NICHIA

Report No. : SQETMSO39001

LM-80 Test Report

This LM-80 testing is performed in accordance with IES LM-80-15.

Part No. NFSW757H

Issue Date:	March 30, 2020	**Revision Date:**	-
Test Initiation Date:	December 19, 2018	**Test Completion Date:**	March 16, 2020
Test Duration:	10,000 hours	**Report No.:**	SQETMSO39001

Customer Information:

Company Name: Nichia Corporation
Address: 491-100, Oka, Kaminaka-cho, Anan-shi, Tokushima, 774-8601, JAPAN

Description of Test Samples:

Manufacturer's Name: Nichia Corporation
Classification: LED Package
Part Name: White LED
Part No.: NFSW757H
Nominal CCT: 2700 K

Test Summary:

Data Set	Case Temperature [°C]	Ambient Temperature [°C]	Drive Current [mA]	Luminous Flux Maintenance at 10K hours [%]	Chromaticity Shift (Δu'v') at 10K hours	TM-21 Projection L_{70}(10K) [hours]	TM-21 Projection L_{80}(10K) [hours]	TM-21 Projection L_{90}(10K) [hours]
1	55	> 50	80	98.3	0.0012	> 60000	> 60000	> 60000
2	55	> 50	125	98.1	0.0014	> 60000	> 60000	> 60000
3	55	> 50	150	97.9	0.0015	> 60000	> 60000	57600
4	55	> 50	180	98.0	0.0016	> 60000	> 60000	56900
5	85	> 80	80	98.0	0.0010	> 60000	> 60000	> 60000
6	85	> 80	125	97.6	0.0012	> 60000	> 60000	54600
7	85	> 80	150	97.4	0.0013	> 60000	> 60000	50200
8	85	> 80	180	97.2	0.0015	> 60000	> 60000	45700
9	105	> 100	80	96.1	0.0012	> 60000	> 60000	28800
10	105	> 100	125	95.6	0.0014	> 60000	> 60000	27700
11	105	> 100	150	95.6	0.0016	> 60000	> 60000	28500
12	105	> 100	180	95.3	0.0026	> 60000	> 60000	26600

ilac-MRA

International Accreditation Japan
IAJapan
Accredited
ASNITE 0057 Testing

Approved Signatory:

H. Hashimoto

Hiroyuki HASHIMOTO, Lab Manager

Nichia Corporation LED Testing Laboratory

1-1,Tatsumi-Cho, Anan-Shi, TOKUSHIMA 774-0001, JAPAN

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Applicable Part Nos.:

This LM-80 test report applies to the following parts:

Series	Part No.	Case Temperature [°C]	Forward Current [mA]	Nominal CCT * [K]	Data Set No.
757	NFSW757H NFSW757HT	55	80	≥ 2200	1
		55	125	≥ 2200	2
		55	150	≥ 2200	3
		55	180	≥ 2200	4
		85	80	≥ 2200	5
		85	125	≥ 2200	6
		85	150	≥ 2200	7
		85	180	≥ 2200	8
		105	80	≥ 2200	9
		105	125	≥ 2200	10
		105	150	≥ 2200	11
		105	180	≥ 2200	12

* The Nominal CCT category in this document refers ENERGY STAR® Requirements for the Use of LM-80 Data.

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IES LM-80 Test Report Requirement :

1. Number of LED light sources tested	See tables
2. Description of LED light sources	See Description of Test Samples
3. Description of auxiliary equipment	
Active cooling life test system	Consisting of small boxes, in which each box contains a reliability test board, and a water-cooled heat sink or a heater to control device temperature
LED Tester	Consisting of an integrating sphere, a programmable current-source meter, and a spectroradiometer
4. Operating cycle	Constant direct current (DC)
5. Ambient conditions	
Ambient Temperature (T_A)	See tables Ambient temperature is the temperature of the air at a distance of 1.5 mm above the reliability test board
Air flow	< 0.1 m/s
Relative Humidity	< 65 %
6. Case temperature (Test point temperature)	See tables For the case temperature (T_S) measurement point, see the figure 1

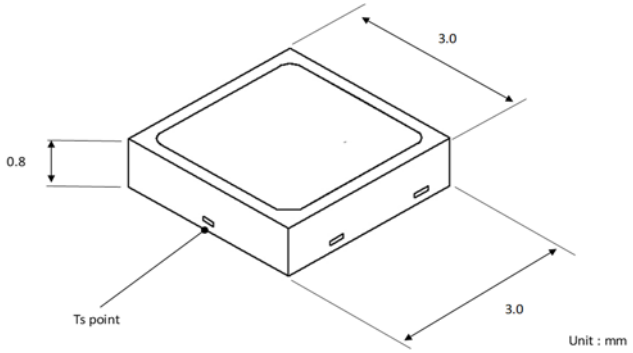

Figure 1: The case temperature (Ts) measurement point

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7. Drive current of the LED light sources during lifetime test	See tables
8. Initial luminous flux,forward voltage and chromaticity coordinates	See tables
9. Luminous flux maintenance data for each individual LED light source along with average value,median value, standard deviation, minimum and maximum luminous flux maintenance value for all of the LED light sources	See tables
10. Observation of LED light sources failures including the failure conditions and time of failure	No failure observed
11. LED light source monitoring interval	See tables
12. Photometric measurement uncertainty	
Luminous Flux	2.0 % (*k* =2)
Chromaticity	0.002 (*k* =2)
13. Chromaticity shift reported over the measurement time	See tables
14. Photometric and electrical measurements	
Measurement point temperature	25°C ± 2°C
Temperature measurement point location	Sphere ambient air temperature monitor
Measurement method	See LM-85-14 section 5.3

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ENERGY STAR® LM-80 Cover Sheet

Administrative Information

Tested subcomponent series :	White LED
Tested subcomponent Part No. :	NFSW757H
Report issue date :	March 30, 2020
Report revision date :	-
Testing start date :	December 19, 2018
Testing completion date :	March 16, 2020
LED sampling method :	Comply with LM-80
LED sample size :	25 Packages

LED Identification

LED manufacturer's name :	Nichia Corporation
LED Part No. :	NFSW757H
Description of LED :	LED Package

LED Characteristics

Total input power (W) :

Average current density per LED die (mA/mm^2):

Average power density per LED die (W/mm^2):

Case Temperature [°C]	Drive Current [mA]	Total Input Power [W]	Average Current density per LED die [mA/mm^2]	Average Power density per LED die [W/mm^2]
55	80	0.23	163	0.48
55	125	0.38	255	0.78
55	150	0.47	306	0.96
55	180	0.58	367	1.18
85	80	0.23	163	0.48
85	125	0.38	255	0.78
85	150	0.47	306	0.96
85	180	0.58	367	1.18
105	80	0.23	163	0.48
105	125	0.38	255	0.78
105	150	0.47	306	0.96
105	180	0.58	367	1.19

Representative CRI (Ra) of the tested sample set :	Ra = 83.6
Minimum die edge to die edge spacing :	N/A

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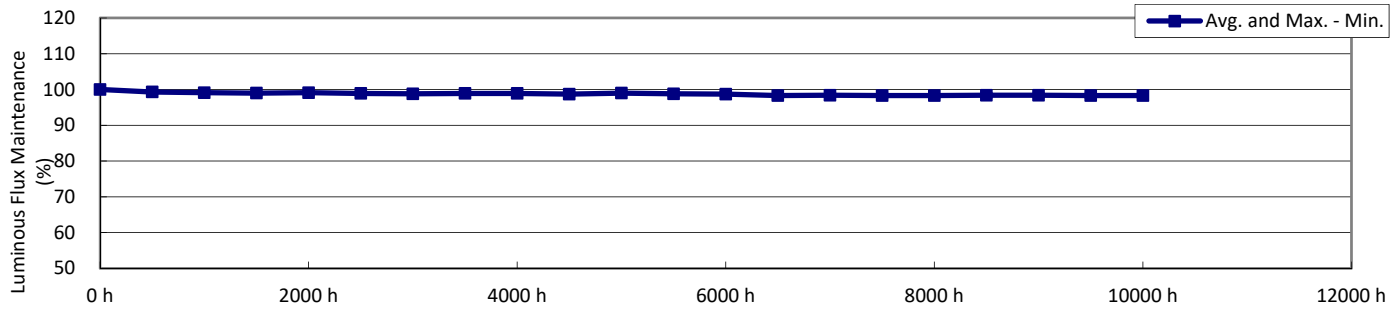
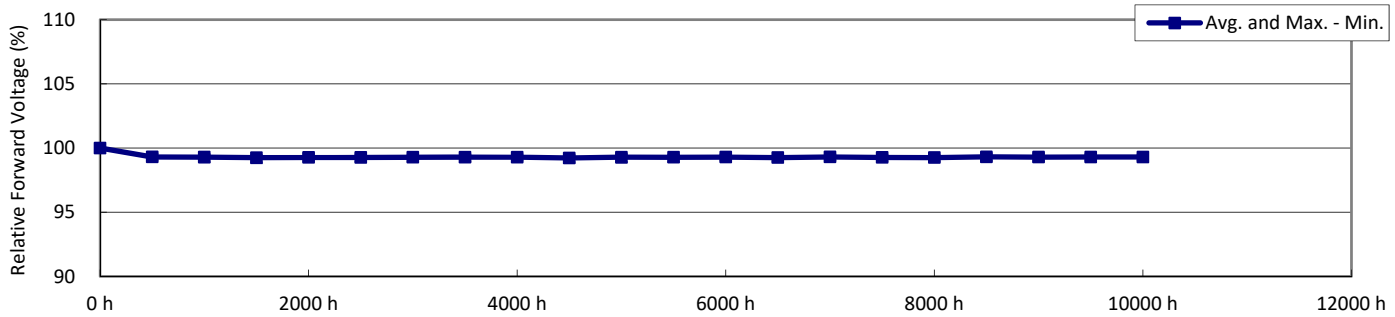
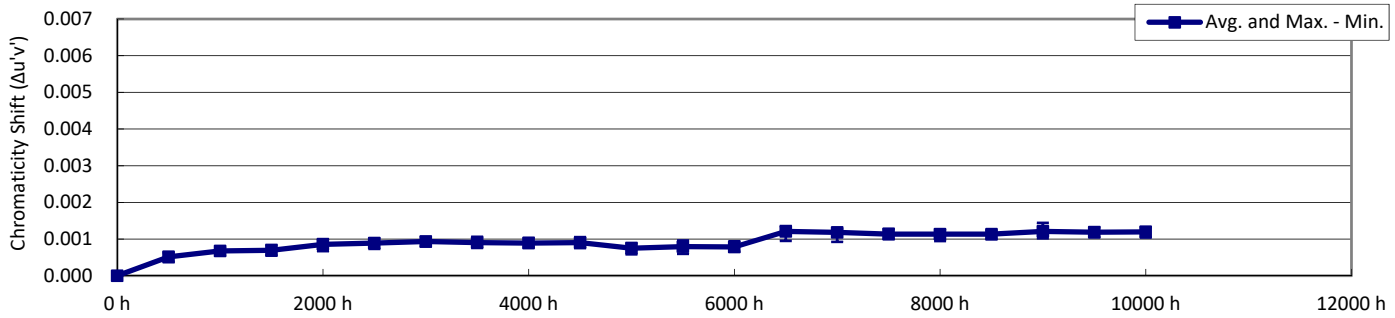
Data Set 1 : 55 °C, 80 mA

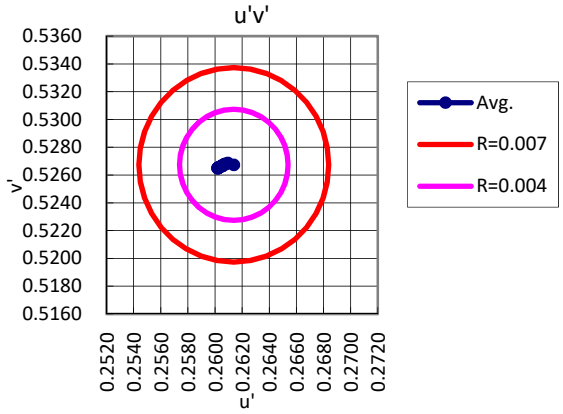
Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 1 : 55 °C, 80 mA

Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 1-1
Initial Characteristics

LED No.	Luminous flux	Forward voltage	CCT	Input Power	CIE1931		CIE1976							
	Φ_V [lm]	V_F [V]	T_{CP} [K]	P [W]	x	y	u'	v'						
1	40.1	2.93	2761	0.23	0.454	0.407	0.260	0.525						
2	39.9	2.91	2646	0.23	0.468	0.417	0.264	0.531						
3	40.3	2.92	2717	0.23	0.462	0.416	0.261	0.530						
4	39.7	2.91	2685	0.23	0.459	0.407	0.264	0.526						
5	40.6	2.92	2809	0.23	0.451	0.409	0.258	0.525						
6	40.1	2.91	2719	0.23	0.460	0.412	0.261	0.528						
7	39.9	2.91	2658	0.23	0.464	0.412	0.264	0.529						
8	40.3	2.93	2748	0.23	0.456	0.410	0.260	0.527						
9	40.2	2.93	2819	0.23	0.449	0.405	0.258	0.524						
10	39.9	2.90	2692	0.23	0.460	0.409	0.263	0.527						
11	40.0	2.92	2707	0.23	0.459	0.411	0.262	0.527						
12	40.9	2.92	2808	0.23	0.456	0.417	0.257	0.529						
13	39.7	2.91	2720	0.23	0.454	0.403	0.262	0.524						
14	40.3	2.91	2685	0.23	0.464	0.416	0.263	0.530						
15	39.8	2.91	2744	0.23	0.450	0.399	0.262	0.521						
16	39.5	2.92	2690	0.23	0.456	0.403	0.264	0.524						
17	39.7	2.90	2751	0.23	0.451	0.401	0.261	0.522						
18	39.9	2.90	2647	0.23	0.466	0.415	0.265	0.530						
19	40.7	2.93	2822	0.23	0.451	0.410	0.257	0.526						
20	40.5	2.92	2794	0.23	0.453	0.410	0.258	0.526						
21	40.4	2.92	2770	0.23	0.455	0.410	0.259	0.526						
22	39.6	2.90	2638	0.23	0.463	0.408	0.266	0.527						
23	39.5	2.93	2618	0.23	0.466	0.412	0.266	0.529						
24	40.9	2.93	2787	0.23	0.456	0.414	0.258	0.528						
25	40.5	2.92	2808	0.23	0.451	0.408	0.258	0.525						
n	25	25	25	25	25	25	25	25						
Avg.	40.1	2.92	2730	0.23	0.457	0.410	0.261	0.527						
Med.	40.1	2.92	2720	0.23	0.456	0.410	0.261	0.527						
σ	0.40	0.009	62.4	0.001	0.0056	0.0049	0.0028	0.0025						
Min.	39.5	2.90	2618	0.23	0.449	0.399	0.257	0.521						
Max.	40.9	2.93	2822	0.23	0.468	0.417	0.266	0.531						

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Data Set 1 : 55 °C, 80 mA

Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 1-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.3	99.3	99.0	99.2	98.9	98.7	98.9	98.9	98.8	99.0	98.8	98.9	98.3	98.4	98.5	98.3	98.5
2	100.0	99.4	99.4	99.2	99.3	99.2	99.0	99.2	99.2	99.1	99.4	99.2	99.3	98.8	98.9	98.9	98.6	98.9
3	100.0	99.3	99.2	99.0	99.1	98.9	98.9	99.0	99.0	98.8	99.1	98.9	98.9	98.5	98.6	98.6	98.4	98.7
4	100.0	99.2	99.1	99.0	99.1	98.8	98.8	98.8	98.8	98.7	98.9	98.7	98.8	98.3	98.3	98.4	98.2	98.5
5	100.0	99.2	99.3	99.0	99.1	98.8	98.6	98.7	98.6	98.5	98.9	98.4	98.5	98.1	98.2	97.9	97.9	98.0
6	100.0	99.4	99.3	99.2	99.3	99.1	99.0	99.1	99.1	99.0	99.2	99.1	99.0	98.6	98.6	98.6	98.5	98.8
7	100.0	99.1	98.9	98.9	99.0	98.7	98.7	98.7	98.7	98.6	98.8	98.7	98.6	98.1	98.3	98.1	98.1	98.2
8	100.0	99.4	99.4	99.2	99.3	99.2	99.2	99.2	99.2	99.1	99.3	99.1	99.0	98.6	98.7	98.7	98.6	98.8
9	100.0	99.5	99.3	99.2	99.3	99.2	99.2	99.1	99.2	99.1	99.3	99.1	99.1	98.7	98.8	98.7	98.6	98.8
10	100.0	99.1	99.0	98.9	98.9	98.9	98.9	98.8	98.9	98.7	99.0	98.9	98.7	98.3	98.4	98.3	98.3	98.5
11	100.0	99.4	99.2	99.1	99.1	98.9	99.0	99.0	99.0	98.8	99.2	98.8	98.9	98.3	98.5	98.2	98.2	98.4
12	100.0	99.4	99.3	99.2	99.4	99.1	99.1	99.0	99.2	99.0	99.3	99.1	99.1	98.6	98.8	98.6	98.6	98.9
13	100.0	99.0	98.9	98.7	98.8	98.6	98.6	98.7	98.7	98.6	98.8	98.6	98.5	98.2	98.3	98.2	98.2	98.2
14	100.0	99.1	99.0	98.9	99.0	98.8	98.7	98.8	98.8	98.6	98.9	98.7	98.7	98.3	98.5	98.3	98.2	98.3
15	100.0	99.1	98.9	98.8	98.9	98.7	98.6	98.9	98.8	98.6	98.9	98.7	98.7	98.3	98.4	98.3	98.2	98.3
16	100.0	99.2	99.1	98.9	99.0	98.9	98.8	99.0	98.9	98.7	99.1	98.7	98.7	98.3	98.4	98.3	98.3	98.5
17	100.0	99.1	98.9	98.9	98.8	98.7	98.6	98.8	98.6	98.4	98.7	98.4	98.4	98.0	98.1	97.7	97.8	97.8
18	100.0	98.9	98.8	98.5	98.7	98.5	98.4	98.6	98.5	98.3	98.6	98.3	98.4	97.9	98.2	98.0	97.9	98.1
19	100.0	99.1	98.9	98.7	98.9	98.7	98.4	98.8	98.7	98.5	98.8	98.6	98.5	98.1	98.2	98.1	98.0	98.2
20	100.0	99.4	99.2	99.0	99.2	99.0	98.8	98.9	98.9	98.7	99.0	98.8	98.7	98.3	98.4	98.4	98.3	98.4
21	100.0	99.2	99.0	98.9	99.1	98.9	98.8	98.9	98.8	98.8	99.1	98.9	98.8	98.3	98.4	98.5	98.4	98.5
22	100.0	99.2	98.9	98.8	99.0	98.7	98.5	98.7	98.6	98.5	98.8	98.6	98.5	98.1	98.3	98.2	98.3	98.4
23	100.0	99.5	99.2	99.0	99.1	99.0	98.7	98.8	98.8	98.5	99.0	98.7	98.6	98.1	98.3	98.0	98.0	98.1
24	100.0	99.5	99.3	99.1	99.2	99.0	98.9	99.1	99.0	98.8	99.2	98.9	98.9	98.4	98.5	98.5	98.5	98.7
25	100.0	99.3	99.0	98.9	99.0	98.8	98.6	98.7	98.7	98.5	98.7	98.5	98.4	98.0	98.1	98.0	97.9	98.1
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.3	99.1	99.0	99.1	98.9	98.8	98.9	98.9	98.7	99.0	98.8	98.7	98.3	98.4	98.3	98.3	98.4
Med.	100.0	99.2	99.1	99.0	99.1	98.9	98.8	98.9	98.8	98.7	99.0	98.7	98.7	98.3	98.4	98.3	98.3	98.4
σ	0.00	0.17	0.19	0.18	0.18	0.19	0.22	0.17	0.21	0.22	0.22	0.24	0.25	0.23	0.21	0.29	0.24	0.30
Min.	100.0	98.9	98.8	98.5	98.7	98.5	98.4	98.6	98.5	98.3	98.6	98.3	98.4	97.9	98.1	97.7	97.8	97.8
Max.	100.0	99.5	99.4	99.2	99.4	99.2	99.2	99.2	99.2	99.1	99.4	99.2	99.3	98.8	98.9	98.9	98.6	98.9

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0101	-0.0121	-0.0131	-0.0171	-0.0161	-0.0171	-0.0171	-0.0161	-0.0161	-0.0171	-0.0171							

Test duration used	5000 h to 10000 h	
B	0.993	
α	1.14E-06	
R^2	0.600	
Calculated L_{70} (10K)	307000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	190000	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	86300	hours
Reported L_{90} (10K)	> 60000	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 1 : 55 °C, 80 mA

Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 1-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	98.3	98.4	98.4															
2	98.8	98.8	98.8															
3	98.5	98.5	98.6															
4	98.3	98.3	98.3															
5	97.9	97.9	97.8															
6	98.6	98.6	98.6															
7	98.3	98.2	98.1															
8	98.8	98.6	98.7															
9	98.7	98.7	98.7															
10	98.5	98.3	98.4															
11	98.4	98.1	98.4															
12	98.8	98.7	98.7															
13	98.3	98.1	98.2															
14	98.3	98.3	98.3															
15	98.4	98.3	98.3															
16	98.5	98.4	98.3															
17	98.0	97.7	97.7															
18	98.1	98.0	98.0															
19	98.0	98.0	98.0															
20	98.3	98.2	98.3															
21	98.4	98.4	98.4															
22	98.2	98.1	98.2															
23	98.1	97.9	98.0															
24	98.5	98.4	98.5															
25	98.0	98.0	97.9															
n	25	25	25															
Avg.	98.4	98.3	98.3															
Med.	98.3	98.3	98.3															
σ	0.26	0.28	0.30															
Min.	97.9	97.7	97.7															
Max.	98.8	98.8	98.8															

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Data Set 1 : 55 °C, 80 mA

Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 1-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.2	99.2	99.2	99.1	99.2	99.0	99.2	99.1	99.1	99.2	99.3	99.1	99.2	99.2	99.1	99.1	99.3
2	100.0	99.3	99.3	99.4	99.3	99.3	99.2	99.4	99.3	99.3	99.4	99.3	99.4	99.3	99.4	99.4	99.4	99.4
3	100.0	99.3	99.3	99.3	99.2	99.4	99.3	99.3	99.3	99.2	99.3	99.4	99.3	99.2	99.3	99.3	99.3	99.2
4	100.0	99.4	99.4	99.4	99.3	99.3	99.4	99.4	99.3	99.4	99.5	99.4	99.4	99.4	99.4	99.4	99.3	99.4
5	100.0	99.2	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.1	99.3	99.1	99.2	99.2	99.1	99.2	99.2
6	100.0	99.2	99.2	99.2	99.3	99.2	99.4	99.2	99.3	99.1	99.3	99.3	99.2	99.3	99.3	99.3	99.3	99.3
7	100.0	99.2	99.3	99.2	99.2	99.2	99.3	99.3	99.3	99.2	99.2	99.3	99.3	99.2	99.2	99.3	99.2	99.3
8	100.0	99.1	99.0	98.9	99.1	99.0	99.1	99.1	99.0	99.0	99.1	99.1	99.1	99.1	99.1	99.0	99.1	99.1
9	100.0	99.2	99.1	99.2	99.1	99.1	99.2	99.2	99.1	99.1	99.2	99.0	99.2	99.1	99.2	99.1	99.1	99.1
10	100.0	99.5	99.5	99.4	99.6	99.5	99.5	99.5	99.5	99.5	99.5	99.4	99.5	99.4	99.5	99.5	99.4	99.5
11	100.0	99.3	99.3	99.3	99.4	99.3	99.4	99.4	99.5	99.3	99.3	99.3	99.3	99.4	99.3	99.3	99.2	99.3
12	100.0	99.3	99.2	99.3	99.3	99.3	99.3	99.2	99.2	99.2	99.2	99.3	99.3	99.2	99.2	99.2	99.2	99.3
13	100.0	99.3	99.3	99.2	99.2	99.3	99.4	99.3	99.3	99.2	99.3	99.2	99.3	99.2	99.3	99.2	99.2	99.3
14	100.0	99.4	99.4	99.3	99.3	99.4	99.4	99.3	99.5	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.3	99.3
15	100.0	99.4	99.5	99.4	99.4	99.3	99.4	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.4
16	100.0	99.4	99.4	99.3	99.4	99.3	99.4	99.3	99.4	99.3	99.5	99.4	99.5	99.3	99.4	99.4	99.4	99.4
17	100.0	99.2	99.4	99.2	99.2	99.1	99.1	99.2	99.2	99.1	99.3	99.2	99.2	99.2	99.3	99.2	99.2	99.3
18	100.0	99.4	99.4	99.3	99.4	99.4	99.3	99.4	99.4	99.4	99.4	99.4	99.3	99.3	99.4	99.4	99.4	99.4
19	100.0	99.4	99.3	99.4	99.4	99.3	99.4	99.4	99.4	99.3	99.3	99.4	99.4	99.4	99.4	99.3	99.4	99.6
20	100.0	99.3	99.3	99.2	99.2	99.2	99.1	99.2	99.3	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.3
21	100.0	99.5	99.4	99.4	99.4	99.4	99.4	99.4	99.5	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.3	99.4
22	100.0	99.4	99.4	99.4	99.5	99.4	99.3	99.5	99.4	99.4	99.5	99.3	99.4	99.4	99.5	99.4	99.4	99.3
23	100.0	99.1	99.1	99.1	99.1	99.1	99.2	99.2	99.2	99.0	99.1	99.1	99.1	99.0	99.1	99.1	99.1	99.2
24	100.0	99.0	98.9	99.0	99.0	98.9	98.9	99.0	99.0	98.9	98.9	98.9	99.0	98.9	99.0	99.0	99.0	99.0
25	100.0	99.5	99.4	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.3	99.4	99.3
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.2	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3
Med.	100.0	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.2	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3
σ	0.00	0.13	0.14	0.14	0.14	0.13	0.14	0.13	0.14	0.15	0.14	0.13	0.12	0.13	0.13	0.13	0.12	0.13
Min.	100.0	99.0	98.9	98.9	99.0	98.9	98.9	99.0	99.0	98.9	98.9	98.9	99.0	98.9	99.0	99.0	99.0	99.0
Max.	100.0	99.5	99.5	99.4	99.6	99.5	99.5	99.5	99.5	99.5	99.5	99.4	99.5	99.4	99.5	99.5	99.4	99.6

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Data Set 1 : 55 °C, 80 mA

Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 1-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	99.2	99.2	99.2															
2	99.3	99.4	99.3															
3	99.4	99.3	99.3															
4	99.4	99.4	99.3															
5	99.2	99.2	99.2															
6	99.3	99.3	99.3															
7	99.2	99.3	99.2															
8	99.1	99.1	99.1															
9	99.2	99.1	99.2															
10	99.5	99.5	99.5															
11	99.4	99.3	99.3															
12	99.2	99.3	99.3															
13	99.3	99.3	99.3															
14	99.6	99.4	99.4															
15	99.4	99.4	99.3															
16	99.4	99.4	99.4															
17	99.2	99.2	99.3															
18	99.4	99.4	99.4															
19	99.3	99.4	99.4															
20	99.2	99.2	99.2															
21	99.4	99.4	99.4															
22	99.4	99.4	99.4															
23	99.2	99.1	99.2															
24	99.0	99.0	99.0															
25	99.4	99.4	99.3															
n	25	25	25															
Avg.	99.3	99.3	99.3															
Med.	99.3	99.3	99.3															
σ	0.13	0.13	0.11															
Min.	99.0	99.0	99.0															
Max.	99.6	99.5	99.5															

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Data Set 1 : 55 °C, 80 mA

Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 1-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0005	0.0006	0.0007	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0012	0.0012	0.0012	0.0012	0.0011
2	0.0000	0.0006	0.0008	0.0008	0.0009	0.0010	0.0010	0.0010	0.0010	0.0011	0.0008	0.0010	0.0009	0.0013	0.0013	0.0012	0.0011	0.0012
3	0.0000	0.0006	0.0006	0.0006	0.0007	0.0008	0.0009	0.0008	0.0008	0.0009	0.0007	0.0007	0.0007	0.0011	0.0011	0.0010	0.0011	0.0012
4	0.0000	0.0006	0.0008	0.0007	0.0010	0.0009	0.0010	0.0010	0.0009	0.0009	0.0008	0.0009	0.0009	0.0013	0.0013	0.0012	0.0012	0.0012
5	0.0000	0.0005	0.0007	0.0008	0.0010	0.0008	0.0008	0.0008	0.0008	0.0008	0.0006	0.0006	0.0007	0.0010	0.0009	0.0010	0.0009	0.0010
6	0.0000	0.0005	0.0006	0.0006	0.0008	0.0008	0.0008	0.0009	0.0008	0.0008	0.0006	0.0008	0.0007	0.0011	0.0012	0.0011	0.0011	0.0011
7	0.0000	0.0005	0.0007	0.0007	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0008	0.0008	0.0008	0.0013	0.0013	0.0013	0.0012	0.0012
8	0.0000	0.0005	0.0006	0.0006	0.0008	0.0007	0.0009	0.0008	0.0009	0.0009	0.0007	0.0007	0.0008	0.0012	0.0010	0.0011	0.0011	0.0010
9	0.0000	0.0005	0.0006	0.0006	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007	0.0011	0.0011	0.0010	0.0010	0.0011
10	0.0000	0.0006	0.0007	0.0007	0.0008	0.0010	0.0010	0.0009	0.0010	0.0009	0.0008	0.0008	0.0007	0.0012	0.0012	0.0011	0.0011	0.0011
11	0.0000	0.0006	0.0007	0.0008	0.0009	0.0010	0.0009	0.0010	0.0008	0.0010	0.0008	0.0007	0.0008	0.0011	0.0012	0.0011	0.0012	0.0012
12	0.0000	0.0006	0.0007	0.0007	0.0009	0.0008	0.0010	0.0008	0.0009	0.0009	0.0007	0.0008	0.0008	0.0011	0.0012	0.0010	0.0011	0.0012
13	0.0000	0.0005	0.0008	0.0008	0.0009	0.0010	0.0011	0.0011	0.0010	0.0010	0.0008	0.0009	0.0009	0.0014	0.0012	0.0012	0.0012	0.0012
14	0.0000	0.0005	0.0007	0.0007	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0007	0.0008	0.0007	0.0012	0.0012	0.0010	0.0011	0.0011
15	0.0000	0.0004	0.0006	0.0006	0.0008	0.0009	0.0009	0.0009	0.0008	0.0009	0.0007	0.0008	0.0008	0.0012	0.0012	0.0010	0.0011	0.0011
16	0.0000	0.0006	0.0008	0.0008	0.0010	0.0010	0.0009	0.0010	0.0009	0.0010	0.0009	0.0008	0.0008	0.0013	0.0012	0.0012	0.0012	0.0012
17	0.0000	0.0006	0.0007	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0013	0.0013	0.0012	0.0012	0.0012
18	0.0000	0.0005	0.0007	0.0007	0.0009	0.0009	0.0010	0.0009	0.0008	0.0009	0.0009	0.0008	0.0008	0.0013	0.0012	0.0012	0.0012	0.0012
19	0.0000	0.0004	0.0006	0.0006	0.0008	0.0008	0.0008	0.0009	0.0008	0.0009	0.0008	0.0008	0.0008	0.0013	0.0013	0.0012	0.0012	0.0012
20	0.0000	0.0005	0.0007	0.0007	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0007	0.0008	0.0008	0.0013	0.0012	0.0012	0.0011	0.0011
21	0.0000	0.0005	0.0007	0.0007	0.0008	0.0010	0.0010	0.0009	0.0009	0.0009	0.0007	0.0007	0.0008	0.0012	0.0011	0.0011	0.0012	0.0011
22	0.0000	0.0006	0.0007	0.0007	0.0010	0.0009	0.0010	0.0010	0.0009	0.0009	0.0007	0.0009	0.0008	0.0013	0.0012	0.0012	0.0012	0.0011
23	0.0000	0.0005	0.0007	0.0007	0.0009	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0012	0.0012	0.0012	0.0011	0.0011
24	0.0000	0.0005	0.0006	0.0006	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0007	0.0008	0.0007	0.0011	0.0012	0.0010	0.0010	0.0011
25	0.0000	0.0005	0.0007	0.0007	0.0009	0.0010	0.0010	0.0009	0.0009	0.0010	0.0007	0.0008	0.0008	0.0013	0.0012	0.0012	0.0012	0.0012
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0005	0.0007	0.0007	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0012	0.0012	0.0011	0.0011	0.0011
Med.	0.0000	0.0005	0.0007	0.0007	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0007	0.0008	0.0008	0.0012	0.0012	0.0012	0.0011	0.0011
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0004	0.0006	0.0006	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0006	0.0006	0.0007	0.0010	0.0009	0.0010	0.0009	0.0010
Max.	0.0000	0.0006	0.0008	0.0008	0.0010	0.0010	0.0011	0.0011	0.0010	0.0011	0.0009	0.0010	0.0009	0.0014	0.0013	0.0013	0.0012	0.0012

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Data Set 1 : 55 °C, 80 mA

Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 1-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0012	0.0012	0.0012															
2	0.0012	0.0013	0.0012															
3	0.0011	0.0011	0.0011															
4	0.0012	0.0013	0.0013															
5	0.0010	0.0011	0.0011															
6	0.0011	0.0011	0.0012															
7	0.0013	0.0013	0.0013															
8	0.0011	0.0011	0.0010															
9	0.0011	0.0011	0.0011															
10	0.0012	0.0012	0.0013															
11	0.0013	0.0011	0.0012															
12	0.0012	0.0011	0.0012															
13	0.0013	0.0013	0.0013															
14	0.0012	0.0011	0.0011															
15	0.0012	0.0012	0.0012															
16	0.0013	0.0012	0.0012															
17	0.0014	0.0013	0.0013															
18	0.0012	0.0012	0.0011															
19	0.0013	0.0013	0.0013															
20	0.0013	0.0012	0.0012															
21	0.0012	0.0011	0.0012															
22	0.0012	0.0012	0.0013															
23	0.0012	0.0012	0.0013															
24	0.0012	0.0011	0.0011															
25	0.0014	0.0013	0.0013															
n	25	25	25															
Avg.	0.0012	0.0012	0.0012															
Med.	0.0012	0.0012	0.0012															
σ	0.0001	0.0001	0.0001															
Min.	0.0010	0.0011	0.0010															
Max.	0.0014	0.0013	0.0013															

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Data Set 1 : 55 °C, 80 mA

Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 1-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2604	0.2600	0.2599	0.2597	0.2596	0.2596	0.2596	0.2596	0.2595	0.2596	0.2597	0.2596	0.2597	0.2593	0.2593	0.2593	0.2593	0.2594
2	0.2649	0.2643	0.2641	0.2641	0.2640	0.2639	0.2639	0.2639	0.2639	0.2638	0.2641	0.2639	0.2640	0.2636	0.2636	0.2637	0.2638	0.2637
3	0.2617	0.2611	0.2611	0.2611	0.2610	0.2609	0.2608	0.2608	0.2609	0.2608	0.2610	0.2610	0.2609	0.2606	0.2606	0.2606	0.2605	0.2605
4	0.2644	0.2638	0.2636	0.2637	0.2634	0.2635	0.2634	0.2634	0.2635	0.2635	0.2636	0.2635	0.2635	0.2631	0.2632	0.2632	0.2632	0.2633
5	0.2610	0.2605	0.2602	0.2602	0.2600	0.2601	0.2602	0.2602	0.2602	0.2602	0.2604	0.2604	0.2603	0.2600	0.2600	0.2599	0.2600	0.2600
6	0.2623	0.2619	0.2617	0.2617	0.2615	0.2615	0.2615	0.2614	0.2615	0.2614	0.2617	0.2615	0.2615	0.2612	0.2611	0.2612	0.2612	0.2612
7	0.2646	0.2642	0.2640	0.2640	0.2637	0.2636	0.2637	0.2636	0.2637	0.2637	0.2638	0.2638	0.2638	0.2634	0.2634	0.2634	0.2634	0.2634
8	0.2607	0.2602	0.2600	0.2601	0.2598	0.2599	0.2598	0.2599	0.2598	0.2598	0.2599	0.2600	0.2599	0.2595	0.2597	0.2596	0.2596	0.2596
9	0.2582	0.2577	0.2576	0.2576	0.2575	0.2574	0.2573	0.2574	0.2574	0.2573	0.2575	0.2574	0.2575	0.2570	0.2571	0.2572	0.2572	0.2571
10	0.2637	0.2631	0.2631	0.2630	0.2629	0.2628	0.2628	0.2629	0.2628	0.2629	0.2630	0.2629	0.2630	0.2626	0.2626	0.2627	0.2626	0.2626
11	0.2650	0.2643	0.2642	0.2642	0.2641	0.2640	0.2640	0.2640	0.2641	0.2640	0.2641	0.2642	0.2642	0.2638	0.2638	0.2638	0.2637	0.2637
12	0.2578	0.2573	0.2571	0.2571	0.2570	0.2570	0.2569	0.2570	0.2569	0.2569	0.2571	0.2570	0.2571	0.2567	0.2566	0.2568	0.2568	0.2567
13	0.2627	0.2622	0.2619	0.2619	0.2618	0.2617	0.2616	0.2617	0.2617	0.2617	0.2618	0.2618	0.2618	0.2614	0.2615	0.2615	0.2616	0.2616
14	0.2630	0.2625	0.2623	0.2623	0.2622	0.2621	0.2621	0.2621	0.2621	0.2622	0.2623	0.2622	0.2623	0.2618	0.2619	0.2620	0.2619	0.2619
15	0.2620	0.2616	0.2614	0.2614	0.2612	0.2611	0.2611	0.2611	0.2612	0.2611	0.2613	0.2612	0.2612	0.2608	0.2608	0.2610	0.2609	0.2609
16	0.2646	0.2639	0.2638	0.2638	0.2636	0.2636	0.2636	0.2636	0.2636	0.2636	0.2637	0.2637	0.2638	0.2633	0.2634	0.2634	0.2634	0.2634
17	0.2640	0.2634	0.2633	0.2632	0.2632	0.2630	0.2631	0.2631	0.2631	0.2631	0.2632	0.2632	0.2632	0.2627	0.2627	0.2628	0.2628	0.2628
18	0.2654	0.2649	0.2647	0.2648	0.2646	0.2646	0.2645	0.2645	0.2646	0.2646	0.2646	0.2646	0.2646	0.2642	0.2642	0.2643	0.2642	0.2643
19	0.2575	0.2571	0.2569	0.2569	0.2567	0.2567	0.2566	0.2566	0.2567	0.2566	0.2567	0.2567	0.2566	0.2562	0.2562	0.2563	0.2564	0.2563
20	0.2587	0.2582	0.2580	0.2580	0.2579	0.2578	0.2578	0.2578	0.2578	0.2578	0.2580	0.2579	0.2579	0.2575	0.2575	0.2576	0.2576	0.2576
21	0.2598	0.2592	0.2591	0.2591	0.2589	0.2588	0.2588	0.2588	0.2589	0.2589	0.2591	0.2591	0.2590	0.2586	0.2587	0.2587	0.2586	0.2587
22	0.2664	0.2658	0.2656	0.2657	0.2654	0.2655	0.2654	0.2654	0.2655	0.2654	0.2656	0.2655	0.2656	0.2651	0.2652	0.2652	0.2652	0.2652
23	0.2689	0.2684	0.2682	0.2682	0.2680	0.2680	0.2679	0.2680	0.2680	0.2681	0.2681	0.2681	0.2682	0.2677	0.2677	0.2677	0.2678	0.2679
24	0.2591	0.2587	0.2585	0.2585	0.2583	0.2584	0.2582	0.2582	0.2583	0.2583	0.2584	0.2584	0.2584	0.2580	0.2580	0.2581	0.2581	0.2580
25	0.2583	0.2578	0.2576	0.2576	0.2574	0.2573	0.2573	0.2574	0.2574	0.2574	0.2576	0.2575	0.2575	0.2570	0.2571	0.2571	0.2571	0.2571
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2622	0.2617	0.2615	0.2615	0.2613	0.2613	0.2613	0.2613	0.2613	0.2613	0.2614	0.2614	0.2614	0.2610	0.2610	0.2611	0.2611	0.2611
Med.	0.2623	0.2619	0.2617	0.2617	0.2615	0.2615	0.2615	0.2614	0.2615	0.2614	0.2617	0.2615	0.2615	0.2612	0.2611	0.2612	0.2612	0.2612
σ	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030
Min.	0.2575	0.2571	0.2569	0.2569	0.2567	0.2567	0.2566	0.2566	0.2567	0.2566	0.2567	0.2567	0.2566	0.2562	0.2562	0.2563	0.2564	0.2563
Max.	0.2689	0.2684	0.2682	0.2682	0.2680	0.2680	0.2679	0.2680	0.2680	0.2681	0.2681	0.2681	0.2682	0.2677	0.2677	0.2677	0.2678	0.2679

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Data Set 1 : 55 °C, 80 mA

Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 1-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2593	0.2592	0.2593															
2	0.2637	0.2636	0.2637															
3	0.2606	0.2606	0.2605															
4	0.2632	0.2631	0.2631															
5	0.2599	0.2599	0.2599															
6	0.2612	0.2612	0.2611															
7	0.2634	0.2634	0.2634															
8	0.2596	0.2596	0.2596															
9	0.2571	0.2571	0.2570															
10	0.2626	0.2626	0.2625															
11	0.2637	0.2638	0.2638															
12	0.2567	0.2567	0.2567															
13	0.2614	0.2614	0.2614															
14	0.2618	0.2619	0.2619															
15	0.2608	0.2608	0.2608															
16	0.2633	0.2634	0.2634															
17	0.2627	0.2627	0.2627															
18	0.2642	0.2643	0.2643															
19	0.2562	0.2562	0.2562															
20	0.2575	0.2576	0.2576															
21	0.2586	0.2587	0.2586															
22	0.2652	0.2652	0.2651															
23	0.2678	0.2678	0.2676															
24	0.2579	0.2580	0.2580															
25	0.2569	0.2571	0.2571															
n	25	25	25															
Avg.	0.2610	0.2610	0.2610															
Med.	0.2612	0.2612	0.2611															
σ	0.0030	0.0030	0.0030															
Min.	0.2562	0.2562	0.2562															
Max.	0.2678	0.2678	0.2676															

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Data Set 1 : 55 °C, 80 mA

Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 1-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5247	0.5248	0.5248	0.5247	0.5246	0.5246	0.5245	0.5246	0.5245	0.5246	0.5246	0.5246	0.5247	0.5244	0.5245	0.5244	0.5244	0.5244
2	0.5309	0.5309	0.5309	0.5309	0.5308	0.5308	0.5308	0.5308	0.5308	0.5308	0.5309	0.5309	0.5309	0.5307	0.5307	0.5308	0.5308	0.5307
3	0.5294	0.5295	0.5295	0.5295	0.5294	0.5293	0.5294	0.5294	0.5294	0.5294	0.5295	0.5295	0.5294	0.5293	0.5293	0.5293	0.5293	0.5293
4	0.5259	0.5260	0.5260	0.5260	0.5258	0.5258	0.5259	0.5259	0.5259	0.5259	0.5259	0.5259	0.5259	0.5257	0.5258	0.5257	0.5257	0.5257
5	0.5269	0.5271	0.5270	0.5270	0.5269	0.5269	0.5268	0.5268	0.5269	0.5269	0.5269	0.5270	0.5269	0.5267	0.5268	0.5267	0.5268	0.5267
6	0.5279	0.5281	0.5280	0.5280	0.5279	0.5279	0.5279	0.5279	0.5279	0.5280	0.5280	0.5280	0.5280	0.5278	0.5278	0.5278	0.5278	0.5278
7	0.5285	0.5286	0.5285	0.5285	0.5284	0.5283	0.5283	0.5284	0.5284	0.5283	0.5284	0.5284	0.5284	0.5282	0.5283	0.5282	0.5283	0.5282
8	0.5263	0.5264	0.5264	0.5264	0.5263	0.5263	0.5263	0.5263	0.5263	0.5263	0.5263	0.5264	0.5263	0.5261	0.5261	0.5262	0.5262	0.5262
9	0.5234	0.5234	0.5235	0.5235	0.5234	0.5233	0.5233	0.5234	0.5234	0.5233	0.5234	0.5234	0.5235	0.5232	0.5232	0.5232	0.5233	0.5232
10	0.5266	0.5267	0.5267	0.5267	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5267	0.5267	0.5267	0.5265	0.5265	0.5265	0.5266	0.5265
11	0.5284	0.5285	0.5285	0.5286	0.5284	0.5284	0.5285	0.5284	0.5285	0.5284	0.5284	0.5285	0.5285	0.5283	0.5284	0.5283	0.5284	0.5284
12	0.5294	0.5295	0.5295	0.5295	0.5294	0.5293	0.5293	0.5293	0.5294	0.5294	0.5294	0.5294	0.5295	0.5292	0.5293	0.5292	0.5293	0.5293
13	0.5234	0.5234	0.5234	0.5234	0.5232	0.5232	0.5232	0.5231	0.5232	0.5232	0.5233	0.5233	0.5233	0.5230	0.5231	0.5231	0.5231	0.5230
14	0.5296	0.5296	0.5296	0.5296	0.5295	0.5295	0.5295	0.5295	0.5295	0.5295	0.5296	0.5295	0.5295	0.5294	0.5294	0.5294	0.5294	0.5293
15	0.5209	0.5210	0.5210	0.5210	0.5209	0.5208	0.5208	0.5209	0.5209	0.5208	0.5209	0.5210	0.5209	0.5207	0.5207	0.5207	0.5207	0.5207
16	0.5239	0.5240	0.5240	0.5240	0.5238	0.5238	0.5238	0.5238	0.5238	0.5238	0.5239	0.5239	0.5239	0.5237	0.5237	0.5237	0.5237	0.5237
17	0.5240	0.5240	0.5239	0.5240	0.5238	0.5239	0.5238	0.5239	0.5238	0.5239	0.5239	0.5239	0.5239	0.5236	0.5237	0.5237	0.5237	0.5237
18	0.5297	0.5298	0.5297	0.5298	0.5297	0.5297	0.5296	0.5296	0.5297	0.5297	0.5297	0.5297	0.5297	0.5295	0.5296	0.5295	0.5295	0.5295
19	0.5256	0.5258	0.5258	0.5257	0.5256	0.5256	0.5256	0.5255	0.5255	0.5254	0.5255	0.5255	0.5255	0.5253	0.5253	0.5253	0.5253	0.5253
20	0.5260	0.5261	0.5261	0.5261	0.5259	0.5259	0.5260	0.5259	0.5259	0.5259	0.5260	0.5259	0.5260	0.5258	0.5258	0.5257	0.5258	0.5258
21	0.5262	0.5262	0.5262	0.5263	0.5261	0.5261	0.5261	0.5261	0.5261	0.5262	0.5262	0.5262	0.5262	0.5260	0.5260	0.5260	0.5260	0.5260
22	0.5269	0.5271	0.5270	0.5270	0.5269	0.5269	0.5269	0.5269	0.5268	0.5269	0.5269	0.5269	0.5269	0.5267	0.5267	0.5268	0.5268	0.5268
23	0.5297	0.5299	0.5298	0.5298	0.5297	0.5297	0.5296	0.5297	0.5297	0.5297	0.5297	0.5298	0.5298	0.5296	0.5296	0.5297	0.5296	0.5297
24	0.5282	0.5283	0.5282	0.5282	0.5281	0.5281	0.5281	0.5281	0.5281	0.5281	0.5282	0.5281	0.5281	0.5279	0.5280	0.5280	0.5280	0.5280
25	0.5247	0.5248	0.5247	0.5247	0.5245	0.5245	0.5245	0.5245	0.5245	0.5245	0.5245	0.5245	0.5245	0.5243	0.5243	0.5243	0.5243	0.5243
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5267	0.5268	0.5267	0.5268	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5267	0.5267	0.5267	0.5265	0.5265	0.5265	0.5265	0.5265
Med.	0.5266	0.5267	0.5267	0.5267	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5267	0.5267	0.5267	0.5265	0.5265	0.5265	0.5266	0.5265
σ	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Min.	0.5209	0.5210	0.5210	0.5210	0.5209	0.5208	0.5208	0.5209	0.5209	0.5208	0.5209	0.5210	0.5209	0.5207	0.5207	0.5207	0.5207	0.5207
Max.	0.5309	0.5309	0.5309	0.5309	0.5308	0.5308	0.5308	0.5308	0.5308	0.5308	0.5309	0.5309	0.5309	0.5307	0.5307	0.5308	0.5308	0.5307

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Data Set 1 : 55 °C, 80 mA

Actual Case Temperature [T_S]	55.7 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 1-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5244	0.5244	0.5244															
2	0.5308	0.5307	0.5308															
3	0.5293	0.5292	0.5292															
4	0.5257	0.5257	0.5257															
5	0.5268	0.5267	0.5267															
6	0.5278	0.5278	0.5278															
7	0.5282	0.5282	0.5282															
8	0.5261	0.5261	0.5261															
9	0.5232	0.5232	0.5232															
10	0.5265	0.5264	0.5265															
11	0.5283	0.5283	0.5283															
12	0.5292	0.5292	0.5292															
13	0.5230	0.5230	0.5231															
14	0.5293	0.5293	0.5293															
15	0.5206	0.5206	0.5206															
16	0.5237	0.5237	0.5236															
17	0.5236	0.5236	0.5236															
18	0.5295	0.5295	0.5295															
19	0.5252	0.5253	0.5253															
20	0.5258	0.5258	0.5258															
21	0.5260	0.5260	0.5260															
22	0.5267	0.5267	0.5267															
23	0.5296	0.5297	0.5296															
24	0.5280	0.5280	0.5280															
25	0.5243	0.5243	0.5243															
n	25	25	25															
Avg.	0.5265	0.5265	0.5265															
Med.	0.5265	0.5264	0.5265															
σ	0.0026	0.0026	0.0025															
Min.	0.5206	0.5206	0.5206															
Max.	0.5308	0.5307	0.5308															

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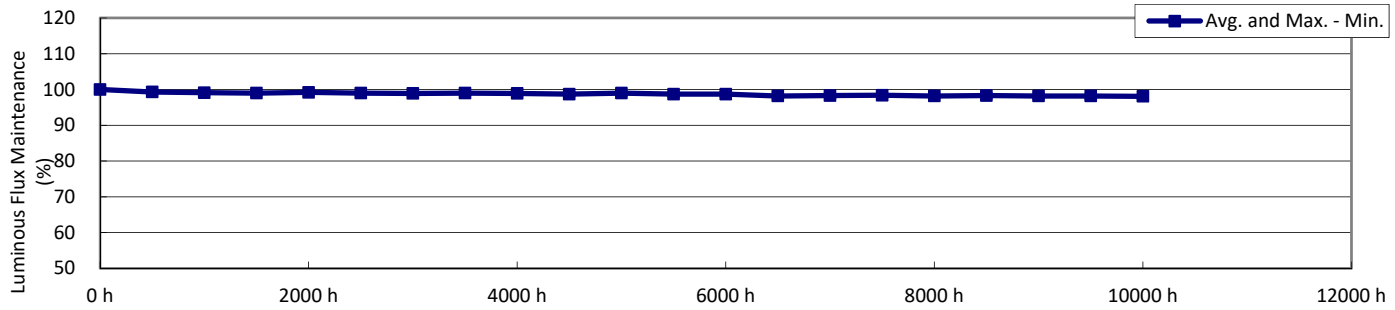
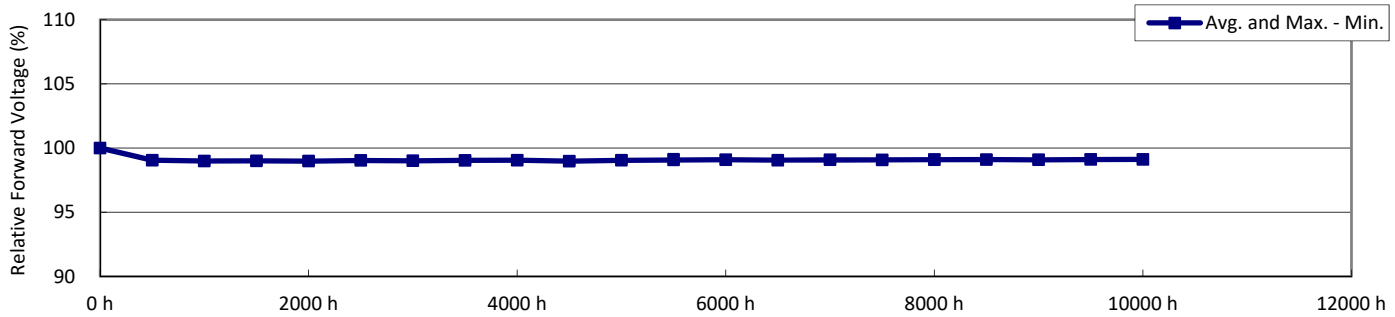
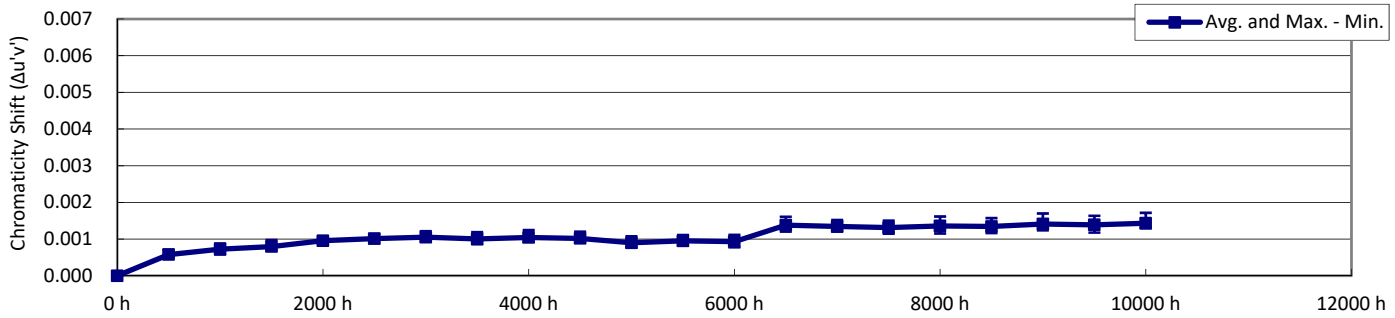
Data Set 2 : 55 °C, 125 mA

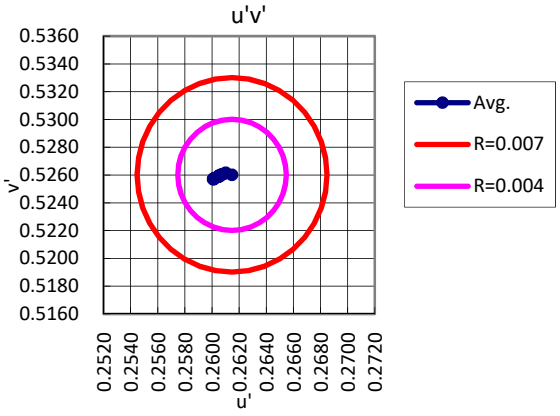
Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 2 : 55 °C, 125 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 2-1
Initial Characteristics

LED No.	Luminous flux	Forward voltage	CCT	Input Power	CIE1931		CIE1976							
	Φ_V [lm]	V_F [V]	T_{CP} [K]	P [W]	x	y	u'	v'						
1	60.8	3.05	2722	0.38	0.458	0.410	0.262	0.527						
2	59.6	3.07	2641	0.38	0.463	0.408	0.265	0.527						
3	61.3	3.06	2781	0.38	0.457	0.416	0.258	0.529						
4	60.4	3.07	2780	0.38	0.449	0.400	0.260	0.522						
5	60.8	3.07	2726	0.38	0.459	0.412	0.261	0.528						
6	60.5	3.06	2790	0.38	0.448	0.401	0.259	0.522						
7	60.3	3.05	2738	0.38	0.452	0.401	0.262	0.522						
8	61.3	3.06	2804	0.38	0.452	0.409	0.258	0.526						
9	60.9	3.08	2763	0.38	0.456	0.411	0.260	0.527						
10	60.6	3.06	2771	0.38	0.453	0.407	0.260	0.525						
11	60.4	3.08	2712	0.38	0.458	0.410	0.262	0.527						
12	60.3	3.08	2720	0.38	0.458	0.410	0.262	0.527						
13	61.3	3.05	2761	0.38	0.459	0.417	0.259	0.530						
14	61.0	3.05	2793	0.38	0.454	0.411	0.258	0.527						
15	60.8	3.05	2745	0.38	0.457	0.412	0.260	0.527						
16	60.6	3.07	2748	0.38	0.457	0.411	0.260	0.527						
17	60.0	3.05	2712	0.38	0.456	0.404	0.263	0.524						
18	60.3	3.07	2708	0.38	0.459	0.409	0.262	0.527						
19	59.7	3.06	2628	0.38	0.463	0.408	0.266	0.527						
20	60.8	3.08	2747	0.38	0.457	0.412	0.260	0.528						
21	60.8	3.05	2788	0.38	0.452	0.406	0.259	0.524						
22	60.3	3.07	2662	0.38	0.465	0.415	0.264	0.530						
23	60.7	3.07	2800	0.38	0.452	0.409	0.258	0.526						
24	59.5	3.07	2653	0.38	0.462	0.408	0.265	0.527						
25	60.3	3.06	2768	0.38	0.450	0.402	0.260	0.523						
n	25	25	25	25	25	25	25	25						
Avg.	60.5	3.06	2738	0.38	0.456	0.409	0.261	0.526						
Med.	60.6	3.06	2747	0.38	0.457	0.409	0.260	0.527						
σ	0.48	0.010	50.4	0.001	0.0045	0.0044	0.0023	0.0022						
Min.	59.5	3.05	2628	0.38	0.448	0.400	0.258	0.522						
Max.	61.3	3.08	2804	0.38	0.465	0.417	0.266	0.530						

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Data Set 2 : 55 °C, 125 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 2-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.0	98.8	98.6	98.8	98.5	98.5	98.5	98.5	98.4	98.5	98.4	98.3	97.9	97.9	97.9	97.8	97.9
2	100.0	99.3	99.2	99.0	99.2	98.9	99.0	99.0	99.0	98.8	98.9	98.9	98.9	98.4	98.4	98.4	98.2	98.4
3	100.0	99.3	99.3	99.0	99.3	98.9	98.9	99.0	99.0	98.8	99.0	98.9	98.8	98.4	98.5	98.5	98.3	98.4
4	100.0	99.2	99.2	99.1	99.3	99.0	99.0	99.0	99.1	98.9	99.1	98.9	98.8	98.3	98.4	98.6	98.3	98.5
5	100.0	99.3	99.3	99.1	99.2	98.8	98.8	98.8	98.8	98.6	98.8	98.7	98.6	98.1	98.1	98.8	97.9	97.6
6	100.0	99.2	99.2	99.0	99.1	98.9	98.9	98.8	98.8	98.7	98.8	98.7	98.5	98.2	98.2	98.3	98.1	98.3
7	100.0	99.0	99.0	98.8	98.9	98.7	98.5	98.7	98.5	98.3	98.6	98.3	98.3	97.8	97.8	97.9	97.8	97.9
8	100.0	99.2	99.1	99.0	99.2	99.0	98.8	98.9	98.9	98.6	98.9	98.7	98.7	98.3	98.2	98.3	98.1	98.3
9	100.0	99.4	99.3	99.3	99.4	99.3	99.1	99.3	99.1	99.0	99.3	99.1	99.0	98.6	98.6	98.6	98.5	98.6
10	100.0	99.2	99.1	99.0	99.2	99.0	98.9	99.0	98.9	98.7	99.0	98.7	98.8	98.3	98.3	98.4	98.3	98.5
11	100.0	99.3	99.3	99.1	99.5	99.1	99.0	99.0	99.0	98.8	99.2	98.9	98.9	98.4	98.6	98.2	98.1	98.3
12	100.0	99.6	99.5	99.4	99.5	99.3	99.2	99.3	99.1	99.0	99.2	98.9	99.0	98.4	98.5	98.5	98.5	98.6
13	100.0	99.2	99.0	98.9	99.0	98.8	98.6	98.8	98.6	98.5	98.7	98.6	98.4	98.0	98.1	98.2	97.9	98.1
14	100.0	99.2	99.0	98.9	99.0	98.8	98.7	98.9	98.7	98.6	98.9	98.7	98.6	98.1	98.3	98.4	98.0	98.3
15	100.0	99.0	98.9	98.8	99.0	98.8	98.7	98.9	98.8	98.7	99.0	98.8	98.7	98.3	98.4	98.5	98.2	98.4
16	100.0	99.6	99.4	99.3	99.5	99.3	99.2	99.3	99.3	99.1	99.4	99.2	99.1	98.6	98.8	98.8	98.5	98.9
17	100.0	99.4	98.8	98.8	98.9	98.7	98.7	98.7	98.7	98.4	98.7	98.5	98.3	97.9	98.1	97.7	97.6	97.9
18	100.0	99.5	99.3	99.2	99.4	99.2	99.1	99.3	99.1	98.9	99.2	99.0	98.9	98.5	98.6	98.7	98.5	98.7
19	100.0	99.2	99.2	99.1	99.2	99.0	98.9	99.1	98.9	98.7	99.1	98.7	98.9	98.3	98.3	98.5	98.2	98.4
20	100.0	99.5	99.4	99.3	99.5	99.3	99.2	99.3	99.2	99.0	99.4	99.1	99.2	98.7	98.8	98.8	98.5	98.9
21	100.0	99.1	99.0	99.0	99.1	99.0	98.8	99.0	98.9	98.8	99.1	98.8	98.8	98.3	98.4	98.4	98.3	98.5
22	100.0	99.2	99.1	99.1	99.2	99.1	98.8	99.1	99.0	98.8	99.1	98.8	98.9	98.3	98.5	98.4	98.3	98.4
23	100.0	99.3	99.1	99.2	99.1	99.1	98.9	98.9	98.8	98.7	98.9	98.6	98.7	98.1	98.4	98.0	98.1	98.1
24	100.0	99.3	99.2	99.1	99.2	99.1	98.9	99.0	98.9	98.7	99.0	98.7	98.8	98.2	98.4	98.3	98.2	98.3
25	100.0	99.0	98.9	98.7	98.8	98.6	98.5	98.5	98.4	98.2	98.4	98.1	98.1	97.7	97.6	97.7	97.6	97.6
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.3	99.1	99.0	99.2	99.0	98.9	99.0	98.9	98.7	99.0	98.7	98.7	98.2	98.3	98.4	98.2	98.3
Med.	100.0	99.2	99.2	99.0	99.2	99.0	98.9	99.0	98.9	98.7	99.0	98.7	98.8	98.3	98.4	98.4	98.2	98.4
σ	0.00	0.17	0.19	0.20	0.21	0.22	0.21	0.23	0.23	0.23	0.26	0.25	0.28	0.25	0.29	0.32	0.27	0.34
Min.	100.0	99.0	98.8	98.6	98.8	98.5	98.5	98.5	98.4	98.2	98.4	98.1	98.1	97.7	97.6	97.7	97.6	97.6
Max.	100.0	99.6	99.5	99.4	99.5	99.3	99.2	99.3	99.3	99.1	99.4	99.2	99.2	98.7	98.8	98.8	98.5	98.9

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0101	-0.0131	-0.0131	-0.0182	-0.0171	-0.0161	-0.0182	-0.0171	-0.0182	-0.0182	-0.0192							

Test duration used	5000 h to 10000 h	
B	0.995	
α	1.45E-06	
R^2	0.702	
Calculated L_{70} (10K)	243000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	150000	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	69200	hours
Reported L_{90} (10K)	> 60000	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 2 : 55 °C, 125 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 2-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	97.8	97.7	97.6															
2	98.3	98.3	98.2															
3	98.3	98.3	98.2															
4	98.4	98.3	98.1															
5	97.7	97.8	97.6															
6	98.1	98.0	97.9															
7	97.8	97.7	97.6															
8	98.3	98.1	98.0															
9	98.6	98.6	98.5															
10	98.4	98.3	98.3															
11	98.4	98.2	98.1															
12	98.5	98.5	98.4															
13	97.9	97.9	97.8															
14	98.1	98.1	97.9															
15	98.3	98.2	98.2															
16	98.7	98.6	98.6															
17	97.8	97.7	97.6															
18	98.5	98.5	98.4															
19	98.2	98.3	98.2															
20	98.6	98.6	98.5															
21	98.3	98.3	98.2															
22	98.3	98.3	98.3															
23	98.1	97.9	98.0															
24	98.1	98.2	98.2															
25	97.5	97.4	97.3															
n	25	25	25															
Avg.	98.2	98.2	98.1															
Med.	98.3	98.2	98.2															
σ	0.31	0.32	0.34															
Min.	97.5	97.4	97.3															
Max.	98.7	98.6	98.6															

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Data Set 2 : 55 °C, 125 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 2-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.2	99.1	99.0	99.2	99.2	99.1	99.2	99.2	99.2	99.2	99.2	99.3	99.2	99.3	99.3	99.2	99.3
2	100.0	99.0	99.0	98.8	98.9	99.0	99.1	99.0	98.9	98.9	99.1	99.0	99.0	99.0	99.0	99.0	99.0	99.1
3	100.0	98.9	99.0	99.1	99.0	99.0	99.1	99.0	99.0	99.0	99.0	99.0	99.1	99.1	99.1	99.1	99.0	99.1
4	100.0	99.1	99.0	99.3	99.1	99.1	99.0	99.1	99.0	99.1	99.1	99.1	99.2	99.1	99.1	99.1	99.1	99.1
5	100.0	98.9	98.9	98.7	98.9	99.0	98.8	98.9	98.9	98.8	98.9	98.9	99.0	98.9	99.0	98.9	99.0	98.9
6	100.0	99.0	99.0	98.9	98.9	99.0	99.0	99.0	99.1	99.0	99.0	99.0	99.0	99.1	99.0	99.0	99.0	99.1
7	100.0	99.1	99.0	99.1	99.0	99.1	99.0	99.0	99.0	99.0	99.1	99.1	99.0	99.1	99.1	99.1	99.1	99.1
8	100.0	99.1	99.0	99.1	99.0	99.1	99.0	99.0	99.0	98.9	99.1	99.0	99.1	99.0	99.1	99.0	99.1	99.1
9	100.0	98.9	98.8	98.9	98.9	98.8	99.0	98.9	98.9	98.9	98.9	98.9	98.9	98.9	99.0	98.9	99.0	98.9
10	100.0	98.9	98.9	99.1	98.9	99.0	98.8	99.0	98.9	98.9	99.0	98.9	99.1	98.9	99.0	99.0	99.0	99.0
11	100.0	99.0	98.9	98.8	98.9	98.9	98.9	99.0	99.0	98.9	99.0	99.0	99.0	99.0	99.0	99.0	99.1	99.0
12	100.0	98.9	98.8	99.0	98.8	98.8	98.8	98.8	98.9	98.8	98.9	98.9	98.9	98.9	98.9	98.9	98.9	99.0
13	100.0	99.2	99.2	99.2	99.2	99.3	99.3	99.3	99.3	99.2	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.4
14	100.0	99.2	99.1	99.1	99.0	99.0	99.1	99.1	99.2	99.1	99.2	99.1	99.2	99.2	99.2	99.2	99.2	99.2
15	100.0	99.1	99.1	99.1	99.1	99.1	99.1	99.2	99.3	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2
16	100.0	99.1	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.1	99.1	99.0	99.1	99.1	99.1	99.1
17	100.0	99.3	99.3	99.1	99.3	99.4	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.4
18	100.0	99.0	98.8	98.9	98.9	98.9	98.8	98.9	98.9	98.9	99.0	99.0	99.0	98.9	98.9	98.9	99.0	99.0
19	100.0	98.9	98.8	98.9	98.9	98.9	98.9	98.9	99.0	98.8	98.9	98.9	98.9	98.9	98.9	98.9	98.9	98.9
20	100.0	98.8	98.8	98.8	98.7	98.8	98.8	98.8	98.8	98.7	98.8	98.9	98.8	98.8	98.8	98.8	98.9	98.9
21	100.0	99.4	99.4	99.3	99.3	99.3	99.3	99.4	99.4	99.3	99.4	99.5	99.4	99.4	99.4	99.4	99.5	99.4
22	100.0	99.2	99.1	99.1	99.0	99.1	99.1	99.1	99.2	99.0	99.1	99.2	99.1	99.1	99.1	99.2	99.1	99.1
23	100.0	99.0	98.9	98.9	98.9	98.9	98.9	99.0	99.0	98.8	99.0	99.1	99.0	98.9	99.0	99.0	99.1	99.0
24	100.0	98.9	98.8	98.8	98.8	98.9	98.9	98.9	99.0	98.8	98.9	99.0	99.0	98.9	98.9	99.0	98.9	99.0
25	100.0	99.1	99.1	99.0	99.0	99.0	99.1	99.2	99.2	99.0	99.1	99.2	99.1	99.1	99.1	99.2	99.2	99.2
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.1	99.1	99.1	99.1	99.1	99.1	99.1
Med.	100.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.1	99.0	99.1	99.0	99.1	99.1
σ	0.00	0.15	0.16	0.15	0.15	0.15	0.15	0.14	0.15	0.16	0.15	0.16	0.15	0.14	0.15	0.15	0.15	0.15
Min.	100.0	98.8	98.8	98.7	98.7	98.8	98.8	98.8	98.8	98.7	98.8	98.9	98.8	98.8	98.8	98.8	98.9	98.9
Max.	100.0	99.4	99.4	99.3	99.3	99.4	99.3	99.4	99.4	99.3	99.4	99.5	99.4	99.4	99.4	99.4	99.5	99.4

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Data Set 2 : 55 °C, 125 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 2-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	99.3	99.3	99.3															
2	99.0	99.1	99.0															
3	99.1	99.1	99.0															
4	99.0	99.2	99.1															
5	98.9	99.0	98.9															
6	99.1	99.0	99.1															
7	99.1	99.2	99.2															
8	99.0	99.0	99.1															
9	98.9	99.0	99.0															
10	99.0	99.0	99.0															
11	99.0	99.1	99.1															
12	98.9	98.9	99.0															
13	99.4	99.3	99.4															
14	99.3	99.2	99.2															
15	99.3	99.2	99.3															
16	99.1	99.1	99.1															
17	99.3	99.3	99.4															
18	99.0	99.0	99.0															
19	99.0	98.9	99.0															
20	98.8	98.9	98.9															
21	99.4	99.5	99.5															
22	99.1	99.2	99.1															
23	99.0	99.1	99.0															
24	99.0	98.9	99.0															
25	99.1	99.2	99.2															
n	25	25	25															
Avg.	99.1	99.1	99.1															
Med.	99.0	99.1	99.1															
σ	0.15	0.15	0.16															
Min.	98.8	98.9	98.9															
Max.	99.4	99.5	99.5															

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Data Set 2 : 55 °C, 125 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 2-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0005	0.0008	0.0008	0.0010	0.0011	0.0011	0.0010	0.0011	0.0011	0.0010	0.0011	0.0010	0.0014	0.0014	0.0014	0.0015	0.0013
2	0.0000	0.0005	0.0007	0.0008	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0008	0.0008	0.0009	0.0013	0.0013	0.0013	0.0012	0.0012
3	0.0000	0.0006	0.0008	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0009	0.0008	0.0010	0.0009	0.0013	0.0014	0.0013	0.0013	0.0013
4	0.0000	0.0006	0.0008	0.0008	0.0010	0.0011	0.0011	0.0010	0.0011	0.0011	0.0009	0.0009	0.0010	0.0013	0.0014	0.0014	0.0014	0.0014
5	0.0000	0.0005	0.0007	0.0007	0.0010	0.0009	0.0011	0.0009	0.0010	0.0011	0.0009	0.0009	0.0010	0.0014	0.0013	0.0013	0.0013	0.0013
6	0.0000	0.0006	0.0007	0.0007	0.0009	0.0011	0.0010	0.0010	0.0009	0.0011	0.0009	0.0010	0.0009	0.0014	0.0014	0.0014	0.0013	0.0014
7	0.0000	0.0006	0.0007	0.0008	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0009	0.0010	0.0014	0.0015	0.0014	0.0015	0.0015
8	0.0000	0.0007	0.0008	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0009	0.0010	0.0014	0.0013	0.0013	0.0014	0.0013
9	0.0000	0.0006	0.0007	0.0008	0.0009	0.0009	0.0010	0.0011	0.0010	0.0010	0.0009	0.0010	0.0009	0.0014	0.0013	0.0012	0.0012	0.0013
10	0.0000	0.0006	0.0007	0.0008	0.0009	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0009	0.0009	0.0015	0.0013	0.0013	0.0013	0.0013
11	0.0000	0.0006	0.0007	0.0008	0.0010	0.0010	0.0010	0.0009	0.0010	0.0009	0.0009	0.0009	0.0009	0.0014	0.0013	0.0013	0.0014	0.0013
12	0.0000	0.0007	0.0009	0.0009	0.0010	0.0011	0.0011	0.0012	0.0012	0.0011	0.0010	0.0010	0.0010	0.0015	0.0014	0.0015	0.0015	0.0016
13	0.0000	0.0006	0.0009	0.0008	0.0010	0.0011	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	0.0010	0.0015	0.0015	0.0015	0.0015	0.0016
14	0.0000	0.0005	0.0006	0.0007	0.0008	0.0010	0.0010	0.0010	0.0009	0.0010	0.0009	0.0010	0.0008	0.0013	0.0013	0.0013	0.0014	0.0013
15	0.0000	0.0006	0.0006	0.0008	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0008	0.0009	0.0008	0.0014	0.0012	0.0012	0.0012	0.0012
16	0.0000	0.0006	0.0007	0.0008	0.0009	0.0009	0.0010	0.0009	0.0011	0.0010	0.0008	0.0008	0.0009	0.0013	0.0014	0.0011	0.0013	0.0013
17	0.0000	0.0006	0.0008	0.0010	0.0010	0.0011	0.0010	0.0010	0.0012	0.0011	0.0009	0.0009	0.0010	0.0014	0.0015	0.0012	0.0015	0.0015
18	0.0000	0.0006	0.0008	0.0009	0.0010	0.0010	0.0011	0.0010	0.0011	0.0010	0.0009	0.0009	0.0010	0.0013	0.0013	0.0012	0.0013	0.0013
19	0.0000	0.0005	0.0007	0.0008	0.0010	0.0010	0.0011	0.0010	0.0010	0.0010	0.0009	0.0010	0.0009	0.0015	0.0012	0.0013	0.0013	0.0013
20	0.0000	0.0006	0.0007	0.0007	0.0009	0.0009	0.0009	0.0010	0.0010	0.0009	0.0008	0.0009	0.0009	0.0013	0.0013	0.0012	0.0012	0.0012
21	0.0000	0.0006	0.0007	0.0008	0.0010	0.0010	0.0011	0.0010	0.0009	0.0009	0.0008	0.0009	0.0009	0.0013	0.0013	0.0013	0.0013	0.0013
22	0.0000	0.0005	0.0007	0.0008	0.0009	0.0010	0.0010	0.0009	0.0010	0.0009	0.0009	0.0009	0.0009	0.0012	0.0012	0.0012	0.0012	0.0012
23	0.0000	0.0005	0.0007	0.0008	0.0009	0.0009	0.0010	0.0009	0.0010	0.0009	0.0009	0.0009	0.0008	0.0013	0.0014	0.0013	0.0014	0.0014
24	0.0000	0.0006	0.0008	0.0008	0.0010	0.0011	0.0011	0.0010	0.0010	0.0011	0.0009	0.0009	0.0009	0.0014	0.0014	0.0013	0.0014	0.0014
25	0.0000	0.0006	0.0007	0.0008	0.0009	0.0011	0.0011	0.0010	0.0011	0.0011	0.0009	0.0011	0.0011	0.0016	0.0014	0.0015	0.0016	0.0015
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0006	0.0007	0.0008	0.0010	0.0010	0.0011	0.0010	0.0010	0.0010	0.0009	0.0010	0.0009	0.0014	0.0013	0.0013	0.0014	0.0013
Med.	0.0000	0.0006	0.0007	0.0008	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0014	0.0013	0.0013	0.0013	0.0013
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0005	0.0006	0.0007	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0012	0.0012	0.0011	0.0012	0.0012
Max.	0.0000	0.0007	0.0009	0.0010	0.0010	0.0011	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	0.0011	0.0016	0.0015	0.0015	0.0016	0.0016

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Data Set 2 : 55 °C, 125 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 2-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0015	0.0015	0.0015															
2	0.0013	0.0013	0.0013															
3	0.0013	0.0016	0.0014															
4	0.0014	0.0015	0.0015															
5	0.0014	0.0014	0.0014															
6	0.0014	0.0014	0.0014															
7	0.0016	0.0015	0.0016															
8	0.0015	0.0014	0.0014															
9	0.0014	0.0013	0.0013															
10	0.0013	0.0014	0.0014															
11	0.0014	0.0013	0.0014															
12	0.0016	0.0016	0.0015															
13	0.0017	0.0015	0.0016															
14	0.0014	0.0013	0.0013															
15	0.0014	0.0013	0.0014															
16	0.0013	0.0014	0.0013															
17	0.0015	0.0014	0.0015															
18	0.0014	0.0013	0.0015															
19	0.0013	0.0014	0.0015															
20	0.0013	0.0012	0.0014															
21	0.0013	0.0013	0.0014															
22	0.0012	0.0013	0.0013															
23	0.0014	0.0013	0.0014															
24	0.0015	0.0013	0.0014															
25	0.0017	0.0016	0.0017															
n	25	25	25															
Avg.	0.0014	0.0014	0.0014															
Med.	0.0014	0.0014	0.0014															
σ	0.0001	0.0001	0.0001															
Min.	0.0012	0.0012	0.0013															
Max.	0.0017	0.0016	0.0017															

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Data Set 2 : 55 °C, 125 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 2-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2620	0.2614	0.2612	0.2611	0.2610	0.2609	0.2609	0.2609	0.2609	0.2608	0.2610	0.2609	0.2610	0.2606	0.2607	0.2606	0.2605	0.2607
2	0.2659	0.2654	0.2652	0.2651	0.2649	0.2649	0.2649	0.2649	0.2649	0.2650	0.2651	0.2650	0.2650	0.2646	0.2646	0.2646	0.2646	0.2647
3	0.2589	0.2583	0.2581	0.2581	0.2579	0.2579	0.2579	0.2578	0.2578	0.2579	0.2580	0.2578	0.2579	0.2576	0.2575	0.2575	0.2575	0.2575
4	0.2608	0.2602	0.2600	0.2599	0.2598	0.2597	0.2597	0.2598	0.2597	0.2597	0.2599	0.2598	0.2598	0.2595	0.2594	0.2594	0.2595	0.2594
5	0.2639	0.2634	0.2632	0.2632	0.2629	0.2630	0.2628	0.2630	0.2629	0.2629	0.2630	0.2630	0.2629	0.2625	0.2626	0.2626	0.2627	0.2626
6	0.2602	0.2596	0.2595	0.2595	0.2593	0.2591	0.2591	0.2592	0.2593	0.2591	0.2593	0.2592	0.2593	0.2588	0.2588	0.2588	0.2588	0.2588
7	0.2620	0.2614	0.2613	0.2613	0.2611	0.2610	0.2610	0.2609	0.2610	0.2610	0.2610	0.2611	0.2610	0.2607	0.2606	0.2607	0.2606	0.2607
8	0.2583	0.2576	0.2575	0.2575	0.2574	0.2573	0.2573	0.2573	0.2572	0.2573	0.2574	0.2574	0.2573	0.2569	0.2571	0.2570	0.2570	0.2570
9	0.2600	0.2594	0.2593	0.2592	0.2591	0.2591	0.2590	0.2589	0.2590	0.2589	0.2591	0.2590	0.2591	0.2586	0.2587	0.2588	0.2587	0.2587
10	0.2605	0.2599	0.2598	0.2597	0.2595	0.2595	0.2594	0.2595	0.2595	0.2595	0.2596	0.2595	0.2596	0.2590	0.2592	0.2592	0.2592	0.2592
11	0.2649	0.2644	0.2643	0.2642	0.2640	0.2639	0.2640	0.2640	0.2639	0.2640	0.2640	0.2640	0.2641	0.2636	0.2636	0.2636	0.2636	0.2636
12	0.2624	0.2617	0.2615	0.2615	0.2614	0.2613	0.2613	0.2612	0.2612	0.2613	0.2614	0.2614	0.2614	0.2609	0.2610	0.2609	0.2609	0.2608
13	0.2596	0.2589	0.2587	0.2588	0.2586	0.2585	0.2584	0.2584	0.2584	0.2584	0.2586	0.2585	0.2586	0.2581	0.2581	0.2581	0.2581	0.2581
14	0.2587	0.2582	0.2580	0.2579	0.2578	0.2577	0.2577	0.2577	0.2578	0.2577	0.2577	0.2577	0.2579	0.2574	0.2574	0.2574	0.2574	0.2574
15	0.2607	0.2601	0.2601	0.2599	0.2597	0.2597	0.2596	0.2597	0.2596	0.2597	0.2598	0.2597	0.2599	0.2593	0.2595	0.2595	0.2595	0.2595
16	0.2610	0.2605	0.2604	0.2602	0.2602	0.2601	0.2600	0.2601	0.2600	0.2601	0.2602	0.2602	0.2602	0.2597	0.2597	0.2599	0.2597	0.2598
17	0.2655	0.2649	0.2646	0.2645	0.2644	0.2644	0.2645	0.2644	0.2643	0.2644	0.2645	0.2645	0.2645	0.2641	0.2640	0.2643	0.2640	0.2640
18	0.2631	0.2625	0.2624	0.2623	0.2622	0.2622	0.2620	0.2621	0.2620	0.2621	0.2623	0.2622	0.2622	0.2618	0.2618	0.2620	0.2618	0.2618
19	0.2666	0.2661	0.2659	0.2658	0.2656	0.2656	0.2655	0.2656	0.2656	0.2656	0.2657	0.2656	0.2657	0.2652	0.2654	0.2653	0.2653	0.2653
20	0.2605	0.2599	0.2598	0.2598	0.2596	0.2596	0.2596	0.2595	0.2596	0.2596	0.2597	0.2596	0.2596	0.2593	0.2592	0.2594	0.2594	0.2594
21	0.2592	0.2586	0.2584	0.2583	0.2582	0.2581	0.2581	0.2582	0.2582	0.2582	0.2583	0.2582	0.2582	0.2578	0.2579	0.2578	0.2579	0.2579
22	0.2645	0.2640	0.2638	0.2636	0.2635	0.2635	0.2635	0.2636	0.2635	0.2636	0.2636	0.2636	0.2636	0.2633	0.2632	0.2633	0.2632	0.2633
23	0.2611	0.2607	0.2604	0.2604	0.2602	0.2602	0.2601	0.2603	0.2601	0.2602	0.2602	0.2603	0.2603	0.2599	0.2598	0.2598	0.2598	0.2598
24	0.2657	0.2651	0.2649	0.2649	0.2647	0.2646	0.2646	0.2647	0.2647	0.2646	0.2648	0.2648	0.2648	0.2644	0.2644	0.2645	0.2644	0.2643
25	0.2605	0.2600	0.2599	0.2598	0.2597	0.2595	0.2595	0.2596	0.2595	0.2594	0.2596	0.2595	0.2595	0.2590	0.2592	0.2591	0.2590	0.2591
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2619	0.2613	0.2611	0.2611	0.2609	0.2609	0.2608	0.2609	0.2608	0.2608	0.2610	0.2609	0.2609	0.2605	0.2605	0.2606	0.2605	0.2605
Med.	0.2610	0.2605	0.2604	0.2602	0.2602	0.2601	0.2600	0.2601	0.2600	0.2601	0.2602	0.2602	0.2602	0.2597	0.2597	0.2598	0.2597	0.2598
σ	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Min.	0.2583	0.2576	0.2575	0.2575	0.2574	0.2573	0.2573	0.2573	0.2572	0.2573	0.2574	0.2574	0.2573	0.2569	0.2571	0.2570	0.2570	0.2570
Max.	0.2666	0.2661	0.2659	0.2658	0.2656	0.2656	0.2655	0.2656	0.2656	0.2656	0.2657	0.2656	0.2657	0.2652	0.2654	0.2653	0.2653	0.2653

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Data Set 2 : 55 °C, 125 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 2-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2605	0.2605	0.2605															
2	0.2646	0.2646	0.2646															
3	0.2576	0.2573	0.2575															
4	0.2594	0.2593	0.2594															
5	0.2625	0.2625	0.2625															
6	0.2588	0.2588	0.2588															
7	0.2605	0.2606	0.2606															
8	0.2569	0.2570	0.2570															
9	0.2586	0.2587	0.2587															
10	0.2592	0.2591	0.2591															
11	0.2635	0.2636	0.2636															
12	0.2609	0.2609	0.2609															
13	0.2580	0.2581	0.2581															
14	0.2573	0.2574	0.2574															
15	0.2593	0.2594	0.2593															
16	0.2597	0.2597	0.2597															
17	0.2640	0.2640	0.2640															
18	0.2618	0.2618	0.2617															
19	0.2653	0.2653	0.2652															
20	0.2593	0.2594	0.2592															
21	0.2579	0.2579	0.2578															
22	0.2632	0.2632	0.2632															
23	0.2598	0.2598	0.2598															
24	0.2642	0.2644	0.2643															
25	0.2589	0.2590	0.2589															
n	25	25	25															
Avg.	0.2605	0.2605	0.2605															
Med.	0.2597	0.2597	0.2597															
σ	0.0025	0.0025	0.0025															
Min.	0.2569	0.2570	0.2570															
Max.	0.2653	0.2653	0.2652															

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Data Set 2 : 55 °C, 125 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 2-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5267	0.5267	0.5267	0.5267	0.5265	0.5265	0.5265	0.5265	0.5265	0.5265	0.5265	0.5265	0.5265	0.5263	0.5263	0.5262	0.5263	0.5263
2	0.5267	0.5268	0.5267	0.5267	0.5266	0.5265	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5264	0.5265	0.5264	0.5265	0.5265
3	0.5287	0.5288	0.5288	0.5288	0.5286	0.5286	0.5286	0.5287	0.5287	0.5287	0.5287	0.5287	0.5287	0.5285	0.5285	0.5285	0.5284	0.5284
4	0.5218	0.5218	0.5218	0.5218	0.5216	0.5216	0.5217	0.5216	0.5217	0.5217	0.5217	0.5218	0.5218	0.5214	0.5215	0.5215	0.5214	0.5214
5	0.5287	0.5288	0.5288	0.5288	0.5286	0.5286	0.5286	0.5286	0.5286	0.5287	0.5287	0.5287	0.5287	0.5285	0.5285	0.5285	0.5285	0.5286
6	0.5219	0.5220	0.5219	0.5219	0.5217	0.5217	0.5217	0.5217	0.5217	0.5217	0.5217	0.5218	0.5217	0.5215	0.5215	0.5215	0.5216	0.5216
7	0.5222	0.5223	0.5223	0.5222	0.5221	0.5220	0.5220	0.5220	0.5220	0.5220	0.5220	0.5221	0.5220	0.5218	0.5217	0.5218	0.5218	0.5218
8	0.5254	0.5255	0.5254	0.5254	0.5253	0.5253	0.5252	0.5253	0.5253	0.5252	0.5253	0.5253	0.5253	0.5251	0.5251	0.5251	0.5251	0.5251
9	0.5267	0.5267	0.5267	0.5267	0.5265	0.5266	0.5266	0.5266	0.5265	0.5265	0.5266	0.5267	0.5267	0.5264	0.5264	0.5264	0.5265	0.5265
10	0.5248	0.5249	0.5248	0.5248	0.5247	0.5247	0.5247	0.5247	0.5247	0.5247	0.5247	0.5247	0.5248	0.5245	0.5246	0.5246	0.5245	0.5246
11	0.5278	0.5279	0.5279	0.5279	0.5278	0.5277	0.5277	0.5277	0.5278	0.5278	0.5278	0.5279	0.5278	0.5276	0.5277	0.5277	0.5277	0.5276
12	0.5269	0.5270	0.5269	0.5269	0.5268	0.5268	0.5267	0.5268	0.5268	0.5268	0.5268	0.5268	0.5268	0.5266	0.5266	0.5266	0.5266	0.5266
13	0.5294	0.5293	0.5293	0.5293	0.5292	0.5292	0.5291	0.5292	0.5292	0.5291	0.5291	0.5292	0.5292	0.5290	0.5290	0.5291	0.5290	0.5290
14	0.5262	0.5263	0.5262	0.5263	0.5261	0.5261	0.5260	0.5261	0.5261	0.5261	0.5262	0.5261	0.5261	0.5259	0.5259	0.5260	0.5259	0.5259
15	0.5273	0.5273	0.5273	0.5273	0.5272	0.5271	0.5271	0.5272	0.5272	0.5272	0.5272	0.5273	0.5273	0.5270	0.5271	0.5270	0.5271	0.5271
16	0.5270	0.5271	0.5270	0.5271	0.5270	0.5269	0.5269	0.5269	0.5270	0.5270	0.5270	0.5271	0.5270	0.5268	0.5268	0.5269	0.5268	0.5268
17	0.5257	0.5256	0.5256	0.5256	0.5255	0.5254	0.5254	0.5254	0.5255	0.5254	0.5254	0.5255	0.5255	0.5252	0.5253	0.5254	0.5254	0.5253
18	0.5266	0.5267	0.5267	0.5266	0.5265	0.5266	0.5265	0.5266	0.5266	0.5266	0.5266	0.5266	0.5267	0.5265	0.5265	0.5265	0.5265	0.5264
19	0.5265	0.5267	0.5266	0.5266	0.5264	0.5264	0.5263	0.5264	0.5264	0.5264	0.5265	0.5264	0.5264	0.5263	0.5262	0.5262	0.5262	0.5262
20	0.5272	0.5274	0.5273	0.5273	0.5273	0.5272	0.5272	0.5272	0.5272	0.5272	0.5272	0.5274	0.5273	0.5270	0.5271	0.5271	0.5271	0.5271
21	0.5243	0.5243	0.5243	0.5243	0.5242	0.5241	0.5241	0.5241	0.5242	0.5241	0.5242	0.5243	0.5242	0.5240	0.5240	0.5240	0.5240	0.5240
22	0.5297	0.5298	0.5298	0.5298	0.5297	0.5296	0.5296	0.5297	0.5297	0.5297	0.5297	0.5297	0.5297	0.5295	0.5296	0.5296	0.5296	0.5296
23	0.5268	0.5270	0.5270	0.5269	0.5268	0.5268	0.5269	0.5268	0.5269	0.5268	0.5268	0.5269	0.5269	0.5266	0.5267	0.5267	0.5266	0.5267
24	0.5266	0.5267	0.5267	0.5267	0.5266	0.5265	0.5265	0.5265	0.5265	0.5265	0.5266	0.5266	0.5265	0.5263	0.5264	0.5263	0.5263	0.5263
25	0.5223	0.5224	0.5223	0.5222	0.5221	0.5220	0.5220	0.5220	0.5220	0.5220	0.5220	0.5220	0.5220	0.5218	0.5218	0.5218	0.5218	0.5218
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5262	0.5262	0.5262	0.5262	0.5261	0.5260	0.5260	0.5260	0.5260	0.5260	0.5261	0.5261	0.5261	0.5259	0.5259	0.5259	0.5259	0.5259
Med.	0.5267	0.5267	0.5267	0.5267	0.5265	0.5265	0.5265	0.5266	0.5265	0.5265	0.5266	0.5266	0.5266	0.5264	0.5264	0.5264	0.5265	0.5264
σ	0.0022	0.0022	0.0022	0.0022	0.0023	0.0023	0.0022	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023
Min.	0.5218	0.5218	0.5218	0.5218	0.5216	0.5216	0.5217	0.5216	0.5217	0.5217	0.5217	0.5218	0.5217	0.5214	0.5215	0.5215	0.5214	0.5214
Max.	0.5297	0.5298	0.5298	0.5298	0.5297	0.5296	0.5296	0.5297	0.5297	0.5297	0.5297	0.5297	0.5297	0.5295	0.5296	0.5296	0.5296	0.5296

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Data Set 2 : 55 °C, 125 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	54.3 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 2-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5263	0.5262	0.5262															
2	0.5264	0.5264	0.5264															
3	0.5285	0.5285	0.5284															
4	0.5214	0.5214	0.5214															
5	0.5285	0.5285	0.5285															
6	0.5216	0.5215	0.5215															
7	0.5217	0.5217	0.5217															
8	0.5251	0.5251	0.5250															
9	0.5265	0.5264	0.5265															
10	0.5245	0.5245	0.5245															
11	0.5276	0.5276	0.5276															
12	0.5265	0.5266	0.5266															
13	0.5290	0.5290	0.5289															
14	0.5259	0.5259	0.5258															
15	0.5270	0.5270	0.5270															
16	0.5268	0.5268	0.5267															
17	0.5253	0.5253	0.5253															
18	0.5264	0.5264	0.5264															
19	0.5262	0.5262	0.5262															
20	0.5271	0.5271	0.5271															
21	0.5240	0.5240	0.5239															
22	0.5296	0.5296	0.5296															
23	0.5267	0.5266	0.5266															
24	0.5263	0.5263	0.5263															
25	0.5217	0.5216	0.5217															
n	25	25	25															
Avg.	0.5259	0.5258	0.5258															
Med.	0.5264	0.5264	0.5264															
σ	0.0023	0.0023	0.0023															
Min.	0.5214	0.5214	0.5214															
Max.	0.5296	0.5296	0.5296															

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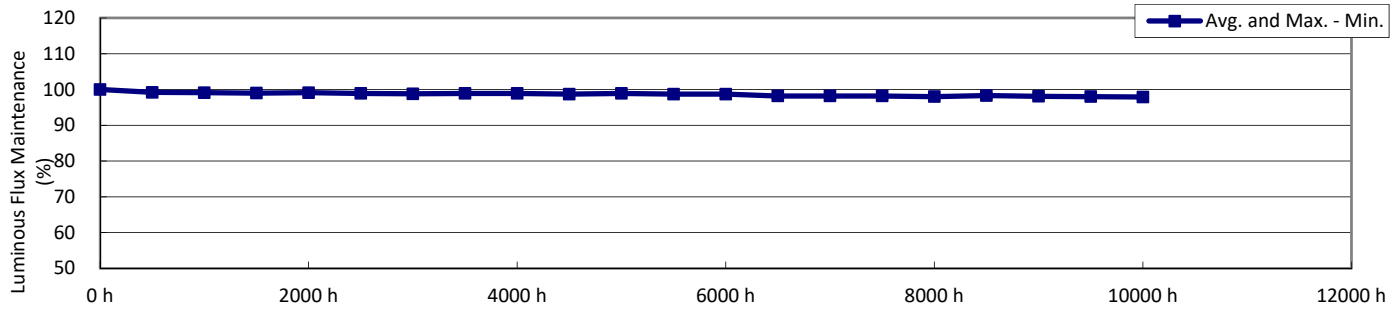
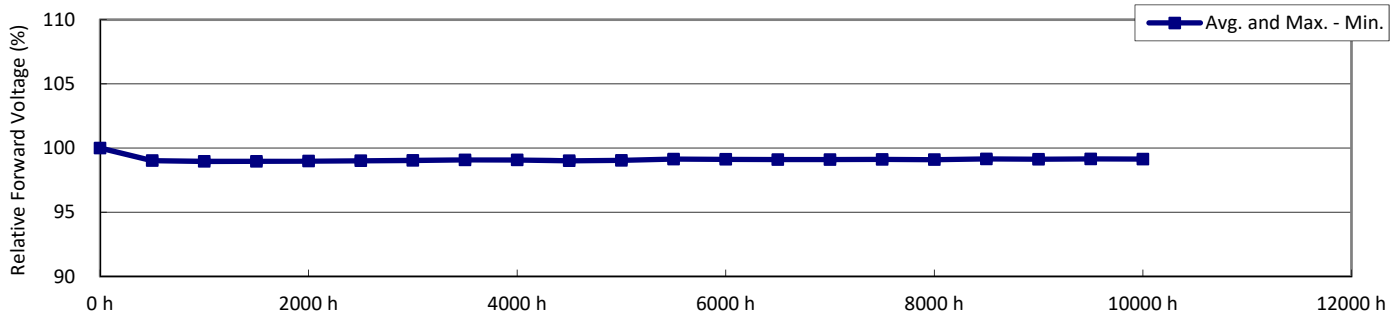
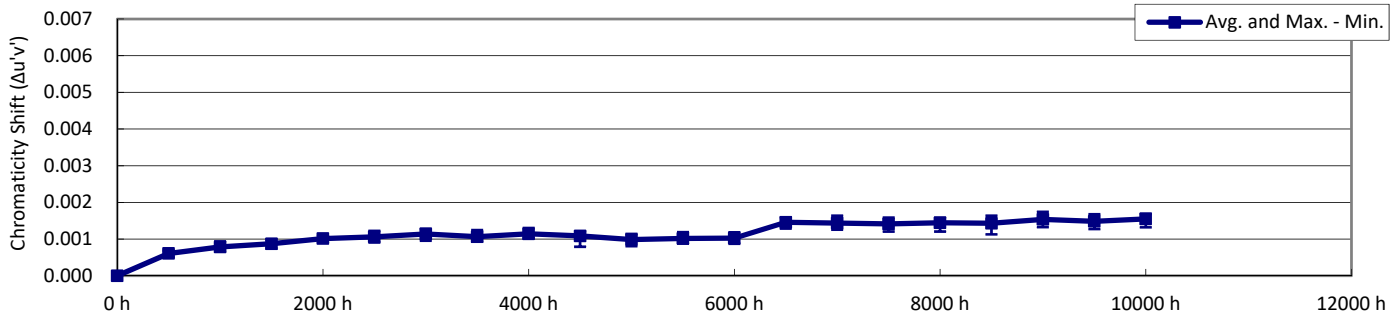
Data Set 3 : 55 °C, 150 mA

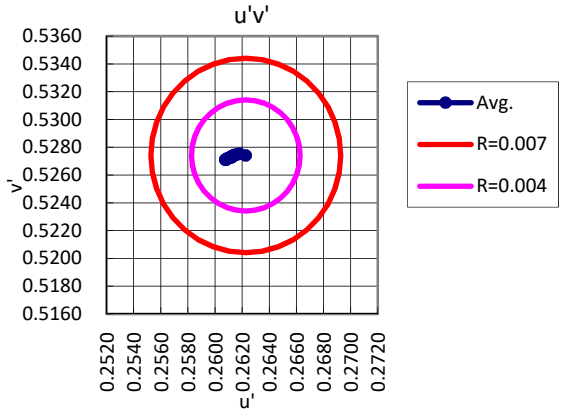
Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 3 : 55 °C, 150 mA

Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 3-1
Initial Characteristics

LED No.	Luminous flux	Forward voltage	CCT	Input Power	CIE1931		CIE1976							
	Φ_V [lm]	V_F [V]	T_{CP} [K]	P [W]	x	y	u'	v'						
1	71.8	3.13	2816	0.47	0.449	0.405	0.258	0.524						
2	70.1	3.12	2680	0.47	0.455	0.400	0.264	0.523						
3	71.9	3.12	2700	0.47	0.463	0.417	0.262	0.530						
4	70.2	3.13	2699	0.47	0.456	0.404	0.263	0.524						
5	70.8	3.15	2702	0.47	0.459	0.409	0.263	0.527						
6	70.4	3.12	2657	0.47	0.461	0.407	0.265	0.526						
7	72.1	3.12	2799	0.47	0.452	0.408	0.258	0.525						
8	70.4	3.16	2686	0.47	0.459	0.407	0.263	0.526						
9	72.4	3.14	2703	0.47	0.465	0.421	0.261	0.532						
10	70.4	3.13	2667	0.47	0.460	0.407	0.264	0.526						
11	72.2	3.14	2742	0.47	0.460	0.416	0.260	0.529						
12	70.8	3.13	2685	0.47	0.460	0.408	0.263	0.527						
13	71.8	3.15	2707	0.47	0.462	0.415	0.262	0.529						
14	71.9	3.14	2739	0.47	0.456	0.409	0.261	0.526						
15	70.1	3.14	2651	0.47	0.461	0.406	0.265	0.526						
16	71.8	3.12	2666	0.47	0.467	0.418	0.263	0.531						
17	71.8	3.12	2748	0.47	0.457	0.411	0.260	0.527						
18	71.2	3.12	2685	0.47	0.462	0.412	0.263	0.528						
19	70.6	3.13	2639	0.47	0.464	0.410	0.265	0.528						
20	71.5	3.15	2716	0.47	0.460	0.413	0.262	0.528						
21	71.2	3.15	2665	0.47	0.464	0.413	0.264	0.529						
22	71.1	3.15	2649	0.47	0.467	0.417	0.264	0.531						
23	71.7	3.14	2713	0.47	0.462	0.415	0.261	0.529						
24	71.5	3.15	2799	0.47	0.450	0.406	0.259	0.524						
25	70.3	3.14	2680	0.47	0.464	0.416	0.263	0.530						
n	25	25	25	25	25	25	25	25						
Avg.	71.2	3.14	2704	0.47	0.460	0.411	0.262	0.527						
Med.	71.2	3.14	2699	0.47	0.460	0.410	0.263	0.527						
σ	0.73	0.011	47.6	0.002	0.0047	0.0052	0.0021	0.0025						
Min.	70.1	3.12	2639	0.47	0.449	0.400	0.258	0.523						
Max.	72.4	3.16	2816	0.47	0.467	0.421	0.265	0.532						

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Data Set 3 : 55 °C, 150 mA

Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 3-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.0	98.8	98.7	98.9	98.6	98.4	98.5	98.5	98.3	98.5	98.4	98.3	97.8	97.8	97.8	97.7	98.0
2	100.0	99.1	98.9	98.8	98.8	98.5	98.5	98.5	98.5	98.3	98.5	98.3	98.3	97.8	97.7	97.8	97.6	97.9
3	100.0	99.2	99.1	99.0	99.2	99.0	98.9	99.0	99.0	98.9	99.1	98.9	98.9	98.4	98.4	98.5	98.3	98.6
4	100.0	99.1	99.0	98.9	99.1	98.8	98.8	98.9	98.9	98.7	98.9	98.7	98.8	98.2	98.2	98.2	98.1	98.3
5	100.0	99.4	99.2	99.0	99.1	98.7	98.7	98.8	98.7	98.6	98.7	98.6	98.6	98.1	98.1	97.9	97.8	98.1
6	100.0	99.1	98.9	98.8	98.9	98.6	98.6	98.7	98.7	98.6	98.6	98.4	98.5	97.9	98.0	97.9	97.8	98.2
7	100.0	99.0	98.8	98.7	98.8	98.7	98.6	98.7	98.6	98.5	98.7	98.6	98.5	98.1	98.1	98.1	97.9	98.1
8	100.0	99.4	99.3	99.2	99.3	99.1	99.0	99.1	99.0	98.7	99.0	98.9	98.8	98.3	98.3	98.2	98.1	98.3
9	100.0	99.3	99.2	99.2	99.2	99.1	99.0	99.1	99.2	98.8	99.2	99.1	99.0	98.7	98.6	98.6	98.5	98.6
10	100.0	99.2	99.0	99.0	99.1	98.9	98.8	98.9	98.9	98.6	99.0	98.7	98.7	98.3	98.3	98.2	98.1	98.4
11	100.0	99.4	99.2	99.1	99.3	99.0	98.8	99.0	99.1	98.6	99.0	98.8	98.8	98.4	98.4	98.1	98.0	98.1
12	100.0	99.0	98.9	98.9	99.0	98.8	98.7	98.8	98.7	98.5	98.8	98.5	98.5	98.1	98.1	98.1	98.0	98.2
13	100.0	99.3	99.3	99.1	99.2	99.1	99.0	99.0	98.9	98.8	99.0	98.8	98.8	98.3	98.3	98.4	98.2	98.5
14	100.0	99.2	99.2	99.0	99.1	99.0	98.9	98.9	98.8	98.7	98.9	98.8	98.8	98.4	98.3	98.3	98.2	98.4
15	100.0	99.5	99.5	99.3	99.0	99.0	98.9	98.9	98.9	98.7	98.8	98.6	98.6	98.1	98.1	98.3	98.0	98.4
16	100.0	98.9	98.9	98.9	99.0	98.8	98.7	98.8	98.7	98.6	98.8	98.7	98.6	98.2	98.2	98.3	98.1	98.3
17	100.0	99.0	98.9	98.7	98.9	98.5	98.5	98.5	98.4	98.3	98.7	98.3	98.3	97.7	97.9	97.5	97.5	97.6
18	100.0	98.9	99.0	99.0	99.0	98.9	98.7	98.8	98.8	98.7	98.9	98.8	98.7	98.2	98.3	98.3	98.1	98.4
19	100.0	99.0	98.9	98.8	98.8	98.7	98.6	98.7	98.7	98.4	98.7	98.6	98.5	98.1	98.1	98.2	97.9	98.1
20	100.0	99.4	99.3	99.2	99.3	99.0	99.0	99.1	99.1	98.8	99.1	98.9	98.9	98.5	98.4	98.4	98.2	98.5
21	100.0	99.3	99.1	99.1	99.1	99.0	98.8	99.0	99.1	98.9	99.1	98.9	98.8	98.4	98.3	98.4	98.1	98.4
22	100.0	99.5	99.4	99.4	99.4	99.2	99.2	99.3	99.2	99.0	99.2	99.1	99.1	98.6	98.6	98.6	98.4	98.7
23	100.0	99.4	99.2	99.2	99.1	98.8	98.9	99.0	99.0	98.7	99.0	98.6	98.7	98.4	98.3	98.1	98.0	98.1
24	100.0	99.5	99.3	99.3	99.3	99.1	99.0	99.1	99.1	98.9	99.1	98.9	98.8	98.4	98.3	98.4	98.2	98.4
25	100.0	99.6	99.5	99.3	99.4	99.1	99.1	99.1	99.0	98.8	99.0	98.8	98.7	98.3	98.3	98.4	98.1	98.3
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.2	99.1	99.0	99.1	98.9	98.8	98.9	98.9	98.7	98.9	98.7	98.7	98.2	98.2	98.2	98.0	98.3
Med.	100.0	99.2	99.1	99.0	99.1	98.9	98.8	98.9	98.9	98.7	98.9	98.7	98.7	98.3	98.3	98.2	98.1	98.3
σ	0.00	0.21	0.21	0.21	0.18	0.20	0.20	0.21	0.23	0.19	0.20	0.22	0.21	0.25	0.22	0.26	0.23	0.24
Min.	100.0	98.9	98.8	98.7	98.8	98.5	98.4	98.5	98.4	98.3	98.5	98.3	98.3	97.7	97.7	97.5	97.5	97.6
Max.	100.0	99.6	99.5	99.4	99.4	99.2	99.2	99.3	99.2	99.0	99.2	99.1	99.1	98.7	98.6	98.6	98.5	98.7

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0111	-0.0131	-0.0131	-0.0182	-0.0182	-0.0182	-0.0202	-0.0171	-0.0192	-0.0202	-0.0212							

Test duration used	5000 h to 10000 h	
B	0.996	
α	1.76E-06	
R^2	0.765	
Calculated L_{70} (10K)	200000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	125000	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	57600	hours
Reported L_{90} (10K)	57600	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 3 : 55 °C, 150 mA

Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 3-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	97.7	97.6	97.7															
2	97.7	97.6	97.6															
3	98.4	98.3	98.3															
4	98.1	97.9	98.0															
5	97.8	97.7	97.8															
6	98.0	97.8	97.8															
7	97.9	97.8	97.8															
8	98.1	98.0	97.9															
9	98.5	98.4	98.4															
10	98.2	98.0	98.0															
11	98.0	98.0	97.8															
12	98.0	97.9	97.8															
13	98.2	98.2	98.0															
14	98.2	98.1	98.1															
15	98.0	98.0	97.8															
16	98.1	98.0	97.9															
17	97.4	97.4	97.2															
18	98.2	98.1	98.0															
19	97.9	97.9	97.9															
20	98.3	98.3	98.1															
21	98.2	98.2	98.0															
22	98.5	98.5	98.4															
23	98.0	97.8	97.8															
24	98.3	98.2	98.0															
25	98.0	98.1	98.1															
n	25	25	25															
Avg.	98.1	98.0	97.9															
Med.	98.1	98.0	97.9															
σ	0.25	0.26	0.25															
Min.	97.4	97.4	97.2															
Max.	98.5	98.5	98.4															

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Data Set 3 : 55 °C, 150 mA

Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 3-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	98.8	98.9	99.1	99.0	99.0	98.9	99.1	99.1	99.0	99.0	99.2	99.1	99.1	99.1	99.2	99.1	99.3
2	100.0	99.1	99.0	99.0	99.0	99.1	99.2	99.1	99.2	99.1	99.1	99.3	99.2	99.2	99.2	99.2	99.2	99.2
3	100.0	99.1	99.0	99.0	99.0	99.1	99.2	99.1	99.2	99.0	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.3
4	100.0	99.1	99.1	99.1	99.2	99.1	99.2	99.2	99.2	99.1	99.2	99.4	99.3	99.3	99.3	99.3	99.3	99.4
5	100.0	98.8	98.8	98.9	98.8	98.8	98.8	98.8	99.0	98.8	98.9	99.0	99.0	98.9	99.0	98.9	98.9	99.0
6	100.0	99.2	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.1	99.2	99.4	99.4	99.3	99.3	99.3	99.3	99.4
7	100.0	99.1	99.0	98.9	99.0	99.1	99.0	99.1	99.1	99.1	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.1
8	100.0	98.7	98.8	98.7	98.8	98.8	98.8	98.9	98.9	98.8	98.8	98.9	98.9	98.9	98.9	98.9	98.9	99.0
9	100.0	99.0	99.0	98.9	99.0	98.9	99.0	99.0	99.0	98.9	99.0	99.1	99.1	99.0	99.0	99.0	99.0	99.2
10	100.0	99.0	99.0	99.0	99.0	99.1	99.2	99.1	99.2	99.1	99.1	99.2	99.1	99.1	99.2	99.2	99.2	99.2
11	100.0	99.0	98.9	98.9	98.9	98.9	98.9	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.1
12	100.0	99.1	99.0	99.0	99.1	99.1	99.2	99.2	99.2	99.0	99.2	99.1	99.2	99.2	99.2	99.1	99.2	99.2
13	100.0	99.1	99.1	99.0	99.1	99.0	99.1	99.2	99.1	99.0	99.0	99.1	99.1	99.0	99.1	99.1	99.1	99.1
14	100.0	99.1	99.1	99.0	99.1	99.1	99.1	99.2	99.1	99.1	99.1	99.2	99.2	99.2	99.1	99.2	99.2	99.2
15	100.0	99.0	98.9	98.9	98.9	99.0	99.0	99.1	99.0	98.9	99.0	99.1	99.1	99.0	99.0	99.1	99.0	99.1
16	100.0	99.2	99.1	99.1	99.1	99.2	99.1	99.2	99.3	99.2	99.2	99.3	99.2	99.3	99.3	99.3	99.3	99.3
17	100.0	99.1	99.0	99.1	99.1	99.1	99.1	99.2	99.1	99.0	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.2
18	100.0	99.3	99.1	99.2	99.1	99.2	99.2	99.3	99.2	99.3	99.2	99.3	99.4	99.3	99.3	99.4	99.3	99.3
19	100.0	99.0	99.0	98.9	99.0	98.9	99.1	99.2	99.1	99.0	99.0	99.1	99.2	99.1	99.1	99.1	99.1	99.1
20	100.0	99.0	98.9	98.9	98.9	99.0	99.0	99.0	99.0	99.0	99.0	99.1	99.1	99.0	99.0	99.0	99.0	99.0
21	100.0	99.1	98.9	99.0	98.9	99.0	98.9	99.1	99.0	99.0	99.0	99.1	99.1	99.1	99.1	99.0	99.1	99.1
22	100.0	98.8	98.8	98.8	98.8	98.8	98.9	98.9	98.9	98.8	98.8	98.9	98.9	99.0	98.9	98.9	98.9	99.0
23	100.0	98.9	98.8	98.8	98.8	98.9	98.8	98.9	98.9	98.8	98.9	99.0	98.9	99.0	98.9	98.9	98.9	99.0
24	100.0	99.0	98.9	98.9	99.0	98.9	98.9	99.0	99.0	99.0	99.0	99.1	99.0	99.1	99.0	99.0	99.0	99.1
25	100.0	98.9	98.8	98.8	98.9	98.9	98.9	98.9	98.9	98.9	98.9	98.9	98.9	99.0	98.9	98.9	98.9	99.0
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.0	99.0	99.0	99.0	99.0	99.0	99.1	99.1	99.0	99.0	99.1	99.1	99.1	99.1	99.1	99.1	99.1
Med.	100.0	99.0	99.0	99.0	99.0	99.0	99.0	99.1	99.1	99.0	99.0	99.1	99.1	99.1	99.1	99.1	99.1	99.1
σ	0.00	0.14	0.12	0.12	0.12	0.12	0.14	0.13	0.11	0.12	0.12	0.14	0.14	0.12	0.13	0.14	0.13	0.13
Min.	100.0	98.7	98.8	98.7	98.8	98.8	98.8	98.8	98.9	98.8	98.8	98.9	98.9	98.9	98.9	98.9	98.9	99.0
Max.	100.0	99.3	99.1	99.2	99.2	99.2	99.2	99.3	99.3	99.3	99.2	99.4	99.4	99.3	99.3	99.4	99.3	99.4

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Data Set 3 : 55 °C, 150 mA

Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 3-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	99.2	99.2	99.2															
2	99.2	99.2	99.2															
3	99.2	99.2	99.2															
4	99.3	99.3	99.3															
5	99.0	99.0	98.9															
6	99.3	99.3	99.3															
7	99.2	99.2	99.2															
8	99.0	99.0	98.9															
9	99.1	99.0	99.1															
10	99.2	99.2	99.2															
11	99.1	99.1	99.0															
12	99.2	99.2	99.3															
13	99.2	99.1	99.1															
14	99.2	99.2	99.2															
15	99.1	99.1	99.0															
16	99.3	99.3	99.3															
17	99.2	99.2	99.2															
18	99.3	99.3	99.3															
19	99.2	99.2	99.2															
20	99.0	99.1	99.1															
21	99.1	99.1	99.1															
22	98.9	99.0	99.0															
23	99.0	99.0	98.9															
24	99.0	99.1	99.0															
25	99.0	99.0	99.0															
n	25	25	25															
Avg.	99.1	99.1	99.1															
Med.	99.2	99.2	99.2															
σ	0.12	0.12	0.14															
Min.	98.9	99.0	98.9															
Max.	99.3	99.3	99.3															

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Data Set 3 : 55 °C, 150 mA

Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 3-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0006	0.0007	0.0008	0.0011	0.0011	0.0011	0.0010	0.0011	0.0011	0.0010	0.0009	0.0010	0.0015	0.0014	0.0015	0.0015	0.0015
2	0.0000	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0010	0.0011	0.0011	0.0010	0.0010	0.0010	0.0015	0.0014	0.0014	0.0014	0.0014
3	0.0000	0.0005	0.0008	0.0009	0.0010	0.0010	0.0011	0.0010	0.0011	0.0010	0.0009	0.0009	0.0009	0.0014	0.0013	0.0014	0.0014	0.0015
4	0.0000	0.0006	0.0008	0.0009	0.0010	0.0010	0.0011	0.0010	0.0012	0.0012	0.0010	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0014
5	0.0000	0.0005	0.0007	0.0007	0.0010	0.0010	0.0011	0.0010	0.0010	0.0010	0.0009	0.0010	0.0009	0.0014	0.0014	0.0014	0.0014	0.0013
6	0.0000	0.0007	0.0008	0.0010	0.0011	0.0011	0.0011	0.0011	0.0012	0.0012	0.0010	0.0010	0.0010	0.0015	0.0015	0.0015	0.0015	0.0015
7	0.0000	0.0007	0.0008	0.0008	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0011	0.0015	0.0015	0.0014	0.0014	0.0015
8	0.0000	0.0007	0.0008	0.0008	0.0009	0.0012	0.0012	0.0011	0.0011	0.0012	0.0010	0.0011	0.0011	0.0015	0.0015	0.0015	0.0015	0.0015
9	0.0000	0.0005	0.0007	0.0008	0.0009	0.0009	0.0010	0.0009	0.0010	0.0008	0.0008	0.0009	0.0009	0.0013	0.0013	0.0012	0.0012	0.0011
10	0.0000	0.0006	0.0009	0.0010	0.0011	0.0012	0.0013	0.0012	0.0013	0.0012	0.0011	0.0012	0.0011	0.0015	0.0016	0.0016	0.0015	0.0016
11	0.0000	0.0007	0.0009	0.0009	0.0011	0.0012	0.0012	0.0012	0.0012	0.0011	0.0010	0.0010	0.0010	0.0015	0.0015	0.0014	0.0015	0.0014
12	0.0000	0.0006	0.0007	0.0008	0.0010	0.0009	0.0012	0.0010	0.0011	0.0011	0.0009	0.0010	0.0010	0.0014	0.0015	0.0014	0.0014	0.0015
13	0.0000	0.0006	0.0008	0.0009	0.0010	0.0010	0.0012	0.0010	0.0012	0.0011	0.0010	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0014
14	0.0000	0.0005	0.0007	0.0008	0.0010	0.0010	0.0011	0.0009	0.0011	0.0011	0.0009	0.0010	0.0010	0.0014	0.0014	0.0013	0.0013	0.0013
15	0.0000	0.0006	0.0009	0.0009	0.0010	0.0012	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	0.0012	0.0016	0.0016	0.0016	0.0016	0.0016
16	0.0000	0.0007	0.0009	0.0010	0.0011	0.0012	0.0012	0.0012	0.0013	0.0012	0.0010	0.0011	0.0011	0.0015	0.0015	0.0014	0.0015	0.0015
17	0.0000	0.0005	0.0007	0.0009	0.0010	0.0009	0.0010	0.0010	0.0011	0.0010	0.0010	0.0010	0.0012	0.0015	0.0015	0.0013	0.0015	0.0015
18	0.0000	0.0006	0.0008	0.0009	0.0009	0.0011	0.0011	0.0010	0.0011	0.0011	0.0010	0.0011	0.0009	0.0015	0.0014	0.0012	0.0014	0.0014
19	0.0000	0.0006	0.0009	0.0010	0.0010	0.0011	0.0012	0.0012	0.0011	0.0012	0.0011	0.0010	0.0012	0.0015	0.0015	0.0016	0.0015	0.0015
20	0.0000	0.0007	0.0009	0.0009	0.0011	0.0011	0.0012	0.0012	0.0012	0.0011	0.0011	0.0011	0.0011	0.0014	0.0015	0.0014	0.0015	0.0015
21	0.0000	0.0007	0.0008	0.0009	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0014	0.0013	0.0014	0.0014	0.0014
22	0.0000	0.0006	0.0007	0.0009	0.0010	0.0011	0.0011	0.0010	0.0011	0.0010	0.0010	0.0009	0.0009	0.0014	0.0014	0.0014	0.0014	0.0014
23	0.0000	0.0006	0.0007	0.0008	0.0009	0.0009	0.0011	0.0010	0.0011	0.0010	0.0009	0.0009	0.0010	0.0015	0.0014	0.0014	0.0014	0.0014
24	0.0000	0.0007	0.0008	0.0009	0.0009	0.0010	0.0012	0.0010	0.0011	0.0010	0.0010	0.0010	0.0011	0.0015	0.0015	0.0015	0.0015	0.0014
25	0.0000	0.0007	0.0008	0.0010	0.0011	0.0011	0.0012	0.0012	0.0012	0.0012	0.0010	0.0010	0.0011	0.0015	0.0015	0.0015	0.0014	0.0014
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0006	0.0008	0.0009	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0015	0.0014	0.0014	0.0014	0.0014
Med.	0.0000	0.0006	0.0008	0.0009	0.0010	0.0011	0.0011	0.0010	0.0011	0.0011	0.0010	0.0010	0.0010	0.0015	0.0015	0.0014	0.0014	0.0014
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0005	0.0007	0.0007	0.0009	0.0009	0.0010	0.0009	0.0010	0.0008	0.0008	0.0009	0.0009	0.0013	0.0013	0.0012	0.0012	0.0011
Max.	0.0000	0.0007	0.0009	0.0010	0.0011	0.0012	0.0013	0.0012	0.0013	0.0012	0.0011	0.0012	0.0012	0.0016	0.0016	0.0016	0.0016	0.0016

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Data Set 3 : 55 °C, 150 mA

Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 3-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0015	0.0015	0.0017															
2	0.0016	0.0014	0.0016															
3	0.0015	0.0015	0.0015															
4	0.0016	0.0016	0.0016															
5	0.0015	0.0014	0.0015															
6	0.0016	0.0015	0.0016															
7	0.0015	0.0015	0.0016															
8	0.0016	0.0015	0.0016															
9	0.0013	0.0013	0.0013															
10	0.0017	0.0017	0.0017															
11	0.0015	0.0015	0.0015															
12	0.0016	0.0015	0.0015															
13	0.0015	0.0015	0.0015															
14	0.0014	0.0013	0.0013															
15	0.0017	0.0016	0.0017															
16	0.0016	0.0015	0.0015															
17	0.0015	0.0015	0.0015															
18	0.0015	0.0015	0.0015															
19	0.0016	0.0015	0.0017															
20	0.0016	0.0016	0.0016															
21	0.0015	0.0015	0.0015															
22	0.0015	0.0014	0.0014															
23	0.0015	0.0014	0.0016															
24	0.0016	0.0014	0.0016															
25	0.0016	0.0016	0.0016															
n	25	25	25															
Avg.	0.0015	0.0015	0.0015															
Med.	0.0015	0.0015	0.0016															
σ	0.0001	0.0001	0.0001															
Min.	0.0013	0.0013	0.0013															
Max.	0.0017	0.0017	0.0017															

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Data Set 3 : 55 °C, 150 mA

Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 3-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2581	0.2575	0.2575	0.2574	0.2571	0.2571	0.2571	0.2572	0.2570	0.2571	0.2572	0.2573	0.2571	0.2567	0.2568	0.2567	0.2567	0.2567
2	0.2648	0.2642	0.2641	0.2640	0.2639	0.2638	0.2637	0.2638	0.2637	0.2638	0.2638	0.2639	0.2638	0.2634	0.2634	0.2635	0.2634	0.2635
3	0.2624	0.2618	0.2616	0.2615	0.2613	0.2613	0.2612	0.2613	0.2613	0.2613	0.2615	0.2614	0.2614	0.2610	0.2610	0.2610	0.2610	0.2609
4	0.2640	0.2634	0.2632	0.2631	0.2629	0.2630	0.2628	0.2630	0.2627	0.2628	0.2629	0.2629	0.2629	0.2625	0.2626	0.2626	0.2626	0.2625
5	0.2651	0.2646	0.2644	0.2644	0.2642	0.2642	0.2641	0.2641	0.2641	0.2642	0.2643	0.2642	0.2642	0.2638	0.2637	0.2637	0.2637	0.2639
6	0.2656	0.2649	0.2648	0.2646	0.2645	0.2645	0.2645	0.2645	0.2644	0.2645	0.2646	0.2646	0.2646	0.2642	0.2641	0.2641	0.2641	0.2641
7	0.2586	0.2579	0.2578	0.2578	0.2576	0.2575	0.2575	0.2575	0.2575	0.2575	0.2575	0.2576	0.2576	0.2572	0.2572	0.2572	0.2573	0.2572
8	0.2638	0.2631	0.2629	0.2629	0.2629	0.2626	0.2626	0.2627	0.2627	0.2626	0.2628	0.2626	0.2627	0.2623	0.2623	0.2623	0.2623	0.2623
9	0.2617	0.2612	0.2610	0.2609	0.2608	0.2608	0.2608	0.2608	0.2607	0.2609	0.2609	0.2608	0.2608	0.2604	0.2605	0.2605	0.2605	0.2606
10	0.2651	0.2645	0.2642	0.2642	0.2641	0.2639	0.2639	0.2639	0.2638	0.2640	0.2641	0.2640	0.2641	0.2636	0.2635	0.2636	0.2636	0.2636
11	0.2629	0.2623	0.2621	0.2620	0.2619	0.2618	0.2618	0.2618	0.2617	0.2618	0.2620	0.2619	0.2619	0.2614	0.2615	0.2615	0.2614	0.2616
12	0.2641	0.2635	0.2633	0.2633	0.2630	0.2632	0.2629	0.2631	0.2630	0.2630	0.2632	0.2630	0.2630	0.2627	0.2626	0.2627	0.2627	0.2626
13	0.2620	0.2614	0.2612	0.2611	0.2610	0.2610	0.2608	0.2610	0.2609	0.2609	0.2610	0.2610	0.2610	0.2606	0.2606	0.2606	0.2606	0.2606
14	0.2612	0.2607	0.2605	0.2604	0.2603	0.2603	0.2601	0.2603	0.2602	0.2602	0.2604	0.2603	0.2603	0.2599	0.2599	0.2600	0.2599	0.2600
15	0.2655	0.2649	0.2646	0.2646	0.2645	0.2643	0.2643	0.2644	0.2643	0.2643	0.2644	0.2644	0.2643	0.2639	0.2639	0.2640	0.2639	0.2639
16	0.2642	0.2635	0.2633	0.2632	0.2631	0.2630	0.2630	0.2631	0.2630	0.2630	0.2632	0.2631	0.2631	0.2627	0.2627	0.2629	0.2627	0.2627
17	0.2632	0.2627	0.2625	0.2623	0.2622	0.2623	0.2622	0.2622	0.2621	0.2622	0.2622	0.2622	0.2620	0.2617	0.2617	0.2619	0.2617	0.2617
18	0.2639	0.2633	0.2631	0.2630	0.2630	0.2628	0.2628	0.2628	0.2628	0.2628	0.2629	0.2628	0.2629	0.2625	0.2625	0.2627	0.2625	0.2625
19	0.2658	0.2651	0.2649	0.2648	0.2648	0.2646	0.2646	0.2646	0.2646	0.2646	0.2647	0.2648	0.2646	0.2643	0.2643	0.2642	0.2643	0.2644
20	0.2618	0.2611	0.2609	0.2609	0.2607	0.2607	0.2606	0.2606	0.2606	0.2607	0.2607	0.2607	0.2607	0.2604	0.2603	0.2604	0.2603	0.2603
21	0.2642	0.2636	0.2635	0.2633	0.2632	0.2631	0.2632	0.2631	0.2631	0.2631	0.2632	0.2632	0.2633	0.2628	0.2630	0.2628	0.2629	0.2629
22	0.2650	0.2644	0.2643	0.2641	0.2640	0.2639	0.2639	0.2639	0.2639	0.2640	0.2640	0.2641	0.2641	0.2636	0.2636	0.2636	0.2636	0.2636
23	0.2640	0.2634	0.2632	0.2632	0.2630	0.2630	0.2629	0.2630	0.2629	0.2629	0.2630	0.2630	0.2630	0.2625	0.2626	0.2626	0.2625	0.2626
24	0.2592	0.2585	0.2584	0.2583	0.2583	0.2582	0.2580	0.2582	0.2581	0.2582	0.2582	0.2582	0.2581	0.2578	0.2578	0.2578	0.2577	0.2578
25	0.2634	0.2627	0.2626	0.2624	0.2623	0.2623	0.2622	0.2622	0.2622	0.2622	0.2624	0.2624	0.2623	0.2619	0.2619	0.2619	0.2620	0.2620
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2632	0.2626	0.2624	0.2623	0.2622	0.2621	0.2621	0.2621	0.2620	0.2621	0.2622	0.2622	0.2622	0.2618	0.2618	0.2618	0.2618	0.2618
Med.	0.2639	0.2633	0.2631	0.2630	0.2629	0.2628	0.2628	0.2628	0.2627	0.2628	0.2629	0.2628	0.2629	0.2625	0.2625	0.2626	0.2625	0.2625
σ	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021
Min.	0.2581	0.2575	0.2575	0.2574	0.2571	0.2571	0.2571	0.2572	0.2570	0.2571	0.2572	0.2573	0.2571	0.2567	0.2568	0.2567	0.2567	0.2567
Max.	0.2658	0.2651	0.2649	0.2648	0.2648	0.2646	0.2646	0.2646	0.2646	0.2646	0.2647	0.2648	0.2646	0.2643	0.2643	0.2642	0.2643	0.2644

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Data Set 3 : 55 °C, 150 mA

Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 3-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2567	0.2567	0.2565															
2	0.2633	0.2634	0.2632															
3	0.2609	0.2609	0.2608															
4	0.2624	0.2624	0.2624															
5	0.2637	0.2638	0.2637															
6	0.2640	0.2641	0.2640															
7	0.2571	0.2571	0.2571															
8	0.2622	0.2623	0.2622															
9	0.2604	0.2605	0.2604															
10	0.2634	0.2635	0.2635															
11	0.2614	0.2615	0.2615															
12	0.2625	0.2626	0.2626															
13	0.2605	0.2606	0.2606															
14	0.2599	0.2599	0.2599															
15	0.2638	0.2639	0.2639															
16	0.2626	0.2628	0.2628															
17	0.2617	0.2617	0.2617															
18	0.2624	0.2624	0.2624															
19	0.2642	0.2643	0.2641															
20	0.2603	0.2603	0.2602															
21	0.2627	0.2628	0.2628															
22	0.2635	0.2636	0.2636															
23	0.2625	0.2626	0.2624															
24	0.2577	0.2578	0.2577															
25	0.2619	0.2618	0.2618															
n	25	25	25															
Avg.	0.2617	0.2617	0.2617															
Med.	0.2624	0.2624	0.2624															
σ	0.0021	0.0021	0.0021															
Min.	0.2567	0.2567	0.2565															
Max.	0.2642	0.2643	0.2641															

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Data Set 3 : 55 °C, 150 mA

Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 3-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5232	0.5233	0.5232	0.5231	0.5231	0.5230	0.5229	0.5230	0.5230	0.5229	0.5230	0.5231	0.5230	0.5228	0.5228	0.5228	0.5228	0.5228
2	0.5222	0.5223	0.5222	0.5222	0.5220	0.5220	0.5220	0.5220	0.5221	0.5220	0.5220	0.5221	0.5221	0.5217	0.5218	0.5218	0.5219	0.5218
3	0.5301	0.5301	0.5301	0.5301	0.5300	0.5300	0.5300	0.5300	0.5300	0.5300	0.5301	0.5301	0.5301	0.5299	0.5299	0.5299	0.5299	0.5299
4	0.5241	0.5242	0.5242	0.5242	0.5241	0.5240	0.5240	0.5240	0.5240	0.5240	0.5241	0.5241	0.5241	0.5239	0.5239	0.5238	0.5239	0.5238
5	0.5278	0.5279	0.5278	0.5278	0.5277	0.5276	0.5276	0.5277	0.5277	0.5276	0.5276	0.5277	0.5277	0.5276	0.5275	0.5275	0.5275	0.5275
6	0.5263	0.5264	0.5263	0.5263	0.5261	0.5261	0.5261	0.5261	0.5261	0.5262	0.5261	0.5262	0.5262	0.5260	0.5260	0.5260	0.5260	0.5260
7	0.5249	0.5250	0.5250	0.5249	0.5247	0.5247	0.5247	0.5247	0.5247	0.5247	0.5247	0.5248	0.5248	0.5246	0.5246	0.5246	0.5246	0.5246
8	0.5258	0.5259	0.5258	0.5259	0.5257	0.5257	0.5257	0.5257	0.5257	0.5256	0.5257	0.5258	0.5257	0.5255	0.5255	0.5255	0.5255	0.5255
9	0.5317	0.5318	0.5317	0.5318	0.5316	0.5317	0.5316	0.5317	0.5317	0.5316	0.5317	0.5317	0.5318	0.5315	0.5316	0.5316	0.5316	0.5316
10	0.5261	0.5263	0.5262	0.5262	0.5260	0.5260	0.5260	0.5261	0.5260	0.5260	0.5261	0.5261	0.5261	0.5259	0.5259	0.5259	0.5259	0.5259
11	0.5304	0.5305	0.5304	0.5304	0.5304	0.5304	0.5303	0.5304	0.5303	0.5303	0.5304	0.5305	0.5304	0.5302	0.5303	0.5302	0.5303	0.5303
12	0.5266	0.5266	0.5266	0.5265	0.5265	0.5264	0.5264	0.5264	0.5264	0.5264	0.5265	0.5265	0.5264	0.5262	0.5262	0.5263	0.5262	0.5263
13	0.5293	0.5293	0.5293	0.5293	0.5292	0.5292	0.5292	0.5291	0.5291	0.5292	0.5292	0.5292	0.5292	0.5290	0.5290	0.5290	0.5290	0.5291
14	0.5258	0.5259	0.5258	0.5258	0.5257	0.5256	0.5257	0.5256	0.5256	0.5257	0.5257	0.5257	0.5257	0.5255	0.5256	0.5255	0.5255	0.5256
15	0.5256	0.5256	0.5257	0.5256	0.5255	0.5254	0.5255	0.5255	0.5255	0.5255	0.5255	0.5256	0.5255	0.5254	0.5253	0.5253	0.5253	0.5252
16	0.5312	0.5312	0.5312	0.5312	0.5311	0.5311	0.5311	0.5311	0.5311	0.5310	0.5311	0.5312	0.5311	0.5310	0.5309	0.5310	0.5310	0.5309
17	0.5283	0.5284	0.5284	0.5284	0.5282	0.5282	0.5282	0.5282	0.5283	0.5282	0.5282	0.5283	0.5282	0.5281	0.5281	0.5281	0.5281	0.5281
18	0.5281	0.5282	0.5281	0.5281	0.5280	0.5280	0.5279	0.5280	0.5280	0.5280	0.5280	0.5281	0.5280	0.5278	0.5279	0.5279	0.5279	0.5279
19	0.5275	0.5276	0.5275	0.5275	0.5274	0.5274	0.5273	0.5274	0.5274	0.5273	0.5274	0.5274	0.5274	0.5272	0.5272	0.5272	0.5272	0.5272
20	0.5282	0.5283	0.5283	0.5283	0.5281	0.5281	0.5281	0.5282	0.5282	0.5281	0.5282	0.5282	0.5282	0.5280	0.5279	0.5280	0.5280	0.5279
21	0.5285	0.5286	0.5285	0.5286	0.5284	0.5284	0.5284	0.5285	0.5285	0.5285	0.5285	0.5285	0.5285	0.5283	0.5283	0.5283	0.5283	0.5283
22	0.5306	0.5307	0.5307	0.5307	0.5306	0.5305	0.5305	0.5307	0.5306	0.5305	0.5307	0.5307	0.5307	0.5304	0.5305	0.5305	0.5305	0.5305
23	0.5304	0.5305	0.5304	0.5304	0.5303	0.5303	0.5303	0.5304	0.5303	0.5303	0.5304	0.5304	0.5304	0.5302	0.5302	0.5301	0.5302	0.5302
24	0.5241	0.5242	0.5242	0.5241	0.5240	0.5240	0.5239	0.5240	0.5240	0.5240	0.5241	0.5241	0.5241	0.5238	0.5238	0.5239	0.5238	0.5238
25	0.5300	0.5301	0.5300	0.5300	0.5299	0.5298	0.5299	0.5299	0.5299	0.5299	0.5299	0.5300	0.5299	0.5297	0.5298	0.5298	0.5297	0.5297
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5275	0.5276	0.5275	0.5275	0.5274	0.5273	0.5273	0.5274	0.5274	0.5273	0.5274	0.5274	0.5274	0.5272	0.5272	0.5272	0.5272	0.5272
Med.	0.5278	0.5279	0.5278	0.5278	0.5277	0.5276	0.5276	0.5277	0.5277	0.5276	0.5276	0.5277	0.5277	0.5276	0.5275	0.5275	0.5275	0.5275
σ	0.0026	0.0026	0.0026	0.0026	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
Min.	0.5222	0.5223	0.5222	0.5222	0.5220	0.5220	0.5220	0.5220	0.5221	0.5220	0.5220	0.5221	0.5221	0.5217	0.5218	0.5218	0.5219	0.5218
Max.	0.5317	0.5318	0.5317	0.5318	0.5316	0.5317	0.5316	0.5317	0.5317	0.5316	0.5317	0.5317	0.5318	0.5315	0.5316	0.5316	0.5316	0.5316

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Data Set 3 : 55 °C, 150 mA

Actual Case Temperature [T_S]	56.3 °C
Actual Ambient Temperature [T_A]	54.5 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 3-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5227	0.5227	0.5227															
2	0.5217	0.5218	0.5217															
3	0.5299	0.5298	0.5298															
4	0.5238	0.5238	0.5237															
5	0.5275	0.5275	0.5274															
6	0.5259	0.5259	0.5259															
7	0.5245	0.5246	0.5245															
8	0.5254	0.5254	0.5254															
9	0.5315	0.5316	0.5315															
10	0.5259	0.5258	0.5258															
11	0.5302	0.5302	0.5302															
12	0.5262	0.5262	0.5262															
13	0.5290	0.5290	0.5290															
14	0.5256	0.5255	0.5255															
15	0.5252	0.5252	0.5252															
16	0.5310	0.5309	0.5309															
17	0.5281	0.5280	0.5280															
18	0.5279	0.5279	0.5278															
19	0.5271	0.5272	0.5272															
20	0.5279	0.5280	0.5280															
21	0.5283	0.5282	0.5282															
22	0.5305	0.5305	0.5305															
23	0.5301	0.5302	0.5302															
24	0.5237	0.5238	0.5238															
25	0.5298	0.5297	0.5298															
n	25	25	25															
Avg.	0.5272	0.5272	0.5272															
Med.	0.5275	0.5275	0.5274															
σ	0.0027	0.0027	0.0027															
Min.	0.5217	0.5218	0.5217															
Max.	0.5315	0.5316	0.5315															

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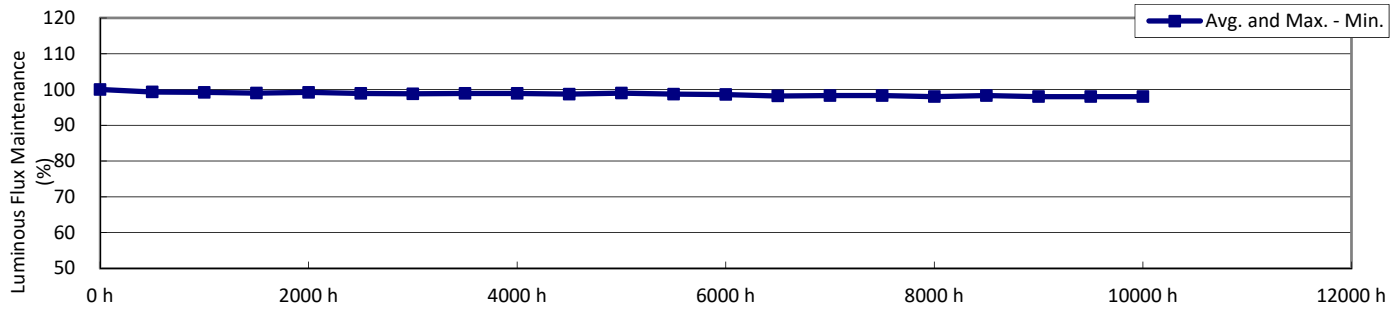
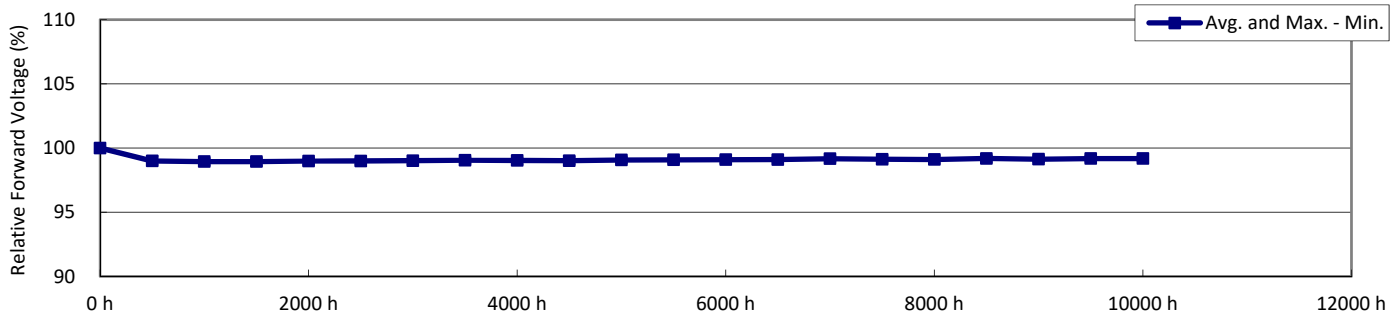
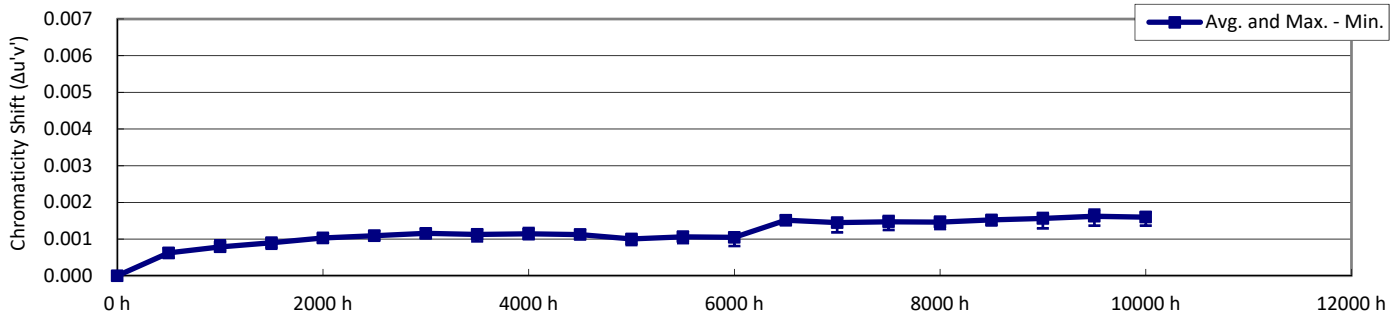
Data Set 4 : 55 °C, 180 mA

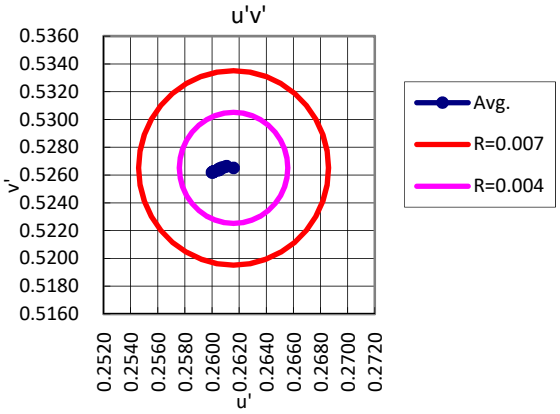
Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 4 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 4-1
Initial Characteristics

LED No.	Luminous flux	Forward voltage	CCT	Input Power	CIE1931		CIE1976							
	Φ_V [lm]	V_F [V]	T_{CP} [K]	P [W]	x	y	u'	v'						
1	82.8	3.20	2669	0.58	0.458	0.404	0.265	0.525						
2	82.9	3.21	2656	0.58	0.464	0.412	0.264	0.528						
3	83.8	3.21	2790	0.58	0.450	0.403	0.259	0.523						
4	81.8	3.22	2625	0.58	0.462	0.404	0.267	0.525						
5	84.6	3.23	2793	0.58	0.452	0.409	0.259	0.526						
6	84.7	3.21	2770	0.58	0.459	0.417	0.259	0.530						
7	83.8	3.23	2772	0.58	0.450	0.401	0.260	0.522						
8	82.6	3.24	2698	0.58	0.455	0.401	0.263	0.523						
9	84.4	3.20	2662	0.58	0.468	0.420	0.264	0.532						
10	82.8	3.22	2668	0.58	0.459	0.406	0.264	0.525						
11	85.5	3.21	2776	0.58	0.460	0.420	0.258	0.531						
12	84.6	3.23	2802	0.58	0.451	0.408	0.258	0.525						
13	83.0	3.23	2736	0.58	0.452	0.401	0.262	0.523						
14	84.0	3.23	2776	0.58	0.453	0.408	0.259	0.525						
15	83.9	3.20	2707	0.58	0.460	0.412	0.262	0.528						
16	83.2	3.24	2667	0.58	0.461	0.409	0.264	0.527						
17	83.2	3.21	2741	0.58	0.453	0.403	0.261	0.523						
18	83.7	3.21	2739	0.58	0.455	0.406	0.261	0.525						
19	84.7	3.24	2789	0.58	0.452	0.408	0.259	0.525						
20	84.0	3.23	2728	0.58	0.456	0.407	0.262	0.525						
21	83.5	3.24	2702	0.58	0.460	0.412	0.262	0.528						
22	84.5	3.24	2721	0.58	0.459	0.412	0.261	0.528						
23	84.3	3.21	2779	0.58	0.452	0.406	0.259	0.524						
24	84.5	3.24	2664	0.58	0.468	0.420	0.263	0.532						
25	83.2	3.24	2657	0.58	0.465	0.414	0.264	0.529						
n	25	25	25	25	25	25	25	25						
Avg.	83.7	3.22	2723	0.58	0.457	0.409	0.262	0.526						
Med.	83.8	3.23	2728	0.58	0.458	0.408	0.262	0.525						
σ	0.85	0.014	54.1	0.002	0.0054	0.0059	0.0024	0.0029						
Min.	81.8	3.20	2625	0.58	0.450	0.401	0.258	0.522						
Max.	85.5	3.24	2802	0.58	0.468	0.420	0.267	0.532						

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Data Set 4 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 4-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.0	98.9	98.7	98.9	98.6	98.6	98.7	98.7	98.4	98.8	98.5	98.4	98.0	98.1	98.2	97.9	98.2
2	100.0	99.1	99.0	98.8	99.0	98.7	98.7	98.8	98.8	98.6	99.0	98.7	98.6	98.3	98.3	98.3	98.1	98.3
3	100.0	99.1	99.0	98.8	99.1	98.8	98.7	98.8	98.9	98.7	98.9	98.6	98.5	98.2	98.2	98.2	98.0	98.2
4	100.0	99.2	99.2	98.9	99.2	98.8	98.7	98.9	98.9	98.7	99.0	98.8	98.6	98.3	98.3	98.3	98.0	98.4
5	100.0	99.3	99.2	98.9	99.1	98.7	98.7	98.7	98.7	98.4	98.7	98.3	98.2	97.9	98.1	97.7	97.6	97.8
6	100.0	99.2	99.2	98.9	99.1	98.8	98.8	98.8	98.8	98.5	98.8	98.6	98.4	98.1	98.2	98.2	98.0	98.3
7	100.0	99.3	99.2	99.1	99.2	98.9	98.7	98.8	98.7	98.6	98.8	98.5	98.5	98.1	98.1	98.2	97.9	98.0
8	100.0	99.5	99.4	99.2	99.4	99.2	99.1	99.1	99.1	98.9	99.1	98.9	98.9	98.4	98.5	98.4	98.2	98.4
9	100.0	99.1	99.0	99.0	99.1	99.0	98.9	99.0	98.9	98.8	99.0	98.8	98.7	98.3	98.4	98.4	98.2	98.3
10	100.0	99.3	99.2	99.1	99.2	99.0	98.9	99.0	98.9	98.8	99.1	98.8	98.8	98.4	98.4	98.5	98.2	98.4
11	100.0	99.2	99.2	99.1	99.4	99.2	98.8	98.9	98.7	98.6	99.0	98.7	98.5	98.0	98.2	98.0	97.9	98.0
12	100.0	99.5	99.5	99.3	99.5	99.4	99.1	99.2	99.1	99.0	99.2	99.0	99.0	98.5	98.5	98.6	98.3	98.6
13	100.0	99.4	99.2	99.0	99.1	98.8	98.8	99.0	98.7	98.5	98.8	98.5	98.4	98.0	98.2	98.2	97.9	98.2
14	100.0	99.5	99.4	99.2	99.4	99.2	99.1	99.3	99.2	99.1	99.2	99.1	98.9	98.6	98.6	98.7	98.5	98.7
15	100.0	99.2	99.0	98.9	99.1	98.9	98.9	99.0	98.9	98.8	99.1	98.9	98.8	98.4	98.5	98.5	98.2	98.5
16	100.0	99.4	99.2	99.1	99.3	99.0	99.0	99.1	98.9	98.9	99.1	99.0	98.8	98.4	98.6	98.5	98.3	98.6
17	100.0	99.1	98.8	98.7	98.9	98.6	98.5	98.6	98.4	98.3	98.7	98.3	98.1	97.8	97.8	97.8	97.4	97.9
18	100.0	99.2	99.0	98.9	99.1	98.9	98.9	99.0	98.8	98.7	98.9	98.8	98.6	98.3	98.3	98.4	98.2	98.4
19	100.0	99.2	99.2	98.9	99.2	98.8	98.7	98.8	98.8	98.6	98.8	98.4	98.4	97.9	98.0	98.1	97.8	98.1
20	100.0	99.1	99.1	98.9	99.2	98.8	98.7	98.9	98.8	98.6	99.0	98.5	98.6	98.1	98.2	98.3	98.0	98.3
21	100.0	99.5	99.3	99.1	99.3	99.0	98.9	99.0	98.9	98.7	99.0	98.6	98.6	98.1	98.2	98.2	98.0	98.3
22	100.0	99.4	99.4	99.2	99.4	99.1	99.0	99.1	99.1	99.0	99.3	98.9	98.9	98.4	98.6	98.6	98.3	98.6
23	100.0	99.0	98.8	98.7	98.9	98.6	98.4	98.6	98.6	98.4	98.7	98.1	98.2	97.8	98.0	97.7	97.5	97.8
24	100.0	99.2	99.2	99.1	99.3	99.0	98.8	99.0	99.0	98.9	99.2	98.8	98.8	98.5	98.5	98.5	98.3	98.7
25	100.0	99.4	99.3	99.1	99.3	99.1	99.0	99.1	99.0	99.0	99.2	98.9	98.8	98.3	98.5	98.6	98.3	98.5
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.3	99.2	99.0	99.2	98.9	98.8	98.9	98.9	98.7	99.0	98.7	98.6	98.2	98.3	98.3	98.0	98.3
Med.	100.0	99.2	99.2	99.0	99.2	98.9	98.8	99.0	98.9	98.7	99.0	98.7	98.6	98.3	98.3	98.3	98.0	98.3
σ	0.00	0.16	0.18	0.17	0.17	0.21	0.18	0.18	0.18	0.22	0.18	0.25	0.24	0.23	0.21	0.27	0.27	0.26
Min.	100.0	99.0	98.8	98.7	98.9	98.6	98.4	98.6	98.4	98.3	98.7	98.1	98.1	97.8	97.8	97.7	97.4	97.8
Max.	100.0	99.5	99.5	99.3	99.5	99.4	99.1	99.3	99.2	99.1	99.3	99.1	99.0	98.6	98.6	98.7	98.5	98.7

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0101	-0.0131	-0.0141	-0.0182	-0.0171	-0.0171	-0.0202	-0.0171	-0.0202	-0.0202	-0.0202							

Test duration used	5000 h to 10000 h	
B	0.996	
α	1.78E-06	
R^2	0.770	
Calculated L_{70} (10K)	198000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	123000	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	56900	hours
Reported L_{90} (10K)	56900	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 4 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 4-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	97.8	97.9	97.8															
2	98.1	98.1	98.0															
3	97.9	97.9	97.9															
4	98.0	98.0	98.0															
5	97.4	97.4	97.3															
6	97.9	97.9	98.0															
7	97.9	97.9	97.8															
8	98.2	98.3	98.1															
9	98.1	98.2	98.1															
10	98.1	98.2	98.2															
11	97.8	97.8	97.7															
12	98.3	98.4	98.3															
13	98.0	97.9	97.9															
14	98.4	98.4	98.4															
15	98.2	98.1	98.2															
16	98.4	98.3	98.3															
17	97.6	97.5	97.4															
18	98.2	98.1	98.1															
19	97.8	97.8	97.7															
20	98.0	98.0	97.9															
21	98.0	98.0	97.9															
22	98.4	98.3	98.3															
23	97.5	97.5	97.4															
24	98.4	98.4	98.3															
25	98.4	98.4	98.2															
n	25	25	25															
Avg.	98.0	98.0	98.0															
Med.	98.0	98.0	98.0															
σ	0.28	0.29	0.30															
Min.	97.4	97.4	97.3															
Max.	98.4	98.4	98.4															

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Data Set 4 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 4-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.1	99.1	99.0	99.1	99.1	99.2	99.1	99.2	99.1	99.2	99.3	99.2	99.3	99.2	99.2	99.2	99.3
2	100.0	99.0	99.0	98.9	99.0	99.1	99.1	99.1	99.1	99.0	99.1	99.1	99.2	99.1	99.1	99.1	99.2	99.2
3	100.0	99.1	99.1	99.1	99.1	99.0	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.3	99.3	99.3	99.3
4	100.0	99.0	99.1	99.1	99.1	99.1	99.1	99.2	99.1	99.1	99.2	99.3	99.2	99.2	99.3	99.2	99.2	99.4
5	100.0	98.9	98.9	98.9	98.9	98.8	99.0	99.0	98.9	98.9	99.0	99.0	99.0	99.0	99.0	99.1	99.0	99.0
6	100.0	99.1	99.1	99.2	99.1	99.2	99.1	99.1	99.2	99.1	99.2	99.1	99.2	99.2	99.3	99.2	99.3	99.4
7	100.0	99.1	99.0	99.1	99.0	99.1	99.1	99.1	99.1	99.1	99.1	99.1	99.1	99.2	99.3	99.2	99.2	99.2
8	100.0	98.8	98.8	98.8	98.7	98.8	98.8	98.9	98.9	98.8	98.9	98.9	98.9	98.9	99.0	98.9	98.9	99.0
9	100.0	99.1	99.1	99.0	99.1	99.1	99.2	99.3	99.2	99.1	99.2	99.2	99.3	99.2	99.3	99.2	99.3	99.4
10	100.0	99.0	98.9	98.9	98.9	98.9	99.0	99.1	98.9	99.0	99.0	99.1	99.2	99.1	99.2	99.2	99.2	99.2
11	100.0	99.1	99.1	98.9	99.1	99.2	99.2	99.2	99.2	99.1	99.2	99.3	99.2	99.2	99.3	99.2	99.2	99.3
12	100.0	99.0	98.9	98.9	98.9	99.0	99.0	99.0	98.9	98.9	99.0	99.0	99.0	99.1	99.1	99.1	99.0	99.1
13	100.0	98.8	98.7	98.6	98.8	98.7	98.8	98.8	98.7	98.8	98.9	98.9	98.9	98.8	99.0	98.9	98.9	99.0
14	100.0	98.9	99.0	98.9	98.9	99.0	98.9	98.9	99.0	98.9	98.9	99.0	99.0	99.0	99.1	99.0	99.0	99.1
15	100.0	99.4	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.3	99.3	99.3	99.3	99.4	99.4	99.4	99.3	99.4
16	100.0	98.9	98.8	98.9	98.9	98.9	98.9	98.9	99.0	98.9	98.9	99.0	99.0	99.0	99.2	99.0	99.0	99.0
17	100.0	99.1	99.1	99.0	99.2	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.3	99.3	99.2	99.3
18	100.0	99.2	99.2	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.3	99.3	99.3	99.3	99.4	99.4	99.4	99.4
19	100.0	99.0	98.8	98.9	99.0	98.9	99.0	99.1	99.0	99.0	99.1	99.1	99.1	99.1	99.2	99.0	99.0	99.2
20	100.0	98.9	98.8	98.9	98.9	98.9	98.9	99.0	98.9	98.9	98.9	99.1	99.0	99.0	99.1	99.0	99.0	99.1
21	100.0	98.9	98.8	98.8	98.9	98.8	98.8	98.9	98.9	98.9	99.0	98.9	99.0	99.0	99.0	99.0	98.9	99.0
22	100.0	98.8	98.7	98.7	98.8	98.7	98.7	98.8	98.9	98.8	98.8	98.8	98.8	98.9	99.0	98.9	98.9	99.0
23	100.0	99.0	98.9	98.9	99.0	99.0	99.0	99.1	99.0	99.1	99.1	99.1	99.1	99.2	99.2	99.2	99.2	99.3
24	100.0	99.0	99.0	99.0	99.0	99.0	99.1	99.1	99.1	99.0	99.1	99.0	99.1	99.1	99.2	99.1	99.1	99.2
25	100.0	98.7	98.7	98.7	98.8	98.8	98.8	98.8	98.8	98.8	98.9	98.9	98.9	98.9	99.0	98.9	98.8	98.9
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.0	98.9	98.9	99.0	99.0	99.0	99.1	99.0	99.0	99.1	99.1	99.1	99.1	99.2	99.1	99.1	99.2
Med.	100.0	99.0	99.0	98.9	99.0	99.0	99.0	99.1	99.0	99.0	99.1	99.1	99.1	99.1	99.2	99.1	99.2	99.2
σ	0.00	0.15	0.15	0.14	0.13	0.15	0.15	0.14	0.14	0.15	0.15	0.14	0.15	0.14	0.13	0.16	0.15	0.15
Min.	100.0	98.7	98.7	98.6	98.7	98.7	98.7	98.8	98.7	98.8	98.8	98.8	98.8	98.8	99.0	98.9	98.8	98.9
Max.	100.0	99.4	99.2	99.2	99.2	99.2	99.2	99.3	99.2	99.3	99.3	99.3	99.3	99.4	99.4	99.4	99.4	99.4

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Data Set 4 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 4-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	99.2	99.3	99.3															
2	99.2	99.2	99.2															
3	99.2	99.2	99.3															
4	99.2	99.3	99.3															
5	99.0	99.1	99.1															
6	99.2	99.3	99.3															
7	99.2	99.2	99.2															
8	99.0	99.0	99.0															
9	99.3	99.4	99.3															
10	99.1	99.2	99.2															
11	99.3	99.3	99.3															
12	99.1	99.1	99.1															
13	99.0	99.0	99.0															
14	99.0	99.1	99.1															
15	99.4	99.4	99.4															
16	99.0	99.0	99.1															
17	99.3	99.3	99.3															
18	99.3	99.4	99.4															
19	99.2	99.2	99.2															
20	99.0	99.1	99.1															
21	99.0	99.1	99.0															
22	98.9	99.0	99.0															
23	99.2	99.2	99.3															
24	99.1	99.2	99.2															
25	99.0	99.0	99.0															
n	25	25	25															
Avg.	99.1	99.2	99.2															
Med.	99.2	99.2	99.2															
σ	0.12	0.14	0.13															
Min.	98.9	99.0	99.0															
Max.	99.4	99.4	99.4															

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Data Set 4 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 4-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0007	0.0007	0.0009	0.0010	0.0011	0.0012	0.0011	0.0011	0.0011	0.0011	0.0010	0.0010	0.0015	0.0016	0.0015	0.0014	0.0015
2	0.0000	0.0007	0.0009	0.0010	0.0011	0.0012	0.0013	0.0012	0.0012	0.0012	0.0011	0.0012	0.0012	0.0016	0.0015	0.0015	0.0015	0.0015
3	0.0000	0.0006	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012	0.0010	0.0011	0.0011	0.0015	0.0015	0.0014	0.0015	0.0016
4	0.0000	0.0007	0.0008	0.0009	0.0011	0.0012	0.0012	0.0011	0.0012	0.0012	0.0010	0.0011	0.0010	0.0016	0.0015	0.0015	0.0015	0.0015
5	0.0000	0.0006	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0010	0.0011	0.0010	0.0011	0.0011	0.0015	0.0014	0.0014	0.0015	0.0015
6	0.0000	0.0006	0.0008	0.0009	0.0010	0.0011	0.0012	0.0011	0.0011	0.0011	0.0010	0.0012	0.0012	0.0015	0.0014	0.0013	0.0015	0.0015
7	0.0000	0.0006	0.0008	0.0010	0.0011	0.0011	0.0012	0.0013	0.0012	0.0013	0.0010	0.0011	0.0011	0.0016	0.0016	0.0016	0.0015	0.0016
8	0.0000	0.0006	0.0008	0.0009	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0010	0.0010	0.0015	0.0014	0.0014	0.0015	0.0014
9	0.0000	0.0006	0.0008	0.0009	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0015
10	0.0000	0.0006	0.0007	0.0009	0.0010	0.0011	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.0016	0.0014	0.0015	0.0015	0.0016
11	0.0000	0.0007	0.0008	0.0010	0.0011	0.0011	0.0012	0.0012	0.0012	0.0012	0.0010	0.0011	0.0010	0.0014	0.0015	0.0016	0.0015	0.0015
12	0.0000	0.0006	0.0007	0.0009	0.0010	0.0011	0.0012	0.0011	0.0011	0.0010	0.0010	0.0010	0.0011	0.0015	0.0014	0.0015	0.0014	0.0015
13	0.0000	0.0006	0.0007	0.0010	0.0010	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	0.0011	0.0016	0.0016	0.0016	0.0016	0.0016
14	0.0000	0.0007	0.0009	0.0010	0.0012	0.0012	0.0012	0.0012	0.0013	0.0012	0.0010	0.0011	0.0011	0.0016	0.0015	0.0014	0.0015	0.0015
15	0.0000	0.0007	0.0009	0.0009	0.0011	0.0012	0.0012	0.0012	0.0012	0.0011	0.0009	0.0011	0.0010	0.0014	0.0014	0.0015	0.0014	0.0015
16	0.0000	0.0006	0.0007	0.0007	0.0009	0.0010	0.0011	0.0009	0.0010	0.0010	0.0008	0.0009	0.0008	0.0014	0.0012	0.0012	0.0013	0.0014
17	0.0000	0.0006	0.0008	0.0010	0.0011	0.0011	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	0.0010	0.0016	0.0015	0.0016	0.0015	0.0016
18	0.0000	0.0006	0.0007	0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0009	0.0010	0.0010	0.0015	0.0014	0.0014	0.0014	0.0014
19	0.0000	0.0005	0.0007	0.0008	0.0010	0.0010	0.0011	0.0010	0.0012	0.0011	0.0011	0.0011	0.0011	0.0015	0.0015	0.0015	0.0014	0.0016
20	0.0000	0.0005	0.0008	0.0008	0.0010	0.0010	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0010	0.0014	0.0014	0.0015	0.0014	0.0015
21	0.0000	0.0006	0.0008	0.0009	0.0009	0.0010	0.0012	0.0012	0.0011	0.0010	0.0010	0.0011	0.0010	0.0015	0.0015	0.0016	0.0015	0.0016
22	0.0000	0.0007	0.0010	0.0008	0.0010	0.0011	0.0011	0.0011	0.0011	0.0012	0.0010	0.0010	0.0010	0.0015	0.0015	0.0015	0.0014	0.0015
23	0.0000	0.0006	0.0008	0.0009	0.0010	0.0011	0.0012	0.0012	0.0011	0.0011	0.0010	0.0011	0.0011	0.0016	0.0015	0.0016	0.0016	0.0016
24	0.0000	0.0006	0.0007	0.0008	0.0009	0.0010	0.0010	0.0011	0.0010	0.0010	0.0009	0.0009	0.0009	0.0014	0.0013	0.0014	0.0013	0.0014
25	0.0000	0.0006	0.0008	0.0009	0.0010	0.0012	0.0011	0.0012	0.0011	0.0012	0.0010	0.0011	0.0011	0.0016	0.0014	0.0014	0.0015	0.0015
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0006	0.0008	0.0009	0.0010	0.0011	0.0012	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0015	0.0014	0.0015	0.0015	0.0015
Med.	0.0000	0.0006	0.0008	0.0009	0.0010	0.0011	0.0012	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0015	0.0015	0.0015	0.0015	0.0015
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0005	0.0007	0.0007	0.0009	0.0010	0.0010	0.0009	0.0010	0.0010	0.0008	0.0009	0.0008	0.0014	0.0012	0.0012	0.0013	0.0014
Max.	0.0000	0.0007	0.0010	0.0010	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0011	0.0012	0.0012	0.0016	0.0016	0.0016	0.0016	0.0016

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Data Set 4 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 4-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0016	0.0018	0.0017															
2	0.0017	0.0017	0.0016															
3	0.0016	0.0016	0.0017															
4	0.0016	0.0017	0.0017															
5	0.0015	0.0017	0.0016															
6	0.0015	0.0015	0.0016															
7	0.0017	0.0017	0.0017															
8	0.0016	0.0016	0.0016															
9	0.0015	0.0016	0.0015															
10	0.0016	0.0017	0.0017															
11	0.0017	0.0016	0.0016															
12	0.0015	0.0016	0.0016															
13	0.0017	0.0017	0.0017															
14	0.0017	0.0016	0.0016															
15	0.0016	0.0015	0.0015															
16	0.0013	0.0014	0.0014															
17	0.0016	0.0018	0.0017															
18	0.0015	0.0016	0.0016															
19	0.0016	0.0016	0.0016															
20	0.0015	0.0016	0.0016															
21	0.0015	0.0016	0.0016															
22	0.0016	0.0016	0.0016															
23	0.0017	0.0017	0.0016															
24	0.0013	0.0014	0.0014															
25	0.0016	0.0017	0.0016															
n	25	25	25															
Avg.	0.0016	0.0016	0.0016															
Med.	0.0016	0.0016	0.0016															
σ	0.0001	0.0001	0.0001															
Min.	0.0013	0.0014	0.0014															
Max.	0.0017	0.0018	0.0017															

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Data Set 4 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 4-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2648	0.2642	0.2641	0.2639	0.2639	0.2637	0.2636	0.2637	0.2637	0.2637	0.2637	0.2638	0.2638	0.2634	0.2633	0.2633	0.2634	0.2634
2	0.2649	0.2641	0.2640	0.2639	0.2637	0.2637	0.2636	0.2636	0.2636	0.2636	0.2637	0.2637	0.2637	0.2633	0.2633	0.2634	0.2633	0.2633
3	0.2594	0.2588	0.2586	0.2586	0.2584	0.2584	0.2583	0.2583	0.2583	0.2582	0.2584	0.2583	0.2583	0.2579	0.2580	0.2580	0.2579	0.2579
4	0.2674	0.2667	0.2666	0.2664	0.2663	0.2662	0.2662	0.2663	0.2662	0.2662	0.2664	0.2663	0.2663	0.2658	0.2659	0.2659	0.2659	0.2659
5	0.2612	0.2606	0.2604	0.2603	0.2602	0.2602	0.2601	0.2601	0.2602	0.2601	0.2601	0.2601	0.2601	0.2597	0.2598	0.2598	0.2597	0.2597
6	0.2595	0.2589	0.2587	0.2586	0.2584	0.2583	0.2583	0.2583	0.2583	0.2583	0.2585	0.2583	0.2583	0.2580	0.2581	0.2582	0.2580	0.2580
7	0.2604	0.2598	0.2596	0.2595	0.2593	0.2593	0.2593	0.2592	0.2593	0.2592	0.2594	0.2593	0.2593	0.2589	0.2589	0.2589	0.2590	0.2589
8	0.2637	0.2631	0.2629	0.2628	0.2627	0.2626	0.2626	0.2626	0.2626	0.2627	0.2628	0.2627	0.2627	0.2623	0.2623	0.2623	0.2622	0.2623
9	0.2638	0.2632	0.2631	0.2629	0.2629	0.2628	0.2627	0.2627	0.2627	0.2628	0.2629	0.2628	0.2628	0.2624	0.2624	0.2624	0.2625	0.2623
10	0.2651	0.2646	0.2644	0.2642	0.2641	0.2641	0.2640	0.2640	0.2640	0.2640	0.2641	0.2640	0.2641	0.2636	0.2638	0.2637	0.2636	0.2636
11	0.2610	0.2604	0.2602	0.2600	0.2599	0.2599	0.2599	0.2599	0.2598	0.2599	0.2600	0.2599	0.2600	0.2596	0.2596	0.2595	0.2595	0.2595
12	0.2589	0.2583	0.2582	0.2580	0.2579	0.2578	0.2578	0.2578	0.2578	0.2579	0.2580	0.2579	0.2579	0.2575	0.2576	0.2575	0.2576	0.2575
13	0.2621	0.2616	0.2614	0.2612	0.2611	0.2610	0.2610	0.2610	0.2609	0.2610	0.2611	0.2610	0.2610	0.2606	0.2606	0.2606	0.2606	0.2606
14	0.2597	0.2590	0.2588	0.2587	0.2586	0.2585	0.2585	0.2585	0.2584	0.2586	0.2587	0.2586	0.2586	0.2581	0.2583	0.2583	0.2582	0.2582
15	0.2624	0.2617	0.2615	0.2615	0.2613	0.2612	0.2612	0.2612	0.2612	0.2613	0.2614	0.2613	0.2614	0.2609	0.2610	0.2609	0.2610	0.2608
16	0.2649	0.2643	0.2642	0.2642	0.2640	0.2639	0.2638	0.2640	0.2639	0.2639	0.2641	0.2640	0.2641	0.2635	0.2637	0.2637	0.2637	0.2636
17	0.2644	0.2638	0.2636	0.2634	0.2633	0.2633	0.2632	0.2632	0.2632	0.2632	0.2633	0.2633	0.2634	0.2628	0.2630	0.2628	0.2629	0.2628
18	0.2619	0.2614	0.2612	0.2610	0.2609	0.2610	0.2609	0.2608	0.2608	0.2609	0.2610	0.2609	0.2609	0.2605	0.2606	0.2605	0.2606	0.2606
19	0.2591	0.2586	0.2584	0.2583	0.2581	0.2581	0.2579	0.2581	0.2579	0.2580	0.2580	0.2580	0.2580	0.2576	0.2577	0.2577	0.2577	0.2575
20	0.2618	0.2613	0.2610	0.2609	0.2608	0.2607	0.2607	0.2607	0.2607	0.2607	0.2608	0.2608	0.2608	0.2603	0.2604	0.2603	0.2604	0.2603
21	0.2626	0.2620	0.2619	0.2617	0.2617	0.2616	0.2615	0.2615	0.2615	0.2616	0.2616	0.2615	0.2616	0.2611	0.2612	0.2611	0.2612	0.2611
22	0.2622	0.2615	0.2612	0.2613	0.2612	0.2611	0.2610	0.2611	0.2610	0.2610	0.2611	0.2611	0.2611	0.2607	0.2607	0.2607	0.2607	0.2607
23	0.2620	0.2614	0.2612	0.2611	0.2610	0.2609	0.2609	0.2608	0.2609	0.2609	0.2610	0.2609	0.2610	0.2605	0.2605	0.2605	0.2604	0.2605
24	0.2639	0.2633	0.2632	0.2631	0.2630	0.2629	0.2629	0.2629	0.2629	0.2629	0.2630	0.2630	0.2630	0.2625	0.2626	0.2625	0.2626	0.2625
25	0.2645	0.2639	0.2637	0.2637	0.2635	0.2634	0.2634	0.2633	0.2634	0.2634	0.2635	0.2635	0.2635	0.2630	0.2631	0.2631	0.2630	0.2630
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2625	0.2619	0.2617	0.2616	0.2614	0.2614	0.2613	0.2613	0.2613	0.2614	0.2615	0.2614	0.2614	0.2610	0.2610	0.2610	0.2610	0.2610
Med.	0.2622	0.2616	0.2614	0.2613	0.2612	0.2611	0.2610	0.2611	0.2610	0.2610	0.2611	0.2611	0.2611	0.2607	0.2607	0.2607	0.2607	0.2607
σ	0.0022	0.0022	0.0023	0.0022	0.0022	0.0022	0.0022	0.0023	0.0023	0.0022	0.0022	0.0023	0.0023	0.0022	0.0023	0.0022	0.0022	0.0022
Min.	0.2589	0.2583	0.2582	0.2580	0.2579	0.2578	0.2578	0.2578	0.2578	0.2579	0.2580	0.2579	0.2579	0.2575	0.2576	0.2575	0.2576	0.2575
Max.	0.2674	0.2667	0.2666	0.2664	0.2663	0.2662	0.2662	0.2663	0.2662	0.2662	0.2664	0.2663	0.2663	0.2658	0.2659	0.2659	0.2659	0.2659

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Data Set 4 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 4-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2633	0.2631	0.2632															
2	0.2632	0.2632	0.2633															
3	0.2578	0.2578	0.2578															
4	0.2658	0.2657	0.2658															
5	0.2597	0.2596	0.2596															
6	0.2580	0.2580	0.2578															
7	0.2588	0.2588	0.2588															
8	0.2622	0.2622	0.2622															
9	0.2624	0.2623	0.2623															
10	0.2636	0.2635	0.2635															
11	0.2594	0.2594	0.2595															
12	0.2574	0.2574	0.2574															
13	0.2605	0.2605	0.2605															
14	0.2581	0.2582	0.2581															
15	0.2608	0.2609	0.2609															
16	0.2636	0.2636	0.2636															
17	0.2628	0.2626	0.2627															
18	0.2605	0.2604	0.2604															
19	0.2576	0.2576	0.2575															
20	0.2603	0.2602	0.2602															
21	0.2611	0.2610	0.2610															
22	0.2606	0.2605	0.2606															
23	0.2604	0.2604	0.2605															
24	0.2626	0.2625	0.2625															
25	0.2630	0.2629	0.2630															
n	25	25	25															
Avg.	0.2609	0.2609	0.2609															
Med.	0.2606	0.2605	0.2606															
σ	0.0023	0.0022	0.0023															
Min.	0.2574	0.2574	0.2574															
Max.	0.2658	0.2657	0.2658															

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Data Set 4 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 4-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5244	0.5245	0.5244	0.5244	0.5242	0.5242	0.5242	0.5242	0.5242	0.5242	0.5243	0.5242	0.5243	0.5240	0.5241	0.5240	0.5241	0.5240
2	0.5280	0.5281	0.5280	0.5280	0.5279	0.5279	0.5279	0.5279	0.5279	0.5279	0.5280	0.5279	0.5280	0.5278	0.5278	0.5278	0.5278	0.5278
3	0.5228	0.5228	0.5227	0.5227	0.5226	0.5226	0.5225	0.5225	0.5226	0.5226	0.5226	0.5227	0.5226	0.5224	0.5225	0.5224	0.5224	0.5223
4	0.5251	0.5252	0.5251	0.5251	0.5250	0.5250	0.5249	0.5250	0.5250	0.5250	0.5250	0.5250	0.5250	0.5248	0.5248	0.5249	0.5249	0.5248
5	0.5267	0.5269	0.5267	0.5268	0.5266	0.5265	0.5266	0.5266	0.5266	0.5266	0.5266	0.5267	0.5267	0.5264	0.5265	0.5265	0.5265	0.5265
6	0.5297	0.5298	0.5298	0.5297	0.5296	0.5296	0.5296	0.5296	0.5296	0.5296	0.5297	0.5297	0.5296	0.5294	0.5296	0.5295	0.5295	0.5295
7	0.5218	0.5218	0.5217	0.5217	0.5216	0.5215	0.5214	0.5215	0.5215	0.5215	0.5216	0.5216	0.5215	0.5213	0.5214	0.5214	0.5214	0.5213
8	0.5225	0.5226	0.5225	0.5225	0.5224	0.5223	0.5224	0.5224	0.5224	0.5224	0.5225	0.5225	0.5224	0.5222	0.5223	0.5222	0.5222	0.5222
9	0.5317	0.5317	0.5317	0.5317	0.5315	0.5316	0.5315	0.5316	0.5315	0.5315	0.5316	0.5316	0.5316	0.5315	0.5315	0.5315	0.5315	0.5315
10	0.5253	0.5253	0.5253	0.5253	0.5251	0.5251	0.5251	0.5251	0.5251	0.5251	0.5252	0.5253	0.5252	0.5250	0.5250	0.5250	0.5250	0.5250
11	0.5321	0.5321	0.5321	0.5321	0.5320	0.5319	0.5319	0.5320	0.5320	0.5319	0.5320	0.5320	0.5320	0.5318	0.5318	0.5318	0.5319	0.5318
12	0.5252	0.5252	0.5252	0.5251	0.5251	0.5250	0.5250	0.5251	0.5251	0.5250	0.5251	0.5251	0.5252	0.5248	0.5249	0.5249	0.5249	0.5249
13	0.5224	0.5226	0.5225	0.5224	0.5222	0.5222	0.5222	0.5223	0.5222	0.5222	0.5222	0.5223	0.5222	0.5220	0.5221	0.5220	0.5220	0.5221
14	0.5249	0.5250	0.5250	0.5250	0.5249	0.5248	0.5248	0.5249	0.5248	0.5248	0.5248	0.5249	0.5249	0.5246	0.5248	0.5247	0.5247	0.5248
15	0.5279	0.5279	0.5279	0.5279	0.5277	0.5277	0.5277	0.5278	0.5278	0.5278	0.5278	0.5279	0.5278	0.5276	0.5277	0.5276	0.5277	0.5277
16	0.5268	0.5270	0.5269	0.5269	0.5268	0.5267	0.5267	0.5268	0.5267	0.5268	0.5268	0.5269	0.5268	0.5266	0.5267	0.5267	0.5267	0.5267
17	0.5245	0.5246	0.5245	0.5245	0.5244	0.5243	0.5244	0.5244	0.5244	0.5243	0.5244	0.5244	0.5244	0.5241	0.5242	0.5242	0.5242	0.5243
18	0.5248	0.5249	0.5248	0.5249	0.5247	0.5246	0.5246	0.5247	0.5247	0.5247	0.5247	0.5248	0.5247	0.5245	0.5246	0.5246	0.5246	0.5245
19	0.5250	0.5251	0.5251	0.5251	0.5249	0.5248	0.5249	0.5248	0.5249	0.5248	0.5249	0.5248	0.5248	0.5247	0.5247	0.5247	0.5247	0.5247
20	0.5252	0.5253	0.5252	0.5252	0.5251	0.5250	0.5250	0.5251	0.5251	0.5250	0.5250	0.5251	0.5251	0.5249	0.5249	0.5249	0.5249	0.5249
21	0.5276	0.5277	0.5277	0.5276	0.5275	0.5275	0.5275	0.5275	0.5275	0.5275	0.5275	0.5276	0.5275	0.5273	0.5273	0.5274	0.5274	0.5274
22	0.5274	0.5276	0.5275	0.5275	0.5274	0.5274	0.5274	0.5274	0.5274	0.5274	0.5274	0.5274	0.5275	0.5272	0.5273	0.5272	0.5273	0.5272
23	0.5257	0.5258	0.5257	0.5258	0.5255	0.5255	0.5255	0.5255	0.5256	0.5255	0.5255	0.5256	0.5255	0.5253	0.5253	0.5254	0.5255	0.5254
24	0.5321	0.5321	0.5321	0.5322	0.5321	0.5321	0.5320	0.5320	0.5321	0.5321	0.5321	0.5321	0.5321	0.5320	0.5320	0.5320	0.5320	0.5320
25	0.5291	0.5292	0.5292	0.5291	0.5291	0.5290	0.5290	0.5291	0.5290	0.5290	0.5291	0.5291	0.5291	0.5289	0.5289	0.5289	0.5289	0.5289
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5264	0.5264	0.5264	0.5264	0.5262	0.5262	0.5262	0.5262	0.5262	0.5262	0.5263	0.5263	0.5263	0.5260	0.5261	0.5261	0.5261	0.5261
Med.	0.5253	0.5253	0.5253	0.5253	0.5251	0.5251	0.5251	0.5251	0.5251	0.5251	0.5252	0.5253	0.5252	0.5250	0.5250	0.5250	0.5250	0.5250
σ	0.0029	0.0029	0.0029	0.0029	0.0029	0.0030	0.0030	0.0030	0.0029	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030
Min.	0.5218	0.5218	0.5217	0.5217	0.5216	0.5215	0.5214	0.5215	0.5215	0.5215	0.5216	0.5216	0.5215	0.5213	0.5214	0.5214	0.5214	0.5213
Max.	0.5321	0.5321	0.5321	0.5322	0.5321	0.5321	0.5320	0.5320	0.5321	0.5321	0.5321	0.5321	0.5321	0.5320	0.5320	0.5320	0.5320	0.5320

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Data Set 4 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.2 °C
Actual Ambient Temperature [T_A]	53.9 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 4-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5240	0.5239	0.5240															
2	0.5277	0.5277	0.5277															
3	0.5223	0.5223	0.5223															
4	0.5248	0.5247	0.5247															
5	0.5264	0.5265	0.5264															
6	0.5295	0.5294	0.5295															
7	0.5213	0.5213	0.5213															
8	0.5222	0.5221	0.5221															
9	0.5314	0.5314	0.5314															
10	0.5250	0.5249	0.5249															
11	0.5319	0.5318	0.5318															
12	0.5249	0.5249	0.5248															
13	0.5220	0.5220	0.5220															
14	0.5247	0.5247	0.5247															
15	0.5276	0.5276	0.5276															
16	0.5267	0.5266	0.5266															
17	0.5242	0.5241	0.5241															
18	0.5245	0.5245	0.5245															
19	0.5247	0.5246	0.5246															
20	0.5248	0.5248	0.5248															
21	0.5273	0.5273	0.5273															
22	0.5273	0.5272	0.5272															
23	0.5253	0.5253	0.5254															
24	0.5320	0.5319	0.5319															
25	0.5289	0.5289	0.5289															
n	25	25	25															
Avg.	0.5261	0.5260	0.5260															
Med.	0.5250	0.5249	0.5249															
σ	0.0030	0.0030	0.0030															
Min.	0.5213	0.5213	0.5213															
Max.	0.5320	0.5319	0.5319															

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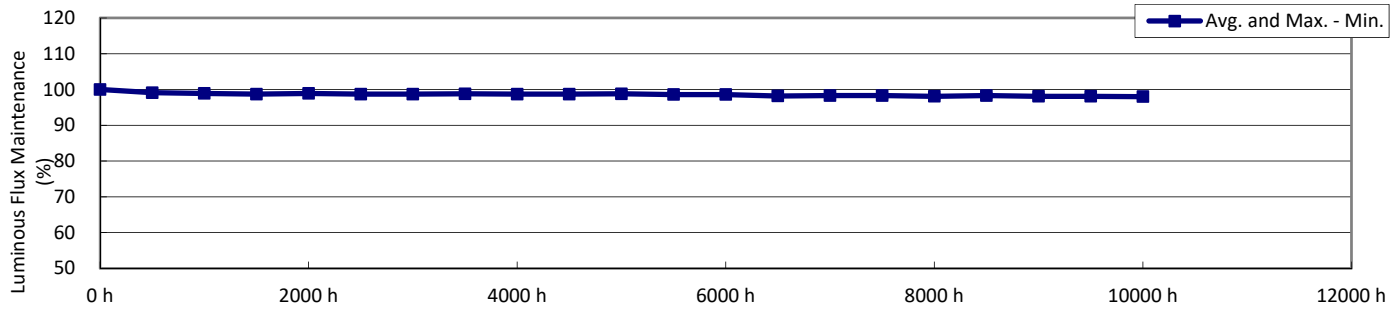
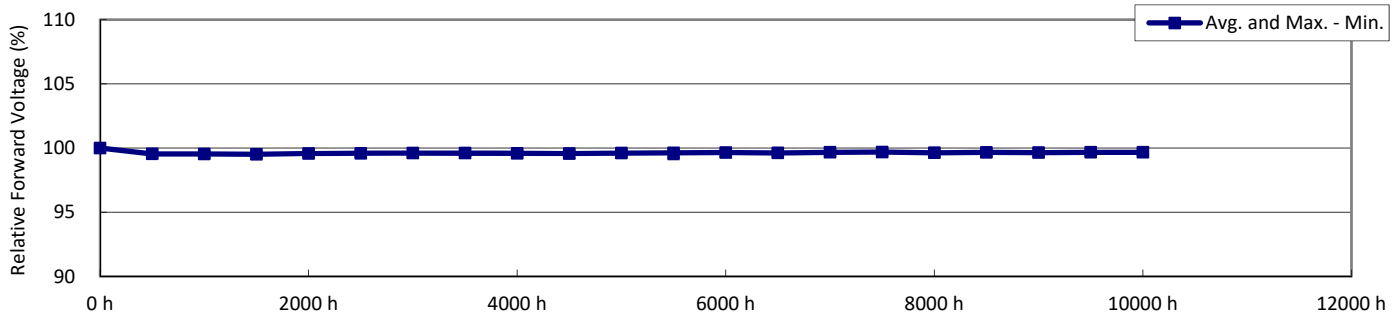
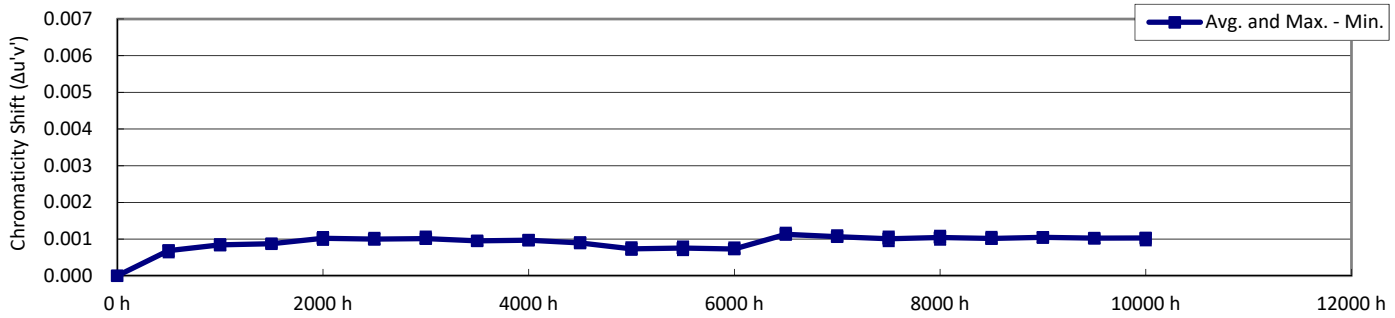
Data Set 5 : 85 °C, 80 mA

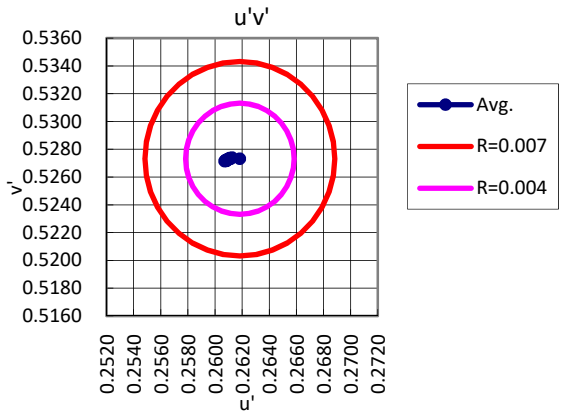
Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 5 : 85 °C, 80 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 5-1
Initial Characteristics

LED No.	Luminous flux Φ_V [lm]	Forward voltage V_F [V]	CCT T_{CP} [K]	Input Power P [W]	CIE1931 x	CIE1931 y	CIE1976 u'	CIE1976 v'						
1	40.2	2.91	2663	0.23	0.465	0.416	0.264	0.530						
2	40.0	2.93	2743	0.23	0.454	0.406	0.261	0.525						
3	40.3	2.90	2699	0.23	0.463	0.416	0.262	0.530						
4	39.8	2.91	2658	0.23	0.463	0.410	0.264	0.528						
5	39.8	2.92	2661	0.23	0.464	0.412	0.264	0.529						
6	40.0	2.91	2730	0.23	0.456	0.408	0.261	0.526						
7	40.9	2.91	2811	0.23	0.453	0.411	0.257	0.527						
8	40.2	2.90	2704	0.23	0.460	0.412	0.262	0.528						
9	40.5	2.90	2760	0.23	0.455	0.409	0.260	0.526						
10	40.2	2.90	2786	0.23	0.451	0.405	0.259	0.524						
11	39.9	2.90	2781	0.23	0.449	0.400	0.260	0.522						
12	39.6	2.92	2735	0.23	0.454	0.404	0.262	0.524						
13	40.5	2.90	2681	0.23	0.466	0.419	0.263	0.531						
14	40.0	2.90	2667	0.23	0.463	0.411	0.264	0.528						
15	40.3	2.92	2823	0.23	0.448	0.404	0.258	0.523						
16	39.6	2.92	2626	0.23	0.465	0.410	0.266	0.528						
17	39.8	2.92	2663	0.23	0.463	0.412	0.264	0.528						
18	41.0	2.91	2813	0.23	0.455	0.417	0.257	0.529						
19	40.0	2.92	2727	0.23	0.457	0.408	0.261	0.526						
20	41.1	2.91	2753	0.23	0.462	0.421	0.259	0.532						
21	40.0	2.92	2652	0.23	0.467	0.417	0.264	0.531						
22	40.6	2.91	2746	0.23	0.460	0.416	0.260	0.529						
23	40.0	2.91	2673	0.23	0.463	0.413	0.264	0.529						
24	39.9	2.93	2665	0.23	0.466	0.417	0.264	0.531						
25	39.6	2.92	2691	0.23	0.458	0.406	0.263	0.525						
n	25	25	25	25	25	25	25	25						
Avg.	40.2	2.91	2716	0.23	0.459	0.411	0.262	0.527						
Med.	40.0	2.91	2704	0.23	0.460	0.411	0.262	0.528						
σ	0.42	0.009	56.9	0.001	0.0057	0.0052	0.0025	0.0027						
Min.	39.6	2.90	2626	0.23	0.448	0.400	0.257	0.522						
Max.	41.1	2.93	2823	0.23	0.467	0.421	0.266	0.532						

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Data Set 5 : 85 °C, 80 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 5-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.0	98.8	98.6	98.8	98.5	98.3	98.6	98.4	98.4	98.6	98.5	98.4	98.0	98.1	98.1	97.6	98.0
2	100.0	99.3	99.2	99.0	99.2	99.0	98.9	99.0	98.8	98.8	99.0	98.8	98.8	98.3	98.4	98.6	98.1	98.5
3	100.0	99.0	98.9	98.7	98.9	98.6	98.6	98.8	98.6	98.7	98.9	98.6	98.6	98.1	98.2	98.3	97.9	98.3
4	100.0	99.0	98.8	98.6	98.8	98.5	98.4	98.6	98.4	98.5	98.7	98.5	98.4	98.0	98.1	98.2	97.9	98.2
5	100.0	99.3	99.0	98.9	99.0	98.8	98.8	98.9	98.7	98.9	99.1	98.7	98.8	98.3	98.3	98.1	98.0	98.3
6	100.0	99.0	98.8	98.6	98.8	98.6	98.5	98.6	98.5	98.6	98.7	98.4	98.3	98.0	98.1	98.1	97.9	98.2
7	100.0	99.1	98.9	98.7	98.9	98.6	98.8	98.9	98.8	98.7	99.0	98.7	98.7	98.3	98.4	98.3	98.2	98.4
8	100.0	99.1	98.9	98.6	98.9	98.5	98.6	98.6	98.5	98.4	98.7	98.4	98.5	98.1	98.2	98.2	98.0	98.3
9	100.0	98.9	98.8	98.5	98.7	98.4	98.6	98.6	98.6	98.5	98.7	98.5	98.4	98.1	98.2	98.1	97.9	98.1
10	100.0	98.9	98.7	98.6	98.7	98.5	98.6	98.6	98.5	98.5	98.7	98.4	98.4	98.0	98.2	98.0	97.9	98.1
11	100.0	98.8	98.7	98.5	98.7	98.4	98.4	98.5	98.5	98.3	98.4	98.2	98.2	97.7	97.9	97.6	97.4	97.8
12	100.0	99.1	99.0	98.8	99.0	98.6	98.8	98.8	98.8	98.7	98.9	98.6	98.6	98.3	98.4	98.3	98.1	98.4
13	100.0	99.1	98.8	98.7	99.0	98.8	98.8	98.9	98.9	98.9	98.9	98.9	98.9	98.4	98.4	98.5	98.4	98.5
14	100.0	99.0	98.6	98.4	98.8	98.4	98.4	98.5	98.5	98.4	98.5	98.4	98.3	97.9	98.0	98.0	97.9	98.1
15	100.0	99.2	99.0	98.9	99.1	99.0	98.9	98.9	98.9	98.8	99.0	98.9	98.8	98.3	98.4	98.4	98.2	98.4
16	100.0	99.2	98.9	98.8	99.1	98.9	99.0	99.0	99.0	99.0	99.0	98.9	98.9	98.5	98.5	98.5	98.4	98.6
17	100.0	99.4	98.9	98.8	99.0	98.6	98.6	98.6	98.5	98.6	98.7	98.5	98.5	98.1	98.2	98.0	97.7	98.1
18	100.0	99.0	98.7	98.5	98.8	98.5	98.4	98.5	98.4	98.3	98.5	98.4	98.4	97.8	97.9	98.0	97.8	98.0
19	100.0	99.2	98.9	98.8	99.0	98.9	98.8	98.8	98.7	98.7	98.8	98.6	98.6	98.1	98.3	98.3	98.1	98.3
20	100.0	99.0	98.8	98.7	98.8	98.8	98.8	98.9	98.8	98.8	98.9	98.8	98.8	98.2	98.3	98.4	98.2	98.4
21	100.0	99.4	99.1	99.0	99.2	99.0	99.1	99.0	99.0	99.0	99.1	99.0	99.0	98.5	98.7	98.7	98.5	98.7
22	100.0	99.2	98.8	98.7	98.9	98.8	98.8	98.8	98.8	98.8	98.8	98.7	98.7	98.2	98.2	98.2	98.1	98.3
23	100.0	99.0	98.7	98.6	98.7	98.6	98.7	98.7	98.6	98.6	98.8	98.5	98.6	98.0	98.2	98.0	97.9	98.1
24	100.0	99.4	99.1	99.0	99.2	99.0	99.1	99.1	99.0	99.0	99.1	99.0	98.9	98.5	98.6	98.7	98.6	98.7
25	100.0	99.5	99.4	99.1	99.3	99.2	99.3	99.3	99.3	99.2	99.4	99.2	99.2	98.7	98.8	98.8	98.6	98.8
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.1	98.9	98.7	98.9	98.7	98.7	98.8	98.7	98.7	98.8	98.6	98.6	98.2	98.3	98.3	98.1	98.3
Med.	100.0	99.1	98.9	98.7	98.9	98.6	98.8	98.8	98.7	98.7	98.8	98.6	98.6	98.1	98.2	98.2	98.0	98.3
σ	0.00	0.18	0.18	0.18	0.18	0.23	0.25	0.21	0.23	0.24	0.23	0.24	0.25	0.24	0.22	0.28	0.30	0.24
Min.	100.0	98.8	98.6	98.4	98.7	98.4	98.3	98.5	98.4	98.3	98.4	98.2	98.2	97.7	97.9	97.6	97.4	97.8
Max.	100.0	99.5	99.4	99.1	99.3	99.2	99.3	99.3	99.3	99.2	99.4	99.2	99.2	98.7	98.8	98.8	98.6	98.8

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0121	-0.0141	-0.0141	-0.0182	-0.0171	-0.0171	-0.0192	-0.0171	-0.0192	-0.0192	-0.0202							

Test duration used	5000 h to 10000 h	
B	0.993	
α	1.38E-06	
R^2	0.785	
Calculated L_{70} (10K)	253000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	157000	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	71300	hours
Reported L_{90} (10K)	> 60000	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 5 : 85 °C, 80 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 5-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	98.0	98.0	97.9															
2	98.4	98.3	98.2															
3	98.2	98.0	97.9															
4	98.1	98.0	97.9															
5	98.0	98.0	98.1															
6	98.0	97.9	97.8															
7	98.3	98.1	98.1															
8	98.1	98.0	98.0															
9	98.0	97.9	97.8															
10	98.0	97.9	97.9															
11	97.4	97.5	97.4															
12	98.2	98.1	98.1															
13	98.4	98.4	98.4															
14	97.9	97.9	97.9															
15	98.2	98.3	98.1															
16	98.4	98.4	98.4															
17	97.9	97.9	97.9															
18	97.9	97.9	97.8															
19	98.1	98.0	97.9															
20	98.3	98.1	98.2															
21	98.6	98.4	98.4															
22	98.2	98.0	98.0															
23	97.9	97.6	98.0															
24	98.6	98.5	98.5															
25	98.6	98.6	98.6															
n	25	25	25															
Avg.	98.1	98.1	98.0															
Med.	98.1	98.0	98.0															
σ	0.27	0.26	0.27															
Min.	97.4	97.5	97.4															
Max.	98.6	98.6	98.6															

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Data Set 5 : 85 °C, 80 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 5-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.5	99.5	99.4	99.5	99.6	99.7	99.6	99.5	99.5	99.5	99.6	99.6	99.6	99.6	99.7	99.6	99.7
2	100.0	99.3	99.3	99.3	99.3	99.3	99.3	99.4	99.3	99.2	99.3	99.2	99.4	99.4	99.4	99.5	99.3	99.4
3	100.0	99.8	99.7	99.7	99.7	99.8	99.7	99.8	99.8	99.8	99.8	99.7	99.9	99.9	99.9	99.9	99.8	99.9
4	100.0	99.7	99.7	99.6	99.7	99.7	99.8	99.8	99.7	99.7	99.7	99.8	99.7	99.7	99.8	99.8	99.7	99.7
5	100.0	99.5	99.5	99.4	99.5	99.6	99.5	99.6	99.5	99.6	99.7	99.6	99.6	99.7	99.7	99.8	99.7	99.6
6	100.0	99.6	99.6	99.6	99.6	99.6	99.7	99.7	99.6	99.6	99.7	99.6	99.7	99.7	99.7	99.7	99.7	99.6
7	100.0	99.5	99.5	99.5	99.5	99.6	99.5	99.5	99.6	99.4	99.5	99.5	99.6	99.6	99.6	99.7	99.4	99.5
8	100.0	99.6	99.7	99.6	99.6	99.7	99.8	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.8	99.8	99.7	99.7
9	100.0	99.8	99.7	99.7	99.8	99.8	100.0	99.9	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.9	99.8	99.8
10	100.0	99.7	99.7	99.6	99.7	99.7	99.6	99.7	99.7	99.7	99.8	99.8	99.8	99.7	99.7	99.8	99.7	99.8
11	100.0	99.7	99.6	99.7	99.8	99.6	99.8	99.8	99.8	99.7	99.8	99.8	99.7	99.7	99.7	99.8	99.9	99.9
12	100.0	99.5	99.6	99.7	99.6	99.6	99.7	99.7	99.7	99.6	99.7	99.7	99.8	99.8	99.8	99.7	99.7	99.7
13	100.0	99.6	99.6	99.6	99.7	99.7	99.6	99.7	99.6	99.7	99.6	99.7	99.6	99.6	99.7	99.8	99.7	99.8
14	100.0	99.6	99.5	99.4	99.4	99.5	99.7	99.5	99.6	99.5	99.5	99.6	99.6	99.5	99.7	99.6	99.6	99.6
15	100.0	99.6	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.5	99.6	99.6	99.6	99.5	99.6	99.7	99.6	99.7
16	100.0	99.3	99.3	99.4	99.4	99.3	99.4	99.3	99.4	99.4	99.4	99.6	99.5	99.4	99.5	99.4	99.4	99.4
17	100.0	99.4	99.4	99.3	99.4	99.4	99.5	99.4	99.4	99.4	99.4	99.4	99.5	99.5	99.4	99.4	99.4	99.6
18	100.0	99.7	99.6	99.5	99.6	99.6	99.8	99.7	99.6	99.6	99.7	99.6	99.8	99.7	99.8	99.7	99.7	99.7
19	100.0	99.5	99.4	99.3	99.5	99.6	99.5	99.7	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6
20	100.0	99.6	99.7	99.7	99.6	99.6	99.5	99.7	99.6	99.7	99.7	99.7	99.8	99.7	99.7	99.8	99.7	99.7
21	100.0	99.6	99.5	99.7	99.6	99.5	99.7	99.5	99.8	99.5	99.6	99.7	99.7	99.6	99.7	99.7	99.7	99.6
22	100.0	99.3	99.4	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.6	99.6	99.6	99.7	99.6	99.6	99.7
23	100.0	99.5	99.5	99.5	99.5	99.6	99.5	99.6	99.5	99.6	99.6	99.6	99.5	99.6	99.7	99.7	99.5	99.7
24	100.0	99.3	99.2	99.3	99.4	99.6	99.3	99.4	99.3	99.4	99.4	99.5	99.4	99.4	99.5	99.5	99.4	99.5
25	100.0	99.5	99.4	99.3	99.5	99.6	99.5	99.5	99.5	99.5	99.5	99.6	99.6	99.6	99.6	99.5	99.6	99.7
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.5	99.5	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.7	99.7	99.6	99.7
Med.	100.0	99.6	99.5	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.7	99.7	99.7	99.7
σ	0.00	0.14	0.15	0.14	0.13	0.12	0.16	0.15	0.14	0.15	0.13	0.14	0.14	0.12	0.12	0.13	0.14	0.12
Min.	100.0	99.3	99.2	99.3	99.3	99.3	99.3	99.3	99.3	99.2	99.3	99.2	99.4	99.4	99.4	99.4	99.3	99.4
Max.	100.0	99.8	99.7	99.7	99.8	99.8	100.0	99.9	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9

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Data Set 5 : 85 °C, 80 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 5-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	99.6	99.6	99.6															
2	99.4	99.4	99.4															
3	99.8	99.9	99.9															
4	99.7	99.8	99.8															
5	99.7	99.7	99.7															
6	99.7	99.7	99.7															
7	99.6	99.6	99.6															
8	99.7	99.8	99.8															
9	99.8	99.9	99.9															
10	99.8	99.8	99.8															
11	99.8	99.8	99.8															
12	99.7	99.8	99.8															
13	99.7	99.7	99.8															
14	99.5	99.7	99.6															
15	99.7	99.6	99.7															
16	99.4	99.4	99.5															
17	99.5	99.6	99.5															
18	99.6	99.8	99.6															
19	99.6	99.6	99.6															
20	99.7	99.7	99.7															
21	99.7	99.6	99.7															
22	99.6	99.6	99.6															
23	99.6	99.7	99.7															
24	99.4	99.5	99.5															
25	99.6	99.5	99.6															
n	25	25	25															
Avg.	99.6	99.7	99.7															
Med.	99.7	99.7	99.7															
σ	0.13	0.13	0.12															
Min.	99.4	99.4	99.4															
Max.	99.8	99.9	99.9															

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Data Set 5 : 85 °C, 80 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 5-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0007	0.0009	0.0009	0.0010	0.0010	0.0011	0.0010	0.0011	0.0010	0.0008	0.0009	0.0008	0.0012	0.0011	0.0010	0.0009	0.0010
2	0.0000	0.0005	0.0007	0.0008	0.0010	0.0009	0.0009	0.0008	0.0009	0.0008	0.0007	0.0006	0.0006	0.0010	0.0011	0.0009	0.0009	0.0009
3	0.0000	0.0008	0.0010	0.0009	0.0011	0.0011	0.0011	0.0010	0.0010	0.0009	0.0008	0.0008	0.0009	0.0012	0.0011	0.0010	0.0010	0.0010
4	0.0000	0.0007	0.0009	0.0009	0.0011	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0008	0.0008	0.0012	0.0012	0.0011	0.0011	0.0011
5	0.0000	0.0007	0.0008	0.0009	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0007	0.0007	0.0008	0.0010	0.0010	0.0009	0.0011	0.0010
6	0.0000	0.0007	0.0007	0.0008	0.0009	0.0009	0.0009	0.0009	0.0010	0.0009	0.0007	0.0008	0.0007	0.0011	0.0010	0.0010	0.0010	0.0010
7	0.0000	0.0006	0.0008	0.0008	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0006	0.0006	0.0006	0.0011	0.0010	0.0008	0.0010	0.0010
8	0.0000	0.0008	0.0009	0.0010	0.0012	0.0012	0.0012	0.0010	0.0011	0.0010	0.0009	0.0009	0.0008	0.0013	0.0012	0.0012	0.0011	0.0011
9	0.0000	0.0006	0.0009	0.0009	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0007	0.0008	0.0007	0.0011	0.0010	0.0010	0.0010	0.0010
10	0.0000	0.0007	0.0008	0.0009	0.0010	0.0010	0.0010	0.0010	0.0009	0.0008	0.0007	0.0007	0.0006	0.0011	0.0011	0.0010	0.0010	0.0010
11	0.0000	0.0006	0.0008	0.0008	0.0010	0.0010	0.0010	0.0010	0.0009	0.0008	0.0007	0.0007	0.0007	0.0011	0.0010	0.0009	0.0010	0.0010
12	0.0000	0.0007	0.0009	0.0010	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0008	0.0008	0.0007	0.0013	0.0012	0.0010	0.0011	0.0010
13	0.0000	0.0007	0.0009	0.0009	0.0011	0.0010	0.0011	0.0010	0.0010	0.0010	0.0007	0.0007	0.0008	0.0012	0.0010	0.0011	0.0011	0.0010
14	0.0000	0.0008	0.0010	0.0010	0.0012	0.0011	0.0012	0.0010	0.0010	0.0009	0.0009	0.0009	0.0008	0.0012	0.0012	0.0012	0.0012	0.0012
15	0.0000	0.0007	0.0009	0.0009	0.0010	0.0010	0.0010	0.0009	0.0010	0.0008	0.0007	0.0007	0.0008	0.0011	0.0011	0.0010	0.0010	0.0009
16	0.0000	0.0005	0.0007	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0006	0.0006	0.0006	0.0010	0.0010	0.0009	0.0009	0.0009
17	0.0000	0.0007	0.0008	0.0008	0.0011	0.0009	0.0010	0.0008	0.0009	0.0009	0.0007	0.0007	0.0007	0.0011	0.0010	0.0010	0.0010	0.0010
18	0.0000	0.0007	0.0007	0.0008	0.0010	0.0010	0.0010	0.0010	0.0011	0.0009	0.0008	0.0008	0.0007	0.0012	0.0011	0.0011	0.0011	0.0012
19	0.0000	0.0007	0.0009	0.0009	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0008	0.0009	0.0008	0.0012	0.0012	0.0011	0.0012	0.0011
20	0.0000	0.0007	0.0008	0.0008	0.0010	0.0009	0.0009	0.0009	0.0009	0.0008	0.0006	0.0006	0.0006	0.0010	0.0010	0.0009	0.0010	0.0010
21	0.0000	0.0006	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0009	0.0008	0.0006	0.0007	0.0007	0.0010	0.0009	0.0009	0.0010	0.0009
22	0.0000	0.0007	0.0008	0.0009	0.0009	0.0010	0.0010	0.0009	0.0009	0.0009	0.0007	0.0007	0.0008	0.0010	0.0010	0.0010	0.0011	0.0010
23	0.0000	0.0008	0.0009	0.0009	0.0011	0.0010	0.0010	0.0010	0.0010	0.0009	0.0009	0.0008	0.0007	0.0012	0.0011	0.0010	0.0012	0.0011
24	0.0000	0.0006	0.0008	0.0008	0.0010	0.0011	0.0010	0.0010	0.0010	0.0009	0.0007	0.0008	0.0007	0.0012	0.0010	0.0010	0.0011	0.0009
25	0.0000	0.0007	0.0009	0.0008	0.0009	0.0010	0.0010	0.0010	0.0010	0.0009	0.0007	0.0008	0.0008	0.0011	0.0011	0.0011	0.0011	0.0010
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0007	0.0008	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0007	0.0008	0.0007	0.0011	0.0011	0.0010	0.0010	0.0010
Med.	0.0000	0.0007	0.0008	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0007	0.0008	0.0007	0.0011	0.0011	0.0010	0.0010	0.0010
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0005	0.0007	0.0008	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0006	0.0006	0.0006	0.0010	0.0009	0.0008	0.0009	0.0009
Max.	0.0000	0.0008	0.0010	0.0010	0.0012	0.0012	0.0012	0.0010	0.0011	0.0010	0.0009	0.0009	0.0009	0.0013	0.0012	0.0012	0.0012	0.0012

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Data Set 5 : 85 °C, 80 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 5-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0011	0.0011	0.0011															
2	0.0010	0.0009	0.0010															
3	0.0011	0.0010	0.0010															
4	0.0011	0.0011	0.0011															
5	0.0011	0.0010	0.0010															
6	0.0010	0.0010	0.0010															
7	0.0009	0.0009	0.0008															
8	0.0011	0.0011	0.0011															
9	0.0010	0.0009	0.0010															
10	0.0010	0.0010	0.0011															
11	0.0010	0.0010	0.0010															
12	0.0011	0.0011	0.0011															
13	0.0011	0.0011	0.0010															
14	0.0011	0.0011	0.0011															
15	0.0011	0.0010	0.0010															
16	0.0009	0.0009	0.0009															
17	0.0010	0.0010	0.0011															
18	0.0011	0.0011	0.0010															
19	0.0011	0.0011	0.0011															
20	0.0009	0.0010	0.0009															
21	0.0010	0.0010	0.0009															
22	0.0010	0.0010	0.0010															
23	0.0012	0.0011	0.0011															
24	0.0010	0.0010	0.0011															
25	0.0010	0.0010	0.0010															
n	25	25	25															
Avg.	0.0010	0.0010	0.0010															
Med.	0.0010	0.0010	0.0010															
σ	0.0001	0.0001	0.0001															
Min.	0.0009	0.0009	0.0008															
Max.	0.0012	0.0011	0.0011															

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Data Set 5 : 85 °C, 80 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 5-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2642	0.2635	0.2634	0.2634	0.2632	0.2632	0.2631	0.2633	0.2632	0.2633	0.2634	0.2634	0.2634	0.2631	0.2632	0.2632	0.2634	0.2633
2	0.2613	0.2608	0.2606	0.2604	0.2603	0.2604	0.2604	0.2605	0.2604	0.2605	0.2606	0.2607	0.2607	0.2603	0.2603	0.2604	0.2604	0.2604
3	0.2626	0.2618	0.2616	0.2617	0.2615	0.2615	0.2615	0.2616	0.2616	0.2617	0.2618	0.2618	0.2617	0.2614	0.2615	0.2616	0.2616	0.2616
4	0.2653	0.2646	0.2644	0.2644	0.2642	0.2643	0.2643	0.2643	0.2643	0.2643	0.2644	0.2645	0.2645	0.2642	0.2641	0.2642	0.2643	0.2642
5	0.2673	0.2665	0.2664	0.2664	0.2663	0.2663	0.2663	0.2664	0.2663	0.2664	0.2666	0.2665	0.2665	0.2662	0.2663	0.2664	0.2662	0.2662
6	0.2622	0.2615	0.2614	0.2613	0.2612	0.2613	0.2613	0.2612	0.2612	0.2613	0.2614	0.2614	0.2615	0.2611	0.2612	0.2612	0.2611	0.2612
7	0.2579	0.2573	0.2571	0.2571	0.2570	0.2570	0.2570	0.2570	0.2570	0.2571	0.2573	0.2573	0.2573	0.2568	0.2569	0.2571	0.2569	0.2569
8	0.2626	0.2618	0.2616	0.2616	0.2614	0.2614	0.2614	0.2616	0.2615	0.2616	0.2617	0.2617	0.2618	0.2613	0.2614	0.2614	0.2615	0.2615
9	0.2603	0.2596	0.2594	0.2594	0.2593	0.2593	0.2593	0.2594	0.2594	0.2594	0.2596	0.2595	0.2596	0.2592	0.2593	0.2593	0.2593	0.2593
10	0.2599	0.2592	0.2590	0.2590	0.2589	0.2589	0.2588	0.2589	0.2590	0.2591	0.2591	0.2592	0.2592	0.2588	0.2588	0.2589	0.2589	0.2588
11	0.2628	0.2622	0.2620	0.2620	0.2619	0.2618	0.2618	0.2619	0.2619	0.2620	0.2622	0.2621	0.2621	0.2617	0.2618	0.2619	0.2618	0.2619
12	0.2625	0.2617	0.2616	0.2615	0.2614	0.2614	0.2614	0.2615	0.2614	0.2615	0.2617	0.2616	0.2617	0.2612	0.2613	0.2615	0.2613	0.2614
13	0.2631	0.2624	0.2622	0.2622	0.2620	0.2621	0.2620	0.2621	0.2621	0.2621	0.2624	0.2624	0.2624	0.2620	0.2621	0.2621	0.2620	0.2621
14	0.2643	0.2635	0.2633	0.2633	0.2631	0.2632	0.2631	0.2632	0.2633	0.2634	0.2634	0.2634	0.2635	0.2630	0.2631	0.2631	0.2631	0.2631
15	0.2581	0.2575	0.2572	0.2572	0.2571	0.2571	0.2571	0.2572	0.2571	0.2573	0.2575	0.2574	0.2574	0.2570	0.2571	0.2571	0.2571	0.2572
16	0.2668	0.2662	0.2660	0.2660	0.2659	0.2659	0.2659	0.2659	0.2659	0.2660	0.2662	0.2662	0.2661	0.2658	0.2658	0.2659	0.2658	0.2659
17	0.2670	0.2663	0.2662	0.2662	0.2659	0.2661	0.2660	0.2662	0.2661	0.2661	0.2663	0.2663	0.2663	0.2659	0.2660	0.2660	0.2660	0.2660
18	0.2577	0.2570	0.2569	0.2568	0.2566	0.2567	0.2567	0.2567	0.2566	0.2567	0.2569	0.2569	0.2569	0.2565	0.2566	0.2565	0.2566	0.2565
19	0.2619	0.2612	0.2610	0.2610	0.2608	0.2608	0.2608	0.2609	0.2608	0.2608	0.2610	0.2610	0.2611	0.2607	0.2607	0.2608	0.2608	0.2608
20	0.2595	0.2587	0.2587	0.2586	0.2585	0.2585	0.2586	0.2586	0.2586	0.2586	0.2589	0.2588	0.2588	0.2585	0.2585	0.2585	0.2585	0.2585
21	0.2645	0.2639	0.2637	0.2637	0.2636	0.2637	0.2637	0.2636	0.2637	0.2637	0.2640	0.2639	0.2639	0.2635	0.2636	0.2636	0.2636	0.2636
22	0.2607	0.2600	0.2599	0.2598	0.2598	0.2598	0.2598	0.2598	0.2598	0.2598	0.2600	0.2600	0.2600	0.2597	0.2597	0.2598	0.2597	0.2598
23	0.2667	0.2659	0.2658	0.2658	0.2656	0.2657	0.2657	0.2656	0.2656	0.2657	0.2658	0.2659	0.2659	0.2655	0.2655	0.2656	0.2655	0.2655
24	0.2644	0.2637	0.2636	0.2635	0.2634	0.2633	0.2633	0.2634	0.2633	0.2635	0.2636	0.2636	0.2636	0.2632	0.2634	0.2633	0.2633	0.2634
25	0.2635	0.2629	0.2627	0.2627	0.2626	0.2625	0.2626	0.2626	0.2626	0.2626	0.2628	0.2628	0.2628	0.2624	0.2625	0.2624	0.2625	0.2625
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2627	0.2620	0.2618	0.2618	0.2617	0.2617	0.2617	0.2617	0.2617	0.2618	0.2619	0.2619	0.2620	0.2616	0.2616	0.2617	0.2616	0.2617
Med.	0.2626	0.2618	0.2616	0.2617	0.2615	0.2615	0.2615	0.2616	0.2616	0.2617	0.2618	0.2618	0.2618	0.2614	0.2615	0.2616	0.2616	0.2616
σ	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028
Min.	0.2577	0.2570	0.2569	0.2568	0.2566	0.2567	0.2567	0.2567	0.2566	0.2567	0.2569	0.2569	0.2569	0.2565	0.2566	0.2565	0.2566	0.2565
Max.	0.2673	0.2665	0.2664	0.2664	0.2663	0.2663	0.2663	0.2664	0.2663	0.2664	0.2666	0.2665	0.2665	0.2662	0.2663	0.2664	0.2662	0.2662

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Data Set 5 : 85 °C, 80 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 5-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2631	0.2632	0.2632															
2	0.2603	0.2604	0.2603															
3	0.2615	0.2616	0.2616															
4	0.2642	0.2642	0.2642															
5	0.2662	0.2663	0.2662															
6	0.2612	0.2612	0.2612															
7	0.2570	0.2570	0.2571															
8	0.2615	0.2615	0.2615															
9	0.2593	0.2594	0.2594															
10	0.2589	0.2589	0.2588															
11	0.2618	0.2618	0.2619															
12	0.2613	0.2614	0.2614															
13	0.2621	0.2620	0.2621															
14	0.2632	0.2632	0.2631															
15	0.2571	0.2571	0.2571															
16	0.2659	0.2659	0.2659															
17	0.2660	0.2660	0.2660															
18	0.2566	0.2566	0.2567															
19	0.2608	0.2608	0.2608															
20	0.2586	0.2585	0.2586															
21	0.2636	0.2636	0.2636															
22	0.2597	0.2597	0.2597															
23	0.2655	0.2656	0.2656															
24	0.2633	0.2633	0.2633															
25	0.2625	0.2625	0.2625															
n	25	25	25															
Avg.	0.2616	0.2617	0.2617															
Med.	0.2615	0.2616	0.2616															
σ	0.0028	0.0028	0.0028															
Min.	0.2566	0.2566	0.2567															
Max.	0.2662	0.2663	0.2662															

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Data Set 5 : 85 °C, 80 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 5-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5299	0.5299	0.5298	0.5298	0.5297	0.5297	0.5297	0.5298	0.5298	0.5298	0.5298	0.5299	0.5298	0.5297	0.5297	0.5297	0.5298	0.5298
2	0.5245	0.5245	0.5245	0.5245	0.5244	0.5244	0.5244	0.5244	0.5244	0.5244	0.5245	0.5246	0.5245	0.5243	0.5244	0.5244	0.5243	0.5243
3	0.5296	0.5295	0.5295	0.5295	0.5294	0.5294	0.5294	0.5295	0.5295	0.5295	0.5296	0.5296	0.5296	0.5294	0.5294	0.5294	0.5294	0.5294
4	0.5277	0.5277	0.5277	0.5276	0.5275	0.5275	0.5275	0.5275	0.5275	0.5275	0.5277	0.5276	0.5277	0.5274	0.5275	0.5275	0.5275	0.5275
5	0.5297	0.5298	0.5298	0.5298	0.5297	0.5297	0.5298	0.5298	0.5298	0.5298	0.5298	0.5299	0.5298	0.5297	0.5297	0.5298	0.5298	0.5298
6	0.5259	0.5259	0.5258	0.5258	0.5257	0.5258	0.5257	0.5258	0.5258	0.5258	0.5259	0.5260	0.5259	0.5257	0.5257	0.5257	0.5257	0.5257
7	0.5263	0.5263	0.5262	0.5262	0.5262	0.5262	0.5262	0.5263	0.5263	0.5263	0.5263	0.5264	0.5264	0.5261	0.5262	0.5262	0.5262	0.5262
8	0.5277	0.5277	0.5277	0.5276	0.5276	0.5275	0.5276	0.5276	0.5275	0.5276	0.5276	0.5277	0.5277	0.5274	0.5276	0.5275	0.5275	0.5276
9	0.5260	0.5260	0.5260	0.5260	0.5258	0.5258	0.5259	0.5259	0.5259	0.5259	0.5260	0.5260	0.5260	0.5258	0.5259	0.5259	0.5259	0.5259
10	0.5239	0.5238	0.5238	0.5238	0.5237	0.5237	0.5238	0.5238	0.5238	0.5238	0.5238	0.5239	0.5239	0.5236	0.5237	0.5237	0.5237	0.5237
11	0.5231	0.5230	0.5230	0.5230	0.5228	0.5229	0.5228	0.5229	0.5230	0.5230	0.5231	0.5230	0.5230	0.5229	0.5229	0.5230	0.5230	0.5229
12	0.5238	0.5237	0.5237	0.5237	0.5235	0.5235	0.5236	0.5236	0.5237	0.5237	0.5238	0.5238	0.5238	0.5236	0.5236	0.5236	0.5236	0.5236
13	0.5312	0.5312	0.5311	0.5311	0.5310	0.5311	0.5311	0.5311	0.5311	0.5312	0.5312	0.5313	0.5312	0.5311	0.5311	0.5311	0.5311	0.5311
14	0.5276	0.5276	0.5275	0.5276	0.5275	0.5275	0.5276	0.5276	0.5276	0.5276	0.5277	0.5277	0.5276	0.5275	0.5275	0.5275	0.5275	0.5276
15	0.5228	0.5228	0.5228	0.5228	0.5226	0.5227	0.5227	0.5227	0.5227	0.5227	0.5228	0.5229	0.5229	0.5226	0.5226	0.5226	0.5227	0.5226
16	0.5278	0.5278	0.5278	0.5278	0.5277	0.5277	0.5277	0.5278	0.5278	0.5278	0.5279	0.5279	0.5279	0.5278	0.5278	0.5278	0.5278	0.5277
17	0.5295	0.5295	0.5295	0.5295	0.5294	0.5294	0.5294	0.5295	0.5295	0.5295	0.5295	0.5295	0.5295	0.5294	0.5294	0.5294	0.5294	0.5294
18	0.5290	0.5290	0.5289	0.5290	0.5289	0.5289	0.5289	0.5290	0.5289	0.5289	0.5290	0.5290	0.5290	0.5288	0.5289	0.5289	0.5289	0.5289
19	0.5258	0.5258	0.5257	0.5257	0.5256	0.5256	0.5256	0.5257	0.5256	0.5257	0.5257	0.5258	0.5258	0.5256	0.5256	0.5256	0.5255	0.5256
20	0.5313	0.5313	0.5312	0.5312	0.5311	0.5311	0.5312	0.5313	0.5313	0.5313	0.5313	0.5314	0.5313	0.5312	0.5312	0.5312	0.5312	0.5313
21	0.5306	0.5306	0.5305	0.5306	0.5305	0.5305	0.5305	0.5305	0.5305	0.5307	0.5306	0.5307	0.5307	0.5305	0.5305	0.5305	0.5305	0.5306
22	0.5293	0.5293	0.5293	0.5294	0.5292	0.5292	0.5292	0.5292	0.5293	0.5293	0.5293	0.5294	0.5294	0.5292	0.5292	0.5292	0.5293	0.5292
23	0.5298	0.5298	0.5298	0.5298	0.5297	0.5297	0.5297	0.5298	0.5299	0.5298	0.5299	0.5299	0.5299	0.5297	0.5297	0.5297	0.5298	0.5297
24	0.5306	0.5307	0.5305	0.5306	0.5305	0.5305	0.5306	0.5305	0.5305	0.5306	0.5306	0.5306	0.5307	0.5304	0.5305	0.5305	0.5305	0.5305
25	0.5251	0.5252	0.5252	0.5252	0.5251	0.5250	0.5251	0.5252	0.5252	0.5252	0.5253	0.5253	0.5253	0.5251	0.5251	0.5251	0.5252	0.5252
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5275	0.5275	0.5275	0.5275	0.5274	0.5274	0.5274	0.5275	0.5275	0.5275	0.5275	0.5276	0.5276	0.5274	0.5274	0.5274	0.5274	0.5274
Med.	0.5277	0.5277	0.5277	0.5276	0.5276	0.5275	0.5276	0.5276	0.5276	0.5276	0.5277	0.5277	0.5277	0.5275	0.5276	0.5275	0.5275	0.5276
σ	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
Min.	0.5228	0.5228	0.5228	0.5228	0.5226	0.5227	0.5227	0.5227	0.5227	0.5227	0.5228	0.5229	0.5229	0.5226	0.5226	0.5226	0.5227	0.5226
Max.	0.5313	0.5313	0.5312	0.5312	0.5311	0.5311	0.5312	0.5313	0.5313	0.5313	0.5313	0.5314	0.5313	0.5312	0.5312	0.5312	0.5312	0.5313

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Data Set 5 : 85 °C, 80 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.8 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 5-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5297	0.5297	0.5296															
2	0.5243	0.5243	0.5244															
3	0.5294	0.5294	0.5294															
4	0.5275	0.5275	0.5275															
5	0.5297	0.5297	0.5298															
6	0.5256	0.5257	0.5257															
7	0.5261	0.5261	0.5262															
8	0.5276	0.5275	0.5276															
9	0.5259	0.5258	0.5258															
10	0.5237	0.5236	0.5236															
11	0.5229	0.5229	0.5229															
12	0.5235	0.5235	0.5236															
13	0.5311	0.5311	0.5311															
14	0.5275	0.5275	0.5275															
15	0.5226	0.5226	0.5226															
16	0.5278	0.5277	0.5277															
17	0.5294	0.5294	0.5294															
18	0.5288	0.5289	0.5288															
19	0.5256	0.5256	0.5255															
20	0.5312	0.5312	0.5312															
21	0.5305	0.5305	0.5305															
22	0.5293	0.5292	0.5292															
23	0.5297	0.5297	0.5298															
24	0.5305	0.5305	0.5305															
25	0.5251	0.5251	0.5251															
n	25	25	25															
Avg.	0.5274	0.5274	0.5274															
Med.	0.5276	0.5275	0.5276															
σ	0.0027	0.0027	0.0027															
Min.	0.5226	0.5226	0.5226															
Max.	0.5312	0.5312	0.5312															

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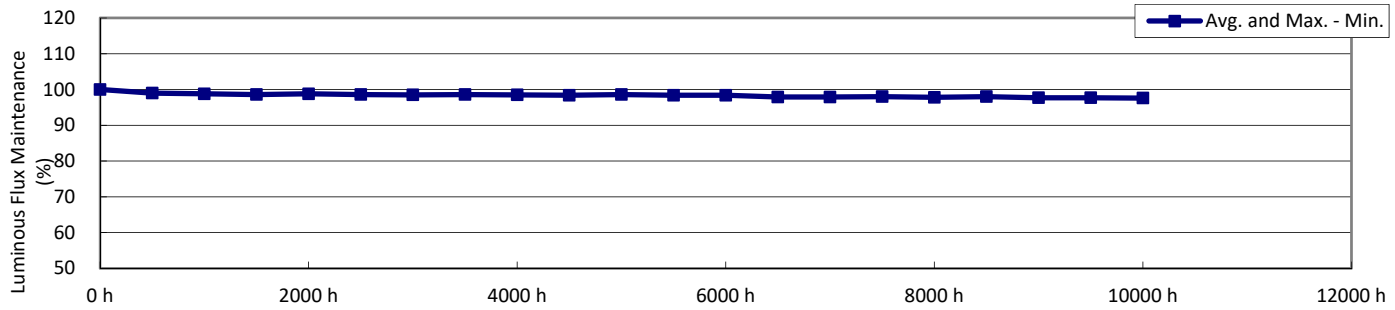
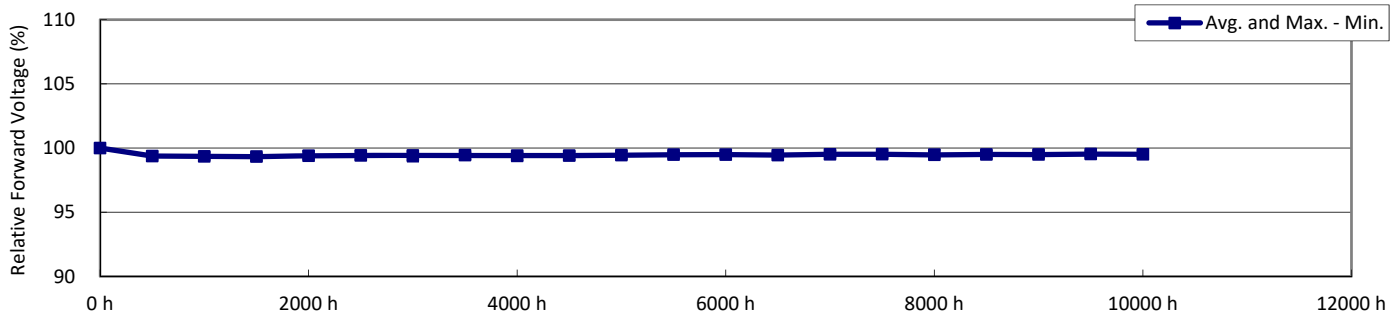
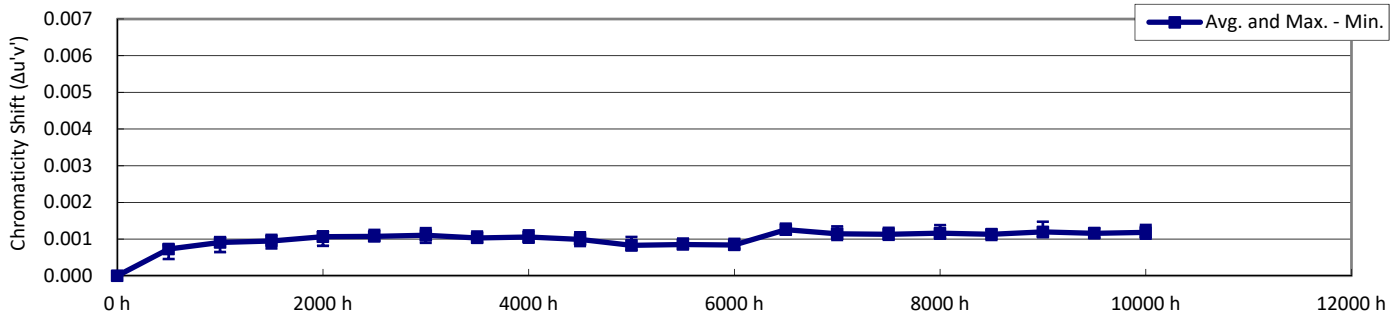
Data Set 6 : 85 °C, 125 mA

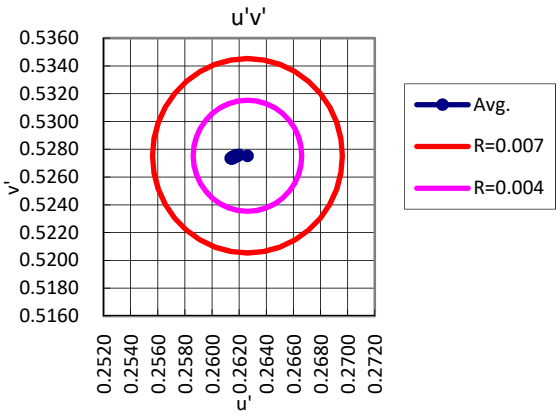
Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 6 : 85 °C, 125 mA

Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 6-1
Initial Characteristics

LED No.	Luminous flux Φ_V [lm]	Forward voltage V_F [V]	CCT T_{CP} [K]	Input Power P [W]	CIE1931 x	CIE1931 y	CIE1976 u'	CIE1976 v'						
1	60.9	3.05	2682	0.38	0.464	0.416	0.263	0.530						
2	61.3	3.06	2716	0.38	0.462	0.417	0.261	0.530						
3	60.8	3.07	2750	0.38	0.457	0.412	0.260	0.527						
4	60.7	3.07	2790	0.38	0.451	0.405	0.259	0.524						
5	59.9	3.05	2710	0.38	0.453	0.400	0.263	0.522						
6	60.7	3.04	2652	0.38	0.466	0.416	0.264	0.530						
7	60.8	3.05	2662	0.38	0.467	0.419	0.264	0.532						
8	60.8	3.07	2764	0.38	0.454	0.408	0.260	0.526						
9	60.4	3.07	2682	0.38	0.463	0.414	0.263	0.529						
10	59.8	3.05	2656	0.38	0.461	0.407	0.265	0.526						
11	59.3	3.07	2632	0.38	0.461	0.404	0.266	0.525						
12	60.2	3.06	2729	0.38	0.453	0.402	0.262	0.523						
13	60.6	3.08	2672	0.38	0.465	0.416	0.263	0.530						
14	60.5	3.07	2705	0.38	0.459	0.410	0.262	0.527						
15	60.1	3.07	2754	0.38	0.450	0.399	0.261	0.521						
16	59.7	3.05	2614	0.38	0.467	0.412	0.267	0.529						
17	59.7	3.05	2661	0.38	0.459	0.405	0.265	0.525						
18	61.1	3.07	2783	0.38	0.456	0.414	0.258	0.528						
19	59.9	3.07	2680	0.38	0.462	0.411	0.263	0.528						
20	60.6	3.05	2676	0.38	0.466	0.418	0.263	0.531						
21	59.9	3.05	2694	0.38	0.457	0.404	0.263	0.524						
22	60.3	3.07	2704	0.38	0.459	0.410	0.262	0.527						
23	60.1	3.05	2635	0.38	0.468	0.417	0.265	0.531						
24	61.2	3.07	2747	0.38	0.462	0.420	0.259	0.531						
25	60.9	3.04	2748	0.38	0.456	0.409	0.260	0.526						
n	25	25	25	25	25	25	25	25						
Avg.	60.4	3.06	2700	0.38	0.460	0.411	0.263	0.527						
Med.	60.5	3.06	2694	0.38	0.461	0.411	0.263	0.527						
σ	0.53	0.010	48.5	0.001	0.0053	0.0061	0.0022	0.0030						
Min.	59.3	3.04	2614	0.38	0.450	0.399	0.258	0.521						
Max.	61.3	3.08	2790	0.38	0.468	0.420	0.267	0.532						

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Data Set 6 : 85 °C, 125 mA

Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 6-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	98.8	98.5	98.2	98.4	98.2	98.1	98.3	98.0	98.1	98.2	98.1	98.1	97.6	97.7	97.7	97.6	97.8
2	100.0	98.9	98.7	98.6	98.8	98.7	98.6	98.8	98.5	98.6	98.7	98.5	98.5	98.0	98.1	98.1	97.9	98.1
3	100.0	99.2	98.9	98.8	98.8	98.7	98.6	98.7	98.4	98.5	98.6	98.5	98.4	97.9	98.0	98.1	97.8	98.0
4	100.0	99.5	99.3	98.9	99.1	98.9	98.9	99.0	98.8	98.8	98.9	98.7	98.7	98.2	98.2	98.3	98.2	98.3
5	100.0	98.9	98.5	98.3	98.5	98.4	98.3	98.4	98.2	98.1	98.3	98.1	98.2	97.7	97.6	97.4	97.5	97.5
6	100.0	98.9	98.7	98.5	98.7	98.6	98.4	98.6	98.3	98.3	98.5	98.3	98.3	97.9	97.8	97.8	97.8	97.9
7	100.0	98.8	98.6	98.4	98.7	98.5	98.4	98.4	98.3	98.3	98.5	98.3	98.2	97.8	97.8	97.8	97.7	97.8
8	100.0	99.1	98.8	98.7	98.8	98.6	98.7	98.6	98.5	98.5	98.7	98.5	98.3	97.9	98.0	98.1	97.9	98.1
9	100.0	99.1	98.9	98.8	98.9	98.8	98.8	98.7	98.6	98.6	98.8	98.5	98.4	98.0	98.0	98.1	97.8	98.0
10	100.0	99.0	98.6	98.4	98.5	98.4	98.4	98.3	98.3	98.2	98.4	98.2	98.2	97.7	97.8	97.9	97.8	98.0
11	100.0	99.2	98.9	98.7	98.8	98.6	98.6	98.5	98.5	98.4	98.7	98.5	98.3	98.0	97.7	97.7	97.8	97.8
12	100.0	99.1	98.8	98.6	98.8	98.7	98.7	98.7	98.6	98.6	98.8	98.7	98.5	98.1	98.0	98.2	98.0	98.2
13	100.0	99.3	99.0	98.8	99.0	98.8	98.8	98.8	98.7	98.6	98.7	98.6	98.6	98.2	98.2	98.4	98.1	98.3
14	100.0	99.1	98.9	98.7	99.0	98.7	98.6	98.6	98.5	98.4	98.5	98.5	98.4	97.9	98.0	98.1	97.7	98.0
15	100.0	99.1	98.9	98.7	99.0	98.7	98.7	98.6	98.6	98.6	98.6	98.5	98.5	98.1	98.1	98.2	97.9	98.1
16	100.0	98.9	98.5	98.3	98.4	98.1	98.1	98.1	98.1	98.1	98.2	98.2	98.0	97.6	97.6	97.7	97.4	97.6
17	100.0	98.8	98.6	98.5	98.8	98.4	97.9	98.5	98.5	98.5	98.5	98.4	98.2	97.9	97.9	97.7	97.6	97.8
18	100.0	99.2	99.0	98.8	98.8	98.8	98.6	98.7	98.6	98.6	98.6	98.6	98.5	98.0	98.1	98.2	97.9	98.2
19	100.0	99.3	98.9	98.8	99.0	98.8	98.6	98.6	98.5	98.4	98.6	98.4	98.4	97.8	98.0	98.0	97.8	98.1
20	100.0	98.8	98.6	98.6	98.8	98.6	98.6	98.6	98.5	98.4	98.5	98.4	98.3	97.8	98.0	97.9	97.6	97.9
21	100.0	98.7	98.5	98.3	98.5	98.4	98.2	98.3	98.2	98.2	98.3	98.1	98.2	97.5	97.7	97.7	97.4	97.6
22	100.0	99.2	98.9	98.8	98.9	98.8	98.7	98.7	98.6	98.6	98.7	98.6	98.5	98.0	98.2	98.2	98.0	98.2
23	100.0	99.1	98.7	98.5	98.7	98.5	98.3	98.4	98.3	98.2	98.3	98.2	98.1	97.5	97.8	97.4	97.5	97.7
24	100.0	99.2	98.9	98.8	99.0	98.8	98.8	98.8	98.7	98.6	98.8	98.7	98.6	98.1	98.2	98.3	98.0	98.3
25	100.0	98.8	98.7	98.4	98.6	98.5	98.6	98.7	98.6	98.3	98.6	98.4	98.4	97.8	97.9	98.0	97.8	97.9
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.0	98.8	98.6	98.8	98.6	98.5	98.6	98.5	98.4	98.6	98.4	98.4	97.9	97.9	98.0	97.8	98.0
Med.	100.0	99.1	98.8	98.6	98.8	98.6	98.6	98.6	98.5	98.4	98.6	98.5	98.4	97.9	98.0	98.0	97.8	98.0
σ	0.00	0.20	0.20	0.20	0.20	0.20	0.25	0.20	0.20	0.20	0.19	0.19	0.18	0.20	0.19	0.27	0.21	0.23
Min.	100.0	98.7	98.5	98.2	98.4	98.1	97.9	98.1	98.0	98.1	98.2	98.1	98.0	97.5	97.6	97.4	97.4	97.5
Max.	100.0	99.5	99.3	98.9	99.1	98.9	98.9	99.0	98.8	98.8	98.9	98.7	98.7	98.2	98.2	98.4	98.2	98.3

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0141	-0.0161	-0.0161	-0.0212	-0.0212	-0.0202	-0.0222	-0.0202	-0.0233	-0.0233	-0.0243							

Test duration used	5000 h to 10000 h	
B	0.994	
α	1.82E-06	
R^2	0.812	
Calculated L_{70} (10K)	193000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	119000	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	54600	hours
Reported L_{90} (10K)	54600	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 6 : 85 °C, 125 mA

Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 6-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	97.6	97.4	97.5															
2	97.9	97.9	97.8															
3	97.8	97.8	97.6															
4	98.1	98.1	97.9															
5	97.4	97.3	97.1															
6	97.7	97.7	97.5															
7	97.6	97.5	97.5															
8	97.9	97.8	97.7															
9	97.8	97.7	97.6															
10	97.7	97.6	97.6															
11	97.6	97.6	97.8															
12	97.9	97.9	97.8															
13	98.0	98.1	98.0															
14	97.7	97.7	97.6															
15	97.9	97.8	97.8															
16	97.4	97.3	97.4															
17	97.3	97.6	97.6															
18	97.8	97.8	97.7															
19	97.9	97.8	97.7															
20	97.7	97.7	97.6															
21	97.4	97.4	97.3															
22	98.0	98.0	97.9															
23	97.4	97.4	97.1															
24	98.1	98.0	97.9															
25	97.8	97.6	97.6															
n	25	25	25															
Avg.	97.7	97.7	97.6															
Med.	97.8	97.7	97.6															
σ	0.23	0.23	0.23															
Min.	97.3	97.3	97.1															
Max.	98.1	98.1	98.0															

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Data Set 6 : 85 °C, 125 mA

Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 6-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.4	99.4	99.5	99.3	99.4	99.4	99.4	99.4	99.4	99.5	99.4	99.4	99.5	99.5	99.5	99.5	99.5
2	100.0	99.1	99.1	99.0	99.1	99.1	99.0	99.1	99.0	99.1	99.2	99.2	99.2	99.2	99.2	99.3	99.2	99.2
3	100.0	99.2	99.2	99.1	99.3	99.3	99.2	99.3	99.1	99.2	99.3	99.3	99.3	99.2	99.4	99.4	99.4	99.3
4	100.0	99.1	99.1	99.1	99.2	99.2	99.2	99.2	99.1	99.2	99.3	99.3	99.2	99.3	99.3	99.4	99.3	99.3
5	100.0	99.5	99.4	99.4	99.6	99.4	99.4	99.6	99.5	99.5	99.6	99.6	99.5	99.5	99.6	99.6	99.6	99.6
6	100.0	99.5	99.5	99.4	99.5	99.5	99.4	99.7	99.5	99.5	99.6	99.5	99.6	99.6	99.7	99.7	99.5	99.6
7	100.0	99.7	99.7	99.5	99.8	99.8	99.7	99.7	99.7	99.7	99.8	99.7	99.8	99.7	99.8	99.8	99.9	99.8
8	100.0	99.3	99.3	99.3	99.3	99.3	99.5	99.4	99.4	99.4	99.5	99.5	99.4	99.4	99.4	99.5	99.4	99.4
9	100.0	99.4	99.3	99.4	99.4	99.5	99.5	99.4	99.5	99.4	99.4	99.4	99.6	99.4	99.5	99.5	99.5	99.5
10	100.0	99.3	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.6	99.5	99.4	99.5	99.5	99.4	99.5
11	100.0	99.4	99.4	99.3	99.4	99.3	99.5	99.5	99.4	99.4	99.4	99.5	99.4	99.4	99.5	99.5	99.4	99.5
12	100.0	99.4	99.5	99.3	99.4	99.4	99.5	99.5	99.4	99.5	99.4	99.5	99.5	99.5	99.5	99.6	99.5	99.6
13	100.0	99.2	99.1	99.2	99.3	99.3	99.4	99.3	99.4	99.3	99.3	99.2	99.3	99.4	99.4	99.4	99.3	99.4
14	100.0	99.3	99.3	99.3	99.4	99.5	99.3	99.5	99.5	99.4	99.4	99.5	99.5	99.4	99.5	99.5	99.4	99.4
15	100.0	99.4	99.3	99.3	99.4	99.4	99.5	99.5	99.4	99.4	99.4	99.5	99.5	99.4	99.5	99.5	99.5	99.5
16	100.0	99.5	99.4	99.4	99.5	99.5	99.4	99.5	99.5	99.5	99.6	99.6	99.6	99.5	99.6	99.6	99.5	99.6
17	100.0	99.5	99.5	99.4	99.5	99.6	99.5	99.5	99.5	99.5	99.5	99.5	99.6	99.5	99.6	99.6	99.6	99.6
18	100.0	99.3	99.3	99.3	99.3	99.4	99.4	99.4	99.5	99.4	99.3	99.5	99.4	99.4	99.5	99.4	99.5	99.5
19	100.0	99.3	99.3	99.2	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.4	99.4	99.4	99.4	99.3	99.4
20	100.0	99.5	99.5	99.5	99.6	99.6	99.7	99.6	99.6	99.6	99.6	99.7	99.7	99.7	99.7	99.7	99.6	99.7
21	100.0	99.4	99.4	99.4	99.5	99.5	99.6	99.6	99.5	99.6	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.6
22	100.0	99.1	99.3	99.3	99.4	99.4	99.3	99.4	99.3	99.3	99.3	99.5	99.4	99.4	99.4	99.5	99.4	99.5
23	100.0	99.4	99.4	99.5	99.4	99.5	99.3	99.5	99.5	99.5	99.4	99.5	99.6	99.5	99.6	99.6	99.5	99.6
24	100.0	99.4	99.3	99.3	99.4	99.3	99.5	99.4	99.4	99.3	99.4	99.5	99.4	99.4	99.5	99.4	99.4	99.5
25	100.0	99.5	99.5	99.6	99.5	99.6	99.5	99.5	99.5	99.5	99.6	99.6	99.6	99.5	99.6	99.6	99.6	99.6
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.4	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.5	99.5	99.4	99.5	99.5	99.5	99.5
Med.	100.0	99.4	99.3	99.3	99.4	99.4	99.4	99.5	99.4	99.4	99.4	99.5	99.5	99.4	99.5	99.5	99.5	99.5
σ	0.00	0.14	0.13	0.14	0.13	0.14	0.16	0.13	0.15	0.14	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Min.	100.0	99.1	99.1	99.0	99.1	99.1	99.0	99.1	99.0	99.1	99.2	99.2	99.2	99.2	99.2	99.3	99.2	99.2
Max.	100.0	99.7	99.7	99.6	99.8	99.8	99.7	99.7	99.7	99.7	99.8	99.7	99.8	99.7	99.8	99.8	99.9	99.8

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Data Set 6 : 85 °C, 125 mA

Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 6-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	99.5	99.5	99.5															
2	99.3	99.3	99.3															
3	99.4	99.4	99.3															
4	99.3	99.3	99.3															
5	99.6	99.6	99.6															
6	99.6	99.7	99.6															
7	99.8	99.8	99.8															
8	99.5	99.5	99.5															
9	99.5	99.5	99.6															
10	99.5	99.5	99.5															
11	99.5	99.5	99.5															
12	99.5	99.6	99.5															
13	99.4	99.4	99.4															
14	99.4	99.5	99.5															
15	99.4	99.6	99.5															
16	99.5	99.5	99.6															
17	99.6	99.7	99.6															
18	99.4	99.5	99.4															
19	99.4	99.4	99.4															
20	99.6	99.6	99.7															
21	99.7	99.6	99.7															
22	99.5	99.5	99.5															
23	99.5	99.6	99.6															
24	99.4	99.5	99.4															
25	99.6	99.6	99.6															
n	25	25	25															
Avg.	99.5	99.5	99.5															
Med.	99.5	99.5	99.5															
σ	0.12	0.13	0.12															
Min.	99.3	99.3	99.3															
Max.	99.8	99.8	99.8															

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Data Set 6 : 85 °C, 125 mA

Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 6-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0008	0.0009	0.0009	0.0011	0.0011	0.0012	0.0011	0.0011	0.0010	0.0009	0.0009	0.0009	0.0013	0.0011	0.0011	0.0012	0.0012
2	0.0000	0.0008	0.0009	0.0009	0.0010	0.0011	0.0010	0.0010	0.0010	0.0009	0.0007	0.0008	0.0008	0.0012	0.0010	0.0010	0.0010	0.0011
3	0.0000	0.0005	0.0006	0.0007	0.0008	0.0010	0.0009	0.0009	0.0009	0.0008	0.0007	0.0008	0.0007	0.0011	0.0011	0.0010	0.0011	0.0010
4	0.0000	0.0008	0.0010	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010	0.0009	0.0009	0.0009	0.0013	0.0012	0.0011	0.0012	0.0012
5	0.0000	0.0008	0.0010	0.0011	0.0011	0.0012	0.0012	0.0011	0.0012	0.0011	0.0011	0.0010	0.0010	0.0014	0.0013	0.0013	0.0014	0.0013
6	0.0000	0.0007	0.0009	0.0010	0.0010	0.0010	0.0010	0.0009	0.0010	0.0010	0.0009	0.0008	0.0008	0.0012	0.0011	0.0010	0.0012	0.0011
7	0.0000	0.0007	0.0009	0.0010	0.0011	0.0010	0.0010	0.0011	0.0010	0.0009	0.0008	0.0009	0.0008	0.0012	0.0011	0.0011	0.0011	0.0011
8	0.0000	0.0007	0.0009	0.0008	0.0010	0.0011	0.0011	0.0010	0.0010	0.0010	0.0008	0.0008	0.0008	0.0011	0.0012	0.0010	0.0011	0.0010
9	0.0000	0.0008	0.0009	0.0011	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0008	0.0007	0.0008	0.0013	0.0011	0.0011	0.0012	0.0011
10	0.0000	0.0008	0.0010	0.0009	0.0011	0.0011	0.0012	0.0012	0.0012	0.0012	0.0009	0.0009	0.0010	0.0013	0.0012	0.0013	0.0012	0.0012
11	0.0000	0.0008	0.0010	0.0010	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010	0.0009	0.0009	0.0008	0.0013	0.0010	0.0010	0.0011	0.0011
12	0.0000	0.0007	0.0009	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010	0.0010	0.0008	0.0008	0.0008	0.0012	0.0011	0.0012	0.0012	0.0011
13	0.0000	0.0006	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0008	0.0008	0.0012	0.0011	0.0011	0.0011	0.0011
14	0.0000	0.0008	0.0009	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0008	0.0009	0.0008	0.0012	0.0012	0.0012	0.0012	0.0011
15	0.0000	0.0008	0.0009	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0008	0.0008	0.0009	0.0013	0.0012	0.0013	0.0011	0.0012
16	0.0000	0.0008	0.0011	0.0010	0.0012	0.0012	0.0013	0.0011	0.0011	0.0011	0.0009	0.0010	0.0008	0.0014	0.0012	0.0013	0.0013	0.0012
17	0.0000	0.0007	0.0008	0.0010	0.0011	0.0011	0.0012	0.0010	0.0010	0.0010	0.0008	0.0007	0.0009	0.0012	0.0012	0.0010	0.0012	0.0012
18	0.0000	0.0007	0.0009	0.0009	0.0011	0.0011	0.0011	0.0010	0.0010	0.0009	0.0009	0.0008	0.0007	0.0013	0.0012	0.0012	0.0011	0.0012
19	0.0000	0.0008	0.0009	0.0010	0.0011	0.0012	0.0011	0.0010	0.0012	0.0011	0.0009	0.0010	0.0009	0.0013	0.0012	0.0012	0.0012	0.0012
20	0.0000	0.0008	0.0010	0.0011	0.0011	0.0012	0.0011	0.0011	0.0011	0.0010	0.0008	0.0009	0.0009	0.0013	0.0012	0.0012	0.0012	0.0012
21	0.0000	0.0008	0.0010	0.0010	0.0012	0.0011	0.0012	0.0011	0.0011	0.0011	0.0009	0.0010	0.0010	0.0014	0.0013	0.0013	0.0013	0.0012
22	0.0000	0.0008	0.0009	0.0010	0.0011	0.0011	0.0011	0.0010	0.0011	0.0011	0.0008	0.0009	0.0009	0.0012	0.0012	0.0012	0.0011	0.0011
23	0.0000	0.0008	0.0009	0.0009	0.0010	0.0011	0.0011	0.0010	0.0010	0.0010	0.0007	0.0008	0.0008	0.0012	0.0012	0.0011	0.0012	0.0011
24	0.0000	0.0007	0.0009	0.0008	0.0009	0.0010	0.0010	0.0010	0.0009	0.0009	0.0008	0.0008	0.0007	0.0011	0.0010	0.0011	0.0010	0.0010
25	0.0000	0.0006	0.0008	0.0009	0.0010	0.0010	0.0011	0.0010	0.0011	0.0010	0.0008	0.0007	0.0009	0.0012	0.0012	0.0011	0.0011	0.0010
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0007	0.0009	0.0009	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0008	0.0009	0.0008	0.0013	0.0011	0.0011	0.0012	0.0011
Med.	0.0000	0.0008	0.0009	0.0010	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0008	0.0008	0.0008	0.0012	0.0012	0.0011	0.0012	0.0011
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0005	0.0006	0.0007	0.0008	0.0010	0.0009	0.0009	0.0009	0.0008	0.0007	0.0007	0.0007	0.0011	0.0010	0.0010	0.0010	0.0010
Max.	0.0000	0.0008	0.0011	0.0011	0.0012	0.0012	0.0013	0.0012	0.0012	0.0012	0.0011	0.0010	0.0010	0.0014	0.0013	0.0013	0.0014	0.0013

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Data Set 6 : 85 °C, 125 mA

Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 6-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0013	0.0011	0.0012															
2	0.0011	0.0011	0.0012															
3	0.0011	0.0010	0.0010															
4	0.0013	0.0012	0.0012															
5	0.0015	0.0011	0.0013															
6	0.0011	0.0011	0.0012															
7	0.0011	0.0011	0.0012															
8	0.0011	0.0010	0.0011															
9	0.0012	0.0011	0.0011															
10	0.0013	0.0012	0.0012															
11	0.0012	0.0012	0.0012															
12	0.0012	0.0012	0.0012															
13	0.0011	0.0011	0.0010															
14	0.0012	0.0012	0.0012															
15	0.0013	0.0013	0.0013															
16	0.0013	0.0013	0.0013															
17	0.0011	0.0012	0.0012															
18	0.0012	0.0011	0.0012															
19	0.0013	0.0012	0.0013															
20	0.0012	0.0011	0.0012															
21	0.0014	0.0013	0.0014															
22	0.0013	0.0012	0.0012															
23	0.0011	0.0011	0.0010															
24	0.0011	0.0011	0.0011															
25	0.0011	0.0012	0.0011															
n	25	25	25															
Avg.	0.0012	0.0012	0.0012															
Med.	0.0012	0.0011	0.0012															
σ	0.0001	0.0001	0.0001															
Min.	0.0011	0.0010	0.0010															
Max.	0.0015	0.0013	0.0014															

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Data Set 6 : 85 °C, 125 mA

Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 6-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2633	0.2625	0.2624	0.2624	0.2623	0.2622	0.2622	0.2623	0.2623	0.2623	0.2624	0.2624	0.2625	0.2621	0.2622	0.2622	0.2622	0.2622
2	0.2614	0.2607	0.2605	0.2606	0.2604	0.2604	0.2604	0.2604	0.2604	0.2606	0.2607	0.2606	0.2606	0.2602	0.2604	0.2604	0.2604	0.2603
3	0.2603	0.2599	0.2597	0.2596	0.2595	0.2594	0.2594	0.2594	0.2594	0.2595	0.2596	0.2595	0.2596	0.2592	0.2593	0.2594	0.2593	0.2594
4	0.2599	0.2592	0.2589	0.2590	0.2589	0.2589	0.2588	0.2589	0.2589	0.2589	0.2591	0.2590	0.2590	0.2586	0.2587	0.2588	0.2587	0.2587
5	0.2657	0.2650	0.2648	0.2646	0.2646	0.2645	0.2646	0.2646	0.2646	0.2647	0.2647	0.2647	0.2648	0.2643	0.2645	0.2645	0.2644	0.2645
6	0.2650	0.2643	0.2640	0.2640	0.2640	0.2639	0.2639	0.2640	0.2640	0.2640	0.2641	0.2642	0.2642	0.2638	0.2639	0.2639	0.2638	0.2638
7	0.2637	0.2630	0.2629	0.2628	0.2627	0.2627	0.2627	0.2626	0.2627	0.2628	0.2629	0.2628	0.2629	0.2625	0.2626	0.2626	0.2626	0.2626
8	0.2601	0.2594	0.2592	0.2593	0.2591	0.2590	0.2590	0.2591	0.2591	0.2591	0.2593	0.2593	0.2593	0.2590	0.2589	0.2591	0.2590	0.2591
9	0.2635	0.2627	0.2626	0.2624	0.2624	0.2624	0.2624	0.2625	0.2624	0.2625	0.2627	0.2628	0.2627	0.2623	0.2625	0.2624	0.2623	0.2624
10	0.2657	0.2649	0.2647	0.2647	0.2646	0.2645	0.2644	0.2645	0.2645	0.2645	0.2648	0.2648	0.2647	0.2644	0.2644	0.2644	0.2645	0.2645
11	0.2690	0.2682	0.2680	0.2680	0.2678	0.2679	0.2679	0.2679	0.2679	0.2679	0.2681	0.2681	0.2681	0.2677	0.2679	0.2680	0.2678	0.2679
12	0.2627	0.2620	0.2619	0.2618	0.2617	0.2617	0.2616	0.2618	0.2617	0.2618	0.2619	0.2619	0.2619	0.2615	0.2617	0.2616	0.2616	0.2616
13	0.2636	0.2630	0.2627	0.2627	0.2625	0.2626	0.2625	0.2625	0.2625	0.2626	0.2627	0.2628	0.2628	0.2624	0.2625	0.2624	0.2625	0.2625
14	0.2627	0.2619	0.2618	0.2617	0.2616	0.2616	0.2616	0.2616	0.2616	0.2618	0.2619	0.2618	0.2619	0.2615	0.2615	0.2615	0.2615	0.2616
15	0.2615	0.2607	0.2605	0.2605	0.2604	0.2604	0.2604	0.2604	0.2604	0.2605	0.2607	0.2606	0.2606	0.2602	0.2603	0.2602	0.2603	0.2603
16	0.2672	0.2665	0.2662	0.2662	0.2660	0.2661	0.2659	0.2661	0.2661	0.2661	0.2663	0.2662	0.2664	0.2659	0.2660	0.2659	0.2660	0.2660
17	0.2675	0.2668	0.2667	0.2665	0.2664	0.2664	0.2663	0.2665	0.2665	0.2665	0.2667	0.2667	0.2666	0.2662	0.2663	0.2665	0.2662	0.2663
18	0.2592	0.2585	0.2583	0.2583	0.2581	0.2582	0.2581	0.2582	0.2582	0.2583	0.2583	0.2584	0.2585	0.2580	0.2581	0.2581	0.2581	0.2581
19	0.2637	0.2630	0.2629	0.2628	0.2626	0.2626	0.2626	0.2627	0.2625	0.2626	0.2628	0.2628	0.2628	0.2624	0.2625	0.2626	0.2626	0.2626
20	0.2633	0.2625	0.2624	0.2623	0.2622	0.2622	0.2622	0.2622	0.2623	0.2624	0.2625	0.2624	0.2625	0.2620	0.2621	0.2622	0.2621	0.2621
21	0.2637	0.2630	0.2627	0.2628	0.2626	0.2627	0.2626	0.2626	0.2626	0.2626	0.2628	0.2628	0.2627	0.2624	0.2624	0.2625	0.2625	0.2626
22	0.2630	0.2622	0.2621	0.2620	0.2618	0.2619	0.2619	0.2619	0.2619	0.2619	0.2621	0.2621	0.2621	0.2618	0.2618	0.2618	0.2619	0.2619
23	0.2676	0.2668	0.2666	0.2666	0.2665	0.2665	0.2665	0.2666	0.2665	0.2666	0.2668	0.2668	0.2668	0.2664	0.2664	0.2665	0.2664	0.2664
24	0.2602	0.2595	0.2593	0.2594	0.2593	0.2592	0.2592	0.2593	0.2593	0.2593	0.2595	0.2594	0.2595	0.2591	0.2592	0.2592	0.2592	0.2592
25	0.2607	0.2600	0.2598	0.2597	0.2597	0.2597	0.2596	0.2597	0.2596	0.2597	0.2599	0.2599	0.2598	0.2595	0.2595	0.2596	0.2595	0.2597
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2634	0.2626	0.2625	0.2624	0.2623	0.2623	0.2623	0.2623	0.2623	0.2624	0.2625	0.2625	0.2625	0.2621	0.2622	0.2622	0.2622	0.2622
Med.	0.2633	0.2625	0.2624	0.2624	0.2623	0.2622	0.2622	0.2623	0.2623	0.2624	0.2625	0.2624	0.2625	0.2621	0.2622	0.2622	0.2622	0.2622
σ	0.0027	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026
Min.	0.2592	0.2585	0.2583	0.2583	0.2581	0.2582	0.2581	0.2582	0.2582	0.2583	0.2583	0.2584	0.2585	0.2580	0.2581	0.2581	0.2581	0.2581
Max.	0.2690	0.2682	0.2680	0.2680	0.2678	0.2679	0.2679	0.2679	0.2679	0.2679	0.2681	0.2681	0.2681	0.2677	0.2679	0.2680	0.2678	0.2679

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Data Set 6 : 85 °C, 125 mA

Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 6-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2621	0.2622	0.2621															
2	0.2603	0.2604	0.2603															
3	0.2593	0.2593	0.2593															
4	0.2587	0.2588	0.2587															
5	0.2643	0.2646	0.2645															
6	0.2638	0.2639	0.2638															
7	0.2627	0.2627	0.2626															
8	0.2590	0.2591	0.2590															
9	0.2624	0.2624	0.2624															
10	0.2644	0.2644	0.2644															
11	0.2678	0.2677	0.2677															
12	0.2616	0.2615	0.2616															
13	0.2625	0.2624	0.2625															
14	0.2615	0.2615	0.2615															
15	0.2602	0.2602	0.2602															
16	0.2660	0.2659	0.2660															
17	0.2664	0.2663	0.2663															
18	0.2581	0.2581	0.2580															
19	0.2625	0.2625	0.2625															
20	0.2622	0.2622	0.2621															
21	0.2624	0.2625	0.2624															
22	0.2617	0.2618	0.2618															
23	0.2665	0.2665	0.2665															
24	0.2592	0.2591	0.2592															
25	0.2596	0.2595	0.2596															
n	25	25	25															
Avg.	0.2622	0.2622	0.2622															
Med.	0.2622	0.2622	0.2621															
σ	0.0026	0.0026	0.0026															
Min.	0.2581	0.2581	0.2580															
Max.	0.2678	0.2677	0.2677															

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Data Set 6 : 85 °C, 125 mA

Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 6-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5298	0.5297	0.5297	0.5297	0.5296	0.5296	0.5296	0.5298	0.5297	0.5297	0.5298	0.5298	0.5299	0.5296	0.5297	0.5297	0.5296	0.5297
2	0.5297	0.5297	0.5296	0.5296	0.5296	0.5296	0.5296	0.5297	0.5296	0.5297	0.5297	0.5297	0.5298	0.5296	0.5296	0.5296	0.5296	0.5296
3	0.5273	0.5273	0.5273	0.5273	0.5272	0.5272	0.5272	0.5272	0.5272	0.5273	0.5273	0.5273	0.5274	0.5272	0.5272	0.5272	0.5272	0.5271
4	0.5237	0.5238	0.5238	0.5238	0.5236	0.5236	0.5237	0.5237	0.5238	0.5238	0.5238	0.5238	0.5239	0.5236	0.5237	0.5237	0.5237	0.5237
5	0.5233	0.5232	0.5232	0.5232	0.5230	0.5230	0.5231	0.5232	0.5232	0.5231	0.5233	0.5232	0.5232	0.5230	0.5231	0.5231	0.5231	0.5231
6	0.5303	0.5303	0.5303	0.5302	0.5302	0.5302	0.5302	0.5302	0.5302	0.5302	0.5303	0.5304	0.5303	0.5301	0.5301	0.5302	0.5302	0.5302
7	0.5315	0.5315	0.5314	0.5315	0.5314	0.5314	0.5314	0.5315	0.5315	0.5315	0.5315	0.5315	0.5315	0.5313	0.5314	0.5314	0.5313	0.5313
8	0.5254	0.5253	0.5252	0.5252	0.5251	0.5251	0.5252	0.5252	0.5252	0.5253	0.5253	0.5254	0.5254	0.5251	0.5252	0.5252	0.5252	0.5252
9	0.5289	0.5288	0.5288	0.5288	0.5287	0.5287	0.5288	0.5288	0.5287	0.5288	0.5288	0.5289	0.5288	0.5286	0.5287	0.5287	0.5287	0.5287
10	0.5260	0.5260	0.5259	0.5259	0.5259	0.5258	0.5258	0.5259	0.5259	0.5259	0.5259	0.5260	0.5260	0.5257	0.5258	0.5259	0.5258	0.5258
11	0.5263	0.5263	0.5262	0.5262	0.5261	0.5261	0.5261	0.5262	0.5262	0.5262	0.5263	0.5263	0.5262	0.5260	0.5261	0.5261	0.5261	0.5261
12	0.5229	0.5228	0.5228	0.5228	0.5226	0.5227	0.5227	0.5228	0.5227	0.5228	0.5229	0.5228	0.5229	0.5227	0.5227	0.5228	0.5227	0.5227
13	0.5298	0.5298	0.5298	0.5298	0.5296	0.5297	0.5297	0.5297	0.5298	0.5297	0.5298	0.5298	0.5298	0.5297	0.5297	0.5297	0.5297	0.5297
14	0.5269	0.5270	0.5269	0.5270	0.5268	0.5268	0.5268	0.5269	0.5268	0.5269	0.5269	0.5270	0.5270	0.5268	0.5268	0.5268	0.5268	0.5268
15	0.5211	0.5211	0.5210	0.5210	0.5209	0.5208	0.5209	0.5210	0.5209	0.5210	0.5210	0.5211	0.5210	0.5208	0.5208	0.5208	0.5208	0.5208
16	0.5288	0.5287	0.5287	0.5287	0.5286	0.5285	0.5286	0.5286	0.5287	0.5287	0.5287	0.5288	0.5287	0.5286	0.5286	0.5286	0.5286	0.5286
17	0.5261	0.5262	0.5261	0.5262	0.5260	0.5260	0.5262	0.5261	0.5262	0.5261	0.5262	0.5262	0.5262	0.5260	0.5260	0.5260	0.5260	0.5260
18	0.5280	0.5280	0.5280	0.5280	0.5278	0.5278	0.5279	0.5280	0.5280	0.5280	0.5280	0.5281	0.5280	0.5278	0.5279	0.5279	0.5279	0.5279
19	0.5275	0.5276	0.5275	0.5275	0.5274	0.5274	0.5274	0.5274	0.5274	0.5275	0.5275	0.5275	0.5275	0.5273	0.5274	0.5274	0.5274	0.5274
20	0.5306	0.5306	0.5305	0.5306	0.5305	0.5304	0.5305	0.5305	0.5306	0.5306	0.5306	0.5306	0.5306	0.5304	0.5305	0.5305	0.5305	0.5305
21	0.5241	0.5240	0.5239	0.5239	0.5238	0.5238	0.5238	0.5239	0.5239	0.5239	0.5239	0.5240	0.5240	0.5237	0.5238	0.5238	0.5238	0.5237
22	0.5269	0.5268	0.5267	0.5268	0.5266	0.5267	0.5267	0.5268	0.5267	0.5268	0.5268	0.5269	0.5268	0.5266	0.5267	0.5267	0.5267	0.5267
23	0.5320	0.5320	0.5319	0.5319	0.5319	0.5319	0.5320	0.5319	0.5319	0.5319	0.5320	0.5320	0.5320	0.5318	0.5319	0.5319	0.5319	0.5319
24	0.5311	0.5312	0.5311	0.5311	0.5311	0.5310	0.5311	0.5311	0.5311	0.5312	0.5312	0.5313	0.5313	0.5310	0.5312	0.5311	0.5311	0.5311
25	0.5260	0.5260	0.5260	0.5259	0.5258	0.5258	0.5259	0.5260	0.5260	0.5260	0.5260	0.5261	0.5261	0.5258	0.5259	0.5259	0.5259	0.5259
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5274	0.5273	0.5273	0.5273	0.5272	0.5272	0.5272	0.5273	0.5273	0.5273	0.5273	0.5274	0.5274	0.5272	0.5272	0.5272	0.5272	0.5272
Med.	0.5273	0.5273	0.5273	0.5273	0.5272	0.5272	0.5272	0.5272	0.5272	0.5273	0.5273	0.5273	0.5274	0.5272	0.5272	0.5272	0.5272	0.5271
σ	0.0029	0.0029	0.0029	0.0029	0.0030	0.0030	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0030	0.0030	0.0029	0.0029	0.0030
Min.	0.5211	0.5211	0.5210	0.5210	0.5209	0.5208	0.5209	0.5210	0.5209	0.5210	0.5210	0.5211	0.5210	0.5208	0.5208	0.5208	0.5208	0.5208
Max.	0.5320	0.5320	0.5319	0.5319	0.5319	0.5319	0.5320	0.5319	0.5319	0.5319	0.5320	0.5320	0.5320	0.5318	0.5319	0.5319	0.5319	0.5319

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Data Set 6 : 85 °C, 125 mA

Actual Case Temperature [T_S]	85.0 °C
Actual Ambient Temperature [T_A]	82.9 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 6-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5296	0.5296	0.5296															
2	0.5295	0.5296	0.5295															
3	0.5271	0.5271	0.5271															
4	0.5236	0.5236	0.5237															
5	0.5231	0.5230	0.5230															
6	0.5301	0.5301	0.5301															
7	0.5313	0.5314	0.5313															
8	0.5252	0.5251	0.5252															
9	0.5287	0.5287	0.5287															
10	0.5258	0.5257	0.5258															
11	0.5261	0.5261	0.5262															
12	0.5227	0.5227	0.5227															
13	0.5296	0.5297	0.5296															
14	0.5268	0.5267	0.5267															
15	0.5207	0.5207	0.5208															
16	0.5286	0.5286	0.5286															
17	0.5261	0.5260	0.5259															
18	0.5278	0.5278	0.5278															
19	0.5274	0.5273	0.5274															
20	0.5305	0.5305	0.5305															
21	0.5238	0.5237	0.5238															
22	0.5267	0.5266	0.5267															
23	0.5319	0.5319	0.5319															
24	0.5311	0.5311	0.5310															
25	0.5259	0.5258	0.5259															
n	25	25	25															
Avg.	0.5272	0.5272	0.5272															
Med.	0.5271	0.5271	0.5271															
σ	0.0030	0.0030	0.0030															
Min.	0.5207	0.5207	0.5208															
Max.	0.5319	0.5319	0.5319															

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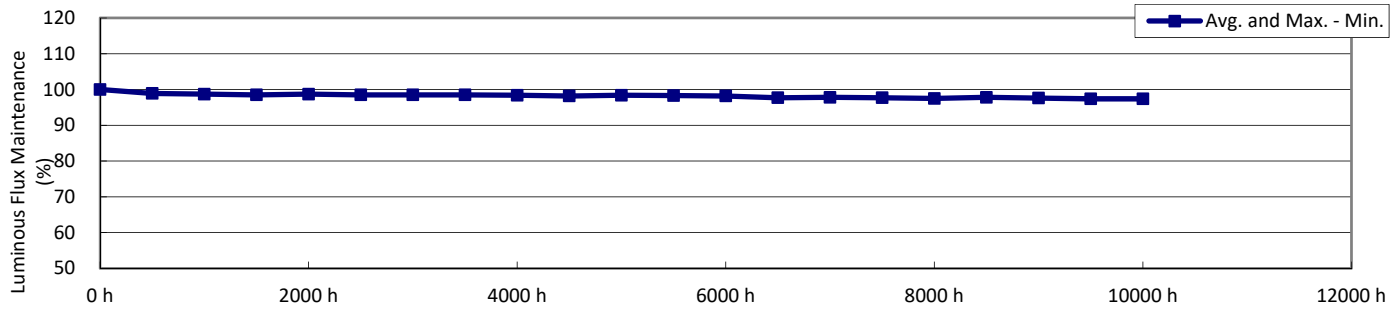
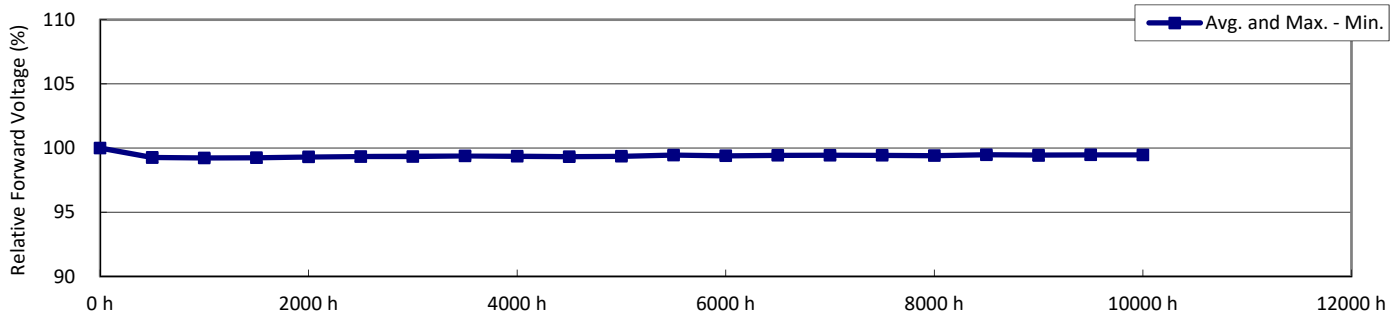
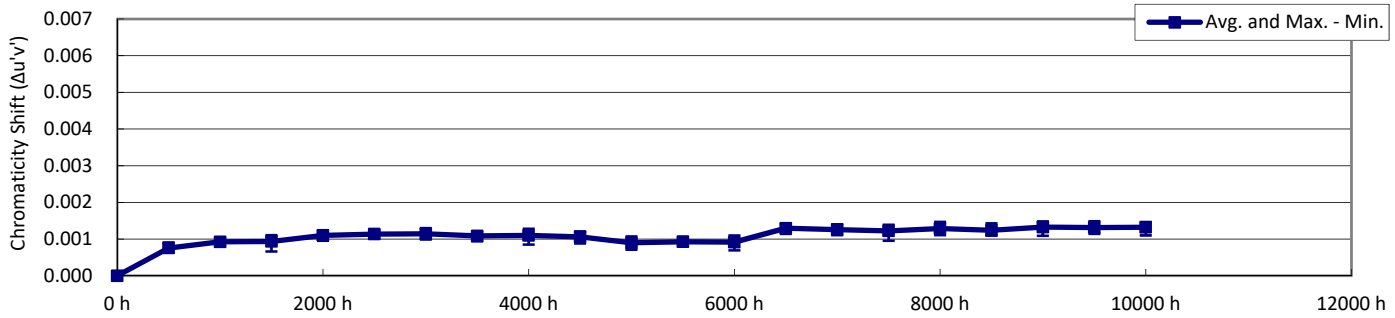
Data Set 7 : 85 °C, 150 mA

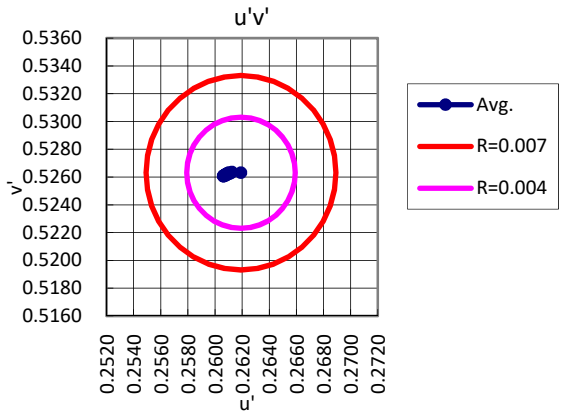
Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 7 : 85 °C, 150 mA

Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 7-1
Initial Characteristics

LED No.	Luminous flux	Forward voltage	CCT	Input Power	CIE1931		CIE1976							
	Φ_V [lm]	V_F [V]	T_{CP} [K]	P [W]	x	y	u'	v'						
1	70.7	3.12	2704	0.47	0.456	0.404	0.263	0.524						
2	70.8	3.15	2660	0.47	0.461	0.408	0.265	0.527						
3	71.1	3.13	2682	0.47	0.463	0.414	0.263	0.529						
4	70.6	3.14	2664	0.47	0.461	0.409	0.264	0.527						
5	71.8	3.13	2777	0.47	0.453	0.408	0.259	0.525						
6	71.3	3.15	2748	0.47	0.452	0.402	0.261	0.523						
7	71.3	3.15	2715	0.47	0.458	0.408	0.262	0.526						
8	71.6	3.15	2735	0.47	0.456	0.408	0.261	0.526						
9	71.3	3.12	2733	0.47	0.456	0.408	0.261	0.526						
10	71.9	3.13	2727	0.47	0.460	0.415	0.261	0.529						
11	71.7	3.15	2765	0.47	0.454	0.408	0.260	0.526						
12	70.2	3.14	2628	0.47	0.464	0.408	0.266	0.527						
13	72.3	3.15	2737	0.47	0.461	0.417	0.260	0.530						
14	71.2	3.15	2768	0.47	0.452	0.405	0.260	0.524						
15	70.5	3.13	2724	0.47	0.452	0.399	0.263	0.522						
16	71.7	3.15	2809	0.47	0.449	0.404	0.258	0.523						
17	70.9	3.15	2676	0.47	0.463	0.412	0.263	0.528						
18	72.2	3.12	2792	0.47	0.452	0.408	0.259	0.525						
19	71.6	3.14	2685	0.47	0.466	0.419	0.262	0.531						
20	71.2	3.13	2760	0.47	0.451	0.402	0.261	0.523						
21	71.4	3.13	2709	0.47	0.462	0.415	0.262	0.529						
22	69.9	3.15	2636	0.47	0.462	0.406	0.266	0.526						
23	71.2	3.12	2641	0.47	0.466	0.414	0.265	0.530						
24	71.7	3.12	2783	0.47	0.451	0.406	0.259	0.524						
25	71.5	3.12	2761	0.47	0.453	0.405	0.260	0.524						
n	25	25	25	25	25	25	25	25						
Avg.	71.3	3.14	2721	0.47	0.457	0.409	0.262	0.526						
Med.	71.3	3.14	2727	0.47	0.456	0.408	0.261	0.526						
σ	0.58	0.013	51.2	0.002	0.0053	0.0050	0.0022	0.0026						
Min.	69.9	3.12	2628	0.47	0.449	0.399	0.258	0.522						
Max.	72.3	3.15	2809	0.47	0.466	0.419	0.266	0.531						

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Data Set 7 : 85 °C, 150 mA

Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 7-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	98.8	98.5	98.4	98.6	98.4	98.4	98.4	98.3	98.1	98.3	98.2	98.0	97.6	97.5	97.7	97.4	97.6
2	100.0	99.0	98.7	98.6	98.8	98.7	98.8	98.7	98.6	98.5	98.6	98.5	98.5	97.9	98.0	98.1	97.7	98.0
3	100.0	98.8	98.5	98.4	98.6	98.4	98.4	98.3	98.2	98.1	98.3	98.1	98.0	97.6	97.6	97.7	97.4	97.6
4	100.0	99.0	98.7	98.5	98.6	98.5	98.5	98.4	98.3	98.2	98.3	98.1	98.0	97.6	97.6	97.7	97.5	97.6
5	100.0	99.0	98.6	98.4	98.7	98.5	98.3	98.2	98.2	98.0	98.2	98.1	98.0	97.6	97.7	97.4	97.3	97.5
6	100.0	99.1	98.9	98.8	98.9	98.7	98.7	98.7	98.5	98.4	98.5	98.4	98.3	97.8	97.8	97.9	97.6	97.9
7	100.0	99.1	98.8	98.7	99.0	98.7	98.7	98.8	98.6	98.5	98.7	98.6	98.6	98.1	98.2	98.2	97.9	98.2
8	100.0	98.9	98.8	98.6	98.9	98.6	98.6	98.7	98.6	98.4	98.7	98.6	98.5	98.1	98.1	98.1	97.8	98.1
9	100.0	98.8	98.7	98.6	98.8	98.6	98.5	98.5	98.4	98.2	98.4	98.3	98.1	97.7	97.8	97.6	97.4	97.7
10	100.0	98.8	98.6	98.4	98.7	98.4	98.4	98.4	98.3	98.1	98.4	98.3	98.1	97.7	97.8	97.7	97.5	97.8
11	100.0	99.2	98.8	98.8	98.9	98.6	98.6	98.8	98.6	98.5	98.6	98.6	98.3	98.0	98.1	97.6	97.6	98.0
12	100.0	98.8	98.5	98.5	98.7	98.5	98.5	98.6	98.5	98.3	98.6	98.5	98.4	97.9	98.0	97.9	97.8	98.1
13	100.0	98.9	98.6	98.5	98.8	98.6	98.6	98.6	98.5	98.4	98.6	98.5	98.2	97.8	97.9	97.9	97.6	97.9
14	100.0	98.9	98.7	98.5	98.7	98.5	98.4	98.4	98.2	98.2	98.3	98.1	97.9	97.5	97.6	97.6	97.3	97.5
15	100.0	98.8	98.5	98.4	98.6	98.4	98.4	98.5	98.4	98.3	98.5	98.3	98.2	97.8	97.7	97.8	97.5	97.8
16	100.0	99.0	98.8	98.6	98.9	98.6	98.5	98.6	98.4	98.3	98.4	98.2	98.1	97.6	97.7	97.6	97.3	97.6
17	100.0	99.0	98.9	98.4	98.8	98.4	98.5	98.6	98.4	98.3	98.6	98.3	98.2	97.8	97.9	97.6	97.5	97.7
18	100.0	98.8	98.6	98.5	98.7	98.5	98.4	98.5	98.5	98.2	98.4	98.2	98.1	97.7	97.7	97.7	97.5	97.7
19	100.0	99.0	98.9	98.6	98.8	98.5	98.6	98.6	98.5	98.4	98.6	98.4	98.4	98.1	98.1	98.0	97.9	98.1
20	100.0	98.7	98.5	98.3	98.5	98.2	98.2	98.1	98.0	97.9	98.1	97.9	97.8	97.4	97.4	97.4	97.1	97.4
21	100.0	98.9	98.6	98.4	98.5	98.3	98.3	98.3	98.1	98.0	98.3	98.1	98.0	97.7	97.7	97.7	97.5	97.7
22	100.0	99.2	99.0	98.9	99.1	98.8	98.8	98.8	98.7	98.6	98.8	98.7	98.6	98.1	98.3	98.1	98.0	98.2
23	100.0	99.0	98.6	98.4	98.6	98.4	98.4	98.3	98.2	98.1	98.3	98.1	98.1	97.7	97.9	97.4	97.6	97.5
24	100.0	98.8	98.6	98.4	98.7	98.4	98.4	98.4	98.2	98.1	98.3	98.1	98.0	97.6	97.7	97.7	97.5	97.7
25	100.0	98.7	98.5	98.3	98.5	98.2	98.0	98.2	97.9	97.8	98.1	97.8	97.7	97.2	97.4	97.4	97.1	97.4
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	98.9	98.7	98.5	98.7	98.5	98.5	98.5	98.4	98.2	98.4	98.3	98.2	97.7	97.8	97.7	97.5	97.8
Med.	100.0	98.9	98.6	98.5	98.7	98.5	98.5	98.5	98.4	98.2	98.4	98.3	98.1	97.7	97.8	97.7	97.5	97.7
σ	0.00	0.14	0.15	0.16	0.16	0.15	0.18	0.20	0.20	0.20	0.19	0.23	0.24	0.23	0.24	0.23	0.23	0.25
Min.	100.0	98.7	98.5	98.3	98.5	98.2	98.0	98.1	97.9	97.8	98.1	97.8	97.7	97.2	97.4	97.4	97.1	97.4
Max.	100.0	99.2	99.0	98.9	99.1	98.8	98.8	98.8	98.7	98.6	98.8	98.7	98.6	98.1	98.3	98.2	98.0	98.2

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0161	-0.0171	-0.0182	-0.0233	-0.0222	-0.0233	-0.0253	-0.0222	-0.0243	-0.0263	-0.0263							

Test duration used	5000 h to 10000 h	
B	0.992	
α	1.94E-06	
R^2	0.805	
Calculated L_{70} (10K)	180000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	111000	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	50200	hours
Reported L_{90} (10K)	50200	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 7 : 85 °C, 150 mA

Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 7-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	97.3	97.3	97.2															
2	97.8	97.7	97.7															
3	97.5	97.4	97.2															
4	97.5	97.4	97.3															
5	97.3	97.1	97.3															
6	97.7	97.6	97.5															
7	98.0	97.8	97.8															
8	98.0	97.8	97.7															
9	97.5	97.3	97.2															
10	97.6	97.4	97.4															
11	97.5	97.5	97.4															
12	97.8	97.6	97.6															
13	97.7	97.5	97.4															
14	97.3	97.2	97.1															
15	97.5	97.4	97.4															
16	97.4	97.2	97.1															
17	97.6	97.4	97.5															
18	97.6	97.4	97.4															
19	97.9	97.8	97.7															
20	97.2	97.0	96.9															
21	97.5	97.4	97.3															
22	98.1	98.0	97.8															
23	97.6	97.4	97.2															
24	97.5	97.3	97.3															
25	97.1	97.0	97.0															
n	25	25	25															
Avg.	97.6	97.4	97.4															
Med.	97.5	97.4	97.4															
σ	0.25	0.25	0.24															
Min.	97.1	97.0	96.9															
Max.	98.1	98.0	97.8															

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Data Set 7 : 85 °C, 150 mA

Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 7-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.4	99.4	99.4	99.4	99.5	99.4	99.5	99.4	99.4	99.4	99.5	99.5	99.5	99.4	99.5	99.5	99.6
2	100.0	99.2	99.2	99.1	99.2	99.3	99.2	99.3	99.3	99.2	99.3	99.4	99.3	99.3	99.4	99.5	99.4	99.4
3	100.0	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.6
4	100.0	99.0	99.0	99.0	99.1	99.1	99.2	99.1	99.1	99.1	99.1	99.2	99.2	99.1	99.2	99.2	99.1	99.2
5	100.0	99.3	99.2	99.3	99.4	99.4	99.4	99.5	99.4	99.4	99.4	99.6	99.5	99.5	99.5	99.6	99.5	99.6
6	100.0	99.2	99.2	99.2	99.3	99.3	99.4	99.3	99.3	99.3	99.2	99.4	99.4	99.3	99.4	99.3	99.3	99.4
7	100.0	98.9	99.0	98.9	99.0	99.0	99.1	99.1	99.1	99.0	99.1	99.3	99.1	99.1	99.1	99.2	99.2	99.2
8	100.0	99.3	99.3	99.2	99.4	99.4	99.3	99.4	99.4	99.4	99.3	99.5	99.5	99.4	99.5	99.5	99.4	99.5
9	100.0	99.2	99.1	99.1	99.2	99.2	99.2	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.2	99.3
10	100.0	99.5	99.4	99.5	99.5	99.6	99.5	99.6	99.6	99.4	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.7
11	100.0	99.3	99.3	99.2	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.5	99.4	99.4	99.4	99.4	99.4	99.4
12	100.0	99.0	99.0	99.1	99.1	99.1	99.1	99.2	99.2	99.1	99.2	99.3	99.3	99.3	99.2	99.3	99.3	99.4
13	100.0	99.5	99.5	99.4	99.5	99.7	99.5	99.7	99.6	99.5	99.6	99.7	99.5	99.7	99.7	99.6	99.6	99.7
14	100.0	99.6	99.5	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.8	99.6	99.7	99.7	99.7	99.6	99.7
15	100.0	99.3	99.2	99.3	99.3	99.4	99.3	99.4	99.4	99.3	99.3	99.4	99.4	99.4	99.5	99.4	99.4	99.5
16	100.0	99.2	99.1	99.1	99.2	99.3	99.2	99.4	99.2	99.2	99.3	99.4	99.3	99.3	99.4	99.4	99.3	99.3
17	100.0	99.1	99.0	99.1	99.2	99.2	99.2	99.3	99.2	99.2	99.2	99.3	99.3	99.3	99.3	99.3	99.2	99.4
18	100.0	99.3	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.3	99.5	99.4	99.5	99.5	99.5	99.5	99.5
19	100.0	99.1	99.1	99.3	99.2	99.3	99.3	99.3	99.2	99.2	99.3	99.2	99.3	99.3	99.3	99.3	99.3	99.4
20	100.0	99.3	99.2	99.3	99.4	99.4	99.4	99.4	99.3	99.5	99.4	99.6	99.5	99.6	99.5	99.5	99.5	99.6
21	100.0	99.3	99.3	99.3	99.4	99.3	99.4	99.4	99.4	99.3	99.5	99.5	99.5	99.6	99.5	99.5	99.5	99.5
22	100.0	99.0	99.0	99.0	99.1	99.2	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.3	99.2	99.2	99.3	99.3
23	100.0	99.4	99.4	99.4	99.4	99.5	99.4	99.6	99.5	99.5	99.5	99.7	99.5	99.6	99.6	99.6	99.6	99.6
24	100.0	99.4	99.4	99.4	99.4	99.5	99.4	99.6	99.4	99.4	99.5	99.5	99.5	99.7	99.6	99.5	99.6	99.6
25	100.0	99.3	99.2	99.3	99.3	99.3	99.6	99.4	99.3	99.4	99.4	99.4	99.4	99.4	99.5	99.5	99.5	99.5
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.3	99.2	99.2	99.3	99.3	99.3	99.4	99.4	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.5
Med.	100.0	99.3	99.2	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.3	99.5	99.4	99.4	99.5	99.5	99.4	99.5
σ	0.00	0.17	0.16	0.16	0.15	0.17	0.15	0.15	0.14	0.14	0.14	0.15	0.13	0.16	0.15	0.13	0.14	0.15
Min.	100.0	98.9	99.0	98.9	99.0	99.0	99.1	99.1	99.1	99.0	99.1	99.2	99.1	99.1	99.1	99.2	99.1	99.2
Max.	100.0	99.6	99.5	99.5	99.6	99.7	99.6	99.7	99.6	99.6	99.6	99.8	99.6	99.7	99.7	99.7	99.6	99.7

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Data Set 7 : 85 °C, 150 mA

Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 7-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	99.5	99.6	99.5															
2	99.4	99.4	99.4															
3	99.6	99.6	99.5															
4	99.2	99.2	99.3															
5	99.5	99.6	99.6															
6	99.3	99.4	99.4															
7	99.0	99.1	99.1															
8	99.5	99.5	99.5															
9	99.3	99.3	99.3															
10	99.7	99.6	99.6															
11	99.4	99.4	99.4															
12	99.3	99.3	99.3															
13	99.6	99.6	99.6															
14	99.7	99.6	99.7															
15	99.5	99.5	99.6															
16	99.3	99.4	99.4															
17	99.3	99.3	99.3															
18	99.5	99.5	99.5															
19	99.4	99.4	99.4															
20	99.5	99.5	99.5															
21	99.5	99.5	99.5															
22	99.4	99.3	99.3															
23	99.6	99.6	99.6															
24	99.6	99.6	99.6															
25	99.5	99.6	99.6															
n	25	25	25															
Avg.	99.4	99.5	99.5															
Med.	99.5	99.5	99.5															
σ	0.15	0.14	0.13															
Min.	99.0	99.1	99.1															
Max.	99.7	99.6	99.7															

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Data Set 7 : 85 °C, 150 mA

Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 7-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0008	0.0010	0.0010	0.0011	0.0012	0.0012	0.0011	0.0012	0.0012	0.0010	0.0010	0.0009	0.0013	0.0013	0.0013	0.0012	0.0013
2	0.0000	0.0008	0.0010	0.0010	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.0009	0.0009	0.0010	0.0013	0.0013	0.0013	0.0013	0.0012
3	0.0000	0.0007	0.0009	0.0010	0.0011	0.0012	0.0012	0.0012	0.0012	0.0011	0.0010	0.0009	0.0010	0.0013	0.0013	0.0013	0.0014	0.0013
4	0.0000	0.0008	0.0010	0.0009	0.0011	0.0011	0.0013	0.0011	0.0011	0.0011	0.0009	0.0010	0.0009	0.0014	0.0013	0.0012	0.0013	0.0012
5	0.0000	0.0008	0.0009	0.0010	0.0012	0.0011	0.0012	0.0012	0.0012	0.0011	0.0010	0.0010	0.0010	0.0013	0.0012	0.0013	0.0013	0.0013
6	0.0000	0.0007	0.0009	0.0009	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010	0.0008	0.0008	0.0009	0.0013	0.0012	0.0012	0.0012	0.0012
7	0.0000	0.0007	0.0010	0.0010	0.0011	0.0011	0.0011	0.0010	0.0011	0.0011	0.0008	0.0009	0.0009	0.0013	0.0013	0.0012	0.0013	0.0012
8	0.0000	0.0007	0.0009	0.0010	0.0010	0.0011	0.0011	0.0010	0.0011	0.0010	0.0009	0.0009	0.0008	0.0012	0.0012	0.0012	0.0012	0.0013
9	0.0000	0.0007	0.0009	0.0010	0.0011	0.0012	0.0011	0.0011	0.0011	0.0011	0.0009	0.0009	0.0010	0.0014	0.0014	0.0013	0.0013	0.0013
10	0.0000	0.0009	0.0009	0.0010	0.0012	0.0012	0.0012	0.0011	0.0012	0.0011	0.0010	0.0010	0.0010	0.0013	0.0013	0.0013	0.0013	0.0012
11	0.0000	0.0008	0.0009	0.0009	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0007	0.0008	0.0007	0.0012	0.0011	0.0010	0.0011	0.0011
12	0.0000	0.0007	0.0009	0.0010	0.0011	0.0012	0.0011	0.0010	0.0012	0.0010	0.0009	0.0009	0.0010	0.0013	0.0012	0.0012	0.0012	0.0012
13	0.0000	0.0007	0.0009	0.0009	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010	0.0008	0.0008	0.0007	0.0012	0.0011	0.0011	0.0012	0.0011
14	0.0000	0.0008	0.0010	0.0010	0.0012	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0009	0.0009	0.0013	0.0013	0.0012	0.0013	0.0012
15	0.0000	0.0008	0.0009	0.0009	0.0012	0.0012	0.0012	0.0011	0.0011	0.0010	0.0009	0.0009	0.0009	0.0013	0.0012	0.0013	0.0013	0.0013
16	0.0000	0.0008	0.0009	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0008	0.0010	0.0010	0.0013	0.0012	0.0012	0.0012	0.0012
17	0.0000	0.0007	0.0008	0.0007	0.0011	0.0011	0.0010	0.0010	0.0010	0.0009	0.0008	0.0008	0.0009	0.0011	0.0011	0.0011	0.0012	0.0011
18	0.0000	0.0007	0.0008	0.0009	0.0011	0.0012	0.0011	0.0011	0.0011	0.0010	0.0009	0.0008	0.0008	0.0013	0.0012	0.0012	0.0013	0.0012
19	0.0000	0.0006	0.0009	0.0009	0.0011	0.0012	0.0010	0.0011	0.0010	0.0009	0.0007	0.0009	0.0008	0.0012	0.0011	0.0011	0.0012	0.0011
20	0.0000	0.0008	0.0009	0.0008	0.0010	0.0011	0.0012	0.0010	0.0011	0.0011	0.0010	0.0010	0.0008	0.0013	0.0013	0.0013	0.0013	0.0014
21	0.0000	0.0008	0.0010	0.0010	0.0012	0.0012	0.0013	0.0012	0.0013	0.0012	0.0011	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0013
22	0.0000	0.0007	0.0010	0.0011	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0010	0.0010	0.0010	0.0014	0.0014	0.0013	0.0014	0.0013
23	0.0000	0.0009	0.0010	0.0009	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0010	0.0010	0.0011	0.0014	0.0013	0.0013	0.0015	0.0013
24	0.0000	0.0007	0.0009	0.0008	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0012	0.0013	0.0013	0.0012	0.0012
25	0.0000	0.0007	0.0010	0.0010	0.0011	0.0012	0.0013	0.0012	0.0012	0.0011	0.0010	0.0011	0.0009	0.0014	0.0014	0.0013	0.0015	0.0014
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0008	0.0009	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0009	0.0009	0.0013	0.0013	0.0012	0.0013	0.0012
Med.	0.0000	0.0007	0.0009	0.0010	0.0011	0.0012	0.0011	0.0011	0.0011	0.0011	0.0009	0.0009	0.0009	0.0013	0.0013	0.0013	0.0013	0.0012
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0006	0.0008	0.0007	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0007	0.0008	0.0007	0.0011	0.0011	0.0010	0.0011	0.0011
Max.	0.0000	0.0009	0.0010	0.0011	0.0012	0.0012	0.0013	0.0012	0.0013	0.0012	0.0011	0.0011	0.0011	0.0014	0.0014	0.0014	0.0015	0.0014

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Data Set 7 : 85 °C, 150 mA

Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 7-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0014	0.0014	0.0013															
2	0.0013	0.0014	0.0013															
3	0.0014	0.0014	0.0014															
4	0.0013	0.0014	0.0014															
5	0.0013	0.0013	0.0014															
6	0.0013	0.0013	0.0013															
7	0.0014	0.0013	0.0013															
8	0.0012	0.0013	0.0013															
9	0.0014	0.0014	0.0014															
10	0.0014	0.0014	0.0014															
11	0.0011	0.0012	0.0011															
12	0.0014	0.0012	0.0013															
13	0.0012	0.0011	0.0012															
14	0.0014	0.0013	0.0013															
15	0.0013	0.0013	0.0013															
16	0.0014	0.0013	0.0013															
17	0.0012	0.0012	0.0013															
18	0.0012	0.0012	0.0013															
19	0.0013	0.0012	0.0012															
20	0.0014	0.0014	0.0014															
21	0.0014	0.0015	0.0014															
22	0.0014	0.0015	0.0014															
23	0.0015	0.0014	0.0014															
24	0.0014	0.0013	0.0013															
25	0.0015	0.0013	0.0015															
n	25	25	25															
Avg.	0.0013	0.0013	0.0013															
Med.	0.0014	0.0013	0.0013															
σ	0.0001	0.0001	0.0001															
Min.	0.0011	0.0011	0.0011															
Max.	0.0015	0.0015	0.0015															

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Data Set 7 : 85 °C, 150 mA

Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 7-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2632	0.2624	0.2623	0.2622	0.2621	0.2621	0.2620	0.2621	0.2621	0.2621	0.2622	0.2622	0.2623	0.2619	0.2619	0.2620	0.2620	0.2620
2	0.2649	0.2641	0.2639	0.2639	0.2638	0.2637	0.2637	0.2638	0.2638	0.2638	0.2640	0.2640	0.2639	0.2636	0.2636	0.2636	0.2636	0.2637
3	0.2633	0.2626	0.2624	0.2624	0.2622	0.2621	0.2621	0.2622	0.2622	0.2622	0.2623	0.2624	0.2624	0.2620	0.2620	0.2621	0.2619	0.2620
4	0.2651	0.2643	0.2641	0.2641	0.2639	0.2639	0.2638	0.2640	0.2639	0.2640	0.2642	0.2641	0.2641	0.2637	0.2638	0.2639	0.2638	0.2639
5	0.2621	0.2613	0.2612	0.2612	0.2610	0.2611	0.2610	0.2610	0.2610	0.2610	0.2612	0.2612	0.2612	0.2609	0.2609	0.2609	0.2608	0.2609
6	0.2617	0.2610	0.2608	0.2609	0.2608	0.2607	0.2607	0.2607	0.2608	0.2608	0.2609	0.2609	0.2608	0.2605	0.2605	0.2606	0.2606	0.2606
7	0.2623	0.2616	0.2614	0.2614	0.2612	0.2613	0.2612	0.2613	0.2613	0.2613	0.2615	0.2614	0.2614	0.2610	0.2611	0.2611	0.2610	0.2611
8	0.2615	0.2608	0.2606	0.2606	0.2605	0.2605	0.2604	0.2605	0.2605	0.2605	0.2606	0.2606	0.2607	0.2603	0.2603	0.2603	0.2603	0.2603
9	0.2615	0.2608	0.2607	0.2605	0.2605	0.2604	0.2604	0.2604	0.2605	0.2604	0.2607	0.2606	0.2606	0.2602	0.2602	0.2603	0.2603	0.2603
10	0.2616	0.2608	0.2607	0.2607	0.2605	0.2605	0.2605	0.2605	0.2605	0.2606	0.2607	0.2606	0.2606	0.2603	0.2604	0.2603	0.2603	0.2604
11	0.2626	0.2619	0.2617	0.2617	0.2617	0.2616	0.2616	0.2616	0.2618	0.2617	0.2619	0.2618	0.2619	0.2615	0.2615	0.2616	0.2615	0.2615
12	0.2667	0.2660	0.2658	0.2657	0.2656	0.2656	0.2656	0.2657	0.2656	0.2657	0.2658	0.2658	0.2658	0.2655	0.2655	0.2655	0.2655	0.2656
13	0.2606	0.2598	0.2597	0.2597	0.2595	0.2595	0.2596	0.2596	0.2596	0.2595	0.2598	0.2598	0.2599	0.2594	0.2595	0.2595	0.2594	0.2595
14	0.2601	0.2593	0.2591	0.2591	0.2589	0.2590	0.2590	0.2590	0.2590	0.2590	0.2592	0.2592	0.2592	0.2588	0.2588	0.2589	0.2588	0.2589
15	0.2628	0.2620	0.2619	0.2619	0.2616	0.2616	0.2616	0.2617	0.2617	0.2618	0.2618	0.2619	0.2618	0.2615	0.2616	0.2616	0.2615	0.2616
16	0.2591	0.2583	0.2581	0.2582	0.2580	0.2580	0.2580	0.2580	0.2580	0.2580	0.2583	0.2581	0.2581	0.2578	0.2579	0.2579	0.2579	0.2579
17	0.2662	0.2654	0.2654	0.2655	0.2651	0.2651	0.2651	0.2652	0.2651	0.2652	0.2653	0.2653	0.2653	0.2650	0.2651	0.2651	0.2650	0.2650
18	0.2594	0.2587	0.2585	0.2585	0.2583	0.2582	0.2582	0.2583	0.2583	0.2584	0.2585	0.2585	0.2585	0.2581	0.2581	0.2582	0.2581	0.2582
19	0.2628	0.2621	0.2619	0.2619	0.2617	0.2616	0.2617	0.2617	0.2617	0.2619	0.2620	0.2619	0.2620	0.2616	0.2616	0.2617	0.2616	0.2617
20	0.2609	0.2601	0.2600	0.2601	0.2599	0.2598	0.2597	0.2599	0.2598	0.2598	0.2599	0.2599	0.2600	0.2596	0.2596	0.2596	0.2596	0.2595
21	0.2621	0.2613	0.2611	0.2610	0.2609	0.2609	0.2608	0.2609	0.2608	0.2609	0.2610	0.2610	0.2611	0.2607	0.2607	0.2607	0.2607	0.2608
22	0.2667	0.2659	0.2657	0.2656	0.2654	0.2655	0.2655	0.2655	0.2655	0.2656	0.2657	0.2656	0.2656	0.2653	0.2653	0.2653	0.2653	0.2654
23	0.2678	0.2669	0.2668	0.2669	0.2666	0.2666	0.2666	0.2666	0.2666	0.2666	0.2668	0.2668	0.2667	0.2664	0.2665	0.2665	0.2663	0.2665
24	0.2601	0.2593	0.2592	0.2592	0.2590	0.2590	0.2590	0.2590	0.2590	0.2590	0.2592	0.2592	0.2592	0.2589	0.2588	0.2588	0.2588	0.2589
25	0.2607	0.2599	0.2597	0.2597	0.2596	0.2595	0.2594	0.2595	0.2595	0.2596	0.2597	0.2596	0.2597	0.2593	0.2593	0.2594	0.2592	0.2593
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2626	0.2619	0.2617	0.2617	0.2615	0.2615	0.2615	0.2615	0.2615	0.2616	0.2617	0.2617	0.2617	0.2614	0.2614	0.2614	0.2614	0.2614
Med.	0.2621	0.2613	0.2612	0.2612	0.2610	0.2611	0.2610	0.2610	0.2610	0.2610	0.2612	0.2612	0.2612	0.2609	0.2609	0.2609	0.2608	0.2609
σ	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0023	0.0024	0.0024	0.0024	0.0024	0.0024
Min.	0.2591	0.2583	0.2581	0.2582	0.2580	0.2580	0.2580	0.2580	0.2580	0.2580	0.2583	0.2581	0.2581	0.2578	0.2579	0.2579	0.2579	0.2579
Max.	0.2678	0.2669	0.2668	0.2669	0.2666	0.2666	0.2666	0.2666	0.2666	0.2666	0.2668	0.2668	0.2667	0.2664	0.2665	0.2665	0.2663	0.2665

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Data Set 7 : 85 °C, 150 mA

Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 7-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2619	0.2619	0.2619															
2	0.2636	0.2635	0.2636															
3	0.2619	0.2619	0.2619															
4	0.2638	0.2637	0.2637															
5	0.2608	0.2608	0.2608															
6	0.2605	0.2605	0.2605															
7	0.2609	0.2611	0.2610															
8	0.2603	0.2603	0.2603															
9	0.2602	0.2602	0.2602															
10	0.2602	0.2603	0.2603															
11	0.2615	0.2615	0.2615															
12	0.2654	0.2655	0.2654															
13	0.2594	0.2595	0.2594															
14	0.2588	0.2588	0.2588															
15	0.2615	0.2615	0.2615															
16	0.2577	0.2579	0.2578															
17	0.2650	0.2649	0.2649															
18	0.2582	0.2582	0.2581															
19	0.2615	0.2616	0.2616															
20	0.2596	0.2595	0.2595															
21	0.2607	0.2606	0.2607															
22	0.2653	0.2652	0.2653															
23	0.2663	0.2664	0.2665															
24	0.2587	0.2588	0.2588															
25	0.2593	0.2594	0.2592															
n	25	25	25															
Avg.	0.2613	0.2613	0.2613															
Med.	0.2608	0.2608	0.2608															
σ	0.0024	0.0024	0.0024															
Min.	0.2577	0.2579	0.2578															
Max.	0.2663	0.2664	0.2665															

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Data Set 7 : 85 °C, 150 mA

Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 7-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5239	0.5238	0.5238	0.5238	0.5236	0.5237	0.5237	0.5238	0.5237	0.5238	0.5238	0.5239	0.5238	0.5236	0.5237	0.5237	0.5238	0.5237
2	0.5264	0.5264	0.5263	0.5264	0.5262	0.5263	0.5263	0.5264	0.5263	0.5263	0.5264	0.5264	0.5265	0.5262	0.5263	0.5262	0.5262	0.5262
3	0.5288	0.5287	0.5287	0.5287	0.5286	0.5286	0.5286	0.5286	0.5286	0.5286	0.5287	0.5288	0.5287	0.5285	0.5286	0.5285	0.5286	0.5287
4	0.5268	0.5268	0.5268	0.5268	0.5267	0.5266	0.5267	0.5268	0.5267	0.5267	0.5268	0.5269	0.5268	0.5266	0.5267	0.5267	0.5266	0.5267
5	0.5266	0.5267	0.5266	0.5267	0.5265	0.5265	0.5266	0.5266	0.5266	0.5266	0.5266	0.5267	0.5267	0.5265	0.5265	0.5265	0.5265	0.5266
6	0.5229	0.5228	0.5227	0.5228	0.5227	0.5226	0.5227	0.5228	0.5228	0.5228	0.5228	0.5228	0.5228	0.5225	0.5226	0.5226	0.5226	0.5226
7	0.5259	0.5260	0.5259	0.5260	0.5258	0.5258	0.5258	0.5259	0.5259	0.5259	0.5260	0.5260	0.5260	0.5258	0.5258	0.5258	0.5258	0.5258
8	0.5254	0.5254	0.5254	0.5254	0.5252	0.5252	0.5253	0.5254	0.5253	0.5253	0.5254	0.5254	0.5254	0.5252	0.5252	0.5253	0.5253	0.5253
9	0.5254	0.5253	0.5253	0.5253	0.5252	0.5251	0.5252	0.5252	0.5252	0.5253	0.5252	0.5253	0.5253	0.5251	0.5251	0.5251	0.5251	0.5250
10	0.5289	0.5289	0.5288	0.5288	0.5287	0.5287	0.5287	0.5287	0.5287	0.5288	0.5289	0.5288	0.5288	0.5287	0.5287	0.5288	0.5287	0.5287
11	0.5270	0.5268	0.5268	0.5268	0.5267	0.5267	0.5269	0.5269	0.5268	0.5269	0.5269	0.5269	0.5270	0.5267	0.5267	0.5268	0.5268	0.5267
12	0.5271	0.5271	0.5270	0.5271	0.5270	0.5270	0.5270	0.5271	0.5271	0.5271	0.5272	0.5272	0.5272	0.5270	0.5271	0.5270	0.5270	0.5270
13	0.5298	0.5297	0.5297	0.5297	0.5297	0.5297	0.5298	0.5298	0.5297	0.5298	0.5298	0.5299	0.5298	0.5297	0.5297	0.5297	0.5297	0.5297
14	0.5237	0.5237	0.5236	0.5236	0.5235	0.5235	0.5235	0.5236	0.5235	0.5236	0.5236	0.5237	0.5237	0.5234	0.5235	0.5235	0.5234	0.5235
15	0.5212	0.5212	0.5211	0.5211	0.5210	0.5210	0.5211	0.5212	0.5211	0.5211	0.5212	0.5212	0.5212	0.5210	0.5210	0.5209	0.5209	0.5210
16	0.5233	0.5233	0.5233	0.5232	0.5232	0.5231	0.5232	0.5233	0.5233	0.5233	0.5233	0.5233	0.5233	0.5231	0.5231	0.5231	0.5231	0.5231
17	0.5294	0.5294	0.5293	0.5293	0.5292	0.5292	0.5292	0.5293	0.5293	0.5293	0.5294	0.5294	0.5294	0.5292	0.5292	0.5293	0.5292	0.5292
18	0.5252	0.5252	0.5251	0.5251	0.5250	0.5250	0.5251	0.5251	0.5251	0.5251	0.5252	0.5253	0.5252	0.5250	0.5250	0.5250	0.5251	0.5250
19	0.5312	0.5311	0.5311	0.5311	0.5311	0.5311	0.5311	0.5312	0.5311	0.5312	0.5312	0.5312	0.5312	0.5311	0.5311	0.5311	0.5311	0.5311
20	0.5225	0.5225	0.5225	0.5225	0.5224	0.5224	0.5223	0.5224	0.5224	0.5224	0.5224	0.5225	0.5225	0.5222	0.5222	0.5223	0.5222	0.5222
21	0.5290	0.5289	0.5289	0.5289	0.5287	0.5288	0.5288	0.5288	0.5288	0.5288	0.5289	0.5289	0.5289	0.5287	0.5287	0.5288	0.5287	0.5288
22	0.5259	0.5259	0.5259	0.5258	0.5258	0.5257	0.5258	0.5258	0.5258	0.5259	0.5259	0.5259	0.5260	0.5257	0.5258	0.5257	0.5257	0.5258
23	0.5308	0.5307	0.5307	0.5308	0.5306	0.5306	0.5307	0.5307	0.5307	0.5307	0.5307	0.5308	0.5308	0.5306	0.5306	0.5307	0.5307	0.5307
24	0.5241	0.5241	0.5241	0.5240	0.5240	0.5239	0.5240	0.5240	0.5240	0.5240	0.5241	0.5241	0.5241	0.5239	0.5239	0.5239	0.5239	0.5239
25	0.5238	0.5237	0.5237	0.5238	0.5236	0.5236	0.5236	0.5237	0.5236	0.5237	0.5237	0.5237	0.5237	0.5235	0.5235	0.5235	0.5235	0.5235
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5262	0.5262	0.5261	0.5261	0.5260	0.5260	0.5261	0.5261	0.5261	0.5261	0.5262	0.5262	0.5262	0.5260	0.5260	0.5260	0.5260	0.5260
Med.	0.5259	0.5260	0.5259	0.5260	0.5258	0.5258	0.5258	0.5259	0.5259	0.5259	0.5260	0.5260	0.5260	0.5258	0.5258	0.5258	0.5258	0.5258
σ	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
Min.	0.5212	0.5212	0.5211	0.5211	0.5210	0.5210	0.5211	0.5212	0.5211	0.5211	0.5212	0.5212	0.5212	0.5210	0.5210	0.5209	0.5209	0.5210
Max.	0.5312	0.5311	0.5311	0.5311	0.5311	0.5311	0.5311	0.5312	0.5311	0.5312	0.5312	0.5312	0.5312	0.5311	0.5311	0.5311	0.5311	0.5311

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Data Set 7 : 85 °C, 150 mA

Actual Case Temperature [T_S]	85.2 °C
Actual Ambient Temperature [T_A]	81.4 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 7-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5236	0.5236	0.5236															
2	0.5262	0.5261	0.5262															
3	0.5285	0.5285	0.5285															
4	0.5266	0.5266	0.5266															
5	0.5265	0.5264	0.5264															
6	0.5225	0.5225	0.5225															
7	0.5257	0.5257	0.5258															
8	0.5252	0.5252	0.5252															
9	0.5251	0.5250	0.5250															
10	0.5287	0.5286	0.5286															
11	0.5267	0.5267	0.5268															
12	0.5269	0.5270	0.5270															
13	0.5297	0.5296	0.5296															
14	0.5234	0.5234	0.5235															
15	0.5210	0.5209	0.5209															
16	0.5230	0.5231	0.5230															
17	0.5292	0.5292	0.5292															
18	0.5251	0.5250	0.5250															
19	0.5310	0.5311	0.5311															
20	0.5222	0.5222	0.5222															
21	0.5287	0.5288	0.5287															
22	0.5257	0.5257	0.5257															
23	0.5307	0.5306	0.5306															
24	0.5238	0.5239	0.5238															
25	0.5235	0.5234	0.5235															
n	25	25	25															
Avg.	0.5260	0.5259	0.5260															
Med.	0.5257	0.5257	0.5258															
σ	0.0027	0.0027	0.0027															
Min.	0.5210	0.5209	0.5209															
Max.	0.5310	0.5311	0.5311															

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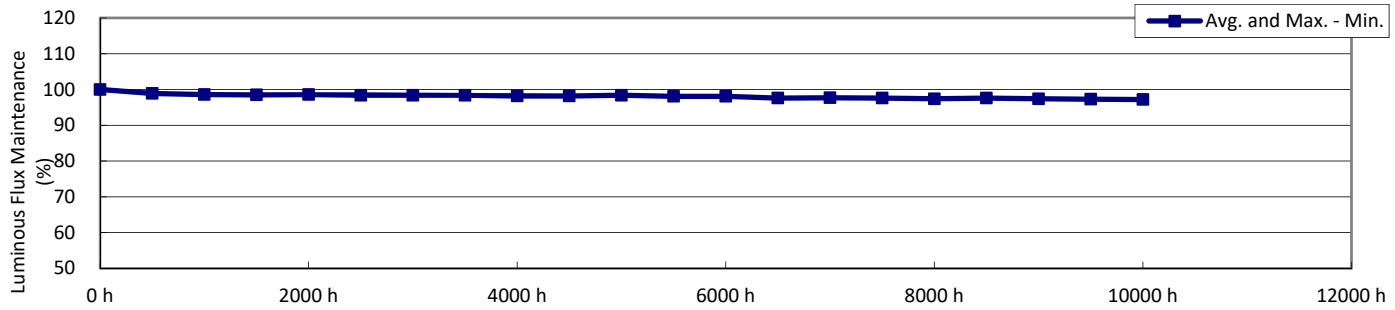
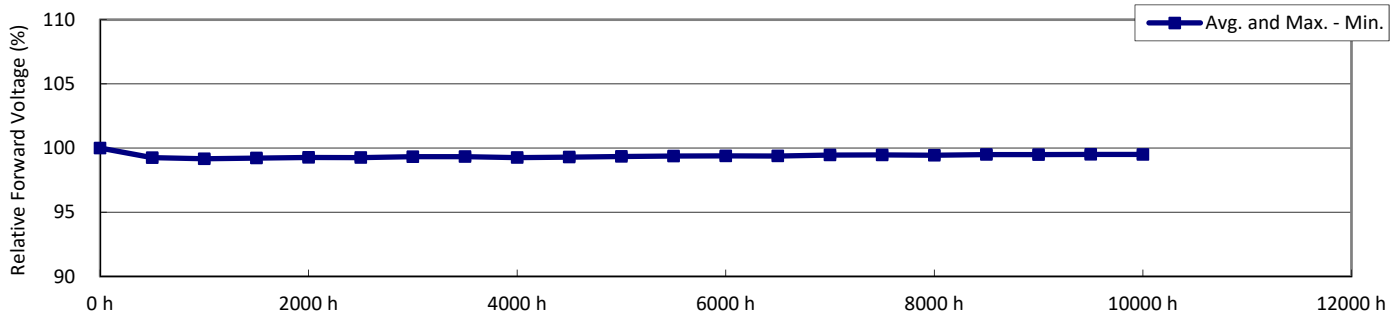
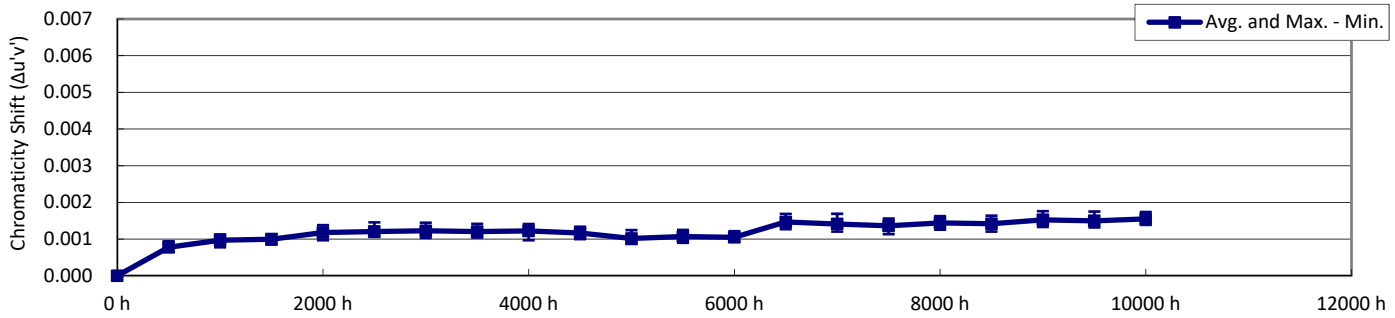
Data Set 8 : 85 °C, 180 mA

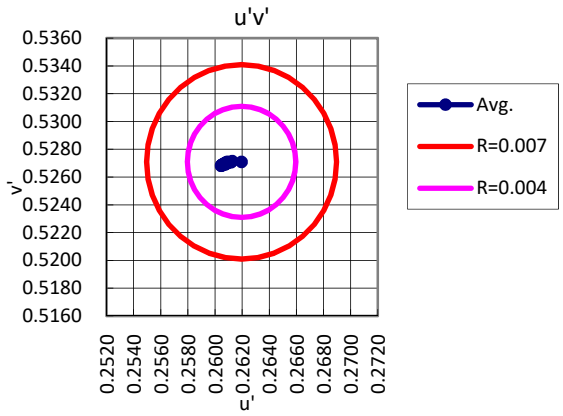
Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 8 : 85 °C, 180 mA

Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 8-1
Initial Characteristics

LED No.	Luminous flux Φ_V [lm]	Forward voltage V_F [V]	CCT T_{CP} [K]	Input Power P [W]	CIE1931 x	CIE1931 y	CIE1976 u'	CIE1976 v'						
1	82.7	3.23	2711	0.58	0.457	0.407	0.262	0.526						
2	84.9	3.21	2703	0.58	0.463	0.417	0.262	0.530						
3	84.7	3.22	2708	0.58	0.464	0.418	0.261	0.531						
4	84.3	3.23	2720	0.58	0.459	0.412	0.261	0.528						
5	85.0	3.23	2786	0.58	0.453	0.409	0.259	0.526						
6	83.7	3.21	2704	0.58	0.458	0.408	0.263	0.526						
7	83.3	3.23	2738	0.58	0.452	0.400	0.262	0.522						
8	83.3	3.23	2734	0.58	0.455	0.407	0.261	0.525						
9	83.5	3.22	2664	0.58	0.465	0.415	0.264	0.530						
10	82.5	3.21	2645	0.58	0.462	0.408	0.265	0.527						
11	84.3	3.21	2704	0.58	0.462	0.415	0.262	0.529						
12	84.4	3.23	2702	0.58	0.463	0.416	0.262	0.530						
13	84.5	3.21	2788	0.58	0.454	0.411	0.259	0.526						
14	84.2	3.23	2665	0.58	0.468	0.420	0.263	0.532						
15	84.1	3.21	2704	0.58	0.461	0.412	0.262	0.528						
16	83.3	3.24	2730	0.58	0.453	0.402	0.262	0.523						
17	84.1	3.24	2754	0.58	0.455	0.409	0.260	0.526						
18	83.0	3.24	2654	0.58	0.461	0.407	0.265	0.526						
19	83.6	3.21	2738	0.58	0.453	0.403	0.261	0.523						
20	84.5	3.23	2717	0.58	0.462	0.417	0.261	0.530						
21	84.6	3.21	2705	0.58	0.463	0.417	0.262	0.530						
22	82.4	3.24	2626	0.58	0.465	0.411	0.266	0.528						
23	84.0	3.21	2747	0.58	0.455	0.407	0.261	0.525						
24	83.9	3.24	2663	0.58	0.465	0.415	0.264	0.530						
25	84.6	3.23	2747	0.58	0.458	0.414	0.260	0.528						
n	25	25	25	25	25	25	25	25						
Avg.	83.9	3.22	2710	0.58	0.459	0.411	0.262	0.527						
Med.	84.1	3.23	2708	0.58	0.461	0.411	0.262	0.528						
σ	0.75	0.013	41.1	0.002	0.0047	0.0054	0.0018	0.0026						
Min.	82.4	3.21	2626	0.58	0.452	0.400	0.259	0.522						
Max.	85.0	3.24	2788	0.58	0.468	0.420	0.266	0.532						

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Data Set 8 : 85 °C, 180 mA

Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 8-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.0	98.7	98.3	98.5	98.2	98.2	98.2	98.0	98.0	98.2	98.0	97.8	97.5	97.5	97.4	97.3	97.5
2	100.0	98.7	98.5	98.4	98.6	98.2	98.3	98.2	98.0	98.1	98.3	98.1	98.0	97.5	97.6	97.6	97.4	97.6
3	100.0	98.8	98.6	98.5	98.7	98.4	98.5	98.5	98.3	98.3	98.5	98.3	98.2	97.8	97.8	97.8	97.6	97.8
4	100.0	98.9	98.8	98.5	98.7	98.4	98.5	98.6	98.3	98.3	98.5	98.3	98.2	97.7	97.8	97.8	97.6	97.8
5	100.0	99.1	98.8	98.7	98.8	98.5	98.5	98.6	98.4	98.3	98.6	98.4	98.1	97.8	97.8	97.6	97.6	97.5
6	100.0	98.6	98.5	98.4	98.5	98.1	98.2	98.2	98.0	98.0	98.1	97.9	97.7	97.3	97.3	97.4	97.2	97.4
7	100.0	99.0	98.7	98.6	98.6	98.4	98.4	98.4	98.2	98.3	98.3	98.1	98.0	97.6	97.4	97.7	97.4	97.7
8	100.0	99.1	98.9	98.8	98.9	98.7	98.7	98.6	98.4	98.4	98.5	98.2	98.1	97.8	97.7	97.9	97.5	97.8
9	100.0	98.8	98.5	98.4	98.4	98.2	98.2	98.2	98.0	98.0	98.2	98.1	97.9	97.5	97.5	97.6	97.2	97.5
10	100.0	98.9	98.7	98.5	98.5	98.4	98.5	98.4	98.2	98.3	98.4	98.2	98.1	97.7	97.7	97.7	97.5	97.7
11	100.0	98.8	98.6	98.4	98.4	98.3	98.2	98.2	98.1	98.1	98.3	98.1	97.8	97.4	97.6	97.3	97.2	97.3
12	100.0	98.9	98.7	98.6	98.6	98.5	98.4	98.4	98.1	98.2	98.3	98.1	98.0	97.5	97.6	97.6	97.4	97.6
13	100.0	98.7	98.3	98.3	98.5	98.3	98.2	98.2	98.0	97.9	98.1	97.9	97.8	97.3	97.5	97.4	97.1	97.3
14	100.0	99.1	98.5	98.6	98.6	98.3	98.4	98.4	98.2	98.2	98.5	98.2	98.2	97.7	97.9	97.9	97.6	97.8
15	100.0	98.8	98.4	98.4	98.5	98.2	98.2	98.3	98.0	98.0	98.1	97.8	97.8	97.3	97.4	97.4	97.1	97.3
16	100.0	99.2	98.7	98.8	98.9	98.6	98.6	98.6	98.4	98.3	98.6	98.3	98.3	97.7	97.9	97.9	97.7	97.8
17	100.0	99.3	98.6	98.8	98.8	98.4	98.4	98.5	98.2	98.0	98.4	98.1	98.0	97.4	97.7	97.5	97.1	97.3
18	100.0	99.0	98.6	98.6	98.8	98.5	98.6	98.6	98.3	98.3	98.5	98.3	98.3	97.7	97.9	97.9	97.6	97.8
19	100.0	98.8	98.6	98.4	98.6	98.4	98.3	98.3	98.2	98.0	98.3	98.1	97.9	97.5	97.6	97.5	97.3	97.5
20	100.0	99.0	98.8	98.7	98.8	98.6	98.7	98.6	98.5	98.5	98.6	98.4	98.4	97.8	98.0	97.9	97.7	97.9
21	100.0	98.8	98.6	98.4	98.5	98.2	98.2	98.2	98.1	98.0	98.3	98.1	98.0	97.5	97.6	97.6	97.3	97.5
22	100.0	99.1	98.9	98.8	98.9	98.6	98.5	98.6	98.4	98.4	98.6	98.3	98.3	97.7	97.9	97.8	97.6	97.8
23	100.0	98.7	98.2	98.5	98.6	98.2	98.2	98.2	98.0	98.0	98.2	97.8	97.9	97.2	97.7	97.2	97.0	97.1
24	100.0	99.2	98.9	98.8	98.9	98.6	98.6	98.6	98.4	98.5	98.6	98.4	98.4	97.8	98.0	98.0	97.8	97.9
25	100.0	99.0	98.6	98.4	98.5	98.2	98.3	98.3	98.0	98.1	98.3	98.1	98.1	97.5	97.5	97.7	97.4	97.5
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	98.9	98.6	98.5	98.6	98.4	98.4	98.4	98.2	98.2	98.4	98.1	98.1	97.6	97.7	97.6	97.4	97.6
Med.	100.0	98.9	98.6	98.5	98.6	98.4	98.4	98.4	98.2	98.2	98.3	98.1	98.0	97.5	97.7	97.6	97.4	97.6
σ	0.00	0.18	0.18	0.17	0.16	0.17	0.17	0.17	0.17	0.18	0.17	0.17	0.20	0.18	0.19	0.22	0.22	0.22
Min.	100.0	98.6	98.2	98.3	98.4	98.1	98.2	98.2	98.0	97.9	98.1	97.8	97.7	97.2	97.3	97.2	97.0	97.1
Max.	100.0	99.3	98.9	98.8	98.9	98.7	98.7	98.6	98.5	98.5	98.6	98.4	98.4	97.8	98.0	98.0	97.8	97.9

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0161	-0.0192	-0.0192	-0.0243	-0.0233	-0.0243	-0.0263	-0.0243	-0.0263	-0.0274	-0.0284							

Test duration used	5000 h to 10000 h	
B	0.993	
α	2.15E-06	
R^2	0.861	
Calculated L_{70} (10K)	163000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	101000	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	45700	hours
Reported L_{90} (10K)	45700	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 8 : 85 °C, 180 mA

Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 8-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	97.2	97.2	97.1															
2	97.3	97.2	97.1															
3	97.6	97.5	97.4															
4	97.6	97.5	97.3															
5	97.3	97.3	96.9															
6	97.1	97.0	97.0															
7	97.5	97.3	97.2															
8	97.6	97.4	97.3															
9	97.2	97.1	97.0															
10	97.5	97.4	97.2															
11	97.1	97.1	96.7															
12	97.4	97.3	97.2															
13	97.2	97.0	96.9															
14	97.6	97.5	97.5															
15	97.1	97.1	97.0															
16	97.7	97.5	97.4															
17	97.6	97.1	97.0															
18	97.6	97.6	97.5															
19	97.4	97.2	97.2															
20	97.7	97.6	97.6															
21	97.3	97.2	97.1															
22	97.7	97.5	97.5															
23	97.4	97.3	96.8															
24	97.9	97.7	97.6															
25	97.4	97.3	97.2															
n	25	25	25															
Avg.	97.4	97.3	97.2															
Med.	97.4	97.3	97.2															
σ	0.22	0.20	0.25															
Min.	97.1	97.0	96.7															
Max.	97.9	97.7	97.6															

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Data Set 8 : 85 °C, 180 mA

Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 8-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.1	99.0	99.1	99.1	99.1	99.2	99.2	99.1	99.2	99.2	99.2	99.2	99.3	99.3	99.2	99.3	99.4
2	100.0	99.4	99.3	99.3	99.3	99.4	99.5	99.4	99.4	99.4	99.5	99.4	99.5	99.4	99.6	99.5	99.4	99.6
3	100.0	99.1	99.1	99.2	99.2	99.2	99.1	99.2	99.2	99.3	99.4	99.3	99.3	99.4	99.4	99.4	99.4	99.4
4	100.0	99.4	99.3	99.3	99.4	99.2	99.4	99.4	99.3	99.3	99.4	99.4	99.4	99.4	99.5	99.4	99.4	99.5
5	100.0	99.2	99.1	99.0	99.2	99.2	99.2	99.2	99.2	99.2	99.3	99.2	99.3	99.3	99.4	99.4	99.3	99.4
6	100.0	99.3	99.2	99.2	99.3	99.3	99.3	99.3	99.3	99.3	99.4	99.4	99.4	99.4	99.6	99.4	99.5	99.5
7	100.0	99.2	99.1	99.2	99.3	99.2	99.3	99.3	99.1	99.3	99.3	99.4	99.3	99.3	99.4	99.4	99.4	99.4
8	100.0	99.0	98.9	99.0	99.1	99.0	99.1	99.1	99.0	99.0	99.1	99.1	99.1	99.1	99.3	99.2	99.2	99.2
9	100.0	99.3	99.2	99.3	99.3	99.4	99.4	99.6	99.4	99.4	99.4	99.5	99.5	99.5	99.5	99.6	99.6	99.6
10	100.0	99.5	99.3	99.4	99.5	99.5	99.6	99.5	99.5	99.5	99.6	99.6	99.6	99.6	99.7	99.7	99.7	99.6
11	100.0	99.4	99.2	99.3	99.3	99.4	99.5	99.6	99.4	99.4	99.5	99.5	99.6	99.6	99.6	99.7	99.6	99.6
12	100.0	99.2	99.1	99.2	99.2	99.3	99.4	99.3	99.2	99.3	99.2	99.4	99.3	99.3	99.4	99.4	99.4	99.5
13	100.0	99.5	99.4	99.4	99.5	99.4	99.5	99.6	99.5	99.6	99.6	99.6	99.6	99.6	99.7	99.7	99.6	99.8
14	100.0	99.2	99.1	99.1	99.1	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.3	99.2	99.3	99.4	99.3	99.4
15	100.0	99.5	99.3	99.4	99.5	99.4	99.5	99.5	99.4	99.5	99.5	99.6	99.5	99.6	99.7	99.7	99.6	99.7
16	100.0	99.1	99.0	99.1	99.1	99.1	99.2	99.1	99.1	99.1	99.2	99.2	99.2	99.2	99.3	99.3	99.3	99.4
17	100.0	99.4	99.3	99.3	99.4	99.3	99.5	99.4	99.3	99.4	99.5	99.4	99.5	99.4	99.4	99.5	99.5	99.6
18	100.0	99.2	99.2	99.2	99.2	99.2	99.3	99.2	99.2	99.2	99.3	99.4	99.3	99.3	99.3	99.4	99.4	99.4
19	100.0	99.3	99.4	99.5	99.5	99.5	99.5	99.6	99.5	99.5	99.6	99.6	99.7	99.6	99.7	99.7	99.7	99.8
20	100.0	99.1	99.1	99.0	99.1	99.1	99.2	99.2	99.1	99.1	99.2	99.3	99.2	99.2	99.2	99.3	99.3	99.3
21	100.0	99.4	99.1	99.3	99.3	99.4	99.5	99.4	99.3	99.3	99.4	99.6	99.5	99.5	99.5	99.6	99.6	99.6
22	100.0	99.0	98.9	99.0	99.1	99.1	99.1	99.2	99.0	99.1	99.1	99.3	99.3	99.2	99.2	99.3	99.2	99.3
23	100.0	99.3	99.3	99.4	99.3	99.3	99.4	99.4	99.3	99.4	99.5	99.4	99.5	99.5	99.6	99.6	99.6	99.6
24	100.0	99.0	98.9	98.9	99.0	99.1	99.1	99.0	99.0	99.1	99.1	99.2	99.1	99.1	99.2	99.3	99.2	99.3
25	100.0	99.2	99.0	99.3	99.3	99.2	99.3	99.3	99.3	99.3	99.4	99.3	99.4	99.3	99.4	99.5	99.4	99.5
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.2	99.2	99.2	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.4	99.4	99.4	99.5	99.5	99.4	99.5
Med.	100.0	99.2	99.1	99.2	99.3	99.2	99.3	99.3	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.5
σ	0.00	0.15	0.15	0.16	0.15	0.14	0.15	0.16	0.15	0.15	0.15	0.16	0.15	0.15	0.15	0.15	0.16	0.15
Min.	100.0	99.0	98.9	98.9	99.0	99.0	99.1	99.0	99.0	99.0	99.1	99.1	99.1	99.1	99.2	99.2	99.2	99.2
Max.	100.0	99.5	99.4	99.5	99.5	99.5	99.6	99.6	99.5	99.6	99.6	99.6	99.7	99.6	99.7	99.7	99.7	99.8

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Data Set 8 : 85 °C, 180 mA

Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 8-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	99.3	99.3	99.4															
2	99.6	99.6	99.6															
3	99.5	99.5	99.5															
4	99.5	99.5	99.5															
5	99.4	99.4	99.5															
6	99.6	99.5	99.6															
7	99.5	99.5	99.4															
8	99.2	99.2	99.2															
9	99.6	99.7	99.6															
10	99.6	99.7	99.7															
11	99.6	99.7	99.6															
12	99.4	99.5	99.5															
13	99.7	99.7	99.7															
14	99.4	99.4	99.4															
15	99.7	99.7	99.7															
16	99.3	99.4	99.3															
17	99.5	99.5	99.5															
18	99.4	99.5	99.4															
19	99.7	99.7	99.7															
20	99.3	99.4	99.3															
21	99.6	99.6	99.6															
22	99.3	99.3	99.3															
23	99.6	99.7	99.7															
24	99.2	99.3	99.3															
25	99.4	99.4	99.5															
n	25	25	25															
Avg.	99.5	99.5	99.5															
Med.	99.5	99.5	99.5															
σ	0.15	0.15	0.16															
Min.	99.2	99.2	99.2															
Max.	99.7	99.7	99.7															

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Data Set 8 : 85 °C, 180 mA

Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 8-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0008	0.0010	0.0011	0.0013	0.0014	0.0014	0.0014	0.0014	0.0013	0.0012	0.0012	0.0012	0.0016	0.0014	0.0014	0.0016	0.0015
2	0.0000	0.0008	0.0009	0.0010	0.0011	0.0012	0.0012	0.0012	0.0012	0.0011	0.0010	0.0011	0.0011	0.0015	0.0014	0.0014	0.0014	0.0015
3	0.0000	0.0008	0.0009	0.0010	0.0011	0.0012	0.0012	0.0012	0.0013	0.0011	0.0010	0.0011	0.0011	0.0015	0.0014	0.0013	0.0014	0.0015
4	0.0000	0.0007	0.0009	0.0010	0.0011	0.0011	0.0012	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010	0.0014	0.0013	0.0013	0.0013	0.0013
5	0.0000	0.0008	0.0010	0.0010	0.0010	0.0011	0.0012	0.0010	0.0011	0.0011	0.0009	0.0010	0.0010	0.0015	0.0013	0.0011	0.0014	0.0014
6	0.0000	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0011	0.0011	0.0011	0.0010	0.0011	0.0009	0.0015	0.0013	0.0014	0.0014	0.0014
7	0.0000	0.0008	0.0010	0.0009	0.0012	0.0012	0.0012	0.0011	0.0012	0.0011	0.0010	0.0011	0.0010	0.0015	0.0013	0.0014	0.0015	0.0014
8	0.0000	0.0007	0.0010	0.0009	0.0012	0.0012	0.0012	0.0012	0.0011	0.0012	0.0010	0.0010	0.0010	0.0015	0.0015	0.0014	0.0015	0.0014
9	0.0000	0.0009	0.0011	0.0011	0.0014	0.0013	0.0014	0.0014	0.0014	0.0013	0.0012	0.0012	0.0012	0.0015	0.0016	0.0015	0.0016	0.0015
10	0.0000	0.0008	0.0010	0.0010	0.0013	0.0012	0.0013	0.0013	0.0013	0.0013	0.0011	0.0011	0.0012	0.0016	0.0015	0.0014	0.0015	0.0015
11	0.0000	0.0008	0.0010	0.0010	0.0012	0.0012	0.0011	0.0012	0.0012	0.0012	0.0011	0.0011	0.0010	0.0014	0.0014	0.0013	0.0015	0.0015
12	0.0000	0.0006	0.0008	0.0009	0.0010	0.0011	0.0010	0.0011	0.0010	0.0010	0.0009	0.0009	0.0009	0.0013	0.0012	0.0012	0.0013	0.0012
13	0.0000	0.0008	0.0010	0.0010	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0010	0.0010	0.0009	0.0015	0.0014	0.0014	0.0014	0.0014
14	0.0000	0.0009	0.0011	0.0011	0.0014	0.0013	0.0013	0.0013	0.0013	0.0012	0.0010	0.0012	0.0011	0.0015	0.0014	0.0014	0.0014	0.0015
15	0.0000	0.0008	0.0010	0.0010	0.0012	0.0012	0.0012	0.0013	0.0012	0.0012	0.0010	0.0011	0.0011	0.0015	0.0015	0.0015	0.0015	0.0013
16	0.0000	0.0008	0.0009	0.0010	0.0010	0.0011	0.0012	0.0012	0.0012	0.0011	0.0009	0.0011	0.0010	0.0014	0.0014	0.0013	0.0014	0.0015
17	0.0000	0.0008	0.0009	0.0010	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0010	0.0010	0.0010	0.0014	0.0014	0.0013	0.0015	0.0014
18	0.0000	0.0008	0.0010	0.0010	0.0013	0.0012	0.0013	0.0012	0.0012	0.0011	0.0010	0.0011	0.0011	0.0015	0.0013	0.0014	0.0014	0.0014
19	0.0000	0.0009	0.0011	0.0011	0.0014	0.0015	0.0014	0.0013	0.0014	0.0013	0.0012	0.0012	0.0012	0.0017	0.0017	0.0016	0.0016	0.0016
20	0.0000	0.0007	0.0009	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0009	0.0009	0.0014	0.0013	0.0012	0.0013	0.0014
21	0.0000	0.0007	0.0010	0.0009	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0009	0.0011	0.0010	0.0014	0.0013	0.0013	0.0014	0.0014
22	0.0000	0.0008	0.0011	0.0011	0.0012	0.0013	0.0013	0.0013	0.0014	0.0012	0.0011	0.0011	0.0011	0.0016	0.0015	0.0014	0.0015	0.0015
23	0.0000	0.0008	0.0008	0.0010	0.0012	0.0012	0.0013	0.0011	0.0012	0.0012	0.0010	0.0010	0.0011	0.0016	0.0015	0.0013	0.0015	0.0015
24	0.0000	0.0008	0.0009	0.0010	0.0011	0.0011	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010	0.0011	0.0014	0.0014	0.0014	0.0014	0.0013
25	0.0000	0.0007	0.0010	0.0010	0.0012	0.0013	0.0013	0.0013	0.0014	0.0012	0.0010	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0013
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0008	0.0010	0.0010	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0010	0.0011	0.0010	0.0015	0.0014	0.0014	0.0014	0.0014
Med.	0.0000	0.0008	0.0010	0.0010	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0010	0.0011	0.0010	0.0015	0.0014	0.0014	0.0014	0.0014
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0006	0.0008	0.0009	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0013	0.0012	0.0011	0.0013	0.0012
Max.	0.0000	0.0009	0.0011	0.0011	0.0014	0.0015	0.0014	0.0014	0.0014	0.0013	0.0012	0.0012	0.0012	0.0017	0.0017	0.0016	0.0016	0.0016

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Data Set 8 : 85 °C, 180 mA

Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 8-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0016	0.0017	0.0016															
2	0.0016	0.0016	0.0015															
3	0.0016	0.0015	0.0016															
4	0.0014	0.0014	0.0014															
5	0.0015	0.0015	0.0014															
6	0.0014	0.0014	0.0016															
7	0.0015	0.0015	0.0015															
8	0.0015	0.0015	0.0016															
9	0.0016	0.0016	0.0017															
10	0.0016	0.0016	0.0016															
11	0.0015	0.0016	0.0015															
12	0.0013	0.0013	0.0014															
13	0.0015	0.0015	0.0015															
14	0.0015	0.0015	0.0016															
15	0.0015	0.0015	0.0016															
16	0.0015	0.0015	0.0015															
17	0.0016	0.0013	0.0016															
18	0.0014	0.0014	0.0015															
19	0.0018	0.0018	0.0017															
20	0.0014	0.0013	0.0014															
21	0.0015	0.0014	0.0014															
22	0.0016	0.0016	0.0017															
23	0.0016	0.0015	0.0015															
24	0.0015	0.0014	0.0015															
25	0.0015	0.0015	0.0016															
n	25	25	25															
Avg.	0.0015	0.0015	0.0015															
Med.	0.0015	0.0015	0.0015															
σ	0.0001	0.0001	0.0001															
Min.	0.0013	0.0013	0.0014															
Max.	0.0018	0.0018	0.0017															

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Data Set 8 : 85 °C, 180 mA

Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 8-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2627	0.2619	0.2617	0.2617	0.2614	0.2614	0.2613	0.2614	0.2614	0.2615	0.2616	0.2615	0.2616	0.2611	0.2614	0.2613	0.2612	0.2613
2	0.2622	0.2614	0.2612	0.2612	0.2611	0.2610	0.2609	0.2609	0.2610	0.2611	0.2612	0.2610	0.2611	0.2607	0.2607	0.2608	0.2608	0.2607
3	0.2619	0.2611	0.2609	0.2609	0.2607	0.2607	0.2607	0.2607	0.2606	0.2607	0.2608	0.2608	0.2608	0.2604	0.2605	0.2606	0.2605	0.2604
4	0.2623	0.2615	0.2613	0.2612	0.2611	0.2611	0.2610	0.2612	0.2611	0.2613	0.2613	0.2613	0.2613	0.2609	0.2609	0.2609	0.2610	0.2610
5	0.2616	0.2608	0.2606	0.2606	0.2605	0.2604	0.2604	0.2605	0.2604	0.2605	0.2606	0.2606	0.2605	0.2601	0.2602	0.2604	0.2601	0.2602
6	0.2634	0.2628	0.2626	0.2626	0.2624	0.2624	0.2623	0.2623	0.2623	0.2623	0.2624	0.2623	0.2625	0.2620	0.2621	0.2621	0.2621	0.2620
7	0.2620	0.2613	0.2610	0.2611	0.2608	0.2609	0.2608	0.2609	0.2608	0.2609	0.2611	0.2610	0.2610	0.2606	0.2607	0.2607	0.2606	0.2607
8	0.2616	0.2609	0.2606	0.2607	0.2604	0.2604	0.2604	0.2604	0.2605	0.2604	0.2606	0.2606	0.2606	0.2601	0.2602	0.2603	0.2602	0.2602
9	0.2641	0.2632	0.2630	0.2630	0.2628	0.2628	0.2627	0.2627	0.2627	0.2628	0.2629	0.2629	0.2629	0.2626	0.2625	0.2626	0.2625	0.2627
10	0.2660	0.2652	0.2650	0.2650	0.2648	0.2648	0.2647	0.2648	0.2647	0.2647	0.2649	0.2649	0.2648	0.2645	0.2645	0.2646	0.2645	0.2645
11	0.2647	0.2639	0.2637	0.2637	0.2635	0.2635	0.2636	0.2635	0.2635	0.2635	0.2636	0.2636	0.2637	0.2634	0.2633	0.2634	0.2632	0.2632
12	0.2626	0.2619	0.2618	0.2617	0.2616	0.2614	0.2615	0.2614	0.2616	0.2616	0.2617	0.2617	0.2616	0.2613	0.2614	0.2614	0.2612	0.2614
13	0.2588	0.2580	0.2577	0.2578	0.2576	0.2576	0.2575	0.2575	0.2576	0.2576	0.2578	0.2577	0.2578	0.2573	0.2574	0.2574	0.2574	0.2574
14	0.2636	0.2628	0.2625	0.2625	0.2623	0.2623	0.2624	0.2624	0.2623	0.2624	0.2626	0.2625	0.2626	0.2622	0.2622	0.2623	0.2622	0.2622
15	0.2624	0.2616	0.2615	0.2614	0.2613	0.2612	0.2612	0.2611	0.2612	0.2612	0.2614	0.2613	0.2613	0.2609	0.2609	0.2609	0.2609	0.2611
16	0.2627	0.2619	0.2618	0.2617	0.2616	0.2615	0.2615	0.2615	0.2615	0.2615	0.2618	0.2616	0.2617	0.2613	0.2613	0.2614	0.2613	0.2612
17	0.2629	0.2621	0.2620	0.2618	0.2617	0.2617	0.2617	0.2617	0.2617	0.2617	0.2619	0.2619	0.2619	0.2615	0.2615	0.2616	0.2614	0.2615
18	0.2659	0.2651	0.2649	0.2649	0.2646	0.2647	0.2646	0.2647	0.2647	0.2648	0.2649	0.2648	0.2648	0.2644	0.2646	0.2645	0.2645	0.2645
19	0.2620	0.2610	0.2609	0.2609	0.2606	0.2605	0.2606	0.2606	0.2606	0.2607	0.2608	0.2608	0.2608	0.2603	0.2603	0.2604	0.2604	0.2604
20	0.2613	0.2606	0.2604	0.2604	0.2602	0.2602	0.2602	0.2601	0.2601	0.2602	0.2604	0.2603	0.2603	0.2599	0.2600	0.2600	0.2600	0.2599
21	0.2620	0.2612	0.2610	0.2611	0.2608	0.2608	0.2608	0.2608	0.2608	0.2608	0.2610	0.2609	0.2610	0.2606	0.2607	0.2607	0.2606	0.2606
22	0.2668	0.2659	0.2657	0.2656	0.2656	0.2655	0.2655	0.2655	0.2654	0.2656	0.2656	0.2656	0.2656	0.2652	0.2653	0.2653	0.2653	0.2653
23	0.2636	0.2628	0.2628	0.2626	0.2624	0.2624	0.2624	0.2625	0.2624	0.2624	0.2626	0.2626	0.2625	0.2621	0.2621	0.2623	0.2621	0.2622
24	0.2645	0.2638	0.2636	0.2635	0.2634	0.2635	0.2634	0.2634	0.2635	0.2634	0.2636	0.2635	0.2635	0.2632	0.2632	0.2632	0.2631	0.2633
25	0.2604	0.2596	0.2594	0.2594	0.2592	0.2591	0.2591	0.2591	0.2590	0.2592	0.2593	0.2593	0.2594	0.2590	0.2590	0.2590	0.2590	0.2590
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2629	0.2621	0.2619	0.2619	0.2617	0.2617	0.2617	0.2617	0.2617	0.2617	0.2619	0.2618	0.2618	0.2614	0.2615	0.2615	0.2614	0.2615
Med.	0.2626	0.2619	0.2617	0.2617	0.2614	0.2614	0.2613	0.2614	0.2614	0.2615	0.2616	0.2615	0.2616	0.2611	0.2613	0.2613	0.2612	0.2612
σ	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018
Min.	0.2588	0.2580	0.2577	0.2578	0.2576	0.2576	0.2575	0.2575	0.2576	0.2576	0.2578	0.2577	0.2578	0.2573	0.2574	0.2574	0.2574	0.2574
Max.	0.2668	0.2659	0.2657	0.2656	0.2656	0.2655	0.2655	0.2655	0.2654	0.2656	0.2656	0.2656	0.2656	0.2652	0.2653	0.2653	0.2653	0.2653

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Data Set 8 : 85 °C, 180 mA

Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 8-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2612	0.2611	0.2611															
2	0.2606	0.2606	0.2607															
3	0.2603	0.2604	0.2603															
4	0.2609	0.2609	0.2609															
5	0.2601	0.2601	0.2601															
6	0.2620	0.2620	0.2619															
7	0.2605	0.2606	0.2606															
8	0.2601	0.2602	0.2601															
9	0.2625	0.2625	0.2624															
10	0.2644	0.2644	0.2644															
11	0.2632	0.2631	0.2632															
12	0.2612	0.2612	0.2612															
13	0.2573	0.2573	0.2573															
14	0.2622	0.2621	0.2621															
15	0.2609	0.2609	0.2608															
16	0.2612	0.2612	0.2612															
17	0.2613	0.2615	0.2613															
18	0.2645	0.2645	0.2644															
19	0.2602	0.2603	0.2603															
20	0.2599	0.2599	0.2598															
21	0.2605	0.2606	0.2606															
22	0.2652	0.2652	0.2651															
23	0.2620	0.2621	0.2621															
24	0.2631	0.2632	0.2631															
25	0.2588	0.2589	0.2588															
n	25	25	25															
Avg.	0.2614	0.2614	0.2613															
Med.	0.2612	0.2611	0.2611															
σ	0.0018	0.0018	0.0018															
Min.	0.2573	0.2573	0.2573															
Max.	0.2652	0.2652	0.2651															

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Data Set 8 : 85 °C, 180 mA

Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 8-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5255	0.5254	0.5254	0.5254	0.5252	0.5252	0.5253	0.5253	0.5253	0.5253	0.5254	0.5254	0.5254	0.5252	0.5251	0.5252	0.5252	0.5252
2	0.5303	0.5302	0.5302	0.5302	0.5301	0.5301	0.5301	0.5302	0.5301	0.5301	0.5302	0.5302	0.5302	0.5300	0.5300	0.5300	0.5301	0.5300
3	0.5305	0.5305	0.5305	0.5305	0.5304	0.5303	0.5304	0.5305	0.5305	0.5305	0.5306	0.5305	0.5305	0.5304	0.5304	0.5304	0.5303	0.5303
4	0.5277	0.5277	0.5277	0.5277	0.5276	0.5276	0.5277	0.5277	0.5277	0.5277	0.5278	0.5277	0.5278	0.5276	0.5276	0.5277	0.5276	0.5276
5	0.5269	0.5269	0.5270	0.5269	0.5268	0.5267	0.5269	0.5269	0.5269	0.5269	0.5270	0.5270	0.5270	0.5267	0.5268	0.5268	0.5268	0.5268
6	0.5261	0.5260	0.5260	0.5260	0.5260	0.5259	0.5260	0.5260	0.5260	0.5260	0.5260	0.5260	0.5260	0.5258	0.5259	0.5258	0.5258	0.5258
7	0.5219	0.5218	0.5218	0.5218	0.5217	0.5217	0.5217	0.5218	0.5218	0.5218	0.5219	0.5219	0.5219	0.5216	0.5219	0.5217	0.5217	0.5216
8	0.5248	0.5248	0.5248	0.5247	0.5246	0.5246	0.5247	0.5248	0.5247	0.5247	0.5247	0.5247	0.5248	0.5245	0.5245	0.5246	0.5245	0.5246
9	0.5298	0.5298	0.5298	0.5298	0.5296	0.5296	0.5296	0.5297	0.5297	0.5297	0.5297	0.5298	0.5297	0.5296	0.5296	0.5296	0.5296	0.5296
10	0.5267	0.5266	0.5266	0.5266	0.5265	0.5265	0.5266	0.5266	0.5266	0.5266	0.5266	0.5267	0.5267	0.5265	0.5264	0.5265	0.5265	0.5264
11	0.5304	0.5304	0.5303	0.5304	0.5303	0.5302	0.5303	0.5304	0.5304	0.5304	0.5304	0.5304	0.5304	0.5302	0.5303	0.5303	0.5303	0.5303
12	0.5299	0.5299	0.5299	0.5298	0.5297	0.5298	0.5298	0.5298	0.5298	0.5299	0.5299	0.5299	0.5300	0.5297	0.5297	0.5298	0.5297	0.5298
13	0.5262	0.5261	0.5262	0.5261	0.5260	0.5260	0.5260	0.5260	0.5261	0.5261	0.5261	0.5261	0.5261	0.5259	0.5259	0.5259	0.5259	0.5259
14	0.5320	0.5320	0.5318	0.5319	0.5318	0.5318	0.5318	0.5318	0.5318	0.5319	0.5320	0.5320	0.5319	0.5318	0.5318	0.5318	0.5319	0.5318
15	0.5279	0.5279	0.5279	0.5279	0.5278	0.5278	0.5278	0.5279	0.5279	0.5278	0.5279	0.5279	0.5279	0.5277	0.5277	0.5277	0.5278	0.5277
16	0.5228	0.5229	0.5228	0.5228	0.5227	0.5226	0.5227	0.5227	0.5227	0.5228	0.5227	0.5228	0.5228	0.5225	0.5226	0.5226	0.5225	0.5226
17	0.5272	0.5272	0.5272	0.5272	0.5271	0.5271	0.5270	0.5272	0.5272	0.5272	0.5272	0.5273	0.5272	0.5271	0.5270	0.5271	0.5271	0.5270
18	0.5259	0.5259	0.5259	0.5258	0.5258	0.5258	0.5258	0.5258	0.5259	0.5259	0.5259	0.5260	0.5260	0.5257	0.5258	0.5257	0.5257	0.5257
19	0.5232	0.5232	0.5231	0.5231	0.5231	0.5230	0.5230	0.5230	0.5231	0.5231	0.5231	0.5232	0.5231	0.5229	0.5229	0.5229	0.5230	0.5230
20	0.5300	0.5301	0.5300	0.5300	0.5299	0.5299	0.5300	0.5300	0.5300	0.5300	0.5300	0.5301	0.5301	0.5299	0.5299	0.5299	0.5299	0.5299
21	0.5300	0.5300	0.5299	0.5299	0.5298	0.5298	0.5298	0.5298	0.5298	0.5298	0.5299	0.5299	0.5299	0.5297	0.5297	0.5298	0.5298	0.5297
22	0.5284	0.5283	0.5283	0.5283	0.5282	0.5282	0.5282	0.5283	0.5282	0.5283	0.5284	0.5284	0.5283	0.5282	0.5282	0.5282	0.5282	0.5281
23	0.5265	0.5265	0.5266	0.5266	0.5263	0.5264	0.5264	0.5264	0.5265	0.5264	0.5265	0.5265	0.5265	0.5263	0.5263	0.5264	0.5263	0.5263
24	0.5297	0.5296	0.5296	0.5296	0.5296	0.5295	0.5295	0.5296	0.5296	0.5296	0.5296	0.5297	0.5297	0.5295	0.5295	0.5296	0.5295	0.5295
25	0.5281	0.5281	0.5280	0.5280	0.5279	0.5280	0.5280	0.5280	0.5280	0.5280	0.5281	0.5281	0.5281	0.5279	0.5279	0.5280	0.5279	0.5279
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5275	0.5275	0.5275	0.5275	0.5274	0.5274	0.5274	0.5274	0.5274	0.5275	0.5275	0.5275	0.5275	0.5273	0.5273	0.5274	0.5273	0.5273
Med.	0.5277	0.5277	0.5277	0.5277	0.5276	0.5276	0.5277	0.5277	0.5277	0.5277	0.5278	0.5277	0.5278	0.5276	0.5276	0.5277	0.5276	0.5276
σ	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0027	0.0026	0.0027	0.0027	0.0027
Min.	0.5219	0.5218	0.5218	0.5218	0.5217	0.5217	0.5217	0.5218	0.5218	0.5218	0.5219	0.5219	0.5219	0.5216	0.5219	0.5217	0.5217	0.5216
Max.	0.5320	0.5320	0.5318	0.5319	0.5318	0.5318	0.5318	0.5318	0.5318	0.5319	0.5320	0.5320	0.5319	0.5318	0.5318	0.5318	0.5319	0.5318

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Data Set 8 : 85 °C, 180 mA

Actual Case Temperature [T_S]	85.4 °C
Actual Ambient Temperature [T_A]	81.5 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 8-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5251	0.5251	0.5251															
2	0.5299	0.5299	0.5299															
3	0.5303	0.5303	0.5303															
4	0.5276	0.5275	0.5275															
5	0.5267	0.5268	0.5267															
6	0.5258	0.5257	0.5258															
7	0.5216	0.5216	0.5215															
8	0.5245	0.5244	0.5244															
9	0.5295	0.5295	0.5295															
10	0.5264	0.5264	0.5264															
11	0.5302	0.5302	0.5302															
12	0.5297	0.5297	0.5296															
13	0.5259	0.5259	0.5258															
14	0.5318	0.5318	0.5318															
15	0.5276	0.5277	0.5276															
16	0.5225	0.5225	0.5224															
17	0.5270	0.5271	0.5271															
18	0.5257	0.5257	0.5257															
19	0.5229	0.5229	0.5228															
20	0.5298	0.5298	0.5298															
21	0.5297	0.5297	0.5296															
22	0.5281	0.5281	0.5281															
23	0.5262	0.5262	0.5263															
24	0.5295	0.5294	0.5294															
25	0.5279	0.5278	0.5278															
n	25	25	25															
Avg.	0.5273	0.5273	0.5273															
Med.	0.5276	0.5275	0.5275															
σ	0.0027	0.0027	0.0027															
Min.	0.5216	0.5216	0.5215															
Max.	0.5318	0.5318	0.5318															

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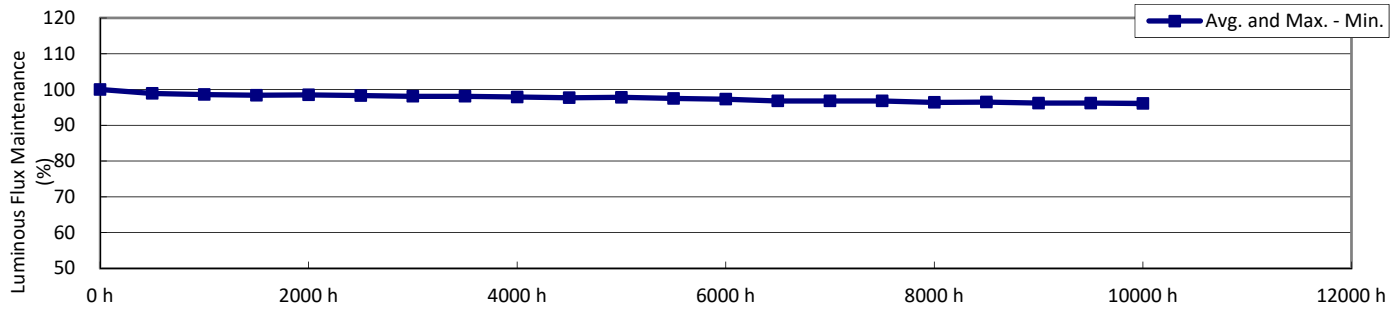
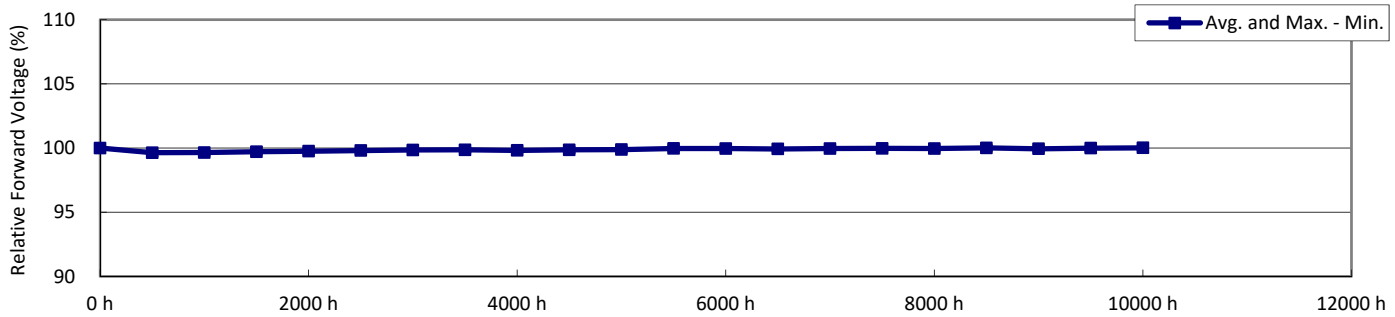
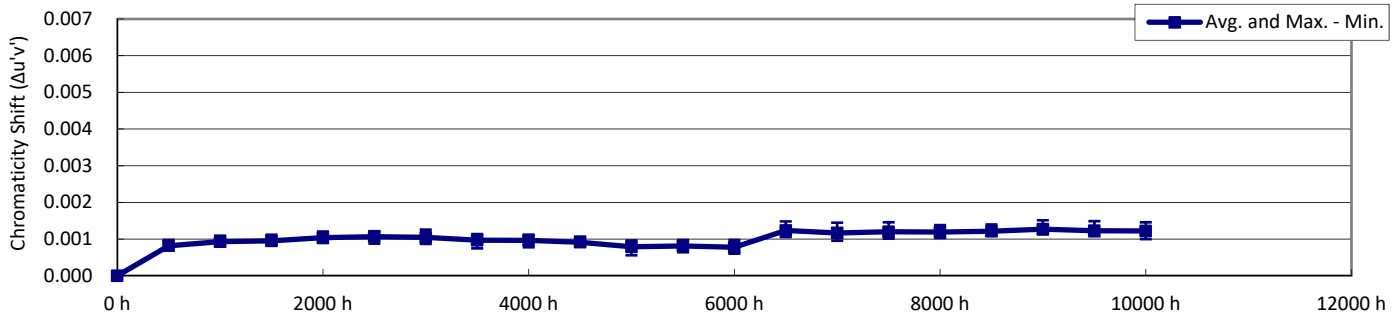
Data Set 9 : 105 °C, 80 mA

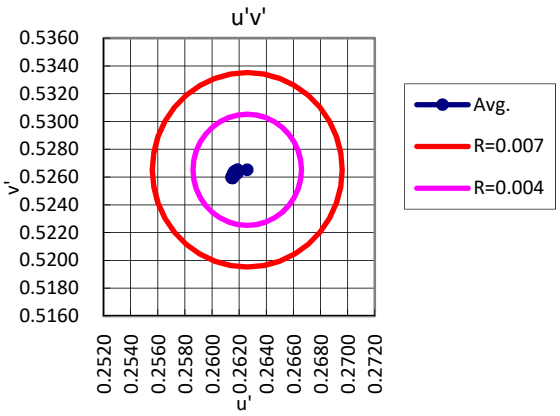
Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 9 : 105 °C, 80 mA

Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 9-1
Initial Characteristics

LED No.	Luminous flux	Forward voltage	CCT	Input Power	CIE1931		CIE1976							
	Φ_V [lm]	V_F [V]	T_{CP} [K]	P [W]	x	y	u'	v'						
1	40.0	2.92	2669	0.23	0.465	0.415	0.264	0.530						
2	39.9	2.90	2675	0.23	0.460	0.408	0.264	0.527						
3	40.0	2.93	2677	0.23	0.463	0.414	0.263	0.529						
4	40.1	2.92	2731	0.23	0.458	0.411	0.261	0.527						
5	40.3	2.90	2689	0.23	0.464	0.416	0.263	0.530						
6	39.6	2.91	2708	0.23	0.454	0.402	0.263	0.523						
7	39.7	2.93	2720	0.23	0.453	0.402	0.262	0.523						
8	40.5	2.93	2735	0.23	0.461	0.418	0.260	0.530						
9	40.2	2.92	2741	0.23	0.457	0.410	0.261	0.527						
10	40.5	2.92	2825	0.23	0.451	0.410	0.257	0.526						
11	40.1	2.90	2673	0.23	0.464	0.414	0.263	0.529						
12	39.6	2.91	2630	0.23	0.463	0.407	0.266	0.526						
13	40.5	2.90	2675	0.23	0.467	0.420	0.263	0.532						
14	40.0	2.92	2772	0.23	0.450	0.402	0.260	0.523						
15	40.3	2.92	2742	0.23	0.458	0.413	0.260	0.528						
16	39.6	2.92	2633	0.23	0.462	0.407	0.266	0.526						
17	39.8	2.92	2664	0.23	0.461	0.407	0.264	0.526						
18	40.3	2.90	2801	0.23	0.451	0.406	0.258	0.524						
19	40.3	2.92	2790	0.23	0.453	0.410	0.259	0.526						
20	39.4	2.92	2659	0.23	0.460	0.405	0.265	0.525						
21	39.5	2.92	2632	0.23	0.464	0.410	0.266	0.528						
22	39.4	2.92	2716	0.23	0.453	0.400	0.263	0.522						
23	40.1	2.91	2667	0.23	0.465	0.415	0.264	0.530						
24	39.8	2.91	2711	0.23	0.453	0.400	0.263	0.522						
25	40.4	2.91	2718	0.23	0.461	0.415	0.261	0.529						
n	25	25	25	25	25	25	25	25						
Avg.	40.0	2.92	2706	0.23	0.459	0.409	0.262	0.527						
Med.	40.0	2.92	2708	0.23	0.460	0.410	0.263	0.527						
σ	0.35	0.010	52.7	0.001	0.0051	0.0056	0.0024	0.0027						
Min.	39.4	2.90	2630	0.23	0.450	0.400	0.257	0.522						
Max.	40.5	2.93	2825	0.23	0.467	0.420	0.266	0.532						

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Data Set 9 : 105 °C, 80 mA

Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 9-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	98.8	98.7	98.6	98.7	98.5	98.3	98.3	98.1	98.1	98.2	97.9	97.7	97.3	97.2	97.1	96.8	97.0
2	100.0	98.5	98.4	98.2	98.3	97.8	97.8	97.7	97.5	97.4	97.5	97.2	97.1	96.6	96.5	96.4	96.1	96.2
3	100.0	98.9	98.8	98.6	98.7	98.5	98.3	98.1	98.0	97.9	98.0	97.7	97.5	97.1	96.9	96.8	96.5	96.7
4	100.0	98.9	98.8	98.6	98.7	98.4	98.2	98.1	97.9	97.8	97.8	97.5	97.3	96.8	96.7	96.6	96.3	96.5
5	100.0	98.6	98.4	98.3	98.5	98.0	97.8	97.7	97.7	97.6	97.8	97.4	97.4	96.9	96.8	96.7	96.5	96.4
6	100.0	98.8	98.7	98.5	98.7	98.4	98.3	98.2	98.0	97.9	97.9	97.6	97.4	96.9	96.9	96.7	96.6	96.7
7	100.0	98.9	98.6	98.4	98.5	98.3	98.1	98.1	97.9	97.7	97.8	97.6	97.4	96.8	96.7	96.8	96.4	96.5
8	100.0	99.1	98.9	98.7	98.9	98.6	98.5	98.4	98.2	98.1	98.1	97.9	97.7	97.2	97.2	97.2	96.7	96.9
9	100.0	99.1	98.9	98.7	98.7	98.6	98.4	98.3	98.1	97.9	98.0	97.7	97.5	97.0	96.9	96.9	96.5	96.7
10	100.0	98.9	98.7	98.5	98.5	98.3	98.1	98.1	97.9	97.7	97.8	97.5	97.3	96.8	96.8	96.8	96.4	96.6
11	100.0	98.9	98.5	98.3	98.3	98.0	97.8	97.7	97.5	97.4	97.5	97.1	96.9	96.5	96.5	97.1	96.2	96.1
12	100.0	98.8	98.5	98.3	98.3	98.2	98.0	98.0	97.8	97.6	97.5	97.4	97.2	96.7	96.5	96.8	96.4	96.5
13	100.0	98.7	98.5	98.2	98.3	98.1	98.0	98.0	97.7	97.7	97.7	97.5	97.4	96.8	96.8	96.8	96.5	96.6
14	100.0	99.0	98.8	98.5	98.5	98.3	98.3	98.2	97.9	97.8	97.8	97.5	97.4	96.9	96.8	96.8	96.4	96.6
15	100.0	99.0	98.9	98.7	98.7	98.5	98.4	98.4	98.1	98.0	97.8	97.6	97.5	96.9	96.9	96.9	96.5	96.7
16	100.0	99.0	98.9	98.7	98.7	98.6	98.4	98.4	98.2	98.1	98.2	97.9	97.8	97.3	97.2	97.4	96.9	97.1
17	100.0	98.7	98.6	98.2	98.2	98.1	97.9	97.8	97.7	97.7	97.6	97.6	97.4	96.9	96.8	97.5	96.3	96.4
18	100.0	98.8	98.4	98.1	98.1	97.9	97.9	97.8	97.4	97.4	97.3	97.1	96.9	96.5	96.3	96.4	96.0	96.2
19	100.0	98.7	98.4	98.2	98.3	97.9	97.7	97.8	97.6	97.6	97.6	97.2	97.1	96.7	96.5	96.6	96.2	96.5
20	100.0	99.0	98.8	98.6	98.7	98.4	98.3	98.2	98.0	97.8	97.8	97.5	97.4	96.9	96.8	96.8	96.5	96.6
21	100.0	99.1	98.8	98.7	98.8	98.5	98.4	98.4	98.3	98.0	98.2	97.9	97.8	97.3	97.2	97.2	96.9	97.0
22	100.0	99.0	98.6	98.4	98.4	98.1	98.1	98.1	97.8	97.6	97.6	97.2	97.1	96.6	96.6	96.6	96.2	96.3
23	100.0	98.8	98.5	98.3	98.3	98.2	98.1	97.8	97.7	97.7	97.7	97.3	97.1	96.6	96.6	97.1	95.9	95.9
24	100.0	98.6	98.3	98.1	98.3	98.0	98.0	97.9	97.6	97.4	97.4	97.0	97.0	96.3	96.4	96.4	96.0	96.3
25	100.0	98.8	98.4	98.4	98.5	98.2	98.1	98.0	97.8	97.7	97.8	97.5	97.3	96.7	96.6	96.6	96.2	96.4
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	98.9	98.6	98.4	98.5	98.3	98.1	98.1	97.9	97.7	97.8	97.5	97.3	96.8	96.8	96.8	96.4	96.5
Med.	100.0	98.9	98.6	98.4	98.5	98.3	98.1	98.1	97.9	97.7	97.8	97.5	97.4	96.8	96.8	96.8	96.4	96.5
σ	0.00	0.16	0.19	0.20	0.22	0.24	0.23	0.24	0.24	0.22	0.25	0.26	0.25	0.26	0.25	0.29	0.27	0.29
Min.	100.0	98.5	98.3	98.1	98.1	97.8	97.7	97.7	97.4	97.4	97.3	97.0	96.9	96.3	96.3	96.4	95.9	95.9
Max.	100.0	99.1	98.9	98.7	98.9	98.6	98.5	98.4	98.3	98.1	98.2	97.9	97.8	97.3	97.2	97.5	96.9	97.1

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0222	-0.0253	-0.0274	-0.0325	-0.0325	-0.0325	-0.0367	-0.0356	-0.0387	-0.0387	-0.0398							

Test duration used	5000 h to 10000 h	
B	0.992	
α	3.38E-06	
R^2	0.925	
Calculated L_{70} (10K)	103000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	63600	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	28800	hours
Reported L_{90} (10K)	28800	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 9 : 105 °C, 80 mA

Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 9-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	96.7	96.6	96.5															
2	96.0	95.9	95.8															
3	96.4	96.3	96.2															
4	96.2	96.1	96.1															
5	96.4	96.2	96.2															
6	96.4	96.3	96.2															
7	96.2	96.1	96.0															
8	96.6	96.6	96.5															
9	96.3	96.3	96.3															
10	96.3	96.1	96.2															
11	95.7	95.8	95.8															
12	96.1	96.0	96.0															
13	96.3	96.3	96.1															
14	96.4	96.2	96.2															
15	96.4	96.3	96.3															
16	96.8	96.7	96.7															
17	96.1	96.0	95.8															
18	95.9	95.7	95.7															
19	96.1	96.1	96.1															
20	96.3	96.2	96.2															
21	96.7	96.6	96.6															
22	96.0	96.0	95.9															
23	95.7	95.6	95.4															
24	95.9	95.8	95.9															
25	96.1	96.1	96.0															
n	25	25	25															
Avg.	96.2	96.2	96.1															
Med.	96.3	96.1	96.1															
σ	0.29	0.28	0.30															
Min.	95.7	95.6	95.4															
Max.	96.8	96.7	96.7															

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Data Set 9 : 105 °C, 80 mA

Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 9-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.6	99.6	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.9	100.0	100.0	100.0	100.0	99.9	100.1
2	100.0	99.7	99.7	99.7	99.8	99.9	99.8	99.8	99.9	99.9	99.9	100.0	100.0	99.9	100.0	99.9	99.9	100.0
3	100.0	99.6	99.5	99.6	99.6	99.7	99.6	99.7	99.7	99.8	99.8	99.8	99.7	99.8	99.8	99.9	99.8	99.8
4	100.0	99.5	99.5	99.6	99.7	99.8	99.8	99.7	99.8	99.9	99.8	99.8	99.9	99.9	99.9	99.9	100.0	100.0
5	100.0	99.7	99.8	99.7	99.8	99.8	99.8	99.9	99.9	100.0	100.1	100.0	100.0	100.0	100.0	100.0	99.9	100.0
6	100.0	99.7	99.6	99.7	99.9	99.8	99.8	100.0	99.8	99.9	100.0	99.9	100.0	100.0	99.9	100.1	100.0	100.0
7	100.0	99.6	99.6	99.7	99.6	99.7	100.1	99.8	99.7	99.7	99.9	99.9	99.9	99.9	99.9	100.0	99.9	99.9
8	100.0	99.5	99.6	99.5	99.6	99.6	99.6	99.8	99.7	99.6	99.7	99.8	99.8	99.8	99.8	99.9	99.7	99.8
9	100.0	99.7	99.8	99.9	99.8	99.9	99.9	99.9	100.0	99.9	100.0	100.1	100.0	100.0	100.1	100.1	100.1	100.1
10	100.0	99.4	99.5	99.6	99.7	99.6	99.7	99.8	99.7	99.7	99.7	99.8	99.9	99.8	99.8	99.8	99.8	99.9
11	100.0	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.1	100.0	100.0	100.0	100.0	100.0	100.0
12	100.0	99.6	99.8	99.7	99.9	99.8	99.9	99.9	99.9	99.9	99.9	100.2	100.0	99.9	100.0	100.0	99.9	100.0
13	100.0	99.7	99.8	99.9	99.8	99.9	100.0	99.8	99.8	99.8	99.9	100.0	99.9	100.0	100.0	100.0	100.0	100.2
14	100.0	99.6	99.6	99.6	99.7	99.8	99.8	99.9	99.8	99.8	99.9	100.0	100.0	100.0	100.0	100.0	100.1	100.0
15	100.0	99.6	99.6	99.8	99.8	99.8	99.9	99.9	100.0	100.0	99.9	100.1	100.1	100.1	100.2	100.1	100.1	100.2
16	100.0	99.7	99.7	99.9	99.8	100.0	100.0	100.0	100.0	99.9	100.0	100.1	100.1	100.0	100.1	100.1	100.0	100.2
17	100.0	99.6	99.5	99.8	99.7	99.7	99.8	99.8	99.8	99.8	99.8	100.0	99.8	99.9	99.9	99.9	99.9	100.0
18	100.0	99.7	99.7	99.7	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	99.9	99.9	99.9	100.0	99.9	100.1
19	100.0	99.6	99.6	99.6	99.7	99.8	99.8	99.7	99.7	99.8	99.7	100.0	99.9	99.8	99.9	99.9	100.0	99.9
20	100.0	99.5	99.5	99.6	99.6	99.7	99.8	99.8	99.7	99.8	99.7	99.9	100.0	99.8	99.9	99.9	100.0	99.9
21	100.0	99.7	99.6	99.5	99.8	99.8	99.9	100.0	99.8	99.8	99.8	99.9	99.9	99.9	100.0	99.9	99.9	100.0
22	100.0	99.4	99.4	99.6	99.6	99.6	99.7	99.8	99.7	99.7	99.8	100.0	99.9	99.8	99.8	99.8	99.8	99.9
23	100.0	99.8	99.8	100.1	99.9	99.9	100.0	100.0	100.0	100.1	100.0	100.1	100.1	100.1	100.1	100.1	100.2	100.1
24	100.0	99.7	99.7	99.6	99.8	99.8	99.9	99.9	99.8	99.9	99.9	99.9	100.0	99.9	100.0	100.0	100.0	100.0
25	100.0	99.8	99.8	99.9	99.9	99.9	99.8	99.9	99.9	100.0	99.9	100.1	100.1	100.0	100.0	100.0	100.1	100.1
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.6	99.6	99.7	99.8	99.8	99.8	99.9	99.8	99.9	99.9	100.0	100.0	99.9	100.0	100.0	100.0	100.0
Med.	100.0	99.6	99.6	99.7	99.8	99.8	99.8	99.9	99.8	99.9	99.9	100.0	100.0	99.9	100.0	100.0	100.0	100.0
σ	0.00	0.11	0.12	0.14	0.11	0.10	0.11	0.09	0.11	0.11	0.11	0.11	0.10	0.09	0.10	0.09	0.11	0.11
Min.	100.0	99.4	99.4	99.5	99.6	99.6	99.6	99.7	99.7	99.6	99.7	99.8	99.7	99.8	99.8	99.8	99.7	99.8
Max.	100.0	99.8	99.8	100.1	99.9	100.0	100.1	100.0	100.0	100.1	100.1	100.2	100.1	100.1	100.2	100.1	100.2	100.2

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Data Set 9 : 105 °C, 80 mA

Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 9-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	100.0	99.9	100.0															
2	99.9	100.0	100.0															
3	99.7	99.8	99.8															
4	99.8	99.9	99.9															
5	100.0	100.1	100.1															
6	100.1	100.1	100.1															
7	99.9	99.9	100.0															
8	99.8	99.9	99.9															
9	100.1	100.1	100.2															
10	99.8	99.8	99.9															
11	100.0	100.0	100.1															
12	100.0	100.0	100.0															
13	100.0	100.1	100.0															
14	99.9	100.0	100.0															
15	100.1	100.1	100.2															
16	100.1	100.1	100.1															
17	99.9	100.0	100.0															
18	99.9	100.0	100.0															
19	99.9	100.0	100.0															
20	99.9	99.9	100.0															
21	100.0	100.0	100.1															
22	99.8	99.8	99.9															
23	100.1	100.1	100.2															
24	100.0	100.0	100.0															
25	100.0	100.1	100.1															
n	25	25	25															
Avg.	99.9	100.0	100.0															
Med.	100.0	100.0	100.0															
σ	0.11	0.10	0.11															
Min.	99.7	99.8	99.8															
Max.	100.1	100.1	100.2															

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Data Set 9 : 105 °C, 80 mA

Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 9-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0009	0.0011	0.0011	0.0011	0.0012	0.0011	0.0011	0.0010	0.0010	0.0008	0.0009	0.0008	0.0012	0.0011	0.0012	0.0012	0.0011
2	0.0000	0.0008	0.0010	0.0009	0.0011	0.0010	0.0011	0.0010	0.0011	0.0010	0.0008	0.0009	0.0008	0.0013	0.0012	0.0013	0.0014	0.0013
3	0.0000	0.0008	0.0009	0.0009	0.0011	0.0010	0.0010	0.0009	0.0010	0.0009	0.0008	0.0008	0.0007	0.0012	0.0012	0.0011	0.0012	0.0011
4	0.0000	0.0008	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0010	0.0009	0.0009	0.0008	0.0012	0.0012	0.0012	0.0012	0.0012
5	0.0000	0.0009	0.0009	0.0010	0.0012	0.0011	0.0010	0.0011	0.0010	0.0009	0.0008	0.0009	0.0009	0.0011	0.0012	0.0011	0.0013	0.0012
6	0.0000	0.0008	0.0009	0.0010	0.0011	0.0011	0.0010	0.0011	0.0010	0.0009	0.0008	0.0008	0.0008	0.0013	0.0013	0.0012	0.0013	0.0013
7	0.0000	0.0007	0.0008	0.0010	0.0010	0.0011	0.0010	0.0010	0.0009	0.0009	0.0008	0.0009	0.0008	0.0013	0.0012	0.0013	0.0013	0.0014
8	0.0000	0.0007	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0007	0.0007	0.0006	0.0011	0.0011	0.0011	0.0010	0.0011
9	0.0000	0.0008	0.0009	0.0009	0.0010	0.0011	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0007	0.0012	0.0011	0.0012	0.0011	0.0013
10	0.0000	0.0008	0.0010	0.0009	0.0011	0.0011	0.0010	0.0009	0.0010	0.0009	0.0008	0.0009	0.0008	0.0013	0.0012	0.0012	0.0013	0.0013
11	0.0000	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011	0.0009	0.0009	0.0008	0.0007	0.0008	0.0006	0.0011	0.0011	0.0012	0.0013	0.0012
12	0.0000	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0007	0.0008	0.0008	0.0006	0.0006	0.0006	0.0011	0.0010	0.0010	0.0011	0.0011
13	0.0000	0.0010	0.0010	0.0009	0.0011	0.0011	0.0011	0.0010	0.0010	0.0009	0.0008	0.0007	0.0008	0.0012	0.0011	0.0012	0.0012	0.0012
14	0.0000	0.0008	0.0009	0.0009	0.0011	0.0011	0.0010	0.0010	0.0009	0.0009	0.0008	0.0008	0.0007	0.0013	0.0012	0.0012	0.0012	0.0012
15	0.0000	0.0007	0.0009	0.0008	0.0009	0.0010	0.0010	0.0009	0.0009	0.0008	0.0007	0.0007	0.0008	0.0012	0.0011	0.0011	0.0011	0.0012
16	0.0000	0.0008	0.0010	0.0009	0.0010	0.0011	0.0010	0.0009	0.0009	0.0009	0.0008	0.0007	0.0009	0.0012	0.0011	0.0012	0.0012	0.0011
17	0.0000	0.0008	0.0009	0.0010	0.0011	0.0011	0.0010	0.0010	0.0009	0.0008	0.0008	0.0008	0.0008	0.0013	0.0011	0.0011	0.0012	0.0011
18	0.0000	0.0008	0.0010	0.0009	0.0011	0.0012	0.0012	0.0010	0.0011	0.0009	0.0010	0.0009	0.0009	0.0014	0.0013	0.0014	0.0014	0.0013
19	0.0000	0.0007	0.0009	0.0009	0.0009	0.0010	0.0011	0.0009	0.0010	0.0009	0.0007	0.0006	0.0007	0.0011	0.0011	0.0011	0.0011	0.0012
20	0.0000	0.0009	0.0010	0.0010	0.0010	0.0011	0.0010	0.0010	0.0009	0.0010	0.0009	0.0008	0.0008	0.0013	0.0012	0.0012	0.0012	0.0012
21	0.0000	0.0008	0.0010	0.0010	0.0010	0.0012	0.0011	0.0010	0.0010	0.0010	0.0008	0.0008	0.0007	0.0012	0.0011	0.0012	0.0011	0.0012
22	0.0000	0.0010	0.0011	0.0011	0.0011	0.0012	0.0013	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0015	0.0014	0.0015	0.0014	0.0014
23	0.0000	0.0008	0.0009	0.0010	0.0010	0.0010	0.0010	0.0009	0.0010	0.0009	0.0008	0.0008	0.0008	0.0012	0.0011	0.0011	0.0011	0.0013
24	0.0000	0.0008	0.0009	0.0009	0.0011	0.0011	0.0010	0.0010	0.0009	0.0009	0.0008	0.0008	0.0008	0.0013	0.0012	0.0013	0.0013	0.0012
25	0.0000	0.0009	0.0009	0.0009	0.0010	0.0010	0.0011	0.0009	0.0010	0.0009	0.0007	0.0009	0.0007	0.0012	0.0011	0.0012	0.0011	0.0012
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0008	0.0009	0.0010	0.0010	0.0011	0.0010	0.0010	0.0010	0.0009	0.0008	0.0008	0.0008	0.0012	0.0012	0.0012	0.0012	0.0012
Med.	0.0000	0.0008	0.0009	0.0009	0.0010	0.0011	0.0010	0.0010	0.0010	0.0009	0.0008	0.0008	0.0008	0.0012	0.0011	0.0012	0.0012	0.0012
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0007	0.0008	0.0008	0.0009	0.0009	0.0009	0.0007	0.0008	0.0008	0.0006	0.0006	0.0006	0.0011	0.0010	0.0010	0.0010	0.0011
Max.	0.0000	0.0010	0.0011	0.0011	0.0012	0.0012	0.0013	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0015	0.0014	0.0015	0.0014	0.0014

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Data Set 9 : 105 °C, 80 mA

Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 9-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0013	0.0012	0.0012															
2	0.0013	0.0013	0.0014															
3	0.0013	0.0012	0.0012															
4	0.0013	0.0013	0.0013															
5	0.0013	0.0013	0.0013															
6	0.0013	0.0012	0.0012															
7	0.0013	0.0013	0.0014															
8	0.0011	0.0011	0.0010															
9	0.0013	0.0012	0.0012															
10	0.0013	0.0012	0.0012															
11	0.0012	0.0012	0.0012															
12	0.0012	0.0011	0.0011															
13	0.0012	0.0012	0.0012															
14	0.0012	0.0012	0.0012															
15	0.0011	0.0012	0.0011															
16	0.0012	0.0012	0.0011															
17	0.0013	0.0012	0.0011															
18	0.0015	0.0015	0.0014															
19	0.0012	0.0012	0.0011															
20	0.0013	0.0013	0.0012															
21	0.0012	0.0012	0.0012															
22	0.0015	0.0014	0.0015															
23	0.0013	0.0013	0.0012															
24	0.0014	0.0013	0.0014															
25	0.0012	0.0012	0.0012															
n	25	25	25															
Avg.	0.0013	0.0012	0.0012															
Med.	0.0013	0.0012	0.0012															
σ	0.0001	0.0001	0.0001															
Min.	0.0011	0.0011	0.0010															
Max.	0.0015	0.0015	0.0015															

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Data Set 9 : 105 °C, 80 mA

Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 9-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2641	0.2632	0.2630	0.2629	0.2630	0.2629	0.2630	0.2630	0.2631	0.2631	0.2633	0.2632	0.2633	0.2629	0.2630	0.2629	0.2630	0.2630
2	0.2643	0.2636	0.2633	0.2634	0.2632	0.2634	0.2633	0.2634	0.2634	0.2634	0.2636	0.2635	0.2636	0.2632	0.2632	0.2632	0.2631	0.2631
3	0.2638	0.2630	0.2629	0.2629	0.2628	0.2628	0.2628	0.2629	0.2628	0.2630	0.2630	0.2630	0.2631	0.2626	0.2627	0.2628	0.2627	0.2628
4	0.2619	0.2611	0.2610	0.2610	0.2609	0.2609	0.2609	0.2610	0.2610	0.2609	0.2611	0.2610	0.2611	0.2608	0.2609	0.2608	0.2608	0.2609
5	0.2654	0.2646	0.2646	0.2644	0.2643	0.2644	0.2644	0.2644	0.2644	0.2645	0.2647	0.2646	0.2646	0.2644	0.2643	0.2644	0.2642	0.2643
6	0.2639	0.2631	0.2630	0.2630	0.2629	0.2629	0.2630	0.2629	0.2630	0.2631	0.2632	0.2632	0.2632	0.2627	0.2628	0.2628	0.2628	0.2628
7	0.2627	0.2620	0.2619	0.2617	0.2617	0.2616	0.2617	0.2618	0.2618	0.2618	0.2619	0.2619	0.2619	0.2616	0.2616	0.2615	0.2615	0.2615
8	0.2604	0.2597	0.2595	0.2595	0.2595	0.2596	0.2595	0.2596	0.2595	0.2596	0.2598	0.2597	0.2598	0.2594	0.2594	0.2594	0.2595	0.2594
9	0.2610	0.2602	0.2601	0.2601	0.2600	0.2599	0.2600	0.2601	0.2601	0.2601	0.2602	0.2602	0.2603	0.2598	0.2600	0.2599	0.2600	0.2598
10	0.2578	0.2570	0.2568	0.2569	0.2567	0.2568	0.2568	0.2570	0.2569	0.2570	0.2571	0.2570	0.2571	0.2566	0.2567	0.2568	0.2567	0.2567
11	0.2664	0.2655	0.2655	0.2655	0.2653	0.2654	0.2653	0.2655	0.2655	0.2655	0.2656	0.2656	0.2657	0.2653	0.2653	0.2653	0.2652	0.2653
12	0.2670	0.2662	0.2662	0.2661	0.2661	0.2661	0.2661	0.2663	0.2662	0.2662	0.2664	0.2663	0.2664	0.2660	0.2661	0.2660	0.2660	0.2660
13	0.2634	0.2625	0.2625	0.2625	0.2624	0.2623	0.2624	0.2624	0.2624	0.2625	0.2627	0.2627	0.2626	0.2623	0.2623	0.2623	0.2623	0.2623
14	0.2604	0.2596	0.2595	0.2595	0.2593	0.2594	0.2594	0.2594	0.2595	0.2596	0.2596	0.2597	0.2597	0.2592	0.2594	0.2594	0.2594	0.2594
15	0.2607	0.2600	0.2598	0.2598	0.2598	0.2597	0.2597	0.2598	0.2598	0.2599	0.2600	0.2600	0.2599	0.2596	0.2597	0.2596	0.2597	0.2596
16	0.2667	0.2660	0.2658	0.2658	0.2658	0.2657	0.2658	0.2658	0.2658	0.2659	0.2660	0.2661	0.2659	0.2657	0.2658	0.2656	0.2657	0.2658
17	0.2671	0.2663	0.2661	0.2661	0.2660	0.2660	0.2661	0.2661	0.2662	0.2663	0.2664	0.2663	0.2663	0.2659	0.2661	0.2661	0.2660	0.2661
18	0.2592	0.2583	0.2582	0.2583	0.2581	0.2580	0.2581	0.2582	0.2581	0.2583	0.2583	0.2583	0.2583	0.2579	0.2580	0.2579	0.2580	0.2580
19	0.2589	0.2582	0.2580	0.2580	0.2581	0.2580	0.2579	0.2581	0.2580	0.2581	0.2583	0.2583	0.2583	0.2579	0.2579	0.2580	0.2580	0.2579
20	0.2653	0.2645	0.2644	0.2644	0.2644	0.2643	0.2643	0.2644	0.2644	0.2644	0.2645	0.2646	0.2645	0.2641	0.2643	0.2642	0.2643	0.2642
21	0.2662	0.2654	0.2652	0.2653	0.2652	0.2651	0.2652	0.2652	0.2652	0.2653	0.2655	0.2654	0.2656	0.2651	0.2652	0.2651	0.2652	0.2652
22	0.2638	0.2628	0.2627	0.2627	0.2627	0.2626	0.2626	0.2627	0.2627	0.2628	0.2629	0.2629	0.2629	0.2625	0.2625	0.2625	0.2625	0.2626
23	0.2663	0.2656	0.2655	0.2654	0.2654	0.2653	0.2653	0.2655	0.2654	0.2655	0.2656	0.2655	0.2656	0.2652	0.2653	0.2653	0.2653	0.2651
24	0.2639	0.2631	0.2630	0.2629	0.2628	0.2628	0.2628	0.2629	0.2630	0.2630	0.2631	0.2631	0.2632	0.2627	0.2628	0.2627	0.2627	0.2628
25	0.2619	0.2610	0.2610	0.2610	0.2609	0.2609	0.2608	0.2610	0.2609	0.2610	0.2612	0.2610	0.2612	0.2608	0.2609	0.2608	0.2608	0.2608
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2633	0.2625	0.2624	0.2624	0.2623	0.2623	0.2623	0.2624	0.2624	0.2624	0.2626	0.2625	0.2626	0.2622	0.2622	0.2622	0.2622	0.2622
Med.	0.2638	0.2630	0.2629	0.2629	0.2628	0.2628	0.2628	0.2629	0.2628	0.2630	0.2630	0.2630	0.2631	0.2626	0.2627	0.2627	0.2627	0.2628
σ	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
Min.	0.2578	0.2570	0.2568	0.2569	0.2567	0.2568	0.2568	0.2570	0.2569	0.2570	0.2571	0.2570	0.2571	0.2566	0.2567	0.2568	0.2567	0.2567
Max.	0.2671	0.2663	0.2662	0.2661	0.2661	0.2661	0.2661	0.2663	0.2662	0.2663	0.2664	0.2663	0.2664	0.2660	0.2661	0.2661	0.2660	0.2661

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Data Set 9 : 105 °C, 80 mA

Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 9-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2629	0.2629	0.2630															
2	0.2632	0.2632	0.2632															
3	0.2626	0.2627	0.2627															
4	0.2608	0.2608	0.2607															
5	0.2642	0.2643	0.2642															
6	0.2629	0.2629	0.2629															
7	0.2615	0.2615	0.2615															
8	0.2594	0.2594	0.2595															
9	0.2598	0.2600	0.2600															
10	0.2567	0.2569	0.2568															
11	0.2652	0.2653	0.2653															
12	0.2659	0.2660	0.2661															
13	0.2622	0.2623	0.2623															
14	0.2594	0.2594	0.2594															
15	0.2597	0.2596	0.2597															
16	0.2657	0.2657	0.2658															
17	0.2659	0.2660	0.2661															
18	0.2579	0.2579	0.2580															
19	0.2579	0.2579	0.2580															
20	0.2642	0.2642	0.2642															
21	0.2651	0.2652	0.2651															
22	0.2625	0.2626	0.2626															
23	0.2652	0.2652	0.2652															
24	0.2627	0.2627	0.2627															
25	0.2608	0.2609	0.2608															
n	25	25	25															
Avg.	0.2622	0.2622	0.2622															
Med.	0.2626	0.2627	0.2627															
σ	0.0027	0.0027	0.0027															
Min.	0.2567	0.2569	0.2568															
Max.	0.2659	0.2660	0.2661															

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Data Set 9 : 105 °C, 80 mA

Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 9-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5295	0.5294	0.5294	0.5294	0.5292	0.5292	0.5293	0.5293	0.5292	0.5293	0.5293	0.5294	0.5293	0.5292	0.5291	0.5291	0.5291	0.5291
2	0.5265	0.5263	0.5263	0.5262	0.5261	0.5261	0.5261	0.5260	0.5260	0.5260	0.5261	0.5261	0.5261	0.5259	0.5259	0.5259	0.5258	0.5258
3	0.5290	0.5290	0.5289	0.5289	0.5287	0.5288	0.5288	0.5288	0.5287	0.5287	0.5288	0.5288	0.5288	0.5286	0.5285	0.5286	0.5286	0.5285
4	0.5270	0.5269	0.5269	0.5269	0.5268	0.5268	0.5267	0.5268	0.5267	0.5267	0.5268	0.5268	0.5268	0.5265	0.5265	0.5265	0.5265	0.5265
5	0.5311	0.5310	0.5309	0.5310	0.5309	0.5308	0.5308	0.5309	0.5309	0.5309	0.5309	0.5309	0.5309	0.5307	0.5307	0.5307	0.5308	0.5307
6	0.5232	0.5230	0.5230	0.5229	0.5228	0.5228	0.5228	0.5229	0.5227	0.5228	0.5228	0.5228	0.5228	0.5225	0.5226	0.5226	0.5225	0.5225
7	0.5227	0.5227	0.5226	0.5226	0.5225	0.5224	0.5224	0.5225	0.5224	0.5224	0.5224	0.5225	0.5224	0.5222	0.5222	0.5221	0.5222	0.5220
8	0.5301	0.5301	0.5301	0.5300	0.5299	0.5299	0.5300	0.5299	0.5299	0.5300	0.5300	0.5300	0.5300	0.5298	0.5298	0.5298	0.5298	0.5297
9	0.5267	0.5266	0.5266	0.5265	0.5264	0.5264	0.5265	0.5264	0.5264	0.5264	0.5265	0.5265	0.5265	0.5262	0.5262	0.5262	0.5263	0.5262
10	0.5258	0.5257	0.5256	0.5256	0.5255	0.5254	0.5254	0.5254	0.5255	0.5254	0.5254	0.5254	0.5254	0.5252	0.5253	0.5251	0.5252	0.5251
11	0.5303	0.5303	0.5302	0.5303	0.5301	0.5302	0.5301	0.5302	0.5302	0.5301	0.5302	0.5302	0.5302	0.5300	0.5299	0.5299	0.5299	0.5300
12	0.5263	0.5262	0.5263	0.5262	0.5260	0.5261	0.5261	0.5261	0.5261	0.5260	0.5261	0.5262	0.5261	0.5259	0.5259	0.5259	0.5259	0.5257
13	0.5316	0.5315	0.5314	0.5315	0.5314	0.5314	0.5314	0.5314	0.5314	0.5314	0.5314	0.5315	0.5314	0.5313	0.5313	0.5313	0.5313	0.5312
14	0.5225	0.5224	0.5223	0.5223	0.5222	0.5221	0.5221	0.5222	0.5221	0.5222	0.5221	0.5221	0.5222	0.5219	0.5219	0.5219	0.5219	0.5219
15	0.5277	0.5275	0.5275	0.5276	0.5273	0.5274	0.5274	0.5274	0.5274	0.5274	0.5273	0.5274	0.5274	0.5271	0.5272	0.5272	0.5272	0.5271
16	0.5262	0.5261	0.5260	0.5260	0.5259	0.5259	0.5259	0.5260	0.5260	0.5260	0.5260	0.5260	0.5260	0.5258	0.5257	0.5258	0.5258	0.5258
17	0.5274	0.5273	0.5272	0.5272	0.5271	0.5272	0.5271	0.5272	0.5271	0.5271	0.5271	0.5271	0.5272	0.5269	0.5269	0.5269	0.5269	0.5268
18	0.5243	0.5242	0.5241	0.5242	0.5239	0.5239	0.5239	0.5240	0.5239	0.5240	0.5239	0.5240	0.5239	0.5237	0.5237	0.5237	0.5236	0.5236
19	0.5258	0.5257	0.5257	0.5256	0.5255	0.5255	0.5254	0.5255	0.5255	0.5255	0.5255	0.5256	0.5255	0.5253	0.5253	0.5252	0.5253	0.5253
20	0.5249	0.5249	0.5249	0.5249	0.5248	0.5247	0.5247	0.5247	0.5248	0.5247	0.5248	0.5248	0.5247	0.5245	0.5245	0.5245	0.5245	0.5244
21	0.5276	0.5276	0.5275	0.5275	0.5274	0.5273	0.5274	0.5274	0.5274	0.5274	0.5274	0.5275	0.5274	0.5273	0.5273	0.5272	0.5272	0.5271
22	0.5221	0.5220	0.5220	0.5220	0.5218	0.5218	0.5218	0.5219	0.5218	0.5218	0.5218	0.5218	0.5218	0.5215	0.5215	0.5215	0.5216	0.5215
23	0.5307	0.5306	0.5305	0.5306	0.5305	0.5304	0.5304	0.5304	0.5304	0.5305	0.5304	0.5305	0.5304	0.5302	0.5303	0.5303	0.5302	0.5302
24	0.5225	0.5224	0.5224	0.5223	0.5222	0.5221	0.5222	0.5223	0.5222	0.5222	0.5222	0.5222	0.5222	0.5219	0.5220	0.5219	0.5219	0.5219
25	0.5288	0.5287	0.5286	0.5286	0.5285	0.5285	0.5286	0.5286	0.5284	0.5285	0.5286	0.5286	0.5285	0.5284	0.5283	0.5283	0.5284	0.5283
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5268	0.5267	0.5267	0.5267	0.5265	0.5265	0.5265	0.5266	0.5265	0.5265	0.5266	0.5266	0.5266	0.5263	0.5263	0.5263	0.5263	0.5263
Med.	0.5267	0.5266	0.5266	0.5265	0.5264	0.5264	0.5265	0.5264	0.5264	0.5264	0.5265	0.5265	0.5265	0.5262	0.5262	0.5262	0.5263	0.5262
σ	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0030	0.0030	0.0030	0.0030	0.0030
Min.	0.5221	0.5220	0.5220	0.5220	0.5218	0.5218	0.5218	0.5219	0.5218	0.5218	0.5218	0.5218	0.5218	0.5215	0.5215	0.5215	0.5216	0.5215
Max.	0.5316	0.5315	0.5314	0.5315	0.5314	0.5314	0.5314	0.5314	0.5314	0.5314	0.5314	0.5315	0.5314	0.5313	0.5313	0.5313	0.5313	0.5312

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Data Set 9 : 105 °C, 80 mA

Actual Case Temperature [T_S]	105.7 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	80 mA
Measurement Current	80 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 9-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5291	0.5290	0.5290															
2	0.5258	0.5257	0.5257															
3	0.5285	0.5285	0.5285															
4	0.5265	0.5264	0.5264															
5	0.5307	0.5306	0.5307															
6	0.5225	0.5225	0.5224															
7	0.5221	0.5220	0.5220															
8	0.5297	0.5297	0.5297															
9	0.5261	0.5261	0.5261															
10	0.5251	0.5250	0.5251															
11	0.5299	0.5299	0.5299															
12	0.5258	0.5257	0.5257															
13	0.5312	0.5312	0.5312															
14	0.5217	0.5218	0.5218															
15	0.5271	0.5271	0.5271															
16	0.5257	0.5257	0.5257															
17	0.5269	0.5268	0.5268															
18	0.5236	0.5235	0.5235															
19	0.5252	0.5252	0.5252															
20	0.5244	0.5244	0.5244															
21	0.5271	0.5271	0.5271															
22	0.5214	0.5214	0.5213															
23	0.5302	0.5302	0.5302															
24	0.5218	0.5218	0.5218															
25	0.5283	0.5282	0.5283															
n	25	25	25															
Avg.	0.5262	0.5262	0.5262															
Med.	0.5261	0.5261	0.5261															
σ	0.0030	0.0030	0.0030															
Min.	0.5214	0.5214	0.5213															
Max.	0.5312	0.5312	0.5312															

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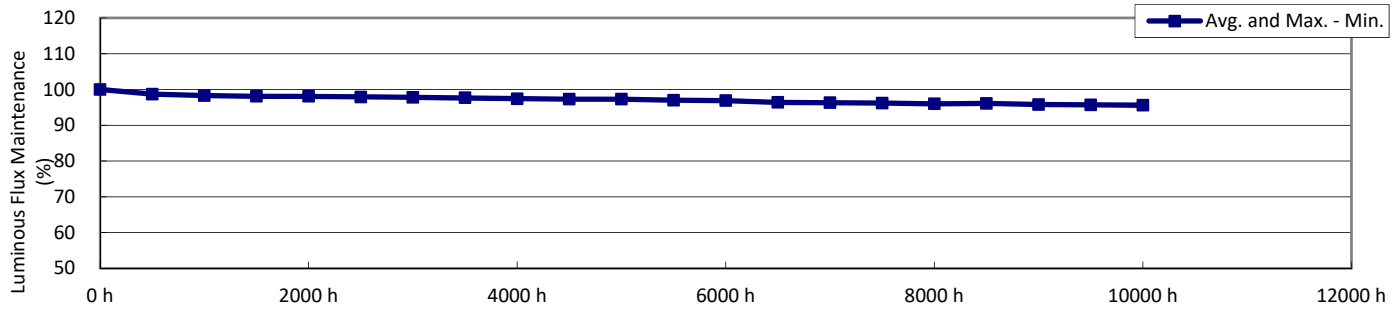
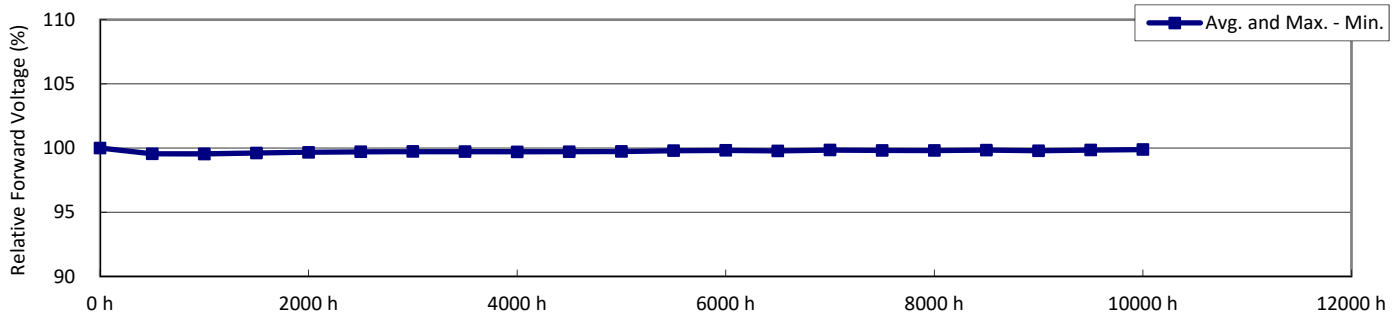
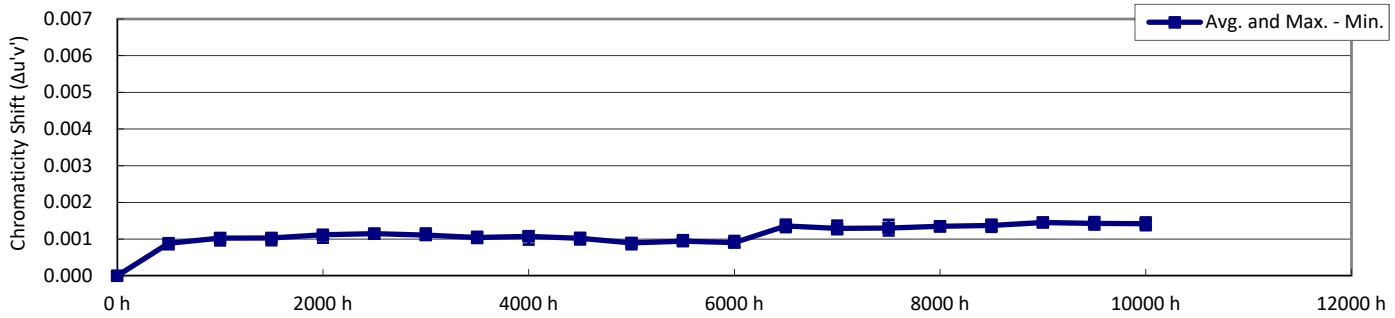
Data Set 10 : 105 °C, 125 mA

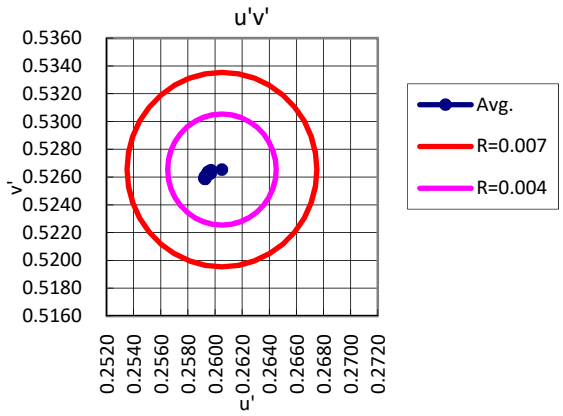
Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 10 : 105 °C, 125 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 10-1
Initial Characteristics

LED No.	Luminous flux Φ_V [lm]	Forward voltage V_F [V]	CCT T_{CP} [K]	Input Power P [W]	CIE1931 x	CIE1931 y	CIE1976 u'	CIE1976 v'						
1	61.4	3.07	2837	0.38	0.450	0.409	0.257	0.525						
2	60.4	3.05	2693	0.38	0.461	0.413	0.263	0.528						
3	60.8	3.07	2785	0.38	0.452	0.408	0.259	0.525						
4	60.4	3.08	2764	0.38	0.453	0.406	0.260	0.525						
5	60.7	3.06	2784	0.38	0.452	0.407	0.259	0.525						
6	61.1	3.06	2701	0.38	0.465	0.419	0.262	0.531						
7	60.8	3.05	2736	0.38	0.456	0.408	0.261	0.526						
8	61.5	3.05	2793	0.38	0.455	0.414	0.258	0.528						
9	61.8	3.07	2781	0.38	0.457	0.416	0.258	0.529						
10	61.0	3.05	2806	0.38	0.450	0.406	0.258	0.524						
11	59.7	3.08	2646	0.38	0.464	0.411	0.265	0.528						
12	60.9	3.05	2762	0.38	0.455	0.410	0.260	0.526						
13	61.0	3.08	2762	0.38	0.458	0.415	0.259	0.529						
14	60.5	3.05	2790	0.38	0.448	0.401	0.259	0.522						
15	60.8	3.06	2776	0.38	0.452	0.405	0.260	0.524						
16	60.6	3.05	2764	0.38	0.453	0.406	0.260	0.524						
17	60.7	3.05	2684	0.38	0.464	0.415	0.263	0.530						
18	60.8	3.07	2670	0.38	0.467	0.419	0.263	0.531						
19	61.1	3.07	2829	0.38	0.449	0.407	0.257	0.524						
20	60.3	3.07	2713	0.38	0.459	0.410	0.262	0.527						
21	60.3	3.07	2696	0.38	0.461	0.412	0.263	0.528						
22	61.1	3.07	2775	0.38	0.454	0.410	0.259	0.526						
23	60.9	3.05	2676	0.38	0.466	0.418	0.263	0.531						
24	60.0	3.05	2728	0.38	0.453	0.401	0.262	0.523						
25	60.6	3.07	2673	0.38	0.464	0.415	0.263	0.530						
n	25	25	25	25	25	25	25	25						
Avg.	60.8	3.06	2745	0.38	0.457	0.410	0.261	0.527						
Med.	60.8	3.06	2762	0.38	0.455	0.410	0.260	0.526						
σ	0.45	0.011	53.5	0.001	0.0057	0.0050	0.0022	0.0027						
Min.	59.7	3.05	2646	0.38	0.448	0.401	0.257	0.522						
Max.	61.8	3.08	2837	0.38	0.467	0.419	0.265	0.531						

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Data Set 10 : 105 °C, 125 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 10-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	98.9	98.7	98.3	98.4	98.1	98.0	98.0	97.6	97.6	97.8	97.4	97.2	96.8	96.7	96.7	96.6	96.6
2	100.0	98.5	98.3	98.0	98.1	97.7	97.7	97.7	97.4	97.2	97.3	96.9	96.7	96.2	96.2	96.2	95.9	96.0
3	100.0	98.9	98.6	98.3	98.1	98.1	97.9	97.9	97.6	97.4	97.5	97.2	97.0	96.5	96.5	96.5	96.3	96.3
4	100.0	98.7	98.4	98.2	98.2	97.9	97.8	97.8	97.3	97.1	97.3	97.0	96.8	96.3	96.3	96.3	96.1	96.3
5	100.0	98.3	98.2	97.9	98.0	97.5	97.5	97.4	96.9	97.1	97.1	96.6	96.5	96.0	95.9	95.8	95.7	95.7
6	100.0	98.5	98.3	97.8	97.9	97.8	97.6	97.6	97.3	97.3	97.4	97.0	96.8	96.4	96.3	96.3	96.1	96.1
7	100.0	98.4	98.0	98.0	98.0	97.8	97.8	97.6	97.4	97.3	97.3	97.1	97.1	96.4	96.4	96.3	96.2	96.3
8	100.0	98.6	98.2	98.0	98.0	97.7	97.7	97.5	97.3	97.1	97.1	96.9	96.8	96.1	96.1	96.0	95.8	95.9
9	100.0	98.9	98.6	98.5	98.4	98.2	98.1	98.0	97.8	97.6	97.6	97.4	97.3	96.7	96.7	96.5	96.3	96.5
10	100.0	98.5	98.0	97.8	97.8	97.5	97.4	97.3	97.0	96.9	96.9	96.6	96.6	95.9	96.0	95.9	95.8	96.0
11	100.0	98.4	97.9	97.8	97.8	97.7	97.8	97.5	97.2	97.1	97.3	97.0	96.9	96.3	96.3	95.9	95.9	95.9
12	100.0	98.5	98.3	98.1	98.1	97.8	97.8	97.6	97.4	97.2	97.2	97.0	96.9	96.3	96.2	96.1	95.9	96.1
13	100.0	98.9	98.5	98.4	98.5	98.1	98.0	97.9	97.6	97.5	97.4	97.2	97.0	96.4	96.4	96.4	96.1	96.2
14	100.0	98.5	98.2	98.1	97.9	97.8	97.6	97.6	97.3	97.3	97.2	97.0	96.8	96.3	96.2	96.2	95.9	96.1
15	100.0	98.5	98.1	98.0	98.1	97.7	97.6	97.5	97.3	97.1	97.1	96.8	96.6	96.1	96.1	96.0	95.7	95.8
16	100.0	98.5	98.2	98.0	98.0	97.7	97.6	97.5	97.3	97.1	97.1	96.8	96.7	96.1	96.1	96.1	95.8	96.0
17	100.0	98.5	98.1	97.8	97.8	97.7	97.6	97.6	97.3	97.2	97.2	96.9	96.9	96.5	96.4	96.1	95.9	95.9
18	100.0	98.7	98.5	98.3	98.4	98.3	98.2	98.1	97.9	97.8	97.8	97.5	97.4	96.9	96.7	96.7	96.4	96.5
19	100.0	98.9	98.5	98.3	98.3	97.9	97.9	97.6	97.4	97.3	97.3	97.1	96.9	96.4	96.3	96.4	96.1	96.3
20	100.0	98.9	98.4	98.2	98.3	98.0	98.0	97.8	97.7	97.4	97.5	97.3	97.1	96.6	96.5	96.4	96.1	96.4
21	100.0	99.0	98.6	98.5	98.5	98.1	98.2	98.1	97.9	97.7	97.7	97.5	97.3	96.7	96.6	96.6	96.4	96.5
22	100.0	98.8	98.4	98.2	98.1	97.8	97.8	97.6	97.3	97.2	97.3	97.1	97.0	96.4	96.2	96.1	95.8	96.1
23	100.0	98.6	98.3	98.1	97.9	97.7	97.6	97.5	97.2	97.1	97.2	97.0	96.6	96.2	96.0	96.0	95.7	95.7
24	100.0	98.8	98.3	98.0	98.0	97.7	97.6	97.4	97.2	96.9	97.0	96.8	96.7	96.1	96.0	96.1	95.8	96.0
25	100.0	98.8	98.3	98.2	98.3	98.0	98.0	97.9	97.6	97.5	97.3	97.1	97.0	96.5	96.3	96.4	96.1	96.2
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	98.7	98.3	98.1	98.1	97.9	97.8	97.7	97.4	97.3	97.3	97.0	96.9	96.4	96.3	96.2	96.0	96.1
Med.	100.0	98.6	98.3	98.1	98.1	97.8	97.8	97.6	97.3	97.2	97.3	97.0	96.9	96.4	96.3	96.2	95.9	96.1
σ	0.00	0.20	0.21	0.21	0.22	0.21	0.22	0.23	0.25	0.23	0.23	0.25	0.24	0.25	0.23	0.25	0.25	0.25
Min.	100.0	98.3	97.9	97.8	97.8	97.5	97.4	97.3	96.9	96.9	96.9	96.6	96.5	95.9	95.9	95.8	95.7	95.7
Max.	100.0	99.0	98.7	98.5	98.5	98.3	98.2	98.1	97.9	97.8	97.8	97.5	97.4	96.9	96.7	96.7	96.6	96.6

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0274	-0.0305	-0.0315	-0.0367	-0.0377	-0.0387	-0.0408	-0.0398	-0.0429	-0.0440	-0.0450							

Test duration used	5000 h to 10000 h	
B	0.988	
α	3.37E-06	
R^2	0.941	
Calculated L_{70} (10K)	102000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	62600	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	27700	hours
Reported L_{90} (10K)	27700	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 10 : 105 °C, 125 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 10-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	96.4	96.2	96.1															
2	95.7	95.6	95.5															
3	96.1	96.0	95.8															
4	96.0	95.9	95.9															
5	95.3	95.4	95.3															
6	95.9	95.8	95.6															
7	96.0	95.8	95.8															
8	95.5	95.4	95.3															
9	96.1	95.9	95.8															
10	95.6	95.5	95.5															
11	95.7	95.5	95.6															
12	95.8	95.6	95.5															
13	96.0	95.8	95.8															
14	95.8	95.7	95.6															
15	95.5	95.4	95.4															
16	95.7	95.6	95.5															
17	95.8	95.5	95.5															
18	96.2	96.1	96.0															
19	95.9	95.8	95.8															
20	95.9	95.9	95.8															
21	96.2	96.1	95.9															
22	95.6	95.6	95.5															
23	95.6	95.2	95.1															
24	95.7	95.6	95.5															
25	95.9	95.7	95.7															
n	25	25	25															
Avg.	95.8	95.7	95.6															
Med.	95.8	95.7	95.6															
σ	0.26	0.25	0.24															
Min.	95.3	95.2	95.1															
Max.	96.4	96.2	96.1															

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Data Set 10 : 105 °C, 125 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 10-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.3	99.5	99.4	99.5	99.5	99.5	99.5	99.5	99.5	99.7	99.6	99.6	99.6	99.6	99.6	99.6	99.7
2	100.0	99.5	99.5	99.6	99.7	99.8	99.7	99.7	99.6	99.6	99.7	99.8	99.8	99.7	99.8	99.8	99.7	99.8
3	100.0	99.4	99.5	99.5	99.6	99.5	99.6	99.6	99.5	99.6	99.7	99.7	99.7	99.7	99.8	99.8	99.7	99.8
4	100.0	99.3	99.3	99.4	99.4	99.5	99.4	99.5	99.4	99.5	99.6	99.5	99.6	99.6	99.6	99.6	99.6	99.5
5	100.0	99.6	99.6	99.6	99.6	99.7	99.8	99.8	99.7	99.7	99.8	99.9	99.8	99.8	99.9	99.8	99.8	99.8
6	100.0	99.6	99.6	99.6	99.6	99.6	99.7	99.7	99.6	99.6	99.8	99.7	99.7	99.8	99.8	99.9	99.8	99.8
7	100.0	99.7	99.6	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.8	99.9	100.0	99.9	100.0	99.9	100.0	100.0
8	100.0	99.7	99.7	99.6	99.7	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.8	99.9	99.9	99.9	99.9
9	100.0	99.5	99.5	99.6	99.6	99.7	99.7	99.8	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8
10	100.0	99.8	99.8	99.8	99.9	99.9	100.0	100.0	99.9	99.9	99.9	100.0	100.0	100.0	100.1	100.0	100.0	100.1
11	100.0	99.5	99.5	99.7	99.6	99.7	99.7	99.7	99.8	99.7	99.7	99.8	99.8	99.8	99.9	99.8	99.8	99.8
12	100.0	99.5	99.5	99.5	99.6	99.6	99.6	99.6	99.7	99.6	99.7	99.7	99.7	99.7	99.8	99.8	99.8	99.9
13	100.0	99.3	99.1	99.4	99.4	99.5	99.4	99.5	99.4	99.5	99.4	99.5	99.6	99.5	99.6	99.5	99.5	99.6
14	100.0	99.8	99.8	99.8	99.9	100.0	100.0	100.0	99.9	99.9	99.9	100.0	100.0	100.0	100.1	100.0	100.0	100.0
15	100.0	99.4	99.4	99.5	99.7	99.6	99.6	99.6	99.6	99.7	99.6	99.6	99.8	99.7	99.8	99.8	99.7	99.7
16	100.0	99.8	99.6	99.9	99.9	99.9	99.9	99.9	99.8	99.9	99.9	100.0	100.0	99.9	100.0	100.0	100.0	100.0
17	100.0	99.4	99.6	99.6	99.5	99.7	99.6	99.6	99.6	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.8	99.8
18	100.0	99.6	99.7	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	99.9	100.0
19	100.0	99.6	99.6	99.6	99.7	99.7	99.7	99.8	99.7	99.8	99.8	99.8	99.9	99.8	99.9	99.9	99.8	99.8
20	100.0	99.5	99.5	99.6	99.6	99.7	99.7	99.8	99.7	99.7	99.7	99.8	99.8	99.7	99.7	99.8	99.7	99.8
21	100.0	99.3	99.2	99.4	99.4	99.6	99.6	99.5	99.5	99.5	99.6	99.6	99.7	99.6	99.6	99.6	99.6	99.6
22	100.0	99.6	99.7	99.6	99.7	99.9	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.9	99.8	99.9	99.9
23	100.0	99.7	99.6	99.7	99.8	99.8	99.9	99.8	99.9	99.8	99.8	99.9	99.9	99.9	100.0	99.9	99.9	100.0
24	100.0	99.6	99.6	99.5	99.7	99.7	99.6	99.6	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8
25	100.0	99.6	99.5	99.7	99.7	99.7	99.9	99.8	99.9	99.8	99.8	99.9	99.9	99.8	99.9	99.9	99.9	99.9
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.5	99.5	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8
Med.	100.0	99.6	99.6	99.6	99.7	99.7	99.7	99.8	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8
σ	0.00	0.15	0.16	0.14	0.15	0.14	0.17	0.15	0.16	0.13	0.13	0.14	0.14	0.13	0.14	0.14	0.14	0.15
Min.	100.0	99.3	99.1	99.4	99.4	99.5	99.4	99.5	99.4	99.5	99.4	99.5	99.6	99.5	99.6	99.5	99.5	99.5
Max.	100.0	99.8	99.8	99.9	99.9	100.0	100.0	100.0	99.9	99.9	99.9	100.0	100.0	100.0	100.1	100.0	100.0	100.1

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Data Set 10 : 105 °C, 125 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 10-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	99.6	99.7	99.7															
2	99.8	99.8	99.9															
3	99.8	99.8	99.8															
4	99.5	99.6	99.7															
5	99.8	99.8	99.9															
6	99.8	99.7	99.8															
7	99.9	100.0	100.0															
8	99.9	99.9	100.0															
9	99.8	99.8	99.8															
10	100.0	100.1	100.0															
11	99.8	99.9	99.9															
12	99.7	99.8	99.8															
13	99.5	99.6	99.6															
14	100.0	100.0	100.1															
15	99.7	99.8	99.8															
16	100.0	100.0	100.1															
17	99.7	99.7	99.8															
18	99.9	100.0	100.0															
19	99.7	99.9	99.9															
20	99.8	99.8	99.8															
21	99.6	99.7	99.6															
22	99.8	99.9	99.9															
23	99.9	100.0	100.0															
24	99.8	99.8	99.9															
25	99.9	99.9	100.0															
n	25	25	25															
Avg.	99.8	99.8	99.9															
Med.	99.8	99.8	99.9															
σ	0.14	0.13	0.14															
Min.	99.5	99.6	99.6															
Max.	100.0	100.1	100.1															

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Data Set 10 : 105 °C, 125 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 10-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0008	0.0010	0.0010	0.0012	0.0011	0.0011	0.0011	0.0011	0.0010	0.0008	0.0009	0.0009	0.0013	0.0012	0.0013	0.0013	0.0013
2	0.0000	0.0009	0.0010	0.0010	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010	0.0011	0.0010	0.0014	0.0013	0.0014	0.0014	0.0014
3	0.0000	0.0007	0.0008	0.0008	0.0009	0.0010	0.0010	0.0009	0.0010	0.0009	0.0008	0.0008	0.0009	0.0012	0.0012	0.0012	0.0012	0.0012
4	0.0000	0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012	0.0011	0.0012	0.0009	0.0010	0.0010	0.0015	0.0014	0.0015	0.0015	0.0015
5	0.0000	0.0008	0.0009	0.0010	0.0011	0.0011	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0012	0.0011	0.0011	0.0012	0.0012
6	0.0000	0.0009	0.0011	0.0011	0.0011	0.0012	0.0011	0.0011	0.0011	0.0010	0.0008	0.0009	0.0008	0.0013	0.0013	0.0013	0.0013	0.0013
7	0.0000	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0009	0.0009	0.0009	0.0013	0.0012	0.0013	0.0013	0.0014
8	0.0000	0.0009	0.0010	0.0009	0.0011	0.0013	0.0010	0.0011	0.0012	0.0011	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0015
9	0.0000	0.0009	0.0010	0.0011	0.0011	0.0012	0.0011	0.0010	0.0011	0.0011	0.0009	0.0008	0.0009	0.0013	0.0013	0.0013	0.0013	0.0014
10	0.0000	0.0009	0.0010	0.0010	0.0012	0.0012	0.0012	0.0011	0.0012	0.0011	0.0009	0.0011	0.0011	0.0015	0.0014	0.0014	0.0014	0.0015
11	0.0000	0.0009	0.0011	0.0011	0.0012	0.0012	0.0011	0.0010	0.0010	0.0011	0.0009	0.0010	0.0009	0.0014	0.0013	0.0012	0.0014	0.0014
12	0.0000	0.0009	0.0009	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010	0.0009	0.0007	0.0009	0.0009	0.0013	0.0012	0.0012	0.0013	0.0014
13	0.0000	0.0008	0.0009	0.0010	0.0011	0.0010	0.0010	0.0009	0.0010	0.0010	0.0009	0.0010	0.0008	0.0013	0.0012	0.0013	0.0013	0.0013
14	0.0000	0.0009	0.0011	0.0011	0.0012	0.0013	0.0012	0.0011	0.0010	0.0011	0.0010	0.0010	0.0010	0.0015	0.0013	0.0014	0.0015	0.0015
15	0.0000	0.0009	0.0010	0.0010	0.0012	0.0012	0.0011	0.0011	0.0012	0.0011	0.0009	0.0010	0.0010	0.0015	0.0015	0.0015	0.0014	0.0015
16	0.0000	0.0009	0.0011	0.0010	0.0012	0.0012	0.0011	0.0010	0.0011	0.0011	0.0009	0.0010	0.0009	0.0015	0.0014	0.0014	0.0014	0.0014
17	0.0000	0.0010	0.0011	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0009	0.0009	0.0008	0.0014	0.0013	0.0012	0.0014	0.0013
18	0.0000	0.0010	0.0011	0.0010	0.0011	0.0010	0.0011	0.0010	0.0010	0.0009	0.0008	0.0009	0.0009	0.0012	0.0013	0.0011	0.0012	0.0014
19	0.0000	0.0009	0.0011	0.0010	0.0011	0.0012	0.0011	0.0010	0.0010	0.0010	0.0009	0.0010	0.0008	0.0012	0.0013	0.0012	0.0013	0.0013
20	0.0000	0.0010	0.0011	0.0011	0.0012	0.0011	0.0011	0.0011	0.0011	0.0010	0.0010	0.0009	0.0009	0.0013	0.0013	0.0013	0.0014	0.0013
21	0.0000	0.0009	0.0011	0.0011	0.0012	0.0012	0.0011	0.0011	0.0010	0.0011	0.0009	0.0010	0.0009	0.0013	0.0014	0.0013	0.0014	0.0014
22	0.0000	0.0009	0.0010	0.0011	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.0009	0.0009	0.0009	0.0013	0.0013	0.0013	0.0014	0.0013
23	0.0000	0.0008	0.0009	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0013	0.0012	0.0012	0.0013	0.0014
24	0.0000	0.0009	0.0011	0.0011	0.0012	0.0012	0.0013	0.0012	0.0012	0.0011	0.0010	0.0011	0.0009	0.0015	0.0013	0.0014	0.0015	0.0015
25	0.0000	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0011	0.0010	0.0009	0.0009	0.0008	0.0013	0.0012	0.0012	0.0012	0.0013
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0009	0.0009	0.0009	0.0014	0.0013	0.0013	0.0013	0.0014
Med.	0.0000	0.0009	0.0010	0.0010	0.0011	0.0012	0.0011	0.0011	0.0011	0.0010	0.0009	0.0009	0.0009	0.0013	0.0013	0.0013	0.0014	0.0014
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0007	0.0008	0.0008	0.0009	0.0010	0.0010	0.0009	0.0009	0.0009	0.0007	0.0008	0.0008	0.0012	0.0011	0.0011	0.0012	0.0012
Max.	0.0000	0.0010	0.0011	0.0011	0.0012	0.0013	0.0013	0.0012	0.0012	0.0012	0.0010	0.0011	0.0011	0.0015	0.0015	0.0015	0.0015	0.0015

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Data Set 10 : 105 °C, 125 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 10-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0014	0.0014	0.0014															
2	0.0015	0.0015	0.0016															
3	0.0013	0.0013	0.0012															
4	0.0015	0.0016	0.0016															
5	0.0013	0.0013	0.0013															
6	0.0014	0.0015	0.0014															
7	0.0013	0.0013	0.0015															
8	0.0015	0.0016	0.0015															
9	0.0015	0.0014	0.0014															
10	0.0014	0.0015	0.0015															
11	0.0014	0.0013	0.0013															
12	0.0015	0.0014	0.0014															
13	0.0015	0.0014	0.0013															
14	0.0015	0.0015	0.0015															
15	0.0016	0.0016	0.0016															
16	0.0016	0.0015	0.0016															
17	0.0014	0.0014	0.0013															
18	0.0014	0.0013	0.0014															
19	0.0014	0.0013	0.0013															
20	0.0014	0.0014	0.0014															
21	0.0015	0.0015	0.0014															
22	0.0014	0.0014	0.0014															
23	0.0015	0.0014	0.0014															
24	0.0016	0.0015	0.0015															
25	0.0014	0.0014	0.0013															
n	25	25	25															
Avg.	0.0015	0.0014	0.0014															
Med.	0.0014	0.0014	0.0014															
σ	0.0001	0.0001	0.0001															
Min.	0.0013	0.0013	0.0012															
Max.	0.0016	0.0016	0.0016															

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Data Set 10 : 105 °C, 125 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 10-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2571	0.2563	0.2561	0.2561	0.2560	0.2560	0.2561	0.2561	0.2561	0.2562	0.2563	0.2562	0.2563	0.2559	0.2560	0.2559	0.2559	0.2560
2	0.2630	0.2621	0.2620	0.2620	0.2619	0.2619	0.2619	0.2619	0.2619	0.2621	0.2621	0.2620	0.2621	0.2617	0.2618	0.2617	0.2618	0.2618
3	0.2594	0.2586	0.2585	0.2585	0.2585	0.2584	0.2584	0.2585	0.2584	0.2586	0.2586	0.2586	0.2585	0.2583	0.2583	0.2583	0.2583	0.2583
4	0.2609	0.2600	0.2599	0.2599	0.2598	0.2598	0.2598	0.2597	0.2598	0.2598	0.2600	0.2599	0.2599	0.2595	0.2596	0.2595	0.2596	0.2595
5	0.2619	0.2612	0.2610	0.2609	0.2609	0.2609	0.2609	0.2611	0.2611	0.2611	0.2612	0.2611	0.2612	0.2608	0.2609	0.2609	0.2609	0.2609
6	0.2626	0.2617	0.2615	0.2615	0.2615	0.2615	0.2615	0.2615	0.2615	0.2616	0.2618	0.2617	0.2618	0.2613	0.2613	0.2613	0.2613	0.2613
7	0.2615	0.2605	0.2604	0.2604	0.2604	0.2604	0.2604	0.2605	0.2604	0.2605	0.2606	0.2606	0.2606	0.2602	0.2604	0.2603	0.2602	0.2602
8	0.2583	0.2573	0.2573	0.2574	0.2572	0.2570	0.2573	0.2572	0.2571	0.2572	0.2574	0.2573	0.2573	0.2569	0.2570	0.2570	0.2570	0.2570
9	0.2586	0.2577	0.2576	0.2575	0.2576	0.2575	0.2575	0.2576	0.2576	0.2576	0.2577	0.2578	0.2578	0.2574	0.2574	0.2574	0.2574	0.2573
10	0.2590	0.2581	0.2580	0.2580	0.2579	0.2578	0.2578	0.2580	0.2578	0.2580	0.2581	0.2580	0.2580	0.2577	0.2577	0.2578	0.2577	0.2577
11	0.2679	0.2671	0.2668	0.2668	0.2668	0.2668	0.2668	0.2669	0.2669	0.2669	0.2670	0.2669	0.2670	0.2666	0.2667	0.2668	0.2665	0.2666
12	0.2605	0.2596	0.2595	0.2595	0.2595	0.2594	0.2594	0.2595	0.2595	0.2596	0.2598	0.2597	0.2597	0.2593	0.2593	0.2594	0.2593	0.2593
13	0.2595	0.2587	0.2586	0.2586	0.2585	0.2586	0.2585	0.2587	0.2586	0.2586	0.2587	0.2586	0.2587	0.2584	0.2584	0.2583	0.2584	0.2583
14	0.2599	0.2590	0.2588	0.2588	0.2588	0.2587	0.2587	0.2589	0.2589	0.2589	0.2589	0.2590	0.2590	0.2585	0.2587	0.2586	0.2586	0.2586
15	0.2601	0.2592	0.2591	0.2590	0.2590	0.2589	0.2590	0.2590	0.2590	0.2590	0.2592	0.2591	0.2591	0.2587	0.2587	0.2587	0.2587	0.2587
16	0.2608	0.2600	0.2598	0.2599	0.2597	0.2597	0.2598	0.2599	0.2598	0.2598	0.2600	0.2599	0.2600	0.2595	0.2596	0.2596	0.2596	0.2596
17	0.2655	0.2645	0.2644	0.2645	0.2645	0.2644	0.2645	0.2644	0.2644	0.2646	0.2646	0.2646	0.2647	0.2642	0.2643	0.2644	0.2642	0.2642
18	0.2640	0.2631	0.2629	0.2630	0.2629	0.2630	0.2630	0.2630	0.2630	0.2631	0.2633	0.2632	0.2632	0.2629	0.2628	0.2630	0.2629	0.2627
19	0.2576	0.2567	0.2565	0.2566	0.2565	0.2565	0.2565	0.2567	0.2566	0.2566	0.2567	0.2567	0.2568	0.2564	0.2564	0.2565	0.2564	0.2564
20	0.2623	0.2614	0.2612	0.2613	0.2611	0.2612	0.2613	0.2613	0.2613	0.2613	0.2613	0.2614	0.2614	0.2611	0.2611	0.2611	0.2610	0.2611
21	0.2629	0.2620	0.2618	0.2618	0.2618	0.2617	0.2618	0.2618	0.2619	0.2618	0.2620	0.2619	0.2620	0.2616	0.2616	0.2617	0.2616	0.2616
22	0.2599	0.2590	0.2589	0.2588	0.2588	0.2588	0.2588	0.2588	0.2589	0.2589	0.2591	0.2590	0.2590	0.2587	0.2587	0.2586	0.2587	0.2587
23	0.2657	0.2649	0.2648	0.2647	0.2647	0.2647	0.2648	0.2647	0.2647	0.2647	0.2649	0.2649	0.2649	0.2645	0.2646	0.2646	0.2644	0.2644
24	0.2629	0.2620	0.2618	0.2618	0.2617	0.2617	0.2616	0.2617	0.2618	0.2619	0.2620	0.2618	0.2620	0.2615	0.2617	0.2616	0.2615	0.2615
25	0.2637	0.2628	0.2627	0.2627	0.2627	0.2626	0.2626	0.2627	0.2626	0.2627	0.2628	0.2628	0.2629	0.2624	0.2626	0.2625	0.2625	0.2625
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2614	0.2605	0.2604	0.2604	0.2603	0.2603	0.2603	0.2604	0.2604	0.2604	0.2606	0.2605	0.2606	0.2602	0.2602	0.2602	0.2602	0.2602
Med.	0.2609	0.2600	0.2599	0.2599	0.2598	0.2598	0.2598	0.2599	0.2598	0.2598	0.2600	0.2599	0.2600	0.2595	0.2596	0.2596	0.2596	0.2596
σ	0.0027	0.0027	0.0026	0.0026	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0026	0.0027
Min.	0.2571	0.2563	0.2561	0.2561	0.2560	0.2560	0.2561	0.2561	0.2561	0.2562	0.2563	0.2562	0.2563	0.2559	0.2560	0.2559	0.2559	0.2560
Max.	0.2679	0.2671	0.2668	0.2668	0.2668	0.2668	0.2668	0.2669	0.2669	0.2669	0.2670	0.2669	0.2670	0.2666	0.2667	0.2668	0.2665	0.2666

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Data Set 10 : 105 °C, 125 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 10-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2559	0.2559	0.2559															
2	0.2616	0.2617	0.2616															
3	0.2582	0.2583	0.2583															
4	0.2595	0.2595	0.2595															
5	0.2608	0.2608	0.2609															
6	0.2613	0.2612	0.2613															
7	0.2603	0.2603	0.2602															
8	0.2569	0.2569	0.2570															
9	0.2573	0.2574	0.2573															
10	0.2578	0.2577	0.2577															
11	0.2666	0.2667	0.2667															
12	0.2591	0.2593	0.2592															
13	0.2581	0.2583	0.2584															
14	0.2586	0.2586	0.2586															
15	0.2587	0.2587	0.2587															
16	0.2595	0.2595	0.2595															
17	0.2642	0.2642	0.2643															
18	0.2627	0.2628	0.2628															
19	0.2564	0.2564	0.2564															
20	0.2610	0.2610	0.2611															
21	0.2616	0.2616	0.2616															
22	0.2586	0.2587	0.2587															
23	0.2643	0.2644	0.2644															
24	0.2615	0.2615	0.2615															
25	0.2624	0.2624	0.2625															
n	25	25	25															
Avg.	0.2601	0.2602	0.2602															
Med.	0.2595	0.2595	0.2595															
σ	0.0027	0.0027	0.0027															
Min.	0.2559	0.2559	0.2559															
Max.	0.2666	0.2667	0.2667															

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Data Set 10 : 105 °C, 125 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 10-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5250	0.5248	0.5247	0.5247	0.5246	0.5245	0.5246	0.5246	0.5245	0.5246	0.5247	0.5246	0.5246	0.5244	0.5244	0.5243	0.5244	0.5243
2	0.5281	0.5280	0.5280	0.5280	0.5279	0.5278	0.5279	0.5279	0.5279	0.5278	0.5279	0.5279	0.5278	0.5276	0.5276	0.5276	0.5276	0.5276
3	0.5250	0.5249	0.5248	0.5248	0.5248	0.5247	0.5247	0.5247	0.5247	0.5247	0.5247	0.5247	0.5247	0.5244	0.5245	0.5244	0.5244	0.5243
4	0.5247	0.5246	0.5245	0.5245	0.5244	0.5243	0.5244	0.5244	0.5243	0.5243	0.5244	0.5244	0.5244	0.5241	0.5241	0.5241	0.5241	0.5240
5	0.5262	0.5260	0.5259	0.5260	0.5258	0.5258	0.5259	0.5259	0.5259	0.5259	0.5259	0.5259	0.5258	0.5257	0.5256	0.5257	0.5255	0.5256
6	0.5312	0.5311	0.5311	0.5311	0.5310	0.5310	0.5310	0.5310	0.5309	0.5310	0.5310	0.5310	0.5310	0.5309	0.5309	0.5308	0.5308	0.5307
7	0.5254	0.5253	0.5253	0.5253	0.5252	0.5252	0.5253	0.5253	0.5253	0.5252	0.5253	0.5253	0.5253	0.5250	0.5250	0.5250	0.5250	0.5249
8	0.5277	0.5275	0.5275	0.5275	0.5274	0.5274	0.5274	0.5274	0.5274	0.5274	0.5274	0.5275	0.5274	0.5272	0.5271	0.5272	0.5271	0.5270
9	0.5289	0.5287	0.5287	0.5287	0.5286	0.5286	0.5286	0.5286	0.5286	0.5287	0.5286	0.5287	0.5286	0.5284	0.5285	0.5284	0.5284	0.5284
10	0.5243	0.5241	0.5241	0.5241	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5240	0.5239	0.5237	0.5237	0.5237	0.5237	0.5237
11	0.5291	0.5290	0.5289	0.5290	0.5289	0.5288	0.5289	0.5289	0.5288	0.5289	0.5289	0.5290	0.5289	0.5287	0.5287	0.5288	0.5287	0.5287
12	0.5265	0.5264	0.5264	0.5263	0.5262	0.5262	0.5262	0.5262	0.5262	0.5262	0.5262	0.5262	0.5262	0.5259	0.5260	0.5259	0.5259	0.5258
13	0.5283	0.5283	0.5282	0.5282	0.5280	0.5280	0.5281	0.5281	0.5281	0.5281	0.5281	0.5281	0.5281	0.5278	0.5279	0.5279	0.5278	0.5278
14	0.5216	0.5214	0.5214	0.5214	0.5212	0.5213	0.5212	0.5213	0.5213	0.5213	0.5213	0.5212	0.5212	0.5210	0.5210	0.5210	0.5210	0.5209
15	0.5238	0.5236	0.5235	0.5235	0.5234	0.5234	0.5234	0.5235	0.5234	0.5234	0.5234	0.5234	0.5234	0.5232	0.5232	0.5232	0.5232	0.5231
16	0.5243	0.5241	0.5241	0.5241	0.5240	0.5239	0.5240	0.5240	0.5240	0.5239	0.5240	0.5240	0.5240	0.5237	0.5237	0.5237	0.5236	0.5237
17	0.5306	0.5305	0.5305	0.5305	0.5304	0.5304	0.5304	0.5304	0.5304	0.5304	0.5304	0.5304	0.5304	0.5302	0.5302	0.5302	0.5301	0.5302
18	0.5314	0.5313	0.5312	0.5312	0.5312	0.5311	0.5312	0.5312	0.5312	0.5312	0.5312	0.5312	0.5312	0.5310	0.5310	0.5310	0.5309	0.5309
19	0.5240	0.5239	0.5238	0.5238	0.5237	0.5237	0.5237	0.5237	0.5237	0.5237	0.5237	0.5237	0.5237	0.5235	0.5235	0.5235	0.5235	0.5234
20	0.5269	0.5268	0.5268	0.5268	0.5267	0.5266	0.5267	0.5266	0.5266	0.5267	0.5267	0.5267	0.5267	0.5265	0.5265	0.5264	0.5264	0.5264
21	0.5278	0.5278	0.5277	0.5277	0.5275	0.5275	0.5276	0.5276	0.5276	0.5276	0.5276	0.5277	0.5276	0.5274	0.5274	0.5274	0.5273	0.5273
22	0.5263	0.5262	0.5261	0.5261	0.5260	0.5260	0.5260	0.5260	0.5260	0.5260	0.5260	0.5260	0.5260	0.5258	0.5259	0.5259	0.5257	0.5257
23	0.5318	0.5317	0.5317	0.5317	0.5316	0.5317	0.5316	0.5316	0.5317	0.5316	0.5316	0.5317	0.5316	0.5314	0.5314	0.5315	0.5315	0.5314
24	0.5227	0.5226	0.5226	0.5225	0.5225	0.5224	0.5224	0.5224	0.5224	0.5223	0.5224	0.5224	0.5224	0.5221	0.5222	0.5221	0.5221	0.5220
25	0.5295	0.5294	0.5294	0.5294	0.5292	0.5292	0.5293	0.5293	0.5292	0.5292	0.5293	0.5293	0.5293	0.5291	0.5291	0.5291	0.5291	0.5290
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5269	0.5267	0.5267	0.5267	0.5266	0.5265	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5263	0.5264	0.5263	0.5263	0.5263
Med.	0.5265	0.5264	0.5264	0.5263	0.5262	0.5262	0.5262	0.5262	0.5262	0.5262	0.5262	0.5262	0.5262	0.5259	0.5260	0.5259	0.5259	0.5258
σ	0.0028	0.0028	0.0028	0.0028	0.0028	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029
Min.	0.5216	0.5214	0.5214	0.5214	0.5212	0.5213	0.5212	0.5213	0.5213	0.5213	0.5213	0.5212	0.5212	0.5210	0.5210	0.5210	0.5210	0.5209
Max.	0.5318	0.5317	0.5317	0.5317	0.5316	0.5317	0.5316	0.5316	0.5317	0.5316	0.5316	0.5317	0.5316	0.5314	0.5314	0.5315	0.5315	0.5314

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Data Set 10 : 105 °C, 125 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.6 °C
Drive Current [I_F]	125 mA
Measurement Current	125 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 10-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5243	0.5242	0.5242															
2	0.5275	0.5274	0.5274															
3	0.5243	0.5242	0.5243															
4	0.5241	0.5239	0.5240															
5	0.5254	0.5254	0.5254															
6	0.5307	0.5308	0.5306															
7	0.5249	0.5249	0.5248															
8	0.5269	0.5269	0.5269															
9	0.5283	0.5283	0.5283															
10	0.5236	0.5236	0.5235															
11	0.5287	0.5287	0.5286															
12	0.5258	0.5257	0.5257															
13	0.5278	0.5277	0.5278															
14	0.5209	0.5208	0.5208															
15	0.5230	0.5229	0.5229															
16	0.5235	0.5236	0.5236															
17	0.5301	0.5301	0.5301															
18	0.5308	0.5309	0.5308															
19	0.5234	0.5234	0.5233															
20	0.5263	0.5264	0.5263															
21	0.5272	0.5272	0.5272															
22	0.5257	0.5257	0.5256															
23	0.5313	0.5313	0.5313															
24	0.5219	0.5219	0.5219															
25	0.5289	0.5289	0.5289															
n	25	25	25															
Avg.	0.5262	0.5262	0.5262															
Med.	0.5258	0.5257	0.5257															
σ	0.0029	0.0029	0.0029															
Min.	0.5209	0.5208	0.5208															
Max.	0.5313	0.5313	0.5313															

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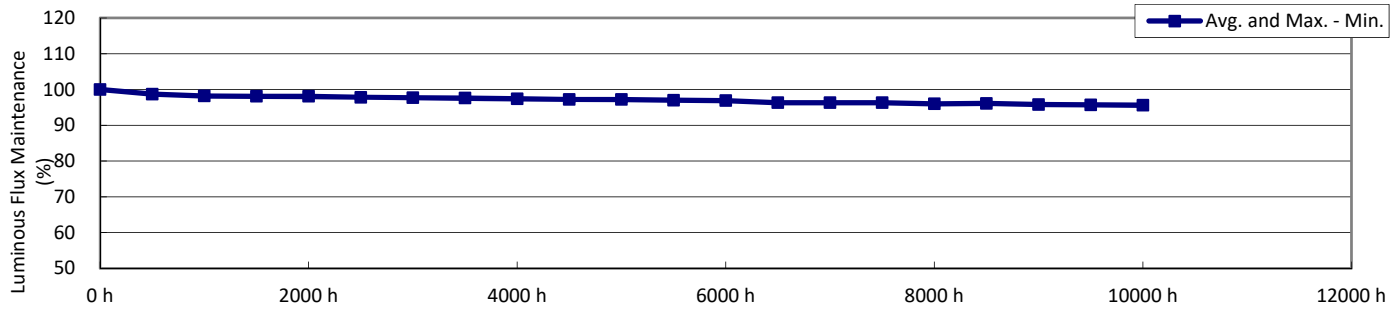
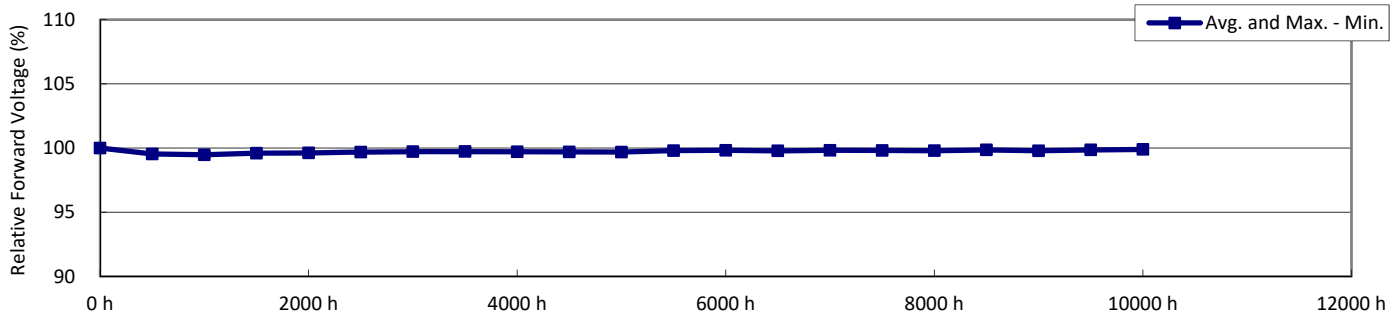
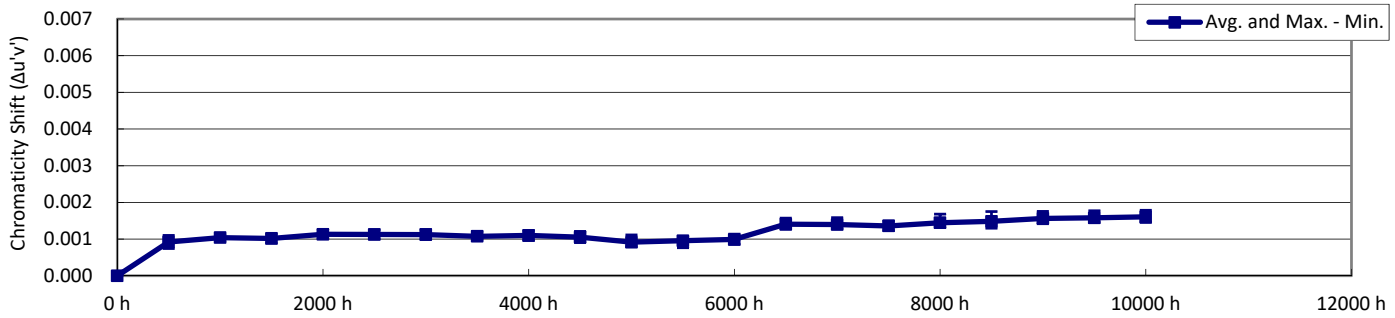
Data Set 11 : 105 °C, 150 mA

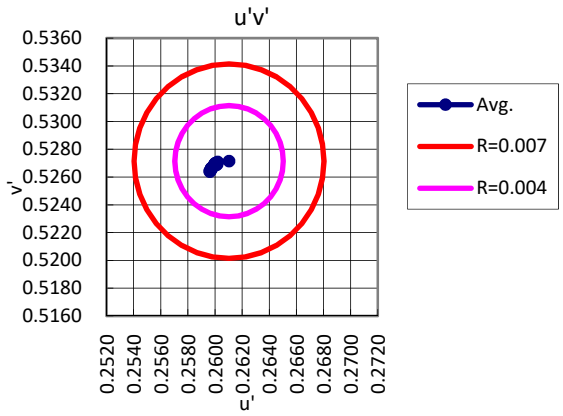
Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 11 : 105 °C, 150 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 11-1
Initial Characteristics

LED No.	Luminous flux Φ_V [lm]	Forward voltage V_F [V]	CCT T_{CP} [K]	Input Power P [W]	CIE1931 x	CIE1931 y	CIE1976 u'	CIE1976 v'						
1	72.4	3.12	2739	0.47	0.460	0.417	0.260	0.530						
2	71.6	3.15	2711	0.47	0.460	0.413	0.262	0.528						
3	71.9	3.15	2733	0.47	0.460	0.414	0.261	0.529						
4	72.8	3.13	2797	0.47	0.456	0.415	0.258	0.528						
5	70.1	3.13	2705	0.47	0.453	0.399	0.263	0.522						
6	71.5	3.15	2820	0.47	0.449	0.405	0.258	0.524						
7	71.5	3.16	2721	0.47	0.457	0.408	0.262	0.526						
8	70.3	3.15	2688	0.47	0.455	0.401	0.264	0.523						
9	71.9	3.15	2708	0.47	0.462	0.415	0.262	0.529						
10	71.2	3.15	2668	0.47	0.464	0.414	0.264	0.529						
11	71.3	3.12	2739	0.47	0.455	0.407	0.261	0.525						
12	71.4	3.14	2710	0.47	0.460	0.412	0.262	0.528						
13	71.7	3.14	2784	0.47	0.450	0.404	0.259	0.523						
14	72.2	3.14	2719	0.47	0.463	0.418	0.261	0.531						
15	72.3	3.14	2735	0.47	0.461	0.417	0.260	0.530						
16	71.6	3.15	2728	0.47	0.457	0.409	0.261	0.526						
17	71.7	3.15	2798	0.47	0.449	0.404	0.259	0.523						
18	71.6	3.14	2689	0.47	0.460	0.410	0.263	0.527						
19	71.0	3.12	2630	0.47	0.466	0.412	0.266	0.529						
20	71.8	3.15	2673	0.47	0.468	0.421	0.263	0.532						
21	72.1	3.14	2749	0.47	0.458	0.414	0.260	0.528						
22	72.1	3.13	2807	0.47	0.452	0.409	0.258	0.526						
23	71.9	3.13	2761	0.47	0.454	0.408	0.260	0.525						
24	70.7	3.12	2637	0.47	0.465	0.411	0.265	0.528						
25	71.3	3.14	2754	0.47	0.455	0.408	0.260	0.526						
n	25	25	25	25	25	25	25	25						
Avg.	71.6	3.14	2728	0.47	0.458	0.411	0.261	0.527						
Med.	71.6	3.14	2728	0.47	0.458	0.411	0.261	0.528						
σ	0.62	0.011	49.8	0.002	0.0052	0.0054	0.0022	0.0027						
Min.	70.1	3.12	2630	0.47	0.449	0.399	0.258	0.522						
Max.	72.8	3.16	2820	0.47	0.468	0.421	0.266	0.532						

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Data Set 11 : 105 °C, 150 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 11-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	98.7	98.1	98.1	98.1	97.8	97.7	97.6	97.4	97.2	97.1	97.0	96.8	96.3	96.2	96.1	95.8	95.9
2	100.0	98.7	98.1	98.0	98.0	97.7	97.6	97.6	97.3	97.1	97.1	97.0	96.8	96.2	96.3	96.2	95.9	96.1
3	100.0	98.9	98.4	98.4	98.3	98.0	98.0	98.0	97.8	97.5	97.5	97.3	97.2	96.6	96.6	96.5	96.2	96.3
4	100.0	98.6	98.1	98.0	98.0	97.7	97.8	97.8	97.6	97.4	97.3	97.1	96.9	96.4	96.5	96.3	96.1	96.2
5	100.0	98.8	98.0	97.8	98.0	97.5	97.3	97.3	97.0	96.7	96.6	96.4	96.3	95.8	95.8	95.7	95.5	95.6
6	100.0	98.9	98.4	98.4	98.4	98.0	97.8	97.8	97.5	97.3	97.2	97.1	96.9	96.5	96.4	96.2	96.1	96.2
7	100.0	98.7	98.3	98.1	98.2	98.0	97.8	97.6	97.5	97.3	97.3	97.0	96.9	96.3	96.3	96.3	96.0	96.2
8	100.0	98.8	98.3	98.2	98.2	97.9	97.9	97.8	97.6	97.4	97.4	97.1	97.1	96.5	96.4	96.4	96.1	96.3
9	100.0	98.8	98.5	98.3	98.3	98.1	97.8	97.7	97.5	97.3	97.3	96.9	96.9	96.3	96.3	96.2	95.9	96.0
10	100.0	98.7	98.3	98.0	98.1	97.8	97.7	97.5	97.4	97.1	97.2	96.8	96.8	96.2	96.2	96.1	95.9	96.1
11	100.0	98.6	98.0	97.7	97.8	97.4	97.5	97.2	97.0	96.8	96.8	96.5	96.6	96.1	96.1	95.7	95.8	96.0
12	100.0	98.8	98.3	98.0	98.1	97.7	97.6	97.6	97.3	97.1	97.1	96.9	96.8	96.1	96.2	96.0	95.9	96.0
13	100.0	98.7	98.3	98.0	98.1	97.8	97.8	97.6	97.4	97.2	97.1	96.8	96.8	96.1	96.1	96.1	95.8	95.9
14	100.0	98.8	98.2	98.1	98.1	97.8	97.9	97.7	97.5	97.4	97.3	97.1	97.1	96.5	96.5	96.5	96.2	96.4
15	100.0	98.8	98.4	98.2	98.2	98.1	97.9	97.8	97.6	97.4	97.4	97.1	97.1	96.4	96.5	96.4	96.1	96.1
16	100.0	98.9	98.5	98.3	98.4	98.2	98.0	98.0	97.8	97.6	97.5	97.4	97.3	96.8	96.7	96.8	96.4	96.5
17	100.0	98.8	98.2	98.0	98.1	97.9	97.7	97.7	97.4	97.2	97.1	96.9	96.9	96.3	96.3	96.9	96.0	96.0
18	100.0	98.7	98.3	98.2	98.2	97.9	97.9	97.8	97.6	97.4	97.3	97.1	97.1	96.4	96.5	96.5	96.2	96.3
19	100.0	98.4	98.0	98.0	97.9	97.8	97.7	97.7	97.5	97.2	97.3	97.1	96.9	96.4	96.3	96.4	96.0	96.1
20	100.0	98.8	98.5	98.3	98.3	98.0	97.9	97.9	97.6	97.3	97.4	97.2	97.0	96.4	96.4	96.3	95.9	96.0
21	100.0	98.7	98.3	98.2	98.2	97.9	97.9	97.8	97.5	97.3	97.4	97.1	97.0	96.5	96.4	96.5	96.0	96.1
22	100.0	98.6	98.2	98.0	97.9	97.6	97.5	97.4	97.1	96.8	97.0	96.6	96.5	95.9	96.1	96.2	95.8	95.9
23	100.0	98.3	97.9	97.7	97.6	97.3	97.4	97.2	96.9	96.7	96.8	96.5	96.4	96.0	96.0	96.6	95.5	95.7
24	100.0	98.3	97.9	97.8	97.8	97.6	97.7	97.7	97.5	97.2	97.3	97.0	96.9	96.4	96.3	96.5	96.0	96.0
25	100.0	98.7	98.4	98.2	98.1	97.7	97.6	97.4	97.1	97.1	97.2	96.8	96.6	96.0	96.1	96.1	95.7	95.9
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	98.7	98.2	98.1	98.1	97.8	97.7	97.6	97.4	97.2	97.2	97.0	96.9	96.3	96.3	96.3	96.0	96.1
Med.	100.0	98.7	98.3	98.1	98.1	97.8	97.8	97.7	97.5	97.2	97.3	97.0	96.9	96.3	96.3	96.3	96.0	96.1
σ	0.00	0.16	0.18	0.20	0.19	0.22	0.18	0.22	0.24	0.24	0.22	0.25	0.24	0.23	0.20	0.28	0.21	0.21
Min.	100.0	98.3	97.9	97.7	97.6	97.3	97.3	97.2	96.9	96.7	96.6	96.4	96.3	95.8	95.8	95.7	95.5	95.6
Max.	100.0	98.9	98.5	98.4	98.4	98.2	98.0	98.0	97.8	97.6	97.5	97.4	97.3	96.8	96.7	96.9	96.4	96.5

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0284	-0.0305	-0.0315	-0.0377	-0.0377	-0.0377	-0.0408	-0.0398	-0.0429	-0.0440	-0.0450							

Test duration used	5000 h to 10000 h	
B	0.987	
α	3.24E-06	
R^2	0.932	
Calculated L_{70} (10K)	106000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	64800	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	28500	hours
Reported L_{90} (10K)	28500	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 11 : 105 °C, 150 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 11-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	95.7	95.5	95.3															
2	95.8	95.8	95.6															
3	96.0	95.9	95.8															
4	96.0	95.9	95.8															
5	95.6	95.3	95.1															
6	96.0	95.8	95.6															
7	96.0	95.8	95.7															
8	96.0	95.8	95.6															
9	95.8	95.6	95.5															
10	95.9	95.7	95.6															
11	95.7	95.4	95.4															
12	95.7	95.6	95.5															
13	95.7	95.5	95.4															
14	96.1	96.0	96.0															
15	95.8	95.7	95.5															
16	96.3	96.1	96.1															
17	95.8	95.7	95.6															
18	96.0	95.9	95.7															
19	95.8	95.7	95.6															
20	95.6	95.7	95.5															
21	95.9	95.7	95.5															
22	95.7	95.6	95.5															
23	95.5	95.5	95.2															
24	95.8	95.7	95.5															
25	95.7	95.5	95.3															
n	25	25	25															
Avg.	95.8	95.7	95.6															
Med.	95.8	95.7	95.5															
σ	0.18	0.19	0.22															
Min.	95.5	95.3	95.1															
Max.	96.3	96.1	96.1															

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Data Set 11 : 105 °C, 150 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 11-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.6	99.5	99.7	99.7	99.8	99.9	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.8	100.0
2	100.0	99.5	99.5	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.9	99.9	99.8	99.9	99.8	99.8	99.9
3	100.0	99.3	99.3	99.4	99.4	99.4	99.4	99.5	99.5	99.4	99.4	99.6	99.6	99.5	99.6	99.6	99.5	99.6
4	100.0	99.4	99.4	99.5	99.5	99.6	99.6	99.6	99.6	99.6	99.5	99.7	99.7	99.7	99.7	99.7	99.7	99.7
5	100.0	99.8	99.7	99.8	99.8	100.0	99.9	100.0	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.2
6	100.0	99.4	99.4	99.5	99.6	99.6	99.7	99.7	99.6	99.6	99.6	99.8	99.8	99.7	99.8	99.8	99.7	99.9
7	100.0	99.5	99.4	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.7	99.8	99.7	99.8	99.8	99.8	99.8
8	100.0	99.5	99.4	99.6	99.6	99.6	99.7	99.6	99.6	99.7	99.6	99.7	99.8	99.7	99.7	99.7	99.7	99.7
9	100.0	99.5	99.5	99.5	99.6	99.7	99.8	99.7	99.6	99.6	99.7	99.7	99.8	99.7	99.9	99.8	99.8	99.8
10	100.0	99.4	99.4	99.5	99.5	99.7	99.6	99.7	99.6	99.6	99.6	99.8	99.8	99.7	99.8	99.8	99.7	99.9
11	100.0	99.8	99.7	99.8	99.9	99.8	100.0	100.0	100.0	99.9	99.9	100.1	100.1	100.1	100.0	100.0	100.0	100.1
12	100.0	99.5	99.5	99.6	99.6	99.6	99.7	99.7	99.7	99.7	99.6	99.8	99.8	99.8	99.8	99.8	99.8	99.8
13	100.0	99.5	99.5	99.5	99.6	99.6	99.6	99.7	99.6	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.7	99.8
14	100.0	99.5	99.4	99.5	99.5	99.6	99.7	99.7	99.7	99.7	99.6	99.7	99.8	99.7	99.8	99.9	99.7	99.8
15	100.0	99.6	99.6	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.9	99.9	99.9	99.9	99.9
16	100.0	99.3	99.3	99.4	99.4	99.6	99.6	99.6	99.6	99.5	99.5	99.7	99.7	99.6	99.7	99.7	99.7	99.7
17	100.0	99.5	99.6	99.5	99.7	99.7	99.8	99.8	99.8	99.7	99.7	99.9	99.9	99.8	99.9	99.8	99.9	99.9
18	100.0	99.5	99.4	99.5	99.6	99.7	99.7	99.7	99.7	99.7	99.6	99.8	99.8	99.8	99.8	99.8	99.8	99.9
19	100.0	99.6	99.5	99.7	99.6	99.8	99.7	99.8	99.8	99.7	99.7	100.0	99.9	99.8	99.9	99.9	99.8	99.9
20	100.0	99.4	99.3	99.4	99.5	99.5	99.6	99.5	99.6	99.5	99.5	99.6	99.6	99.6	99.7	99.6	99.6	99.7
21	100.0	99.6	99.5	99.8	99.7	99.7	99.8	99.8	99.7	99.7	99.7	99.8	99.9	99.8	99.8	99.8	99.8	99.8
22	100.0	99.6	99.5	99.6	99.6	99.7	99.7	99.9	99.7	99.8	99.8	99.7	99.8	99.8	99.8	99.9	99.9	99.9
23	100.0	99.7	99.6	99.7	99.8	99.9	99.8	99.9	99.8	99.8	99.9	100.0	100.0	99.9	100.0	100.0	99.9	100.0
24	100.0	99.7	99.6	99.8	99.8	99.9	99.8	99.9	99.9	99.9	99.9	99.8	100.1	99.9	99.9	100.0	100.0	100.1
25	100.0	99.5	99.4	99.6	99.5	99.6	99.6	99.6	99.7	99.6	99.7	99.7	99.6	99.7	99.8	99.7	99.7	99.7
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.5	99.5	99.6	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.9
Med.	100.0	99.5	99.5	99.6	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.9
σ	0.00	0.13	0.12	0.13	0.12	0.14	0.13	0.14	0.11	0.12	0.13	0.12	0.13	0.13	0.10	0.11	0.11	0.14
Min.	100.0	99.3	99.3	99.4	99.4	99.4	99.4	99.5	99.5	99.4	99.4	99.6	99.6	99.5	99.6	99.6	99.5	99.6
Max.	100.0	99.8	99.7	99.8	99.9	100.0	100.0	100.0	100.0	99.9	99.9	100.1	100.1	100.1	100.0	100.0	100.0	100.2

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Data Set 11 : 105 °C, 150 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 11-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	99.9	99.9	100.0															
2	99.8	99.9	99.9															
3	99.5	99.6	99.6															
4	99.7	99.7	99.7															
5	100.0	100.1	100.1															
6	99.8	99.8	99.8															
7	99.7	99.8	99.8															
8	99.7	99.8	99.8															
9	99.8	99.8	99.9															
10	99.7	99.8	99.9															
11	100.1	100.1	100.1															
12	99.8	99.8	99.9															
13	99.7	99.9	99.9															
14	99.7	99.8	99.9															
15	99.8	99.9	99.9															
16	99.7	99.7	99.8															
17	99.8	99.9	99.9															
18	99.8	99.8	99.9															
19	99.9	100.0	100.0															
20	99.6	99.6	99.7															
21	99.8	99.9	99.9															
22	99.8	99.9	100.0															
23	100.0	100.1	100.1															
24	99.9	100.0	100.1															
25	99.7	99.7	99.8															
n	25	25	25															
Avg.	99.8	99.9	99.9															
Med.	99.8	99.8	99.9															
σ	0.13	0.12	0.13															
Min.	99.5	99.6	99.6															
Max.	100.1	100.1	100.1															

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Data Set 11 : 105 °C, 150 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 11-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0009	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010	0.0011	0.0010	0.0009	0.0010	0.0009	0.0014	0.0013	0.0013	0.0014	0.0016
2	0.0000	0.0009	0.0011	0.0010	0.0012	0.0011	0.0010	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010	0.0013	0.0013	0.0013	0.0014	0.0015
3	0.0000	0.0011	0.0011	0.0011	0.0012	0.0011	0.0011	0.0012	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0014	0.0013	0.0014	0.0014
4	0.0000	0.0009	0.0009	0.0009	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010	0.0009	0.0010	0.0009	0.0013	0.0013	0.0013	0.0013	0.0014
5	0.0000	0.0010	0.0011	0.0011	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	0.0011	0.0016	0.0015	0.0015	0.0016	0.0018
6	0.0000	0.0011	0.0010	0.0011	0.0012	0.0011	0.0011	0.0010	0.0011	0.0010	0.0009	0.0009	0.0010	0.0014	0.0015	0.0014	0.0015	0.0015
7	0.0000	0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0010	0.0011	0.0011	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0015
8	0.0000	0.0009	0.0011	0.0011	0.0012	0.0012	0.0012	0.0011	0.0011	0.0011	0.0009	0.0010	0.0010	0.0015	0.0014	0.0015	0.0014	0.0015
9	0.0000	0.0009	0.0010	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0009	0.0013	0.0013	0.0012	0.0013	0.0013
10	0.0000	0.0009	0.0010	0.0010	0.0011	0.0012	0.0012	0.0011	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0015
11	0.0000	0.0009	0.0011	0.0011	0.0012	0.0012	0.0013	0.0012	0.0012	0.0012	0.0010	0.0011	0.0011	0.0016	0.0016	0.0014	0.0016	0.0016
12	0.0000	0.0010	0.0010	0.0010	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	0.0009	0.0010	0.0010	0.0014	0.0014	0.0013	0.0014	0.0015
13	0.0000	0.0008	0.0010	0.0009	0.0011	0.0011	0.0012	0.0011	0.0011	0.0010	0.0009	0.0009	0.0010	0.0014	0.0014	0.0014	0.0014	0.0016
14	0.0000	0.0010	0.0011	0.0010	0.0012	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0009	0.0010	0.0013	0.0014	0.0013	0.0014	0.0014
15	0.0000	0.0011	0.0011	0.0011	0.0011	0.0012	0.0011	0.0011	0.0012	0.0010	0.0009	0.0009	0.0009	0.0013	0.0013	0.0013	0.0014	0.0015
16	0.0000	0.0008	0.0011	0.0009	0.0010	0.0010	0.0011	0.0010	0.0011	0.0011	0.0009	0.0008	0.0009	0.0013	0.0014	0.0014	0.0014	0.0014
17	0.0000	0.0010	0.0011	0.0009	0.0012	0.0011	0.0011	0.0011	0.0011	0.0012	0.0009	0.0009	0.0011	0.0015	0.0015	0.0014	0.0016	0.0015
18	0.0000	0.0008	0.0009	0.0009	0.0010	0.0010	0.0011	0.0010	0.0010	0.0009	0.0008	0.0008	0.0009	0.0013	0.0013	0.0013	0.0014	0.0014
19	0.0000	0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0013	0.0013	0.0014	0.0014
20	0.0000	0.0009	0.0010	0.0010	0.0010	0.0010	0.0011	0.0011	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0014	0.0013	0.0014	0.0013
21	0.0000	0.0009	0.0011	0.0010	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0013	0.0013	0.0013	0.0013	0.0014
22	0.0000	0.0009	0.0010	0.0010	0.0011	0.0012	0.0011	0.0011	0.0012	0.0012	0.0011	0.0010	0.0011	0.0014	0.0016	0.0015	0.0017	0.0016
23	0.0000	0.0009	0.0011	0.0011	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0015	0.0015	0.0014	0.0015	0.0015
24	0.0000	0.0009	0.0011	0.0011	0.0012	0.0012	0.0012	0.0011	0.0011	0.0011	0.0009	0.0010	0.0011	0.0015	0.0014	0.0014	0.0015	0.0015
25	0.0000	0.0007	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0011	0.0011	0.0009	0.0010	0.0010	0.0015	0.0013	0.0014	0.0014	0.0014
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0015
Med.	0.0000	0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0015
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0007	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0008	0.0008	0.0009	0.0013	0.0013	0.0012	0.0013	0.0013
Max.	0.0000	0.0011	0.0011	0.0011	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0011	0.0011	0.0011	0.0016	0.0016	0.0015	0.0017	0.0018

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Data Set 11 : 105 °C, 150 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 11-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0016	0.0016	0.0016															
2	0.0015	0.0015	0.0016															
3	0.0015	0.0015	0.0016															
4	0.0015	0.0015	0.0015															
5	0.0018	0.0018	0.0018															
6	0.0017	0.0017	0.0017															
7	0.0016	0.0016	0.0016															
8	0.0016	0.0016	0.0016															
9	0.0015	0.0015	0.0015															
10	0.0016	0.0016	0.0016															
11	0.0015	0.0016	0.0016															
12	0.0016	0.0015	0.0016															
13	0.0017	0.0017	0.0017															
14	0.0015	0.0015	0.0015															
15	0.0015	0.0015	0.0016															
16	0.0016	0.0015	0.0015															
17	0.0016	0.0016	0.0017															
18	0.0014	0.0016	0.0015															
19	0.0016	0.0016	0.0016															
20	0.0014	0.0016	0.0016															
21	0.0015	0.0015	0.0015															
22	0.0016	0.0017	0.0017															
23	0.0016	0.0016	0.0016															
24	0.0016	0.0016	0.0016															
25	0.0016	0.0016	0.0016															
n	25	25	25															
Avg.	0.0016	0.0016	0.0016															
Med.	0.0016	0.0016	0.0016															
σ	0.0001	0.0001	0.0001															
Min.	0.0014	0.0015	0.0015															
Max.	0.0018	0.0018	0.0018															

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Data Set 11 : 105 °C, 150 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 11-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2605	0.2596	0.2596	0.2595	0.2595	0.2595	0.2595	0.2595	0.2595	0.2595	0.2596	0.2596	0.2596	0.2592	0.2592	0.2593	0.2592	0.2591
2	0.2621	0.2612	0.2610	0.2610	0.2609	0.2610	0.2610	0.2611	0.2610	0.2610	0.2611	0.2611	0.2611	0.2608	0.2608	0.2609	0.2608	0.2607
3	0.2611	0.2600	0.2600	0.2599	0.2599	0.2600	0.2599	0.2599	0.2600	0.2600	0.2602	0.2600	0.2601	0.2597	0.2598	0.2598	0.2597	0.2597
4	0.2584	0.2576	0.2575	0.2575	0.2574	0.2574	0.2574	0.2575	0.2575	0.2575	0.2576	0.2575	0.2575	0.2572	0.2572	0.2573	0.2572	0.2572
5	0.2662	0.2652	0.2651	0.2651	0.2650	0.2650	0.2651	0.2651	0.2650	0.2651	0.2652	0.2652	0.2652	0.2648	0.2649	0.2649	0.2647	0.2647
6	0.2584	0.2573	0.2574	0.2573	0.2573	0.2574	0.2574	0.2575	0.2574	0.2574	0.2576	0.2575	0.2575	0.2571	0.2571	0.2571	0.2571	0.2571
7	0.2619	0.2610	0.2610	0.2610	0.2609	0.2609	0.2609	0.2610	0.2609	0.2609	0.2611	0.2610	0.2609	0.2607	0.2606	0.2607	0.2608	0.2607
8	0.2641	0.2632	0.2630	0.2630	0.2629	0.2630	0.2630	0.2630	0.2630	0.2630	0.2632	0.2632	0.2631	0.2628	0.2628	0.2628	0.2629	0.2628
9	0.2619	0.2610	0.2610	0.2610	0.2609	0.2609	0.2609	0.2609	0.2609	0.2610	0.2611	0.2610	0.2611	0.2607	0.2606	0.2608	0.2607	0.2607
10	0.2644	0.2635	0.2634	0.2634	0.2633	0.2633	0.2632	0.2634	0.2633	0.2634	0.2635	0.2635	0.2634	0.2631	0.2631	0.2631	0.2631	0.2631
11	0.2637	0.2629	0.2626	0.2626	0.2625	0.2626	0.2625	0.2626	0.2626	0.2626	0.2628	0.2627	0.2627	0.2623	0.2623	0.2625	0.2622	0.2623
12	0.2627	0.2617	0.2616	0.2616	0.2615	0.2615	0.2615	0.2615	0.2616	0.2616	0.2618	0.2617	0.2617	0.2613	0.2613	0.2614	0.2614	0.2612
13	0.2597	0.2589	0.2587	0.2588	0.2587	0.2586	0.2585	0.2587	0.2586	0.2588	0.2589	0.2589	0.2588	0.2584	0.2584	0.2585	0.2585	0.2583
14	0.2613	0.2603	0.2602	0.2602	0.2601	0.2602	0.2601	0.2602	0.2601	0.2602	0.2604	0.2603	0.2603	0.2600	0.2599	0.2600	0.2599	0.2599
15	0.2607	0.2596	0.2596	0.2596	0.2595	0.2595	0.2596	0.2596	0.2595	0.2597	0.2597	0.2597	0.2597	0.2594	0.2594	0.2594	0.2593	0.2593
16	0.2620	0.2611	0.2609	0.2611	0.2609	0.2610	0.2609	0.2610	0.2609	0.2609	0.2611	0.2612	0.2611	0.2607	0.2607	0.2606	0.2606	0.2607
17	0.2614	0.2604	0.2604	0.2606	0.2603	0.2604	0.2603	0.2604	0.2604	0.2603	0.2606	0.2606	0.2604	0.2601	0.2601	0.2602	0.2600	0.2601
18	0.2638	0.2630	0.2628	0.2629	0.2628	0.2628	0.2627	0.2628	0.2628	0.2629	0.2630	0.2630	0.2630	0.2626	0.2626	0.2626	0.2625	0.2625
19	0.2659	0.2650	0.2649	0.2649	0.2648	0.2648	0.2648	0.2648	0.2648	0.2649	0.2651	0.2649	0.2649	0.2646	0.2647	0.2646	0.2646	0.2646
20	0.2631	0.2623	0.2621	0.2621	0.2621	0.2621	0.2620	0.2621	0.2621	0.2621	0.2623	0.2621	0.2621	0.2618	0.2618	0.2619	0.2618	0.2619
21	0.2603	0.2594	0.2593	0.2593	0.2593	0.2593	0.2592	0.2593	0.2593	0.2593	0.2594	0.2595	0.2594	0.2591	0.2591	0.2591	0.2591	0.2591
22	0.2586	0.2577	0.2576	0.2576	0.2575	0.2575	0.2575	0.2575	0.2574	0.2575	0.2575	0.2577	0.2576	0.2573	0.2571	0.2572	0.2571	0.2572
23	0.2628	0.2620	0.2617	0.2617	0.2618	0.2616	0.2616	0.2618	0.2617	0.2618	0.2619	0.2619	0.2619	0.2614	0.2615	0.2615	0.2614	0.2614
24	0.2663	0.2653	0.2651	0.2652	0.2651	0.2651	0.2651	0.2652	0.2651	0.2652	0.2653	0.2653	0.2652	0.2648	0.2649	0.2649	0.2648	0.2648
25	0.2606	0.2599	0.2596	0.2596	0.2596	0.2596	0.2595	0.2596	0.2596	0.2596	0.2598	0.2597	0.2597	0.2593	0.2594	0.2593	0.2593	0.2594
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2621	0.2612	0.2610	0.2611	0.2610	0.2610	0.2610	0.2610	0.2610	0.2611	0.2612	0.2612	0.2611	0.2608	0.2608	0.2608	0.2607	0.2607
Med.	0.2619	0.2610	0.2610	0.2610	0.2609	0.2609	0.2609	0.2610	0.2609	0.2609	0.2611	0.2610	0.2611	0.2607	0.2606	0.2607	0.2607	0.2607
σ	0.0023	0.0023	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0023	0.0022	0.0022	0.0022	0.0023	0.0022	0.0022	0.0022
Min.	0.2584	0.2573	0.2574	0.2573	0.2573	0.2574	0.2574	0.2575	0.2574	0.2574	0.2575	0.2575	0.2575	0.2571	0.2571	0.2571	0.2571	0.2571
Max.	0.2663	0.2653	0.2651	0.2652	0.2651	0.2651	0.2651	0.2652	0.2651	0.2652	0.2653	0.2653	0.2652	0.2648	0.2649	0.2649	0.2648	0.2648

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Data Set 11 : 105 °C, 150 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 11-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2590	0.2591	0.2590															
2	0.2607	0.2607	0.2606															
3	0.2597	0.2597	0.2597															
4	0.2571	0.2571	0.2571															
5	0.2647	0.2647	0.2647															
6	0.2570	0.2570	0.2570															
7	0.2606	0.2606	0.2606															
8	0.2628	0.2628	0.2628															
9	0.2605	0.2606	0.2605															
10	0.2629	0.2629	0.2629															
11	0.2624	0.2623	0.2623															
12	0.2612	0.2613	0.2612															
13	0.2583	0.2583	0.2583															
14	0.2598	0.2599	0.2599															
15	0.2592	0.2593	0.2591															
16	0.2605	0.2606	0.2607															
17	0.2599	0.2601	0.2600															
18	0.2625	0.2624	0.2624															
19	0.2644	0.2644	0.2645															
20	0.2618	0.2617	0.2616															
21	0.2590	0.2590	0.2590															
22	0.2572	0.2571	0.2572															
23	0.2613	0.2613	0.2613															
24	0.2648	0.2648	0.2648															
25	0.2592	0.2593	0.2593															
n	25	25	25															
Avg.	0.2607	0.2607	0.2607															
Med.	0.2605	0.2606	0.2606															
σ	0.0022	0.0022	0.0022															
Min.	0.2570	0.2570	0.2570															
Max.	0.2648	0.2648	0.2648															

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Data Set 11 : 105 °C, 150 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 11-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5294	0.5294	0.5293	0.5293	0.5292	0.5292	0.5293	0.5292	0.5292	0.5293	0.5292	0.5292	0.5292	0.5290	0.5290	0.5290	0.5290	0.5288
2	0.5278	0.5278	0.5278	0.5278	0.5276	0.5276	0.5277	0.5277	0.5277	0.5277	0.5277	0.5277	0.5277	0.5275	0.5275	0.5274	0.5275	0.5274
3	0.5286	0.5285	0.5285	0.5285	0.5284	0.5284	0.5284	0.5285	0.5285	0.5284	0.5284	0.5285	0.5284	0.5282	0.5282	0.5281	0.5281	0.5280
4	0.5284	0.5283	0.5282	0.5283	0.5281	0.5281	0.5282	0.5282	0.5282	0.5282	0.5282	0.5282	0.5281	0.5280	0.5279	0.5280	0.5279	0.5279
5	0.5235	0.5234	0.5233	0.5233	0.5232	0.5231	0.5232	0.5232	0.5232	0.5231	0.5231	0.5231	0.5230	0.5228	0.5228	0.5229	0.5228	0.5226
6	0.5237	0.5236	0.5236	0.5236	0.5234	0.5234	0.5234	0.5234	0.5234	0.5234	0.5234	0.5234	0.5234	0.5231	0.5231	0.5231	0.5230	0.5229
7	0.5259	0.5256	0.5256	0.5257	0.5255	0.5255	0.5255	0.5255	0.5255	0.5255	0.5255	0.5255	0.5255	0.5253	0.5253	0.5253	0.5252	0.5251
8	0.5228	0.5227	0.5226	0.5226	0.5225	0.5225	0.5226	0.5226	0.5226	0.5225	0.5226	0.5225	0.5226	0.5223	0.5223	0.5222	0.5222	0.5221
9	0.5293	0.5292	0.5291	0.5291	0.5290	0.5290	0.5292	0.5291	0.5292	0.5292	0.5291	0.5291	0.5292	0.5289	0.5289	0.5289	0.5289	0.5288
10	0.5295	0.5294	0.5293	0.5293	0.5292	0.5291	0.5292	0.5293	0.5293	0.5292	0.5292	0.5292	0.5292	0.5290	0.5290	0.5290	0.5290	0.5289
11	0.5267	0.5265	0.5265	0.5264	0.5263	0.5262	0.5263	0.5263	0.5263	0.5263	0.5263	0.5263	0.5263	0.5260	0.5260	0.5261	0.5261	0.5260
12	0.5278	0.5278	0.5276	0.5277	0.5276	0.5275	0.5276	0.5277	0.5276	0.5276	0.5276	0.5277	0.5277	0.5274	0.5274	0.5274	0.5273	0.5273
13	0.5229	0.5228	0.5228	0.5228	0.5226	0.5226	0.5226	0.5227	0.5226	0.5226	0.5227	0.5226	0.5226	0.5223	0.5223	0.5223	0.5222	0.5221
14	0.5305	0.5305	0.5304	0.5304	0.5303	0.5302	0.5303	0.5303	0.5303	0.5303	0.5303	0.5304	0.5303	0.5301	0.5302	0.5301	0.5301	0.5301
15	0.5297	0.5296	0.5296	0.5295	0.5295	0.5294	0.5295	0.5295	0.5295	0.5295	0.5295	0.5295	0.5295	0.5293	0.5294	0.5293	0.5293	0.5292
16	0.5262	0.5261	0.5260	0.5261	0.5260	0.5259	0.5259	0.5259	0.5259	0.5259	0.5259	0.5259	0.5259	0.5256	0.5257	0.5256	0.5256	0.5255
17	0.5244	0.5242	0.5242	0.5242	0.5241	0.5241	0.5241	0.5241	0.5241	0.5241	0.5242	0.5241	0.5241	0.5238	0.5238	0.5237	0.5238	0.5237
18	0.5271	0.5270	0.5270	0.5270	0.5269	0.5268	0.5269	0.5269	0.5269	0.5269	0.5269	0.5269	0.5269	0.5266	0.5267	0.5267	0.5266	0.5265
19	0.5287	0.5286	0.5286	0.5287	0.5285	0.5286	0.5286	0.5286	0.5286	0.5285	0.5286	0.5286	0.5286	0.5283	0.5283	0.5283	0.5282	0.5282
20	0.5321	0.5320	0.5320	0.5320	0.5319	0.5319	0.5320	0.5320	0.5319	0.5320	0.5319	0.5320	0.5319	0.5318	0.5318	0.5318	0.5317	0.5317
21	0.5283	0.5282	0.5281	0.5281	0.5280	0.5280	0.5280	0.5280	0.5280	0.5281	0.5280	0.5280	0.5281	0.5278	0.5278	0.5278	0.5277	0.5277
22	0.5256	0.5254	0.5254	0.5253	0.5252	0.5252	0.5252	0.5252	0.5252	0.5252	0.5252	0.5252	0.5252	0.5249	0.5249	0.5249	0.5249	0.5248
23	0.5268	0.5267	0.5267	0.5267	0.5265	0.5265	0.5265	0.5266	0.5265	0.5266	0.5266	0.5266	0.5266	0.5263	0.5263	0.5263	0.5263	0.5263
24	0.5283	0.5282	0.5281	0.5281	0.5280	0.5280	0.5281	0.5281	0.5281	0.5280	0.5281	0.5281	0.5281	0.5278	0.5278	0.5278	0.5278	0.5278
25	0.5254	0.5253	0.5253	0.5253	0.5251	0.5251	0.5252	0.5251	0.5251	0.5251	0.5251	0.5251	0.5251	0.5248	0.5248	0.5248	0.5248	0.5247
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5272	0.5271	0.5270	0.5270	0.5269	0.5269	0.5269	0.5270	0.5269	0.5269	0.5269	0.5270	0.5269	0.5267	0.5267	0.5267	0.5266	0.5266
Med.	0.5278	0.5278	0.5276	0.5277	0.5276	0.5275	0.5276	0.5277	0.5276	0.5276	0.5276	0.5277	0.5277	0.5274	0.5274	0.5274	0.5273	0.5273
σ	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0026	0.0026	0.0026	0.0025	0.0026
Min.	0.5228	0.5227	0.5226	0.5226	0.5225	0.5225	0.5226	0.5226	0.5226	0.5225	0.5226	0.5225	0.5226	0.5223	0.5223	0.5222	0.5222	0.5221
Max.	0.5321	0.5320	0.5320	0.5320	0.5319	0.5319	0.5320	0.5320	0.5319	0.5320	0.5319	0.5320	0.5319	0.5318	0.5318	0.5318	0.5317	0.5317

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Data Set 11 : 105 °C, 150 mA

Actual Case Temperature [T_S]	106.2 °C
Actual Ambient Temperature [T_A]	102.0 °C
Drive Current [I_F]	150 mA
Measurement Current	150 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 11-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5288	0.5288	0.5287															
2	0.5273	0.5273	0.5272															
3	0.5280	0.5280	0.5279															
4	0.5278	0.5277	0.5277															
5	0.5227	0.5226	0.5226															
6	0.5229	0.5228	0.5228															
7	0.5250	0.5250	0.5250															
8	0.5220	0.5219	0.5219															
9	0.5288	0.5287	0.5286															
10	0.5289	0.5289	0.5289															
11	0.5260	0.5259	0.5259															
12	0.5272	0.5272	0.5271															
13	0.5220	0.5220	0.5220															
14	0.5300	0.5300	0.5299															
15	0.5292	0.5291	0.5291															
16	0.5255	0.5254	0.5254															
17	0.5237	0.5236	0.5236															
18	0.5265	0.5264	0.5263															
19	0.5281	0.5281	0.5281															
20	0.5315	0.5316	0.5315															
21	0.5277	0.5275	0.5275															
22	0.5248	0.5247	0.5247															
23	0.5262	0.5262	0.5262															
24	0.5277	0.5276	0.5276															
25	0.5247	0.5246	0.5246															
n	25	25	25															
Avg.	0.5265	0.5265	0.5264															
Med.	0.5272	0.5272	0.5271															
σ	0.0026	0.0026	0.0026															
Min.	0.5220	0.5219	0.5219															
Max.	0.5315	0.5316	0.5315															

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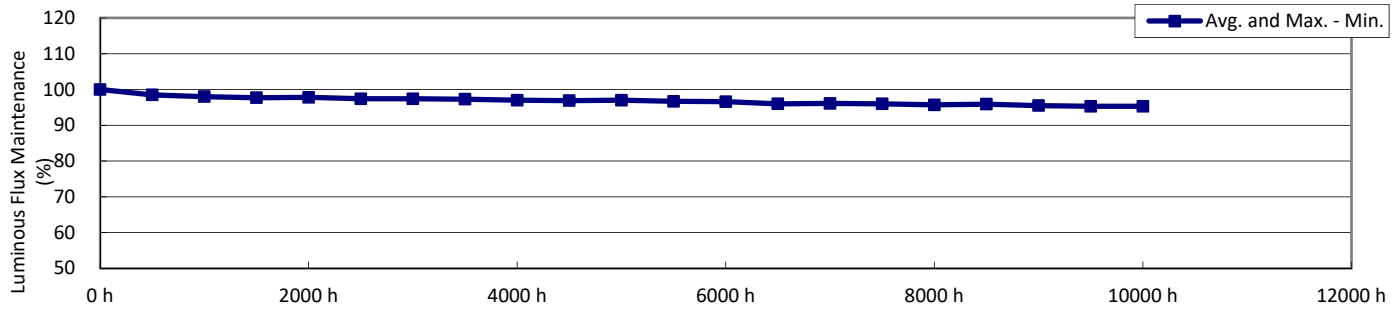
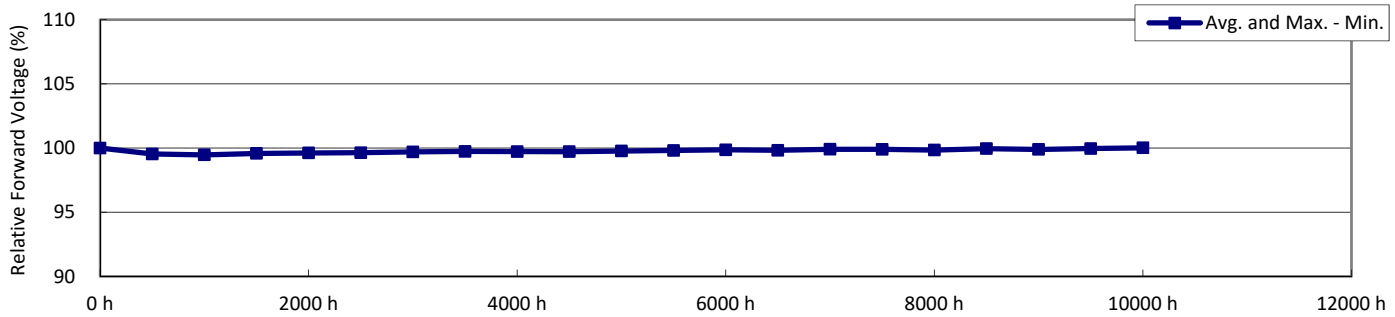
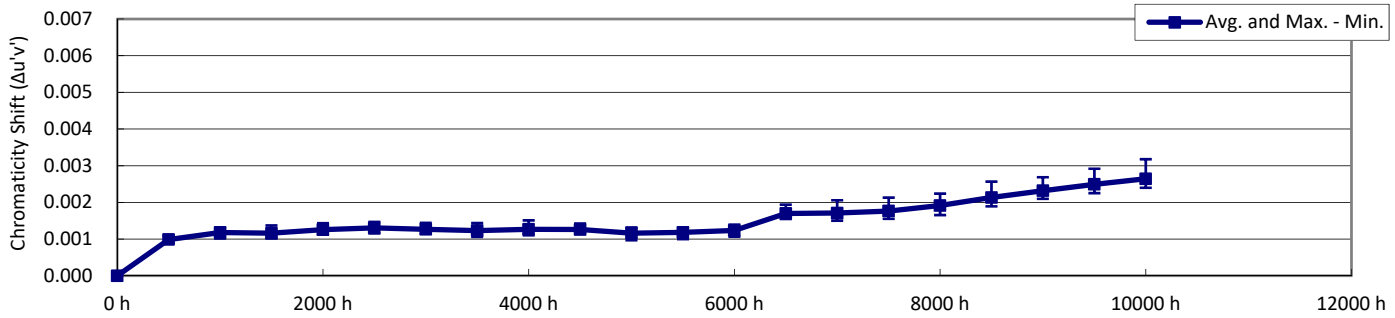
Data Set 12 : 105 °C, 180 mA

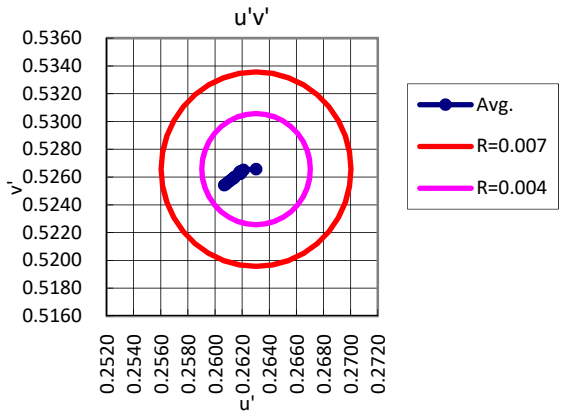
Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0









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Data Set 12 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 12-1
Initial Characteristics

LED No.	Luminous flux Φ_V [lm]	Forward voltage V_F [V]	CCT T_{CP} [K]	Input Power P [W]	CIE1931 x	CIE1931 y	CIE1976 u'	CIE1976 v'						
1	83.3	3.22	2660	0.58	0.462	0.410	0.264	0.527						
2	83.3	3.24	2650	0.58	0.462	0.409	0.265	0.527						
3	83.3	3.21	2737	0.58	0.453	0.403	0.262	0.523						
4	82.6	3.24	2689	0.58	0.455	0.400	0.264	0.523						
5	82.6	3.24	2630	0.58	0.463	0.407	0.266	0.527						
6	84.2	3.21	2805	0.58	0.449	0.404	0.259	0.523						
7	83.9	3.22	2658	0.58	0.464	0.412	0.264	0.528						
8	83.6	3.23	2682	0.58	0.460	0.409	0.263	0.527						
9	83.6	3.24	2664	0.58	0.465	0.416	0.264	0.530						
10	83.3	3.21	2650	0.58	0.464	0.412	0.265	0.529						
11	82.2	3.24	2626	0.58	0.462	0.405	0.266	0.526						
12	83.4	3.23	2730	0.58	0.455	0.405	0.262	0.525						
13	83.0	3.24	2706	0.58	0.455	0.402	0.263	0.523						
14	83.7	3.24	2682	0.58	0.460	0.409	0.263	0.527						
15	82.3	3.21	2647	0.58	0.458	0.401	0.266	0.523						
16	83.5	3.21	2680	0.58	0.463	0.413	0.263	0.529						
17	83.3	3.24	2661	0.58	0.463	0.411	0.264	0.528						
18	84.5	3.21	2734	0.58	0.460	0.416	0.260	0.529						
19	82.4	3.24	2642	0.58	0.463	0.409	0.265	0.527						
20	84.2	3.21	2758	0.58	0.453	0.406	0.260	0.525						
21	84.8	3.21	2681	0.58	0.466	0.419	0.263	0.531						
22	83.9	3.24	2735	0.58	0.457	0.410	0.261	0.527						
23	83.1	3.23	2659	0.58	0.462	0.408	0.265	0.527						
24	82.7	3.21	2669	0.58	0.457	0.402	0.265	0.524						
25	84.8	3.23	2750	0.58	0.459	0.415	0.260	0.529						
n	25	25	25	25	25	25	25	25						
Avg.	83.4	3.23	2687	0.58	0.460	0.408	0.263	0.526						
Med.	83.3	3.23	2680	0.58	0.460	0.409	0.264	0.527						
σ	0.73	0.013	45.4	0.002	0.0044	0.0050	0.0021	0.0024						
Min.	82.2	3.21	2626	0.58	0.449	0.400	0.259	0.523						
Max.	84.8	3.24	2805	0.58	0.466	0.419	0.266	0.531						

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Data Set 12 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 12-2
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	98.2	97.7	97.5	97.5	97.2	97.3	97.3	96.9	96.7	96.9	96.5	96.4	95.8	95.7	95.6	95.3	95.4
2	100.0	98.6	98.3	98.1	98.0	97.8	97.8	97.7	97.4	97.3	97.4	97.2	97.1	96.5	96.6	96.5	96.1	96.3
3	100.0	98.3	97.7	97.5	97.4	97.1	97.0	96.9	96.6	96.5	96.6	96.3	96.3	95.8	95.9	95.8	95.6	95.8
4	100.0	98.5	97.9	97.7	97.7	97.3	97.0	97.0	96.6	96.3	96.4	96.1	96.1	95.5	95.6	95.6	95.3	95.5
5	100.0	98.5	98.3	98.1	98.2	97.7	97.8	97.7	97.4	97.2	97.3	97.2	97.2	96.4	96.5	96.2	96.1	96.1
6	100.0	98.2	97.6	97.3	97.4	96.9	96.8	96.7	96.3	96.2	96.2	96.0	95.9	95.3	95.4	95.3	95.1	95.3
7	100.0	98.3	97.9	97.8	97.7	97.5	97.5	97.3	97.0	97.0	97.0	96.8	96.7	96.0	96.1	96.0	95.6	95.8
8	100.0	98.7	98.2	98.0	97.9	97.6	97.7	97.5	97.3	97.2	97.2	97.0	96.9	96.2	96.2	96.2	95.7	95.9
9	100.0	99.1	98.6	98.4	98.3	98.0	98.1	98.0	97.6	97.5	97.5	97.2	97.1	96.5	96.6	96.5	96.2	96.4
10	100.0	98.5	97.9	97.6	97.6	97.3	97.3	97.2	96.9	96.8	96.9	96.6	96.5	96.0	96.0	96.1	95.6	95.9
11	100.0	98.1	97.6	97.3	97.4	97.0	97.0	96.9	96.7	96.7	96.8	96.4	96.3	95.7	96.0	96.4	95.4	95.7
12	100.0	98.6	98.0	97.7	97.7	97.5	97.5	97.3	97.0	96.9	96.9	96.7	96.6	96.1	96.1	96.2	95.8	95.9
13	100.0	98.7	98.2	98.0	98.1	97.7	97.7	97.7	97.4	97.2	97.3	97.0	97.0	96.5	96.6	96.5	96.1	96.2
14	100.0	98.7	98.0	97.8	97.8	97.5	97.5	97.5	97.2	97.1	97.1	96.8	96.8	96.2	96.3	96.2	95.9	95.9
15	100.0	98.2	97.7	97.5	97.6	97.3	97.2	97.2	96.9	96.7	96.8	96.4	96.4	95.9	96.0	96.0	95.6	95.9
16	100.0	98.5	97.9	97.6	97.6	97.3	97.6	97.5	97.3	97.0	97.2	96.8	96.8	96.2	96.2	96.1	95.9	96.0
17	100.0	98.7	98.2	97.9	98.0	97.6	97.5	97.5	97.3	96.9	97.1	96.9	96.8	96.2	96.2	95.8	95.7	95.9
18	100.0	98.6	97.9	97.6	97.7	97.4	97.4	97.4	97.1	96.9	97.0	96.8	96.6	96.0	96.1	96.0	95.7	95.8
19	100.0	98.8	98.2	98.0	98.0	97.7	97.7	97.6	97.3	97.1	97.1	96.8	96.8	96.1	96.3	96.2	95.8	95.9
20	100.0	98.4	97.7	97.4	97.4	97.0	97.0	97.0	96.7	96.5	96.6	96.3	96.4	95.8	95.9	95.9	95.6	95.9
21	100.0	98.5	98.0	97.9	97.8	97.4	97.5	97.4	97.2	97.0	97.1	96.8	96.6	96.1	96.2	96.1	95.7	95.8
22	100.0	98.6	98.1	97.9	97.9	97.5	97.6	97.5	97.3	97.0	97.1	96.8	96.7	96.1	96.2	96.1	95.7	95.8
23	100.0	98.7	98.2	97.9	97.9	97.3	97.3	97.2	97.0	96.8	96.9	96.6	96.5	95.8	96.1	95.8	95.3	95.6
24	100.0	98.3	97.7	97.4	97.5	97.0	97.2	97.0	96.8	96.7	96.7	96.4	96.3	95.8	95.9	95.9	95.6	95.8
25	100.0	98.6	98.1	97.8	97.7	97.3	97.4	97.3	97.0	96.9	96.9	96.7	96.6	96.1	96.1	96.0	95.9	95.9
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	98.5	98.0	97.7	97.8	97.4	97.4	97.3	97.0	96.9	97.0	96.7	96.6	96.0	96.1	96.0	95.7	95.9
Med.	100.0	98.5	98.0	97.8	97.7	97.4	97.5	97.3	97.0	96.9	97.0	96.8	96.6	96.1	96.1	96.1	95.7	95.9
σ	0.00	0.23	0.26	0.28	0.26	0.28	0.31	0.31	0.32	0.31	0.30	0.32	0.32	0.30	0.29	0.29	0.28	0.25
Min.	100.0	98.1	97.6	97.3	97.4	96.9	96.8	96.7	96.3	96.2	96.2	96.0	95.9	95.3	95.4	95.3	95.1	95.3
Max.	100.0	99.1	98.6	98.4	98.3	98.0	98.1	98.0	97.6	97.5	97.5	97.2	97.2	96.5	96.6	96.5	96.2	96.4

TM-21 Projection

Time	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h	9000 h	9500 h	10000 h							
ln(Avg.)	-0.0305	-0.0336	-0.0346	-0.0408	-0.0398	-0.0408	-0.0440	-0.0419	-0.0460	-0.0481	-0.0481							

Test duration used	5000 h to 10000 h	
B	0.985	
α	3.39E-06	
R^2	0.924	
Calculated L_{70} (10K)	101000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	61400	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	26600	hours
Reported L_{90} (10K)	26600	hours

Curve-fit equation:
$\Phi(t)=Bexp(-\alpha t)$

Luminous flux maintenance life equation:
$L_{70}=ln(B/0.7)/\alpha$

$L_{80}=ln(B/0.8)/\alpha$

$L_{90}=ln(B/0.9)/\alpha$

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Data Set 12 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 12-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	95.1	94.8	94.6															
2	96.1	95.8	95.8															
3	95.6	95.4	95.3															
4	95.3	95.0	94.9															
5	95.7	95.7	95.7															
6	95.0	94.8	94.7															
7	95.4	95.2	95.1															
8	95.5	95.3	95.2															
9	96.1	95.9	96.0															
10	95.5	95.3	95.2															
11	95.4	95.2	95.2															
12	95.6	95.4	95.3															
13	96.0	95.9	95.8															
14	95.7	95.6	95.6															
15	95.6	95.4	95.4															
16	95.6	95.4	95.3															
17	95.7	95.4	95.3															
18	95.4	95.3	95.2															
19	95.4	95.2	95.1															
20	95.6	95.5	95.5															
21	95.4	95.2	95.2															
22	95.4	95.3	95.3															
23	95.1	95.1	95.0															
24	95.4	95.3	95.2															
25	95.6	95.3	95.2															
n	25	25	25															
Avg.	95.5	95.3	95.3															
Med.	95.5	95.3	95.2															
σ	0.27	0.28	0.32															
Min.	95.0	94.8	94.6															
Max.	96.1	95.9	96.0															

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Data Set 12 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 12-3
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	100.0	99.5	99.5	99.7	99.6	99.7	99.6	99.7	99.7	99.8	99.8	99.9	99.9	99.9	100.0	100.0	100.0	100.0
2	100.0	99.3	99.3	99.4	99.4	99.5	99.6	99.5	99.4	99.4	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8
3	100.0	99.5	99.5	99.5	99.5	99.6	99.8	99.6	99.6	99.6	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8
4	100.0	99.5	99.5	99.5	99.7	99.6	99.7	99.7	99.7	99.6	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8
5	100.0	99.5	99.4	99.5	99.5	99.6	99.6	99.5	99.6	99.7	99.6	99.7	99.7	99.7	99.8	99.7	99.7	99.8
6	100.0	99.7	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8	100.0	99.9	99.9	100.0	100.0	100.0	99.9	100.0
7	100.0	99.7	99.7	99.7	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.1	100.1	100.1	100.1	100.1	100.2
8	100.0	99.6	99.4	99.7	99.6	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.8	100.0	100.0	99.9	100.0
9	100.0	99.3	99.1	99.5	99.4	99.4	99.3	99.5	99.6	99.5	99.7	99.7	99.6	99.7	99.8	99.7	99.6	99.8
10	100.0	99.6	99.5	99.6	99.7	99.7	99.7	99.8	99.9	99.9	99.9	99.9	100.0	99.9	100.0	100.0	99.9	100.1
11	100.0	99.6	99.6	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.9	100.0	99.9	100.0	100.0	100.0	100.0
12	100.0	99.5	99.2	99.5	99.5	99.6	99.6	99.7	99.6	99.6	99.6	99.7	99.7	99.7	99.8	99.8	99.7	99.9
13	100.0	99.4	99.3	99.5	99.5	99.5	99.7	99.6	99.5	99.7	99.7	99.7	99.7	99.7	99.9	99.9	99.8	99.9
14	100.0	99.6	99.5	99.5	99.6	99.6	99.6	99.7	99.8	99.7	99.7	99.8	99.8	99.7	99.9	99.9	99.8	100.0
15	100.0	99.6	99.6	99.7	99.7	99.8	99.8	99.8	99.9	99.8	99.9	99.9	99.9	99.9	100.1	100.0	99.9	100.1
16	100.0	99.6	99.6	99.6	99.7	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0
17	100.0	99.4	99.3	99.3	99.4	99.4	99.5	99.6	99.5	99.5	99.6	99.6	99.7	99.7	99.7	99.8	99.7	99.8
18	100.0	99.6	99.6	99.5	99.7	99.6	99.7	99.8	99.7	99.8	99.8	99.8	99.9	99.8	99.9	99.9	99.9	99.9
19	100.0	99.6	99.5	99.7	99.7	99.7	99.7	99.8	99.8	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.9
20	100.0	99.7	99.6	99.7	99.8	99.8	99.8	99.8	99.9	99.9	100.0	100.0	100.0	100.0	100.1	100.1	100.0	100.1
21	100.0	99.7	99.6	99.7	99.8	99.7	99.7	99.9	99.8	99.8	99.9	100.0	100.1	100.0	100.0	100.1	100.0	100.1
22	100.0	99.2	99.2	99.3	99.3	99.4	99.5	99.5	99.4	99.5	99.5	99.5	99.6	99.5	99.7	99.6	99.6	99.7
23	100.0	99.5	99.6	99.6	99.6	99.6	99.7	99.7	99.7	99.8	99.7	99.8	99.8	99.8	99.9	99.8	99.8	99.9
24	100.0	99.7	99.6	99.8	99.8	99.8	99.9	100.0	99.9	99.9	100.0	100.1	100.1	100.1	100.2	100.1	100.1	100.3
25	100.0	99.5	99.2	99.5	99.5	99.5	99.8	99.7	99.7	99.7	99.8	99.7	99.9	99.7	99.9	99.8	99.7	99.9
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.5	99.5	99.6	99.6	99.6	99.7	99.7	99.7	99.7	99.8	99.8	99.9	99.8	99.9	99.9	99.8	100.0
Med.	100.0	99.6	99.5	99.6	99.6	99.6	99.7	99.7	99.7	99.8	99.8	99.8	99.9	99.8	99.9	99.9	99.8	99.9
σ	0.00	0.13	0.17	0.13	0.14	0.13	0.14	0.14	0.16	0.13	0.13	0.13	0.14	0.14	0.13	0.13	0.14	0.13
Min.	100.0	99.2	99.1	99.3	99.3	99.4	99.3	99.5	99.4	99.4	99.5	99.5	99.6	99.5	99.7	99.6	99.6	99.7
Max.	100.0	99.7	99.7	99.8	99.8	99.8	99.9	100.0	99.9	99.9	100.0	100.1	100.1	100.1	100.2	100.1	100.1	100.3

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Data Set 12 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 12-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	100.0	100.0	100.1															
2	99.7	99.8	99.8															
3	99.8	99.8	99.9															
4	99.8	99.9	100.0															
5	99.8	99.8	99.8															
6	100.0	100.0	100.1															
7	100.1	100.1	100.2															
8	100.0	100.0	100.0															
9	99.7	99.8	99.8															
10	100.0	100.0	100.2															
11	99.9	100.1	100.0															
12	99.8	99.8	99.9															
13	99.8	99.9	100.0															
14	99.9	100.0	100.0															
15	100.0	100.0	100.1															
16	99.9	100.0	100.0															
17	99.7	99.8	99.9															
18	99.9	100.0	100.0															
19	99.8	99.9	100.0															
20	100.1	100.2	100.2															
21	100.0	100.1	100.2															
22	99.6	99.7	99.8															
23	99.8	99.9	100.0															
24	100.2	100.2	100.3															
25	99.8	100.0	100.0															
n	25	25	25															
Avg.	99.9	100.0	100.0															
Med.	99.9	100.0	100.0															
σ	0.14	0.14	0.14															
Min.	99.6	99.7	99.8															
Max.	100.2	100.2	100.3															

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Data Set 12 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 12-4
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.0000	0.0009	0.0011	0.0011	0.0011	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	0.0012	0.0017	0.0016	0.0017	0.0019	0.0020
2	0.0000	0.0009	0.0010	0.0010	0.0011	0.0012	0.0013	0.0011	0.0011	0.0012	0.0010	0.0011	0.0011	0.0016	0.0016	0.0016	0.0017	0.0019
3	0.0000	0.0009	0.0012	0.0012	0.0013	0.0014	0.0014	0.0013	0.0014	0.0012	0.0012	0.0012	0.0013	0.0018	0.0017	0.0018	0.0020	0.0021
4	0.0000	0.0010	0.0013	0.0012	0.0013	0.0014	0.0014	0.0013	0.0015	0.0014	0.0012	0.0013	0.0014	0.0018	0.0018	0.0018	0.0020	0.0022
5	0.0000	0.0009	0.0011	0.0012	0.0013	0.0013	0.0012	0.0012	0.0014	0.0012	0.0011	0.0012	0.0013	0.0017	0.0017	0.0018	0.0019	0.0021
6	0.0000	0.0009	0.0011	0.0011	0.0012	0.0014	0.0013	0.0013	0.0014	0.0013	0.0012	0.0012	0.0012	0.0017	0.0017	0.0018	0.0019	0.0021
7	0.0000	0.0010	0.0012	0.0011	0.0012	0.0013	0.0013	0.0012	0.0013	0.0013	0.0012	0.0012	0.0012	0.0017	0.0017	0.0017	0.0018	0.0021
8	0.0000	0.0010	0.0012	0.0011	0.0012	0.0013	0.0012	0.0012	0.0012	0.0013	0.0011	0.0012	0.0012	0.0016	0.0017	0.0017	0.0018	0.0020
9	0.0000	0.0010	0.0011	0.0011	0.0012	0.0013	0.0012	0.0013	0.0012	0.0013	0.0012	0.0011	0.0013	0.0017	0.0017	0.0018	0.0020	0.0022
10	0.0000	0.0010	0.0013	0.0011	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0012	0.0013	0.0013	0.0018	0.0017	0.0019	0.0019	0.0020
11	0.0000	0.0011	0.0013	0.0014	0.0014	0.0014	0.0013	0.0013	0.0013	0.0014	0.0013	0.0012	0.0012	0.0017	0.0017	0.0018	0.0020	0.0023
12	0.0000	0.0011	0.0012	0.0012	0.0012	0.0013	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	0.0012	0.0016	0.0016	0.0017	0.0019	0.0021
13	0.0000	0.0009	0.0011	0.0011	0.0012	0.0013	0.0012	0.0012	0.0012	0.0013	0.0011	0.0011	0.0012	0.0018	0.0019	0.0018	0.0021	0.0023
14	0.0000	0.0009	0.0012	0.0010	0.0012	0.0012	0.0011	0.0012	0.0011	0.0011	0.0010	0.0011	0.0011	0.0015	0.0016	0.0016	0.0017	0.0020
15	0.0000	0.0011	0.0013	0.0013	0.0013	0.0014	0.0014	0.0014	0.0014	0.0013	0.0013	0.0013	0.0014	0.0019	0.0021	0.0021	0.0022	0.0026
16	0.0000	0.0010	0.0012	0.0012	0.0013	0.0013	0.0014	0.0013	0.0012	0.0012	0.0012	0.0012	0.0012	0.0016	0.0017	0.0017	0.0020	0.0021
17	0.0000	0.0009	0.0011	0.0011	0.0011	0.0012	0.0012	0.0011	0.0011	0.0012	0.0011	0.0012	0.0012	0.0018	0.0017	0.0017	0.0020	0.0022
18	0.0000	0.0010	0.0012	0.0012	0.0012	0.0013	0.0013	0.0012	0.0013	0.0012	0.0011	0.0011	0.0012	0.0016	0.0016	0.0017	0.0019	0.0021
19	0.0000	0.0009	0.0012	0.0011	0.0012	0.0012	0.0012	0.0011	0.0012	0.0012	0.0010	0.0010	0.0011	0.0016	0.0016	0.0018	0.0018	0.0021
20	0.0000	0.0010	0.0011	0.0012	0.0014	0.0015	0.0013	0.0013	0.0014	0.0014	0.0013	0.0013	0.0013	0.0018	0.0018	0.0019	0.0020	0.0022
21	0.0000	0.0010	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.0013	0.0016	0.0016	0.0017	0.0018	0.0020
22	0.0000	0.0010	0.0012	0.0012	0.0012	0.0013	0.0013	0.0014	0.0013	0.0012	0.0012	0.0012	0.0012	0.0017	0.0017	0.0018	0.0019	0.0020
23	0.0000	0.0010	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.0017	0.0016	0.0017	0.0018	0.0022
24	0.0000	0.0010	0.0012	0.0012	0.0013	0.0014	0.0013	0.0012	0.0013	0.0013	0.0012	0.0013	0.0013	0.0018	0.0018	0.0020	0.0020	0.0023
25	0.0000	0.0010	0.0011	0.0011	0.0011	0.0012	0.0011	0.0011	0.0012	0.0012	0.0011	0.0010	0.0011	0.0016	0.0015	0.0016	0.0018	0.0020
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0010	0.0012	0.0012	0.0013	0.0013	0.0013	0.0012	0.0013	0.0013	0.0012	0.0012	0.0012	0.0017	0.0017	0.0018	0.0019	0.0021
Med.	0.0000	0.0010	0.0012	0.0012	0.0012	0.0013	0.0013	0.0012	0.0013	0.0012	0.0012	0.0012	0.0012	0.0017	0.0017	0.0018	0.0019	0.0021
σ	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	0.0001	0.0001	0.0001
Min.	0.0000	0.0009	0.0010	0.0010	0.0011	0.0012	0.0011	0.0011	0.0011	0.0011	0.0010	0.0010	0.0011	0.0015	0.0015	0.0016	0.0017	0.0019
Max.	0.0000	0.0011	0.0013	0.0014	0.0014	0.0015	0.0014	0.0014	0.0015	0.0014	0.0013	0.0013	0.0014	0.0019	0.0021	0.0021	0.0022	0.0026

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Data Set 12 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 12-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0023	0.0025	0.0026															
2	0.0021	0.0023	0.0024															
3	0.0023	0.0025	0.0026															
4	0.0024	0.0026	0.0027															
5	0.0023	0.0025	0.0026															
6	0.0022	0.0023	0.0024															
7	0.0021	0.0024	0.0025															
8	0.0023	0.0025	0.0026															
9	0.0024	0.0025	0.0027															
10	0.0023	0.0024	0.0026															
11	0.0025	0.0027	0.0029															
12	0.0023	0.0024	0.0026															
13	0.0026	0.0027	0.0029															
14	0.0021	0.0024	0.0025															
15	0.0027	0.0029	0.0032															
16	0.0023	0.0024	0.0025															
17	0.0024	0.0025	0.0027															
18	0.0022	0.0023	0.0024															
19	0.0024	0.0024	0.0027															
20	0.0024	0.0026	0.0028															
21	0.0022	0.0024	0.0026															
22	0.0023	0.0024	0.0025															
23	0.0023	0.0026	0.0028															
24	0.0024	0.0027	0.0029															
25	0.0022	0.0023	0.0025															
n	25	25	25															
Avg.	0.0023	0.0025	0.0026															
Med.	0.0023	0.0025	0.0026															
σ	0.0001	0.0002	0.0002															
Min.	0.0021	0.0023	0.0024															
Max.	0.0027	0.0029	0.0032															

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Data Set 12 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 12-5
Chromaticity

LED No.	Chromaticity u'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.2648	0.2639	0.2637	0.2637	0.2637	0.2637	0.2636	0.2637	0.2637	0.2636	0.2637	0.2637	0.2637	0.2633	0.2633	0.2633	0.2631	0.2630
2	0.2653	0.2643	0.2643	0.2642	0.2642	0.2641	0.2640	0.2642	0.2642	0.2641	0.2643	0.2642	0.2642	0.2638	0.2638	0.2638	0.2637	0.2635
3	0.2619	0.2610	0.2608	0.2607	0.2607	0.2606	0.2606	0.2607	0.2606	0.2608	0.2608	0.2608	0.2607	0.2603	0.2604	0.2603	0.2601	0.2600
4	0.2649	0.2639	0.2637	0.2637	0.2636	0.2636	0.2635	0.2636	0.2634	0.2636	0.2638	0.2637	0.2636	0.2633	0.2633	0.2633	0.2632	0.2630
5	0.2691	0.2681	0.2679	0.2679	0.2678	0.2678	0.2679	0.2679	0.2677	0.2679	0.2680	0.2679	0.2678	0.2674	0.2674	0.2674	0.2672	0.2670
6	0.2594	0.2585	0.2583	0.2583	0.2582	0.2581	0.2581	0.2581	0.2581	0.2582	0.2583	0.2583	0.2583	0.2578	0.2578	0.2578	0.2577	0.2575
7	0.2647	0.2637	0.2635	0.2636	0.2635	0.2634	0.2634	0.2635	0.2635	0.2634	0.2635	0.2635	0.2635	0.2631	0.2631	0.2631	0.2630	0.2628
8	0.2637	0.2627	0.2625	0.2626	0.2625	0.2625	0.2625	0.2626	0.2625	0.2625	0.2627	0.2626	0.2625	0.2622	0.2621	0.2622	0.2621	0.2620
9	0.2642	0.2632	0.2630	0.2630	0.2630	0.2629	0.2629	0.2629	0.2629	0.2629	0.2630	0.2631	0.2629	0.2625	0.2625	0.2624	0.2623	0.2621
10	0.2654	0.2644	0.2641	0.2643	0.2641	0.2641	0.2641	0.2641	0.2641	0.2640	0.2642	0.2642	0.2642	0.2637	0.2637	0.2636	0.2636	0.2636
11	0.2694	0.2683	0.2681	0.2680	0.2680	0.2680	0.2681	0.2681	0.2681	0.2680	0.2681	0.2682	0.2682	0.2678	0.2677	0.2677	0.2675	0.2673
12	0.2624	0.2614	0.2612	0.2613	0.2613	0.2612	0.2613	0.2613	0.2613	0.2612	0.2614	0.2613	0.2613	0.2609	0.2610	0.2609	0.2608	0.2606
13	0.2633	0.2624	0.2622	0.2622	0.2621	0.2620	0.2621	0.2621	0.2621	0.2621	0.2622	0.2622	0.2621	0.2617	0.2616	0.2616	0.2613	0.2612
14	0.2637	0.2628	0.2626	0.2627	0.2625	0.2626	0.2626	0.2626	0.2626	0.2626	0.2627	0.2626	0.2626	0.2623	0.2622	0.2623	0.2621	0.2619
15	0.2661	0.2650	0.2648	0.2649	0.2649	0.2648	0.2647	0.2647	0.2648	0.2648	0.2649	0.2649	0.2648	0.2643	0.2642	0.2641	0.2641	0.2638
16	0.2639	0.2629	0.2627	0.2627	0.2626	0.2626	0.2625	0.2626	0.2627	0.2627	0.2627	0.2627	0.2627	0.2623	0.2622	0.2622	0.2620	0.2618
17	0.2670	0.2661	0.2659	0.2659	0.2659	0.2658	0.2658	0.2659	0.2659	0.2658	0.2659	0.2659	0.2658	0.2653	0.2654	0.2654	0.2651	0.2649
18	0.2612	0.2602	0.2600	0.2600	0.2600	0.2599	0.2599	0.2600	0.2600	0.2600	0.2601	0.2601	0.2600	0.2596	0.2597	0.2596	0.2594	0.2592
19	0.2658	0.2649	0.2647	0.2647	0.2646	0.2647	0.2647	0.2647	0.2646	0.2647	0.2649	0.2648	0.2648	0.2643	0.2644	0.2642	0.2642	0.2640
20	0.2606	0.2596	0.2595	0.2594	0.2592	0.2592	0.2593	0.2593	0.2593	0.2592	0.2593	0.2594	0.2593	0.2589	0.2589	0.2589	0.2587	0.2586
21	0.2631	0.2621	0.2619	0.2619	0.2618	0.2618	0.2618	0.2618	0.2619	0.2619	0.2618	0.2619	0.2618	0.2615	0.2615	0.2615	0.2613	0.2612
22	0.2616	0.2606	0.2605	0.2605	0.2604	0.2604	0.2604	0.2603	0.2603	0.2605	0.2605	0.2605	0.2605	0.2601	0.2600	0.2599	0.2599	0.2598
23	0.2673	0.2663	0.2661	0.2661	0.2660	0.2660	0.2660	0.2660	0.2660	0.2661	0.2661	0.2661	0.2661	0.2657	0.2657	0.2657	0.2655	0.2653
24	0.2655	0.2645	0.2643	0.2643	0.2642	0.2642	0.2643	0.2644	0.2643	0.2642	0.2644	0.2643	0.2643	0.2639	0.2638	0.2638	0.2637	0.2635
25	0.2602	0.2592	0.2591	0.2591	0.2591	0.2591	0.2591	0.2591	0.2590	0.2591	0.2591	0.2592	0.2591	0.2587	0.2588	0.2587	0.2585	0.2584
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2642	0.2632	0.2630	0.2630	0.2630	0.2629	0.2629	0.2630	0.2629	0.2630	0.2631	0.2630	0.2630	0.2626	0.2626	0.2625	0.2624	0.2622
Med.	0.2642	0.2632	0.2630	0.2630	0.2630	0.2629	0.2629	0.2629	0.2629	0.2629	0.2630	0.2631	0.2629	0.2625	0.2625	0.2624	0.2623	0.2621
σ	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0025	0.0026	0.0025	0.0025	0.0025	0.0025	0.0025
Min.	0.2594	0.2585	0.2583	0.2583	0.2582	0.2581	0.2581	0.2581	0.2581	0.2582	0.2583	0.2583	0.2583	0.2578	0.2578	0.2578	0.2577	0.2575
Max.	0.2694	0.2683	0.2681	0.2680	0.2680	0.2680	0.2681	0.2681	0.2681	0.2680	0.2681	0.2682	0.2682	0.2678	0.2677	0.2677	0.2675	0.2673

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Data Set 12 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 12-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2628	0.2627	0.2626															
2	0.2634	0.2633	0.2631															
3	0.2598	0.2597	0.2596															
4	0.2628	0.2627	0.2626															
5	0.2669	0.2668	0.2666															
6	0.2574	0.2574	0.2573															
7	0.2628	0.2626	0.2626															
8	0.2618	0.2616	0.2616															
9	0.2619	0.2618	0.2616															
10	0.2634	0.2632	0.2631															
11	0.2670	0.2668	0.2668															
12	0.2605	0.2603	0.2602															
13	0.2610	0.2608	0.2607															
14	0.2618	0.2615	0.2614															
15	0.2637	0.2635	0.2633															
16	0.2617	0.2616	0.2615															
17	0.2647	0.2646	0.2645															
18	0.2592	0.2591	0.2590															
19	0.2638	0.2638	0.2636															
20	0.2584	0.2583	0.2581															
21	0.2610	0.2608	0.2606															
22	0.2596	0.2595	0.2594															
23	0.2651	0.2649	0.2648															
24	0.2634	0.2632	0.2630															
25	0.2582	0.2581	0.2579															
n	25	25	25															
Avg.	0.2621	0.2619	0.2618															
Med.	0.2619	0.2618	0.2616															
σ	0.0025	0.0025	0.0025															
Min.	0.2574	0.2574	0.2573															
Max.	0.2670	0.2668	0.2668															

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Data Set 12 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 12-6
Chromaticity

LED No.	Chromaticity v'																	
	0 h	500 h	1000 h	1500 h	2000 h	2500 h	3000 h	3500 h	4000 h	4500 h	5000 h	5500 h	6000 h	6500 h	7000 h	7500 h	8000 h	8500 h
1	0.5271	0.5269	0.5269	0.5269	0.5268	0.5268	0.5268	0.5269	0.5268	0.5268	0.5268	0.5268	0.5267	0.5265	0.5264	0.5264	0.5263	0.5261
2	0.5267	0.5266	0.5266	0.5266	0.5265	0.5265	0.5265	0.5265	0.5265	0.5265	0.5265	0.5265	0.5265	0.5262	0.5262	0.5262	0.5261	0.5259
3	0.5230	0.5228	0.5228	0.5228	0.5225	0.5226	0.5226	0.5226	0.5226	0.5225	0.5226	0.5226	0.5226	0.5223	0.5223	0.5222	0.5222	0.5221
4	0.5227	0.5226	0.5225	0.5225	0.5223	0.5223	0.5223	0.5224	0.5224	0.5223	0.5223	0.5223	0.5222	0.5219	0.5219	0.5219	0.5218	0.5216
5	0.5276	0.5276	0.5275	0.5274	0.5274	0.5273	0.5274	0.5275	0.5274	0.5274	0.5275	0.5275	0.5273	0.5272	0.5271	0.5271	0.5270	0.5270
6	0.5231	0.5229	0.5229	0.5228	0.5227	0.5227	0.5227	0.5227	0.5226	0.5226	0.5226	0.5226	0.5225	0.5223	0.5223	0.5222	0.5221	0.5221
7	0.5281	0.5280	0.5280	0.5280	0.5279	0.5278	0.5279	0.5279	0.5279	0.5279	0.5279	0.5279	0.5278	0.5276	0.5276	0.5275	0.5274	0.5272
8	0.5264	0.5263	0.5263	0.5262	0.5261	0.5260	0.5262	0.5262	0.5261	0.5261	0.5261	0.5261	0.5261	0.5258	0.5258	0.5257	0.5256	0.5254
9	0.5299	0.5299	0.5298	0.5298	0.5297	0.5297	0.5297	0.5298	0.5297	0.5297	0.5297	0.5297	0.5297	0.5294	0.5295	0.5294	0.5293	0.5293
10	0.5286	0.5284	0.5283	0.5284	0.5282	0.5282	0.5283	0.5283	0.5282	0.5282	0.5282	0.5282	0.5281	0.5279	0.5280	0.5279	0.5278	0.5277
11	0.5269	0.5267	0.5266	0.5266	0.5265	0.5264	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5263	0.5263	0.5263	0.5262	0.5261
12	0.5246	0.5244	0.5243	0.5243	0.5242	0.5242	0.5243	0.5242	0.5242	0.5242	0.5243	0.5242	0.5242	0.5240	0.5239	0.5239	0.5238	0.5236
13	0.5231	0.5230	0.5230	0.5230	0.5228	0.5228	0.5228	0.5228	0.5229	0.5228	0.5228	0.5228	0.5227	0.5224	0.5224	0.5224	0.5223	0.5221
14	0.5265	0.5263	0.5262	0.5262	0.5261	0.5261	0.5262	0.5262	0.5262	0.5261	0.5262	0.5261	0.5261	0.5259	0.5259	0.5259	0.5257	0.5256
15	0.5231	0.5230	0.5229	0.5229	0.5228	0.5228	0.5228	0.5228	0.5227	0.5228	0.5227	0.5227	0.5227	0.5224	0.5224	0.5224	0.5222	0.5221
16	0.5287	0.5285	0.5285	0.5285	0.5284	0.5284	0.5285	0.5285	0.5285	0.5285	0.5285	0.5285	0.5285	0.5283	0.5282	0.5283	0.5282	0.5281
17	0.5289	0.5288	0.5288	0.5288	0.5286	0.5287	0.5287	0.5287	0.5287	0.5287	0.5287	0.5287	0.5287	0.5284	0.5284	0.5284	0.5283	0.5282
18	0.5292	0.5291	0.5290	0.5290	0.5289	0.5289	0.5290	0.5290	0.5290	0.5290	0.5290	0.5290	0.5289	0.5287	0.5287	0.5286	0.5286	0.5285
19	0.5269	0.5268	0.5267	0.5268	0.5266	0.5266	0.5267	0.5267	0.5267	0.5266	0.5266	0.5266	0.5265	0.5263	0.5262	0.5261	0.5260	0.5258
20	0.5244	0.5242	0.5242	0.5241	0.5240	0.5239	0.5241	0.5241	0.5240	0.5240	0.5240	0.5239	0.5240	0.5236	0.5237	0.5236	0.5236	0.5234
21	0.5311	0.5309	0.5310	0.5309	0.5308	0.5308	0.5309	0.5309	0.5309	0.5310	0.5309	0.5309	0.5308	0.5307	0.5306	0.5306	0.5305	0.5304
22	0.5268	0.5268	0.5267	0.5267	0.5266	0.5265	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5263	0.5263	0.5262	0.5262	0.5260
23	0.5278	0.5278	0.5277	0.5276	0.5275	0.5275	0.5277	0.5276	0.5276	0.5276	0.5276	0.5276	0.5276	0.5273	0.5273	0.5273	0.5273	0.5270
24	0.5235	0.5233	0.5233	0.5233	0.5231	0.5231	0.5232	0.5232	0.5231	0.5232	0.5231	0.5231	0.5230	0.5228	0.5227	0.5226	0.5226	0.5224
25	0.5286	0.5285	0.5284	0.5285	0.5283	0.5283	0.5283	0.5284	0.5284	0.5283	0.5283	0.5284	0.5283	0.5280	0.5281	0.5279	0.5279	0.5277
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5265	0.5264	0.5264	0.5263	0.5262	0.5262	0.5263	0.5263	0.5263	0.5262	0.5262	0.5262	0.5262	0.5259	0.5259	0.5259	0.5258	0.5257
Med.	0.5269	0.5268	0.5267	0.5267	0.5266	0.5265	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5266	0.5263	0.5263	0.5262	0.5262	0.5260
σ	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0026	0.0025	0.0026	0.0026	0.0026
Min.	0.5227	0.5226	0.5225	0.5225	0.5223	0.5223	0.5223	0.5224	0.5224	0.5223	0.5223	0.5223	0.5222	0.5219	0.5219	0.5219	0.5218	0.5216
Max.	0.5311	0.5309	0.5310	0.5309	0.5308	0.5308	0.5309	0.5309	0.5309	0.5310	0.5309	0.5309	0.5308	0.5307	0.5306	0.5306	0.5305	0.5304

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Data Set 12 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

NOTES:
T_S and T_A were measured during initial setup.
Number of LED failures: 0

TABLE 12-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5260	0.5259	0.5259															
2	0.5258	0.5257	0.5256															
3	0.5220	0.5219	0.5218															
4	0.5215	0.5214	0.5212															
5	0.5269	0.5267	0.5267															
6	0.5220	0.5219	0.5218															
7	0.5271	0.5270	0.5269															
8	0.5253	0.5251	0.5250															
9	0.5291	0.5291	0.5291															
10	0.5275	0.5275	0.5274															
11	0.5260	0.5259	0.5257															
12	0.5234	0.5234	0.5232															
13	0.5220	0.5219	0.5218															
14	0.5255	0.5255	0.5254															
15	0.5220	0.5218	0.5217															
16	0.5280	0.5280	0.5278															
17	0.5282	0.5281	0.5280															
18	0.5283	0.5283	0.5282															
19	0.5256	0.5255	0.5253															
20	0.5233	0.5232	0.5231															
21	0.5303	0.5302	0.5302															
22	0.5259	0.5258	0.5258															
23	0.5269	0.5267	0.5266															
24	0.5223	0.5222	0.5220															
25	0.5277	0.5275	0.5274															
n	25	25	25															
Avg.	0.5255	0.5254	0.5253															
Med.	0.5259	0.5258	0.5257															
σ	0.0026	0.0026	0.0026															
Min.	0.5215	0.5214	0.5212															
Max.	0.5303	0.5302	0.5302															

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