

Lumileds

IESNA LM-80 Test Report

1. Description of LED light sources tested

LUXEON M p/n: LXR7-SW40 (nominal CCT 4000K).

2. Package Pictures



Figure 1. Picture of LUXEON M.

3a. Projected L_{70} extrapolations per IESNA TM-21-11

$I_f = 1050\text{mA}$	
$T_s = 105^\circ\text{C}$	481,711

3b. Reported L_{70} extrapolations per IESNA TM-21-11

$I_f = 1050\text{mA}$	
$T_s = 105^\circ\text{C}$	> 60,000

4. Applicable LUXEON® Series part number(s)

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

Product Family	Part Number	Nominal CCT
LUXEON MX	L1MX-407003V500000	4000K
LUXEON MX	L1MX-407006V500000	4000K
LUXEON MX	L1MX-407012V500000	4000K
LUXEON MX	L1MX-507012V500000	5000K
LUXEON MX	L1MX-507003V500000	5000K
LUXEON MX	L1MX-507006V500000	5000K
LUXEON MX	L1MX-577003V500000	5700K
LUXEON MX	L1MX-577006V500000	5700K
LUXEON MX	L1MX-577012V500000	5700K
LUXEON MX	L1MX-657003V500000	6500K
LUXEON MX	L1MX-657006V500000	6500K
LUXEON MX	L1MX-657012V500000	6500K

Please note following current equivalencies and that I_f below refers to current listed in Section 3a and Section 3b:

The equivalent drive current I_f' for L1MX-xx7012V000000 is equal to I_f .

The equivalent drive current I_f' for L1MX-xx7006V000000 can be determined as follows: $I_f' = I_f \times 2$.

The equivalent drive current I_f' for L1MX-xx7003V000000 can be determined as follows: $I_f' = I_f \times 4$.

Note that xx designates part CCT (eg. 40 for 4000K, 50 for 5000K, etc.).

5. Number of LED light sources tested

20 units.

6. Dates Tests Started

2012/07/05

7. Date Report First Issued

2017/01/23.

8. Mechanical Drawing

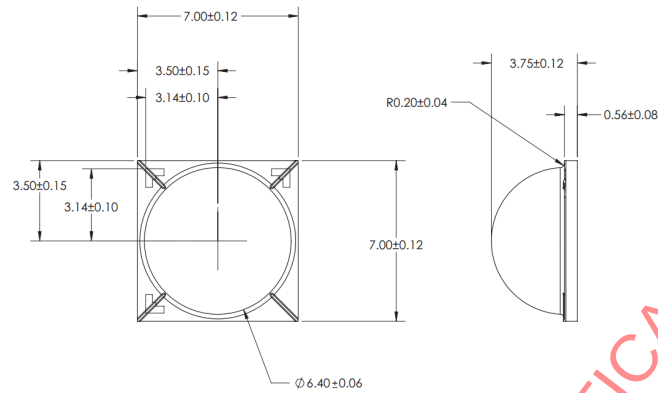


Figure 2. Mechanical Drawings for LUXEON M.

Notes for Figure 2:

- Drawings not to scale. All dimensions are in millimeters.
- The thermal pad is electrically isolated from the anode and cathode contact pads.

9. T_s Measurement Point

The location of the T_s measurement point for LUXEON M is shown in Figure 3.

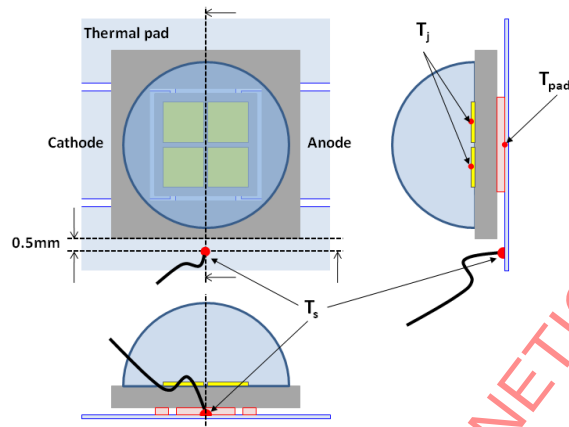


Figure 3. Location of T_s measurement point for LUXEON M.

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

10. Description of auxiliary equipment

LUXEON LED devices are soldered to reliability stress boards. Reliability stress boards are mounted in a thermal chamber which provides liquid N2 cooling and has a controlled air temperature.

11. Operating Cycle

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

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

LEDs are operated on controlled thermal plates in an environment that complies with the requirements given in Section 4.4 of LM80-08.

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

In all cases, both T_s and T_{air} meet or exceed the IESNA LM-80-08 limits.

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)

Luminous Flux (Φ_v) $\pm 2\%$

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.

This report issued to ELECTROMAGNETICA

22. ISO 17025-2005 Accreditation



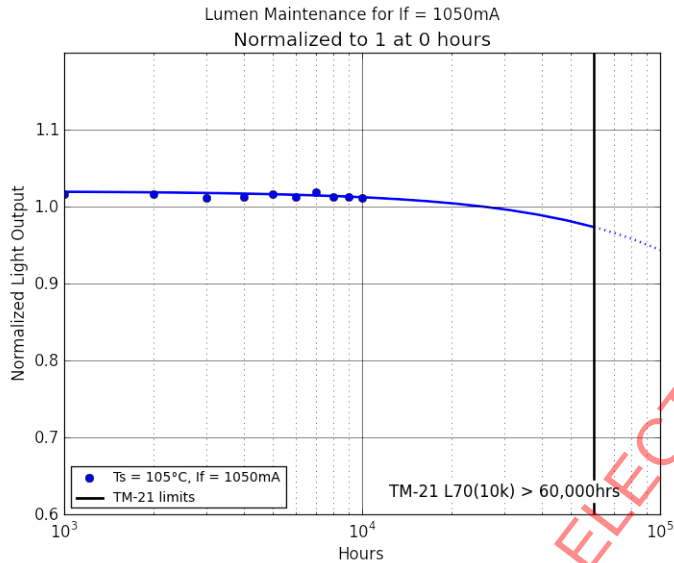
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Normalized Flux Statistics for $I_f = 1050\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	alpha	B	L70
median =	1.0000	1.0166	1.0162	1.0113	1.0121	1.0153	1.0099	1.0162	1.0103	1.0114	1.0128			
Ts=Tair=105°C average =	1.0000	1.0161	1.0163	1.0117	1.0129	1.0164	1.0121	1.0190	1.0126	1.0130	1.0116	7.8172e-07	1.0201	481,711
st dev =	0.0000	0.0028	0.0031	0.0030	0.0028	0.0050	0.0075	0.0091	0.0095	0.0095	0.0095			TM-21 L70(10k) > 60,000hrs
min =	1.0000	1.0114	1.0118	1.0071	1.0092	1.0094	1.0003	1.0043	0.9972	0.9964	0.9960			
max =	1.0000	1.0218	1.0253	1.0191	1.0197	1.0278	1.0277	1.0364	1.0306	1.0301	1.0265			



Delta u'v' for $I_f = 1050\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
median =	0.0000	0.0008	0.0006	0.0006	0.0004	0.0007	0.0008	0.0014	0.0022	0.0028	0.0036
Ts=Tair=105°C average =	0.0000	0.0008	0.0007	0.0006	0.0004	0.0007	0.0009	0.0015	0.0023	0.0029	0.0037
st dev =	0.0000	0.0001	0.0001	0.0001	0.0001	0.0002	0.0005	0.0006	0.0007	0.0007	0.0008
min =	0.0000	0.0005	0.0005	0.0004	0.0003	0.0004	0.0004	0.0008	0.0015	0.0021	0.0028
max =	0.0000	0.0010	0.0009	0.0006	0.0007	0.0013	0.0020	0.0029	0.0037	0.0045	0.0056

Luminous Flux [lm] data for tested units

$T_s = T_{air} = 105^{\circ}C$, $I_f = 1050mA$; $T_s \geq 103^{\circ}C$ and $T_{air} \geq 100^{\circ}C$ in compliance with LM-80-08

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3908K	1339.678	1355.129	1356.413	1349.152	1352.551	1354.345	1347.987	1354.731	1343.966	1342.616	1339.004
2	3916K	1333.587	1351.475	1352.323	1343.967	1347.035	1351.527	1347.746	1355.494	1343.471	1340.744	1334.126
3	3929K	1322.497	1337.535	1338.046	1332.208	1337.898	1346.017	1347.314	1360.035	1352.301	1354.206	1352.006
4	3931K	1292.554	1312.161	1312.818	1306.145	1307.252	1310.557	1302.680	1311.309	1306.460	1308.481	1309.558
5	3926K	1307.183	1328.780	1329.820	1322.191	1322.163	1323.891	1317.920	1326.496	1321.187	1326.395	1329.206
6	3936K	1307.419	1330.741	1330.867	1326.762	1330.722	1341.023	1343.156	1354.832	1347.375	1346.829	1342.115
7	3893K	1320.140	1344.282	1343.604	1337.043	1337.250	1340.871	1337.252	1344.401	1334.222	1332.995	1327.546
8	3865K	1326.963	1349.065	1343.673	1341.560	1342.523	1342.548	1331.606	1338.699	1326.126	1326.870	1324.191
9	3868K	1330.065	1353.063	1350.057	1344.415	1344.063	1345.823	1336.022	1342.845	1332.920	1334.253	1332.460
10	3864K	1291.023	1314.038	1313.163	1308.495	1310.787	1315.793	1311.667	1322.663	1316.294	1319.226	1316.881
11	3855K	1331.196	1353.651	1351.913	1346.376	1347.021	1349.907	1342.592	1350.663	1341.800	1344.394	1342.413
12	3860K	1350.176	1375.732	1375.205	1368.660	1367.462	1371.751	1364.586	1372.977	1363.408	1365.146	1362.625
13	3834K	1347.263	1373.866	1372.810	1365.407	1363.758	1367.431	1357.744	1364.846	1355.507	1355.684	1354.125
14	3833K	1322.210	1351.070	1355.710	1347.406	1348.260	1354.041	1347.637	1358.710	1351.863	1353.008	1351.821
15	3831K	1323.599	1347.904	1349.735	1345.165	1343.343	1344.719	1335.692	1344.820	1336.792	1339.093	1340.110
16	3875K	1311.559	1331.392	1332.383	1328.810	1331.185	1336.958	1333.033	1345.273	1338.152	1337.562	1334.363
17	3886K	1354.884	1372.253	1373.123	1365.932	1367.413	1367.669	1355.265	1360.723	1351.155	1350.015	1349.514
18	3937K	1330.018	1350.497	1351.886	1344.940	1347.571	1356.210	1355.501	1369.347	1360.012	1359.763	1357.706
19	3918K	1313.222	1332.307	1334.902	1326.324	1326.458	1332.149	1322.343	1331.022	1325.850	1325.841	1330.562
20	3964K	1314.094	1331.525	1333.308	1328.056	1335.622	1350.657	1350.511	1361.906	1351.284	1349.392	1344.555

Normalized Luminous Flux data for tested units

$T_s = T_{air} = 105^{\circ}C$, $I_f = 1050mA$; $T_s \geq 103^{\circ}C$ and $T_{air} \geq 100^{\circ}C$ in compliance with LM-80-08

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3908K	1.0000	1.0115	1.0125	1.0071	1.0096	1.0109	1.0062	1.0112	1.0032	1.0022	0.9995
2	3916K	1.0000	1.0134	1.0140	1.0078	1.0101	1.0135	1.0106	1.0164	1.0074	1.0054	1.0004
3	3929K	1.0000	1.0114	1.0118	1.0073	1.0116	1.0178	1.0188	1.0284	1.0225	1.0240	1.0223
4	3931K	1.0000	1.0152	1.0157	1.0105	1.0114	1.0139	1.0078	1.0145	1.0108	1.0123	1.0132
5	3926K	1.0000	1.0165	1.0173	1.0115	1.0115	1.0128	1.0082	1.0148	1.0107	1.0147	1.0168
6	3936K	1.0000	1.0178	1.0179	1.0148	1.0178	1.0257	1.0273	1.0363	1.0306	1.0301	1.0265
7	3893K	1.0000	1.0183	1.0178	1.0128	1.0130	1.0157	1.0130	1.0184	1.0107	1.0097	1.0056
8	3865K	1.0000	1.0167	1.0126	1.0110	1.0117	1.0117	1.0035	1.0088	0.9994	0.9999	0.9979
9	3868K	1.0000	1.0173	1.0150	1.0108	1.0105	1.0118	1.0045	1.0096	1.0021	1.0031	1.0018
10	3864K	1.0000	1.0178	1.0171	1.0135	1.0153	1.0192	1.0160	1.0245	1.0196	1.0218	1.0200
11	3855K	1.0000	1.0169	1.0156	1.0114	1.0119	1.0141	1.0086	1.0146	1.0080	1.0099	1.0084
12	3860K	1.0000	1.0189	1.0185	1.0137	1.0128	1.0160	1.0107	1.0169	1.0098	1.0111	1.0092
13	3834K	1.0000	1.0197	1.0190	1.0135	1.0122	1.0150	1.0078	1.0131	1.0061	1.0063	1.0051
14	3833K	1.0000	1.0218	1.0253	1.0191	1.0197	1.0241	1.0192	1.0276	1.0224	1.0233	1.0224
15	3831K	1.0000	1.0184	1.0197	1.0163	1.0149	1.0160	1.0091	1.0160	1.0100	1.0117	1.0125
16	3875K	1.0000	1.0151	1.0159	1.0132	1.0150	1.0194	1.0164	1.0257	1.0203	1.0198	1.0174
17	3886K	1.0000	1.0128	1.0135	1.0082	1.0092	1.0094	1.0003	1.0043	0.9972	0.9964	0.9960
18	3937K	1.0000	1.0154	1.0164	1.0112	1.0132	1.0197	1.0192	1.0296	1.0226	1.0224	1.0208
19	3918K	1.0000	1.0145	1.0165	1.0100	1.0101	1.0144	1.0069	1.0136	1.0096	1.0096	1.0132
20	3964K	1.0000	1.0133	1.0146	1.0106	1.0164	1.0278	1.0277	1.0364	1.0283	1.0269	1.0232

CIE 1976 u' data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$, $I_f = 1050\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ and $T_{air} \geq 100^{\circ}\text{C}$ in compliance with LM-80-08

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3908K	0.2290	0.2286	0.2285	0.2285	0.2286	0.2285	0.2285	0.2285	0.2287	0.2288	0.2289
2	3916K	0.2289	0.2285	0.2284	0.2284	0.2285	0.2284	0.2285	0.2284	0.2286	0.2287	0.2288
3	3929K	0.2283	0.2279	0.2279	0.2279	0.2280	0.2278	0.2279	0.2278	0.2279	0.2279	0.2280
4	3931K	0.2281	0.2277	0.2276	0.2276	0.2277	0.2276	0.2277	0.2276	0.2277	0.2278	0.2279
5	3926K	0.2282	0.2278	0.2278	0.2278	0.2279	0.2278	0.2278	0.2278	0.2279	0.2279	0.2280
6	3936K	0.2278	0.2274	0.2273	0.2273	0.2274	0.2273	0.2274	0.2273	0.2273	0.2274	0.2274
7	3893K	0.2290	0.2285	0.2285	0.2284	0.2285	0.2284	0.2285	0.2284	0.2286	0.2287	0.2287
8	3865K	0.2293	0.2289	0.2290	0.2289	0.2290	0.2289	0.2289	0.2289	0.2290	0.2290	0.2291
9	3868K	0.2295	0.2291	0.2291	0.2290	0.2292	0.2290	0.2291	0.2291	0.2292	0.2293	0.2294
10	3864K	0.2292	0.2287	0.2287	0.2287	0.2288	0.2286	0.2287	0.2287	0.2288	0.2289	0.2289
11	3855K	0.2296	0.2291	0.2292	0.2291	0.2292	0.2290	0.2291	0.2291	0.2292	0.2293	0.2294
12	3860K	0.2295	0.2290	0.2291	0.2290	0.2291	0.2290	0.2291	0.2290	0.2292	0.2293	0.2294
13	3834K	0.2301	0.2296	0.2296	0.2296	0.2297	0.2295	0.2296	0.2296	0.2297	0.2298	0.2299
14	3833K	0.2294	0.2288	0.2288	0.2289	0.2289	0.2288	0.2289	0.2289	0.2290	0.2291	0.2291
15	3831K	0.2298	0.2294	0.2294	0.2294	0.2294	0.2294	0.2294	0.2294	0.2295	0.2295	0.2296
16	3875K	0.2288	0.2284	0.2284	0.2283	0.2284	0.2283	0.2284	0.2284	0.2285	0.2286	0.2287
17	3886K	0.2291	0.2287	0.2287	0.2287	0.2287	0.2286	0.2288	0.2287	0.2288	0.2289	0.2289
18	3937K	0.2277	0.2274	0.2273	0.2273	0.2274	0.2273	0.2274	0.2274	0.2274	0.2275	0.2275
19	3918K	0.2283	0.2279	0.2279	0.2279	0.2279	0.2278	0.2279	0.2278	0.2279	0.2279	0.2280
20	3964K	0.2280	0.2276	0.2276	0.2276	0.2276	0.2275	0.2276	0.2276	0.2277	0.2277	0.2277

CIE 1976 v' data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$, $I_f = 1050\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ and $T_{air} \geq 100^{\circ}\text{C}$ in compliance with LM-80-08

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3908K	0.4984	0.4980	0.4979	0.4983	0.4986	0.4989	0.4993	0.5000	0.5010	0.5017	0.5027
2	3916K	0.4980	0.4977	0.4976	0.4981	0.4986	0.4990	0.4996	0.5005	0.5017	0.5025	0.5036
3	3929K	0.4987	0.4981	0.4982	0.4985	0.4989	0.4993	0.4997	0.5004	0.5012	0.5014	0.5020
4	3931K	0.4991	0.4985	0.4985	0.4988	0.4991	0.4992	0.4994	0.5000	0.5008	0.5014	0.5021
5	3926K	0.4991	0.4984	0.4985	0.4987	0.4991	0.4993	0.4994	0.5000	0.5009	0.5016	0.5024
6	3936K	0.4995	0.4987	0.4989	0.4991	0.4998	0.5002	0.5007	0.5015	0.5023	0.5028	0.5034
7	3893K	0.4994	0.4987	0.4989	0.4992	0.4997	0.5000	0.5004	0.5013	0.5024	0.5033	0.5043
8	3865K	0.5003	0.4996	0.4998	0.4999	0.5002	0.5004	0.5005	0.5010	0.5018	0.5024	0.5032
9	3868K	0.4996	0.4989	0.4991	0.4993	0.4996	0.4998	0.4999	0.5005	0.5014	0.5021	0.5030
10	3864K	0.5006	0.5000	0.5001	0.5004	0.5008	0.5010	0.5013	0.5020	0.5029	0.5035	0.5041
11	3855K	0.5002	0.4995	0.4997	0.4998	0.5002	0.5004	0.5006	0.5012	0.5021	0.5029	0.5038
12	3860K	0.5001	0.4994	0.4996	0.4998	0.5002	0.5004	0.5009	0.5016	0.5027	0.5036	0.5046
13	3834K	0.5003	0.4996	0.4999	0.5000	0.5004	0.5006	0.5009	0.5015	0.5024	0.5032	0.5041
14	3833K	0.5022	0.5014	0.5015	0.5018	0.5022	0.5023	0.5026	0.5032	0.5041	0.5046	0.5052
15	3831K	0.5012	0.5005	0.5007	0.5007	0.5011	0.5012	0.5014	0.5020	0.5028	0.5033	0.5040
16	3875K	0.5009	0.5004	0.5006	0.5008	0.5013	0.5016	0.5021	0.5029	0.5038	0.5044	0.5050
17	3886K	0.4995	0.4989	0.4991	0.4992	0.4995	0.4996	0.4998	0.5003	0.5010	0.5016	0.5025
18	3937K	0.4995	0.4990	0.4990	0.4993	0.4998	0.5002	0.5008	0.5017	0.5025	0.5029	0.5036
19	3918K	0.4994	0.4989	0.4989	0.4991	0.4994	0.4994	0.4996	0.5002	0.5010	0.5016	0.5024
20	3964K	0.4974	0.4969	0.4971	0.4974	0.4979	0.4986	0.4994	0.5003	0.5010	0.5012	0.5018

Delta u'v' data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$, $I_f = 1050\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ and $T_{air} \geq 100^{\circ}\text{C}$ in compliance with LM-80-08

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3908K	0.0000	0.0006	0.0007	0.0005	0.0004	0.0007	0.0010	0.0017	0.0026	0.0033	0.0043
2	3916K	0.0000	0.0005	0.0006	0.0005	0.0007	0.0011	0.0016	0.0025	0.0037	0.0045	0.0056
3	3929K	0.0000	0.0007	0.0006	0.0004	0.0004	0.0008	0.0011	0.0018	0.0025	0.0027	0.0033
4	3931K	0.0000	0.0007	0.0008	0.0006	0.0004	0.0005	0.0005	0.0010	0.0017	0.0023	0.0030
5	3926K	0.0000	0.0008	0.0007	0.0006	0.0003	0.0004	0.0005	0.0010	0.0018	0.0025	0.0033
6	3936K	0.0000	0.0009	0.0008	0.0006	0.0005	0.0009	0.0013	0.0021	0.0028	0.0033	0.0039
7	3893K	0.0000	0.0009	0.0007	0.0006	0.0006	0.0008	0.0011	0.0020	0.0030	0.0039	0.0049
8	3865K	0.0000	0.0008	0.0006	0.0006	0.0003	0.0004	0.0004	0.0008	0.0015	0.0021	0.0029
9	3868K	0.0000	0.0008	0.0006	0.0006	0.0003	0.0005	0.0005	0.0010	0.0018	0.0025	0.0034
10	3864K	0.0000	0.0008	0.0007	0.0005	0.0004	0.0007	0.0009	0.0015	0.0023	0.0029	0.0035
11	3855K	0.0000	0.0009	0.0006	0.0006	0.0004	0.0006	0.0006	0.0011	0.0019	0.0027	0.0036
12	3860K	0.0000	0.0009	0.0006	0.0006	0.0004	0.0006	0.0009	0.0016	0.0026	0.0035	0.0045
13	3834K	0.0000	0.0009	0.0006	0.0006	0.0004	0.0007	0.0008	0.0013	0.0021	0.0029	0.0038
14	3833K	0.0000	0.0010	0.0009	0.0006	0.0005	0.0006	0.0006	0.0011	0.0019	0.0024	0.0030
15	3831K	0.0000	0.0008	0.0006	0.0006	0.0004	0.0004	0.0004	0.0009	0.0016	0.0021	0.0028
16	3875K	0.0000	0.0006	0.0005	0.0005	0.0006	0.0009	0.0013	0.0020	0.0029	0.0035	0.0041
17	3886K	0.0000	0.0007	0.0006	0.0005	0.0004	0.0005	0.0004	0.0009	0.0015	0.0021	0.0030
18	3937K	0.0000	0.0006	0.0006	0.0004	0.0004	0.0008	0.0013	0.0022	0.0030	0.0034	0.0041
19	3918K	0.0000	0.0006	0.0006	0.0005	0.0004	0.0005	0.0004	0.0009	0.0016	0.0022	0.0030
20	3964K	0.0000	0.0006	0.0005	0.0004	0.0006	0.0013	0.0020	0.0029	0.0036	0.0038	0.0044

Forward Voltage [V] data for tested units

$T_s = T_{air} = 105^{\circ}\text{C}$, $I_f = 1050\text{mA}$; $T_s \geq 103^{\circ}\text{C}$ and $T_{air} \geq 100^{\circ}\text{C}$ in compliance with LM-80-08

	CCT (t=0)	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	3908K	11.773	11.772	11.791	11.804	11.809	11.806	11.814	11.857	11.913	11.972	12.038
2	3916K	11.777	11.783	11.793	11.814	11.818	11.831	11.847	11.915	11.988	12.072	12.164
3	3929K	11.720	11.715	11.728	11.749	11.748	11.764	11.783	11.856	11.947	12.035	12.109
4	3931K	11.715	11.714	11.722	11.736	11.733	11.726	11.719	11.748	11.792	11.828	11.859
5	3926K	11.750	11.749	11.760	11.778	11.777	11.765	11.758	11.793	11.834	11.874	11.921
6	3936K	11.708	11.708	11.724	11.740	11.750	11.765	11.801	11.897	12.004	12.088	12.148
7	3893K	11.781	11.785	11.795	11.820	11.820	11.830	11.841	11.906	11.988	12.074	12.165
8	3865K	11.753	11.751	11.760	11.777	11.771	11.766	11.753	11.771	11.798	11.820	11.830
9	3868K	11.761	11.762	11.775	11.787	11.783	11.779	11.768	11.792	11.830	11.863	11.895
10	3864K	11.721	11.718	11.728	11.746	11.752	11.751	11.758	11.805	11.871	11.948	12.022
11	3855K	11.736	11.735	11.746	11.763	11.759	11.755	11.752	11.784	11.834	11.882	11.936
12	3860K	11.733	11.729	11.741	11.761	11.756	11.753	11.759	11.799	11.857	11.912	11.980
13	3834K	11.752	11.745	11.757	11.777	11.776	11.773	11.766	11.796	11.846	11.882	11.941
14	3833K	11.755	11.750	11.762	11.791	11.786	11.787	11.791	11.840	11.914	11.974	12.044
15	3831K	11.713	11.697	11.708	11.727	11.719	11.721	11.719	11.749	11.802	11.841	11.888
16	3875K	11.735	11.729	11.740	11.771	11.768	11.777	11.794	11.854	11.943	12.011	12.096
17	3886K	11.774	11.769	11.779	11.796	11.794	11.783	11.778	11.800	11.837	11.856	11.885
18	3937K	11.717	11.711	11.723	11.748	11.749	11.765	11.800	11.897	12.013	12.098	12.182
19	3918K	11.754	11.746	11.758	11.775	11.772	11.763	11.763	11.785	11.832	11.862	11.907
20	3964K	11.709	11.701	11.713	11.734	11.743	11.767	11.823	11.950	12.080	12.157	12.217

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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.

This report issued to ELECTROMAGNETICS

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

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

If = 1050mA	
Ts = 105°C	393,453

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

If = 1050mA	
Ts = 105°C	310,894

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

If = 1050mA	
Ts = 105°C	233,341

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

If = 1050mA	
Ts = 105°C	160,223

Projected L_{95} extrapolations per IESNA TM-21-11

If = 1050mA	
Ts = 105°C	91,059

Projected L_{100} extrapolations per IESNA TM-21-11

If = 1050mA	
Ts = 105°C	25,443

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