

Cree® XLamp® CXA3050 White LEDs



NVLAP Lab Code 500041-0

INFORMATION REQUIRED BY LM-80-08

Cree classifies these LEDs as "LED arrays" (Section 3.7) per Sep 9, 2011 ENERGY STAR® guidelines¹: LED arrays constructed as an assembly of LED dies on a substrate with one common phosphor layer overlaying all dies.

1. Number of LED light sources tested	See individual data sets on following pages.
2. Description of tested LED light sources	XLamp® CXA3050 White LEDs (Series: CXA3050) See the Scaling For Applicable Products section for list of applicable order codes and currents. All measurements provided are LED array measurements.
3. Description of auxiliary equipment	Instrument Systems ISP-500 Integrating Sphere Instrument Systems CAS-140 Spectrometer Keithley 2420 Sourcemeter
4. Operating cycle	LED arrays are driven at constant current.
5. Ambient conditions	LED arrays are operated in environmental control chambers. The temperature of the ambient air around the LED arrays is actively controlled by air flowing through the chamber. T _A : See individual data sets on following pages RH : < 45% Air flow : 800 CFM
6. Case temperature	See individual data sets on following pages.
7. Drive current of the LED light source during lifetime 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	Apr 19, 2013	Date of first issue
1	Feb 17, 2014	Added data set 3050-3.
2	Sep 22, 2014	Removed data sets 3050-1 & 3050-2. Added data sets 3050-4, 3050-4+, 3050-5 & 3050-6. Extended data set 3050-3 with additional test duration. Added Scaling For Applicable Products section.

RESULTS SUMMARY FOR TESTED LED ARRAY

Data Set	Case Temp. [T _s]	Ambient Temp. [T _A]	Drive Current [I _r]	Average Lumen Maintenance at 6,000 hours	Average Chromaticity Shift (Δu'v') at 6,000 hours	Reported TM-21 Lifetimes
3050-4	105°C	105°C	1500 mA	97.0%	0.0015	L90(7k) = 23,700 hrs L80(7k) > 42,300 hrs L70(7k) > 42,300 hrs
3050-5	85°C	85°C	1700 mA	98.0%	0.0010	L90(10k) > 57,500 hrs L80(10k) > 57,500 hrs L70(10k) > 57,500 hrs
3050-6	85°C	85°C	2250 mA	97.0%	0.0018	L90(7k) = 35,500 hrs L80(7k) > 39,300 hrs L70(7k) > 39,300 hrs
3050-3	55°C	55°C	2500 mA	96.5%	0.0009	L90(10k) = 55,100 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

The following data sets are extended versions of some of the data sets above, but have sample sizes less than 25 units each. Please refer to each individual data set for the exact number of samples included. These data sets are projected according to IES TM-21-11 methods and the Reported lifetimes presented are valid under TM-21-11. However, the use of these extended data sets may not be allowed by a particular program because of the sample size of the data set. Cree recommends reviewing the details on LM-80 lumen maintenance for each program to verify that data sets with fewer than 25 samples are considered valid. If not, then the data sets above should be referenced.

Data Set	Case Temp. [T _s]	Ambient Temp. [T _A]	Drive Current [I _r]	Average Lumen Maintenance at 6,000 hours	Average Chromaticity Shift (Δu'v') at 6,000 hours	Reported TM-21 Lifetimes
3050-4+	105°C	105°C	1500 mA	97.0%	0.0015	L90(10k) = 35,000 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs

SCALING FOR APPLICABLE PRODUCTS

The data sets in this document meet the all criteria for one LM-80 data set to apply to a range of LED arrays, as defined in ENERGY STAR Sep 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	Nominal Voltage	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	9V	CXA1304-xxxx-xxxCxxxxxxxx	460 mA	524 mA	692 mA	768 mA
CXA1304	18V	CXA1304-xxxx-xxxFxxxxxxxx	230 mA	262 mA	346 mA	384 mA
CXA1304	37V	CXA1304-xxxx-xxxNxxxxxxxx	115 mA	131 mA	173 mA	192 mA
CXA1510	37V	CXA1512-xxxx-xxxNxxxxxxxx	234 mA	265 mA	351 mA	390 mA
CXA1512	18V	CXA1512-xxxx-xxxFxxxxxxxx	692 mA	784 mA	1038 mA	1154 mA
CXA1512	37V	CXA1512-xxxx-xxxNxxxxxxxx	346 mA	392 mA	519 mA	577 mA
CXA1816	37V	CXA1816-xxxx-xxxNxxxxxxxx	462 mA	523 mA	692 mA	769 mA
CXA1820	37V	CXA1820-xxxx-xxxNxxxxxxxx	577 mA	654 mA	865 mA	962 mA
CXA1830	37V	CXA1830-xxxx-xxxNxxxxxxxx	662 mA	743 mA	977 mA	1087 mA
CXA2520	37V	CXA2520-xxxx-xxxNxxxxxxxx	624 mA	707 mA	936 mA	1040 mA
CXA2530	37V	CXA2530-xxxx-xxxNxxxxxxxx	808 mA	915 mA	1212 mA	1346 mA
CXA2540	37V	CXA2540-xxxx-xxxNxxxxxxxx	1139 mA	1281 mA	1693 mA	1903 mA
CXA3050	37V	CXA3050-xxxx-xxxNxxxxxxxx	1500 mA	1700 mA	2250 mA	2500 mA

Prepared for
Howard Lighting Products

DATA SET 3050-4: 105°C; 1500 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
1	7113	37.14	3029	3000	99.3	99.6	99.5	98.9	98.5	98.7	98.3	98.1	97.9	97.2	97.5	97.5	97.5	97.4
2	7094	37.10	3021	3000	99.6	100.0	99.6	99.1	98.9	99.1	98.2	98.2	98.2	97.9	97.8	97.0	97.3	97.7
3	7062	37.19	2960	3000	99.2	99.4	98.8	98.7	98.6	98.2	98.1	97.8	97.3	97.4	96.7	97.0	97.2	96.7
4	7106	37.29	2950	3000	99.5	99.2	98.8	98.6	98.5	98.2	98.1	97.9	97.5	97.1	97.1	96.9	96.8	96.7
5	7131	37.16	3002	3000	99.3	99.4	99.0	98.8	98.4	98.4	97.9	98.1	97.7	97.6	96.7	97.2	97.1	96.6
6	7124	37.17	2990	3000	98.9	99.1	98.7	98.5	98.4	97.8	97.9	97.8	97.3	96.8	96.6	96.6	96.8	96.4
7	7194	37.11	3071	3000	99.2	99.4	99.2	99.0	98.9	98.5	98.7	98.5	98.2	96.7	96.4	96.6	96.0	95.6
8	7082	37.08	3013	3000	99.1	98.7	98.3	98.4	98.1	97.8	98.0	97.6	97.0	96.7	96.5	97.0	96.5	95.7
9	7091	37.60	3055	3000	99.4	99.6	99.0	98.5	98.6	98.0	97.8	98.1	97.9	97.5	97.1	97.7	97.7	96.5
10	7097	37.60	3055	3000	99.6	99.5	99.0	98.3	98.3	97.7	97.5	97.7	96.6	96.1	97.5	96.4	96.4	96.5
11	7108	37.58	3031	3000	99.5	99.6	99.2	98.7	98.8	98.2	98.3	98.5	98.0	97.7	97.2	97.6	97.4	97.1
12	7054	37.46	3038	3000	100.5	100.5	100.1	99.5	99.5	99.2	98.9	99.1	99.0	99.3	98.3	98.9	98.8	97.9
13	7094	37.56	3036	3000	99.8	99.7	99.5	98.8	98.6	98.2	98.3	98.5	98.3	98.4	97.7	98.0	97.9	97.5
14	7192	37.53	3044	3000	99.5	99.7	98.8	98.4	98.1	97.8	97.1	98.1	97.5	96.8	96.4	97.3	97.2	96.7
15	7163	37.59	3050	3000	99.5	99.5	98.9	98.6	98.1	97.5	97.9	97.5	97.4	96.9	96.3	96.7	96.3	95.9
16	7037	37.57	2999	3000	99.1	99.3	98.8	98.8	98.5	98.3	98.3	97.8	97.8	97.6	97.2	96.4	96.1	96.3
17	7120	37.48	3061	3000	99.8	100.1	98.9	98.8	98.4	98.0	98.0	96.8	97.5	97.0	97.1	96.4	96.4	96.4
18	7155	37.58	3006	3000	99.9	99.5	99.3	99.0	98.4	97.9	98.1	97.9	97.4	96.8	96.5	96.7	96.7	96.8
19	7182	37.57	3029	3000	99.6	99.7	98.8	98.7	98.5	97.8	97.9	97.2	97.4	97.0	96.2	96.4	96.3	96.3
20	7124	37.57	3006	3000	99.7	100.2	99.0	99.0	98.6	98.1	98.3	97.1	97.8	97.4	96.5	96.8	96.8	96.8
21	7141	37.56	3028	3000	99.5	99.8	99.0	99.0	98.6	98.0	98.1	97.3	97.4	97.0	96.2	96.7	96.6	96.7
22	7152	37.59	3043	3000	99.9	99.8	99.0	98.9	98.3	97.9	97.9	97.6	97.6	97.0	96.9	96.9	96.0	96.2
23	7169	37.65	3045	3000	99.3	99.4	98.8	98.5	98.1	97.8	97.3	96.7	96.6	96.1	95.8	95.8	96.1	96.1
24	7091	37.08	3047	3000	99.5	99.2	98.8	98.4	98.2	97.9	97.7	98.0	97.8	97.9	96.9	97.4	96.9	96.4
25	7089	37.12	2977	3000	100.0	99.9	99.6	99.3	98.9	98.9	98.0	98.3	98.2	98.1	97.9	98.0	97.9	97.8
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	7119	37.40			99.5	99.6	99.1	98.8	98.5	98.2	98.0	97.9	97.7	97.3	96.9	97.0	96.9	96.7
Median	7113	37.53			99.5	99.6	99.0	98.8	98.5	98.0	98.0	97.9	97.6	97.1	96.9	96.9	96.8	96.6
σ	42	0.22			0.34	0.39	0.38	0.30	0.31	0.44	0.39	0.56	0.53	0.70	0.61	0.66	0.69	0.62
Min.	7037	37.08			98.9	98.7	98.3	98.3	98.1	97.5	97.1	96.7	96.6	96.1	95.8	95.8	96.0	95.6
Max.	7194	37.65			100.5	100.5	100.1	99.5	99.5	99.2	98.9	99.1	99.0	99.3	98.3	98.9	98.8	97.9

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
1	0.4364	0.4058	3029	3000	0.0006	0.0008	0.0007	0.0007	0.0008	0.0009	0.0009	0.0011	0.0011	0.0012	0.0012	0.0014	0.0014	0.0015
2	0.4363	0.4046	3021	3000	0.0006	0.0009	0.0008	0.0008	0.0009	0.0008	0.0011	0.0012	0.0012	0.0012	0.0013	0.0015	0.0015	0.0014
3	0.4413	0.4076	2960	3000	0.0008	0.0007	0.0008	0.0008	0.0009	0.0010	0.0011	0.0012	0.0013	0.0014	0.0014	0.0015	0.0014	0.0017
4	0.4431	0.4101	2950	3000	0.0007	0.0007	0.0007	0.0008	0.0008	0.0009	0.0010	0.0011	0.0011	0.0013	0.0014	0.0014	0.0014	0.0016
5	0.4402	0.4106	3002	3000	0.0006	0.0006	0.0006	0.0007	0.0007	0.0008	0.0009	0.0010	0.0010	0.0011	0.0012	0.0013	0.0013	0.0015
6	0.4416	0.4118	2990	3000	0.0006	0.0006	0.0006	0.0006	0.0008	0.0009	0.0010	0.0010	0.0011	0.0013	0.0013	0.0014	0.0013	0.0015
7	0.4350	0.4081	3071	3000	0.0005	0.0004	0.0006	0.0006	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0011	0.0012	0.0015
8	0.4364	0.4040	3013	3000	0.0008	0.0009	0.0009	0.0010	0.0010	0.0011	0.0012	0.0013	0.0014	0.0015	0.0016	0.0016	0.0016	0.0019
9	0.4335	0.4030	3055	3000	0.0006	0.0006	0.0006	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011	0.0012	0.0014	0.0013	0.0013	0.0016
10	0.4334	0.4028	3055	3000	0.0005	0.0005	0.0006	0.0008	0.0008	0.0009	0.0011	0.0011	0.0012	0.0014	0.0012	0.0015	0.0015	0.0016
11	0.4350	0.4032	3031	3000	0.0006	0.0006	0.0007	0.0008	0.0008	0.0010	0.0011	0.0011	0.0011	0.0012	0.0014	0.0013	0.0014	0.0016
12	0.4344	0.4027	3038	3000	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0011	0.0013	0.0012	0.0013	0.0014	0.0014	0.0014	0.0016
13	0.4345	0.4026	3036	3000	0.0006	0.0006	0.0007	0.0009	0.0009	0.0010	0.0011	0.0011	0.0011	0.0012	0.0013	0.0014	0.0014	0.0016
14	0.4328	0.4002	3044	3000	0.0006	0.0006	0.0006	0.0008	0.0008	0.0009	0.0010	0.0011	0.0011	0.0012	0.0014	0.0014	0.0014	0.0015
15	0.4323	0.3997	3050	3000	0.0008	0.0007	0.0007	0.0009	0.0009	0.0010	0.0011	0.0013	0.0014	0.0016	0.0016	0.0016	0.0017	0.0020
16	0.4366	0.4025	2999	3000	0.0008	0.0008	0.0008	0.0010	0.0009	0.0011	0.0012	0.0012	0.0013	0.0013	0.0014	0.0015	0.0017	0.0018
17	0.4316	0.3995	3061	3000	0.0005	0.0005	0.0007	0.0007	0.0008	0.0009	0.0010	0.0012	0.0012	0.0014	0.0016	0.0015	0.0016	0.0017
18	0.4350	0.4002	3006	3000	0.0006	0.0007	0.0007	0.0008	0.0009	0.0010	0.0012	0.0012	0.0012	0.0015	0.0016	0.0017	0.0017	0.0017
19	0.4338	0.4004	3029	3000	0.0007	0.0006	0.0007	0.0008	0.0008	0.0010	0.0012	0.0013	0.0013	0.0014	0.0016	0.0016	0.0017	0.0017
20	0.4350	0.4002	3006	3000	0.0007	0.0007	0.0008	0.0008	0.0009	0.0010	0.0012	0.0013	0.0013	0.0014	0.0014	0.0016	0.0017	0.0017
21	0.4338	0.4002	3028	3000	0.0007	0.0005	0.0007	0.0008	0.0009	0.0010	0.0011	0.0013	0.0013	0.0014	0.0015	0.0016	0.0017	0.0017
22	0.4329	0.4003	3043	3000	0.0004	0.0004	0.0006	0.0008	0.0009	0.0011	0.0012	0.0011	0.0012	0.0013	0.0014	0.0014	0.0017	0.0018
23	0.4326	0.3997	3045	3000	0.0009	0.0007	0.0008	0.0009	0.0009	0.0011	0.0013	0.0015	0.0016	0.0017	0.0017	0.0019	0.0019	0.0021
24	0.4353	0.4058	3047	3000	0.0007	0.0006	0.0008	0.0009	0.0009	0.0011	0.0012	0.0013	0.0014	0.0014	0.0016	0.0015	0.0016	0.0018
25	0.4431	0.4134	2977	3000	0.0006	0.0006	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0011	0.0012	0.0013	0.0013	0.0014	0.0015
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					0.0007	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0012	0.0013	0.0014	0.0015	0.0015	0.0017
Median					0.0006	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0012	0.0013	0.0014	0.0015	0.0014	0.0016
σ					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0002	0.0002
Min.					0.0004	0.0004	0.0006	0.0006	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0011	0.0012	0.0014
Max.					0.0009	0.0009	0.0009	0.0010	0.0010	0.0011	0.0013	0.0015	0.0016	0.0017	0.0017	0.0019	0.0019	0.0021

DATA SET 3050-4+: 105°C; 1500 mA

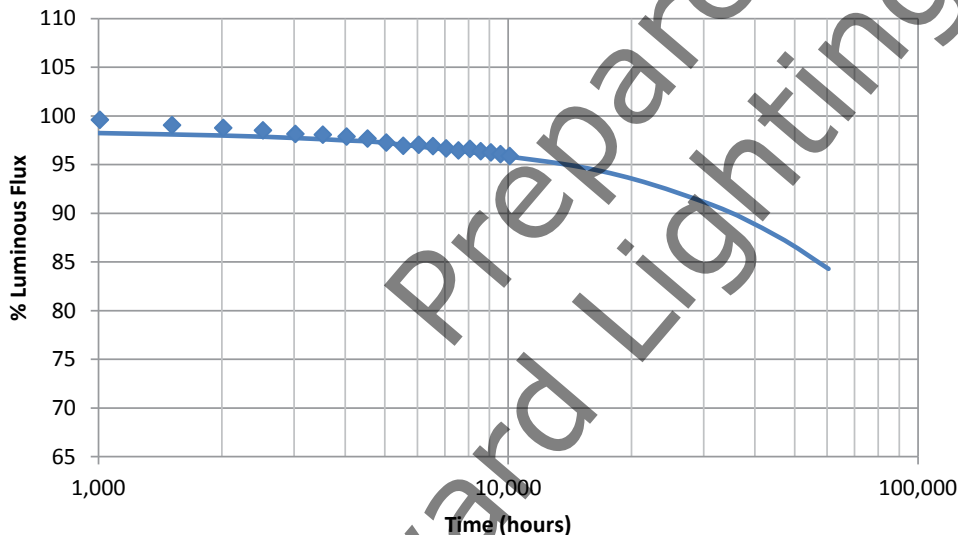
Tested LED Array Series	XLamp CXA3050 White LEDs (Series: CXA3050) See the Scaling For Applicable Products section for list of applicable order codes and currents.
Tested Model Number	CXA3050-0000-000N00W230F
Tested Drive Current [I_F]	1500 mA
Average Current-Per-Die	115.4 mA per die
Testing Initiation Date	February 27, 2013
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	10,080 hours
Test duration used for projection	t=5,040 to t=10,080
α	2.575E-06
β	9.848E-01
Calculated Lifetime	L70(10k) = 133,000 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	99.6010%
1512	99.0500%
2016	98.7700%
2520	98.5160%
3024	98.1490%
3528	98.0710%
4032	97.8780%
4536	97.6740%
5040	97.2620%
5544	96.9300%
6048	97.0360%
6552	96.8990%
7056	96.6620%
7560	96.4560%
8064	96.6150%
8568	96.3750%
9072	96.2520%
9576	96.0710%
10080	95.8820%



* <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 points t=168 hr would be excluded, so the projection is unaffected.

DATA SET 3050-4+: 105°C; 1500 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
1	7113	37.14	3029	3000	99.3	99.6	99.5	98.9	98.5	98.7	98.3	98.1	97.9	97.2	97.5	97.5
2	7094	37.10	3021	3000	99.6	100.0	99.6	99.1	98.9	99.1	98.2	98.2	98.2	97.9	97.8	97.0
3	7062	37.19	2960	3000	99.2	99.4	98.8	98.7	98.6	98.2	98.1	97.8	97.3	97.4	96.7	97.0
4	7106	37.29	2950	3000	99.5	99.2	98.8	98.6	98.5	98.2	98.1	97.9	97.5	97.1	97.1	96.9
5	7131	37.16	3002	3000	99.3	99.4	99.0	98.8	98.4	98.4	97.9	98.1	97.7	97.6	96.7	97.2
6	7124	37.17	2990	3000	98.9	99.1	98.7	98.5	98.4	97.8	97.9	97.8	97.3	96.8	96.6	96.6
7	7194	37.11	3071	3000	99.2	99.4	99.2	99.0	98.9	98.5	98.7	98.5	98.2	96.7	96.4	96.6
8	7082	37.08	3013	3000	99.1	98.7	98.3	98.4	98.1	97.8	98.0	97.6	97.0	96.7	96.5	97.0
9	7091	37.60	3055	3000	99.4	99.6	99.0	98.5	98.6	98.0	97.8	98.1	97.9	97.5	97.1	97.7
10	7097	37.60	3055	3000	99.6	99.5	99.0	98.3	98.3	97.7	97.5	97.7	96.6	96.1	97.5	96.4
11	7108	37.58	3031	3000	99.5	99.6	99.2	98.7	98.8	98.2	98.3	98.5	98.0	97.7	97.2	97.6
12	7054	37.46	3038	3000	100.5	100.5	100.1	99.5	99.5	99.2	98.9	99.1	99.0	99.3	98.3	98.9
13	7094	37.56	3036	3000	99.8	99.7	99.5	98.8	98.6	98.2	98.3	98.5	98.3	98.4	97.7	98.0
14	7192	37.53	3044	3000	99.5	99.7	98.8	98.4	98.1	97.8	97.1	98.1	97.5	96.8	96.4	97.3
15	7163	37.59	3050	3000	99.5	99.5	98.9	98.6	98.1	97.5	97.9	97.5	97.4	96.9	96.3	96.7
16	7037	37.57	2999	3000	99.1	99.3	98.8	98.8	98.5	98.3	98.3	97.8	97.8	97.6	97.2	96.4
17	7120	37.48	3061	3000	99.8	100.1	98.9	98.8	98.4	98.0	98.0	96.8	97.5	97.0	97.1	96.4
18	7155	37.58	3006	3000	99.9	99.5	99.3	99.0	98.4	97.9	98.1	97.9	97.4	96.8	96.5	96.7
19	7182	37.57	3029	3000	99.6	99.7	98.8	98.7	98.5	97.8	97.9	97.2	97.4	97.0	96.2	96.4
20	7124	37.57	3006	3000	99.7	100.2	99.0	99.0	98.6	98.1	98.3	97.1	97.8	97.4	96.5	96.8
21	7141	37.56	3028	3000	99.5	99.8	99.0	99.0	98.6	98.0	98.1	97.3	97.4	97.0	96.2	96.7
22	7152	37.59	3043	3000	99.9	99.8	99.0	98.9	98.3	97.9	97.9	97.6	97.6	97.0	96.9	96.9
n	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Mean	7119	37.41			99.5	99.6	99.1	98.8	98.5	98.1	98.1	97.9	97.7	97.3	96.9	97.0
Median	7116	37.54			99.5	99.6	99.0	98.8	98.5	98.1	98.1	97.9	97.6	97.1	96.8	96.9
σ	43	0.21			0.34	0.40	0.38	0.27	0.31	0.44	0.38	0.52	0.50	0.66	0.56	0.62
Min.	7037	37.08			98.9	98.7	98.3	98.3	98.1	97.5	97.1	96.8	96.6	96.1	96.2	96.4
Max.	7194	37.60			100.5	100.5	100.1	99.5	99.5	99.2	98.9	99.1	99.0	99.3	98.3	98.9

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)							
	LF (lm)	V _F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080
1	7113	37.14	3029	3000	97.5	97.4	97.0	97.3	97.0	97.3	97.2	96.7
2	7094	37.10	3021	3000	97.3	97.7	97.2	96.5	97.0	96.9	97.1	96.7
3	7062	37.19	2960	3000	97.2	96.7	96.9	97.0	96.7	95.9	95.4	94.6
4	7106	37.29	2950	3000	96.8	96.7	96.7	96.9	96.7	96.3	96.1	95.3
5	7131	37.16	3002	3000	97.1	96.6	96.1	96.8	96.6	96.4	96.1	96.4
6	7124	37.17	2990	3000	96.8	96.4	96.4	96.1	96.1	95.9	95.7	95.6
7	7194	37.11	3071	3000	96.0	95.6	95.4	95.9	95.8	95.1	95.1	95.2
8	7082	37.08	3013	3000	96.5	95.7	95.7	95.7	95.4	95.4	95.0	95.3
9	7091	37.60	3055	3000	97.7	96.5	95.9	96.4	96.3	96.6	96.1	95.8
10	7097	37.60	3055	3000	96.4	96.5	96.0	96.4	95.8	95.7	95.5	96.2
11	7108	37.58	3031	3000	97.4	97.1	96.7	96.5	96.4	96.3	96.4	96.1
12	7054	37.46	3038	3000	98.8	97.9	97.7	98.0	97.7	98.1	98.1	97.6
13	7094	37.56	3036	3000	97.9	97.5	97.2	97.6	97.2	97.6	97.6	97.3
14	7192	37.53	3044	3000	97.2	96.7	96.5	96.2	96.2	96.1	96.1	95.7
15	7163	37.59	3050	3000	96.3	95.9	95.9	96.1	96.0	95.7	95.4	95.4
16	7037	37.57	2999	3000	96.1	96.3	96.3	96.6	96.3	96.0	96.3	96.1
17	7120	37.48	3061	3000	96.4	96.4	96.3	96.6	95.9	95.5	95.4	95.2
18	7155	37.58	3006	3000	96.7	96.8	96.7	96.9	96.2	96.0	96.0	96.2
19	7182	37.57	3029	3000	96.3	96.3	96.1	96.5	96.3	96.0	95.9	95.7
20	7124	37.57	3006	3000	96.8	96.8	96.7	96.9	96.7	96.5	96.4	96.3
21	7141	37.56	3028	3000	96.6	96.7	96.3	95.9	95.7	96.1	94.6	94.3
22	7152	37.59	3043	3000	96.0	96.2	96.2	96.7	96.1	96.0	96.0	95.6
n	22	22	22	22	22	22	22	22	22	22	22	22
Mean	7119	37.41			96.9	96.7	96.5	96.6	96.4	96.3	96.1	95.9
Median	7116	37.54			96.8	96.6	96.4	96.5	96.3	96.1	96.0	95.8
σ	43	0.21			0.68	0.60	0.55	0.56	0.55	0.72	0.84	0.79
Min.	7037	37.08			96.0	95.6	95.4	95.7	95.4	95.1	94.6	94.3
Max.	7194	37.60			98.8	97.9	97.7	98.0	97.7	98.1	98.1	97.6

DATA SET 3050-4+: 105°C; 1500 mA

Lamp #	Initial (0 hrs)				Chromaticity Shift ($\Delta u/v$)											
	CCx	CCy	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	0.4364	0.4058	3029	3000	0.0006	0.0008	0.0007	0.0007	0.0008	0.0009	0.0009	0.0011	0.0011	0.0012	0.0012	0.0014
2	0.4363	0.4046	3021	3000	0.0006	0.0009	0.0008	0.0008	0.0009	0.0008	0.0011	0.0012	0.0012	0.0012	0.0013	0.0015
3	0.4413	0.4076	2960	3000	0.0008	0.0007	0.0008	0.0008	0.0009	0.0010	0.0011	0.0012	0.0013	0.0014	0.0014	0.0015
4	0.4431	0.4101	2950	3000	0.0007	0.0007	0.0007	0.0008	0.0008	0.0009	0.0010	0.0011	0.0011	0.0013	0.0014	0.0014
5	0.4402	0.4106	3002	3000	0.0006	0.0006	0.0006	0.0007	0.0007	0.0008	0.0009	0.0010	0.0010	0.0011	0.0012	0.0013
6	0.4416	0.4118	2990	3000	0.0006	0.0006	0.0006	0.0006	0.0008	0.0009	0.0010	0.0010	0.0011	0.0013	0.0013	0.0014
7	0.4350	0.4081	3071	3000	0.0005	0.0004	0.0006	0.0006	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0011
8	0.4364	0.4040	3013	3000	0.0008	0.0009	0.0009	0.0010	0.0010	0.0011	0.0012	0.0013	0.0014	0.0015	0.0016	0.0016
9	0.4335	0.4030	3055	3000	0.0006	0.0006	0.0006	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011	0.0012	0.0014	0.0013
10	0.4334	0.4028	3055	3000	0.0005	0.0005	0.0006	0.0008	0.0008	0.0009	0.0011	0.0011	0.0012	0.0014	0.0012	0.0015
11	0.4350	0.4032	3031	3000	0.0006	0.0006	0.0007	0.0008	0.0008	0.0010	0.0011	0.0011	0.0011	0.0012	0.0014	0.0013
12	0.4344	0.4027	3038	3000	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0011	0.0013	0.0012	0.0013	0.0014	0.0014
13	0.4345	0.4026	3036	3000	0.0006	0.0006	0.0007	0.0009	0.0009	0.0010	0.0011	0.0011	0.0011	0.0012	0.0013	0.0014
14	0.4328	0.4002	3044	3000	0.0006	0.0006	0.0006	0.0008	0.0008	0.0009	0.0010	0.0011	0.0011	0.0012	0.0014	0.0014
15	0.4323	0.3997	3050	3000	0.0008	0.0007	0.0007	0.0009	0.0009	0.0010	0.0011	0.0013	0.0014	0.0016	0.0016	0.0016
16	0.4366	0.4025	2999	3000	0.0008	0.0008	0.0008	0.0010	0.0009	0.0011	0.0012	0.0012	0.0013	0.0013	0.0014	0.0015
17	0.4316	0.3995	3061	3000	0.0005	0.0005	0.0007	0.0007	0.0008	0.0009	0.0010	0.0012	0.0012	0.0012	0.0014	0.0016
18	0.4350	0.4002	3006	3000	0.0006	0.0007	0.0007	0.0008	0.0009	0.0010	0.0012	0.0012	0.0012	0.0015	0.0016	0.0017
19	0.4338	0.4004	3029	3000	0.0007	0.0006	0.0007	0.0008	0.0008	0.0010	0.0012	0.0013	0.0013	0.0014	0.0016	0.0016
20	0.4350	0.4002	3006	3000	0.0007	0.0007	0.0008	0.0008	0.0009	0.0010	0.0012	0.0013	0.0013	0.0014	0.0014	0.0016
21	0.4338	0.4002	3028	3000	0.0007	0.0005	0.0007	0.0008	0.0009	0.0010	0.0011	0.0013	0.0013	0.0014	0.0015	0.0016
22	0.4329	0.4003	3043	3000	0.0004	0.0004	0.0006	0.0008	0.0009	0.0011	0.0012	0.0011	0.0012	0.0013	0.0014	0.0014
n	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Mean					0.0006	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0012	0.0013	0.0014	0.0015
Median					0.0006	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0011	0.0012	0.0013	0.0014	0.0014
σ					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Min.					0.0004	0.0004	0.0006	0.0006	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0011
Max.					0.0008	0.0009	0.0009	0.0010	0.0010	0.0011	0.0012	0.0013	0.0014	0.0016	0.0016	0.0017

Lamp #	Initial (0 hrs)				Chromaticity Shift ($\Delta u/v$)							
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080
1	0.4364	0.4058	3029	3000	0.0014	0.0015	0.0015	0.0016	0.0017	0.0016	0.0017	0.0017
2	0.4363	0.4046	3021	3000	0.0014	0.0014	0.0014	0.0017	0.0017	0.0017	0.0018	0.0019
3	0.4413	0.4076	2960	3000	0.0014	0.0017	0.0018	0.0017	0.0018	0.0019	0.0021	0.0022
4	0.4431	0.4101	2950	3000	0.0014	0.0016	0.0016	0.0016	0.0017	0.0018	0.0019	0.0019
5	0.4402	0.4106	3002	3000	0.0013	0.0015	0.0016	0.0016	0.0016	0.0016	0.0018	0.0018
6	0.4416	0.4118	2990	3000	0.0013	0.0015	0.0016	0.0017	0.0017	0.0018	0.0019	0.0019
7	0.4350	0.4081	3071	3000	0.0012	0.0015	0.0015	0.0016	0.0015	0.0017	0.0018	0.0019
8	0.4364	0.4040	3013	3000	0.0016	0.0019	0.0020	0.0021	0.0020	0.0022	0.0024	0.0025
9	0.4335	0.4030	3055	3000	0.0013	0.0016	0.0017	0.0018	0.0018	0.0018	0.0020	0.0021
10	0.4334	0.4028	3055	3000	0.0015	0.0016	0.0017	0.0018	0.0018	0.0018	0.0020	0.0019
11	0.4350	0.4032	3031	3000	0.0014	0.0016	0.0017	0.0018	0.0017	0.0018	0.0019	0.0020
12	0.4344	0.4027	3038	3000	0.0014	0.0016	0.0017	0.0018	0.0017	0.0018	0.0018	0.0018
13	0.4345	0.4026	3036	3000	0.0014	0.0016	0.0016	0.0017	0.0017	0.0017	0.0017	0.0018
14	0.4328	0.4002	3044	3000	0.0014	0.0015	0.0016	0.0016	0.0018	0.0018	0.0019	0.0021
15	0.4323	0.3997	3050	3000	0.0017	0.0020	0.0022	0.0022	0.0021	0.0022	0.0023	0.0024
16	0.4366	0.4025	2999	3000	0.0017	0.0018	0.0019	0.0019	0.0020	0.0020	0.0022	0.0023
17	0.4316	0.3995	3061	3000	0.0016	0.0017	0.0018	0.0018	0.0018	0.0020	0.0020	0.0020
18	0.4350	0.4002	3006	3000	0.0017	0.0017	0.0018	0.0019	0.0019	0.0020	0.0022	0.0021
19	0.4338	0.4004	3029	3000	0.0017	0.0017	0.0019	0.0019	0.0019	0.0020	0.0021	0.0021
20	0.4350	0.4002	3006	3000	0.0017	0.0017	0.0018	0.0019	0.0019	0.0020	0.0020	0.0020
21	0.4338	0.4002	3028	3000	0.0017	0.0017	0.0019	0.0019	0.0017	0.0020	0.0022	0.0022
22	0.4329	0.4003	3043	3000	0.0017	0.0018	0.0019	0.0020	0.0020	0.0021	0.0022	0.0021
n	22	22	22	22	22	22	22	22	22	22	22	22
Mean					0.0015	0.0016	0.0017	0.0018	0.0018	0.0019	0.0020	0.0020
Median					0.0014	0.0016	0.0017	0.0018	0.0018	0.0019	0.0020	0.0020
σ					0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.					0.0012	0.0014	0.0015	0.0016	0.0015	0.0016	0.0017	0.0017
Max.					0.0017	0.0020	0.0022	0.0022	0.0021	0.0022	0.0024	0.0025

DATA SET 3050-5: 85°C; 1700 mA

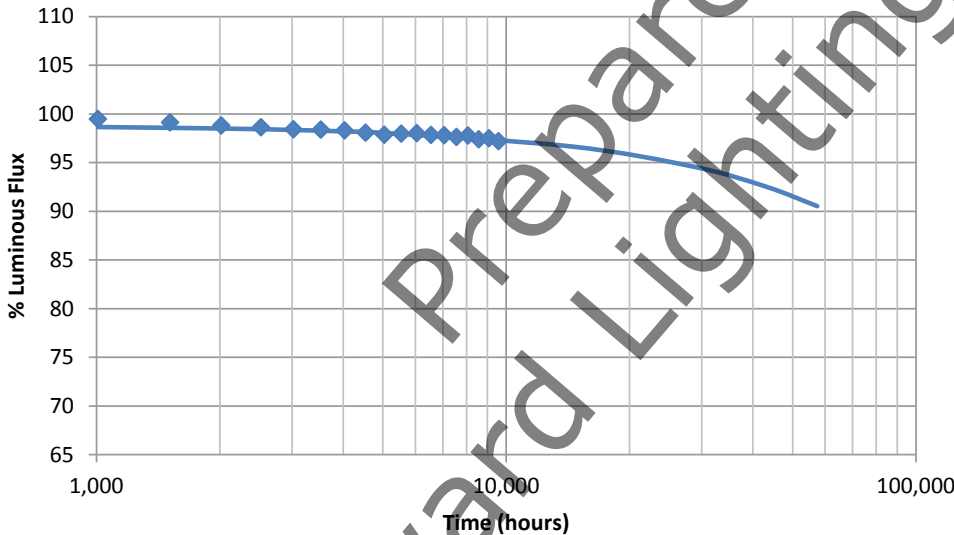
Tested LED Array Series	XLamp CXA3050 White LEDs (Series: CXA3050) See the Scaling For Applicable Products section for list of applicable order codes and currents.
Tested Model Number	CXA3050-0000-000N00W230F
Tested Drive Current [I_F]	1700 mA
Average Current-Per-Die	130.8 mA per die
Testing Initiation Date	February 11, 2013
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	9,576 hours
Test duration used for projection	t=4,536 to t=9,576
α	1.524E-06
β	9.879E-01
Calculated Lifetime	L70(10k) > 172,000 hours
Reported Lifetime	L70(10k) > 57,500 hours

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

Time (hours)	Lumen Maintenance
0	100.0000%
168	99.4500%
1008	99.4780%
1512	99.1290%
2016	98.8130%
2520	98.6340%
3024	98.4260%
3528	98.3890%
4032	98.3120%
4536	98.0740%
5040	97.8630%
5544	97.9750%
6048	98.0270%
6552	97.8470%
7056	97.8110%
7560	97.6340%
8064	97.7850%
8568	97.3960%
9072	97.5040%
9576	97.1980%



* <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 3050-5: 85°C; 1700 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
1	7962	38.23	2925	3000	99.2	100.1	100.0	99.5	98.6	98.8	98.0	98.9	98.5	98.9	98.6	98.0
2	7967	38.61	3046	3000	99.4	99.6	98.7	98.0	98.4	97.7	97.9	98.0	97.4	97.0	97.2	97.8
3	7966	38.61	3053	3000	99.3	99.9	99.1	98.4	99.0	98.3	98.8	98.9	97.9	98.1	98.1	98.4
4	7923	38.47	3028	3000	99.8	100.2	99.3	98.7	99.0	98.2	98.6	98.6	97.9	97.8	98.0	98.3
5	8025	38.51	3055	3000	99.6	99.9	99.4	99.3	98.5	99.0	99.2	99.1	98.9	98.4	97.9	98.1
6	8079	38.50	3067	3000	99.5	99.4	99.2	99.0	98.2	98.5	98.7	98.7	98.7	98.2	97.8	97.9
7	8050	38.49	3050	3000	99.6	99.7	99.2	99.1	98.5	98.6	98.7	98.8	98.9	98.6	98.2	98.4
8	8188	38.79	3093	3000	98.9	99.8	99.6	99.6	99.5	98.6	98.8	98.8	97.5	98.0	97.3	97.9
9	8163	38.81	3081	3000	99.5	99.4	99.5	99.4	99.4	98.5	99.1	99.1	98.1	98.1	98.6	98.9
10	8112	38.52	3089	3000	99.0	99.0	98.4	98.2	98.2	97.4	97.9	98.1	97.2	97.2	97.4	97.8
11	7902	38.65	3017	3000	99.6	99.7	98.5	98.9	98.1	98.7	98.8	98.4	98.7	97.7	97.5	97.4
12	7948	38.73	3006	3000	99.3	99.3	98.7	98.3	98.2	98.1	98.2	97.8	98.1	97.6	97.5	97.4
13	7946	38.52	3018	3000	99.7	99.4	99.3	98.9	98.7	98.1	97.6	98.1	97.8	97.7	97.4	97.9
14	8136	38.95	3087	3000	98.8	99.5	99.1	99.1	98.9	98.8	98.5	98.6	97.7	98.5	98.8	98.8
15	7964	38.85	3073	3000	99.2	98.5	98.7	97.7	98.6	97.3	98.2	98.1	97.3	97.2	97.3	97.5
16	7956	38.82	3065	3000	99.5	99.4	98.9	97.9	98.8	98.4	98.7	98.6	97.6	98.8	98.1	98.0
17	7964	38.63	3119	3000	99.6	99.4	99.0	98.9	98.9	98.5	97.6	97.1	97.1	96.7	97.4	98.0
18	7910	38.70	3120	3000	99.3	99.4	99.2	99.0	99.1	98.6	97.9	97.5	98.3	97.3	98.3	98.4
19	7874	38.59	3092	3000	99.7	99.2	99.0	98.9	98.8	98.6	97.8	97.9	98.1	97.1	98.1	97.7
20	7984	38.73	3095	3000	99.6	99.3	98.9	98.8	98.6	98.3	97.6	97.4	97.8	97.3	98.0	98.0
21	7940	38.12	2933	3000	99.6	99.4	99.9	99.6	98.9	99.5	99.3	99.0	99.0	99.0	99.3	99.0
22	8263	38.15	3130	3000	99.5	99.3	99.6	99.0	98.5	99.2	99.2	98.3	98.7	98.4	98.7	98.4
23	8248	38.17	3095	3000	99.3	99.1	98.8	98.4	98.0	98.2	98.4	97.6	97.9	97.7	98.2	97.5
24	7938	38.54	3007	3000	99.6	99.2	98.7	98.3	97.9	97.8	97.4	97.7	97.7	97.2	97.2	96.9
25	7990	38.46	3059	3000	99.8	99.7	99.6	99.3	98.7	98.8	98.6	98.8	99.1	98.5	98.5	98.5
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	8016	38.57			99.4	99.5	99.1	98.8	98.6	98.4	98.4	98.3	98.1	97.9	98.0	98.0
Median	7966	38.59			99.5	99.4	99.1	98.9	98.6	98.5	98.5	98.4	97.9	97.8	98.0	98.0
σ	110	0.22			0.26	0.36	0.42	0.54	0.40	0.50	0.55	0.58	0.60	0.63	0.57	0.51
Min.	7874	38.12			98.8	98.5	98.4	97.7	97.9	97.3	97.4	97.1	97.1	96.7	97.2	96.9
Max.	8263	38.95			99.8	100.2	100.0	99.6	99.5	99.5	99.3	99.1	99.1	99.0	99.3	99.0

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)							
	LF (lm)	V _F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	
1	7962	38.23	2925	3000	98.6	98.5	97.5	98.3	98.6	98.3	98.2	
2	7967	38.61	3046	3000	97.5	97.7	97.5	97.5	96.9	97.4	97.1	
3	7966	38.61	3053	3000	98.3	97.8	98.1	98.4	97.8	97.5	97.6	
4	7923	38.47	3028	3000	97.5	97.4	97.7	98.1	97.6	97.3	97.4	
5	8025	38.51	3055	3000	97.9	98.2	97.8	98.0	98.1	97.9	97.6	
6	8079	38.50	3067	3000	97.9	98.1	97.8	98.0	98.1	98.0	97.6	
7	8050	38.49	3050	3000	98.2	98.4	97.9	98.3	98.1	98.2	97.7	
8	8188	38.79	3093	3000	97.2	96.6	97.5	97.7	96.5	97.2	96.3	
9	8163	38.81	3081	3000	98.4	98.6	98.5	98.8	97.9	98.8	97.6	
10	8112	38.52	3089	3000	97.6	97.5	97.7	97.6	97.1	97.5	97.0	
11	7902	38.65	3017	3000	98.3	97.7	98.5	98.4	97.9	97.5	98.5	
12	7948	38.73	3006	3000	97.6	97.7	98.1	98.2	97.5	97.6	98.1	
13	7946	38.52	3018	3000	97.6	97.4	97.0	97.5	96.7	96.8	96.6	
14	8136	38.95	3087	3000	98.2	97.5	97.8	97.8	97.1	97.8	96.5	
15	7964	38.85	3073	3000	97.7	97.6	96.6	97.2	96.8	96.6	97.3	
16	7956	38.82	3065	3000	97.6	96.8	97.9	96.9	96.8	97.3	97.1	
17	7964	38.63	3119	3000	97.3	97.1	96.2	96.2	95.9	96.1	95.9	
18	7910	38.70	3120	3000	98.1	98.0	97.5	97.7	96.8	97.4	97.2	
19	7874	38.59	3092	3000	98.2	98.0	96.8	97.6	96.6	97.2	96.6	
20	7984	38.73	3095	3000	97.6	97.6	97.5	97.2	96.7	97.0	96.3	
21	7940	38.12	2933	3000	99.0	99.2	98.7	98.8	98.9	98.5	98.6	
22	8263	38.15	3130	3000	98.2	98.9	98.4	98.2	98.1	97.9	97.5	
23	8248	38.17	3095	3000	97.2	97.9	97.2	97.7	97.9	97.5	96.2	
24	7938	38.54	3007	3000	96.7	96.8	96.8	96.5	96.4	96.3	95.9	
25	7990	38.46	3059	3000	97.8	98.3	97.8	98.1	98.1	98.0	97.8	
n	25	25	25	25	25	25	25	25	25	25	25	
Mean	8016	38.57			97.8	97.8	97.6	97.8	97.4	97.5	97.2	
Median	7966	38.59			97.8	97.7	97.7	97.8	97.5	97.5	97.3	
σ	110	0.22			0.51	0.64	0.62	0.65	0.77	0.65	0.76	
Min.	7874	38.12			96.7	96.6	96.2	96.2	95.9	96.1	95.9	
Max.	8263	38.95			99.0	99.2	98.7	98.8	98.9	98.8	98.6	

DATA SET 3050-5: 85°C; 1700 mA

Lamp #	Initial (0 hrs)				Chromaticity Shift ($\Delta u/v'$)											
	CCx	CCy	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	0.4435	0.4078	2925	3000	0.0006	0.0005	0.0004	0.0004	0.0005	0.0004	0.0006	0.0005	0.0006	0.0006	0.0006	0.0007
2	0.4334	0.4016	3046	3000	0.0006	0.0005	0.0005	0.0006	0.0006	0.0007	0.0008	0.0009	0.0011	0.0011	0.0012	0.0012
3	0.4333	0.4023	3053	3000	0.0005	0.0004	0.0004	0.0006	0.0005	0.0006	0.0007	0.0007	0.0008	0.0009	0.0010	0.0010
4	0.4338	0.4003	3028	3000	0.0006	0.0004	0.0005	0.0006	0.0006	0.0007	0.0008	0.0008	0.0010	0.0011	0.0011	0.0012
5	0.4325	0.4009	3055	3000	0.0004	0.0002	0.0004	0.0005	0.0005	0.0006	0.0007	0.0007	0.0008	0.0009	0.0010	0.0011
6	0.4320	0.4011	3067	3000	0.0005	0.0003	0.0003	0.0005	0.0005	0.0006	0.0007	0.0007	0.0008	0.0008	0.0009	0.0010
7	0.4325	0.4001	3050	3000	0.0005	0.0003	0.0003	0.0005	0.0005	0.0006	0.0007	0.0007	0.0008	0.0009	0.0010	0.0010
8	0.4335	0.4075	3093	3000	0.0003	0.0004	0.0003	0.0004	0.0003	0.0004	0.0006	0.0007	0.0008	0.0008	0.0012	0.0010
9	0.4337	0.4065	3081	3000	0.0003	0.0003	0.0003	0.0004	0.0004	0.0005	0.0007	0.0007	0.0008	0.0009	0.0009	0.0009
10	0.4335	0.4070	3089	3000	0.0005	0.0004	0.0005	0.0006	0.0006	0.0006	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009
11	0.4359	0.4034	3017	3000	0.0006	0.0004	0.0006	0.0008	0.0007	0.0008	0.0010	0.0009	0.0010	0.0012	0.0013	0.0012
12	0.4368	0.4040	3006	3000	0.0006	0.0004	0.0006	0.0007	0.0007	0.0008	0.0009	0.0009	0.0009	0.0011	0.0011	0.0012
13	0.4345	0.4007	3018	3000	0.0006	0.0005	0.0004	0.0006	0.0007	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0012
14	0.4334	0.4066	3087	3000	0.0004	0.0003	0.0004	0.0005	0.0005	0.0006	0.0007	0.0006	0.0007	0.0008	0.0008	0.0009
15	0.4381	0.4149	3073	3000	0.0004	0.0003	0.0003	0.0006	0.0005	0.0007	0.0007	0.0007	0.0008	0.0009	0.0009	0.0010
16	0.4382	0.4143	3065	3000	0.0004	0.0002	0.0003	0.0005	0.0004	0.0005	0.0006	0.0006	0.0007	0.0007	0.0007	0.0008
17	0.4297	0.4024	3119	3000	0.0005	0.0003	0.0002	0.0006	0.0005	0.0007	0.0010	0.0009	0.0011	0.0012	0.0010	0.0010
18	0.4297	0.4027	3120	3000	0.0005	0.0003	0.0003	0.0005	0.0004	0.0006	0.0008	0.0008	0.0009	0.0010	0.0009	0.0009
19	0.4305	0.4009	3092	3000	0.0005	0.0004	0.0003	0.0005	0.0006	0.0006	0.0008	0.0008	0.0009	0.0010	0.0009	0.0010
20	0.4312	0.4028	3095	3000	0.0005	0.0003	0.0003	0.0006	0.0005	0.0007	0.0009	0.0009	0.0009	0.0011	0.0009	0.0011
21	0.4432	0.4080	2933	3000	0.0005	0.0005	0.0005	0.0006	0.0007	0.0006	0.0007	0.0007	0.0008	0.0008	0.0008	0.0009
22	0.4348	0.4151	3130	3000	0.0005	0.0004	0.0006	0.0005	0.0007	0.0007	0.0008	0.0010	0.0011	0.0010	0.0010	0.0011
23	0.4355	0.4122	3095	3000	0.0004	0.0005	0.0006	0.0006	0.0008	0.0009	0.0008	0.0010	0.0011	0.0011	0.0011	0.0012
24	0.4352	0.4007	3007	3000	0.0006	0.0005	0.0004	0.0007	0.0008	0.0009	0.0012	0.0010	0.0011	0.0013	0.0013	0.0015
25	0.4323	0.4009	3059	3000	0.0005	0.0004	0.0003	0.0006	0.0006	0.0007	0.0009	0.0008	0.0009	0.0010	0.0011	0.0012
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					0.0005	0.0004	0.0004	0.0006	0.0006	0.0007	0.0008	0.0008	0.0009	0.0010	0.0010	0.0010
Median					0.0005	0.0004	0.0004	0.0006	0.0005	0.0006	0.0006	0.0008	0.0008	0.0009	0.0010	0.0010
σ					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002
Min.					0.0003	0.0002	0.0002	0.0004	0.0003	0.0004	0.0006	0.0005	0.0006	0.0006	0.0006	0.0007
Max.					0.0006	0.0005	0.0006	0.0008	0.0008	0.0009	0.0012	0.0010	0.0011	0.0013	0.0013	0.0015

Lamp #	Initial (0 hrs)				Chromaticity Shift ($\Delta u/v'$)							
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	
1	0.4435	0.4078	2925	3000	0.0007	0.0008	0.0007	0.0008	0.0009	0.0010	0.0010	
2	0.4334	0.4016	3046	3000	0.0012	0.0013	0.0013	0.0014	0.0013	0.0014	0.0015	
3	0.4333	0.4023	3053	3000	0.0011	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	
4	0.4338	0.4003	3028	3000	0.0013	0.0013	0.0013	0.0014	0.0013	0.0015	0.0014	
5	0.4325	0.4009	3055	3000	0.0012	0.0013	0.0012	0.0013	0.0012	0.0013	0.0013	
6	0.4320	0.4011	3067	3000	0.0011	0.0011	0.0011	0.0011	0.0011	0.0012	0.0012	
7	0.4325	0.4001	3050	3000	0.0010	0.0011	0.0011	0.0012	0.0011	0.0012	0.0012	
8	0.4335	0.4075	3093	3000	0.0013	0.0013	0.0012	0.0013	0.0014	0.0014	0.0015	
9	0.4337	0.4065	3081	3000	0.0010	0.0010	0.0011	0.0011	0.0011	0.0010	0.0012	
10	0.4335	0.4070	3089	3000	0.0011	0.0011	0.0011	0.0012	0.0011	0.0012	0.0013	
11	0.4359	0.4034	3017	3000	0.0012	0.0013	0.0013	0.0013	0.0014	0.0015	0.0015	
12	0.4368	0.4040	3006	3000	0.0012	0.0012	0.0013	0.0013	0.0014	0.0014	0.0015	
13	0.4345	0.4007	3018	3000	0.0013	0.0013	0.0015	0.0015	0.0016	0.0016	0.0016	
14	0.4334	0.4066	3087	3000	0.0009	0.0011	0.0010	0.0011	0.0011	0.0012	0.0012	
15	0.4381	0.4149	3073	3000	0.0010	0.0010	0.0013	0.0012	0.0013	0.0014	0.0013	
16	0.4382	0.4143	3065	3000	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0012	
17	0.4297	0.4024	3119	3000	0.0010	0.0011	0.0012	0.0015	0.0014	0.0017	0.0017	
18	0.4297	0.4027	3120	3000	0.0009	0.0011	0.0012	0.0012	0.0013	0.0014	0.0015	
19	0.4305	0.4009	3092	3000	0.0009	0.0011	0.0012	0.0013	0.0013	0.0014	0.0015	
20	0.4312	0.4028	3095	3000	0.0011	0.0011	0.0012	0.0013	0.0013	0.0015	0.0016	
21	0.4432	0.4080	2933	3000	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0013	
22	0.4348	0.4151	3130	3000	0.0011	0.0012	0.0011	0.0012	0.0012	0.0013	0.0014	
23	0.4355	0.4122	3095	3000	0.0013	0.0012	0.0013	0.0014	0.0014	0.0014	0.0016	
24	0.4352	0.4007	3007	3000	0.0016	0.0017	0.0017	0.0017	0.0018	0.0018	0.0018	
25	0.4323	0.4009	3059	3000	0.0013	0.0014	0.0014	0.0014	0.0014	0.0015	0.0014	
n	25	25	25	25	25	25	25	25	25	25	25	
Mean					0.0011	0.0012	0.0012	0.0012	0.0013	0.0014	0.0014	
Median					0.0011	0.0011	0.0012	0.0013	0.0013	0.0014	0.0014	
σ					0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	
Min.					0.0007	0.0008	0.0007	0.0008	0.0009	0.0010	0.0010	
Max.					0.0016	0.0017	0.0017	0.0017	0.0018	0.0018	0.0018	

DATA SET 3050-6: 85°C; 2250 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
1	9242	40.06	2930	3000	98.3	97.6	97.7	96.9	97.3	96.9	96.5	95.9	95.8	95.7	95.1	94.8	94.7
2	9245	40.18	2934	3000	98.2	98.0	97.6	96.9	96.8	96.7	97.3	96.8	96.8	97.1	96.5	95.7	95.7
3	9231	39.80	2959	3000	98.9	98.6	98.4	98.2	98.3	97.9	98.4	98.1	98.0	98.3	97.9	97.0	96.8
4	10188	40.79	2966	3000	98.7	98.5	98.0	97.7	97.7	97.0	97.7	97.4	96.9	97.7	97.3	96.8	96.2
5	10231	40.87	2966	3000	98.7	98.5	98.0	97.7	98.0	97.4	98.0	97.6	97.4	97.7	97.5	96.8	96.6
6	10064	40.32	2959	3000	98.8	98.3	98.4	97.8	98.4	97.8	98.2	97.7	97.3	98.0	97.4	96.9	96.6
7	10112	40.71	2956	3000	99.2	98.7	98.4	98.1	98.3	97.2	98.1	97.6	97.5	98.1	97.6	96.9	96.7
8	9749	39.22	3021	3000	98.1	98.3	98.1	97.6	97.8	96.6	97.3	96.9	97.0	97.6	97.1	96.8	97.0
9	9752	39.24	3020	3000	98.7	98.6	98.6	97.9	98.1	97.4	98.0	97.1	97.3	97.5	97.1	96.8	96.6
10	9557	39.89	2993	3000	99.1	99.1	99.1	98.4	98.7	98.2	98.9	98.2	98.1	98.7	98.1	97.9	98.3
11	9680	40.14	3093	3000	98.2	98.8	98.9	98.2	97.9	97.9	98.3	97.4	98.1	98.3	98.1	97.8	98.0
12	9776	39.58	3155	3000	98.6	99.4	99.5	98.7	99.3	98.4	99.0	97.9	98.6	98.9	98.8	98.4	98.6
13	9939	40.18	3183	3000	98.1	98.3	98.1	97.3	97.9	97.2	97.2	96.8	97.3	97.4	96.8	96.8	97.1
14	9818	39.40	3066	3000	98.9	98.3	96.9	96.8	96.9	96.6	96.5	95.9	96.2	95.7	96.3	95.9	95.8
15	9264	39.52	2903	3000	98.9	98.5	98.2	97.8	98.0	97.7	97.4	97.1	96.7	96.7	96.5	96.9	96.7
16	10098	40.18	3091	3000	98.4	97.9	97.5	97.3	97.6	97.5	97.8	97.4	97.1	97.3	97.1	96.1	95.9
17	10023	39.97	2884	3000	98.8	98.9	98.6	98.2	98.1	98.1	98.0	97.3	97.9	97.3	97.7	97.2	97.0
18	10003	40.02	2878	3000	99.0	98.9	98.6	98.2	98.2	98.0	97.9	97.2	98.0	97.6	97.8	97.5	96.8
19	10001	40.09	2904	3000	98.9	99.2	99.0	98.6	98.7	98.4	98.3	97.6	98.5	97.5	98.0	97.4	97.3
20	9975	40.03	2893	3000	98.6	99.1	99.0	98.6	98.7	98.4	98.4	97.6	98.3	98.0	98.0	97.6	97.0
21	9566	39.95	2995	3000	99.0	99.1	99.0	98.3	98.7	97.8	98.4	97.9	97.8	98.4	98.2	97.8	97.6
22	9630	40.01	3098	3000	99.8	99.7	98.6	98.8	98.9	98.3	98.0	97.2	98.5	98.2	98.0	97.6	97.6
23	9835	39.33	3042	3000	98.2	99.2	99.2	98.6	99.2	98.6	99.0	98.1	98.8	99.1	98.9	98.5	98.5
24	9195	39.38	2896	3000	99.0	98.8	98.7	97.7	97.3	97.4	97.2	97.3	96.7	96.7	96.6	96.4	96.5
25	9182	39.38	2904	3000	98.6	98.5	98.7	97.8	97.8	97.8	97.4	97.7	97.6	97.1	96.9	96.5	96.5
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	9734	39.93			98.7	98.7	98.4	97.9	98.1	97.6	97.9	97.3	97.5	97.6	97.4	97.0	96.9
Median	9776	40.01			98.7	98.6	98.6	97.9	98.1	97.8	98.0	97.4	97.5	97.6	97.5	96.9	96.8
σ	342	0.47			0.40	0.48	0.61	0.57	0.65	0.60	0.68	0.58	0.77	0.84	0.84	0.84	0.90
Min.	9182	39.22			98.1	97.6	96.9	96.8	96.8	96.6	96.5	95.9	95.8	95.7	95.1	94.8	94.7
Max.	10231	40.87			99.8	99.7	99.5	98.8	99.3	98.6	99.0	98.2	98.8	99.1	98.9	98.5	98.6

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δuv)												
	CCx	CCy	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048	6552
1	0.4397	0.4008	2930	3000	0.0010	0.0016	0.0017	0.0018	0.0018	0.0019	0.0020	0.0021	0.0021	0.0021	0.0023	0.0023	0.0024
2	0.4396	0.4010	2934	3000	0.0009	0.0012	0.0016	0.0016	0.0017	0.0019	0.0019	0.0019	0.0020	0.0020	0.0020	0.0022	0.0023
3	0.4373	0.3994	2959	3000	0.0010	0.0012	0.0014	0.0015	0.0015	0.0016	0.0017	0.0017	0.0018	0.0018	0.0018	0.0020	0.0021
4	0.4458	0.4176	2966	3000	0.0008	0.0010	0.0013	0.0013	0.0013	0.0014	0.0015	0.0016	0.0016	0.0016	0.0016	0.0017	0.0019
5	0.4457	0.4172	2966	3000	0.0008	0.0010	0.0013	0.0012	0.0013	0.0014	0.0015	0.0015	0.0015	0.0015	0.0015	0.0017	0.0018
6	0.4466	0.4181	2959	3000	0.0007	0.0010	0.0012	0.0012	0.0012	0.0012	0.0014	0.0014	0.0014	0.0014	0.0014	0.0015	0.0016
7	0.4463	0.4172	2956	3000	0.0007	0.0010	0.0012	0.0012	0.0012	0.0013	0.0014	0.0015	0.0015	0.0015	0.0015	0.0016	0.0017
8	0.4431	0.4189	3021	3000	0.0006	0.0010	0.0012	0.0012	0.0012	0.0013	0.0015	0.0016	0.0016	0.0015	0.0016	0.0017	0.0017
9	0.4428	0.4182	3020	3000	0.0008	0.0011	0.0013	0.0013	0.0013	0.0014	0.0015	0.0016	0.0017	0.0016	0.0016	0.0017	0.0018
10	0.4440	0.4172	2993	3000	0.0007	0.0010	0.0011	0.0012	0.0012	0.0013	0.0013	0.0014	0.0015	0.0014	0.0014	0.0016	0.0016
11	0.4312	0.4025	3093	3000	0.0009	0.0010	0.0011	0.0011	0.0012	0.0013	0.0014	0.0015	0.0015	0.0014	0.0015	0.0015	0.0016
12	0.4242	0.3945	3155	3000	0.0008	0.0009	0.0011	0.0011	0.0011	0.0012	0.0013	0.0015	0.0015	0.0014	0.0015	0.0015	0.0016
13	0.4197	0.3875	3183	3000	0.0009	0.0012	0.0015	0.0015	0.0014	0.0016	0.0016	0.0018	0.0018	0.0018	0.0020	0.0020	0.0021
14	0.4293	0.3951	3066	3000	0.0008	0.0011	0.0010	0.0010	0.0011	0.0012	0.0014	0.0015	0.0016	0.0015	0.0017	0.0017	0.0018
15	0.4469	0.4116	2903	3000	0.0009	0.0011	0.0014	0.0014	0.0014	0.0015	0.0016	0.0017	0.0018	0.0017	0.0018	0.0020	0.0020
16	0.4296	0.3987	3091	3000	0.0009	0.0012	0.0015	0.0016	0.0016	0.0017	0.0018	0.0018	0.0019	0.0019	0.0019	0.0021	0.0023
17	0.4444	0.4045	2884	3000	0.0006	0.0013	0.0015	0.0016	0.0017	0.0018	0.0019	0.0021	0.0019	0.0020	0.0021	0.0022	0.0023
18	0.4433	0.4018	2878	3000	0.0006	0.0012	0.0014	0.0015	0.0016	0.0017	0.0019	0.0019	0.0019	0.0019	0.0020	0.0020	0.0022
19	0.4424	0.4029	2904	3000	0.0007	0.0011	0.0013	0.0014	0.0015	0.0016	0.0017	0.0018	0.0018	0.0017	0.0019	0.0020	0.0021
20	0.4428	0.4024	2893	3000	0.0010	0.0012	0.0014	0.0015	0.0016	0.0017	0.0018	0.0018	0.0018	0.0019	0.0020	0.0021	0.0021
21	0.4439	0.4173	2995	3000	0.0008	0.0010	0.0012	0.0012	0.0012	0.0013	0.0014	0.0014	0.0015	0.0015	0.0014	0.0016	0.0016
22	0.4304	0.4015	3098	3000	0.0006	0.0011	0.0011	0.0013	0.0013	0.0014	0.0015	0.0016	0.0016	0.0017	0.0018	0.0019	0.0020
23	0.4295	0.3928	3042	3000	0.0009	0.0010	0.0011	0.0011	0.0011	0.0012	0.0013	0.0014	0.0014	0.0013	0.0014	0.0015	0.0015
24	0.4478	0.4127	2896	3000	0.0008	0.0011	0.0012	0.0013	0.0015	0.0015	0.0016	0.0017	0.0017	0.0017	0.0018	0.0020	0.0020
25	0.4474	0.4128	2904	3000	0.0008	0.0011	0.0012	0.0013	0.0014	0.0014	0.0015	0.0016	0.0016	0.0016	0.0017	0.0018	0.0019
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					0.0008	0.0011	0.0013	0.0013	0.0014	0.0015	0.0016	0.0016	0.0017	0.0017	0.0017	0.0018	0.0019
Median					0.0008	0.0011	0.0013	0.0013	0.0013	0.0014	0.0015	0.0016	0.0016	0.0016	0.0017	0.0018	0.0019
σ					0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003
Min.					0.0006	0.0009	0.0010	0.0010	0.0011	0.0012	0.0013	0.0014	0.0014	0.0013	0.0014	0.0015	0.0015
Max.					0.0010	0.0016	0.0017	0.0018	0.0018	0.0019	0.0020	0.0021	0.0021	0.0021	0.0023	0.0023	0.0024

DATA SET 3050-3: 55°C; 2500 mA

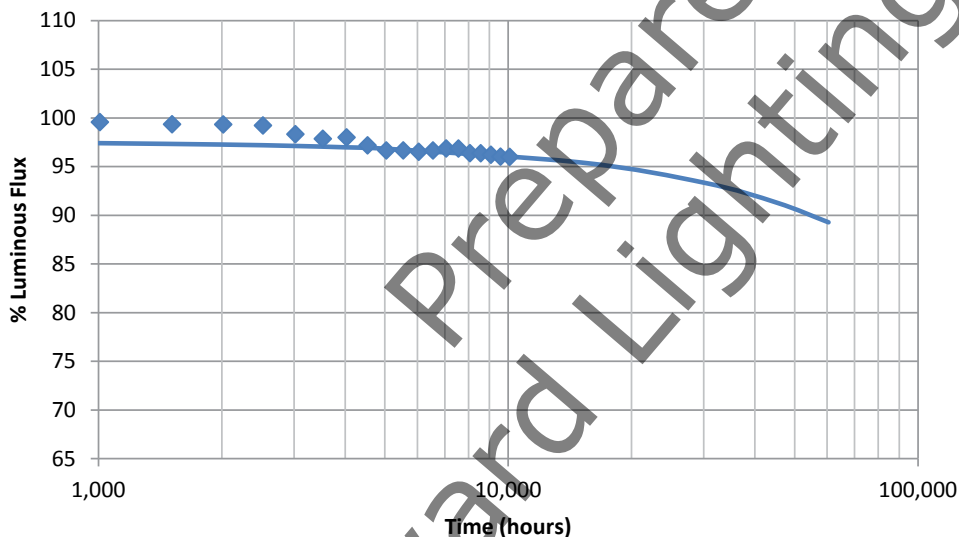
Tested LED Array Series	XLamp CXA3050 White LEDs (Series: CXA3050) See the Scaling For Applicable Products section for list of applicable order codes and currents.
Tested Model Number	CXA3050-0000-000N00W230F
Tested Drive Current [I_F]	2500 mA
Average Current-Per-Die	192.3 mA per die
Testing Initiation Date	March 25, 2013
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	1.462E-06
β	9.754E-01
Calculated Lifetime	L70(10k) > 181,000 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	99.5700%
1512	99.3480%
2016	99.3310%
2520	99.2240%
3024	98.3280%
3528	97.8550%
4032	97.9970%
4536	97.1820%
5040	96.6570%
5544	96.6620%
6048	96.5210%
6552	96.6570%
7056	96.8600%
7560	96.8540%
8064	96.3800%
8568	96.3700%
9072	96.2180%
9576	96.0220%
10080	95.9980%



* <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 points t=168 hr would be excluded, so the projection is unaffected.

DATA SET 3050-3: 55°C; 2500 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
1	9767	41.38	3093	3000	99.7	99.9	99.5	99.9	99.8	98.7	97.3	97.0	96.3	96.1	95.6	95.7
2	9745	41.33	3106	3000	99.8	100.2	100.1	100.1	100.0	98.9	98.0	98.4	96.9	96.5	97.2	97.2
3	9772	41.35	3113	3000	99.9	99.5	99.3	99.8	99.8	99.3	98.8	98.8	98.8	98.0	96.8	97.0
4	9414	41.21	3117	3000	99.4	99.1	99.0	98.9	98.9	98.9	97.3	97.9	97.8	97.2	96.7	96.0
5	9584	41.36	3103	3000	99.9	99.2	99.2	99.3	99.4	98.1	98.2	98.5	98.2	97.8	97.1	96.9
6	9765	41.46	3096	3000	99.6	99.5	99.3	99.4	99.3	98.4	98.3	98.6	98.5	97.1	97.3	97.0
7	9687	41.29	3100	3000	100.6	100.6	100.4	100.2	99.9	98.6	98.0	98.3	97.2	96.5	97.5	97.4
8	9695	40.64	3088	3000	100.1	99.7	99.8	100.0	99.8	98.8	98.6	98.6	97.5	97.2	97.3	96.9
9	9738	40.69	3100	3000	99.9	99.4	99.7	99.9	99.7	98.9	98.8	98.7	97.8	97.3	97.4	97.2
10	9681	40.65	3090	3000	100.1	100.4	100.0	100.0	99.8	99.0	98.8	98.7	97.6	98.0	97.8	97.4
11	9414	41.38	3080	3000	99.4	99.4	99.2	99.3	99.1	97.9	97.7	97.2	96.4	95.7	96.4	96.4
12	9590	41.08	3097	3000	99.6	99.5	99.2	99.2	98.9	97.8	96.8	97.2	96.6	95.6	96.2	96.2
13	9776	41.11	3097	3000	99.2	98.9	98.7	98.4	98.4	97.2	97.0	96.9	96.5	95.7	95.7	95.8
14	9560	41.44	3099	3000	99.6	99.0	98.7	99.2	98.5	98.0	97.4	97.6	96.7	95.9	96.2	95.3
15	9403	41.34	3097	3000	99.4	98.8	98.7	98.9	98.8	97.8	97.6	97.4	96.5	95.7	96.3	95.5
16	9541	41.40	3111	3000	100.0	99.2	99.2	99.2	99.1	97.9	97.4	98.4	96.0	95.9	96.5	96.4
17	9579	41.43	3099	3000	99.5	99.3	99.3	98.9	98.9	97.6	97.2	97.7	96.6	96.0	96.3	96.5
18	9414	41.18	3110	3000	99.5	99.3	98.4	98.3	98.2	97.2	97.2	97.2	96.0	96.1	95.6	95.6
19	9575	41.41	3098	3000	99.6	99.6	98.7	98.5	98.4	97.5	97.5	97.5	96.9	96.4	96.0	96.1
20	9379	41.20	3106	3000	99.4	99.4	98.7	98.3	98.5	97.9	97.9	97.8	96.6	96.5	96.1	96.2
21	9401	41.19	3100	3000	99.4	99.4	98.8	98.5	98.6	97.7	97.8	97.7	97.0	96.8	96.3	96.3
22	9569	40.83	3109	3000	100.3	100.3	100.3	99.8	100.1	99.1	97.8	98.7	98.8	97.9	96.7	97.0
23	9650	41.73	3100	3000	99.7	99.7	99.4	99.3	99.8	99.3	98.6	98.0	97.2	96.6	96.9	96.5
24	9724	40.72	3094	3000	99.7	99.7	99.9	99.7	99.5	98.5	97.9	98.6	97.4	96.7	97.0	97.4
25	9713	40.65	3099	3000	100.1	100.1	100.2	100.3	99.4	99.3	98.4	98.6	97.9	97.0	97.5	97.3
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	9605	41.18			99.7	99.6	99.3	99.3	99.2	98.3	97.9	98.0	97.2	96.7	96.7	96.5
Median	9590	41.29			99.7	99.5	99.3	99.3	99.3	98.4	97.8	98.0	97.0	96.5	96.7	96.5
σ	137	0.31			0.34	0.47	0.56	0.62	0.59	0.67	0.60	0.63	0.82	0.77	0.63	0.65
Min.	9379	40.64			99.2	98.8	98.4	98.3	98.2	97.2	96.8	96.9	96.0	95.6	95.6	95.3
Max.	9776	41.73			100.6	100.6	100.4	100.3	100.1	99.3	98.8	98.8	98.8	98.0	97.8	97.4

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)							
	LF (lm)	V _F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080
1	9767	41.38	3093	3000	96.3	96.4	97.1	96.4	96.6	96.3	96.3	96.1
2	9745	41.33	3106	3000	97.3	98.1	97.7	96.8	96.9	96.7	96.8	96.8
3	9772	41.35	3113	3000	97.6	97.8	97.6	97.3	97.1	96.5	96.5	96.1
4	9414	41.21	3117	3000	95.8	96.4	96.5	96.1	95.9	96.0	95.8	96.0
5	9584	41.36	3103	3000	97.1	97.3	96.3	97.0	96.7	96.9	96.8	96.9
6	9765	41.46	3096	3000	97.3	97.6	96.9	97.2	96.1	96.2	96.0	96.2
7	9687	41.29	3100	3000	97.3	98.1	97.8	96.8	97.1	96.8	96.3	96.2
8	9695	40.64	3088	3000	97.5	96.6	97.7	97.3	97.1	97.3	96.9	96.8
9	9738	40.69	3100	3000	97.4	97.9	97.6	96.9	97.1	96.8	96.8	97.0
10	9681	40.65	3090	3000	97.3	98.0	97.8	97.3	97.4	97.1	97.0	97.3
11	9414	41.38	3080	3000	96.1	96.6	96.4	96.5	95.9	95.7	95.7	95.7
12	9590	41.08	3097	3000	96.1	96.7	96.5	96.1	95.8	95.8	95.6	95.9
13	9776	41.11	3097	3000	96.6	96.1	96.2	95.7	95.6	95.4	95.1	95.5
14	9560	41.44	3099	3000	96.2	95.5	96.3	95.8	95.7	95.6	95.3	95.2
15	9403	41.34	3097	3000	96.3	96.1	96.5	96.0	95.9	96.0	95.5	95.4
16	9541	41.40	3111	3000	96.1	96.9	96.7	95.9	96.1	95.9	95.6	96.0
17	9579	41.43	3099	3000	96.0	96.7	96.5	95.8	96.0	95.7	95.6	95.9
18	9414	41.18	3110	3000	95.2	95.4	95.0	94.9	94.8	94.5	94.2	94.0
19	9575	41.41	3098	3000	96.2	95.9	95.9	95.6	95.5	95.3	94.9	94.2
20	9379	41.20	3106	3000	95.9	96.1	95.7	95.5	95.4	95.2	94.9	94.5
21	9401	41.19	3100	3000	96.4	96.6	96.2	96.0	95.7	95.6	95.3	95.0
22	9569	40.83	3109	3000	97.9	98.7	97.9	97.7	97.7	97.5	97.4	97.2
23	9650	41.73	3100	3000	96.2	95.9	97.2	96.7	96.7	96.7	96.4	95.9
24	9724	40.72	3094	3000	97.0	97.9	97.6	96.1	96.8	96.8	97.0	97.0
25	9713	40.65	3099	3000	97.5	98.1	97.8	97.3	97.4	97.2	96.9	97.2
n	25	25	25	25	25	25	25	25	25	25	25	25
Mean	9605	41.18			96.7	96.9	96.9	96.4	96.4	96.2	96.0	96.0
Median	9590	41.29			96.4	96.7	96.7	96.1	96.1	96.2	96.0	96.0
σ	137	0.31			0.72	0.88	0.77	0.75	0.76	0.76	0.82	0.93
Min.	9379	40.64			95.2	95.4	95.0	94.9	94.8	94.5	94.2	94.0
Max.	9776	41.73			97.9	98.1	97.9	97.7	97.7	97.5	97.4	97.3

DATA SET 3050-3: 55°C; 2500 mA

Lamp #	Initial (0 hrs)				Chromaticity Shift ($\Delta u'v'$)											
	CCx	CCy	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	0.4336	0.4077	3093	3000	0.0004	0.0004	0.0004	0.0003	0.0003	0.0005	0.0007	0.0008	0.0009	0.0011	0.0010	0.0011
2	0.4309	0.4036	3106	3000	0.0003	0.0003	0.0002	0.0002	0.0002	0.0004	0.0006	0.0005	0.0007	0.0010	0.0007	0.0007
3	0.4320	0.4068	3113	3000	0.0004	0.0003	0.0002	0.0002	0.0003	0.0003	0.0005	0.0004	0.0005	0.0005	0.0008	0.0008
4	0.4290	0.4006	3117	3000	0.0005	0.0004	0.0004	0.0005	0.0005	0.0004	0.0007	0.0007	0.0007	0.0008	0.0009	0.0009
5	0.4315	0.4044	3103	3000	0.0004	0.0005	0.0003	0.0003	0.0003	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007
6	0.4327	0.4061	3096	3000	0.0005	0.0005	0.0003	0.0004	0.0003	0.0005	0.0006	0.0006	0.0005	0.0006	0.0006	0.0007
7	0.4324	0.4061	3100	3000	0.0006	0.0006	0.0005	0.0005	0.0005	0.0007	0.0007	0.0007	0.0009	0.0011	0.0009	0.0009
8	0.4334	0.4066	3088	3000	0.0004	0.0004	0.0003	0.0003	0.0003	0.0005	0.0005	0.0006	0.0007	0.0007	0.0006	0.0007
9	0.4324	0.4060	3100	3000	0.0004	0.0003	0.0002	0.0002	0.0003	0.0004	0.0004	0.0005	0.0005	0.0007	0.0006	0.0007
10	0.4329	0.4059	3090	3000	0.0004	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0005	0.0006	0.0006	0.0006	0.0007
11	0.4365	0.4126	3080	3000	0.0004	0.0003	0.0003	0.0003	0.0003	0.0005	0.0005	0.0006	0.0007	0.0009	0.0007	0.0007
12	0.4316	0.4039	3097	3000	0.0004	0.0004	0.0003	0.0004	0.0005	0.0006	0.0007	0.0007	0.0009	0.0011	0.0009	0.0009
13	0.4320	0.4048	3097	3000	0.0005	0.0004	0.0003	0.0003	0.0004	0.0006	0.0006	0.0007	0.0008	0.0010	0.0008	0.0008
14	0.4298	0.4003	3099	3000	0.0006	0.0006	0.0007	0.0005	0.0006	0.0007	0.0007	0.0007	0.0009	0.0012	0.0010	0.0011
15	0.4301	0.4008	3097	3000	0.0005	0.0006	0.0006	0.0005	0.0005	0.0007	0.0007	0.0008	0.0008	0.0011	0.0010	0.0011
16	0.4298	0.4016	3111	3000	0.0006	0.0004	0.0005	0.0005	0.0005	0.0007	0.0007	0.0007	0.0010	0.0010	0.0010	0.0009
17	0.4305	0.4018	3099	3000	0.0006	0.0006	0.0005	0.0005	0.0006	0.0007	0.0007	0.0008	0.0010	0.0012	0.0010	0.0010
18	0.4299	0.4018	3110	3000	0.0005	0.0004	0.0006	0.0007	0.0007	0.0010	0.0010	0.0010	0.0012	0.0012	0.0013	0.0012
19	0.4301	0.4008	3098	3000	0.0006	0.0004	0.0005	0.0007	0.0007	0.0008	0.0008	0.0009	0.0009	0.0011	0.0011	0.0011
20	0.4294	0.4003	3106	3000	0.0007	0.0005	0.0007	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0011	0.0011	0.0011
21	0.4301	0.4010	3100	3000	0.0007	0.0005	0.0005	0.0007	0.0006	0.0008	0.0008	0.0008	0.0009	0.0010	0.0010	0.0010
22	0.4319	0.4061	3109	3000	0.0003	0.0003	0.0002	0.0001	0.0003	0.0004	0.0003	0.0004	0.0004	0.0004	0.0005	0.0006
23	0.4334	0.4081	3100	3000	0.0004	0.0004	0.0003	0.0003	0.0004	0.0004	0.0006	0.0005	0.0008	0.0009	0.0008	0.0008
24	0.4323	0.4051	3094	3000	0.0004	0.0004	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0006	0.0008	0.0007	0.0007
25	0.4323	0.4056	3099	3000	0.0004	0.0003	0.0003	0.0003	0.0003	0.0005	0.0004	0.0005	0.0006	0.0007	0.0006	0.0007
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					0.0005	0.0004	0.0004	0.0004	0.0004	0.0006	0.0006	0.0006	0.0008	0.0009	0.0008	0.0009
Median					0.0004	0.0004	0.0003	0.0003	0.0004	0.0005	0.0006	0.0007	0.0008	0.0010	0.0008	0.0008
σ					0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.					0.0003	0.0003	0.0002	0.0001	0.0002	0.0003	0.0003	0.0004	0.0004	0.0004	0.0005	0.0006
Max.					0.0007	0.0006	0.0007	0.0008	0.0008	0.0010	0.0010	0.0010	0.0012	0.0012	0.0013	0.0012

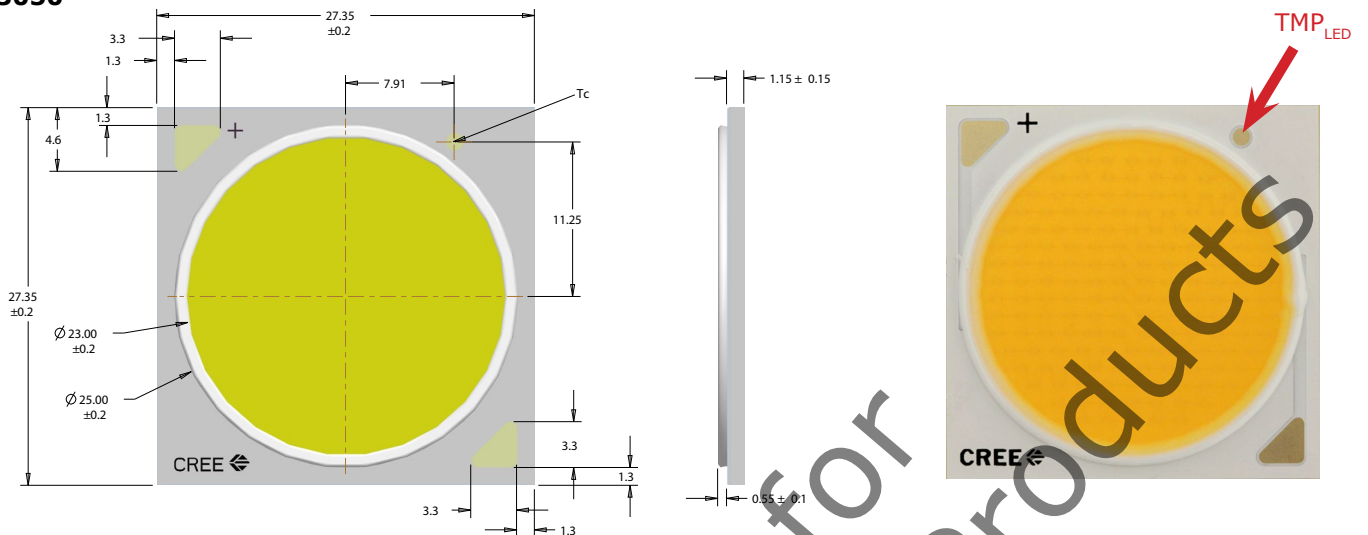
Lamp #	Initial (0 hrs)				Chromaticity Shift ($\Delta u'v'$)							
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080
1	0.4336	0.4077	3093	3000	0.0010	0.0011	0.0010	0.0011	0.0010	0.0011	0.0011	0.0012
2	0.4309	0.4036	3106	3000	0.0008	0.0008	0.0009	0.0011	0.0009	0.0010	0.0010	0.0010
3	0.4320	0.4068	3113	3000	0.0008	0.0008	0.0009	0.0009	0.0009	0.0011	0.0011	0.0011
4	0.4290	0.4006	3117	3000	0.0010	0.0011	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012
5	0.4315	0.4044	3103	3000	0.0008	0.0009	0.0009	0.0010	0.0009	0.0010	0.0010	0.0011
6	0.4327	0.4061	3096	3000	0.0007	0.0008	0.0008	0.0009	0.0013	0.0013	0.0013	0.0014
7	0.4324	0.4061	3100	3000	0.0010	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012	0.0013
8	0.4334	0.4066	3088	3000	0.0008	0.0010	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010
9	0.4324	0.4060	3100	3000	0.0008	0.0008	0.0008	0.0010	0.0009	0.0009	0.0010	0.0010
10	0.4329	0.4059	3090	3000	0.0008	0.0008	0.0008	0.0010	0.0009	0.0009	0.0009	0.0010
11	0.4365	0.4126	3080	3000	0.0009	0.0009	0.0009	0.0012	0.0011	0.0011	0.0011	0.0012
12	0.4316	0.4039	3097	3000	0.0010	0.0010	0.0011	0.0012	0.0012	0.0011	0.0013	0.0012
13	0.4320	0.4048	3097	3000	0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012	0.0012
14	0.4298	0.4003	3099	3000	0.0011	0.0013	0.0012	0.0012	0.0012	0.0013	0.0013	0.0014
15	0.4301	0.4008	3097	3000	0.0011	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013
16	0.4298	0.4016	3111	3000	0.0011	0.0011	0.0011	0.0014	0.0012	0.0013	0.0014	0.0014
17	0.4305	0.4018	3099	3000	0.0011	0.0011	0.0012	0.0014	0.0012	0.0013	0.0013	0.0013
18	0.4299	0.4018	3110	3000	0.0015	0.0015	0.0017	0.0016	0.0016	0.0017	0.0018	0.0019
19	0.4301	0.4008	3098	3000	0.0011	0.0013	0.0014	0.0014	0.0014	0.0014	0.0015	0.0016
20	0.4294	0.4003	3106	3000	0.0013	0.0014	0.0015	0.0015	0.0015	0.0015	0.0016	0.0018
21	0.4301	0.4010	3100	3000	0.0011	0.0011	0.0013	0.0013	0.0013	0.0013	0.0015	0.0016
22	0.4319	0.4061	3109	3000	0.0006	0.0008	0.0007	0.0008	0.0007	0.0007	0.0007	0.0009
23	0.4334	0.4081	3100	3000	0.0008	0.0011	0.0009	0.0010	0.0010	0.0010	0.0010	0.0011
24	0.4323	0.4051	3094	3000	0.0008	0.0007	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009
25	0.4323	0.4056	3099	3000	0.0007	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0010
n	25	25	25	25	25	25	25	25	25	25	25	25
Mean					0.0010	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012	0.0012
Median					0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012	0.0012
σ					0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003
Min.					0.0006	0.0007	0.0007	0.0008	0.0007	0.0007	0.0007	0.0009
Max.					0.0015	0.0015	0.0017	0.0016	0.0016	0.0017	0.0018	0.0019

MECHANICAL DIMENSIONS & TEMPERATURE MEASUREMENT POINT

Dimensions are in mm. Tolerances unless otherwise specified:

.x ± .10, .xx ± .03, .xxx ± .010, x° ± 1°, x ± .10

CXA3050

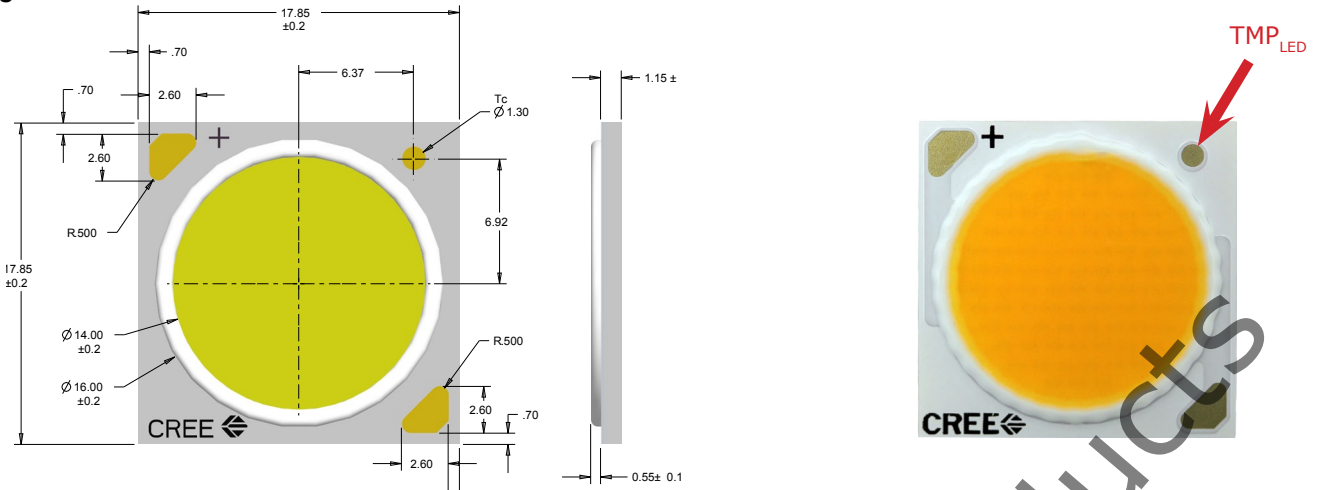


CXA2520, CXA2530, CXA2540



MECHANICAL DIMENSIONS & TEMPERATURE MEASUREMENT POINT - CONTINUED

CXA1830



CXA1816, CXA1820

