



NVLAP Lab Code 500041-0

Cree® XLamp® XT-E White LEDs

INFORMATION REQUIRED BY LM-80-08

Cree classifies these LEDs as "LED packages" per Sep 9, 2011 ENERGY STAR guidelines¹.

1. Number of LED light sources tested	See individual data sets on following pages.
2. Description of LED light sources	<p>XLamp XT-E White LEDs (Series: XTEAWT)</p> <p>This LM-80 report is applicable to the following order codes: XTEAWT-xx-xxxx-xxxxxxxxxx</p> <p>All measurements provided are LED package measurements.</p>
3. Description of auxiliary equipment	<p>Instrument Systems ISP-500 Integrating Sphere</p> <p>Instrument Systems CAS-140 Spectrometer</p> <p>Keithley 2420 Sourcemeter</p>
4. Operating cycle	LED packages are driven at constant current.
5. Ambient conditions	<p>LED packages are operated in environmental control chambers. The temperature of the ambient air around the LED packages is actively controlled by air flowing through the chamber.</p> <p>T_A : See individual data sets on following pages RH : < 45% Air flow : 800 CFM</p>
6. Case temperature	See individual data sets on following pages.
7. Drive current of the LED light source during life-time test.	See individual data sets on following pages.
8. Initial luminous flux and forward voltage at photometric measurement current	See individual data sets on following pages.
9. Lumen maintenance data for each individual LED light source	See individual data sets on following pages. Ambient temperature during luminous flux testing set to 25°C ±2°C.
10. Observation of LED light source failures	No failures occurred during testing.
11. LED light source monitoring interval	See individual data sets on following pages.
12. Photometric measurement uncertainty	Cree maintains a tolerance of ±2.0% on flux measurements for LM-80 testing.
13. Chromaticity shift reported over the measurement time	See individual data sets on following pages. Ambient temperature during chromaticity testing set to 25°C ±2°C.
Test Report Authorization	Amber Abare, Components Reliability Laboratory Manager
Sampling method	Cree uses systematic sampling of production LEDs, with checks to ensure that the behavior of early samples are representative of the behavior of later samples.

¹ http://www.energystar.gov/ia/partners/prod_development/new_specs/downloads/luminaires/ENERGY_STAR_Final_Lumen_Maintenance_Guidance.pdf

REVISION HISTORY

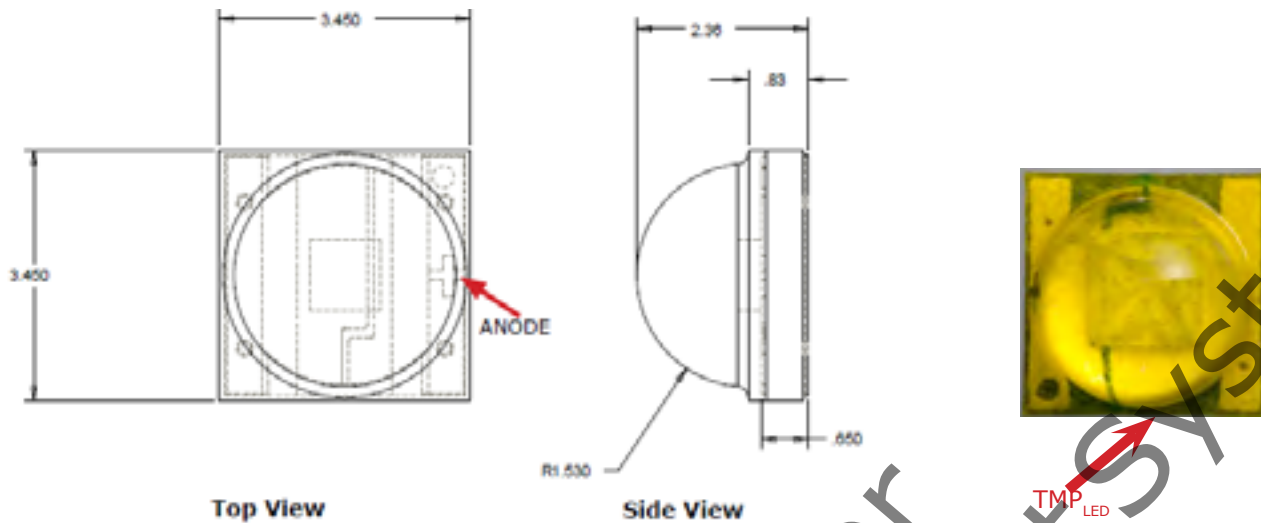
Revision	Date	Change
0	Mar 29, 2012	Date of first issue
1	Sep 27, 2012	Removed successor data set 1. Added data set 2.
2	Oct 23, 2012	Added data set 3.
3	Nov 14, 2012	Added data set 4.
4	Apr 17, 2013	Revised data sets 2 & 4 to add additional test duration. Added data sets 5 & 6.
5	Aug 22, 2013	Revised data sets 2-6 to add additional test duration.
6	Nov 13, 2013	Revised data sets 5 & 6 to add additional test duration.
7	Sep 29, 2014	Removed data sets 3 & 4. Added data sets 3+ & 4+. Revised data sets 2 & 5 to add additional test duration.

TEST RESULTS SUMMARY

Data Set	Case Temp. [T _s]	Ambient Temp. [T _A]	Drive Current [I _F]	Average Lumen Maintenance at 6,000 hours	Average Chromaticity Shift (Δu'v') at 6,000 hours	Reported TM-21 Lifetimes
3+	55°C	55°C	1000 mA	98.6%	0.0012	L90(18k) = 45,600 hrs L80(18k) = 88,500 hrs L70(18k) > 99,800 hrs
2	85°C	85°C	1000 mA	98.8%	0.0014	L90(18k) = 35,500 hrs L80(18k) = 67,700 hrs L70(18k) = 104,000 hrs
4+	105°C	105°C	1000 mA	96.1%	0.0021	L90(17k) = 21,000 hrs L80(17k) = 41,700 hrs L70(17k) = 65,200 hrs
5	55°C	55°C	1250 mA	96.3%	0.0008	L90(10k) = 46,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
6	85°C	85°C	1250 mA	95.6%	0.0012	L90(9k) = 19,300 hrs L80(9k) = 41,400 hrs L70(9k) > 54,400 hrs

MECHANICAL DIMENSIONS & TEMPERATURE MEASUREMENT POINT

All measurements are $\pm .13$ mm unless otherwise indicated.



The LED temperature measurement point (TMP_{LED}) should be measured on the PCB surface, as close to the LED's thermal pad as possible (shown in the picture above). It is not required to use a solder footprint for the thermal pad that is larger than the LED itself. In testing, Cree has found such a solder pad to have insignificant impact on the resulting temperature measurement.

DATA SET 3+: 55°C; 1000 mA

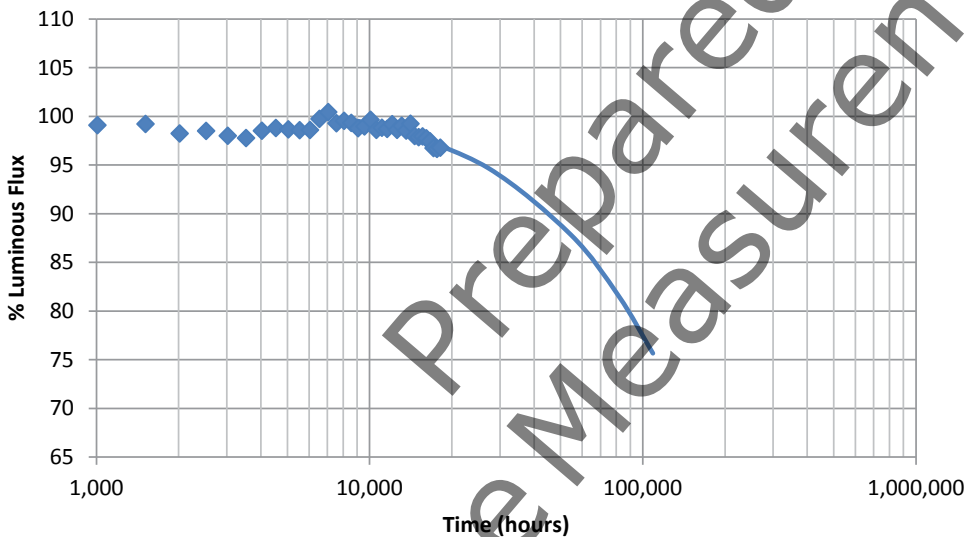
LED Package Series	XLamp XT-E White LEDs (Series: XTEAWT) This LM-80 report is applicable to the following order codes: XTEAWT-xx-xxxx-xxxxxxxxxx
Tested Model Number	XTEAWT-00-0000-00000LBE7
Drive Current [I _F]	1000 mA
Testing Initiation Date	December 19, 2011
Case Temperature [T _s]	55°C
Ambient Temperature [T _A]	55°C
Failures observed	None

Projection Generated By Cree’s Internal TM-21 Calculator:

Test duration	18,144 hours
Test duration used for projection	t=9,072 to t=18,144
α	2.745E-06
β	1.020E+00
Calculated Lifetime	L70(18k) = 137,000 hours
Reported Lifetime	L70(18k) > 99,800 hours

LM-80 Data For The Official TM-21 Calculator*

Time (hours)	Lumen Maintenance
0	100.0000%
9072	98.7780%
9576	98.9610%
10080	99.6420%
10584	98.6050%
11088	98.8250%
11592	98.7050%
12096	99.1910%
12600	98.6080%
13104	99.0280%
13608	98.5330%
14112	99.2380%
14616	97.9780%
15120	97.8600%
15624	97.9360%
16128	97.7410%
16632	97.4400%
17136	96.7400%
17640	96.6530%
18144	96.7790%



* <http://www.energystar.gov/TM-21calculator>

Suggestion for exporting the LM-80 data:

1. Copy above table from PDF & paste into Microsoft Word.
2. Copy table out of Word & paste into Microsoft Excel (Match destination formatting)

Note: Data points t=168 hr through t=8568 hr are intentionally excluded from this table since the ENERGY STAR tool has a 20 data point input limit. Per TM-21 methodology, data points t=168 hr to t=8568 hr would be excluded, so the projection is unaffected.

DATA SET 3+: 55°C; 1000 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)																
	LF (lm)	V _F (V)	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048	6552	7056	7560	8064	8568
1	268.5	3.43	3009	3000	100.7	98.7	99.6	98.7	98.0	98.2	97.5	98.4	98.4	98.1	99.0	99.5	99.6	101.3	98.4	100.1	99.2
2	261.7	3.39	3046	3000	99.4	98.4	98.5	97.3	97.9	97.5	97.8	99.1	98.7	98.5	98.7	98.4	99.2	100.2	99.8	99.7	99.9
3	260.1	3.41	3064	3000	99.8	99.6	99.8	99.1	99.2	98.3	98.8	99.9	99.5	99.4	99.6	99.4	100.3	101.3	100.8	100.9	100.9
4	239.5	3.40	2897	3000	101.4	99.6	100.0	98.9	98.8	97.6	97.7	98.2	98.9	98.6	99.2	100.3	100.9	102.3	99.1	100.6	99.8
5	258.3	3.43	3004	3000	98.3	97.8	98.1	97.6	97.4	96.9	97.2	97.3	97.0	96.9	97.2	97.1	98.1	98.9	98.5	98.6	98.7
6	243.1	3.42	2984	3000	99.9	98.3	98.5	97.9	97.7	97.3	97.5	98.5	98.5	98.3	98.5	98.3	99.2	100.1	99.3	99.7	99.8
7	253.7	3.44	3022	3000	100.1	98.8	99.8	98.4	98.1	97.6	97.5	97.2	98.2	97.9	98.0	99.4	100.3	101.3	97.9	99.5	98.5
8	256.4	3.39	2941	3000	100.9	100.7	101.1	99.9	100.2	99.7	100.0	100.8	100.6	100.3	100.7	100.5	101.6	102.4	102.2	102.0	102.3
9	267.5	3.43	3202	3000	100.9	100.4	100.4	99.3	99.5	98.0	97.9	97.8	99.0	98.5	98.8	100.3	101.3	102.2	99.0	100.4	99.6
10	271.5	3.42	2903	3000	100.3	98.9	98.2	98.0	98.8	98.3	97.5	98.2	98.5	99.6	98.0	97.6	99.6	99.5	98.4	100.0	99.2
11	256.9	3.40	2957	3000	99.8	99.8	99.2	98.3	99.0	98.7	97.8	98.9	99.3	99.1	98.6	98.6	99.9	100.0	99.7	99.3	98.6
12	262.4	3.43	3030	3000	100.0	99.5	99.7	98.1	98.9	98.7	98.3	99.1	99.4	99.4	98.5	98.7	100.1	100.4	100.0	99.3	99.7
13	260.7	3.46	2983	3000	98.5	97.9	97.9	96.4	97.1	96.9	96.2	97.4	97.7	97.2	97.3	96.2	97.9	98.0	97.8	96.6	96.6
14	255.4	3.41	3025	3000	100.8	98.0	99.0	98.2	98.7	98.5	98.1	99.0	99.5	99.0	99.0	98.4	98.7	100.0	99.6	98.7	99.3
15	258.0	3.49	3046	3000	101.1	100.0	98.9	98.2	98.8	98.0	96.5	97.5	98.6	99.0	97.6	96.6	98.7	99.2	98.5	98.7	97.8
16	256.4	3.43	3080	3000	100.7	99.0	98.8	97.7	98.0	97.8	97.9	98.8	99.1	98.7	98.6	98.2	99.4	99.8	99.5	98.5	99.4
n	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Mean	258.1	3.42			100.2	99.1	99.2	98.2	98.5	98.0	97.8	98.5	98.8	98.7	98.6	98.6	99.7	100.4	99.3	99.5	99.3
Median	258.2	3.43			100.2	98.9	99.1	98.2	98.7	98.0	97.8	98.5	98.8	98.7	98.6	98.5	99.7	100.1	99.2	99.6	99.4
σ	8.3	0.03			0.88	0.88	0.90	0.84	0.80	0.73	0.85	0.99	0.83	0.88	0.87	1.28	1.03	1.27	1.12	1.22	1.26
Min.	239.5	3.39			98.3	97.8	97.9	96.4	97.1	96.9	96.2	97.2	97.0	96.9	97.2	96.2	97.9	98.0	97.8	96.6	96.6
Max.	271.5	3.49			101.4	100.7	101.1	99.9	100.2	99.7	100.0	100.8	100.6	100.3	100.7	100.5	101.6	102.4	102.2	102.0	102.3

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')																
	CCx	CCy	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048	6552	7056	7560	8064	8568
1	0.4359	0.4023	3009	3000	0.0004	0.0005	0.0006	0.0007	0.0008	0.0008	0.0009	0.0009	0.0009	0.0008	0.0009	0.0008	0.0010	0.0009	0.0010	0.0010	0.0010
2	0.4320	0.3986	3046	3000	0.0006	0.0011	0.0012	0.0010	0.0014	0.0015	0.0015	0.0017	0.0018	0.0016	0.0019	0.0018	0.0019	0.0019	0.0020	0.0020	0.0020
3	0.4302	0.3969	3064	3000	0.0005	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010	0.0008	0.0009	0.0008	0.0009	0.0008	0.0008	0.0008	0.0010
4	0.4406	0.3987	2897	3000	0.0005	0.0007	0.0009	0.0009	0.0010	0.0010	0.0012	0.0013	0.0013	0.0013	0.0012	0.0011	0.0014	0.0013	0.0015	0.0014	0.0014
5	0.4293	0.3881	3004	3000	0.0009	0.0009	0.0008	0.0009	0.0008	0.0008	0.0009	0.0010	0.0009	0.0010	0.0007	0.0007	0.0007	0.0006	0.0008	0.0007	0.0007
6	0.4389	0.4055	2984	3000	0.0004	0.0005	0.0005	0.0006	0.0006	0.0005	0.0005	0.0007	0.0007	0.0006	0.0005	0.0005	0.0006	0.0006	0.0006	0.0006	0.0007
7	0.4374	0.4071	3022	3000	0.0006	0.0007	0.0011	0.0011	0.0013	0.0013	0.0013	0.0016	0.0016	0.0016	0.0016	0.0017	0.0018	0.0017	0.0019	0.0019	0.0020
8	0.4392	0.4010	2941	3000	0.0011	0.0011	0.0013	0.0012	0.0014	0.0014	0.0014	0.0015	0.0015	0.0014	0.0013	0.0013	0.0012	0.0012	0.0013	0.0013	0.0013
9	0.4280	0.4091	3202	3000	0.0004	0.0007	0.0011	0.0011	0.0012	0.0013	0.0012	0.0014	0.0015	0.0015	0.0015	0.0016	0.0017	0.0016	0.0017	0.0018	0.0019
10	0.4432	0.4045	2903	3000	0.0005	0.0008	0.0008	0.0009	0.0010	0.0011	0.0012	0.0013	0.0013	0.0014	0.0011	0.0014	0.0015	0.0016	0.0017	0.0016	0.0018
11	0.4406	0.4057	2957	3000	0.0004	0.0005	0.0005	0.0006	0.0007	0.0008	0.0006	0.0009	0.0009	0.0009	0.0009	0.0010	0.0009	0.0011	0.0011	0.0010	0.0009
12	0.4354	0.4039	3030	3000	0.0002	0.0006	0.0007	0.0007	0.0008	0.0009	0.0008	0.0009	0.0010	0.0009	0.0008	0.0010	0.0009	0.0011	0.0010	0.0009	0.0010
13	0.4353	0.3981	2983	3000	0.0004	0.0008	0.0008	0.0009	0.0010	0.0012	0.0012	0.0012	0.0014	0.0014	0.0014	0.0014	0.0014	0.0017	0.0017	0.0013	0.0013
14	0.4366	0.4058	3025	3000	0.0004	0.0003	0.0005	0.0007	0.0008	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0012	0.0011	0.0012	0.0013	0.0011	0.0012
15	0.4329	0.4005	3046	3000	0.0004	0.0005	0.0002	0.0004	0.0005	0.0006	0.0002	0.0007	0.0008	0.0007	0.0005	0.0009	0.0009	0.0008	0.0010	0.0009	0.0008
16	0.4371	0.4138	3080	3000	0.0005	0.0007	0.0009	0.0010	0.0010	0.0012	0.0012	0.0014	0.0015	0.0014	0.0014	0.0015	0.0016	0.0016	0.0017	0.0013	0.0017
n	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Mean					0.0005	0.0007	0.0008	0.0008	0.0009	0.0010	0.0010	0.0012	0.0012	0.0011	0.0011	0.0012	0.0012	0.0012	0.0013	0.0012	0.0013
Median					0.0005	0.0007	0.0008	0.0009	0.0009	0.0010	0.0011	0.0012	0.0012	0.0012	0.0011	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013
σ					0.0002	0.0002	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Min.					0.0002	0.0003	0.0003	0.0004	0.0005	0.0002	0.0007	0.0007	0.0006	0.0005	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007
Max.					0.0011	0.0011	0.0013	0.0012	0.0014	0.0015	0.0015	0.0017	0.0018	0.0016	0.0019	0.0018	0.0019	0.0019	0.0020	0.0020	0.0020

DATA SET 3+: 55°C; 1000 mA

Lamp #	9072	9576	10080	10584	11088	11592	12096	12600	13104	13608	14112	14616	15120	15624	16128	16632	17136	17640	18144
1	98.1	98.5	99.3	98.2	98.8	98.5	98.5	98.2	99.1	97.3	98.6	97.2	98.0	96.7	95.5	96.2	96.1	96.2	96.0
2	99.1	99.7	99.4	99.5	99.2	98.9	99.2	98.8	99.5	98.8	99.5	98.2	98.4	98.2	98.3	97.6	97.6	97.3	97.5
3	100.4	100.6	100.9	100.4	100.0	99.8	100.3	99.6	100.2	99.6	100.4	98.8	99.1	99.0	98.7	98.0	97.5	96.8	96.9
4	98.6	98.4	99.8	97.7	98.8	98.9	98.9	98.4	99.0	98.3	99.0	97.5	97.9	97.8	96.7	96.9	96.7	96.8	96.4
5	98.2	98.6	98.8	98.5	98.2	97.8	98.4	97.8	98.5	98.1	98.1	97.3	97.4	97.4	97.7	96.9	96.6	96.4	96.4
6	99.3	99.5	99.8	98.8	99.0	98.7	99.1	98.7	99.2	99.0	99.6	98.4	98.4	98.4	98.5	97.9	97.7	97.3	97.5
7	97.6	97.2	98.7	96.7	97.3	97.2	97.9	97.4	98.2	97.3	98.0	97.0	96.6	97.1	96.4	96.2	95.7	96.0	95.9
8	101.8	101.9	102.0	102.1	101.4	101.1	101.6	101.0	102.0	101.4	102.0	100.6	100.4	100.7	100.8	100.4	99.7	99.7	99.9
9	98.2	97.9	99.1	98.2	98.6	98.7	98.8	97.9	98.7	97.8	98.2	96.9	96.7	96.6	96.4	96.2	95.8	95.8	95.7
10	98.3	98.3	99.9	98.1	98.4	98.3	98.9	98.4	98.2	97.7	98.6	97.6	97.7	97.3	96.7	97.9	96.1	95.8	96.8
11	99.7	99.6	100.0	99.4	99.2	99.2	99.9	99.4	99.2	99.2	100.1	98.6	98.1	98.7	97.9	98.2	97.1	97.0	97.1
12	99.7	99.6	100.1	98.7	99.1	99.2	100.0	99.0	99.2	99.2	100.1	98.3	97.9	98.5	98.9	98.0	97.1	97.1	97.1
13	97.2	97.7	98.4	96.7	97.5	97.6	98.2	97.6	97.7	97.6	98.3	97.1	96.8	97.2	97.4	96.2	95.3	95.4	95.8
14	97.9	99.6	100.0	98.6	99.1	99.1	99.7	99.2	99.6	99.3	100.1	98.9	98.4	98.5	99.2	98.5	97.5	97.3	97.8
15	98.3	97.5	98.9	98.1	98.2	97.7	98.5	97.8	97.2	97.4	98.1	97.4	96.9	97.5	97.3	97.2	95.9	95.9	96.3
16	97.9	98.8	99.2	98.2	98.5	98.5	99.2	98.5	98.9	98.6	99.1	97.7	97.0	97.6	97.4	96.9	95.4	95.5	95.6
n	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Mean	98.8	99.0	99.6	98.6	98.8	98.7	99.2	98.6	99.0	98.5	99.2	98.0	97.9	97.9	97.7	97.4	96.7	96.7	96.8
Median	98.3	98.7	99.6	98.3	98.8	98.7	99.0	98.5	99.1	98.4	99.0	97.7	97.9	97.7	97.6	97.4	96.6	96.6	96.6
σ	1.18	1.22	0.90	1.32	0.95	0.95	0.94	0.92	1.08	1.08	1.12	0.97	1.01	1.03	1.31	1.11	1.13	1.05	1.08
Min.	97.2	97.2	98.4	96.7	97.3	97.2	97.9	97.4	97.2	97.3	98.0	96.9	96.6	96.6	95.5	96.2	95.3	95.4	95.6
Max.	101.8	101.9	102.0	102.1	101.4	101.1	101.6	101.0	102.0	101.4	102.0	100.6	100.4	100.7	100.8	100.4	99.7	99.7	99.9

Lamp #	9072	9576	10080	10584	11088	11592	12096	12600	13104	13608	14112	14616	15120	15624	16128	16632	17136	17640	18144
1	0.0011	0.0011	0.0014	0.0012	0.0015	0.0010	0.0014	0.0015	0.0013	0.0013	0.0014	0.0014	0.0013	0.0012	0.0014	0.0012	0.0012	0.0009	0.0006
2	0.0020	0.0021	0.0024	0.0022	0.0026	0.0026	0.0026	0.0026	0.0028	0.0029	0.0031	0.0032	0.0033	0.0034	0.0035	0.0034	0.0035	0.0034	0.0034
3	0.0009	0.0010	0.0013	0.0010	0.0011	0.0012	0.0013	0.0012	0.0011	0.0011	0.0011	0.0012	0.0010	0.0009	0.0010	0.0007	0.0004	0.0004	0.0002
4	0.0015	0.0014	0.0014	0.0014	0.0016	0.0016	0.0016	0.0017	0.0016	0.0018	0.0019	0.0017	0.0017	0.0017	0.0017	0.0015	0.0014	0.0012	0.0010
5	0.0008	0.0011	0.0010	0.0007	0.0010	0.0010	0.0010	0.0010	0.0008	0.0009	0.0010	0.0011	0.0008	0.0009	0.0009	0.0009	0.0009	0.0008	0.0006
6	0.0007	0.0007	0.0009	0.0007	0.0009	0.0009	0.0010	0.0010	0.0008	0.0009	0.0010	0.0011	0.0010	0.0011	0.0010	0.0010	0.0008	0.0006	0.0005
7	0.0021	0.0021	0.0023	0.0020	0.0023	0.0021	0.0024	0.0026	0.0026	0.0027	0.0028	0.0029	0.0028	0.0028	0.0028	0.0028	0.0027	0.0024	0.0023
8	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0014	0.0016	0.0015	0.0015	0.0016	0.0017	0.0015	0.0013	0.0014	0.0015	0.0013	0.0012	0.0011
9	0.0017	0.0019	0.0020	0.0020	0.0022	0.0022	0.0022	0.0023	0.0023	0.0024	0.0026	0.0026	0.0025	0.0024	0.0025	0.0024	0.0023	0.0020	0.0021
10	0.0020	0.0020	0.0019	0.0020	0.0021	0.0021	0.0022	0.0021	0.0023	0.0022	0.0022	0.0022	0.0025	0.0024	0.0024	0.0023	0.0024	0.0025	0.0025
11	0.0012	0.0012	0.0012	0.0011	0.0013	0.0013	0.0014	0.0015	0.0014	0.0014	0.0014	0.0014	0.0013	0.0013	0.0010	0.0011	0.0007	0.0006	0.0005
12	0.0011	0.0011	0.0011	0.0010	0.0011	0.0013	0.0013	0.0013	0.0012	0.0013	0.0012	0.0011	0.0012	0.0011	0.0010	0.0009	0.0007	0.0006	0.0007
13	0.0017	0.0019	0.0020	0.0016	0.0023	0.0023	0.0023	0.0024	0.0024	0.0023	0.0024	0.0025	0.0024	0.0026	0.0026	0.0027	0.0028	0.0030	0.0030
14	0.0012	0.0015	0.0015	0.0013	0.0015	0.0016	0.0015	0.0017	0.0018	0.0017	0.0016	0.0018	0.0016	0.0015	0.0015	0.0016	0.0014	0.0011	0.0010
15	0.0011	0.0011	0.0010	0.0012	0.0011	0.0011	0.0010	0.0012	0.0012	0.0012	0.0012	0.0014	0.0014	0.0013	0.0014	0.0013	0.0012	0.0011	0.0008
16	0.0015	0.0018	0.0019	0.0014	0.0020	0.0020	0.0021	0.0022	0.0022	0.0022	0.0022	0.0022	0.0021	0.0022	0.0021	0.0019	0.0019	0.0017	0.0013
n	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Mean	0.0014	0.0015	0.0015	0.0014	0.0016	0.0016	0.0017	0.0017	0.0017	0.0017	0.0018	0.0018	0.0018	0.0018	0.0018	0.0017	0.0016	0.0015	0.0014
Median	0.0012	0.0014	0.0014	0.0013	0.0015	0.0015	0.0015	0.0016	0.0015	0.0016	0.0016	0.0017	0.0016	0.0014	0.0015	0.0015	0.0013	0.0011	0.0010
σ	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0006	0.0006	0.0006	0.0006	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009	0.0010
Min.	0.0007	0.0007	0.0009	0.0007	0.0009	0.0009	0.0010	0.0010	0.0008	0.0009	0.0010	0.0011	0.0008	0.0009	0.0009	0.0007	0.0004	0.0004	0.0002
Max.	0.0021	0.0021	0.0024	0.0022	0.0026	0.0026	0.0026	0.0026	0.0028	0.0029	0.0031	0.0032	0.0033	0.0034	0.0035	0.0034	0.0035	0.0034	0.0034

DATA SET 2: 85°C; 1000 mA

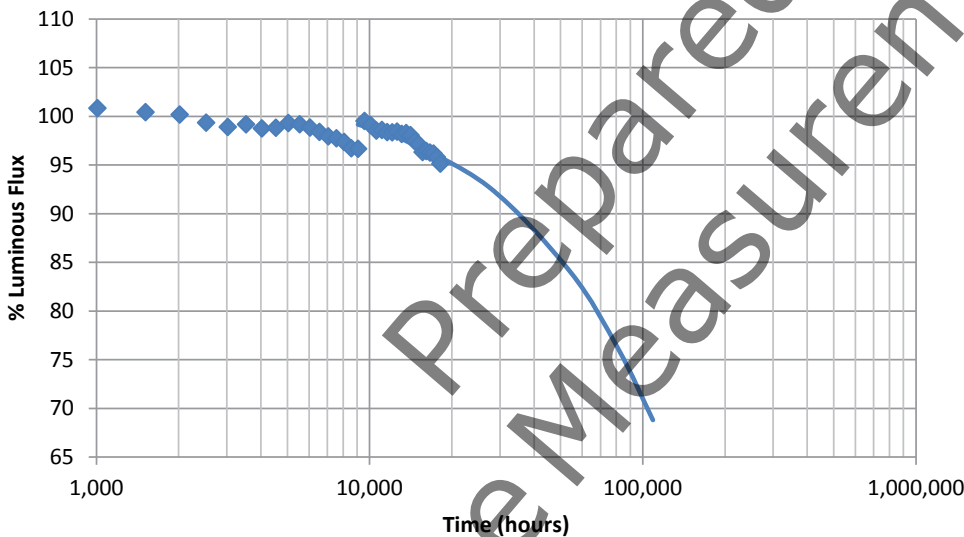
LED Package Series	XLamp XT-E White LEDs (Series: XTEAWT) This LM-80 report is applicable to the following order codes: XTEAWT-xx-xxxx-xxxxxxxxxx
Tested Model Number	XTEAWT-00-0000-00000LBE7
Drive Current [I _F]	1000 mA
Testing Initiation Date	November 16, 2011
Case Temperature [T _S]	85°C
Ambient Temperature [T _A]	85°C
Failures observed	None

Projection Generated By Cree’s Internal TM-21 Calculator:

Test duration	18,144 hours
Test duration used for projection	t=9,072 to t=18,144
α	3.660E-06
β	1.025E+00
Calculated Lifetime	L70(18k) = 104,000 hours
Reported Lifetime	L70(18k) = 104,000 hours

LM-80 Data For The Official TM-21 Calculator*

Time (hours)	Lumen Maintenance
0	100.0000%
9072	96.6660%
9576	99.5220%
10080	99.1020%
10584	98.5320%
11088	98.5980%
11592	98.3780%
12096	98.3560%
12600	98.4310%
13104	98.1890%
13608	98.2780%
14112	98.0670%
14616	97.4580%
15120	97.1270%
15624	96.3310%
16128	96.4320%
16632	96.2750%
17136	96.1760%
17640	95.8000%
18144	95.1360%



* <http://www.energystar.gov/TM-21calculator>

Suggestion for exporting the LM-80 data:

1. Copy above table from PDF & paste into Microsoft Word.
2. Copy table out of Word & paste into Microsoft Excel (Match destination formatting)

Note: Data points t=168 hr through t=8568 hr are intentionally excluded from this table since the ENERGY STAR tool has a 20 data point input limit. Per TM-21 methodology, data points t=168 hr to t=8568 hr would be excluded, so the projection is unaffected.

DATA SET 2: 85°C; 1000 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)																
	LF (lm)	V _f (V)	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048	6552	7056	7560	8064	8568
1	253.1	3.39	2912	3000	98.8	99.7	98.5	97.8	98.1	97.1	96.6	97.3	97.6	97.2	97.0	96.7	96.3	96.8	96.1	95.7	95.2
2	248.1	3.37	3074	3000	97.9	100.2	97.9	98.5	98.0	96.3	96.1	97.0	98.0	97.5	97.9	97.4	96.4	97.1	95.9	94.8	95.3
3	245.8	3.41	2981	3000	99.6	100.4	98.9	98.0	98.1	96.6	96.1	96.7	96.6	96.8	97.1	96.4	95.1	95.8	94.6	94.2	93.8
4	248.4	3.41	2880	3000	99.2	101.4	100.5	100.4	98.6	98.8	98.7	98.0	98.5	98.5	97.4	97.4	96.3	95.5	96.1	95.6	97.1
5	249.4	3.38	3009	3000	98.3	99.6	99.9	98.9	97.7	96.8	97.5	96.9	97.3	97.6	96.7	97.0	96.6	96.0	96.5	95.9	95.9
6	255.6	3.39	3017	3000	99.7	98.9	99.3	98.7	97.6	97.5	97.4	96.9	97.8	97.7	97.0	97.2	95.9	96.1	96.0	95.9	95.7
7	262.3	3.37	2990	3000	98.9	101.0	98.2	99.3	99.2	97.3	97.5	98.1	98.4	98.2	98.1	97.7	97.1	97.8	97.1	96.6	96.5
8	251.9	3.39	2873	3000	98.6	101.9	98.7	99.3	99.0	98.2	98.0	98.5	98.7	98.4	98.8	98.3	97.0	97.9	96.0	95.8	95.7
9	240.6	3.45	3015	3000	100.9	101.7	101.4	101.1	99.6	100.4	100.9	99.4	98.5	100.4	100.1	99.0	100.5	98.1	97.4	97.7	96.9
10	248.1	3.35	3106	3000	101.8	102.1	102.0	101.7	100.1	100.6	101.9	100.9	99.5	101.7	101.5	100.8	101.6	99.9	99.3	99.3	98.3
11	266.6	3.33	3089	3000	100.4	100.4	101.4	101.3	100.0	99.9	100.2	99.9	98.8	100.6	100.6	100.3	99.5	99.4	99.1	98.8	96.4
12	247.7	3.36	3149	3000	100.2	102.0	101.8	101.9	100.0	100.4	101.6	100.5	99.0	101.1	100.8	100.1	100.9	99.2	98.9	98.8	96.0
13	253.8	3.37	3117	3000	100.3	100.4	101.5	101.2	99.9	99.4	100.2	100.1	99.5	100.7	100.6	100.3	99.6	99.6	99.3	99.0	96.7
14	251.1	3.37	3111	3000	100.9	101.8	102.1	102.1	101.7	101.9	102.3	102.2	100.5	102.2	102.2	101.4	101.7	100.5	100.5	100.1	97.3
15	257.6	3.36	3183	3000	101.0	101.6	101.5	101.9	100.9	100.7	101.2	101.0	100.4	101.4	101.6	100.9	100.3	100.3	100.0	100.0	97.6
16	256.9	3.47	3026	3000	99.8	100.2	100.7	100.7	99.3	99.8	100.1	98.3	99.4	99.8	99.5	99.4	99.3	98.1	97.6	97.8	97.7
17	269.4	3.33	3025	3000	98.3	99.2	100.2	99.6	98.8	99.4	99.2	98.6	99.1	99.4	99.5	99.3	98.5	97.3	98.3	98.0	97.7
18	255.9	3.34	3012	3000	99.2	101.7	101.5	101.4	99.9	99.1	101.1	99.1	99.8	100.7	100.4	100.1	100.2	98.6	98.9	98.7	98.3
19	254.4	3.38	3131	3000	99.0	99.9	100.4	99.5	98.8	99.5	99.1	98.7	99.4	99.4	99.5	99.3	98.6	98.1	98.5	98.0	97.7
20	257.5	3.36	3105	3000	100.2	102.1	101.7	100.9	99.9	100.0	99.6	100.3	100.3	100.4	100.2	99.5	98.9	99.3	98.7	98.3	96.9
21	252.2	3.37	3198	3000	100.6	102.2	101.8	101.6	101.7	100.8	101.5	100.6	101.0	101.5	101.8	101.4	101.5	100.1	100.6	100.0	99.7
22	261.2	3.35	3110	3000	99.8	99.7	99.6	99.1	98.3	98.8	98.5	97.9	98.8	98.8	99.0	98.8	98.2	97.8	98.1	97.6	97.3
23	245.9	3.44	2898	3000	98.7	101.5	100.1	99.9	100.1	97.3	96.6	97.5	97.2	97.0	97.3	96.6	95.7	96.3	96.0	95.2	94.3
24	233.0	3.34	2875	3000	98.6	99.4	99.1	98.4	98.3	97.3	97.4	96.9	97.6	96.6	96.5	96.0	95.9	96.3	95.9	95.4	95.0
25	244.4	3.39	2942	3000	99.0	102.0	102.0	101.3	100.0	98.6	100.1	98.3	98.7	99.3	98.3	98.8	97.8	97.0	97.5	96.7	97.0
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	252.4	3.38			99.6	100.8	100.4	100.2	99.3	98.9	99.2	98.8	98.8	99.3	99.2	98.8	98.4	97.9	97.7	97.4	96.7
Median	252.2	3.37			99.6	101.0	100.5	100.4	99.3	99.1	99.2	98.5	98.8	99.4	99.5	99.0	98.5	97.9	97.6	97.7	96.9
σ	8.0	0.03			1.01	1.06	1.33	1.35	1.14	1.55	1.93	1.53	1.11	1.70	1.77	1.67	2.08	1.51	1.67	1.78	1.40
Min.	233.0	3.33			97.9	98.9	97.9	97.8	97.6	96.3	96.1	96.7	96.6	96.6	96.5	96.0	95.1	95.5	94.6	94.2	93.8
Max.	269.4	3.47			101.8	102.2	102.1	102.1	101.7	101.9	102.3	102.2	101.0	102.2	102.2	101.4	101.7	100.5	100.6	100.1	99.7

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')																	
	CCx	CCy	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048	6552	7056	7560	8064	8568	
1	0.4424	0.4039	2912	3000	0.0007	0.0011	0.0010	0.0011	0.0012	0.0011	0.0012	0.0012	0.0013	0.0013	0.0014	0.0014	0.0014	0.0015	0.0015	0.0016	0.0016	0.0017
2	0.4295	0.3967	3074	3000	0.0008	0.0013	0.0010	0.0014	0.0014	0.0014	0.0014	0.0014	0.0015	0.0015	0.0014	0.0017	0.0015	0.0017	0.0019	0.0018	0.0018	0.0020
3	0.4370	0.4014	2981	3000	0.0006	0.0013	0.0012	0.0013	0.0013	0.0011	0.0011	0.0014	0.0012	0.0015	0.0015	0.0014	0.0014	0.0016	0.0016	0.0016	0.0016	0.0017
4	0.4443	0.4038	2880	3000	0.0008	0.0014	0.0014	0.0016	0.0015	0.0016	0.0016	0.0016	0.0015	0.0017	0.0019	0.0020	0.0020	0.0019	0.0021	0.0022	0.0024	0.0024
5	0.4334	0.3971	3009	3000	0.0006	0.0010	0.0010	0.0012	0.0012	0.0012	0.0013	0.0014	0.0013	0.0015	0.0017	0.0015	0.0017	0.0016	0.0018	0.0017	0.0018	0.0018
6	0.4334	0.3982	3017	3000	0.0007	0.0012	0.0012	0.0014	0.0014	0.0015	0.0015	0.0015	0.0015	0.0016	0.0018	0.0017	0.0017	0.0019	0.0020	0.0021	0.0021	0.0021
7	0.4322	0.3925	2990	3000	0.0010	0.0015	0.0012	0.0017	0.0016	0.0015	0.0016	0.0019	0.0016	0.0015	0.0018	0.0018	0.0019	0.0021	0.0022	0.0021	0.0021	0.0021
8	0.4437	0.4018	2873	3000	0.0007	0.0014	0.0007	0.0012	0.0012	0.0011	0.0012	0.0015	0.0013	0.0013	0.0016	0.0015	0.0015	0.0017	0.0016	0.0017	0.0017	0.0017
9	0.4362	0.4037	3015	3000	0.0007	0.0012	0.0012	0.0014	0.0013	0.0015	0.0017	0.0016	0.0017	0.0017	0.0018	0.0018	0.0022	0.0019	0.0019	0.0021	0.0019	
10	0.4281	0.3973	3106	3000	0.0006	0.0009	0.0008	0.0009	0.0009	0.0010	0.0011	0.0012	0.0012	0.0011	0.0012	0.0012	0.0013	0.0013	0.0012	0.0011	0.0012	0.0012
11	0.4286	0.3965	3089	3000	0.0005	0.0005	0.0008	0.0009	0.0009	0.0010	0.0009	0.0011	0.0010	0.0010	0.0011	0.0011	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011
12	0.4240	0.3934	3149	3000	0.0005	0.0008	0.0008	0.0010	0.0010	0.0011	0.0011	0.0012	0.0013	0.0012	0.0012	0.0013	0.0014	0.0014	0.0013	0.0013	0.0013	0.0013
13	0.4269	0.3960	3117	3000	0.0004	0.0006	0.0008	0.0010	0.0009	0.0009	0.0010	0.0010	0.0012	0.0012	0.0012	0.0013	0.0014	0.0014	0.0014	0.0012	0.0013	0.0013
14	0.4293	0.4005	3111	3000	0.0004	0.0008	0.0008	0.0009	0.0009	0.0011	0.0011	0.0012	0.0013	0.0012	0.0012	0.0013	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
15	0.4242	0.3979	3183	3000	0.0004	0.0008	0.0007	0.0009	0.0008	0.0009	0.0009	0.0010	0.0011	0.0010	0.0010	0.0010	0.0013	0.0012	0.0010	0.0012	0.0012	0.0012
16	0.4330	0.3984	3026	3000	0.0003	0.0002	0.0007	0.0008	0.0007	0.0008	0.0009	0.0009	0.0011	0.0009	0.0010	0.0010	0.0012	0.0011	0.0013	0.0014	0.0013	0.0013
17	0.4345	0.4015	3025	3000	0.0005	0.0005	0.0009	0.0009	0.0009	0.0010	0.0010	0.0012	0.0011	0.0012	0.0010	0.0012	0.0013	0.0010	0.0013	0.0014	0.0014	0.0014
18	0.4341	0.3991	3012	3000	0.0004	0.0007	0.0009	0.0009	0.0008	0.0006	0.0010	0.0010	0.0011	0.0010	0.0010	0.0012	0.0011	0.0012	0.0012	0.0013	0.0013	0.0013
19	0.4252	0.3938	3131	3000	0.0005	0.0008	0.0012	0.0012	0.0011	0.0012	0.0013	0.0015	0.0015	0.0014	0.0014	0.0015	0.0016	0.0015	0.0015	0.0017	0.0017	0.0017
20	0.4298	0.4009	3105	3000	0.0006	0.0011	0.0011	0.0012	0.0011	0.0011	0.0013	0.0014	0.0015	0.0014	0.0014	0.0014	0.0015	0.0015	0.0017	0.0017	0.0018	0.0018
21	0.4249	0.4012	3198	3000	0.0005	0.0007	0.0009	0.0008	0.0007	0.0005	0.0008	0.0010	0.0009	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011
22	0.4281	0.3978	3110	3000	0.0004	0.0005	0.0008															

DATA SET 2: 85°C; 1000 mA

Lamp #	9072	9576	10080	10584	11088	11592	12096	12600	13104	13608	14112	14616	15120	15624	16128	16632	17136	17640	18144
1	95.3	97.3	97.6	97.0	97.2	97.1	96.9	96.7	96.2	96.0	96.4	95.9	95.5	94.2	94.8	94.2	94.0	93.6	93.3
2	94.4	97.2	97.5	96.4	97.0	96.3	96.2	95.5	95.1	95.3	96.0	95.6	93.5	92.4	94.4	92.8	92.8	93.0	92.0
3	93.5	96.5	96.4	95.6	95.9	95.6	95.7	94.9	94.6	95.0	95.7	95.2	93.4	92.2	94.3	92.3	92.2	92.0	91.3
4	94.5	98.4	97.1	96.0	97.7	96.2	96.4	95.4	95.3	95.2	96.2	95.4	93.0	92.4	94.0	92.6	92.2	92.2	90.8
5	95.6	97.8	97.8	97.3	97.5	97.4	97.4	97.0	96.7	96.2	96.5	96.2	95.7	94.2	94.9	94.7	94.1	93.9	93.8
6	95.2	97.3	97.5	96.8	97.2	96.9	96.7	96.5	96.2	96.2	96.3	96.1	95.4	94.1	94.6	93.8	93.6	93.2	92.9
7	96.2	98.2	98.4	98.0	98.1	98.1	98.0	97.8	97.3	97.1	97.1	96.9	96.2	94.9	95.6	94.7	94.4	93.9	93.9
8	95.3	98.0	98.2	96.3	97.5	97.0	97.3	96.4	95.9	96.4	97.3	96.7	94.6	93.4	95.4	93.7	93.6	93.9	92.9
9	96.5	100.5	100.2	99.4	98.1	97.9	98.4	97.7	97.1	97.0	96.2	94.6	93.8	94.5	93.2	94.2	93.9	94.5	93.8
10	98.0	101.8	101.3	100.8	100.1	99.8	100.2	100.4	100.8	101.0	101.3	99.3	98.9	99.4	97.4	99.4	99.8	100.3	98.3
11	98.2	100.3	100.7	98.8	100.5	99.7	100.3	100.2	100.5	100.2	99.7	99.7	98.9	98.8	98.8	98.2	98.1	97.6	96.8
12	97.7	101.1	100.6	99.9	99.3	99.5	99.8	100.3	100.2	100.1	100.2	98.8	98.3	98.9	97.4	98.5	99.1	99.3	97.6
13	98.3	100.0	100.8	99.5	100.5	100.0	100.4	100.6	100.3	100.3	99.8	100.1	99.3	98.7	98.9	98.0	97.9	97.5	97.0
14	99.0	102.1	101.9	101.2	100.4	100.9	101.1	101.1	101.3	101.2	101.1	99.9	99.8	100.7	100.1	100.1	101.0	100.9	99.4
15	99.3	101.5	101.7	99.4	101.5	101.2	101.5	101.5	101.8	101.5	100.4	101.3	101.0	100.9	101.5	100.6	100.8	100.5	99.9
16	97.4	100.7	98.7	100.3	98.1	99.0	98.2	99.4	99.8	98.7	98.8	97.6	99.5	97.2	96.1	98.1	97.7	96.1	97.2
17	97.5	100.3	99.8	100.1	99.0	99.1	98.8	99.9	99.3	100.2	98.9	98.4	98.8	97.9	97.0	97.1	96.8	95.9	95.5
18	97.7	101.6	99.3	100.3	99.0	99.5	98.7	100.2	99.8	100.1	99.0	97.8	99.8	97.8	96.6	98.1	98.3	97.0	96.7
19	97.5	100.3	99.8	99.8	98.9	99.0	98.8	100.0	99.4	100.3	98.5	98.2	98.8	97.9	97.3	97.6	97.5	96.4	96.0
20	98.1	100.9	100.4	100.6	99.8	99.5	99.3	100.6	100.0	101.2	99.3	99.1	100.0	99.2	98.7	99.0	98.1	98.2	97.5
21	99.0	102.8	100.7	101.4	101.0	100.7	99.8	101.1	100.5	101.4	100.0	99.1	101.0	99.7	98.8	100.2	100.6	99.4	99.0
22	97.0	99.7	99.4	99.4	99.0	98.6	98.4	99.7	99.1	100.0	98.5	98.1	99.3	98.4	98.0	98.4	98.5	97.5	97.0
23	94.4	97.1	96.8	95.4	96.2	96.2	96.4	95.3	95.4	95.1	95.9	95.4	94.4	93.3	94.9	93.8	93.3	91.1	92.4
24	95.0	96.8	97.0	96.6	96.7	96.5	96.3	96.1	95.7	95.3	95.7	95.1	94.3	93.5	94.1	93.6	92.8	92.5	92.2
25	96.0	99.9	97.8	96.9	98.8	97.6	97.7	96.3	96.5	96.0	96.7	96.3	95.1	93.7	93.8	93.2	92.4	92.5	91.7
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	96.7	99.5	99.1	98.5	98.6	98.4	98.4	98.4	98.2	98.3	98.1	97.5	97.1	96.3	96.4	96.3	96.2	95.8	95.1
Median	97.0	100.0	99.3	99.4	98.8	98.6	98.4	98.4	99.1	98.7	98.5	97.6	98.3	97.2	96.1	97.1	96.8	95.9	95.5
σ	1.67	1.88	1.67	1.93	1.54	1.64	1.65	2.22	2.29	2.46	1.84	1.87	2.66	2.88	2.21	2.75	3.05	2.88	2.79
Min.	93.5	96.5	96.4	95.4	95.9	95.6	95.7	94.9	94.6	95.0	95.7	94.6	93.0	92.2	93.2	92.3	92.2	92.0	90.8
Max.	99.3	102.8	101.9	101.4	101.5	101.2	101.5	101.5	101.8	101.5	101.3	101.3	101.0	100.9	101.5	100.6	101.0	100.9	99.9

Lamp #	9072	9576	10080	10584	11088	11592	12096	12600	13104	13608	14112	14616	15120	15624	16128	16632	17136	17640	18144
1	0.0018	0.0017	0.0018	0.0019	0.0019	0.0021	0.0020	0.0025	0.0023	0.0026	0.0026	0.0030	0.0029	0.0027	0.0027	0.0025	0.0023	0.0019	0.0018
2	0.0021	0.0021	0.0022	0.0022	0.0023	0.0023	0.0025	0.0025	0.0025	0.0028	0.0029	0.0031	0.0031	0.0033	0.0032	0.0033	0.0032	0.0030	0.0029
3	0.0017	0.0020	0.0020	0.0019	0.0019	0.0020	0.0021	0.0022	0.0021	0.0029	0.0030	0.0031	0.0029	0.0029	0.0031	0.0030	0.0025	0.0025	0.0023
4	0.0023	0.0026	0.0025	0.0024	0.0028	0.0026	0.0027	0.0032	0.0032	0.0034	0.0035	0.0038	0.0035	0.0035	0.0036	0.0035	0.0032	0.0031	0.0026
5	0.0019	0.0021	0.0020	0.0020	0.0021	0.0021	0.0021	0.0022	0.0020	0.0021	0.0020	0.0021	0.0020	0.0018	0.0019	0.0018	0.0016	0.0015	0.0014
6	0.0021	0.0023	0.0023	0.0025	0.0025	0.0026	0.0026	0.0026	0.0025	0.0030	0.0029	0.0032	0.0031	0.0031	0.0032	0.0030	0.0028	0.0025	0.0024
7	0.0025	0.0026	0.0025	0.0025	0.0029	0.0028	0.0029	0.0032	0.0030	0.0036	0.0036	0.0038	0.0037	0.0037	0.0037	0.0032	0.0029	0.0026	0.0023
8	0.0019	0.0021	0.0021	0.0021	0.0020	0.0022	0.0023	0.0025	0.0025	0.0031	0.0032	0.0035	0.0033	0.0036	0.0036	0.0035	0.0033	0.0033	0.0030
9	0.0021	0.0025	0.0024	0.0021	0.0024	0.0023	0.0024	0.0027	0.0028	0.0028	0.0029	0.0028	0.0026	0.0028	0.0021	0.0025	0.0027	0.0028	0.0025
10	0.0012	0.0013	0.0015	0.0014	0.0016	0.0016	0.0015	0.0020	0.0019	0.0020	0.0022	0.0023	0.0024	0.0024	0.0024	0.0024	0.0026	0.0028	0.0029
11	0.0013	0.0015	0.0015	0.0010	0.0016	0.0016	0.0017	0.0019	0.0019	0.0020	0.0023	0.0023	0.0023	0.0027	0.0028	0.0028	0.0032	0.0032	0.0031
12	0.0017	0.0017	0.0019	0.0016	0.0020	0.0019	0.0019	0.0021	0.0021	0.0021	0.0023	0.0024	0.0024	0.0024	0.0023	0.0023	0.0025	0.0025	0.0024
13	0.0015	0.0018	0.0019	0.0013	0.0018	0.0020	0.0018	0.0020	0.0019	0.0021	0.0020	0.0023	0.0023	0.0025	0.0027	0.0026	0.0027	0.0026	0.0024
14	0.0016	0.0017	0.0018	0.0014	0.0017	0.0018	0.0018	0.0018	0.0018	0.0019	0.0020	0.0021	0.0021	0.0022	0.0023	0.0022	0.0024	0.0026	0.0027
15	0.0014	0.0017	0.0016	0.0010	0.0016	0.0016	0.0016	0.0016	0.0017	0.0016	0.0019	0.0019	0.0018	0.0021	0.0021	0.0021	0.0023	0.0024	0.0025
16	0.0013	0.0014	0.0016	0.0015	0.0013	0.0016	0.0017	0.0017	0.0018	0.0020	0.0022	0.0024	0.0024	0.0026	0.0026	0.0027	0.0027	0.0028	0.0030
17	0.0014	0.0018	0.0016	0.0017	0.0014	0.0017	0.0020	0.0019	0.0022	0.0022	0.0024	0.0024	0.0027	0.0029	0.0029	0.0029	0.0027	0.0027	0.0027
18	0.0014	0.0016	0.0016	0.0016	0.0013	0.0017	0.0018	0.0019	0.0019	0.0020	0.0021	0.0021	0.0022	0.0023	0.0022	0.0021	0.0021	0.0020	0.0022
19	0.0019	0.0020	0.0020	0.0018	0.0017	0.0019	0.0023	0.0025	0.0026	0.0024	0.0025	0.0025	0.0027	0.0028	0.0030	0.0030	0.0031	0.0030	0.0030
20	0.0018	0.0020	0.0020	0.0020	0.0018	0.0020	0.0024	0.0025	0.0024	0.0025	0.0026	0.0027	0.0027	0.0029	0.0032	0.0031	0.0031	0.0033	0.0033
21	0.0012	0.0013	0.0014	0.0013	0.0014	0.0014	0.0015	0.0015	0.0015	0.0015	0.0018	0.0019	0.0018	0.0019	0.0021	0.0022	0.0021	0.0020	0.0021
22	0.0012	0.0014	0.0014	0.0013	0.0010	0.0013	0.0017	0.0016	0.0017	0.0016	0.0018	0.0017	0.0019	0.0020	0.0021	0.0021	0.0021	0.0022	0.0023
23	0.0024	0.0025	0.0026	0.0026	0.0026	0.0028	0.0027	0.0027	0.0026	0.0027	0.0027	0.0027	0.0027	0.0025	0.0025	0.0023	0.0022	0.0020	0.0021
24	0.0019	0.0021	0.0022	0.0021	0.0023	0.0023	0.0023	0.0024	0.0022	0.0025	0.0024	0.0023	0.0023	0.0022	0.0020	0.0019	0.0016	0.0016	0.0014
25	0.0025	0.0026	0.0026	0.0025	0.0026	0.0026	0.0026	0.0027	0.0025	0.0026	0.0025	0.0025	0.0025	0.0024	0.0019	0.0018	0.0017	0.0016	0.0015
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	0.0018	0.0019	0.0020	0.0018	0.0019	0.0020	0.0021	0.0023	0.0022	0.0024	0.0025	0.0026	0.0026	0.0027	0.0027	0.0026	0.0025	0.0025	0.0024
Median	0.0018	0.0020	0.0020	0.0019	0.0019	0.0020	0.0021	0.0											

DATA SET 4+: 105°C; 1000 mA

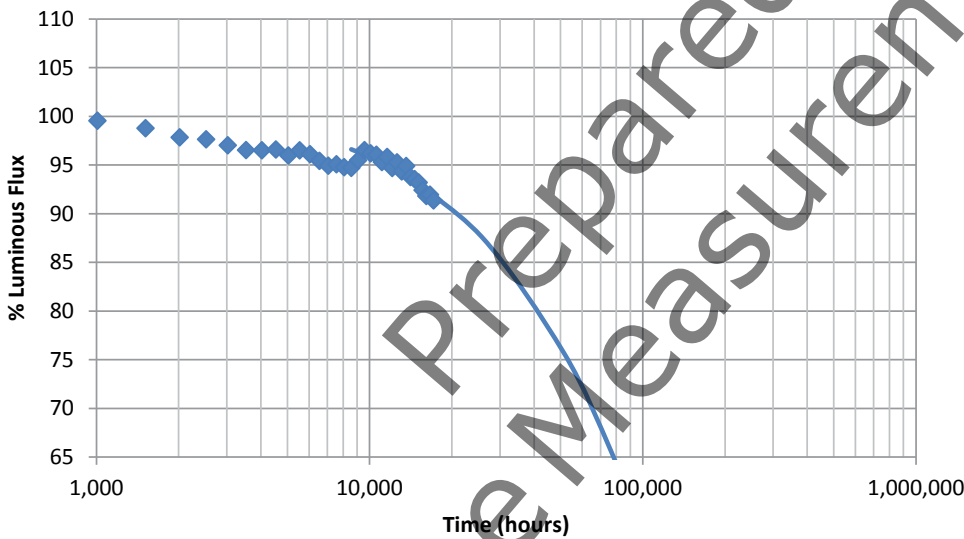
LED Package Series	XLamp XT-E White LEDs (Series: XTEAWT) This LM-80 report is applicable to the following order codes: XTEAWT-xx-xxxx-xxxxxxxxxx
Tested Model Number	XTEAWT-00-0000-00000LBE7
Drive Current [I _F]	1000 mA
Testing Initiation Date	December 19, 2011
Case Temperature [T _s]	105°C
Ambient Temperature [T _A]	105°C
Failures observed	None

Projection Generated By Cree’s Internal TM-21 Calculator:

Test duration	17,136 hours
Test duration used for projection	t=8,568 to t=17,136
α	5.688E-06
β	1.014E+00
Calculated Lifetime	L70(17k) = 65,200 hours
Reported Lifetime	L70(17k) = 65,200 hours

LM-80 Data For The Official TM-21 Calculator*

Time (hours)	Lumen Maintenance
0	100.0000%
8064	94.7770%
8568	94.7010%
9072	95.4830%
9576	96.5230%
10080	96.1960%
10584	96.0510%
11088	95.3060%
11592	95.8250%
12096	94.6900%
12600	95.2700%
13104	94.3400%
13608	94.8960%
14112	93.7620%
14616	93.5470%
15120	93.2040%
15624	92.4210%
16128	91.8200%
16632	91.9510%
17136	91.3650%



* <http://www.energystar.gov/TM-21calculator>

Suggestion for exporting the LM-80 data:

1. Copy above table from PDF & paste into Microsoft Word.
2. Copy table out of Word & paste into Microsoft Excel (Match destination formatting)

Note: Data points t=168 hr through t=7560 hr are intentionally excluded from this table since the ENERGY STAR tool has a 20 data point input limit. Per TM-21 methodology, data points t=168 hr to t=7560 hr would be excluded, so the projection is unaffected.

DATA SET 4+: 105°C; 1000 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)															
	LF (lm)	V _F (V)	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048	6552	7056	7560	8064
1	251.6	3.36	2983	3000	100.1	99.1	97.9	96.1	95.8	95.7	95.6	95.5	95.6	95.1	95.5	95.3	94.6	94.2	94.6	93.4
2	247.9	3.39	2999	3000	99.4	100.0	100.0	100.0	98.5	97.9	98.8	98.1	97.9	97.5	97.8	97.6	96.5	96.2	96.6	95.1
3	242.0	3.37	2961	3000	99.0	99.0	98.0	97.0	96.3	95.6	95.7	95.7	95.5	95.0	95.6	95.4	94.8	94.7	94.6	93.4
4	235.5	3.42	3017	3000	99.5	99.6	99.0	97.6	97.2	96.7	96.4	96.1	96.2	95.2	96.4	95.5	95.1	94.9	94.8	93.7
5	239.5	3.40	3046	3000	100.0	99.3	97.9	97.3	96.2	95.8	96.1	95.4	95.4	95.2	95.0	94.7	93.9	93.3	93.9	93.0
6	234.8	3.34	3083	3000	99.8	99.9	99.2	98.6	97.6	97.1	96.7	96.5	96.6	96.1	96.5	95.9	95.6	95.6	95.4	94.1
7	241.2	3.42	2973	3000	99.6	99.9	98.9	99.3	98.4	98.0	97.2	96.6	97.1	97.2	96.5	96.4	95.6	95.2	95.8	93.7
8	262.1	3.42	3040	3000	100.5	100.4	100.4	98.9	99.9	98.9	99.0	99.1	98.7	97.6	99.3	99.3	97.7	97.4	97.6	97.8
9	259.7	3.34	3048	3000	99.6	99.9	99.0	97.1	97.7	96.7	96.5	96.3	96.7	95.9	96.9	96.2	95.7	95.1	95.1	95.0
10	245.8	3.33	2919	3000	99.8	100.1	99.2	97.9	98.8	97.6	96.7	97.4	97.2	96.2	98.0	97.8	96.3	96.0	96.1	96.3
11	259.5	3.39	3068	3000	98.6	98.0	97.9	96.5	96.3	96.0	95.6	95.6	95.1	95.2	95.2	94.7	94.1	93.6	93.9	93.8
12	262.1	3.43	3074	3000	100.2	99.8	99.1	97.4	97.5	97.0	96.3	96.3	96.7	95.9	96.7	96.2	95.7	95.3	95.4	95.4
13	241.0	3.37	3158	3000	99.8	100.3	99.2	97.8	98.2	97.5	96.4	96.3	96.8	96.0	96.8	96.2	95.6	95.1	95.3	95.3
14	236.2	3.40	3017	3000	99.9	100.4	100.1	99.3	99.0	98.8	96.4	97.2	97.3	96.3	97.5	97.1	96.1	95.9	96.3	96.4
15	235.5	3.39	2935	3000	100.1	98.8	98.3	97.2	97.3	96.7	95.0	95.1	95.5	94.9	95.5	94.7	94.4	93.8	93.7	93.7
16	251.2	3.42	3012	3000	100.6	100.2	99.1	98.1	98.2	97.4	95.1	95.7	96.1	95.1	96.0	95.2	94.4	94.3	94.5	94.5
17	279.2	3.42	3112	3000	99.4	98.3	97.0	97.3	96.8	96.3	96.8	97.1	97.0	96.4	96.0	95.7	95.6	94.0	93.8	95.6
18	280.0	3.41	3055	3000	100.7	98.8	97.9	97.9	97.7	96.8	97.3	97.3	97.2	96.9	96.1	96.1	95.9	94.2	94.0	95.8
n	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Mean	250.3	3.39			99.8	99.5	98.8	97.8	97.6	97.0	96.5	96.5	96.6	96.0	96.5	96.1	95.4	94.9	95.1	94.8
Median	246.8	3.40			99.8	99.8	99.0	97.7	97.6	96.9	96.4	96.3	96.7	96.0	96.4	96.0	95.6	95.0	94.9	94.7
σ	14.2	0.03			0.53	0.70	0.91	1.03	1.10	0.98	1.08	1.03	0.95	0.87	1.11	1.21	0.94	1.05	1.09	1.30
Min.	234.8	3.33			98.6	98.0	97.0	96.1	95.8	95.6	95.0	95.1	95.1	94.9	95.0	94.7	93.9	93.3	93.7	93.0
Max.	280.0	3.43			100.7	100.4	100.4	100.0	99.9	98.9	99.0	99.1	98.7	97.6	99.3	99.3	97.7	97.4	97.6	97.8

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')															
	CCx	CCy	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048	6552	7056	7560	8064
1	0.4374	0.4025	2983	3000	0.0010	0.0014	0.0015	0.0011	0.0018	0.0020	0.0021	0.0021	0.0023	0.0018	0.0024	0.0024	0.0025	0.0026	0.0028	0.0026
2	0.4378	0.4051	2999	3000	0.0008	0.0008	0.0008	0.0010	0.0011	0.0013	0.0014	0.0013	0.0014	0.0011	0.0013	0.0015	0.0016	0.0016	0.0018	0.0021
3	0.4394	0.4038	2961	3000	0.0006	0.0010	0.0010	0.0013	0.0015	0.0017	0.0017	0.0018	0.0018	0.0014	0.0019	0.0019	0.0021	0.0022	0.0022	0.0022
4	0.4378	0.4074	3017	3000	0.0009	0.0013	0.0015	0.0016	0.0019	0.0021	0.0021	0.0022	0.0024	0.0022	0.0024	0.0025	0.0026	0.0028	0.0028	0.0029
5	0.4353	0.4055	3046	3000	0.0009	0.0006	0.0008	0.0009	0.0011	0.0014	0.0013	0.0014	0.0016	0.0014	0.0016	0.0016	0.0018	0.0018	0.0019	0.0022
6	0.4327	0.4046	3083	3000	0.0008	0.0012	0.0010	0.0012	0.0013	0.0015	0.0014	0.0016	0.0017	0.0016	0.0018	0.0018	0.0019	0.0020	0.0019	0.0021
7	0.4420	0.4107	2973	3000	0.0007	0.0005	0.0006	0.0008	0.0009	0.0010	0.0010	0.0012	0.0012	0.0013	0.0014	0.0013	0.0015	0.0015	0.0015	0.0019
8	0.4347	0.4035	3040	3000	0.0011	0.0014	0.0013	0.0014	0.0016	0.0016	0.0018	0.0019	0.0020	0.0017	0.0021	0.0022	0.0023	0.0024	0.0024	0.0024
9	0.4318	0.3985	3048	3000	0.0011	0.0017	0.0018	0.0016	0.0018	0.0021	0.0023	0.0023	0.0024	0.0023	0.0025	0.0027	0.0027	0.0028	0.0029	0.0030
10	0.4406	0.4013	2919	3000	0.0010	0.0015	0.0015	0.0017	0.0018	0.0020	0.0021	0.0024	0.0025	0.0022	0.0024	0.0028	0.0029	0.0030	0.0031	0.0032
11	0.4292	0.3952	3068	3000	0.0014	0.0016	0.0017	0.0014	0.0017	0.0018	0.0019	0.0021	0.0022	0.0020	0.0022	0.0024	0.0025	0.0026	0.0029	0.0029
12	0.4307	0.3992	3074	3000	0.0011	0.0015	0.0016	0.0014	0.0016	0.0017	0.0020	0.0022	0.0023	0.0021	0.0024	0.0026	0.0027	0.0028	0.0031	0.0032
13	0.4278	0.4030	3158	3000	0.0010	0.0011	0.0013	0.0010	0.0013	0.0014	0.0017	0.0018	0.0019	0.0017	0.0020	0.0021	0.0022	0.0022	0.0025	0.0026
14	0.4369	0.4055	3017	3000	0.0011	0.0014	0.0014	0.0015	0.0016	0.0017	0.0022	0.0024	0.0023	0.0022	0.0024	0.0026	0.0027	0.0028	0.0028	0.0029
15	0.4432	0.4083	2935	3000	0.0011	0.0012	0.0015	0.0015	0.0016	0.0019	0.0025	0.0026	0.0027	0.0026	0.0028	0.0028	0.0031	0.0030	0.0031	0.0031
16	0.4368	0.4048	3012	3000	0.0011	0.0012	0.0013	0.0016	0.0019	0.0019	0.0024	0.0024	0.0025	0.0022	0.0025	0.0026	0.0028	0.0027	0.0027	0.0027
17	0.4245	0.3901	3112	3000	0.0003	0.0005	0.0007	0.0007	0.0009	0.0010	0.0013	0.0012	0.0013	0.0013	0.0014	0.0015	0.0014	0.0016	0.0014	0.0015
18	0.4356	0.4075	3055	3000	0.0003	0.0005	0.0005	0.0006	0.0006	0.0009	0.0008	0.0010	0.0011	0.0010	0.0012	0.0012	0.0013	0.0012	0.0014	0.0017
n	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Mean					0.0009	0.0011	0.0012	0.0012	0.0014	0.0016	0.0018	0.0019	0.0020	0.0018	0.0020	0.0021	0.0023	0.0023	0.0024	0.0025
Median					0.0010	0.0012	0.0013	0.0013	0.0016	0.0017	0.0019	0.0020	0.0021	0.0018	0.0022	0.0023	0.0024	0.0025	0.0026	0.0026
σ					0.0003	0.0004	0.0004	0.0003	0.0004	0.0004	0.0005	0.0005	0.0005	0.0004	0.0005	0.0005	0.0005	0.0006	0.0006	0.0005
Min.					0.0003	0.0005	0.0005	0.0006	0.0006	0.0009	0.0008	0.0010	0.0011	0.0010	0.0012	0.0012	0.0013	0.0012	0.0014	0.0015
Max.					0.0014	0.0017	0.0018	0.0017	0.0019	0.0021	0.0025	0.0026	0.0027	0.0026	0.0028	0.0028	0.0031	0.0030	0.0031	0.0032

DATA SET 4+: 105°C; 1000 mA

Lamp #	8568	9072	9576	10080	10584	11088	11592	12096	12600	13104	13608	14112	14616	15120	15624	16128	16632	17136
1	92.9	93.9	96.0	95.8	95.3	95.0	94.9	93.8	94.7	94.5	94.2	93.6	93.4	92.6	92.1	91.9	90.9	91.2
2	93.9	96.1	97.1	96.8	96.6	96.0	96.6	94.3	95.4	95.6	95.5	94.6	94.5	93.7	91.8	91.7	92.1	92.4
3	93.1	93.6	96.1	95.9	95.4	95.1	95.1	94.2	95.2	94.5	94.1	93.6	93.3	92.4	92.1	91.8	90.5	90.8
4	93.4	93.9	96.3	96.2	95.9	95.3	95.2	94.7	95.2	94.4	94.4	93.6	93.3	92.4	92.0	91.8	91.1	90.9
5	93.0	93.1	94.8	94.6	94.3	93.5	94.2	92.3	93.4	93.2	93.0	92.4	92.4	91.6	90.0	90.0	90.3	90.7
6	93.8	94.3	96.8	96.7	96.1	95.6	95.3	94.7	95.5	94.8	94.9	94.2	94.1	93.3	93.1	92.9	92.3	91.7
7	93.1	93.9	96.1	96.0	95.2	94.6	95.4	93.7	94.4	93.5	93.0	92.9	92.7	92.1	91.7	91.3	91.3	91.2
8	98.1	97.8	99.5	97.5	98.8	97.2	98.3	97.2	96.7	95.8	97.9	95.9	97.7	96.4	94.7	93.9	95.5	94.2
9	94.9	96.8	96.7	96.6	96.6	95.9	96.7	95.5	96.2	94.8	95.4	94.4	94.0	93.9	93.2	92.3	92.4	91.8
10	96.5	96.2	97.2	96.3	97.1	95.6	96.5	95.5	95.4	93.9	96.3	94.4	95.4	94.5	93.1	91.9	93.9	92.4
11	93.7	95.6	95.7	95.7	95.5	95.0	95.5	94.5	95.3	94.1	94.8	93.5	92.8	93.1	92.7	91.5	91.8	91.3
12	94.6	96.8	96.8	96.8	96.5	95.9	96.6	95.3	96.1	94.9	95.3	94.1	93.2	93.4	92.8	92.1	92.1	91.2
13	94.7	96.6	96.4	96.7	96.4	95.6	96.1	95.0	95.6	94.3	94.8	93.7	92.6	92.7	92.2	91.1	91.3	90.5
14	95.9	96.2	97.2	96.4	96.8	95.5	96.5	95.2	95.3	94.3	96.2	94.0	93.4	93.5	92.3	91.8	92.9	90.8
15	93.4	95.1	94.6	94.6	94.2	93.7	94.2	92.3	93.6	91.9	92.7	91.4	90.4	90.8	89.3	89.3	88.1	88.1
16	94.2	94.4	95.4	94.9	95.4	94.3	95.2	93.6	94.0	92.3	94.5	92.4	91.6	92.0	90.9	90.3	91.2	89.2
17	97.6	97.0	97.2	96.8	96.3	95.7	96.1	96.0	96.0	95.3	95.2	94.1	94.0	94.1	93.4	92.7	92.3	92.0
18	97.9	97.2	97.4	97.1	96.5	96.0	96.4	96.7	96.7	95.9	95.9	95.0	95.0	95.2	95.0	94.4	93.8	94.2
n	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Mean	94.7	95.5	96.5	96.2	96.1	95.3	95.8	94.7	95.3	94.3	94.9	93.8	93.5	93.2	92.4	91.8	92.0	91.4
Median	94.0	95.8	96.5	96.4	96.2	95.6	95.8	94.7	95.4	94.5	94.9	93.8	93.3	93.2	92.3	91.8	92.0	91.2
σ	1.76	1.47	1.11	0.82	1.07	0.89	1.01	1.31	0.95	1.09	1.28	1.04	1.58	1.35	1.29	1.25	1.46	1.47
Min.	92.9	93.1	94.6	94.6	94.2	93.5	94.2	92.3	93.4	91.9	92.7	91.4	90.4	90.8	90.0	89.3	89.3	88.1
Max.	98.1	97.8	99.5	97.5	98.8	97.2	98.3	97.2	96.7	95.8	97.9	95.9	97.7	96.4	94.7	93.9	95.5	94.2

Lamp #	8568	9072	9576	10080	10584	11088	11592	12096	12600	13104	13608	14112	14616	15120	15624	16128	16632	17136
1	0.0028	0.0030	0.0029	0.0030	0.0032	0.0032	0.0033	0.0035	0.0036	0.0038	0.0037	0.0038	0.0037	0.0036	0.0035	0.0033	0.0031	0.0029
2	0.0017	0.0019	0.0019	0.0021	0.0023	0.0022	0.0021	0.0024	0.0024	0.0023	0.0022	0.0022	0.0021	0.0019	0.0017	0.0016	0.0014	0.0015
3	0.0023	0.0023	0.0023	0.0025	0.0026	0.0027	0.0026	0.0030	0.0031	0.0029	0.0027	0.0028	0.0027	0.0026	0.0025	0.0023	0.0019	0.0018
4	0.0029	0.0029	0.0028	0.0030	0.0030	0.0029	0.0030	0.0033	0.0031	0.0029	0.0028	0.0029	0.0028	0.0027	0.0025	0.0025	0.0023	0.0024
5	0.0021	0.0022	0.0021	0.0022	0.0021	0.0022	0.0022	0.0023	0.0023	0.0023	0.0020	0.0023	0.0022	0.0022	0.0021	0.0020	0.0018	0.0020
6	0.0020	0.0021	0.0021	0.0022	0.0022	0.0022	0.0022	0.0022	0.0023	0.0022	0.0020	0.0022	0.0020	0.0021	0.0020	0.0019	0.0018	0.0017
7	0.0016	0.0017	0.0016	0.0017	0.0016	0.0015	0.0016	0.0018	0.0017	0.0016	0.0015	0.0016	0.0015	0.0015	0.0015	0.0017	0.0015	0.0016
8	0.0026	0.0026	0.0031	0.0029	0.0033	0.0033	0.0034	0.0035	0.0036	0.0036	0.0038	0.0038	0.0039	0.0036	0.0033	0.0031	0.0029	0.0027
9	0.0032	0.0033	0.0034	0.0037	0.0039	0.0039	0.0041	0.0042	0.0044	0.0043	0.0043	0.0043	0.0040	0.0039	0.0036	0.0033	0.0030	0.0028
10	0.0033	0.0034	0.0035	0.0036	0.0040	0.0040	0.0039	0.0042	0.0043	0.0043	0.0042	0.0042	0.0041	0.0039	0.0036	0.0033	0.0030	0.0028
11	0.0029	0.0032	0.0033	0.0034	0.0036	0.0037	0.0036	0.0037	0.0038	0.0037	0.0037	0.0036	0.0035	0.0033	0.0032	0.0029	0.0025	0.0024
12	0.0030	0.0034	0.0035	0.0035	0.0037	0.0037	0.0040	0.0039	0.0042	0.0040	0.0039	0.0037	0.0034	0.0033	0.0031	0.0028	0.0025	0.0023
13	0.0026	0.0027	0.0025	0.0026	0.0027	0.0027	0.0025	0.0024	0.0025	0.0022	0.0022	0.0020	0.0020	0.0019	0.0019	0.0019	0.0019	0.0020
14	0.0029	0.0032	0.0033	0.0032	0.0033	0.0032	0.0033	0.0033	0.0033	0.0032	0.0030	0.0030	0.0029	0.0028	0.0027	0.0028	0.0025	0.0025
15	0.0033	0.0033	0.0033	0.0030	0.0031	0.0032	0.0032	0.0032	0.0031	0.0030	0.0029	0.0028	0.0028	0.0028	0.0027	0.0027	0.0027	0.0027
16	0.0028	0.0030	0.0030	0.0029	0.0030	0.0032	0.0031	0.0029	0.0029	0.0028	0.0027	0.0027	0.0026	0.0025	0.0025	0.0024	0.0023	0.0023
17	0.0016	0.0015	0.0014	0.0015	0.0014	0.0013	0.0014	0.0014	0.0015	0.0014	0.0014	0.0015	0.0017	0.0021	0.0024	0.0026	0.0029	0.0027
18	0.0016	0.0017	0.0018	0.0018	0.0021	0.0019	0.0020	0.0020	0.0022	0.0023	0.0024	0.0024	0.0026	0.0026	0.0026	0.0026	0.0024	0.0024
n	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Mean	0.0025	0.0026	0.0027	0.0027	0.0028	0.0028	0.0029	0.0030	0.0030	0.0029	0.0029	0.0029	0.0028	0.0027	0.0026	0.0025	0.0024	0.0023
Median	0.0027	0.0028	0.0029	0.0029	0.0030	0.0030	0.0030	0.0031	0.0031	0.0029	0.0028	0.0028	0.0027	0.0026	0.0026	0.0026	0.0024	0.0024
σ	0.0006	0.0007	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0008	0.0008	0.0007	0.0007	0.0006	0.0005	0.0004
Min.	0.0016	0.0015	0.0014	0.0015	0.0014	0.0013	0.0014	0.0014	0.0015	0.0014	0.0014	0.0015	0.0015	0.0015	0.0015	0.0016	0.0014	0.0015
Max.	0.0033	0.0034	0.0035	0.0037	0.0040	0.0040	0.0041	0.0042	0.0044	0.0043	0.0043	0.0043	0.0041	0.0039	0.0036	0.0033	0.0031	0.0029

DATA SET 5: 55°C; 1250 mA

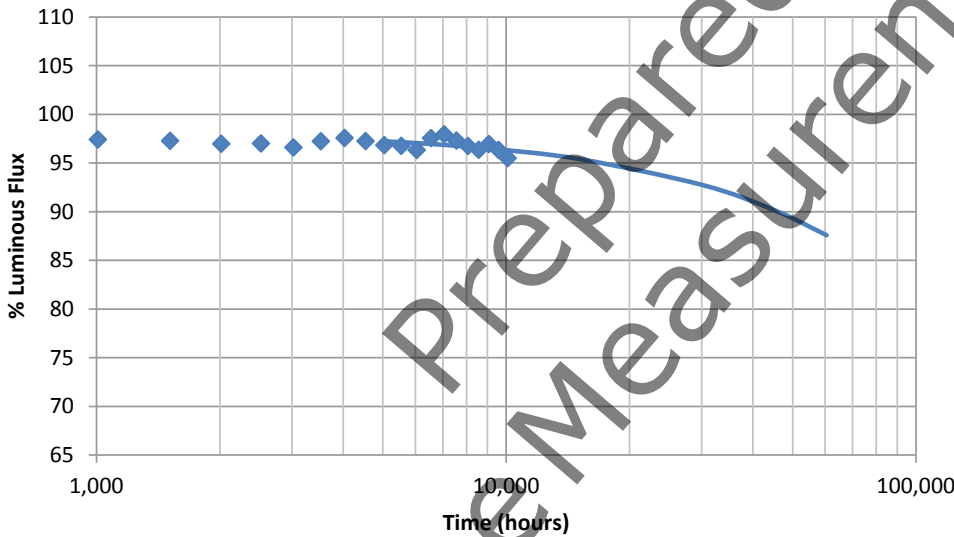
LED Package Series	XLamp XT-E White LEDs (Series: XTEAWT) This LM-80 report is applicable to the following order codes: XTEAWT-xx-xxxx-xxxxxxxxxx
Tested Model Number	XTEAWT-00-0000-00000LBE7
Drive Current [I _F]	1250 mA
Testing Initiation Date	January 8, 2012
Case Temperature [T _s]	55°C
Ambient Temperature [T _A]	55°C
Failures observed	None

Projection Generated By Cree's Internal TM-21 Calculator:

Test duration	10,080 hours
Test duration used for projection	t=5,040 to t=10,080
α	1.885E-06
β	9.817E-01
Calculated Lifetime	L70(10k) = 179,000 hours
Reported Lifetime	L70(10k) > 60,500 hours

LM-80 Data For The Official TM-21 Calculator*

Time (hours)	Lumen Maintenance
0	100.0000%
1008	97.4150%
1512	97.2810%
2016	96.9740%
2520	97.0090%
3024	96.6000%
3528	97.2320%
4032	97.5730%
4536	97.2510%
5040	96.8320%
5544	96.7610%
6048	96.3320%
6552	97.5540%
7056	97.9390%
7560	97.3030%
8064	96.7540%
8568	96.3510%
9072	96.9500%
9576	96.3470%
10080	95.4950%



* <http://www.energystar.gov/TM-21calculator>

Suggestion for exporting the LM-80 data:

1. Copy above table from PDF & paste into Microsoft Word.
2. Copy table out of Word & paste into Microsoft Excel (Match destination formatting)

Note: Data point t=168 hr is intentionally excluded from this table since the ENERGY STAR tool has a 20 data point input limit. Per TM-21 methodology, data point t=168 hr would be excluded, so the projection is unaffected.

DATA SET 5: 55°C; 1250 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)								
	LF (lm)	V _F (V)	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536
1	266.7	3.60	2981	3000	96.9	97.5	97.2	96.3	96.8	96.4	96.6	98.3	98.0
2	283.7	3.66	3042	3000	96.4	97.1	97.5	98.0	97.6	97.3	98.8	98.8	98.1
3	262.7	3.57	2979	3000	95.6	96.5	95.8	95.1	95.7	95.3	94.8	95.7	95.4
4	281.7	3.59	3035	3000	97.1	97.5	97.0	96.7	97.2	97.4	98.5	98.4	98.1
5	265.5	3.60	3036	3000	96.5	96.6	96.6	95.2	96.0	95.2	95.4	95.6	95.4
6	287.5	3.66	3070	3000	98.7	97.9	97.5	97.5	97.3	97.5	98.6	98.6	98.0
7	283.8	3.63	3014	3000	98.0	97.6	96.6	96.4	97.1	97.1	98.0	98.0	97.4
8	275.6	3.63	2997	3000	96.0	96.0	96.4	96.0	96.3	96.1	95.4	96.3	95.9
9	262.5	3.55	2911	3000	97.4	98.0	97.1	96.3	96.8	96.2	97.3	98.0	97.0
10	282.5	3.68	3016	3000	99.3	97.7	98.6	98.4	98.1	96.7	98.5	98.1	98.5
11	267.4	3.63	3082	3000	97.3	97.1	96.5	95.7	96.3	95.4	96.0	96.0	95.6
12	295.8	3.56	3004	3000	97.3	96.8	96.9	97.3	97.3	97.4	97.6	97.5	97.4
13	261.7	3.68	2991	3000	96.3	96.7	96.8	96.2	97.0	96.0	96.1	97.6	97.1
14	285.1	3.61	2971	3000	97.3	96.3	96.4	96.3	96.1	96.0	97.0	97.2	96.3
15	269.5	3.64	2995	3000	98.1	97.4	97.2	96.9	97.1	97.1	97.8	97.8	97.3
16	279.2	3.58	2990	3000	98.8	96.9	97.8	97.2	97.6	96.5	96.3	98.2	97.4
17	262.6	3.59	3220	3000	96.8	96.7	97.6	97.3	97.2	95.6	96.7	97.2	96.8
18	288.2	3.60	3156	3000	100.0	100.1	99.0	98.2	97.7	98.6	99.2	99.3	98.7
19	270.7	3.58	3021	3000	97.1	96.5	97.0	97.2	97.1	95.9	96.3	96.8	97.0
20	285.3	3.63	3047	3000	99.2	98.0	97.5	97.2	96.4	96.9	97.7	97.7	97.6
21	261.7	3.60	2943	3000	99.5	97.0	97.5	98.0	98.0	96.8	97.1	97.2	97.7
22	279.1	3.66	3013	3000	99.9	99.2	98.2	98.3	97.5	97.8	98.6	98.5	98.2
23	279.7	3.61	2955	3000	98.8	99.1	98.1	97.8	97.3	97.6	98.6	98.5	98.2
24	271.3	3.67	2977	3000	98.5	96.9	98.0	97.7	97.8	95.7	96.1	96.5	96.8
25	290.9	3.60	3117	3000	99.0	98.2	97.0	97.1	96.2	96.7	97.5	97.4	97.4
n	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	276.0	3.62			97.8	97.4	97.3	97.0	97.0	96.6	97.2	97.6	97.3
Median	279.1	3.61			97.4	97.1	97.2	97.2	97.1	96.7	97.3	97.7	97.4
σ	10.4	0.04			1.28	0.97	0.74	0.93	0.65	0.86	1.21	0.98	0.95
Min.	261.7	3.55			95.6	96.0	95.8	95.1	95.7	95.2	94.8	95.6	95.4
Max.	295.8	3.68			100.0	100.1	99.0	98.4	98.1	98.6	99.2	99.3	98.7

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')								
	CCx	CCy	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536
1	0.4382	0.4039	2981	3000	0.0002	0.0003	0.0004	0.0005	0.0005	0.0006	0.0006	0.0006	0.0006
2	0.4322	0.3985	3042	3000	0.0009	0.0006	0.0005	0.0005	0.0005	0.0005	0.0006	0.0007	0.0008
3	0.4365	0.4000	2979	3000	0.0011	0.0004	0.0006	0.0006	0.0005	0.0006	0.0004	0.0007	0.0007
4	0.4324	0.3982	3035	3000	0.0007	0.0006	0.0004	0.0007	0.0006	0.0006	0.0006	0.0008	0.0009
5	0.4309	0.3951	3036	3000	0.0010	0.0007	0.0008	0.0007	0.0007	0.0009	0.0005	0.0008	0.0009
6	0.4305	0.3983	3070	3000	0.0003	0.0004	0.0004	0.0005	0.0005	0.0005	0.0006	0.0006	0.0006
7	0.4359	0.4030	3014	3000	0.0006	0.0004	0.0006	0.0007	0.0005	0.0005	0.0005	0.0008	0.0008
8	0.4365	0.4021	2997	3000	0.0011	0.0004	0.0005	0.0006	0.0005	0.0005	0.0004	0.0005	0.0006
9	0.4466	0.4122	2911	3000	0.0003	0.0005	0.0005	0.0006	0.0007	0.0008	0.0008	0.0007	0.0007
10	0.4346	0.4007	3016	3000	0.0004	0.0005	0.0004	0.0004	0.0004	0.0006	0.0007	0.0005	0.0006
11	0.4301	0.3989	3082	3000	0.0005	0.0003	0.0002	0.0003	0.0002	0.0003	0.0003	0.0004	0.0005
12	0.4371	0.4043	3004	3000	0.0009	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0009
13	0.4396	0.4079	2991	3000	0.0006	0.0003	0.0004	0.0004	0.0005	0.0005	0.0005	0.0006	0.0005
14	0.4407	0.4078	2971	3000	0.0002	0.0006	0.0005	0.0007	0.0007	0.0007	0.0008	0.0007	0.0007
15	0.4391	0.4074	2995	3000	0.0006	0.0004	0.0003	0.0003	0.0005	0.0004	0.0005	0.0004	0.0005
16	0.4394	0.4072	2990	3000	0.0005	0.0005	0.0004	0.0005	0.0004	0.0005	0.0005	0.0006	0.0007
17	0.4168	0.3849	3220	3000	0.0006	0.0007	0.0006	0.0006	0.0006	0.0007	0.0008	0.0008	0.0009
18	0.4200	0.3852	3156	3000	0.0003	0.0005	0.0005	0.0005	0.0005	0.0007	0.0007	0.0008	0.0008
19	0.4363	0.4048	3021	3000	0.0003	0.0004	0.0006	0.0007	0.0006	0.0007	0.0007	0.0007	0.0007
20	0.4334	0.4018	3047	3000	0.0005	0.0005	0.0006	0.0006	0.0005	0.0007	0.0007	0.0007	0.0007
21	0.4432	0.4093	2943	3000	0.0005	0.0005	0.0005	0.0005	0.0005	0.0006	0.0005	0.0006	0.0006
22	0.4352	0.4015	3013	3000	0.0005	0.0008	0.0008	0.0010	0.0009	0.0010	0.0010	0.0010	0.0010
23	0.4409	0.4062	2955	3000	0.0002	0.0007	0.0005	0.0005	0.0005	0.0006	0.0006	0.0007	0.0006
24	0.4395	0.4060	2977	3000	0.0005	0.0007	0.0007	0.0007	0.0007	0.0008	0.0007	0.0007	0.0008
25	0.4294	0.4017	3117	3000	0.0001	0.0002	0.0001	0.0001	0.0001	0.0002	0.0004	0.0003	0.0004
n	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					0.0005	0.0005	0.0005	0.0006	0.0005	0.0006	0.0006	0.0007	0.0007
Median					0.0005	0.0005	0.0005	0.0006	0.0005	0.0006	0.0006	0.0007	0.0007
σ					0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.					0.0001	0.0002	0.0001	0.0001	0.0001	0.0002	0.0003	0.0003	0.0004
Max.					0.0011	0.0008	0.0008	0.0010	0.0009	0.0010	0.0010	0.0010	0.0010

DATA SET 5: 55°C; 1250 mA

Lamp #	5040	5544	6048	6552	7056	7560	8064	8568	9072	9576	10080
1	96.2	97.4	96.1	97.6	97.9	97.3	96.1	95.3	97.0	96.6	95.4
2	98.1	97.8	97.3	99.2	99.3	98.7	98.4	97.9	98.0	97.3	97.1
3	93.8	94.7	93.5	95.2	95.2	94.8	93.8	93.9	94.6	94.4	93.3
4	97.7	97.8	97.2	98.9	99.3	98.8	98.4	98.0	98.3	98.0	97.3
5	95.3	95.7	94.5	94.8	95.4	94.6	94.0	94.3	94.5	94.4	93.3
6	97.9	97.7	97.1	98.9	99.3	98.8	98.2	97.7	97.9	97.6	97.1
7	97.4	97.0	96.6	98.3	98.6	98.1	97.5	97.3	97.2	96.7	96.3
8	95.4	95.6	94.8	95.9	96.4	95.9	95.6	95.1	95.5	95.1	94.4
9	95.7	97.0	96.8	97.5	97.2	96.7	95.6	95.1	95.7	94.8	93.7
10	97.9	97.1	97.0	98.7	98.5	97.9	98.0	97.3	97.8	96.8	96.0
11	94.9	95.1	95.1	94.9	95.0	94.4	93.7	93.8	94.4	93.9	92.9
12	97.0	97.2	96.7	98.5	98.9	98.5	98.0	97.9	98.0	97.3	96.9
13	96.3	96.6	96.9	96.7	97.4	96.9	96.4	95.7	96.7	96.2	95.5
14	96.5	96.2	95.7	97.1	97.9	97.5	96.9	96.6	96.6	96.3	95.8
15	97.3	97.1	96.6	98.4	98.9	98.5	97.9	97.7	97.6	97.1	96.6
16	96.7	97.1	97.2	97.0	98.0	97.3	96.9	96.5	96.9	96.6	96.1
17	97.3	96.5	96.8	97.7	97.9	97.0	96.1	95.3	96.9	96.4	94.2
18	97.9	98.8	97.9	99.5	100.2	99.2	98.9	98.4	98.5	97.7	96.6
19	96.8	95.8	96.1	97.0	97.2	96.5	95.8	95.1	97.0	95.9	94.5
20	97.4	97.1	96.5	98.2	98.7	97.8	97.5	97.0	97.1	96.5	95.5
21	97.3	96.3	96.3	96.8	97.6	96.6	96.2	95.4	97.9	96.5	95.3
22	98.1	97.5	97.0	98.7	99.2	98.2	97.7	97.4	97.6	97.1	96.2
23	98.2	97.7	97.1	98.8	99.3	98.4	98.0	97.7	97.9	97.2	96.4
24	96.6	95.4	95.2	95.9	96.8	95.9	95.6	94.8	96.3	95.0	94.1
25	97.2	96.9	96.4	98.6	98.6	98.3	97.9	97.7	97.8	97.4	96.8
n	25	25	25	25	25	25	25	25	25	25	25
Mean	96.8	96.8	96.3	97.6	97.9	97.3	96.8	96.4	97.0	96.3	95.5
Median	97.2	97.0	96.6	97.7	98.0	97.5	96.9	96.6	97.1	96.6	95.8
σ	1.12	0.98	1.04	1.39	1.38	1.37	1.49	1.45	1.19	1.14	1.34
Min.	93.8	94.7	93.5	94.8	95.0	94.4	93.7	93.8	94.4	93.9	92.9
Max.	98.2	98.8	97.9	99.5	100.2	99.2	98.9	98.4	98.5	98.0	97.3

Lamp #	5040	5544	6048	6552	7056	7560	8064	8568	9072	9576	10080
1	0.0006	0.0007	0.0006	0.0006	0.0008	0.0007	0.0007	0.0006	0.0008	0.0006	0.0006
2	0.0008	0.0008	0.0009	0.0008	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0007
3	0.0008	0.0008	0.0008	0.0007	0.0010	0.0009	0.0009	0.0009	0.0011	0.0011	0.0010
4	0.0009	0.0010	0.0009	0.0009	0.0011	0.0012	0.0012	0.0010	0.0011	0.0010	0.0009
5	0.0009	0.0009	0.0009	0.0007	0.0010	0.0011	0.0010	0.0010	0.0011	0.0013	0.0011
6	0.0006	0.0007	0.0006	0.0007	0.0008	0.0009	0.0007	0.0007	0.0007	0.0007	0.0006
7	0.0008	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0005	0.0004	0.0005	0.0004
8	0.0007	0.0007	0.0007	0.0006	0.0008	0.0008	0.0008	0.0008	0.0009	0.0010	0.0009
9	0.0008	0.0008	0.0007	0.0009	0.0010	0.0010	0.0012	0.0013	0.0011	0.0009	0.0009
10	0.0005	0.0006	0.0006	0.0005	0.0006	0.0006	0.0005	0.0005	0.0007	0.0006	0.0007
11	0.0004	0.0005	0.0006	0.0005	0.0005	0.0006	0.0006	0.0004	0.0005	0.0006	0.0005
12	0.0009	0.0010	0.0011	0.0009	0.0012	0.0012	0.0011	0.0011	0.0012	0.0012	0.0010
13	0.0005	0.0006	0.0007	0.0005	0.0006	0.0007	0.0006	0.0006	0.0008	0.0007	0.0006
14	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007	0.0007
15	0.0005	0.0004	0.0004	0.0004	0.0005	0.0006	0.0005	0.0005	0.0005	0.0006	0.0004
16	0.0007	0.0007	0.0009	0.0007	0.0009	0.0009	0.0009	0.0009	0.0010	0.0011	0.0010
17	0.0008	0.0008	0.0010	0.0009	0.0010	0.0010	0.0010	0.0009	0.0013	0.0012	0.0011
18	0.0008	0.0009	0.0011	0.0008	0.0010	0.0011	0.0011	0.0011	0.0013	0.0012	0.0012
19	0.0006	0.0007	0.0007	0.0007	0.0008	0.0008	0.0007	0.0007	0.0008	0.0007	0.0006
20	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0009	0.0008	0.0009	0.0008	0.0007
21	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007	0.0006
22	0.0009	0.0010	0.0010	0.0012	0.0012	0.0012	0.0013	0.0013	0.0014	0.0013	0.0013
23	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006
24	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	0.0009	0.0008	0.0009	0.0008	0.0007
25	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002
n	25	25	25	25	25	25	25	25	25	25	25
Mean	0.0007	0.0007	0.0008	0.0007	0.0008	0.0008	0.0008	0.0008	0.0009	0.0008	0.0008
Median	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0007
σ	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003
Min.	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002
Max.	0.0009	0.0010	0.0011	0.0012	0.0012	0.0012	0.0013	0.0013	0.0014	0.0013	0.0013

DATA SET 6: 85°C; 1250 mA

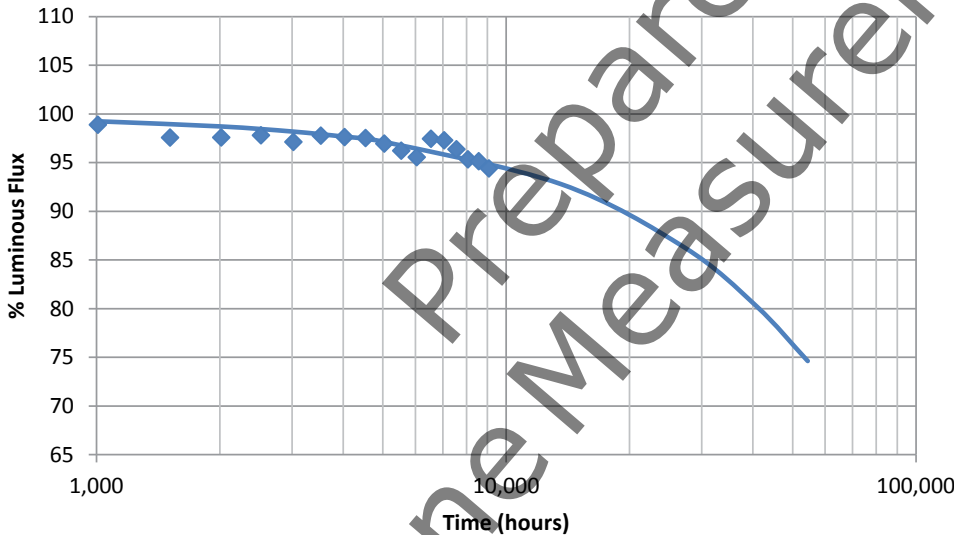
LED Package Series	XLamp XT-E White LEDs (Series: XTEAWT) This LM-80 report is applicable to the following order codes: XTEAWT-xx-xxxx-xxxxxxxxxx
Tested Model Number	XTEAWT-00-0000-00000LBE7
Drive Current [I _F]	1250 mA
Testing Initiation Date	January 7, 2012
Case Temperature [T _s]	85°C
Ambient Temperature [T _A]	85°C
Failures observed	None

Projection Generated By Cree's Internal TM-21 Calculator:

Test duration	9,072 hours
Test duration used for projection	t=4,032 to t=9,072
α	5.337E-06
β	9.977E-01
Calculated Lifetime	L70(9k) = 66,400 hours
Reported Lifetime	L70(9k) > 54,400 hours

LM-80 Data For The Official TM-21 Calculator*

Time (hours)	Lumen Maintenance
0	100.0000%
168	98.7210%
1008	98.8860%
1512	97.5710%
2016	97.5830%
2520	97.8050%
3024	97.1220%
3528	97.7670%
4032	97.6190%
4536	97.5230%
5040	96.9520%
5544	96.2220%
6048	95.5560%
6552	97.4500%
7056	97.2900%
7560	96.3690%
8064	95.3350%
8568	95.1430%
9072	94.4000%



* <http://www.energystar.gov/TM-21calculator>

Suggestion for exporting the LM-80 data:

1. Copy above table from PDF & paste into Microsoft Word.
2. Copy table out of Word & paste into Microsoft Excel (Match destination formatting)

DATA SET 6: 85°C; 1250 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)																	
	LF (lm)	V _F (V)	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048	6552	7056	7560	8064	8568	9072
1	261.9	3.54	3198	3000	99.0	98.6	96.7	97.2	98.9	96.8	97.6	98.0	97.8	97.1	96.2	95.4	97.2	97.1	97.0	95.1	94.7	94.7
2	284.7	3.61	3176	3000	98.8	98.9	98.0	97.9	97.7	97.4	98.6	98.0	98.2	97.7	97.1	96.3	98.8	97.9	97.8	97.2	97.1	96.4
3	269.8	3.51	3193	3000	99.3	99.2	97.6	98.2	98.4	97.4	98.0	98.3	98.1	97.4	96.0	95.8	98.0	98.1	97.3	95.7	95.5	95.7
4	289.7	3.63	3161	3000	99.4	99.8	98.4	98.4	98.3	98.0	99.1	98.8	98.7	98.2	97.5	96.5	98.7	97.7	96.9	95.7	94.9	93.9
5	287.1	3.55	3199	3000	99.2	98.8	97.7	97.5	97.4	96.9	98.1	97.6	97.7	97.1	96.6	95.8	98.2	97.4	96.6	95.7	95.4	94.1
6	271.6	3.58	3207	3000	100.6	99.9	98.2	98.7	98.7	97.9	97.6	97.9	97.6	97.1	96.1	95.2	97.5	97.1	96.5	95.8	95.7	96.0
7	288.6	3.60	3194	3000	98.9	98.6	97.7	97.6	97.3	97.1	98.2	97.7	97.7	97.4	96.6	96.2	98.3	98.1	97.6	97.3	96.4	96.4
8	273.6	3.55	3217	3000	98.1	97.4	97.0	96.1	97.1	96.5	95.9	96.4	96.1	95.3	94.7	94.0	95.8	97.5	95.7	94.2	93.8	93.3
9	287.2	3.70	3206	3000	99.0	98.9	98.0	98.1	97.9	97.4	98.7	98.2	98.2	97.8	96.9	96.5	98.7	98.3	97.1	96.5	95.5	95.2
10	284.0	3.60	3186	3000	99.7	99.1	98.0	97.6	97.7	97.5	98.4	98.1	98.1	97.8	97.0	96.2	98.6	98.7	97.9	97.5	96.3	96.2
11	269.9	3.60	3177	3000	97.6	97.8	97.0	96.8	97.3	96.1	96.2	96.5	96.2	95.5	94.6	93.7	94.6	95.8	93.1	91.9	90.6	91.7
12	257.2	3.54	2989	3000	98.3	99.0	97.1	97.4	98.4	97.3	97.1	97.9	97.6	96.9	96.5	95.6	96.4	97.0	96.0	93.7	95.2	93.8
13	271.7	3.58	2993	3000	98.9	99.1	97.7	97.5	97.6	97.5	98.4	97.7	98.0	97.7	97.0	96.6	98.3	97.9	97.7	97.2	96.9	96.1
14	280.8	3.55	3091	3000	97.7	98.6	97.1	97.2	97.2	97.2	98.3	97.7	97.8	97.4	96.8	96.3	97.9	97.5	97.1	96.2	95.3	94.0
15	254.7	3.55	2929	3000	99.1	99.3	97.8	98.1	98.9	97.4	97.8	98.1	97.7	97.1	96.5	95.6	97.1	97.1	96.3	95.1	96.7	95.4
16	269.8	3.60	2973	3000	98.7	99.4	97.8	97.7	97.7	97.7	98.8	98.1	98.2	97.8	97.0	96.4	98.1	97.9	96.8	95.5	94.4	93.9
17	273.8	3.56	3025	3000	98.7	99.7	98.3	98.1	97.9	98.0	98.8	98.2	98.5	97.8	97.3	96.8	98.5	98.4	97.5	96.9	96.2	94.9
18	259.2	3.59	3074	3000	98.6	99.6	97.3	97.7	98.3	96.9	97.3	97.3	97.1	96.5	95.7	95.1	97.1	96.9	96.2	95.3	96.6	95.6
19	289.0	3.62	3196	3000	98.5	98.5	97.3	97.2	98.8	96.4	96.8	96.2	96.2	95.8	95.1	94.8	97.0	96.5	95.9	95.6	95.3	94.8
20	265.9	3.58	3159	3000	97.3	98.2	96.8	96.8	97.3	96.1	96.8	97.2	96.8	96.0	95.1	94.2	95.9	95.8	94.4	92.6	93.1	92.1
21	288.9	3.65	3179	3000	97.7	97.5	97.2	97.2	97.0	96.5	96.8	96.4	96.1	95.6	94.9	94.4	96.2	95.7	93.9	92.6	91.2	90.2
22	264.5	3.62	2994	3000	98.7	99.1	97.3	97.4	97.9	96.8	97.2	97.4	97.0	96.2	95.5	94.7	96.7	96.6	95.6	94.3	96.2	94.8
23	276.1	3.63	3124	3000	98.6	98.5	97.3	97.2	97.2	96.7	97.9	97.4	97.3	96.8	96.2	95.7	97.7	97.3	96.5	96.0	95.2	94.1
24	281.8	3.64	2996	3000	99.1	99.0	98.1	97.7	97.9	97.5	98.6	98.2	98.2	97.6	97.0	96.4	98.5	98.2	97.4	96.9	96.2	95.1
25	264.4	3.69	2997	3000	98.5	99.6	97.9	98.2	98.5	97.0	97.3	97.4	97.0	96.2	95.5	94.7	96.6	96.0	94.3	93.0	93.9	92.0
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	274.6	3.59			98.7	98.9	97.6	97.6	97.8	97.1	97.8	97.6	97.5	97.0	96.2	95.6	97.4	97.3	96.4	95.3	95.1	94.4
Median	273.6	3.60			98.7	99.0	97.7	97.6	97.7	97.2	97.9	97.7	97.7	97.1	96.5	95.7	97.7	97.7	97.4	96.6	95.7	94.4
σ	11.0	0.05			0.70	0.66	0.49	0.57	0.61	0.55	0.85	0.67	0.76	0.83	0.86	0.90	1.10	0.87	1.28	1.62	1.62	1.61
Min.	254.7	3.51			97.3	97.4	96.7	96.1	96.8	96.1	95.9	96.2	96.1	95.3	94.6	93.7	94.6	95.7	93.1	91.9	90.6	90.2
Max.	289.7	3.70			100.6	99.9	98.4	98.7	98.9	98.0	99.1	98.8	98.7	98.2	97.5	96.8	98.8	98.7	97.9	97.5	97.1	96.4

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')																	
	CCx	CCy	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048	6552	7056	7560	8064	8568	9072
1	0.4181	0.3856	3198	3000	0.0006	0.0011	0.0010	0.0012	0.0016	0.0013	0.0013	0.0017	0.0016	0.0016	0.0016	0.0017	0.0017	0.0016	0.0019	0.0019	0.0024	0.0028
2	0.4199	0.3871	3176	3000	0.0005	0.0009	0.0009	0.0010	0.0012	0.0013	0.0012	0.0013	0.0013	0.0014	0.0014	0.0015	0.0017	0.0016	0.0019	0.0020	0.0022	0.0026
3	0.4182	0.3851	3193	3000	0.0006	0.0009	0.0008	0.0009	0.0011	0.0010	0.0009	0.0011	0.0010	0.0010	0.0010	0.0011	0.0012	0.0013	0.0014	0.0012	0.0014	0.0019
4	0.4206	0.3869	3161	3000	0.0004	0.0009	0.0008	0.0010	0.0011	0.0012	0.0011	0.0012	0.0012	0.0013	0.0014	0.0015	0.0017	0.0016	0.0021	0.0023	0.0025	0.0024
5	0.4188	0.3872	3199	3000	0.0005	0.0010	0.0009	0.0011	0.0011	0.0013	0.0012	0.0013	0.0014	0.0014	0.0016	0.0016	0.0019	0.0020	0.0026	0.0027	0.0032	0.0036
6	0.4197	0.3903	3207	3000	0.0007	0.0009	0.0009	0.0011	0.0012	0.0011	0.0010	0.0012	0.0010	0.0012	0.0011	0.0012	0.0014	0.0012	0.0014	0.0014	0.0017	0.0021
7	0.4180	0.3849	3194	3000	0.0003	0.0007	0.0007	0.0008	0.0009	0.0010	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0013	0.0015	0.0019	0.0021	0.0023	0.0027
8	0.4191	0.3901	3217	3000	0.0003	0.0007	0.0005	0.0006	0.0008	0.0007	0.0006	0.0008	0.0008	0.0008	0.0009	0.0010	0.0010	0.0016	0.0017	0.0018	0.0021	0.0021
9	0.4172	0.3844	3206	3000	0.0002	0.0008	0.0007	0.0009	0.0009	0.0011	0.0010	0.0011	0.0012	0.0012	0.0014	0.0016	0.0019	0.0023	0.0028	0.0029	0.0032	0.0031
10	0.4179	0.3836	3186	3000	0.0004	0.0008	0.0007	0.0009	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0011	0.0013	0.0014	0.0019	0.0020	0.0024	0.0029
11	0.4222	0.3926	3177	3000	0.0004	0.0007	0.0005	0.0005	0.0007	0.0006	0.0005	0.0007	0.0007	0.0008	0.0008	0.0011	0.0014	0.0019	0.0022	0.0024	0.0024	0.0026
12	0.4372	0.4026	2989	3000	0.0004	0.0006	0.0005	0.0005	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0011	0.0011	0.0007	0.0008
13	0.4374	0.4036	2993	3000	0.0003	0.0005	0.0006	0.0005	0.0006	0.0007	0.0007	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0009	0.0008
14	0.4282	0.3957	3091	3000	0.0003	0.0004	0.0004	0.0005	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0009	0.0011	0.0008	0.0007
15	0.4412	0.4037	2929	3000	0.0004	0.0006	0.0005	0.0006	0.0007	0.0008	0.0007	0.0008	0.0010	0.0010	0.0010	0.0010	0.0009	0.0010	0.0009	0.0010	0.0010	0.0010
16	0.4371	0.4006	2973	3000	0.0004	0.0006	0.0005	0.0007	0.0006	0.0008	0.0008	0.0009	0.0010	0.0010	0.0010	0.0009	0.0009	0.0010	0.0010	0.0013	0.0022	0.0028
17	0.4328	0.3979	3025	3000	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0009	0.0011	0.0011	0.0010	0.0010	0.0010	0.0009	0.0008	0.0008	0.0008	0.0011	0.0014
18	0.4268	0.3908	3074	3000	0.0003	0.0004	0.0005	0.0006	0.0007	0.0007	0.0008	0.0008	0.0009	0.0009	0.0011	0.0010	0.0010	0.0009	0.0009	0.0009	0.0008	0.0009
19	0.4186	0.3864	3196	3000	0.0003	0.0010	0.0011	0.0013	0.0014	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0019	0.0019	0.0021	0.0026	0.0028	0.0031	0.0037
20	0.4202	0.3859	3159	3000	0.0011	0.0008	0.0007	0.0008	0.0009	0.0007	0.0009	0.0012	0.0012	0.0012	0.0014	0.0015	0.0017	0.0024	0.0030	0.0031	0.0032	0.0032
21	0.4203	0.3884	3179	3000	0.0006	0.0014	0.0014	0.0017	0.0018	0.0019	0.0019	0.0020	0.0022	0.0023	0.0024	0.0028						