

# Cree LED Components IES LM-80-2008 Testing Results Revision: 73 (June 21, 2021)



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## INTRODUCTION

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This document provides the results of IES LM-80-2008, LM-80-2015, and LM-80-2021 (“LM-80”) testing on Cree LED components. Cree LED 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. Customers who need the full LM-80 reports should contact their Cree LED sales representative.

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

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Cree LED’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 LED are generated in Cree LED’s accredited laboratory. Full details on Cree LED’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
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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>F</sub> ]	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 <sub>s</sub> ]	Ambient Temp. [T <sub>a</sub> ]	Drive Current [I <sub>F</sub> ]	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® CMA1303 WHITE LEDS (REV 8)

Revision: 8 (July 19, 2019)

### Description Of LED Light Sources

XLamp® CMA1303 White LEDs (Series: CMA1303)

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

CMA1303 9-V CMA1303-xxxx-xx0Cxxxxxxx

CMA1303 18-V CMA1303-xxxx-xx0Fxxxxxxx

CMA1303 36-V CMA1303-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

### CMA1303 9-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	536 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	804 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

### CMA1303 18-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	268 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	402 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

### CMA1303 36-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	134 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	201 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® CMA1306 WHITE LEDS (REV 8)

Revision: 8 (July 19, 2019)

### Description Of LED Light Sources

XLamp® CMA1306 White LEDs (Series: CMA1306)

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

CMA1306 9-V CMA1306-xxxx-xx0Cxxxxxxx

CMA1306 18-V CMA1306-xxxx-xx0Fxxxxxxx

CMA1306 36-V CMA1306-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

### CMA1306 9-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	771 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	1156 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

### CMA1306 18-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	385 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	578 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

### CMA1306 36-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	193 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	289 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® CMA1516 WHITE LEDS (REV 8)

Revision: 8 (July 19, 2019)

### 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-xx0Nxxxxxxx

No failures occurred during testing.

### CMA1516 36-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	560 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 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 8)

Revision: 8 (July 19, 2019)

### 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-xx0Nxxxxxxx

No failures occurred during testing.

### CMA1825 36-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	731 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 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 8)

Revision: 8 (July 19, 2019)

### 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-xx0Nxxxxxxx

No failures occurred during testing.

### CMA1840 36-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	1120 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	1540 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

## XLAMP® CMA2550 WHITE LEDS (REV 8)

Revision: 8 (July 19, 2019)

### 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-xx0Nxxxxxxx

No failures occurred during testing.

### CMA2550 36-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	1920 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	2640 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

## XLAMP® CMA3090 WHITE LEDS (REV 8)

Revision: 8 (July 19, 2019)

### 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-xx0Qxxxxxxxx

CMA3090 72-V CMA3090-xxxx-xx0Rxxxxxxxx

No failures occurred during testing.

### CMA3090 48-V

#### 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	2400 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	3300 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 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 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	2200 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

## XLAMP® CMT1407 WHITE LEDS (REV 8)

Revision: 8 (July 19, 2019)

### 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-xx0Nxxxxxxx

No failures occurred during testing.

### CMT1407 36-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	280 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 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 8)

Revision: 8 (July 19, 2019)

### 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-xx0Nxxxxxxx

No failures occurred during testing.

### CMT1412 36-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	420 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 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 8)

Revision: 8 (July 19, 2019)

### 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-xx0Nxxxxxxx

No failures occurred during testing.

### CMT1420 36-V

#### 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	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 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 8)**

Revision: 8 (July 19, 2019)

**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-xx0Nxxxxxxx

No failures occurred during testing.

**CMT1922 36-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	697 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	959 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs



## XLAMP® CMT1925 WHITE LEDS (REV 8)

Revision: 8 (July 19, 2019)

### 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-xx0Nxxxxxxx

No failures occurred during testing.

### CMT1925 36-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	814 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	1119 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

**XLAMP® CMT1930 WHITE LEDS (REV 8)**

Revision: 8 (July 19, 2019)

**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-xx0Nxxxxxxx

No failures occurred during testing.

**CMT1930 36-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	960 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	1320 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

## XLAMP® CMT1945 WHITE LEDS (REV 8)

Revision: 8 (July 19, 2019)

### 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-xx0Nxxxxxxx

No failures occurred during testing.

### CMT1945 36-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	1280 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	1760 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

## XLAMP® CMT2850 WHITE LEDS (REV 8)

Revision: 8 (July 19, 2019)

### 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-xx0Nxxxxxxx

No failures occurred during testing.

### CMT2850 36-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	2080 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	2860 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

## XLAMP® CMT2870 WHITE LEDS (REV 8)

Revision: 8 (July 19, 2019)

### 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-xx0Pxxxxxxx

No failures occurred during testing.

### CMT2870 54-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	1760 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	2420 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

**XLAMP® CMT2890 WHITE LEDS (REV 8)**

Revision: 8 (July 19, 2019)

**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-xx0Pxxxxxxx

No failures occurred during testing.

**CMT2890 54-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	2030 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	2824 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

**XLAMP® CMU1003 WHITE LEDS (REV 9)**

Revision: 9 (February 11, 2021)

**Description Of LED Light Sources**

XLamp CMU1003 White LEDs (Series: CMU1003)

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

CMU1003 36-V CMU1003-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

**CMU1003 36-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	137 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	205 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® CMU1006 WHITE LEDS (REV 9)

Revision: 9 (February 11, 2021)

### Description Of LED Light Sources

XLamp CMU1006 White LEDs (Series: CMU1006)

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

CMU1006 36-V CMU1006-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

### CMU1006 36-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	274 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	410 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® CMU1010 WHITE LEDS (REV 9)

Revision: 9 (February 11, 2021)

### Description Of LED Light Sources

XLamp CMU1010 White LEDs (Series: CMU1010)

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

CMU1010 36-V CMU1010-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

### CMU1010 36-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	410 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	615 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® CMU1013 WHITE LEDS (REV 9)

Revision: 9 (February 11, 2021)

### Description Of LED Light Sources

XLamp CMU1013 White LEDs (Series: CMU1013)

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

CMU1013 36-V CMU1013-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

### CMU1013 36-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	547 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	821 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® CMU1516 WHITE LEDS (REV 9)

Revision: 9 (February 11, 2021)

### Description Of LED Light Sources

XLamp CMU1516 White LEDs (Series: CMU1516)

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

CMU1516 36-V CMU1516-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

### CMU1516 36-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	684 mA	CMT1420 36-V @ 105 °C, 700 mA	3000 K	83	13	12,000 hrs	L90(12k) > 41,500 hrs L80(12k) > 66,000 hrs L70(12k) > 66,000 hrs
85 °C	1026 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® CMU1519 WHITE LEDs (REV 9)

Revision: 9 (February 11, 2021)

### Description Of LED Light Sources

XLamp CMU1519 White LEDs (Series: CMU1519)

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

CMU1519 36-V CMU1519-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

### CMU1519 36-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	681 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	937 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

## XLAMP® CMU1526 WHITE LEDS (REV 9)

Revision: 9 (February 11, 2021)

### Description Of LED Light Sources

XLamp CMU1526 White LEDs (Series: CMU1526)

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

CMU1526 36-V CMU1526-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

### CMU1526 36-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	908 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	1249 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

## XLAMP® CMU1532 WHITE LEDS (REV 9)

Revision: 9 (February 11, 2021)

### Description Of LED Light Sources

XLamp CMU1532 White LEDs (Series: CMU1532)

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

CMU1532 36-V CMU1532-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

### CMU1532 36-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	1135 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	1561 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

## XLAMP® CMU2236 WHITE LEDs (REV 9)

Revision: 9 (February 11, 2021)

### Description Of LED Light Sources

XLamp CMU2236 White LEDs (Series: CMU2236)

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

CMU2236 36-V CMU2236-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

### CMU2236 36-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	1249 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	1717 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs

## XLAMP® CMU2239 WHITE LEDS (REV 9)

Revision: 9 (February 11, 2021)

### Description Of LED Light Sources

XLamp CMU2239 White LEDs (Series: CMU2239)

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

CMU2239 36-V CMU2239-xxxx-xx0Nxxxxxxx

No failures occurred during testing.

### CMU2239 36-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	1363 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	1874 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs



## XLAMP® CMU2258 WHITE LEDS (REV 9)

Revision: 9 (February 11, 2021)

### Description Of LED Light Sources

XLamp CMU2258 White LEDs (Series: CMU2258)

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

CMU2258 54-V CMU2258-xxxx-xx0Pxxxxxxx

No failures occurred during testing.

### CMU2258 54-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	1363 mA	CMA3090 48-V @ 105 °C, 2400 mA	3000 K	83	13	9,000 hrs	L90(9k) = 36,200 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 hrs
85 °C	1874 mA	CMA3090 48-V @ 85 °C, 3300 mA	3000 K	83	13	9,000 hrs	L90(9k) = 34,300 hrs L80(9k) > 49,500 hrs L70(9k) > 49,500 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-xxxCxxxxxxxx

CXA1304 18 V CXA1304-xxxx-xxxFxxxxxxxx

CXA1304 36 V CXA1304-xxxx-xxxNxxxxxxxx

No failures occurred during testing.

### Results Summary For Tested LED Array

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxCxxxxxxxx	460 mA	524 mA	692 mA	768 mA
CXA1304	18 V	CXA1304-xxxx-xxxFxxxxxxxx	230 mA	262 mA	346 mA	384 mA
CXA1304	36 V	CXA1304-xxxx-xxxNxxxxxxxx	115 mA	131 mA	173 mA	192 mA
<b>CXA3050</b>	<b>36 V</b>	<b>CXA3050-xxxx-xxxNxxxxxxxx</b>	<b>1500 mA</b>	<b>1700 mA</b>	<b>2250 mA</b>	<b>2500 mA</b>

## 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-xxxFxxxxxxxx

CXA1507 36-V CXA1507-xxxx-xxxNxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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
<b>CXA3050</b>	<b>36 V</b>	<b>CXA3050-xxxx-xxxNxxxxxxx</b>	<b>1500 mA</b>	<b>1700 mA</b>	<b>2250 mA</b>	<b>2500 mA</b>

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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
<b>CXA3050</b>	<b>36 V</b>	<b>CXA3050-xxxx-xxxNxxxxxxx</b>	<b>1500 mA</b>	<b>1700 mA</b>	<b>2250 mA</b>	<b>2500 mA</b>

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxNxxxxxxxx	462 mA	523 mA	692 mA	769 mA
<b>CXA3050</b>	<b>36 V</b>	<b>CXA3050-xxxx-xxxNxxxxxxxx</b>	<b>1500 mA</b>	<b>1700 mA</b>	<b>2250 mA</b>	<b>2500 mA</b>

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxNxxxxxxxx	577 mA	654 mA	865 mA	962 mA
<b>CXA3050</b>	<b>36 V</b>	<b>CXA3050-xxxx-xxxNxxxxxxxx</b>	<b>1500 mA</b>	<b>1700 mA</b>	<b>2250 mA</b>	<b>2500 mA</b>

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxNxxxxxxxx	662 mA	753 mA	977 mA	1087 mA
<b>CXA3050</b>	<b>36 V</b>	<b>CXA3050-xxxx-xxxNxxxxxxxx</b>	<b>1500 mA</b>	<b>1700 mA</b>	<b>2250 mA</b>	<b>2500 mA</b>



## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxNxxxxxxxx	624 mA	707 mA	936 mA	1040 mA
<b>CXA3050</b>	<b>36 V</b>	<b>CXA3050-xxxx-xxxNxxxxxxxx</b>	<b>1500 mA</b>	<b>1700 mA</b>	<b>2250 mA</b>	<b>2500 mA</b>

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxNxxxxxxxx	808 mA	915 mA	1212 mA	1346 mA
<b>CXA3050</b>	<b>36 V</b>	<b>CXA3050-xxxx-xxxNxxxxxxxx</b>	<b>1500 mA</b>	<b>1700 mA</b>	<b>2250 mA</b>	<b>2500 mA</b>

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxNxxxxxxxx	1139 mA	1281 mA	1693 mA	1903 mA
<b>CXA3050</b>	<b>36 V</b>	<b>CXA3050-xxxx-xxxNxxxxxxxx</b>	<b>1500 mA</b>	<b>1700 mA</b>	<b>2250 mA</b>	<b>2500 mA</b>

## 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-xxxxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxNxxxxxxxx	1335 mA	1794 mA
<b>CXA3590</b>	<b>72 V</b>	<b>CXA3590-xxxx-xxxRxxxxxxxx</b>	<b>1050 mA</b>	<b>1400 mA</b>

## 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-xxxNxxxxxxxx

CXA3590 72 V CXA3590-xxxx-xxxRxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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-xxxNxxxxxxxx	2100 mA	2800 mA
<b>CXA3590</b>	<b>72 V</b>	<b>CXA3590-xxxx-xxxRxxxxxxxx</b>	<b>1050 mA</b>	<b>1400 mA</b>

## 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-xxxCxxxxxxxx

CXB1304 18 V CXB1304-xxxx-xxxFxxxxxxxx

CXB1304 36 V CXB1304-xxxx-xxxNxxxxxxxx

No failures occurred during testing.

### Results Summary For Tested LED Array

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxCxxxxxxxx	684 mA	916 mA
CXB1304	18 V	CXB1304-xxxx-xxxFxxxxxxxx	342 mA	458 mA
CXB1304	36 V	CXB1304-xxxx-xxxNxxxxxxxx	171 mA	229 mA
<b>CXB2530</b>	<b>36 V</b>	<b>CXB2530-xxxx-xxxNxxxxxxxx</b>	<b>1200 mA</b>	<b>1600 mA</b>

## 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-xxxFxxxxxxxx

CXB1310 36 V CXB1310-xxxx-xxxNxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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 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
<b>CXB2530</b>	<b>36 V</b>	<b>CXB2530-xxxx-xxxNxxxxxxx</b>	<b>1200 mA</b>	
<b>CXB3050</b>	<b>36 V</b>	<b>CXB3050-xxxx-xxxNxxxxxxx</b>		<b>2500 mA</b>

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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
<b>CXB3050</b>	<b>36 V</b>	<b>CXB3050-xxxx-xxxNxxxxxxx</b>	<b>1500 mA</b>	<b>2500 mA</b>

## 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-xxxxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxNxxxxxxxx	673 mA	900 mA
<b>CXB2530</b>	<b>36V</b>	<b>CXB2530-xxxx-xxxNxxxxxxxx</b>	<b>1200 mA</b>	<b>1600 mA</b>

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxNxxxxxxxx	681 mA	1044 mA	727 mA
<b>CXB2530</b>	<b>36 V</b>	<b>CXB2530-xxxx-xxxNxxxxxxxx</b>	<b>1200 mA</b>		
<b>CXB3050</b>	<b>36 V</b>	<b>CXB3050-xxxx-xxxNxxxxxxxx</b>		<b>2500 mA</b>	
<b>CXB3070</b>	<b>36 V</b>	<b>CXB3070-xxxx-xxxNxxxxxxxx</b>			<b>2250 mA</b>

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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-xxxNxxxxxxxx	707 mA	984 mA	1227 mA
<b>CXB2530</b>	<b>36 V</b>	<b>CXB2530-xxxx-xxxNxxxxxxxx</b>	<b>1200 mA</b>		
<b>CXB3070</b>	<b>36 V</b>	<b>CXB3070-xxxx-xxxNxxxxxxxx</b>		<b>2250 mA</b>	<b>2800 mA</b>

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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
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 B3050-1 (105 °C)	Data Set B3050-2 (85 °C)	Data Set B3070-1 (105 °C)
CXB2540	36 V	CXB2540-xxxx-xxxNxxxxxxxx	1146 mA	1923 mA	1262 mA
<b>CXB3050</b>	<b>36V</b>	<b>CXB3050-xxxx-xxxNxxxxxxxx</b>	<b>1500 mA</b>	<b>2500 mA</b>	
<b>CXB3070</b>	<b>36 V</b>	<b>CXB3070-xxxx-xxxNxxxxxxxx</b>			<b>2250 mA</b>



## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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-xxxNxxxxxxxx	1641 mA
<b>CXB3070</b>	<b>36 V</b>	<b>CXB3070-xxxx-xxxNxxxxxxxx</b>	<b>2250 mA</b>

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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-xxxNxxxxxxxx	1321 mA	1764 mA
<b>CXB3590</b>	<b>72 V</b>	<b>CXB3590-xxxx-xxxRxxxxxxxx</b>	<b>1050 mA</b>	<b>1400 mA</b>

## 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-xxxNxxxxxxxx

CXB3590 72 V CXB3590-xxxx-xxxRxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	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-xxxxxxxxxx

No failures occurred during testing.

**Test Summary**

Data Set	Case Temp. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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-xxxCxxxxxxxx

MHB-B 18 V: MHBBWT-xxxx-xxxFxxxxxxxx

MHB-B 36 V: MHBBWT-xxxx-xxxNxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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-xxxCxxxxxxxx

MHD-E 18 V: MHDEWT-xxxx-xxxFxxxxxxxx

MHD-E 36 V: MHDEWT-xxxx-xxNxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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-xBxxxxxxxxxx

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

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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® 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. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [TS]	Ambient Temp. [TA]	Drive Current [IF]	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 3)

Revision: 3 (February 15, 2021)

### Description Of LED Light Sources

XLamp XD16 White LEDs (Series: XD16AWT)

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

XD16AWT-Hx-xxxx-xxxxxxxxxx

No failures occurred during testing.

### Test Summary (4000 K)

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	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
105 °C	500 mA	XD16 4000 K @ 105 °C, 500 mA	4000 K	71	20	15,120 hrs	L90(15k) > 90,700 hrs L80(15k) > 90,700 hrs L70(15k) > 90,700 hrs
85 °C	1000 mA	XD16 4000 K @ 85 °C, 1000 mA	4000 K	71	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 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

### Test Summary (2700 K)

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 2700 K @ 85 °C, 500 mA	2700 K	83	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
105 °C	500 mA	XD16 2700 K @ 105 °C, 500 mA	2700 K	83	20	15,120 hrs	L90(15k) > 90,700 hrs L80(15k) > 90,700 hrs L70(15k) > 90,700 hrs
85 °C	1000 mA	XD16 2700 K @ 85 °C, 1000 mA	2700 K	82	20	11,592 hrs	L90(12k) > 69,600 hrs L80(12k) > 69,600 hrs L70(12k) > 69,600 hrs
105 °C	1000 mA	XD16 2700 K @ 105 °C, 1000 mA	2700 K	82	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
85 °C	1500 mA	XD16 2700 K @ 85 °C, 1500 mA	2700 K	81	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-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>d</sub> ]	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-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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® XHP35.2 WHITE LEDs (REV 2)

Revision: 2 (November 3, 2020)

### Description Of LED Light Sources

XLamp XHP35.2 White LEDs (Series: XHP35B)

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

High Density XHP35B-0x-xxxx-xDxxxxxxx

High Intensity XHP35B-Hx-xxxx-xDxxxxxxx

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	XHP50.2 6-V @ 85 °C, 1400 mA	3000 K	82	25	24,192 hrs	L90(24k) = 98,500 hrs L80(24k) > 145,000 hrs L70(24k) > 145,000 hrs
105 °C	449 mA	XHP50.2 6-V @ 105 °C, 1400 mA	3000 K	82	25	24,192 hrs	L90(24k) = 56,600 hrs L80(24k) = 121,000 hrs L70(24k) > 145,000 hrs
125 °C	449 mA	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	XHP50.2 6-V @ 85 °C, 2100 mA	3000 K	81	25	18,144 hrs	L90(18k) > 109,000 hrs L80(18k) > 109,000 hrs L70(18k) > 109,000 hrs
105 °C	674 mA	XHP50.2 6-V @ 105 °C, 2100 mA	3000 K	82	25	18,144 hrs	L90(18k) = 41,900 hrs L80(18k) = 89,100 hrs L70(18k) > 109,000 hrs
85 °C	963 mA	XHP50.2 12-V @ 85 °C, 1500 mA	3000 K	81	25	18,144 hrs	L90(18k) > 109,000 hrs L80(18k) > 109,000 hrs L70(18k) > 109,000 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-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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 3)

Revision: 3 (June 24, 2020)

### 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-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

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	24,192 hrs	L90(24k) = 98,500 hrs L80(24k) > 145,000 hrs L70(24k) > 145,000 hrs
2	105 °C	1400 mA (6-V) 700 mA (12-V)	3000 K	82	25	24,192 hrs	L90(24k) = 56,600 hrs L80(24k) = 121,000 hrs L70(24k) > 145,000 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	18,144 hrs	L90(18k) > 109,000 hrs L80(18k) > 109,000 hrs L70(18k) > 109,000 hrs
5	105 °C	2100 mA (6-V) 1050 mA (12-V)	3000 K	82	25	18,144 hrs	L90(18k) = 41,900 hrs L80(18k) = 89,100 hrs L70(18k) > 109,000 hrs
6	85 °C	3000 mA (6-V) 1500 mA (12-V)	3000 K	81	25	18,144 hrs	L90(18k) > 109,000 hrs L80(18k) > 109,000 hrs L70(18k) > 109,000 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-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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 2)

Revision: 2 (March 20, 2019)

### 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-xxxxxxxxxx

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	11,592 hrs	L90(12k) > 69,600 hrs L80(12k) > 69,600 hrs L70(12k) > 69,600 hrs
105 °C	2100 mA (6 V) 1050 mA (12 V)	XHP70.2 6-V @ 105 °C, 2100 mA	3000 K	83	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
125 °C	2100 mA (6 V) 1050 mA (12 V)	XHP70.2 12-V @ 125 °C, 1050 mA	3000 K	83	20	12,096 hrs	L90(12k) = 21,400 hrs L80(12k) = 56,100 hrs L70(12k) > 72,600 hrs
85 °C	3000 mA (6 V) 1500 mA (12 V)	XHP70.2 12-V @ 85 °C, 1500 mA	3000 K	82	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
105 °C	3000 mA (6 V) 1500 mA (12 V)	XHP70.2 12-V @ 105 °C, 1500 mA	3000 K	82	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
85 °C	4200 mA (6 V) 2100 mA (12 V)	XHP70.2 12-V @ 85 °C, 2100 mA	3000 K	82	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
85 °C	4800 mA (6 V) 2400 mA (12 V)	XHP70.2 12-V @ 85 °C, 2400 mA	3000 K	82	20	11,592 hrs	L90(12k) > 69,600 hrs L80(12k) > 69,600 hrs L70(12k) > 69,600 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-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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-EFFICACY PHOTO RED LEDS (REV 2)

Revision: 2 (March 12, 2019)

### Description Of LED Light Sources

XLamp XP-E High-Efficacy Photo Red LEDs (Series: XPEEPR)

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

XPEEPR-xx-xxxx-xxxxx

No failures occurred during testing.

### Test Summary

LED Color	Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>a</sub> ]	Drive Current [I <sub>r</sub> ]	Sample Count	Test Duration	Reported TM-21 Lifetimes
High-Efficacy Photo Red	660-1	85 °C	85 °C	700 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	700 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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 COLOR LEDS (REV 4)

Revision: 4 (April 9, 2021)

### 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>F</sub> ]	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	12,096 hrs	L90(12k) > 66,500 hrs L80(12k) > 66,500 hrs L70(12k) > 66,500 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 COLOR LEDS (REV 3) - CONTINUED

LED Color	Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>F</sub> ]	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	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
	G4	105 °C	105 °C	1000 mA	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 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 FAR RED LEDS (REV 0)

Revision: 0 (November 22, 2019)

### Description Of LED Light Sources

XLamp XP-E2 Far Red LEDs (Series: XPEBFR)

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

XPEBFR-xx-xxxx-xxxxx

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	PFM <sub>p</sub> Lifetimes	PF <sub>FR</sub> Lifetimes
85 °C	1000 mA	XP-E2 Far Red @ 85 °C, 1000 mA	N/A	N/A	20	6,048hrs	Q90(6k) > 36,300 hrs Q80(6k) > 36,300 hrs Q70(6k) > 36,300 hrs	<25% flux in PFF range
105 °C	1000 mA	XP-E2 Far Red @ 105 °C, 1000 mA	N/A	N/A	20	6,048 hrs	Q90(6k) > 36,300 hrs Q80(6k) > 36,300 hrs Q70(6k) > 36,300 hrs	<25% flux in PFF range

## XLAMP® XP-E2 PC AMBER LEDS (REV 1)

Revision: 1 (April 9, 2020)

### Description Of LED Light Sources

XLamp XP-E2 PC Amber LEDs (Series: XPEBPA)

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

XPEBPA-xx-xxxx-xxxxx

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	350 mA	XP-E2 PC Amber @ 85 °C, 350 mA	N/A	N/A	20	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
105 °C	350 mA	XP-E2 PC Amber @ 105 °C, 350 mA	N/A	N/A	20	12,096 hrs	L90(12k) = 70,400 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
85 °C	1000 mA	XP-E2 PC Amber @ 85 °C, 1000 mA	N/A	N/A	20	12,096 hrs	L90(12k) = 33,200 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
105 °C	1000 mA	XP-E2 PC Amber @ 105 °C, 1000 mA	N/A	N/A	20	10,080 hrs	L90(10k) = 17,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs



## XLAMP® XP-E2 PHOTO RED LEDs (REV 0)

Revision: 0 (November 4, 2019)

### Description Of LED Light Sources

XLamp XP-E2 Photo Red LEDs (Series: XPEBPR)

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

XPEBPR-xx-xxxx-xxxxx

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	PF <sub>M<sub>p</sub></sub> Lifetimes	PF <sub>FR</sub> Lifetimes
85 °C	1000 mA	XP-E2 Photo Red @ 85 °C, 1000 mA	N/A	N/A	20	6,552 hrs	Q90(7k) > 39,300 hrs Q80(7k) > 39,300 hrs Q70(7k) > 39,300 hrs	<25% flux in PF <sub>FR</sub> range
105 °C	1000 mA	XP-E2 Photo Red @ 105 °C, 1000 mA	N/A	N/A	20	6,552 hrs	Q90(7k) = 20,900 hrs Q80(7k) > 39,300 hrs Q70(7k) > 39,300 hrs	<25% flux in PF <sub>FR</sub> range

## 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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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-xxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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 3)

Revision: 3 (March 23, 2020)

### 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-xxxx

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	1050 mA	XP-G2 High Efficacy @ 85 °C, 1050 mA	4000 K	71	20	9,576 hrs	L90(10k) > 57,500 hrs L80(10k) > 57,500 hrs L70(10k) > 57,500 hrs
105 °C	1050 mA	XP-G2 High Efficacy @ 105 °C, 1050 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	2000 mA	XP-G2 High Efficacy @ 85 °C, 2000 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	1050 mA	XP-G2 High Efficacy @ 85 °C, 1050 mA	2700 K	72	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
105 °C	1050 mA	XP-G2 High Efficacy @ 105 °C, 1050 mA	2700 K	72	20	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
85 °C	1500 mA	XP-G2 High Efficacy @ 85 °C, 1500 mA	2700 K	71	20	7,056 hrs	L90(7k) > 42,300 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
105 °C	1500 mA	XP-G2 High Efficacy @ 105 °C, 1500 mA	2700 K	71	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
85 °C	2000 mA	XP-G2 High Efficacy @ 85 °C, 2000 mA	2700 K	71	20	6,048 hrs	L90(6k) = 33,600 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 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-x1-xxxx-xxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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 9) - CONTINUED**

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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 HORTICULTURE LEDS (REV 2)

Revision: 2 (July 24, 2020)

### Description Of LED Light Sources

XLamp XP-G3 Photo Red LEDs (Series: XPGDPR)

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

XLamp XP-G3 White LEDs (Series: XPGDWT)

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

XP-G3 Photo Red	XPGDPR-xx-xxxx-xxxxx
XP-G3 Royal Blue	XPGDRY-xx-xxxx-xxxxx
XP-G3 White - S Line	XPGDWT-xS-xxxx-xxxxx
XP-G3 White - Standard	XPGDWT-x1-xxxx-xxxxx
	XPGDWT-x3-xxxx-xxxxx

No failures occurred during testing.

### XP-G3 Photo Red

#### Test Summary

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	PFM <sub>p</sub> Lifetimes	PF <sub>FR</sub> Lifetimes
85 °C	1000 mA	XP-G3 Photo Red @ 85 °C, 1000 mA	N/A	N/A	20	7,560 hrs	Q90(8k) > 45,400 hrs Q80(8k) > 45,400 hrs Q70(8k) > 45,400 hrs	<25% flux in PF <sub>FR</sub> range
105 °C	1000 mA	XP-G3 Photo Red @ 105 °C, 1000 mA	N/A	N/A	20	6,048 hrs	Q90(6k) > 36,300 hrs Q80(6k) > 36,300 hrs Q70(6k) > 36,300 hrs	<25% flux in PF <sub>FR</sub> range
85 °C	1500 mA	XP-G3 Photo Red @ 85 °C, 1500 mA	N/A	N/A	20	6,048 hrs	Q90(6k) > 36,300 hrs Q80(6k) > 36,300 hrs Q70(6k) > 36,300 hrs	<25% flux in PF <sub>FR</sub> range
105 °C	1000 mA	XP-G3 Photo Red @ 105 °C, 1500 mA	N/A	N/A	20	6,048 hrs	Q90(6k) > 36,300 hrs Q80(6k) > 36,300 hrs Q70(6k) > 36,300 hrs	<25% flux in PF <sub>FR</sub> range

**XLAMP® XP-G3 HORTICULTURE LEDS (REV 1) - CONTINUED**
**XP-G3 Royal Blue**
**Test Summary**

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	PF <sub>M</sub> <sub>p</sub> Lifetimes	PF <sub>FR</sub> Lifetimes
105 °C	500 mA	XP-G3 Royal Blue @ 105 °C, 500 mA	N/A	N/A	20	8,064 hrs	Q90(8k) > 48,400 hrs Q80(8k) > 48,400 hrs Q70(8k) > 48,400 hrs	<25% flux in PF <sub>FR</sub> range
125 °C	500 mA	XP-G3 Royal Blue @ 125 °C, 500 mA	N/A	N/A	20	8,064 hrs	Q90(8k) = 22,000 hrs Q80(8k) = 44,300 hrs Q70(8k) > 48,400 hrs	<25% flux in PF <sub>FR</sub> range
85 °C	1000 mA	XP-G3 Royal Blue @ 85 °C, 1000 mA	N/A	N/A	20	8,064 hrs	Q90(8k) > 48,400 hrs Q80(8k) > 48,400 hrs Q70(8k) > 48,400 hrs	<25% flux in PF <sub>FR</sub> range
105 °C	1000 mA	XP-G3 Royal Blue @ 105 °C, 1000 mA	N/A	N/A	20	8,064 hrs	Q90(8k) > 48,400 hrs Q80(8k) > 48,400 hrs Q70(8k) > 48,400 hrs	<25% flux in PF <sub>FR</sub> range

**XP-G3 White ( S Line & Standard)**
**Test Summary**

Nominal Case & Ambient Temperature	Drive Current	Tested Product & Data Set	ANSI CCT Target	Mean CRI	Sample Count	Test Duration	PF <sub>M</sub> <sub>p</sub> Lifetimes	PF <sub>FR</sub> Lifetimes
105 °C	500 mA	XP-G3 White (S Line) @ 105 °C, 500 mA	3000 K	71	20	6,048 hrs	Q90(6k) > 36,300 hrs Q80(6k) > 36,300 hrs Q70(6k) > 36,300 hrs	<25% flux in PF <sub>FR</sub> range
125 °C	500 mA	XP-G3 White (S Line) @ 125 °C, 500 mA	3000 K	70	20	6,048 hrs	Q90(6k) > 36,300 hrs Q80(6k) > 36,300 hrs Q70(6k) > 36,300 hrs	<25% flux in PF <sub>FR</sub> range
85 °C	1000 mA	XP-G3 White (S Line) @ 85 °C, 1000 mA	3000 K	71	20	6,048 hrs	Q90(6k) > 36,300 hrs Q80(6k) > 36,300 hrs Q70(6k) > 36,300 hrs	<25% flux in PF <sub>FR</sub> range
105 °C	1000 mA	XP-G3 White (S Line) @ 105 °C, 1000 mA	3000 K	71	20	6,048 hrs	Q90(6k) > 36,300 hrs Q80(6k) > 36,300 hrs Q70(6k) > 36,300 hrs	<25% flux in PF <sub>FR</sub> range



**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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>d</sub> ]	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 WHITE - S LINE LEDs (REV 4)

Revision: 4 (September 9, 2020)

### Description Of LED Light Sources

XLamp XP-G3 White - 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.

### 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	XP-G3 S Line @ 85 °C, 500 mA	3000 K	70	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
105 °C	500 mA	XP-G3 S Line @ 105 °C, 500 mA	3000 K	71	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
125 °C	500 mA	XP-G3 S Line @ 125 °C, 500 mA	3000 K	71	20	6,048 hrs	L90(6k) > 36,300 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs
105 °C	700 mA	XP-G3 S Line @ 105 °C, 700 mA	3000 K	70	25	10,080 hrs	L90(10k) > 60,500 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
85 °C	1000 mA	XP-G3 S Line @ 85 °C, 1000 mA	3000 K	81	25	16,128 hrs	L90(16k) = 79,800 hrs L80(16k) > 96,800 hrs L70(16k) > 96,800 hrs
105 °C	1000 mA	XP-G3 S Line @ 105 °C, 1000 mA	3000 K	81	25	10,080 hrs	L90(10k) = 51,200 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
85 °C	1500 mA	XP-G3 S Line @ 85 °C, 1500 mA	3000 K	81	25	10,080 hrs	L90(10k) = 23,800 hrs L80(10k) = 44,700 hrs L70(10k) > 60,500 hrs

## XLAMP® XP-G3 WHITE - STANDARD LEDs (REV 14)

Revision: 14 (June 11, 2021)

### Description Of LED Light Sources

XLamp XP-G3 White - Standard LEDs (Series: XPGDWT)

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

XPGDWT-x1-xxxx-xxxxx

XPGDWT-x3-xxxx-xxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>p</sub> ]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3	85 °C	85 °C	350 mA	3000 K	25	15,120 hrs	L90(15k) > 90,700 hrs L80(15k) > 90,700 hrs L70(15k) > 90,700 hrs
4	105 °C	105 °C	350 mA	3000 K	25	15,120 hrs	L90(15k) > 90,700 hrs L80(15k) > 90,700 hrs L70(15k) > 90,700 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	24,192 hrs	L90(24k) > 145,000 hrs L80(24k) > 145,000 hrs L70(24k) > 145,000 hrs
16	85 °C	85 °C	700 mA	2700 K	20	15,624 hrs	L90(16k) > 93,700 hrs L80(16k) > 93,700 hrs L70(16k) > 93,700 hrs
7	105 °C	105 °C	700 mA	3000 K	25	15,120 hrs	L90(15k) > 90,700 hrs L80(15k) > 90,700 hrs L70(15k) > 90,700 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	15,120 hrs	L90(15k) > 90,700 hrs L80(15k) > 90,700 hrs L70(15k) > 90,700 hrs
15	105 °C	105 °C	1050 mA	3000 K	25	12,096 hrs	L90(12k) > 72,600 hrs L80(12k) > 72,600 hrs L70(12k) > 72,600 hrs
11	85 °C	85 °C	1500 mA	3000 K	25	24,192 hrs	L90(24k) > 145,000 hrs L80(24k) > 145,000 hrs L70(24k) > 145,000 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

**XLAMP® XP-G3 WHITE -STANDARD LEDS (REV 11) - CONTINUED**

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>F</sub> ]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
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
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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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 COLOR 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)

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

XQARED-xx-xxxx-xxxxxxxxxx

XQARDO-xx-xxxx-xxxxxxxxxx

XQAAPA-xx-xxxx-xxxxxxxxxx

XQAGRN-xx-xxxx-xxxxxxxxxx

XQABLU-xx-xxxx-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

LED Color	Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>F</sub> ]	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 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-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>a</sub> ]	Drive Current [I <sub>f</sub> ]	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-E COLOR LEDS (REV 2)

Revision: 2 (May 8, 2020)

### 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-xxxxxxxxxx

XQERDO-xx-xxxx-xxxxxxxxxx

XQEAPA-xx-xxxx-xxxxxxxxxx

XQEGRN-xx-xxxx-xxxxxxxxxx

XQEBLU-xx-xxxx-xxxxxxxxxx

XQEROY-xx-xxxx-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

LED Color	Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>F</sub> ]	Sample Count	Test Duration	Reported TM-21 Lifetimes
Red, Red-Orange	R1	85 °C	85 °C	1000 mA	25	18,144 hrs	L90(18k) > 109,000 hrs L80(18k) > 109,000 hrs L70(18k) > 109,000 hrs
	R2	105 °C	105 °C	1000 mA	25	18,144 hrs	L90(18k) > 109,000 hrs L80(18k) > 109,000 hrs L70(18k) > 109,000 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 COLOR LEDS (REV 2) - CONTINUED

LED Color	Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>F</sub> ]	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 HIGH-EFFICACY PHOTO RED LEDS (REV 0)**

Revision: 0 (April 13, 2019)

**Description Of LED Light Sources**

XLamp XQ-E High-Efficacy Photo Red LEDs (Series: XQEEPR)

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

XQEEPR-xx-xxxx-xxxxxxxxxx

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	XQ-E HE Photo Red @ 105 °C, 700 mA	N/A	N/A	20	6,048 hrs	R90(6k) > 36,300 hrs R80(6k) > 36,300 hrs R70(6k) > 36,300 hrs
85 °C	1000 mA	XQ-E HE Photo Red @ 85 °C, 1000 mA	N/A	N/A	20	6,048 hrs	R90(6k) > 36,300 hrs R80(6k) > 36,300 hrs R70(6k) > 36,300 hrs
105 °C	1000 mA	XQ-E HE Photo Red @ 105 °C, 1000 mA	N/A	N/A	20	6,048 hrs	R90(6k) > 36,300 hrs R80(6k) > 36,300 hrs R70(6k) > 36,300 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-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>f</sub> ]	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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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 <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>r</sub> ]	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-xxxxxxxxxx

No failures occurred during testing.

### Test Summary

Data Set	Case Temp. [T <sub>s</sub> ]	Ambient Temp. [T <sub>A</sub> ]	Drive Current [I <sub>d</sub> ]	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