

Lumileds

IESNA LM-80 Test Report

1. Description of LED light sources tested

LUXEON 3030 2D: L130-2790003000W2C (nominal CCT 2700K)

2a. Package Pictures



Figure 1. Picture of LUXEON 3030 2D Round LES(left) and LUXEON 3030 2D Square LES(right).

2b. Average current extrapolations of LED light sources tested at max. current tested

360.0mA/mm²

2c. Average power extrapolations of LED light sources tested at max. current tested

2.54W/mm²

2d. Average CRI Ra of LED light sources tested at max. current tested

91.39

2e. Minimum die to die spacing of LED light sources tested

0.1mm

2f. Total Input Power at max. current tested

1.80 W

3a. Projected L₇₀ extrapolations per IESNA TM-21-11

	If = 120mA	If = 180mA
T _s = 105°C	471,055	152,678

3b. Reported L₇₀ extrapolations per IESNA TM-21-11

	If = 120mA	If = 180mA
T _s = 105°C	> 60,000	> 60,000

4. Applicable LUXEON® Series part number(s)

This IESNA LM-80 Test Report applies to the following LUXEON part numbers:

Product Family	Part Number	CCT
LUXEON 3030 2D	L130-AABBCC30xxxxx	white
LUXEON 3030 HE	L130-AABBCC30000DE	white
LUXEON 3030 HE Plus Deep Dimming	L130-AABBHA3000DD1	white

For LUXEON 3030 2D: AA designates nominal CCT (27=2700K, 30=3000K, 35=3500K, 40=4000K, 50=5000K, 57=5700K and 65=6500K), BB designates minimum CRI (70=70CRI, 80=80CRI and 90=90CRI), CC designates ESD protection level (00=2kV and 0T=8kV), xx and xxxx designate Lumileds internal codes.

For LUXEON 3030 HE: AA designates nominal CCT (27=2700K, 30=3000K, 35=3500K, 40=4000K, 50=5000K, 57=5700K and 65=6500K), BB designates minimum CRI (70=70CRI, 80=80CRI and 90=90CRI), CC designates product code (HA= LUXEON 3030 HE Plus, HB = LUXEON 3030 HE), D designates product code (0=0.08V Vf bin, B=0.1V Vf bin), E designates Lumileds internal code.

LUXEON 3030 HE Plus Deep Dimming: AA designates nominal CCT (27=2700K, 30=3000K, 35=3500K, 40=4000K, 50=5000K, 57=5700K and 65=6500K), BB designates minimum CRI (80=80CRI and 90=90CRI).

For LUXEON 3030 HE and LUXEON 3030 HE Plus Deep Dimming, drive current If can be calculated as follows: If = If*2, and voltage Vf = Vf/2 (2 dies in parallel).

5. Number of LED light sources reported

20 units per test condition.

6. Dates Tests Started

2016/12/08.

7. Date Report First Issued

2018/05/25.

8. Mechanical Drawing

For detailed mechanical drawings, please see individual product data sheets.

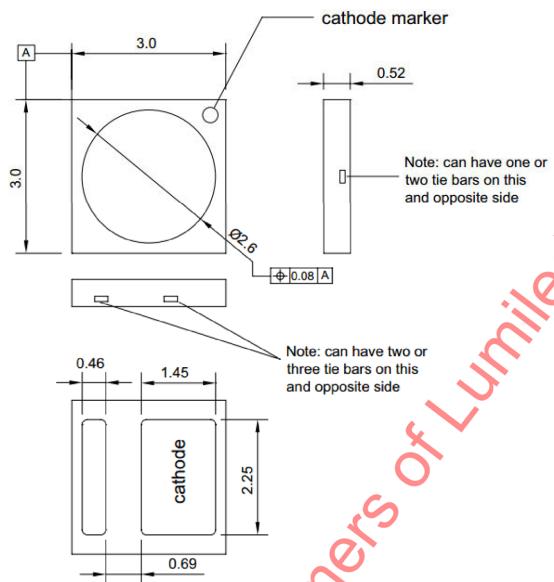


Figure 2: Mechanical Drawing for LUXEON 3030 2D. All dimensions are in millimeters.

9. T_s Measurement Point

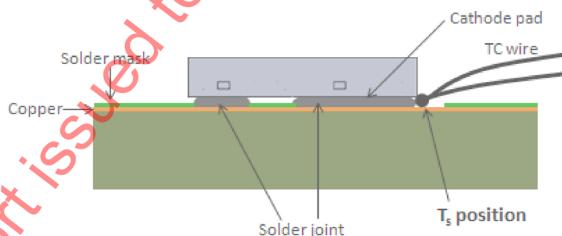


Figure 3: Preferred T_s measurement point for LUXEON 3030 2D.

For further information on measuring the in-situ T_s , please see Lumileds Application Brief AB207, which is available online at www.lumileds.com.

10. Description of auxiliary equipment

LUXEON LED devices are soldered to reliability stress boards.

Reliability stress boards are mounted in a chamber with minimal ambient airflow. The chamber temperature is controlled based on the temperature of a control Ts point, which is located on the stress board.

The reliability stress board is periodically removed from the thermal chamber, allowed to cool to room temperature, and then tested. After testing, the reliability stress board is returned to the thermal chamber for additional operation.

11. Operating Cycle

LUXEON LEDs are driven with a constant direct current (DC).

12. Ambient conditions including airflow, temperature, and relative humidity

The typical relative humidity within the chamber is < 65%. The temperature uniformity of the board (center to edge) was experimentally determined to be less than 2°C.

The photometry measurement temperature is set and monitored to be within $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ with no forced airflow and RH < 65%.

13. T_s and ambient temperatures (ambient temperature measured 5mm above reliability stress board)

In all cases, both T_s and T_{air} meet or exceed the IESNA LM-80-15 limits.

14. Drive current of the LED light source during lifetime test

See tables.

15. Initial luminous flux and forward voltage at photometric measurement current

See tables.

16. Lumen maintenance for data for each individual light source along with median value, standard deviation, minimum and maximum lumen maintenance value for all of the light sources

See tables.

17. Observation of LED light source failures including the failure conditions and time of failure

No failures observed in devices reported.

18. LED light source monitoring interval

Units were tested at 0 hour and at subsequent 1,000 hours intervals.

19. Photometric measurement uncertainty

Long-term measurement uncertainty is based on reproducibility tests done over a period of one year, calculated to $k = 2$ coverage (i.e. 95% coverage).

Luminous Flux (Φ_v) $\pm 1.59\%$

Correlated Color Temperature (CCT) $\pm 21K$

20. Chromaticity shift reported over the measurement time

See tables.

21. Sampling Method/Sample size

Tested samples are selected to be representative of the overall LED population. LED sample size is indicated in Section 5 of this report.

22. ISO 17025-2005 Accreditation



Lumileds IESNA LM-80 test report generated on Tue Dec 8 10:58:32 2020

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Report number S5199 issued to levi.liu_1@lumileds.com on Thu Apr 07 19:34:29 2022

Notes

Data is for reference only and is not an endorsement to exceed the Data Sheet operating conditions.

The TM-21 extrapolations are based on IES TM-21-11 "Projecting Long Term Lumen Maintenance of LED Light Sources". The TM-21 lumen maintenance model is based on the flux data normalized to 1 at 0 hours and the use of a exponential model for flux(time):

Flux(time) = B exp[-alpha*time], where normally B ≥ 1, and alpha > 0.

An L70 extrapolation less than 0 means that the model predicts an increasing flux output with time, i.e. alpha < 0 (see graphs). Generally, this means that additional test time is needed to determine the long-term lumen maintenance behavior.

Customer needs to check for all applicable local rules regarding application of LM-80 reports.

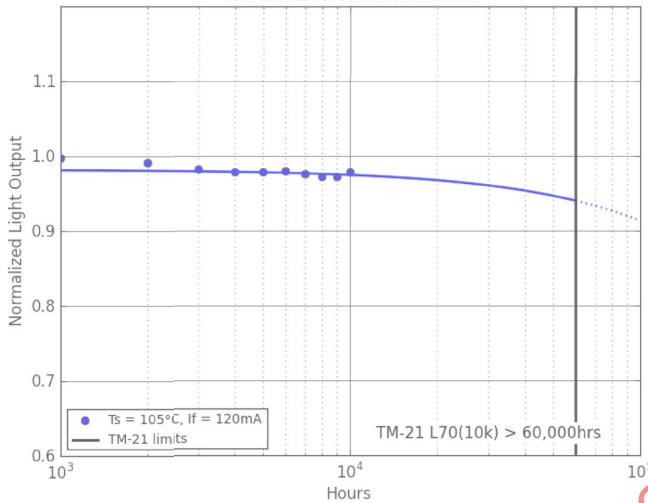
Number of LED light sources tested: 40 units per test condition.

This report issued to Customers of Lumileds

Normalized Flux Statistics for $I_f = 120\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	alpha	B	L70
median =	1.0000	0.9961	0.9921	0.9811	0.9789	0.9804	0.9795	0.9757	0.9709	0.9713	0.9734			
Ts=Tair=105°C average =	1.0000	0.9979	0.9918	0.9823	0.9787	0.9784	0.9797	0.9765	0.9730	0.9724	0.9786	7.1798e-07	0.9817	471,055
st dev =	0.0000	0.0145	0.0141	0.0140	0.0126	0.0095	0.0119	0.0130	0.0124	0.0122	0.0205	TM-21 L70(10k) > 60,000hrs		
min =	1.0000	0.9733	0.9673	0.9585	0.9576	0.9620	0.9588	0.9541	0.9534	0.9506	0.9480			
max =	1.0000	1.0236	1.0171	1.0070	1.0005	0.9918	0.9998	0.9975	0.9955	0.9938	1.0225			

Lumen Maintenance for $I_f = 120\text{mA}$
Normalized to 1 at 0 hours



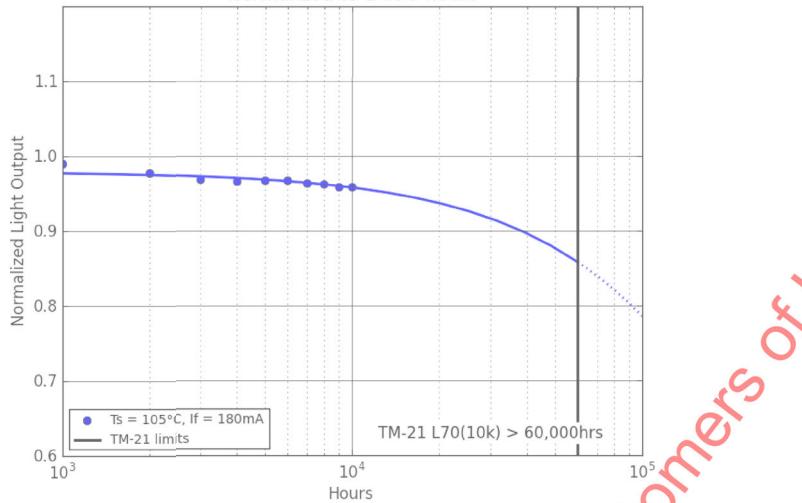
Delta u'v' for $I_f = 120\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs			
median =	0.0000	0.0006	0.0009	0.0008	0.0010	0.0013	0.0011	0.0015	0.0015	0.0016	0.0019			
Ts=Tair=105°C average =	0.0000	0.0007	0.0009	0.0009	0.0010	0.0014	0.0012	0.0015	0.0016	0.0017	0.0019			
st dev =	0.0000	0.0002	0.0003	0.0002	0.0002	0.0003	0.0002	0.0002	0.0003	0.0002	0.0003			
min =	0.0000	0.0003	0.0005	0.0006	0.0007	0.0010	0.0009	0.0011	0.0012	0.0013	0.0015			
max =	0.0000	0.0011	0.0015	0.0012	0.0015	0.0021	0.0016	0.0020	0.0021	0.0022	0.0025			

Normalized Flux Statistics for $I_f = 180\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	alpha	B	L70	
median =	1.0000	0.9869	0.9770	0.9690	0.9657	0.9644	0.9658	0.9606	0.9613	0.9574	0.9573				
Ts=Tair=105°C	average =	1.0000	0.9896	0.9775	0.9688	0.9660	0.9679	0.9672	0.9639	0.9629	0.9591	0.9581	2.1983e-06	0.9792	152,678
	st dev =	0.0000	0.0144	0.0142	0.0113	0.0110	0.0101	0.0108	0.0114	0.0105	0.0105	0.0167	TM-21 L70(10k) > 60,000hrs		
	min =	1.0000	0.9689	0.9568	0.9537	0.9508	0.9562	0.9511	0.9473	0.9455	0.9422	0.9318			
	max =	1.0000	1.0248	1.0114	0.9900	0.9890	0.9935	0.9896	0.9886	0.9861	0.9822	0.9895			

Lumen Maintenance for $I_f = 180\text{mA}$
Normalized to 1 at 0 hours



Delta u'v' for $I_f = 180\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs				
median =	0.0000	0.0012	0.0011	0.0013	0.0013	0.0019	0.0015	0.0018	0.0019	0.0020	0.0021				
Ts=Tair=105°C	average =	0.0000	0.0012	0.0011	0.0013	0.0012	0.0018	0.0014	0.0017	0.0019	0.0020	0.0021			
	st dev =	0.0000	0.0003	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002			
	min =	0.0000	0.0006	0.0008	0.0009	0.0008	0.0011	0.0011	0.0013	0.0015	0.0016	0.0016			
	max =	0.0000	0.0018	0.0014	0.0018	0.0015	0.0023	0.0017	0.0020	0.0022	0.0023	0.0025			

Luminous Flux [lm] data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 120\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3090K	115.183	114.947	114.009	113.072	112.844	113.180	113.066	112.518	112.169	112.056	112.484
2	3086K	115.637	116.007	115.256	114.367	114.061	114.516	114.237	113.830	113.500	113.354	113.728
3	3145K	116.042	118.098	117.320	116.351	114.838	114.417	114.817	115.756	115.384	113.917	115.497
4	3149K	114.389	115.940	114.863	114.012	113.487	112.721	113.421	113.040	112.955	112.714	115.242
5	3094K	111.504	113.227	112.551	111.746	111.308	110.057	111.262	110.964	111.001	110.676	112.775
6	3091K	119.663	116.470	115.754	114.693	114.590	115.109	114.736	114.167	114.082	113.746	113.436
7	3127K	118.621	115.989	115.203	114.412	113.819	114.412	114.483	113.995	113.892	113.633	113.649
8	3132K	119.508	117.511	116.458	115.515	115.185	115.175	115.419	114.927	114.895	114.555	114.891
9	3063K	115.469	114.187	113.402	112.609	112.316	112.422	112.529	111.988	111.986	111.794	112.093
10	3168K	118.424	117.866	117.585	116.651	116.286	116.635	116.873	116.343	116.021	116.122	116.594
11	3046K	116.653	115.900	115.412	114.171	113.901	113.913	113.800	113.399	112.863	112.948	113.291
12	3138K	115.195	114.651	114.433	112.794	112.674	113.057	112.931	112.431	111.862	111.841	112.082
13	3130K	114.940	116.233	115.417	114.127	113.816	113.805	113.857	113.389	111.401	112.828	113.183
14	3140K	115.145	116.762	115.812	114.555	113.802	113.108	113.883	113.543	112.730	113.050	115.416
15	3121K	114.460	117.161	116.420	115.257	114.518	113.520	114.440	114.133	113.500	113.745	117.038
16	3095K	120.121	117.390	116.784	115.505	115.369	115.838	115.468	115.049	114.654	114.573	114.012
17	3128K	117.857	116.532	115.907	114.655	114.361	114.606	114.393	113.922	113.570	113.536	113.390
18	3137K	119.384	118.232	117.578	116.299	115.912	115.862	115.952	115.342	115.099	115.012	115.140
19	3085K	117.958	117.587	116.932	115.657	115.343	115.521	115.432	114.994	114.510	114.623	114.882
20	3097K	118.316	118.369	117.733	116.246	115.938	115.855	115.743	115.412	114.935	114.781	115.026

Normalized Luminous Flux data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 120\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3090K	1.0000	0.9980	0.9898	0.9817	0.9797	0.9826	0.9816	0.9769	0.9738	0.9729	0.9766
2	3086K	1.0000	1.0032	0.9967	0.9890	0.9864	0.9903	0.9879	0.9844	0.9815	0.9803	0.9835
3	3145K	1.0000	1.0177	1.0110	1.0027	0.9896	0.9860	0.9894	0.9975	0.9943	0.9817	0.9953
4	3149K	1.0000	1.0136	1.0041	0.9967	0.9921	0.9854	0.9915	0.9882	0.9875	0.9854	1.0075
5	3094K	1.0000	1.0155	1.0094	1.0022	0.9982	0.9870	0.9978	0.9952	0.9955	0.9926	1.0114
6	3091K	1.0000	0.9733	0.9673	0.9585	0.9576	0.9620	0.9588	0.9541	0.9534	0.9506	0.9480
7	3127K	1.0000	0.9778	0.9712	0.9645	0.9595	0.9645	0.9651	0.9610	0.9601	0.9579	0.9581
8	3132K	1.0000	0.9833	0.9745	0.9666	0.9638	0.9637	0.9658	0.9617	0.9614	0.9586	0.9614
9	3063K	1.0000	0.9889	0.9821	0.9752	0.9727	0.9736	0.9745	0.9699	0.9698	0.9682	0.9708
10	3168K	1.0000	0.9953	0.9929	0.9850	0.9819	0.9849	0.9869	0.9824	0.9797	0.9806	0.9846
11	3046K	1.0000	0.9935	0.9894	0.9787	0.9764	0.9765	0.9755	0.9721	0.9675	0.9682	0.9712
12	3138K	1.0000	0.9953	0.9934	0.9792	0.9781	0.9814	0.9803	0.9760	0.9711	0.9709	0.9730
13	3130K	1.0000	1.0112	1.0042	0.9929	0.9902	0.9901	0.9906	0.9865	0.9692	0.9816	0.9847
14	3140K	1.0000	1.0140	1.0058	0.9949	0.9883	0.9823	0.9890	0.9861	0.9790	0.9818	1.0024
15	3121K	1.0000	1.0236	1.0171	1.0070	1.0005	0.9918	0.9998	0.9971	0.9916	0.9938	1.0225
16	3095K	1.0000	0.9773	0.9722	0.9616	0.9604	0.9643	0.9613	0.9578	0.9545	0.9538	0.9491
17	3128K	1.0000	0.9888	0.9835	0.9728	0.9703	0.9724	0.9706	0.9666	0.9636	0.9633	0.9621
18	3137K	1.0000	0.9904	0.9849	0.9742	0.9709	0.9705	0.9713	0.9661	0.9641	0.9634	0.9645
19	3085K	1.0000	0.9969	0.9913	0.9805	0.9778	0.9793	0.9786	0.9749	0.9708	0.9717	0.9739
20	3097K	1.0000	1.0005	0.9951	0.9825	0.9799	0.9792	0.9783	0.9755	0.9714	0.9701	0.9722

CIE 1976 u' data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 120\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3090K	0.2476	0.2472	0.2467	0.2469	0.2468	0.2464	0.2466	0.2465	0.2463	0.2462	0.2459
2	3086K	0.2476	0.2472	0.2468	0.2470	0.2467	0.2464	0.2466	0.2464	0.2461	0.2461	0.2459
3	3145K	0.2459	0.2456	0.2452	0.2453	0.2451	0.2447	0.2449	0.2447	0.2445	0.2445	0.2442
4	3149K	0.2459	0.2457	0.2450	0.2454	0.2452	0.2446	0.2451	0.2449	0.2447	0.2447	0.2444
5	3094K	0.2473	0.2467	0.2467	0.2466	0.2464	0.2460	0.2463	0.2462	0.2460	0.2460	0.2458
6	3091K	0.2472	0.2462	0.2457	0.2460	0.2457	0.2452	0.2456	0.2453	0.2451	0.2451	0.2448
7	3127K	0.2461	0.2453	0.2449	0.2452	0.2448	0.2447	0.2447	0.2445	0.2442	0.2443	0.2439
8	3132K	0.2464	0.2458	0.2454	0.2457	0.2454	0.2452	0.2452	0.2449	0.2447	0.2447	0.2444
9	3063K	0.2485	0.2479	0.2475	0.2478	0.2475	0.2476	0.2475	0.2473	0.2470	0.2472	0.2469
10	3168K	0.2454	0.2448	0.2447	0.2447	0.2442	0.2442	0.2442	0.2440	0.2437	0.2439	0.2436
11	3046K	0.2496	0.2485	0.2484	0.2484	0.2484	0.2480	0.2481	0.2478	0.2477	0.2477	0.2476
12	3138K	0.2462	0.2452	0.2452	0.2452	0.2451	0.2447	0.2448	0.2446	0.2444	0.2444	0.2443
13	3130K	0.2463	0.2453	0.2453	0.2453	0.2452	0.2450	0.2449	0.2447	0.2444	0.2445	0.2444
14	3140K	0.2461	0.2455	0.2456	0.2454	0.2454	0.2452	0.2452	0.2448	0.2448	0.2447	0.2448
15	3121K	0.2464	0.2458	0.2460	0.2459	0.2459	0.2453	0.2455	0.2452	0.2453	0.2451	0.2452
16	3095K	0.2471	0.2460	0.2461	0.2461	0.2460	0.2455	0.2457	0.2455	0.2454	0.2453	0.2453
17	3128K	0.2470	0.2464	0.2463	0.2463	0.2462	0.2457	0.2459	0.2455	0.2455	0.2454	0.2453
18	3137K	0.2460	0.2455	0.2454	0.2454	0.2453	0.2450	0.2450	0.2446	0.2446	0.2445	0.2445
19	3085K	0.2478	0.2474	0.2473	0.2473	0.2472	0.2468	0.2469	0.2465	0.2466	0.2465	0.2464
20	3097K	0.2474	0.2468	0.2466	0.2466	0.2465	0.2459	0.2461	0.2458	0.2458	0.2456	0.2456

CIE 1976 v' data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 120\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3090K	0.5237	0.5238	0.5236	0.5239	0.5237	0.5236	0.5240	0.5241	0.5241	0.5241	0.5242
2	3086K	0.5244	0.5246	0.5246	0.5249	0.5246	0.5244	0.5249	0.5249	0.5248	0.5249	0.5250
3	3145K	0.5223	0.5227	0.5226	0.5228	0.5226	0.5226	0.5229	0.5229	0.5229	0.5229	0.5230
4	3149K	0.5217	0.5219	0.5217	0.5220	0.5218	0.5217	0.5221	0.5221	0.5220	0.5220	0.5221
5	3094K	0.5240	0.5240	0.5241	0.5242	0.5239	0.5240	0.5243	0.5243	0.5242	0.5243	0.5244
6	3091K	0.5250	0.5250	0.5248	0.5251	0.5249	0.5248	0.5252	0.5252	0.5252	0.5252	0.5254
7	3127K	0.5238	0.5236	0.5235	0.5238	0.5235	0.5235	0.5239	0.5239	0.5238	0.5238	0.5238
8	3132K	0.5221	0.5222	0.5219	0.5222	0.5219	0.5219	0.5222	0.5222	0.5221	0.5222	0.5223
9	3063K	0.5244	0.5243	0.5242	0.5245	0.5243	0.5243	0.5246	0.5246	0.5245	0.5246	0.5247
10	3168K	0.5209	0.5210	0.5210	0.5211	0.5208	0.5209	0.5212	0.5212	0.5212	0.5213	0.5214
11	3046K	0.5225	0.5223	0.5225	0.5225	0.5226	0.5224	0.5228	0.5227	0.5228	0.5227	0.5229
12	3138K	0.5223	0.5223	0.5226	0.5226	0.5226	0.5224	0.5228	0.5227	0.5228	0.5227	0.5230
13	3130K	0.5229	0.5230	0.5231	0.5232	0.5232	0.5231	0.5234	0.5234	0.5234	0.5233	0.5235
14	3140K	0.5222	0.5223	0.5226	0.5226	0.5226	0.5227	0.5228	0.5227	0.5228	0.5228	0.5230
15	3121K	0.5234	0.5235	0.5237	0.5238	0.5238	0.5237	0.5239	0.5238	0.5240	0.5239	0.5242
16	3095K	0.5247	0.5244	0.5246	0.5248	0.5247	0.5245	0.5249	0.5248	0.5249	0.5249	0.5251
17	3128K	0.5203	0.5203	0.5204	0.5204	0.5203	0.5201	0.5205	0.5203	0.5204	0.5204	0.5206
18	3137K	0.5229	0.5229	0.5230	0.5232	0.5230	0.5229	0.5232	0.5230	0.5232	0.5231	0.5234
19	3085K	0.5236	0.5237	0.5238	0.5239	0.5239	0.5237	0.5241	0.5240	0.5241	0.5240	0.5242
20	3097K	0.5236	0.5237	0.5238	0.5239	0.5238	0.5235	0.5239	0.5238	0.5239	0.5238	0.5240

Delta u'v' data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 120\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (I=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3090K	0.0000	0.0004	0.0009	0.0008	0.0008	0.0013	0.0011	0.0012	0.0014	0.0015	0.0018
2	3086K	0.0000	0.0005	0.0009	0.0008	0.0010	0.0013	0.0011	0.0013	0.0016	0.0017	0.0019
3	3145K	0.0000	0.0005	0.0008	0.0008	0.0009	0.0013	0.0012	0.0014	0.0015	0.0016	0.0019
4	3149K	0.0000	0.0003	0.0009	0.0006	0.0007	0.0014	0.0009	0.0011	0.0012	0.0013	0.0016
5	3094K	0.0000	0.0006	0.0007	0.0008	0.0009	0.0014	0.0011	0.0012	0.0013	0.0014	0.0016
6	3091K	0.0000	0.0010	0.0015	0.0012	0.0015	0.0021	0.0016	0.0020	0.0021	0.0022	0.0025
7	3127K	0.0000	0.0008	0.0013	0.0009	0.0014	0.0015	0.0014	0.0016	0.0019	0.0019	0.0023
8	3132K	0.0000	0.0006	0.0011	0.0007	0.0010	0.0013	0.0012	0.0015	0.0017	0.0018	0.0021
9	3063K	0.0000	0.0006	0.0011	0.0007	0.0010	0.0010	0.0010	0.0013	0.0015	0.0014	0.0017
10	3168K	0.0000	0.0006	0.0008	0.0008	0.0012	0.0013	0.0012	0.0015	0.0017	0.0016	0.0019
11	3046K	0.0000	0.0011	0.0012	0.0012	0.0012	0.0017	0.0015	0.0019	0.0019	0.0020	0.0021
12	3138K	0.0000	0.0010	0.0011	0.0011	0.0012	0.0016	0.0015	0.0017	0.0019	0.0019	0.0021
13	3130K	0.0000	0.0010	0.0011	0.0011	0.0012	0.0014	0.0015	0.0017	0.0020	0.0019	0.0020
14	3140K	0.0000	0.0006	0.0007	0.0008	0.0008	0.0011	0.0011	0.0014	0.0014	0.0016	0.0016
15	3121K	0.0000	0.0006	0.0005	0.0007	0.0007	0.0012	0.0010	0.0013	0.0013	0.0015	0.0015
16	3095K	0.0000	0.0011	0.0010	0.0010	0.0011	0.0017	0.0014	0.0016	0.0017	0.0019	0.0019
17	3128K	0.0000	0.0006	0.0008	0.0007	0.0008	0.0014	0.0011	0.0015	0.0015	0.0017	0.0018
18	3137K	0.0000	0.0005	0.0007	0.0007	0.0007	0.0011	0.0011	0.0014	0.0014	0.0016	0.0016
19	3085K	0.0000	0.0004	0.0006	0.0006	0.0007	0.0011	0.0010	0.0014	0.0013	0.0014	0.0016
20	3097K	0.0000	0.0006	0.0009	0.0009	0.0010	0.0016	0.0013	0.0017	0.0016	0.0019	0.0019

Forward Voltage [V] data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 120\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (I=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3090K	6.022	6.087	6.103	6.115	6.116	6.114	6.137	6.132	6.137	6.136	6.153
2	3086K	6.029	6.116	6.134	6.151	6.153	6.148	6.175	6.169	6.174	6.171	6.191
3	3145K	6.026	6.128	6.151	6.171	6.175	6.190	6.199	6.193	6.199	6.196	6.216
4	3149K	6.019	6.109	6.131	6.150	6.151	6.166	6.175	6.169	6.173	6.171	6.192
5	3094K	6.007	6.109	6.128	6.146	6.149	6.163	6.171	6.167	6.170	6.169	6.187
6	3091K	6.007	6.094	6.112	6.128	6.131	6.127	6.153	6.147	6.152	6.149	6.170
7	3127K	6.044	6.147	6.167	6.186	6.190	6.187	6.211	6.208	6.211	6.209	6.228
8	3132K	6.044	6.155	6.179	6.202	6.206	6.202	6.233	6.227	6.232	6.231	6.252
9	3063K	6.028	6.219	6.253	6.293	6.303	6.297	6.338	6.329	6.334	6.327	6.364
10	3168K	6.059	6.163	6.181	6.199	6.201	6.195	6.225	6.216	6.221	6.219	6.238
11	3046K	6.076	6.193	6.217	6.243	6.248	6.245	6.276	6.268	6.275	6.269	6.294
12	3138K	6.051	6.069	6.076	6.080	6.078	6.074	6.089	6.084	6.086	6.085	6.093
13	3130K	6.063	6.264	6.300	6.345	6.356	6.353	6.393	6.384	6.393	6.379	6.415
14	3140K	6.044	6.130	6.150	6.168	6.170	6.186	6.193	6.189	6.192	6.191	6.208
15	3121K	5.975	6.018	6.027	6.036	6.034	6.045	6.049	6.044	6.046	6.045	6.056
16	3095K	5.995	6.080	6.095	6.110	6.114	6.112	6.132	6.127	6.131	6.130	6.144
17	3128K	6.039	6.095	6.109	6.121	6.119	6.115	6.137	6.131	6.134	6.133	6.147
18	3137K	6.047	6.117	6.132	6.146	6.146	6.142	6.164	6.158	6.162	6.159	6.172
19	3085K	6.014	6.121	6.141	6.161	6.165	6.164	6.186	6.182	6.187	6.184	6.202
20	3097K	6.057	6.156	6.178	6.198	6.201	6.198	6.224	6.219	6.223	6.221	6.239

Luminous Flux [lm] data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 180\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3165K	212.326	210.439	207.607	206.853	205.197	206.410	205.628	204.858	204.693	204.039	203.011
2	3189K	210.215	207.770	204.017	203.012	201.598	202.285	201.585	201.331	201.003	200.321	199.167
3	3135K	206.890	207.288	203.883	203.289	202.049	202.530	202.144	201.663	201.503	200.880	199.950
4	3188K	209.007	209.522	206.683	203.188	202.240	200.333	201.826	200.636	200.746	199.914	201.954
5	3089K	202.745	202.600	199.458	198.429	196.487	194.083	195.837	194.872	195.074	194.294	197.692
6	3149K	214.734	208.046	205.451	204.785	204.168	205.333	204.230	203.420	203.027	202.320	200.095
7	3155K	215.311	209.754	207.133	206.320	205.336	206.260	205.470	204.795	204.808	204.238	202.538
8	3085K	211.076	206.725	203.709	203.105	201.505	202.597	202.122	201.362	201.663	201.070	199.993
9	3107K	210.901	204.798	202.972	201.977	201.202	201.974	201.307	200.355	200.283	199.397	198.392
10	3156K	215.941	212.879	210.800	209.678	208.387	209.207	208.789	207.892	208.200	207.437	206.980
11	3199K	216.550	215.838	213.463	210.767	211.714	212.953	212.369	212.005	211.210	210.597	210.008
12	3121K	212.711	210.134	208.949	205.678	206.670	207.839	207.042	206.216	205.835	205.177	204.790
13	3113K	204.096	205.646	203.862	201.301	201.852	202.770	201.967	201.780	201.251	200.460	200.016
14	3206K	209.464	214.649	211.846	207.373	205.891	204.393	206.210	205.611	204.965	203.922	207.092
15	3167K	207.109	208.959	205.904	203.733	202.891	200.864	202.791	202.258	201.549	200.732	204.926
16	3156K	214.871	210.003	206.947	204.921	205.191	206.845	205.739	204.794	204.703	203.758	201.418
17	3125K	218.327	214.072	210.875	208.877	209.129	210.461	209.731	209.030	208.774	207.685	206.008
18	3164K	217.459	212.928	210.321	208.138	208.286	209.491	209.219	208.770	208.435	207.233	206.103
19	3109K	214.437	210.455	208.167	206.019	205.881	206.907	206.620	205.854	205.899	204.790	204.318
20	3110K	210.406	207.162	206.688	204.458	204.293	204.920	204.489	203.746	203.474	202.488	202.045

Normalized Luminous Flux data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 180\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3165K	1.0000	0.9911	0.9778	0.9742	0.9664	0.9721	0.9685	0.9648	0.9641	0.9610	0.9561
2	3189K	1.0000	0.9884	0.9705	0.9657	0.9590	0.9623	0.9589	0.9577	0.9562	0.9529	0.9474
3	3135K	1.0000	1.0019	0.9855	0.9826	0.9766	0.9789	0.9771	0.9747	0.9740	0.9710	0.9665
4	3188K	1.0000	1.0025	0.9889	0.9722	0.9676	0.9585	0.9656	0.9600	0.9605	0.9565	0.9663
5	3089K	1.0000	0.9993	0.9838	0.9787	0.9691	0.9573	0.9659	0.9612	0.9622	0.9583	0.9751
6	3149K	1.0000	0.9689	0.9568	0.9537	0.9508	0.9562	0.9511	0.9473	0.9455	0.9422	0.9318
7	3155K	1.0000	0.9742	0.9620	0.9582	0.9537	0.9580	0.9543	0.9512	0.9512	0.9486	0.9407
8	3085K	1.0000	0.9794	0.9651	0.9622	0.9547	0.9598	0.9576	0.9540	0.9554	0.9526	0.9475
9	3107K	1.0000	0.9711	0.9624	0.9577	0.9540	0.9577	0.9545	0.9500	0.9497	0.9455	0.9407
10	3156K	1.0000	0.9858	0.9762	0.9710	0.9650	0.9688	0.9669	0.9627	0.9642	0.9606	0.9585
11	3199K	1.0000	0.9967	0.9857	0.9733	0.9777	0.9834	0.9807	0.9790	0.9753	0.9725	0.9698
12	3121K	1.0000	0.9879	0.9823	0.9669	0.9716	0.9771	0.9733	0.9695	0.9677	0.9646	0.9628
13	3113K	1.0000	1.0076	0.9989	0.9863	0.9890	0.9935	0.9896	0.9886	0.9861	0.9822	0.9800
14	3206K	1.0000	1.0248	1.0114	0.9900	0.9829	0.9758	0.9845	0.9816	0.9785	0.9735	0.9887
15	3167K	1.0000	1.0089	0.9942	0.9837	0.9796	0.9698	0.9792	0.9766	0.9732	0.9692	0.9895
16	3156K	1.0000	0.9773	0.9631	0.9537	0.9550	0.9626	0.9575	0.9531	0.9527	0.9483	0.9374
17	3125K	1.0000	0.9805	0.9659	0.9567	0.9579	0.9640	0.9606	0.9574	0.9562	0.9513	0.9436
18	3164K	1.0000	0.9792	0.9672	0.9571	0.9578	0.9634	0.9621	0.9600	0.9585	0.9530	0.9478
19	3109K	1.0000	0.9814	0.9708	0.9607	0.9601	0.9649	0.9635	0.9600	0.9602	0.9550	0.9528
20	3110K	1.0000	0.9846	0.9823	0.9717	0.9709	0.9739	0.9719	0.9683	0.9671	0.9624	0.9601

CIE 1976 u' data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 180\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (l=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3165K	0.2447	0.2433	0.2436	0.2437	0.2434	0.2427	0.2434	0.2432	0.2430	0.2430	0.2430
2	3189K	0.2439	0.2429	0.2428	0.2430	0.2427	0.2428	0.2426	0.2424	0.2422	0.2422	0.2422
3	3135K	0.2459	0.2447	0.2448	0.2449	0.2446	0.2439	0.2444	0.2444	0.2441	0.2442	0.2442
4	3188K	0.2442	0.2430	0.2429	0.2430	0.2428	0.2420	0.2426	0.2424	0.2422	0.2422	0.2422
5	3089K	0.2475	0.2463	0.2462	0.2461	0.2461	0.2453	0.2459	0.2456	0.2455	0.2455	0.2456
6	3149K	0.2448	0.2436	0.2436	0.2436	0.2435	0.2427	0.2433	0.2431	0.2430	0.2430	0.2431
7	3155K	0.2450	0.2440	0.2439	0.2441	0.2439	0.2433	0.2437	0.2436	0.2435	0.2434	0.2434
8	3085K	0.2474	0.2465	0.2466	0.2466	0.2465	0.2461	0.2464	0.2463	0.2460	0.2460	0.2461
9	3107K	0.2463	0.2446	0.2449	0.2448	0.2448	0.2442	0.2448	0.2447	0.2446	0.2446	0.2447
10	3156K	0.2450	0.2438	0.2439	0.2437	0.2437	0.2431	0.2435	0.2432	0.2431	0.2431	0.2432
11	3199K	0.2443	0.2434	0.2432	0.2428	0.2433	0.2427	0.2431	0.2429	0.2426	0.2427	0.2427
12	3121K	0.2468	0.2458	0.2457	0.2451	0.2455	0.2448	0.2453	0.2451	0.2449	0.2449	0.2448
13	3113K	0.2467	0.2462	0.2459	0.2455	0.2460	0.2455	0.2458	0.2456	0.2454	0.2453	0.2453
14	3206K	0.2435	0.2429	0.2427	0.2425	0.2428	0.2426	0.2425	0.2422	0.2421	0.2420	0.2420
15	3167K	0.2444	0.2436	0.2434	0.2427	0.2432	0.2430	0.2429	0.2427	0.2424	0.2424	0.2425
16	3156K	0.2452	0.2440	0.2444	0.2444	0.2444	0.2437	0.2439	0.2434	0.2433	0.2434	0.2434
17	3125K	0.2458	0.2444	0.2449	0.2446	0.2449	0.2442	0.2447	0.2445	0.2442	0.2442	0.2443
18	3164K	0.2447	0.2433	0.2437	0.2434	0.2437	0.2429	0.2437	0.2432	0.2432	0.2431	0.2431
19	3109K	0.2463	0.2445	0.2452	0.2451	0.2452	0.2444	0.2453	0.2447	0.2447	0.2448	0.2448
20	3110K	0.2465	0.2454	0.2456	0.2457	0.2456	0.2447	0.2456	0.2451	0.2451	0.2450	0.2449

CIE 1976 v' data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 180\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (l=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3165K	0.5239	0.5238	0.5240	0.5242	0.5242	0.5240	0.5245	0.5246	0.5247	0.5248	0.5251
2	3189K	0.5235	0.5236	0.5237	0.5240	0.5240	0.5242	0.5244	0.5246	0.5247	0.5249	0.5253
3	3135K	0.5235	0.5235	0.5238	0.5241	0.5240	0.5238	0.5242	0.5244	0.5245	0.5246	0.5250
4	3188K	0.5227	0.5225	0.5227	0.5228	0.5228	0.5225	0.5230	0.5232	0.5233	0.5234	0.5238
5	3089K	0.5244	0.5243	0.5244	0.5246	0.5246	0.5243	0.5248	0.5249	0.5250	0.5251	0.5255
6	3149K	0.5255	0.5254	0.5255	0.5258	0.5259	0.5256	0.5262	0.5263	0.5264	0.5265	0.5269
7	3155K	0.5241	0.5239	0.5241	0.5243	0.5242	0.5241	0.5245	0.5247	0.5248	0.5248	0.5251
8	3085K	0.5249	0.5247	0.5250	0.5252	0.5251	0.5250	0.5254	0.5255	0.5255	0.5256	0.5258
9	3107K	0.5261	0.5256	0.5260	0.5262	0.5263	0.5261	0.5267	0.5269	0.5270	0.5271	0.5275
10	3156K	0.5237	0.5235	0.5236	0.5237	0.5237	0.5236	0.5240	0.5240	0.5241	0.5242	0.5245
11	3199K	0.5209	0.5212	0.5212	0.5211	0.5215	0.5212	0.5218	0.5219	0.5220	0.5221	0.5225
12	3121K	0.5222	0.5223	0.5223	0.5220	0.5223	0.5220	0.5226	0.5226	0.5227	0.5228	0.5231
13	3113K	0.5237	0.5239	0.5240	0.5240	0.5242	0.5240	0.5244	0.5245	0.5245	0.5247	0.5247
14	3206K	0.5224	0.5227	0.5228	0.5228	0.5228	0.5230	0.5231	0.5231	0.5232	0.5233	0.5236
15	3167K	0.5245	0.5247	0.5249	0.5248	0.5250	0.5251	0.5252	0.5254	0.5254	0.5255	0.5259
16	3156K	0.5232	0.5231	0.5234	0.5236	0.5236	0.5234	0.5237	0.5236	0.5237	0.5238	0.5241
17	3125K	0.5253	0.5252	0.5256	0.5257	0.5258	0.5257	0.5261	0.5262	0.5263	0.5264	0.5267
18	3164K	0.5241	0.5238	0.5242	0.5243	0.5245	0.5242	0.5248	0.5248	0.5250	0.5251	0.5255
19	3109K	0.5256	0.5253	0.5257	0.5259	0.5260	0.5256	0.5263	0.5262	0.5263	0.5265	0.5268
20	3110K	0.5250	0.5250	0.5253	0.5255	0.5255	0.5251	0.5257	0.5257	0.5258	0.5258	0.5261

Delta u'v' data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 180\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (I=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3165K	0.0000	0.0014	0.0011	0.0011	0.0014	0.0021	0.0014	0.0017	0.0019	0.0020	0.0021
2	3189K	0.0000	0.0010	0.0012	0.0011	0.0013	0.0013	0.0016	0.0019	0.0021	0.0023	0.0025
3	3135K	0.0000	0.0012	0.0012	0.0012	0.0014	0.0021	0.0017	0.0018	0.0021	0.0021	0.0023
4	3188K	0.0000	0.0012	0.0013	0.0012	0.0014	0.0023	0.0016	0.0019	0.0021	0.0022	0.0023
5	3089K	0.0000	0.0012	0.0013	0.0015	0.0014	0.0023	0.0017	0.0020	0.0021	0.0022	0.0022
6	3149K	0.0000	0.0012	0.0012	0.0013	0.0014	0.0022	0.0017	0.0019	0.0020	0.0021	0.0022
7	3155K	0.0000	0.0010	0.0011	0.0010	0.0011	0.0018	0.0014	0.0016	0.0016	0.0018	0.0019
8	3085K	0.0000	0.0009	0.0008	0.0009	0.0010	0.0014	0.0011	0.0013	0.0015	0.0016	0.0016
9	3107K	0.0000	0.0018	0.0014	0.0015	0.0015	0.0022	0.0016	0.0018	0.0019	0.0020	0.0022
10	3156K	0.0000	0.0012	0.0011	0.0013	0.0013	0.0020	0.0015	0.0019	0.0019	0.0020	0.0020
11	3199K	0.0000	0.0010	0.0012	0.0016	0.0012	0.0017	0.0015	0.0017	0.0020	0.0021	0.0023
12	3121K	0.0000	0.0010	0.0011	0.0018	0.0013	0.0021	0.0016	0.0018	0.0020	0.0021	0.0022
13	3113K	0.0000	0.0006	0.0009	0.0013	0.0009	0.0013	0.0011	0.0014	0.0015	0.0017	0.0018
14	3206K	0.0000	0.0007	0.0009	0.0011	0.0008	0.0011	0.0012	0.0015	0.0016	0.0018	0.0020
15	3167K	0.0000	0.0008	0.0011	0.0018	0.0013	0.0016	0.0017	0.0020	0.0022	0.0023	0.0024
16	3156K	0.0000	0.0012	0.0009	0.0009	0.0009	0.0016	0.0014	0.0019	0.0020	0.0020	0.0021
17	3125K	0.0000	0.0014	0.0010	0.0013	0.0011	0.0017	0.0013	0.0016	0.0019	0.0020	0.0021
18	3164K	0.0000	0.0014	0.0010	0.0014	0.0011	0.0019	0.0012	0.0017	0.0017	0.0020	0.0022
19	3109K	0.0000	0.0018	0.0011	0.0013	0.0012	0.0020	0.0012	0.0017	0.0017	0.0018	0.0020
20	3110K	0.0000	0.0011	0.0010	0.0010	0.0011	0.0019	0.0011	0.0016	0.0016	0.0018	0.0020

Forward Voltage [V] data for tested units

$T_s = T_{air} = 105^\circ\text{C}$, $I_f = 180\text{mA}$; $T_s \geq 103^\circ\text{C}$ and $T_{air} \geq 100^\circ\text{C}$ in compliance with LM-80-15

	CCT (I=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3165K	6.666	6.722	6.730	6.740	6.741	6.746	6.754	6.748	6.754	6.748	6.752
2	3189K	6.763	6.851	6.871	6.889	6.891	6.904	6.915	6.907	6.916	6.912	6.914
3	3135K	6.789	7.007	7.044	7.078	7.087	7.100	7.120	7.113	7.124	7.118	7.134
4	3188K	6.790	7.051	7.096	7.141	7.153	7.166	7.193	7.182	7.193	7.181	7.202
5	3089K	6.701	6.856	6.886	6.914	6.920	6.932	6.949	6.942	6.951	6.947	6.953
6	3149K	6.711	6.949	6.987	7.022	7.033	7.044	7.063	7.059	7.067	7.062	7.078
7	3155K	6.781	7.110	7.163	7.217	7.229	7.240	7.271	7.258	7.265	7.249	7.278
8	3085K	6.715	7.089	7.146	7.205	7.220	7.230	7.263	7.250	7.257	7.241	7.273
9	3107K	6.713	6.927	6.961	6.995	7.004	7.015	7.032	7.028	7.036	7.031	7.045
10	3156K	6.784	7.007	7.049	7.085	7.094	7.107	7.128	7.121	7.132	7.125	7.139
11	3199K	6.728	6.811	6.833	6.850	6.854	6.866	6.880	6.873	6.883	6.880	6.884
12	3121K	6.777	7.042	7.092	7.142	7.155	7.167	7.197	7.188	7.196	7.185	7.208
13	3113K	6.726	7.093	7.152	7.213	7.227	7.238	7.258	7.261	7.270	7.255	7.286
14	3206K	6.778	6.984	7.015	7.052	7.052	7.064	7.080	7.075	7.080	7.075	7.086
15	3167K	6.679	6.835	6.858	6.883	6.887	6.895	6.910	6.904	6.909	6.904	6.913
16	3156K	6.704	6.876	6.912	6.947	6.955	6.965	6.988	6.977	6.987	6.977	6.993
17	3125K	6.739	6.895	6.925	6.951	6.958	6.968	6.982	6.978	6.986	6.979	6.989
18	3164K	6.682	6.871	6.903	6.936	6.944	6.952	6.972	6.964	6.970	6.960	6.979
19	3109K	6.678	9.864	6.906	6.943	6.952	6.960	6.982	6.974	6.979	6.969	6.990
20	3110K	6.771	9.997	7.020	7.053	7.062	7.074	7.093	7.088	7.097	7.092	7.107

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Company Information

Lumileds is a leading provider of power LEDs for everyday lighting applications. The company's records for light output, efficacy and thermal management are direct results of the ongoing commitment to advancing solid-state lighting technology and enabling lighting solutions that are more environmentally friendly, help reduce CO₂ emissions and reduce the need for power plant expansion. Lumileds LUXEON LEDs are enabling never before possible applications in outdoor lighting, shop lighting, home lighting, digital imaging, display and automotive lighting.

Lumileds is a fully integrated supplier, producing core LED material in all three base colors, (red, green, blue) and white. Lumileds has R & D centers in San Jose, California and in the Netherlands, and production capabilities in San Jose, Singapore and Penang, Malaysia. Founded in 1999, Lumileds is the high flux LED technology leader and is dedicated to bridging the gap between solid-state technology and the lighting world. More information about the company's LUXEON LED products and solid-state lighting technologies can be found at www.lumileds.com.

Appendix: Additional Projected Extrapolations per IESNA TM-21-11

Projected L₇₅ extrapolations per IESNA TM-21-11

	If = 120mA	If = 180mA
Ts = 105°C	374,962	121,294

Projected L₈₀ extrapolations per IESNA TM-21-11

	If = 120mA	If = 180mA
Ts = 105°C	285,074	91,936

Projected L₈₅ extrapolations per IESNA TM-21-11

	If = 120mA	If = 180mA
Ts = 105°C	200,637	64,358

Projected L₉₀ extrapolations per IESNA TM-21-11

	If = 120mA	If = 180mA
Ts = 105°C	121,027	38,357