

Lumileds

IESNA LM-80 Test Report

1. Description of LED light sources tested

LUXEON 5050 Square LES with nominal CCT of 4000K (L150-40705030000S0).

2a. Package Pictures



Figure 1. Picture of the LUXEON 5050 Square LES.

2b. Average current density per LED die at max. current tested

300.0 mA/mm²

2c. Average power density per LED die at max. current tested

9.07 W/mm²

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

72.28

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

0.4 mm

2f. Total Input Power at max. current tested

4.55 W

3a. Projected L_{70} extrapolations per IESNA TM-21-11 for LUXEON 5050 30V

	If = 70mA	If = 150mA
Ts = 105°C	551,177	30,542
Ts = 85°C	1,025,574	352,158
Ts = 55°C	-1,280,690	-

3b. Reported L_{70} extrapolations per IESNA TM-21-11 for LUXEON 5050 30V

	If = 70mA	If = 150mA
Ts = 105°C	> 60,000	30,542
Ts = 85°C	> 60,000	> 60,000
Ts = 55°C	> 60,000	-

4. Applicable LUXEON® Series part number(s)

This Test Report applies to the following LUXEON part numbers*:

Product Family	Part Number	Color
LUXEON 5050(Square LES)	L150-AABB50CC000S0	white
LUXEON 5050(Round LES)	L150-AABB50CC00000	white

For LUXEON 5050(Square LES): AA designates nominal ANSI CCT (40=4000K, 50=5000K, 57=5700K, 65=6500K), BB designates minimum CRI (70=70CRI, 80=80CRI, 90=90CRI), CC designates voltage (06=6V, 30=30V).

For LUXEON 5050(Round LES): AA designates nominal ANSI CCT (40=4000K, 50=5000K, 57=5700K, 65=6500K), BB designates minimum CRI (70=70CRI, 80=80CRI, 90=90CRI), CC designates voltage (06=6V, 24=24V).

Please note LUXEON 5050(Square LES) 6V parts have an equivalent drive current I_f' that can be determined as follows: $I_f' = I_f * 5$.

Please note LUXEON 5050(Round LES) 6V parts have an equivalent drive current I_f' that can be determined as follows: $I_f' = I_f * 4$.

5. Number of LED light sources reported

20 units.

6. Dates Tests Started

2019/04/19.

7. Date Report First Issued

2020/01/10.

8. Mechanical Drawing

For detailed mechanical drawings, please see the LUXEON 5050 datasheet.

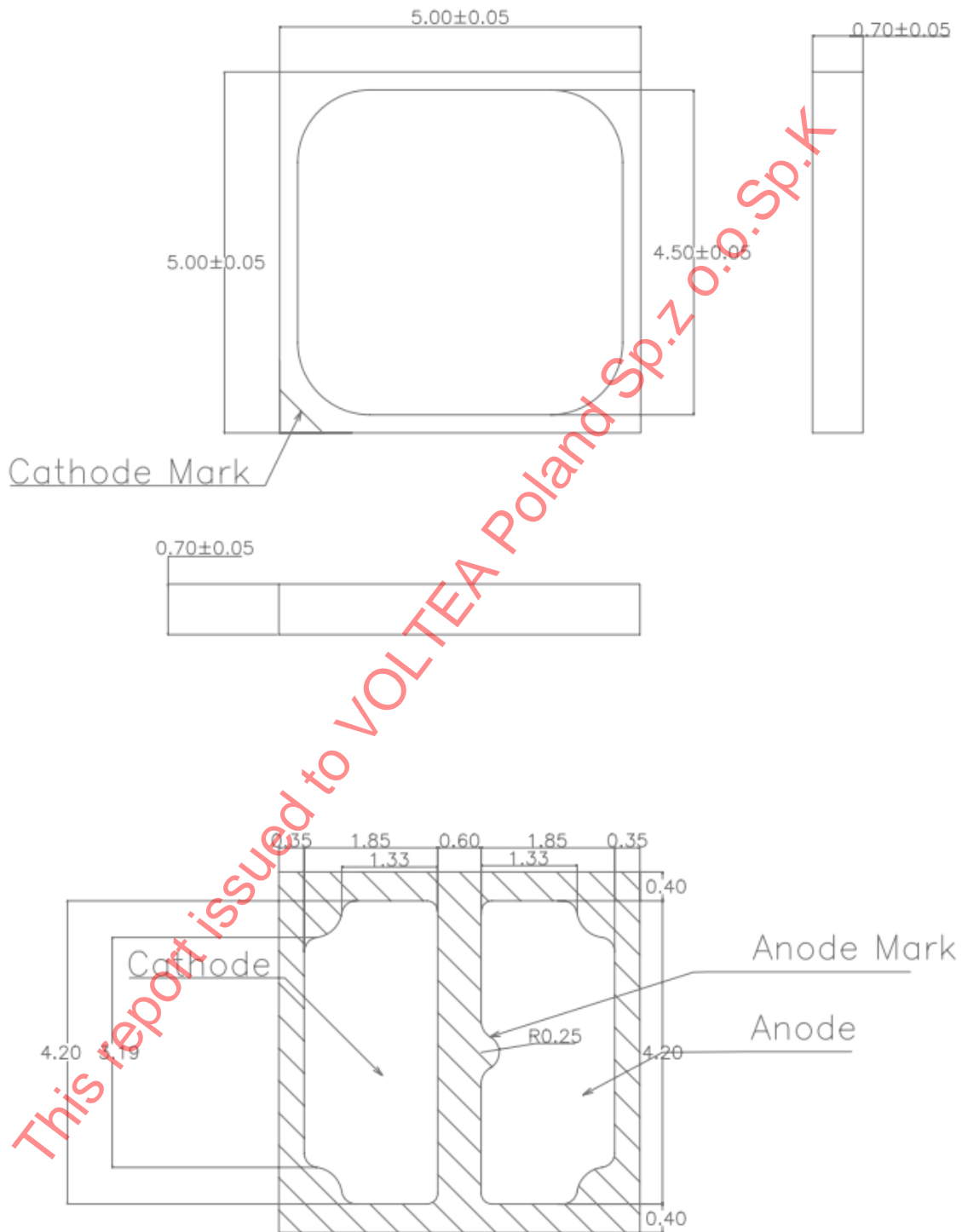


Figure 2. Mechanical drawings for the LUXEON 5050 Square LES (all dimensions in millimeters).

9. T_s Measurement Point

The circular pad in the bottom side of LUXEON 5050 corresponds to the recommended temperature measurement point T_s , see Figure 3.

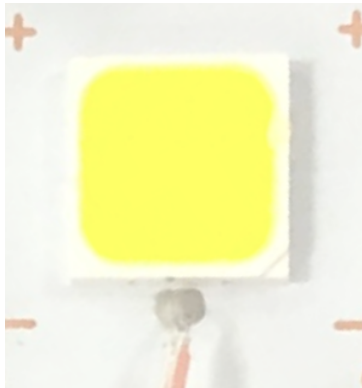


Figure 3. The recommended T_s point is located in the bottom of LUXEON 5050.

For further information on measuring the in-situ T_s , please see LUXEON 5050 Application Brief.

10. Description of auxiliary equipment

Reliability stress boards are mounted in a thermal chamber which provides liquid N₂ cooling and has a controlled air temperature.

11. Operating Cycle

LUXEON 5050 LEDs are driven with a constant direct current (DC).

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

Case temperature (T_s): controlled to within -2°C

Surrounding air temperature: controlled to within -5°C of T_s

Humidity: < 65 RH, No forced air flow.

13. Case and ambient temperatures

See Section 3.

14. Drive current of the LED light source during lumen maintenance 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.

18. LED light source monitoring interval

Units were tested at 0 and every 1000 hours thereafter.

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)

Uncertainty of light output is $U=1.59\%$. Uncertainty of correlated color temperature is $U=21K$.

20. Chromaticity shift reported over the measurement time

See tables.

21. Sampling Method/Sample size

LED samples for IESNA LM-80 testing consist of units built from a minimum of three manufacturing lots with each manufacturing lot built from different wafer lots built on non-consecutive days. These manufacturing lots are picked to represent a wide parametric distribution. Each Sample is soldered to all of the reliability stress boards for a given set of IESNA LM-80 tests.

LED sample size is indicated in Section 5 of this report.

This report issued to VOLTEA Poland Sp.z o.o.SP.K

22. ISO 17025-2005 Accreditation

Lumileds holds certificate LA-2016-0634-E issued by SAC-SINGLAS under scope of accreditation for IESNA LM-80-15 and LM-80-08.

**SINGAPORE LABORATORY
ACCREDITATION SCHEME**

**SINGAPORE
ACCREDITATION COUNCIL**

Number : **LA-2016-0634-E**

Date of Issue : **14 December 2016**

Date of Expiry : **13 December 2020**

Certificate of Accreditation

This certifies that

Lumileds Malaysia Sdn. Bhd.
Reliability Test Laboratory
No. 3, Lintang Bayan Lepas 8,
Phase 4, Bayan Lepas Industrial Park
11900, Penang, Malaysia

is accredited by the Singapore Accreditation Council to

ISO / IEC 17025 : 2005

for specific scope within the field of

Electrical Testing

as detailed in the attached schedule.

Chairman

Yeo Ah Kian

This Certificate is awarded subject to the organisation's compliance with the stated criteria and terms and conditions laid down by the Singapore Accreditation Council.

This Certificate may not be reproduced except with the written permission of the Chairman.

Figure 4. Certificate LA-2016-0634-E.

Notes

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

The TM-21 extrapolations are based on the IESNA TM-21-11 technical memorandum. The TM-21 lumen maintenance model is based on the flux data normalized to 1 at 0 hours and the use of an exponential model for flux (time):

$\text{Flux}(\text{time}) = B \exp[-\alpha \cdot \text{time}]$, where normally $B \cong 1$, 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.

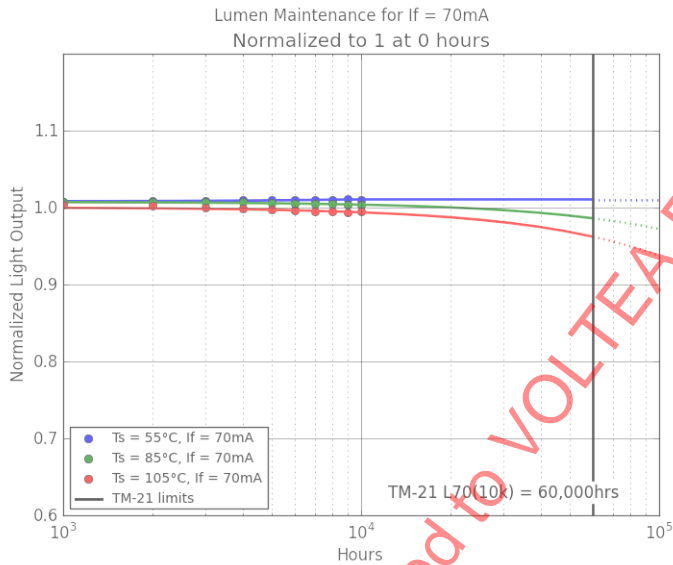
Customer needs to check for all applicable local rules regarding application of LM-80 reports.

Number of LED light sources tested: 36 units.

This report issued to VOLTEA Poland Sp.z o.o.Sp.K

Normalized Flux Statistics for $I_f = 70\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	alpha	B	L70
Ts=Tair=105°C	median =	1.0000	1.0036	1.0019	1.0002	0.9989	0.9975	0.9957	0.9950	0.9946	0.9939	0.9942		
	average =	1.0000	1.0036	1.0022	1.0005	0.9990	0.9979	0.9960	0.9951	0.9949	0.9939	0.9947	6.4759e-07	1.0003 551,177
	st dev =	0.0000	0.0010	0.0012	0.0015	0.0014	0.0020	0.0018	0.0019	0.0019	0.0019	0.0021	TM-21 L70(10k) > 60,000hrs	
	min =	1.0000	1.0018	1.0004	0.9986	0.9968	0.9942	0.9928	0.9915	0.9915	0.9906	0.9915		
	max =	1.0000	1.0058	1.0053	1.0045	1.0028	1.0019	1.0002	0.9993	0.9998	0.9986	0.9992		
Ts=Tair=85°C	median =	1.0000	1.0076	1.0077	1.0073	1.0068	1.0057	1.0050	1.0044	1.0045	1.0039	1.0038		
	average =	1.0000	1.0076	1.0077	1.0074	1.0069	1.0058	1.0050	1.0045	1.0047	1.0041	1.0039	3.5491e-07	1.0073 1,025,574
	st dev =	0.0000	0.0010	0.0009	0.0010	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0011	TM-21 L70(10k) > 60,000hrs	
	min =	1.0000	1.0060	1.0065	1.0058	1.0057	1.0046	1.0034	1.0032	1.0031	1.0026	1.0022		
	max =	1.0000	1.0096	1.0093	1.0097	1.0091	1.0079	1.0072	1.0070	1.0068	1.0064	1.0062		
Ts=Tair=55°C	median =	1.0000	1.0076	1.0078	1.0086	1.0100	1.0090	1.0095	1.0096	1.0103	1.0107	1.0104		
	average =	1.0000	1.0080	1.0081	1.0089	1.0102	1.0094	1.0097	1.0097	1.0105	1.0108	1.0106	-2.8470e-07	1.0080 -1,280,690
	st dev =	0.0000	0.0016	0.0016	0.0016	0.0016	0.0016	0.0017	0.0017	0.0017	0.0017	0.0016	TM-21 L70(10k) = 60,000hrs	
	min =	1.0000	1.0053	1.0056	1.0062	1.0073	1.0068	1.0070	1.0068	1.0078	1.0079	1.0079		
	max =	1.0000	1.0113	1.0118	1.0130	1.0140	1.0134	1.0139	1.0139	1.0146	1.0146	1.0139		

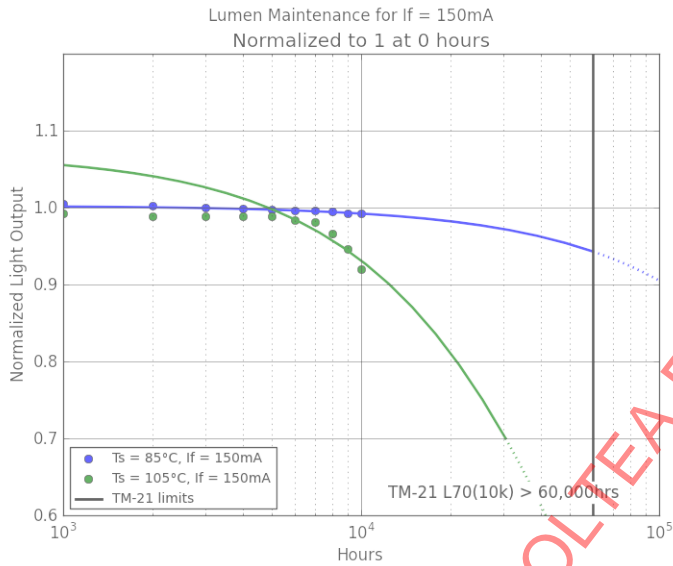


Delta u'v' for $I_f = 70\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
Ts=Tair=105°C	median =	0.0000	0.0009	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0021	0.0023
	average =	0.0000	0.0009	0.0012	0.0013	0.0015	0.0017	0.0019	0.0020	0.0021	0.0023
	st dev =	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	min =	0.0000	0.0008	0.0010	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0022
	max =	0.0000	0.0010	0.0012	0.0014	0.0017	0.0019	0.0020	0.0022	0.0022	0.0025
Ts=Tair=85°C	median =	0.0000	0.0006	0.0008	0.0008	0.0009	0.0010	0.0011	0.0011	0.0012	0.0012
	average =	0.0000	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0011	0.0012	0.0012
	st dev =	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001
	min =	0.0000	0.0006	0.0006	0.0007	0.0008	0.0008	0.0009	0.0009	0.0010	0.0011
	max =	0.0000	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0012	0.0013	0.0014
Ts=Tair=55°C	median =	0.0000	0.0005	0.0005	0.0006	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006
	average =	0.0000	0.0005	0.0005	0.0006	0.0005	0.0005	0.0005	0.0006	0.0006	0.0006
	st dev =	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	min =	0.0000	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	max =	0.0000	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006

Normalized Flux Statistics for $I_f = 150\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	alpha	B	L70
Ts=Tair=105°C	median =	1.0000	0.9966	0.9926	0.9929	0.9921	0.9926	0.9888	0.9877	0.9722	0.9518	0.9260		
	average =	1.0000	0.9930	0.9894	0.9892	0.9883	0.9882	0.9837	0.9813	0.9666	0.9464	0.9205	1.3895e-05	1.0700 30,542
	st dev =	0.0000	0.0097	0.0102	0.0112	0.0123	0.0154	0.0172	0.0175	0.0185	0.0192	0.0193	TM-21 L70(10k) = 30,542hrs	
	min =	1.0000	0.9646	0.9592	0.9563	0.9516	0.9423	0.9320	0.9277	0.9114	0.8896	0.8616		
	max =	1.0000	0.9982	0.9949	0.9950	0.9961	1.0009	0.9961	0.9957	0.9841	0.9670	0.9459		
Ts=Tair=85°C	median =	1.0000	1.0047	1.0024	1.0003	0.9989	0.9975	0.9961	0.9959	0.9945	0.9932	0.9926		
	average =	1.0000	1.0049	1.0025	1.0004	0.9990	0.9972	0.9958	0.9959	0.9944	0.9927	0.9923	1.0195e-06	1.0024 352,158
	st dev =	0.0000	0.0012	0.0014	0.0014	0.0015	0.0014	0.0016	0.0015	0.0017	0.0018	0.0026	TM-21 L70(10k) > 60,000hrs	
	min =	1.0000	1.0024	1.0001	0.9977	0.9961	0.9947	0.9928	0.9928	0.9907	0.9884	0.9856		
	max =	1.0000	1.0072	1.0050	1.0030	1.0016	1.0000	0.9986	0.9987	0.9976	0.9954	0.9964		



Delta $u'v'$ for $I_f = 150\text{mA}$

		0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
Ts=Tair=105°C	median =	0.0000	0.0013	0.0017	0.0020	0.0022	0.0021	0.0019	0.0017	0.0021	0.0038	0.0060
	average =	0.0000	0.0015	0.0019	0.0022	0.0024	0.0023	0.0021	0.0018	0.0024	0.0037	0.0060
	st dev =	0.0000	0.0005	0.0005	0.0005	0.0006	0.0006	0.0007	0.0006	0.0008	0.0009	0.0008
	min =	0.0000	0.0011	0.0015	0.0018	0.0020	0.0018	0.0015	0.0012	0.0013	0.0023	0.0045
	max =	0.0000	0.0028	0.0033	0.0037	0.0040	0.0042	0.0042	0.0033	0.0039	0.0055	0.0079
Ts=Tair=85°C	median =	0.0000	0.0008	0.0009	0.0011	0.0012	0.0013	0.0014	0.0015	0.0016	0.0016	0.0015
	average =	0.0000	0.0008	0.0009	0.0011	0.0012	0.0013	0.0014	0.0015	0.0016	0.0016	0.0015
	st dev =	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	min =	0.0000	0.0007	0.0008	0.0010	0.0010	0.0012	0.0013	0.0014	0.0014	0.0014	0.0012
	max =	0.0000	0.0008	0.0010	0.0012	0.0014	0.0015	0.0016	0.0017	0.0018	0.0018	0.0017

Luminous Flux [lm] data for tested units**T_s = T_{air} = 55°C; I_f = 70mA; T_s ≥ 53°C and T_{air} ≥ 50°C in compliance with LM-80-15**

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3958K	373.526	377.741	377.935	378.374	378.771	378.543	378.732	378.726	378.994	378.978	378.724
2	3936K	375.405	378.930	379.079	378.999	379.528	379.321	379.481	379.501	379.660	379.784	379.881
3	3968K	372.601	375.881	375.932	376.267	376.668	376.350	376.628	376.534	376.825	376.954	376.830
4	3968K	373.745	376.608	376.643	376.973	377.422	377.099	377.244	377.244	377.447	377.588	377.450
5	3953K	375.253	377.991	377.979	378.247	378.665	378.471	378.505	378.528	378.762	378.919	378.869
6	3949K	372.068	374.869	375.075	375.334	375.692	375.539	375.595	375.683	376.053	376.061	376.156
7	3953K	373.627	376.145	376.213	376.484	376.920	376.640	376.702	376.759	377.039	377.041	377.031
8	3965K	375.165	377.632	377.873	378.104	378.480	378.410	378.408	378.500	378.694	378.790	378.690
9	3950K	373.280	376.011	376.190	376.479	376.941	376.824	376.805	376.961	377.116	377.351	377.380
10	3949K	375.558	377.531	377.656	377.894	378.286	378.172	378.266	378.204	378.493	378.638	378.554
11	3954K	374.847	376.909	377.024	377.208	377.779	377.397	377.473	377.408	377.804	377.818	377.792
12	3962K	371.304	374.022	374.141	374.578	375.376	374.883	375.050	375.035	375.414	375.431	374.974
13	3926K	375.325	378.307	378.139	378.529	379.103	378.656	378.823	378.857	379.218	379.321	379.242
14	3946K	374.221	377.735	377.777	378.131	378.595	378.266	378.233	378.313	378.684	378.732	378.748
15	3957K	373.999	377.201	377.111	377.287	377.798	377.330	377.291	377.410	377.658	377.835	377.748
16	3941K	374.235	376.961	377.161	377.362	378.011	377.633	377.855	377.868	378.091	378.398	378.374
17	3957K	369.229	372.490	372.625	372.975	373.543	373.222	373.321	373.453	373.749	374.025	373.912
18	3946K	376.423	379.213	379.060	379.272	380.023	379.506	379.635	379.597	379.884	380.022	379.837
19	3953K	373.951	376.882	376.842	377.174	377.696	377.314	377.493	377.372	377.757	377.921	377.830
20	3947K	371.795	375.965	376.000	376.194	376.687	376.283	376.436	376.391	376.658	376.860	376.656

Normalized Luminous Flux data for tested units**T_s = T_{air} = 55°C; I_f = 70mA; T_s ≥ 53°C and T_{air} ≥ 50°C in compliance with LM-80-15**

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3958K	1.0000	1.0113	1.0118	1.0130	1.0140	1.0134	1.0139	1.0139	1.0146	1.0146	1.0139
2	3936K	1.0000	1.0094	1.0098	1.0096	1.0110	1.0104	1.0109	1.0109	1.0113	1.0117	1.0119
3	3968K	1.0000	1.0088	1.0089	1.0098	1.0109	1.0101	1.0108	1.0106	1.0113	1.0117	1.0113
4	3968K	1.0000	1.0077	1.0078	1.0086	1.0098	1.0090	1.0094	1.0094	1.0099	1.0103	1.0099
5	3953K	1.0000	1.0073	1.0073	1.0080	1.0091	1.0086	1.0087	1.0087	1.0093	1.0098	1.0096
6	3949K	1.0000	1.0075	1.0081	1.0088	1.0097	1.0093	1.0095	1.0097	1.0107	1.0107	1.0110
7	3953K	1.0000	1.0067	1.0069	1.0076	1.0088	1.0081	1.0082	1.0084	1.0091	1.0091	1.0091
8	3965K	1.0000	1.0066	1.0072	1.0078	1.0088	1.0086	1.0086	1.0089	1.0094	1.0097	1.0094
9	3950K	1.0000	1.0073	1.0078	1.0086	1.0098	1.0095	1.0094	1.0099	1.0103	1.0109	1.0110
10	3949K	1.0000	1.0053	1.0056	1.0062	1.0073	1.0070	1.0072	1.0070	1.0078	1.0082	1.0080
11	3954K	1.0000	1.0055	1.0058	1.0063	1.0078	1.0068	1.0070	1.0068	1.0079	1.0079	1.0079
12	3962K	1.0000	1.0073	1.0076	1.0088	1.0110	1.0096	1.0101	1.0100	1.0111	1.0111	1.0099
13	3926K	1.0000	1.0079	1.0075	1.0085	1.0101	1.0089	1.0093	1.0094	1.0104	1.0106	1.0104
14	3946K	1.0000	1.0094	1.0095	1.0104	1.0117	1.0108	1.0107	1.0109	1.0119	1.0121	1.0121
15	3957K	1.0000	1.0086	1.0083	1.0088	1.0102	1.0089	1.0088	1.0091	1.0098	1.0103	1.0100
16	3941K	1.0000	1.0073	1.0078	1.0084	1.0101	1.0091	1.0097	1.0097	1.0103	1.0111	1.0111
17	3957K	1.0000	1.0088	1.0092	1.0101	1.0117	1.0108	1.0111	1.0114	1.0122	1.0130	1.0127
18	3946K	1.0000	1.0074	1.0070	1.0076	1.0096	1.0082	1.0085	1.0084	1.0092	1.0096	1.0091
19	3953K	1.0000	1.0078	1.0077	1.0086	1.0100	1.0090	1.0095	1.0091	1.0102	1.0106	1.0104
20	3947K	1.0000	1.0112	1.0113	1.0118	1.0132	1.0121	1.0125	1.0124	1.0131	1.0136	1.0131

CIE 1976 u' data for tested units

$T_s = T_{air} = 55^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 53^{\circ}\text{C}$ and $T_{air} \geq 50^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3958K	0.2247	0.2242	0.2242	0.2241	0.2241	0.2242	0.2241	0.2242	0.2241	0.2241	0.2241
2	3936K	0.2249	0.2244	0.2244	0.2244	0.2244	0.2244	0.2244	0.2244	0.2244	0.2243	0.2243
3	3968K	0.2247	0.2243	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242
4	3968K	0.2243	0.2239	0.2238	0.2238	0.2238	0.2238	0.2238	0.2238	0.2238	0.2237	0.2237
5	3953K	0.2246	0.2241	0.2241	0.2241	0.2241	0.2241	0.2241	0.2241	0.2241	0.2241	0.2241
6	3949K	0.2248	0.2243	0.2243	0.2242	0.2243	0.2243	0.2243	0.2243	0.2242	0.2242	0.2242
7	3953K	0.2247	0.2243	0.2243	0.2243	0.2243	0.2242	0.2242	0.2243	0.2243	0.2242	0.2242
8	3965K	0.2243	0.2238	0.2238	0.2238	0.2238	0.2238	0.2238	0.2238	0.2238	0.2237	0.2238
9	3950K	0.2245	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240	0.2239	0.2239
10	3949K	0.2249	0.2244	0.2244	0.2244	0.2244	0.2244	0.2244	0.2244	0.2244	0.2243	0.2244
11	3954K	0.2247	0.2243	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242
12	3962K	0.2243	0.2239	0.2238	0.2238	0.2238	0.2238	0.2238	0.2238	0.2238	0.2238	0.2238
13	3926K	0.2252	0.2247	0.2246	0.2246	0.2246	0.2246	0.2246	0.2246	0.2246	0.2246	0.2246
14	3946K	0.2242	0.2237	0.2237	0.2237	0.2237	0.2237	0.2237	0.2236	0.2237	0.2236	0.2236
15	3957K	0.2248	0.2243	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2241
16	3941K	0.2246	0.2241	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240	0.2240	0.2239	0.2240
17	3957K	0.2248	0.2243	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242	0.2242
18	3946K	0.2247	0.2242	0.2241	0.2241	0.2241	0.2241	0.2241	0.2241	0.2241	0.2241	0.2241
19	3953K	0.2246	0.2241	0.2241	0.2240	0.2241	0.2241	0.2241	0.2240	0.2240	0.2240	0.2240
20	3947K	0.2250	0.2245	0.2245	0.2244	0.2245	0.2245	0.2244	0.2244	0.2244	0.2244	0.2244

CIE 1976 v' data for tested units

$T_s = T_{air} = 55^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 53^{\circ}\text{C}$ and $T_{air} \geq 50^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3958K	0.5050	0.5052	0.5052	0.5052	0.5051	0.5052	0.5052	0.5051	0.5051	0.5051	0.5051
2	3936K	0.5058	0.5059	0.5059	0.5060	0.5059	0.5059	0.5059	0.5059	0.5059	0.5059	0.5059
3	3968K	0.5042	0.5043	0.5043	0.5043	0.5043	0.5043	0.5043	0.5042	0.5042	0.5043	0.5043
4	3968K	0.5051	0.5051	0.5051	0.5052	0.5052	0.5052	0.5051	0.5051	0.5051	0.5051	0.5051
5	3953K	0.5054	0.5054	0.5054	0.5054	0.5053	0.5053	0.5053	0.5053	0.5053	0.5053	0.5053
6	3949K	0.5053	0.5053	0.5053	0.5053	0.5053	0.5053	0.5053	0.5053	0.5053	0.5053	0.5053
7	3953K	0.5051	0.5051	0.5051	0.5052	0.5052	0.5052	0.5052	0.5051	0.5052	0.5051	0.5052
8	3965K	0.5054	0.5054	0.5054	0.5054	0.5054	0.5054	0.5054	0.5054	0.5054	0.5053	0.5053
9	3950K	0.5059	0.5060	0.5060	0.5060	0.5060	0.5060	0.5060	0.5060	0.5059	0.5060	0.5060
10	3949K	0.5051	0.5052	0.5052	0.5052	0.5051	0.5052	0.5052	0.5051	0.5051	0.5051	0.5051
11	3954K	0.5051	0.5051	0.5051	0.5051	0.5051	0.5051	0.5051	0.5050	0.5050	0.5050	0.5050
12	3962K	0.5055	0.5056	0.5055	0.5056	0.5055	0.5055	0.5056	0.5055	0.5055	0.5055	0.5055
13	3926K	0.5057	0.5057	0.5057	0.5057	0.5057	0.5057	0.5057	0.5057	0.5056	0.5057	0.5057
14	3946K	0.5067	0.5068	0.5068	0.5068	0.5068	0.5068	0.5068	0.5068	0.5067	0.5067	0.5068
15	3957K	0.5048	0.5048	0.5049	0.5049	0.5048	0.5048	0.5048	0.5048	0.5048	0.5048	0.5048
16	3941K	0.5063	0.5062	0.5063	0.5063	0.5063	0.5063	0.5062	0.5063	0.5062	0.5062	0.5062
17	3957K	0.5048	0.5048	0.5048	0.5048	0.5048	0.5048	0.5048	0.5048	0.5047	0.5048	0.5048
18	3946K	0.5057	0.5057	0.5057	0.5057	0.5057	0.5057	0.5057	0.5057	0.5056	0.5056	0.5057
19	3953K	0.5055	0.5055	0.5055	0.5055	0.5055	0.5055	0.5055	0.5054	0.5054	0.5054	0.5055
20	3947K	0.5049	0.5050	0.5050	0.5050	0.5049	0.5050	0.5049	0.5049	0.5049	0.5049	0.5049

Delta u'v' data for tested units

$T_s = T_{air} = 55^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 53^{\circ}\text{C}$ and $T_{air} \geq 50^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3958K	0.0000	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
2	3936K	0.0000	0.0005	0.0006	0.0005	0.0006	0.0006	0.0005	0.0005	0.0005	0.0006	0.0006
3	3968K	0.0000	0.0005	0.0005	0.0005	0.0005	0.0005	0.0006	0.0005	0.0005	0.0006	0.0006
4	3968K	0.0000	0.0005	0.0005	0.0006	0.0005	0.0005	0.0005	0.0005	0.0006	0.0006	0.0006
5	3953K	0.0000	0.0005	0.0005	0.0006	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
6	3949K	0.0000	0.0005	0.0005	0.0006	0.0005	0.0005	0.0005	0.0005	0.0006	0.0006	0.0006
7	3953K	0.0000	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
8	3965K	0.0000	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0006	0.0005
9	3950K	0.0000	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0006	0.0006
10	3949K	0.0000	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0006	0.0005
11	3954K	0.0000	0.0005	0.0005	0.0005	0.0005	0.0006	0.0006	0.0005	0.0006	0.0006	0.0005
12	3962K	0.0000	0.0005	0.0005	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0005	0.0006
13	3926K	0.0000	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
14	3946K	0.0000	0.0005	0.0005	0.0006	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
15	3957K	0.0000	0.0005	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
16	3941K	0.0000	0.0005	0.0006	0.0006	0.0005	0.0006	0.0005	0.0006	0.0006	0.0006	0.0006
17	3957K	0.0000	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
18	3946K	0.0000	0.0005	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
19	3953K	0.0000	0.0005	0.0005	0.0006	0.0005	0.0005	0.0005	0.0006	0.0006	0.0006	0.0006
20	3947K	0.0000	0.0005	0.0006	0.0006	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006

Forward Voltage [V] data for tested units

$T_s = T_{air} = 55^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 53^{\circ}\text{C}$ and $T_{air} \geq 50^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3958K	28.134	28.138	28.144	28.146	28.151	28.152	28.153	28.154	28.155	28.156	28.157
2	3936K	28.242	28.239	28.244	28.246	28.250	28.251	28.253	28.254	28.255	28.255	28.256
3	3968K	28.163	28.166	28.171	28.175	28.178	28.179	28.181	28.183	28.183	28.184	28.185
4	3968K	28.236	28.237	28.242	28.246	28.249	28.251	28.252	28.254	28.255	28.255	28.257
5	3953K	28.154	28.154	28.159	28.162	28.164	28.167	28.168	28.169	28.170	28.170	28.172
6	3949K	28.196	28.192	28.197	28.200	28.203	28.205	28.207	28.208	28.208	28.209	28.211
7	3953K	28.144	28.146	28.151	28.154	28.157	28.159	28.161	28.162	28.163	28.163	28.164
8	3965K	28.168	28.171	28.177	28.180	28.183	28.185	28.187	28.188	28.189	28.189	28.190
9	3950K	28.182	28.184	28.191	28.193	28.196	28.198	28.200	28.201	28.201	28.202	28.204
10	3949K	28.180	28.180	28.185	28.189	28.192	28.194	28.195	28.197	28.197	28.198	28.199
11	3954K	28.167	28.165	28.171	28.174	28.177	28.180	28.181	28.182	28.183	28.183	28.185
12	3962K	28.222	28.222	28.229	28.232	28.235	28.236	28.239	28.240	28.241	28.242	28.243
13	3926K	28.177	28.175	28.180	28.182	28.186	28.187	28.189	28.190	28.191	28.191	28.194
14	3946K	28.184	28.188	28.193	28.196	28.199	28.200	28.202	28.204	28.204	28.205	28.207
15	3957K	28.189	28.190	28.194	28.197	28.201	28.202	28.204	28.205	28.206	28.206	28.208
16	3941K	28.257	28.250	28.256	28.258	28.261	28.264	28.265	28.267	28.267	28.267	28.270
17	3957K	28.221	28.216	28.222	28.225	28.227	28.229	28.231	28.232	28.233	28.233	28.236
18	3946K	28.241	28.236	28.242	28.245	28.247	28.249	28.251	28.254	28.253	28.253	28.255
19	3953K	28.135	28.136	28.142	28.145	28.148	28.149	28.151	28.152	28.154	28.154	28.155
20	3947K	28.156	28.158	28.163	28.166	28.169	28.170	28.172	28.173	28.174	28.175	28.176

Luminous Flux [lm] data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3927K	376.391	378.688	378.854	378.586	378.525	378.142	377.676	377.672	377.554	377.372	377.268
2	3946K	368.566	370.775	370.947	370.838	370.663	370.357	369.941	369.744	369.790	369.609	369.387
3	3970K	374.735	377.105	377.232	376.991	376.867	376.544	376.157	376.061	376.038	375.842	375.730
4	3955K	374.018	376.857	376.905	376.671	376.568	376.235	375.857	375.694	375.693	375.398	375.288
5	3970K	375.086	377.923	377.898	377.690	377.617	377.140	376.874	376.678	376.687	376.573	376.374
6	3970K	370.416	373.240	373.306	373.295	373.113	372.680	372.399	372.341	372.385	372.178	372.095
7	3959K	373.940	376.670	376.803	376.587	376.336	376.033	375.843	375.492	375.692	375.351	375.384
8	3976K	373.160	376.269	376.316	376.159	375.913	375.394	375.217	375.011	375.130	374.811	374.904
9	3974K	372.209	375.447	375.530	375.268	374.837	374.332	374.112	373.853	373.835	373.632	373.667
10	3961K	372.686	375.589	375.716	375.528	375.398	375.015	374.716	374.374	374.613	374.407	374.382
11	3947K	373.483	376.132	376.219	376.054	375.833	375.454	375.200	374.951	375.099	374.766	374.710
12	3952K	374.771	377.780	377.926	377.757	377.547	377.208	377.016	376.776	376.937	376.667	376.630
13	3962K	374.701	377.737	377.922	377.726	377.511	376.997	376.716	376.565	376.625	376.368	376.390
14	3957K	373.998	376.902	376.869	376.845	376.600	376.308	376.030	375.857	375.989	375.749	375.686
15	3963K	372.563	376.105	376.005	376.161	375.937	375.510	375.138	375.159	375.110	374.959	374.856
16	3966K	372.044	375.610	375.490	375.583	375.315	374.985	374.705	374.409	374.417	374.297	374.203
17	3949K	373.070	375.575	375.655	375.591	375.343	374.926	374.636	374.344	374.464	374.162	374.067
18	3934K	372.700	375.552	375.417	375.358	375.202	374.750	374.414	374.281	374.192	374.039	373.761
19	3941K	374.672	377.322	377.382	377.464	377.197	376.840	376.394	376.316	376.388	376.185	376.111
20	3934K	372.850	375.291	375.374	375.322	375.196	374.799	374.423	374.184	374.337	374.083	374.085

Normalized Luminous Flux data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3927K	1.0000	1.0061	1.0065	1.0058	1.0057	1.0046	1.0034	1.0034	1.0031	1.0026	1.0023
2	3946K	1.0000	1.0060	1.0065	1.0062	1.0057	1.0049	1.0037	1.0032	1.0033	1.0028	1.0022
3	3970K	1.0000	1.0063	1.0067	1.0060	1.0057	1.0048	1.0038	1.0035	1.0035	1.0030	1.0027
4	3955K	1.0000	1.0076	1.0077	1.0071	1.0068	1.0059	1.0049	1.0045	1.0045	1.0037	1.0034
5	3970K	1.0000	1.0076	1.0075	1.0069	1.0067	1.0055	1.0048	1.0042	1.0043	1.0040	1.0034
6	3970K	1.0000	1.0076	1.0078	1.0078	1.0073	1.0061	1.0054	1.0052	1.0053	1.0048	1.0045
7	3959K	1.0000	1.0073	1.0077	1.0071	1.0064	1.0056	1.0051	1.0041	1.0047	1.0038	1.0039
8	3976K	1.0000	1.0083	1.0085	1.0080	1.0074	1.0060	1.0055	1.0050	1.0053	1.0044	1.0047
9	3974K	1.0000	1.0087	1.0089	1.0082	1.0071	1.0057	1.0051	1.0044	1.0044	1.0038	1.0039
10	3961K	1.0000	1.0078	1.0081	1.0076	1.0073	1.0062	1.0054	1.0045	1.0052	1.0046	1.0046
11	3947K	1.0000	1.0071	1.0073	1.0069	1.0063	1.0053	1.0046	1.0039	1.0043	1.0034	1.0033
12	3952K	1.0000	1.0080	1.0084	1.0080	1.0074	1.0065	1.0060	1.0054	1.0058	1.0051	1.0050
13	3962K	1.0000	1.0081	1.0086	1.0081	1.0075	1.0061	1.0054	1.0050	1.0051	1.0045	1.0045
14	3957K	1.0000	1.0078	1.0077	1.0076	1.0070	1.0062	1.0054	1.0050	1.0053	1.0047	1.0045
15	3963K	1.0000	1.0095	1.0092	1.0097	1.0091	1.0079	1.0069	1.0070	1.0068	1.0064	1.0062
16	3966K	1.0000	1.0096	1.0093	1.0095	1.0088	1.0079	1.0072	1.0064	1.0064	1.0061	1.0058
17	3949K	1.0000	1.0067	1.0069	1.0068	1.0061	1.0050	1.0042	1.0034	1.0037	1.0029	1.0027
18	3934K	1.0000	1.0077	1.0073	1.0071	1.0067	1.0055	1.0046	1.0042	1.0040	1.0036	1.0028
19	3941K	1.0000	1.0071	1.0072	1.0075	1.0067	1.0058	1.0046	1.0044	1.0046	1.0040	1.0038
20	3934K	1.0000	1.0065	1.0068	1.0066	1.0063	1.0052	1.0042	1.0036	1.0040	1.0033	1.0033

CIE 1976 u' data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (K=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3927K	0.2248	0.2242	0.2240	0.2240	0.2240	0.2239	0.2239	0.2238	0.2239	0.2238	0.2237
2	3946K	0.2250	0.2244	0.2243	0.2243	0.2242	0.2242	0.2242	0.2241	0.2241	0.2240	0.2240
3	3970K	0.2241	0.2235	0.2234	0.2233	0.2233	0.2232	0.2232	0.2232	0.2232	0.2231	0.2231
4	3955K	0.2242	0.2236	0.2234	0.2234	0.2234	0.2233	0.2233	0.2232	0.2232	0.2232	0.2231
5	3970K	0.2240	0.2235	0.2233	0.2233	0.2232	0.2232	0.2232	0.2231	0.2231	0.2230	0.2230
6	3970K	0.2246	0.2240	0.2239	0.2238	0.2238	0.2237	0.2237	0.2236	0.2236	0.2235	0.2235
7	3959K	0.2243	0.2237	0.2236	0.2236	0.2236	0.2235	0.2235	0.2234	0.2233	0.2233	0.2233
8	3976K	0.2243	0.2237	0.2235	0.2235	0.2235	0.2234	0.2234	0.2233	0.2233	0.2232	0.2232
9	3974K	0.2241	0.2234	0.2233	0.2232	0.2232	0.2232	0.2231	0.2230	0.2231	0.2230	0.2230
10	3961K	0.2247	0.2241	0.2239	0.2239	0.2239	0.2238	0.2238	0.2237	0.2237	0.2237	0.2236
11	3947K	0.2246	0.2240	0.2239	0.2238	0.2238	0.2237	0.2237	0.2236	0.2236	0.2236	0.2235
12	3952K	0.2247	0.2241	0.2240	0.2239	0.2239	0.2238	0.2238	0.2238	0.2238	0.2237	0.2237
13	3962K	0.2243	0.2237	0.2236	0.2235	0.2235	0.2234	0.2234	0.2233	0.2233	0.2232	0.2232
14	3957K	0.2243	0.2237	0.2236	0.2235	0.2235	0.2234	0.2234	0.2234	0.2234	0.2233	0.2233
15	3963K	0.2247	0.2241	0.2240	0.2239	0.2239	0.2238	0.2237	0.2237	0.2237	0.2236	0.2236
16	3966K	0.2242	0.2236	0.2235	0.2235	0.2234	0.2234	0.2233	0.2233	0.2233	0.2232	0.2232
17	3949K	0.2248	0.2241	0.2240	0.2239	0.2238	0.2238	0.2238	0.2238	0.2237	0.2237	0.2237
18	3934K	0.2252	0.2246	0.2245	0.2244	0.2244	0.2243	0.2243	0.2243	0.2242	0.2242	0.2242
19	3941K	0.2247	0.2241	0.2241	0.2240	0.2239	0.2239	0.2239	0.2239	0.2238	0.2237	0.2237
20	3934K	0.2248	0.2242	0.2241	0.2240	0.2240	0.2240	0.2239	0.2239	0.2238	0.2238	0.2238

CIE 1976 v' data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (K=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3927K	0.5066	0.5064	0.5064	0.5064	0.5063	0.5062	0.5062	0.5061	0.5060	0.5060	0.5060
2	3946K	0.5050	0.5048	0.5048	0.5048	0.5047	0.5047	0.5046	0.5045	0.5045	0.5045	0.5044
3	3970K	0.5055	0.5053	0.5053	0.5053	0.5052	0.5052	0.5051	0.5050	0.5049	0.5049	0.5049
4	3955K	0.5062	0.5061	0.5060	0.5060	0.5059	0.5058	0.5057	0.5057	0.5056	0.5055	0.5055
5	3970K	0.5057	0.5056	0.5055	0.5055	0.5054	0.5054	0.5053	0.5053	0.5051	0.5051	0.5051
6	3970K	0.5045	0.5044	0.5044	0.5043	0.5042	0.5042	0.5041	0.5041	0.5040	0.5039	0.5039
7	3959K	0.5057	0.5055	0.5055	0.5054	0.5053	0.5053	0.5053	0.5051	0.5051	0.5051	0.5050
8	3976K	0.5048	0.5047	0.5047	0.5046	0.5045	0.5044	0.5044	0.5043	0.5043	0.5041	0.5041
9	3974K	0.5054	0.5052	0.5052	0.5051	0.5050	0.5050	0.5049	0.5049	0.5048	0.5047	0.5047
10	3961K	0.5048	0.5047	0.5047	0.5046	0.5046	0.5045	0.5044	0.5043	0.5043	0.5042	0.5042
11	3947K	0.5057	0.5056	0.5056	0.5055	0.5054	0.5054	0.5053	0.5052	0.5052	0.5051	0.5050
12	3952K	0.5053	0.5051	0.5051	0.5051	0.5050	0.5049	0.5049	0.5048	0.5048	0.5047	0.5046
13	3962K	0.5055	0.5054	0.5054	0.5053	0.5052	0.5051	0.5051	0.5050	0.5049	0.5048	0.5048
14	3957K	0.5060	0.5058	0.5058	0.5058	0.5057	0.5056	0.5056	0.5055	0.5054	0.5054	0.5053
15	3963K	0.5047	0.5046	0.5045	0.5045	0.5044	0.5043	0.5043	0.5042	0.5041	0.5041	0.5040
16	3966K	0.5057	0.5056	0.5055	0.5055	0.5054	0.5054	0.5054	0.5053	0.5052	0.5052	0.5051
17	3949K	0.5054	0.5052	0.5052	0.5051	0.5050	0.5049	0.5049	0.5048	0.5048	0.5047	0.5046
18	3934K	0.5053	0.5051	0.5051	0.5050	0.5050	0.5049	0.5049	0.5048	0.5047	0.5047	0.5046
19	3941K	0.5059	0.5058	0.5058	0.5057	0.5056	0.5056	0.5055	0.5055	0.5054	0.5054	0.5053
20	3934K	0.5063	0.5061	0.5061	0.5061	0.5060	0.5060	0.5059	0.5059	0.5058	0.5058	0.5057

Delta u'v' data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3927K	0.0000	0.0007	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0013
2	3946K	0.0000	0.0006	0.0008	0.0008	0.0008	0.0009	0.0009	0.0010	0.0010	0.0011	0.0012
3	3970K	0.0000	0.0006	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0013
4	3955K	0.0000	0.0006	0.0008	0.0008	0.0009	0.0010	0.0011	0.0011	0.0012	0.0013	0.0014
5	3970K	0.0000	0.0006	0.0007	0.0008	0.0009	0.0009	0.0010	0.0010	0.0011	0.0012	0.0012
6	3970K	0.0000	0.0006	0.0007	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011	0.0012	0.0012
7	3959K	0.0000	0.0006	0.0007	0.0008	0.0009	0.0009	0.0010	0.0011	0.0012	0.0012	0.0012
8	3976K	0.0000	0.0006	0.0007	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0013
9	3974K	0.0000	0.0007	0.0008	0.0009	0.0009	0.0010	0.0011	0.0011	0.0011	0.0012	0.0013
10	3961K	0.0000	0.0006	0.0007	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011	0.0012	0.0012
11	3947K	0.0000	0.0007	0.0008	0.0008	0.0009	0.0010	0.0011	0.0011	0.0012	0.0012	0.0013
12	3952K	0.0000	0.0007	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0012
13	3962K	0.0000	0.0007	0.0008	0.0009	0.0009	0.0010	0.0011	0.0012	0.0012	0.0013	0.0014
14	3957K	0.0000	0.0006	0.0007	0.0008	0.0008	0.0009	0.0009	0.0010	0.0011	0.0011	0.0012
15	3963K	0.0000	0.0006	0.0007	0.0008	0.0009	0.0010	0.0010	0.0011	0.0012	0.0012	0.0013
16	3966K	0.0000	0.0006	0.0006	0.0007	0.0008	0.0008	0.0009	0.0009	0.0010	0.0010	0.0011
17	3949K	0.0000	0.0007	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0012	0.0013
18	3934K	0.0000	0.0007	0.0008	0.0009	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0012
19	3941K	0.0000	0.0006	0.0007	0.0007	0.0008	0.0009	0.0009	0.0010	0.0011	0.0011	0.0012
20	3934K	0.0000	0.0006	0.0007	0.0008	0.0008	0.0009	0.0009	0.0010	0.0010	0.0011	0.0011

Forward Voltage [V] data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3927K	28.173	28.170	28.175	28.177	28.181	28.181	28.183	28.184	28.185	28.185	28.186
2	3946K	28.200	28.198	28.202	28.205	28.208	28.210	28.211	28.213	28.213	28.214	28.215
3	3970K	28.169	28.174	28.180	28.183	28.186	28.188	28.190	28.191	28.192	28.192	28.193
4	3955K	28.155	28.156	28.162	28.164	28.166	28.168	28.170	28.171	28.172	28.172	28.173
5	3970K	28.182	28.186	28.191	28.195	28.198	28.200	28.202	28.203	28.204	28.204	28.205
6	3970K	28.178	28.185	28.191	28.194	28.197	28.200	28.201	28.203	28.204	28.203	28.206
7	3959K	28.165	28.171	28.177	28.179	28.183	28.185	28.186	28.187	28.188	28.189	28.190
8	3976K	28.275	28.266	28.271	28.273	28.276	28.279	28.280	28.281	28.282	28.283	28.284
9	3974K	28.175	28.179	28.185	28.188	28.190	28.192	28.194	28.195	28.196	28.197	28.198
10	3961K	28.299	28.287	28.292	28.295	28.297	28.300	28.302	28.303	28.304	28.304	28.306
11	3947K	28.264	28.257	28.264	28.266	28.268	28.270	28.271	28.273	28.273	28.274	28.275
12	3952K	28.253	28.246	28.251	28.254	28.256	28.258	28.260	28.261	28.262	28.263	28.264
13	3962K	28.204	28.203	28.208	28.211	28.214	28.216	28.217	28.218	28.219	28.220	28.221
14	3957K	28.131	28.126	28.132	28.134	28.138	28.139	28.142	28.143	28.143	28.145	28.144
15	3963K	28.263	28.263	28.268	28.271	28.274	28.276	28.278	28.279	28.280	28.281	28.281
16	3966K	28.164	28.173	28.179	28.182	28.186	28.187	28.188	28.190	28.191	28.192	28.193
17	3949K	28.227	28.229	28.231	28.233	28.237	28.238	28.240	28.241	28.242	28.242	28.243
18	3934K	28.189	28.192	28.199	28.200	28.203	28.205	28.207	28.208	28.209	28.209	28.210
19	3941K	28.267	28.266	28.272	28.275	28.278	28.280	28.282	28.283	28.285	28.285	28.286
20	3934K	28.171	28.177	28.184	28.186	28.188	28.191	28.193	28.194	28.195	28.195	28.196

Luminous Flux [lm] data for tested units**T_s = T_{air} = 105°C, I_f = 70mA; T_s ≥ 103°C and T_{air} ≥ 100°C in compliance with LM-80-15**

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3961K	373.046	373.997	373.365	372.578	372.092	372.076	371.016	370.649	370.558	370.254	370.550
2	3973K	370.392	371.952	371.345	370.795	370.263	370.129	369.225	368.894	368.927	368.508	369.163
3	3956K	373.033	374.479	373.981	373.199	372.544	372.739	371.604	371.344	371.144	370.816	371.064
4	3958K	370.877	372.210	371.544	370.973	370.608	370.661	369.505	369.468	369.432	369.086	369.919
5	3951K	369.714	371.856	370.726	370.226	369.691	369.757	369.447	368.928	368.850	368.455	368.693
6	3943K	376.179	377.642	377.171	376.529	376.018	375.935	374.905	374.515	374.431	374.037	374.340
7	3992K	372.159	374.125	373.698	373.165	372.577	372.856	371.738	371.488	371.372	370.996	371.287
8	3949K	369.840	371.130	370.450	369.445	369.142	368.513	367.965	367.604	367.372	366.993	367.088
9	3952K	371.610	372.645	372.061	371.287	371.058	370.472	369.819	369.408	369.244	368.839	368.859
10	3957K	372.814	374.470	373.936	373.061	372.523	371.957	371.282	370.856	370.683	370.354	370.206
11	3956K	373.882	375.254	374.586	373.911	373.325	372.704	372.043	371.775	371.582	371.164	371.719
12	3947K	373.394	374.775	374.183	373.441	372.974	372.462	371.694	371.515	371.381	371.069	371.244
13	3981K	375.330	376.641	376.084	375.293	374.963	374.348	373.699	373.497	373.651	373.378	374.049
14	3944K	373.717	374.663	374.211	373.559	373.139	372.564	372.127	371.899	371.704	371.485	371.584
15	3949K	374.280	375.224	374.423	373.750	373.094	372.094	371.586	371.104	371.116	370.760	371.103
16	3942K	374.847	375.900	375.162	374.571	373.767	373.127	372.425	371.977	372.129	371.628	371.727
17	3947K	370.528	372.481	372.497	372.210	371.553	371.070	370.587	370.266	370.472	370.024	370.225
18	3957K	369.537	371.149	370.920	370.493	369.704	368.997	368.371	367.992	367.923	367.432	367.386
19	3954K	373.273	374.314	373.928	373.340	372.610	371.821	371.250	370.859	370.940	370.420	370.778
20	3945K	375.465	376.149	376.116	375.694	375.122	374.155	373.456	373.206	373.308	372.906	373.097

Normalized Luminous Flux data for tested units**T_s = T_{air} = 105°C, I_f = 70mA; T_s ≥ 103°C and T_{air} ≥ 100°C in compliance with LM-80-15**

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3961K	1.0000	1.0025	1.0009	0.9987	0.9974	0.9974	0.9946	0.9936	0.9933	0.9925	0.9933
2	3973K	1.0000	1.0042	1.0026	1.0011	0.9997	0.9993	0.9968	0.9960	0.9960	0.9949	0.9967
3	3956K	1.0000	1.0039	1.0025	1.0004	0.9987	0.9992	0.9962	0.9955	0.9949	0.9941	0.9947
4	3958K	1.0000	1.0036	1.0018	1.0003	0.9993	0.9994	0.9963	0.9962	0.9961	0.9952	0.9974
5	3951K	1.0000	1.0058	1.0027	1.0014	0.9999	1.0001	0.9993	0.9979	0.9977	0.9966	0.9972
6	3943K	1.0000	1.0039	1.0026	1.0009	0.9996	0.9994	0.9966	0.9956	0.9954	0.9943	0.9951
7	3992K	1.0000	1.0053	1.0041	1.0027	1.0011	1.0019	0.9989	0.9982	0.9979	0.9969	0.9977
8	3949K	1.0000	1.0035	1.0016	0.9989	0.9981	0.9964	0.9949	0.9940	0.9933	0.9923	0.9926
9	3952K	1.0000	1.0028	1.0012	0.9991	0.9985	0.9969	0.9952	0.9941	0.9936	0.9925	0.9926
10	3957K	1.0000	1.0044	1.0030	1.0007	0.9992	0.9977	0.9959	0.9947	0.9943	0.9934	0.9930
11	3956K	1.0000	1.0037	1.0019	1.0001	0.9985	0.9968	0.9951	0.9944	0.9938	0.9927	0.9942
12	3947K	1.0000	1.0037	1.0021	1.0001	0.9989	0.9975	0.9954	0.9950	0.9946	0.9938	0.9942
13	3981K	1.0000	1.0035	1.0020	0.9999	0.9990	0.9974	0.9957	0.9951	0.9955	0.9948	0.9966
14	3944K	1.0000	1.0025	1.0013	0.9996	0.9985	0.9969	0.9957	0.9951	0.9946	0.9940	0.9943
15	3949K	1.0000	1.0025	1.0004	0.9986	0.9968	0.9942	0.9928	0.9915	0.9915	0.9906	0.9915
16	3942K	1.0000	1.0028	1.0008	0.9993	0.9971	0.9954	0.9935	0.9923	0.9928	0.9914	0.9917
17	3947K	1.0000	1.0053	1.0053	1.0045	1.0028	1.0015	1.0002	0.9993	0.9998	0.9986	0.9992
18	3957K	1.0000	1.0044	1.0037	1.0026	1.0005	0.9985	0.9968	0.9958	0.9956	0.9943	0.9942
19	3954K	1.0000	1.0028	1.0018	1.0002	0.9982	0.9961	0.9946	0.9935	0.9937	0.9924	0.9933
20	3945K	1.0000	1.0018	1.0017	1.0006	0.9991	0.9965	0.9947	0.9940	0.9943	0.9932	0.9937

CIE 1976 u' data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ 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	3961K	0.2243	0.2234	0.2232	0.2231	0.2230	0.2228	0.2228	0.2227	0.2226	0.2225	0.2225
2	3973K	0.2243	0.2235	0.2232	0.2231	0.2230	0.2229	0.2228	0.2227	0.2226	0.2225	0.2225
3	3956K	0.2246	0.2238	0.2236	0.2235	0.2234	0.2233	0.2231	0.2231	0.2230	0.2229	0.2229
4	3958K	0.2248	0.2239	0.2237	0.2236	0.2235	0.2233	0.2233	0.2231	0.2231	0.2230	0.2230
5	3951K	0.2250	0.2241	0.2239	0.2238	0.2237	0.2236	0.2235	0.2235	0.2234	0.2233	0.2232
6	3943K	0.2246	0.2237	0.2235	0.2234	0.2233	0.2231	0.2230	0.2229	0.2229	0.2228	0.2228
7	3992K	0.2244	0.2235	0.2233	0.2232	0.2231	0.2229	0.2229	0.2228	0.2227	0.2226	0.2226
8	3949K	0.2250	0.2241	0.2240	0.2239	0.2238	0.2236	0.2236	0.2234	0.2234	0.2233	0.2232
9	3952K	0.2248	0.2239	0.2238	0.2236	0.2235	0.2234	0.2234	0.2233	0.2232	0.2231	0.2230
10	3957K	0.2247	0.2239	0.2238	0.2237	0.2236	0.2234	0.2233	0.2232	0.2232	0.2231	0.2230
11	3956K	0.2247	0.2239	0.2237	0.2235	0.2235	0.2233	0.2233	0.2231	0.2231	0.2230	0.2229
12	3947K	0.2248	0.2240	0.2238	0.2237	0.2236	0.2235	0.2234	0.2233	0.2233	0.2231	0.2230
13	3981K	0.2243	0.2234	0.2232	0.2231	0.2229	0.2228	0.2227	0.2226	0.2226	0.2225	0.2224
14	3944K	0.2248	0.2239	0.2238	0.2236	0.2235	0.2234	0.2233	0.2232	0.2232	0.2231	0.2230
15	3949K	0.2247	0.2239	0.2237	0.2236	0.2234	0.2234	0.2233	0.2232	0.2232	0.2230	0.2229
16	3942K	0.2246	0.2238	0.2236	0.2235	0.2234	0.2232	0.2231	0.2230	0.2230	0.2229	0.2228
17	3947K	0.2247	0.2239	0.2237	0.2236	0.2235	0.2234	0.2233	0.2232	0.2231	0.2231	0.2229
18	3957K	0.2248	0.2240	0.2238	0.2237	0.2236	0.2235	0.2233	0.2233	0.2232	0.2231	0.2230
19	3954K	0.2246	0.2237	0.2236	0.2235	0.2233	0.2232	0.2231	0.2230	0.2230	0.2228	0.2228
20	3945K	0.2244	0.2235	0.2233	0.2232	0.2231	0.2230	0.2229	0.2227	0.2228	0.2226	0.2225

CIE 1976 v' data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$; $I_f = 70\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ 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	3961K	0.5056	0.5052	0.5051	0.5048	0.5046	0.5045	0.5043	0.5043	0.5041	0.5041	0.5040
2	3973K	0.5049	0.5046	0.5044	0.5042	0.5040	0.5039	0.5037	0.5037	0.5036	0.5035	0.5035
3	3956K	0.5052	0.5049	0.5047	0.5045	0.5042	0.5041	0.5040	0.5039	0.5038	0.5037	0.5037
4	3958K	0.5048	0.5044	0.5043	0.5041	0.5039	0.5038	0.5036	0.5036	0.5035	0.5033	0.5034
5	3951K	0.5048	0.5045	0.5044	0.5042	0.5040	0.5039	0.5037	0.5036	0.5035	0.5034	0.5034
6	3943K	0.5062	0.5058	0.5057	0.5055	0.5053	0.5051	0.5050	0.5049	0.5048	0.5047	0.5047
7	3992K	0.5037	0.5034	0.5032	0.5030	0.5028	0.5027	0.5026	0.5025	0.5023	0.5022	0.5022
8	3949K	0.5049	0.5046	0.5045	0.5042	0.5041	0.5040	0.5038	0.5038	0.5037	0.5036	0.5035
9	3952K	0.5051	0.5048	0.5047	0.5045	0.5044	0.5042	0.5041	0.5040	0.5039	0.5038	0.5037
10	3957K	0.5050	0.5047	0.5046	0.5044	0.5042	0.5041	0.5039	0.5038	0.5037	0.5036	0.5035
11	3956K	0.5050	0.5047	0.5045	0.5043	0.5041	0.5040	0.5038	0.5037	0.5037	0.5035	0.5035
12	3947K	0.5054	0.5050	0.5049	0.5048	0.5046	0.5045	0.5043	0.5042	0.5041	0.5040	0.5040
13	3981K	0.5045	0.5041	0.5039	0.5037	0.5035	0.5034	0.5032	0.5031	0.5031	0.5030	0.5030
14	3944K	0.5056	0.5053	0.5051	0.5048	0.5047	0.5046	0.5044	0.5044	0.5042	0.5042	0.5041
15	3949K	0.5054	0.5050	0.5049	0.5047	0.5045	0.5043	0.5042	0.5040	0.5039	0.5038	0.5038
16	3942K	0.5061	0.5057	0.5055	0.5054	0.5051	0.5050	0.5049	0.5047	0.5046	0.5045	0.5044
17	3947K	0.5056	0.5052	0.5051	0.5049	0.5047	0.5046	0.5044	0.5044	0.5042	0.5042	0.5041
18	3957K	0.5047	0.5043	0.5042	0.5040	0.5038	0.5037	0.5035	0.5034	0.5033	0.5032	0.5031
19	3954K	0.5054	0.5050	0.5049	0.5047	0.5045	0.5044	0.5042	0.5041	0.5040	0.5039	0.5038
20	3945K	0.5064	0.5060	0.5060	0.5058	0.5056	0.5054	0.5053	0.5052	0.5051	0.5050	0.5049

Delta u'v' data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$, $I_f = 70\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ 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	3961K	0.0000	0.0010	0.0012	0.0014	0.0016	0.0018	0.0020	0.0021	0.0022	0.0023	0.0024
2	3973K	0.0000	0.0009	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0021	0.0023	0.0023
3	3956K	0.0000	0.0009	0.0012	0.0014	0.0016	0.0018	0.0019	0.0020	0.0022	0.0023	0.0023
4	3958K	0.0000	0.0010	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0021	0.0023	0.0022
5	3951K	0.0000	0.0009	0.0011	0.0013	0.0015	0.0016	0.0018	0.0019	0.0020	0.0022	0.0023
6	3943K	0.0000	0.0010	0.0012	0.0014	0.0016	0.0018	0.0020	0.0021	0.0022	0.0023	0.0024
7	3992K	0.0000	0.0009	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0021	0.0023	0.0023
8	3949K	0.0000	0.0009	0.0011	0.0013	0.0014	0.0016	0.0018	0.0019	0.0020	0.0022	0.0022
9	3952K	0.0000	0.0009	0.0011	0.0013	0.0015	0.0016	0.0018	0.0019	0.0020	0.0022	0.0023
10	3957K	0.0000	0.0008	0.0010	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0022	0.0022
11	3956K	0.0000	0.0009	0.0011	0.0014	0.0015	0.0018	0.0019	0.0020	0.0021	0.0023	0.0024
12	3947K	0.0000	0.0009	0.0011	0.0013	0.0015	0.0017	0.0018	0.0019	0.0020	0.0022	0.0023
13	3981K	0.0000	0.0010	0.0012	0.0014	0.0017	0.0019	0.0020	0.0022	0.0022	0.0023	0.0024
14	3944K	0.0000	0.0009	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0021	0.0022	0.0023
15	3949K	0.0000	0.0009	0.0012	0.0014	0.0016	0.0017	0.0019	0.0021	0.0022	0.0023	0.0024
16	3942K	0.0000	0.0009	0.0012	0.0013	0.0016	0.0018	0.0019	0.0021	0.0022	0.0024	0.0025
17	3947K	0.0000	0.0009	0.0011	0.0013	0.0015	0.0017	0.0018	0.0019	0.0021	0.0022	0.0023
18	3957K	0.0000	0.0010	0.0011	0.0014	0.0016	0.0017	0.0019	0.0020	0.0022	0.0023	0.0025
19	3954K	0.0000	0.0009	0.0011	0.0013	0.0016	0.0017	0.0019	0.0020	0.0022	0.0023	0.0024
20	3945K	0.0000	0.0010	0.0012	0.0014	0.0016	0.0017	0.0019	0.0021	0.0021	0.0023	0.0024

Forward Voltage [V] data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$, $I_f = 70\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ 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	3961K	28.176	28.182	28.189	28.192	28.196	28.201	28.201	28.203	28.203	28.205	28.206
2	3973K	28.198	28.198	28.204	28.208	28.211	28.215	28.216	28.221	28.219	28.220	28.221
3	3956K	28.201	28.202	28.209	28.212	28.215	28.219	28.220	28.224	28.222	28.224	28.225
4	3958K	28.170	28.176	28.182	28.185	28.189	28.194	28.193	28.195	28.196	28.197	28.199
5	3951K	28.195	28.196	28.203	28.205	28.208	28.211	28.213	28.214	28.216	28.217	28.218
6	3943K	28.276	28.272	28.279	28.283	28.286	28.290	28.293	28.294	28.299	28.299	28.299
7	3992K	28.286	28.279	28.286	28.290	28.293	28.297	28.299	28.301	28.304	28.305	28.305
8	3949K	28.154	28.159	28.165	28.165	28.171	28.175	28.175	28.182	28.184	28.180	28.183
9	3952K	28.192	28.192	28.199	28.197	28.205	28.209	28.209	28.212	28.213	28.214	28.216
10	3957K	28.227	28.225	28.231	28.230	28.238	28.241	28.243	28.245	28.246	28.249	28.250
11	3956K	28.170	28.173	28.180	28.181	28.188	28.189	28.192	28.195	28.193	28.193	28.194
12	3947K	28.304	28.299	28.307	28.308	28.315	28.319	28.324	28.324	28.325	28.326	28.328
13	3981K	28.284	28.278	28.286	28.289	28.292	28.295	28.301	28.304	28.304	28.305	28.308
14	3944K	28.221	28.223	28.231	28.233	28.238	28.240	28.242	28.244	28.247	28.247	28.255
15	3949K	28.122	28.127	28.132	28.134	28.137	28.141	28.141	28.142	28.143	28.144	28.146
16	3942K	28.167	28.173	28.179	28.182	28.185	28.188	28.190	28.191	28.193	28.194	28.195
17	3947K	28.213	28.204	28.219	28.222	28.226	28.229	28.230	28.232	28.233	28.234	28.236
18	3957K	28.178	28.176	28.188	28.191	28.194	28.197	28.199	28.200	28.201	28.202	28.205
19	3954K	28.189	28.187	28.199	28.201	28.204	28.207	28.209	28.213	28.212	28.213	28.214
20	3945K	28.201	28.201	28.211	28.216	28.219	28.221	28.223	28.224	28.225	28.227	28.229

Luminous Flux [lm] data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 150\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3935K	754.660	758.772	756.792	755.510	754.309	753.056	751.717	751.603	750.370	749.423	749.309
2	3945K	747.929	751.111	749.300	748.008	746.871	745.345	744.072	744.573	743.544	742.466	741.752
3	3975K	751.019	754.352	752.826	751.355	750.204	749.106	748.030	747.875	747.137	746.303	744.944
4	3961K	748.701	751.940	750.066	748.570	747.462	746.093	744.952	745.269	744.685	743.957	743.248
5	3971K	751.296	754.914	753.286	751.615	750.953	749.563	748.264	747.936	747.133	746.288	745.403
6	3945K	757.544	760.327	758.479	756.903	755.704	754.795	753.439	753.360	752.267	751.624	750.802
7	3949K	754.256	757.559	755.662	754.290	753.427	752.373	751.494	751.561	750.528	749.901	748.780
8	3931K	757.851	760.432	758.182	756.482	755.135	753.854	752.406	752.361	750.766	749.078	746.942
9	3934K	759.643	762.511	760.296	758.631	757.509	756.214	754.621	754.985	753.555	752.276	750.812
10	3952K	753.721	755.507	753.764	751.957	750.805	749.719	748.419	748.642	747.212	746.118	745.249
11	3966K	753.286	757.073	755.066	753.427	752.286	751.402	750.001	750.118	749.169	748.465	747.721
12	3978K	748.163	753.505	751.931	750.405	749.357	748.180	746.959	747.208	746.356	744.704	743.926
13	3953K	749.596	754.176	752.493	750.774	749.800	748.339	747.423	747.210	746.495	744.852	743.690
14	3940K	749.762	754.238	753.035	751.465	750.411	749.423	748.714	748.555	747.839	746.203	747.044
15	3961K	758.686	762.228	760.397	758.600	757.407	756.119	755.125	755.156	754.263	752.381	753.653
16	3943K	749.301	752.443	750.745	749.099	748.508	747.409	746.370	746.304	745.767	744.706	746.055
17	3978K	748.199	752.689	751.272	749.660	748.576	747.334	745.986	745.911	744.026	741.476	741.152
18	3950K	758.908	762.891	761.482	759.628	758.777	756.286	756.441	756.573	754.686	752.694	753.271
19	3963K	744.569	748.472	746.682	745.183	744.275	742.258	741.961	741.944	740.761	739.132	740.978
20	3976K	753.259	758.706	756.587	755.031	753.804	751.710	750.855	750.779	750.087	748.358	749.325

Normalized Luminous Flux data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 150\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3935K	1.0000	1.0054	1.0028	1.0011	0.9995	0.9979	0.9961	0.9959	0.9943	0.9931	0.9929
2	3945K	1.0000	1.0043	1.0018	1.0001	0.9986	0.9965	0.9948	0.9955	0.9941	0.9927	0.9917
3	3975K	1.0000	1.0044	1.0024	1.0004	0.9989	0.9975	0.9960	0.9958	0.9948	0.9937	0.9919
4	3961K	1.0000	1.0043	1.0018	0.9998	0.9983	0.9965	0.9950	0.9954	0.9946	0.9937	0.9927
5	3971K	1.0000	1.0048	1.0026	1.0004	0.9995	0.9977	0.9960	0.9955	0.9945	0.9933	0.9922
6	3945K	1.0000	1.0037	1.0012	0.9992	0.9976	0.9964	0.9946	0.9945	0.9930	0.9922	0.9911
7	3949K	1.0000	1.0044	1.0019	1.0000	0.9989	0.9975	0.9963	0.9964	0.9951	0.9942	0.9927
8	3931K	1.0000	1.0034	1.0004	0.9982	0.9964	0.9947	0.9928	0.9928	0.9907	0.9884	0.9856
9	3934K	1.0000	1.0038	1.0009	0.9987	0.9972	0.9955	0.9934	0.9939	0.9920	0.9903	0.9884
10	3952K	1.0000	1.0024	1.0001	0.9977	0.9961	0.9947	0.9930	0.9933	0.9914	0.9899	0.9888
11	3966K	1.0000	1.0050	1.0024	1.0002	0.9987	0.9975	0.9956	0.9958	0.9945	0.9936	0.9926
12	3978K	1.0000	1.0071	1.0050	1.0030	1.0016	1.0000	0.9984	0.9987	0.9976	0.9954	0.9943
13	3953K	1.0000	1.0061	1.0039	1.0016	1.0003	0.9983	0.9971	0.9968	0.9959	0.9937	0.9921
14	3940K	1.0000	1.0060	1.0044	1.0023	1.0009	0.9995	0.9986	0.9984	0.9974	0.9953	0.9964
15	3961K	1.0000	1.0047	1.0023	0.9999	0.9983	0.9966	0.9953	0.9953	0.9942	0.9917	0.9934
16	3943K	1.0000	1.0042	1.0019	0.9997	0.9989	0.9975	0.9961	0.9960	0.9953	0.9939	0.9957
17	3978K	1.0000	1.0060	1.0041	1.0020	1.0005	0.9988	0.9970	0.9969	0.9944	0.9910	0.9906
18	3950K	1.0000	1.0052	1.0034	1.0009	0.9998	0.9985	0.9968	0.9969	0.9944	0.9918	0.9926
19	3963K	1.0000	1.0052	1.0028	1.0008	0.9996	0.9969	0.9965	0.9965	0.9949	0.9927	0.9952
20	3976K	1.0000	1.0072	1.0044	1.0024	1.0007	0.9979	0.9968	0.9967	0.9958	0.9935	0.9948

CIE 1976 u' data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 150\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3935K	0.2254	0.2247	0.2246	0.2244	0.2244	0.2243	0.2242	0.2241	0.2241	0.2241	0.2241
2	3945K	0.2254	0.2247	0.2246	0.2245	0.2244	0.2243	0.2243	0.2242	0.2242	0.2242	0.2241
3	3975K	0.2249	0.2241	0.2240	0.2240	0.2239	0.2238	0.2237	0.2236	0.2236	0.2236	0.2236
4	3961K	0.2250	0.2243	0.2241	0.2240	0.2240	0.2239	0.2238	0.2237	0.2237	0.2237	0.2237
5	3971K	0.2250	0.2243	0.2241	0.2240	0.2240	0.2239	0.2238	0.2237	0.2237	0.2236	0.2237
6	3945K	0.2250	0.2243	0.2242	0.2240	0.2240	0.2239	0.2238	0.2237	0.2237	0.2237	0.2237
7	3949K	0.2250	0.2243	0.2242	0.2241	0.2240	0.2239	0.2238	0.2237	0.2237	0.2237	0.2237
8	3931K	0.2256	0.2248	0.2247	0.2246	0.2244	0.2244	0.2243	0.2242	0.2242	0.2243	0.2243
9	3934K	0.2253	0.2246	0.2244	0.2243	0.2242	0.2241	0.2240	0.2240	0.2240	0.2240	0.2241
10	3952K	0.2255	0.2248	0.2247	0.2246	0.2245	0.2244	0.2244	0.2242	0.2242	0.2243	0.2242
11	3966K	0.2251	0.2244	0.2243	0.2242	0.2241	0.2240	0.2240	0.2238	0.2239	0.2238	0.2238
12	3978K	0.2248	0.2241	0.2240	0.2239	0.2238	0.2237	0.2237	0.2236	0.2236	0.2236	0.2236
13	3953K	0.2250	0.2242	0.2240	0.2240	0.2239	0.2238	0.2237	0.2237	0.2236	0.2236	0.2237
14	3940K	0.2252	0.2245	0.2244	0.2243	0.2242	0.2242	0.2241	0.2240	0.2240	0.2240	0.2241
15	3961K	0.2247	0.2240	0.2239	0.2238	0.2237	0.2236	0.2235	0.2235	0.2235	0.2235	0.2236
16	3943K	0.2255	0.2247	0.2246	0.2245	0.2244	0.2243	0.2242	0.2242	0.2242	0.2242	0.2242
17	3978K	0.2252	0.2244	0.2243	0.2242	0.2241	0.2240	0.2240	0.2239	0.2240	0.2240	0.2241
18	3950K	0.2251	0.2243	0.2242	0.2241	0.2241	0.2240	0.2239	0.2239	0.2239	0.2239	0.2241
19	3963K	0.2251	0.2245	0.2243	0.2242	0.2241	0.2240	0.2240	0.2239	0.2239	0.2239	0.2239
20	3976K	0.2250	0.2243	0.2242	0.2241	0.2240	0.2239	0.2238	0.2237	0.2237	0.2237	0.2237

CIE 1976 v' data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 150\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3935K	0.5048	0.5046	0.5045	0.5043	0.5041	0.5041	0.5040	0.5038	0.5038	0.5037	0.5039
2	3945K	0.5041	0.5038	0.5037	0.5036	0.5034	0.5034	0.5033	0.5033	0.5031	0.5031	0.5031
3	3975K	0.5035	0.5033	0.5032	0.5031	0.5029	0.5029	0.5028	0.5027	0.5026	0.5026	0.5027
4	3961K	0.5041	0.5037	0.5036	0.5035	0.5033	0.5032	0.5031	0.5030	0.5030	0.5030	0.5031
5	3971K	0.5035	0.5031	0.5031	0.5029	0.5028	0.5027	0.5026	0.5025	0.5024	0.5024	0.5025
6	3945K	0.5050	0.5047	0.5046	0.5045	0.5043	0.5042	0.5042	0.5041	0.5040	0.5040	0.5041
7	3949K	0.5047	0.5044	0.5043	0.5042	0.5040	0.5039	0.5039	0.5038	0.5037	0.5037	0.5037
8	3931K	0.5046	0.5043	0.5041	0.5040	0.5038	0.5037	0.5036	0.5036	0.5035	0.5035	0.5036
9	3934K	0.5051	0.5048	0.5047	0.5045	0.5043	0.5043	0.5042	0.5041	0.5040	0.5040	0.5041
10	3952K	0.5035	0.5032	0.5031	0.5029	0.5028	0.5027	0.5026	0.5025	0.5024	0.5024	0.5025
11	3966K	0.5035	0.5033	0.5032	0.5030	0.5029	0.5028	0.5027	0.5026	0.5025	0.5025	0.5025
12	3978K	0.5035	0.5033	0.5032	0.5031	0.5030	0.5029	0.5028	0.5028	0.5026	0.5026	0.5027
13	3953K	0.5047	0.5045	0.5044	0.5043	0.5042	0.5041	0.5040	0.5039	0.5039	0.5038	0.5040
14	3940K	0.5049	0.5047	0.5046	0.5045	0.5045	0.5044	0.5043	0.5042	0.5041	0.5041	0.5042
15	3961K	0.5047	0.5045	0.5043	0.5042	0.5042	0.5040	0.5039	0.5039	0.5039	0.5038	0.5040
16	3943K	0.5041	0.5038	0.5037	0.5035	0.5035	0.5034	0.5033	0.5032	0.5032	0.5031	0.5032
17	3978K	0.5027	0.5025	0.5025	0.5023	0.5023	0.5021	0.5020	0.5020	0.5020	0.5020	0.5021
18	3950K	0.5046	0.5044	0.5043	0.5042	0.5042	0.5040	0.5039	0.5039	0.5039	0.5038	0.5040
19	3963K	0.5037	0.5035	0.5034	0.5033	0.5032	0.5031	0.5030	0.5029	0.5029	0.5028	0.5029
20	3976K	0.5033	0.5031	0.5031	0.5029	0.5029	0.5027	0.5026	0.5026	0.5025	0.5025	0.5026

Delta u'v' data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 150\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3935K	0.0000	0.0007	0.0009	0.0011	0.0013	0.0013	0.0015	0.0016	0.0017	0.0017	0.0016
2	3945K	0.0000	0.0008	0.0009	0.0011	0.0012	0.0013	0.0014	0.0015	0.0016	0.0016	0.0016
3	3975K	0.0000	0.0008	0.0009	0.0010	0.0011	0.0013	0.0014	0.0015	0.0015	0.0016	0.0015
4	3961K	0.0000	0.0008	0.0010	0.0011	0.0013	0.0014	0.0015	0.0017	0.0017	0.0017	0.0016
5	3971K	0.0000	0.0008	0.0010	0.0011	0.0013	0.0014	0.0015	0.0016	0.0017	0.0018	0.0016
6	3945K	0.0000	0.0008	0.0009	0.0011	0.0013	0.0014	0.0015	0.0016	0.0017	0.0017	0.0016
7	3949K	0.0000	0.0008	0.0010	0.0011	0.0013	0.0014	0.0015	0.0016	0.0017	0.0017	0.0016
8	3931K	0.0000	0.0008	0.0010	0.0012	0.0014	0.0015	0.0016	0.0017	0.0018	0.0017	0.0017
9	3934K	0.0000	0.0008	0.0010	0.0011	0.0013	0.0014	0.0016	0.0017	0.0017	0.0017	0.0016
10	3952K	0.0000	0.0008	0.0009	0.0011	0.0013	0.0013	0.0015	0.0016	0.0017	0.0017	0.0016
11	3966K	0.0000	0.0007	0.0008	0.0010	0.0012	0.0013	0.0014	0.0016	0.0016	0.0017	0.0017
12	3978K	0.0000	0.0008	0.0009	0.0010	0.0011	0.0012	0.0014	0.0014	0.0015	0.0015	0.0014
13	3953K	0.0000	0.0008	0.0010	0.0011	0.0012	0.0013	0.0014	0.0015	0.0015	0.0016	0.0015
14	3940K	0.0000	0.0007	0.0009	0.0010	0.0011	0.0012	0.0013	0.0014	0.0014	0.0014	0.0014
15	3961K	0.0000	0.0008	0.0009	0.0010	0.0012	0.0013	0.0014	0.0015	0.0015	0.0015	0.0014
16	3943K	0.0000	0.0008	0.0010	0.0012	0.0013	0.0014	0.0015	0.0016	0.0016	0.0016	0.0015
17	3978K	0.0000	0.0008	0.0009	0.0010	0.0011	0.0013	0.0014	0.0015	0.0014	0.0014	0.0013
18	3950K	0.0000	0.0007	0.0009	0.0010	0.0011	0.0012	0.0014	0.0014	0.0014	0.0014	0.0012
19	3963K	0.0000	0.0007	0.0009	0.0010	0.0011	0.0013	0.0014	0.0014	0.0015	0.0015	0.0014
20	3976K	0.0000	0.0007	0.0008	0.0010	0.0010	0.0012	0.0013	0.0014	0.0015	0.0015	0.0014

Forward Voltage [V] data for tested units

$T_s = T_{air} = 85^{\circ}\text{C}$; $I_f = 150\text{mA}$; $T_s \geq 83^{\circ}\text{C}$ and $T_{air} \geq 80^{\circ}\text{C}$ in compliance with LM-80-15

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3935K	30.205	30.179	30.187	30.193	30.199	30.200	30.202	30.211	30.208	30.206	30.210
2	3945K	30.147	30.173	30.184	30.196	30.198	30.200	30.202	30.212	30.209	30.209	30.210
3	3975K	30.046	30.077	30.086	30.092	30.099	30.102	30.104	30.106	30.107	30.109	30.110
4	3961K	30.226	30.238	30.250	30.257	30.264	30.267	30.271	30.273	30.277	30.276	30.279
5	3971K	30.304	30.311	30.323	30.327	30.331	30.336	30.341	30.340	30.343	30.343	30.344
6	3945K	30.261	30.279	30.282	30.289	30.293	30.297	30.299	30.302	30.304	30.306	30.307
7	3949K	30.140	30.173	30.180	30.188	30.192	30.197	30.200	30.204	30.205	30.205	30.208
8	3931K	30.076	30.097	30.110	30.115	30.119	30.123	30.126	30.127	30.131	30.133	30.132
9	3934K	30.105	30.121	30.132	30.137	30.145	30.148	30.151	30.153	30.156	30.156	30.157
10	3952K	30.041	30.067	30.077	30.083	30.089	30.090	30.093	30.096	30.098	30.097	30.098
11	3966K	30.158	30.178	30.190	30.197	30.203	30.206	30.210	30.212	30.214	30.215	30.216
12	3978K	30.117	30.147	30.159	30.163	30.166	30.170	30.167	30.178	30.178	30.179	30.182
13	3953K	30.076	30.101	30.110	30.114	30.119	30.124	30.128	30.129	30.136	30.132	30.134
14	3940K	30.202	30.232	30.243	30.251	30.256	30.261	30.264	30.267	30.267	30.270	30.271
15	3961K	30.277	30.286	30.298	30.306	30.311	30.315	30.318	30.323	30.325	30.326	30.328
16	3943K	30.122	30.145	30.156	30.163	30.168	30.172	30.173	30.178	30.177	30.183	30.181
17	3978K	30.105	30.135	30.144	30.148	30.160	30.157	30.166	30.162	30.164	30.165	30.168
18	3950K	30.286	30.295	30.304	30.309	30.314	30.303	30.320	30.324	30.324	30.325	30.327
19	3963K	30.095	30.116	30.127	30.133	30.137	30.133	30.142	30.145	30.146	30.147	30.152
20	3976K	30.104	30.135	30.146	30.153	30.159	30.153	30.163	30.164	30.173	30.167	30.173

Luminous Flux [lm] data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$; $I_f = 150\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ 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	3968K	749.109	747.594	744.385	743.884	743.300	745.099	742.316	741.720	734.811	721.685	708.601
2	3952K	746.868	745.496	743.047	742.978	743.935	747.575	743.946	739.502	724.657	710.062	692.626
3	3964K	753.274	751.198	747.890	748.919	747.751	747.937	745.686	735.789	722.680	707.524	691.000
4	3942K	756.864	754.458	751.671	751.434	751.121	752.275	748.603	747.534	736.412	721.700	703.685
5	3966K	754.346	751.792	750.253	750.391	750.179	750.902	745.943	738.631	722.016	704.257	687.147
6	3986K	748.100	744.724	742.115	741.910	741.801	742.848	739.674	739.643	730.287	714.353	695.952
7	3950K	757.339	751.320	750.452	752.387	751.435	756.171	749.414	742.498	728.136	709.248	692.205
8	3948K	755.433	728.691	724.647	722.448	720.309	714.658	707.298	708.120	699.172	686.209	670.008
9	3946K	756.503	753.986	751.632	752.595	751.904	752.708	751.175	747.812	737.943	720.598	700.079
10	3978K	749.283	746.950	744.686	744.702	744.211	744.748	743.874	746.071	737.393	722.555	700.312
11	3953K	752.213	748.538	746.608	747.814	746.166	744.764	741.420	738.860	726.118	709.209	685.235
12	3946K	747.512	744.976	743.129	743.751	742.204	743.245	737.598	733.578	719.644	702.316	679.540
13	3962K	755.285	752.751	750.144	750.038	750.068	749.345	749.388	750.054	740.342	724.619	701.902
14	3970K	757.669	755.229	752.029	751.256	750.949	750.050	746.914	748.319	742.250	730.523	711.406
15	3954K	752.913	749.510	747.074	747.222	746.776	746.714	744.776	743.703	733.215	716.977	697.675
16	3955K	762.765	758.890	755.270	754.384	755.673	755.325	752.500	756.905	746.352	732.411	711.524
17	3955K	753.455	727.374	723.612	721.555	717.017	710.009	702.189	699.010	686.718	670.275	649.207
18	3976K	756.388	752.989	749.833	749.899	748.791	750.614	747.744	741.579	728.730	713.753	693.272
19	3952K	762.902	758.253	755.331	755.617	755.155	753.921	752.648	751.603	741.074	725.846	702.488
20	3970K	758.271	755.792	752.213	750.632	750.424	749.977	747.904	752.892	745.168	733.249	713.152

Normalized Luminous Flux data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$; $I_f = 150\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ 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	3968K	1.0000	0.9980	0.9937	0.9930	0.9922	0.9946	0.9909	0.9901	0.9809	0.9634	0.9459
2	3952K	1.0000	0.9982	0.9949	0.9948	0.9961	1.0009	0.9961	0.9901	0.9703	0.9507	0.9274
3	3964K	1.0000	0.9972	0.9929	0.9942	0.9927	0.9929	0.9899	0.9768	0.9594	0.9393	0.9173
4	3942K	1.0000	0.9968	0.9931	0.9928	0.9924	0.9939	0.9891	0.9877	0.9730	0.9535	0.9297
5	3966K	1.0000	0.9966	0.9946	0.9948	0.9945	0.9954	0.9889	0.9792	0.9571	0.9336	0.9109
6	3986K	1.0000	0.9955	0.9920	0.9917	0.9916	0.9930	0.9887	0.9887	0.9762	0.9549	0.9303
7	3950K	1.0000	0.9921	0.9909	0.9935	0.9922	0.9985	0.9895	0.9804	0.9614	0.9365	0.9140
8	3948K	1.0000	0.9646	0.9592	0.9563	0.9535	0.9460	0.9363	0.9374	0.9255	0.9084	0.8869
9	3946K	1.0000	0.9967	0.9936	0.9948	0.9939	0.9950	0.9930	0.9885	0.9755	0.9525	0.9254
10	3978K	1.0000	0.9969	0.9939	0.9939	0.9932	0.9939	0.9928	0.9957	0.9841	0.9643	0.9346
11	3953K	1.0000	0.9951	0.9925	0.9942	0.9920	0.9901	0.9857	0.9822	0.9653	0.9428	0.9110
12	3946K	1.0000	0.9966	0.9941	0.9950	0.9929	0.9943	0.9867	0.9814	0.9627	0.9395	0.9091
13	3962K	1.0000	0.9966	0.9932	0.9931	0.9931	0.9921	0.9922	0.9931	0.9802	0.9594	0.9293
14	3970K	1.0000	0.9968	0.9926	0.9915	0.9911	0.9899	0.9858	0.9877	0.9796	0.9642	0.9389
15	3954K	1.0000	0.9955	0.9922	0.9924	0.9918	0.9918	0.9892	0.9878	0.9738	0.9523	0.9266
16	3955K	1.0000	0.9949	0.9902	0.9890	0.9907	0.9902	0.9865	0.9923	0.9785	0.9602	0.9328
17	3955K	1.0000	0.9654	0.9604	0.9577	0.9516	0.9423	0.9320	0.9277	0.9114	0.8896	0.8616
18	3976K	1.0000	0.9955	0.9913	0.9914	0.9900	0.9924	0.9886	0.9804	0.9634	0.9436	0.9166
19	3952K	1.0000	0.9939	0.9901	0.9905	0.9898	0.9882	0.9866	0.9852	0.9714	0.9514	0.9208
20	3970K	1.0000	0.9967	0.9920	0.9899	0.9897	0.9891	0.9863	0.9929	0.9827	0.9670	0.9405

CIE 1976 u' data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$; $I_f = 150\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ 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	3968K	0.2250	0.2239	0.2237	0.2234	0.2232	0.2231	0.2232	0.2233	0.2234	0.2233	0.2230
2	3952K	0.2253	0.2242	0.2239	0.2236	0.2235	0.2235	0.2236	0.2238	0.2237	0.2234	0.2229
3	3964K	0.2247	0.2237	0.2234	0.2231	0.2230	0.2230	0.2232	0.2233	0.2231	0.2227	0.2222
4	3942K	0.2250	0.2239	0.2236	0.2234	0.2232	0.2232	0.2233	0.2236	0.2235	0.2232	0.2228
5	3966K	0.2249	0.2239	0.2236	0.2233	0.2232	0.2232	0.2234	0.2236	0.2233	0.2229	0.2224
6	3986K	0.2248	0.2235	0.2232	0.2230	0.2228	0.2227	0.2229	0.2232	0.2232	0.2228	0.2222
7	3950K	0.2250	0.2238	0.2235	0.2232	0.2231	0.2233	0.2235	0.2236	0.2234	0.2230	0.2225
8	3948K	0.2252	0.2233	0.2229	0.2226	0.2224	0.2223	0.2222	0.2225	0.2225	0.2224	0.2220
9	3946K	0.2253	0.2243	0.2240	0.2237	0.2235	0.2234	0.2235	0.2238	0.2239	0.2236	0.2230
10	3978K	0.2249	0.2238	0.2235	0.2233	0.2231	0.2230	0.2231	0.2234	0.2235	0.2233	0.2227
11	3953K	0.2252	0.2242	0.2239	0.2236	0.2234	0.2235	0.2237	0.2240	0.2239	0.2235	0.2227
12	3946K	0.2253	0.2242	0.2239	0.2236	0.2234	0.2236	0.2237	0.2238	0.2236	0.2231	0.2225
13	3962K	0.2249	0.2238	0.2236	0.2233	0.2231	0.2230	0.2233	0.2236	0.2236	0.2234	0.2228
14	3970K	0.2248	0.2238	0.2235	0.2232	0.2230	0.2229	0.2228	0.2231	0.2233	0.2232	0.2227
15	3954K	0.2253	0.2242	0.2239	0.2236	0.2235	0.2235	0.2237	0.2240	0.2240	0.2236	0.2231
16	3955K	0.2251	0.2241	0.2237	0.2236	0.2233	0.2232	0.2231	0.2235	0.2236	0.2234	0.2228
17	3955K	0.2251	0.2232	0.2229	0.2225	0.2223	0.2223	0.2223	0.2225	0.2224	0.2220	0.2215
18	3976K	0.2250	0.2239	0.2236	0.2233	0.2231	0.2232	0.2234	0.2236	0.2234	0.2231	0.2224
19	3952K	0.2252	0.2241	0.2238	0.2235	0.2233	0.2233	0.2234	0.2237	0.2237	0.2233	0.2226
20	3970K	0.2251	0.2241	0.2238	0.2236	0.2234	0.2233	0.2232	0.2235	0.2236	0.2235	0.2231

CIE 1976 v' data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$; $I_f = 150\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ 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	3968K	0.5037	0.5030	0.5028	0.5026	0.5024	0.5027	0.5028	0.5030	0.5024	0.5003	0.4979
2	3952K	0.5040	0.5034	0.5032	0.5031	0.5031	0.5035	0.5035	0.5030	0.5010	0.4996	0.4987
3	3964K	0.5045	0.5038	0.5036	0.5036	0.5034	0.5038	0.5037	0.5025	0.5014	0.5002	0.4997
4	3942K	0.5052	0.5044	0.5041	0.5040	0.5039	0.5042	0.5043	0.5046	0.5038	0.5025	0.5009
5	3966K	0.5040	0.5032	0.5030	0.5029	0.5029	0.5033	0.5033	0.5026	0.5010	0.4993	0.4986
6	3986K	0.5032	0.5023	0.5021	0.5019	0.5017	0.5020	0.5022	0.5026	0.5018	0.4999	0.4977
7	3950K	0.5048	0.5038	0.5037	0.5036	0.5035	0.5043	0.5044	0.5044	0.5035	0.5017	0.5010
8	3948K	0.5045	0.5025	0.5021	0.5019	0.5016	0.5015	0.5015	0.5026	0.5025	0.5016	0.4994
9	3946K	0.5044	0.5037	0.5034	0.5033	0.5031	0.5033	0.5036	0.5037	0.5029	0.5011	0.4987
10	3978K	0.5034	0.5028	0.5024	0.5023	0.5021	0.5022	0.5026	0.5035	0.5030	0.5012	0.4974
11	3953K	0.5042	0.5036	0.5033	0.5033	0.5031	0.5033	0.5038	0.5041	0.5029	0.5014	0.4991
12	3946K	0.5043	0.5037	0.5034	0.5033	0.5031	0.5036	0.5039	0.5038	0.5025	0.5008	0.4986
13	3962K	0.5043	0.5036	0.5033	0.5032	0.5030	0.5031	0.5037	0.5044	0.5039	0.5022	0.4986
14	3970K	0.5040	0.5032	0.5029	0.5028	0.5026	0.5025	0.5027	0.5036	0.5036	0.5023	0.4988
15	3954K	0.5038	0.5030	0.5027	0.5026	0.5024	0.5028	0.5032	0.5038	0.5030	0.5012	0.4985
16	3955K	0.5041	0.5032	0.5029	0.5027	0.5027	0.5027	0.5028	0.5034	0.5024	0.5013	0.4987
17	3955K	0.5042	0.5023	0.5019	0.5017	0.5014	0.5015	0.5018	0.5024	0.5015	0.4996	0.4972
18	3976K	0.5033	0.5025	0.5022	0.5020	0.5019	0.5024	0.5027	0.5021	0.5008	0.4996	0.4979
19	3952K	0.5043	0.5034	0.5031	0.5030	0.5028	0.5030	0.5034	0.5038	0.5029	0.5009	0.4968
20	3970K	0.5033	0.5026	0.5023	0.5021	0.5020	0.5020	0.5021	0.5029	0.5025	0.5014	0.4981

Delta u'v' data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$, $I_f = 150\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ 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	3968K	0.0000	0.0013	0.0016	0.0019	0.0022	0.0021	0.0020	0.0018	0.0021	0.0038	0.0062
2	3952K	0.0000	0.0013	0.0016	0.0019	0.0020	0.0018	0.0018	0.0018	0.0034	0.0048	0.0059
3	3964K	0.0000	0.0012	0.0017	0.0019	0.0021	0.0018	0.0017	0.0025	0.0036	0.0048	0.0054
4	3942K	0.0000	0.0014	0.0018	0.0020	0.0023	0.0021	0.0020	0.0016	0.0021	0.0032	0.0048
5	3966K	0.0000	0.0013	0.0016	0.0019	0.0021	0.0018	0.0017	0.0019	0.0034	0.0051	0.0060
6	3986K	0.0000	0.0015	0.0019	0.0022	0.0025	0.0023	0.0021	0.0016	0.0021	0.0038	0.0060
7	3950K	0.0000	0.0015	0.0019	0.0021	0.0023	0.0018	0.0016	0.0014	0.0020	0.0037	0.0045
8	3948K	0.0000	0.0028	0.0033	0.0037	0.0040	0.0042	0.0042	0.0033	0.0033	0.0040	0.0060
9	3946K	0.0000	0.0012	0.0016	0.0019	0.0022	0.0022	0.0020	0.0017	0.0020	0.0037	0.0062
10	3978K	0.0000	0.0012	0.0016	0.0019	0.0021	0.0022	0.0020	0.0015	0.0014	0.0027	0.0063
11	3953K	0.0000	0.0011	0.0015	0.0018	0.0021	0.0019	0.0015	0.0012	0.0018	0.0032	0.0057
12	3946K	0.0000	0.0013	0.0017	0.0020	0.0022	0.0019	0.0017	0.0016	0.0025	0.0042	0.0064
13	3962K	0.0000	0.0013	0.0017	0.0020	0.0022	0.0022	0.0017	0.0013	0.0013	0.0026	0.0060
14	3970K	0.0000	0.0013	0.0017	0.0020	0.0023	0.0024	0.0024	0.0017	0.0016	0.0023	0.0056
15	3954K	0.0000	0.0013	0.0018	0.0021	0.0023	0.0021	0.0018	0.0014	0.0016	0.0031	0.0058
16	3955K	0.0000	0.0014	0.0018	0.0021	0.0024	0.0024	0.0024	0.0018	0.0023	0.0033	0.0059
17	3955K	0.0000	0.0027	0.0033	0.0036	0.0039	0.0040	0.0037	0.0032	0.0039	0.0055	0.0079
18	3976K	0.0000	0.0013	0.0018	0.0021	0.0023	0.0020	0.0017	0.0018	0.0029	0.0041	0.0060
19	3952K	0.0000	0.0014	0.0018	0.0021	0.0023	0.0022	0.0019	0.0015	0.0020	0.0039	0.0079
20	3970K	0.0000	0.0012	0.0016	0.0019	0.0022	0.0023	0.0023	0.0016	0.0017	0.0024	0.0056

Forward Voltage [V] data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$, $I_f = 150\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ 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	3968K	30.197	30.223	30.237	30.239	30.247	30.254	30.257	30.263	30.267	30.272	30.283
2	3952K	30.191	30.216	30.229	30.220	30.244	30.250	30.256	30.262	30.267	30.273	30.281
3	3964K	30.145	30.168	30.181	30.177	30.207	30.202	30.206	30.211	30.215	30.222	30.227
4	3942K	30.033	30.057	30.069	30.068	30.080	30.086	30.092	30.095	30.099	30.105	30.109
5	3966K	30.050	30.083	30.097	30.096	30.108	30.112	30.117	30.121	30.129	30.132	30.138
6	3986K	30.334	30.350	30.368	30.372	30.387	30.395	30.399	30.407	30.414	30.417	30.434
7	3950K	30.115	30.143	30.154	30.164	30.173	30.181	30.187	30.195	30.203	30.203	30.207
8	3948K	30.163	30.188	30.197	30.209	30.240	30.222	30.228	30.230	30.241	30.244	30.243
9	3946K	30.070	30.095	30.110	30.118	30.124	30.126	30.135	30.151	30.142	30.145	30.157
10	3978K	30.165	30.186	30.197	30.213	30.220	30.218	30.225	30.233	30.232	30.236	30.238
11	3953K	30.070	30.096	30.104	30.118	30.126	30.130	30.135	30.142	30.146	30.153	30.169
12	3946K	30.128	30.152	30.163	30.175	30.184	30.189	30.195	30.201	30.206	30.220	30.228
13	3962K	30.182	30.200	30.213	30.219	30.233	30.231	30.248	30.245	30.246	30.254	30.259
14	3970K	30.328	30.344	30.353	30.368	30.377	30.388	30.392	30.400	30.404	30.410	30.417
15	3954K	30.069	30.096	30.107	30.119	30.124	30.128	30.135	30.140	30.146	30.154	30.160
16	3955K	30.297	30.314	30.333	30.329	30.351	30.360	30.370	30.376	30.383	30.386	30.406
17	3955K	30.206	30.224	30.239	30.236	30.255	30.259	30.275	30.272	30.281	30.285	30.287
18	3976K	30.252	30.262	30.273	30.271	30.287	30.293	30.299	30.305	30.308	30.313	30.319
19	3952K	30.285	30.300	30.324	30.320	30.343	30.344	30.350	30.371	30.365	30.373	30.378
20	3970K	30.255	30.270	30.291	30.287	30.307	30.308	30.312	30.329	30.321	30.329	30.332

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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 L_{75} extrapolations per IESNA TM-21-11

	If = 70mA	If = 150mA
Ts = 105°C	444,639	25,577
Ts = 85°C	831,181	284,485
Ts = 55°C	-1,038,355	-

Projected L_{80} extrapolations per IESNA TM-21-11

	If = 70mA	If = 150mA
Ts = 105°C	344,980	20,932
Ts = 85°C	649,338	221,181
Ts = 55°C	-811,667	-

Projected L_{85} extrapolations per IESNA TM-21-11

	If = 70mA	If = 150mA
Ts = 105°C	251,365	16,569
Ts = 85°C	478,523	161,716
Ts = 55°C	-598,725	-

Projected L_{90} extrapolations per IESNA TM-21-11

	If = 70mA	If = 150mA
Ts = 105°C	163,102	12,455
Ts = 85°C	317,474	105,651
Ts = 55°C	-397,959	-