

LM-80 Test Report

Cree® XLamp® XP-G White LEDs

Revision: 2 (October 1, 2010)
 Document Creation Date: October 11, 2010

1. Number of LED light sources tested	See individual test reports.
2. Description of LED light sources	XLamp XP-G White LEDs (XPGWHT) All measurements provided are LED package measurements.
3. Description of auxiliary equipment	Instrument Systems ISP-500 Integrating Sphere Instrument Systems CAS-140 Spectrometer Keithley 2420 Sourcemeter
4. Operating cycle	LED packages are driven at constant current.
5. Ambient conditions	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. T_A : See individual test reports RH : < 45% Air flow : 800 CFM
6. Case temperature	The case temperature measurement point is shown in the XLamp XP-G Soldering & Handling document (AP25).
7. Drive current of the LED light source during lifetime test.	See individual test reports. The drive current used during lifetime testing is listed as "Drive Current."
8. Initial luminous flux and forward voltage at photometric measurement current	See individual test reports. The drive current used for luminous flux, forward voltage and chromaticity measurements is listed as "Measurement Current."
9. Lumen maintenance data for each individual LED light source	See individual test reports. 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 test reports.
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 test reports. Ambient temperature during chromaticity testing set to 25°C ±2°C.

Test 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
1	45°C	45°C	1000 mA	98.7%	0.0032
2	55°C	55°C	350 mA	99.1%	0.0020
3	55°C	55°C	1000 mA	98.6%	0.0009
4	85°C	85°C	350 mA	98.7%	0.0009
5	85°C	85°C	1000 mA	98.7%	0.0015



Data Set 1: 45°C, 1000 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	45°C
Ambient Temperature [T _A]	45°C
Drive Current [I _F]	1000 mA
Measurement Current	350 mA
Failures observed	None

Board ID	Lamp #	Initial (0 hrs)		Lumen Maintenance (%)											
		LF (lm)	V _F (V)	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
DUR04HY	1	133.8	3.56	99.8	99.9	99.8	98.3	97.8	98.3	97.2	96.9	95.4	96.9	97.0	97.9
	2	134.0	3.29	100.3	100.3	99.6	97.6	97.5	97.7	96.9	96.8	96.9	96.3	96.8	97.3
	3	135.0	3.22	100.3	100.6	100.2	98.6	98.0		97.8	97.6	97.1	96.6	97.0	97.6
	5	132.1	3.23	100.0	99.9	99.6	97.8	97.1	97.6	96.4	96.3	96.3	95.7	95.7	95.8
	6	136.6	3.31	101.0	101.1	100.3	98.9	98.2	98.5	98.2	98.2	98.0	97.9	97.4	98.1
	7	135.3	3.29	101.1	101.5	100.7	99.5	98.8	99.0	98.4	98.1	98.1	97.5	97.0	97.6
	8	132.5	3.36	101.7	102.4	101.9	100.4	99.8	100.0	99.5	99.5	99.3	98.9	98.2	98.6
	9	134.6	3.29	101.0	101.2	100.4	99.2	98.5	98.5	98.3	98.1	98.0	97.5	96.7	97.6
	10	135.8	3.35	100.5	101.1	100.8	99.9	99.2	99.2	98.6	98.6	98.5	98.3	97.9	98.4
	DUR04HZ	1	128.4	3.60	103.3	104.4	104.4	103.4	102.8	103.7	103.3	102.7	103.5	103.1	102.7
2		126.5	3.12	103.2	104.3	103.9	102.9	102.7	103.2	102.9	102.7	102.8	102.6	101.7	102.6
3		126.6	3.07	102.5	103.6	103.3	101.5	101.4	101.8	101.6	101.4	101.6	100.3	101.0	101.7
4		127.6	3.09	103.4	104.4	104.0	103.1	102.9	103.5	102.9	102.9	103.2	103.2	102.0	102.8
5		128.2	3.13	103.0	103.8	103.7	101.9	101.9	102.4	102.1	101.7	101.6	101.7	101.6	102.5
6		130.8	3.06	101.8	102.8	102.4	101.3	100.8	101.4	101.4	100.9	100.1	100.5	100.5	101.6
7		131.3	3.01	101.8	102.8	102.5	101.2	100.7	101.3	101.0	100.6	100.7	100.9	100.3	101.3
8		131.5	3.01	101.7	102.8	102.2	100.5	100.3	100.9	100.4	99.9	99.6	99.9	99.0	100.1
9		132.3	3.00	101.9	102.1	101.9	100.3	99.8	100.6	99.9	99.6	99.1	99.5	99.0	99.8
10		131.2	3.03	101.6	101.9	101.3	100.1	99.7	100.1	99.7	99.5	98.8	99.4	99.1	99.9
DUR067J	1	124.6	3.13	99.0	100.0	102.3	103.0	104.5	103.8	103.5	103.2	101.8	99.9	99.2	98.2
	2	122.8	3.07	99.7	100.3	102.0	102.7	104.8	102.8	102.4	101.8	100.5	98.8	98.9	97.6
	3	119.8	3.02	99.2	99.7	100.8	101.2	102.3	101.5	101.6	100.9	100.2	98.7	98.4	96.8
	4	118.6	3.01	99.9	100.5	101.3	101.1	104.1	101.0	101.3	100.4	99.8	98.2	97.9	96.8
	5	128.4	3.14	100.1	100.8	101.8	102.3	101.4	100.8	99.7	98.3	97.0	94.7	94.6	93.9
	6	128.2	3.15	99.3	100.3	101.9	103.4	102.4	101.4	100.3	99.3	97.8	96.3	95.9	95.3
	7	113.3	2.99	98.4	98.2	100.5	101.4	104.2	101.9	102.0	101.0	99.7	98.8	98.8	97.6
	8	114.6	2.99	99.0	99.3	101.5		102.8	102.5	102.4	101.7	101.0	99.5	99.3	98.2
	9	118.0	3.13	99.0	99.4	101.8	103.3	103.5	102.8	102.1	100.6	99.6	97.7	97.6	96.5
	10	119.8	3.28	99.9	100.2	102.3	103.3	103.4	102.5	102.1	101.0	99.7	97.8	97.6	97.0
n	29	29	29	29	29	28	29	28	29	29	29	29	29	29	
Mean	128.0	3.17	100.8	101.4	101.7	101.0	101.1	101.0	100.5	100.0	99.5	98.9	98.6	98.7	
Median	128.4	3.13	100.5	101.1	101.8	101.2	101.4	101.4	101.0	100.4	99.6	98.8	98.4	98.1	
σ	6.58	0.16	1.43	1.68	1.33	1.81	2.32	1.85	2.06	1.94	2.05	2.15	1.99	2.47	
Min.	113.3	2.99	98.4	98.2	99.6	97.6	97.1	97.6	96.4	96.3	95.4	94.7	94.6	93.9	
Max.	136.6	3.60	103.4	104.4	104.4	103.4	104.8	103.8	103.5	103.2	103.5	103.2	102.7	103.8	

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Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 1: 45°C, 1000 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	45°C
Ambient Temperature [T _A]	45°C
Drive Current [I _F]	1000 mA
Measurement Current	350 mA
Failures observed	None

Board ID	Lamp #	Initial (0 hrs)			Chromaticity Shift ($\Delta u'v'$)											
		CCx	CCy	CCT	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
DUR04HY	1	0.3201	0.3576	6010	0.0012	0.0020	0.0025	0.0038	0.0046	0.0040	0.0047	0.0052	0.0039	0.0046	0.0044	0.0032
	2	0.3186	0.3556	6080	0.0010	0.0017	0.0021	0.0034	0.0042	0.0036	0.0044	0.0049	0.0046	0.0043	0.0042	0.0030
	3	0.3169	0.3478	6185	0.0009	0.0013	0.0017	0.0029	0.0035		0.0036	0.0041	0.0036	0.0033	0.0029	0.0018
	5	0.3223	0.3546	5923	0.0007	0.0014	0.0018	0.0027	0.0031	0.0022	0.0023	0.0025	0.0018	0.0012	0.0004	0.0008
	6	0.3086	0.3322	6705	0.0011	0.0018	0.0023	0.0036	0.0043	0.0036	0.0044	0.0049	0.0043	0.0038	0.0032	0.0019
	7	0.3078	0.3278	6786	0.0008	0.0017	0.0022	0.0035	0.0041	0.0033	0.0038	0.0038	0.0032	0.0026	0.0020	0.0006
	8	0.3055	0.3221	6987	0.0012	0.0019	0.0023	0.0032	0.0036	0.0028	0.0028	0.0029	0.0020	0.0012	0.0003	0.0014
	9	0.3061	0.3240	6924	0.0010	0.0017	0.0021	0.0031	0.0037	0.0028	0.0032	0.0033	0.0025	0.0018	0.0010	0.0005
	10	0.3056	0.3219	6978	0.0008	0.0014	0.0018	0.0025	0.0028	0.0017	0.0017	0.0018	0.0010	0.0003	0.0006	0.0019
	DUR04HZ	1	0.3161	0.3473	6226	0.0005	0.0007	0.0008	0.0014	0.0015	0.0011	0.0013	0.0015	0.0014	0.0013	0.0012
2		0.3178	0.3477	6148	0.0007	0.0009	0.0010	0.0017	0.0019	0.0015	0.0017	0.0021	0.0018	0.0017	0.0017	0.0013
3		0.3250	0.3606	5798	0.0005	0.0008	0.0010	0.0016	0.0018	0.0014	0.0016	0.0019	0.0017	0.0013	0.0014	0.0010
4		0.3155	0.3466	6260	0.0005	0.0008	0.0009	0.0016	0.0019	0.0015	0.0018	0.0022	0.0021	0.0020	0.0019	0.0017
5		0.3168	0.3463	6199	0.0005	0.0007	0.0011	0.0016	0.0020	0.0017	0.0021	0.0024	0.0023	0.0023	0.0025	0.0023
6		0.3241	0.3589	5841	0.0002	0.0006	0.0008	0.0015	0.0018	0.0014	0.0019	0.0022	0.0016	0.0018	0.0020	0.0016
7		0.3226	0.3565	5908	0.0002	0.0004	0.0006	0.0013	0.0017	0.0012	0.0016	0.0018	0.0015	0.0015	0.0015	0.0010
8		0.3226	0.3556	5911	0.0002	0.0005	0.0008	0.0014	0.0020	0.0016	0.0020	0.0024	0.0019	0.0021	0.0021	0.0014
9		0.3216	0.3528	5958	0.0001	0.0003	0.0006	0.0014	0.0017	0.0015	0.0017	0.0021	0.0017	0.0019	0.0017	0.0011
10		0.3218	0.3537	5949	0.0001	0.0002	0.0004	0.0012	0.0015	0.0010	0.0013	0.0019	0.0012	0.0015	0.0014	0.0009
DUR067J	1	0.3250	0.3669	5790	0.0012	0.0015	0.0017	0.0025	0.0020	0.0024	0.0017	0.0016	0.0006	0.0002	0.0013	0.0024
	2	0.3239	0.3661	5834	0.0010	0.0013	0.0016	0.0022	0.0021	0.0021	0.0013	0.0011	0.0001	0.0010	0.0021	0.0035
	3	0.3153	0.3544	6232	0.0011	0.0015	0.0017	0.0023	0.0028	0.0025	0.0019	0.0020	0.0009	0.0003	0.0008	0.0021
	4	0.3143	0.3520	6289	0.0012	0.0016	0.0018	0.0024	0.0027	0.0025	0.0019	0.0019	0.0009	0.0002	0.0011	0.0023
	5	0.3219	0.3516	5951	0.0019	0.0025	0.0024	0.0025	0.0006	0.0004	0.0016	0.0036	0.0062	0.0090	0.0114	0.0139
	6	0.3208	0.3492	6006	0.0014	0.0019	0.0019	0.0026	0.0005	0.0002	0.0020	0.0039	0.0066	0.0092	0.0119	0.0144
	7	0.3148	0.3517	6268	0.0010	0.0014	0.0019	0.0028	0.0015	0.0027	0.0022	0.0022	0.0014	0.0006	0.0005	0.0015
	8	0.3144	0.3505	6288	0.0014	0.0018	0.0021		0.0028	0.0028	0.0022	0.0022	0.0011	0.0004	0.0009	0.0020
	9	0.3157	0.3428	6269	0.0010	0.0014	0.0019	0.0029	0.0022	0.0015	0.0001	0.0013	0.0034	0.0054	0.0077	0.0097
	10	0.3157	0.3423	6270	0.0014	0.0016	0.0021	0.0027	0.0019	0.0009	0.0008	0.0024	0.0046	0.0068	0.0092	0.0117
n		29	29	29	29	29	29	28	29	28	29	29	29	29	29	29
Mean					0.0009	0.0013	0.0016	0.0024	0.0025	0.0020	0.0022	0.0026	0.0024	0.0025	0.0029	0.0032
Median					0.0010	0.0014	0.0018	0.0025	0.0020	0.0017	0.0019	0.0022	0.0018	0.0018	0.0017	0.0018
σ					0.0005	0.0006	0.0006	0.0008	0.0011	0.0010	0.0011	0.0011	0.0016	0.0024	0.0032	0.0039
Min.					0.0001	0.0002	0.0004	0.0012	0.0005	0.0002	0.0001	0.0011	0.0001	0.0002	0.0003	0.0005
Max.					0.0019	0.0025	0.0025	0.0038	0.0046	0.0040	0.0047	0.0052	0.0066	0.0092	0.0119	0.0144

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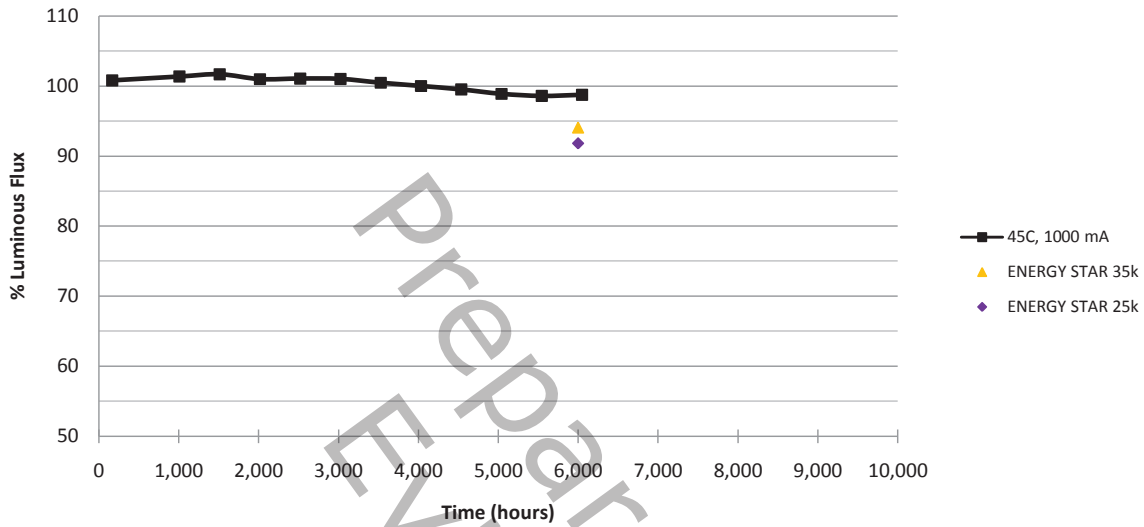
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4600 Silicon Drive
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www.cree.com/xlamp



Data Set 1: 45°C, 1000 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	45°C
Ambient Temperature [T _A]	45°C
Drive Current [I _F]	1000 mA
Measurement Current	350 mA
Failures observed	None



	Initial (0 hrs)		Lumen Maintenance (%)											
	LF (lm)	V _F (V)	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
n	29	29	29	29	29	28	29	28	29	29	29	29	29	29
Mean	128.0	3.17	100.8	101.4	101.7	101.0	101.1	101.0	100.5	100.0	99.5	98.9	98.6	98.7
Median	128.4		100.5	101.1	101.8	101.2	101.4	101.4	101.0	100.4	99.6	98.8	98.4	98.1
σ	6.58		1.43	1.68	1.33	1.81	2.32	1.85	2.06	1.94	2.05	2.15	1.99	2.47
Min.	113.3		98.4	98.2	99.6	97.6	97.1	97.6	96.4	96.3	95.4	94.7	94.6	93.9
Max.	136.6		103.4	104.4	104.4	103.4	104.8	103.8	103.5	103.2	103.5	103.2	102.7	103.8

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4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 2: 55°C, 350 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	55°C
Ambient Temperature [T _A]	55°C
Drive Current [I _F]	350 mA
Measurement Current	350 mA
Failures observed	None

Board ID	Lamp #	Initial (0 hrs)		Lumen Maintenance (%)											
		LF (lm)	V _F (V)	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
DUR08SN	1	95.1	3.33	95.6	96.5	97.2	98.2	98.9	98.5	99.1	98.7	98.6	95.3	100.0	99.9
	2	94.4	3.15	98.6	99.6	99.2	98.4	99.2	98.8	99.0	98.2	98.3	95.3	100.9	100.0
	3	95.6	3.33	97.0	98.1	98.9	98.6	99.5	98.6	99.7	99.3	98.9	96.3	100.4	99.1
	4	95.4	3.30	98.9	100.0	99.7	98.7	98.7	98.9	99.2	98.9	98.4	95.9	100.2	99.1
	5	100.6	3.13	96.2	97.0	97.7	97.1	98.2	98.0	98.3	98.3	98.0	95.7	99.6	98.6
	6	101.4	3.14	95.8	96.4	97.0	97.5	97.9	98.1	98.3	98.0	97.7	95.4	99.0	97.9
	7	100.4	3.14	98.7	99.0	98.8	98.0	97.9	98.1	98.3	98.4	97.9	95.9	99.8	98.2
	8	98.1	3.23	98.3	98.9	99.1	98.5	98.9	98.5	99.2	99.1	98.7	96.5	100.5	99.8
	9	96.4	3.11	96.9	98.0	97.8	97.8	97.5	97.8	97.7	97.6	97.1	95.0	98.2	98.9
	10	98.5	3.14	95.7	96.3	97.4	98.5	99.1	99.0	99.2	99.0	98.8	96.7	99.5	100.4
DUR08F3	1	124.0	3.24	97.3	95.5	97.0	97.9	98.4	98.8	97.8	97.2	97.8	97.4	98.5	98.5
	2	120.5	3.03	98.0	97.7	98.0	98.5	99.2	100.1	98.9	98.7	98.6	99.5	99.8	99.5
	3	120.7	3.12	98.6	98.8	99.4	99.4	99.7	100.3	99.2	98.7	99.5	99.7	99.9	100.0
	4	118.7	3.05	97.7	98.0	99.3	98.8	99.2	99.5	98.8	97.8	98.4	97.7	98.0	99.6
	5	118.5	3.01	97.6	97.4	98.2	97.9	99.4	99.7	98.6	98.5	98.7	98.9	99.4	99.1
	6	121.1	2.95	98.8	98.9	99.1	99.4	99.7	100.2	99.1	98.5	99.0	97.9	99.4	99.2
	7	119.3	2.95	99.2	99.7	100.5	99.1	99.5	100.2	99.3	98.3	99.2	99.8	99.9	99.9
	8	121.6	3.02	99.7	100.0	100.5	99.7	99.9	100.2	99.4	98.9	99.6	99.2	99.8	99.8
	9	119.2	2.99	99.1	99.0	99.9	99.4	99.7	100.2	99.3	98.8	99.8	99.8	99.9	99.9
	10	122.2	3.00	98.9	98.6	99.4	99.0	99.5	98.8	98.0	98.0	98.2	98.5	99.5	99.5
DUR08F4	1	122.3	3.21	98.3	98.5	98.8	99.1	99.4	99.9	98.6	98.7	99.3	98.3	99.5	98.9
	2	121.2	3.00	100.0	100.1	100.3	99.5	99.8	100.1	98.3	98.2	99.1	98.9	99.0	98.3
	3	118.4	3.16	98.7	99.0	99.2	98.8	99.7	99.9	98.6	98.4	99.2	98.8	98.9	99.1
	4	123.1	3.02	97.9	97.5	98.1	99.1	99.0	99.5	98.0	98.1	99.2	98.5	99.2	99.4
	5	122.6	3.01	97.7	97.6	98.0	99.0	99.4	99.8	98.3	98.6	99.7	98.9	99.0	98.4
	6	122.3	3.02	97.8	96.9	97.2	98.3	98.7	97.7	96.5	97.3	98.7	97.4	97.1	97.7
	7	119.5	3.01	97.9	98.5	98.4	98.9	99.0	99.2	98.4	97.4	99.0	98.4	98.5	98.7
	8	119.6	3.12	95.7	95.8	97.1	98.3	98.9	99.0	98.7	98.1	99.2	98.2	98.3	98.9
	9	118.6	3.00	98.5	98.9	99.7	99.2	99.5	99.5	97.9	98.1	98.7	98.8	98.8	98.8
	10	118.1	3.03	96.9	96.9	97.2	97.9	99.1	98.1	97.2	97.8	99.0	96.0	97.4	98.3
n	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
Mean	112.9	3.10	97.9	98.1	98.6	98.6	99.1	99.2	98.6	98.3	98.7	97.6	99.3	99.1	
Median	118.9	3.08	98.0	98.3	98.8	98.7	99.2	99.1	98.6	98.3	98.8	98.1	99.4	99.1	
σ	11.20	0.11	1.20	1.28	1.10	0.64	0.61	0.82	0.70	0.53	0.63	1.55	0.89	0.69	
Min.	94.4	2.95	95.6	95.5	97.0	97.1	97.5	97.7	96.5	97.2	97.1	95.0	97.1	97.7	
Max.	124.0	3.33	100.0	100.1	100.5	99.7	99.9	100.3	99.7	99.3	99.8	99.8	100.9	100.4	

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Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 2: 55°C, 350 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	55°C
Ambient Temperature [T _A]	55°C
Drive Current [I _F]	350 mA
Measurement Current	350 mA
Failures observed	None

Board ID	Lamp #	Initial (0 hrs)			Chromaticity Shift (Δu'v')											
		CCx	CCy	CCT	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
DUR08SN	1	0.4313	0.3979	3053	0.0002	0.0004	0.0006	0.0008	0.0009	0.0008	0.0011	0.0011	0.0012	0.0013	0.0012	0.0016
	2	0.4323	0.3974	3030	0.0005	0.0007	0.0008	0.0009	0.0009	0.0011	0.0011	0.0011	0.0013	0.0013	0.0016	0.0016
	3	0.4326	0.3987	3036	0.0004	0.0006	0.0008	0.0008	0.0009	0.0008	0.0012	0.0012	0.0014	0.0013	0.0014	0.0019
	4	0.4324	0.3986	3038	0.0006	0.0007	0.0009	0.0009	0.0008	0.0014	0.0011	0.0012	0.0012	0.0014	0.0014	0.0020
	5	0.4286	0.3978	3101	0.0005	0.0007	0.0008	0.0008	0.0010	0.0010	0.0012	0.0012	0.0013	0.0012	0.0015	0.0019
	6	0.4284	0.3979	3106	0.0002	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0011	0.0013	0.0013	0.0015	0.0019
	7	0.4287	0.3979	3100	0.0006	0.0006	0.0008	0.0008	0.0008	0.0010	0.0010	0.0011	0.0012	0.0012	0.0011	0.0020
	8	0.4324	0.4005	3054	0.0006	0.0009	0.0009	0.0008	0.0009	0.0009	0.0012	0.0012	0.0013	0.0012	0.0015	0.0016
	9	0.4329	0.4007	3048	0.0006	0.0009	0.0011	0.0012	0.0011	0.0013	0.0013	0.0014	0.0014	0.0014	0.0013	0.0020
	10	0.4313	0.4007	3076	0.0003	0.0005	0.0007	0.0009	0.0010	0.0010	0.0012	0.0012	0.0013	0.0013	0.0012	0.0016
DUR08F3	1	0.3608	0.3613	4493	0.0002	0.0004	0.0004	0.0007	0.0009	0.0010	0.0010	0.0013	0.0013	0.0017	0.0013	0.0017
	2	0.3586	0.3502	4505	0.0002	0.0004	0.0006	0.0009	0.0012	0.0013	0.0013	0.0016	0.0018	0.0023	0.0019	0.0020
	3	0.3589	0.3498	4495	0.0003	0.0004	0.0007	0.0010	0.0011	0.0012	0.0012	0.0016	0.0017	0.0020	0.0018	0.0019
	4	0.3675	0.3608	4278	0.0002	0.0004	0.0008	0.0009	0.0011	0.0012	0.0013	0.0013	0.0015	0.0019	0.0015	0.0018
	5	0.3676	0.3605	4273	0.0002	0.0002	0.0002	0.0002	0.0005	0.0009	0.0008	0.0010	0.0012	0.0014	0.0012	0.0015
	6	0.3649	0.3587	4346	0.0004	0.0004	0.0007	0.0009	0.0011	0.0012	0.0013	0.0015	0.0017	0.0019	0.0016	0.0020
	7	0.3641	0.3572	4362	0.0003	0.0005	0.0008	0.0009	0.0013	0.0014	0.0017	0.0017	0.0019	0.0021	0.0019	0.0023
	8	0.3517	0.3435	4722	0.0005	0.0006	0.0007	0.0009	0.0009	0.0013	0.0013	0.0016	0.0017	0.0020	0.0018	0.0021
	9	0.3516	0.3445	4729	0.0003	0.0002	0.0007	0.0008	0.0011	0.0012	0.0014	0.0016	0.0018	0.0021	0.0020	0.0023
	10	0.3528	0.3461	4692	0.0003	0.0004	0.0006	0.0008	0.0010	0.0011	0.0011	0.0014	0.0014	0.0020	0.0017	0.0021
DUR08F4	1	0.3543	0.3461	4637	0.0003	0.0003	0.0004	0.0006	0.0011	0.0010	0.0011	0.0015	0.0018	0.0019	0.0016	0.0026
	2	0.3509	0.3427	4750	0.0004	0.0007	0.0008	0.0007	0.0009	0.0011	0.0011	0.0014	0.0016	0.0024	0.0018	0.0026
	3	0.3515	0.3452	4738	0.0002	0.0003	0.0005	0.0006	0.0015	0.0012	0.0013	0.0017	0.0019	0.0023	0.0023	0.0031
	4	0.3589	0.3523	4508	0.0003	0.0003	0.0003	0.0005	0.0008	0.0009	0.0009	0.0009	0.0013	0.0017	0.0013	0.0022
	5	0.3585	0.3505	4513	0.0004	0.0002	0.0003	0.0006	0.0010	0.0009	0.0009	0.0012	0.0014	0.0017	0.0016	0.0021
	6	0.3566	0.3475	4564	0.0002	0.0003	0.0003	0.0007	0.0013	0.0009	0.0010	0.0015	0.0018	0.0019	0.0016	0.0023
	7	0.3667	0.3552	4266	0.0006	0.0007	0.0007	0.0011	0.0011	0.0014	0.0015	0.0016	0.0019	0.0020	0.0018	0.0023
	8	0.3689	0.3618	4240	0.0003	0.0002	0.0004	0.0008	0.0009	0.0011	0.0011	0.0013	0.0015	0.0017	0.0016	0.0025
	9	0.3672	0.3597	4281	0.0007	0.0007	0.0009	0.0012	0.0011	0.0013	0.0010	0.0014	0.0017	0.0019	0.0017	0.0018
	10	0.3689	0.3620	4242	0.0004	0.0004	0.0006	0.0008	0.0010	0.0012	0.0009	0.0014	0.0015	0.0020	0.0015	0.0018
n	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
Mean				0.0004	0.0005	0.0007	0.0008	0.0010	0.0011	0.0012	0.0013	0.0015	0.0017	0.0016	0.0020	
Median				0.0003	0.0004	0.0007	0.0008	0.0010	0.0011	0.0011	0.0014	0.0015	0.0018	0.0016	0.0020	
σ				0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0003	0.0004	
Min.				0.0002	0.0002	0.0002	0.0002	0.0005	0.0008	0.0008	0.0009	0.0012	0.0012	0.0011	0.0015	
Max.				0.0007	0.0009	0.0011	0.0012	0.0015	0.0014	0.0017	0.0017	0.0019	0.0024	0.0023	0.0031	

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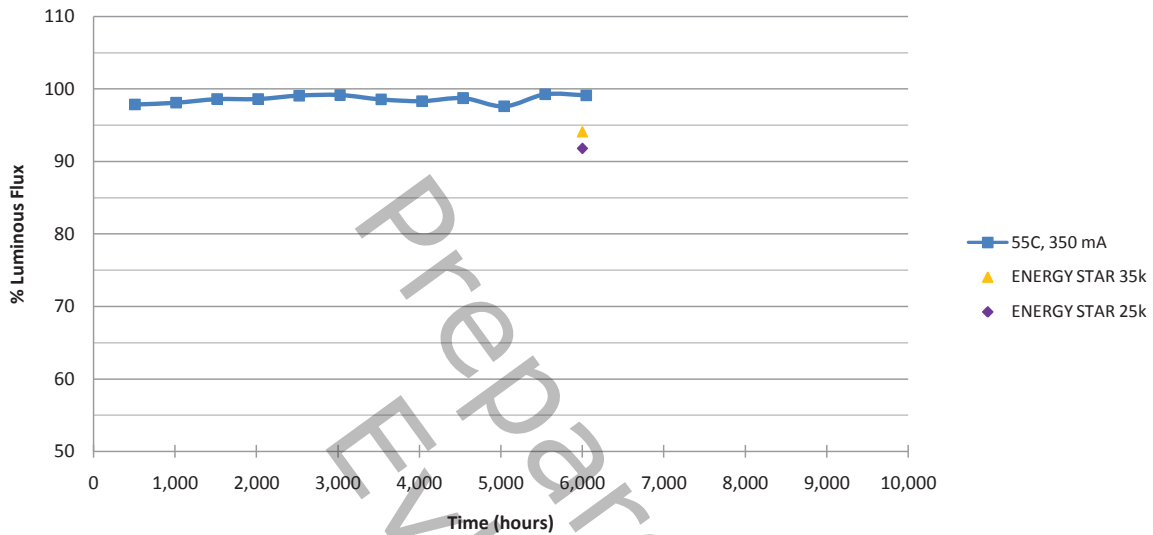
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Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 2: 55°C, 350 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	55°C
Ambient Temperature [T _A]	55°C
Drive Current [I _F]	350 mA
Measurement Current	350 mA
Failures observed	None



	Initial (0 hrs)		Lumen Maintenance (%)											
	LF (lm)	V _F (V)	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
n	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Mean	112.9	3.10	97.9	98.1	98.6	98.6	99.1	99.2	98.6	98.3	98.7	97.6	99.3	99.1
Median	118.9	3.08	98.0	98.3	98.8	98.7	99.2	99.1	98.6	98.3	98.8	98.1	99.4	99.1
σ	11.20	0.11	1.20	1.28	1.10	0.64	0.61	0.82	0.70	0.53	0.63	1.55	0.89	0.69
Min.	94.4	2.95	95.6	95.5	97.0	97.1	97.5	97.7	96.5	97.2	97.1	95.0	97.1	97.7
Max.	124.0	3.33	100.0	100.1	100.5	99.7	99.9	100.3	99.7	99.3	99.8	99.8	100.9	100.4

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USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 3: 55°C, 1000 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	55°C
Ambient Temperature [T _A]	55°C
Drive Current [I _F]	1000 mA
Measurement Current	350 mA
Failures observed	None

Board ID	Lamp #	Initial (0 hrs)		Lumen Maintenance (%)											
		LF (lm)	V _F (V)	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
DUR08F5	1	121.6	3.23	99.6	100.0		99.5	99.9	100.3	99.1	98.6	98.3	97.4	97.7	97.3
	2	120.8	3.00	101.6	101.3	101.2	100.4	100.5	100.8	99.8	98.8	98.4	98.2	97.9	97.5
	3	123.5	3.02	101.1	101.1	100.8	99.7	99.6	99.8	98.8	98.1	98.0	97.0	97.7	96.9
	4	119.5	3.00	101.6	101.6	101.3	100.0	100.0	99.9	98.9	97.8	97.2	96.5	96.3	97.7
	5	118.7	3.02	100.7	100.7	100.2	99.8	99.8	100.2	99.0	98.2	98.0	97.2	97.4	96.9
	6	119.9	3.02	100.1	99.8	99.8	98.6	99.1	99.2	97.9	97.1	97.1	96.3	96.8	96.2
	7	120.1	3.03	101.1	100.9	101.1	99.9	99.9	100.4	99.6	98.7	98.2	97.2	97.5	97.0
	8	121.6	3.04	99.9	100.2	100.7	100.3	100.1	100.6	99.7	98.8	98.9	98.6	98.7	98.6
	9	120.2	3.00	101.3	101.2	101.5	100.6	100.7	101.1	100.2	99.4	96.3	96.4	95.1	96.2
	10	119.9	3.00	96.7	95.2	96.1	97.9	98.7	99.5	98.2	98.1	98.2	97.5	98.0	97.5
DUR08F6	1	120.2	3.25	100.0		100.3	99.9	100.6	101.2	100.0	99.8	100.3	98.7	98.8	98.5
	2	120.0	3.06	101.8	101.7	101.6	100.6	100.7	101.2	100.1	99.1	99.2	98.2	98.4	98.0
	3	119.0	3.08	101.9	101.6	101.8	101.0	101.3	101.8	100.8	100.2	100.6	99.4	99.4	99.2
	4	120.5	3.04	101.9	101.8	101.6	101.2	101.3	101.6	100.4	99.9	100.7	99.1	99.8	99.5
	5	120.7	3.00	101.0	100.6	100.6	100.1	100.6	101.3	99.6	99.1	99.3	98.4	98.7	98.4
	6	120.5	3.03	100.9	100.4	100.6	99.8	100.0	100.8	99.7	99.0	99.4	98.1	98.8	98.1
	7	120.2	3.02	101.6	101.3	101.1	50.0	99.7	98.6	98.7	96.7	97.6	95.6	96.5	96.4
	8	120.3	3.09	100.9	100.5	100.9	100.4	100.8	101.3	100.0	99.4	99.6	98.8	98.7	98.3
	9	119.6	2.95	102.2	101.9	101.5	100.8	100.8	101.0	99.5	99.3	99.2	97.9	98.6	97.8
	10	117.6	3.01	99.3	99.4	99.6	99.9	100.1	100.1	98.4	98.3	98.8	97.5	97.9	97.4
DUR0A5Z	1	105.1	2.99	100.6	100.1	101.4	101.5	101.1	101.2	101.5	100.9	100.7	100.1	99.6	99.2
	2	115.9	3.01	100.9	101.2	100.5	100.1	100.6	100.4	101.0	101.0	101.5	100.5	101.5	101.5
	3	110.0	3.00	99.9	99.8	100.0	99.7	99.5	99.9	100.2	99.6	100.0	99.5	100.6	100.3
	4	120.8	2.95	99.7	99.3	98.9	98.8	99.1	99.8	99.5	99.6	99.9	99.1	100.1	99.8
	5	115.6	2.97	98.6	98.6	99.2	99.1	98.6	99.3	99.5	99.0	99.4	98.4	99.1	99.4
	6	121.3	2.96	99.7	99.4	99.5	99.5	99.3	99.9	99.9	99.8	100.1	99.3	100.3	100.0
	7	122.0	2.97	99.4	99.2	99.5	98.9	99.3	100.0	99.4	99.6	99.8	99.1	99.9	100.1
	8	113.5	2.95	99.5	99.9	100.4	100.0	99.9	100.3	100.5	99.9	100.5	99.8	100.4	100.5
	9	121.2	2.94	101.1	101.4	101.2	101.1	101.3	101.7	101.6	101.6	101.8	101.4	101.9	102.0
	10	109.5	2.95	100.9	100.1	102.1	101.8	101.6	101.6	102.4	101.5	102.2	102.0	101.7	101.7
n	30	30	30	29	29	30	30	30	30	30	30	30	30	30	
Mean	118.6	3.02	100.5	100.4	100.5	98.4	100.1	100.5	99.8	99.2	99.3	98.4	98.8	98.6	
Median	120.1	3.01	100.9	100.5	100.7	100.0	100.0	100.4	99.7	99.2	99.3	98.4	98.7	98.4	
σ	4.13	0.07	1.17	1.33	1.19	9.18	0.81	0.83	1.01	1.16	1.43	1.48	1.61	1.62	
Min.	105.1	2.94	96.7	95.2	96.1	50.0	98.6	98.6	97.9	96.7	96.3	95.6	95.1	96.2	
Max.	123.5	3.25	102.2	101.9	102.1	101.8	101.6	101.8	102.4	101.6	102.2	102.0	101.9	102.0	

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USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 3: 55°C, 1000 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	55°C
Ambient Temperature [T _A]	55°C
Drive Current [I _F]	1000 mA
Measurement Current	350 mA
Failures observed	None

Board ID	Lamp #	Initial (0 hrs)			Chromaticity Shift (Δu'v')											
		CCx	CCy	CCT	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
DUR08F5	1	0.3577	0.3500	4537	0.0003	0.0002	0.0005	0.0007	0.0008	0.0008	0.0010	0.0005	0.0006	0.0009	0.0030	0.0009
	2	0.3593	0.3520	4493	0.0003	0.0004	0.0005	0.0009	0.0009	0.0010	0.0011	0.0010	0.0008	0.0009	0.0026	0.0011
	3	0.3605	0.3609	4502	0.0007	0.0003	0.0003	0.0005	0.0006	0.0007	0.0007	0.0007	0.0006	0.0008	0.0030	0.0008
	4	0.3649	0.3586	4346	0.0003	0.0005	0.0005	0.0009	0.0009	0.0010	0.0011	0.0009	0.0009	0.0008	0.0023	0.0006
	5	0.3645	0.3588	4361	0.0003	0.0002	0.0003	0.0007	0.0007	0.0009	0.0009	0.0009	0.0004	0.0007	0.0027	0.0008
	6	0.3646	0.3574	4347	0.0005	0.0007	0.0004	0.0010	0.0010	0.0010	0.0012	0.0008	0.0008	0.0011	0.0028	0.0012
	7	0.3657	0.3613	4338	0.0001	0.0004	0.0004	0.0007	0.0005	0.0009	0.0010	0.0010	0.0009	0.0010	0.0028	0.0013
	8	0.3503	0.3438	4777	0.0002	0.0003	0.0004	0.0008	0.0006	0.0008	0.0009	0.0010	0.0005	0.0012	0.0033	0.0015
	9	0.3512	0.3441	4745	0.0005	0.0003	0.0003	0.0006	0.0008	0.0009	0.0010	0.0011	0.0011	0.0014	0.0026	0.0014
	10	0.3504	0.3443	4776	0.0003	0.0004	0.0004	0.0009	0.0009	0.0011	0.0011	0.0012	0.0012	0.0014	0.0029	0.0014
DUR08F6	1	0.3656	0.3547	4300	0.0004	0.0003	0.0009	0.0008	0.0009	0.0010	0.0007	0.0007	0.0010	0.0027	0.0007	
	2	0.3693	0.3624	4231	0.0005	0.0004	0.0003	0.0007	0.0008	0.0009	0.0010	0.0003	0.0007	0.0009	0.0022	0.0007
	3	0.3686	0.3614	4248	0.0003	0.0003	0.0003	0.0008	0.0004	0.0009	0.0009	0.0006	0.0004	0.0007	0.0025	0.0008
	4	0.3690	0.3601	4226	0.0006	0.0006	0.0007	0.0008	0.0011	0.0012	0.0011	0.0010	0.0007	0.0009	0.0023	0.0008
	5	0.3506	0.3434	4762	0.0002	0.0003	0.0004	0.0008	0.0008	0.0010	0.0010	0.0012	0.0005	0.0009	0.0035	0.0014
	6	0.3520	0.3450	4719	0.0005	0.0006	0.0008	0.0009	0.0012	0.0012	0.0014	0.0012	0.0014	0.0017	0.0034	0.0018
	7	0.3465	0.3405	4911	0.0003	0.0003	0.0005	0.0008	0.0011	0.0010	0.0011	0.0008	0.0011	0.0013	0.0031	0.0016
	8	0.3452	0.3376	4953	0.0003	0.0006	0.0006	0.0010	0.0009	0.0011	0.0012	0.0013	0.0013	0.0017	0.0031	0.0018
	9	0.3536	0.3475	4670	0.0004	0.0005	0.0007	0.0008	0.0010	0.0011	0.0012	0.0010	0.0010	0.0013	0.0026	0.0014
	10	0.3512	0.3435	4741	0.0004	0.0003	0.0007	0.0011	0.0006	0.0012	0.0012	0.0012	0.0012	0.0015	0.0029	0.0015
DUR0A5Z	1	0.3182	0.3378	6169	0.0005	0.0003	0.0004	0.0001	0.0001	0.0003	0.0003	0.0005	0.0005	0.0005	0.0011	0.0008
	2	0.3190	0.3395	6121	0.0007	0.0007	0.0001	0.0003	0.0002	0.0005	0.0001	0.0001	0.0000	0.0001	0.0003	0.0000
	3	0.3147	0.3329	6370	0.0005	0.0005	0.0001	0.0000	0.0002	0.0002	0.0002	0.0004	0.0005	0.0009	0.0004	0.0003
	4	0.3206	0.3558	5994	0.0008	0.0008	0.0005	0.0007	0.0007	0.0002	0.0002	0.0001	0.0002	0.0003	0.0001	0.0001
	5	0.3218	0.3585	5935	0.0009	0.0009	0.0005	0.0008	0.0006	0.0003	0.0002	0.0000	0.0003	0.0008	0.0006	0.0004
	6	0.3248	0.3645	5801	0.0010	0.0007	0.0006	0.0008	0.0007	0.0004	0.0003	0.0001	0.0001	0.0004	0.0002	0.0002
	7	0.3250	0.3640	5793	0.0011	0.0009	0.0008	0.0009	0.0007	0.0005	0.0005	0.0004	0.0001	0.0005	0.0001	0.0001
	8	0.3351	0.3689	5405	0.0006	0.0007	0.0003	0.0004	0.0004	0.0002	0.0003	0.0002	0.0002	0.0007	0.0001	0.0001
	9	0.3387	0.3722	5279	0.0008	0.0007	0.0004	0.0006	0.0007	0.0004	0.0005	0.0002	0.0002	0.0006	0.0003	0.0004
	10	0.3353	0.3667	5395	0.0008	0.0008	0.0004	0.0007	0.0006	0.0004	0.0005	0.0004	0.0004	0.0012	0.0003	0.0003
n	30	30	30	30	29	29	30	30	30	30	30	30	30	30	30	
Mean				0.0005	0.0005	0.0004	0.0007	0.0007	0.0008	0.0008	0.0007	0.0006	0.0009	0.0020	0.0009	
Median				0.0005	0.0005	0.0004	0.0008	0.0007	0.0009	0.0010	0.0008	0.0006	0.0009	0.0026	0.0008	
σ				0.0003	0.0002	0.0002	0.0002	0.0003	0.0003	0.0004	0.0004	0.0004	0.0004	0.0012	0.0005	
Min.				0.0001	0.0002	0.0001	0.0000	0.0001	0.0002	0.0001	0.0000	0.0000	0.0001	0.0001	0.0000	
Max.				0.0011	0.0009	0.0008	0.0011	0.0012	0.0012	0.0014	0.0013	0.0014	0.0017	0.0035	0.0018	

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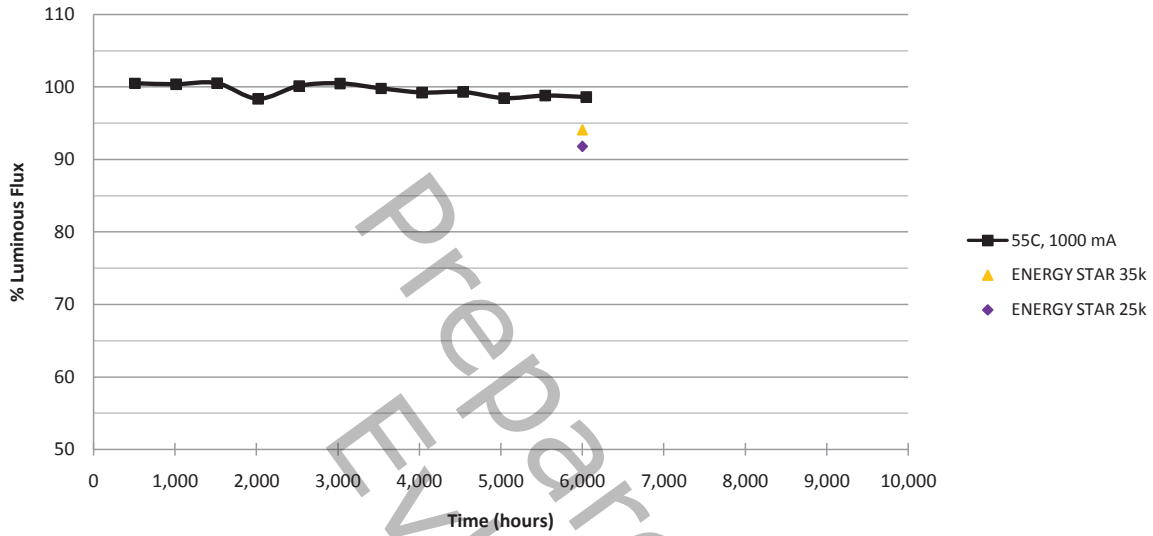
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Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 3: 55°C, 1000 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	55°C
Ambient Temperature [T _A]	55°C
Drive Current [I _F]	1000 mA
Measurement Current	350 mA
Failures observed	None



	Initial (0 hrs)		Lumen Maintenance (%)												
	LF (lm)	V _F (V)	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048	
n	30	30	30	29	29	30	30	30	30	30	30	30	30	30	
Mean	118.6	3.02	100.5	100.4	100.5	98.4	100.1	100.5	99.8	99.2	99.3	98.4	98.8	98.6	
Median	120.1	3.01	100.9	100.5	100.7	100.0	100.0	100.4	99.7	99.2	99.3	98.4	98.7	98.4	
σ	4.13	0.07	1.17	1.33	1.19	9.18	0.81	0.83	1.01	1.16	1.43	1.48	1.61	1.62	
Min.	105.1	2.94	96.7	95.2	96.1	50.0	98.6	98.6	97.9	96.7	96.3	95.6	95.1	96.2	
Max.	123.5	3.25	102.2	101.9	102.1	101.8	101.6	101.8	102.4	101.6	102.2	102.0	101.9	102.0	

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Durham, NC 27703
USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 4: 85°C, 350 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	85°C
Ambient Temperature [T _A]	85°C
Drive Current [I _F]	350 mA
Measurement Current	350 mA
Failures observed	None

Board ID	Lamp #	Initial (0 hrs)		Lumen Maintenance (%)											
		LF (lm)	V _F (V)	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
DUR04GU	1	116.1	3.11	100.2	101.3	100.7	99.6	99.0	98.3	99.4	98.8	100.7	98.8	98.9	99.6
	3	122.5	3.10	100.3	100.3	100.4	99.0	98.6	99.4	100.0	99.9	99.1	99.8	99.2	99.1
	4	127.7	3.11	99.4	99.5	99.5	98.2	97.8	98.3	99.6	99.4	98.3	99.7	99.2	99.1
	5	121.4	3.11	99.8	99.7	99.4	98.3	97.9	98.8	99.5	99.2	99.1	99.2	98.3	98.3
	6	127.1	3.15	99.4	99.6	99.5	98.8	99.1	100.1	100.6	100.4	98.7	100.4	100.2	99.6
	7	127.8	3.13	98.2	96.3	97.3	97.3	97.1	98.0	98.9	98.8	99.5	100.1	99.8	99.5
	8	122.0	3.14	99.5	99.2	97.2	97.8	98.0	98.6	99.8	99.2	99.4	100.0	99.0	98.9
	9	129.3	3.12	97.6	96.9	97.5	96.8	96.7	97.8	98.7	98.4	97.7	98.9	99.0	98.9
	10	119.1	3.12	98.3	98.7	98.9	97.9	97.4	97.5	98.8	97.5	99.0	99.2	98.0	98.7
	DUR04GV	1	118.0	3.20	100.5	101.2	100.0	99.0	100.2	99.0	99.7	98.8	99.7	100.0	99.1
2		131.8	3.16	100.5	100.0	99.8	99.6	97.9	99.9	100.7	100.3	100.2	100.8	100.6	100.8
3		126.1	3.16	100.4	100.5	100.2	99.4	99.6	99.3	100.4	99.9	100.2	100.3	99.4	99.9
4		129.8	3.17	99.9	99.7	99.0	98.6	98.9	99.4	99.9	99.7	99.5	99.8	99.8	99.8
5		126.9	3.16	98.1	98.6	98.6	96.7	97.6	98.0	98.8	98.2	98.6	98.8	97.5	98.3
6		124.9	3.18	98.9	99.1	99.5	98.5	98.0	99.4	99.8	99.9	99.2	99.1	99.3	99.5
7		124.6	3.18	99.5	99.6	98.9	98.2	98.1	99.2	99.8	99.6	99.3	100.2	100.0	99.1
8		119.0	3.16	98.7	98.8	97.8	97.5	97.6	98.2	98.9	98.7	98.7	100.1	98.8	99.8
9		126.9	3.13	99.6	100.0	97.1	97.8	97.9	99.1	99.3	99.4	98.4	99.9	99.6	99.9
10		114.5	3.18	98.3	99.5	100.1	98.7	98.0	98.8	99.0	97.6	98.8	100.7	98.3	100.1
DUR04GW	1	119.1	3.04	99.0	98.7	97.7	96.7	95.9	96.4	95.7	95.9	97.0	96.1	96.5	97.4
	2	129.8	3.03	99.6	99.1	97.9	97.7	97.7	97.3	98.5	98.2	97.6	97.8	98.2	98.3
	3	125.4	3.04	99.2	97.5	96.2	96.0	95.5	96.3	96.8	96.2	96.0	96.7	96.5	97.4
	4	129.5	3.04	99.3	97.0	96.1	96.8	95.8	96.2	97.3	96.8	95.8	96.3	96.7	97.0
	5	123.0	3.04	98.8	96.8	97.0	97.1	97.3	96.1	96.1	95.7	96.2	96.4	96.3	97.0
	6	130.3	3.03	98.8	97.5	96.7	97.1	97.5	96.8	97.6	97.3	96.6	96.0	96.7	97.1
	7	131.5	3.03	99.7	99.4	97.8	98.0	98.2	98.0	97.9	97.5	96.8	96.5	97.1	97.2
	8	125.9	3.03	98.8	98.2	96.9	97.3	97.3	97.4	96.4	96.1	96.8	95.2	96.6	97.7
	9	131.9	3.02	99.4	99.1	96.9	97.7	97.2	96.9	97.8	97.0	97.1	96.7	97.7	96.5
n	28	28	28	28	28	28	28	28	28	28	28	28	28	28	
Mean	125.1	3.11	99.3	99.0	98.4	97.9	97.8	98.2	98.8	98.4	98.4	98.7	98.4	98.7	
Median	126.0	3.12	99.4	99.2	98.2	97.9	97.8	98.3	99.0	98.8	98.7	99.2	98.8	99.0	
σ	4.92	0.06	0.77	1.29	1.38	0.96	1.06	1.15	1.36	1.41	1.36	1.73	1.29	1.17	
Min.	114.5	3.02	97.6	96.3	96.1	96.0	95.5	96.1	95.7	95.7	95.8	95.2	96.3	96.5	
Max.	131.9	3.20	100.5	101.3	100.7	99.6	100.2	100.1	100.7	100.4	100.7	100.8	100.6	100.8	

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Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 4: 85°C, 350 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	85°C
Ambient Temperature [T _A]	85°C
Drive Current [I _F]	350 mA
Measurement Current	350 mA
Failures observed	None

Board ID	Lamp #	Initial (0 hrs)			Chromaticity Shift ($\Delta u'v'$)											
		CCx	CCy	CCT	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
DUR04GU	1	0.3129	0.3371	6441	0.0007	0.0005	0.0004	0.0000	0.0007	0.0004	0.0010	0.0009	0.0010	0.0011	0.0013	0.0009
	3	0.3137	0.3386	6386	0.0007	0.0006	0.0007	0.0005	0.0005	0.0004	0.0010	0.0010	0.0005	0.0011	0.0013	0.0008
	4	0.3156	0.3421	6273	0.0004	0.0004	0.0005	0.0004	0.0005	0.0002	0.0008	0.0007	0.0006	0.0009	0.0011	0.0007
	5	0.3132	0.3368	6427	0.0006	0.0005	0.0007	0.0005	0.0006	0.0006	0.0010	0.0010	0.0007	0.0010	0.0013	0.0008
	6	0.3105	0.3303	6613	0.0007	0.0008	0.0008	0.0008	0.0009	0.0007	0.0010	0.0010	0.0007	0.0011	0.0012	0.0007
	7	0.3101	0.3293	6647	0.0003	0.0007	0.0002	0.0004	0.0005	0.0003	0.0009	0.0008	0.0011	0.0012	0.0013	0.0009
	8	0.3102	0.3298	6634	0.0008	0.0008	0.0002	0.0006	0.0009	0.0006	0.0012	0.0011	0.0010	0.0013	0.0014	0.0009
	9	0.3130	0.3348	6450	0.0002	0.0003	0.0002	0.0002	0.0003	0.0001	0.0006	0.0006	0.0007	0.0008	0.0011	0.0008
	10	0.3110	0.3306	6583	0.0006	0.0003	0.0003	0.0002	0.0007	0.0004	0.0010	0.0005	0.0008	0.0010	0.0012	0.0007
	DUR04GV	1	0.3173	0.3425	6192	0.0008	0.0006	0.0003	0.0002	0.0010	0.0005	0.0010	0.0008	0.0005	0.0011	0.0012
2		0.3239	0.3610	5842	0.0008	0.0006	0.0008	0.0009	0.0004	0.0006	0.0011	0.0011	0.0011	0.0011	0.0015	0.0011
3		0.3213	0.3538	5969	0.0008	0.0006	0.0007	0.0006	0.0010	0.0005	0.0011	0.0010	0.0009	0.0010	0.0014	0.0008
4		0.3163	0.3393	6257	0.0006	0.0005	0.0005	0.0005	0.0009	0.0006	0.0009	0.0009	0.0008	0.0008	0.0009	0.0003
5		0.3148	0.3349	6356	0.0003	0.0003	0.0005	0.0000	0.0005	0.0004	0.0008	0.0008	0.0006	0.0006	0.0006	0.0001
6		0.3094	0.3345	6642	0.0007	0.0006	0.0008	0.0008	0.0007	0.0006	0.0011	0.0011	0.0011	0.0011	0.0017	0.0012
7		0.3105	0.3379	6557	0.0008	0.0006	0.0005	0.0005	0.0009	0.0004	0.0010	0.0010	0.0011	0.0012	0.0018	0.0010
8		0.3102	0.3376	6577	0.0005	0.0005	0.0002	0.0004	0.0008	0.0003	0.0010	0.0011	0.0011	0.0013	0.0019	0.0015
9		0.3103	0.3364	6577	0.0007	0.0005	0.0001	0.0003	0.0008	0.0005	0.0009	0.0009	0.0008	0.0010	0.0015	0.0012
10		0.3072	0.3269	6833	0.0002	0.0003	0.0003	0.0001	0.0006	0.0002	0.0009	0.0009	0.0004	0.0011	0.0013	0.0009
DUR04GW	1	0.3113	0.3395	6506	0.0005	0.0007	0.0010	0.0003	0.0005	0.0009	0.0009	0.0011	0.0011	0.0010	0.0016	0.0011
	2	0.3176	0.3479	6157	0.0008	0.0008	0.0011	0.0007	0.0008	0.0009	0.0013	0.0016	0.0016	0.0013	0.0017	0.0013
	3	0.3109	0.3387	6529	0.0006	0.0003	0.0008	0.0002	0.0002	0.0006	0.0010	0.0011	0.0012	0.0010	0.0015	0.0011
	4	0.3156	0.3432	6270	0.0008	0.0003	0.0006	0.0007	0.0001	0.0005	0.0010	0.0013	0.0013	0.0010	0.0013	0.0009
	5	0.3141	0.3415	6350	0.0007	0.0001	0.0011	0.0009	0.0009	0.0009	0.0011	0.0013	0.0014	0.0013	0.0016	0.0012
	6	0.3164	0.3473	6214	0.0004	0.0002	0.0008	0.0006	0.0007	0.0007	0.0010	0.0013	0.0014	0.0008	0.0014	0.0011
	7	0.3152	0.3430	6293	0.0007	0.0008	0.0011	0.0009	0.0010	0.0009	0.0009	0.0013	0.0013	0.0006	0.0012	0.0006
	8	0.3114	0.3367	6518	0.0005	0.0006	0.0009	0.0007	0.0008	0.0009	0.0007	0.0012	0.0014	0.0006	0.0015	0.0010
	9	0.3178	0.3484	6145	0.0006	0.0008	0.0008	0.0007	0.0006	0.0007	0.0010	0.0009	0.0013	0.0008	0.0013	0.0002
n	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Mean				0.0006	0.0005	0.0006	0.0005	0.0007	0.0006	0.0010	0.0010	0.0010	0.0010	0.0014	0.0009	
Median				0.0006	0.0006	0.0006	0.0005	0.0007	0.0005	0.0010	0.0010	0.0010	0.0010	0.0013	0.0009	
σ				0.0002	0.0002	0.0003	0.0003	0.0002	0.0002	0.0001	0.0002	0.0003	0.0002	0.0003	0.0003	
Min.				0.0002	0.0001	0.0001	0.0000	0.0001	0.0001	0.0006	0.0005	0.0004	0.0006	0.0006	0.0001	
Max.				0.0008	0.0008	0.0011	0.0009	0.0010	0.0009	0.0013	0.0016	0.0016	0.0013	0.0019	0.0015	

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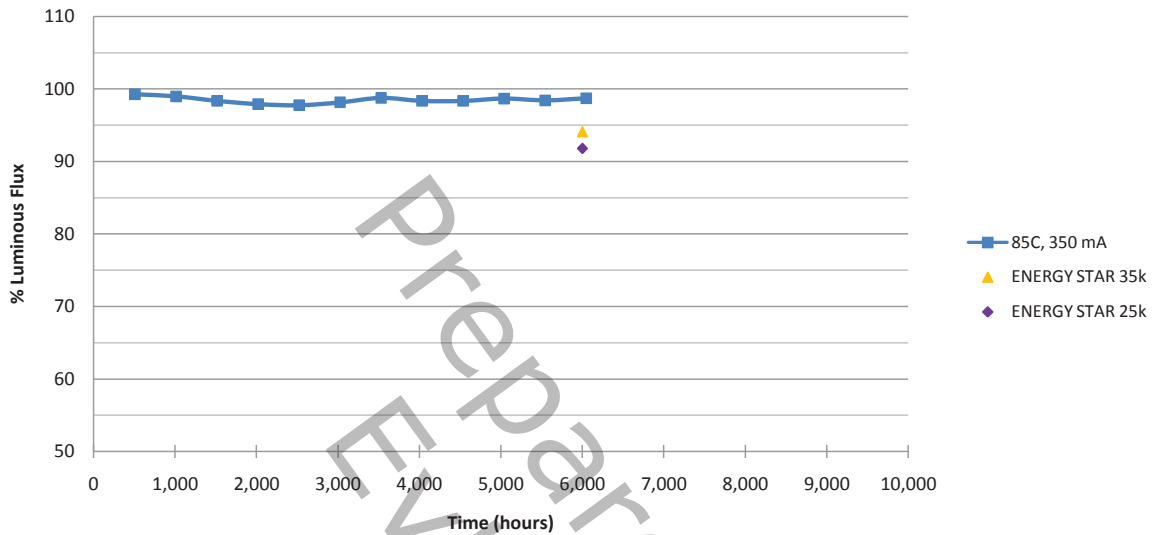
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Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 4: 85°C, 350 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	85°C
Ambient Temperature [T _A]	85°C
Drive Current [I _F]	350 mA
Measurement Current	350 mA
Failures observed	None



	Initial (0 hrs)		Lumen Maintenance (%)												
	LF (lm)	V _F (V)	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048	
n	28	28	28	28	28	28	28	28	28	28	28	28	28	28	
Mean	125.1	3.11	99.3	99.0	98.4	97.9	97.8	98.2	98.8	98.4	98.4	98.7	98.4	98.7	
Median	126.0	3.12	99.4	99.2	98.2	97.9	97.8	98.3	99.0	98.8	98.7	99.2	98.8	99.0	
σ	4.92	0.06	0.77	1.29	1.38	0.96	1.06	1.15	1.36	1.41	1.36	1.73	1.29	1.17	
Min.	114.5	3.02	97.6	96.3	96.1	96.0	95.5	96.1	95.7	95.7	95.8	95.2	96.3	96.5	
Max.	131.9	3.20	100.5	101.3	100.7	99.6	100.2	100.1	100.7	100.4	100.7	100.8	100.6	100.8	

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4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 5: 85°C, 1000 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	85°C
Ambient Temperature [T _A]	85°C
Drive Current [I _F]	1000 mA
Measurement Current	350 mA
Failures observed	None

Board ID	Lamp #	Initial (0 hrs)		Lumen Maintenance (%)											
		LF (lm)	V _F (V)	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
DUR0A5R	1	101.3	2.96	97.4	99.5	100.0	99.9	99.0	98.6	100.1	99.2	100.5	98.7	99.5	97.8
	2	110.6	2.96	99.0	99.0	99.3	99.3	99.4	99.1	99.4	99.9	100.2	100.0	100.0	99.5
	3	110.7	2.91	97.7	98.5	99.2	99.3	98.9	98.6	100.2	99.6	100.3	99.2	100.0	98.9
	4	115.1	2.95	97.6	97.7	98.3	98.5	98.4	98.0	98.9	98.7	98.9	99.1	100.1	98.1
	5	117.8	3.00	100.0	100.8	101.0	101.3	100.7	100.3	100.8	101.3	101.3	100.9	100.8	100.4
	6	123.0	2.99	99.6	100.2	100.5	100.6	100.6	100.1	100.7	100.9	100.6	101.0	101.6	99.6
	7	121.2	2.99	100.5	100.7	100.7	101.1	101.4	101.2	101.4	101.7	101.8	101.7	102.3	100.9
	8	117.0	2.97	100.4	101.2	101.6	101.6	101.3	101.1	102.0	102.3	102.6	101.8	102.6	101.1
	9	121.9	2.94	99.3	99.4	100.3	100.5	100.4	100.2	100.3	100.9	100.6	100.8	101.6	100.1
	10	111.1	2.95	96.5	99.1	100.0	99.6	98.7	98.1	99.8	100.2	100.1	99.6	101.3	99.1
DUR0A5S	2	116.5	3.00	98.7	99.9	101.0	101.0	100.5	100.4	100.1	101.0	101.4	100.2	100.5	100.6
	3	120.1	2.96	97.4	99.9	100.9	100.4	99.8	99.7	100.1	100.5	100.4	99.5	99.7	99.9
	4	124.4	2.96	98.6	99.6	100.7	100.5	99.7	99.7	99.9	100.6	101.0	100.1	100.2	100.3
	5	119.2	2.99	96.9	99.3	100.3	98.8	99.0	99.1	99.6	100.0	100.5	98.0	99.4	99.5
	6	120.9	2.96	96.5	97.9	99.1	98.4	98.1	98.4	98.1	98.7	98.9	98.0	98.1	98.2
	7	121.7	2.97	97.0	98.5	99.7	98.7	98.9	99.1	98.5	99.3	99.9	98.7	99.1	99.1
	8	117.0	2.94	96.4	98.9	100.0	99.3	98.7	98.6	98.8	99.3	99.9	98.3	98.6	98.6
	9	119.6	2.97	99.0	100.5	101.4	101.1	101.0	101.1	100.9	101.3	101.6	101.1	100.9	101.3
	10	107.5	3.06	96.9	101.2	102.2	101.5	100.7	100.0	101.1	101.1	101.8	100.1	99.8	99.2
	DUR0A5V	1	96.0	2.94	97.6	100.7	100.3	100.0	99.0	98.5	100.0	98.9	98.7	97.3	96.4
2		112.1	2.96	99.6	100.1	100.0	99.5	99.8	99.9	99.5	99.5	98.8	98.9	98.7	98.3
3		107.1	2.94	98.5	99.6	99.6	98.8	98.6	98.5	98.8	98.5	98.0	97.3	97.0	97.0
4		117.3	2.98	98.4	99.5	99.5	99.1	99.4	99.3	99.2	99.3	98.7	98.8	98.5	98.2
5		111.2	2.99	99.1	100.8	100.7	100.2	100.0	99.7	100.4	100.0	99.7	98.9	98.4	96.4
6		116.1	2.94	99.6	100.3	100.4	100.0	100.3	100.2	100.0	100.0	99.3	98.5	97.5	96.2
7		115.8	2.97	100.3	101.2	101.3	100.9	100.9	101.0	100.9	101.0	100.4	100.1	99.7	98.5
8		118.5	2.98	100.1	101.6	102.0	101.8	101.6	101.3	101.8	101.3	100.7	98.3	97.2	96.0
9		123.1	2.98	102.3	102.4	102.5	102.0	102.4	102.3	102.1	102.0	101.2	99.7	98.4	97.3
10		113.1	3.01	100.7	102.0	102.5	101.9	101.1	100.5	101.5	100.2	100.0	97.9	97.8	95.8
n	29	29	29	29	29	29	29	29	29	29	29	29	29	29	
Mean	115.4	2.97	98.7	100.0	100.5	100.2	99.9	99.7	100.2	100.2	100.3	99.4	99.5	98.7	
Median	117.0	2.97	98.7	99.9	100.4	100.2	99.8	99.7	100.1	100.2	100.4	99.2	99.7	98.9	
σ	6.62	0.03	1.51	1.17	1.03	1.10	1.11	1.11	1.04	1.04	1.10	1.24	1.58	1.61	
Min.	96.0	2.91	96.4	97.7	98.3	98.4	98.1	98.0	98.1	98.5	98.0	97.3	96.4	95.8	
Max.	124.4	3.06	102.3	102.4	102.5	102.0	102.4	102.3	102.1	102.3	102.6	101.8	102.6	101.3	

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Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
www.cree.com/xlamp



Data Set 5: 85°C, 1000 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	85°C
Ambient Temperature [T _A]	85°C
Drive Current [I _F]	1000 mA
Measurement Current	350 mA
Failures observed	None

Board ID	Lamp #	Initial (0 hrs)			Chromaticity Shift ($\Delta u'v'$)											
		CCx	CCy	CCT	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
DUR0A5R	1	0.3169	0.3510	6174	0.0006	0.0007	0.0007	0.0006	0.0005	0.0008	0.0014	0.0001	0.0009	0.0002	0.0005	0.0005
	2	0.3175	0.3457	6170	0.0002	0.0005	0.0005	0.0003	0.0002	0.0002	0.0007	0.0003	0.0005	0.0005	0.0001	0.0010
	3	0.3213	0.3414	6005	0.0001	0.0001	0.0001	0.0001	0.0000	0.0001	0.0009	0.0001	0.0008	0.0003	0.0006	0.0004
	4	0.3245	0.3447	5851	0.0003	0.0001	0.0001	0.0002	0.0003	0.0003	0.0003	0.0004	0.0004	0.0008	0.0001	0.0009
	5	0.3240	0.3412	5882	0.0003	0.0004	0.0003	0.0002	0.0002	0.0002	0.0003	0.0004	0.0001	0.0006	0.0002	0.0010
	6	0.3241	0.3415	5875	0.0003	0.0001	0.0002	0.0001	0.0001	0.0001	0.0005	0.0004	0.0003	0.0007	0.0003	0.0011
	7	0.3257	0.3474	5791	0.0001	0.0003	0.0003	0.0002	0.0002	0.0001	0.0002	0.0001	0.0005	0.0003	0.0004	0.0005
	8	0.3243	0.3440	5861	0.0002	0.0005	0.0004	0.0003	0.0002	0.0004	0.0005	0.0002	0.0004	0.0001	0.0008	0.0003
	9	0.3225	0.3578	5909	0.0005	0.0009	0.0009	0.0007	0.0008	0.0007	0.0006	0.0002	0.0003	0.0002	0.0006	0.0004
	10	0.3218	0.3580	5936	0.0002	0.0007	0.0007	0.0005	0.0007	0.0005	0.0005	0.0001	0.0001	0.0002	0.0002	0.0004
DUR0A5S	2	0.3202	0.3410	6062	0.0006	0.0006	0.0005	0.0004	0.0005	0.0005	0.0007	0.0003	0.0002	0.0003	0.0002	0.0010
	3	0.3242	0.3609	5833	0.0009	0.0010	0.0008	0.0008	0.0011	0.0009	0.0010	0.0006	0.0003	0.0008	0.0005	0.0012
	4	0.3223	0.3576	5918	0.0009	0.0009	0.0009	0.0008	0.0009	0.0006	0.0010	0.0006	0.0002	0.0006	0.0003	0.0010
	5	0.3210	0.3558	5975	0.0006	0.0011	0.0008	0.0006	0.0011	0.0010	0.0011	0.0008	0.0004	0.0006	0.0005	0.0010
	6	0.3236	0.3621	5854	0.0009	0.0007	0.0006	0.0005	0.0006	0.0006	0.0005	0.0003	0.0006	0.0000	0.0004	0.0001
	7	0.3242	0.3634	5827	0.0008	0.0008	0.0006	0.0005	0.0006	0.0006	0.0007	0.0003	0.0002	0.0002	0.0001	0.0004
	8	0.3224	0.3596	5907	0.0005	0.0009	0.0005	0.0004	0.0004	0.0003	0.0004	0.0001	0.0008	0.0003	0.0009	0.0003
	9	0.3295	0.3505	5625	0.0004	0.0004	0.0002	0.0001	0.0003	0.0002	0.0001	0.0001	0.0007	0.0005	0.0005	0.0003
	10	0.3293	0.3505	5635	0.0004	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0006	0.0012	0.0012	0.0016	0.0014
	DUR0A5V	1	0.3182	0.3482	6125	0.0001	0.0004	0.0005	0.0005	0.0011	0.0017	0.0020	0.0025	0.0026	0.0034	0.0038
2		0.3181	0.3553	6105	0.0002	0.0001	0.0003	0.0003	0.0009	0.0009	0.0010	0.0014	0.0016	0.0021	0.0023	0.0026
3		0.3195	0.3579	6035	0.0003	0.0001	0.0004	0.0003	0.0009	0.0014	0.0015	0.0020	0.0022	0.0027	0.0032	0.0034
4		0.3260	0.3516	5773	0.0002	0.0002	0.0002	0.0003	0.0007	0.0011	0.0013	0.0015	0.0016	0.0019	0.0023	0.0023
5		0.3226	0.3447	5936	0.0000	0.0001	0.0003	0.0003	0.0007	0.0010	0.0013	0.0016	0.0018	0.0022	0.0024	0.0026
6		0.3240	0.3459	5869	0.0001	0.0002	0.0003	0.0005	0.0009	0.0011	0.0015	0.0019	0.0020	0.0027	0.0028	0.0026
7		0.3228	0.3440	5929	0.0001	0.0000	0.0002	0.0003	0.0007	0.0009	0.0011	0.0015	0.0015	0.0021	0.0023	0.0024
8		0.3239	0.3413	5887	0.0002	0.0002	0.0004	0.0003	0.0008	0.0011	0.0016	0.0022	0.0023	0.0032	0.0034	0.0033
9		0.3233	0.3400	5918	0.0001	0.0001	0.0002	0.0004	0.0007	0.0010	0.0014	0.0020	0.0023	0.0032	0.0034	0.0033
10		0.3222	0.3383	5973	0.0001	0.0003	0.0006	0.0007	0.0010	0.0013	0.0014	0.0021	0.0024	0.0030	0.0033	0.0033
n	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
Mean				0.0004	0.0004	0.0004	0.0004	0.0006	0.0007	0.0009	0.0009	0.0010	0.0012	0.0013	0.0015	
Median				0.0003	0.0004	0.0004	0.0003	0.0007	0.0006	0.0009	0.0004	0.0007	0.0006	0.0006	0.0010	
σ				0.0003	0.0003	0.0002	0.0002	0.0003	0.0004	0.0005	0.0008	0.0008	0.0011	0.0013	0.0012	
Min.				0.0000	0.0000	0.0001	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0000	0.0001	0.0001	
Max.				0.0009	0.0011	0.0009	0.0008	0.0011	0.0017	0.0020	0.0025	0.0026	0.0034	0.0038	0.0042	

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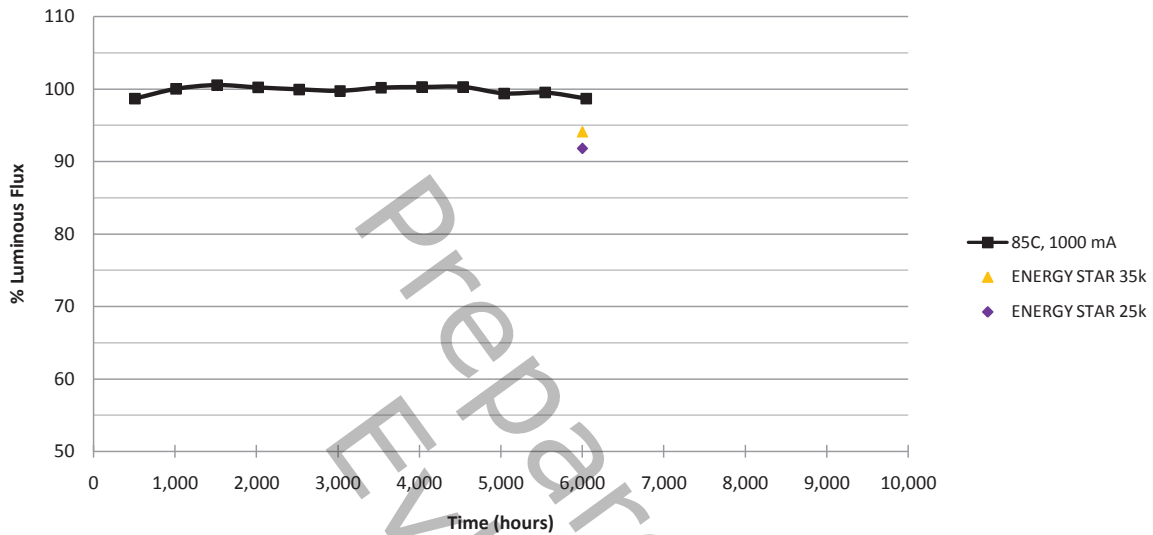
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Data Set 5: 85°C, 1000 mA

Part Number	XLamp XP-G White LEDs (XPGWHT)
Case Temperature [T _s]	85°C
Ambient Temperature [T _A]	85°C
Drive Current [I _F]	1000 mA
Measurement Current	350 mA
Failures observed	None



	Initial (0 hrs)		Lumen Maintenance (%)											
	LF (lm)	V _F (V)	504	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
n	29	29	29	29	29	29	29	29	29	29	29	29	29	29
Mean	115.4	2.97	98.7	100.0	100.5	100.2	99.9	99.7	100.2	100.2	100.3	99.4	99.5	98.7
Median	117.0	2.97	98.7	99.9	100.4	100.2	99.8	99.7	100.1	100.2	100.4	99.2	99.7	98.9
σ	6.62	0.03	1.51	1.17	1.03	1.10	1.11	1.11	1.04	1.04	1.10	1.24	1.58	1.61
Min.	96.0	2.91	96.4	97.7	98.3	98.4	98.1	98.0	98.1	98.5	98.0	97.3	96.4	95.8
Max.	124.4	3.06	102.3	102.4	102.5	102.0	102.4	102.3	102.1	102.3	102.6	101.8	102.6	101.3

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