CREE

CONJUNTO DE DADOS 15: 105° C; 1050 mA

1079

Nº da Lâmpada	Inicial (0 hrs)				Constância de Lúmen(%)											
	LF (lm)	V_f (V)	Calc CCT	Meta ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	420	3.09	3153	3000	98.93	95.81	97.37	94.69	95.78	95.90	94.78	94.55	96.39	95.97	94.78	94.92
2	419	3.06	3133	3000	99.12	97.23	98.02	96.37	96.99	96.90	96.11	96.51	97.06	96.44	96.47	96.66
3	416	3.07	3107	3000	98.56	95.43	96.26	93.62	94.85	94.73	94.92	93.84	95.72	95.08	94.71	94.20
4	412	3.09	3081	3000	99.35	96.73	97.79	96.24	97.04	96.24	97.26	96.75	96.77	96.41	96.68	96.56
5	407	3.09	3121	3000	97.93	94.98	95.62	94.98	95.03	95.33	94.42	94.37	95.40	95.60	94.88	94.62
6	406	3.06	3073	3000	99.09	96.73	97.66	96.58	97.17	95.91	97.24	96.01	96.48	96.31	96.36	96.06
7	411	3.06	3099	3000	99.27	96.62	97.08	95.89	95.99	95.89	96.76	95.94	96.16	95.94	96.16	96.08
8	398	3.07	3062	3000	97.74	96.01	95.98	95.00	95.20	95.15	94.78	94.60	95.30	95.55	94.65	94.40
9	410	3.07	3095	3000	100.00	96.59	98.17	97.86	97.73	97.88	98.34	97.46	97.66	97.34	97.49	97.64
10	418	3.06	3104	3000	98.71	96.10	97.27	95.17	95.89	96.32	95.53	95.67	96.44	96.80	95.58	95.72
11	416	3.07	3031	3000	97.59	95.38	94.42	94.35	93.27	93.92	94.01	93.86	93.39	93.05	94.18	93.87
12	410	3.04	3067	3000	99.58	96.83	97.27	97.83	96.07	96.66	97.12	97.49	97.17	97.46	97.68	97.07
13	408	3.05	3103	3000	98.48	96.34	95.44	94.48	94.21	93.94	94.04	94.63	94.77	95.29	95.61	94.75
14	409	3.07	3085	3000	97.28	96.07	96.23	96.23	96.48	96.33	96.18	96.33	96.43	96.99	97.28	96.38
15	403	3.07	3114	3000	96.26	96.03	96.10	95.71	94.69	95.14	94.14	94.34	94.58	94.70	94.56	94.54
16	410	3.06	3058	3000	99.60	98.36	97.06	97.78	96.92	97.78	97.41	98.07	97.39	97.90	98.12	97.32
17	413	3.05	3105	3000	99.03	96.76	97.84	98.47	97.12	97.21	96.85	97.50	96.85	97.17	97.48	96.92
18	405	3.06	3132	3000	98.60	96.23	95.63	94.64	94.52	94.67	94.05	94.65	95.21	95.24	95.66	94.77
19	410	3.10	3062	3000	98.88	97.75	97.22	97.44	96.70	97.34	97.39	97.58	97.00	97.56	97.63	96.92
20	419	3.08	3078	3000	97.81	96.90	96.52	96.06	95.87	96.33	95.49	96.23	96.18	95.92	96.49	95.52
21	432	3.07	2994	3000	97.94	96.34	95.60	94.05	94.35	93.80	93.75	93.45	93.98	94.21	94.03	93.87
22	426	3.07	3044	3000	99.22	97.18	96.92	97.25	96.19	96.36	96.10	96.83	96.19	96.24	96.55	95.56
23	424	3.08	3012	3000	98.09	95.76	95.45	95.17	94.72	94.95	94.91	95.14	94.61	94.84	94.53	93.99
24	419	3.08	3002	3000	97.65	95.94	95.13	94.70	94.56	94.58	95.09	95.49	94.83	95.16	95.59	94.78
25	412	3.08	3043	3000	98.28	95.00	95.44	95.29	94.37	94.03	93.68	94.20	94.61	94.71	95.02	94.20
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Média	414	3.07			98.63	96.56	96.64	95.84	95.67	95.73	95.62	95.66	95.87	95.96	95.93	95.49
Mediana	412	3.07			98.56	96.34	96.52	95.71	95.87	95.90	95.49	95.67	96.18	95.97	95.66	95.52
σ	8	0.01			0.78	1.02	1.03	1.34	1.18	1.22	1.39	1.38	1.13	1.18	1.25	1.19
Min.	398	3.04			97.28	94.98	94.42	93.62	93.27	93.80	93.66	93.45	93.39	93.05	94.03	93.87
Max.	432	3.10			100.00	98.76	98.17	98.47	97.73	97.88	98.34	98.07	97.66	97.90	98.12	97.64

Nº da Lâmpada	Inicial (0 hrs)				Alteração de cromaticidade(Δu'v')											
	CCx	CCy	Calc CCT	Alvo ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	0.4315	0.4108	3153	3000	0.0009	0.0010	0.0012	0.0009	0.0010	0.0011	0.0010	0.0012	0.0010	0.0009	0.0011	0.0010
2	0.4337	0.4131	3133	3000	0.0011	0.0012	0.0015	0.0012	0.0013	0.0014	0.0012	0.0014	0.0015	0.0012	0.0013	0.0013
3	0.4342	0.4109	3107	3000	0.0007	0.0008	0.0010	0.0007	0.0007	0.0007	0.0010	0.0011	0.0008	0.0009	0.0010	0.0009
4	0.4360	0.4122	3081	3000	0.0011	0.0009	0.0013	0.0009	0.0011	0.0011	0.0012	0.0013	0.0012	0.0011	0.0013	0.0011
5	0.4328	0.4096	3121	3000	0.0008	0.0009	0.0010	0.0009	0.0009	0.0009	0.0011	0.0011	0.0008	0.0008	0.0009	0.0007
6	0.4340	0.4062	3073	3000	0.0011	0.0003	0.0010	0.0008	0.0011	0.0009	0.0011	0.0010	0.0010	0.0010	0.0010	0.0010
7	0.4319	0.4048	3099	3000	0.0011	0.0003	0.0007	0.0008	0.0007	0.0007	0.0009	0.0010	0.0008	0.0008	0.0010	0.0009
8	0.4338	0.4040	3062	3000	0.0008	0.0006	0.0007	0.0004	0.0006	0.0006	0.0007	0.0008	0.0005	0.0007	0.0005	0.0005
9	0.4319	0.4043	3095	3000	0.0011	0.0012	0.0013	0.0008	0.0011	0.0011	0.0012	0.0012	0.0011	0.0012	0.0011	0.0012
10	0.4306	0.4026	3104	3000	0.0008	0.0004	0.0008	0.0007	0.0007	0.0007	0.0008	0.0009	0.0007	0.0009	0.0008	0.0007
11	0.4407	0.4152	3031	3000	0.0003	0.0006	0.0009	0.0004	0.0006	0.0004	0.0005	0.0006	0.0004	0.0010	0.0008	0.0009
12	0.4395	0.4173	3067	3000	0.0007	0.0005	0.0005	0.0007	0.0006	0.0007	0.0006	0.0005	0.0009	0.0008	0.0009	0.0009
13	0.4348	0.4117	3103	3000	0.0006	0.0002	0.0005	0.0003	0.0004	0.0006	0.0005	0.0005	0.0006	0.0007	0.0007	0.0007
14	0.4388	0.4138	3085	3000	0.0002	0.0004	0.0007	0.0004	0.0005	0.0005	0.0005	0.0006	0.0007	0.0006	0.0007	0.0008
15	0.4350	0.4136	3114	3000	0.0003	0.0004	0.0004	0.0005	0.0003	0.0003	0.0003	0.0005	0.0005	0.0006	0.0008	0.0004
16	0.4410	0.4193	3058	3000	0.0007	0.0006	0.0005	0.0007	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010	0.0011	0.0009
17	0.4364	0.4155	3105	3000	0.0007	0.0007	0.0006	0.0006	0.0010	0.0009	0.0009	0.0009	0.0009	0.0008	0.0010	0.0008
18	0.4331	0.4116	3132	3000	0.0002	0.0002	0.0005	0.0004	0.0004	0.0004	0.0006	0.0003	0.0006	0.0006	0.0008	0.0006
19	0.4375	0.4124	3062	3000	0.0006	0.0007	0.0004	0.0009	0.0011	0.0013	0.0012	0.0012	0.0012	0.0012	0.0013	0.0011
20	0.4383	0.4161	3078	3000	0.0004	0.0003	0.0005	0.0004	0.0006	0.0006	0.0006	0.0006	0.0007	0.0006	0.0007	0.0005
21	0.4422	0.4138	2994	3000	0.0002	0.0002	0.0006	0.0003	0.0004	0.0004	0.0004	0.0006	0.0004	0.0008	0.0007	0.0010
22	0.4370	0.4090	3044	3000	0.0008	0.0008	0.0009	0.0009	0.0009	0.0006	0.0009	0.0009	0.0011	0.0009	0.0009	0.0009
23	0.4390	0.4093	3012	3000	0.0006	0.0007	0.0003	0.0001	0.0003	0.0004	0.0004	0.0005	0.0006	0.0005	0.0006	0.0006
24	0.4407	0.4116	3002	3000	0.0005	0.0004	0.0005	0.0005	0.0007	0.0006	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007
25	0.4370	0.4089	3043	3000	0.0007	0.0008	0.0004	0.0003	0.0007	0.0006	0.0005	0.0007	0.0008	0.0006	0.0007	0.0008
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Média					0.0007	0.0006	0.0007	0.0006	0.0007	0.0006	0.0008	0.0009	0.0008	0.0008	0.0009	0.0008
Mediana					0.0007	0.0008	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009
σ					0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002
Min.					0.0002	0.0002	0.0003	0.0001	0.0003	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0004
Max.					0.0011	0.0012	0.0015	0.0012	0.0013	0.0014	0.0012	0.0014	0.0015	0.0012	0.0013	0.0013

CESARE B. TAVARES
Nº 2296
Marcelo Jucapar
Nº 0781-7

1080

CONJUNTO DE DADOS 15: 105° C; 1050 mA

Nº da Lâmpada	Inicial (0 hrs)				Constância de Lúmen(%)			
	LF (lm)	V_f (V)	Calc. CCT	Alvo ANSI	5552	7056	7560	8064
1	429	3.08	3153	3000	99.57	95.87	95.09	94.81
2	419	3.08	3133	3000	96.54	97.64	97.06	96.56
3	418	3.07	3107	3000	95.23	95.62	94.61	94.42
4	412	3.09	3081	3000	96.53	97.40	97.02	96.65
5	407	3.09	3121	3000	94.74	93.85	93.96	94.12
6	406	3.06	3073	3000	96.06	97.00	96.68	96.41
7	411	3.06	3090	3000	95.74	95.84	96.57	95.91
8	398	3.07	3062	3000	94.60	94.95	93.67	94.30
9	410	3.07	3095	3000	97.49	98.51	98.08	97.47
10	418	3.08	3104	3000	96.66	96.01	95.63	96.20
11	416	3.07	3031	3000	93.60	93.72	93.28	93.31
12	410	3.04	3067	3000	96.76	97.68	96.83	96.70
13	408	3.05	3103	3000	94.10	94.55	93.67	94.06
14	409	3.07	3085	3000	96.67	97.28	96.36	95.79
15	403	3.07	3114	3000	94.54	94.91	94.51	94.34
16	410	3.08	3058	3000	97.73	98.00	97.51	96.97
17	413	3.05	3105	3000	97.21	97.41	96.70	96.15
18	405	3.06	3132	3000	94.94	94.77	94.42	94.89
19	410	3.10	3063	3000	97.24	97.49	96.66	96.60
20	419	3.08	3078	3000	95.52	96.28	95.47	95.52
21	432	3.07	2994	3000	93.56	93.80	93.26	92.82
22	426	3.07	3044	3000	96.82	96.26	96.38	95.44
23	424	3.08	3012	3000	94.53	94.22	93.87	93.23
24	419	3.08	3002	3000	94.51	95.04	94.42	94.56
25	412	3.08	3043	3000	94.59	94.63	94.06	93.64
n	25	25	25	25	25	25	25	25
Média	**414**	**3.07**			**95.60**	**95.92**	**95.43**	**95.20**
Mediana	412	3.07			95.57	96.01	95.47	95.44
σ	8	0.01			1.21	1.52	1.47	1.30
Min	398	3.04			93.56	93.72	93.26	92.82
Max	432	3.10			97.73	98.51	98.08	97.47

Nº da Lâmpada	Inicial (0 hrs)				Alteração de Cromaticidade (ΔuV')			
	CCx	CCy	Calc. CCT	Alvo ANSI	5552	7056	7560	8064
1	0.4315	0.4198	3153	3000	0.0008	0.0010	0.0009	0.0009
2	0.4337	0.4131	3133	3000	0.0012	0.0013	0.0012	0.0012
3	0.4342	0.4109	3107	3000	0.0008	0.0009	0.0010	0.0009
4	0.4363	0.4122	3081	3000	0.0012	0.0012	0.0012	0.0012
5	0.4320	0.4096	3121	3000	0.0007	0.0006	0.0009	0.0009
6	0.4340	0.4062	3073	3000	0.0012	0.0011	0.0012	0.0011
7	0.4319	0.4048	3099	3000	0.0009	0.0010	0.0009	0.0009
8	0.4338	0.4040	3062	3000	0.0006	0.0006	0.0007	0.0007
9	0.4319	0.4043	3085	3000	0.0012	0.0012	0.0011	0.0011
10	0.4306	0.4026	3104	3000	0.0008	0.0009	0.0009	0.0009
11	0.4407	0.4192	3031	3000	0.0007	0.0008	0.0008	0.0009
12	0.4395	0.4173	3067	3000	0.0009	0.0009	0.0009	0.0007
13	0.4348	0.4117	3103	3000	0.0007	0.0006	0.0008	0.0008
14	0.4368	0.4138	3085	3000	0.0007	0.0007	0.0008	0.0009
15	0.4350	0.4136	3114	3000	0.0007	0.0007	0.0006	0.0007
16	0.4410	0.4193	3058	3000	0.0010	0.0009	0.0012	0.0011
17	0.4364	0.4155	3105	3000	0.0010	0.0008	0.0010	0.0009
18	0.4331	0.4116	3132	3000	0.0006	0.0009	0.0007	0.0008
19	0.4375	0.4124	3062	3000	0.0012	0.0011	0.0012	0.0013
20	0.4383	0.4161	3078	3000	0.0006	0.0007	0.0007	0.0007
21	0.4422	0.4136	2994	3000	0.0009	0.0008	0.0008	0.0010
22	0.4370	0.4090	3044	3000	0.0009	0.0011	0.0010	0.0010
23	0.4390	0.4093	3012	3000	0.0008	0.0006	0.0008	0.0013
24	0.4407	0.4116	3002	3000	0.0007	0.0008	0.0008	0.0011
25	0.4370	0.4089	3043	3000	0.0008	0.0006	0.0009	0.0011
n	25	25	25	25	25	25	25	25
Média					**0.0009**	**0.0009**	**0.0009**	**0.0010**
Mediana					0.0008	0.0008	0.0009	0.0009
σ					0.0002	0.0002	0.0002	0.0002
Min.					0.0006	0.0006	0.0006	0.0007
Max.					0.0012	0.0013	0.0012	0.0013

1081

CONJUNTO DE DADOS 10:105° C; 1050 mA

Série testada de LEDs	XLamp XP-G3 LEDs brancos (Série: XPGDWT) Este relatório LM-80 aplica-se aos seguintes códigos de pedido: XPGDWT-xx-xxxx-xxxxx
Corrente da unidade testada [IF]	1050 mA
Data de Início do Teste	16 de outubro de 2015
Temperatura da carcaça [TS]	105°C
Temperatura ambiente [TA]	105°C
Falhas observadas	Nenhuma

Síntese dos Resultados de Teste

Duração do teste (horas)	Fluxo luminoso relativo	Mudança relativa de cor (Δu'v')	Mudança relativa de CRI (ΔRa)	Mudança relativa de Tensão (% ΔVF)	Duração do teste (horas)	Fluxo luminoso relativo	Mudança relativa de cor (Δu'v')	Mudança relativa de CRI (ΔRa)	Mudança relativa de tensão (% ΔVF)
0	100.00%	0.0000	0.0	0.0%	10080	94.88%	0.0009	-0.1	-2.3%
168	99.37%	0.0005	-0.1	N/R	10584	94.81%	0.0013	-0.2	-1.7%
1008	98.28%	0.0007	0.1	N/R	11088	94.90%	0.0015	-0.3	-1.6%
1512	97.69%	0.0006	0.0	N/R	11592	95.10%	0.0012	-0.2	-1.9%
2016	97.41%	0.0005	0.0	N/R					
2520	97.15%	0.0004	0.0	N/R					
3024	96.98%	0.0004	0.0	N/R					
3528	96.69%	0.0004	0.0	N/R					
4032	96.40%	0.0005	0.0	N/R					
4536	96.35%	0.0004	0.0	N/R					
5040	96.19%	0.0005	0.0	N/R					
5544	96.24%	0.0004	0.0	N/R					
6048	95.87%	0.0003	0.0	N/R					
6552	95.67%	0.0005	0.0	-1.6%					
7056	95.43%	0.0004	0.0	-1.5%					
7560	95.28%	0.0004	0.0	-1.1%					
8064	95.13%	0.0006	0.0	-0.9%					
8568	95.16%	0.0007	-0.1	-1.1%					
9072	95.07%	0.0007	-0.1	-1.6%					
9576	94.85%	0.0007	-0.1	-1.1%					

Nota: "N/R" indica pontos de dados que não são relatados

1082

CONJUNTO DE DADOS 10: 105° C; 1050 mA

Projeção TM-21 da Calculadora Interna Cree

Duração do teste	11.592 horas
Duração do teste usado para projeção	t=5.544 a t=11.592
α	2.022E-06
β	9.692E-01
Vidas Úteis Relatadas	L90(12k) = 36.700 horas L80(12k) > 69.600 horas L70(12k) > 69.600 horas

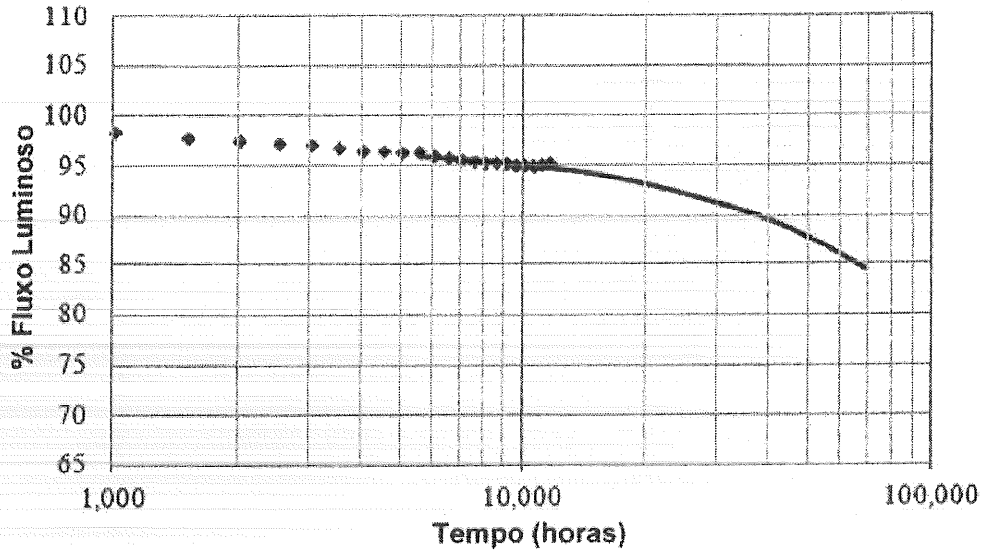
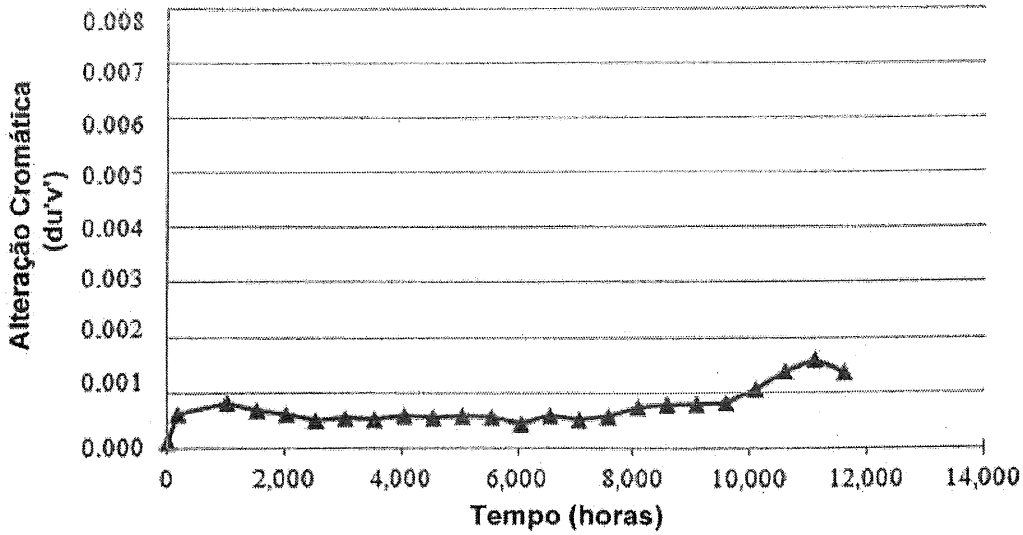


Gráfico de Alteração Cromática



1083

CONJUNTO DE DADOS 10:105° C; 1050 mA

Nº da Lâmpada	Inicial (0 hrs)				Constância de Lúmen(%)											
	LF (lm)	V_F (V)	Calc. CCT	Meta ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	492	3.06	4018	4000	99.35	98.01	97.07	96.86	96.64	96.62	96.36	95.85	95.91	95.49	95.61	95.65
2	477	3.11	4139	4000	99.12	98.26	97.65	97.44	97.23	97.29	97.13	97.13	96.77	96.64	96.20	96.03
3	489	3.07	4102	4000	98.53	98.02	97.51	97.33	96.91	96.12	96.03	95.32	94.95	94.77	96.16	94.73
4	471	3.11	4099	4000	99.15	97.77	97.28	96.09	97.16	97.20	97.37	96.77	96.10	96.24	94.69	95.74
5	475	3.12	4028	4000	98.93	98.55	97.37	96.69	96.48	96.55	96.10	96.06	96.55	95.89	95.81	95.58
6	463	3.09	4080	4000	99.78	99.01	98.08	97.75	97.80	96.84	96.65	96.65	96.52	96.41	95.89	95.46
7	458	3.09	3972	4000	99.46	98.67	98.58	97.86	97.75	97.58	96.88	96.66	96.77	97.05	97.14	96.70
8	485	3.06	4070	4000	99.90	97.61	97.20	96.64	96.31	95.84	95.43	95.22	95.01	94.83	95.06	94.66
9	477	3.06	4037	4000	99.39	98.41	98.05	97.74	97.51	97.21	97.17	96.83	96.77	97.02	96.81	96.04
10	470	3.09	4039	4000	99.34	97.83	97.62	97.11	96.36	96.33	95.83	95.28	95.57	94.87	95.60	94.98
11	448	3.13	3996	4000	100.02	99.75	98.28	97.79	97.10	96.92	96.79	96.07	96.70	96.79	96.63	96.16
12	441	3.15	4043	4000	99.05	98.32	97.98	97.17	97.73	97.05	96.62	96.44	96.49	96.42	96.28	96.38
13	468	3.06	3918	4000	100.00	97.93	97.43	97.31	96.79	96.69	96.41	96.04	96.22	95.81	95.83	95.60
14	460	3.08	4100	4000	99.29	98.46	97.93	97.22	96.84	97.22	96.87	96.45	96.71	96.43	96.49	96.40
15	470	3.16	4095	4000	99.06	98.33	97.65	97.46	97.46	97.37	97.70	97.33	96.45	96.93	96.74	96.24
16	478	3.13	4003	4000	99.06	97.95	96.99	96.92	96.78	97.13	96.82	96.25	96.63	96.23	97.03	96.48
17	448	3.10	3959	4000	99.55	98.37	97.70	97.74	97.94	97.56	97.27	97.47	97.43	97.36	97.14	96.47
18	443	3.13	3978	4000	99.05	97.77	97.41	97.32	97.16	96.48	95.78	95.92	95.94	95.31	95.47	94.92
19	479	3.07	4024	4000	99.02	99.14	98.14	97.95	97.47	97.79	97.64	97.47	96.84	96.68	97.01	96.72
20	483	3.08	3937	4000	99.23	98.51	97.87	97.91	97.72	97.70	97.14	96.85	96.68	97.08	96.87	96.44
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Média	**470**	**3.09**			**99.37**	**98.28**	**97.69**	**97.41**	**97.15**	**96.98**	**96.69**	**96.40**	**96.35**	**96.19**	**96.24**	**95.87**
Mediana	473	3.09			99.32	98.33	97.67	97.39	97.17	97.09	96.73	96.45	96.54	96.42	96.24	96.04
σ	15	0.03			0.34	0.42	0.42	0.45	0.51	0.52	0.63	0.69	0.62	0.79	0.69	0.68
Min.	441	3.06			98.93	97.61	96.99	96.64	96.31	95.84	95.43	95.22	94.95	94.77	94.89	94.66
Max.	492	3.15			100.02	99.14	98.58	98.08	97.94	97.78	97.70	97.47	97.43	97.36	97.14	96.72

Nº da Lâmpada	Inicial (0 hrs)				Alteração de cromaticidade(Δu'v')											
	CCx	CCy	Calc. CCT	Alvo ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	0.3803	0.3775	4018	4000	0.0010	0.0011	0.0008	0.0008	0.0002	0.0003	0.0004	0.0004	0.0001	0.0003	0.0004	0.0005
2	0.3748	0.3729	4139	4000	0.0001	0.0006	0.0003	0.0005	0.0003	0.0004	0.0004	0.0009	0.0006	0.0006	0.0006	0.0003
3	0.3766	0.3750	4102	4000	0.0009	0.0008	0.0004	0.0007	0.0001	0.0003	0.0001	0.0004	0.0003	0.0007	0.0004	0.0007
4	0.3749	0.3674	4099	4000	0.0005	0.0005	0.0007	0.0004	0.0002	0.0001	0.0005	0.0004	0.0005	0.0004	0.0007	0.0002
5	0.3793	0.3751	4028	4000	0.0002	0.0008	0.0006	0.0005	0.0003	0.0007	0.0003	0.0003	0.0005	0.0003	0.0006	0.0007
6	0.3788	0.3809	4080	4000	0.0005	0.0008	0.0007	0.0005	0.0007	0.0004	0.0003	0.0006	0.0005	0.0003	0.0004	0.0002
7	0.3827	0.3801	3972	4000	0.0001	0.0003	0.0002	0.0001	0.0005	0.0001	0.0003	0.0004	0.0002	0.0002	0.0003	0.0002
8	0.3784	0.3777	4070	4000	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0005	0.0007	0.0004	0.0004	0.0002	0.0003
9	0.3790	0.3751	4037	4000	0.0007	0.0007	0.0007	0.0010	0.0007	0.0005	0.0009	0.0010	0.0009	0.0008	0.0007	0.0004
10	0.3772	0.3682	4039	4000	0.0003	0.0009	0.0007	0.0001	0.0002	0.0007	0.0007	0.0006	0.0004	0.0004	0.0006	0.0002
11	0.3795	0.3712	3996	4000	0.0006	0.0008	0.0007	0.0004	0.0001	0.0004	0.0002	0.0002	0.0001	0.0005	0.0003	0.0002
12	0.3773	0.3692	4043	4000	0.0002	0.0007	0.0004	0.0005	0.0004	0.0003	0.0003	0.0003	0.0004	0.0003	0.0004	0.0002
13	0.3837	0.3762	3918	4000	0.0007	0.0004	0.0003	0.0004	0.0003	0.0002	0.0002	0.0003	0.0002	0.0004	0.0002	0.0002
14	0.3746	0.3682	4100	4000	0.0005	0.0007	0.0004	0.0001	0.0001	0.0002	0.0004	0.0002	0.0001	0.0002	0.0001	0.0001
15	0.3780	0.3798	4095	4000	0.0005	0.0007	0.0009	0.0008	0.0006	0.0006	0.0006	0.0006	0.0008	0.0004	0.0003	0.0001
16	0.3829	0.3856	4003	4000	0.0003	0.0006	0.0003	0.0003	0.0001	0.0003	0.0003	0.0002	0.0001	0.0005	0.0003	0.0001
17	0.3817	0.3744	3959	4000	0.0006	0.0009	0.0006	0.0006	0.0003	0.0006	0.0003	0.0004	0.0003	0.0004	0.0004	0.0003
18	0.3789	0.3863	3978	4000	0.0003	0.0003	0.0002	0.0002	0.0004	0.0001	0.0002	0.0002	0.0007	0.0006	0.0004	0.0007
19	0.3773	0.3865	4024	4000	0.0009	0.0011	0.0010	0.0009	0.0009	0.0010	0.0007	0.0009	0.0007	0.0009	0.0006	0.0004
20	0.3813	0.3898	3937	4000	0.0009	0.0009	0.0007	0.0008	0.0007	0.0008	0.0005	0.0005	0.0008	0.0006	0.0007	0.0004
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Média					**0.0005**	**0.0007**	**0.0006**	**0.0005**	**0.0004**	**0.0004**	**0.0004**	**0.0005**	**0.0004**	**0.0005**	**0.0004**	**0.0003**
Mediana					0.0005	0.0007	0.0006	0.0005	0.0003	0.0004	0.0003	0.0004	0.0004	0.0004	0.0004	0.0003
σ					0.0003	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.					0.0001	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0001
Max.					0.0010	0.0011	0.0010	0.0010	0.0009	0.0010	0.0009	0.0010	0.0009	0.0009	0.0008	0.0007

CREE

CONJUNTO DE DADOS 10: 105° C; 1050 mA

1084

Nº da Lâmpada	Inicial (0 hrs)				Constância de Lúmen(%)										
	LF (lm)	VF (V)	Calc. CCT	Meta ANSI	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592
1	492	3.06	4018	4000	94.51	94.69	95.16	94.37	95.04	95.83	95.22	95.83	95.69	94.53	94.96
2	477	3.11	4139	4000	96.20	96.29	96.31	95.74	95.97	95.95	95.61	96.16	95.93	96.54	95.26
3	489	3.07	4102	4000	95.61	95.22	95.40	95.58	95.20	94.32	94.03	93.40	93.95	93.72	94.01
4	471	3.11	4099	4000	94.87	95.27	95.54	94.97	95.31	95.16	95.06	94.84	95.23	94.57	95.54
5	475	3.12	4028	4000	95.43	95.32	95.56	94.99	95.18	94.99	95.41	95.05	95.20	95.64	95.75
6	463	3.09	4080	4000	96.17	95.01	95.11	95.29	95.20	95.24	94.42	95.35	94.62	95.40	95.63
7	458	3.09	3972	4000	96.77	97.01	96.40	95.90	96.42	96.05	96.42	95.37	95.63	96.81	96.49
8	485	3.06	4070	4000	94.52	93.98	94.50	94.58	93.92	93.86	93.57	93.82	93.74	93.08	93.49
9	477	3.06	4037	4000	96.10	95.88	95.14	95.84	96.35	96.56	96.33	96.06	96.27	95.93	96.46
10	470	3.09	4039	4000	95.00	94.70	94.66	94.51	94.34	93.87	93.83	93.83	93.28	93.49	93.81
11	448	3.13	3996	4000	96.27	95.52	95.54	95.23	95.23	95.45	94.91	95.85	95.00	95.59	95.96
12	441	3.15	4043	4000	95.93	95.72	95.36	94.72	95.02	94.61	95.13	95.24	95.20	95.31	95.49
13	458	3.06	3918	4000	95.34	94.95	94.40	94.36	94.76	94.98	94.91	94.59	94.33	94.21	94.74
14	488	3.09	4100	4000	96.20	95.92	95.43	95.11	94.49	93.72	93.57	93.27	93.25	92.86	92.84
15	479	3.10	4095	4000	95.41	95.32	95.20	95.22	95.36	95.78	95.45	95.28	95.07	95.49	95.68
16	478	3.13	4003	4000	95.98	95.88	95.17	95.02	95.29	95.12	94.73	95.04	95.21	95.85	96.02
17	448	3.10	3959	4000	95.84	95.20	94.55	94.73	94.46	94.79	93.81	94.97	94.41	95.37	95.42
18	443	3.13	3978	4000	94.36	94.43	93.86	93.68	93.50	93.35	93.53	93.39	93.59	93.53	93.77
19	479	3.07	4024	4000	97.20	96.36	95.39	96.70	96.90	95.57	95.32	95.24	94.92	94.69	94.57
20	483	3.08	3937	4000	95.73	96.06	95.96	96.25	96.31	96.27	95.81	95.05	95.38	95.56	96.05
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Média	**470**	**3.09**			**95.67**	**95.43**	**95.28**	**95.13**	**95.16**	**95.07**	**94.85**	**94.88**	**94.81**	**94.90**	**95.10**
Mediana	473	3.09			95.79	95.32	95.28	95.07	95.20	95.14	94.99	95.05	95.04	95.34	95.46
σ	15	0.03			0.75	0.72	0.68	0.71	0.79	0.90	0.90	0.89	0.88	1.13	1.04
Min.	441	3.06			94.36	93.98	93.86	93.68	93.50	93.35	93.53	93.27	93.25	92.86	92.84
Max.	492	3.15			97.20	97.01	96.40	96.70	96.42	96.56	96.42	96.16	96.27	96.81	96.49

Nº da Lâmpada	Inicial (0 hrs)				Alteração de cromaticidade(Δu'v')										
	CCx	CCy	Calc. CCT	Alvo ANSI	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592
1	0.3803	0.3775	4018	4000	0.0010	0.0009	0.0010	0.0012	0.0011	0.0014	0.0011	0.0015	0.0012	0.0022	0.0019
2	0.3748	0.3729	4139	4000	0.0001	0.0004	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0009	0.0008	0.0023
3	0.3786	0.3750	4102	4000	0.0003	0.0002	0.0003	0.0005	0.0008	0.0005	0.0006	0.0006	0.0008	0.0019	0.0017
4	0.3749	0.3874	4099	4000	0.0005	0.0004	0.0006	0.0010	0.0008	0.0009	0.0010	0.0009	0.0011	0.0016	0.0009
5	0.3793	0.3751	4028	4000	0.0004	0.0003	0.0002	0.0003	0.0003	0.0004	0.0006	0.0006	0.0007	0.0006	0.0008
6	0.3788	0.3809	4080	4000	0.0003	0.0002	0.0007	0.0008	0.0002	0.0002	0.0004	0.0004	0.0013	0.0011	0.0008
7	0.3827	0.3801	3972	4000	0.0003	0.0005	0.0003	0.0002	0.0006	0.0006	0.0005	0.0019	0.0009	0.0013	0.0009
8	0.3784	0.3777	4070	4000	0.0012	0.0008	0.0003	0.0006	0.0008	0.0006	0.0007	0.0008	0.0012	0.0020	0.0019
9	0.3790	0.3751	4037	4000	0.0004	0.0008	0.0002	0.0003	0.0002	0.0004	0.0004	0.0004	0.0006	0.0011	0.0008
10	0.3772	0.3682	4039	4000	0.0004	0.0004	0.0003	0.0002	0.0004	0.0007	0.0004	0.0013	0.0016	0.0019	0.0017
11	0.3795	0.3712	3996	4000	0.0005	0.0004	0.0004	0.0009	0.0008	0.0008	0.0008	0.0009	0.0019	0.0017	0.0013
12	0.3773	0.3802	4043	4000	0.0005	0.0008	0.0006	0.0007	0.0010	0.0008	0.0009	0.0013	0.0014	0.0015	0.0013
13	0.3837	0.3762	3918	4000	0.0005	0.0003	0.0003	0.0009	0.0007	0.0009	0.0010	0.0008	0.0018	0.0020	0.0015
14	0.3746	0.3802	4100	4000	0.0003	0.0003	0.0005	0.0007	0.0017	0.0008	0.0005	0.0011	0.0009	0.0006	0.0008
15	0.3780	0.3798	4095	4000	0.0007	0.0003	0.0007	0.0008	0.0007	0.0005	0.0007	0.0008	0.0017	0.0011	0.0011
16	0.3829	0.3856	4003	4000	0.0003	0.0002	0.0005	0.0005	0.0005	0.0003	0.0005	0.0009	0.0007	0.0009	0.0007
17	0.3817	0.3744	3959	4000	0.0006	0.0003	0.0009	0.0009	0.0008	0.0007	0.0008	0.0008	0.0018	0.0017	0.0012
18	0.3789	0.3863	3978	4000	0.0003	0.0001	0.0004	0.0009	0.0009	0.0008	0.0009	0.0013	0.0012	0.0020	0.0011
19	0.3773	0.3685	4024	4000	0.0003	0.0003	0.0002	0.0007	0.0007	0.0012	0.0012	0.0012	0.0026	0.0021	0.0017
20	0.3813	0.3698	3937	4000	0.0005	0.0006	0.0004	0.0004	0.0008	0.0005	0.0008	0.0012	0.0008	0.0012	0.0009
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Média					**0.0005**	**0.0004**	**0.0004**	**0.0006**	**0.0007**	**0.0007**	**0.0007**	**0.0009**	**0.0013**	**0.0015**	**0.0012**
Mediana					0.0004	0.0003	0.0004	0.0006	0.0007	0.0007	0.0007	0.0009	0.0012	0.0018	0.0011
σ					0.0002	0.0002	0.0002	0.0003	0.0004	0.0003	0.0003	0.0004	0.0005	0.0005	0.0005
Min.					0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0006	0.0006	0.0008
Max.					0.0012	0.0009	0.0010	0.0012	0.0017	0.0014	0.0012	0.0019	0.0026	0.0022	0.0023

1085

CONJUNTO DE DADOS 11: 85°C; 1500 mA

Série testada de LEDs	XLamp XP-G3 LEDs brancos (Série: XPGDWT) Este relatório LM-80 aplica-se aos seguintes códigos de pedido: XPGDWT-xx-xxxx-xxxxx
Corrente da unidade testada [IF]	1500 mA
Data de Início do Teste	2 de novembro de 2015
Temperatura da carcaça [TS]	85°C
Temperatura ambiente [TA]	85°C
Falhas observadas	Nenhuma

Síntese dos Resultados de Teste

Duração do teste (horas)	Fluxo luminoso relativo	Mudança relativa de cor (Δu'v ')	Mudança relativa de CRI (ΔRa)	Mudança relativa de tensão (% ΔVF)	Duração do teste (horas)	Fluxo luminoso relativo	Mudança relativa de cor (Δu'v ')	Mudança relativa de CRI (ΔRa)	Mudança relativa de tensão (% ΔVF)
0	100.00%	0.0000	0.0	0.0%	10080	96.80%	0.0009	-0.2	N/R
168	100.11%	0.0006	-0.1	N/R	10584	97.01%	0.0009	-0.2	-2.6%
1008	99.63%	0.0008	-0.1	N/R	11088	97.12%	0.0009	-0.2	-3.1%
1512	99.30%	0.0009	-0.1	N/R	11592	96.95%	0.0010	-0.3	-3.1%
2016	98.99%	0.0008	-0.2	N/R	12096	96.95%	0.0010	-0.2	-2.9%
2520	98.67%	0.0007	-0.1	N/R	12600	97.00%	0.0010	-0.2	-3.3%
3024	98.50%	0.0007	-0.1	N/R	13104	96.94%	0.0010	-0.2	-3.3%
3528	98.51%	0.0008	-0.1	N/R	13608	96.99%	0.0009	-0.2	-3.6%
4032	98.36%	0.0008	-0.2	N/R					
4536	98.37%	0.0008	-0.1	N/R					
5040	98.36%	0.0008	-0.2	N/R					
5544	98.18%	0.0008	-0.2	N/R					
6048	98.20%	0.0008	-0.2	N/R					
6552	97.88%	0.0008	-0.1	N/R					
7056	97.77%	0.0008	-0.1	N/R					
7560	97.48%	0.0009	-0.2	N/R					
8064	97.42%	0.0009	-0.2	N/R					
8568	97.26%	0.0009	-0.2	N/R					
9072	97.02%	0.0009	-0.2	N/R					
9576	97.21%	0.0010	-0.2	N/R					

Nota: "N/R" indica pontos de dados que não são relatados

CONJUNTO DE DADOS 11: 85° C; 1500 mA

1086

Projeção TM-21 da Calculadora Interna Cree

Duração do teste	13.608 horas
Duração do teste usado para projeção	t=6.552 a t=13.608
α	1.195E-06
β	9.836E-01
Vidas Úteis Relatadas	L90(14k) = 74.300 horas L80(14k) > 81.600 horas L70(14k) > 81.600 horas

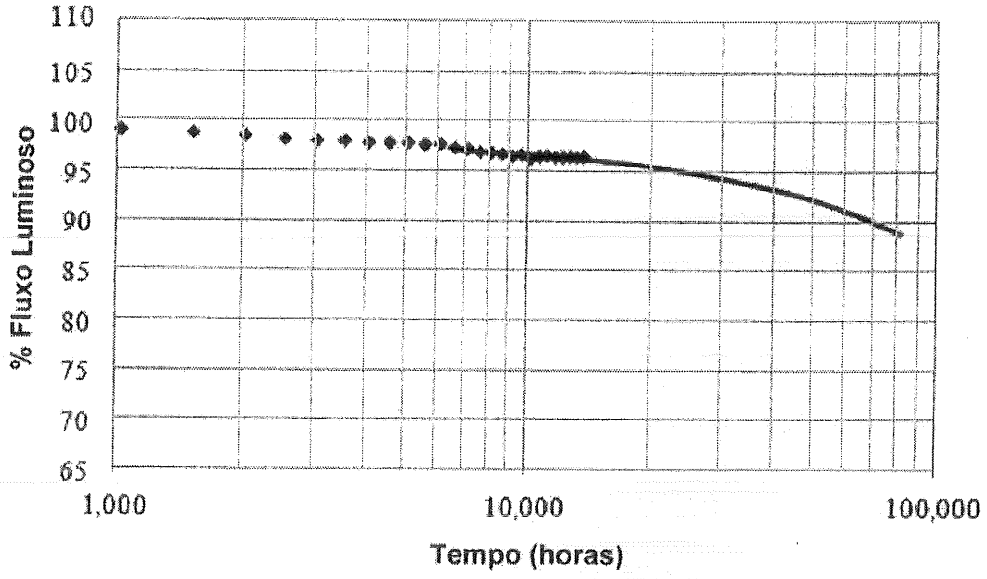
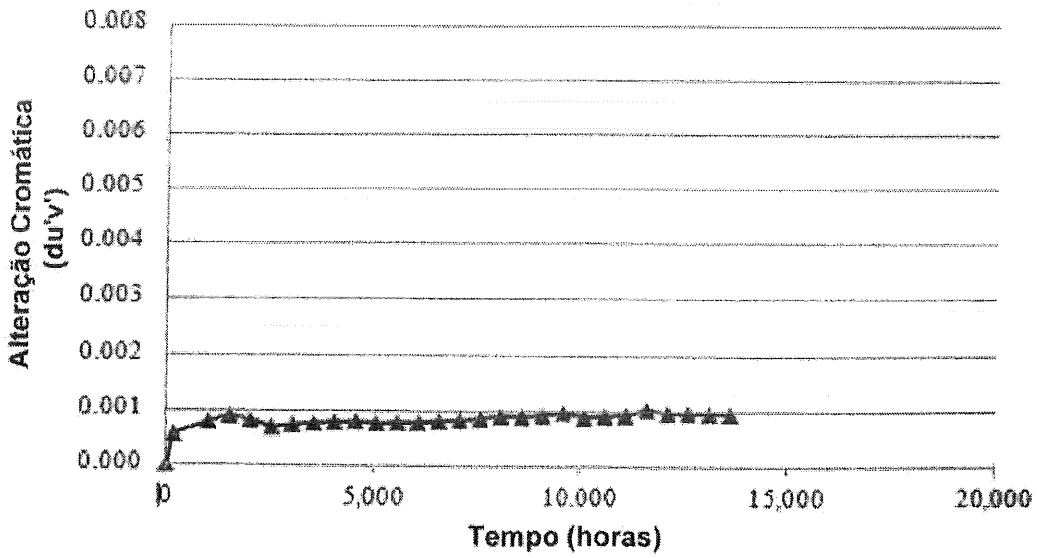


Gráfico de Alteração Cromática



CESAR E. B. TAVARES
Matrícula Jucepar Nº 12/181-T
Tradutor Público Juramentado de Língua Inglesa
N 2296

CREE

CONJUNTO DE DADOS 11: 85° C; 1500 mA

1087

Nº da Lâmpada	Inicial (0 hrs)				Constância de Lúmen(%)											
	LF (lm)	V_x (V)	Calc. CCT	Meta ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	559	3.11	3163	3000	100.16	100.07	99.98	99.79	99.53	98.64	98.04	98.64	99.16	98.98	98.76	98.23
2	559	3.15	3100	3000	100.13	99.64	99.07	98.82	98.69	98.75	98.62	98.44	98.12	98.66	98.59	98.62
3	533	3.10	3132	3000	100.13	99.59	99.68	98.57	98.14	97.75	98.07	97.78	98.10	97.71	97.78	97.95
4	532	3.18	3091	3000	100.11	99.44	98.85	98.23	98.27	98.36	97.61	97.88	97.57	98.14	97.50	97.46
5	559	3.14	3178	3000	99.87	99.16	98.80	98.59	97.68	97.78	97.60	97.77	97.57	97.82	97.50	97.57
6	541	3.15	3139	3000	100.18	100.00	99.56	99.19	98.98	98.65	98.97	98.36	98.56	98.74	98.41	98.37
7	554	3.12	3106	3000	100.07	99.26	98.83	98.56	98.09	98.32	98.12	97.62	97.44	97.89	97.49	97.35
8	550	3.22	3105	3000	99.65	99.62	99.29	99.33	98.47	98.58	98.67	98.80	98.84	98.76	98.40	98.53
9	523	3.12	3102	3000	99.96	99.89	99.79	98.75	99.10	98.53	98.83	98.66	98.63	98.43	98.55	98.49
10	525	3.13	3128	3000	99.85	99.52	98.64	98.28	98.87	98.78	98.44	98.72	98.53	98.02	98.06	98.00
11	527	3.14	3147	3000	100.09	100.19	99.70	98.41	99.43	98.80	98.59	98.80	99.26	98.86	98.96	98.88
12	561	3.26	3083	3000	100.50	99.06	98.16	98.04	97.58	97.92	98.09	97.97	97.40	97.33	97.45	97.67
13	549	3.27	3111	3000	100.11	99.40	98.91	98.69	98.41	98.41	98.60	97.99	98.36	98.76	97.79	98.09
14	558	3.24	3140	3000	99.87	100.00	99.55	99.10	98.24	98.51	98.08	98.10	98.92	98.23	97.78	98.23
15	551	3.20	3044	3000	100.45	99.93	99.53	98.18	99.15	99.29	98.35	98.67	98.80	98.58	98.80	99.02
16	551	3.16	3124	3000	100.44	99.27	98.98	98.80	98.75	98.22	98.51	97.99	98.40	98.75	98.06	98.40
17	534	3.19	3084	3000	100.09	100.17	99.74	99.53	99.57	99.59	99.46	99.31	99.23	99.12	98.91	99.25
18	544	3.16	3168	3000	100.22	99.34	99.72	99.32	99.08	98.92	99.30	98.58	98.73	99.58	98.70	98.99
19	546	3.31	3059	3000	100.00	99.98	99.66	99.27	98.90	98.55	98.65	98.66	98.83	98.46	98.33	98.17
20	548	3.26	3089	3000	99.98	99.82	99.12	98.96	98.87	98.16	98.65	97.81	98.32	98.72	98.41	98.07
21	529	3.13	3113	3000	100.34	99.62	99.58	99.39	99.36	98.92	99.22	99.21	98.54	98.75	98.49	98.34
22	544	3.15	3080	3000	100.15	99.61	99.15	98.71	98.80	98.77	98.84	99.08	98.47	98.42	98.46	98.51
23	529	3.26	3086	3000	100.32	99.70	99.09	99.11	98.75	98.47	98.00	98.28	98.28	97.83	98.03	97.90
24	556	3.18	3111	3000	100.36	99.39	98.70	98.06	97.53	97.30	97.61	97.75	97.43	97.52	97.39	97.34
25	525	3.09	3058	3000	99.83	99.71	99.37	99.31	98.83	98.49	98.04	98.23	98.28	98.06	97.86	97.56
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Média	543	3.18			100.11	99.83	99.30	98.99	98.67	98.50	98.51	98.36	98.37	98.36	98.18	98.20
Mediana	546	3.18			100.11	99.62	99.37	99.11	98.75	98.53	98.60	98.36	98.40	98.44	98.33	98.23
σ	13	0.06			0.21	0.32	0.46	0.48	0.57	0.48	0.54	0.49	0.55	0.48	0.50	0.53
Min	523	3.09			99.65	99.06	98.16	98.04	97.53	97.30	97.60	97.62	97.40	97.33	97.39	97.34
Max.	561	3.31			100.50	100.19	99.98	99.79	99.57	99.59	99.46	99.31	99.26	99.12	98.96	99.25

Nº da Lâmpada	Inicial (0 hrs)				Alteração de cromaticidade(Δu'v')											
	CCx	CCy	Calc. CCT	Alvo ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	0.4299	0.4084	3163	3000	0.0003	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0009	0.0008	0.0008	0.0007	0.0008
2	0.4308	0.4026	3100	3000	0.0006	0.0008	0.0010	0.0008	0.0007	0.0006	0.0007	0.0009	0.0007	0.0007	0.0006	0.0007
3	0.4278	0.3998	3132	3000	0.0003	0.0007	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0004	0.0004	0.0004	0.0003
4	0.4291	0.3977	3091	3000	0.0005	0.0010	0.0010	0.0008	0.0007	0.0006	0.0007	0.0007	0.0006	0.0005	0.0005	0.0006
5	0.4294	0.4092	3178	3000	0.0006	0.0008	0.0011	0.0010	0.0010	0.0008	0.0009	0.0011	0.0009	0.0009	0.0008	0.0009
6	0.4303	0.4063	3139	3000	0.0003	0.0008	0.0008	0.0008	0.0006	0.0005	0.0006	0.0006	0.0005	0.0005	0.0005	0.0005
7	0.4240	0.3978	3186	3000	0.0006	0.0010	0.0009	0.0009	0.0006	0.0008	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008
8	0.4291	0.3994	3105	3000	0.0005	0.0009	0.0008	0.0008	0.0006	0.0007	0.0006	0.0009	0.0008	0.0007	0.0006	0.0007
9	0.4356	0.4133	3102	3000	0.0005	0.0005	0.0010	0.0008	0.0007	0.0007	0.0008	0.0008	0.0008	0.0007	0.0007	0.0008
10	0.4326	0.4100	3128	3000	0.0006	0.0009	0.0010	0.0009	0.0008	0.0007	0.0007	0.0007	0.0008	0.0007	0.0008	0.0009
11	0.4305	0.4077	3147	3000	0.0007	0.0010	0.0011	0.0007	0.0007	0.0008	0.0006	0.0007	0.0006	0.0007	0.0006	0.0008
12	0.4393	0.4124	3083	3000	0.0007	0.0007	0.0010	0.0010	0.0007	0.0008	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010
13	0.4333	0.4094	3111	3000	0.0009	0.0009	0.0010	0.0009	0.0007	0.0009	0.0010	0.0008	0.0009	0.0009	0.0010	0.0009
14	0.4303	0.4064	3140	3000	0.0008	0.0010	0.0011	0.0008	0.0006	0.0009	0.0008	0.0009	0.0010	0.0009	0.0010	0.0011
15	0.4409	0.4173	3044	3000	0.0007	0.0009	0.0013	0.0013	0.0010	0.0012	0.0011	0.0012	0.0012	0.0013	0.0013	0.0012
16	0.4333	0.4111	3124	3000	0.0005	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	0.0009	0.0009	0.0010	0.0008
17	0.4368	0.4137	3084	3000	0.0004	0.0007	0.0010	0.0010	0.0010	0.0009	0.0010	0.0010	0.0008	0.0009	0.0009	0.0008
18	0.4311	0.4118	3168	3000	0.0005	0.0005	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0009	0.0007
19	0.4380	0.4130	3059	3000	0.0007	0.0010	0.0009	0.0010	0.0008	0.0009	0.0010	0.0008	0.0011	0.0009	0.0010	0.0010
20	0.4344	0.4090	3089	3000	0.0008	0.0011	0.0011	0.0011	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0009	0.0009
21	0.4336	0.4103	3113	3000	0.0006	0.0007	0.0009	0.0007	0.0005	0.0006	0.0007	0.0005	0.0007	0.0007	0.0007	0.0006
22	0.4385	0.4175	3080	3000	0.0002	0.0005	0.0007	0.0006	0.0005	0.0006	0.0006	0.0008	0.0006	0.0005	0.0005	0.0006
23	0.4348	0.4095	3086	3000	0.0005	0.0009	0.0010	0.0006	0.0006	0.0009	0.0007	0.0008	0.0009	0.0007	0.0008	0.0008
24	0.4327	0.4081	3111	3000	0.0005	0.0005	0.0007	0.0004	0.0004	0.0003	0.0005	0.0005	0.0006	0.0007	0.0006	0.0005
25	0.4396	0.4164	3058	3000	0.0004	0.0006	0.0005	0.0007	0.0006	0.0007	0.0006	0.0006	0.0007	0.0006	0.0006	0.0006
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Média					0.0006	0.0008	0.0009	0.0008	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
Mediana					0.0005	0.0008	0.0010	0.0008	0.0007	0.0007	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008
σ					0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min					0.0002	0.0005	0.0005	0.0004	0.0004	0.0003	0.0003	0.0005	0.0004	0.0004	0.0004	0.0003
Max.					0.0009	0.0011	0.0013	0.0013	0.0010	0.0012	0.0011	0.0012	0.0012	0.0013	0.0013	0.0012

CREE

CONJUNTO DE DADOS 11: 85° C; 1500 mA

1088

Nº da Lâmpada	Inicial (0 hrs)				Constância de Lúmen(%)											
	LF (lm)	V_f (V)	Calc CCT	Meta ANSI	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	559	3.11	3163	3000	97.74	97.85	97.51	97.15	97.42	97.39	97.39	96.54	96.40	96.96	97.24	96.37
2	559	3.15	3100	3000	98.05	97.78	98.03	97.62	97.10	97.41	97.84	97.55	97.89	98.00	97.91	98.09
3	533	3.10	3132	3000	97.18	97.54	96.92	96.24	96.56	97.11	96.56	95.96	96.13	95.94	95.94	95.76
4	532	3.18	3091	3000	97.41	96.69	96.88	97.03	96.83	96.60	96.97	96.86	96.79	97.01	97.03	97.05
5	559	3.14	3178	3000	97.60	96.71	97.10	96.57	96.91	96.75	97.18	96.39	96.89	96.84	96.96	96.94
6	541	3.15	3139	3000	97.88	97.56	97.17	97.43	97.75	97.65	97.60	97.41	97.08	97.75	97.51	97.36
7	554	3.12	3186	3000	97.31	98.06	97.06	96.95	96.73	96.84	97.15	96.77	97.17	97.27	97.11	97.11
8	550	3.22	3105	3000	98.27	98.20	98.25	97.58	98.16	97.89	96.33	97.60	97.80	98.02	98.22	97.71
9	523	3.12	3102	3000	98.99	98.40	97.74	97.90	97.55	97.17	97.40	97.40	97.63	97.65	97.44	96.92
10	525	3.13	3128	3000	97.65	97.02	97.37	97.20	97.25	96.61	96.43	96.40	96.57	96.93	96.43	96.70
11	527	3.14	3147	3000	98.51	98.31	98.08	98.27	98.29	97.78	97.45	97.42	97.51	97.42	97.45	97.61
12	561	3.26	3083	3000	97.45	97.58	96.83	96.99	96.58	96.15	96.72	95.99	96.74	96.22	96.76	96.83
13	549	3.27	3111	3000	97.74	97.64	97.52	97.74	97.50	97.28	97.07	96.81	97.54	97.76	96.95	97.17
14	558	3.24	3140	3000	97.53	97.56	97.40	97.38	97.47	97.13	97.44	96.72	97.40	97.60	96.88	97.29
15	551	3.20	3044	3000	98.44	98.47	98.11	97.77	98.33	98.17	98.28	97.77	98.09	97.57	97.15	97.15
16	551	3.16	3124	3000	97.71	98.19	97.46	97.44	97.26	96.57	97.06	96.30	96.86	96.79	96.34	96.21
17	534	3.19	3084	3000	98.73	98.73	98.54	98.82	98.33	98.14	98.52	98.16	98.28	98.50	97.79	98.33
18	544	3.16	3168	3000	98.29	98.24	97.92	98.24	98.13	97.61	98.11	97.41	97.65	98.02	97.45	97.85
19	546	3.31	3059	3000	97.65	97.82	97.71	97.40	98.50	98.37	98.72	97.01	98.48	98.85	98.24	95.99
20	548	3.26	3089	3000	97.74	97.77	97.45	97.68	98.97	96.88	96.73	95.91	96.60	96.99	96.41	96.41
21	529	3.13	3113	3000	97.88	98.34	97.68	97.90	96.92	96.75	96.90	96.58	96.26	96.43	96.28	96.28
22	544	3.15	3080	3000	98.62	98.47	97.55	97.94	97.46	97.07	97.66	97.02	97.37	97.88	97.57	97.64
23	529	3.26	3086	3000	97.35	97.64	96.60	96.71	96.39	96.14	95.94	95.83	95.54	95.92	95.75	95.86
24	556	3.18	3111	3000	97.39	97.20	97.23	96.69	96.17	95.84	96.51	95.81	95.72	96.08	96.42	96.44
25	525	3.09	3058	3000	97.75	97.27	96.76	96.93	97.04	96.38	96.19	96.59	96.80	96.47	96.59	96.61
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Média	**543**	**3.18**			**97.88**	**97.77**	**97.48**	**97.42**	**97.26**	**97.02**	**97.21**	**96.80**	**97.01**	**97.12**	**96.96**	**96.95**
Mediana	546	3.16			97.74	97.77	97.46	97.43	97.25	97.07	97.15	96.77	96.89	97.01	96.96	96.94
σ	13	0.08			0.49	0.57	0.51	0.60	0.85	0.63	0.68	0.67	0.71	0.71	0.63	0.69
Min.	523	3.09			97.18	96.69	96.60	96.24	96.17	95.84	95.94	95.83	95.54	95.92	95.75	95.76
Max.	561	3.31			98.99	98.73	98.54	98.82	98.33	98.17	98.52	98.16	98.28	98.50	98.22	98.33

Nº da Lâmpada	Inicial (0 hrs)				Alteração de cromaticidade(Δu'v')											
	CCx	CCy	Calc CCT	Alvo ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	0.4299	0.4064	3163	3000	0.0008	0.0007	0.0007	0.0008	0.0009	0.0008	0.0008	0.0009	0.0007	0.0008	0.0008	0.0009
2	0.4308	0.4026	3100	3000	0.0006	0.0007	0.0007	0.0008	0.0007	0.0006	0.0006	0.0008	0.0009	0.0009	0.0010	0.0010
3	0.4278	0.3998	3132	3000	0.0004	0.0004	0.0004	0.0005	0.0004	0.0003	0.0003	0.0003	0.0004	0.0007	0.0007	0.0008
4	0.4291	0.3977	3091	3000	0.0005	0.0006	0.0005	0.0006	0.0005	0.0006	0.0005	0.0007	0.0009	0.0009	0.0008	0.0009
5	0.4294	0.4092	3178	3000	0.0011	0.0009	0.0007	0.0008	0.0010	0.0010	0.0010	0.0011	0.0008	0.0007	0.0007	0.0007
6	0.4303	0.4063	3139	3000	0.0005	0.0005	0.0005	0.0005	0.0005	0.0004	0.0005	0.0005	0.0007	0.0007	0.0008	0.0007
7	0.4240	0.3978	3186	3000	0.0007	0.0008	0.0007	0.0008	0.0008	0.0007	0.0009	0.0008	0.0009	0.0010	0.0009	0.0010
8	0.4291	0.3994	3105	3000	0.0008	0.0007	0.0005	0.0008	0.0008	0.0006	0.0007	0.0008	0.0008	0.0009	0.0009	0.0009
9	0.4356	0.4133	3102	3000	0.0007	0.0007	0.0008	0.0010	0.0008	0.0009	0.0011	0.0010	0.0009	0.0008	0.0008	0.0008
10	0.4328	0.4100	3128	3000	0.0008	0.0008	0.0008	0.0010	0.0012	0.0012	0.0011	0.0010	0.0009	0.0009	0.0012	0.0010
11	0.4305	0.4077	3147	3000	0.0009	0.0008	0.0010	0.0007	0.0011	0.0011	0.0010	0.0010	0.0009	0.0007	0.0011	0.0009
12	0.4363	0.4124	3083	3000	0.0010	0.0010	0.0011	0.0013	0.0012	0.0010	0.0013	0.0011	0.0011	0.0011	0.0011	0.0011
13	0.4333	0.4094	3111	3000	0.0011	0.0011	0.0012	0.0010	0.0012	0.0014	0.0013	0.0012	0.0012	0.0012	0.0014	0.0013
14	0.4303	0.4064	3140	3000	0.0010	0.0011	0.0011	0.0011	0.0011	0.0013	0.0012	0.0011	0.0011	0.0012	0.0012	0.0011
15	0.4409	0.4173	3044	3000	0.0013	0.0014	0.0014	0.0014	0.0015	0.0016	0.0015	0.0015	0.0016	0.0015	0.0018	0.0014
16	0.4333	0.4111	3124	3000	0.0009	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0009	0.0009	0.0012	0.0010
17	0.4368	0.4137	3084	3000	0.0010	0.0010	0.0014	0.0011	0.0010	0.0011	0.0011	0.0008	0.0011	0.0010	0.0012	0.0011
18	0.4311	0.4118	3168	3000	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010	0.0010	0.0012	0.0012
19	0.4380	0.4130	3059	3000	0.0011	0.0010	0.0011	0.0008	0.0011	0.0012	0.0011	0.0007	0.0010	0.0010	0.0012	0.0012
20	0.4344	0.4090	3089	3000	0.0009	0.0008	0.0009	0.0011	0.0010	0.0012	0.0011	0.0011	0.0009	0.0011	0.0011	0.0012
21	0.4356	0.4103	3113	3000	0.0007	0.0007	0.0009	0.0008	0.0009	0.0007	0.0009	0.0009	0.0008	0.0007	0.0010	0.0008
22	0.4358	0.4175	3080	3000	0.0007	0.0007	0.0007	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009
23	0.4348	0.4095	3086	3000	0.0011	0.0009	0.0011	0.0010	0.0011	0.0013	0.0012	0.0008	0.0009	0.0009	0.0011	0.0012
24	0.4327	0.4081	3111	3000	0.0004	0.0005	0.0006	0.0008	0.0005	0.0004	0.0007	0.0007	0.0008	0.0008	0.0009	0.0008
25	0.4396	0.4164	3058	3000	0.0006	0.0008	0.0007	0.0010	0.0007	0.0008	0.0010	0.0008	0.0008	0.0008	0.0009	0.0009
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Média					**0.0008**	**0.0008**	**0.0009**	**0.0009**	**0.0009**	**0.0009**	**0.0010**	**0.0009**	**0.0009**	**0.0009**	**0.0010**	**0.0010**
Mediana					0.0008	0.0008	0.0008	0.0009	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0010	0.0010
σ					0.0002	0.0002	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002
Min.					0.0004	0.0004	0.0004	0.0005	0.0004	0.0003	0.0003	0.0003	0.0004	0.0007	0.0007	0.0008
Max.					0.0013	0.0014	0.0014	0.0014	0.0015	0.0016	0.0015	0.0015	0.0016	0.0015	0.0018	0.0014

1089

CONJUNTO DE DADOS 11: 85° C; 1500 mA

Nº da Lâmpada	Inicial (0 hrs)				Constância de Lúmen(%)		
	LF (lm)	V_F (V)	Calc. CCT	Alvo ANSI	12600	13104	13608
1	559	3.11	3163	3000	96.53	97.19	96.76
2	559	3.15	3100	3000	97.89	98.14	98.18
3	533	3.10	3132	3000	95.79	95.57	95.47
4	532	3.15	3091	3000	97.16	97.37	97.35
5	559	3.14	3178	3000	97.30	96.87	97.19
6	541	3.15	3139	3000	97.32	97.40	97.04
7	554	3.12	3186	3000	97.29	97.36	97.18
8	550	3.22	3105	3000	97.36	97.80	97.58
9	523	3.12	3102	3000	96.86	96.54	96.84
10	525	3.13	3128	3000	96.80	96.57	96.72
11	527	3.14	3147	3000	97.55	97.38	97.68
12	501	3.26	3083	3000	96.53	96.85	96.29
13	549	3.27	3111	3000	97.43	97.56	97.51
14	558	3.24	3140	3000	97.28	96.95	97.66
15	561	3.20	3044	3000	97.53	96.80	97.59
16	551	3.16	3124	3000	96.19	96.39	96.75
17	534	3.19	3084	3000	98.24	98.29	98.24
18	544	3.16	3168	3000	97.98	97.74	98.22
19	546	3.31	3059	3000	96.35	96.43	96.50
20	548	3.26	3089	3000	96.51	96.55	96.93
21	529	3.13	3113	3000	96.52	96.33	96.87
22	544	3.15	3080	3000	97.33	97.37	96.93
23	529	3.26	3086	3000	95.90	95.86	95.69
24	556	3.18	3111	3000	96.31	96.20	95.92
25	525	3.09	3058	3000	97.04	96.11	95.63
n	25	25	25	25	25	25	25
Média	**543**	**3.18**			**97.00**	**96.94**	**96.99**
Mediana	546	3.16			97.16	96.87	96.93
σ	13	0.08			0.64	0.70	0.79
Min.	523	3.09			95.79	95.57	95.47
Max.	561	3.31			98.24	98.29	98.24

Nº da Lâmpada	Inicial (0 hrs)				Alteração de cromaticidade(Δu'v')		
	CCx	CCy	Calc. CCT	Alvo ANSI	12600	13104	13608
1	0.4299	0.4084	3163	3000	0.0007	0.0008	0.0009
2	0.4308	0.4028	3100	3000	0.0010	0.0010	0.0011
3	0.4278	0.3998	3132	3000	0.0008	0.0009	0.0007
4	0.4291	0.3977	3091	3000	0.0009	0.0009	0.0009
5	0.4294	0.4092	3178	3000	0.0008	0.0008	0.0008
6	0.4303	0.4063	3139	3000	0.0007	0.0007	0.0007
7	0.4240	0.3978	3186	3000	0.0010	0.0010	0.0010
8	0.4291	0.3994	3105	3000	0.0008	0.0009	0.0008
9	0.4356	0.4153	3102	3000	0.0010	0.0009	0.0008
10	0.4326	0.4100	3128	3000	0.0010	0.0010	0.0009
11	0.4305	0.4077	3147	3000	0.0009	0.0010	0.0010
12	0.4363	0.4124	3083	3000	0.0011	0.0012	0.0011
13	0.4333	0.4094	3111	3000	0.0012	0.0012	0.0012
14	0.4303	0.4064	3140	3000	0.0010	0.0010	0.0010
15	0.4409	0.4173	3044	3000	0.0013	0.0012	0.0012
16	0.4333	0.4111	3124	3000	0.0010	0.0010	0.0010
17	0.4368	0.4137	3084	3000	0.0010	0.0010	0.0011
18	0.4311	0.4118	3168	3000	0.0011	0.0010	0.0010
19	0.4380	0.4130	3059	3000	0.0011	0.0010	0.0009
20	0.4344	0.4090	3089	3000	0.0010	0.0010	0.0011
21	0.4336	0.4103	3113	3000	0.0008	0.0007	0.0009
22	0.4388	0.4175	3080	3000	0.0010	0.0009	0.0009
23	0.4348	0.4095	3086	3000	0.0010	0.0010	0.0008
24	0.4327	0.4081	3111	3000	0.0008	0.0007	0.0008
25	0.4398	0.4184	3058	3000	0.0009	0.0010	0.0009
n	25	25	25	25	25	25	25
Média					**0.0010**	**0.0010**	**0.0009**
Mediana					0.0010	0.0010	0.0009
σ					0.0001	0.0001	0.0001
Min.					0.0007	0.0007	0.0007
Max.					0.0013	0.0012	0.0012

1090
m

CONJUNTO DE DADOS 14: 105° C; 1500 mA

Série testada de LEDs	XLamp XP-G3 LEDs brancos (Série: XPGDWT) Este relatório LM-80 aplica-se aos seguintes códigos de pedido: XPGDWT-xx-xxxx-xxxxx
Corrente da unidade testada [IF]	1500 mA
Data de Início do Teste	9 de dezembro 2015
Temperatura da carcaça [TS]	105°C
Temperatura ambiente [TA]	105°C
Falhas observadas	Nenhuma

Síntese dos Resultados de Teste

Duração do teste (horas)	Fluxo luminoso relativo	Mudança relativa de cor (Δu'v')	Mudança relativa de CRI (ΔRa)	Mudança relativa de tensão (% ΔVF)	Duração do teste (horas)	Fluxo luminoso relativo	Mudança relativa de cor (Δu'v')	Mudança relativa de CRI (ΔRa)	Mudança relativa de tensão (% ΔVF)
0	100.00%	0.0000	0.0	0.0%	10080	94.07%	0.0011	-0.3	N/R
168	99.73%	0.0005	-0.1	N/R					
1008	98.42%	0.0008	-0.2	N/R					
1512	97.99%	0.0008	-0.2	N/R					
2016	97.25%	0.0007	-0.2	N/R					
2520	97.21%	0.0007	-0.1	N/R					
3024	96.60%	0.0007	-0.2	N/R					
3528	96.29%	0.0007	-0.1	N/R					
4032	95.92%	0.0007	-0.2	N/R					
4536	95.87%	0.0007	-0.2	N/R					
5040	95.62%	0.0007	-0.2	N/R					
5544	95.58%	0.0007	-0.2	N/R					
6048	95.25%	0.0007	-0.2	N/R					
6552	95.12%	0.0007	-0.2	N/R					
7056	94.91%	0.0009	-0.2	N/R					
7560	94.85%	0.0009	-0.2	N/R					
8064	94.69%	0.0009	-0.2	N/R					
8568	94.72%	0.0010	-0.2	N/R					
9072	94.79%	0.0010	-0.3	N/R					
9576	94.67%	0.0010	-0.3	N/R					

Nota: "N/R" indica pontos de dados que não são relatados

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1091

CONJUNTO DE DADOS 14: 105° C; 1500 mA

Projeção TM-21 da Calculadora Interna Cree

Duração do teste	10.080 horas
Duração do teste usado para projeção	t=5.040 a t=10.080
α	2.620E-06
β	9.683E-01
Vidas Úteis Relatadas	L90(10k) = 27.900 horas L80(10k) > 60.500 horas L70(10k) > 60.500 horas

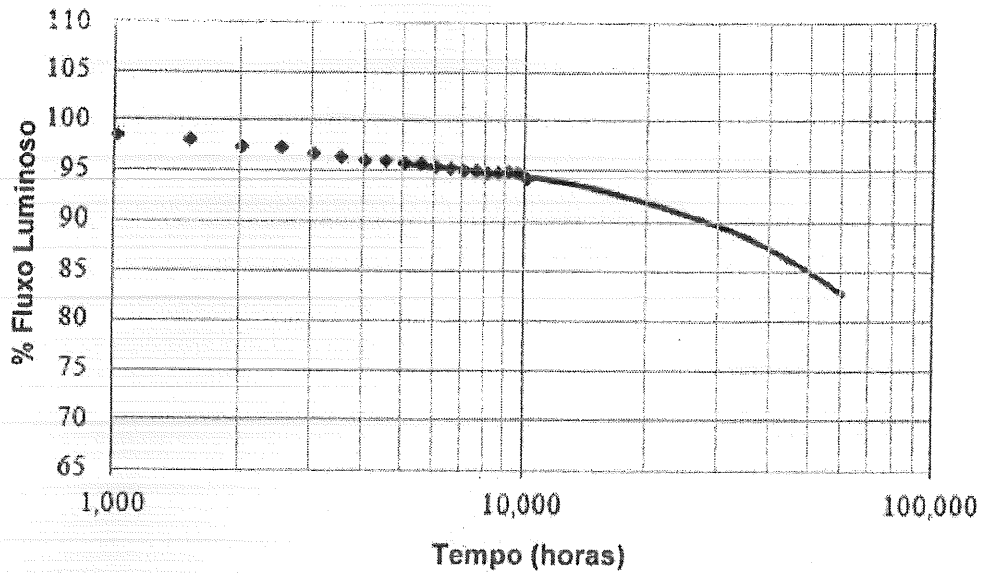
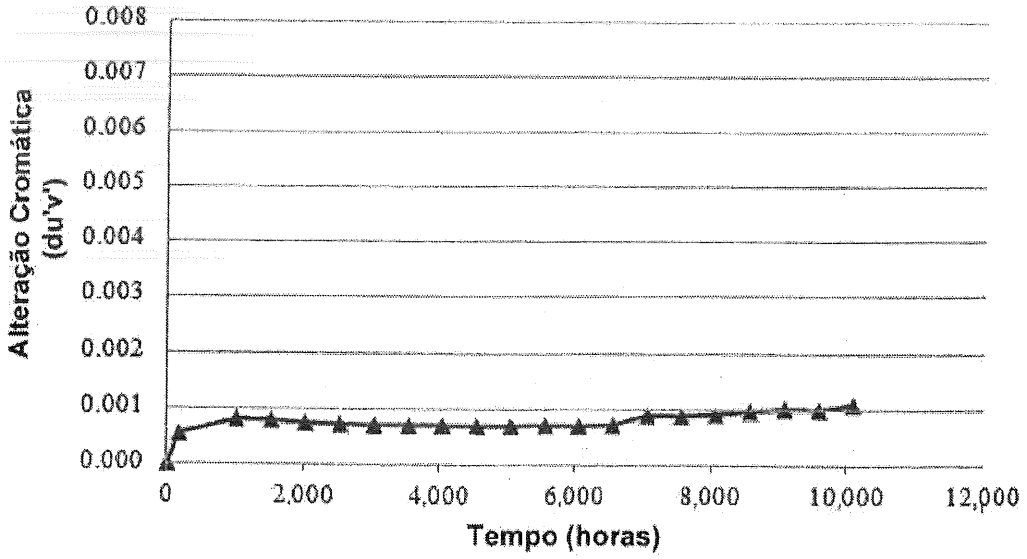


Gráfico de Alteração Cromática



CREE

CONJUNTO DE DADOS 14: 105° C; 1500 mA

1092

Nº da Lâmpada	Inicial (0 hrs)				Constância de Lúmen(%)											
	LF (lm)	V_F (V)	Calc. CCT	Meta ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	585	3.13	3131	3000	100.30	99.24	98.87	97.82	98.07	98.05	97.66	97.42	97.40	97.19	97.03	96.81
2	536	3.19	3102	3000	100.28	100.26	99.05	98.82	99.05	97.54	97.44	97.89	97.41	97.65	97.39	97.14
3	525	3.16	3089	3000	100.50	99.41	99.56	98.76	99.03	98.63	97.98	97.79	97.43	97.10	97.52	96.15
4	565	3.23	3152	3000	99.70	98.90	98.14	98.03	98.03	97.11	96.44	96.60	96.44	96.62	96.04	95.09
5	556	3.13	3071	3000	99.35	98.20	97.39	97.28	96.60	97.28	96.04	95.97	96.24	95.79	95.59	95.99
6	540	3.10	3170	3000	100.13	98.44	98.99	97.86	98.28	97.29	96.45	96.32	96.66	95.26	95.77	95.55
7	549	3.18	3130	3000	100.82	98.89	98.42	97.92	97.61	97.67	96.02	96.04	97.07	96.74	96.10	96.56
8	554	3.14	3166	3000	99.91	98.14	97.56	96.59	96.35	96.26	96.37	95.54	96.07	95.18	95.89	95.74
9	530	3.25	3106	3000	100.65	99.66	98.18	97.48	98.03	96.88	96.20	96.42	96.44	96.14	96.51	95.20
10	552	3.11	3132	3000	100.49	98.70	98.68	98.35	98.26	98.94	96.25	95.36	95.71	95.73	94.73	95.22
11	559	3.17	3104	3000	100.14	99.43	98.34	97.92	98.46	98.03	97.10	96.87	96.73	96.98	96.58	95.38
12	540	3.23	3023	3000	100.40	98.01	98.12	97.30	97.85	97.59	97.14	97.01	96.97	96.35	95.84	94.53
13	528	3.11	3098	3000	100.70	98.41	99.17	97.33	97.46	96.27	97.08	95.42	96.04	96.12	96.35	95.44
14	535	3.18	3070	3000	100.13	99.35	99.14	97.85	99.17	97.53	96.84	95.77	96.50	95.87	96.76	96.09
15	556	3.17	3105	3000	99.37	98.51	97.17	96.34	97.12	96.52	95.31	95.36	94.84	95.09	94.98	94.48
16	539	3.10	3153	3000	98.18	96.61	96.07	95.33	95.73	94.69	95.31	94.75	94.45	94.53	94.03	93.82
17	538	3.11	3089	3000	100.22	99.87	98.27	98.64	97.47	97.19	96.99	96.54	95.42	94.77	94.68	95.68
18	552	3.20	3057	3000	98.46	97.84	96.74	95.94	94.92	94.60	94.73	94.46	95.11	94.26	94.24	94.15
19	552	3.14	3126	3000	98.23	97.36	97.25	96.33	96.94	95.91	96.00	95.00	95.69	95.60	95.76	95.38
20	563	3.17	3051	3000	99.24	97.30	96.70	95.77	96.01	94.67	95.12	94.30	94.85	94.32	94.04	94.12
21	532	3.09	3091	3000	98.74	97.18	97.16	95.97	95.26	95.35	95.54	94.81	95.00	94.71	95.00	95.05
22	555	3.25	3081	3000	99.86	98.70	97.51	96.50	96.67	96.22	95.55	95.51	94.70	95.04	94.52	94.02
23	537	3.09	3093	3000	98.69	98.32	97.95	98.19	97.09	96.11	95.79	95.79	95.88	94.88	93.93	94.75
24	547	3.15	3137	3000	99.30	97.71	97.26	96.12	95.61	95.30	94.99	94.66	93.56	93.89	93.89	93.49
25	546	3.23	3066	3000	99.27	98.02	97.87	96.58	96.39	95.27	96.04	95.27	95.03	94.78	95.07	94.85
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Média	**547**	**3.16**			**99.73**	**98.42**	**97.99**	**97.25**	**97.21**	**96.60**	**96.29**	**95.92**	**95.87**	**95.62**	**95.53**	**95.26**
Mediana	548	3.16			99.91	98.43	98.12	97.33	97.46	96.68	96.25	95.77	95.88	95.60	95.70	95.38
σ	11	0.05			0.78	0.85	0.90	1.02	1.16	1.12	0.87	1.02	1.02	1.03	1.10	0.95
Min	525	3.09			98.18	96.61	96.07	95.33	94.82	94.60	94.73	94.46	93.56	93.89	93.89	93.49
Max.	585	3.25			100.82	100.26	99.56	98.82	99.05	98.63	97.98	97.89	97.43	97.65	97.52	97.14

Nº da Lâmpada	Inicial (0 hrs)				Alteração de cromaticidade(Δu'v')											
	CCx	CCy	Calc. CCT	Alvo ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	0.4318	0.4086	3131	3000	0.0003	0.0006	0.0006	0.0005	0.0008	0.0007	0.0006	0.0008	0.0006	0.0006	0.0005	0.0006
2	0.4370	0.4164	3102	3000	0.0007	0.0010	0.0008	0.0008	0.0008	0.0007	0.0008	0.0009	0.0008	0.0008	0.0009	0.0008
3	0.4385	0.4137	3089	3000	0.0011	0.0013	0.0013	0.0013	0.0012	0.0012	0.0015	0.0016	0.0015	0.0015	0.0016	0.0014
4	0.4274	0.4013	3152	3000	0.0003	0.0006	0.0004	0.0006	0.0004	0.0003	0.0001	0.0004	0.0003	0.0005	0.0005	0.0004
5	0.4352	0.4086	3071	3000	0.0003	0.0006	0.0005	0.0007	0.0008	0.0008	0.0004	0.0005	0.0006	0.0005	0.0004	0.0005
6	0.4266	0.4018	3170	3000	0.0002	0.0006	0.0005	0.0005	0.0004	0.0006	0.0003	0.0002	0.0003	0.0001	0.0003	0.0003
7	0.4298	0.4040	3130	3000	0.0003	0.0005	0.0004	0.0005	0.0005	0.0007	0.0005	0.0004	0.0003	0.0005	0.0006	0.0005
8	0.4290	0.4067	3166	3000	0.0003	0.0006	0.0008	0.0009	0.0007	0.0008	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007
9	0.4331	0.4083	3106	3000	0.0007	0.0012	0.0010	0.0011	0.0010	0.0009	0.0010	0.0011	0.0012	0.0013	0.0010	0.0010
10	0.4313	0.4076	3132	3000	0.0003	0.0008	0.0006	0.0006	0.0005	0.0007	0.0005	0.0003	0.0003	0.0004	0.0002	0.0007
11	0.4357	0.4138	3104	3000	0.0008	0.0008	0.0009	0.0008	0.0008	0.0009	0.0010	0.0009	0.0009	0.0008	0.0009	0.0007
12	0.4402	0.4132	3023	3000	0.0009	0.0011	0.0012	0.0012	0.0013	0.0014	0.0013	0.0013	0.0015	0.0013	0.0013	0.0011
13	0.4371	0.4161	3098	3000	0.0007	0.0010	0.0010	0.0008	0.0006	0.0006	0.0007	0.0005	0.0005	0.0005	0.0005	0.0005
14	0.4382	0.4148	3070	3000	0.0010	0.0009	0.0011	0.0009	0.0009	0.0008	0.0009	0.0007	0.0007	0.0008	0.0009	0.0009
15	0.4351	0.4126	3105	3000	0.0005	0.0007	0.0007	0.0004	0.0008	0.0006	0.0004	0.0004	0.0006	0.0008	0.0007	0.0005
16	0.4323	0.4125	3153	3000	0.0007	0.0006	0.0008	0.0006	0.0008	0.0006	0.0007	0.0005	0.0004	0.0006	0.0005	0.0005
17	0.4376	0.4161	3089	3000	0.0005	0.0008	0.0007	0.0006	0.0006	0.0004	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005
18	0.4353	0.4070	3057	3000	0.0003	0.0005	0.0004	0.0005	0.0004	0.0006	0.0006	0.0005	0.0007	0.0007	0.0006	0.0007
19	0.4329	0.4105	3126	3000	0.0004	0.0008	0.0006	0.0007	0.0008	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0007
20	0.4397	0.4071	3051	3000	0.0005	0.0005	0.0004	0.0004	0.0005	0.0004	0.0008	0.0005	0.0006	0.0007	0.0007	0.0006
21	0.4371	0.4152	3091	3000	0.0007	0.0011	0.0010	0.0009	0.0008	0.0006	0.0009	0.0008	0.0009	0.0006	0.0006	0.0006
22	0.4350	0.4004	3081	3000	0.0003	0.0009	0.0011	0.0010	0.0009	0.0008	0.0005	0.0008	0.0009	0.0007	0.0008	0.0009
23	0.4376	0.4156	3093	3000	0.0004	0.0007	0.0008	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007	0.0005	0.0005	0.0006
24	0.4322	0.4103	3137	3000	0.0010	0.0009	0.0011	0.0008	0.0005	0.0005	0.0006	0.0004	0.0004	0.0005	0.0007	0.0008
25	0.4351	0.4077	3066	3000	0.0006	0.0010	0.0008	0.0010	0.0011	0.0009	0.0011	0.0013	0.0011	0.0010	0.0010	0.0010
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Média					**0.0005**	**0.0008**	**0.0008**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0007**
Mediana					0.0005	0.0008	0.0006	0.0007	0.0007	0.0007	0.0006	0.0008	0.0007	0.0006	0.0007	0.0006
σ					0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
Min.					0.0002	0.0005	0.0004	0.0004	0.0004	0.0003	0.0001	0.0002	0.0003	0.0001	0.0002	0.0003
Max.					0.0011	0.0013	0.0013	0.0013	0.0013	0.0014	0.0015	0.0016	0.0015	0.0015	0.0016	0.0014

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CONJUNTO DE DADOS 14: 105° C; 1500 mA

1093

Nº da Lâmpada	Inicial (0 hrs)				Manutenção de Lúmen (%)							
	LF (lm)	V_f (V)	Calc. CCT	Meta ANSI	6552	7056	7560	8064	8568	9072	9576	10080
565	565	3.13	3131	3000	96.96	96.90	96.90	96.58	96.23	96.90	96.05	95.88
536	536	3.19	3102	3000	96.57	97.20	96.34	96.77	96.68	97.28	96.94	95.76
525	525	3.18	3089	3000	96.70	96.11	96.23	95.92	96.48	96.23	95.45	95.43
565	565	3.23	3152	3000	96.33	96.00	95.91	95.77	96.05	95.54	96.12	95.87
556	556	3.13	3071	3000	95.90	95.64	95.30	95.41	95.45	95.86	94.82	94.46
546	546	3.10	3170	3000	96.34	95.46	96.08	95.37	95.42	95.75	95.81	94.78
549	549	3.16	3130	3000	96.50	95.94	95.98	95.72	95.61	95.47	95.87	95.45
554	554	3.14	3166	3000	95.90	95.87	95.04	95.47	95.49	95.63	94.87	94.33
539	539	3.25	3106	3000	95.53	94.88	94.82	94.06	94.88	94.73	93.75	94.15
552	552	3.11	3132	3000	95.49	94.79	95.27	94.53	94.48	95.09	95.40	94.00
559	559	3.17	3104	3000	94.97	94.86	94.45	94.85	95.22	94.92	94.29	94.63
548	548	3.23	3023	3000	94.93	94.60	94.25	94.12	94.78	94.62	93.60	93.83
528	528	3.11	3098	3000	94.53	94.22	95.19	94.41	94.79	94.04	95.40	94.74
535	535	3.18	3070	3000	95.47	95.07	95.17	95.12	95.17	95.72	95.10	93.45
558	558	3.17	3105	3000	93.85	94.73	94.21	94.32	94.52	94.82	94.48	93.62
539	539	3.10	3153	3000	93.88	93.53	94.27	94.66	93.36	93.77	93.77	92.65
538	538	3.11	3089	3000	95.70	95.54	94.35	94.31	93.92	94.03	95.16	93.15
552	552	3.20	3057	3000	94.13	94.26	93.69	93.68	93.62	94.19	93.39	93.19
552	552	3.14	3126	3000	94.90	94.12	94.71	94.25	94.01	93.57	94.03	93.77
563	563	3.17	3051	3000	93.95	93.04	93.61	92.93	94.02	93.75	93.29	93.29
532	532	3.09	3091	3000	94.19	93.85	94.45	93.81	93.84	93.02	93.60	93.32
555	555	3.25	3081	3000	93.78	94.02	93.55	93.64	93.96	94.59	94.09	93.04
537	537	3.09	3093	3000	93.74	93.67	93.82	94.34	93.78	94.24	93.93	93.20
547	547	3.15	3137	3000	93.69	93.45	93.76	94.13	93.25	93.01	93.43	92.19
548	548	3.23	3066	3000	93.97	93.71	94.36	93.05	93.28	92.94	93.67	93.05
25	25	25	25	25	25	25	25	25	25	25	25	25
547	**547**	**3.16**			**95.12**	**94.91**	**94.85**	**94.69**	**94.72**	**94.79**	**94.67**	**94.07**
548	548	3.16			94.97	94.80	94.71	94.41	94.78	94.73	94.48	93.83
11	11	0.05			1.09	1.13	0.91	1.00	1.03	1.17	1.02	1.06
529	525	3.09			93.69	93.04	93.55	92.93	93.25	92.94	93.29	92.19
565	565	3.25			96.96	97.20	96.50	96.77	96.68	97.28	96.94	95.88

Nº da Lâmpada	Inicial (0 hrs)				Mudança de cromaticidade (ΔuV')							
	CCx	CCy	Calc. CCT	Alvo ANSI	6552	7056	7560	8064	8568	9072	9576	10080
1	0.4318	0.4086	3131	3000	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0012
2	0.4370	0.4184	3102	3000	0.0008	0.0009	0.0010	0.0010	0.0012	0.0013	0.0013	0.0013
3	0.4365	0.4137	3089	3000	0.0015	0.0017	0.0014	0.0015	0.0015	0.0014	0.0013	0.0014
4	0.4274	0.4013	3152	3000	0.0004	0.0006	0.0007	0.0006	0.0008	0.0008	0.0008	0.0011
5	0.4352	0.4086	3071	3000	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008
6	0.4266	0.4018	3170	3000	0.0004	0.0006	0.0007	0.0006	0.0007	0.0007	0.0008	0.0009
7	0.4298	0.4040	3130	3000	0.0005	0.0007	0.0009	0.0008	0.0009	0.0008	0.0009	0.0010
8	0.4290	0.4067	3166	3000	0.0008	0.0008	0.0007	0.0008	0.0007	0.0008	0.0008	0.0007
9	0.4331	0.4083	3106	3000	0.0010	0.0010	0.0010	0.0009	0.0010	0.0011	0.0009	0.0010
10	0.4313	0.4076	3152	3000	0.0008	0.0006	0.0007	0.0007	0.0007	0.0008	0.0008	0.0007
11	0.4357	0.4135	3104	3000	0.0008	0.0009	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011
12	0.4402	0.4132	3023	3000	0.0012	0.0014	0.0012	0.0012	0.0014	0.0013	0.0012	0.0014
13	0.4371	0.4161	3098	3000	0.0005	0.0008	0.0007	0.0009	0.0009	0.0009	0.0009	0.0009
14	0.4382	0.4149	3070	3000	0.0007	0.0010	0.0009	0.0009	0.0010	0.0012	0.0011	0.0012
15	0.4351	0.4128	3105	3000	0.0008	0.0007	0.0009	0.0009	0.0009	0.0009	0.0010	0.0012
16	0.4323	0.4125	3153	3000	0.0006	0.0008	0.0008	0.0008	0.0008	0.0010	0.0009	0.0011
17	0.4370	0.4161	3089	3000	0.0004	0.0006	0.0006	0.0008	0.0008	0.0007	0.0010	0.0010
18	0.4353	0.4070	3057	3000	0.0006	0.0009	0.0009	0.0011	0.0011	0.0012	0.0011	0.0010
19	0.4329	0.4105	3126	3000	0.0007	0.0010	0.0008	0.0010	0.0009	0.0010	0.0009	0.0010
20	0.4357	0.4071	3051	3000	0.0007	0.0010	0.0010	0.0011	0.0012	0.0012	0.0011	0.0011
21	0.4371	0.4152	3091	3000	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006	0.0003	0.0006
22	0.4350	0.4094	3081	3000	0.0009	0.0009	0.0009	0.0009	0.0012	0.0012	0.0012	0.0012
23	0.4376	0.4166	3093	3000	0.0004	0.0007	0.0008	0.0007	0.0009	0.0010	0.0010	0.0012
24	0.4322	0.4103	3137	3000	0.0008	0.0011	0.0009	0.0010	0.0010	0.0011	0.0012	0.0015
25	0.4351	0.4077	3066	3000	0.0011	0.0012	0.0011	0.0011	0.0012	0.0012	0.0014	0.0013
n	25	25	25	25	25	25	25	25	25	25	25	25
Média					**0.0007**	**0.0009**	**0.0009**	**0.0009**	**0.0010**	**0.0010**	**0.0010**	**0.0011**
Mediana					0.0007	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010	0.0011
σ					0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.					0.0004	0.0006	0.0006	0.0006	0.0006	0.0006	0.0003	0.0006
Max					0.0015	0.0017	0.0014	0.0015	0.0015	0.0014	0.0014	0.0015

CONJUNTO DE DADOS 12:120° C; 1500 mA

1094

Série testada de LEDs	XLamp XP-G3 LEDs brancos (Série: XPGDWT) Este relatório LM-80 aplica-se aos seguintes códigos de pedido: XPGDWT-xx-xxxx-xxxxx
Corrente da unidade testada [IF]	1500 mA
Data de Início do Teste	2 de novembro 2015
Temperatura da carcaça [TS]	120°C
Temperatura ambiente [TA]	120°C
Falhas observadas	Nenhuma

Síntese dos Resultados de Teste

Duração do teste (horas)	Fluxo luminoso relativo	Mudança relativa de cor (Δu'v ')	Mudança relativa de CRI (ΔRa)	Mudança relativa de tensão (% ΔVF)	Duração do teste (horas)	Fluxo luminoso relativo	Mudança relativa de cor (Δu'v ')	Mudança relativa de CRI (ΔRa)	Mudança relativa de tensão (% ΔVF)
0	100.00%	0.0000	0.0	0.0%					
168	97.93%	0.0003	-0.1	N/R					
1008	96.46%	0.0004	-0.1	N/R					
1512	95.64%	0.0004	-0.2	N/R					
2016	94.67%	0.0006	-0.2	N/R					
2520	94.13%	0.0007	-0.2	N/R					
3024	93.71%	0.0007	-0.3	N/R					
3528	93.27%	0.0008	-0.3	N/R					
4032	92.59%	0.0009	-0.3	N/R					
4536	92.44%	0.0010	-0.4	N/R					
5040	92.40%	0.0012	-0.3	N/R					
5544	92.30%	0.0014	-0.3	N/R					
6048	91.94%	0.0016	-0.6	N/R					

Nota: "N/R" indica pontos de dados que não são relatados

CONJUNTO DE DADOS 12:120° C; 1500 mA

1095

Projeção TM-21 da Calculadora Interna Cree

Duração do teste	6.048 horas
Duração do teste usado para projeção	t=1.008 a t=6.048
α	9.077E-06
β	9.663E-01
Vidas Úteis Relatadas	L90(6k) = 7.830 horas L80(6k) = 20.800 horas L70(6k) = 35.500 horas

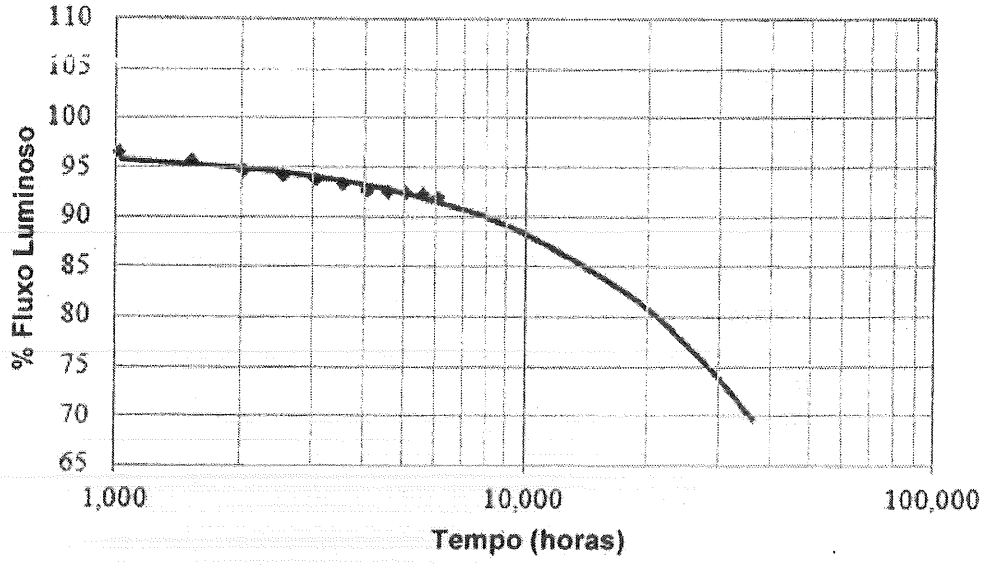
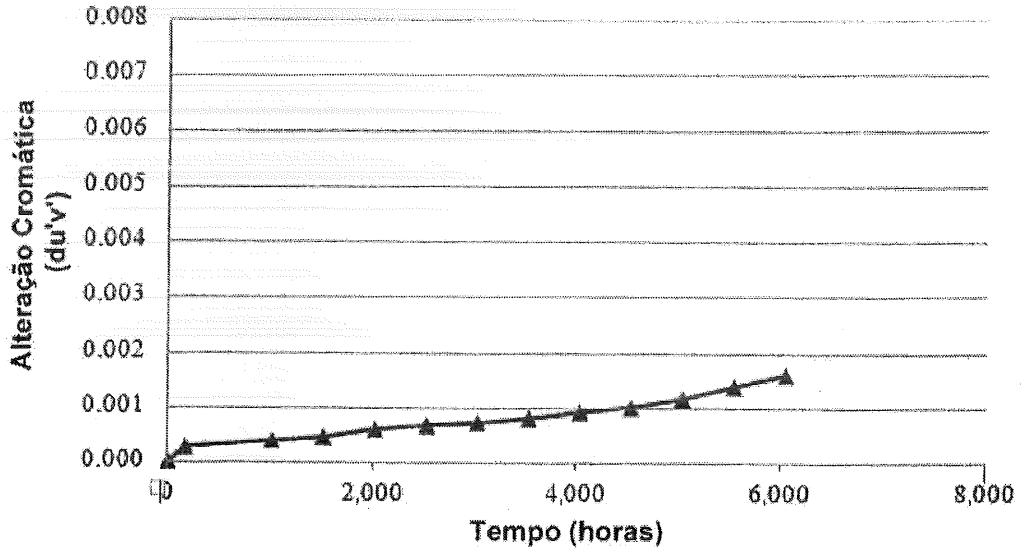


Gráfico de Alteração de Cromaticidade



1096

CONJUNTO DE DADOS 12:120° C; 1500 mA

Nº da Lâmpada	Inicial (0 hrs)				Manutenção de Lúmen (%)											
	LF (lm)	V_c (V)	Calc. CCT	Meta ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	525.0	3.10	3122	3000	96.27	96.31	95.79	94.59	93.07	93.05	92.34	91.81	91.71	92.21	92.44	92.00
2	528.9	3.13	3149	3000	98.90	97.46	96.72	94.91	94.53	94.33	94.23	93.38	93.22	93.00	92.83	92.33
3	554.5	3.25	3138	3000	98.92	97.24	95.80	93.90	94.01	92.68	92.46	91.38	91.65	92.12	92.41	91.54
4	549.2	3.26	3118	3000	98.58	96.38	95.66	94.81	93.85	93.15	93.21	91.93	92.23	91.62	91.41	91.64
5	531.7	3.13	3053	3000	97.99	96.78	96.16	94.92	93.98	93.85	92.80	92.55	92.44	92.65	92.74	91.71
6	538.1	3.16	3112	3000	98.35	97.21	96.56	96.52	95.58	95.09	93.70	93.70	93.70	93.87	94.16	94.15
7	548.8	3.16	3077	3000	98.62	96.28	95.84	94.95	95.24	94.15	94.68	93.75	94.00	92.85	93.00	92.11
8	556.1	3.15	3112	3000	97.79	96.97	95.72	94.19	93.24	92.23	92.41	91.31	91.98	91.58	91.44	91.98
9	547.8	3.23	3095	3000	98.10	96.08	94.95	93.54	93.30	92.13	92.95	91.86	91.44	91.42	91.86	90.62
10	549.0	3.26	3075	3000	98.93	96.80	96.32	94.38	94.03	92.92	92.89	92.01	91.89	91.05	91.50	91.72
11	527.8	3.11	3079	3000	97.97	97.27	95.43	94.37	93.99	94.01	93.29	92.72	92.90	93.10	93.58	93.03
12	530.0	3.12	3101	3000	97.21	95.72	95.55	94.37	94.19	94.13	93.19	92.38	92.83	92.83	92.72	92.04
13	562.1	3.12	3184	3000	98.25	95.53	94.72	94.24	93.81	93.06	92.28	91.69	91.73	91.66	91.41	90.54
14	544.5	3.12	3181	3000	97.01	95.21	94.93	94.03	93.31	92.76	92.04	91.75	91.50	91.42	91.07	90.67
15	557.7	3.15	3110	3000	97.63	96.95	96.09	95.36	95.36	95.55	94.58	93.89	93.17	93.11	92.47	92.76
16	562.3	3.15	3116	3000	97.74	97.05	95.47	94.70	94.61	95.13	94.04	93.83	92.83	92.85	92.03	91.39
17	580.1	3.16	3088	3000	98.52	97.97	96.43	95.27	94.97	95.16	93.98	93.16	92.64	92.88	92.32	92.47
18	533.4	3.14	3107	3000	96.14	95.29	94.15	94.26	92.91	92.31	91.56	91.53	90.64	91.04	90.64	89.91
19	553.8	3.12	3173	3000	97.13	96.17	94.80	94.28	94.01	94.51	94.01	93.52	93.26	93.12	92.98	93.12
20	571.8	3.18	3152	3000	98.30	96.20	95.86	95.61	94.58	94.09	94.07	93.58	92.98	93.16	93.00	92.97
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Média	**546.5**	**3.16**			**97.93**	**96.46**	**95.64**	**94.67**	**94.13**	**93.71**	**93.27**	**92.59**	**92.44**	**92.40**	**92.30**	**91.94**
Mediana	548.9	3.15			98.05	96.44	95.70	94.58	94.01	93.93	93.20	92.47	92.54	92.66	92.43	91.99
σ	13.8	0.05			0.83	0.69	0.67	0.67	0.76	1.06	0.86	0.93	0.88	0.80	0.88	1.02
Min.	525.0	3.10			96.14	95.21	94.15	93.54	92.91	92.13	91.56	91.31	90.64	91.04	90.64	89.91
Max.	571.8	3.26			98.93	97.46	96.72	96.52	95.58	95.55	94.68	93.89	94.00	93.87	94.16	94.15

Nº da Lâmpada	Inicial (0 hrs)				Mudança de cromaticidade (Δu'v')											
	CCx	CCy	Calc. CCT	Alvo ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	0.4346	0.4137	3122	3000	0.0002	0.0004	0.0003	0.0006	0.0008	0.0006	0.0005	0.0008	0.0008	0.0010	0.0013	0.0017
2	0.4319	0.4111	3149	3000	0.0001	0.0002	0.0001	0.0003	0.0005	0.0006	0.0008	0.0008	0.0009	0.0011	0.0014	0.0016
3	0.4364	0.4064	3138	3000	0.0002	0.0003	0.0003	0.0004	0.0006	0.0007	0.0008	0.0008	0.0009	0.0013	0.0014	0.0018
4	0.4325	0.4085	3118	3000	0.0003	0.0003	0.0001	0.0004	0.0006	0.0010	0.0010	0.0010	0.0011	0.0013	0.0017	0.0018
5	0.4378	0.4118	3053	3000	0.0001	0.0003	0.0003	0.0008	0.0007	0.0008	0.0006	0.0009	0.0009	0.0013	0.0016	0.0020
6	0.4350	0.4133	3112	3000	0.0003	0.0005	0.0005	0.0006	0.0006	0.0008	0.0008	0.0009	0.0010	0.0013	0.0016	0.0022
7	0.4371	0.4134	3077	3000	0.0001	0.0006	0.0007	0.0008	0.0006	0.0009	0.0011	0.0012	0.0013	0.0013	0.0016	0.0021
8	0.4343	0.4118	3112	3000	0.0000	0.0004	0.0005	0.0008	0.0008	0.0008	0.0008	0.0010	0.0010	0.0012	0.0013	0.0016
9	0.4340	0.4089	3095	3000	0.0003	0.0003	0.0006	0.0005	0.0006	0.0007	0.0009	0.0011	0.0010	0.0013	0.0014	0.0021
10	0.4372	0.4134	3075	3000	0.0006	0.0004	0.0008	0.0009	0.0008	0.0009	0.0010	0.0012	0.0012	0.0012	0.0015	0.0014
11	0.4381	0.4158	3079	3000	0.0003	0.0003	0.0003	0.0005	0.0008	0.0007	0.0007	0.0009	0.0010	0.0012	0.0014	0.0017
12	0.4369	0.4161	3101	3000	0.0004	0.0005	0.0004	0.0006	0.0006	0.0006	0.0007	0.0006	0.0008	0.0009	0.0011	0.0012
13	0.4291	0.4092	3184	3000	0.0003	0.0003	0.0005	0.0006	0.0008	0.0005	0.0006	0.0008	0.0008	0.0008	0.0009	0.0011
14	0.4284	0.4072	3181	3000	0.0002	0.0003	0.0004	0.0003	0.0005	0.0006	0.0007	0.0009	0.0009	0.0009	0.0012	0.0012
15	0.4309	0.4040	3110	3000	0.0004	0.0006	0.0005	0.0007	0.0007	0.0007	0.0009	0.0009	0.0010	0.0011	0.0011	0.0012
16	0.4311	0.4052	3116	3000	0.0005	0.0007	0.0008	0.0008	0.0008	0.0009	0.0009	0.0011	0.0012	0.0011	0.0012	0.0013
17	0.4339	0.4065	3088	3000	0.0003	0.0004	0.0006	0.0007	0.0010	0.0008	0.0008	0.0010	0.0011	0.0013	0.0015	0.0014
18	0.4354	0.4135	3107	3000	0.0002	0.0003	0.0004	0.0006	0.0005	0.0004	0.0006	0.0006	0.0011	0.0012	0.0016	0.0017
19	0.4259	0.4005	3173	3000	0.0004	0.0004	0.0004	0.0005	0.0005	0.0005	0.0007	0.0007	0.0007	0.0013	0.0013	0.0012
20	0.4288	0.4041	3152	3000	0.0001	0.0003	0.0006	0.0009	0.0010	0.0009	0.0010	0.0011	0.0013	0.0012	0.0016	0.0017
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Média					**0.0003**	**0.0004**	**0.0004**	**0.0006**	**0.0007**	**0.0007**	**0.0008**	**0.0009**	**0.0010**	**0.0012**	**0.0014**	**0.0016**
Mediana					0.0003	0.0004	0.0004	0.0006	0.0006	0.0007	0.0008	0.0009	0.0010	0.0012	0.0014	0.0016
σ					0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003
Min.					0.0000	0.0002	0.0001	0.0003	0.0005	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0011
Max.					0.0006	0.0007	0.0008	0.0009	0.0010	0.0010	0.0011	0.0012	0.0013	0.0013	0.0017	0.0022

1097

CONJUNTO DE DADOS 13: 85°C; 2000 mA

Série testada de LEDs	XLamp XP-G3 LEDs brancos (Série: XPGDWT) Este relatório LM-80 aplica-se aos seguintes códigos de pedido: XPGDWT-xx-xxxx-xxxxx
Corrente da unidade testada [IF]	2000 mA
Data de Início do Teste	10 de fevereiro 2016
Temperatura da carcaça [TS]	85°C
Temperatura ambiente [TA]	85°C
Falhas observadas	Nenhuma

Síntese dos Resultados de Teste

Duração do teste (horas)	Fluxo luminoso relativo	Mudança relativa de cor (Δu'v ')	Mudança relativa de CRI (ΔRa)	Mudança relativa de tensão (% ΔVF)	Duração do teste (horas)	Fluxo luminoso relativo	Mudança relativa de cor (Δu'v ')	Mudança relativa de CRI (ΔRa)	Mudança relativa de tensão (% ΔVF)
0	100.00%	0.0000	0.0	0.0%					
168	99.49%	0.0004	-0.1	N/R					
1008	99.18%	0.0007	-0.1	N/R					
1512	98.41%	0.0007	-0.1	N/R					
2016	98.22%	0.0008	-0.1	N/R					
2520	97.96%	0.0007	-0.1	N/R					
3024	97.72%	0.0008	-0.1	N/R					
3528	97.53%	0.0007	-0.1	N/R					
4032	97.14%	0.0008	-0.1	N/R					
4536	96.77%	0.0008	-0.1	N/R					
5040	96.55%	0.0008	-0.1	N/R					
5544	96.48%	0.0008	-0.1	N/R					
6048	96.14%	0.0008	-0.2	N/R					

Nota: "N/R" indica pontos de dados que não são relatados

1098

CONJUNTO DE DADOS 13: 85°C; 2000 mA

Projeção TM-21 da Calculadora Interna Cree

Duração do teste	6.048 horas
Duração do teste usado para projeção	t=1.008 a t=6.048
α	5.713E-06
β	9.944E-01
Vidas Úteis Relatadas	L90(6k) = 17.500 horas L80(6k) > 36.300 horas L70(6k) > 36.300 horas

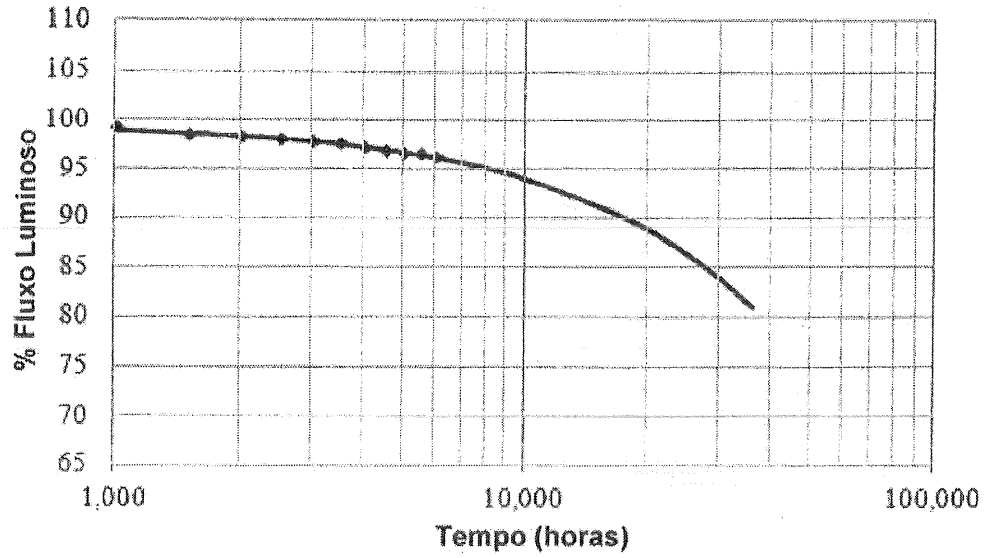
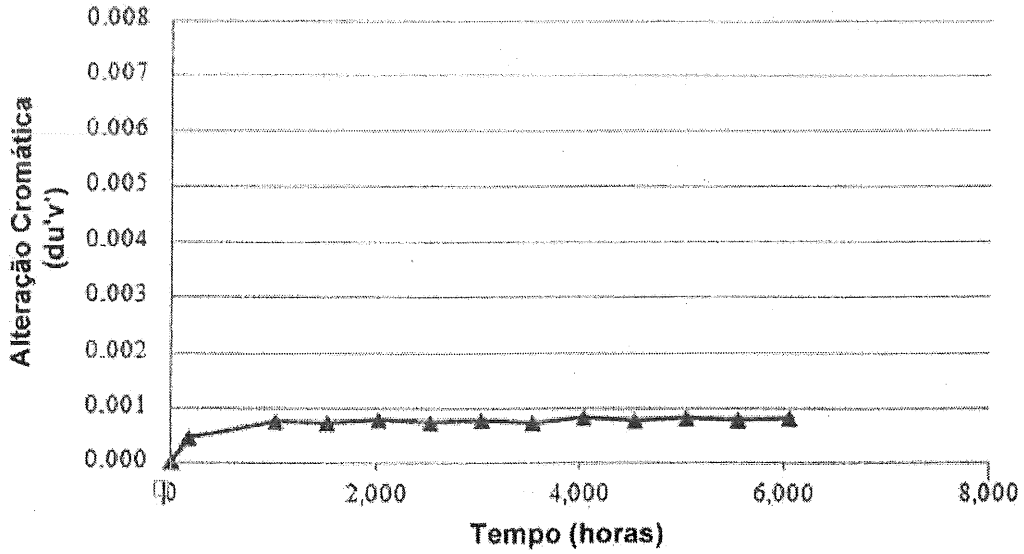


Gráfico de Alteração de Cromaticidade



CREE

1099

CONJUNTO DE DADOS 13:85° C; 2000 mA

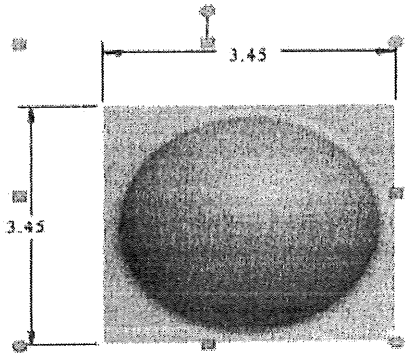
Nº da Lâmpada	Inicial (0 hrs)				Manutenção de Lúmen (%)											
	LF (lm)	V_F (V)	Calc. CCT	Meta ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	653.7	3.18	3127	3000	99.72	99.20	98.50	98.09	97.48	97.34	97.05	96.11	96.08	96.47	96.07	95.90
2	660.1	3.20	3171	3000	100.07	98.95	97.86	97.96	97.64	97.82	96.63	96.63	96.45	96.87	96.38	96.48
3	645.7	3.19	3149	3000	100.45	99.30	98.34	98.92	97.80	97.89	97.60	97.66	96.96	97.43	97.54	96.93
4	672.6	3.24	3189	3000	100.04	99.79	98.55	98.86	98.50	97.99	97.61	97.92	97.06	98.31	97.84	98.02
5	674.9	3.27	3156	3000	100.04	99.47	98.40	98.99	98.70	97.96	98.04	97.75	97.70	97.87	97.73	97.57
6	636.6	3.22	3168	3000	99.75	98.48	97.83	98.18	97.75	98.01	97.42	97.26	96.73	97.03	97.20	96.70
7	662.5	3.22	3172	3000	99.32	98.49	97.45	97.68	97.22	97.42	96.68	96.45	96.18	96.33	96.14	96.05
8	667.0	3.31	3172	3000	99.74	99.34	98.59	98.75	98.79	98.40	98.53	97.39	97.45	97.86	98.21	97.79
9	648.8	3.14	3148	3000	98.81	99.34	99.01	98.64	98.23	98.84	98.55	98.40	97.72	97.28	97.84	97.41
10	639.5	3.15	3152	3000	99.14	99.70	99.45	98.80	98.47	99.01	98.26	98.33	97.88	97.28	97.83	97.44
11	646.0	3.15	3112	3000	99.38	99.92	99.29	98.70	98.36	98.81	98.62	98.51	98.22	97.09	96.89	96.63
12	643.1	3.16	3108	3000	99.19	100.12	99.04	98.46	98.07	98.46	98.09	97.84	97.71	96.87	97.14	96.92
13	642.8	3.16	3110	3000	98.99	99.53	98.44	98.09	97.60	98.26	97.93	97.64	97.32	96.68	97.23	96.39
14	637.5	3.16	3080	3000	99.44	99.78	98.81	97.85	97.69	98.15	96.09	97.90	97.49	96.54	96.25	96.31
15	620.4	3.10	3159	3000	99.53	99.15	99.29	98.45	98.80	97.98	97.86	97.43	97.08	97.20	96.23	95.71
16	627.5	3.20	3103	3000	99.93	98.90	99.43	98.37	98.74	97.71	97.55	97.05	96.67	96.37	95.81	95.52
17	647.6	3.31	3102	3000	99.44	99.03	98.32	98.21	97.96	97.30	97.16	97.07	96.66	96.12	95.74	95.68
18	657.8	3.31	3144	3000	99.45	99.26	97.83	98.05	97.61	97.46	97.26	97.20	96.86	95.99	96.76	96.20
19	625.5	3.11	3153	3000	99.81	99.18	98.75	98.03	98.86	97.78	98.55	97.20	96.72	96.75	96.58	95.78
20	660.9	3.32	3139	3000	99.20	98.79	97.70	97.94	97.55	98.85	98.99	95.79	95.58	94.73	95.37	95.08
21	626.4	3.22	3126	3000	99.55	98.79	98.58	97.89	97.41	97.09	97.35	96.98	95.81	96.22	95.07	94.72
22	650.7	3.33	3141	3000	99.25	99.02	97.85	98.06	97.66	98.39	96.00	95.54	95.31	94.59	95.14	94.50
23	621.7	3.11	3104	3000	99.89	98.75	98.02	97.49	97.28	96.40	97.47	95.99	95.54	95.64	94.63	94.29
24	654.8	3.33	3137	3000	98.58	98.34	97.19	97.63	97.48	96.87	96.61	95.95	95.53	95.20	94.64	94.27
25	648.7	3.32	3145	3000	98.50	98.91	97.60	97.83	97.27	96.93	96.47	96.25	96.02	95.08	95.75	95.25
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Média	**648.8**	**3.22**			**99.49**	**99.18**	**98.41**	**98.22**	**97.96**	**97.72**	**97.53**	**97.14**	**96.78**	**96.55**	**96.48**	**96.14**
Mediana	647.6	3.20			99.45	99.18	98.44	98.09	97.80	97.89	97.55	97.20	96.72	96.66	96.38	96.20
σ	17.1	0.08			0.48	0.47	0.64	0.45	0.53	0.73	0.72	0.85	0.88	0.96	1.06	1.08
Min.	620.4	3.10			98.50	98.34	97.19	97.49	97.22	96.39	96.00	95.54	95.31	94.59	94.63	94.27
Max	667.0	3.33			100.45	100.12	99.45	98.99	98.86	99.01	98.62	98.51	98.22	98.31	98.21	98.02

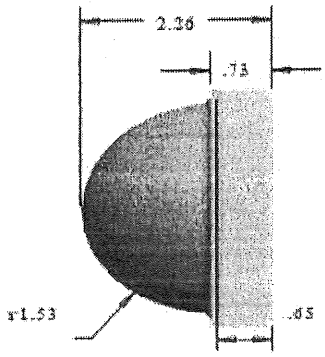
Nº da Lâmpada	Inicial (0 hrs)				Mudança de cromaticidade (ΔuV')											
	CCx	CCy	Calc. CCT	Alvo ANSI	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	0.4276	0.3987	3127	3000	0.0003	0.0008	0.0003	0.0005	0.0005	0.0008	0.0005	0.0008	0.0006	0.0005	0.0003	0.0003
2	0.4318	0.4137	3171	3000	0.0005	0.0010	0.0010	0.0010	0.0010	0.0009	0.0007	0.0010	0.0009	0.0008	0.0008	0.0009
3	0.4305	0.4080	3149	3000	0.0003	0.0009	0.0007	0.0008	0.0007	0.0008	0.0008	0.0011	0.0008	0.0008	0.0007	0.0007
4	0.4272	0.4055	3189	3000	0.0004	0.0010	0.0009	0.0008	0.0007	0.0008	0.0006	0.0007	0.0007	0.0007	0.0006	0.0006
5	0.4270	0.4047	3186	3000	0.0003	0.0010	0.0009	0.0009	0.0007	0.0008	0.0007	0.0008	0.0009	0.0006	0.0006	0.0006
6	0.4291	0.4072	3168	3000	0.0002	0.0009	0.0006	0.0008	0.0006	0.0007	0.0006	0.0007	0.0008	0.0006	0.0005	0.0005
7	0.4284	0.4016	3172	3000	0.0005	0.0010	0.0009	0.0009	0.0008	0.0007	0.0007	0.0008	0.0008	0.0006	0.0008	0.0008
8	0.4294	0.4016	3172	3000	0.0004	0.0008	0.0006	0.0006	0.0006	0.0007	0.0006	0.0008	0.0006	0.0006	0.0006	0.0007
9	0.4336	0.4148	3148	3000	0.0004	0.0004	0.0005	0.0006	0.0006	0.0006	0.0006	0.0007	0.0006	0.0007	0.0007	0.0008
10	0.4314	0.4104	3152	3000	0.0005	0.0007	0.0009	0.0010	0.0009	0.0010	0.0009	0.0010	0.0011	0.0012	0.0011	0.0011
11	0.4357	0.4149	3112	3000	0.0004	0.0006	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0007	0.0007	0.0009
12	0.4349	0.4126	3108	3000	0.0005	0.0007	0.0007	0.0008	0.0007	0.0008	0.0007	0.0008	0.0007	0.0009	0.0007	0.0009
13	0.4357	0.4146	3110	3000	0.0003	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0007	0.0007
14	0.4389	0.4175	3080	3000	0.0006	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0007	0.0008	0.0007	0.0009
15	0.4322	0.4131	3159	3000	0.0005	0.0006	0.0006	0.0007	0.0008	0.0008	0.0007	0.0008	0.0007	0.0009	0.0008	0.0009
16	0.4373	0.4172	3103	3000	0.0004	0.0005	0.0006	0.0005	0.0006	0.0006	0.0005	0.0005	0.0005	0.0006	0.0005	0.0007
17	0.4352	0.4124	3102	3000	0.0006	0.0007	0.0009	0.0008	0.0007	0.0009	0.0009	0.0010	0.0009	0.0011	0.0010	0.0010
18	0.4303	0.4089	3144	3000	0.0005	0.0009	0.0007	0.0009	0.0009	0.0009	0.0009	0.0011	0.0009	0.0011	0.0012	0.0009
19	0.4319	0.4118	3153	3000	0.0005	0.0005	0.0005	0.0004	0.0006	0.0005	0.0004	0.0006	0.0004	0.0005	0.0005	0.0006
20	0.4305	0.4087	3139	3000	0.0004	0.0005	0.0007	0.0007	0.0006	0.0006	0.0007	0.0007	0.0007	0.0008	0.0008	0.0007
21	0.4338	0.4127	3126	3000	0.0005	0.0005	0.0006	0.0007	0.0005	0.0006	0.0005	0.0006	0.0005	0.0006	0.0006	0.0007
22	0.4320	0.4103	3141	3000	0.0006	0.0009	0.0010	0.0012	0.0012	0.0013	0.0012	0.0012	0.0013	0.0013	0.0013	0.0012
23	0.4353	0.4129	3104	3000	0.0005	0.0007	0.0005	0.0006	0.0005	0.0006	0.0006	0.0006	0.0005	0.0006	0.0006	0.0009
24	0.4313	0.4083	3137	3000	0.0005	0.0008	0.0008	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	0.0012	0.0011	0.0012
25	0.4300	0.4063	3145	3000	0.0004	0.0008	0.0009	0.0010	0.0009	0.0010	0.0010	0.0011	0.0010	0.0011	0.0011	0.0009
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Média					**0.0004**	**0.0007**	**0.0007**	**0.0008**	**0.0007**	**0.0008**	**0.0007**	**0.0008**	**0.0008**	**0.0008**	**0.0008**	**0.0008**
Mediana					0.0005	0.0007	0.0007	0.0008	0.0007	0.0009	0.0007	0.0008	0.0007	0.0008	0.0007	0.0008
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
Min.					0.0002	0.0004	0.0003	0.0004	0.0005	0.0005	0.0004	0.0005	0.0004	0.0005	0.0003	0.0003
Max.					0.0006	0.0010	0.0010	0.0012	0.0012	0.0013	0.0012	0.0012	0.0013	0.0013	0.0013	0.0012

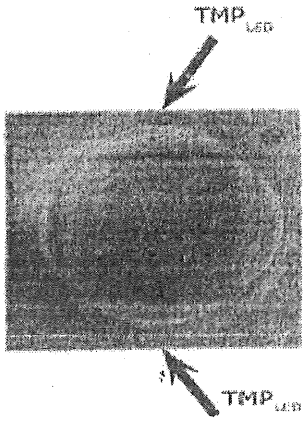
DIMENSÕES MECÂNICAS E PONTO DE MEDIDA DA TEMPERATURA

1100

Dimensões estão em mm. Todas as medições são de ± 0,13 mm salvo indicação em contrário.







O ponto de medição de temperatura do LED (TMP_{led}) deve ser medido na superfície do PCB, o mais próximo possível do painel térmico do LED (mostrado na figura acima). Não é necessário usar uma pegada de solda para o bloco térmico maior que o próprio LED. Nos testes, a Cree descobriu que uma almofada de solda tem um impacto insignificante na medição de temperatura resultante. Qualquer um dos dois locais TMP_{led} mostrados pode ser usado e são equivalentes entre si.

1101

REPÚBLICA FEDERATIVA DO BRASIL
ESTADO DA PARAÍBA
CARTÓRIO AZEVÊDO BASTOS
FUNDADO EM 1888
PRIMEIRO REGISTRO CIVIL DE NASCIMENTO E ÓBITOS E PRIVATIVO DE CASAMENTOS, INTERDIÇÕES E TUTELAS DA COMARCA DE JOÃO PESSOA

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E-mail: cartorio@azevedobastos.not.br

Cartório Azevêdo Bastos — Fundado em 1888

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[1]**Código de Autenticação Digital:** 77002211181415410354-1 a 77002211181415410354-61
[2]**Legislações Vigentes:** Lei Federal nº 8.935/94, Lei Federal nº 10.406/2002, Medida Provisória nº 2200/2001, Lei Federal nº 13.105/2015, Lei Estadual nº 8.721/2008, Lei Estadual nº 10.132/2013 e Provimento CGJ N° 003/2014.

O referido é verdade, dou fé.

CHAVE DIGITAL

00005b1d734fd94f057f2d69fe6bc05b5a075c2b82fe118b64d7f3a4174d3f0e463149327545a7a31cc0adff8b518bbc601ac804ce8eac52499a1cde96b
ae9111c30309393f9d825d548bfd3b89872c2

Presidência da República
Casa Civil
Medida Provisória N.º 2.200-2, de 24 de agosto de 2001.

ICP Brasil

Cree® XLamp® XP-G3 White LEDs

NVLAP® 102 TESTING
NVLAP Lab Code 500041-0

INFORMATION REQUIRED BY LM-80-08

Cree classifies these LEDs as "LED packages" per Sep 9, 2011 ENERGY STAR guidelines[1].

1. Number of LED light sources tested	*See individual data sets on following pages.*
2. Description of LED light sources	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx All measurements provided are LED package measurements.
3. Description of test and 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 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	Arthur Pun, Components Reliability Laboratory Manager

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

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Durham, NC 27703
USA Tel: +1.919.407.5300

REVISION HISTORY

1103

Revision	Date	Change
0	Jan 7, 2016	Date of first issue
1	Apr 8, 2016	Added additional test duration to data set 1, removed successor status, added data set 2.
2	Aug 17, 2016	Extended data set #1 & 2 with additional test duration.
3	Sept 9, 2016	Added data sets #3 - 12
4	Sept 13, 2016	Fixed report error in data set 10
5	Dec 02, 2016	Extended data set #2 with additional test duration. Added data set #13.
6	Feb 28, 2017	Removed data sets #1 & 2. Added data set #14. Extended data sets #3, 4, 6, 7, 9 & 11 with additional test duration.
7	May 15, 2017	Extended data sets #3, 4, 6, 7, 9, 11 & 14 with additional test duration.
8	Nov 15, 2017	Added data set #15. Extended data sets #3, 4, 5, 6, 7, 8, 9 & 11 with additional test duration. Revised TM-21 graph for all data sets. Added color shift graph and Test Results Summary tables for all data sets.

TEST RESULTS SUMMARY

Data Set	Case Temp. [T_S]	Ambient Temp. [T_A]	Drive Current [I_F]	ANSI CCT Target	Sample Count	Test Duration	Reported TM-21 Lifetimes
3	85°C	85°C	350 mA	3000K	25	14,112 hrs	L90(14k) > 84,700 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
4	105°C	105°C	350 mA	3000K	25	13,608 hrs	L90(14k) > 81,600 hrs L80(14k) > 81,600 hrs L70(14k) > 81,600 hrs
5	120°C	120°C	350 mA	3000K	25	8,568 hrs	L90(9k) > 51,400 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
6	85°C	85°C	700 mA	3000K	25	14,112 hrs	L90(14k) > 84,700 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
7	105°C	105°C	700 mA	3000K	25	12,600 hrs	L90(13k) > 75,600 hrs L80(13k) > 75,600 hrs L70(13k) > 75,600 hrs
8	120°C	120°C	700 mA	3000K	25	8,568 hrs	L90(9k) = 39,600 hrs L80(9k) > 51,400 hrs L70(9k) > 51,400 hrs
9	85°C	85°C	1050 mA	3000K	25	14,112 hrs	L90(14k) > 84,700 hrs L80(14k) > 84,700 hrs L70(14k) > 84,700 hrs
15	105°C	105°C	1050 mA	3000K	25	8,064 hrs	L90(8k) > 48,400 hrs L80(8k) > 48,400 hrs L70(8k) > 48,400 hrs
10	105°C	105°C	1050 mA	4000K	20	11,592 hrs	L90(12k) = 36,700 hrs L80(12k) > 69,600 hrs L70(12k) > 69,600 hrs
11	85°C	85°C	1500 mA	3000K	25	13,608 hrs	L90(14k) = 74,300 hrs L80(14k) > 81,600 hrs L70(14k) > 81,600 hrs
14	105°C	105°C	1500 mA	3000K	25	10,080 hrs	L90(10k) = 27,900 hrs L80(10k) > 60,500 hrs L70(10k) > 60,500 hrs
12	120°C	120°C	1500 mA	3000K	20	6,048 hrs	L90(6k) = 7,830 hrs L80(6k) = 20,800 hrs L70(6k) = 35,500 hrs
13	85°C	85°C	2000 mA	3000K	25	6,048 hrs	L90(6k) = 17,500 hrs L80(6k) > 36,300 hrs L70(6k) > 36,300 hrs

CREE

DATA SET 3: 85°C; 350 mA

1165

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	350 mA
Testing Initiation Date	November 2, 2015
Case Temperature [T_S]	85°C
Ambient Temperature [T_A]	85°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	99.97%	0.0005	-0.1	N/R
1008	99.76%	0.0007	0.0	N/R
1512	99.75%	0.0007	0.0	N/R
2016	99.62%	0.0007	-0.1	N/R
2520	99.51%	0.0007	-0.1	N/R
3024	99.55%	0.0008	-0.1	N/R
3528	99.39%	0.0007	-0.1	N/R
4032	99.33%	0.0008	-0.1	N/R
4536	99.27%	0.0009	-0.1	N/R
5040	99.34%	0.0009	-0.1	N/R
5544	99.32%	0.0009	-0.1	N/R
6048	99.38%	0.0009	-0.1	N/R
6552	99.15%	0.0008	-0.1	N/R
7056	99.15%	0.0008	-0.1	N/R
7560	99.38%	0.0009	-0.1	N/R
8064	99.12%	0.0009	-0.2	N/R
8568	99.31%	0.0009	-0.2	N/R
9072	99.31%	0.0009	-0.2	N/R
9576	99.44%	0.0010	-0.2	N/R
10080	99.33%	0.0010	-0.2	N/R
10584	99.42%	0.0010	-0.2	-0.9%
11088	99.49%	0.0010	-0.2	-1.1%
11592	99.46%	0.0010	-0.2	-1.1%
12096	99.45%	0.0010	-0.3	-1.0%
12600	99.46%	0.0010	-0.2	-1.1%
13104	99.44%	0.0009	-0.3	-1.3%
13608	99.48%	0.0010	-0.2	-1.1%
14112	99.32%	0.0010	-0.3	-1.3%

Note: "N/R" indicates data points that are not reported

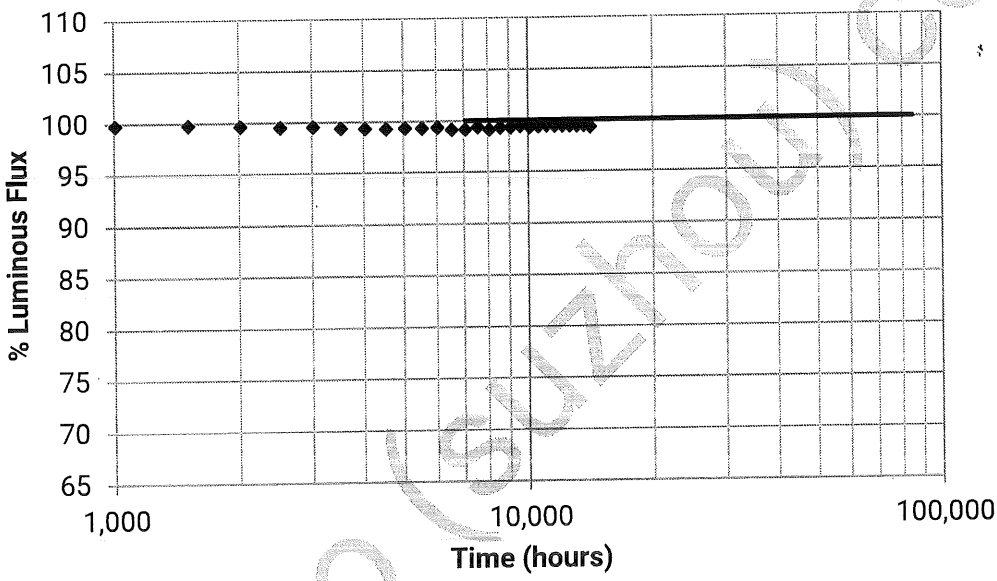
CREE

DATA SET 3: 85°C; 350 mA

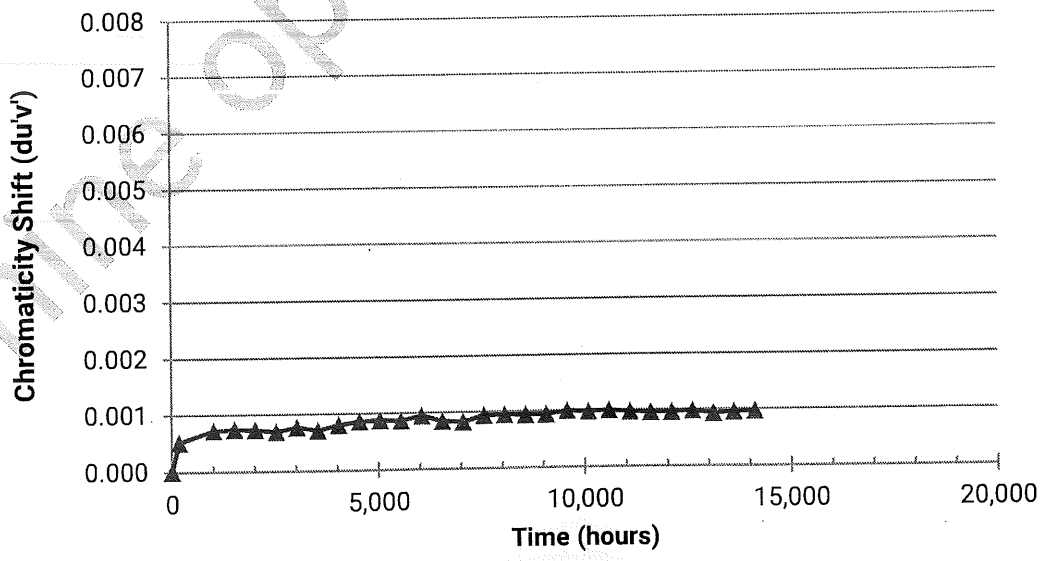
1166

TM-21 Projection from Cree's Internal Calculator

Test duration	14,112 hours
Test duration used for projection	t=7,056 to t=14,112
α	-3.289E-07
β	9.903E-01
Reported Lifetimes	L90(14k) > 84,700 hours
	L80(14k) > 84,700 hours
	L70(14k) > 84,700 hours



Color Shift Graph



CREE

DATA SET 3: 85°C; 350 mA

1107

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	162	2.83	3106	3000	100.12	100.25	99.88	100.12	100.06	99.82	99.75	99.75	99.69	99.57	99.57	99.51
2	155	2.87	3016	3000	99.81	99.87	99.74	99.35	99.29	99.61	99.29	99.22	99.03	99.35	99.10	99.29
3	153	2.82	3084	3000	100.00	99.61	99.54	99.87	99.93	99.61	99.35	99.54	99.54	99.80	99.54	99.74
4	158	2.83	3067	3000	99.75	100.19	100.06	100.00	99.24	99.18	98.73	98.54	98.29	98.48	98.54	98.54
5	150	2.84	3083	3000	99.73	99.87	100.07	99.93	99.67	99.80	99.80	99.80	99.73	99.80	100.13	100.13
6	159	2.86	3035	3000	100.13	100.13	99.62	99.81	99.31	99.56	99.31	99.18	98.74	98.74	98.87	98.74
7	157	2.83	3053	3000	99.87	99.55	99.49	98.98	98.79	98.79	98.85	98.79	98.47	98.98	98.79	98.72
8	153	2.85	3021	3000	100.26	99.67	99.87	99.54	99.22	99.41	99.54	99.48	99.61	99.41	99.48	99.41
9	162	2.85	3036	3000	100.00	100.12	100.00	99.57	99.57	99.32	99.07	98.89	98.83	99.14	99.01	99.01
10	158	2.89	3033	3000	100.06	100.19	100.00	100.13	100.06	100.06	99.49	99.49	99.30	99.56	99.49	99.62
11	157	2.82	3009	3000	100.13	99.68	100.06	100.00	100.13	100.00	99.94	99.87	99.81	99.94	100.00	100.13
12	157	2.82	3058	3000	100.32	100.13	99.94	100.19	100.13	100.13	100.19	100.06	100.00	100.06	100.13	100.38
13	154	2.87	2965	3000	100.26	100.06	100.19	99.94	99.94	100.26	99.87	99.61	99.81	100.06	100.19	100.00
14	155	2.87	3002	3000	100.13	100.06	100.19	99.74	99.81	99.87	99.94	99.94	99.81	99.81	100.06	100.00
15	161	2.84	2993	3000	99.56	99.13	99.19	99.07	99.13	99.25	99.07	99.25	99.07	99.19	99.31	99.31
16	154	2.87	3009	3000	100.26	99.68	99.48	99.61	99.42	99.48	99.16	99.09	99.16	99.42	99.48	99.48
17	149	2.82	3019	3000	99.80	99.66	99.66	99.60	99.26	99.13	98.79	99.06	99.19	98.93	99.06	99.26
18	155	2.81	2950	3000	100.13	100.00	99.94	99.74	99.35	99.74	99.87	99.61	99.81	99.61	99.55	99.87
19	153	2.82	2998	3000	99.74	99.74	99.61	99.34	99.61	99.80	99.74	99.80	99.54	99.48	99.41	99.93
20	157	2.87	2979	3000	100.06	99.55	99.36	99.62	99.43	99.30	99.87	99.62	99.68	99.55	99.43	98.85
21	155	2.87	2996	3000	99.87	99.35	99.29	98.97	99.23	99.68	99.10	98.84	98.97	99.03	98.97	98.97
22	159	2.84	3035	3000	99.94	99.37	100.19	99.12	99.44	99.31	98.93	98.49	98.43	98.49	98.62	98.74
23	158	2.81	3015	3000	99.68	99.24	99.49	98.99	98.86	98.86	98.67	98.67	98.55	98.29	98.23	98.48
24	160	2.84	3056	3000	99.94	99.69	99.75	99.87	99.81	99.69	99.62	99.62	99.62	99.75	99.31	99.25
25	151	2.87	3007	3000	99.60	99.14	99.21	99.34	99.01	99.01	98.88	99.01	99.01	98.94	98.81	99.07
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**156**	**2.84**			**99.97**	**99.76**	**99.75**	**99.62**	**99.51**	**99.55**	**99.39**	**99.33**	**99.27**	**99.34**	**99.32**	**99.38**
Median	157	2.84			100.00	99.69	99.75	99.62	99.43	99.61	99.35	99.48	99.30	99.42	99.41	99.31
σ	3	0.02			0.22	0.34	0.31	0.38	0.39	0.39	0.45	0.46	0.51	0.50	0.53	0.55
Min.	149	2.81			99.56	99.13	99.19	98.97	98.79	98.79	98.67	98.49	98.29	98.29	98.23	98.48
Max.	162	2.89			100.32	100.25	100.19	100.19	100.13	100.26	100.19	100.06	100.00	100.06	100.19	100.38

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
1	0.4346	0.4116	3106	3000	0.0003	0.0006	0.0005	0.0005	0.0003	0.0005	0.0006	0.0008	0.0007	0.0008	0.0006	0.0008
2	0.4395	0.4108	3016	3000	0.0005	0.0007	0.0007	0.0009	0.0008	0.0008	0.0009	0.0010	0.0010	0.0009	0.0009	0.0010
3	0.4361	0.4121	3084	3000	0.0001	0.0003	0.0004	0.0004	0.0003	0.0001	0.0003	0.0004	0.0003	0.0004	0.0004	0.0004
4	0.4378	0.4136	3067	3000	0.0006	0.0006	0.0007	0.0007	0.0006	0.0007	0.0008	0.0009	0.0009	0.0009	0.0010	0.0009
5	0.4357	0.4111	3083	3000	0.0004	0.0007	0.0007	0.0007	0.0004	0.0008	0.0008	0.0011	0.0011	0.0011	0.0011	0.0011
6	0.4390	0.4122	3035	3000	0.0003	0.0004	0.0006	0.0006	0.0004	0.0006	0.0007	0.0008	0.0008	0.0008	0.0009	0.0008
7	0.4378	0.4118	3053	3000	0.0002	0.0006	0.0007	0.0007	0.0005	0.0007	0.0009	0.0009	0.0010	0.0009	0.0009	0.0008
8	0.4376	0.4074	3021	3000	0.0003	0.0006	0.0007	0.0006	0.0008	0.0008	0.0010	0.0011	0.0011	0.0011	0.0010	0.0010
9	0.4381	0.4103	3036	3000	0.0004	0.0007	0.0005	0.0006	0.0007	0.0008	0.0007	0.0007	0.0008	0.0008	0.0009	0.0009
10	0.4377	0.4091	3033	3000	0.0004	0.0007	0.0006	0.0007	0.0009	0.0008	0.0007	0.0009	0.0008	0.0009	0.0008	0.0009
11	0.4437	0.4187	3009	3000	0.0010	0.0012	0.0012	0.0011	0.0011	0.0012	0.0011	0.0010	0.0013	0.0014	0.0012	0.0013
12	0.4384	0.4138	3058	3000	0.0006	0.0009	0.0009	0.0008	0.0007	0.0010	0.0006	0.0007	0.0009	0.0009	0.0009	0.0012
13	0.4460	0.4177	2965	3000	0.0009	0.0011	0.0013	0.0012	0.0011	0.0011	0.0011	0.0011	0.0013	0.0012	0.0013	0.0013
14	0.4420	0.4142	3002	3000	0.0008	0.0012	0.0012	0.0012	0.0011	0.0012	0.0009	0.0011	0.0013	0.0011	0.0013	0.0015
15	0.4455	0.4204	2993	3000	0.0005	0.0006	0.0008	0.0007	0.0007	0.0007	0.0006	0.0006	0.0008	0.0007	0.0007	0.0008
16	0.4417	0.4145	3009	3000	0.0008	0.0010	0.0012	0.0011	0.0011	0.0011	0.0010	0.0011	0.0011	0.0012	0.0011	0.0013
17	0.4422	0.4169	3019	3000	0.0006	0.0007	0.0006	0.0005	0.0006	0.0007	0.0005	0.0006	0.0007	0.0008	0.0008	0.0008
18	0.4481	0.4201	2950	3000	0.0005	0.0004	0.0006	0.0006	0.0006	0.0005	0.0005	0.0006	0.0006	0.0007	0.0007	0.0006
19	0.4445	0.4189	2998	3000	0.0006	0.0008	0.0008	0.0009	0.0010	0.0010	0.0008	0.0010	0.0010	0.0011	0.0010	0.0011
20	0.4453	0.4181	2979	3000	0.0006	0.0008	0.0009	0.0009	0.0006	0.0008	0.0006	0.0008	0.0009	0.0009	0.0009	0.0009
21	0.4429	0.4153	2996	3000	0.0006	0.0008	0.0007	0.0006	0.0004	0.0007	0.0004	0.0006	0.0007	0.0007	0.0007	0.0008
22	0.4417	0.4178	3035	3000	0.0006	0.0007	0.0005	0.0006	0.0007	0.0008	0.0006	0.0006	0.0007	0.0009	0.0008	0.0008
23	0.4437	0.4194	3015	3000	0.0005	0.0005	0.0006	0.0005	0.0005	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005	0.0006
24	0.4411	0.4193	3056	3000	0.0004	0.0006	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006	0.0008	0.0007	0.0007	0.0008
25	0.4410	0.4128	3007	3000	0.0006	0.0008	0.0006	0.0006	0.0007	0.0009	0.0008	0.0005	0.0008	0.0009	0.0006	0.0009
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0005**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0008**	**0.0007**	**0.0008**	**0.0009**	**0.0009**	**0.0009**	**0.0009**
Median					0.0005	0.0007	0.0007	0.0007	0.0007	0.0008	0.0007	0.0008	0.0008	0.0009	0.0009	0.0009
σ					0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003
Min.					0.0001	0.0003	0.0004	0.0004	0.0003	0.0001	0.0003	0.0004	0.0003	0.0004	0.0004	0.0004
Max.					0.0010	0.0012	0.0013	0.0012	0.0011	0.0012	0.0011	0.0011	0.0013	0.0014	0.0013	0.0015

DATA SET 3: 85°C; 350 mA

1108

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)											
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	162	2.83	3106	3000	99.57	99.75	99.82	99.45	99.63	99.57	99.88	99.75	100.12	100.12	99.69	99.69
2	155	2.87	3016	3000	99.48	99.68	99.68	99.16	99.10	98.77	99.42	99.29	99.55	99.87	100.06	100.00
3	153	2.82	3084	3000	98.89	99.61	99.54	98.89	99.35	99.28	99.61	99.67	100.26	99.67	100.00	99.74
4	158	2.83	3067	3000	98.22	98.48	98.79	98.35	98.22	98.73	98.29	98.22	98.22	98.73	98.86	98.79
5	150	2.84	3083	3000	99.73	99.67	99.80	100.00	99.60	99.80	100.20	100.40	100.07	100.13	99.73	99.60
6	159	2.86	3035	3000	98.74	98.81	98.93	98.74	99.31	98.49	98.24	98.18	99.12	98.99	98.99	99.12
7	157	2.83	3053	3000	98.47	99.04	99.36	98.79	99.11	98.27	99.11	98.85	98.79	98.91	99.42	99.49
8	153	2.85	3021	3000	99.67	99.67	99.61	98.96	100.13	100.33	99.87	99.74	99.48	100.00	99.87	99.93
9	162	2.85	3036	3000	99.26	99.20	99.69	99.20	99.51	99.38	99.88	99.81	99.32	99.63	100.06	99.44
10	158	2.89	3033	3000	100.00	100.06	99.75	99.24	99.81	100.06	100.44	100.19	100.32	100.00	100.32	100.19
11	157	2.82	3009	3000	99.49	99.11	99.49	99.68	99.81	99.87	99.74	99.68	100.13	100.13	100.32	99.87
12	157	2.82	3058	3000	100.00	99.87	100.58	100.26	100.06	100.19	100.32	100.96	101.28	100.64	100.13	100.26
13	154	2.87	2965	3000	99.87	99.42	99.29	99.61	99.68	99.55	100.06	100.19	100.00	99.87	99.68	100.13
14	155	2.87	3002	3000	99.35	99.22	100.00	99.68	99.74	99.42	99.87	99.94	99.81	100.13	100.32	100.58
15	161	2.84	2993	3000	98.88	99.19	99.44	98.82	99.38	99.31	99.00	99.13	99.13	99.63	99.63	99.19
16	154	2.87	3009	3000	99.55	99.61	99.68	99.35	99.42	99.81	99.16	98.90	98.96	99.03	98.90	99.03
17	149	2.82	3019	3000	98.79	98.66	98.59	98.93	98.99	98.59	98.59	98.19	98.46	98.05	97.79	97.99
18	155	2.81	2950	3000	99.61	99.16	99.29	99.55	99.55	99.35	99.81	99.81	99.55	100.13	100.00	99.87
19	153	2.82	2998	3000	99.54	99.15	99.21	99.67	99.74	99.54	99.61	99.74	99.74	100.20	99.48	100.07
20	157	2.87	2979	3000	98.85	99.11	99.43	98.92	98.85	99.68	100.13	99.24	99.17	99.55	98.92	99.30
21	155	2.87	2996	3000	98.45	98.32	98.97	98.58	98.84	99.35	98.77	98.71	98.84	99.03	99.23	99.55
22	159	2.84	3035	3000	98.24	98.56	98.56	98.68	98.68	98.12	98.31	98.12	98.31	97.99	97.87	97.55
23	158	2.81	3015	3000	98.48	98.04	98.92	98.36	98.42	98.67	98.80	98.80	98.80	98.67	99.11	99.11
24	160	2.84	3056	3000	99.37	98.87	99.12	98.50	99.00	99.37	99.44	98.69	98.62	98.94	99.12	98.56
25	151	2.87	3007	3000	98.22	98.61	98.88	98.55	98.88	99.34	99.41	99.01	99.47	99.14	99.07	99.14
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**156**	**2.84**			**99.15**	**99.15**	**99.38**	**99.12**	**99.31**	**99.31**	**99.44**	**99.33**	**99.42**	**99.49**	**99.46**	**99.45**
Median	157	2.84			99.35	99.16	99.43	98.96	99.38	99.37	99.61	99.29	99.47	99.63	99.63	99.55
σ	3	0.02			0.58	0.52	0.47	0.52	0.49	0.59	0.65	0.76	0.73	0.70	0.69	0.71
Min.	149	2.81			98.22	98.04	98.56	98.35	98.22	98.12	98.24	98.12	98.22	97.99	97.79	97.55
Max.	162	2.89			100.00	100.06	100.58	100.26	100.13	100.33	100.44	100.96	101.28	100.64	100.32	100.58

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')											
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	0.4346	0.4116	3106	3000	0.0007	0.0006	0.0008	0.0006	0.0007	0.0008	0.0008	0.0009	0.0008	0.0007	0.0007	0.0007
2	0.4395	0.4108	3016	3000	0.0009	0.0008	0.0009	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0009	0.0009	0.0009
3	0.4361	0.4121	3084	3000	0.0004	0.0002	0.0004	0.0003	0.0006	0.0006	0.0006	0.0005	0.0007	0.0006	0.0006	0.0006
4	0.4378	0.4136	3067	3000	0.0010	0.0009	0.0011	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010	0.0010	0.0010
5	0.4357	0.4111	3083	3000	0.0011	0.0010	0.0011	0.0011	0.0011	0.0010	0.0011	0.0012	0.0011	0.0010	0.0010	0.0011
6	0.4390	0.4122	3035	3000	0.0007	0.0006	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0008	0.0007	0.0007	0.0007
7	0.4378	0.4118	3053	3000	0.0008	0.0009	0.0009	0.0008	0.0009	0.0008	0.0010	0.0009	0.0008	0.0008	0.0008	0.0008
8	0.4376	0.4074	3021	3000	0.0009	0.0008	0.0010	0.0009	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010
9	0.4381	0.4103	3036	3000	0.0009	0.0007	0.0009	0.0009	0.0009	0.0009	0.0010	0.0008	0.0009	0.0008	0.0007	0.0009
10	0.4377	0.4091	3033	3000	0.0009	0.0008	0.0010	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009
11	0.4437	0.4187	3009	3000	0.0009	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0012	0.0011	0.0011
12	0.4384	0.4138	3058	3000	0.0011	0.0011	0.0013	0.0013	0.0012	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011
13	0.4460	0.4177	2965	3000	0.0012	0.0012	0.0012	0.0013	0.0014	0.0013	0.0014	0.0014	0.0013	0.0011	0.0014	0.0014
14	0.4420	0.4142	3002	3000	0.0014	0.0015	0.0016	0.0016	0.0017	0.0017	0.0017	0.0016	0.0016	0.0016	0.0016	0.0014
15	0.4455	0.4204	2993	3000	0.0008	0.0007	0.0009	0.0009	0.0007	0.0008	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009
16	0.4417	0.4145	3009	3000	0.0012	0.0012	0.0012	0.0013	0.0009	0.0008	0.0008	0.0007	0.0009	0.0009	0.0009	0.0009
17	0.4422	0.4169	3019	3000	0.0006	0.0008	0.0005	0.0008	0.0007	0.0009	0.0009	0.0013	0.0014	0.0016	0.0018	0.0017
18	0.4481	0.4201	2950	3000	0.0006	0.0007	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0008	0.0008
19	0.4445	0.4189	2998	3000	0.0011	0.0010	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013
20	0.4453	0.4181	2979	3000	0.0009	0.0009	0.0010	0.0011	0.0011	0.0011	0.0011	0.0010	0.0012	0.0010	0.0010	0.0010
21	0.4429	0.4153	2996	3000	0.0006	0.0009	0.0009	0.0010	0.0008	0.0009	0.0009	0.0007	0.0008	0.0009	0.0008	0.0008
22	0.4417	0.4178	3035	3000	0.0006	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0008	0.0009	0.0009	0.0009	0.0007
23	0.4437	0.4194	3015	3000	0.0006	0.0005	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0008	0.0007
24	0.4411	0.4193	3056	3000	0.0007	0.0006	0.0008	0.0010	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0008	0.0009
25	0.4410	0.4128	3007	3000	0.0007	0.0007	0.0008	0.0010	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0007	0.0008
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0008**	**0.0008**	**0.0009**	**0.0009**	**0.0009**	**0.0009**	**0.0010**	**0.0010**	**0.0010**	**0.0010**	**0.0010**	**0.0010**
Median					0.0009	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
σ					0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0003	0.0003
Min.					0.0004	0.0002	0.0004	0.0003	0.0006	0.0006	0.0006	0.0005	0.0007	0.0006	0.0006	0.0006
Max.					0.0014	0.0015	0.0016	0.0016	0.0017	0.0017	0.0017	0.0016	0.0016	0.0016	0.0018	0.0017

CREE

DATA SET 3: 85°C; 350 mA

1109

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)			
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	12600	13104	13608	14112
1	162	2.83	3106	3000	99.75	100.00	99.88	99.63
2	155	2.87	3016	3000	100.06	100.06	99.87	99.94
3	153	2.82	3084	3000	99.87	99.67	99.48	99.74
4	158	2.83	3067	3000	98.67	98.92	98.98	98.73
5	150	2.84	3083	3000	100.20	99.93	100.07	99.67
6	159	2.86	3035	3000	99.06	98.81	98.81	98.87
7	157	2.83	3053	3000	99.17	98.98	98.91	99.11
8	153	2.85	3021	3000	99.93	100.07	100.00	100.07
9	162	2.85	3036	3000	99.81	100.00	100.25	100.12
10	158	2.89	3033	3000	99.87	100.06	100.19	100.19
11	157	2.82	3009	3000	100.13	100.00	99.68	99.68
12	157	2.82	3058	3000	100.58	100.64	100.77	100.58
13	154	2.87	2965	3000	99.55	100.06	100.26	99.55
14	155	2.87	3002	3000	100.32	100.00	99.87	100.32
15	161	2.84	2993	3000	99.56	99.25	99.25	99.56
16	154	2.87	3009	3000	98.38	98.90	99.03	98.44
17	149	2.82	3019	3000	98.12	97.52	97.58	97.11
18	155	2.81	2950	3000	100.00	100.26	100.06	100.26
19	153	2.82	2998	3000	99.34	99.61	100.20	99.21
20	157	2.87	2979	3000	99.36	98.85	99.43	99.49
21	155	2.87	2996	3000	99.03	99.48	100.00	99.23
22	159	2.84	3035	3000	98.12	97.99	97.49	97.49
23	158	2.81	3015	3000	98.86	98.99	98.86	98.17
24	160	2.84	3056	3000	99.00	98.87	99.06	99.06
25	151	2.87	3007	3000	99.67	99.01	99.14	98.88
n	25	25	25	25	25	25	25	25
Mean	**156**	**2.84**			**99.46**	**99.44**	**99.48**	**99.32**
Median	157	2.84			99.56	99.61	99.68	99.55
σ	3	0.02			0.67	0.74	0.79	0.86
Min.	149	2.81			98.12	97.52	97.49	97.11
Max.	162	2.89			100.58	100.64	100.77	100.58

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')			
	CCx	CCy	Calc. CCT	ANSI Target	12600	13104	13608	14112
1	0.4346	0.4116	3106	3000	0.0007	0.0005	0.0006	0.0006
2	0.4395	0.4108	3016	3000	0.0009	0.0009	0.0010	0.0009
3	0.4361	0.4121	3084	3000	0.0006	0.0006	0.0006	0.0006
4	0.4378	0.4136	3067	3000	0.0011	0.0010	0.0011	0.0011
5	0.4357	0.4111	3083	3000	0.0010	0.0007	0.0009	0.0010
6	0.4390	0.4122	3035	3000	0.0008	0.0007	0.0009	0.0008
7	0.4378	0.4118	3053	3000	0.0008	0.0007	0.0008	0.0008
8	0.4376	0.4074	3021	3000	0.0010	0.0008	0.0010	0.0010
9	0.4381	0.4103	3036	3000	0.0008	0.0008	0.0010	0.0009
10	0.4377	0.4091	3033	3000	0.0008	0.0010	0.0007	0.0008
11	0.4437	0.4187	3009	3000	0.0010	0.0010	0.0010	0.0011
12	0.4384	0.4138	3058	3000	0.0011	0.0012	0.0011	0.0012
13	0.4460	0.4177	2965	3000	0.0013	0.0014	0.0014	0.0014
14	0.4420	0.4142	3002	3000	0.0016	0.0016	0.0015	0.0013
15	0.4455	0.4204	2993	3000	0.0008	0.0009	0.0009	0.0008
16	0.4417	0.4145	3009	3000	0.0009	0.0009	0.0010	0.0010
17	0.4422	0.4169	3019	3000	0.0019	0.0018	0.0019	0.0019
18	0.4481	0.4201	2950	3000	0.0009	0.0008	0.0009	0.0008
19	0.4445	0.4189	2998	3000	0.0012	0.0011	0.0011	0.0013
20	0.4453	0.4181	2979	3000	0.0010	0.0009	0.0009	0.0010
21	0.4429	0.4153	2996	3000	0.0009	0.0008	0.0008	0.0009
22	0.4417	0.4178	3035	3000	0.0009	0.0007	0.0008	0.0008
23	0.4437	0.4194	3015	3000	0.0008	0.0007	0.0007	0.0007
24	0.4411	0.4193	3056	3000	0.0009	0.0008	0.0008	0.0008
25	0.4410	0.4128	3007	3000	0.0008	0.0008	0.0007	0.0008
n	25	25	25	25	25	25	25	25
Mean					**0.0010**	**0.0009**	**0.0010**	**0.0010**
Median					0.0009	0.0008	0.0009	0.0009
σ					0.0003	0.0003	0.0003	0.0003
Min.					0.0006	0.0005	0.0006	0.0006
Max.					0.0019	0.0018	0.0019	0.0019

DATA SET 4: 105°C; 350 mA

1110

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	350 mA
Testing Initiation Date	November 2, 2015
Case Temperature [T_S]	105°C
Ambient Temperature [T_A]	105°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	99.71%	0.0004	0.0	N/R
1008	99.37%	0.0007	0.0	N/R
1512	99.11%	0.0006	0.0	N/R
2016	98.86%	0.0006	0.0	N/R
2520	98.54%	0.0005	0.0	N/R
3024	98.42%	0.0006	0.0	N/R
3528	98.19%	0.0006	0.0	N/R
4032	98.03%	0.0006	0.0	N/R
4536	97.93%	0.0005	-0.1	N/R
5040	97.82%	0.0005	-0.1	N/R
5544	97.71%	0.0005	-0.1	N/R
6048	97.78%	0.0007	-0.1	N/R
6552	97.65%	0.0006	0.0	N/R
7056	97.64%	0.0006	-0.1	N/R
7560	97.72%	0.0005	-0.1	N/R
8064	97.69%	0.0006	-0.2	N/R
8568	97.68%	0.0006	-0.2	N/R
9072	97.62%	0.0006	-0.2	N/R
9576	97.60%	0.0006	-0.1	N/R
10080	97.53%	0.0006	-0.1	N/R
10584	97.81%	0.0007	-0.2	-0.5%
11088	97.83%	0.0008	-0.1	-0.7%
11592	97.76%	0.0009	-0.3	-0.8%
12096	97.82%	0.0009	-0.1	-0.5%
12600	97.75%	0.0009	-0.1	-0.6%
13104	97.80%	0.0010	-0.1	-0.5%
13608	97.75%	0.0010	-0.2	-0.4%

Note: "N/R" indicates data points that are not reported

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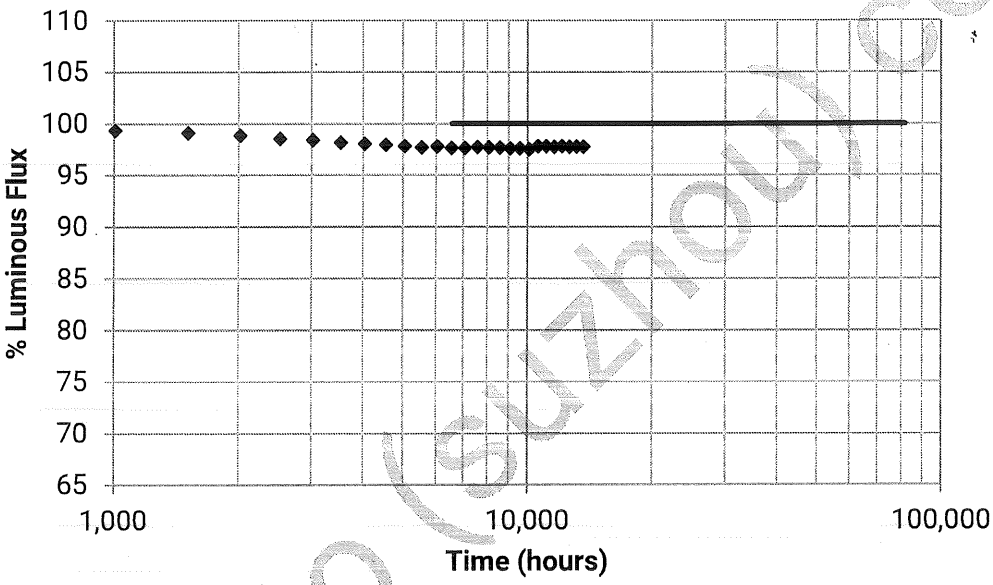
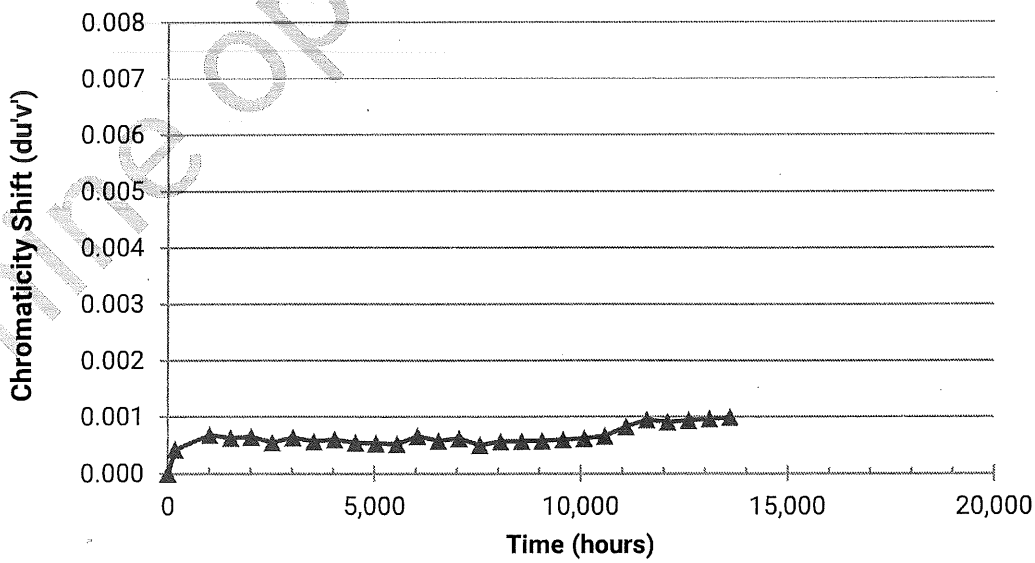
DATA SET 4: 105°C; 350 mA

TM-21 Projection from Cree's Internal Calculator

Test duration	13,608 hours
Test duration used for projection	t=6,552 to t=13,608
α	*-2.320E-07*
β	9.748E-01
Reported Lifetimes	**L90(14k) > 81,600 hours**
	L80(14k) > 81,600 hours
	L70(14k) > 81,600 hours



Color Shift Graph



DATA SET 4: 105°C; 350 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	157	2.81	3016	3000	100.06	99.68	99.17	98.92	98.72	98.40	98.34	98.34	98.40	97.96	97.45	97.32
2	156	2.87	2988	3000	99.49	99.81	99.55	99.10	98.84	98.78	98.46	98.01	98.07	98.14	97.88	98.26
3	156	2.86	2995	3000	99.55	99.29	98.84	98.59	98.39	98.20	98.26	98.14	97.81	97.81	97.56	97.49
4	159	2.83	2994	3000	99.81	99.68	99.31	99.12	98.42	98.11	97.85	98.11	98.23	98.17	97.79	98.04
5	153	2.81	3039	3000	99.54	99.48	99.67	99.35	99.02	98.63	98.63	98.37	98.57	97.85	98.11	97.91
6	154	2.82	3038	3000	99.55	98.96	98.57	98.70	98.64	99.09	98.77	98.51	97.99	98.51	98.38	98.51
7	154	2.83	3011	3000	99.68	99.74	99.16	99.03	99.03	98.77	98.57	98.51	98.18	98.25	97.99	98.05
8	156	2.87	3005	3000	99.81	99.36	98.72	98.53	98.27	98.14	98.02	97.82	97.95	97.38	97.70	97.70
9	156	2.87	3018	3000	99.81	99.23	99.04	98.78	98.46	98.85	98.65	98.08	97.76	97.63	97.37	97.69
10	160	2.85	2983	3000	99.81	99.37	99.37	99.19	98.75	98.75	98.44	98.19	98.06	98.19	97.87	97.81
11	158	2.87	3005	3000	99.87	99.62	99.75	99.43	98.74	98.86	98.42	98.04	98.42	98.17	98.23	98.10
12	158	2.87	3042	3000	99.68	99.62	99.18	98.92	98.42	98.99	98.61	98.29	97.85	97.91	98.04	97.97
13	157	2.82	3025	3000	99.43	98.86	98.54	98.22	98.09	97.78	97.71	97.27	97.46	97.01	97.40	97.65
14	157	2.82	3057	3000	99.87	99.43	99.36	99.30	98.86	99.17	98.73	98.35	98.09	97.77	97.27	97.58
15	162	2.84	3068	3000	99.75	99.07	99.32	99.20	99.26	98.76	98.21	98.08	97.83	97.22	97.15	96.97
16	156	2.88	3028	3000	99.87	99.61	99.29	99.04	98.59	98.14	98.14	98.01	97.95	98.14	98.01	98.27
17	153	2.82	3061	3000	99.61	99.41	99.48	98.89	98.30	98.49	98.10	97.97	97.71	98.17	97.77	98.30
18	156	2.84	3027	3000	99.87	99.49	99.10	98.59	98.72	98.08	97.57	97.82	97.57	97.50	97.25	97.31
19	163	2.85	3040	3000	99.82	99.82	99.08	99.02	98.52	98.59	98.16	97.97	98.03	97.97	97.91	97.85
20	161	2.89	3085	3000	99.88	99.25	98.94	98.76	98.88	98.01	97.82	97.64	97.70	97.64	97.45	97.51
21	153	2.84	3103	3000	99.74	99.28	98.95	98.63	98.10	98.04	97.91	97.91	97.78	97.65	97.65	97.84
22	160	2.85	3029	3000	99.50	98.87	98.63	98.00	97.81	97.81	97.81	97.63	97.63	97.63	97.44	97.38
23	157	2.83	3084	3000	99.68	98.98	98.72	98.66	97.90	97.77	97.64	97.70	97.64	97.51	97.58	97.58
24	158	2.82	3024	3000	99.68	99.49	99.30	99.37	98.73	98.35	98.29	98.29	98.23	97.91	98.16	97.97
25	159	2.83	3127	3000	99.44	98.93	98.68	98.24	98.12	97.93	97.74	97.62	97.30	97.37	97.37	97.37
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**157**	**2.84**			**99.71**	**99.37**	**99.11**	**98.86**	**98.54**	**98.42**	**98.19**	**98.03**	**97.93**	**97.82**	**97.71**	**97.78**
Median	157	2.84			99.74	99.41	99.16	98.92	98.59	98.40	98.21	98.04	97.95	97.85	97.70	97.81
σ	3	0.02			0.16	0.30	0.34	0.38	0.37	0.43	0.37	0.31	0.31	0.36	0.34	0.37
Min.	153	2.81			99.43	98.86	98.54	98.00	97.81	97.77	97.57	97.27	97.30	97.01	97.15	96.97
Max.	163	2.89			100.06	99.82	99.75	99.43	99.26	99.17	98.77	98.51	98.57	98.51	98.38	98.51

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
1	0.4429	0.4179	3016	3000	0.0006	0.0007	0.0007	0.0005	0.0006	0.0007	0.0008	0.0007	0.0004	0.0004	0.0005	0.0003
2	0.4440	0.4166	2988	3000	0.0006	0.0009	0.0009	0.0011	0.0009	0.0011	0.0009	0.0011	0.0009	0.0010	0.0012	0.0011
3	0.4439	0.4173	2995	3000	0.0003	0.0008	0.0008	0.0008	0.0007	0.0009	0.0009	0.0008	0.0008	0.0009	0.0007	0.0009
4	0.4441	0.4176	2994	3000	0.0007	0.0009	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007
5	0.4407	0.4162	3039	3000	0.0004	0.0008	0.0008	0.0007	0.0006	0.0008	0.0006	0.0006	0.0006	0.0008	0.0005	0.0007
6	0.4425	0.4199	3038	3000	0.0005	0.0006	0.0003	0.0004	0.0005	0.0005	0.0006	0.0006	0.0005	0.0004	0.0003	0.0006
7	0.4427	0.4168	3011	3000	0.0006	0.0008	0.0007	0.0007	0.0007	0.0006	0.0005	0.0006	0.0005	0.0006	0.0005	0.0012
8	0.4415	0.4136	3005	3000	0.0006	0.0010	0.0008	0.0009	0.0010	0.0011	0.0007	0.0011	0.0009	0.0011	0.0010	0.0010
9	0.4418	0.4159	3018	3000	0.0005	0.0008	0.0011	0.0010	0.0009	0.0010	0.0010	0.0012	0.0009	0.0009	0.0009	0.0011
10	0.4445	0.4170	2983	3000	0.0007	0.0009	0.0009	0.0010	0.0008	0.0008	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008
11	0.4425	0.4157	3005	3000	0.0007	0.0008	0.0011	0.0010	0.0010	0.0011	0.0007	0.0009	0.0006	0.0009	0.0007	0.0009
12	0.4407	0.4166	3042	3000	0.0008	0.0009	0.0009	0.0010	0.0009	0.0010	0.0011	0.0011	0.0010	0.0010	0.0011	0.0009
13	0.4416	0.4163	3025	3000	0.0004	0.0007	0.0006	0.0006	0.0004	0.0005	0.0004	0.0005	0.0006	0.0006	0.0006	0.0006
14	0.4398	0.4166	3057	3000	0.0006	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006	0.0004	0.0006
15	0.4372	0.4125	3068	3000	0.0003	0.0007	0.0005	0.0008	0.0005	0.0009	0.0006	0.0006	0.0008	0.0004	0.0005	0.0007
16	0.4387	0.4106	3028	3000	0.0001	0.0006	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0002	0.0003	0.0005
17	0.4354	0.4077	3061	3000	0.0002	0.0006	0.0004	0.0006	0.0002	0.0005	0.0003	0.0003	0.0003	0.0001	0.0003	0.0004
18	0.4386	0.4103	3027	3000	0.0003	0.0006	0.0004	0.0005	0.0003	0.0004	0.0002	0.0002	0.0002	0.0001	0.0003	0.0004
19	0.4389	0.4125	3040	3000	0.0003	0.0008	0.0005	0.0005	0.0004	0.0005	0.0005	0.0005	0.0004	0.0005	0.0001	0.0005
20	0.4346	0.4090	3085	3000	0.0002	0.0006	0.0004	0.0005	0.0002	0.0003	0.0003	0.0003	0.0002	0.0001	0.0001	0.0003
21	0.4342	0.4104	3103	3000	0.0001	0.0005	0.0003	0.0005	0.0002	0.0003	0.0002	0.0003	0.0004	0.0003	0.0003	0.0005
22	0.4387	0.4108	3029	3000	0.0003	0.0003	0.0003	0.0001	0.0003	0.0002	0.0003	0.0002	0.0002	0.0003	0.0003	0.0003
23	0.4340	0.4076	3084	3000	0.0001	0.0006	0.0006	0.0007	0.0003	0.0004	0.0004	0.0003	0.0002	0.0002	0.0003	0.0005
24	0.4421	0.4173	3024	3000	0.0004	0.0003	0.0005	0.0003	0.0002	0.0004	0.0003	0.0004	0.0004	0.0004	0.0004	0.0004
25	0.4341	0.4132	3127	3000	0.0003	0.0006	0.0005	0.0004	0.0003	0.0004	0.0003	0.0004	0.0004	0.0001	0.0003	0.0005
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0004**	**0.0007**	**0.0006**	**0.0006**	**0.0005**	**0.0006**	**0.0006**	**0.0006**	**0.0005**	**0.0005**	**0.0005**	**0.0007**
Median					0.0004	0.0007	0.0006	0.0007	0.0005	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005	0.0006
σ					0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003
Min.					0.0001	0.0003	0.0003	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0003
Max.					0.0008	0.0010	0.0011	0.0011	0.0010	0.0011	0.0011	0.0012	0.0010	0.0011	0.0012	0.0012

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DATA SET 4: 105°C; 350 mA

1113

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)											
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	157	2.81	3016	3000	97.51	97.51	97.32	97.19	96.94	96.87	97.57	97.89	97.70	98.09	97.70	97.96
2	156	2.87	2988	3000	97.69	97.94	97.62	97.88	97.94	97.75	97.43	97.69	98.14	98.33	98.59	98.33
3	156	2.86	2995	3000	97.75	97.68	98.01	97.75	97.88	97.81	97.04	97.23	97.11	96.91	96.66	96.72
4	159	2.83	2994	3000	97.98	97.92	98.17	98.11	98.04	97.67	98.11	98.42	98.23	98.68	98.30	98.42
5	153	2.81	3039	3000	97.98	97.98	97.85	98.24	98.31	98.17	97.91	98.17	98.44	98.76	99.02	98.76
6	154	2.82	3038	3000	98.31	98.12	98.31	98.44	98.44	98.64	97.92	97.53	98.64	98.77	98.90	98.70
7	154	2.83	3011	3000	97.99	97.40	97.40	97.66	97.53	97.60	98.18	98.25	98.38	97.92	98.05	97.60
8	156	2.87	3005	3000	97.12	97.31	97.50	97.57	97.50	97.31	97.44	97.44	97.70	98.27	98.02	98.02
9	156	2.87	3018	3000	97.44	97.25	97.89	97.76	97.82	97.82	98.14	97.63	98.14	98.21	98.21	98.14
10	160	2.85	2983	3000	97.75	97.75	98.06	97.81	98.25	97.93	98.31	97.93	98.00	98.00	97.93	97.93
11	158	2.87	3005	3000	97.85	98.23	98.36	98.29	98.74	98.42	97.91	97.79	98.17	98.74	98.29	98.23
12	158	2.87	3042	3000	97.85	98.23	98.10	97.97	98.10	97.97	98.16	97.47	97.78	98.23	97.66	98.04
13	157	2.82	3025	3000	97.59	97.20	97.40	97.14	97.14	97.01	97.27	97.01	97.20	97.20	97.14	97.46
14	157	2.82	3057	3000	97.46	97.97	97.65	97.71	97.71	98.28	98.03	97.90	97.77	98.22	97.84	97.71
15	162	2.84	3068	3000	97.09	96.91	97.03	97.03	97.15	97.15	97.34	96.97	97.28	97.34	97.22	97.77
16	156	2.88	3028	3000	97.88	97.69	97.69	97.43	98.01	97.43	97.43	97.24	98.07	97.75	98.20	98.27
17	153	2.82	3061	3000	97.90	98.30	98.17	98.23	97.77	97.71	97.77	97.71	97.71	97.77	97.51	97.71
18	156	2.84	3027	3000	97.25	97.31	97.89	97.82	97.31	97.89	97.12	98.21	97.63	97.25	96.93	96.93
19	163	2.85	3040	3000	97.97	97.66	98.22	98.22	98.16	98.16	98.03	98.52	98.83	97.91	97.91	97.85
20	161	2.89	3085	3000	97.64	97.70	97.76	97.39	97.01	97.14	96.95	97.20	97.08	97.01	97.45	97.64
21	153	2.84	3103	3000	97.12	97.51	97.38	97.71	97.25	97.32	97.12	97.12	97.32	97.06	97.19	97.45
22	160	2.85	3029	3000	97.94	97.94	97.81	97.88	98.31	98.38	98.44	97.75	98.56	98.69	98.31	98.56
23	157	2.83	3084	3000	97.64	97.45	97.51	97.07	97.39	97.26	97.39	96.94	97.64	97.26	97.00	97.32
24	158	2.82	3024	3000	97.47	97.09	96.96	97.03	96.84	96.33	96.33	96.27	96.77	96.52	97.09	96.58
25	159	2.83	3127	3000	96.99	96.86	96.99	96.93	96.55	96.36	96.68	96.05	96.86	96.93	96.86	97.30
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**157**	**2.84**			**97.65**	**97.64**	**97.72**	**97.69**	**97.68**	**97.62**	**97.60**	**97.53**	**97.81**	**97.83**	**97.76**	**97.82**
Median	157	2.84			97.69	97.68	97.76	97.75	97.77	97.71	97.57	97.63	97.77	97.92	97.84	97.85
σ	3	0.02			0.34	0.41	0.41	0.44	0.56	0.60	0.54	0.61	0.56	0.68	0.64	0.57
Min.	153	2.81			96.99	96.86	96.96	96.93	96.55	96.33	96.33	96.05	96.77	96.52	96.66	96.58
Max.	163	2.89			98.31	98.30	98.36	98.44	98.74	98.64	98.44	98.52	98.83	98.77	99.02	98.76

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')											
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	0.4429	0.4179	3016	3000	0.0006	0.0004	0.0003	0.0006	0.0006	0.0008	0.0008	0.0008	0.0008	0.0009	0.0013	0.0011
2	0.4440	0.4166	2988	3000	0.0010	0.0013	0.0009	0.0010	0.0011	0.0011	0.0008	0.0011	0.0013	0.0013	0.0013	0.0012
3	0.4439	0.4173	2995	3000	0.0008	0.0008	0.0006	0.0009	0.0009	0.0009	0.0011	0.0009	0.0003	0.0001	0.0003	0.0006
4	0.4441	0.4176	2994	3000	0.0006	0.0007	0.0006	0.0007	0.0006	0.0008	0.0010	0.0010	0.0008	0.0008	0.0011	0.0009
5	0.4407	0.4162	3039	3000	0.0006	0.0008	0.0005	0.0007	0.0005	0.0007	0.0004	0.0004	0.0008	0.0007	0.0008	0.0009
6	0.4425	0.4199	3038	3000	0.0005	0.0006	0.0004	0.0006	0.0005	0.0006	0.0006	0.0006	0.0005	0.0009	0.0008	0.0008
7	0.4427	0.4168	3011	3000	0.0005	0.0005	0.0004	0.0005	0.0006	0.0005	0.0006	0.0006	0.0005	0.0008	0.0012	0.0009
8	0.4415	0.4136	3005	3000	0.0010	0.0012	0.0008	0.0009	0.0011	0.0008	0.0009	0.0009	0.0011	0.0012	0.0012	0.0012
9	0.4418	0.4159	3018	3000	0.0009	0.0009	0.0009	0.0009	0.0011	0.0012	0.0009	0.0009	0.0010	0.0012	0.0012	0.0011
10	0.4445	0.4170	2983	3000	0.0007	0.0008	0.0008	0.0008	0.0009	0.0008	0.0009	0.0009	0.0011	0.0010	0.0011	0.0010
11	0.4425	0.4157	3005	3000	0.0008	0.0012	0.0010	0.0009	0.0010	0.0010	0.0009	0.0010	0.0011	0.0012	0.0012	0.0013
12	0.4407	0.4166	3042	3000	0.0007	0.0010	0.0009	0.0009	0.0009	0.0009	0.0010	0.0009	0.0007	0.0011	0.0011	0.0009
13	0.4416	0.4163	3025	3000	0.0006	0.0006	0.0003	0.0002	0.0004	0.0004	0.0005	0.0005	0.0008	0.0009	0.0008	0.0009
14	0.4398	0.4166	3057	3000	0.0005	0.0006	0.0004	0.0005	0.0005	0.0004	0.0005	0.0006	0.0006	0.0008	0.0011	0.0009
15	0.4372	0.4125	3068	3000	0.0007	0.0004	0.0004	0.0004	0.0006	0.0004	0.0005	0.0005	0.0002	0.0008	0.0006	0.0008
16	0.4387	0.4106	3028	3000	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0003	0.0004	0.0007	0.0008	0.0008
17	0.4354	0.4077	3061	3000	0.0004	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0004	0.0005	0.0008	0.0008	0.0008
18	0.4386	0.4103	3027	3000	0.0002	0.0003	0.0002	0.0004	0.0003	0.0002	0.0003	0.0003	0.0006	0.0009	0.0008	0.0009
19	0.4389	0.4125	3040	3000	0.0005	0.0005	0.0005	0.0005	0.0004	0.0005	0.0005	0.0006	0.0006	0.0005	0.0010	0.0007
20	0.4346	0.4090	3085	3000	0.0003	0.0003	0.0002	0.0003	0.0001	0.0002	0.0002	0.0003	0.0006	0.0007	0.0008	0.0008
21	0.4342	0.4104	3103	3000	0.0005	0.0003	0.0004	0.0003	0.0003	0.0004	0.0003	0.0004	0.0003	0.0007	0.0007	0.0007
22	0.4387	0.4108	3029	3000	0.0004	0.0003	0.0003	0.0004	0.0003	0.0003	0.0004	0.0004	0.0006	0.0008	0.0011	0.0010
23	0.4340	0.4076	3084	3000	0.0004	0.0004	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0008	0.0009	0.0009
24	0.4421	0.4173	3024	3000	0.0004	0.0006	0.0003	0.0003	0.0002	0.0003	0.0005	0.0005	0.0009	0.0008	0.0009	0.0009
25	0.4341	0.4132	3127	3000	0.0006	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003	0.0007	0.0008	0.0008
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0006**	**0.0006**	**0.0005**	**0.0006**	**0.0006**	**0.0006**	**0.0006**	**0.0006**	**0.0007**	**0.0008**	**0.0009**	**0.0009**
Median					0.0006	0.0006	0.0004	0.0005	0.0005	0.0005	0.0005	0.0006	0.0006	0.0008	0.0009	0.0009
σ					0.0002	0.0003	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002
Min.					0.0002	0.0003	0.0002	0.0002	0.0001	0.0002	0.0002	0.0003	0.0002	0.0001	0.0003	0.0006
Max.					0.0010	0.0013	0.0010	0.0010	0.0011	0.0012	0.0011	0.0011	0.0013	0.0013	0.0013	0.0013

1114

DATA SET 4: 105°C; 350 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)		
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	12600	13104	13608
1	157	2.81	3016	3000	97.51	97.51	97.51
2	156	2.87	2988	3000	97.81	98.33	98.65
3	156	2.86	2995	3000	96.33	96.46	96.08
4	159	2.83	2994	3000	97.85	98.23	98.04
5	153	2.81	3039	3000	98.63	98.96	98.76
6	154	2.82	3038	3000	99.09	99.16	98.83
7	154	2.83	3011	3000	97.73	98.05	97.99
8	156	2.87	3005	3000	98.02	97.89	98.08
9	156	2.87	3018	3000	98.27	98.33	98.33
10	160	2.85	2983	3000	98.00	98.06	97.81
11	158	2.87	3005	3000	98.80	98.36	98.80
12	158	2.87	3042	3000	98.73	98.29	98.04
13	157	2.82	3025	3000	96.82	96.76	96.57
14	157	2.82	3057	3000	97.97	97.65	97.14
15	162	2.84	3068	3000	97.34	97.28	97.59
16	156	2.88	3028	3000	97.82	98.14	98.01
17	153	2.82	3061	3000	97.64	97.12	98.03
18	156	2.84	3027	3000	97.44	97.82	97.50
19	163	2.85	3040	3000	97.66	97.48	97.17
20	161	2.89	3085	3000	97.39	97.89	97.82
21	153	2.84	3103	3000	96.93	97.38	97.58
22	160	2.85	3029	3000	98.44	98.75	98.75
23	157	2.83	3084	3000	97.64	97.32	97.45
24	158	2.82	3024	3000	96.90	96.71	96.52
25	159	2.83	3127	3000	97.11	97.18	96.74
n	25	25	25	25	25	25	25
Mean	**157**	**2.84**			**97.75**	**97.80**	**97.75**
Median	157	2.84			97.73	97.89	97.82
σ	3	0.02			0.67	0.69	0.75
Min.	153	2.81			96.33	96.46	96.08
Max.	163	2.89			99.09	99.16	98.83

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')		
	CCx	CCy	Calc. CCT	ANSI Target	12600	13104	13608
1	0.4429	0.4179	3016	3000	0.0010	0.0009	0.0011
2	0.4440	0.4166	2988	3000	0.0012	0.0013	0.0013
3	0.4439	0.4173	2995	3000	0.0006	0.0005	0.0004
4	0.4441	0.4176	2994	3000	0.0009	0.0010	0.0011
5	0.4407	0.4162	3039	3000	0.0009	0.0009	0.0009
6	0.4425	0.4199	3038	3000	0.0008	0.0009	0.0010
7	0.4427	0.4168	3011	3000	0.0009	0.0010	0.0010
8	0.4415	0.4136	3005	3000	0.0012	0.0013	0.0014
9	0.4418	0.4159	3018	3000	0.0011	0.0012	0.0012
10	0.4445	0.4170	2983	3000	0.0010	0.0012	0.0010
11	0.4425	0.4157	3005	3000	0.0013	0.0012	0.0012
12	0.4407	0.4166	3042	3000	0.0011	0.0009	0.0010
13	0.4416	0.4163	3025	3000	0.0010	0.0011	0.0010
14	0.4398	0.4166	3057	3000	0.0009	0.0011	0.0009
15	0.4372	0.4125	3068	3000	0.0007	0.0008	0.0008
16	0.4387	0.4106	3028	3000	0.0008	0.0009	0.0009
17	0.4354	0.4077	3061	3000	0.0009	0.0008	0.0010
18	0.4386	0.4103	3027	3000	0.0010	0.0009	0.0013
19	0.4389	0.4125	3040	3000	0.0007	0.0010	0.0009
20	0.4346	0.4090	3085	3000	0.0009	0.0008	0.0010
21	0.4342	0.4104	3103	3000	0.0008	0.0007	0.0009
22	0.4387	0.4108	3029	3000	0.0009	0.0010	0.0010
23	0.4340	0.4076	3084	3000	0.0009	0.0009	0.0009
24	0.4421	0.4173	3024	3000	0.0011	0.0011	0.0009
25	0.4341	0.4132	3127	3000	0.0008	0.0008	0.0008
n	25	25	25	25	25	25	25
Mean					**0.0009**	**0.0010**	**0.0010**
Median					0.0009	0.0009	0.0010
σ					0.0002	0.0002	0.0002
Min.					0.0006	0.0005	0.0004
Max.					0.0013	0.0013	0.0014

DATA SET 5: 120°C; 350 mA

1115

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	350 mA
Testing Initiation Date	November 2, 2015
Case Temperature [T_S]	120°C
Ambient Temperature [T_A]	120°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	99.11%	0.0005	-0.1	N/R
1008	98.14%	0.0005	-0.1	N/R
1512	97.85%	0.0006	-0.1	N/R
2016	97.28%	0.0005	-0.1	N/R
2520	96.94%	0.0006	-0.1	N/R
3024	96.58%	0.0006	-0.2	N/R
3528	96.17%	0.0006	-0.2	N/R
4032	95.59%	0.0005	-0.2	N/R
4536	95.41%	0.0005	-0.2	N/R
5040	95.21%	0.0005	-0.2	N/R
5544	95.37%	0.0007	-0.3	N/R
6048	95.40%	0.0008	-0.2	N/R
6552	95.35%	0.0009	-0.3	-0.3%
7056	95.18%	0.0008	-0.3	-0.2%
7560	95.23%	0.0009	-0.4	-0.3%
8064	95.31%	0.0010	-0.4	-0.2%
8568	95.52%	0.0011	-0.4	-0.3%

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)

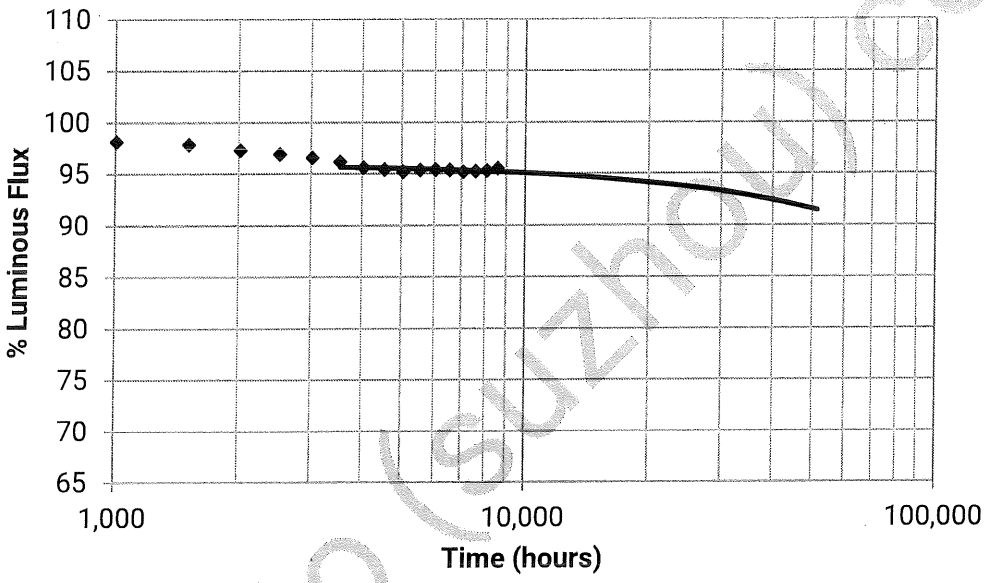
Note: "N/R" indicates data points that are not reported

1116

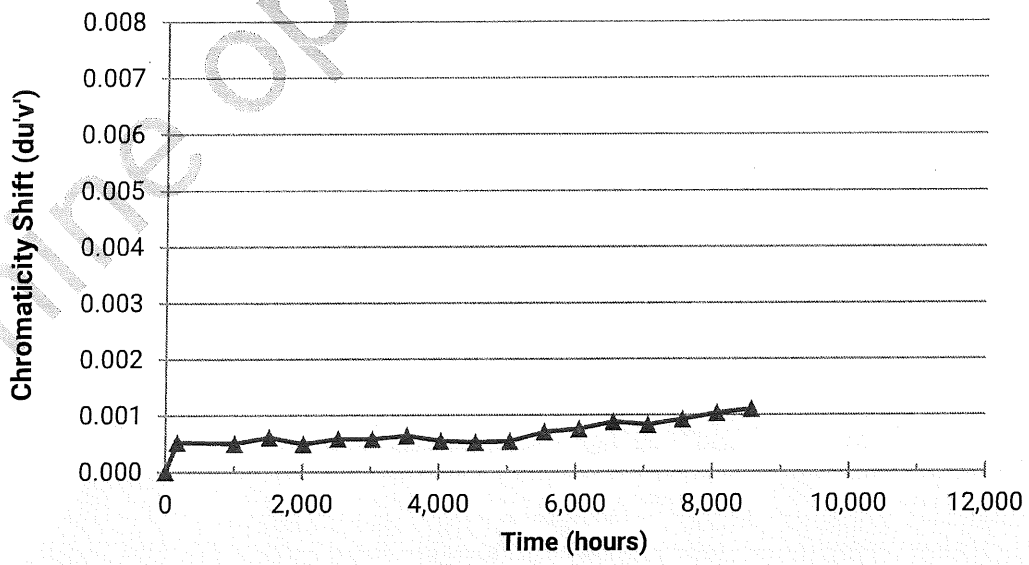
DATA SET 5: 120°C; 350 mA

TM-21 Projection from Cree's Internal Calculator

Test duration	8,568 hours
Test duration used for projection	t=3,528 to t=8,568
α	9.406E-07
β	9.597E-01
Reported Lifetimes	L90(9k) > 51,400 hours
	L80(9k) > 51,400 hours
	L70(9k) > 51,400 hours



Color Shift Graph



1117

DATA SET 5: 120°C; 350 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	156	2.81	3025	3000	99.36	98.27	98.52	97.88	97.50	97.18	96.02	95.76	95.57	95.06	95.06	95.06
2	158	2.81	3044	3000	98.92	98.60	98.29	97.65	96.89	97.08	96.76	96.13	96.13	96.00	96.19	96.19
3	155	2.87	3019	3000	100.19	98.52	98.26	97.04	96.78	96.40	96.72	95.50	95.56	94.72	96.01	96.33
4	160	2.85	3063	3000	99.13	97.94	98.19	97.25	96.19	98.06	97.38	97.00	96.63	96.32	96.38	96.19
5	159	2.84	3008	3000	98.24	98.31	98.12	97.18	96.42	95.73	95.54	95.17	95.17	94.92	94.73	94.16
6	158	2.83	3027	3000	97.79	97.03	96.78	96.34	96.08	95.89	94.69	94.25	94.57	94.38	94.19	95.07
7	153	2.82	3041	3000	99.61	98.36	98.23	96.99	98.10	97.51	97.64	96.20	96.34	96.01	96.66	96.20
8	154	2.82	3021	3000	99.16	98.05	97.34	97.47	97.47	96.75	96.69	95.97	95.58	95.06	95.32	95.19
9	150	2.82	2999	3000	98.67	98.07	98.07	97.40	97.34	96.87	96.67	95.81	95.61	95.34	95.41	94.94
10	148	2.82	2985	3000	98.45	98.04	98.38	98.11	97.16	96.69	95.68	95.14	95.34	95.54	95.61	95.88
11	156	2.87	2994	3000	99.23	98.52	97.43	96.85	97.05	96.15	96.15	95.19	94.99	94.48	95.25	94.35
12	157	2.87	3047	3000	98.73	97.96	97.64	97.45	96.94	95.79	95.98	95.60	94.96	94.65	95.28	94.96
13	159	2.85	3052	3000	99.37	98.31	98.24	97.99	97.87	97.11	97.18	95.92	96.30	95.29	96.24	95.73
14	160	2.85	3055	3000	98.63	98.57	97.88	97.94	97.69	96.76	97.07	96.07	96.26	95.63	96.19	96.57
15	148	2.87	2994	3000	99.59	98.65	98.18	97.23	97.43	96.83	96.42	95.61	95.07	95.48	95.61	95.54
16	155	2.88	3063	3000	98.77	98.06	97.94	97.10	96.52	96.39	95.35	94.97	94.97	95.29	94.97	94.90
17	156	2.87	3006	3000	99.68	98.65	98.20	97.37	97.50	97.17	96.72	95.57	95.83	95.44	95.70	96.21
18	157	2.88	3052	3000	99.74	98.34	98.15	97.57	97.06	96.17	96.23	95.08	94.76	94.82	95.08	95.46
19	155	2.82	3028	3000	99.74	99.22	98.84	98.84	98.26	97.80	97.29	96.77	95.74	95.28	96.06	95.87
20	158	2.82	3062	3000	99.18	98.80	98.86	98.16	98.04	97.91	97.21	96.39	95.94	96.20	96.26	96.20
21	161	2.83	3094	3000	99.13	97.39	96.46	96.46	95.59	95.03	94.22	94.53	94.47	94.16	94.10	93.91
22	156	2.88	3070	3000	99.74	97.76	97.63	96.55	95.71	95.91	95.39	95.33	94.37	95.20	94.31	94.75
23	153	2.83	3100	3000	99.35	97.20	96.48	95.96	95.76	95.57	95.11	95.37	95.05	94.85	94.52	95.18
24	159	2.83	3106	3000	98.18	96.73	96.60	96.04	95.60	95.91	94.91	94.59	94.40	94.84	94.15	94.59
25	153	2.84	3126	3000	99.28	98.04	97.52	97.13	96.61	95.95	95.30	95.82	95.63	95.30	94.91	95.69
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**156**	**2.84**			**99.11**	**98.14**	**97.85**	**97.28**	**96.94**	**96.58**	**96.17**	**95.59**	**95.41**	**95.21**	**95.37**	**95.40**
Median	156	2.84			99.18	98.27	98.12	97.25	97.05	96.69	96.23	95.60	95.56	95.28	95.32	95.46
σ	4	0.02			0.57	0.57	0.68	0.69	0.80	0.78	0.93	0.66	0.65	0.55	0.76	0.74
Min.	148	2.81			97.79	96.73	96.46	95.96	95.59	95.03	94.22	94.25	94.37	94.16	94.10	93.91
Max.	161	2.88			100.19	99.22	98.86	98.84	98.26	98.06	97.64	97.00	96.63	96.32	96.66	96.57

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
1	0.4422	0.4176	3025	3000	0.0004	0.0003	0.0005	0.0004	0.0006	0.0006	0.0007	0.0005	0.0004	0.0004	0.0007	0.0010
2	0.4404	0.4162	3044	3000	0.0007	0.0007	0.0009	0.0007	0.0008	0.0008	0.0010	0.0008	0.0007	0.0008	0.0008	0.0009
3	0.4417	0.4158	3019	3000	0.0008	0.0006	0.0006	0.0006	0.0007	0.0009	0.0010	0.0009	0.0007	0.0006	0.0010	0.0012
4	0.4359	0.4091	3063	3000	0.0002	0.0001	0.0003	0.0002	0.0003	0.0004	0.0004	0.0004	0.0004	0.0005	0.0005	0.0008
5	0.4437	0.4185	3008	3000	0.0005	0.0003	0.0007	0.0004	0.0005	0.0006	0.0006	0.0003	0.0004	0.0005	0.0006	0.0007
6	0.4400	0.4132	3027	3000	0.0003	0.0004	0.0003	0.0003	0.0003	0.0004	0.0003	0.0004	0.0006	0.0005	0.0006	0.0006
7	0.4410	0.4171	3041	3000	0.0007	0.0006	0.0009	0.0002	0.0006	0.0007	0.0008	0.0005	0.0005	0.0006	0.0007	0.0008
8	0.4428	0.4184	3021	3000	0.0004	0.0004	0.0006	0.0004	0.0005	0.0006	0.0006	0.0004	0.0005	0.0005	0.0007	0.0007
9	0.4447	0.4195	2999	3000	0.0006	0.0005	0.0007	0.0005	0.0005	0.0005	0.0005	0.0005	0.0004	0.0006	0.0007	0.0007
10	0.4454	0.4191	2985	3000	0.0006	0.0005	0.0006	0.0004	0.0005	0.0006	0.0006	0.0005	0.0004	0.0007	0.0007	0.0008
11	0.4422	0.4136	2994	3000	0.0005	0.0005	0.0004	0.0005	0.0008	0.0008	0.0009	0.0008	0.0007	0.0008	0.0010	0.0012
12	0.4399	0.4156	3047	3000	0.0004	0.0005	0.0006	0.0003	0.0007	0.0006	0.0006	0.0004	0.0004	0.0005	0.0007	0.0007
13	0.4409	0.4184	3052	3000	0.0006	0.0006	0.0005	0.0006	0.0007	0.0006	0.0006	0.0005	0.0006	0.0004	0.0006	0.0009
14	0.4400	0.4168	3055	3000	0.0004	0.0006	0.0007	0.0006	0.0007	0.0006	0.0007	0.0006	0.0005	0.0005	0.0007	0.0008
15	0.4422	0.4136	2994	3000	0.0009	0.0011	0.0013	0.0009	0.0012	0.0009	0.0012	0.0009	0.0010	0.0010	0.0012	0.0013
16	0.4379	0.4134	3063	3000	0.0007	0.0005	0.0006	0.0006	0.0006	0.0007	0.0009	0.0007	0.0007	0.0006	0.0008	0.0007
17	0.4414	0.4135	3006	3000	0.0009	0.0009	0.0012	0.0011	0.0012	0.0011	0.0012	0.0010	0.0009	0.0010	0.0012	0.0014
18	0.4379	0.4120	3052	3000	0.0009	0.0008	0.0009	0.0007	0.0009	0.0008	0.0010	0.0009	0.0007	0.0006	0.0008	0.0008
19	0.4408	0.4151	3028	3000	0.0009	0.0008	0.0011	0.0006	0.0006	0.0007	0.0008	0.0007	0.0005	0.0004	0.0007	0.0007
20	0.4391	0.4158	3062	3000	0.0007	0.0007	0.0008	0.0006	0.0006	0.0007	0.0008	0.0006	0.0006	0.0007	0.0009	0.0009
21	0.4346	0.4101	3094	3000	0.0003	0.0001	0.0003	0.0003	0.0003	0.0001	0.0001	0.0002	0.0003	0.0001	0.0003	0.0002
22	0.4359	0.4099	3070	3000	0.0002	0.0004	0.0004	0.0005	0.0007	0.0004	0.0005	0.0004	0.0005	0.0005	0.0006	0.0006
23	0.4325	0.4063	3100	3000	0.0004	0.0004	0.0004	0.0004	0.0003	0.0002	0.0002	0.0003	0.0004	0.0004	0.0005	0.0003
24	0.4350	0.4125	3106	3000	0.0001	0.0002	0.0001	0.0001	0.0001	0.0003	0.0002	0.0003	0.0002	0.0002	0.0004	0.0003
25	0.4325	0.4095	3126	3000	0.0002	0.0003	0.0001	0.0003	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0003	0.0003
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0005**	**0.0005**	**0.0006**	**0.0005**	**0.0006**	**0.0006**	**0.0006**	**0.0005**	**0.0005**	**0.0005**	**0.0007**	**0.0008**
Median					0.0005	0.0005	0.0006	0.0005	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005	0.0007	0.0008
σ					0.0003	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003
Min.					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0001	0.0003	0.0002
Max.					0.0009	0.0011	0.0013	0.0011	0.0012	0.0011	0.0012	0.0010	0.0010	0.0010	0.0012	0.0014

1118

DATA SET 5: 120°C; 350 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)				
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568
1	156	2.81	3025	3000	95.38	95.12	95.12	95.31	95.25
2	158	2.81	3044	3000	96.51	96.13	96.00	95.68	95.81
3	155	2.87	3019	3000	95.62	95.62	95.37	95.75	96.01
4	160	2.85	3063	3000	96.88	96.50	96.88	97.07	96.88
5	159	2.84	3008	3000	94.22	94.35	94.35	94.16	94.66
6	158	2.83	3027	3000	94.57	94.06	94.69	94.31	94.69
7	153	2.82	3041	3000	96.34	96.53	96.27	96.73	96.92
8	154	2.82	3021	3000	95.45	95.52	95.58	95.78	96.10
9	150	2.82	2999	3000	95.07	94.34	95.21	94.74	95.07
10	148	2.82	2985	3000	95.95	95.14	95.88	95.41	96.08
11	156	2.87	2994	3000	94.54	94.61	94.67	95.06	95.38
12	157	2.87	3047	3000	94.96	94.90	94.58	94.96	95.35
13	159	2.85	3052	3000	96.05	96.24	96.24	96.74	96.11
14	160	2.85	3055	3000	96.38	96.19	95.70	96.32	96.63
15	148	2.87	2994	3000	95.41	95.27	94.94	94.80	95.34
16	155	2.88	3063	3000	95.55	94.58	94.84	94.97	95.10
17	156	2.87	3006	3000	95.83	95.89	96.21	96.34	96.53
18	157	2.88	3052	3000	94.82	94.44	94.70	95.08	95.34
19	155	2.82	3028	3000	95.67	95.87	95.93	95.28	95.99
20	158	2.82	3062	3000	96.20	95.75	95.75	95.75	95.75
21	161	2.83	3094	3000	93.73	93.98	93.73	94.16	94.22
22	156	2.88	3070	3000	94.63	94.43	94.50	94.50	94.37
23	153	2.83	3100	3000	94.39	94.52	94.39	94.85	94.98
24	159	2.83	3106	3000	94.34	94.09	94.09	94.15	94.03
25	153	2.84	3126	3000	95.23	95.43	95.17	94.91	95.30
n	25	25	25	25	25	25	25	25	25
Mean	**156**	**2.84**			**95.35**	**95.18**	**95.23**	**95.31**	**95.52**
Median	156	2.84			95.41	95.14	95.17	95.08	95.36
σ	4	0.02			0.81	0.81	0.79	0.84	0.80
Min.	148	2.81			93.73	93.98	93.73	94.15	94.03
Max.	161	2.88			96.88	96.53	96.88	97.07	96.92

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')				
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568
1	0.4422	0.4176	3025	3000	0.0009	0.0007	0.0009	0.0011	0.0013
2	0.4404	0.4162	3044	3000	0.0011	0.0010	0.0015	0.0017	0.0020
3	0.4417	0.4158	3019	3000	0.0013	0.0013	0.0013	0.0013	0.0013
4	0.4359	0.4091	3063	3000	0.0006	0.0003	0.0005	0.0006	0.0007
5	0.4437	0.4185	3008	3000	0.0008	0.0007	0.0008	0.0010	0.0010
6	0.4400	0.4132	3027	3000	0.0010	0.0011	0.0011	0.0013	0.0013
7	0.4410	0.4171	3041	3000	0.0010	0.0010	0.0010	0.0011	0.0011
8	0.4428	0.4184	3021	3000	0.0009	0.0010	0.0010	0.0011	0.0011
9	0.4447	0.4195	2999	3000	0.0009	0.0008	0.0009	0.0011	0.0012
10	0.4454	0.4191	2985	3000	0.0012	0.0011	0.0012	0.0013	0.0015
11	0.4422	0.4136	2994	3000	0.0011	0.0011	0.0012	0.0012	0.0013
12	0.4399	0.4156	3047	3000	0.0009	0.0010	0.0010	0.0011	0.0012
13	0.4409	0.4184	3052	3000	0.0008	0.0008	0.0008	0.0009	0.0010
14	0.4400	0.4168	3055	3000	0.0010	0.0009	0.0010	0.0011	0.0012
15	0.4422	0.4136	2994	3000	0.0015	0.0016	0.0016	0.0018	0.0017
16	0.4379	0.4134	3063	3000	0.0006	0.0006	0.0007	0.0008	0.0010
17	0.4414	0.4135	3006	3000	0.0014	0.0013	0.0014	0.0014	0.0015
18	0.4379	0.4120	3052	3000	0.0011	0.0010	0.0011	0.0011	0.0012
19	0.4408	0.4151	3028	3000	0.0011	0.0010	0.0011	0.0011	0.0012
20	0.4391	0.4158	3062	3000	0.0011	0.0011	0.0011	0.0012	0.0015
21	0.4346	0.4101	3094	3000	0.0002	0.0002	0.0003	0.0004	0.0004
22	0.4359	0.4099	3070	3000	0.0005	0.0003	0.0006	0.0007	0.0007
23	0.4325	0.4063	3100	3000	0.0003	0.0002	0.0004	0.0005	0.0006
24	0.4350	0.4125	3106	3000	0.0005	0.0003	0.0003	0.0005	0.0004
25	0.4325	0.4095	3126	3000	0.0004	0.0003	0.0003	0.0005	0.0005
n	25	25	25	25	25	25	25	25	25
Mean					**0.0009**	**0.0008**	**0.0009**	**0.0010**	**0.0011**
Median					0.0009	0.0010	0.0010	0.0011	0.0012
σ					0.0003	0.0004	0.0004	0.0004	0.0004
Min.					0.0002	0.0002	0.0003	0.0004	0.0004
Max.					0.0015	0.0016	0.0016	0.0018	0.0020

1119

DATA SET 6: 85°C; 700 mA

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	700 mA
Testing Initiation Date	November 2, 2015
Case Temperature [T_S]	85°C
Ambient Temperature [T_A]	85°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	99.93%	0.0006	-0.1	N/R
1008	99.73%	0.0009	-0.1	N/R
1512	99.60%	0.0010	-0.1	N/R
2016	99.43%	0.0009	-0.1	N/R
2520	99.28%	0.0008	-0.1	N/R
3024	99.31%	0.0009	-0.1	N/R
3528	99.14%	0.0009	-0.1	N/R
4032	99.07%	0.0009	-0.2	N/R
4536	98.88%	0.0010	-0.1	N/R
5040	98.90%	0.0009	-0.2	N/R
5544	98.79%	0.0009	-0.2	N/R
6048	98.88%	0.0009	-0.2	N/R
6552	98.76%	0.0009	-0.2	N/R
7056	98.77%	0.0010	-0.2	N/R
7560	98.70%	0.0009	-0.1	N/R
8064	98.73%	0.0010	-0.2	N/R
8568	98.74%	0.0009	-0.2	N/R
9072	98.51%	0.0009	-0.2	N/R
9576	98.51%	0.0010	-0.2	N/R
10080	98.36%	0.0010	-0.2	N/R
10584	98.79%	0.0009	-0.2	-1.6%
11088	98.56%	0.0009	-0.2	-1.9%
11592	98.48%	0.0009	-0.2	-1.7%
12096	98.68%	0.0009	-0.2	-1.3%
12600	98.72%	0.0010	-0.2	-1.8%
13104	98.59%	0.0010	-0.2	-1.8%
13608	98.54%	0.0010	-0.3	-1.9%
14112	98.64%	0.0010	-0.2	-1.7%

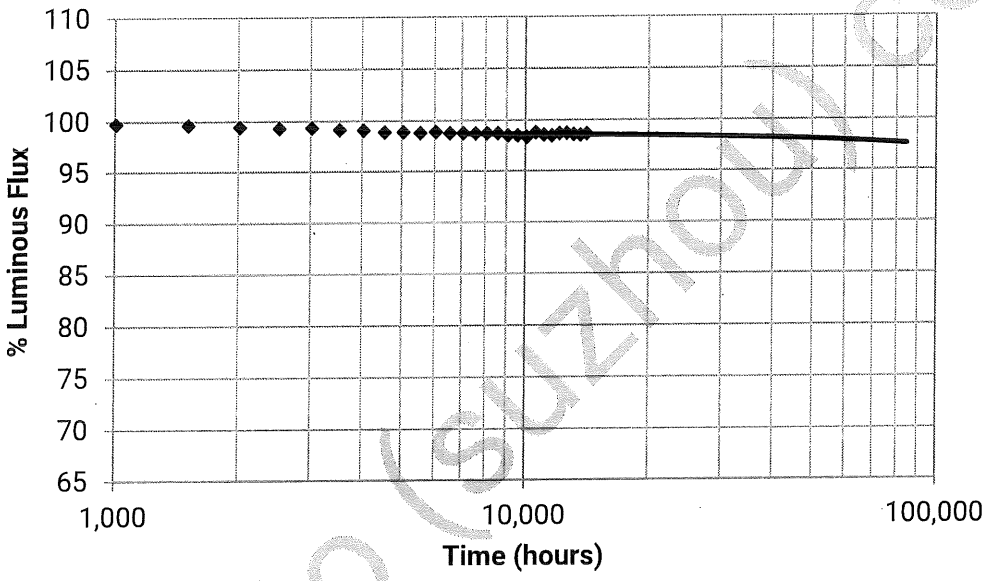
Note: "N/R" indicates data points that are not reported

1120

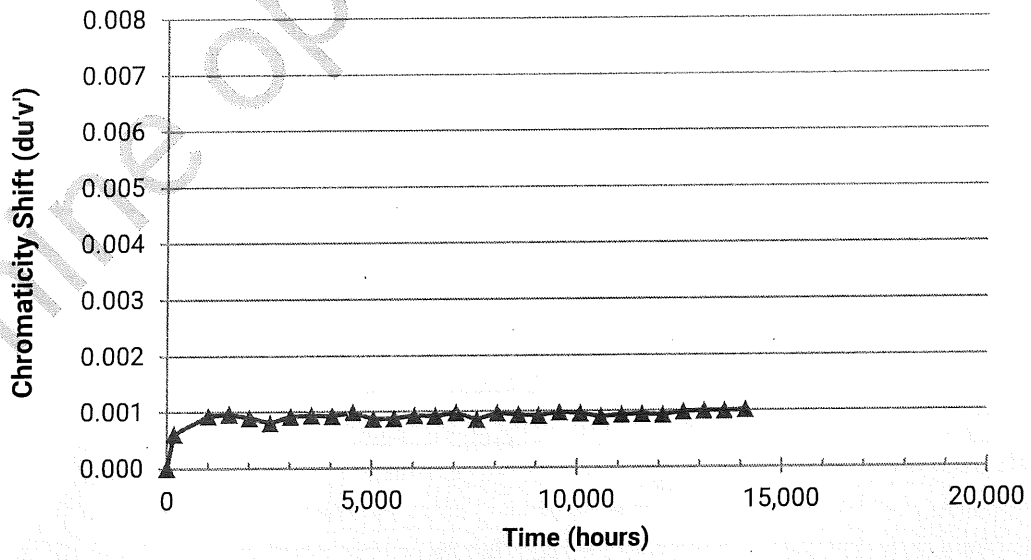
DATA SET 6: 85°C; 700 mA

TM-21 Projection from Cree's Internal Calculator

Test duration	14,112 hours
Test duration used for projection	t=7,056 to t=14,112
α	1.436E-07
β	9.877E-01
Reported Lifetimes	L90(14k) > 84,700 hours L80(14k) > 84,700 hours L70(14k) > 84,700 hours



Color Shift Graph



1121

DATA SET 6: 85°C; 700 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	300	2.95	3142	3000	100.13	99.80	99.60	99.57	99.60	99.20	99.23	99.03	98.53	98.43	98.17	98.23
2	291	3.00	3073	3000	99.93	99.83	99.35	99.00	99.25	99.07	98.97	98.90	98.94	98.87	98.76	98.76
3	286	2.94	3117	3000	99.76	99.62	99.69	99.41	99.09	99.13	98.88	98.60	98.43	98.50	98.39	98.57
4	294	2.95	3133	3000	99.97	100.00	99.35	99.01	99.08	98.94	98.94	98.54	98.19	98.40	98.02	98.30
5	281	2.96	3082	3000	99.93	100.11	99.50	99.50	99.29	99.47	99.54	99.11	98.79	98.72	98.61	98.93
6	297	2.97	3067	3000	100.10	99.66	99.56	99.39	99.23	99.49	98.82	98.58	98.55	98.85	98.28	98.32
7	291	2.95	3064	3000	99.83	99.42	99.11	99.14	99.04	99.14	98.90	98.69	98.45	98.52	98.38	98.56
8	287	2.97	3070	3000	100.00	99.83	99.79	99.34	99.58	99.62	99.69	99.58	99.44	99.30	98.99	99.13
9	302	2.97	3088	3000	99.97	99.90	99.83	99.54	99.14	99.17	98.61	98.51	98.15	98.25	98.01	98.25
10	295	3.03	3068	3000	99.97	99.46	99.73	99.46	99.63	99.29	99.05	99.32	98.95	98.88	98.85	98.88
11	292	2.93	3022	3000	99.66	99.66	99.83	99.45	99.56	99.56	99.18	99.08	99.04	99.21	99.21	98.97
12	289	3.04	3033	3000	99.76	99.65	99.52	99.31	99.20	99.24	99.03	99.00	98.93	99.03	98.69	99.00
13	290	3.02	3052	3000	99.97	99.86	99.90	99.55	99.24	99.41	99.48	99.62	99.24	99.24	99.21	99.14
14	295	2.98	3042	3000	99.93	99.36	99.39	99.80	99.36	99.39	99.19	99.19	99.22	99.19	99.15	99.22
15	298	2.97	3054	3000	99.76	99.46	99.70	99.46	99.09	98.89	99.29	99.40	99.09	98.82	98.89	98.86
16	281	2.94	3080	3000	99.96	99.82	99.93	99.64	99.64	99.75	99.89	99.75	99.50	99.47	99.22	99.11
17	279	2.93	3026	3000	100.04	99.78	99.78	99.39	99.25	99.57	99.39	99.64	99.32	99.39	99.61	99.50
18	289	3.02	2992	3000	100.03	99.86	99.31	99.10	98.96	99.45	99.27	99.27	99.06	99.24	98.89	99.06
19	296	2.94	3031	3000	99.86	99.53	99.56	99.29	98.99	99.22	98.95	98.75	98.38	98.48	98.68	98.68
20	291	2.93	3052	3000	100.00	99.90	99.83	99.35	99.14	99.00	98.83	98.63	98.42	98.80	98.97	98.49
21	282	3.02	3049	3000	100.07	100.00	99.68	99.82	99.33	99.15	98.90	99.15	99.11	98.87	98.90	99.01
22	289	2.94	3084	3000	99.69	99.45	99.69	99.62	99.69	99.55	99.52	99.52	99.62	99.34	99.38	99.55
23	289	3.03	3040	3000	100.14	99.76	99.41	99.48	99.03	99.27	98.82	99.07	98.89	98.86	98.79	99.17
24	293	3.02	3071	3000	99.83	99.73	99.38	99.32	99.15	99.42	98.97	98.91	99.01	99.04	98.77	99.25
25	275	2.95	3056	3000	99.93	99.75	99.64	99.75	99.56	99.31	99.20	98.80	98.76	98.80	98.94	99.05
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**290**	**2.97**			**99.93**	**99.73**	**99.60**	**99.43**	**99.28**	**99.31**	**99.14**	**99.07**	**98.88**	**98.90**	**98.79**	**98.88**
Median	291	2.97			99.96	99.76	99.64	99.45	99.24	99.29	99.05	99.07	98.94	98.87	98.85	98.97
σ	7	0.04			0.13	0.20	0.21	0.22	0.23	0.22	0.31	0.38	0.41	0.34	0.41	0.37
Min.	275	2.93			99.66	99.36	99.11	99.00	98.96	98.89	98.61	98.51	98.15	98.25	98.01	98.23
Max.	302	3.04			100.14	100.11	99.93	99.82	99.69	99.75	99.89	99.75	99.62	99.47	99.61	99.55

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
1	0.4315	0.4094	3142	3000	0.0002	0.0006	0.0006	0.0006	0.0004	0.0007	0.0007	0.0006	0.0008	0.0007	0.0004	0.0004
2	0.4352	0.4088	3073	3000	0.0003	0.0008	0.0008	0.0009	0.0009	0.0006	0.0007	0.0008	0.0008	0.0008	0.0007	0.0007
3	0.4299	0.4026	3117	3000	0.0003	0.0004	0.0003	0.0004	0.0004	0.0003	0.0001	0.0001	0.0003	0.0002	0.0001	0.0002
4	0.4323	0.4100	3133	3000	0.0005	0.0007	0.0008	0.0009	0.0008	0.0008	0.0011	0.0011	0.0011	0.0010	0.0008	0.0009
5	0.4366	0.4129	3082	3000	0.0003	0.0006	0.0008	0.0009	0.0006	0.0009	0.0009	0.0011	0.0011	0.0010	0.0008	0.0009
6	0.4350	0.4076	3067	3000	0.0002	0.0003	0.0006	0.0008	0.0006	0.0006	0.0006	0.0007	0.0008	0.0006	0.0005	0.0006
7	0.4350	0.4072	3064	3000	0.0004	0.0007	0.0008	0.0009	0.0008	0.0008	0.0009	0.0009	0.0010	0.0009	0.0008	0.0008
8	0.4351	0.4082	3070	3000	0.0004	0.0007	0.0007	0.0008	0.0005	0.0008	0.0008	0.0009	0.0009	0.0008	0.0005	0.0005
9	0.4350	0.4102	3088	3000	0.0006	0.0010	0.0011	0.0006	0.0007	0.0007	0.0008	0.0009	0.0007	0.0006	0.0005	0.0006
10	0.4357	0.4093	3068	3000	0.0005	0.0009	0.0008	0.0009	0.0006	0.0004	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
11	0.4424	0.4176	3022	3000	0.0008	0.0009	0.0009	0.0006	0.0008	0.0010	0.0009	0.0008	0.0007	0.0005	0.0006	0.0008
12	0.4407	0.4155	3033	3000	0.0009	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.0014	0.0012	0.0013	0.0012
13	0.4382	0.4126	3052	3000	0.0011	0.0015	0.0016	0.0015	0.0015	0.0016	0.0016	0.0015	0.0017	0.0016	0.0016	0.0016
14	0.4411	0.4175	3042	3000	0.0006	0.0009	0.0009	0.0009	0.0007	0.0009	0.0009	0.0008	0.0009	0.0007	0.0009	0.0010
15	0.4398	0.4162	3054	3000	0.0006	0.0009	0.0006	0.0007	0.0007	0.0007	0.0006	0.0006	0.0009	0.0008	0.0008	0.0008
16	0.4370	0.4136	3080	3000	0.0007	0.0011	0.0011	0.0010	0.0008	0.0009	0.0011	0.0010	0.0010	0.0012	0.0011	0.0012
17	0.4413	0.4159	3026	3000	0.0007	0.0011	0.0011	0.0011	0.0008	0.0010	0.0012	0.0010	0.0011	0.0008	0.0012	0.0011
18	0.4433	0.4157	2992	3000	0.0008	0.0012	0.0015	0.0014	0.0014	0.0015	0.0016	0.0015	0.0015	0.0014	0.0016	0.0015
19	0.4418	0.4175	3031	3000	0.0006	0.0009	0.0010	0.0009	0.0008	0.0008	0.0007	0.0008	0.0009	0.0008	0.0009	0.0010
20	0.4395	0.4154	3052	3000	0.0006	0.0009	0.0009	0.0006	0.0008	0.0009	0.0010	0.0009	0.0008	0.0008	0.0009	0.0009
21	0.4383	0.4124	3049	3000	0.0010	0.0014	0.0013	0.0010	0.0009	0.0012	0.0011	0.0011	0.0012	0.0009	0.0011	0.0012
22	0.4362	0.4124	3084	3000	0.0011	0.0014	0.0013	0.0011	0.0010	0.0013	0.0012	0.0011	0.0011	0.0010	0.0012	0.0012
23	0.4396	0.4141	3040	3000	0.0009	0.0014	0.0014	0.0012	0.0013	0.0014	0.0014	0.0013	0.0015	0.0015	0.0013	0.0015
24	0.4360	0.4103	3071	3000	0.0008	0.0011	0.0011	0.0011	0.0010	0.0012	0.0011	0.0011	0.0012	0.0007	0.0011	0.0012
25	0.4401	0.4172	3056	3000	0.0007	0.0008	0.0009	0.0006	0.0003	0.0007	0.0007	0.0006	0.0007	0.0007	0.0008	0.0008
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0006**	**0.0009**	**0.0010**	**0.0009**	**0.0008**	**0.0009**	**0.0009**	**0.0009**	**0.0010**	**0.0009**	**0.0009**	**0.0009**
Median					0.0006	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	0.0009	0.0008	0.0008	0.0009
σ					0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0003
Min.					0.0002	0.0003	0.0003	0.0004	0.0003	0.0003	0.0001	0.0001	0.0003	0.0002	0.0001	0.0002
Max.					0.0011	0.0015	0.0016	0.0015	0.0015	0.0016	0.0016	0.0015	0.0017	0.0016	0.0016	0.0016

1122

DATA SET 6: 85°C; 700 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)											
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	300	2.95	3142	3000	98.23	98.07	98.10	98.00	97.70	97.73	97.87	98.07	98.33	97.83	98.00	98.00
2	291	3.00	3073	3000	98.66	98.73	98.73	98.46	98.66	98.28	97.84	97.67	98.70	98.01	98.49	98.66
3	286	2.94	3117	3000	98.08	98.18	98.32	98.32	98.64	98.29	98.53	97.80	98.22	98.04	98.53	98.36
4	294	2.95	3133	3000	97.96	98.26	97.99	98.37	98.23	97.68	98.09	97.99	97.99	97.55	97.58	97.89
5	281	2.96	3082	3000	98.86	98.72	98.72	98.65	98.82	98.50	98.61	98.72	99.00	98.47	98.65	99.11
6	297	2.97	3067	3000	98.75	98.92	98.96	98.35	98.92	98.69	99.09	98.69	98.85	98.25	98.18	98.75
7	291	2.95	3064	3000	97.87	97.94	97.94	97.70	97.63	97.35	97.59	97.11	97.80	96.97	97.42	97.83
8	287	2.97	3070	3000	99.58	99.23	98.95	99.37	99.27	98.95	98.95	99.37	99.51	99.27	99.27	99.69
9	302	2.97	3088	3000	97.58	97.78	97.62	97.55	97.65	97.85	97.75	97.09	97.81	97.62	97.19	97.48
10	295	3.03	3068	3000	99.12	98.92	98.78	98.85	99.02	97.46	98.65	98.24	98.82	98.61	98.51	98.88
11	292	2.93	3022	3000	99.11	99.01	99.08	98.80	99.01	98.73	98.43	98.80	99.08	99.32	98.70	98.77
12	289	3.04	3033	3000	98.72	98.89	98.65	98.89	99.10	99.20	98.51	98.69	99.03	98.89	98.76	98.72
13	290	3.02	3052	3000	99.00	98.86	98.96	99.10	99.27	99.55	99.24	98.45	99.38	99.14	99.41	99.72
14	295	2.98	3042	3000	98.75	98.68	98.82	98.65	98.58	98.65	99.02	98.54	98.92	99.12	98.68	99.05
15	298	2.97	3054	3000	98.66	98.93	98.96	98.99	98.82	98.19	98.09	98.15	98.69	98.32	98.72	99.19
16	281	2.94	3080	3000	98.93	99.36	98.93	99.14	99.43	99.79	99.25	99.07	99.18	99.75	99.50	99.32
17	279	2.93	3026	3000	100.11	99.68	99.25	99.89	99.32	100.00	99.78	99.82	100.04	100.04	99.93	99.68
18	289	3.02	2992	3000	99.06	98.82	99.10	99.13	99.31	98.51	98.55	98.93	99.17	98.41	98.30	98.89
19	296	2.94	3031	3000	98.38	98.55	98.48	98.61	98.34	98.44	98.61	98.17	98.51	98.34	97.84	97.77
20	291	2.93	3052	3000	98.90	98.80	98.35	98.28	97.97	97.63	97.77	97.90	98.49	99.14	98.52	99.00
21	282	3.02	3049	3000	98.55	98.72	98.48	98.94	99.01	98.48	98.48	98.16	98.87	98.65	98.09	97.94
22	289	2.94	3084	3000	99.27	99.10	98.89	99.03	99.00	98.72	98.89	98.48	99.24	99.17	98.55	98.93
23	289	3.03	3040	3000	99.31	99.07	99.38	98.89	99.17	98.48	98.44	98.03	98.51	98.00	97.75	98.31
24	293	3.02	3071	3000	98.80	99.08	98.84	99.38	98.74	98.50	98.22	98.22	98.63	98.43	98.53	98.32
25	275	2.95	3056	3000	98.80	99.02	99.20	98.94	98.87	99.02	98.58	98.73	98.94	98.58	98.94	98.73
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**290**	**2.97**			**98.76**	**98.77**	**98.70**	**98.73**	**98.74**	**98.51**	**98.51**	**98.36**	**98.79**	**98.56**	**98.48**	**98.68**
Median	291	2.97			98.80	98.86	98.82	98.85	98.87	98.50	98.53	98.24	98.85	98.47	98.53	98.75
σ	7	0.04			0.55	0.44	0.44	0.53	0.54	0.68	0.54	0.62	0.52	0.71	0.65	0.62
Min.	275	2.93			97.58	97.78	97.62	97.55	97.63	97.35	97.59	97.09	97.80	96.97	97.19	97.48
Max.	302	3.04			100.11	99.68	99.38	99.89	99.43	100.00	99.78	99.82	100.04	100.04	99.93	99.72

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')											
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	0.4315	0.4094	3142	3000	0.0009	0.0009	0.0007	0.0007	0.0006	0.0008	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007
2	0.4352	0.4088	3073	3000	0.0008	0.0008	0.0007	0.0008	0.0007	0.0007	0.0007	0.0008	0.0007	0.0008	0.0008	0.0008
3	0.4299	0.4026	3117	3000	0.0004	0.0003	0.0000	0.0003	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0006	0.0005
4	0.4323	0.4100	3133	3000	0.0012	0.0011	0.0008	0.0009	0.0010	0.0009	0.0010	0.0009	0.0007	0.0009	0.0009	0.0009
5	0.4366	0.4129	3082	3000	0.0010	0.0009	0.0009	0.0008	0.0010	0.0010	0.0008	0.0009	0.0008	0.0007	0.0008	0.0009
6	0.4350	0.4076	3067	3000	0.0007	0.0006	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008
7	0.4350	0.4072	3064	3000	0.0009	0.0008	0.0008	0.0007	0.0007	0.0007	0.0007	0.0008	0.0006	0.0007	0.0007	0.0007
8	0.4351	0.4082	3070	3000	0.0008	0.0007	0.0007	0.0008	0.0007	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007
9	0.4350	0.4102	3088	3000	0.0006	0.0005	0.0006	0.0007	0.0008	0.0008	0.0007	0.0009	0.0008	0.0009	0.0009	0.0009
10	0.4357	0.4093	3068	3000	0.0009	0.0007	0.0006	0.0008	0.0007	0.0007	0.0007	0.0009	0.0008	0.0008	0.0009	0.0009
11	0.4424	0.4176	3022	3000	0.0006	0.0007	0.0006	0.0007	0.0007	0.0007	0.0008	0.0007	0.0007	0.0006	0.0008	0.0006
12	0.4407	0.4155	3033	3000	0.0010	0.0013	0.0009	0.0011	0.0013	0.0012	0.0013	0.0012	0.0012	0.0012	0.0012	0.0014
13	0.4382	0.4126	3052	3000	0.0014	0.0017	0.0015	0.0018	0.0017	0.0017	0.0017	0.0015	0.0017	0.0018	0.0016	0.0017
14	0.4411	0.4175	3042	3000	0.0007	0.0010	0.0009	0.0010	0.0009	0.0010	0.0010	0.0011	0.0010	0.0010	0.0009	0.0009
15	0.4398	0.4162	3054	3000	0.0008	0.0009	0.0009	0.0009	0.0007	0.0006	0.0008	0.0008	0.0006	0.0007	0.0007	0.0007
16	0.4370	0.4136	3080	3000	0.0011	0.0012	0.0011	0.0010	0.0011	0.0012	0.0011	0.0010	0.0009	0.0012	0.0011	0.0010
17	0.4413	0.4159	3026	3000	0.0011	0.0012	0.0011	0.0014	0.0013	0.0011	0.0013	0.0013	0.0012	0.0011	0.0011	0.0012
18	0.4433	0.4157	2992	3000	0.0016	0.0016	0.0015	0.0014	0.0015	0.0015	0.0016	0.0016	0.0014	0.0015	0.0014	0.0014
19	0.4418	0.4175	3031	3000	0.0006	0.0008	0.0008	0.0010	0.0008	0.0009	0.0010	0.0009	0.0007	0.0009	0.0009	0.0007
20	0.4395	0.4154	3052	3000	0.0008	0.0010	0.0009	0.0011	0.0008	0.0008	0.0011	0.0008	0.0009	0.0009	0.0010	0.0009
21	0.4383	0.4124	3049	3000	0.0009	0.0011	0.0008	0.0011	0.0011	0.0010	0.0011	0.0012	0.0009	0.0011	0.0009	0.0007
22	0.4362	0.4124	3084	3000	0.0012	0.0012	0.0012	0.0013	0.0010	0.0008	0.0013	0.0013	0.0011	0.0011	0.0010	0.0011
23	0.4396	0.4141	3040	3000	0.0013	0.0016	0.0013	0.0015	0.0015	0.0015	0.0014	0.0013	0.0010	0.0013	0.0013	0.0013
24	0.4360	0.4103	3071	3000	0.0012	0.0013	0.0010	0.0013	0.0012	0.0010	0.0012	0.0011	0.0011	0.0010	0.0011	0.0011
25	0.4401	0.4172	3056	3000	0.0006	0.0008	0.0008	0.0007	0.0008	0.0008	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0009**	**0.0010**	**0.0009**	**0.0010**	**0.0009**	**0.0009**	**0.0010**	**0.0010**	**0.0009**	**0.0009**	**0.0009**	**0.0009**
Median					0.0009	0.0009	0.0008	0.0009	0.0008	0.0008	0.0010	0.0009	0.0008	0.0009	0.0009	0.0009
σ					0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0003
Min.					0.0004	0.0003	0.0000	0.0003	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0006	0.0005
Max.					0.0016	0.0017	0.0015	0.0018	0.0017	0.0017	0.0017	0.0016	0.0017	0.0018	0.0016	0.0017

1123

DATA SET 6: 85°C; 700 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)			
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	12600	13104	13608	14112
1	300	2.95	3142	3000	98.20	97.57	97.43	98.03
2	291	3.00	3073	3000	98.42	98.18	98.49	98.59
3	286	2.94	3117	3000	98.50	98.04	98.22	98.08
4	294	2.95	3133	3000	97.82	97.75	97.72	98.13
5	281	2.96	3082	3000	99.18	98.40	98.72	98.86
6	297	2.97	3067	3000	98.01	97.94	98.05	98.62
7	291	2.95	3064	3000	97.66	97.08	97.04	97.70
8	287	2.97	3070	3000	99.69	99.34	99.72	99.69
9	302	2.97	3088	3000	97.28	97.28	97.32	97.72
10	295	3.03	3068	3000	98.95	98.34	98.95	98.48
11	292	2.93	3022	3000	98.84	98.80	98.67	98.39
12	289	3.04	3033	3000	99.03	98.79	99.14	98.58
13	290	3.02	3052	3000	99.62	99.86	99.27	99.41
14	295	2.98	3042	3000	99.59	99.29	98.88	99.15
15	298	2.97	3054	3000	99.09	99.43	98.79	98.86
16	281	2.94	3080	3000	99.86	99.61	99.36	99.71
17	279	2.93	3026	3000	99.86	100.11	99.93	99.96
18	289	3.02	2992	3000	98.93	98.96	99.03	98.93
19	296	2.94	3031	3000	97.77	97.90	97.80	98.01
20	291	2.93	3052	3000	98.73	99.31	98.87	98.94
21	282	3.02	3049	3000	98.16	97.80	98.51	98.23
22	289	2.94	3084	3000	99.10	98.69	98.76	98.82
23	289	3.03	3040	3000	98.51	98.65	98.00	98.38
24	293	3.02	3071	3000	98.36	98.80	98.46	98.43
25	275	2.95	3056	3000	98.76	98.73	98.25	98.25
n	25	25	25	25	25	25	25	25
Mean	**290**	**2.97**			**98.72**	**98.59**	**98.54**	**98.64**
Median	291	2.97			98.76	98.69	98.67	98.58
σ	7	0.04			0.71	0.80	0.72	0.60
Min.	275	2.93			97.28	97.08	97.04	97.70
Max.	302	3.04			99.86	100.11	99.93	99.96

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')			
	CCx	CCy	Calc. CCT	ANSI Target	12600	13104	13608	14112
1	0.4315	0.4094	3142	3000	0.0006	0.0006	0.0006	0.0007
2	0.4352	0.4088	3073	3000	0.0007	0.0007	0.0007	0.0007
3	0.4299	0.4026	3117	3000	0.0010	0.0006	0.0008	0.0007
4	0.4323	0.4100	3133	3000	0.0008	0.0008	0.0007	0.0009
5	0.4366	0.4129	3082	3000	0.0007	0.0008	0.0008	0.0009
6	0.4350	0.4076	3067	3000	0.0009	0.0009	0.0008	0.0009
7	0.4350	0.4072	3064	3000	0.0006	0.0006	0.0006	0.0007
8	0.4351	0.4082	3070	3000	0.0006	0.0008	0.0008	0.0008
9	0.4350	0.4102	3088	3000	0.0010	0.0009	0.0010	0.0010
10	0.4357	0.4093	3068	3000	0.0008	0.0008	0.0009	0.0010
11	0.4424	0.4176	3022	3000	0.0008	0.0007	0.0007	0.0008
12	0.4407	0.4155	3033	3000	0.0013	0.0013	0.0013	0.0013
13	0.4382	0.4126	3052	3000	0.0014	0.0017	0.0014	0.0016
14	0.4411	0.4175	3042	3000	0.0010	0.0010	0.0011	0.0009
15	0.4398	0.4162	3054	3000	0.0007	0.0008	0.0013	0.0007
16	0.4370	0.4136	3080	3000	0.0011	0.0011	0.0013	0.0012
17	0.4413	0.4159	3026	3000	0.0012	0.0013	0.0011	0.0013
18	0.4433	0.4157	2992	3000	0.0016	0.0016	0.0016	0.0016
19	0.4418	0.4175	3031	3000	0.0010	0.0009	0.0009	0.0009
20	0.4395	0.4154	3052	3000	0.0010	0.0010	0.0010	0.0011
21	0.4383	0.4124	3049	3000	0.0011	0.0012	0.0012	0.0012
22	0.4362	0.4124	3084	3000	0.0011	0.0013	0.0011	0.0013
23	0.4396	0.4141	3040	3000	0.0015	0.0014	0.0013	0.0014
24	0.4360	0.4103	3071	3000	0.0010	0.0011	0.0011	0.0012
25	0.4401	0.4172	3056	3000	0.0009	0.0009	0.0009	0.0008
n	25	25	25	25	25	25	25	25
Mean					**0.0010**	**0.0010**	**0.0010**	**0.0010**
Median					0.0010	0.0009	0.0010	0.0009
σ					0.0003	0.0003	0.0003	0.0003
Min.					0.0006	0.0006	0.0006	0.0007
Max.					0.0016	0.0017	0.0016	0.0016

1124

DATA SET 7: 105°C; 700 mA

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	700 mA
Testing Initiation Date	November 2, 2015
Case Temperature [T_S]	105°C
Ambient Temperature [T_A]	105°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	99.26%	0.0005	-0.1	N/R
1008	98.71%	0.0008	-0.2	N/R
1512	98.56%	0.0008	-0.1	N/R
2016	98.27%	0.0008	-0.2	N/R
2520	98.05%	0.0007	-0.1	N/R
3024	97.94%	0.0008	-0.2	N/R
3528	97.65%	0.0007	-0.1	N/R
4032	97.47%	0.0008	-0.2	N/R
4536	97.36%	0.0008	-0.2	N/R
5040	97.32%	0.0006	-0.2	N/R
5544	97.05%	0.0006	-0.2	N/R
6048	97.14%	0.0006	-0.2	N/R
6552	96.94%	0.0007	-0.2	N/R
7056	96.91%	0.0007	-0.2	N/R
7560	96.67%	0.0007	-0.2	N/R
8064	96.74%	0.0007	-0.2	N/R
8568	96.63%	0.0007	-0.2	N/R
9072	96.52%	0.0008	-0.3	N/R
9576	96.38%	0.0008	-0.3	N/R
10080	96.36%	0.0009	-0.2	N/R
10584	96.50%	0.0009	-0.2	-1.1%
11088	96.64%	0.0010	-0.2	-1.0%
11592	96.51%	0.0010	-0.3	-0.5%
12096	96.68%	0.0010	-0.3	-0.4%
12600	96.71%	0.0010	-0.3	-0.7%

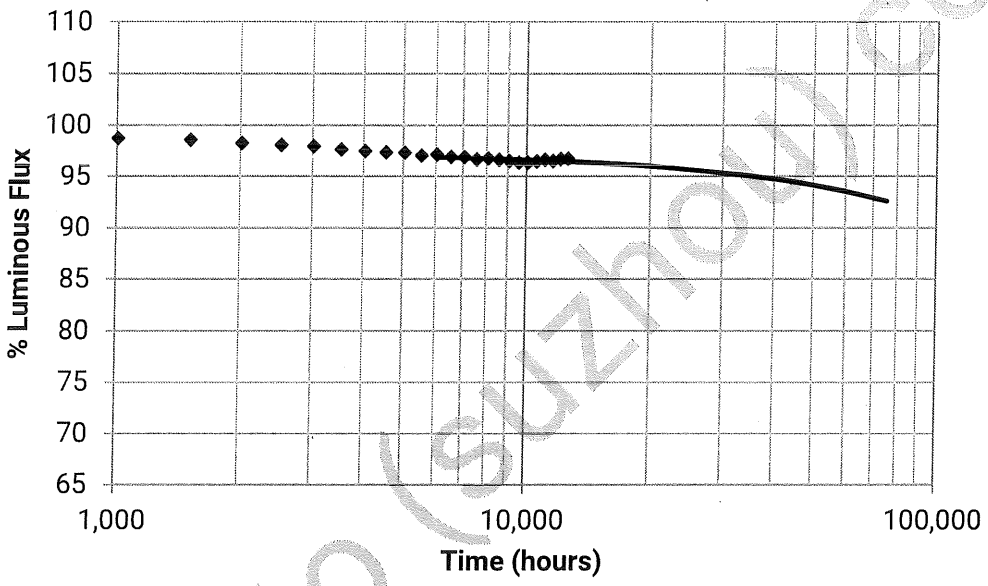
Note: "N/R" indicates data points that are not reported

1125

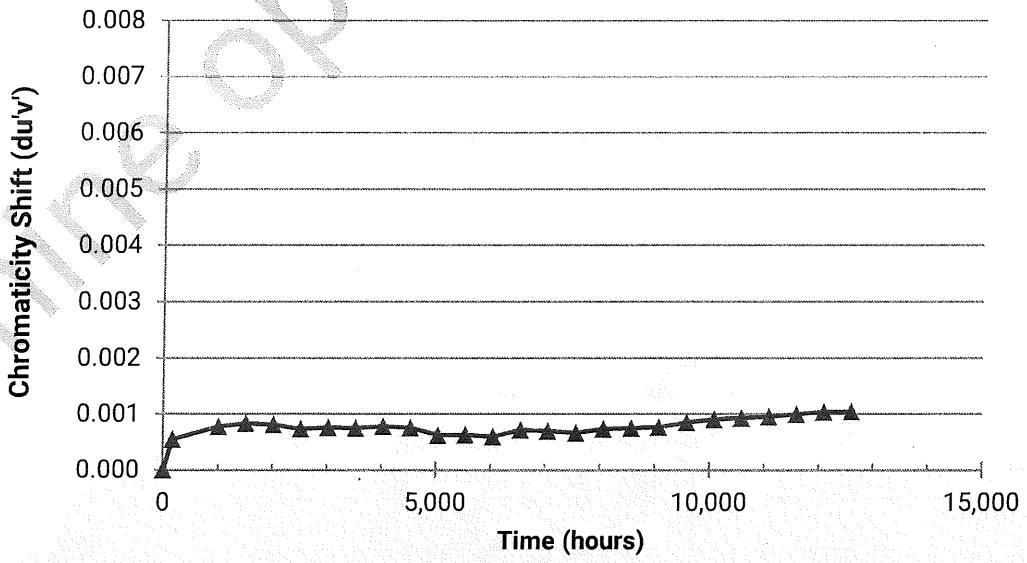
DATA SET 7: 105°C; 700 mA

TM-21 Projection from Cree's Internal Calculator

Test duration	12,600 hours
Test duration used for projection	t=6,048 to t=12,600
α	6.492E-07
β	9.725E-01
Reported Lifetimes	**L90(13k) > 75,600 hours**
	L80(13k) > 75,600 hours
	L70(13k) > 75,600 hours



Color Shift Graph



1126

DATA SET 7: 105°C; 700 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	295	2.92	3082	3000	99.56	98.92	98.78	98.41	98.34	98.48	98.07	97.83	97.93	98.00	97.53	96.68
2	295	3.02	3019	3000	99.36	98.88	97.83	97.73	97.45	97.69	96.84	97.11	97.08	96.78	96.78	97.35
3	295	2.96	3007	3000	98.98	98.88	98.54	98.41	98.07	97.22	96.64	97.08	97.19	96.78	96.78	96.68
4	286	2.93	3057	3000	99.51	99.06	98.85	98.64	98.15	98.25	97.94	97.80	97.31	97.27	97.41	97.34
5	276	2.95	3068	3000	99.49	98.55	98.91	98.44	97.86	97.76	97.18	96.92	97.39	97.07	96.74	96.89
6	285	3.02	3029	3000	99.44	98.25	98.18	97.86	97.27	97.72	97.16	97.44	97.05	96.74	96.35	96.46
7	297	2.98	3060	3000	99.43	98.99	98.69	98.21	98.55	98.62	98.48	98.45	98.21	97.74	97.78	97.91
8	285	3.02	3087	3000	98.77	98.07	97.72	97.41	97.34	96.92	96.74	96.74	96.60	96.88	96.28	95.97
9	291	3.02	3031	3000	99.38	98.62	98.32	97.83	97.77	98.14	97.87	97.22	96.91	96.97	96.53	97.01
10	292	2.95	3044	3000	99.49	99.35	99.15	98.63	97.91	98.02	97.88	97.44	97.30	97.47	97.26	96.89
11	297	2.95	3106	3000	99.23	98.55	98.62	98.48	98.18	97.68	97.54	97.47	97.41	97.14	96.84	96.77
12	288	3.00	3027	3000	98.68	98.44	97.88	97.53	97.36	97.67	97.64	97.36	97.36	97.84	97.50	97.39
13	282	2.93	3059	3000	99.04	98.76	98.79	99.08	98.97	98.69	98.51	98.05	97.51	96.98	96.66	96.70
14	293	2.95	3114	3000	99.28	98.43	98.05	97.64	97.57	97.40	97.03	96.79	96.55	96.89	96.55	97.06
15	280	2.97	3138	3000	99.32	99.18	98.96	99.00	98.79	98.14	98.07	98.00	97.93	97.71	97.89	97.89
16	297	2.97	3093	3000	99.43	98.79	98.82	98.49	97.95	97.95	98.12	97.75	97.34	97.71	97.21	97.58
17	290	2.94	3099	3000	98.83	98.55	98.24	97.76	97.73	97.35	96.90	96.49	96.52	96.59	96.28	96.59
18	287	2.97	3079	3000	99.55	99.34	99.02	98.74	98.39	98.50	98.57	98.33	98.33	98.33	97.91	97.91
19	302	2.97	3088	3000	99.20	99.04	99.01	98.61	98.18	98.01	97.45	97.85	97.42	97.51	97.25	97.71
20	296	3.03	3061	3000	99.19	98.65	98.99	98.34	98.21	97.90	98.24	97.60	97.60	97.60	97.70	97.77
21	294	2.92	3096	3000	99.12	98.23	97.82	97.55	97.65	97.38	97.24	96.73	97.14	97.45	96.67	96.43
22	293	3.02	3045	3000	98.87	98.19	98.26	97.85	97.81	97.95	97.27	97.13	97.13	96.89	96.55	96.96
23	296	2.98	3096	3000	99.53	98.38	98.71	98.31	97.90	97.77	97.23	97.09	97.16	97.36	96.65	96.92
24	283	2.93	3026	3000	99.61	99.01	98.80	98.90	98.94	98.66	98.66	98.20	98.30	97.91	97.77	98.06
25	276	2.95	3046	3000	99.24	98.66	99.13	98.95	98.81	98.66	98.01	97.90	97.39	97.39	97.43	97.61
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**290**	**2.97**			**99.26**	**98.71**	**98.56**	**98.27**	**98.05**	**97.94**	**97.65**	**97.47**	**97.36**	**97.32**	**97.05**	**97.14**
Median	292	2.97			99.32	98.66	98.71	98.41	97.95	97.95	97.64	97.44	97.34	97.36	96.84	97.01
σ	7	0.04			0.27	0.35	0.45	0.50	0.50	0.49	0.61	0.54	0.49	0.46	0.54	0.56
Min.	276	2.92			98.68	98.07	97.72	97.41	97.27	96.92	96.64	96.49	96.52	96.59	96.28	95.97
Max.	302	3.03			99.61	99.35	99.15	99.08	98.97	98.69	98.66	98.45	98.33	98.33	97.91	98.06

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
1	0.4370	0.4138	3082	3000	0.0006	0.0006	0.0007	0.0007	0.0006	0.0006	0.0005	0.0004	0.0006	0.0005	0.0008	0.0002
2	0.4423	0.4171	3019	3000	0.0004	0.0006	0.0008	0.0010	0.0010	0.0012	0.0009	0.0011	0.0010	0.0009	0.0010	0.0009
3	0.4430	0.4170	3007	3000	0.0006	0.0008	0.0008	0.0007	0.0009	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0007
4	0.4401	0.4173	3057	3000	0.0007	0.0008	0.0010	0.0010	0.0010	0.0010	0.0010	0.0011	0.0010	0.0010	0.0008	0.0007
5	0.4372	0.4125	3068	3000	0.0007	0.0008	0.0010	0.0009	0.0010	0.0012	0.0013	0.0010	0.0011	0.0009	0.0010	0.0011
6	0.4397	0.4128	3029	3000	0.0009	0.0011	0.0010	0.0011	0.0010	0.0012	0.0010	0.0012	0.0011	0.0011	0.0009	0.0009
7	0.4387	0.4147	3060	3000	0.0008	0.0009	0.0010	0.0010	0.0008	0.0010	0.0009	0.0009	0.0008	0.0007	0.0008	0.0008
8	0.4354	0.4110	3087	3000	0.0008	0.0007	0.0010	0.0008	0.0010	0.0009	0.0010	0.0011	0.0011	0.0009	0.0007	0.0007
9	0.4405	0.4148	3031	3000	0.0006	0.0009	0.0010	0.0010	0.0008	0.0010	0.0010	0.0009	0.0008	0.0009	0.0007	0.0007
10	0.4399	0.4152	3044	3000	0.0006	0.0006	0.0010	0.0009	0.0008	0.0009	0.0009	0.0010	0.0008	0.0008	0.0008	0.0010
11	0.4361	0.4150	3106	3000	0.0005	0.0007	0.0007	0.0006	0.0004	0.0002	0.0004	0.0006	0.0005	0.0002	0.0004	0.0003
12	0.4382	0.4094	3027	3000	0.0006	0.0007	0.0007	0.0007	0.0006	0.0004	0.0005	0.0006	0.0006	0.0004	0.0006	0.0006
13	0.4352	0.4071	3059	3000	0.0003	0.0007	0.0006	0.0007	0.0005	0.0003	0.0004	0.0005	0.0005	0.0003	0.0003	0.0002
14	0.4342	0.4118	3114	3000	0.0005	0.0008	0.0008	0.0008	0.0006	0.0005	0.0007	0.0006	0.0006	0.0005	0.0006	0.0005
15	0.4308	0.4073	3138	3000	0.0005	0.0009	0.0010	0.0007	0.0007	0.0006	0.0007	0.0008	0.0008	0.0003	0.0004	0.0003
16	0.4340	0.4087	3093	3000	0.0003	0.0010	0.0009	0.0009	0.0007	0.0007	0.0007	0.0008	0.0007	0.0006	0.0007	0.0006
17	0.4320	0.4050	3099	3000	0.0004	0.0008	0.0008	0.0008	0.0007	0.0009	0.0007	0.0005	0.0005	0.0004	0.0004	0.0004
18	0.4358	0.4108	3079	3000	0.0006	0.0008	0.0007	0.0008	0.0006	0.0005	0.0006	0.0007	0.0007	0.0005	0.0006	0.0006
19	0.4347	0.4096	3088	3000	0.0004	0.0007	0.0008	0.0007	0.0006	0.0005	0.0005	0.0007	0.0006	0.0004	0.0006	0.0006
20	0.4352	0.4073	3061	3000	0.0006	0.0008	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0005	0.0003	0.0003	0.0003
21	0.4360	0.4135	3096	3000	0.0001	0.0006	0.0007	0.0007	0.0006	0.0007	0.0006	0.0007	0.0005	0.0004	0.0004	0.0005
22	0.4380	0.4113	3045	3000	0.0004	0.0008	0.0008	0.0009	0.0010	0.0009	0.0009	0.0010	0.0010	0.0007	0.0004	0.0006
23	0.4369	0.4154	3096	3000	0.0006	0.0009	0.0009	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0008	0.0006	0.0008
24	0.4420	0.4173	3026	3000	0.0005	0.0008	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	0.0008	0.0007	0.0006	0.0005
25	0.4407	0.4171	3046	3000	0.0007	0.0008	0.0009	0.0007	0.0006	0.0008	0.0008	0.0007	0.0008	0.0007	0.0007	0.0009
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0005**	**0.0008**	**0.0008**	**0.0008**	**0.0007**	**0.0008**	**0.0007**	**0.0008**	**0.0008**	**0.0006**	**0.0006**	**0.0006**
Median					0.0006	0.0008	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	0.0008	0.0007	0.0006	0.0006
σ					0.0002	0.0001	0.0001	0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.					0.0001	0.0006	0.0006	0.0006	0.0004	0.0002	0.0004	0.0004	0.0005	0.0002	0.0003	0.0002
Max.					0.0009	0.0011	0.0010	0.0011	0.0010	0.0012	0.0013	0.0012	0.0011	0.0011	0.0010	0.0011

1127

DATA SET 7: 105°C; 700 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)											
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	295	2.92	3082	3000	96.99	96.44	96.48	96.41	96.65	96.17	96.44	96.54	96.14	95.90	95.73	95.83
2	295	3.02	3019	3000	97.05	97.32	96.44	97.11	96.61	96.37	96.61	95.89	95.82	95.82	95.62	95.69
3	295	2.96	3007	3000	97.19	96.54	96.13	96.44	95.93	95.29	94.88	95.76	95.35	95.15	95.08	95.18
4	286	2.93	3057	3000	97.38	97.52	97.27	97.66	97.03	97.76	97.76	97.13	96.85	97.97	98.04	98.22
5	276	2.95	3068	3000	96.63	96.09	96.31	96.16	96.60	96.13	96.05	96.38	96.92	96.09	95.62	96.42
6	285	3.02	3029	3000	96.98	97.19	96.39	96.91	96.39	96.60	96.53	96.00	96.28	96.67	96.56	96.63
7	297	2.98	3060	3000	97.78	97.91	97.74	97.91	97.74	97.88	98.05	97.51	97.27	98.01	98.15	98.18
8	285	3.02	3087	3000	96.95	96.57	95.58	96.00	95.62	95.58	95.69	95.27	95.58	95.13	95.44	95.69
9	291	3.02	3031	3000	97.52	97.22	96.97	97.04	96.84	97.22	96.97	96.18	96.46	97.18	96.70	97.15
10	292	2.95	3044	3000	96.58	96.41	96.37	96.51	96.96	96.24	96.34	96.51	96.79	96.27	96.34	96.44
11	297	2.95	3106	3000	96.30	95.96	95.89	96.36	96.63	96.03	95.66	95.62	96.50	96.77	96.40	96.46
12	288	3.00	3027	3000	97.08	96.84	96.80	97.22	96.28	96.42	96.52	96.11	96.56	96.77	96.49	96.94
13	282	2.93	3059	3000	96.24	96.56	95.92	95.92	95.56	95.56	95.67	95.95	96.38	97.09	96.66	96.77
14	293	2.95	3114	3000	96.55	96.21	96.55	96.75	97.10	96.14	96.34	95.63	95.76	95.66	95.32	95.18
15	280	2.97	3138	3000	97.07	97.28	96.71	97.28	97.07	96.32	95.96	96.57	96.93	97.18	96.89	96.78
16	297	2.97	3093	3000	97.14	97.21	97.34	96.84	96.91	97.07	96.94	97.28	97.65	97.65	97.68	97.95
17	290	2.94	3099	3000	96.07	96.45	96.63	95.97	95.90	96.38	96.35	96.14	96.56	97.00	96.80	97.00
18	287	2.97	3079	3000	97.56	97.94	97.42	98.01	98.05	98.12	97.49	98.01	98.33	98.22	97.98	98.12
19	302	2.97	3088	3000	97.05	97.12	97.51	96.52	97.02	97.38	97.22	97.18	97.45	97.65	97.48	97.88
20	296	3.03	3061	3000	96.85	97.53	97.16	97.23	97.06	96.96	96.41	96.75	96.82	96.92	96.62	96.96
21	294	2.92	3096	3000	96.80	96.56	96.43	95.92	96.05	95.78	95.17	95.54	95.68	95.65	95.75	95.68
22	293	3.02	3045	3000	96.04	96.48	95.70	95.70	95.49	95.94	95.87	95.70	95.53	95.66	95.83	96.04
23	296	2.98	3096	3000	96.75	96.55	96.28	95.77	95.57	95.23	94.96	95.77	95.60	95.84	95.91	96.04
24	283	2.93	3026	3000	97.56	97.81	97.91	97.95	97.63	97.99	97.81	97.31	97.24	98.20	98.06	98.20
25	276	2.95	3046	3000	97.32	97.03	96.74	96.92	97.03	96.38	95.73	96.38	96.02	95.44	95.66	95.69
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**290**	**2.97**			**96.94**	**96.91**	**96.67**	**96.74**	**96.63**	**96.52**	**96.38**	**96.36**	**96.50**	**96.64**	**96.51**	**96.68**
Median	292	2.97			96.99	96.84	96.55	96.75	96.65	96.37	96.35	96.18	96.50	96.77	96.49	96.63
σ	7	0.04			0.47	0.57	0.62	0.70	0.70	0.83	0.86	0.71	0.75	0.97	0.94	0.97
Min.	276	2.92			96.04	95.96	95.58	95.70	95.49	95.23	94.88	95.27	95.35	95.13	95.08	95.18
Max.	302	3.03			97.78	97.94	97.91	98.01	98.05	98.12	98.05	98.01	98.33	98.22	98.15	98.22

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')											
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	0.4370	0.4138	3082	3000	0.0006	0.0006	0.0007	0.0007	0.0008	0.0007	0.0008	0.0010	0.0009	0.0008	0.0009	0.0009
2	0.4423	0.4171	3019	3000	0.0012	0.0011	0.0011	0.0012	0.0010	0.0010	0.0012	0.0011	0.0011	0.0013	0.0013	0.0012
3	0.4430	0.4170	3007	3000	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010
4	0.4401	0.4173	3057	3000	0.0010	0.0011	0.0011	0.0012	0.0012	0.0010	0.0011	0.0013	0.0011	0.0013	0.0014	0.0014
5	0.4372	0.4125	3068	3000	0.0011	0.0012	0.0010	0.0011	0.0012	0.0013	0.0013	0.0012	0.0013	0.0013	0.0013	0.0013
6	0.4397	0.4128	3029	3000	0.0012	0.0013	0.0012	0.0013	0.0013	0.0012	0.0013	0.0013	0.0013	0.0015	0.0015	0.0015
7	0.4387	0.4147	3060	3000	0.0008	0.0008	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012
8	0.4354	0.4110	3087	3000	0.0012	0.0011	0.0011	0.0010	0.0012	0.0011	0.0012	0.0011	0.0011	0.0013	0.0012	0.0013
9	0.4405	0.4148	3031	3000	0.0011	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0012	0.0012	0.0012	0.0013
10	0.4399	0.4152	3044	3000	0.0008	0.0009	0.0008	0.0011	0.0009	0.0010	0.0010	0.0012	0.0011	0.0011	0.0012	0.0012
11	0.4361	0.4150	3106	3000	0.0002	0.0002	0.0003	0.0004	0.0005	0.0004	0.0005	0.0004	0.0005	0.0007	0.0006	0.0006
12	0.4382	0.4094	3027	3000	0.0005	0.0005	0.0005	0.0007	0.0005	0.0006	0.0006	0.0005	0.0006	0.0005	0.0006	0.0007
13	0.4352	0.4071	3059	3000	0.0003	0.0004	0.0004	0.0005	0.0006	0.0006	0.0005	0.0006	0.0008	0.0007	0.0008	0.0009
14	0.4342	0.4118	3114	3000	0.0005	0.0003	0.0003	0.0005	0.0006	0.0007	0.0008	0.0010	0.0012	0.0011	0.0009	0.0010
15	0.4308	0.4073	3138	3000	0.0003	0.0002	0.0005	0.0005	0.0005	0.0007	0.0006	0.0007	0.0006	0.0007	0.0007	0.0008
16	0.4340	0.4087	3093	3000	0.0007	0.0006	0.0007	0.0005	0.0005	0.0004	0.0008	0.0007	0.0008	0.0008	0.0010	0.0009
17	0.4320	0.4050	3099	3000	0.0003	0.0004	0.0004	0.0003	0.0003	0.0003	0.0007	0.0007	0.0007	0.0008	0.0008	0.0009
18	0.4358	0.4108	3079	3000	0.0005	0.0006	0.0005	0.0004	0.0006	0.0008	0.0008	0.0009	0.0009	0.0011	0.0010	0.0011
19	0.4347	0.4096	3088	3000	0.0006	0.0005	0.0006	0.0004	0.0004	0.0005	0.0008	0.0007	0.0008	0.0009	0.0009	0.0010
20	0.4352	0.4073	3061	3000	0.0005	0.0004	0.0003	0.0003	0.0003	0.0003	0.0005	0.0006	0.0007	0.0007	0.0009	0.0009
21	0.4360	0.4135	3096	3000	0.0006	0.0006	0.0006	0.0007	0.0008	0.0008	0.0008	0.0009	0.0011	0.0009	0.0009	0.0010
22	0.4380	0.4113	3045	3000	0.0009	0.0009	0.0005	0.0008	0.0008	0.0008	0.0009	0.0010	0.0009	0.0009	0.0010	0.0009
23	0.4369	0.4154	3096	3000	0.0008	0.0009	0.0007	0.0009	0.0006	0.0008	0.0008	0.0009	0.0010	0.0009	0.0011	0.0011
24	0.4420	0.4173	3026	3000	0.0009	0.0009	0.0007	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010	0.0011
25	0.4407	0.4171	3046	3000	0.0008	0.0005	0.0004	0.0006	0.0007	0.0006	0.0005	0.0008	0.0008	0.0007	0.0008	0.0008
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0008**	**0.0008**	**0.0009**	**0.0009**	**0.0010**	**0.0010**	**0.0010**
Median					0.0007	0.0006	0.0007	0.0007	0.0007	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010
σ					0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002
Min.					0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0005	0.0004	0.0005	0.0005	0.0006	0.0006
Max.					0.0012	0.0013	0.0012	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0015	0.0015	0.0015

1128

DATA SET 7: 105°C; 700 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)		
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	12600		
1	295	2.92	3082	3000	95.39		
2	295	3.02	3019	3000	96.03		
3	295	2.96	3007	3000	95.49		
4	286	2.93	3057	3000	98.39		
5	276	2.95	3068	3000	95.73		
6	285	3.02	3029	3000	96.81		
7	297	2.98	3060	3000	98.45		
8	285	3.02	3087	3000	95.30		
9	291	3.02	3031	3000	97.28		
10	292	2.95	3044	3000	96.37		
11	297	2.95	3106	3000	96.77		
12	288	3.00	3027	3000	96.87		
13	282	2.93	3059	3000	96.84		
14	293	2.95	3114	3000	95.49		
15	280	2.97	3138	3000	96.86		
16	297	2.97	3093	3000	98.22		
17	290	2.94	3099	3000	96.94		
18	287	2.97	3079	3000	97.98		
19	302	2.97	3088	3000	98.11		
20	296	3.03	3061	3000	97.29		
21	294	2.92	3096	3000	95.58		
22	293	3.02	3045	3000	96.14		
23	296	2.98	3096	3000	95.67		
24	283	2.93	3026	3000	98.27		
25	276	2.95	3046	3000	95.37		
n	25	25	25	25	25		
Mean	**290**	**2.97**			**96.71**		
Median	292	2.97			96.81		
σ	7	0.04			1.07		
Min.	276	2.92			95.30		
Max.	302	3.03			98.45		

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')		
	CCx	CCy	Calc. CCT	ANSI Target	12600		
1	0.4370	0.4138	3082	3000	0.0010		
2	0.4423	0.4171	3019	3000	0.0012		
3	0.4430	0.4170	3007	3000	0.0010		
4	0.4401	0.4173	3057	3000	0.0013		
5	0.4372	0.4125	3068	3000	0.0012		
6	0.4397	0.4128	3029	3000	0.0014		
7	0.4387	0.4147	3060	3000	0.0011		
8	0.4354	0.4110	3087	3000	0.0013		
9	0.4405	0.4148	3031	3000	0.0012		
10	0.4399	0.4152	3044	3000	0.0012		
11	0.4361	0.4150	3106	3000	0.0007		
12	0.4382	0.4094	3027	3000	0.0008		
13	0.4352	0.4071	3059	3000	0.0009		
14	0.4342	0.4118	3114	3000	0.0012		
15	0.4308	0.4073	3138	3000	0.0009		
16	0.4340	0.4087	3093	3000	0.0010		
17	0.4320	0.4050	3099	3000	0.0010		
18	0.4358	0.4108	3079	3000	0.0012		
19	0.4347	0.4096	3088	3000	0.0010		
20	0.4352	0.4073	3061	3000	0.0009		
21	0.4360	0.4135	3096	3000	0.0009		
22	0.4380	0.4113	3045	3000	0.0010		
23	0.4369	0.4154	3096	3000	0.0010		
24	0.4420	0.4173	3026	3000	0.0010		
25	0.4407	0.4171	3046	3000	0.0008		
n	25	25	25	25	25		
Mean					**0.0010**		
Median					0.0010		
σ					0.0002		
Min.					0.0007		
Max.					0.0014		

1129

DATA SET 8: 120°C; 700 mA

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	700 mA
Testing Initiation Date	November 2, 2015
Case Temperature [T_S]	120°C
Ambient Temperature [T_A]	120°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
168	98.62%	0.0005	-0.2	0.0%
1008	97.52%	0.0004	-0.2	N/R
1512	96.89%	0.0005	-0.2	N/R
2016	96.11%	0.0005	-0.2	N/R
2520	95.54%	0.0006	-0.2	N/R
3024	95.11%	0.0006	-0.2	N/R
3528	94.53%	0.0006	-0.2	N/R
4032	94.08%	0.0006	-0.3	N/R
4536	94.10%	0.0006	-0.3	N/R
5040	94.00%	0.0007	-0.3	N/R
5544	93.94%	0.0008	-0.3	N/R
6048	94.30%	0.0008	-0.4	N/R
6552	94.00%	0.0009	-0.4	0.6%
7056	93.89%	0.0011	-0.4	0.7%
7560	93.72%	0.0012	-0.5	0.5%
8064	93.79%	0.0013	-0.4	0.2%
8568	93.67%	0.0014	-0.5	0.0%

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)

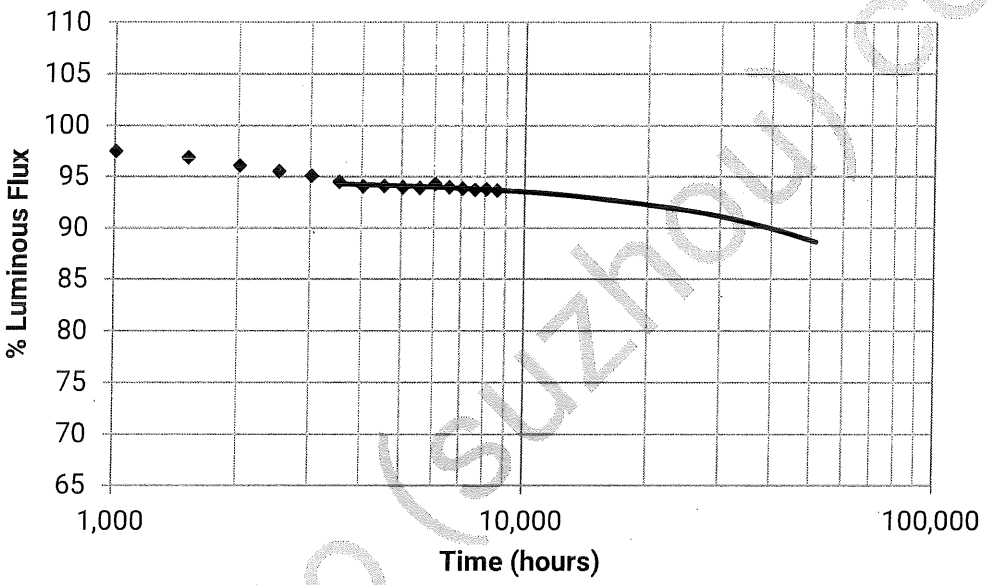
Note: "N/R" indicates data points that are not reported

1130

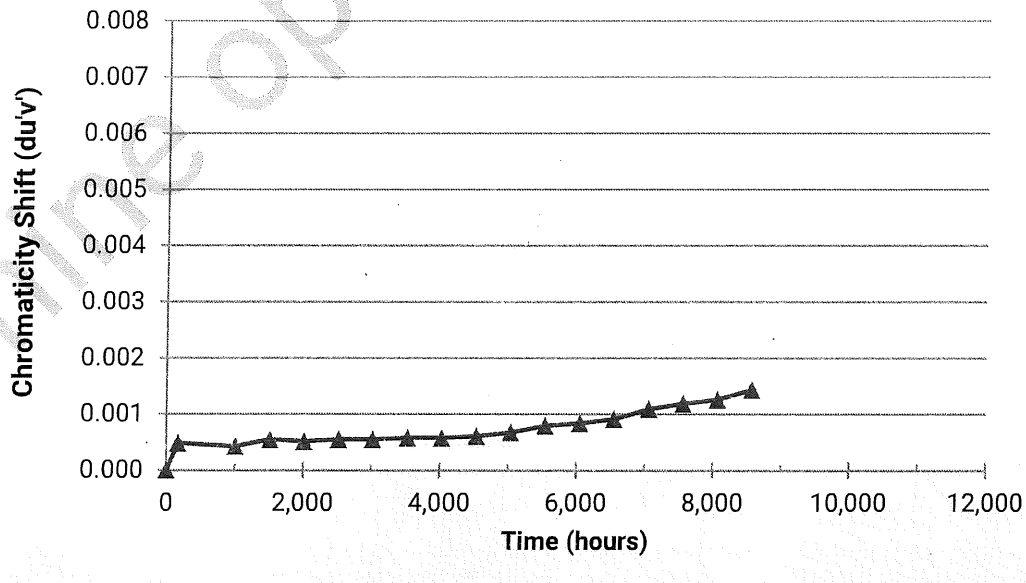
DATA SET 8: 120°C; 700 mA

TM-21 Projection from Cree's Internal Calculator

Test duration	8,568 hours
Test duration used for projection	t=3,528 to t=8,568
α	1.297E-06
β	9.474E-01
Reported Lifetimes	L90(9k) = 39,600 hours
	L80(9k) > 51,400 hours
	L70(9k) > 51,400 hours



Color Shift Graph



1131

DATA SET 8: 120°C; 700 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	276	2.94	3036	3000	98.77	97.46	96.85	95.80	94.68	94.89	94.20	93.73	93.84	93.48	93.52	93.59
2	281	2.93	3064	3000	98.25	97.61	97.26	95.94	95.01	94.73	94.44	93.62	93.91	93.51	93.09	93.69
3	290	3.02	3012	3000	99.07	96.41	95.99	94.89	95.13	94.44	94.09	93.51	94.23	93.64	93.58	94.23
4	290	3.02	3036	3000	99.55	97.41	97.10	95.66	95.69	95.00	94.35	93.45	93.76	93.31	93.66	94.35
5	276	2.97	3098	3000	98.08	98.19	97.57	96.99	95.98	95.14	94.31	93.91	94.16	94.42	94.74	94.35
6	275	2.97	3040	3000	98.26	97.27	96.66	96.22	95.57	95.57	94.91	94.91	94.37	94.84	95.09	95.09
7	277	2.96	3068	3000	97.40	96.36	95.85	94.70	94.30	94.41	93.40	92.85	93.32	93.65	93.36	93.83
8	286	2.96	3096	3000	98.36	97.90	97.17	96.75	96.65	95.46	94.93	94.58	93.82	94.13	94.55	94.93
9	285	2.97	3053	3000	99.44	97.89	97.15	96.98	96.94	95.43	95.43	94.48	95.11	94.62	94.59	95.18
10	286	2.94	3021	3000	99.02	98.11	97.48	96.85	96.61	95.66	95.70	94.58	95.28	94.68	94.33	94.82
11	281	3.01	3051	3000	98.58	97.76	96.94	95.73	95.13	94.95	94.45	94.02	94.38	94.02	94.09	94.66
12	279	3.01	3006	3000	98.57	97.13	96.52	95.31	94.05	93.55	92.94	92.80	92.48	92.73	92.73	92.40
13	296	2.98	3085	3000	99.43	98.04	97.97	97.30	96.99	96.45	95.91	95.20	94.83	95.37	95.27	95.23
14	297	2.98	3035	3000	98.89	97.85	97.92	96.47	96.81	96.00	96.03	95.19	95.80	95.06	95.12	95.80
15	293	2.98	3050	3000	98.98	98.02	96.72	96.41	95.90	94.98	95.32	94.09	94.23	93.78	93.85	94.33
16	295	3.04	3045	3000	99.80	98.40	97.69	96.95	96.84	96.30	94.77	94.84	93.89	93.86	93.41	93.89
17	287	3.02	3058	3000	100.03	97.91	97.18	95.68	95.44	94.74	94.60	93.59	94.08	93.59	94.22	94.74
18	278	2.94	3035	3000	98.52	98.20	97.80	96.43	95.32	94.95	93.62	93.69	93.77	93.30	93.84	93.95
19	280	2.93	3028	3000	98.96	98.03	97.17	95.78	94.81	94.35	93.96	93.56	93.63	93.60	93.67	93.63
20	297	2.95	3134	3000	97.65	97.48	96.20	95.90	95.22	95.73	94.58	94.18	94.05	94.18	93.81	94.18
21	285	2.95	3160	3000	97.13	95.86	95.30	95.69	94.32	94.32	94.22	94.39	94.01	93.69	93.62	93.80
22	299	2.97	3086	3000	98.63	97.35	96.55	96.48	95.65	95.31	94.01	93.77	93.67	93.84	93.10	93.80
23	297	2.98	3046	3000	98.15	97.84	96.97	96.67	95.42	95.86	95.12	94.98	94.61	94.98	94.24	94.81
24	288	2.96	3148	3000	97.08	95.80	95.52	95.24	94.51	93.92	93.05	93.47	92.53	92.67	92.08	93.15
25	295	2.95	3090	3000	98.81	97.69	96.81	96.00	95.46	95.49	94.85	94.51	94.74	95.05	95.05	95.18
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**287**	**2.97**			**98.62**	**97.52**	**96.89**	**96.11**	**95.54**	**95.11**	**94.53**	**94.08**	**94.10**	**94.00**	**93.94**	**94.30**
Median	286	2.97			98.63	97.76	96.97	96.00	95.44	95.00	94.45	94.02	94.05	93.84	93.84	94.33
σ	8	0.03			0.77	0.71	0.71	0.69	0.88	0.72	0.81	0.67	0.74	0.72	0.79	0.76
Min.	275	2.93			97.08	95.80	95.30	94.70	94.05	93.55	92.94	92.80	92.48	92.67	92.08	92.40
Max.	299	3.04			100.03	98.40	97.97	97.30	96.99	96.45	96.03	95.20	95.80	95.37	95.27	95.80

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
1	0.4398	0.4140	3036	3000	0.0004	0.0004	0.0006	0.0004	0.0004	0.0004	0.0007	0.0005	0.0004	0.0006	0.0008	0.0012
2	0.4384	0.4146	3064	3000	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0003	0.0004	0.0005	0.0005	0.0007	0.0007
3	0.4403	0.4120	3012	3000	0.0006	0.0002	0.0006	0.0005	0.0005	0.0006	0.0007	0.0007	0.0008	0.0008	0.0009	0.0009
4	0.4389	0.4121	3036	3000	0.0008	0.0008	0.0008	0.0005	0.0008	0.0006	0.0007	0.0007	0.0006	0.0007	0.0008	0.0010
5	0.4356	0.4128	3098	3000	0.0006	0.0004	0.0006	0.0008	0.0005	0.0004	0.0005	0.0003	0.0005	0.0006	0.0008	0.0008
6	0.4412	0.4175	3040	3000	0.0004	0.0003	0.0004	0.0004	0.0005	0.0004	0.0004	0.0005	0.0005	0.0006	0.0008	0.0009
7	0.4391	0.4166	3068	3000	0.0005	0.0002	0.0002	0.0003	0.0004	0.0006	0.0005	0.0005	0.0006	0.0006	0.0007	0.0008
8	0.4366	0.4148	3096	3000	0.0003	0.0007	0.0005	0.0006	0.0005	0.0005	0.0006	0.0004	0.0003	0.0006	0.0007	0.0008
9	0.4392	0.4148	3053	3000	0.0005	0.0002	0.0005	0.0004	0.0006	0.0005	0.0004	0.0004	0.0005	0.0005	0.0008	0.0009
10	0.4427	0.4182	3021	3000	0.0004	0.0006	0.0007	0.0004	0.0007	0.0007	0.0007	0.0006	0.0008	0.0008	0.0009	0.0009
11	0.4368	0.4095	3051	3000	0.0005	0.0003	0.0006	0.0003	0.0004	0.0005	0.0006	0.0005	0.0006	0.0007	0.0009	0.0008
12	0.4401	0.4108	3006	3000	0.0008	0.0004	0.0006	0.0004	0.0005	0.0005	0.0005	0.0005	0.0006	0.0007	0.0008	0.0008
13	0.4382	0.4168	3085	3000	0.0003	0.0005	0.0004	0.0006	0.0007	0.0006	0.0007	0.0010	0.0008	0.0011	0.0013	0.0012
14	0.4415	0.4174	3035	3000	0.0005	0.0004	0.0006	0.0005	0.0006	0.0007	0.0006	0.0006	0.0007	0.0006	0.0008	0.0007
15	0.4401	0.4164	3050	3000	0.0007	0.0006	0.0007	0.0004	0.0006	0.0006	0.0008	0.0006	0.0006	0.0007	0.0008	0.0008
16	0.4387	0.4128	3045	3000	0.0008	0.0007	0.0008	0.0011	0.0008	0.0010	0.0006	0.0008	0.0006	0.0009	0.0007	0.0009
17	0.4378	0.4125	3058	3000	0.0010	0.0007	0.0010	0.0010	0.0010	0.0009	0.0011	0.0010	0.0011	0.0011	0.0012	0.0009
18	0.4414	0.4172	3035	3000	0.0002	0.0004	0.0006	0.0005	0.0004	0.0005	0.0002	0.0004	0.0002	0.0004	0.0006	0.0007
19	0.4421	0.4178	3028	3000	0.0007	0.0005	0.0005	0.0007	0.0006	0.0008	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008
20	0.4340	0.4139	3134	3000	0.0003	0.0006	0.0004	0.0004	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0006	0.0006
21	0.4286	0.4050	3160	3000	0.0003	0.0003	0.0005	0.0006	0.0005	0.0004	0.0004	0.0006	0.0006	0.0005	0.0007	0.0007
22	0.4347	0.4093	3086	3000	0.0003	0.0003	0.0004	0.0005	0.0007	0.0006	0.0009	0.0008	0.0009	0.0009	0.0009	0.0010
23	0.4376	0.4106	3046	3000	0.0003	0.0005	0.0005	0.0006	0.0008	0.0007	0.0008	0.0007	0.0009	0.0009	0.0009	0.0009
24	0.4308	0.4085	3148	3000	0.0003	0.0002	0.0005	0.0004	0.0004	0.0003	0.0003	0.0004	0.0007	0.0004	0.0007	0.0007
25	0.4337	0.4076	3090	3000	0.0002	0.0002	0.0003	0.0002	0.0003	0.0003	0.0003	0.0004	0.0003	0.0005	0.0006	0.0006
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0005**	**0.0004**	**0.0005**	**0.0005**	**0.0006**	**0.0006**	**0.0006**	**0.0006**	**0.0006**	**0.0007**	**0.0008**	**0.0008**
Median					0.0005	0.0004	0.0005	0.0005	0.0005	0.0005	0.0006	0.0005	0.0006	0.0006	0.0008	0.0008
σ					0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.					0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0003	0.0002	0.0004	0.0006	0.0006
Max.					0.0010	0.0008	0.0010	0.0011	0.0010	0.0010	0.0011	0.0010	0.0011	0.0011	0.0013	0.0012

1132

DATA SET 8: 120°C; 700 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)				
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568
1	276	2.94	3036	3000	93.52	93.48	94.20	93.52	94.17
2	281	2.93	3064	3000	93.76	93.01	93.76	93.23	93.23
3	290	3.02	3012	3000	93.61	93.61	93.13	93.78	93.16
4	290	3.02	3036	3000	93.42	93.55	93.00	93.21	92.66
5	276	2.97	3098	3000	94.78	94.42	94.74	94.71	94.71
6	275	2.97	3040	3000	94.91	94.73	94.00	94.73	94.80
7	277	2.96	3068	3000	94.01	93.65	93.40	93.14	92.85
8	286	2.96	3096	3000	94.93	94.44	94.16	93.61	94.27
9	285	2.97	3053	3000	94.73	94.48	94.06	94.80	94.55
10	286	2.94	3021	3000	93.67	93.84	93.35	93.56	93.74
11	281	3.01	3051	3000	93.56	93.67	93.67	93.95	92.99
12	279	3.01	3006	3000	92.33	91.62	92.08	91.94	91.69
13	296	2.98	3085	3000	94.93	95.03	95.00	94.93	95.13
14	297	2.98	3035	3000	94.72	95.16	94.15	95.02	95.26
15	293	2.98	3050	3000	93.88	94.16	93.44	93.99	94.16
16	295	3.04	3045	3000	94.33	94.30	94.09	94.03	94.47
17	287	3.02	3058	3000	94.32	94.01	93.73	93.48	92.86
18	278	2.94	3035	3000	94.09	93.95	93.77	93.87	93.12
19	280	2.93	3028	3000	94.17	93.31	93.63	93.20	93.38
20	297	2.95	3134	3000	93.84	93.95	93.51	93.71	93.31
21	285	2.95	3160	3000	93.41	93.55	93.48	93.69	93.66
22	299	2.97	3086	3000	93.27	92.80	92.46	92.83	92.50
23	297	2.98	3046	3000	94.61	94.78	94.51	94.38	94.00
24	288	2.96	3148	3000	92.36	92.49	92.46	92.49	92.25
25	295	2.95	3090	3000	94.91	95.18	95.12	95.02	94.71
n	25	25	25	25	25	25	25	25	25
Mean	**287**	**2.97**			**94.00**	**93.89**	**93.72**	**93.79**	**93.67**
Median	286	2.97			94.01	93.95	93.73	93.71	93.66
σ	8	0.03			0.74	0.85	0.75	0.80	0.95
Min.	275	2.93			92.33	91.62	92.08	91.94	91.69
Max.	299	3.04			94.93	95.18	95.12	95.02	95.26

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')				
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568
1	0.4398	0.4140	3036	3000	0.0008	0.0011	0.0012	0.0013	0.0014
2	0.4384	0.4146	3064	3000	0.0006	0.0011	0.0012	0.0012	0.0015
3	0.4403	0.4120	3012	3000	0.0009	0.0011	0.0011	0.0013	0.0015
4	0.4389	0.4121	3036	3000	0.0007	0.0010	0.0010	0.0011	0.0015
5	0.4356	0.4128	3098	3000	0.0013	0.0014	0.0015	0.0018	0.0019
6	0.4412	0.4175	3040	3000	0.0006	0.0011	0.0012	0.0008	0.0010
7	0.4391	0.4166	3068	3000	0.0010	0.0013	0.0012	0.0013	0.0013
8	0.4366	0.4148	3096	3000	0.0010	0.0013	0.0011	0.0012	0.0017
9	0.4392	0.4148	3053	3000	0.0011	0.0010	0.0011	0.0012	0.0014
10	0.4427	0.4182	3021	3000	0.0009	0.0011	0.0013	0.0013	0.0017
11	0.4368	0.4095	3051	3000	0.0010	0.0010	0.0012	0.0013	0.0013
12	0.4401	0.4108	3006	3000	0.0010	0.0010	0.0013	0.0013	0.0015
13	0.4382	0.4168	3085	3000	0.0015	0.0014	0.0015	0.0017	0.0016
14	0.4415	0.4174	3035	3000	0.0008	0.0011	0.0012	0.0012	0.0015
15	0.4401	0.4164	3050	3000	0.0010	0.0013	0.0014	0.0014	0.0017
16	0.4387	0.4128	3045	3000	0.0011	0.0014	0.0013	0.0012	0.0015
17	0.4378	0.4125	3058	3000	0.0013	0.0014	0.0015	0.0019	0.0019
18	0.4414	0.4172	3035	3000	0.0011	0.0013	0.0014	0.0014	0.0017
19	0.4421	0.4178	3028	3000	0.0007	0.0011	0.0011	0.0011	0.0017
20	0.4340	0.4139	3134	3000	0.0007	0.0008	0.0010	0.0011	0.0011
21	0.4286	0.4050	3160	3000	0.0007	0.0009	0.0009	0.0011	0.0010
22	0.4347	0.4093	3086	3000	0.0010	0.0010	0.0014	0.0012	0.0013
23	0.4376	0.4106	3046	3000	0.0009	0.0010	0.0013	0.0012	0.0013
24	0.4308	0.4085	3148	3000	0.0006	0.0007	0.0008	0.0011	0.0010
25	0.4337	0.4076	3090	3000	0.0006	0.0007	0.0009	0.0011	0.0011
n	25	25	25	25	25	25	25	25	25
Mean					**0.0009**	**0.0011**	**0.0012**	**0.0013**	**0.0014**
Median					0.0009	0.0011	0.0012	0.0012	0.0015
σ					0.0002	0.0002	0.0002	0.0002	0.0003
Min.					0.0006	0.0007	0.0008	0.0008	0.0010
Max.					0.0015	0.0014	0.0015	0.0019	0.0019

1133
m

DATA SET 9: 85°C; 1050 mA

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	1050 mA
Testing Initiation Date	November 2, 2015
Case Temperature [T_S]	85°C
Ambient Temperature [T_A]	85°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	99.99%	0.0004	-0.1	N/R
1008	99.72%	0.0007	-0.1	N/R
1512	99.54%	0.0008	-0.2	N/R
2016	99.32%	0.0007	-0.2	N/R
2520	99.23%	0.0007	-0.2	N/R
3024	99.13%	0.0008	-0.2	N/R
3528	98.93%	0.0008	-0.2	N/R
4032	98.74%	0.0008	-0.2	N/R
4536	98.68%	0.0008	-0.2	N/R
5040	98.69%	0.0008	-0.2	N/R
5544	98.69%	0.0008	-0.2	N/R
6048	98.73%	0.0008	-0.2	N/R
6552	98.57%	0.0008	-0.2	N/R
7056	98.52%	0.0008	-0.2	N/R
7560	98.38%	0.0008	-0.2	N/R
8064	98.29%	0.0009	-0.2	N/R
8568	98.42%	0.0009	-0.2	N/R
9072	98.23%	0.0009	-0.2	N/R
9576	98.16%	0.0009	-0.2	N/R
10080	98.06%	0.0009	-0.2	N/R
10584	98.40%	0.0009	-0.2	-2.3%
11088	98.50%	0.0009	-0.2	-2.5%
11592	98.33%	0.0009	-0.2	-2.8%
12096	98.40%	0.0009	-0.2	-2.4%
12600	98.47%	0.0009	-0.2	-2.8%
13104	98.46%	0.0009	-0.2	-2.6%
13608	98.25%	0.0009	-0.2	-2.0%
14112	98.33%	0.0009	-0.2	-2.2%

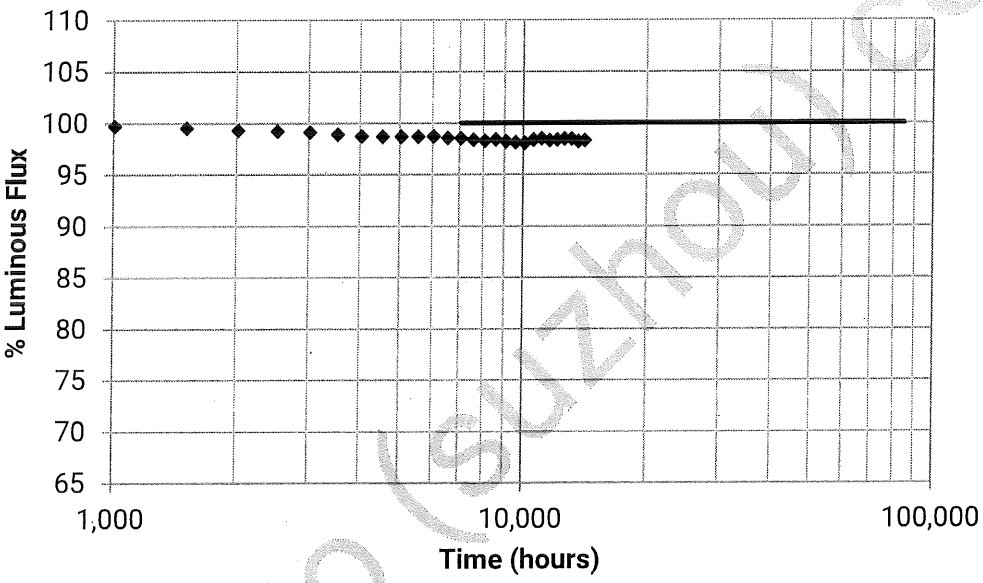
Note: "N/R" indicates data points that are not reported

1134

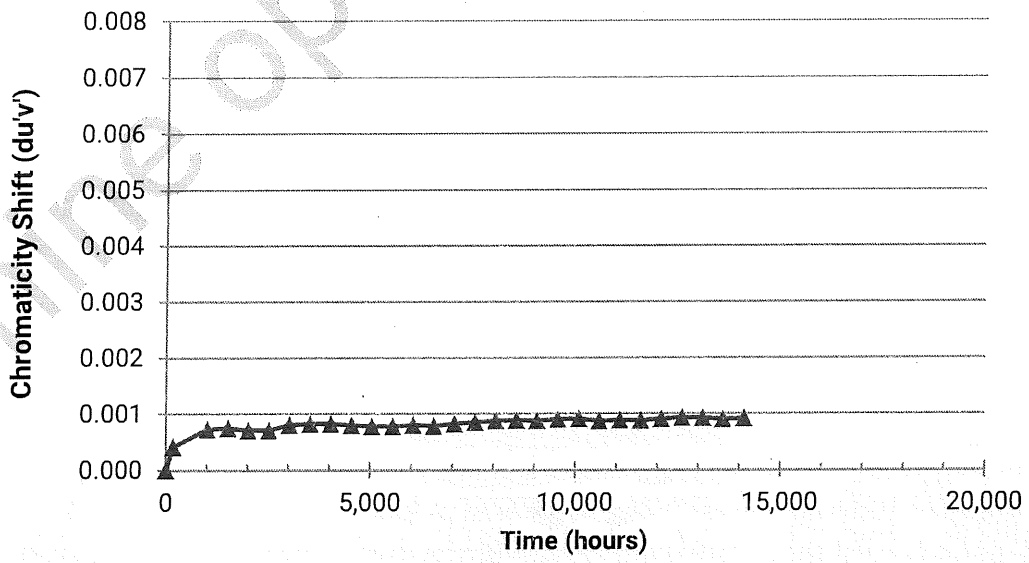
DATA SET 9: 85°C; 1050 mA

TM-21 Projection from Cree's Internal Calculator

Test duration	14,112 hours
Test duration used for projection	t=7,056 to t=14,112
α	*-1.666E-08*
β	9.833E-01
Reported Lifetimes	**L90(14k) > 84,700 hours** **L80(14k) > 84,700 hours** **L70(14k) > 84,700 hours**



Color Shift Graph



1135

DATA SET 9: 85°C; 1050 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	422	3.04	3197	3000	99.95	99.64	99.72	99.53	99.19	99.41	98.91	98.55	98.18	98.44	98.20	98.46
2	406	3.10	3079	3000	100.15	99.75	99.80	99.41	99.46	99.38	98.72	98.79	98.33	98.65	98.47	98.40
3	403	3.03	3146	3000	100.02	99.63	99.40	99.45	99.43	99.08	98.93	98.73	98.46	98.39	98.46	98.49
4	413	3.04	3154	3000	99.81	99.69	99.27	98.98	99.06	98.81	98.33	98.35	98.23	98.33	98.21	98.26
5	395	3.06	3149	3000	99.87	99.65	99.72	99.39	99.14	98.86	99.24	98.99	98.91	98.76	98.91	98.94
6	419	3.05	3102	3000	100.24	100.02	99.62	99.33	99.16	99.19	98.73	98.38	98.16	98.59	98.35	98.61
7	412	3.05	3080	3000	99.78	99.66	99.44	99.08	99.08	99.05	98.71	98.52	98.50	98.47	98.69	98.50
8	407	3.08	3101	3000	100.07	99.71	99.73	99.31	99.29	99.63	99.41	99.17	99.29	99.29	99.26	99.17
9	427	3.08	3114	3000	100.16	99.84	99.32	99.16	98.87	98.66	98.55	98.24	98.36	98.24	98.29	98.27
10	413	3.13	3053	3000	99.78	99.66	99.81	99.47	99.13	99.42	99.10	98.89	98.52	98.43	98.28	98.55
11	416	3.06	3114	3000	100.10	99.95	99.74	99.66	99.54	99.59	99.57	99.26	98.99	98.97	99.18	99.04
12	417	3.03	3039	3000	99.95	99.38	99.42	99.09	99.50	99.26	99.11	98.94	98.73	98.82	98.99	99.04
13	417	3.17	3098	3000	99.90	99.86	99.90	99.09	99.18	98.80	98.44	98.15	98.27	98.32	98.56	98.85
14	410	3.13	3039	3000	99.88	99.68	99.51	99.20	99.20	99.02	98.98	98.71	98.66	98.85	98.68	99.00
15	416	3.14	3043	3000	100.05	99.88	99.61	99.06	99.13	98.82	98.84	98.60	98.75	98.84	99.04	99.18
16	415	3.07	3096	3000	100.00	99.30	99.25	99.30	99.08	98.89	99.25	98.96	98.79	98.82	98.53	98.65
17	409	3.16	3075	3000	99.90	99.85	99.83	99.46	99.56	99.46	99.17	99.27	99.36	99.29	99.31	99.24
18	410	3.15	3065	3000	100.19	99.63	99.29	99.29	99.05	98.98	98.88	98.85	98.93	98.85	98.90	99.05
19	399	3.12	3157	3000	99.95	99.62	99.22	99.35	98.95	99.27	99.22	98.87	99.25	98.87	99.10	99.35
20	391	3.05	3047	3000	99.67	99.59	99.44	99.16	99.11	98.72	98.49	98.36	98.49	98.31	98.11	98.11
21	403	3.05	3087	3000	99.83	99.98	99.35	99.30	99.50	99.28	99.13	98.91	99.11	99.06	98.96	99.01
22	405	3.03	3080	3000	100.25	99.83	99.88	99.53	99.16	99.60	99.21	99.18	99.11	99.11	98.76	98.52
23	409	3.14	3018	3000	100.22	99.71	99.56	99.56	99.32	99.00	98.88	98.83	98.80	98.88	99.17	98.85
24	416	3.01	3083	3000	99.95	99.59	99.23	99.33	99.16	99.09	98.77	98.22	98.05	97.93	98.12	97.98
25	413	3.04	3088	3000	100.15	99.85	99.54	99.61	99.47	98.96	98.69	98.69	98.89	98.69	98.69	98.65
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**411**	**3.08**			**99.99**	**99.72**	**99.54**	**99.32**	**99.23**	**99.13**	**98.93**	**98.74**	**98.68**	**98.69**	**98.69**	**98.73**
Median	412	3.06			99.95	99.69	99.54	99.33	99.16	99.08	98.91	98.79	98.73	98.76	98.69	98.65
σ	8	0.05			0.16	0.17	0.22	0.19	0.19	0.29	0.31	0.33	0.38	0.34	0.38	0.37
Min.	391	3.01			99.67	99.30	99.22	98.98	98.87	98.66	98.33	98.15	98.05	97.93	98.11	97.98
Max.	427	3.17			100.25	100.02	99.90	99.66	99.56	99.63	99.57	99.27	99.36	99.29	99.31	99.35

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
1	0.4270	0.4061	3197	3000	0.0002	0.0005	0.0004	0.0004	0.0005	0.0007	0.0006	0.0008	0.0008	0.0008	0.0006	0.0007
2	0.4329	0.4045	3079	3000	0.0002	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0007	0.0006	0.0006	0.0006
3	0.4289	0.4040	3146	3000	0.0003	0.0003	0.0004	0.0002	0.0005	0.0005	0.0003	0.0003	0.0003	0.0003	0.0000	0.0002
4	0.4295	0.4064	3154	3000	0.0002	0.0004	0.0005	0.0006	0.0005	0.0007	0.0008	0.0008	0.0007	0.0006	0.0005	0.0006
5	0.4312	0.4096	3149	3000	0.0001	0.0005	0.0004	0.0003	0.0004	0.0006	0.0007	0.0008	0.0007	0.0009	0.0008	0.0006
6	0.4341	0.4100	3102	3000	0.0003	0.0006	0.0006	0.0007	0.0005	0.0006	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007
7	0.4340	0.4071	3080	3000	0.0002	0.0003	0.0002	0.0005	0.0002	0.0003	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003
8	0.4317	0.4046	3101	3000	0.0004	0.0004	0.0005	0.0005	0.0006	0.0006	0.0007	0.0007	0.0008	0.0007	0.0007	0.0007
9	0.4317	0.4062	3114	3000	0.0002	0.0008	0.0005	0.0004	0.0003	0.0005	0.0005	0.0007	0.0007	0.0007	0.0007	0.0006
10	0.4337	0.4031	3053	3000	0.0001	0.0005	0.0005	0.0005	0.0005	0.0006	0.0004	0.0006	0.0005	0.0005	0.0004	0.0005
11	0.4345	0.4124	3114	3000	0.0006	0.0009	0.0010	0.0009	0.0008	0.0008	0.0010	0.0008	0.0010	0.0009	0.0009	0.0010
12	0.4425	0.4201	3039	3000	0.0004	0.0009	0.0009	0.0008	0.0009	0.0009	0.0010	0.0010	0.0009	0.0008	0.0009	0.0010
13	0.4358	0.4133	3098	3000	0.0007	0.0010	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0011	0.0011	0.0011	0.0011
14	0.4401	0.4150	3039	3000	0.0008	0.0009	0.0011	0.0009	0.0011	0.0011	0.0012	0.0012	0.0011	0.0011	0.0012	0.0012
15	0.4413	0.4180	3043	3000	0.0005	0.0010	0.0010	0.0009	0.0009	0.0011	0.0011	0.0010	0.0011	0.0010	0.0010	0.0010
16	0.4350	0.4112	3096	3000	0.0004	0.0007	0.0009	0.0008	0.0008	0.0007	0.0008	0.0007	0.0007	0.0007	0.0008	0.0007
17	0.4363	0.4114	3075	3000	0.0006	0.0011	0.0012	0.0009	0.0010	0.0013	0.0012	0.0013	0.0012	0.0012	0.0013	0.0013
18	0.4382	0.4142	3065	3000	0.0008	0.0011	0.0011	0.0011	0.0011	0.0011	0.0012	0.0012	0.0011	0.0010	0.0011	0.0011
19	0.4313	0.4108	3157	3000	0.0003	0.0007	0.0008	0.0007	0.0006	0.0008	0.0009	0.0008	0.0007	0.0007	0.0008	0.0008
20	0.4392	0.4141	3047	3000	0.0006	0.0007	0.0006	0.0006	0.0007	0.0008	0.0008	0.0008	0.0007	0.0007	0.0007	0.0007
21	0.4362	0.4127	3087	3000	0.0004	0.0010	0.0009	0.0009	0.0009	0.0010	0.0010	0.0009	0.0009	0.0008	0.0009	0.0009
22	0.4387	0.4172	3080	3000	0.0006	0.0009	0.0009	0.0008	0.0008	0.0009	0.0009	0.0010	0.0009	0.0009	0.0009	0.0009
23	0.4417	0.4156	3018	3000	0.0006	0.0010	0.0011	0.0009	0.0009	0.0011	0.0011	0.0010	0.0011	0.0011	0.0011	0.0011
24	0.4387	0.4177	3083	3000	0.0005	0.0007	0.0009	0.0007	0.0009	0.0008	0.0008	0.0008	0.0007	0.0007	0.0008	0.0008
25	0.4373	0.4152	3088	3000	0.0004	0.0010	0.0009	0.0010	0.0009	0.0009	0.0010	0.0008	0.0008	0.0009	0.0010	0.0009
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0004**	**0.0007**	**0.0008**	**0.0007**	**0.0007**	**0.0008**	**0.0008**	**0.0008**	**0.0008**	**0.0008**	**0.0008**	**0.0008**
Median					0.0004	0.0007	0.0009	0.0007	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
σ					0.0002	0.0003	0.0003	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0003	0.0003
Min.					0.0001	0.0003	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0000	0.0002
Max.					0.0008	0.0011	0.0012	0.0011	0.0011	0.0013	0.0012	0.0013	0.0012	0.0012	0.0013	0.0013

1136

DATA SET 9: 85°C; 1050 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)											
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	422	3.04	3197	3000	98.18	98.55	98.01	98.39	98.36	97.68	98.29	98.67	98.27	98.32	97.91	98.13
2	406	3.10	3079	3000	98.70	98.42	98.20	97.54	97.86	98.06	97.76	97.56	98.38	98.52	98.15	98.38
3	403	3.03	3146	3000	98.44	98.54	98.19	97.96	97.94	97.44	97.87	97.42	97.57	97.79	97.54	97.29
4	413	3.04	3154	3000	97.94	97.87	97.55	97.43	97.21	97.31	97.48	96.90	97.34	97.41	97.07	96.75
5	395	3.06	3149	3000	98.66	98.66	98.51	98.51	98.53	97.90	98.28	98.33	98.20	98.46	98.03	98.08
6	419	3.05	3102	3000	98.45	98.33	98.35	97.78	98.04	97.90	97.95	97.66	98.02	97.97	97.66	98.28
7	412	3.05	3080	3000	98.18	98.38	98.18	97.62	98.13	97.94	97.55	97.33	97.48	97.38	97.16	96.85
8	407	3.08	3101	3000	99.29	98.80	98.40	98.70	98.75	99.02	99.09	98.65	99.07	99.12	99.04	98.90
9	427	3.08	3114	3000	98.59	98.24	98.29	97.66	97.75	97.63	97.59	97.84	98.20	98.01	97.94	98.45
10	413	3.13	3053	3000	98.65	98.84	98.62	98.50	98.40	98.09	97.90	97.73	97.99	98.50	98.06	98.36
11	416	3.06	3114	3000	98.92	98.97	98.89	99.09	99.14	98.65	98.25	98.44	98.80	98.82	99.04	99.06
12	417	3.03	3039	3000	98.66	98.51	98.54	98.56	98.73	98.39	98.42	98.25	98.32	98.66	98.70	98.66
13	417	3.17	3098	3000	98.32	98.63	98.51	98.39	98.73	98.66	98.61	98.66	99.23	99.04	99.23	99.30
14	410	3.13	3039	3000	98.71	98.73	98.22	98.27	98.32	98.88	98.85	98.07	98.20	98.51	98.29	98.95
15	416	3.14	3043	3000	98.58	98.70	98.29	98.05	98.39	98.34	97.98	98.03	98.63	98.34	98.51	98.70
16	415	3.07	3096	3000	98.63	98.29	98.58	98.31	98.58	98.51	98.51	98.10	98.46	98.92	98.65	98.89
17	409	3.16	3075	3000	99.09	99.14	98.51	98.75	98.73	98.65	98.48	98.51	99.19	99.02	99.09	99.27
18	410	3.15	3065	3000	98.73	98.29	98.44	98.03	98.37	98.59	98.59	97.69	98.08	98.56	98.27	98.15
19	399	3.12	3157	3000	99.27	99.05	98.75	99.02	99.07	98.50	97.99	98.32	98.92	99.17	98.65	98.14
20	391	3.05	3047	3000	97.90	97.62	98.16	97.60	97.98	97.78	97.62	97.70	97.73	97.73	97.80	98.16
21	403	3.05	3087	3000	98.66	98.78	98.88	98.83	98.98	99.08	98.66	99.30	99.53	99.45	99.40	98.83
22	405	3.03	3080	3000	98.37	98.91	98.69	98.89	98.91	99.18	98.99	98.62	98.79	99.33	99.28	99.04
23	409	3.14	3018	3000	98.88	98.31	98.83	99.07	99.12	98.34	98.58	98.75	99.12	98.68	98.95	99.00
24	416	3.01	3083	3000	97.55	98.03	97.67	97.74	98.08	97.28	97.11	97.40	97.96	98.29	97.40	98.24
25	413	3.04	3088	3000	98.84	98.43	98.28	98.65	98.52	97.99	97.58	97.65	98.50	98.43	98.31	98.16
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**411**	**3.08**			**98.57**	**98.52**	**98.38**	**98.29**	**98.42**	**98.23**	**98.16**	**98.06**	**98.40**	**98.50**	**98.33**	**98.40**
Median	412	3.06			98.65	98.54	98.40	98.39	98.40	98.34	98.25	98.07	98.32	98.51	98.29	98.38
σ	8	0.05			0.41	0.36	0.33	0.52	0.48	0.55	0.52	0.56	0.58	0.56	0.67	0.67
Min.	391	3.01			97.55	97.62	97.55	97.43	97.21	97.28	97.11	96.90	97.34	97.38	97.07	96.75
Max.	427	3.17			99.29	99.14	98.89	99.09	99.14	99.18	99.09	99.30	99.53	99.45	99.40	99.30

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')											
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	0.4270	0.4061	3197	3000	0.0006	0.0006	0.0007	0.0006	0.0005	0.0005	0.0007	0.0006	0.0006	0.0005	0.0005	0.0006
2	0.4329	0.4045	3079	3000	0.0007	0.0008	0.0011	0.0010	0.0011	0.0010	0.0007	0.0007	0.0008	0.0008	0.0008	0.0007
3	0.4289	0.4040	3146	3000	0.0001	0.0003	0.0004	0.0005	0.0004	0.0005	0.0006	0.0006	0.0008	0.0008	0.0006	0.0008
4	0.4295	0.4064	3154	3000	0.0004	0.0005	0.0006	0.0006	0.0006	0.0006	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006
5	0.4312	0.4096	3149	3000	0.0006	0.0006	0.0007	0.0006	0.0006	0.0007	0.0007	0.0007	0.0006	0.0006	0.0005	0.0006
6	0.4341	0.4100	3102	3000	0.0004	0.0006	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
7	0.4340	0.4071	3080	3000	0.0003	0.0003	0.0005	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0006
8	0.4317	0.4046	3101	3000	0.0004	0.0006	0.0006	0.0006	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0009	0.0008
9	0.4317	0.4062	3114	3000	0.0006	0.0007	0.0008	0.0007	0.0008	0.0009	0.0007	0.0007	0.0008	0.0008	0.0007	0.0008
10	0.4337	0.4031	3053	3000	0.0004	0.0005	0.0006	0.0006	0.0005	0.0007	0.0006	0.0008	0.0008	0.0006	0.0008	0.0009
11	0.4345	0.4124	3114	3000	0.0011	0.0010	0.0010	0.0009	0.0012	0.0009	0.0011	0.0011	0.0010	0.0010	0.0010	0.0010
12	0.4425	0.4201	3039	3000	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010	0.0011	0.0012	0.0008	0.0009	0.0010	0.0011
13	0.4358	0.4133	3098	3000	0.0011	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010
14	0.4401	0.4150	3039	3000	0.0013	0.0013	0.0012	0.0014	0.0013	0.0013	0.0013	0.0013	0.0012	0.0013	0.0012	0.0012
15	0.4413	0.4180	3043	3000	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
16	0.4350	0.4112	3096	3000	0.0008	0.0009	0.0007	0.0009	0.0009	0.0010	0.0009	0.0010	0.0008	0.0010	0.0009	0.0009
17	0.4363	0.4114	3075	3000	0.0014	0.0014	0.0013	0.0015	0.0014	0.0013	0.0014	0.0014	0.0015	0.0014	0.0014	0.0014
18	0.4382	0.4142	3065	3000	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0011	0.0012	0.0011	0.0012
19	0.4313	0.4108	3157	3000	0.0008	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0009	0.0008	0.0008	0.0008	0.0008
20	0.4392	0.4141	3047	3000	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009	0.0007	0.0008	0.0008	0.0008
21	0.4362	0.4127	3087	3000	0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0012
22	0.4387	0.4172	3080	3000	0.0010	0.0010	0.0008	0.0011	0.0011	0.0010	0.0010	0.0010	0.0010	0.0011	0.0010	0.0010
23	0.4417	0.4156	3018	3000	0.0012	0.0011	0.0011	0.0011	0.0012	0.0011	0.0012	0.0011	0.0012	0.0011	0.0012	0.0011
24	0.4387	0.4177	3083	3000	0.0008	0.0008	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0009	0.0008	0.0009
25	0.4373	0.4152	3088	3000	0.0009	0.0008	0.0009	0.0010	0.0010	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0008**	**0.0008**	**0.0008**	**0.0009**	**0.0009**	**0.0009**	**0.0009**	**0.0009**	**0.0009**	**0.0009**	**0.0009**	**0.0009**
Median					0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009
σ					0.0003	0.0003	0.0002	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.					0.0001	0.0003	0.0004	0.0005	0.0004	0.0005	0.0006	0.0006	0.0006	0.0005	0.0005	0.0006
Max.					0.0014	0.0014	0.0013	0.0015	0.0014	0.0013	0.0014	0.0014	0.0015	0.0014	0.0014	0.0014

1137

DATA SET 9: 85°C; 1050 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)			
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	12600	13104	13608	14112
1	422	3.04	3197	3000	98.22	98.55	98.29	98.25
2	406	3.10	3079	3000	98.13	98.62	98.13	97.88
3	403	3.03	3146	3000	97.37	98.01	97.37	97.54
4	413	3.04	3154	3000	97.04	97.24	97.14	96.78
5	395	3.06	3149	3000	98.08	98.38	97.92	97.95
6	419	3.05	3102	3000	97.95	98.02	98.35	98.14
7	412	3.05	3080	3000	97.14	97.48	97.11	96.90
8	407	3.08	3101	3000	98.63	99.12	98.80	99.31
9	427	3.08	3114	3000	98.22	98.87	98.50	98.10
10	413	3.13	3053	3000	98.91	98.74	97.87	98.36
11	416	3.06	3114	3000	99.47	99.11	99.30	99.64
12	417	3.03	3039	3000	98.54	98.49	98.34	98.78
13	417	3.17	3098	3000	99.26	99.11	98.92	98.97
14	410	3.13	3039	3000	98.88	98.76	98.56	98.59
15	416	3.14	3043	3000	99.18	98.72	98.41	98.94
16	415	3.07	3096	3000	98.77	98.58	98.41	99.18
17	409	3.16	3075	3000	99.27	98.95	98.90	98.80
18	410	3.15	3065	3000	97.83	98.12	97.76	97.88
19	399	3.12	3157	3000	98.32	98.07	97.84	97.79
20	391	3.05	3047	3000	98.52	97.88	98.01	98.52
21	403	3.05	3087	3000	99.11	98.98	98.58	98.16
22	405	3.03	3080	3000	98.91	98.67	98.86	98.81
23	409	3.14	3018	3000	99.12	99.05	98.63	98.83
24	416	3.01	3083	3000	98.58	97.83	98.34	98.34
25	413	3.04	3088	3000	98.21	98.11	97.80	97.73
n	25	25	25	25	25	25	25	25
Mean	**411**	**3.08**			**98.47**	**98.46**	**98.25**	**98.33**
Median	412	3.06			98.54	98.58	98.34	98.34
σ	8	0.05			0.66	0.52	0.55	0.69
Min.	391	3.01			97.04	97.24	97.11	96.78
Max.	427	3.17			99.47	99.12	99.30	99.64

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')			
	CCx	CCy	Calc. CCT	ANSI Target	12600	13104	13608	14112
1	0.4270	0.4061	3197	3000	0.0006	0.0006	0.0007	0.0006
2	0.4329	0.4045	3079	3000	0.0006	0.0008	0.0007	0.0007
3	0.4289	0.4040	3146	3000	0.0006	0.0006	0.0007	0.0006
4	0.4295	0.4064	3154	3000	0.0006	0.0007	0.0006	0.0007
5	0.4312	0.4096	3149	3000	0.0006	0.0006	0.0006	0.0006
6	0.4341	0.4100	3102	3000	0.0007	0.0008	0.0008	0.0010
7	0.4340	0.4071	3080	3000	0.0007	0.0006	0.0007	0.0007
8	0.4317	0.4046	3101	3000	0.0009	0.0007	0.0008	0.0010
9	0.4317	0.4062	3114	3000	0.0007	0.0008	0.0009	0.0008
10	0.4337	0.4031	3053	3000	0.0009	0.0008	0.0008	0.0007
11	0.4345	0.4124	3114	3000	0.0011	0.0011	0.0010	0.0010
12	0.4425	0.4201	3039	3000	0.0011	0.0010	0.0007	0.0010
13	0.4358	0.4133	3098	3000	0.0011	0.0010	0.0012	0.0010
14	0.4401	0.4150	3039	3000	0.0013	0.0012	0.0012	0.0012
15	0.4413	0.4180	3043	3000	0.0011	0.0011	0.0011	0.0010
16	0.4350	0.4112	3096	3000	0.0009	0.0009	0.0009	0.0010
17	0.4363	0.4114	3075	3000	0.0015	0.0014	0.0014	0.0014
18	0.4382	0.4142	3065	3000	0.0012	0.0013	0.0011	0.0013
19	0.4313	0.4108	3157	3000	0.0008	0.0009	0.0007	0.0007
20	0.4392	0.4141	3047	3000	0.0009	0.0008	0.0008	0.0009
21	0.4362	0.4127	3087	3000	0.0012	0.0014	0.0013	0.0011
22	0.4387	0.4172	3080	3000	0.0010	0.0010	0.0009	0.0010
23	0.4417	0.4156	3018	3000	0.0013	0.0012	0.0013	0.0013
24	0.4387	0.4177	3083	3000	0.0009	0.0008	0.0008	0.0010
25	0.4373	0.4152	3088	3000	0.0010	0.0011	0.0009	0.0010
n	25	25	25	25	25	25	25	25
Mean					**0.0009**	**0.0009**	**0.0009**	**0.0009**
Median					0.0009	0.0009	0.0008	0.0010
σ					0.0003	0.0002	0.0002	0.0002
Min.					0.0006	0.0006	0.0006	0.0006
Max.					0.0015	0.0014	0.0014	0.0014

1138

DATA SET 15: 105°C; 1050 mA

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	1050 mA
Testing Initiation Date	July 29, 2016
Case Temperature [T_S]	105°C
Ambient Temperature [T_A]	105°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	98.63%	0.0007	-0.2	0.1%
1008	96.56%	0.0006	-0.1	0.1%
1512	96.54%	0.0007	-0.1	0.2%
2016	95.84%	0.0006	-0.1	0.3%
2520	95.67%	0.0007	-0.1	0.4%
3024	95.73%	0.0008	-0.2	0.3%
3528	95.62%	0.0008	-0.2	0.2%
4032	95.66%	0.0009	-0.2	0.2%
4536	95.87%	0.0008	-0.2	0.1%
5040	95.96%	0.0008	-0.2	0.2%
5544	95.93%	0.0009	-0.2	0.1%
6048	95.49%	0.0008	-0.2	0.2%
6552	95.60%	0.0009	-0.2	-0.1%
7056	95.92%	0.0009	-0.2	-0.6%
7560	95.43%	0.0009	-0.2	0.0%
8064	95.20%	0.0010	-0.2	-0.3%

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)

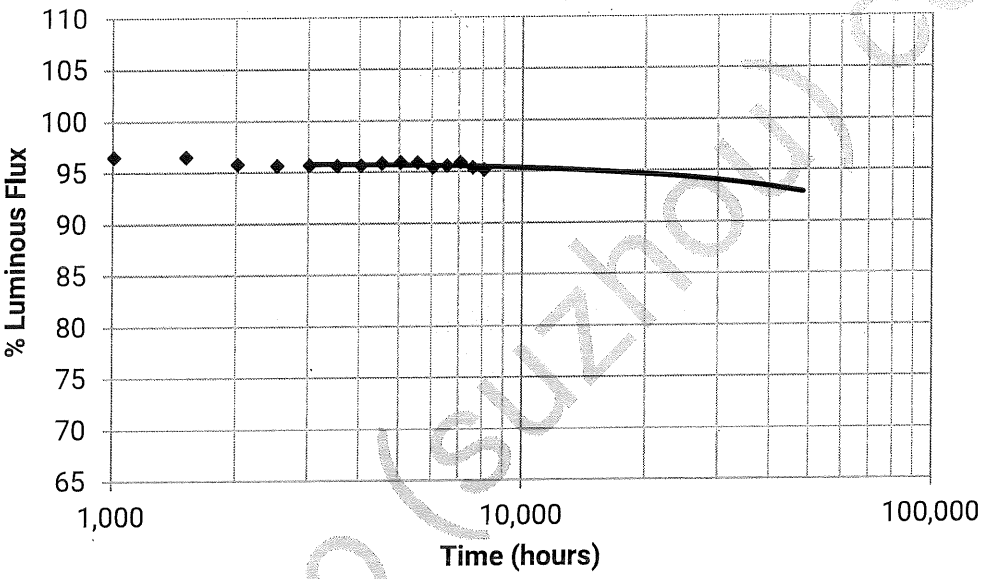
Note: "N/R" indicates data points that are not reported

1139

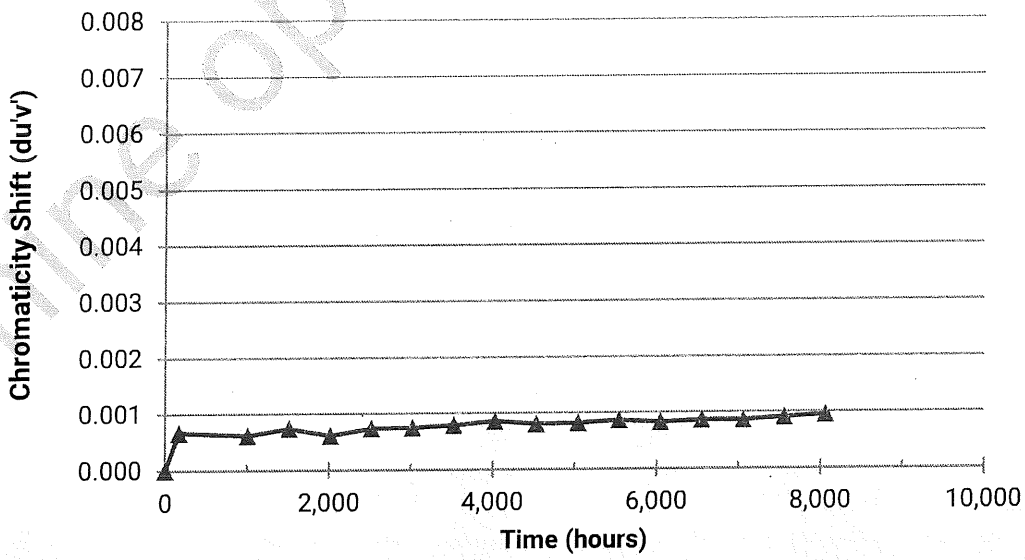
DATA SET 15: 105°C; 1050 mA

TM-21 Projection from Cree's Internal Calculator

Test duration	8,064 hours
Test duration used for projection	t=3,024 to t=8,064
α	6.876E-07
β	9.604E-01
Reported Lifetimes	L90(8k) > 48,400 hours L80(8k) > 48,400 hours L70(8k) > 48,400 hours



Color Shift Graph



DATA SET 15: 105°C; 1050 mA

1140

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	429	3.09	3153	3000	98.93	95.81	97.37	94.69	95.78	95.90	94.78	94.55	96.39	95.97	94.78	94.92
2	419	3.06	3133	3000	99.12	97.23	98.02	96.37	96.99	96.90	96.11	96.51	97.06	96.44	96.47	96.66
3	416	3.07	3107	3000	98.56	95.43	96.20	93.62	94.85	94.73	94.92	93.84	95.72	96.08	94.71	94.20
4	412	3.09	3081	3000	99.35	96.73	97.79	96.24	97.04	96.24	97.28	96.75	96.77	96.41	96.68	96.56
5	407	3.09	3121	3000	97.93	94.98	95.62	94.98	95.03	95.33	94.42	94.37	95.40	95.60	94.86	94.62
6	406	3.06	3073	3000	99.09	96.73	97.66	96.58	97.17	95.91	97.24	96.01	96.46	96.31	96.36	96.06
7	411	3.06	3099	3000	99.27	96.62	97.08	95.89	95.99	95.89	96.76	95.94	96.16	95.94	96.16	96.08
8	398	3.07	3062	3000	97.74	96.01	95.98	95.00	95.20	95.15	94.78	94.60	95.30	95.55	94.65	94.40
9	410	3.07	3095	3000	100.00	98.59	98.17	97.86	97.73	97.88	98.34	97.49	97.66	97.34	97.49	97.64
10	418	3.06	3104	3000	98.71	96.10	97.27	95.17	95.89	96.32	95.53	95.67	96.44	96.80	95.58	95.72
11	416	3.07	3031	3000	97.59	95.38	94.42	94.35	93.27	93.92	94.01	93.89	93.39	93.05	94.18	93.87
12	410	3.04	3067	3000	99.58	96.83	97.27	97.83	96.07	96.66	97.12	97.49	97.17	97.46	97.68	97.07
13	408	3.05	3103	3000	98.48	96.34	95.44	94.48	94.21	93.94	94.04	94.63	94.77	95.29	95.61	94.75
14	409	3.07	3085	3000	97.28	96.97	96.23	96.23	96.48	96.33	96.18	96.33	96.43	96.99	97.26	96.38
15	403	3.07	3114	3000	98.26	96.08	96.10	95.71	94.69	95.14	94.14	94.34	94.56	94.76	94.56	94.54
16	410	3.06	3058	3000	99.80	98.36	97.05	97.78	96.92	97.78	97.41	98.07	97.39	97.90	98.12	97.32
17	413	3.05	3105	3000	99.93	98.76	97.84	98.47	97.12	97.21	96.85	97.50	96.85	97.17	97.48	96.92
18	405	3.06	3132	3000	98.00	96.23	95.63	94.84	94.52	94.67	94.05	94.65	95.21	95.24	95.66	94.77
19	410	3.10	3062	3000	98.88	97.75	97.22	97.44	96.70	97.34	97.39	97.58	97.00	97.56	97.83	96.92
20	419	3.08	3078	3000	97.81	96.90	96.52	96.06	95.87	96.33	95.49	96.23	96.18	95.92	96.49	95.52
21	432	3.07	2994	3000	97.94	96.34	95.60	94.05	94.35	93.80	93.75	93.45	93.98	94.21	94.03	93.87
22	426	3.07	3044	3000	99.22	97.18	96.92	97.25	96.19	96.36	96.19	96.83	96.19	96.24	96.55	95.56
23	424	3.08	3012	3000	98.09	95.76	95.45	95.17	94.72	94.95	94.91	95.14	94.81	94.84	94.53	93.99
24	419	3.08	3002	3000	97.85	95.94	95.13	94.70	94.56	94.58	95.09	95.49	94.85	95.16	95.59	94.78
25	412	3.08	3043	3000	98.28	95.00	95.44	95.29	94.37	94.03	93.66	94.20	94.61	94.71	95.02	94.20
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**414**	**3.07**			**98.63**	**96.56**	**96.54**	**95.84**	**95.67**	**95.73**	**95.62**	**95.66**	**95.87**	**95.96**	**95.93**	**95.49**
Median	412	3.07			98.56	96.34	96.52	95.71	95.87	95.90	95.49	95.67	96.18	95.97	95.66	95.52
σ	8	0.01			0.78	1.02	1.03	1.34	1.18	1.22	1.39	1.38	1.13	1.16	1.25	1.19
Min.	398	3.04			97.28	94.98	94.42	93.62	93.27	93.80	93.66	93.45	93.39	93.05	94.03	93.87
Max.	432	3.10			100.00	98.76	98.17	98.47	97.73	97.88	98.34	98.07	97.66	97.90	98.12	97.64

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
1	0.4315	0.4108	3153	3000	0.0009	0.0010	0.0012	0.0009	0.0010	0.0011	0.0010	0.0012	0.0010	0.0009	0.0011	0.0010
2	0.4337	0.4131	3133	3000	0.0011	0.0012	0.0015	0.0012	0.0013	0.0014	0.0012	0.0014	0.0015	0.0012	0.0013	0.0013
3	0.4342	0.4109	3107	3000	0.0007	0.0008	0.0010	0.0007	0.0007	0.0007	0.0010	0.0011	0.0008	0.0009	0.0010	0.0009
4	0.4363	0.4122	3081	3000	0.0011	0.0009	0.0013	0.0009	0.0011	0.0011	0.0012	0.0013	0.0012	0.0011	0.0013	0.0011
5	0.4328	0.4096	3121	3000	0.0008	0.0009	0.0010	0.0009	0.0009	0.0009	0.0011	0.0011	0.0008	0.0008	0.0008	0.0007
6	0.4340	0.4062	3073	3000	0.0011	0.0008	0.0010	0.0008	0.0011	0.0009	0.0011	0.0010	0.0010	0.0010	0.0010	0.0010
7	0.4319	0.4048	3099	3000	0.0011	0.0003	0.0007	0.0006	0.0007	0.0007	0.0009	0.0010	0.0008	0.0008	0.0010	0.0009
8	0.4336	0.4040	3062	3000	0.0008	0.0006	0.0007	0.0004	0.0006	0.0006	0.0007	0.0008	0.0005	0.0007	0.0005	0.0005
9	0.4319	0.4043	3095	3000	0.0011	0.0012	0.0013	0.0008	0.0011	0.0011	0.0012	0.0012	0.0011	0.0012	0.0011	0.0012
10	0.4306	0.4026	3104	3000	0.0008	0.0004	0.0009	0.0007	0.0007	0.0007	0.0008	0.0009	0.0007	0.0009	0.0008	0.0007
11	0.4407	0.4152	3031	3000	0.0003	0.0006	0.0009	0.0004	0.0006	0.0004	0.0005	0.0006	0.0004	0.0010	0.0008	0.0009
12	0.4395	0.4173	3067	3000	0.0007	0.0005	0.0005	0.0007	0.0006	0.0007	0.0008	0.0008	0.0009	0.0008	0.0009	0.0009
13	0.4348	0.4117	3103	3000	0.0006	0.0002	0.0005	0.0003	0.0004	0.0006	0.0005	0.0005	0.0006	0.0007	0.0007	0.0007
14	0.4368	0.4138	3085	3000	0.0002	0.0004	0.0007	0.0004	0.0005	0.0005	0.0005	0.0006	0.0007	0.0006	0.0007	0.0008
15	0.4350	0.4136	3114	3000	0.0003	0.0004	0.0004	0.0005	0.0003	0.0003	0.0003	0.0005	0.0005	0.0006	0.0006	0.0004
16	0.4410	0.4193	3058	3000	0.0007	0.0006	0.0005	0.0007	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010	0.0011	0.0009
17	0.4364	0.4155	3105	3000	0.0007	0.0007	0.0005	0.0007	0.0010	0.0009	0.0009	0.0009	0.0009	0.0008	0.0010	0.0008
18	0.4331	0.4116	3132	3000	0.0002	0.0002	0.0005	0.0004	0.0004	0.0004	0.0006	0.0003	0.0006	0.0006	0.0006	0.0006
19	0.4375	0.4124	3062	3000	0.0006	0.0007	0.0004	0.0009	0.0011	0.0013	0.0012	0.0012	0.0012	0.0012	0.0013	0.0011
20	0.4383	0.4161	3078	3000	0.0004	0.0003	0.0005	0.0004	0.0006	0.0006	0.0006	0.0006	0.0007	0.0006	0.0007	0.0005
21	0.4422	0.4136	2994	3000	0.0002	0.0002	0.0006	0.0003	0.0004	0.0004	0.0004	0.0006	0.0004	0.0008	0.0007	0.0010
22	0.4370	0.4090	3044	3000	0.0008	0.0008	0.0009	0.0009	0.0009	0.0006	0.0009	0.0009	0.0011	0.0009	0.0009	0.0009
23	0.4390	0.4093	3012	3000	0.0006	0.0007	0.0003	0.0001	0.0003	0.0004	0.0004	0.0005	0.0006	0.0005	0.0006	0.0006
24	0.4407	0.4116	3002	3000	0.0005	0.0004	0.0005	0.0005	0.0007	0.0006	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007
25	0.4370	0.4089	3043	3000	0.0007	0.0008	0.0004	0.0003	0.0007	0.0006	0.0005	0.0007	0.0008	0.0006	0.0007	0.0008
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0007**	**0.0006**	**0.0007**	**0.0006**	**0.0007**	**0.0008**	**0.0008**	**0.0009**	**0.0008**	**0.0008**	**0.0009**	**0.0008**
Median					0.0007	0.0006	0.0007	0.0007	0.0007	0.0007	0.0008	0.0009	0.0008	0.0008	0.0008	0.0009
σ					0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002
Min.					0.0002	0.0002	0.0003	0.0001	0.0003	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0004
Max.					0.0011	0.0012	0.0015	0.0012	0.0013	0.0014	0.0012	0.0014	0.0015	0.0012	0.0013	0.0013

1141

DATA SET 15: 105°C; 1050 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)			
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064
1	429	3.09	3153	3000	95.57	95.67	95.09	94.81
2	419	3.06	3133	3000	96.54	97.64	97.06	96.56
3	416	3.07	3107	3000	95.23	95.02	94.61	94.42
4	412	3.09	3081	3000	96.53	97.40	97.02	96.65
5	407	3.09	3121	3000	94.74	93.85	93.98	94.12
6	406	3.06	3073	3000	96.06	97.00	96.68	96.41
7	411	3.06	3099	3000	95.74	96.84	96.57	95.91
8	398	3.07	3062	3000	94.60	94.05	93.67	94.30
9	410	3.07	3095	3000	97.49	98.51	98.08	97.47
10	418	3.06	3104	3000	96.06	96.01	95.63	96.20
11	416	3.07	3031	3000	93.60	93.72	93.29	93.31
12	410	3.04	3067	3000	96.78	97.66	96.83	95.70
13	408	3.05	3103	3000	94.16	94.55	93.67	94.06
14	409	3.07	3085	3000	96.67	97.28	96.36	95.79
15	403	3.07	3114	3000	94.54	94.91	94.51	94.34
16	410	3.06	3058	3000	97.73	98.00	97.51	96.97
17	413	3.05	3105	3000	97.21	97.41	96.70	96.15
18	405	3.06	3132	3000	94.94	94.77	94.42	94.89
19	410	3.10	3062	3000	97.24	97.48	96.68	96.80
20	419	3.08	3078	3000	95.52	96.28	95.47	95.52
21	432	3.07	2994	3000	93.56	93.80	93.26	92.82
22	426	3.07	3044	3000	95.82	96.26	96.36	95.44
23	424	3.08	3012	3000	94.53	94.22	93.87	93.23
24	419	3.08	3002	3000	94.51	95.04	94.42	94.56
25	412	3.08	3043	3000	94.59	94.63	94.05	93.64
n	25	25	25	25	25	25	25	25
Mean	**414**	**3.07**			**95.60**	**95.92**	**95.43**	**95.20**
Median	412	3.07			95.57	96.01	95.47	95.44
σ	8	0.01			1.21	1.52	1.47	1.30
Min.	398	3.04			93.56	93.72	93.26	92.82
Max.	432	3.10			97.73	98.51	98.08	97.47

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')			
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064
1	0.4315	0.4108	3153	3000	0.0008	0.0010	0.0009	0.0009
2	0.4337	0.4131	3133	3000	0.0012	0.0013	0.0012	0.0012
3	0.4342	0.4109	3107	3000	0.0008	0.0009	0.0010	0.0009
4	0.4363	0.4122	3081	3000	0.0012	0.0012	0.0012	0.0012
5	0.4328	0.4096	3121	3000	0.0007	0.0006	0.0009	0.0009
6	0.4340	0.4062	3073	3000	0.0012	0.0011	0.0012	0.0011
7	0.4319	0.4048	3099	3000	0.0009	0.0010	0.0009	0.0009
8	0.4336	0.4040	3062	3000	0.0006	0.0006	0.0007	0.0007
9	0.4319	0.4043	3095	3000	0.0012	0.0012	0.0011	0.0011
10	0.4306	0.4026	3104	3000	0.0008	0.0009	0.0009	0.0009
11	0.4407	0.4152	3031	3000	0.0007	0.0008	0.0008	0.0009
12	0.4395	0.4173	3067	3000	0.0009	0.0009	0.0009	0.0007
13	0.4348	0.4117	3103	3000	0.0007	0.0006	0.0008	0.0008
14	0.4368	0.4138	3085	3000	0.0007	0.0007	0.0008	0.0009
15	0.4350	0.4136	3114	3000	0.0007	0.0007	0.0006	0.0007
16	0.4410	0.4193	3058	3000	0.0010	0.0009	0.0012	0.0011
17	0.4364	0.4155	3105	3000	0.0010	0.0008	0.0010	0.0009
18	0.4331	0.4116	3132	3000	0.0006	0.0006	0.0007	0.0008
19	0.4375	0.4124	3062	3000	0.0012	0.0011	0.0012	0.0013
20	0.4383	0.4161	3078	3000	0.0006	0.0007	0.0007	0.0007
21	0.4422	0.4136	2994	3000	0.0009	0.0008	0.0008	0.0010
22	0.4370	0.4090	3044	3000	0.0009	0.0011	0.0010	0.0010
23	0.4390	0.4093	3012	3000	0.0006	0.0006	0.0008	0.0013
24	0.4407	0.4116	3002	3000	0.0007	0.0008	0.0008	0.0011
25	0.4370	0.4089	3043	3000	0.0008	0.0008	0.0009	0.0011
n	25	25	25	25	25	25	25	25
Mean					**0.0009**	**0.0009**	**0.0009**	**0.0010**
Median					0.0008	0.0008	0.0009	0.0009
σ					0.0002	0.0002	0.0002	0.0002
Min.					0.0006	0.0006	0.0006	0.0007
Max.					0.0012	0.0013	0.0012	0.0013

1142

DATA SET 10: 105°C; 1050 mA

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	1050 mA
Testing Initiation Date	October 16, 2015
Case Temperature [T_s]	105°C
Ambient Temperature [T_A]	105°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	99.37%	0.0005	-0.1	N/R
1008	98.28%	0.0007	0.1	N/R
1512	97.69%	0.0006	0.0	N/R
2016	97.41%	0.0005	0.0	N/R
2520	97.15%	0.0004	0.0	N/R
3024	96.98%	0.0004	0.0	N/R
3528	96.69%	0.0004	0.0	N/R
4032	96.40%	0.0005	0.0	N/R
4536	96.35%	0.0004	0.0	N/R
5040	96.19%	0.0005	0.0	N/R
5544	96.24%	0.0004	0.0	N/R
6048	95.87%	0.0003	0.0	N/R
6552	95.67%	0.0005	0.0	-1.6%
7056	95.43%	0.0004	0.0	-1.5%
7560	95.28%	0.0004	0.0	-1.1%
8064	95.13%	0.0006	0.0	-0.9%
8568	95.16%	0.0007	-0.1	-1.1%
9072	95.07%	0.0007	-0.1	-1.6%
9576	94.85%	0.0007	-0.1	-1.1%
10080	94.88%	0.0009	-0.1	-2.3%
10584	94.81%	0.0013	-0.2	-1.7%
11088	94.90%	0.0015	-0.3	-1.6%
11592	95.10%	0.0012	-0.2	-1.9%

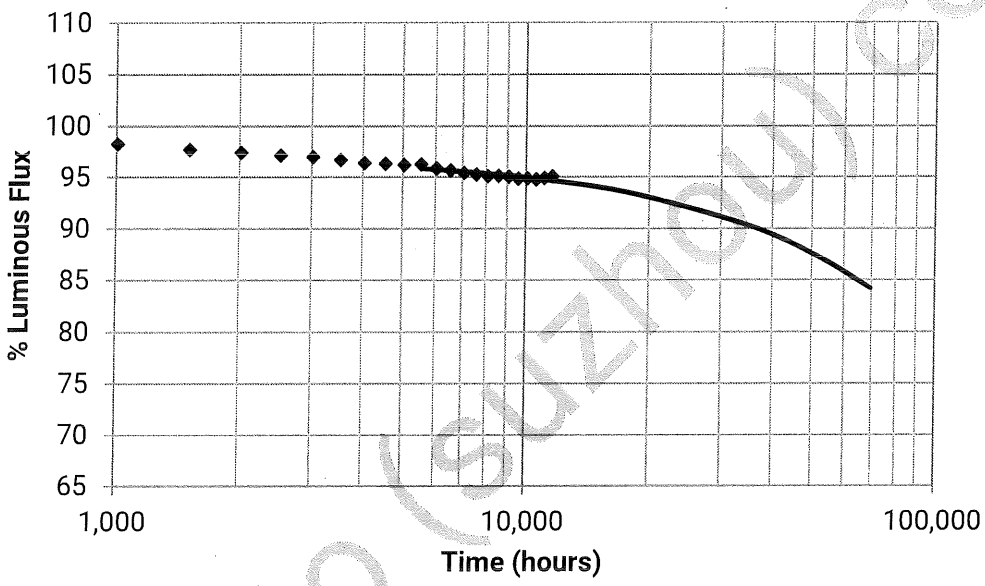
Note: "N/R" indicates data points that are not reported

1143

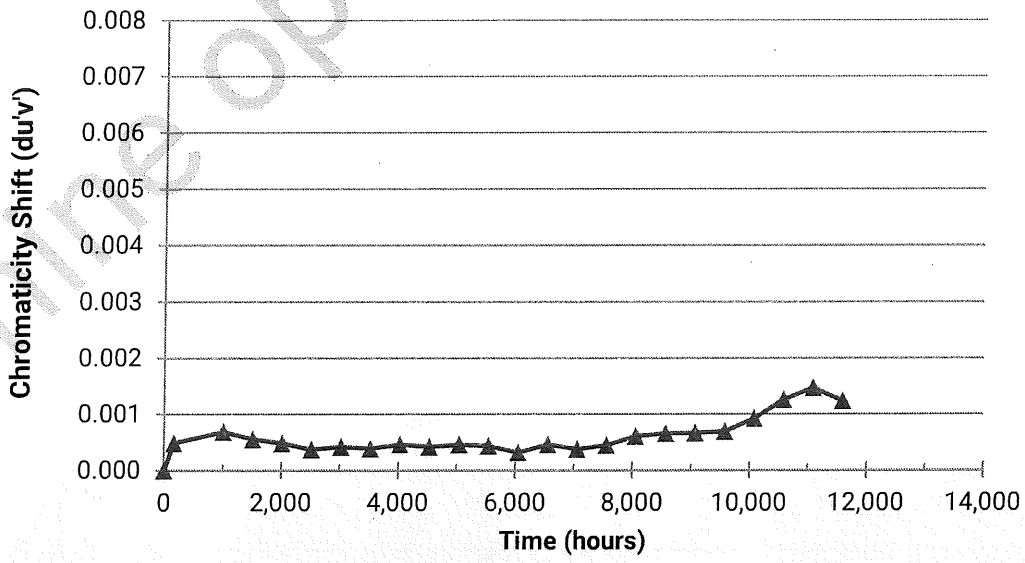
DATA SET 10: 105°C; 1050 mA

TM-21 Projection from Cree's Internal Calculator

Test duration	11,592 hours
Test duration used for projection	t=5,544 to t=11,592
α	2.022E-06
β	9.692E-01
Reported Lifetimes	L90(12k) = 36,700 hours L80(12k) > 69,600 hours L70(12k) > 69,600 hours



Color Shift Graph



DATA SET 10: 105°C; 1050 mA

1144

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	492	3.06	4018	4000	99.35	98.01	97.07	96.66	96.64	96.62	96.36	95.85	95.91	95.49	95.61	95.65
2	477	3.11	4139	4000	99.12	98.26	97.65	97.44	97.23	97.29	97.13	97.13	96.77	96.64	96.20	96.03
3	489	3.07	4102	4000	99.53	98.02	97.51	97.33	96.91	96.12	96.03	95.32	94.95	94.77	96.16	94.73
4	471	3.11	4099	4000	99.15	97.77	97.28	98.08	97.18	97.20	97.37	96.77	96.10	96.24	94.89	95.74
5	475	3.12	4028	4000	98.93	98.55	97.37	96.69	96.48	96.55	96.10	96.06	96.55	95.89	95.81	95.58
6	463	3.09	4080	4000	99.76	99.01	98.08	97.75	97.80	96.84	96.65	96.65	96.52	96.41	95.98	95.46
7	458	3.09	3972	4000	99.48	98.67	98.58	97.88	97.75	97.58	96.88	96.66	96.77	97.05	97.14	96.70
8	485	3.06	4070	4000	99.90	97.61	97.20	96.64	96.31	95.84	95.43	95.22	95.01	94.83	95.06	94.66
9	477	3.06	4037	4000	99.39	98.41	98.05	97.74	97.51	97.21	97.17	96.83	96.77	97.02	96.81	96.04
10	470	3.09	4039	4000	99.34	97.83	97.62	97.11	96.36	96.53	95.83	95.28	95.57	94.87	95.60	94.98
11	448	3.13	3996	4000	100.02	98.75	98.28	97.79	97.10	96.92	96.79	96.07	96.70	96.79	96.63	96.16
12	441	3.15	4043	4000	99.05	98.32	97.98	97.17	97.73	97.05	96.62	96.44	96.49	96.42	96.28	96.38
13	468	3.06	3918	4000	100.00	97.93	97.43	97.31	96.79	96.69	96.41	96.04	96.22	95.81	95.83	95.60
14	468	3.08	4100	4000	99.29	98.46	97.93	97.22	96.64	97.22	96.67	96.45	96.71	96.43	96.49	96.49
15	479	3.10	4095	4000	99.06	98.33	97.68	97.45	97.45	97.37	97.70	97.33	96.45	96.53	96.74	96.24
16	478	3.13	4003	4000	99.08	97.95	96.99	96.92	96.78	97.13	96.82	96.25	96.63	96.23	97.03	96.48
17	448	3.10	3959	4000	99.55	98.37	97.70	97.74	97.94	97.56	97.27	97.47	97.43	97.36	97.14	96.47
18	443	3.13	3978	4000	99.05	97.77	97.41	97.32	97.16	96.48	95.78	95.92	95.94	95.31	95.47	94.92
19	479	3.07	4024	4000	99.02	99.14	98.14	97.95	97.47	97.79	97.64	97.47	96.84	96.68	97.01	96.72
20	483	3.08	3937	4000	99.23	98.51	97.87	97.91	97.72	97.70	97.14	96.85	96.68	97.08	96.87	96.44
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Mean	**470**	**3.09**			**99.37**	**98.28**	**97.69**	**97.41**	**97.15**	**96.98**	**96.69**	**96.40**	**96.35**	**96.19**	**96.24**	**95.87**
Median	473	3.09			99.32	98.33	97.67	97.39	97.17	97.09	96.73	96.45	96.54	96.42	96.24	96.04
σ	15	0.03			0.34	0.42	0.42	0.45	0.51	0.52	0.63	0.69	0.62	0.79	0.69	0.66
Min.	441	3.06			98.93	97.61	96.99	96.64	96.31	95.84	95.43	95.22	94.95	94.77	94.89	94.66
Max.	492	3.15			100.02	99.14	98.58	98.08	97.94	97.79	97.70	97.47	97.43	97.36	97.14	96.72

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
1	0.3803	0.3775	4018	4000	0.0010	0.0011	0.0008	0.0008	0.0002	0.0003	0.0004	0.0004	0.0001	0.0003	0.0004	0.0005
2	0.3748	0.3729	4139	4000	0.0001	0.0006	0.0003	0.0005	0.0003	0.0004	0.0004	0.0008	0.0006	0.0006	0.0008	0.0003
3	0.3766	0.3750	4102	4000	0.0009	0.0008	0.0004	0.0007	0.0001	0.0003	0.0001	0.0004	0.0003	0.0007	0.0004	0.0007
4	0.3749	0.3674	4099	4000	0.0005	0.0005	0.0007	0.0004	0.0002	0.0001	0.0005	0.0004	0.0005	0.0004	0.0007	0.0002
5	0.3793	0.3751	4028	4000	0.0002	0.0008	0.0006	0.0005	0.0003	0.0007	0.0003	0.0003	0.0005	0.0003	0.0006	0.0007
6	0.3788	0.3809	4080	4000	0.0005	0.0008	0.0007	0.0005	0.0007	0.0004	0.0003	0.0006	0.0005	0.0003	0.0004	0.0002
7	0.3827	0.3801	3972	4000	0.0001	0.0003	0.0002	0.0001	0.0005	0.0001	0.0003	0.0004	0.0002	0.0002	0.0003	0.0002
8	0.3784	0.3777	4070	4000	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0005	0.0007	0.0004	0.0004	0.0002	0.0003
9	0.3790	0.3751	4037	4000	0.0007	0.0007	0.0007	0.0010	0.0007	0.0005	0.0009	0.0010	0.0009	0.0008	0.0007	0.0004
10	0.3772	0.3682	4039	4000	0.0003	0.0009	0.0007	0.0001	0.0002	0.0007	0.0007	0.0006	0.0004	0.0004	0.0006	0.0002
11	0.3795	0.3712	3996	4000	0.0006	0.0008	0.0007	0.0004	0.0001	0.0004	0.0002	0.0002	0.0001	0.0005	0.0003	0.0002
12	0.3773	0.3692	4043	4000	0.0002	0.0007	0.0004	0.0005	0.0004	0.0003	0.0003	0.0003	0.0004	0.0003	0.0004	0.0002
13	0.3837	0.3762	3918	4000	0.0007	0.0004	0.0003	0.0004	0.0003	0.0002	0.0002	0.0003	0.0002	0.0004	0.0002	0.0002
14	0.3746	0.3662	4100	4000	0.0005	0.0007	0.0004	0.0001	0.0001	0.0002	0.0004	0.0002	0.0001	0.0002	0.0001	0.0001
15	0.3780	0.3798	4095	4000	0.0005	0.0007	0.0009	0.0008	0.0006	0.0006	0.0006	0.0006	0.0006	0.0004	0.0003	0.0001
16	0.3829	0.3856	4003	4000	0.0003	0.0006	0.0003	0.0003	0.0001	0.0003	0.0003	0.0002	0.0001	0.0005	0.0003	0.0001
17	0.3817	0.3744	3959	4000	0.0006	0.0009	0.0008	0.0006	0.0003	0.0006	0.0003	0.0004	0.0003	0.0004	0.0004	0.0003
18	0.3789	0.3663	3978	4000	0.0003	0.0003	0.0002	0.0002	0.0004	0.0001	0.0002	0.0002	0.0007	0.0006	0.0004	0.0007
19	0.3773	0.3665	4024	4000	0.0009	0.0011	0.0010	0.0009	0.0009	0.0010	0.0007	0.0009	0.0007	0.0009	0.0006	0.0004
20	0.3813	0.3698	3937	4000	0.0009	0.0009	0.0007	0.0008	0.0007	0.0008	0.0005	0.0005	0.0008	0.0006	0.0007	0.0004
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Mean					**0.0005**	**0.0007**	**0.0006**	**0.0005**	**0.0004**	**0.0004**	**0.0004**	**0.0005**	**0.0004**	**0.0005**	**0.0004**	**0.0003**
Median					0.0005	0.0007	0.0006	0.0005	0.0003	0.0004	0.0003	0.0004	0.0004	0.0004	0.0004	0.0003
σ					0.0003	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.					0.0001	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0001
Max.					0.0010	0.0011	0.0010	0.0010	0.0009	0.0010	0.0009	0.0010	0.0009	0.0009	0.0008	0.0007

CREE

DATA SET 10: 105°C; 1050 mA

1145

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)										
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592
1	492	3.06	4018	4000	94.51	94.69	95.16	94.37	95.04	95.83	95.22	95.83	95.69	94.53	94.96
2	477	3.11	4139	4000	96.20	96.29	96.31	95.74	95.97	95.95	95.61	96.16	95.93	96.54	95.26
3	489	3.07	4102	4000	95.61	95.22	95.40	95.58	95.20	94.32	94.03	93.40	93.95	93.72	94.01
4	471	3.11	4099	4000	94.87	95.27	95.54	94.97	95.31	95.16	95.06	94.84	95.23	94.57	95.54
5	475	3.12	4028	4000	95.43	95.32	95.56	94.99	95.18	94.99	95.41	95.05	95.20	95.64	95.75
6	463	3.09	4080	4000	96.17	95.01	95.11	95.29	95.20	95.24	94.42	95.35	94.62	95.40	95.63
7	458	3.09	3972	4000	96.77	97.01	96.40	95.90	96.42	96.05	96.42	95.37	95.83	96.81	96.49
8	485	3.06	4070	4000	94.52	93.98	94.50	94.58	93.92	93.86	93.57	93.82	93.74	93.08	93.49
9	477	3.06	4037	4000	96.10	95.68	95.14	95.64	96.35	96.56	96.33	96.06	96.27	95.93	96.46
10	470	3.09	4039	4000	95.00	94.70	94.66	94.51	94.34	93.87	93.83	93.83	93.28	93.49	93.81
11	448	3.13	3996	4000	96.27	95.52	95.54	95.23	95.23	95.45	94.91	95.85	95.00	95.69	95.96
12	441	3.15	4043	4000	95.90	95.72	95.36	94.72	95.02	94.61	95.13	95.24	95.20	95.31	95.49
13	468	3.06	3918	4000	95.34	94.95	94.40	94.36	94.76	94.98	94.91	94.59	94.33	94.21	94.74
14	468	3.08	4100	4000	96.20	95.92	95.43	95.11	94.49	93.72	93.57	93.27	93.25	92.86	92.84
15	479	3.10	4095	4000	95.41	95.32	95.20	95.22	95.36	95.78	95.45	95.28	95.07	95.49	95.68
16	478	3.13	4003	4000	95.98	95.88	95.17	95.02	95.29	95.12	94.73	95.04	95.21	95.65	96.02
17	448	3.10	3959	4000	95.84	95.20	94.55	94.73	94.46	94.79	93.81	94.97	94.41	95.37	95.42
18	443	3.13	3978	4000	94.36	94.43	93.86	93.68	93.50	93.35	93.53	93.39	93.59	93.53	93.77
19	479	3.07	4024	4000	97.20	96.36	96.39	96.70	95.90	95.57	95.32	95.24	94.92	94.69	94.57
20	483	3.08	3937	4000	95.73	96.06	95.96	96.25	96.31	96.27	95.81	95.05	95.38	95.56	96.06
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Mean	**470**	**3.09**			**95.67**	**95.43**	**95.28**	**95.13**	**95.16**	**95.07**	**94.85**	**94.88**	**94.81**	**94.90**	**95.10**
Median	473	3.09			95.79	95.32	95.28	95.07	95.20	95.14	94.99	95.05	95.04	95.34	95.46
σ	15	0.03			0.75	0.72	0.68	0.71	0.79	0.90	0.90	0.89	0.88	1.13	1.04
Min.	441	3.06			94.36	93.98	93.86	93.68	93.50	93.35	93.53	93.27	93.25	92.86	92.84
Max.	492	3.15			97.20	97.01	96.40	96.70	96.42	96.56	96.42	96.16	96.27	96.81	96.49

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')										
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592
1	0.3803	0.3775	4018	4000	0.0010	0.0009	0.0010	0.0012	0.0011	0.0014	0.0011	0.0015	0.0012	0.0022	0.0019
2	0.3748	0.3729	4139	4000	0.0001	0.0004	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0009	0.0008	0.0023
3	0.3766	0.3750	4102	4000	0.0003	0.0002	0.0003	0.0005	0.0008	0.0005	0.0006	0.0006	0.0008	0.0019	0.0017
4	0.3749	0.3674	4099	4000	0.0005	0.0004	0.0006	0.0010	0.0006	0.0009	0.0010	0.0009	0.0011	0.0016	0.0009
5	0.3793	0.3751	4028	4000	0.0004	0.0003	0.0002	0.0003	0.0003	0.0004	0.0006	0.0006	0.0007	0.0006	0.0006
6	0.3788	0.3809	4080	4000	0.0003	0.0002	0.0007	0.0008	0.0002	0.0002	0.0004	0.0004	0.0013	0.0011	0.0008
7	0.3827	0.3801	3972	4000	0.0003	0.0005	0.0003	0.0002	0.0006	0.0006	0.0005	0.0019	0.0009	0.0013	0.0009
8	0.3784	0.3777	4070	4000	0.0012	0.0006	0.0003	0.0006	0.0008	0.0006	0.0007	0.0008	0.0012	0.0020	0.0019
9	0.3790	0.3751	4037	4000	0.0004	0.0006	0.0002	0.0003	0.0002	0.0004	0.0004	0.0004	0.0006	0.0011	0.0008
10	0.3772	0.3682	4039	4000	0.0004	0.0004	0.0003	0.0002	0.0004	0.0007	0.0004	0.0013	0.0016	0.0019	0.0017
11	0.3795	0.3712	3996	4000	0.0005	0.0004	0.0004	0.0009	0.0008	0.0008	0.0008	0.0009	0.0019	0.0017	0.0013
12	0.3773	0.3692	4043	4000	0.0005	0.0005	0.0006	0.0007	0.0010	0.0008	0.0009	0.0013	0.0014	0.0015	0.0013
13	0.3837	0.3762	3918	4000	0.0005	0.0003	0.0003	0.0009	0.0007	0.0008	0.0010	0.0008	0.0018	0.0020	0.0015
14	0.3746	0.3662	4100	4000	0.0003	0.0003	0.0005	0.0007	0.0017	0.0008	0.0005	0.0011	0.0009	0.0006	0.0008
15	0.3780	0.3798	4095	4000	0.0007	0.0003	0.0007	0.0006	0.0007	0.0005	0.0007	0.0006	0.0017	0.0011	0.0011
16	0.3829	0.3856	4003	4000	0.0003	0.0002	0.0005	0.0005	0.0005	0.0003	0.0005	0.0009	0.0007	0.0009	0.0007
17	0.3817	0.3744	3959	4000	0.0006	0.0003	0.0009	0.0009	0.0008	0.0007	0.0008	0.0008	0.0018	0.0017	0.0012
18	0.3789	0.3663	3978	4000	0.0003	0.0001	0.0004	0.0009	0.0009	0.0008	0.0009	0.0013	0.0012	0.0020	0.0011
19	0.3773	0.3665	4024	4000	0.0003	0.0003	0.0002	0.0007	0.0007	0.0012	0.0012	0.0012	0.0026	0.0021	0.0017
20	0.3813	0.3698	3937	4000	0.0005	0.0006	0.0004	0.0004	0.0006	0.0005	0.0008	0.0012	0.0008	0.0012	0.0009
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Mean					**0.0005**	**0.0004**	**0.0004**	**0.0006**	**0.0007**	**0.0007**	**0.0007**	**0.0009**	**0.0013**	**0.0015**	**0.0012**
Median					0.0004	0.0003	0.0004	0.0006	0.0007	0.0007	0.0007	0.0009	0.0012	0.0016	0.0011
σ					0.0002	0.0002	0.0002	0.0003	0.0004	0.0003	0.0003	0.0004	0.0005	0.0005	0.0005
Min.					0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0006	0.0006	0.0006
Max.					0.0012	0.0009	0.0010	0.0012	0.0017	0.0014	0.0012	0.0019	0.0026	0.0022	0.0023

DATA SET 11: 85°C; 1500 mA

1146

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	1500 mA
Testing Initiation Date	November 2, 2015
Case Temperature [T_S]	85°C
Ambient Temperature [T_A]	85°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	100.11%	0.0006	-0.1	N/R
1008	99.63%	0.0008	-0.1	N/R
1512	99.30%	0.0009	-0.1	N/R
2016	98.99%	0.0008	-0.2	N/R
2520	98.67%	0.0007	-0.1	N/R
3024	98.50%	0.0007	-0.1	N/R
3528	98.51%	0.0008	-0.1	N/R
4032	98.36%	0.0008	-0.2	N/R
4536	98.37%	0.0008	-0.1	N/R
5040	98.36%	0.0008	-0.2	N/R
5544	98.18%	0.0008	-0.2	N/R
6048	98.20%	0.0008	-0.2	N/R
6552	97.88%	0.0008	-0.1	N/R
7056	97.77%	0.0008	-0.1	N/R
7560	97.48%	0.0009	-0.2	N/R
8064	97.42%	0.0009	-0.2	N/R
8568	97.26%	0.0009	-0.2	N/R
9072	97.02%	0.0009	-0.2	N/R
9576	97.21%	0.0010	-0.2	N/R
10080	96.80%	0.0009	-0.2	N/R
10584	97.01%	0.0009	-0.2	-2.6%
11088	97.12%	0.0009	-0.2	-3.1%
11592	96.95%	0.0010	-0.3	-3.1%
12096	96.95%	0.0010	-0.2	-2.9%
12600	97.00%	0.0010	-0.2	-3.3%
13104	96.94%	0.0010	-0.2	-3.3%
13608	96.99%	0.0009	-0.2	-3.6%

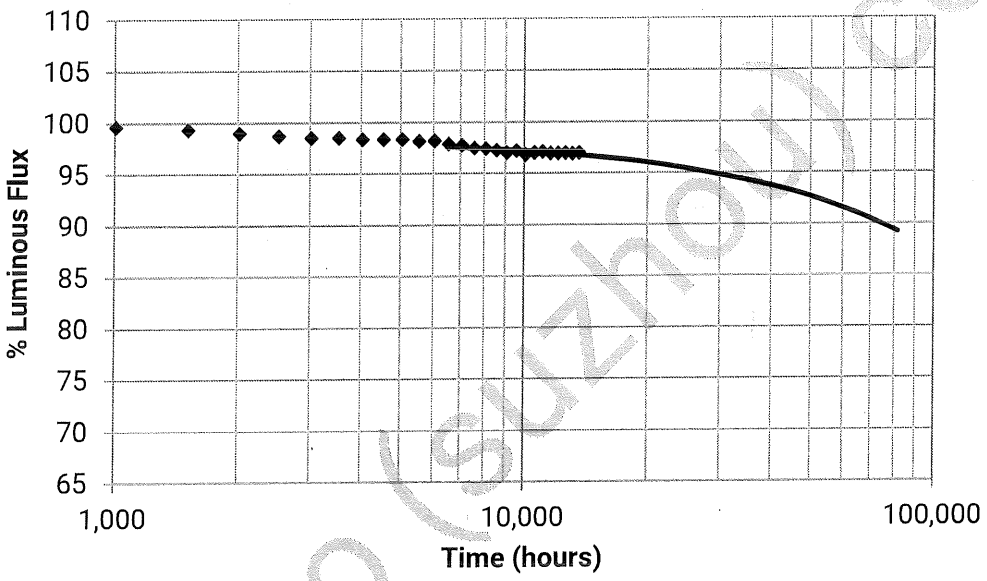
Note: "N/R" indicates data points that are not reported

1147

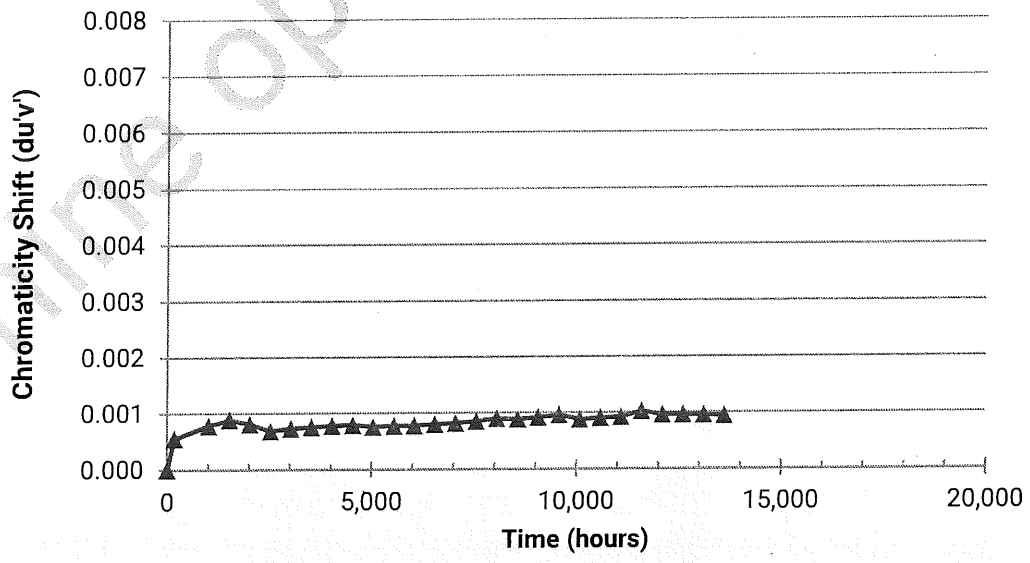
DATA SET 11: 85°C; 1500 mA

TM-21 Projection from Cree's Internal Calculator

Test duration	13,608 hours
Test duration used for projection	t=6,552 to t=13,608
α	1.195E-06
β	9.836E-01
Reported Lifetimes	L90(14k) = 74,300 hours L80(14k) > 81,600 hours L70(14k) > 81,600 hours



Color Shift Graph



1148

DATA SET 11: 85°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	559	3.11	3163	3000	100.16	100.07	99.98	99.79	99.53	98.64	98.94	98.64	99.16	98.98	98.76	98.23
2	559	3.15	3100	3000	100.13	99.64	99.07	98.82	98.69	98.75	98.62	98.44	98.12	98.66	98.59	98.62
3	533	3.10	3132	3000	100.13	99.59	99.68	98.57	98.14	97.75	98.07	97.78	98.10	97.71	97.78	97.95
4	532	3.18	3091	3000	100.11	99.44	98.65	98.23	98.27	98.36	97.61	97.88	97.57	98.14	97.56	97.46
5	559	3.14	3178	3000	99.87	99.16	98.80	98.39	97.68	97.78	97.60	97.77	97.57	97.82	97.50	97.57
6	541	3.15	3139	3000	100.18	100.00	99.56	99.19	98.98	98.65	98.97	98.36	98.56	98.74	98.41	98.37
7	554	3.12	3186	3000	100.07	99.26	98.83	98.56	98.09	98.32	98.12	97.62	97.44	97.89	97.49	97.35
8	550	3.22	3105	3000	99.65	99.62	99.29	99.33	98.47	98.58	98.67	98.80	98.64	98.76	98.43	98.53
9	523	3.12	3102	3000	99.96	99.89	99.79	99.75	99.10	98.53	98.83	98.66	98.83	98.43	98.55	98.49
10	525	3.13	3128	3000	99.85	99.52	99.64	99.28	98.67	98.78	98.44	98.72	98.53	98.02	98.06	98.00
11	527	3.14	3147	3000	100.09	100.19	99.70	99.41	99.43	98.80	98.59	98.80	99.26	98.86	98.96	98.88
12	561	3.26	3083	3000	100.50	99.06	98.16	98.04	97.58	97.92	98.09	97.97	97.40	97.33	97.45	97.67
13	549	3.27	3111	3000	100.11	99.40	98.91	98.69	98.41	98.41	98.60	97.99	98.36	98.76	97.79	98.09
14	558	3.24	3140	3000	99.87	100.00	99.55	99.10	98.24	98.51	98.08	98.10	98.32	98.23	97.78	98.23
15	551	3.20	3044	3000	100.45	99.33	99.55	99.18	99.15	99.29	99.35	98.67	98.80	98.58	98.80	99.02
16	551	3.16	3124	3000	100.44	99.27	98.98	98.80	98.75	98.22	98.51	97.99	98.40	98.75	98.06	98.40
17	534	3.19	3084	3000	100.09	100.17	99.74	99.53	99.57	99.59	99.46	99.31	99.23	99.12	98.91	99.25
18	544	3.16	3168	3000	100.22	99.34	99.72	99.32	99.06	98.92	99.30	98.58	98.73	98.58	98.70	98.99
19	546	3.31	3059	3000	100.00	99.98	99.96	99.27	98.90	98.55	98.63	98.66	98.83	98.44	98.33	98.17
20	548	3.26	3089	3000	99.98	99.82	99.12	98.96	98.87	98.16	98.65	97.81	98.32	98.72	98.41	98.07
21	529	3.13	3113	3000	100.34	99.62	99.58	99.39	99.36	98.92	99.22	99.21	98.54	98.75	98.49	98.34
22	544	3.15	3080	3000	100.15	99.61	99.15	98.71	98.80	98.77	98.84	99.08	98.47	98.42	98.49	98.51
23	529	3.26	3086	3000	100.32	99.70	99.09	99.11	98.75	98.47	98.00	98.28	98.28	97.83	98.03	97.90
24	556	3.18	3111	3000	100.36	99.30	98.70	98.06	97.53	97.30	97.61	97.75	97.43	97.52	97.39	97.34
25	525	3.09	3058	3000	99.83	99.71	99.37	99.31	98.63	98.49	98.04	98.23	98.28	98.06	97.86	97.56
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**543**	**3.18**			**100.11**	**99.63**	**99.30**	**98.99**	**98.67**	**98.50**	**98.51**	**98.36**	**98.37**	**98.36**	**98.18**	**98.20**
Median	546	3.16			100.11	99.62	99.37	99.11	98.75	98.53	98.60	98.36	98.40	98.44	98.33	98.23
σ	13	0.06			0.21	0.32	0.46	0.49	0.57	0.48	0.54	0.49	0.55	0.48	0.50	0.53
Min	523	3.09			99.65	99.06	98.16	98.04	97.53	97.30	97.60	97.62	97.40	97.33	97.39	97.34
Max.	561	3.31			100.50	100.19	99.98	99.79	99.57	99.59	99.46	99.31	99.26	99.12	98.96	99.25

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
1	0.4299	0.4084	3163	3000	0.0003	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0009	0.0008	0.0008	0.0007	0.0008
2	0.4308	0.4026	3100	3000	0.0006	0.0008	0.0010	0.0008	0.0007	0.0006	0.0007	0.0009	0.0007	0.0007	0.0008	0.0007
3	0.4278	0.3998	3132	3000	0.0003	0.0007	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0004	0.0004	0.0004	0.0003
4	0.4291	0.3977	3091	3000	0.0005	0.0010	0.0010	0.0008	0.0007	0.0006	0.0007	0.0007	0.0006	0.0005	0.0005	0.0006
5	0.4294	0.4092	3178	3000	0.0006	0.0008	0.0011	0.0010	0.0010	0.0008	0.0009	0.0011	0.0009	0.0009	0.0008	0.0009
6	0.4303	0.4063	3139	3000	0.0003	0.0008	0.0008	0.0008	0.0006	0.0005	0.0006	0.0006	0.0005	0.0005	0.0005	0.0005
7	0.4240	0.3978	3186	3000	0.0008	0.0010	0.0009	0.0009	0.0006	0.0008	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008
8	0.4291	0.3994	3105	3000	0.0005	0.0009	0.0008	0.0008	0.0006	0.0007	0.0006	0.0009	0.0008	0.0007	0.0006	0.0007
9	0.4356	0.4133	3102	3000	0.0005	0.0005	0.0010	0.0008	0.0007	0.0007	0.0008	0.0008	0.0008	0.0007	0.0007	0.0008
10	0.4326	0.4100	3128	3000	0.0006	0.0009	0.0010	0.0009	0.0008	0.0007	0.0007	0.0007	0.0008	0.0007	0.0008	0.0009
11	0.4305	0.4077	3147	3000	0.0007	0.0010	0.0011	0.0007	0.0007	0.0008	0.0006	0.0007	0.0006	0.0007	0.0008	0.0008
12	0.4363	0.4124	3083	3000	0.0007	0.0007	0.0010	0.0010	0.0007	0.0008	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010
13	0.4333	0.4094	3111	3000	0.0009	0.0009	0.0010	0.0009	0.0007	0.0009	0.0010	0.0008	0.0009	0.0009	0.0010	0.0009
14	0.4303	0.4064	3140	3000	0.0008	0.0010	0.0011	0.0008	0.0006	0.0009	0.0008	0.0009	0.0010	0.0008	0.0010	0.0011
15	0.4409	0.4173	3044	3000	0.0007	0.0009	0.0013	0.0013	0.0010	0.0012	0.0011	0.0012	0.0012	0.0013	0.0013	0.0012
16	0.4333	0.4111	3124	3000	0.0005	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	0.0009	0.0009	0.0010	0.0008
17	0.4368	0.4137	3084	3000	0.0004	0.0007	0.0010	0.0010	0.0010	0.0009	0.0010	0.0010	0.0008	0.0009	0.0009	0.0008
18	0.4311	0.4118	3168	3000	0.0005	0.0005	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0009	0.0007
19	0.4380	0.4130	3059	3000	0.0007	0.0010	0.0009	0.0010	0.0008	0.0009	0.0010	0.0009	0.0011	0.0009	0.0010	0.0010
20	0.4344	0.4090	3089	3000	0.0008	0.0011	0.0011	0.0011	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0009	0.0009
21	0.4336	0.4103	3113	3000	0.0006	0.0007	0.0009	0.0007	0.0005	0.0006	0.0007	0.0005	0.0007	0.0007	0.0007	0.0006
22	0.4388	0.4175	3080	3000	0.0002	0.0005	0.0007	0.0006	0.0005	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0006
23	0.4348	0.4095	3086	3000	0.0005	0.0009	0.0010	0.0006	0.0006	0.0009	0.0007	0.0008	0.0009	0.0007	0.0008	0.0008
24	0.4327	0.4081	3111	3000	0.0005	0.0005	0.0007	0.0004	0.0004	0.0003	0.0005	0.0005	0.0006	0.0007	0.0006	0.0005
25	0.4396	0.4164	3058	3000	0.0004	0.0006	0.0005	0.0007	0.0006	0.0007	0.0006	0.0006	0.0007	0.0006	0.0006	0.0008
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0006**	**0.0008**	**0.0009**	**0.0008**	**0.0007**	**0.0007**	**0.0008**	**0.0008**	**0.0008**	**0.0008**	**0.0008**	**0.0008**
Median					0.0005	0.0008	0.0010	0.0008	0.0007	0.0007	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008
σ					0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.					0.0002	0.0005	0.0005	0.0004	0.0004	0.0003	0.0003	0.0005	0.0004	0.0004	0.0004	0.0003
Max.					0.0009	0.0011	0.0013	0.0013	0.0010	0.0012	0.0011	0.0012	0.0012	0.0013	0.0013	0.0012

1149

DATA SET 11: 85°C; 1500 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)											
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	559	3.11	3163	3000	97.74	97.85	97.51	97.15	97.42	97.39	97.39	96.54	96.46	96.96	97.24	96.37
2	559	3.15	3100	3000	98.05	97.78	98.03	97.62	97.10	97.41	97.84	97.55	97.89	98.00	97.91	98.09
3	533	3.10	3132	3000	97.18	97.54	96.92	96.24	96.56	97.11	96.56	95.96	96.13	95.94	95.94	95.76
4	532	3.18	3091	3000	97.41	96.69	96.88	97.03	96.63	96.80	96.97	96.86	96.79	97.01	97.03	97.05
5	559	3.14	3178	3000	97.60	96.71	97.10	96.57	96.91	96.75	97.16	96.39	96.89	96.84	96.96	96.94
6	541	3.15	3139	3000	97.86	97.56	97.17	97.43	97.75	97.60	97.60	97.41	97.08	97.75	97.51	97.36
7	554	3.12	3186	3000	97.31	96.66	97.06	96.95	96.73	96.84	97.15	96.77	97.17	97.27	97.11	97.11
8	550	3.22	3105	3000	98.27	98.20	98.25	97.56	98.16	97.89	98.33	97.60	97.80	98.02	98.22	97.71
9	523	3.12	3102	3000	98.99	98.49	97.74	97.90	97.55	97.17	97.40	97.40	97.63	97.05	97.44	96.92
10	525	3.13	3128	3000	97.65	97.62	97.37	97.20	97.25	96.51	96.43	96.40	96.57	96.93	96.43	96.70
11	527	3.14	3147	3000	98.61	98.31	98.08	98.27	98.29	97.78	97.45	97.42	97.51	97.42	97.45	97.61
12	561	3.26	3083	3000	97.45	97.58	96.83	96.99	96.58	96.15	96.72	95.99	96.74	96.22	96.76	96.83
13	549	3.27	3111	3000	97.74	97.54	97.52	97.74	97.59	97.28	97.07	96.81	97.54	97.76	96.96	97.17
14	558	3.24	3140	3000	97.53	97.56	97.40	97.38	97.47	97.13	97.44	96.72	97.40	97.60	96.88	97.29
15	551	3.20	3044	3000	98.44	98.47	98.11	97.77	98.33	98.17	98.28	97.77	98.09	97.57	97.15	97.15
16	551	3.16	3124	3000	97.71	98.19	97.46	97.44	97.28	96.57	97.06	96.30	96.86	96.79	96.34	96.21
17	534	3.19	3084	3000	98.73	98.73	98.54	98.82	98.33	98.14	98.52	98.16	98.26	98.50	97.79	98.33
18	544	3.16	3168	3000	98.29	98.24	97.92	98.24	98.13	97.61	98.11	97.41	97.65	98.02	97.45	97.85
19	546	3.31	3059	3000	97.65	97.82	97.71	97.40	96.50	96.37	96.72	97.01	96.48	96.85	96.24	95.99
20	548	3.26	3089	3000	97.74	97.77	97.45	97.66	96.97	96.66	96.73	95.91	96.50	96.99	96.41	96.41
21	529	3.13	3113	3000	97.88	98.34	97.88	97.90	96.92	96.75	96.90	96.58	96.26	96.43	96.28	96.28
22	544	3.15	3080	3000	98.62	98.47	97.55	97.94	97.46	97.07	97.66	97.02	97.37	97.68	97.57	97.64
23	529	3.26	3086	3000	97.35	97.64	96.60	96.71	96.39	96.14	95.94	95.63	95.54	95.92	95.75	95.86
24	556	3.18	3111	3000	97.39	97.28	97.23	96.69	96.17	95.84	96.51	95.81	95.72	96.06	96.42	96.44
25	525	3.09	3058	3000	97.75	97.27	96.76	96.93	97.04	96.38	96.19	96.59	96.80	96.47	96.59	96.61
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**543**	**3.18**			**97.88**	**97.77**	**97.48**	**97.42**	**97.26**	**97.02**	**97.21**	**96.80**	**97.01**	**97.12**	**96.95**	**96.95**
Median	546	3.16			97.74	97.77	97.46	97.43	97.25	97.07	97.15	96.77	96.89	97.01	96.96	96.94
σ	13	0.06			0.49	0.57	0.51	0.60	0.65	0.63	0.68	0.67	0.71	0.71	0.63	0.69
Min.	523	3.09			97.18	96.66	96.60	96.24	96.17	95.84	95.94	95.63	95.54	95.92	95.75	95.76
Max.	561	3.31			98.99	98.73	98.54	98.82	98.33	98.17	98.52	98.16	98.26	98.50	98.22	98.33

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')											
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080	10584	11088	11592	12096
1	0.4299	0.4084	3163	3000	0.0008	0.0007	0.0007	0.0008	0.0009	0.0008	0.0008	0.0009	0.0007	0.0008	0.0008	0.0006
2	0.4308	0.4026	3100	3000	0.0006	0.0007	0.0007	0.0008	0.0007	0.0006	0.0006	0.0006	0.0009	0.0009	0.0010	0.0010
3	0.4278	0.3998	3132	3000	0.0004	0.0004	0.0004	0.0005	0.0004	0.0003	0.0003	0.0003	0.0004	0.0007	0.0007	0.0008
4	0.4291	0.3977	3091	3000	0.0005	0.0006	0.0005	0.0006	0.0005	0.0005	0.0005	0.0007	0.0009	0.0009	0.0008	0.0009
5	0.4294	0.4092	3178	3000	0.0011	0.0009	0.0007	0.0008	0.0010	0.0010	0.0010	0.0011	0.0008	0.0007	0.0007	0.0007
6	0.4303	0.4063	3139	3000	0.0005	0.0005	0.0005	0.0005	0.0005	0.0004	0.0005	0.0005	0.0007	0.0007	0.0008	0.0007
7	0.4240	0.3978	3186	3000	0.0007	0.0008	0.0007	0.0008	0.0008	0.0007	0.0009	0.0008	0.0009	0.0010	0.0009	0.0010
8	0.4291	0.3994	3105	3000	0.0006	0.0007	0.0005	0.0008	0.0006	0.0006	0.0007	0.0008	0.0008	0.0009	0.0009	0.0009
9	0.4356	0.4133	3102	3000	0.0007	0.0007	0.0008	0.0010	0.0008	0.0009	0.0011	0.0010	0.0009	0.0008	0.0009	0.0008
10	0.4326	0.4100	3128	3000	0.0008	0.0008	0.0008	0.0010	0.0012	0.0012	0.0011	0.0010	0.0009	0.0009	0.0012	0.0010
11	0.4305	0.4077	3147	3000	0.0009	0.0008	0.0010	0.0007	0.0011	0.0011	0.0010	0.0010	0.0009	0.0007	0.0011	0.0009
12	0.4363	0.4124	3083	3000	0.0010	0.0010	0.0011	0.0013	0.0012	0.0010	0.0013	0.0011	0.0011	0.0011	0.0011	0.0011
13	0.4333	0.4094	3111	3000	0.0011	0.0011	0.0012	0.0010	0.0012	0.0014	0.0013	0.0012	0.0012	0.0012	0.0014	0.0013
14	0.4303	0.4064	3140	3000	0.0010	0.0011	0.0011	0.0011	0.0011	0.0013	0.0012	0.0011	0.0011	0.0012	0.0012	0.0011
15	0.4409	0.4173	3044	3000	0.0013	0.0014	0.0014	0.0014	0.0015	0.0016	0.0015	0.0015	0.0016	0.0015	0.0018	0.0014
16	0.4333	0.4111	3124	3000	0.0009	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0009	0.0009	0.0012	0.0010
17	0.4368	0.4137	3084	3000	0.0010	0.0010	0.0014	0.0011	0.0010	0.0011	0.0011	0.0008	0.0011	0.0010	0.0012	0.0011
18	0.4311	0.4118	3168	3000	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010	0.0010	0.0012	0.0012
19	0.4380	0.4130	3059	3000	0.0011	0.0010	0.0011	0.0009	0.0011	0.0012	0.0011	0.0007	0.0010	0.0010	0.0012	0.0012
20	0.4344	0.4090	3089	3000	0.0009	0.0008	0.0009	0.0011	0.0010	0.0012	0.0011	0.0011	0.0009	0.0011	0.0011	0.0012
21	0.4336	0.4103	3113	3000	0.0007	0.0007	0.0009	0.0008	0.0009	0.0007	0.0009	0.0009	0.0008	0.0007	0.0010	0.0008
22	0.4388	0.4175	3080	3000	0.0007	0.0007	0.0007	0.0008	0.0006	0.0008	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009
23	0.4348	0.4095	3086	3000	0.0011	0.0009	0.0011	0.0010	0.0011	0.0013	0.0012	0.0006	0.0009	0.0009	0.0011	0.0012
24	0.4327	0.4081	3111	3000	0.0004	0.0005	0.0006	0.0008	0.0005	0.0004	0.0007	0.0007	0.0008	0.0008	0.0009	0.0006
25	0.4396	0.4164	3058	3000	0.0006	0.0008	0.0007	0.0010	0.0007	0.0008	0.0010	0.0008	0.0008	0.0008	0.0009	0.0009
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0008**	**0.0008**	**0.0009**	**0.0009**	**0.0009**	**0.0009**	**0.0010**	**0.0009**	**0.0009**	**0.0009**	**0.0010**	**0.0010**
Median					0.0008	0.0008	0.0008	0.0009	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0010	0.0010
σ					0.0002	0.0002	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002
Min.					0.0004	0.0004	0.0004	0.0005	0.0004	0.0003	0.0003	0.0003	0.0004	0.0007	0.0007	0.0006
Max.					0.0013	0.0014	0.0014	0.0014	0.0015	0.0016	0.0015	0.0015	0.0016	0.0015	0.0018	0.0014

1150

DATA SET 11: 85°C; 1500 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)		
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	12600	13104	13608
1	559	3.11	3163	3000	96.53	97.19	96.76
2	559	3.15	3100	3000	97.89	98.14	98.18
3	533	3.10	3132	3000	95.79	95.57	95.47
4	532	3.18	3091	3000	97.18	97.37	97.35
5	559	3.14	3178	3000	97.30	96.87	97.19
6	541	3.15	3139	3000	97.32	97.40	97.04
7	554	3.12	3186	3000	97.29	97.36	97.18
8	550	3.22	3105	3000	97.36	97.80	97.58
9	523	3.12	3102	3000	96.86	96.54	96.84
10	525	3.13	3128	3000	96.80	96.57	96.72
11	527	3.14	3147	3000	97.55	97.38	97.68
12	561	3.26	3083	3000	96.53	96.65	96.29
13	549	3.27	3111	3000	97.43	97.56	97.81
14	558	3.24	3140	3000	97.28	96.95	97.65
15	551	3.20	3044	3000	97.53	96.80	97.59
16	551	3.16	3124	3000	96.19	96.39	96.75
17	534	3.19	3084	3000	98.24	98.29	98.24
18	544	3.16	3168	3000	97.98	97.74	98.22
19	546	3.31	3059	3000	96.35	96.43	96.50
20	548	3.26	3089	3000	96.51	96.55	96.93
21	529	3.13	3113	3000	96.52	96.33	96.67
22	544	3.15	3080	3000	97.33	97.37	96.93
23	529	3.26	3086	3000	95.90	95.86	95.69
24	556	3.18	3111	3000	96.31	96.20	95.92
25	525	3.09	3058	3000	97.04	96.11	95.63
n	25	25	25	25	25	25	25
Mean	**543**	**3.18**			**97.00**	**96.94**	**96.99**
Median	546	3.16			97.18	96.87	96.93
σ	13	0.06			0.64	0.70	0.79
Min.	523	3.09			95.79	95.57	95.47
Max.	561	3.31			98.24	98.29	98.24

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')		
	CCx	CCy	Calc. CCT	ANSI Target	12600	13104	13608
1	0.4299	0.4084	3163	3000	0.0007	0.0008	0.0009
2	0.4308	0.4026	3100	3000	0.0010	0.0010	0.0011
3	0.4278	0.3998	3132	3000	0.0008	0.0009	0.0007
4	0.4291	0.3977	3091	3000	0.0009	0.0009	0.0009
5	0.4294	0.4092	3178	3000	0.0008	0.0008	0.0008
6	0.4303	0.4063	3139	3000	0.0007	0.0007	0.0007
7	0.4240	0.3978	3186	3000	0.0010	0.0010	0.0010
8	0.4291	0.3994	3105	3000	0.0008	0.0009	0.0008
9	0.4356	0.4133	3102	3000	0.0010	0.0009	0.0008
10	0.4326	0.4100	3128	3000	0.0010	0.0010	0.0009
11	0.4305	0.4077	3147	3000	0.0009	0.0010	0.0010
12	0.4363	0.4124	3083	3000	0.0011	0.0012	0.0011
13	0.4333	0.4094	3111	3000	0.0012	0.0012	0.0012
14	0.4303	0.4064	3140	3000	0.0010	0.0010	0.0010
15	0.4409	0.4173	3044	3000	0.0013	0.0012	0.0012
16	0.4333	0.4111	3124	3000	0.0010	0.0010	0.0010
17	0.4368	0.4137	3084	3000	0.0010	0.0010	0.0011
18	0.4311	0.4118	3168	3000	0.0011	0.0010	0.0010
19	0.4380	0.4130	3059	3000	0.0011	0.0010	0.0009
20	0.4344	0.4090	3089	3000	0.0010	0.0010	0.0011
21	0.4336	0.4103	3113	3000	0.0008	0.0007	0.0009
22	0.4388	0.4175	3080	3000	0.0010	0.0009	0.0009
23	0.4348	0.4095	3086	3000	0.0010	0.0010	0.0008
24	0.4327	0.4081	3111	3000	0.0008	0.0007	0.0008
25	0.4396	0.4164	3058	3000	0.0009	0.0010	0.0009
n	25	25	25	25	25	25	25
Mean					**0.0010**	**0.0010**	**0.0009**
Median					0.0010	0.0010	0.0009
σ					0.0001	0.0001	0.0001
Min.					0.0007	0.0007	0.0007
Max.					0.0013	0.0012	0.0012

1151

DATA SET 14: 105°C; 1500 mA

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	1500 mA
Testing Initiation Date	December 09, 2015
Case Temperature [T_S]	105°C
Ambient Temperature [T_A]	105°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	99.73%	0.0005	-0.1	N/R
1008	98.42%	0.0008	-0.2	N/R
1512	97.99%	0.0008	-0.2	N/R
2016	97.25%	0.0007	-0.2	N/R
2520	97.21%	0.0007	-0.1	N/R
3024	96.60%	0.0007	-0.2	N/R
3528	96.29%	0.0007	-0.1	N/R
4032	95.92%	0.0007	-0.2	N/R
4536	95.87%	0.0007	-0.2	N/R
5040	95.62%	0.0007	-0.2	N/R
5544	95.58%	0.0007	-0.2	N/R
6048	95.25%	0.0007	-0.2	N/R
6552	95.12%	0.0007	-0.2	N/R
7056	94.91%	0.0009	-0.2	N/R
7560	94.85%	0.0009	-0.2	N/R
8064	94.69%	0.0009	-0.2	N/R
8568	94.72%	0.0010	-0.2	N/R
9072	94.79%	0.0010	-0.3	N/R
9576	94.67%	0.0010	-0.3	N/R
10080	94.07%	0.0011	-0.3	N/R

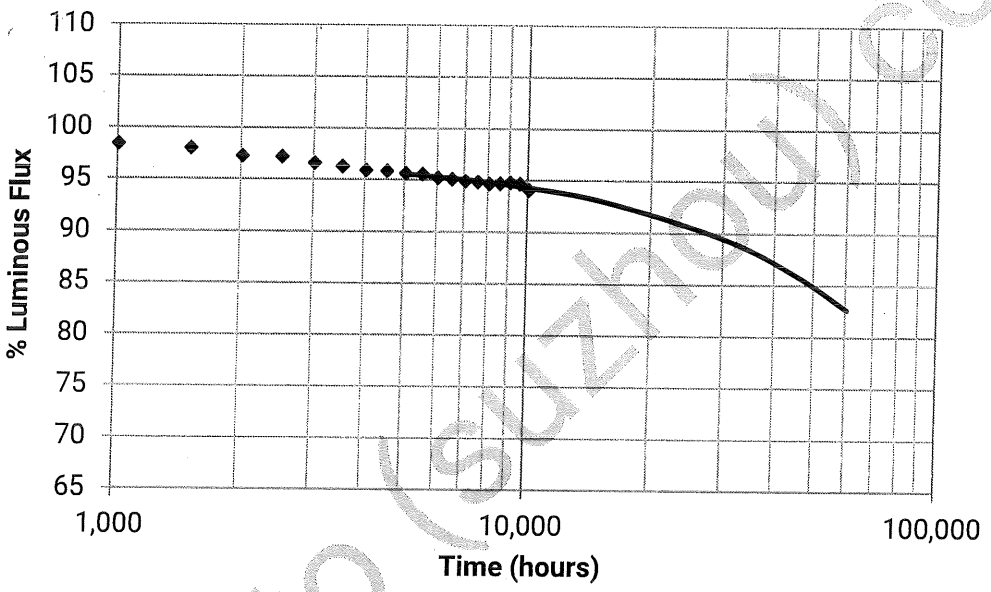
Note: "N/R" indicates data points that are not reported

DATA SET 14: 105°C; 1500 mA

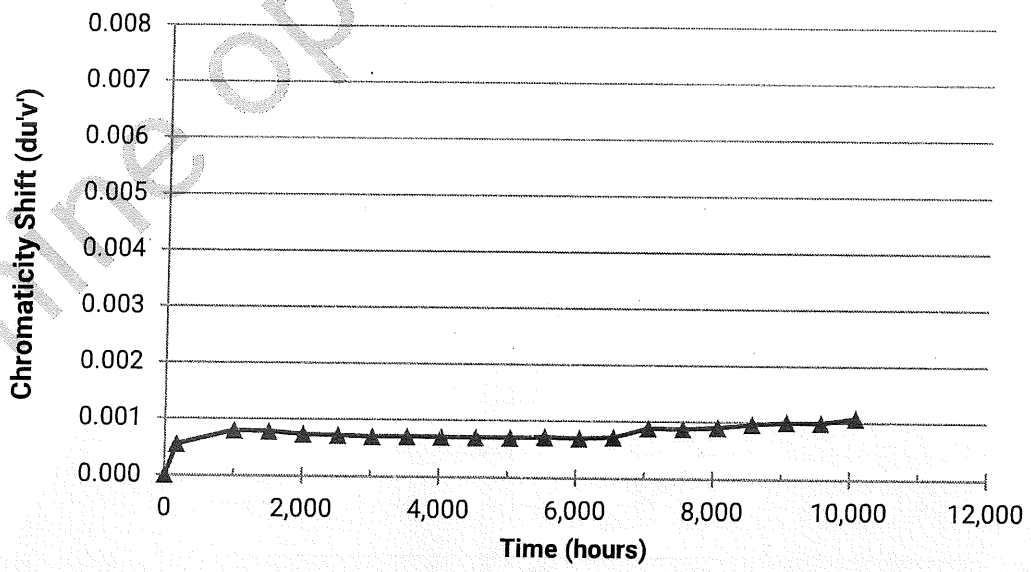
1152

TM-21 Projection from Cree's Internal Calculator

Test duration	10,080 hours
Test duration used for projection	t=5,040 to t=10,080
α	2.620E-06
β	9.683E-01
Reported Lifetimes	L90(10k) = 27,900 hours L80(10k) > 60,500 hours L70(10k) > 60,500 hours



Color Shift Graph



DATA SET 14: 105°C; 1500 mA

1153

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	565	3.13	3131	3000	100.30	99.24	98.87	97.82	98.07	98.05	97.66	97.42	97.40	97.19	97.03	96.81
2	536	3.19	3102	3000	100.28	100.26	99.05	98.82	99.05	97.54	97.44	97.89	97.41	97.65	97.39	97.14
3	525	3.16	3089	3000	100.50	99.41	99.56	98.76	99.03	98.63	97.98	97.79	97.43	97.10	97.52	96.15
4	565	3.23	3152	3000	99.70	98.90	98.14	98.03	98.03	97.11	96.44	96.60	96.44	96.62	96.64	95.89
5	556	3.13	3071	3000	99.35	98.20	97.39	97.26	96.60	97.28	96.04	95.97	96.24	95.79	95.59	95.99
6	546	3.10	3170	3000	100.13	98.44	98.99	97.88	98.28	97.29	96.48	96.32	95.66	95.26	95.77	95.55
7	549	3.16	3130	3000	100.82	98.89	98.42	97.92	97.61	97.67	96.92	96.94	97.07	96.74	96.10	96.56
8	554	3.14	3166	3000	99.91	98.14	97.56	96.59	96.35	96.26	96.37	95.54	96.07	95.18	95.99	95.74
9	539	3.25	3106	3000	100.65	98.68	98.18	97.48	98.03	96.68	96.20	96.42	96.44	96.14	96.51	95.29
10	552	3.11	3132	3000	100.49	98.70	98.88	98.35	98.26	96.94	96.25	95.36	95.71	95.73	94.73	95.22
11	559	3.17	3104	3000	100.14	98.43	98.34	97.92	98.46	98.03	97.10	96.87	96.73	96.98	96.58	95.38
12	548	3.23	3023	3000	100.40	98.01	98.12	97.30	97.85	97.59	97.14	97.01	96.97	96.35	95.84	94.53
13	528	3.11	3098	3000	100.70	98.41	99.17	97.33	97.46	96.27	97.08	95.42	96.04	96.12	96.35	95.44
14	535	3.18	3070	3000	100.13	99.35	99.14	97.85	98.17	97.53	96.84	95.77	96.50	95.87	96.76	96.09
15	558	3.17	3105	3000	99.37	98.51	97.17	96.34	97.12	96.52	95.31	95.36	94.84	95.09	94.98	94.48
16	539	3.10	3153	3000	98.18	96.61	96.07	95.33	95.72	94.99	95.31	94.75	94.45	94.53	94.53	93.82
17	538	3.11	3089	3000	100.22	99.87	98.27	98.64	97.47	97.19	96.99	96.54	95.42	94.77	94.68	95.68
18	552	3.20	3057	3000	98.46	97.84	96.74	95.94	94.82	94.60	94.73	94.46	95.11	94.26	94.24	94.15
19	552	3.14	3126	3000	98.23	97.36	97.25	96.33	96.94	95.91	96.00	95.00	95.69	95.60	95.76	95.38
20	563	3.17	3051	3000	99.24	97.30	96.70	95.77	96.01	94.67	95.12	94.50	94.85	94.32	94.04	94.12
21	532	3.09	3091	3000	98.74	97.16	97.16	95.97	95.26	95.35	95.54	94.81	95.00	94.71	95.00	95.05
22	555	3.25	3081	3000	99.86	98.70	97.51	96.56	96.67	96.22	95.55	95.51	94.70	95.04	94.52	94.02
23	537	3.09	3093	3000	98.99	98.32	97.95	98.19	97.09	96.11	95.79	95.79	95.88	94.88	93.93	94.75
24	547	3.15	3137	3000	99.30	97.71	97.26	96.12	95.61	95.30	94.99	94.66	93.56	93.89	93.89	93.49
25	546	3.23	3066	3000	99.27	98.02	97.87	96.68	96.39	95.27	96.04	95.27	95.03	94.78	95.07	94.65
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**547**	**3.16**			**99.73**	**98.42**	**97.99**	**97.25**	**97.21**	**96.60**	**96.29**	**95.92**	**95.87**	**95.62**	**95.58**	**95.25**
Median	548	3.16			99.91	98.43	98.12	97.33	97.46	96.68	96.25	95.77	95.88	95.60	95.76	95.38
σ	11	0.05			0.78	0.85	0.90	1.02	1.16	1.12	0.87	1.02	1.02	1.03	1.10	0.95
Min.	525	3.09			98.18	96.61	96.07	95.33	94.82	94.60	94.73	94.46	93.56	93.89	93.89	93.49
Max.	565	3.25			100.82	100.26	99.56	98.82	99.05	98.63	97.98	97.89	97.43	97.65	97.52	97.14

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
1	0.4318	0.4086	3131	3000	0.0003	0.0006	0.0006	0.0005	0.0006	0.0007	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006
2	0.4370	0.4164	3102	3000	0.0007	0.0010	0.0008	0.0008	0.0008	0.0007	0.0008	0.0009	0.0008	0.0008	0.0009	0.0008
3	0.4365	0.4137	3089	3000	0.0011	0.0013	0.0013	0.0013	0.0012	0.0012	0.0015	0.0016	0.0015	0.0015	0.0016	0.0014
4	0.4274	0.4013	3152	3000	0.0003	0.0006	0.0004	0.0006	0.0004	0.0003	0.0001	0.0004	0.0003	0.0005	0.0005	0.0004
5	0.4352	0.4086	3071	3000	0.0003	0.0006	0.0005	0.0007	0.0006	0.0006	0.0004	0.0005	0.0006	0.0005	0.0004	0.0005
6	0.4266	0.4018	3170	3000	0.0002	0.0005	0.0005	0.0005	0.0004	0.0005	0.0003	0.0002	0.0003	0.0001	0.0003	0.0003
7	0.4298	0.4040	3130	3000	0.0003	0.0005	0.0004	0.0005	0.0005	0.0007	0.0005	0.0004	0.0003	0.0005	0.0006	0.0005
8	0.4290	0.4067	3166	3000	0.0003	0.0006	0.0008	0.0009	0.0007	0.0008	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007
9	0.4331	0.4083	3106	3000	0.0007	0.0012	0.0010	0.0011	0.0010	0.0009	0.0010	0.0011	0.0012	0.0013	0.0010	0.0010
10	0.4313	0.4076	3132	3000	0.0003	0.0008	0.0006	0.0006	0.0005	0.0007	0.0005	0.0003	0.0003	0.0004	0.0002	0.0007
11	0.4357	0.4138	3104	3000	0.0006	0.0008	0.0009	0.0008	0.0008	0.0009	0.0010	0.0009	0.0009	0.0008	0.0009	0.0007
12	0.4402	0.4132	3023	3000	0.0009	0.0011	0.0012	0.0012	0.0013	0.0014	0.0013	0.0013	0.0015	0.0013	0.0013	0.0011
13	0.4371	0.4161	3098	3000	0.0007	0.0010	0.0010	0.0008	0.0006	0.0006	0.0007	0.0005	0.0005	0.0005	0.0005	0.0005
14	0.4382	0.4149	3070	3000	0.0010	0.0009	0.0011	0.0009	0.0009	0.0008	0.0009	0.0007	0.0007	0.0008	0.0009	0.0009
15	0.4351	0.4126	3105	3000	0.0005	0.0007	0.0007	0.0004	0.0006	0.0006	0.0004	0.0004	0.0006	0.0006	0.0007	0.0005
16	0.4323	0.4125	3153	3000	0.0007	0.0006	0.0008	0.0006	0.0008	0.0006	0.0007	0.0005	0.0004	0.0006	0.0005	0.0005
17	0.4376	0.4161	3089	3000	0.0005	0.0008	0.0007	0.0006	0.0006	0.0004	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005
18	0.4353	0.4070	3057	3000	0.0003	0.0005	0.0004	0.0005	0.0004	0.0005	0.0006	0.0005	0.0007	0.0007	0.0006	0.0007
19	0.4329	0.4105	3126	3000	0.0004	0.0008	0.0008	0.0007	0.0008	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0007
20	0.4357	0.4071	3051	3000	0.0005	0.0005	0.0004	0.0004	0.0005	0.0004	0.0006	0.0005	0.0006	0.0007	0.0007	0.0006
21	0.4371	0.4152	3091	3000	0.0007	0.0011	0.0010	0.0008	0.0008	0.0006	0.0009	0.0008	0.0009	0.0006	0.0006	0.0006
22	0.4350	0.4094	3081	3000	0.0005	0.0009	0.0011	0.0010	0.0009	0.0008	0.0005	0.0008	0.0009	0.0007	0.0008	0.0009
23	0.4376	0.4166	3093	3000	0.0004	0.0007	0.0008	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007	0.0005	0.0005	0.0006
24	0.4322	0.4103	3137	3000	0.0010	0.0009	0.0011	0.0008	0.0005	0.0005	0.0006	0.0004	0.0004	0.0005	0.0007	0.0006
25	0.4351	0.4077	3066	3000	0.0006	0.0010	0.0009	0.0010	0.0011	0.0009	0.0011	0.0013	0.0011	0.0010	0.0010	0.0010
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0005**	**0.0008**	**0.0008**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0007**	**0.0007**
Median					0.0005	0.0008	0.0008	0.0007	0.0007	0.0007	0.0006	0.0006	0.0007	0.0006	0.0007	0.0006
σ					0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
Min.					0.0002	0.0005	0.0004	0.0004	0.0004	0.0003	0.0001	0.0002	0.0003	0.0001	0.0002	0.0003
Max.					0.0011	0.0013	0.0013	0.0013	0.0013	0.0014	0.0015	0.0016	0.0015	0.0015	0.0016	0.0014

1154

DATA SET 14: 105°C; 1500 mA

Lamp #	Initial (0 hrs)				Lumen Maintenance (%)							
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080
1	565	3.13	3131	3000	96.96	96.90	96.50	96.58	96.23	96.90	96.05	95.88
2	536	3.19	3102	3000	96.57	97.20	96.34	96.77	96.68	97.28	96.94	95.76
3	525	3.16	3089	3000	96.70	96.11	96.23	95.92	96.48	96.23	95.45	95.43
4	565	3.23	3152	3000	96.33	96.00	95.91	95.77	96.05	95.64	96.12	95.87
5	556	3.13	3071	3000	95.90	95.84	95.30	95.41	95.45	95.86	94.82	94.46
6	546	3.10	3170	3000	96.34	95.46	96.08	95.37	95.42	95.75	95.81	94.78
7	549	3.16	3130	3000	96.50	95.94	95.96	95.72	95.61	95.47	95.87	95.45
8	554	3.14	3166	3000	95.90	95.67	95.04	95.47	95.49	95.63	94.87	94.33
9	539	3.25	3106	3000	95.53	94.88	94.82	94.06	94.88	94.73	93.75	94.15
10	552	3.11	3132	3000	95.49	94.79	95.27	94.53	94.48	95.09	95.40	94.66
11	559	3.17	3104	3000	94.97	94.86	94.45	94.85	95.22	94.92	94.29	94.63
12	548	3.23	3023	3000	94.93	94.80	94.25	94.12	94.78	94.62	93.80	93.83
13	528	3.11	3098	3000	94.53	94.22	95.15	94.41	94.79	94.04	95.40	94.74
14	535	3.18	3070	3000	95.47	96.07	95.17	95.12	95.17	95.72	95.10	93.45
15	558	3.17	3105	3000	93.85	94.73	94.21	94.32	94.52	94.82	94.48	93.62
16	539	3.10	3153	3000	93.88	93.53	94.27	94.66	93.36	93.77	93.77	92.65
17	538	3.11	3089	3000	95.70	95.54	94.35	94.31	93.92	94.03	95.16	93.15
18	552	3.20	3057	3000	94.13	94.26	93.69	93.68	93.62	94.15	93.30	93.10
19	552	3.14	3126	3000	94.90	94.12	94.71	94.26	94.01	93.57	94.03	93.77
20	563	3.17	3051	3000	93.95	93.04	93.61	92.93	94.02	93.75	93.29	93.29
21	532	3.09	3091	3000	94.19	93.85	94.45	93.81	93.64	93.02	93.60	93.32
22	555	3.25	3081	3000	93.78	94.02	93.55	93.64	93.96	94.59	94.09	93.04
23	537	3.09	3093	3000	93.74	93.67	93.82	94.34	93.78	94.24	93.93	93.20
24	547	3.15	3137	3000	93.69	93.45	93.76	94.13	93.25	93.01	93.43	92.19
25	546	3.23	3066	3000	93.97	93.71	94.36	93.05	93.26	92.94	93.97	93.05
n	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**547**	**3.16**			**95.12**	**94.91**	**94.85**	**94.69**	**94.72**	**94.79**	**94.67**	**94.07**
Median	548	3.16			94.97	94.80	94.71	94.41	94.78	94.73	94.48	93.83
σ	11	0.05			1.09	1.13	0.91	1.00	1.03	1.17	1.02	1.06
Min.	525	3.09			93.69	93.04	93.55	92.93	93.25	92.94	93.29	92.19
Max.	565	3.25			96.96	97.20	96.50	96.77	96.68	97.28	96.94	95.88

Lamp #	Initial (0 hrs)				Chromaticity Shift (Δu'v')							
	CCx	CCy	Calc. CCT	ANSI Target	6552	7056	7560	8064	8568	9072	9576	10080
1	0.4318	0.4086	3131	3000	0.0006	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0012
2	0.4370	0.4164	3102	3000	0.0008	0.0009	0.0010	0.0010	0.0012	0.0013	0.0013	0.0013
3	0.4365	0.4137	3089	3000	0.0015	0.0017	0.0014	0.0015	0.0015	0.0014	0.0013	0.0014
4	0.4274	0.4013	3152	3000	0.0004	0.0006	0.0007	0.0006	0.0008	0.0008	0.0008	0.0011
5	0.4352	0.4086	3071	3000	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008
6	0.4266	0.4018	3170	3000	0.0004	0.0006	0.0007	0.0006	0.0007	0.0007	0.0008	0.0009
7	0.4298	0.4040	3130	3000	0.0005	0.0007	0.0009	0.0008	0.0009	0.0008	0.0009	0.0010
8	0.4290	0.4067	3166	3000	0.0008	0.0008	0.0007	0.0008	0.0007	0.0008	0.0008	0.0007
9	0.4331	0.4083	3106	3000	0.0010	0.0010	0.0010	0.0009	0.0010	0.0011	0.0009	0.0010
10	0.4313	0.4076	3132	3000	0.0006	0.0006	0.0007	0.0007	0.0007	0.0008	0.0008	0.0007
11	0.4357	0.4138	3104	3000	0.0008	0.0009	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011
12	0.4402	0.4132	3023	3000	0.0012	0.0014	0.0012	0.0012	0.0014	0.0013	0.0012	0.0014
13	0.4371	0.4161	3098	3000	0.0005	0.0008	0.0007	0.0009	0.0009	0.0009	0.0009	0.0009
14	0.4382	0.4149	3070	3000	0.0007	0.0010	0.0009	0.0009	0.0010	0.0012	0.0011	0.0012
15	0.4351	0.4126	3105	3000	0.0006	0.0007	0.0009	0.0009	0.0009	0.0009	0.0010	0.0012
16	0.4323	0.4125	3153	3000	0.0006	0.0008	0.0008	0.0008	0.0008	0.0010	0.0009	0.0011
17	0.4376	0.4161	3089	3000	0.0004	0.0006	0.0006	0.0006	0.0008	0.0007	0.0010	0.0010
18	0.4353	0.4070	3057	3000	0.0006	0.0009	0.0009	0.0011	0.0011	0.0012	0.0011	0.0010
19	0.4329	0.4105	3126	3000	0.0007	0.0010	0.0008	0.0010	0.0009	0.0010	0.0009	0.0010
20	0.4357	0.4071	3051	3000	0.0007	0.0010	0.0010	0.0011	0.0012	0.0012	0.0011	0.0011
21	0.4371	0.4152	3091	3000	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006	0.0003	0.0006
22	0.4350	0.4094	3081	3000	0.0009	0.0009	0.0009	0.0009	0.0012	0.0012	0.0012	0.0012
23	0.4376	0.4166	3093	3000	0.0004	0.0007	0.0008	0.0007	0.0009	0.0010	0.0010	0.0012
24	0.4322	0.4103	3137	3000	0.0008	0.0011	0.0009	0.0010	0.0010	0.0011	0.0012	0.0015
25	0.4351	0.4077	3066	3000	0.0011	0.0012	0.0011	0.0011	0.0012	0.0012	0.0014	0.0013
n	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0007**	**0.0009**	**0.0009**	**0.0009**	**0.0010**	**0.0010**	**0.0010**	**0.0011**
Median					0.0007	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010	0.0011
σ					0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.					0.0004	0.0006	0.0006	0.0006	0.0006	0.0006	0.0003	0.0006
Max.					0.0015	0.0017	0.0014	0.0015	0.0015	0.0014	0.0014	0.0015

1155

DATA SET 12: 120°C; 1500 mA

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	1500 mA
Testing Initiation Date	November 2, 2015
Case Temperature [T_S]	120°C
Ambient Temperature [T_A]	120°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	97.93%	0.0003	-0.1	N/R
1008	96.46%	0.0004	-0.1	N/R
1512	95.64%	0.0004	-0.2	N/R
2016	94.67%	0.0006	-0.2	N/R
2520	94.13%	0.0007	-0.2	N/R
3024	93.71%	0.0007	-0.3	N/R
3528	93.27%	0.0008	-0.3	N/R
4032	92.59%	0.0009	-0.3	N/R
4536	92.44%	0.0010	-0.4	N/R
5040	92.40%	0.0012	-0.3	N/R
5544	92.30%	0.0014	-0.3	N/R
6048	91.94%	0.0016	-0.6	N/R

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)

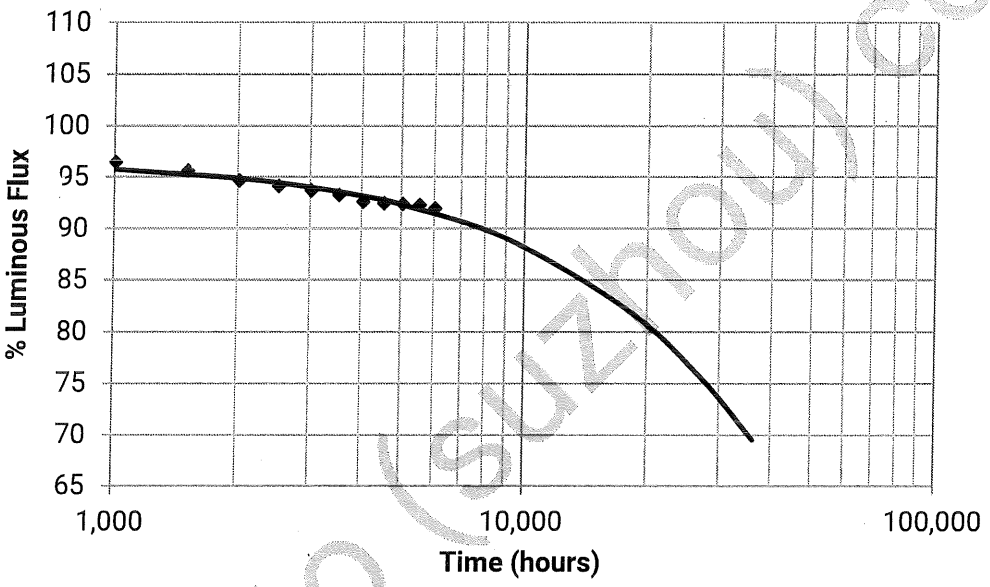
Note: "N/R" indicates data points that are not reported

1156

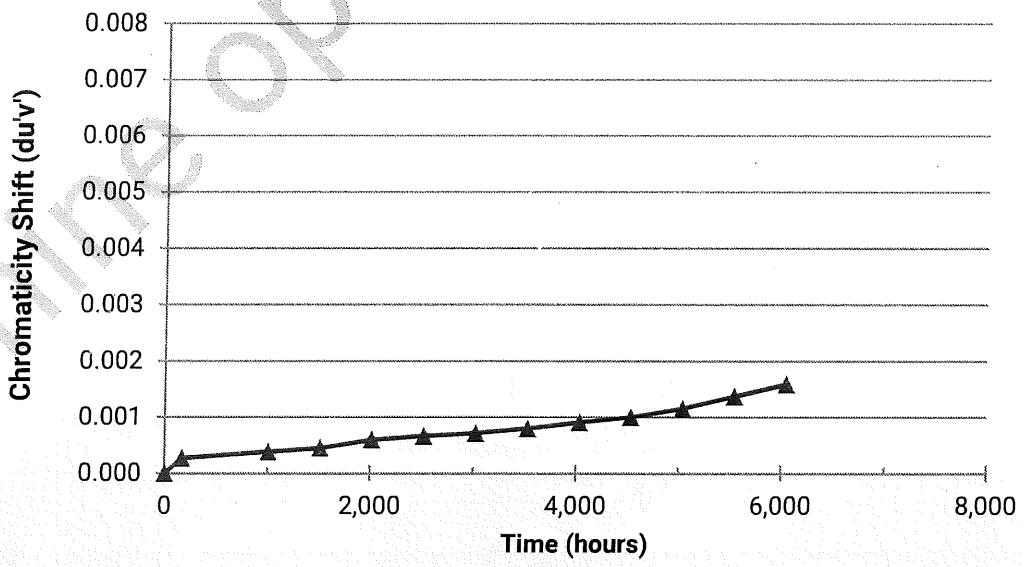
DATA SET 12: 120°C; 1500 mA

TM-21 Projection from Cree's Internal Calculator

Test duration	6,048 hours
Test duration used for projection	t=1,008 to t=6,048
α	9.077E-06
β	9.663E-01
Reported Lifetimes	L90(6k) = 7,830 hours L80(6k) = 20,800 hours L70(6k) = 35,500 hours



Color Shift Graph



DATA SET 12: 120°C; 1500 mA

1157

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	525.0	3.10	3122	3000	98.27	96.51	95.79	94.59	93.07	93.05	92.34	91.81	91.71	92.21	92.44	92.00
2	526.9	3.13	3149	3000	98.90	97.46	96.72	94.91	94.53	94.33	94.23	93.38	93.22	93.68	92.83	92.33
3	554.5	3.25	3138	3000	98.92	97.24	95.80	93.90	94.01	92.68	92.46	91.38	91.65	92.12	92.41	91.54
4	549.2	3.26	3118	3000	98.58	96.36	95.68	94.81	93.85	93.15	93.21	91.93	92.23	91.62	91.41	91.64
5	531.7	3.13	3053	3000	97.99	96.78	96.16	94.92	93.96	93.85	92.80	92.55	92.44	92.65	92.74	91.71
6	538.1	3.16	3112	3000	98.35	97.21	96.56	96.52	95.56	95.09	93.70	93.70	93.70	93.87	94.16	94.15
7	548.6	3.16	3077	3000	98.82	96.28	95.84	94.95	95.24	94.15	94.68	93.75	94.00	92.85	93.00	92.11
8	556.1	3.15	3112	3000	97.79	95.97	95.72	94.19	93.24	92.23	92.41	91.31	91.98	91.58	91.44	91.98
9	547.9	3.23	3095	3000	98.10	96.08	94.98	93.54	93.30	92.13	92.95	91.86	91.44	91.42	91.86	90.62
10	549.6	3.26	3075	3000	98.93	96.80	96.32	94.38	94.03	92.92	92.89	92.01	91.89	91.05	91.56	91.72
11	527.8	3.11	3079	3000	97.97	97.27	95.43	94.37	93.99	94.01	93.29	92.72	92.90	93.10	93.58	93.03
12	530.0	3.12	3101	3000	97.21	95.72	95.55	94.57	94.19	94.13	93.19	92.38	92.83	92.83	92.72	92.04
13	562.1	3.12	3184	3000	96.25	95.53	94.72	94.24	93.81	93.06	92.28	91.69	91.73	91.69	91.41	90.54
14	544.5	3.12	3181	3000	97.01	95.21	94.93	94.03	93.31	92.76	92.64	91.75	91.50	91.42	91.07	90.67
15	557.7	3.15	3110	3000	97.63	96.95	96.09	95.36	95.36	95.55	94.58	93.89	93.17	93.11	92.47	92.76
16	562.3	3.15	3116	3000	97.74	97.05	95.47	94.70	94.61	95.13	94.04	93.83	92.83	92.85	92.03	91.39
17	560.1	3.16	3088	3000	98.52	97.07	96.43	95.27	94.97	95.16	93.98	93.16	92.64	92.66	92.32	92.47
18	533.4	3.14	3107	3000	96.14	95.29	94.15	94.26	92.91	92.31	91.56	91.53	90.64	91.04	90.64	89.91
19	553.8	3.12	3173	3000	97.13	96.17	94.80	94.28	94.01	94.51	94.01	93.52	93.26	93.12	92.96	93.12
20	571.6	3.18	3152	3000	98.30	96.20	95.66	95.61	94.56	94.09	94.07	93.58	92.98	93.16	93.00	92.97
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Mean	**546.5**	**3.16**			**97.93**	**96.46**	**95.64**	**94.67**	**94.13**	**93.71**	**93.27**	**92.59**	**92.44**	**92.40**	**92.30**	**91.94**
Median	548.9	3.15			98.05	96.44	95.70	94.58	94.01	93.93	93.20	92.47	92.54	92.66	92.43	91.99
σ	13.8	0.05			0.83	0.69	0.67	0.67	0.76	1.06	0.86	0.93	0.86	0.86	0.88	1.02
Min.	525.0	3.10			96.14	95.21	94.15	93.54	92.91	92.13	91.56	91.31	90.64	91.04	90.64	89.91
Max.	571.6	3.26			98.93	97.46	96.72	96.52	95.56	95.55	94.68	93.89	94.00	93.87	94.16	94.15

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
1	0.4346	0.4137	3122	3000	0.0002	0.0004	0.0003	0.0006	0.0006	0.0006	0.0005	0.0008	0.0008	0.0010	0.0013	0.0017
2	0.4319	0.4111	3149	3000	0.0001	0.0002	0.0001	0.0003	0.0005	0.0006	0.0008	0.0008	0.0009	0.0011	0.0014	0.0016
3	0.4304	0.4064	3138	3000	0.0002	0.0003	0.0003	0.0004	0.0006	0.0007	0.0008	0.0008	0.0009	0.0013	0.0014	0.0018
4	0.4325	0.4085	3118	3000	0.0003	0.0003	0.0001	0.0004	0.0006	0.0010	0.0010	0.0010	0.0011	0.0013	0.0017	0.0018
5	0.4378	0.4118	3053	3000	0.0001	0.0003	0.0003	0.0008	0.0007	0.0008	0.0006	0.0009	0.0009	0.0013	0.0016	0.0020
6	0.4350	0.4133	3112	3000	0.0003	0.0005	0.0005	0.0006	0.0006	0.0008	0.0008	0.0009	0.0010	0.0013	0.0016	0.0022
7	0.4371	0.4134	3077	3000	0.0001	0.0006	0.0007	0.0008	0.0008	0.0009	0.0011	0.0012	0.0013	0.0013	0.0016	0.0021
8	0.4343	0.4118	3112	3000	0.0000	0.0004	0.0005	0.0008	0.0008	0.0008	0.0008	0.0010	0.0010	0.0012	0.0013	0.0016
9	0.4340	0.4089	3095	3000	0.0003	0.0003	0.0006	0.0005	0.0006	0.0007	0.0009	0.0011	0.0010	0.0013	0.0014	0.0021
10	0.4372	0.4134	3075	3000	0.0006	0.0004	0.0008	0.0009	0.0008	0.0009	0.0010	0.0012	0.0012	0.0012	0.0015	0.0014
11	0.4381	0.4158	3079	3000	0.0003	0.0003	0.0003	0.0005	0.0006	0.0007	0.0007	0.0009	0.0010	0.0012	0.0014	0.0017
12	0.4369	0.4161	3101	3000	0.0004	0.0005	0.0004	0.0006	0.0006	0.0006	0.0007	0.0006	0.0008	0.0009	0.0011	0.0012
13	0.4291	0.4092	3184	3000	0.0003	0.0003	0.0005	0.0006	0.0006	0.0005	0.0006	0.0008	0.0008	0.0008	0.0009	0.0011
14	0.4284	0.4072	3181	3000	0.0002	0.0003	0.0004	0.0003	0.0005	0.0006	0.0007	0.0009	0.0009	0.0009	0.0012	0.0012
15	0.4309	0.4040	3110	3000	0.0004	0.0006	0.0005	0.0007	0.0007	0.0007	0.0009	0.0009	0.0010	0.0011	0.0011	0.0012
16	0.4311	0.4052	3116	3000	0.0005	0.0007	0.0008	0.0008	0.0008	0.0009	0.0009	0.0011	0.0012	0.0011	0.0012	0.0013
17	0.4333	0.4065	3088	3000	0.0003	0.0004	0.0006	0.0007	0.0010	0.0008	0.0008	0.0010	0.0011	0.0013	0.0015	0.0014
18	0.4354	0.4135	3107	3000	0.0002	0.0003	0.0004	0.0005	0.0005	0.0004	0.0006	0.0008	0.0011	0.0012	0.0016	0.0017
19	0.4259	0.4005	3173	3000	0.0004	0.0004	0.0004	0.0005	0.0005	0.0005	0.0007	0.0007	0.0007	0.0013	0.0013	0.0012
20	0.4286	0.4041	3152	3000	0.0001	0.0003	0.0006	0.0009	0.0010	0.0009	0.0010	0.0011	0.0013	0.0012	0.0016	0.0017
n	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Mean					**0.0003**	**0.0004**	**0.0004**	**0.0006**	**0.0007**	**0.0007**	**0.0008**	**0.0009**	**0.0010**	**0.0012**	**0.0014**	**0.0016**
Median					0.0003	0.0004	0.0004	0.0006	0.0006	0.0007	0.0008	0.0009	0.0010	0.0012	0.0014	0.0016
σ					0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003
Min.					0.0000	0.0002	0.0001	0.0003	0.0005	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0011
Max.					0.0006	0.0007	0.0008	0.0009	0.0010	0.0010	0.0011	0.0012	0.0013	0.0013	0.0017	0.0022

DATA SET 13: 85°C; 2000 mA

1158

Tested LED Array Series	XLamp XP-G3 White LEDs (Series: XPGDWT) This LM-80 report is applicable to the following order codes: XPGDWT-xx-xxxx-xxxxx
Tested Drive Current [I_F]	2000 mA
Testing Initiation Date	February 10, 2016
Case Temperature [T_s]	85°C
Ambient Temperature [T_A]	85°C
Failures observed	None

Test Results Summary

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)
0	100.00%	0.0000	0.0	0.0%
168	99.49%	0.0004	-0.1	N/R
1008	99.18%	0.0007	-0.1	N/R
1512	98.41%	0.0007	-0.1	N/R
2016	98.22%	0.0008	-0.1	N/R
2520	97.96%	0.0007	-0.1	N/R
3024	97.72%	0.0008	-0.1	N/R
3528	97.53%	0.0007	-0.1	N/R
4032	97.14%	0.0008	-0.1	N/R
4536	96.77%	0.0008	-0.1	N/R
5040	96.55%	0.0008	-0.1	N/R
5544	96.48%	0.0008	-0.1	N/R
6048	96.14%	0.0008	-0.2	N/R

Test Duration (hrs)	Relative Luminous Flux	Relative Color Shift (Δu'v')	Relative CRI Shift (ΔRa)	Relative Voltage Shift (%ΔV_F)

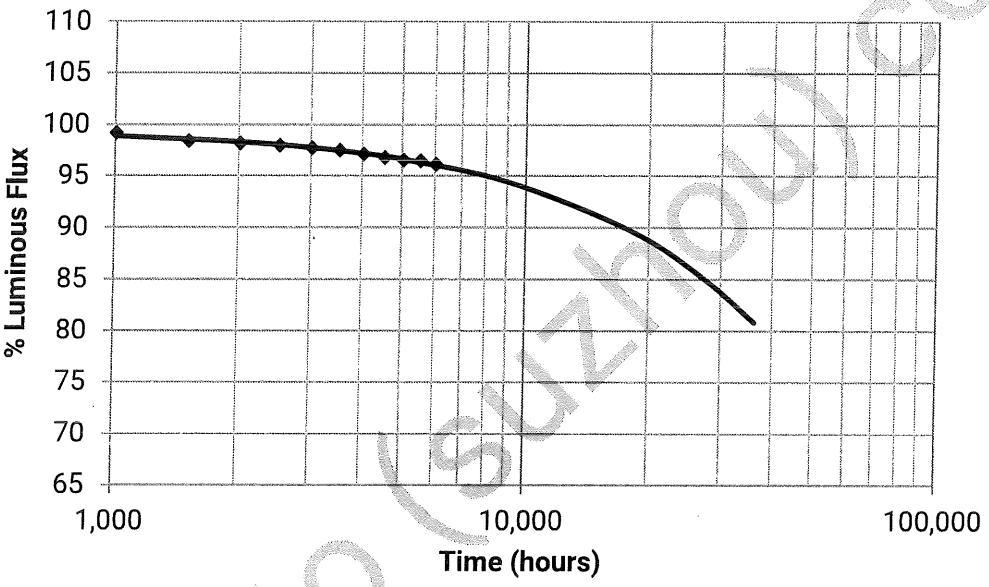
Note: "N/R" indicates data points that are not reported

1159

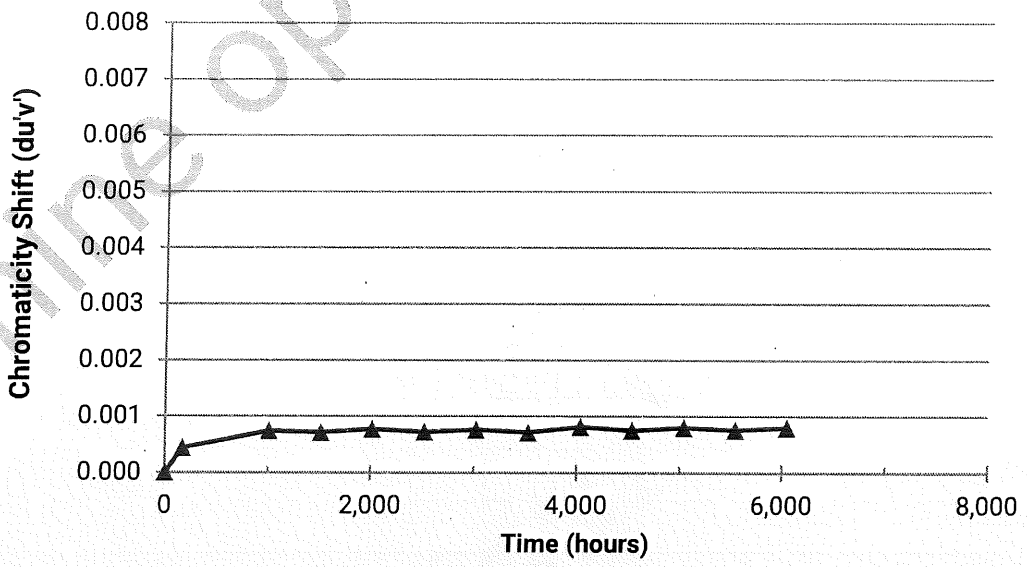
DATA SET 13: 85°C; 2000 mA

TM-21 Projection from Cree's Internal Calculator

Test duration	6,048 hours
Test duration used for projection	t=1,008 to t=6,048
α	5.713E-06
β	9.944E-01
Reported Lifetimes	L90(6k) = 17,500 hours L80(6k) > 36,300 hours L70(6k) > 36,300 hours



Color Shift Graph



DATA SET 13: 85°C; 2000 mA

1160

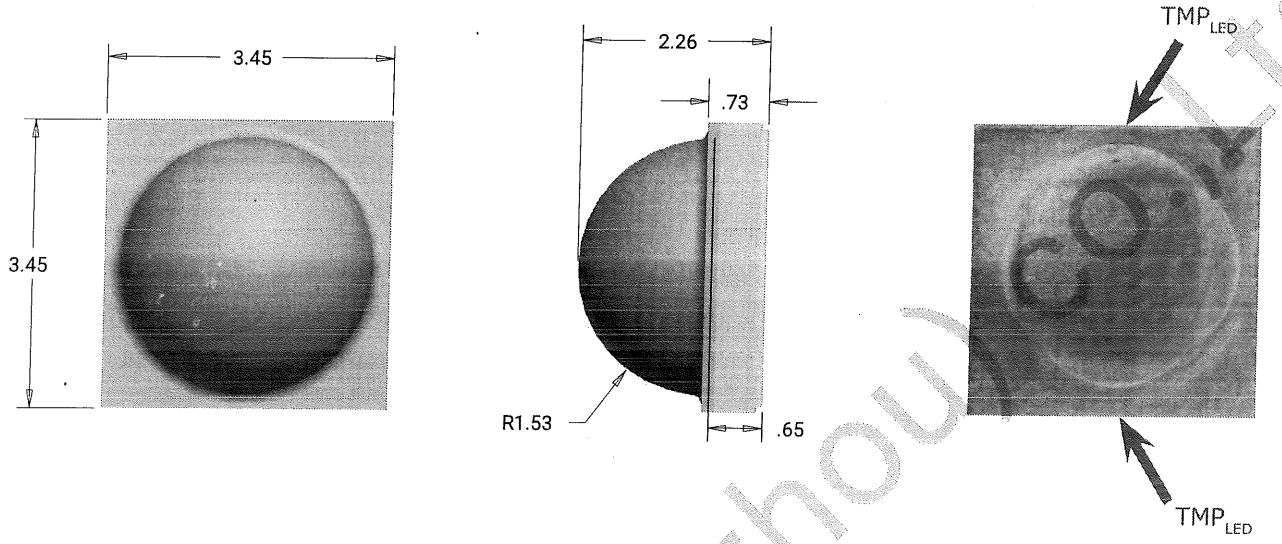
Lamp #	Initial (0 hrs)				Lumen Maintenance (%)											
	LF (lm)	V_F (V)	Calc. CCT	ANSI Target	168	1008	1512	2016	2520	3024	3528	4032	4536	5040	5544	6048
1	653.7	3.18	3127	3000	99.72	99.20	98.50	98.09	97.48	97.34	97.05	96.11	96.08	96.47	96.07	95.90
2	668.1	3.20	3171	3000	100.07	98.95	97.86	97.96	97.64	97.92	96.63	96.83	96.45	96.87	96.38	96.48
3	645.7	3.19	3149	3000	100.45	99.30	98.34	98.92	97.80	97.89	97.60	97.66	96.96	97.43	97.54	96.93
4	672.6	3.24	3189	3000	100.04	99.79	98.65	98.86	98.50	97.99	97.61	97.92	97.96	98.31	97.84	98.02
5	674.9	3.27	3186	3000	100.04	99.47	98.40	98.99	98.70	97.96	98.04	97.75	97.70	97.87	97.73	97.57
6	636.6	3.22	3168	3000	99.75	98.48	97.83	98.18	97.75	98.01	97.42	97.28	96.73	97.03	97.28	96.70
7	662.5	3.22	3172	3000	99.32	98.49	97.45	97.68	97.22	97.42	96.68	96.45	96.18	96.33	96.14	96.05
8	687.0	3.31	3172	3000	99.74	99.34	98.59	98.75	98.79	98.40	98.53	97.39	97.45	97.86	98.21	97.70
9	648.8	3.14	3148	3000	98.81	99.34	99.01	98.64	98.23	98.84	98.55	98.40	97.72	97.29	97.84	97.41
10	639.5	3.15	3152	3000	99.14	99.70	99.45	98.80	98.47	99.01	98.26	98.33	97.98	97.28	97.83	97.44
11	646.0	3.15	3112	3000	99.38	99.92	99.29	98.70	98.39	98.81	98.62	98.51	98.22	97.09	96.89	96.63
12	643.1	3.16	3108	3000	99.19	100.12	99.04	98.45	98.07	98.46	98.09	97.84	97.71	96.67	97.14	96.92
13	642.8	3.16	3110	3000	98.99	99.53	98.44	98.09	97.60	98.26	97.93	97.64	97.32	96.66	97.23	96.39
14	637.5	3.16	3080	3000	99.44	99.78	98.81	97.85	97.69	98.15	98.09	97.90	97.49	96.64	96.25	96.31
15	620.4	3.10	3159	3000	99.53	99.15	99.26	98.45	98.66	97.99	97.86	97.45	97.08	97.28	96.23	95.71
16	627.5	3.20	3103	3000	99.98	98.90	99.43	98.37	98.74	97.71	97.55	97.05	96.67	96.37	95.81	95.52
17	647.6	3.31	3102	3000	99.44	99.03	98.32	98.21	97.96	97.30	97.16	97.07	96.66	96.12	95.74	95.68
18	657.8	3.31	3144	3000	99.45	99.26	97.83	98.05	97.81	97.48	97.26	97.20	96.66	95.99	96.76	96.20
19	625.5	3.11	3153	3000	99.81	99.18	98.75	98.03	98.86	97.78	98.55	97.20	96.72	96.75	96.58	95.78
20	660.9	3.32	3139	3000	99.20	98.79	97.70	97.94	97.55	96.85	96.99	95.79	95.58	94.73	95.37	95.08
21	626.4	3.22	3128	3000	99.55	98.79	98.58	97.69	97.41	97.09	97.35	96.98	95.61	96.22	95.07	94.72
22	650.7	3.33	3141	3000	99.25	99.02	97.85	98.06	97.66	96.39	96.00	95.54	95.31	94.59	95.14	94.50
23	621.7	3.11	3104	3000	99.89	98.75	98.02	97.49	97.28	96.40	97.47	95.99	95.54	95.64	94.63	94.29
24	654.8	3.33	3137	3000	98.58	98.34	97.19	97.63	97.48	96.67	96.61	95.95	95.53	95.20	94.64	94.27
25	648.7	3.32	3145	3000	98.50	98.81	97.60	97.63	97.27	96.93	96.47	96.25	96.02	95.08	95.75	95.25
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean	**648.0**	**3.22**			**99.49**	**99.18**	**98.41**	**98.22**	**97.96**	**97.72**	**97.53**	**97.14**	**96.78**	**96.55**	**96.48**	**96.14**
Median	647.6	3.20			99.45	99.18	98.44	98.09	97.80	97.89	97.55	97.20	96.72	96.66	96.38	96.20
σ	17.1	0.08			0.48	0.47	0.64	0.45	0.53	0.73	0.72	0.85	0.88	0.96	1.06	1.08
Min.	620.4	3.10			98.50	98.34	97.19	97.49	97.22	96.39	96.00	95.54	95.31	94.59	94.63	94.27
Max.	687.0	3.33			100.45	100.12	99.45	98.99	98.86	99.01	98.62	98.51	98.22	98.31	98.21	98.02

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
1	0.4276	0.3987	3127	3000	0.0003	0.0008	0.0003	0.0005	0.0005	0.0008	0.0005	0.0008	0.0006	0.0005	0.0003	0.0003
2	0.4318	0.4137	3171	3000	0.0005	0.0010	0.0010	0.0010	0.0010	0.0009	0.0007	0.0010	0.0009	0.0008	0.0008	0.0009
3	0.4305	0.4080	3149	3000	0.0003	0.0009	0.0007	0.0008	0.0007	0.0008	0.0008	0.0011	0.0008	0.0008	0.0007	0.0007
4	0.4272	0.4055	3189	3000	0.0004	0.0010	0.0009	0.0008	0.0007	0.0008	0.0006	0.0007	0.0007	0.0007	0.0006	0.0006
5	0.4270	0.4047	3186	3000	0.0003	0.0010	0.0009	0.0009	0.0007	0.0008	0.0007	0.0008	0.0006	0.0006	0.0006	0.0006
6	0.4291	0.4072	3168	3000	0.0002	0.0009	0.0006	0.0008	0.0006	0.0007	0.0006	0.0007	0.0006	0.0006	0.0005	0.0005
7	0.4264	0.4016	3172	3000	0.0005	0.0010	0.0009	0.0009	0.0008	0.0007	0.0007	0.0008	0.0008	0.0006	0.0008	0.0006
8	0.4264	0.4016	3172	3000	0.0004	0.0009	0.0006	0.0006	0.0006	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007
9	0.4336	0.4148	3148	3000	0.0004	0.0004	0.0005	0.0006	0.0006	0.0006	0.0006	0.0007	0.0006	0.0007	0.0007	0.0008
10	0.4314	0.4104	3152	3000	0.0005	0.0007	0.0009	0.0010	0.0009	0.0010	0.0009	0.0010	0.0011	0.0012	0.0011	0.0011
11	0.4357	0.4149	3112	3000	0.0004	0.0006	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0007	0.0007	0.0009
12	0.4349	0.4126	3108	3000	0.0005	0.0007	0.0007	0.0008	0.0007	0.0008	0.0007	0.0008	0.0007	0.0009	0.0007	0.0009
13	0.4357	0.4146	3110	3000	0.0003	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0007	0.0007
14	0.4388	0.4175	3080	3000	0.0006	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0007	0.0008	0.0007	0.0009
15	0.4322	0.4131	3159	3000	0.0005	0.0006	0.0006	0.0007	0.0008	0.0008	0.0007	0.0008	0.0007	0.0009	0.0008	0.0009
16	0.4373	0.4172	3103	3000	0.0004	0.0005	0.0006	0.0005	0.0006	0.0006	0.0005	0.0005	0.0005	0.0006	0.0005	0.0007
17	0.4352	0.4124	3102	3000	0.0006	0.0007	0.0009	0.0008	0.0007	0.0009	0.0009	0.0010	0.0009	0.0011	0.0010	0.0010
18	0.4303	0.4069	3144	3000	0.0005	0.0009	0.0007	0.0009	0.0009	0.0009	0.0009	0.0011	0.0009	0.0011	0.0012	0.0009
19	0.4319	0.4116	3153	3000	0.0005	0.0005	0.0005	0.0004	0.0006	0.0005	0.0004	0.0006	0.0004	0.0005	0.0005	0.0006
20	0.4305	0.4067	3139	3000	0.0004	0.0005	0.0007	0.0007	0.0006	0.0006	0.0007	0.0007	0.0007	0.0008	0.0008	0.0007
21	0.4338	0.4127	3128	3000	0.0005	0.0005	0.0006	0.0007	0.0005	0.0006	0.0005	0.0006	0.0005	0.0006	0.0006	0.0007
22	0.4320	0.4103	3141	3000	0.0006	0.0009	0.0010	0.0012	0.0012	0.0013	0.0012	0.0012	0.0013	0.0013	0.0013	0.0012
23	0.4353	0.4129	3104	3000	0.0005	0.0007	0.0005	0.0006	0.0005	0.0006	0.0006	0.0006	0.0005	0.0008	0.0006	0.0009
24	0.4313	0.4083	3137	3000	0.0005	0.0008	0.0008	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	0.0012	0.0011	0.0012
25	0.4300	0.4063	3145	3000	0.0004	0.0008	0.0009	0.0010	0.0009	0.0010	0.0010	0.0011	0.0010	0.0011	0.0011	0.0009
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mean					**0.0004**	**0.0007**	**0.0007**	**0.0008**	**0.0007**	**0.0008**	**0.0007**	**0.0008**	**0.0008**	**0.0008**	**0.0008**	**0.0008**
Median					0.0005	0.0007	0.0007	0.0008	0.0007	0.0008	0.0007	0.0008	0.0007	0.0008	0.0007	0.0008
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
Min.					0.0002	0.0004	0.0003	0.0004	0.0005	0.0005	0.0004	0.0005	0.0004	0.0005	0.0003	0.0003
Max.					0.0006	0.0010	0.0010	0.0012	0.0012	0.0013	0.0012	0.0012	0.0013	0.0013	0.0013	0.0012

MECHANICAL DIMENSIONS & TEMPERATURE MEASUREMENT POINT

1161

Dimensions are in mm. All measurements are ±.13 mm unless otherwise indicated.



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

1162

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Fundado em 1888

DECLARAÇÃO DE SERVIÇO DE AUTENTICAÇÃO DIGITAL

O Bel. Válber Azevêdo de Miranda Cavalcanti, Oficial do Primeiro Registro Civil de Nascimentos e Óbitos e Privativo de Casamentos, Interdições e Tutelas com atribuição de autenticar e reconhecer firmas da Comarca de João Pessoa Capital do Estado da Paraíba, em virtude de Lei, etc...

DECLARA para os devidos fins de direito que, o documento em anexo identificado individualmente em cada *Código de Autenticação Digital*[1] ou na referida sequência, foi autenticados de acordo com as Legislações e normas vigentes[3].

DECLARO ainda que, para garantir transparência e segurança jurídica de todos os atos oriundos dos respectivos serviços de Notas e Registros do Estado da Paraíba, a Corregedoria Geral de Justiça editou o Provimento CGJPB Nº 003/2014, determinando a inserção de um código em todos os atos notoriais e registrais, assim, cada Selo Digital de Fiscalização Extrajudicial contém um código único (por exemplo: ***Selo Digital: ABC12345-X1X2***) e dessa forma, cada autenticação processada pela nossa Serventia pode ser confirmada e verificada tantas vezes quanto for necessário através do site do Tribunal de Justiça do Estado da Paraíba, endereço http://corregedoria.tjpb.jus.br/selo-digital/

A autenticação digital do documento faz prova de que, na data e hora em que ela foi realizada, a empresa **WLUX COMERCIO DE MATERIAIS ELETRICOS LTDA - EPP** tinha posse de um documento com as mesmas características que foram reproduzidas na cópia autenticada, sendo da empresa **WLUX COMERCIO DE MATERIAIS ELETRICOS LTDA - EPP** a responsabilidade, única e exclusiva, pela idoneidade do documento apresentado a este Cartório.

Esta DECLARAÇÃO foi emitida em **27/11/2018 11:58:17 (hora local)** através do sistema de autenticação digital do Cartório Azevêdo Bastos, de acordo com o Art. 1º, 10º e seus §§ 1º e 2º da MP 2200/2001, como também, o documento eletrônico autenticado contendo o Certificado Digital do titular do Cartório Azevêdo Bastos, poderá ser solicitado diretamente a empresa **WLUX COMERCIO DE MATERIAIS ELETRICOS LTDA - EPP** ou ao Cartório pelo endereço de e-mail autentica@azevedobastos.not.br

Para informações mais detalhadas deste ato, acesse o site https://autdigital.azevedobastos.not.br e informe o *Código de Consulta desta Declaração.*

Código de Consulta desta Declaração: 1121890

A consulta desta Declaração estará disponível em nosso site até **27/11/2019 11:18:15 (hora local)**.

[1]**Código de Autenticação Digital:** 77002711181112270222-1 a 77002711181112270222-60
[2]**Legislações Vigentes:** Lei Federal nº 8.935/94, Lei Federal nº 10.406/2002, Medida Provisória nº 2200/2001, Lei Federal nº 13.105/2015, Lei Estadual nº 8.721/2008, Lei Estadual nº 10.132/2013 e Provimento CGJ N° 003/2014.

O referido é verdade, dou fé.

CHAVE DIGITAL

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Presidência da República
Casa Civil
Medida Provisória N.º 2.200-2, de 24 de agosto de 2001.

ICP Brasil