WHITE LEDS (REV 0)

Revision: 0 (October 14, 2013)

Description Of LED Light Sources

XLamp XQ-D White LEDs (Series: XQDAWT)

This LM-80 report is applicable to the following order codes:
XQDAWT-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	105 °C	105 °C	500 mA	3000 K	25	7,560 hrs	L90(8k) = 13,800 hrs L80(8k) = 32,500 hrs L70(8k) > 45,400 hrs
2	105 °C	105 °C	700 mA	3000 K	25	6,048 hrs	L90(6k) = 12,500 hrs L80(6k) = 30,100 hrs L70(6k) > 36,300 hrs

XLAMP® XQ-E RED, RED-ORANGE, PHOSPHOR-CONVERTED AMBER, GREEN, BLUE & ROYAL BLUE LEDS (REV 1)

Revision: 1 (November 15, 2017)

Description Of LED Light Sources

XLamp XQ-E Red LEDs (Series: XQERED)
XLamp XQ-E Red-Orange LEDs (Series: XQERDO)
XLamp XQ-E Phosphor-Converted Amber LEDs (Series: XQEAPA)
XLamp XQ-E Green LEDs (Series: XQEGRN)
XLamp XQ-E Blue LEDs (Series: XQEBLU)
XLamp XQ-E Royal Blue LEDs (Series: XQEROY)

This LM-80 report is applicable to the following order codes:
XQERED-xx-xxxx-xxxxxxxxx
XQERDO-xx-xxxx-xxxxxxxxx
XQEAPA-xx-xxxx-xxxxxxxxx
XQEGRN-xx-xxxx-xxxxxxxxx
XQEBLU-xx-xxxx-xxxxxxxxx
XQEROY-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

LED Color	Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	Sample Count	Test Duration	Reported TM-21 Lifetimes
Red, Red-Orange	R1	85 °C	85 °C	1000 mA	25	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
	R2	105 °C	105 °C	1000 mA	25	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
Phosphor-Converted Amber	PCA1	105 °C	105 °C	700 mA	20	9,576 hrs	L90(10k) = 10,500 hrs L80(10k) = 29,400 hrs L70(10k) = 50,800 hrs
	PCA2	85 °C	85 °C	1000 mA	20	9,072 hrs	L90(9k) = 10,600 hrs L80(9k) = 33,000 hrs L70(9k) > 54,400 hrs
	PCA3	105 °C	105 °C	1000 mA	20	6,048 hrs	L90(6k) = 9,490 hrs L80(6k) = 19,000 hrs L70(6k) = 29,800 hrs

XLAMP® XQ-E RED, RED-ORANGE, PHOSPHOR-CONVERTED AMBER, GREEN, BLUE & ROYAL BLUE LEDS (REV 1) - CONTINUED

LED Color	Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	Sample Count	Test Duration	Reported TM-21 Lifetimes
Green	G1	85 °C	85 °C	500 mA	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
	G2	105 °C	105 °C	500 mA	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
	G3	85 °C	85 °C	1000 mA	20	7,560 hrs	L90(8k) > 45,400 hrs L80(8k) > 45,400 hrs L70(8k) > 45,400 hrs
	G4	105 °C	105 °C	1000 mA	20	6,048 hrs	L90(6k) = 22,500 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
Blue	B1	85 °C	85 °C	500 mA	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
	B2	105 °C	105 °C	500 mA	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
	B3	85 °C	85 °C	1000 mA	20	7,560 hrs	L90(8k) > 45,400 hrs L80(8k) > 45,400 hrs L70(8k) > 45,400 hrs
	B4	105 °C	105 °C	1000 mA	20	7,560 hrs	L90(8k) > 45,400 hrs L80(8k) > 45,400 hrs L70(8k) > 45,400 hrs
Royal Blue	RB1	85 °C	85 °C	1000 mA	17	11,592 hrs	L90(12k) > 63,800 hrs L80(12k) > 63,800 hrs L70(12k) > 63,800 hrs
	RB2	105 °C	105 °C	1000 mA	19	11,592 hrs	L90(12k) > 63,800 hrs L80(12k) > 63,800 hrs L70(12k) > 63,800 hrs

XLAMP® XQ-E WHITE LEDS (REV 0)

Revision: 0 (December 11, 2014)

Description Of LED Light Sources

XLamp XQ-E White LEDs (Series: XQEAWT)

This LM-80 report is applicable to the following order codes:
XQEAWT-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	85 °C	85 °C	500 mA	3000 K	25	8,568 hrs	L90(9k) = 28,300 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
2	105 °C	105 °C	500 mA	3000 K	25	8,568 hrs	L90(9k) = 25,500 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
3	85 °C	85 °C	700 mA	3000 K	25	6,048 hrs	L90(6k) = 24,700 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
4	105 °C	105 °C	700 mA	3000 K	25	6,048 hrs	L90(6k) = 19,900 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

XLAMP® XR-E WHITE LEDS (REV 1)

Revision: 1 (September 20, 2010)

Description Of LED Light Sources

XLamp XR-E White LEDs (Series: XREWHT)

This LM-80 report is applicable to the following order codes:
XREWHT-xx-xxxx-xxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
1	25 °C	25 °C	350 mA	6200 K	30	9,072 hrs	L90(9k) = 28,500 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
2	25 °C	25 °C	350 mA	2700 K	30	9,072 hrs	L90(9k) > 54,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
5	45 °C	45 °C	350 mA	6000 K	19	6,846 hrs	L90(7k) = 26,600 hrs L80(7k) > 37,700 hrs L70(7k) > 37,700 hrs
7	55 °C	55 °C	350 mA	6500 K	30	11,088 hrs	L90(11k) = 12,400 hrs L80(11k) = 22,400 hrs L70(11k) = 33,700 hrs
8	55 °C	55 °C	350 mA	2700 K	29	10,080 hrs	L90(10k) = 13,000 hrs L80(10k) = 23,500 hrs L70(10k) = 35,500 hrs
11	85 °C	85 °C	350 mA	6000 K	30	7,560 hrs	L90(8k) = 10,000 hrs L80(8k) = 19,300 hrs L70(8k) = 29,900 hrs
12	85 °C	85 °C	350 mA	3000 K	30	8,544 hrs	L90(9k) = 11,500 hrs L80(9k) = 20,500 hrs L70(9k) = 30,800 hrs
3	25 °C	25 °C	700 mA	6200 K	30	9,072 hrs	L90(9k) = 29,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
4	25 °C	25 °C	700 mA	2700 K	30	9,072 hrs	L90(9k) > 54,400 hrs L80(9k) > 54,400 hrs L70(9k) > 54,400 hrs
6	45 °C	45 °C	1000 mA	6500 K	20	14,616 hrs	L90(15k) = 19,100 hrs L80(15k) = 37,900 hrs L70(15k) = 59,200 hrs
9	55 °C	55 °C	1000 mA	6200 K	29	11,592 hrs	L90(12k) = 17,100 hrs L80(12k) = 37,500 hrs L70(12k) = 60,600 hrs
10	55 °C	55 °C	1000 mA	4500 K	30	10,080 hrs	L90(10k) = 12,600 hrs L80(10k) = 24,800 hrs L70(10k) = 38,700 hrs

XLAMP® XR-E WHITE LEDS (REV 1) - CONTINUED

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
13	85 °C	85 °C	1000 mA	6500 K	30	6,048 hrs	L90(6k) = 12,900 hrs L80(6k) = 26,500 hrs L70(6k) > 36,300 hrs

XLAMP® XT-E WHITE LEDS (REV 11)

Revision: 11 (August 25, 2017)

Description Of LED Light Sources

XLamp XT-E White LEDs (Series: XTEAWT)

This LM-80 report is applicable to the following order codes:
XTEAWT-xx-xxxx-xxxxxxxxx

No failures occurred during testing.

Test Summary

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
8	85 °C	85 °C	500 mA	3000 K	20	18,144 hrs	L90(18k) > 109,000 hrs L80(18k) > 109,000 hrs L70(18k) > 109,000 hrs
9	105 °C	105 °C	500 mA	3000 K	20	18,144 hrs	L90(18k) > 109,000 hrs L80(18k) > 109,000 hrs L70(18K) > 109,000 hrs
3+	55 °C	55 °C	1000 mA	3000 K	16	18,144 hrs	L90(18k) = 45,600 hrs L80(18k) = 88,500 hrs L70(18k) > 99,800 hrs
10	85 °C	85 °C	1000 mA	3000 K	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
11	105 °C	105 °C	1000 mA	3000 K	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
5	55 °C	55 °C	1250 mA	3000 K	25	10,080 hrs	L90(10k) = 46,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
6	85 °C	85 °C	1250 mA	3000 K	25	9,072 hrs	L90(9k) = 19,300 hrs L80(9k) = 41,400 hrs L70(9k) > 54,400 hrs