

Lumileds

IESNA LM-80 Test Report

1. Description of LED light sources tested

LUXEON 3030 2D: L130-3080003000W2C (nominal CCT 3000K)

2a. Package Pictures



Figure 1. Picture of LUXEON 3030 2D.

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

360.0 mA/mm²

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

2.21 W/mm²

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

83.03

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

0.1mm

2f. Total Input Power at max. current tested

1.17 W

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

	If = 65mA	If = 100mA	If = 120mA	If = 150mA	If = 180mA
T _s = 115°C	-	-	116,125	-	90,035
T _s = 105°C	152,952	-	128,827	122,380	-
T _s = 85°C	-	141,867	-	-	-
T _s = 55°C	182,119	-	-	-	-

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

	If = 65mA	If = 100mA	If = 120mA	If = 150mA	If = 180mA
T _s = 115°C	-	-	> 84,000	-	> 84,000
T _s = 105°C	> 84,000	-	> 84,000	> 84,000	-
T _s = 85°C	-	> 84,000	-	-	-
T _s = 55°C	> 84,000	-	-	-	-

4. Applicable LUXEON® Series part number(s)

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

Product Family	Part Number	CCT
LUXEON 3030 2D	L130-AABBxx30xxxx	white
LUXEON HR30	L130-AABCCHR00000	white

For LUXEON 3030 2D: AA designates nominal CCT (22=2200K, 27=2700K, 30=3000K, 35=3500K, 40=4000K, 50=5000K, 57=5700K and 65=6500K), BB designates minimum CRI (70=70CRI, 80=80CRI and 90=90CRI), CC designates ESD protection level (00=2kV and 0T=8kV), xx and xxxx designate Lumileds internal codes.

For LUXEON HR30: AA designates nominal CCT (22=2200K, 27=2700K, 30=3000K, 35=3500K, 40=4000K, 50=5000K, 57=5700K, 65=6500K), BB designates minimum CRI (70=70CRI, 80=80CRI and 90=90CRI), and CC designates ESD protection level (00=2kV and 0T=8kV).

5. Number of LED light sources tested

25 units per test condition.

6. Dates Tests Started

2016/08/24.

7. Date Report First Issued

2017/10/17.

8. Mechanical Drawing

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

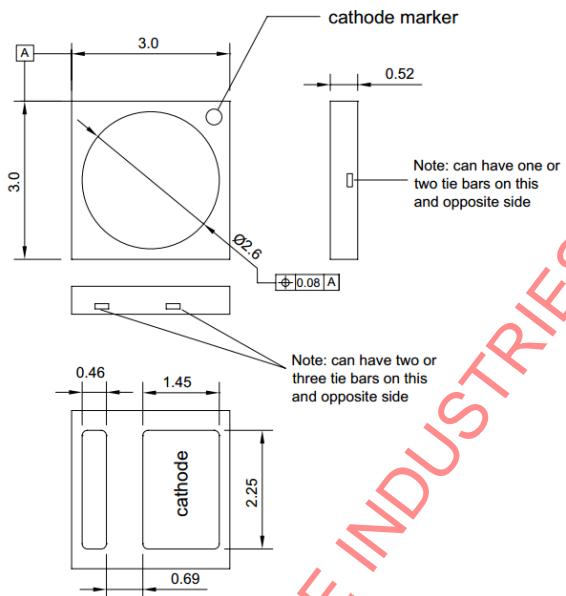


Figure 2: Mechanical Drawing for LUXEON 3030 2D. All dimensions are in millimeters.

9. T_s Measurement Point

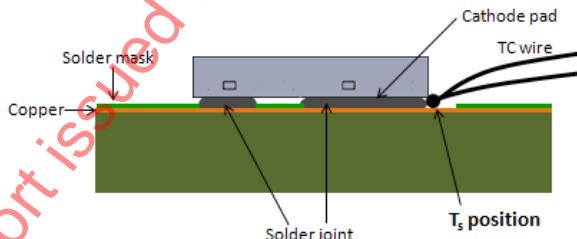


Figure 3: Preferred T_s measurement point for LUXEON 3030 2D.

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

10. Description of auxiliary equipment

LUXEON LED devices are soldered to reliability stress boards.

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

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

11. Operating Cycle

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

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

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

The photometry measurement temperature is set and monitored to be within 25°C ± 2°C with no forced airflow and RH < 65%.

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

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

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

See tables.

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

See tables.

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

See tables.

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

No failures observed in devices reported.

18. LED light source monitoring interval

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

19. Photometric measurement uncertainty

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

Luminous Flux (Φ_v) ± 1.59%

Correlated Color Temperature (CCT) ± 21K

20. Chromaticity shift reported over the measurement time

See tables.

21. Sampling Method/Sample size

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

22. ISO 17025-2005 Accreditation



Notes

Data is for reference only and is not an endorsement to exceed the Data Sheet operating conditions. The data was collected by a subcontracted laboratory (ref. R2SH160822052-10, R2SH160822053-10 and R2SH160822051-10).

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

Flux(time) = B exp[-alpha*time], where normally B \geq 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.

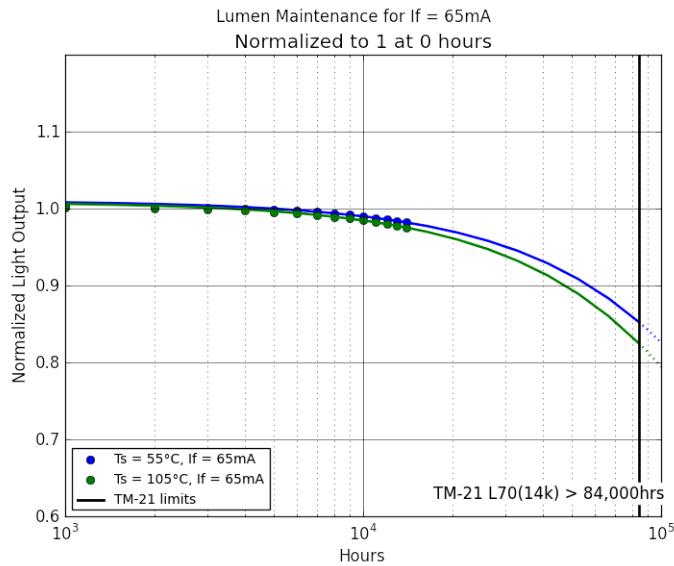
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Normalized Flux Statistics for $I_f = 65\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	alpha	B	L70	
Ts=Tair=105°C	median =	1.0000	1.0018	0.9999	0.9985	0.9970	0.9953	0.9928	0.9910	0.9895	0.9878	0.9855	0.9828	0.9800	0.9769	0.9746			
Ts=Tair=105°C	average =	1.0000	1.0017	1.0001	0.9988	0.9972	0.9953	0.9932	0.9913	0.9892	0.9873	0.9852	0.9827	0.9799	0.9773	0.9752	2.3870e-06	1.0085	152,952
Ts=Tair=105°C	st dev =	0.0000	0.0008	0.0011	0.0013	0.0015	0.0015	0.0015	0.0017	0.0021	0.0022	0.0024	0.0026	0.0028	0.0030	0.0030	TM-21 L70(14k) > 84,000hrs		
Ts=Tair=105°C	min =	1.0000	1.0001	0.9983	0.9970	0.9945	0.9925	0.9911	0.9879	0.9846	0.9823	0.9796	0.9770	0.9739	0.9708	0.9696			
Ts=Tair=105°C	max =	1.0000	1.0031	1.0023	1.0015	0.9996	0.9989	0.9970	0.9951	0.9932	0.9918	0.9910	0.9891	0.9869	0.9849	0.9824			
Ts=Tair=55°C	median =	1.0000	1.0037	1.0026	1.0018	1.0003	0.9990	0.9972	0.9960	0.9939	0.9917	0.9900	0.9877	0.9862	0.9836	0.9818			
Ts=Tair=55°C	average =	1.0000	1.0035	1.0026	1.0019	1.0004	0.9990	0.9975	0.9958	0.9939	0.9920	0.9901	0.9881	0.9860	0.9838	0.9820	2.0136e-06	1.0101	182,119
Ts=Tair=55°C	st dev =	0.0000	0.0010	0.0010	0.0013	0.0009	0.0012	0.0011	0.0012	0.0016	0.0019	0.0022	0.0022	0.0023	0.0023	0.0022	TM-21 L70(14k) > 84,000hrs		
Ts=Tair=55°C	min =	1.0000	1.0014	1.0004	0.9996	0.9989	0.9973	0.9951	0.9934	0.9907	0.9890	0.9866	0.9850	0.9829	0.9802	0.9789			
Ts=Tair=55°C	max =	1.0000	1.0052	1.0045	1.0038	1.0020	1.0015	0.9992	0.9976	0.9969	0.9968	0.9962	0.9941	0.9924	0.9903	0.9889			



Delta u'v' for If = 65mA

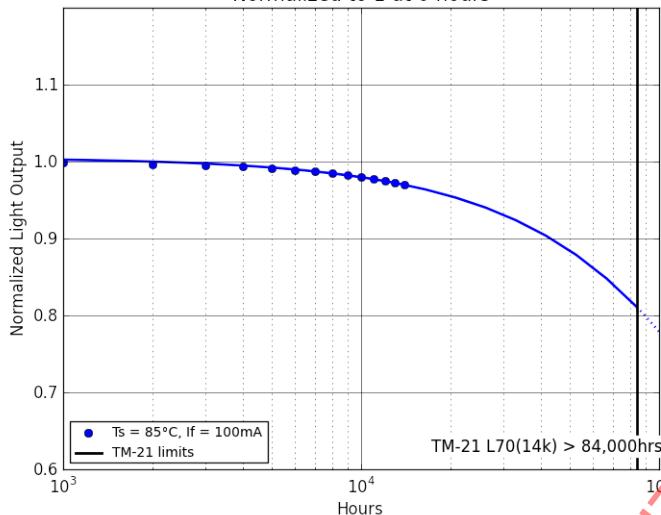
	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs
Ts=Tair=105°C	median = 0.0000	0.0004	0.0007	0.0009	0.0013	0.0014	0.0016	0.0020	0.0023	0.0026	0.0030	0.0033	0.0035	0.0037	0.0039
	average = 0.0000	0.0004	0.0007	0.0008	0.0013	0.0015	0.0016	0.0019	0.0023	0.0026	0.0029	0.0033	0.0035	0.0037	0.0038
	st dev = 0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	min = 0.0000	0.0002	0.0005	0.0007	0.0011	0.0013	0.0014	0.0017	0.0021	0.0025	0.0027	0.0031	0.0033	0.0034	0.0035
	max = 0.0000	0.0006	0.0009	0.0010	0.0014	0.0017	0.0018	0.0022	0.0026	0.0029	0.0032	0.0035	0.0038	0.0040	0.0041
Ts=Tair=55°C	median = 0.0000	0.0003	0.0004	0.0005	0.0010	0.0012	0.0014	0.0018	0.0022	0.0024	0.0026	0.0030	0.0032	0.0034	0.0035
	average = 0.0000	0.0003	0.0004	0.0005	0.0010	0.0013	0.0015	0.0018	0.0022	0.0024	0.0027	0.0029	0.0032	0.0034	0.0035
	st dev = 0.0000	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	min = 0.0000	0.0001	0.0003	0.0003	0.0008	0.0011	0.0012	0.0016	0.0019	0.0022	0.0024	0.0027	0.0029	0.0031	0.0032
	max = 0.0000	0.0009	0.0010	0.0010	0.0017	0.0019	0.0021	0.0024	0.0027	0.0030	0.0033	0.0034	0.0038	0.0039	0.0041

Normalized Flux Statistics for $I_f = 100\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	alpha	B	L70	
Ts=Tair=85°C	median =	1.0000	0.9982	0.9963	0.9953	0.9935	0.9917	0.9889	0.9870	0.9851	0.9823	0.9790	0.9771	0.9740	0.9713	0.9701			
	average =	1.0000	0.9986	0.9968	0.9952	0.9937	0.9916	0.9893	0.9870	0.9848	0.9825	0.9798	0.9774	0.9745	0.9720	0.9700	2.5496e-06	1.0050	141,867
	st dev =	0.0000	0.0017	0.0019	0.0018	0.0019	0.0020	0.0020	0.0022	0.0026	0.0026	0.0027	0.0029	0.0032	0.0034	0.0034	0.0034	TM-21 L70(14k) > 84,000hrs	
	min =	1.0000	0.9962	0.9935	0.9925	0.9906	0.9880	0.9859	0.9835	0.9806	0.9784	0.9752	0.9725	0.9679	0.9651	0.9633			
	max =	1.0000	1.0028	1.0018	0.9991	0.9982	0.9963	0.9935	0.9915	0.9896	0.9877	0.9852	0.9830	0.9811	0.9786	0.9773			

Lumen Maintenance for $I_f = 100\text{mA}$

Normalized to 1 at 0 hours



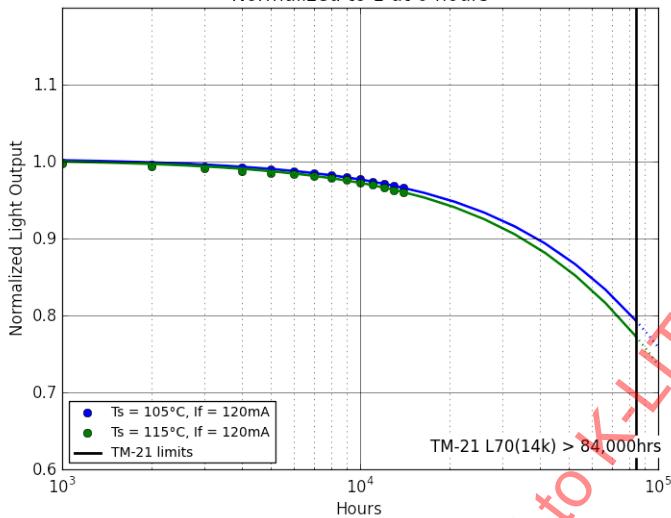
Delta u'v' for $I_f = 100\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs		
Ts=Tair=85°C	median =	0.0000	0.0005	0.0007	0.0009	0.0012	0.0014	0.0017	0.0021	0.0023	0.0028	0.0031	0.0032	0.0035	0.0036	0.0038	
	average =	0.0000	0.0005	0.0007	0.0009	0.0012	0.0014	0.0017	0.0021	0.0023	0.0028	0.0031	0.0033	0.0035	0.0037	0.0038	
	st dev =	0.0000	0.0002	0.0001	0.0001	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	
	min =	0.0000	0.0002	0.0005	0.0007	0.0010	0.0012	0.0013	0.0019	0.0021	0.0025	0.0028	0.0030	0.0032	0.0033	0.0034	
	max =	0.0000	0.0009	0.0011	0.0014	0.0017	0.0020	0.0022	0.0025	0.0028	0.0032	0.0035	0.0038	0.0041	0.0044	0.0046	

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

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	alpha	B	L70	
Ts=Tair=115°C	median =	1.0000	0.9969	0.9944	0.9920	0.9882	0.9850	0.9833	0.9805	0.9782	0.9756	0.9730	0.9699	0.9665	0.9628	0.9597			
	average =	1.0000	0.9973	0.9939	0.9912	0.9879	0.9848	0.9831	0.9808	0.9785	0.9756	0.9728	0.9700	0.9666	0.9630	0.9600	3.0972e-06	1.0030	116,125
	st dev =	0.0000	0.0018	0.0021	0.0025	0.0031	0.0035	0.0035	0.0036	0.0037	0.0038	0.0040	0.0041	0.0037	0.0041	0.0040	TM-21 L70(14k) > 84,000hrs		
	min =	1.0000	0.9945	0.9904	0.9867	0.9824	0.9778	0.9762	0.9736	0.9715	0.9691	0.9659	0.9628	0.9596	0.9556	0.9517			
	max =	1.0000	1.0008	0.9984	0.9953	0.9929	0.9913	0.9889	0.9866	0.9842	0.9818	0.9788	0.9770	0.9733	0.9694	0.9658			
Ts=Tair=105°C	median =	1.0000	0.9984	0.9961	0.9944	0.9920	0.9890	0.9866	0.9841	0.9824	0.9797	0.9771	0.9743	0.9711	0.9680	0.9661			
	average =	1.0000	0.9985	0.9960	0.9942	0.9919	0.9895	0.9870	0.9847	0.9824	0.9796	0.9770	0.9743	0.9713	0.9683	0.9659	2.8040e-06	1.0046	128,827
	st dev =	0.0000	0.0017	0.0016	0.0016	0.0016	0.0018	0.0020	0.0023	0.0028	0.0031	0.0032	0.0032	0.0033	0.0031	0.0031	TM-21 L70(14k) > 84,000hrs		
	min =	1.0000	0.9952	0.9929	0.9907	0.9890	0.9859	0.9835	0.9811	0.9780	0.9740	0.9725	0.9693	0.9662	0.9630	0.9607			
	max =	1.0000	1.0016	0.9984	0.9976	0.9952	0.9936	0.9920	0.9904	0.9888	0.9857	0.9833	0.9801	0.9777	0.9753	0.9721			

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



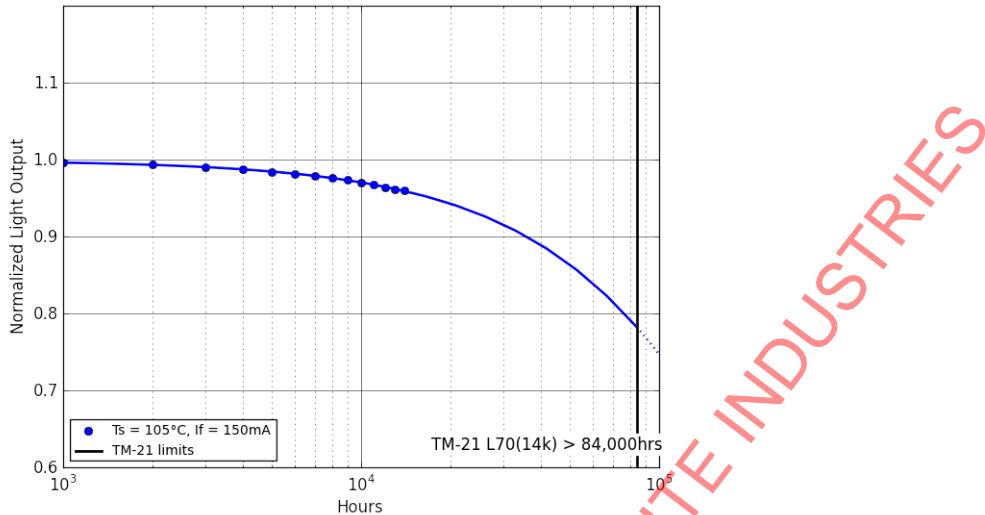
Delta u'v' for $I_f = 120\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs			
Ts=Tair=115°C	median =	0.0000	0.0007	0.0009	0.0013	0.0014	0.0017	0.0022	0.0024	0.0026	0.0028	0.0031	0.0035	0.0037	0.0039	0.0040		
	average =	0.0000	0.0007	0.0010	0.0013	0.0015	0.0018	0.0021	0.0024	0.0026	0.0028	0.0032	0.0035	0.0037	0.0039	0.0040		
	st dev =	0.0000	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002		
	min =	0.0000	0.0005	0.0008	0.0011	0.0013	0.0015	0.0019	0.0023	0.0023	0.0025	0.0029	0.0029	0.0033	0.0035	0.0036		
	max =	0.0000	0.0010	0.0013	0.0017	0.0020	0.0023	0.0025	0.0029	0.0031	0.0033	0.0037	0.0043	0.0042	0.0044	0.0046		
Ts=Tair=105°C	median =	0.0000	0.0006	0.0007	0.0011	0.0013	0.0017	0.0019	0.0021	0.0024	0.0027	0.0030	0.0034	0.0036	0.0038	0.0039		
	average =	0.0000	0.0006	0.0008	0.0011	0.0013	0.0017	0.0019	0.0022	0.0025	0.0028	0.0030	0.0034	0.0037	0.0038	0.0040		
	st dev =	0.0000	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003	0.0004	0.0003	0.0004	0.0004		
	min =	0.0000	0.0002	0.0006	0.0009	0.0008	0.0012	0.0017	0.0019	0.0020	0.0022	0.0024	0.0029	0.0031	0.0029	0.0030		
	max =	0.0000	0.0013	0.0014	0.0020	0.0024	0.0027	0.0028	0.0031	0.0035	0.0038	0.0042	0.0047	0.0046	0.0047	0.0049		

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

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	alpha	B	L70	
	median =	1.0000	0.9961	0.9929	0.9902	0.9867	0.9837	0.9813	0.9791	0.9762	0.9741	0.9714	0.9684	0.9646	0.9627	0.9597			
Ts=Tair=105°C	average =	1.0000	0.9965	0.9934	0.9904	0.9870	0.9840	0.9812	0.9787	0.9761	0.9733	0.9703	0.9676	0.9643	0.9618	0.9594	2.9058e-06	0.9989	122,380
	st dev =	0.0000	0.0017	0.0018	0.0021	0.0022	0.0024	0.0022	0.0023	0.0024	0.0026	0.0028	0.0030	0.0033	0.0033	0.0033	TM-21 L70(14k) > 84,000hrs		
	min =	1.0000	0.9942	0.9904	0.9866	0.9838	0.9806	0.9780	0.9741	0.9715	0.9683	0.9651	0.9612	0.9567	0.9535	0.9522			
	max =	1.0000	1.0013	0.9980	0.9954	0.9935	0.9895	0.9852	0.9830	0.9810	0.9784	0.9758	0.9725	0.9699	0.9680	0.9654			

Lumen Maintenance for $I_f = 150\text{mA}$
Normalized to 1 at 0 hours



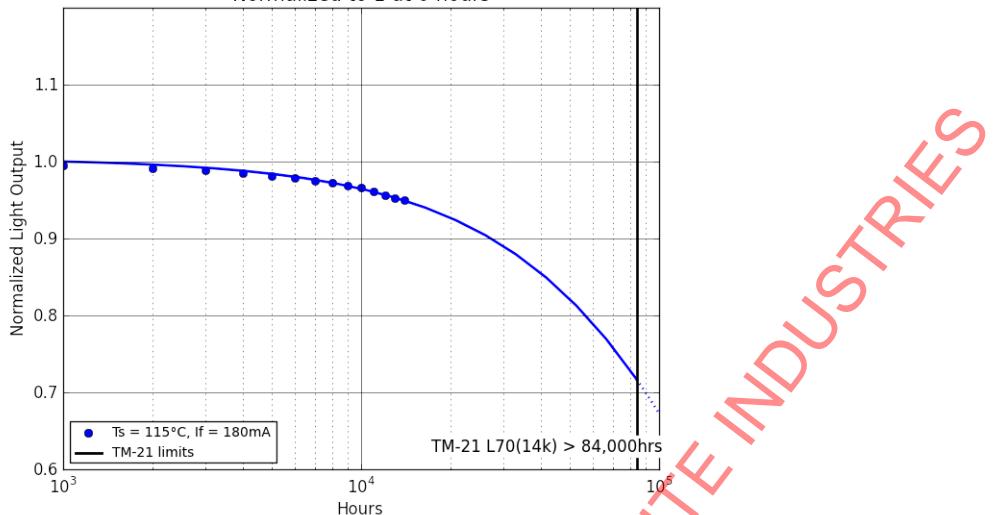
Delta u'v' for $I_f = 150\text{mA}$

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	
	median =	0.0000	0.0008	0.0011	0.0014	0.0019	0.0021	0.0023	0.0026	0.0029	0.0032	0.0036	0.0038	0.0042	0.0044	0.0046
Ts=Tair=105°C	average =	0.0000	0.0008	0.0011	0.0014	0.0019	0.0021	0.0022	0.0026	0.0029	0.0032	0.0036	0.0039	0.0042	0.0044	0.0046
	st dev =	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0003	0.0002	0.0002	0.0002
	min =	0.0000	0.0006	0.0009	0.0013	0.0017	0.0018	0.0021	0.0023	0.0027	0.0030	0.0033	0.0030	0.0038	0.0041	0.0042
	max =	0.0000	0.0010	0.0012	0.0016	0.0021	0.0023	0.0025	0.0028	0.0030	0.0034	0.0040	0.0045	0.0045	0.0047	0.0048

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

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	alpha	B	L70	
	median =	1.0000	0.9945	0.9912	0.9888	0.9848	0.9818	0.9786	0.9752	0.9724	0.9692	0.9662	0.9613	0.9573	0.9532	0.9499			
Ts=Tair=115°C	average =	1.0000	0.9949	0.9917	0.9887	0.9849	0.9816	0.9784	0.9753	0.9724	0.9692	0.9659	0.9610	0.9562	0.9526	0.9494	4.0065e-06	1.0041	90,035
	st dev =	0.0000	0.0018	0.0022	0.0023	0.0024	0.0026	0.0029	0.0029	0.0024	0.0024	0.0021	0.0028	0.0032	0.0034	0.0034	TM-21 L70(14k) > 84,000hrs		
	min =	1.0000	0.9917	0.9873	0.9846	0.9791	0.9757	0.9719	0.9680	0.9658	0.9631	0.9609	0.9541	0.9487	0.9432	0.9399			
	max =	1.0000	0.9989	0.9972	0.9949	0.9898	0.9864	0.9835	0.9801	0.9761	0.9733	0.9690	0.9655	0.9601	0.9566	0.9535			

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



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

	0hrs	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	
	median =	0.0000	0.0008	0.0010	0.0015	0.0019	0.0021	0.0025	0.0028	0.0029	0.0031	0.0035	0.0038	0.0042	0.0044	0.0045
Ts=Tair=115°C	average =	0.0000	0.0008	0.0011	0.0015	0.0019	0.0021	0.0025	0.0028	0.0029	0.0031	0.0035	0.0038	0.0043	0.0044	0.0045
	st dev =	0.0000	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0004	0.0004	0.0004
	min =	0.0000	0.0005	0.0008	0.0013	0.0015	0.0017	0.0023	0.0026	0.0027	0.0028	0.0030	0.0031	0.0034	0.0036	0.0038
	max =	0.0000	0.0012	0.0015	0.0019	0.0023	0.0025	0.0029	0.0032	0.0033	0.0035	0.0039	0.0042	0.0051	0.0052	0.0053

Disclaimer

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Company Information

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

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

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

Projected L₇₅ extrapolations per IESNA TM-21-11

	If = 65mA	If = 100mA	If = 120mA	If = 150mA	If = 180mA
Ts = 115°C	-	-	93,850	-	72,815
Ts = 105°C	124,048	-	104,221	98,637	-
Ts = 85°C	-	114,807	-	-	-
Ts = 55°C	147,855	-	-	-	-

Projected L₈₀ extrapolations per IESNA TM-21-11

	If = 65mA	If = 100mA	If = 120mA	If = 150mA	If = 180mA
Ts = 115°C	-	-	73,012	-	56,706
Ts = 105°C	97,010	-	81,205	76,426	-
Ts = 85°C	-	89,494	-	-	-
Ts = 55°C	115,803	-	-	-	-

Projected L₈₅ extrapolations per IESNA TM-21-11

	If = 65mA	If = 100mA	If = 120mA	If = 150mA	If = 180mA
Ts = 115°C	-	-	53,438	-	41,575
Ts = 105°C	71,612	-	59,584	55,562	-
Ts = 85°C	-	65,716	-	-	-
Ts = 55°C	85,695	-	-	-	-

Projected L₉₀ extrapolations per IESNA TM-21-11

	If = 65mA	If = 100mA	If = 120mA	If = 150mA	If = 180mA
Ts = 115°C	-	-	34,983	-	27,308
Ts = 105°C	47,666	-	39,199	35,892	-
Ts = 85°C	-	43,297	-	-	-
Ts = 55°C	57,309	-	-	-	-