NICHIA

Report No. : SQETMSO40001

LM-80 Test Report

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

Part No. NF2W757H-F1

Issue Date:	April 27, 2020	**Revision Date:**	-
Test Initiation Date:	January 17, 2019	**Test Completion Date:**	April 2, 2020
Test Duration:	10,000 hours	**Report No.:**	SQETMSO40001

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.: NF2W757H-F1
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	65	98.1	0.0014	> 60000	> 60000	49000
2	55	> 50	100	97.8	0.0015	> 60000	> 60000	42500
3	55	> 50	180	97.6	0.0016	> 60000	> 60000	39700
4	85	> 80	65	98.2	0.0013	> 60000	> 60000	48400
5	85	> 80	100	97.8	0.0013	> 60000	> 60000	39900
6	85	> 80	180	96.7	0.0015	> 60000	> 60000	29300
7	105	> 100	65	97.0	0.0014	> 60000	> 60000	30000
8	105	> 100	100	96.2	0.0017	> 60000	53500	25500
9	105	> 100	180	94.4	0.0022	> 60000	41700	19300

ilac-MRA

International Accreditation Japan
IAJapan
Accredited
ASNITE 0057 Testing

Approved Signatory:

T. Wakaki

Takara WAKAKI, 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	NF2W757H-F1 NF2W757HT-F1	55	65	≥ 2200	1
		55	100	≥ 2200	2
		55	180	≥ 2200	3
		85	65	≥ 2200	4
		85	100	≥ 2200	5
		85	180	≥ 2200	6
		105	65	≥ 2200	7
		105	100	≥ 2200	8
		105	180	≥ 2200	9

* 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

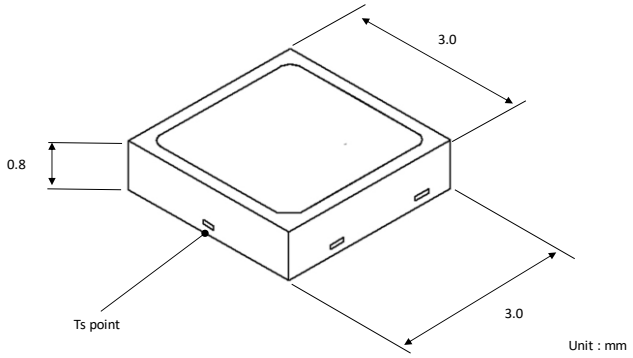

Figure 1: The case temperature (Ts) measurement point

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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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NICHIA

Report No. : SQETMSO40001

ENERGY STAR® LM-80 Cover Sheet

Administrative Information

Tested subcomponent series :	White LED
Tested subcomponent Part No. :	NF2W757H-F1
Report issue date :	April 27, 2020
Report revision date :	-
Testing start date :	January 17, 2019
Testing completion date :	April 2, 2020
LED sampling method :	Comply with LM-80
LED sample size :	25 Packages

LED Identification

LED manufacturer's name :	Nichia Corporation
LED Part No. :	NF2W757H-F1
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	65	0.18	66	0.18
55	100	0.28	102	0.29
55	180	0.53	184	0.54
85	65	0.18	66	0.18
85	100	0.28	102	0.29
85	180	0.53	184	0.54
105	65	0.18	66	0.18
105	100	0.28	102	0.29
105	180	0.53	184	0.54

Representative CRI (Ra) of the tested sample set :	Ra = 84.3
Minimum die edge to die edge spacing :	0.13 mm

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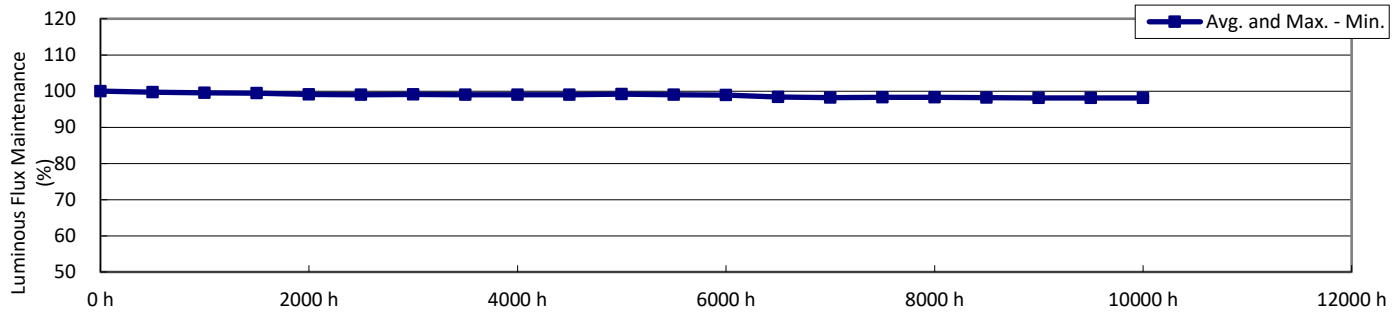
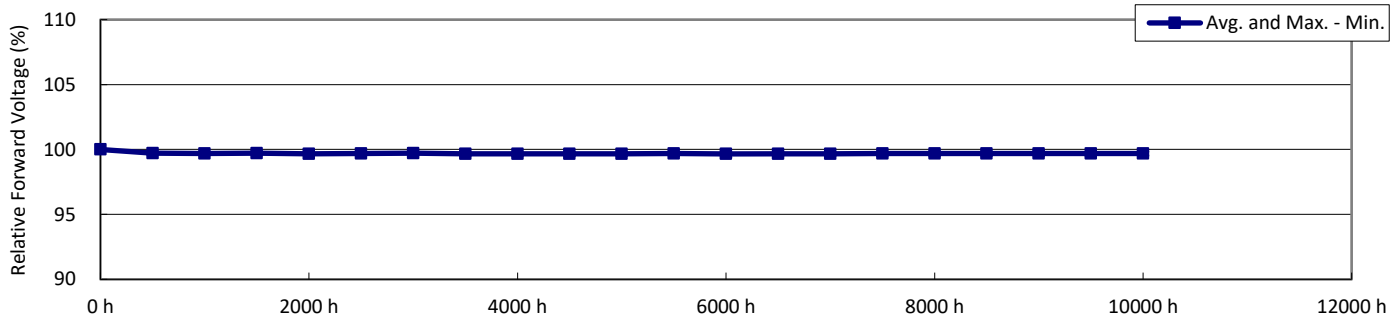
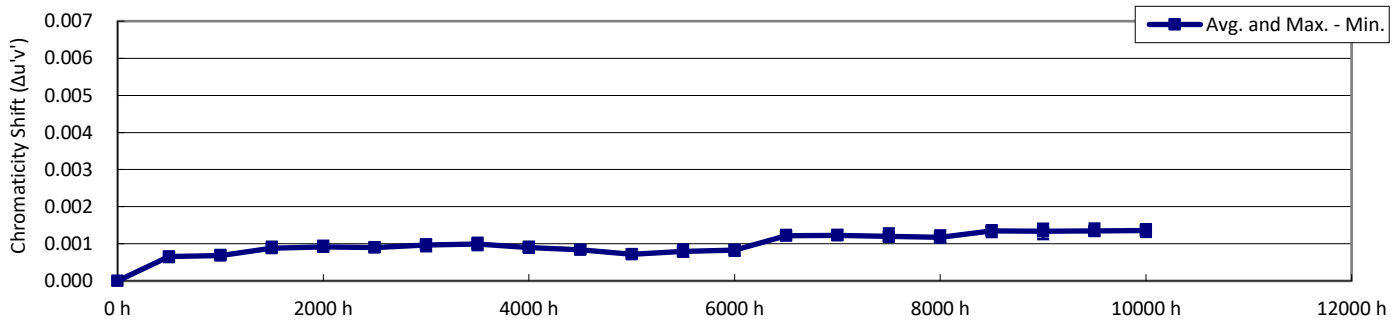
Data Set 1 : 55 °C, 65 mA

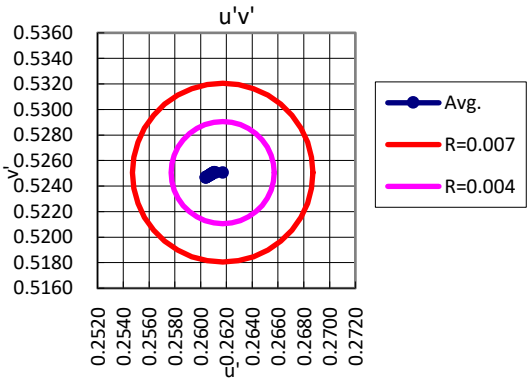
Actual Case Temperature [T_S]	55.5 °C
Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 mA

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









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Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	33.5	2.73	2709	0.18	0.458	0.408	0.262	0.526						
2	33.3	2.73	2746	0.18	0.454	0.406	0.261	0.525						
3	33.5	2.74	2715	0.18	0.456	0.405	0.262	0.525						
4	33.4	2.73	2720	0.18	0.456	0.406	0.262	0.525						
5	33.6	2.73	2778	0.18	0.454	0.409	0.259	0.526						
6	33.7	2.73	2767	0.18	0.454	0.409	0.260	0.526						
7	33.0	2.74	2680	0.18	0.458	0.404	0.264	0.525						
8	33.0	2.73	2707	0.18	0.454	0.402	0.263	0.523						
9	33.5	2.73	2728	0.18	0.455	0.405	0.262	0.524						
10	33.4	2.73	2692	0.18	0.457	0.405	0.263	0.525						
11	33.6	2.73	2681	0.18	0.459	0.407	0.264	0.526						
12	33.7	2.74	2792	0.18	0.452	0.407	0.259	0.525						
13	33.5	2.73	2767	0.18	0.452	0.405	0.260	0.524						
14	33.6	2.73	2763	0.18	0.457	0.413	0.259	0.528						
15	33.2	2.73	2689	0.18	0.457	0.404	0.264	0.524						
16	34.0	2.73	2794	0.18	0.454	0.412	0.258	0.527						
17	33.6	2.74	2768	0.18	0.451	0.403	0.260	0.523						
18	33.4	2.73	2751	0.18	0.457	0.412	0.260	0.527						
19	33.3	2.73	2711	0.18	0.455	0.403	0.263	0.524						
20	33.7	2.73	2792	0.18	0.455	0.413	0.258	0.527						
21	33.3	2.72	2706	0.18	0.457	0.407	0.263	0.525						
22	33.4	2.72	2691	0.18	0.457	0.405	0.263	0.525						
23	32.9	2.73	2694	0.18	0.456	0.403	0.263	0.524						
24	33.3	2.73	2680	0.18	0.457	0.404	0.264	0.524						
25	33.3	2.74	2725	0.18	0.454	0.404	0.262	0.524						
n	25	25	25	25	25	25	25	25						
Avg.	33.4	2.73	2730	0.18	0.455	0.406	0.262	0.525						
Med.	33.4	2.73	2720	0.18	0.456	0.405	0.262	0.525						
σ	0.24	0.004	38.5	0.000	0.0021	0.0032	0.0019	0.0013						
Min.	32.9	2.72	2680	0.18	0.451	0.402	0.258	0.523						
Max.	34.0	2.74	2794	0.18	0.459	0.413	0.264	0.528						

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Data Set 1 : 55 °C, 65 mA

Actual Case Temperature [T_S]	55.5 °C
Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	99.9	99.7	99.6	99.5	99.3	99.4	99.2	99.3	99.2	99.4	99.3	99.1	98.5	98.5	98.5	98.5	98.5
2	100.0	99.8	99.6	99.5	99.3	99.1	99.3	99.1	99.3	99.1	99.4	99.2	99.0	98.5	98.3	98.5	98.5	98.4
3	100.0	99.6	99.4	99.3	99.2	99.0	99.1	98.9	99.1	99.0	99.2	99.0	98.9	98.3	98.2	98.4	98.4	98.4
4	100.0	99.8	99.6	99.5	99.3	99.1	99.2	99.1	99.1	99.1	99.2	99.1	98.9	98.5	98.3	98.5	98.4	98.5
5	100.0	99.3	99.2	99.1	98.8	99.0	98.8	98.6	98.6	98.9	98.7	98.7	98.4	98.1	97.8	98.1	97.8	97.9
6	100.0	99.6	99.4	99.3	99.1	99.0	99.1	98.9	99.0	99.0	99.2	99.0	98.8	98.3	98.2	98.3	98.3	98.3
7	100.0	100.0	100.0	99.8	99.6	99.5	99.6	99.4	99.5	99.5	99.6	99.5	99.4	98.8	98.7	98.8	98.8	98.7
8	100.0	99.5	99.3	99.2	99.0	98.9	99.0	98.8	98.8	98.9	99.0	98.9	98.8	98.2	98.1	98.3	98.3	98.2
9	100.0	99.7	99.5	99.4	99.3	99.1	99.2	99.0	99.1	99.1	99.2	99.1	98.9	98.5	98.3	98.4	98.4	98.3
10	100.0	99.5	99.4	99.2	99.0	98.9	99.0	98.8	98.9	98.9	99.0	98.9	98.7	98.2	98.1	98.2	98.2	98.1
11	100.0	99.5	99.3	99.3	98.9	99.0	98.9	98.6	98.7	98.8	98.7	98.7	98.5	98.3	98.2	98.1	98.0	98.2
12	100.0	99.9	99.8	99.7	99.5	99.4	99.5	99.3	99.4	99.4	99.5	99.5	99.3	98.8	98.7	98.8	98.7	98.7
13	100.0	99.6	99.4	99.4	99.1	99.0	99.1	99.0	99.1	99.0	99.2	99.0	98.9	98.3	98.2	98.3	98.2	98.2
14	100.0	99.8	99.5	99.5	99.3	99.2	99.3	99.1	99.2	99.2	99.4	99.2	99.1	98.5	98.4	98.5	98.4	98.4
15	100.0	99.5	99.3	99.3	99.0	98.9	99.1	98.9	98.9	99.0	99.0	98.9	98.8	98.2	98.2	98.2	98.1	98.1
16	100.0	99.5	99.3	99.3	99.0	98.9	99.1	98.9	98.9	98.9	99.2	99.0	98.9	98.3	98.2	98.3	98.3	98.2
17	100.0	99.7	99.3	99.4	99.2	99.1	99.1	99.0	98.9	98.8	98.8	99.1	99.0	98.4	98.4	98.2	98.0	98.0
18	100.0	99.8	99.6	99.5	99.4	99.2	99.4	99.2	99.3	99.2	99.4	99.3	99.2	98.6	98.6	98.6	98.5	98.5
19	100.0	99.6	99.3	99.2	98.9	98.7	98.9	98.7	98.8	98.7	98.9	98.7	98.5	98.0	97.9	98.0	97.9	97.8
20	100.0	99.6	99.3	99.2	98.9	98.8	99.0	98.8	98.9	98.8	99.1	98.9	98.7	98.3	98.1	98.3	98.2	98.2
21	100.0	99.4	99.2	99.1	98.8	98.7	98.9	98.7	98.7	98.7	98.9	98.8	98.6	98.2	98.0	98.1	98.0	97.9
22	100.0	99.7	99.6	99.5	99.2	99.1	99.3	99.1	99.1	99.2	99.4	99.2	99.0	98.5	98.3	98.6	98.4	98.4
23	100.0	99.8	99.7	99.7	99.1	98.9	99.0	99.0	99.0	99.0	99.2	99.1	98.5	98.2	97.9	98.2	97.8	98.1
24	100.0	99.7	99.5	99.4	99.0	98.9	99.0	98.8	98.9	98.8	99.0	98.8	98.6	98.1	97.8	98.0	97.9	97.9
25	100.0	99.9	99.7	99.6	99.3	99.1	99.2	99.0	99.1	99.0	99.3	99.0	98.9	98.4	98.3	98.4	98.3	98.3
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.7	99.5	99.4	99.1	99.0	99.1	99.0	99.0	99.0	99.2	99.0	98.9	98.4	98.2	98.3	98.3	98.2
Med.	100.0	99.7	99.4	99.4	99.1	99.0	99.1	99.0	99.0	99.0	99.2	99.0	98.9	98.3	98.2	98.3	98.3	98.2
σ	0.00	0.17	0.20	0.19	0.22	0.19	0.20	0.21	0.23	0.20	0.24	0.22	0.26	0.20	0.24	0.22	0.26	0.24
Min.	100.0	99.3	99.2	99.1	98.8	98.7	98.8	98.6	98.6	98.7	98.7	98.7	98.4	98.0	97.8	98.0	97.8	97.8
Max.	100.0	100.0	100.0	99.8	99.6	99.5	99.6	99.4	99.5	99.5	99.6	99.5	99.4	98.8	98.7	98.8	98.8	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.)	-0.0080	-0.0101	-0.0111	-0.0161	-0.0182	-0.0171	-0.0171	-0.0182	-0.0192	-0.0192	-0.0192							

Test duration used	5000 h to 10000 h	
B	1.001	
α	2.17E-06	
R^2	0.790	
Calculated L_{70} (10K)	165000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	103000	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	49000	hours
Reported L_{90} (10K)	49000	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, 65 mA

Actual Case Temperature [T_S]	55.5 °C
Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	98.3	98.4															
2	98.2	98.3	98.3															
3	98.2	98.1	98.2															
4	98.2	98.3	98.3															
5	97.6	98.1	97.7															
6	98.0	98.2	98.2															
7	98.5	98.7	98.4															
8	98.0	98.1	97.9															
9	98.0	98.2	98.0															
10	97.9	98.1	97.9															
11	97.6	97.9	97.7															
12	98.5	98.6	98.5															
13	98.1	98.2	98.0															
14	98.2	98.3	98.2															
15	98.0	98.1	98.0															
16	98.1	98.1	98.2															
17	98.0	97.7	98.3															
18	98.4	98.4	98.5															
19	97.7	97.8	97.6															
20	98.0	98.0	97.9															
21	97.8	97.8	97.8															
22	98.2	98.2	98.2															
23	97.9	97.8	97.8															
24	97.7	97.8	97.7															
25	98.2	98.1	98.0															
n	25	25	25															
Avg.	98.1	98.1	98.1															
Med.	98.0	98.1	98.0															
σ	0.25	0.25	0.27															
Min.	97.6	97.7	97.6															
Max.	98.5	98.7	98.5															

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Data Set 1 : 55 °C, 65 mA

Actual Case Temperature [T_S]	55.5 °C
Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	99.7	99.6	99.7	99.6	99.6	99.7	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6
2	100.0	99.8	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.6	99.7	99.8	99.7
3	100.0	99.8	99.7	99.7	99.7	99.7	99.7	99.7	99.6	99.7	99.7	99.7	99.6	99.6	99.7	99.6	99.7	99.7
4	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.7
5	100.0	99.7	99.6	99.7	99.7	99.7	99.7	99.6	99.6	99.7	99.7	99.7	99.6	99.7	99.6	99.7	99.7	99.8
6	100.0	99.7	99.6	99.7	99.7	99.7	99.7	99.7	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.7
7	100.0	99.7	99.6	99.7	99.6	99.6	99.7	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6
8	100.0	99.7	99.7	99.7	99.7	99.8	99.8	99.7	99.7	99.7	99.8	99.7	99.7	99.7	99.8	99.7	99.7	99.8
9	100.0	99.8	99.7	99.8	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.7
10	100.0	99.8	99.8	99.8	99.7	99.7	99.8	99.8	99.7	99.7	99.7	99.7	99.8	99.7	99.7	99.7	99.7	99.7
11	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7
12	100.0	99.6	99.6	99.6	99.5	99.6	99.6	99.5	99.5	99.5	99.5	99.5	99.4	99.5	99.5	99.5	99.5	99.5
13	100.0	99.7	99.7	99.7	99.6	99.7	99.6	99.6	99.7	99.6	99.7	99.6	99.7	99.6	99.7	99.7	99.7	99.7
14	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.6	99.7	99.6	99.6	99.7	99.7	99.7	99.7	99.6	99.6	99.7
15	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7
16	100.0	99.7	99.7	99.7	99.6	99.7	99.7	99.7	99.7	99.6	99.7	99.7	99.7	99.6	99.7	99.7	99.7	99.7
17	100.0	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.5	99.6	99.6	99.6	99.7
18	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.6	99.7	99.6	99.7	99.7	99.7
19	100.0	99.7	99.8	99.8	99.8	99.8	99.8	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8
20	100.0	99.7	99.7	99.8	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8
21	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.8
22	100.0	99.7	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.7	99.7	99.7
23	100.0	99.8	99.8	99.8	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.7	99.7	99.7	99.8	99.8
24	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7
25	100.0	99.7	99.7	99.7	99.6	99.7	99.7	99.6	99.6	99.6	99.6	99.6	99.6	99.7	99.7	99.7	99.7	99.6
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7
Med.	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7
σ	0.00	0.05	0.05	0.06	0.05	0.06	0.05	0.06	0.06	0.06	0.07	0.07	0.08	0.07	0.06	0.07	0.07	0.06
Min.	100.0	99.6	99.6	99.6	99.5	99.6	99.6	99.5	99.5	99.5	99.5	99.5	99.4	99.5	99.5	99.5	99.5	99.5
Max.	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8

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Data Set 1 : 55 °C, 65 mA

Actual Case Temperature [T_S]	55.5 °C
Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	99.6	99.7	99.6															
2	99.7	99.6	99.7															
3	99.6	99.6	99.6															
4	99.6	99.6	99.6															
5	99.7	99.7	99.6															
6	99.6	99.7	99.7															
7	99.6	99.6	99.6															
8	99.7	99.7	99.7															
9	99.8	99.8	99.7															
10	99.7	99.8	99.7															
11	99.8	99.8	99.7															
12	99.5	99.5	99.5															
13	99.7	99.8	99.7															
14	99.7	99.7	99.7															
15	99.7	99.7	99.7															
16	99.7	99.7	99.7															
17	99.6	99.6	99.6															
18	99.7	99.7	99.7															
19	99.8	99.7	99.7															
20	99.7	99.7	99.7															
21	99.9	99.8	99.8															
22	99.7	99.7	99.7															
23	99.7	99.8	99.8															
24	99.7	99.6	99.6															
25	99.7	99.7	99.7															
n	25	25	25															
Avg.	99.7	99.7	99.7															
Med.	99.7	99.7	99.7															
σ	0.09	0.08	0.07															
Min.	99.5	99.5	99.5															
Max.	99.9	99.8	99.8															

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Data Set 1 : 55 °C, 65 mA

Actual Case Temperature [T_S]	55.5 °C
Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.0006	0.0006	0.0009	0.0010	0.0009	0.0010	0.0010	0.0010	0.0008	0.0007	0.0008	0.0009	0.0012	0.0012	0.0012	0.0012	0.0013
2	0.0000	0.0007	0.0007	0.0009	0.0009	0.0009	0.0009	0.0010	0.0008	0.0008	0.0008	0.0008	0.0009	0.0012	0.0012	0.0012	0.0012	0.0013
3	0.0000	0.0007	0.0007	0.0009	0.0009	0.0010	0.0010	0.0009	0.0009	0.0008	0.0007	0.0008	0.0008	0.0012	0.0012	0.0012	0.0012	0.0013
4	0.0000	0.0007	0.0007	0.0008	0.0009	0.0008	0.0009	0.0010	0.0009	0.0008	0.0007	0.0007	0.0008	0.0013	0.0012	0.0012	0.0012	0.0013
5	0.0000	0.0006	0.0007	0.0008	0.0008	0.0009	0.0009	0.0009	0.0008	0.0008	0.0006	0.0007	0.0008	0.0011	0.0012	0.0011	0.0011	0.0013
6	0.0000	0.0006	0.0006	0.0008	0.0008	0.0008	0.0009	0.0008	0.0008	0.0007	0.0007	0.0007	0.0007	0.0011	0.0011	0.0012	0.0011	0.0012
7	0.0000	0.0005	0.0006	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0007	0.0006	0.0007	0.0007	0.0011	0.0012	0.0011	0.0010	0.0013
8	0.0000	0.0007	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0010	0.0010	0.0008	0.0009	0.0008	0.0013	0.0013	0.0013	0.0012	0.0014
9	0.0000	0.0006	0.0006	0.0008	0.0009	0.0008	0.0010	0.0010	0.0008	0.0008	0.0007	0.0007	0.0008	0.0013	0.0012	0.0013	0.0012	0.0014
10	0.0000	0.0007	0.0008	0.0010	0.0011	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0009	0.0008	0.0013	0.0013	0.0012	0.0012	0.0014
11	0.0000	0.0006	0.0006	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0008	0.0007	0.0007	0.0008	0.0011	0.0011	0.0011	0.0011	0.0013
12	0.0000	0.0006	0.0006	0.0009	0.0008	0.0008	0.0009	0.0009	0.0008	0.0008	0.0007	0.0008	0.0008	0.0012	0.0012	0.0011	0.0011	0.0013
13	0.0000	0.0006	0.0007	0.0008	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	0.0014
14	0.0000	0.0006	0.0006	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0006	0.0007	0.0008	0.0012	0.0012	0.0012	0.0011	0.0013
15	0.0000	0.0008	0.0008	0.0011	0.0010	0.0010	0.0010	0.0012	0.0010	0.0010	0.0008	0.0010	0.0009	0.0013	0.0013	0.0013	0.0013	0.0015
16	0.0000	0.0007	0.0007	0.0008	0.0009	0.0009	0.0010	0.0010	0.0009	0.0009	0.0007	0.0008	0.0008	0.0011	0.0012	0.0012	0.0012	0.0013
17	0.0000	0.0006	0.0007	0.0009	0.0009	0.0009	0.0010	0.0010	0.0009	0.0008	0.0006	0.0008	0.0009	0.0013	0.0012	0.0012	0.0011	0.0013
18	0.0000	0.0008	0.0007	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0009	0.0007	0.0008	0.0009	0.0012	0.0012	0.0012	0.0012	0.0014
19	0.0000	0.0007	0.0007	0.0010	0.0010	0.0009	0.0011	0.0011	0.0010	0.0010	0.0008	0.0009	0.0009	0.0013	0.0014	0.0014	0.0013	0.0015
20	0.0000	0.0007	0.0006	0.0009	0.0009	0.0009	0.0009	0.0010	0.0009	0.0008	0.0007	0.0007	0.0007	0.0012	0.0011	0.0012	0.0012	0.0014
21	0.0000	0.0005	0.0006	0.0008	0.0010	0.0009	0.0009	0.0010	0.0009	0.0008	0.0007	0.0008	0.0008	0.0012	0.0012	0.0012	0.0012	0.0014
22	0.0000	0.0006	0.0007	0.0008	0.0009	0.0008	0.0009	0.0010	0.0008	0.0008	0.0007	0.0008	0.0008	0.0012	0.0012	0.0011	0.0011	0.0013
23	0.0000	0.0007	0.0006	0.0009	0.0009	0.0009	0.0010	0.0010	0.0009	0.0009	0.0007	0.0009	0.0008	0.0012	0.0013	0.0012	0.0011	0.0014
24	0.0000	0.0007	0.0008	0.0010	0.0010	0.0009	0.0011	0.0011	0.0010	0.0009	0.0008	0.0009	0.0009	0.0014	0.0014	0.0013	0.0014	0.0015
25	0.0000	0.0006	0.0007	0.0009	0.0010	0.0010	0.0011	0.0010	0.0011	0.0010	0.0008	0.0009	0.0010	0.0014	0.0013	0.0013	0.0013	0.0014
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0007	0.0007	0.0009	0.0009	0.0009	0.0010	0.0010	0.0009	0.0008	0.0007	0.0008	0.0008	0.0012	0.0012	0.0012	0.0012	0.0013
Med.	0.0000	0.0006	0.0007	0.0009	0.0009	0.0009	0.0010	0.0010	0.0009	0.0008	0.0007	0.0008	0.0008	0.0012	0.0012	0.0012	0.0012	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	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0007	0.0006	0.0007	0.0007	0.0011	0.0011	0.0011	0.0010	0.0012
Max.	0.0000	0.0008	0.0008	0.0011	0.0011	0.0010	0.0011	0.0012	0.0011	0.0010	0.0008	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0015

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Data Set 1 : 55 °C, 65 mA

Actual Case Temperature [T_S]	55.5 °C
Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.0014	0.0013	0.0014															
2	0.0013	0.0013	0.0014															
3	0.0013	0.0012	0.0013															
4	0.0012	0.0013	0.0014															
5	0.0014	0.0013	0.0012															
6	0.0011	0.0013	0.0013															
7	0.0012	0.0013	0.0013															
8	0.0014	0.0014	0.0014															
9	0.0014	0.0013	0.0014															
10	0.0014	0.0014	0.0013															
11	0.0012	0.0013	0.0012															
12	0.0013	0.0013	0.0013															
13	0.0014	0.0013	0.0014															
14	0.0013	0.0013	0.0014															
15	0.0014	0.0015	0.0015															
16	0.0013	0.0013	0.0013															
17	0.0013	0.0013	0.0014															
18	0.0013	0.0014	0.0014															
19	0.0015	0.0015	0.0014															
20	0.0013	0.0013	0.0013															
21	0.0013	0.0014	0.0013															
22	0.0012	0.0012	0.0013															
23	0.0013	0.0013	0.0013															
24	0.0014	0.0015	0.0015															
25	0.0015	0.0014	0.0015															
n	25	25	25															
Avg.	0.0013	0.0013	0.0014															
Med.	0.0013	0.0013	0.0014															
σ	0.0001	0.0001	0.0001															
Min.	0.0011	0.0012	0.0012															
Max.	0.0015	0.0015	0.0015															

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Data Set 1 : 55 °C, 65 mA

Actual Case Temperature [T_S]	55.5 °C
Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.2626	0.2619	0.2619	0.2617	0.2616	0.2617	0.2616	0.2615	0.2616	0.2618	0.2618	0.2618	0.2617	0.2614	0.2614	0.2615	0.2614	0.2613
2	0.2611	0.2604	0.2603	0.2602	0.2602	0.2602	0.2602	0.2601	0.2603	0.2603	0.2603	0.2603	0.2602	0.2599	0.2599	0.2599	0.2600	0.2598
3	0.2626	0.2619	0.2619	0.2618	0.2617	0.2617	0.2617	0.2617	0.2618	0.2618	0.2619	0.2619	0.2618	0.2615	0.2615	0.2614	0.2615	0.2613
4	0.2627	0.2620	0.2620	0.2619	0.2619	0.2619	0.2618	0.2617	0.2618	0.2620	0.2620	0.2620	0.2619	0.2615	0.2616	0.2616	0.2616	0.2615
5	0.2619	0.2613	0.2612	0.2611	0.2611	0.2610	0.2609	0.2610	0.2611	0.2611	0.2612	0.2612	0.2611	0.2608	0.2607	0.2608	0.2608	0.2606
6	0.2603	0.2597	0.2597	0.2595	0.2595	0.2595	0.2594	0.2595	0.2596	0.2596	0.2596	0.2596	0.2596	0.2592	0.2592	0.2592	0.2592	0.2592
7	0.2641	0.2635	0.2635	0.2633	0.2633	0.2633	0.2633	0.2632	0.2633	0.2633	0.2634	0.2634	0.2634	0.2630	0.2629	0.2630	0.2631	0.2628
8	0.2633	0.2625	0.2624	0.2624	0.2623	0.2623	0.2623	0.2622	0.2623	0.2623	0.2625	0.2624	0.2624	0.2620	0.2620	0.2620	0.2621	0.2619
9	0.2620	0.2614	0.2614	0.2612	0.2611	0.2612	0.2611	0.2610	0.2612	0.2612	0.2613	0.2613	0.2612	0.2608	0.2608	0.2608	0.2609	0.2607
10	0.2642	0.2635	0.2635	0.2632	0.2632	0.2632	0.2632	0.2632	0.2632	0.2634	0.2635	0.2633	0.2634	0.2630	0.2630	0.2630	0.2630	0.2629
11	0.2662	0.2656	0.2656	0.2654	0.2654	0.2654	0.2653	0.2653	0.2654	0.2655	0.2655	0.2655	0.2654	0.2651	0.2651	0.2652	0.2651	0.2650
12	0.2594	0.2589	0.2588	0.2586	0.2586	0.2586	0.2585	0.2585	0.2586	0.2586	0.2588	0.2586	0.2586	0.2583	0.2583	0.2584	0.2583	0.2582
13	0.2603	0.2598	0.2597	0.2595	0.2594	0.2594	0.2594	0.2594	0.2594	0.2595	0.2597	0.2596	0.2595	0.2592	0.2592	0.2592	0.2592	0.2590
14	0.2597	0.2591	0.2591	0.2588	0.2588	0.2588	0.2588	0.2588	0.2589	0.2589	0.2591	0.2590	0.2589	0.2586	0.2585	0.2585	0.2586	0.2585
15	0.2641	0.2633	0.2633	0.2630	0.2631	0.2630	0.2630	0.2629	0.2631	0.2631	0.2632	0.2631	0.2631	0.2628	0.2628	0.2628	0.2628	0.2626
16	0.2589	0.2582	0.2582	0.2580	0.2580	0.2579	0.2579	0.2579	0.2580	0.2580	0.2582	0.2581	0.2581	0.2578	0.2577	0.2577	0.2577	0.2577
17	0.2630	0.2624	0.2623	0.2622	0.2621	0.2621	0.2621	0.2620	0.2621	0.2623	0.2624	0.2622	0.2621	0.2618	0.2618	0.2619	0.2619	0.2618
18	0.2610	0.2602	0.2602	0.2601	0.2600	0.2600	0.2599	0.2599	0.2600	0.2601	0.2602	0.2602	0.2601	0.2597	0.2598	0.2597	0.2597	0.2596
19	0.2631	0.2624	0.2624	0.2622	0.2622	0.2622	0.2620	0.2620	0.2621	0.2621	0.2623	0.2622	0.2622	0.2619	0.2618	0.2617	0.2619	0.2617
20	0.2585	0.2578	0.2579	0.2576	0.2576	0.2576	0.2576	0.2575	0.2576	0.2577	0.2578	0.2577	0.2577	0.2573	0.2574	0.2573	0.2573	0.2571
21	0.2629	0.2624	0.2623	0.2621	0.2620	0.2621	0.2620	0.2620	0.2620	0.2621	0.2622	0.2622	0.2621	0.2618	0.2618	0.2618	0.2618	0.2616
22	0.2640	0.2634	0.2634	0.2632	0.2631	0.2632	0.2631	0.2630	0.2633	0.2632	0.2634	0.2632	0.2632	0.2629	0.2628	0.2629	0.2629	0.2628
23	0.2661	0.2654	0.2655	0.2652	0.2652	0.2652	0.2651	0.2651	0.2652	0.2652	0.2654	0.2652	0.2653	0.2649	0.2649	0.2650	0.2650	0.2648
24	0.2649	0.2641	0.2641	0.2639	0.2638	0.2640	0.2638	0.2638	0.2638	0.2639	0.2641	0.2639	0.2639	0.2635	0.2636	0.2636	0.2636	0.2635
25	0.2623	0.2617	0.2616	0.2614	0.2614	0.2614	0.2613	0.2614	0.2613	0.2614	0.2615	0.2614	0.2614	0.2610	0.2611	0.2612	0.2611	0.2610
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2624	0.2617	0.2617	0.2615	0.2615	0.2615	0.2614	0.2614	0.2615	0.2615	0.2617	0.2616	0.2615	0.2612	0.2612	0.2612	0.2612	0.2611
Med.	0.2626	0.2619	0.2619	0.2618	0.2617	0.2617	0.2617	0.2617	0.2618	0.2618	0.2619	0.2619	0.2618	0.2615	0.2615	0.2615	0.2615	0.2613
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.	0.2585	0.2578	0.2579	0.2576	0.2576	0.2576	0.2576	0.2575	0.2576	0.2577	0.2578	0.2577	0.2577	0.2573	0.2574	0.2573	0.2573	0.2571
Max.	0.2662	0.2656	0.2656	0.2654	0.2654	0.2654	0.2653	0.2653	0.2654	0.2655	0.2655	0.2655	0.2654	0.2651	0.2651	0.2652	0.2651	0.2650

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Data Set 1 : 55 °C, 65 mA

Actual Case Temperature [T_S]	55.5 °C
Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.2613	0.2613	0.2612															
2	0.2599	0.2598	0.2598															
3	0.2613	0.2615	0.2613															
4	0.2615	0.2615	0.2614															
5	0.2605	0.2606	0.2607															
6	0.2592	0.2591	0.2591															
7	0.2629	0.2628	0.2629															
8	0.2619	0.2619	0.2619															
9	0.2607	0.2607	0.2607															
10	0.2628	0.2629	0.2630															
11	0.2650	0.2649	0.2650															
12	0.2582	0.2582	0.2582															
13	0.2590	0.2591	0.2590															
14	0.2585	0.2585	0.2584															
15	0.2627	0.2626	0.2626															
16	0.2576	0.2576	0.2576															
17	0.2617	0.2618	0.2617															
18	0.2596	0.2596	0.2595															
19	0.2617	0.2616	0.2618															
20	0.2572	0.2572	0.2572															
21	0.2617	0.2616	0.2617															
22	0.2628	0.2629	0.2628															
23	0.2648	0.2648	0.2648															
24	0.2635	0.2634	0.2634															
25	0.2609	0.2610	0.2609															
n	25	25	25															
Avg.	0.2611	0.2611	0.2611															
Med.	0.2613	0.2615	0.2613															
σ	0.0021	0.0021	0.0021															
Min.	0.2572	0.2572	0.2572															
Max.	0.2650	0.2649	0.2650															

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Data Set 1 : 55 °C, 65 mA

Actual Case Temperature [T_S]	55.5 °C
Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.5264	0.5265	0.5265	0.5263	0.5263	0.5263	0.5263	0.5263	0.5263	0.5264	0.5265	0.5264	0.5264	0.5261	0.5262	0.5262	0.5262	0.5261
2	0.5248	0.5248	0.5248	0.5247	0.5246	0.5247	0.5246	0.5246	0.5247	0.5247	0.5248	0.5247	0.5247	0.5245	0.5244	0.5245	0.5245	0.5244
3	0.5249	0.5249	0.5249	0.5247	0.5247	0.5248	0.5248	0.5247	0.5248	0.5249	0.5249	0.5248	0.5248	0.5246	0.5246	0.5247	0.5246	0.5246
4	0.5255	0.5255	0.5255	0.5253	0.5254	0.5253	0.5253	0.5254	0.5253	0.5254	0.5255	0.5254	0.5254	0.5252	0.5252	0.5252	0.5252	0.5252
5	0.5273	0.5272	0.5272	0.5271	0.5271	0.5271	0.5271	0.5271	0.5271	0.5272	0.5273	0.5272	0.5272	0.5270	0.5270	0.5271	0.5270	0.5269
6	0.5261	0.5261	0.5261	0.5260	0.5259	0.5259	0.5259	0.5259	0.5259	0.5260	0.5261	0.5261	0.5260	0.5258	0.5258	0.5258	0.5258	0.5257
7	0.5247	0.5248	0.5248	0.5246	0.5246	0.5246	0.5246	0.5246	0.5246	0.5247	0.5248	0.5247	0.5247	0.5245	0.5244	0.5245	0.5245	0.5244
8	0.5232	0.5232	0.5232	0.5230	0.5230	0.5231	0.5230	0.5230	0.5230	0.5231	0.5232	0.5232	0.5231	0.5229	0.5228	0.5229	0.5229	0.5228
9	0.5245	0.5245	0.5244	0.5243	0.5243	0.5244	0.5243	0.5243	0.5244	0.5244	0.5245	0.5244	0.5243	0.5241	0.5241	0.5241	0.5242	0.5241
10	0.5251	0.5251	0.5251	0.5249	0.5248	0.5249	0.5249	0.5249	0.5250	0.5250	0.5251	0.5250	0.5250	0.5248	0.5248	0.5248	0.5248	0.5247
11	0.5275	0.5275	0.5275	0.5273	0.5274	0.5274	0.5274	0.5273	0.5274	0.5275	0.5275	0.5275	0.5274	0.5272	0.5272	0.5273	0.5272	0.5272
12	0.5251	0.5251	0.5251	0.5250	0.5250	0.5250	0.5250	0.5250	0.5250	0.5251	0.5252	0.5252	0.5250	0.5249	0.5248	0.5249	0.5249	0.5248
13	0.5241	0.5242	0.5242	0.5240	0.5240	0.5240	0.5240	0.5240	0.5240	0.5240	0.5241	0.5240	0.5240	0.5238	0.5238	0.5238	0.5238	0.5238
14	0.5276	0.5277	0.5276	0.5276	0.5275	0.5276	0.5275	0.5275	0.5275	0.5276	0.5276	0.5276	0.5275	0.5273	0.5273	0.5274	0.5274	0.5273
15	0.5243	0.5243	0.5242	0.5241	0.5241	0.5241	0.5241	0.5241	0.5241	0.5242	0.5243	0.5242	0.5241	0.5240	0.5239	0.5239	0.5239	0.5239
16	0.5275	0.5275	0.5275	0.5273	0.5273	0.5273	0.5273	0.5273	0.5274	0.5274	0.5275	0.5274	0.5274	0.5272	0.5272	0.5272	0.5272	0.5271
17	0.5248	0.5249	0.5249	0.5247	0.5247	0.5246	0.5247	0.5247	0.5247	0.5248	0.5248	0.5248	0.5247	0.5245	0.5245	0.5245	0.5246	0.5244
18	0.5275	0.5276	0.5276	0.5275	0.5274	0.5274	0.5274	0.5274	0.5275	0.5276	0.5276	0.5275	0.5275	0.5274	0.5274	0.5273	0.5274	0.5273
19	0.5237	0.5237	0.5237	0.5235	0.5235	0.5235	0.5235	0.5235	0.5235	0.5236	0.5236	0.5236	0.5236	0.5233	0.5233	0.5233	0.5233	0.5232
20	0.5275	0.5276	0.5275	0.5274	0.5273	0.5274	0.5274	0.5274	0.5274	0.5274	0.5275	0.5275	0.5274	0.5272	0.5272	0.5272	0.5272	0.5272
21	0.5255	0.5256	0.5255	0.5253	0.5253	0.5253	0.5253	0.5254	0.5254	0.5254	0.5254	0.5254	0.5254	0.5252	0.5251	0.5252	0.5252	0.5251
22	0.5250	0.5250	0.5250	0.5249	0.5248	0.5249	0.5248	0.5248	0.5248	0.5249	0.5250	0.5250	0.5249	0.5247	0.5247	0.5247	0.5247	0.5246
23	0.5252	0.5253	0.5252	0.5250	0.5250	0.5251	0.5250	0.5250	0.5251	0.5251	0.5251	0.5251	0.5250	0.5249	0.5248	0.5249	0.5249	0.5248
24	0.5247	0.5248	0.5248	0.5246	0.5246	0.5246	0.5245	0.5246	0.5246	0.5246	0.5247	0.5246	0.5246	0.5244	0.5243	0.5244	0.5243	0.5243
25	0.5241	0.5241	0.5241	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5240	0.5240	0.5239	0.5237	0.5237	0.5237	0.5237	0.5236
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5255	0.5255	0.5255	0.5253	0.5253	0.5253	0.5253	0.5253	0.5253	0.5254	0.5255	0.5254	0.5254	0.5252	0.5251	0.5252	0.5252	0.5251
Med.	0.5251	0.5251	0.5251	0.5249	0.5248	0.5249	0.5249	0.5249	0.5250	0.5250	0.5251	0.5250	0.5250	0.5248	0.5248	0.5248	0.5248	0.5247
σ	0.0013	0.0013	0.0013	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
Min.	0.5232	0.5232	0.5232	0.5230	0.5230	0.5231	0.5230	0.5230	0.5230	0.5231	0.5232	0.5232	0.5231	0.5229	0.5228	0.5229	0.5229	0.5228
Max.	0.5276	0.5277	0.5276	0.5276	0.5275	0.5276	0.5275	0.5275	0.5275	0.5276	0.5276	0.5276	0.5275	0.5274	0.5274	0.5274	0.5274	0.5273

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Data Set 1 : 55 °C, 65 mA

Actual Case Temperature [T_S]	55.5 °C
Actual Ambient Temperature [T_A]	53.5 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.5261	0.5261	0.5261															
2	0.5244	0.5244	0.5243															
3	0.5246	0.5245	0.5246															
4	0.5251	0.5251	0.5251															
5	0.5269	0.5269	0.5270															
6	0.5257	0.5257	0.5257															
7	0.5244	0.5243	0.5244															
8	0.5229	0.5229	0.5228															
9	0.5241	0.5241	0.5241															
10	0.5247	0.5247	0.5247															
11	0.5272	0.5272	0.5271															
12	0.5248	0.5248	0.5248															
13	0.5237	0.5237	0.5237															
14	0.5273	0.5273	0.5273															
15	0.5238	0.5238	0.5239															
16	0.5271	0.5271	0.5272															
17	0.5245	0.5245	0.5244															
18	0.5273	0.5273	0.5272															
19	0.5232	0.5232	0.5232															
20	0.5271	0.5271	0.5271															
21	0.5251	0.5251	0.5251															
22	0.5246	0.5246	0.5246															
23	0.5248	0.5248	0.5248															
24	0.5243	0.5242	0.5242															
25	0.5236	0.5236	0.5236															
n	25	25	25															
Avg.	0.5251	0.5251	0.5251															
Med.	0.5247	0.5247	0.5247															
σ	0.0014	0.0014	0.0014															
Min.	0.5229	0.5229	0.5228															
Max.	0.5273	0.5273	0.5273															

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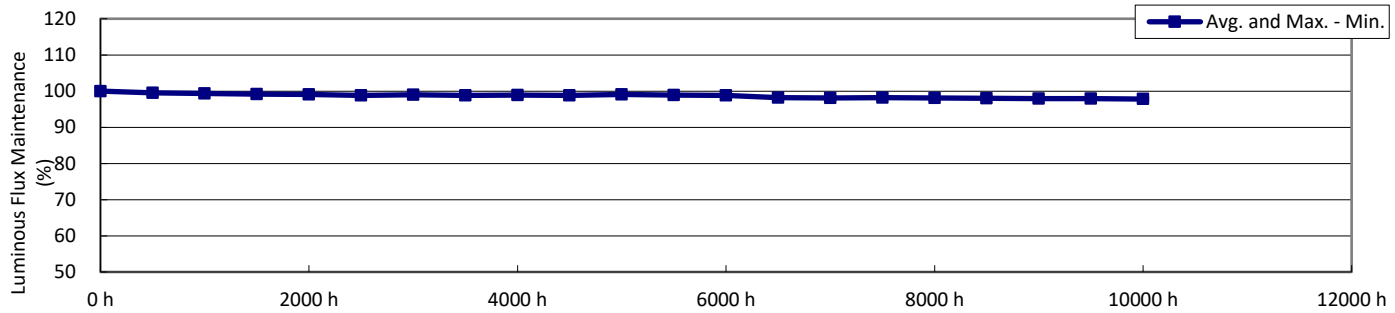
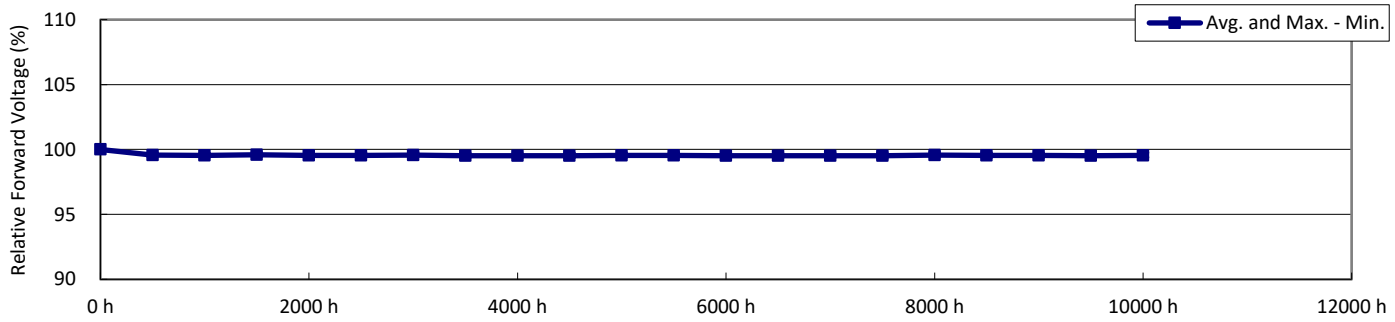
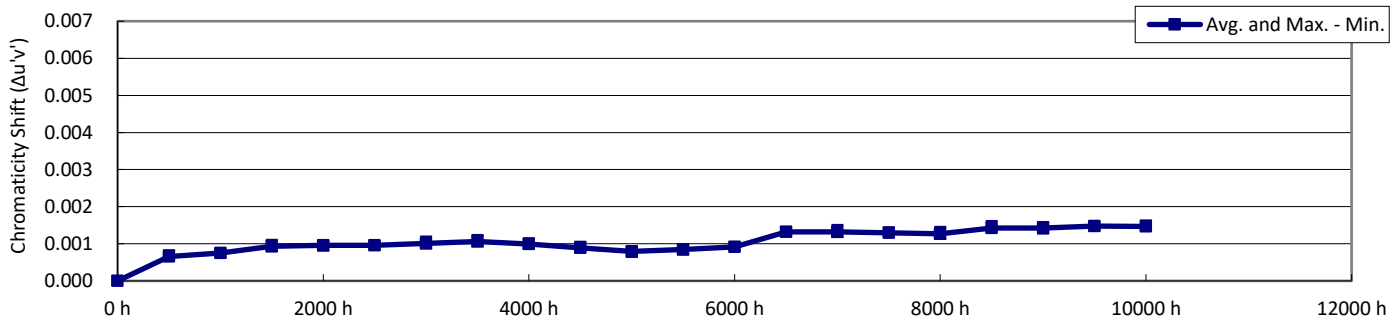
Data Set 2 : 55 °C, 100 mA

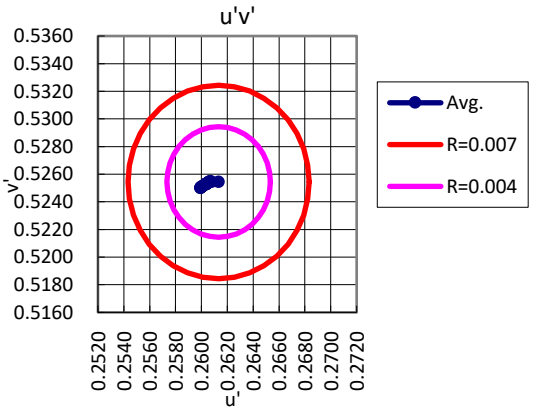
Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 mA

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, 100 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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 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	50.3	2.80	2685	0.28	0.460	0.408	0.263	0.527						
2	51.1	2.80	2767	0.28	0.457	0.414	0.259	0.528						
3	50.7	2.80	2752	0.28	0.453	0.405	0.261	0.524						
4	50.6	2.80	2688	0.28	0.459	0.408	0.263	0.526						
5	49.8	2.81	2758	0.28	0.453	0.405	0.260	0.524						
6	51.0	2.80	2788	0.28	0.455	0.413	0.258	0.527						
7	50.8	2.81	2757	0.28	0.454	0.407	0.260	0.525						
8	50.0	2.81	2684	0.28	0.457	0.403	0.264	0.524						
9	50.2	2.80	2742	0.28	0.453	0.403	0.261	0.523						
10	50.3	2.81	2712	0.28	0.456	0.405	0.262	0.524						
11	51.2	2.80	2793	0.28	0.453	0.411	0.258	0.526						
12	50.5	2.80	2729	0.28	0.454	0.403	0.262	0.523						
13	50.6	2.80	2700	0.28	0.461	0.412	0.262	0.528						
14	51.1	2.80	2770	0.28	0.456	0.412	0.259	0.527						
15	50.7	2.81	2783	0.28	0.454	0.410	0.259	0.526						
16	50.3	2.81	2727	0.28	0.454	0.404	0.262	0.524						
17	51.1	2.80	2797	0.28	0.453	0.410	0.258	0.526						
18	50.7	2.80	2735	0.28	0.454	0.405	0.261	0.524						
19	50.4	2.80	2668	0.28	0.459	0.405	0.264	0.525						
20	50.4	2.80	2698	0.28	0.458	0.408	0.263	0.526						
21	50.6	2.81	2770	0.28	0.455	0.410	0.259	0.526						
22	50.5	2.80	2725	0.28	0.454	0.404	0.262	0.524						
23	51.0	2.80	2769	0.28	0.456	0.412	0.259	0.527						
24	50.5	2.81	2751	0.28	0.454	0.406	0.261	0.525						
25	50.8	2.81	2772	0.28	0.452	0.405	0.260	0.524						
n	25	25	25	25	25	25	25	25						
Avg.	50.6	2.80	2741	0.28	0.455	0.408	0.261	0.525						
Med.	50.6	2.80	2751	0.28	0.454	0.407	0.261	0.525						
σ	0.37	0.004	37.8	0.000	0.0025	0.0034	0.0019	0.0015						
Min.	49.8	2.80	2668	0.28	0.452	0.403	0.258	0.523						
Max.	51.2	2.81	2797	0.28	0.461	0.414	0.264	0.528						

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Data Set 2 : 55 °C, 100 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	99.4	99.2	99.1	99.0	98.9	98.9	98.8	98.9	98.8	99.1	99.0	98.8	98.3	98.2	98.3	98.2	98.1
2	100.0	99.2	99.0	98.9	98.8	98.6	98.6	98.5	98.6	98.5	98.9	98.6	98.6	97.9	97.9	97.9	97.9	97.8
3	100.0	99.7	99.5	99.3	99.3	99.0	99.0	98.9	99.1	98.9	99.3	99.1	98.8	98.3	98.2	98.3	98.2	98.1
4	100.0	99.4	99.2	99.1	98.9	98.7	98.7	98.7	98.7	98.6	98.7	98.6	98.5	98.0	97.9	97.9	97.9	97.9
5	100.0	99.9	99.6	99.4	99.3	98.9	99.3	98.9	98.7	98.8	99.2	99.0	98.8	98.5	98.0	98.2	98.0	98.0
6	100.0	99.4	99.2	99.1	98.9	98.6	98.8	98.6	98.7	98.7	99.0	98.8	98.7	98.2	98.0	98.2	98.1	98.0
7	100.0	99.7	99.4	99.4	99.2	99.0	99.1	99.0	99.1	99.0	99.3	99.1	99.0	98.5	98.3	98.4	98.4	98.2
8	100.0	99.6	99.3	99.3	99.1	98.8	99.0	98.9	98.9	98.8	99.2	98.9	98.9	98.3	98.2	98.3	98.1	98.0
9	100.0	99.5	99.2	99.2	99.0	98.8	98.9	98.7	98.7	98.7	99.0	98.7	98.6	98.0	97.9	98.0	98.0	97.8
10	100.0	99.7	99.4	99.4	99.3	99.0	99.2	99.0	99.0	98.9	99.2	99.0	98.9	98.3	98.2	98.2	98.3	98.1
11	100.0	99.6	99.3	99.6	99.1	98.8	99.2	98.9	98.9	98.8	99.1	98.8	98.9	98.5	98.3	98.2	98.2	97.9
12	100.0	99.3	99.0	99.1	98.9	98.8	98.9	98.7	98.8	98.7	99.1	98.8	98.8	98.3	98.2	98.2	98.2	98.0
13	100.0	99.6	99.4	99.3	99.2	98.9	99.1	98.9	99.0	98.9	99.2	99.0	98.9	98.3	98.2	98.4	98.3	98.2
14	100.0	99.5	99.4	99.3	99.1	98.9	99.0	98.9	99.1	98.9	99.2	99.0	98.9	98.3	98.2	98.4	98.3	98.2
15	100.0	99.6	99.5	99.3	99.2	99.1	99.2	99.0	99.2	99.0	99.2	99.1	98.9	98.3	98.1	98.3	98.2	98.1
16	100.0	99.5	99.2	99.2	99.0	98.7	98.9	98.7	98.9	98.8	98.9	98.8	98.7	98.1	97.9	98.1	98.0	97.9
17	100.0	99.3	99.1	99.2	98.9	98.6	98.7	98.5	98.4	98.7	98.7	98.7	98.6	98.0	97.6	98.0	97.7	97.7
18	100.0	99.2	99.0	99.0	98.8	98.6	98.7	98.6	98.7	98.7	98.9	98.8	98.7	98.1	97.9	98.1	98.0	98.0
19	100.0	99.3	99.0	99.0	98.8	98.7	98.8	98.6	98.7	98.6	99.0	98.8	98.6	98.0	97.9	98.1	98.0	97.9
20	100.0	99.3	99.1	99.1	99.0	98.7	98.9	98.7	98.8	98.7	99.0	98.8	98.7	98.0	98.0	98.1	98.0	97.9
21	100.0	99.7	99.6	99.5	99.4	99.2	99.4	99.2	99.3	99.2	99.5	99.3	99.2	98.6	98.5	98.6	98.6	98.4
22	100.0	99.3	99.1	99.0	98.8	98.6	98.8	98.7	98.7	98.6	98.9	98.7	98.6	98.1	97.9	98.1	98.0	97.8
23	100.0	99.5	99.3	99.4	99.1	98.9	99.0	98.7	98.8	98.9	99.0	99.0	98.9	98.3	98.2	98.1	98.1	98.0
24	100.0	99.7	99.4	99.5	99.3	99.1	99.3	99.1	99.2	99.1	99.4	99.3	99.2	98.6	98.5	98.5	98.5	98.4
25	100.0	99.4	99.2	99.2	99.0	98.9	99.1	98.9	98.9	98.8	99.0	98.9	98.8	98.2	98.1	98.2	98.2	98.1
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.5	99.3	99.2	99.1	98.8	99.0	98.8	98.9	98.8	99.1	98.9	98.8	98.2	98.1	98.2	98.1	98.0
Med.	100.0	99.5	99.2	99.2	99.0	98.8	99.0	98.8	98.9	98.8	99.1	98.9	98.8	98.3	98.1	98.2	98.1	98.0
σ	0.00	0.18	0.18	0.18	0.18	0.17	0.21	0.18	0.22	0.16	0.20	0.19	0.18	0.20	0.21	0.17	0.20	0.18
Min.	100.0	99.2	99.0	98.9	98.8	98.6	98.6	98.5	98.4	98.5	98.7	98.6	98.5	97.9	97.6	97.9	97.7	97.7
Max.	100.0	99.9	99.6	99.6	99.4	99.2	99.4	99.2	99.3	99.2	99.5	99.3	99.2	98.6	98.5	98.6	98.6	98.4

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.)	-0.0090	-0.0111	-0.0121	-0.0182	-0.0192	-0.0182	-0.0192	-0.0202	-0.0212	-0.0212	-0.0222							

Test duration used	5000 h to 10000 h	
B	1.001	
α	2.50E-06	
R^2	0.837	
Calculated L_{70} (10K)	143000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	89700	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	42500	hours
Reported L_{90} (10K)	42500	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, 100 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	98.0	98.0	97.8															
2	97.7	97.7	97.6															
3	98.0	98.0	97.9															
4	97.7	97.8	97.8															
5	97.9	97.9	97.7															
6	98.0	97.9	97.8															
7	98.2	98.2	98.1															
8	98.0	97.9	97.9															
9	97.7	97.8	97.6															
10	98.0	98.0	97.9															
11	98.0	97.9	97.7															
12	97.9	98.0	97.9															
13	98.1	98.1	98.1															
14	98.2	98.0	98.0															
15	98.0	98.0	98.0															
16	97.8	97.8	97.8															
17	97.6	97.5	97.5															
18	97.9	97.8	97.8															
19	97.7	97.8	97.6															
20	97.8	97.8	97.7															
21	98.3	98.3	98.2															
22	97.8	97.8	97.6															
23	98.1	98.1	97.8															
24	98.3	98.3	98.2															
25	98.0	97.9	97.9															
n	25	25	25															
Avg.	97.9	97.9	97.8															
Med.	98.0	97.9	97.8															
σ	0.19	0.18	0.19															
Min.	97.6	97.5	97.5															
Max.	98.3	98.3	98.2															

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Data Set 2 : 55 °C, 100 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	99.6	99.5	99.6	99.6	99.5	99.6	99.5	99.5	99.5	99.5	99.6	99.5	99.5	99.5	99.5	99.6	99.5
2	100.0	99.6	99.5	99.6	99.6	99.6	99.6	99.5	99.6	99.6	99.6	99.5	99.5	99.5	99.6	99.5	99.6	99.6
3	100.0	99.5	99.5	99.6	99.5	99.6	99.5	99.5	99.5	99.5	99.5	99.6	99.5	99.5	99.5	99.5	99.5	99.5
4	100.0	99.6	99.5	99.6	99.6	99.5	99.5	99.5	99.5	99.5	99.5	99.6	99.5	99.5	99.5	99.5	99.5	99.6
5	100.0	99.5	99.4	99.5	99.5	99.4	99.5	99.4	99.4	99.5	99.5	99.5	99.4	99.5	99.5	99.4	99.5	99.5
6	100.0	99.6	99.5	99.6	99.6	99.6	99.6	99.5	99.5	99.6	99.5	99.6	99.5	99.5	99.6	99.5	99.6	99.6
7	100.0	99.5	99.4	99.5	99.4	99.5	99.5	99.4	99.4	99.4	99.4	99.5	99.4	99.4	99.4	99.3	99.4	99.4
8	100.0	99.6	99.6	99.7	99.6	99.7	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.7
9	100.0	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5
10	100.0	99.5	99.4	99.5	99.4	99.5	99.5	99.4	99.4	99.4	99.4	99.5	99.4	99.4	99.4	99.4	99.5	99.5
11	100.0	99.5	99.5	99.6	99.5	99.6	99.6	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5
12	100.0	99.7	99.6	99.7	99.6	99.6	99.7	99.6	99.7	99.6	99.6	99.6	99.6	99.6	99.6	99.7	99.7	99.6
13	100.0	99.6	99.5	99.6	99.5	99.5	99.6	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.6	99.5
14	100.0	99.5	99.5	99.6	99.5	99.5	99.6	99.5	99.5	99.5	99.5	99.6	99.5	99.5	99.5	99.6	99.6	99.6
15	100.0	99.6	99.5	99.6	99.5	99.5	99.6	99.5	99.5	99.5	99.5	99.6	99.5	99.6	99.5	99.6	99.6	99.6
16	100.0	99.6	99.5	99.6	99.5	99.6	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.4	99.5	99.5
17	100.0	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.5	99.6	99.6	99.6	99.5	99.6	99.6	99.5	99.6	99.6
18	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.7	99.7	99.7	99.8	99.7
19	100.0	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.5	99.6	99.6	99.5	99.6	99.6	99.6
20	100.0	99.6	99.6	99.6	99.6	99.6	99.7	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6
21	100.0	99.6	99.6	99.6	99.5	99.6	99.6	99.6	99.5	99.5	99.6	99.6	99.5	99.5	99.6	99.5	99.6	99.5
22	100.0	99.6	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.6	99.5	99.5	99.5	99.6	99.5	99.5
23	100.0	99.7	99.7	99.7	99.7	99.6	99.7	99.6	99.6	99.6	99.7	99.7	99.6	99.7	99.6	99.6	99.7	99.7
24	100.0	99.5	99.5	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	99.5	99.4
25	100.0	99.5	99.4	99.5	99.4	99.4	99.5	99.4	99.4	99.4	99.4	99.5	99.4	99.4	99.4	99.5	99.5	99.4
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.6	99.5	99.6	99.5	99.6	99.6	99.5	99.5	99.5	99.5	99.6	99.5	99.5	99.5	99.5	99.6	99.5
Med.	100.0	99.6	99.5	99.6	99.5	99.6	99.6	99.5	99.5	99.5	99.5	99.6	99.5	99.5	99.5	99.5	99.6	99.5
σ	0.00	0.06	0.07	0.07	0.07	0.08	0.07	0.08	0.08	0.08	0.08	0.07	0.07	0.08	0.08	0.09	0.08	0.08
Min.	100.0	99.5	99.4	99.5	99.4	99.4	99.5	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.3	99.4	99.4
Max.	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.7	99.7	99.7	99.8	99.7

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Data Set 2 : 55 °C, 100 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	99.5	99.5	99.5															
2	99.6	99.6	99.5															
3	99.5	99.5	99.5															
4	99.5	99.4	99.4															
5	99.5	99.5	99.5															
6	99.6	99.5	99.6															
7	99.5	99.4	99.4															
8	99.6	99.7	99.6															
9	99.4	99.5	99.4															
10	99.4	99.5	99.4															
11	99.6	99.5	99.6															
12	99.7	99.7	99.6															
13	99.5	99.5	99.6															
14	99.6	99.6	99.5															
15	99.6	99.5	99.5															
16	99.4	99.4	99.5															
17	99.6	99.5	99.6															
18	99.7	99.7	99.7															
19	99.6	99.6	99.6															
20	99.6	99.6	99.6															
21	99.6	99.5	99.6															
22	99.5	99.5	99.5															
23	99.7	99.6	99.7															
24	99.5	99.4	99.5															
25	99.4	99.4	99.4															
n	25	25	25															
Avg.	99.6	99.5	99.5															
Med.	99.6	99.5	99.5															
σ	0.09	0.08	0.09															
Min.	99.4	99.4	99.4															
Max.	99.7	99.7	99.7															

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Data Set 2 : 55 °C, 100 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.0007	0.0008	0.0010	0.0010	0.0010	0.0011	0.0010	0.0010	0.0010	0.0009	0.0010	0.0010	0.0013	0.0014	0.0013	0.0013	0.0015
2	0.0000	0.0006	0.0007	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0008	0.0008	0.0009	0.0013	0.0013	0.0012	0.0012	0.0014
3	0.0000	0.0007	0.0008	0.0009	0.0011	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0009	0.0009	0.0014	0.0014	0.0013	0.0014	0.0015
4	0.0000	0.0008	0.0008	0.0010	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0008	0.0008	0.0009	0.0012	0.0014	0.0013	0.0012	0.0015
5	0.0000	0.0006	0.0007	0.0009	0.0009	0.0009	0.0010	0.0011	0.0009	0.0009	0.0007	0.0008	0.0009	0.0014	0.0013	0.0013	0.0013	0.0013
6	0.0000	0.0007	0.0007	0.0008	0.0009	0.0008	0.0010	0.0010	0.0009	0.0009	0.0007	0.0007	0.0008	0.0013	0.0012	0.0012	0.0011	0.0014
7	0.0000	0.0006	0.0007	0.0009	0.0009	0.0009	0.0009	0.0011	0.0010	0.0009	0.0008	0.0008	0.0009	0.0013	0.0013	0.0013	0.0013	0.0014
8	0.0000	0.0008	0.0008	0.0010	0.0010	0.0011	0.0012	0.0012	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0015	0.0014	0.0014	0.0016
9	0.0000	0.0007	0.0007	0.0009	0.0009	0.0010	0.0010	0.0011	0.0010	0.0009	0.0008	0.0009	0.0009	0.0013	0.0013	0.0013	0.0013	0.0015
10	0.0000	0.0006	0.0007	0.0009	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0009	0.0009	0.0010	0.0014	0.0013	0.0013	0.0013	0.0014
11	0.0000	0.0007	0.0008	0.0011	0.0011	0.0011	0.0012	0.0012	0.0011	0.0009	0.0008	0.0009	0.0010	0.0014	0.0014	0.0013	0.0012	0.0014
12	0.0000	0.0007	0.0007	0.0009	0.0009	0.0009	0.0010	0.0010	0.0009	0.0008	0.0007	0.0008	0.0009	0.0013	0.0012	0.0012	0.0012	0.0013
13	0.0000	0.0006	0.0007	0.0009	0.0009	0.0010	0.0009	0.0010	0.0010	0.0009	0.0007	0.0008	0.0009	0.0013	0.0013	0.0012	0.0013	0.0014
14	0.0000	0.0007	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0008	0.0009	0.0009	0.0009	0.0013	0.0013	0.0013	0.0013	0.0015
15	0.0000	0.0007	0.0008	0.0009	0.0010	0.0009	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0009	0.0013	0.0014	0.0013	0.0013	0.0015
16	0.0000	0.0007	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0009	0.0013	0.0014	0.0013	0.0012	0.0015
17	0.0000	0.0007	0.0008	0.0009	0.0009	0.0010	0.0009	0.0011	0.0009	0.0009	0.0008	0.0009	0.0009	0.0013	0.0013	0.0014	0.0013	0.0014
18	0.0000	0.0006	0.0007	0.0009	0.0010	0.0009	0.0010	0.0010	0.0010	0.0009	0.0008	0.0008	0.0009	0.0013	0.0013	0.0013	0.0013	0.0014
19	0.0000	0.0006	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0008	0.0009	0.0010	0.0014	0.0013	0.0013	0.0014	0.0014
20	0.0000	0.0007	0.0007	0.0010	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0008	0.0009	0.0010	0.0013	0.0013	0.0013	0.0012	0.0014
21	0.0000	0.0007	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0008	0.0007	0.0008	0.0008	0.0013	0.0012	0.0013	0.0012	0.0015
22	0.0000	0.0006	0.0007	0.0009	0.0008	0.0010	0.0009	0.0009	0.0010	0.0009	0.0008	0.0009	0.0009	0.0013	0.0013	0.0013	0.0013	0.0014
23	0.0000	0.0006	0.0007	0.0010	0.0010	0.0010	0.0011	0.0010	0.0010	0.0009	0.0007	0.0009	0.0010	0.0014	0.0013	0.0012	0.0013	0.0013
24	0.0000	0.0006	0.0006	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0008	0.0008	0.0009	0.0012	0.0013	0.0013	0.0012	0.0014
25	0.0000	0.0006	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010	0.0009	0.0008	0.0008	0.0008	0.0009	0.0013	0.0013	0.0013	0.0013	0.0014
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0007	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0008	0.0009	0.0009	0.0013	0.0013	0.0013	0.0013	0.0014
Med.	0.0000	0.0007	0.0007	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0009	0.0013	0.0013	0.0013	0.0013	0.0014
σ	0.0000	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Min.	0.0000	0.0006	0.0006	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0008	0.0007	0.0007	0.0008	0.0012	0.0012	0.0012	0.0011	0.0013
Max.	0.0000	0.0008	0.0008	0.0011	0.0011	0.0011	0.0012	0.0012	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0015	0.0014	0.0014	0.0016

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Data Set 2 : 55 °C, 100 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.0014	0.0015	0.0015															
2	0.0014	0.0014	0.0015															
3	0.0014	0.0015	0.0016															
4	0.0015	0.0015	0.0015															
5	0.0014	0.0014	0.0016															
6	0.0013	0.0014	0.0014															
7	0.0014	0.0015	0.0014															
8	0.0016	0.0016	0.0016															
9	0.0014	0.0015	0.0014															
10	0.0015	0.0015	0.0015															
11	0.0014	0.0015	0.0015															
12	0.0013	0.0014	0.0014															
13	0.0014	0.0015	0.0014															
14	0.0015	0.0015	0.0014															
15	0.0014	0.0015	0.0015															
16	0.0015	0.0015	0.0015															
17	0.0014	0.0015	0.0014															
18	0.0015	0.0015	0.0014															
19	0.0014	0.0015	0.0015															
20	0.0015	0.0015	0.0014															
21	0.0015	0.0015	0.0015															
22	0.0015	0.0014	0.0015															
23	0.0014	0.0015	0.0014															
24	0.0014	0.0015	0.0014															
25	0.0014	0.0015	0.0015															
n	25	25	25															
Avg.	0.0014	0.0015	0.0015															
Med.	0.0014	0.0015	0.0015															
σ	0.0001	0.0001	0.0001															
Min.	0.0013	0.0014	0.0014															
Max.	0.0016	0.0016	0.0016															

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Data Set 2 : 55 °C, 100 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.2638	0.2631	0.2630	0.2628	0.2628	0.2628	0.2627	0.2628	0.2628	0.2629	0.2629	0.2628	0.2628	0.2626	0.2624	0.2625	0.2626	0.2624
2	0.2596	0.2589	0.2588	0.2586	0.2586	0.2586	0.2586	0.2585	0.2586	0.2587	0.2587	0.2588	0.2587	0.2583	0.2583	0.2584	0.2584	0.2582
3	0.2610	0.2604	0.2602	0.2601	0.2600	0.2601	0.2600	0.2599	0.2600	0.2601	0.2602	0.2601	0.2601	0.2597	0.2597	0.2598	0.2597	0.2596
4	0.2640	0.2632	0.2633	0.2631	0.2630	0.2631	0.2630	0.2630	0.2630	0.2631	0.2632	0.2632	0.2632	0.2628	0.2627	0.2628	0.2629	0.2626
5	0.2632	0.2626	0.2625	0.2623	0.2623	0.2623	0.2622	0.2621	0.2623	0.2622	0.2624	0.2623	0.2623	0.2619	0.2620	0.2619	0.2619	0.2619
6	0.2592	0.2585	0.2585	0.2584	0.2583	0.2584	0.2583	0.2582	0.2583	0.2583	0.2585	0.2585	0.2584	0.2580	0.2580	0.2580	0.2581	0.2579
7	0.2605	0.2599	0.2598	0.2597	0.2596	0.2597	0.2596	0.2595	0.2596	0.2596	0.2598	0.2597	0.2597	0.2593	0.2593	0.2593	0.2593	0.2592
8	0.2641	0.2634	0.2633	0.2631	0.2631	0.2631	0.2630	0.2630	0.2630	0.2631	0.2632	0.2632	0.2631	0.2628	0.2627	0.2628	0.2628	0.2626
9	0.2615	0.2609	0.2608	0.2606	0.2606	0.2606	0.2605	0.2605	0.2605	0.2606	0.2607	0.2606	0.2606	0.2603	0.2603	0.2603	0.2603	0.2601
10	0.2631	0.2625	0.2624	0.2622	0.2621	0.2621	0.2622	0.2620	0.2621	0.2622	0.2622	0.2622	0.2621	0.2618	0.2618	0.2618	0.2618	0.2617
11	0.2610	0.2604	0.2602	0.2599	0.2600	0.2600	0.2599	0.2599	0.2600	0.2601	0.2602	0.2601	0.2600	0.2597	0.2597	0.2598	0.2598	0.2597
12	0.2626	0.2619	0.2619	0.2617	0.2617	0.2617	0.2616	0.2616	0.2617	0.2618	0.2619	0.2618	0.2617	0.2613	0.2614	0.2614	0.2614	0.2613
13	0.2627	0.2621	0.2620	0.2618	0.2618	0.2618	0.2618	0.2617	0.2617	0.2618	0.2620	0.2619	0.2618	0.2615	0.2614	0.2615	0.2615	0.2614
14	0.2594	0.2587	0.2586	0.2585	0.2584	0.2584	0.2584	0.2583	0.2583	0.2585	0.2585	0.2585	0.2585	0.2581	0.2581	0.2581	0.2581	0.2580
15	0.2592	0.2585	0.2584	0.2583	0.2582	0.2583	0.2582	0.2581	0.2582	0.2583	0.2584	0.2583	0.2583	0.2579	0.2578	0.2579	0.2579	0.2578
16	0.2626	0.2619	0.2618	0.2617	0.2617	0.2617	0.2616	0.2616	0.2616	0.2617	0.2618	0.2618	0.2617	0.2614	0.2613	0.2614	0.2615	0.2612
17	0.2610	0.2603	0.2602	0.2600	0.2600	0.2600	0.2601	0.2598	0.2600	0.2601	0.2602	0.2601	0.2600	0.2597	0.2598	0.2596	0.2597	0.2597
18	0.2621	0.2615	0.2614	0.2612	0.2612	0.2613	0.2611	0.2611	0.2612	0.2612	0.2614	0.2613	0.2612	0.2609	0.2609	0.2608	0.2609	0.2608
19	0.2647	0.2641	0.2639	0.2639	0.2638	0.2637	0.2637	0.2636	0.2637	0.2638	0.2639	0.2638	0.2637	0.2634	0.2634	0.2635	0.2634	0.2634
20	0.2631	0.2623	0.2623	0.2621	0.2621	0.2621	0.2621	0.2619	0.2621	0.2622	0.2622	0.2622	0.2621	0.2618	0.2617	0.2617	0.2619	0.2617
21	0.2596	0.2590	0.2589	0.2588	0.2588	0.2587	0.2587	0.2586	0.2587	0.2588	0.2589	0.2588	0.2588	0.2583	0.2585	0.2583	0.2584	0.2582
22	0.2627	0.2621	0.2620	0.2618	0.2619	0.2617	0.2618	0.2618	0.2618	0.2618	0.2619	0.2618	0.2619	0.2614	0.2615	0.2615	0.2615	0.2614
23	0.2619	0.2613	0.2612	0.2609	0.2609	0.2610	0.2609	0.2609	0.2609	0.2610	0.2612	0.2610	0.2609	0.2606	0.2606	0.2607	0.2607	0.2606
24	0.2612	0.2606	0.2606	0.2603	0.2603	0.2602	0.2602	0.2602	0.2602	0.2604	0.2604	0.2604	0.2603	0.2601	0.2600	0.2600	0.2601	0.2599
25	0.2600	0.2594	0.2592	0.2591	0.2590	0.2590	0.2590	0.2589	0.2591	0.2592	0.2592	0.2592	0.2591	0.2587	0.2587	0.2587	0.2587	0.2586
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2618	0.2611	0.2610	0.2608	0.2608	0.2608	0.2608	0.2607	0.2608	0.2609	0.2610	0.2609	0.2608	0.2605	0.2605	0.2605	0.2605	0.2604
Med.	0.2619	0.2613	0.2612	0.2609	0.2609	0.2610	0.2609	0.2609	0.2609	0.2610	0.2612	0.2610	0.2609	0.2606	0.2606	0.2607	0.2607	0.2606
σ	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0016	0.0017	0.0017	0.0017	0.0017	0.0017
Min.	0.2592	0.2585	0.2584	0.2583	0.2582	0.2583	0.2582	0.2581	0.2582	0.2583	0.2584	0.2583	0.2583	0.2579	0.2578	0.2579	0.2579	0.2578
Max.	0.2647	0.2641	0.2639	0.2639	0.2638	0.2637	0.2637	0.2636	0.2637	0.2638	0.2639	0.2638	0.2637	0.2634	0.2634	0.2635	0.2634	0.2634

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Data Set 2 : 55 °C, 100 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.2625	0.2624	0.2624															
2	0.2582	0.2582	0.2581															
3	0.2596	0.2595	0.2595															
4	0.2626	0.2626	0.2626															
5	0.2618	0.2618	0.2617															
6	0.2579	0.2579	0.2579															
7	0.2592	0.2591	0.2592															
8	0.2627	0.2627	0.2626															
9	0.2602	0.2601	0.2602															
10	0.2617	0.2617	0.2617															
11	0.2597	0.2595	0.2596															
12	0.2614	0.2613	0.2613															
13	0.2614	0.2613	0.2613															
14	0.2579	0.2579	0.2580															
15	0.2578	0.2577	0.2577															
16	0.2612	0.2613	0.2612															
17	0.2596	0.2596	0.2596															
18	0.2607	0.2607	0.2608															
19	0.2634	0.2632	0.2633															
20	0.2616	0.2616	0.2617															
21	0.2582	0.2582	0.2582															
22	0.2613	0.2614	0.2613															
23	0.2605	0.2605	0.2605															
24	0.2599	0.2598	0.2599															
25	0.2586	0.2586	0.2586															
n	25	25	25															
Avg.	0.2604	0.2603	0.2604															
Med.	0.2605	0.2605	0.2605															
σ	0.0017	0.0017	0.0017															
Min.	0.2578	0.2577	0.2577															
Max.	0.2634	0.2632	0.2633															

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Data Set 2 : 55 °C, 100 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.5266	0.5266	0.5266	0.5265	0.5265	0.5265	0.5264	0.5265	0.5265	0.5265	0.5266	0.5265	0.5264	0.5263	0.5262	0.5263	0.5263	0.5262
2	0.5282	0.5282	0.5282	0.5281	0.5280	0.5280	0.5280	0.5280	0.5280	0.5281	0.5282	0.5281	0.5281	0.5279	0.5278	0.5279	0.5279	0.5278
3	0.5246	0.5246	0.5246	0.5245	0.5244	0.5244	0.5244	0.5244	0.5245	0.5245	0.5246	0.5245	0.5244	0.5243	0.5242	0.5243	0.5242	0.5241
4	0.5268	0.5268	0.5268	0.5267	0.5266	0.5267	0.5266	0.5266	0.5266	0.5267	0.5268	0.5267	0.5267	0.5265	0.5265	0.5265	0.5265	0.5265
5	0.5255	0.5256	0.5255	0.5254	0.5254	0.5254	0.5253	0.5253	0.5254	0.5254	0.5255	0.5255	0.5254	0.5252	0.5251	0.5252	0.5252	0.5251
6	0.5277	0.5277	0.5277	0.5275	0.5275	0.5275	0.5275	0.5275	0.5275	0.5276	0.5277	0.5276	0.5276	0.5274	0.5274	0.5274	0.5273	0.5273
7	0.5251	0.5252	0.5252	0.5250	0.5249	0.5250	0.5249	0.5249	0.5250	0.5250	0.5251	0.5251	0.5250	0.5248	0.5247	0.5247	0.5248	0.5246
8	0.5242	0.5242	0.5242	0.5240	0.5240	0.5240	0.5239	0.5239	0.5240	0.5240	0.5241	0.5241	0.5240	0.5238	0.5238	0.5238	0.5238	0.5237
9	0.5234	0.5235	0.5235	0.5233	0.5232	0.5233	0.5233	0.5232	0.5232	0.5233	0.5234	0.5233	0.5233	0.5231	0.5230	0.5230	0.5231	0.5230
10	0.5249	0.5249	0.5249	0.5247	0.5247	0.5247	0.5246	0.5247	0.5247	0.5247	0.5248	0.5247	0.5247	0.5244	0.5244	0.5245	0.5245	0.5244
11	0.5278	0.5278	0.5278	0.5277	0.5276	0.5276	0.5276	0.5275	0.5276	0.5276	0.5277	0.5277	0.5276	0.5275	0.5275	0.5275	0.5275	0.5275
12	0.5238	0.5238	0.5238	0.5236	0.5235	0.5236	0.5236	0.5236	0.5237	0.5237	0.5238	0.5238	0.5237	0.5235	0.5235	0.5234	0.5235	0.5234
13	0.5282	0.5282	0.5281	0.5280	0.5280	0.5280	0.5280	0.5279	0.5280	0.5280	0.5281	0.5281	0.5280	0.5278	0.5278	0.5278	0.5278	0.5277
14	0.5274	0.5274	0.5274	0.5273	0.5273	0.5273	0.5272	0.5272	0.5273	0.5273	0.5274	0.5274	0.5273	0.5271	0.5271	0.5271	0.5271	0.5270
15	0.5263	0.5264	0.5263	0.5262	0.5261	0.5262	0.5262	0.5262	0.5263	0.5262	0.5263	0.5263	0.5262	0.5260	0.5260	0.5260	0.5260	0.5259
16	0.5241	0.5241	0.5241	0.5239	0.5240	0.5239	0.5239	0.5239	0.5239	0.5239	0.5240	0.5240	0.5240	0.5237	0.5237	0.5237	0.5237	0.5237
17	0.5273	0.5274	0.5273	0.5271	0.5272	0.5272	0.5272	0.5271	0.5271	0.5272	0.5272	0.5272	0.5272	0.5270	0.5270	0.5270	0.5270	0.5269
18	0.5246	0.5246	0.5245	0.5245	0.5244	0.5244	0.5244	0.5244	0.5244	0.5245	0.5246	0.5245	0.5245	0.5242	0.5242	0.5243	0.5243	0.5242
19	0.5254	0.5254	0.5254	0.5252	0.5252	0.5252	0.5251	0.5252	0.5252	0.5252	0.5254	0.5253	0.5252	0.5250	0.5250	0.5250	0.5251	0.5250
20	0.5260	0.5261	0.5260	0.5259	0.5259	0.5259	0.5258	0.5259	0.5259	0.5260	0.5260	0.5259	0.5259	0.5257	0.5257	0.5257	0.5257	0.5256
21	0.5264	0.5265	0.5264	0.5263	0.5262	0.5263	0.5263	0.5262	0.5262	0.5263	0.5264	0.5263	0.5263	0.5260	0.5261	0.5261	0.5261	0.5260
22	0.5243	0.5243	0.5243	0.5241	0.5241	0.5241	0.5241	0.5241	0.5241	0.5241	0.5243	0.5242	0.5241	0.5239	0.5239	0.5239	0.5239	0.5238
23	0.5286	0.5287	0.5286	0.5285	0.5285	0.5285	0.5285	0.5285	0.5285	0.5285	0.5286	0.5286	0.5285	0.5283	0.5283	0.5283	0.5283	0.5283
24	0.5253	0.5253	0.5253	0.5251	0.5251	0.5251	0.5251	0.5251	0.5251	0.5251	0.5252	0.5252	0.5251	0.5249	0.5249	0.5250	0.5250	0.5249
25	0.5241	0.5242	0.5242	0.5240	0.5240	0.5240	0.5240	0.5240	0.5240	0.5241	0.5241	0.5240	0.5241	0.5238	0.5238	0.5238	0.5238	0.5238
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5259	0.5259	0.5259	0.5257	0.5257	0.5257	0.5257	0.5257	0.5257	0.5257	0.5258	0.5258	0.5258	0.5255	0.5255	0.5255	0.5255	0.5255
Med.	0.5255	0.5256	0.5255	0.5254	0.5254	0.5254	0.5253	0.5253	0.5254	0.5254	0.5255	0.5255	0.5254	0.5252	0.5251	0.5252	0.5252	0.5251
σ	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
Min.	0.5234	0.5235	0.5235	0.5233	0.5232	0.5233	0.5233	0.5232	0.5232	0.5233	0.5234	0.5233	0.5233	0.5231	0.5230	0.5230	0.5231	0.5230
Max.	0.5286	0.5287	0.5286	0.5285	0.5285	0.5285	0.5285	0.5285	0.5285	0.5285	0.5286	0.5286	0.5285	0.5283	0.5283	0.5283	0.5283	0.5283

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Data Set 2 : 55 °C, 100 mA

Actual Case Temperature [T_S]	55.9 °C
Actual Ambient Temperature [T_A]	55.1 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.5262	0.5262	0.5261															
2	0.5278	0.5278	0.5278															
3	0.5242	0.5242	0.5241															
4	0.5265	0.5264	0.5264															
5	0.5251	0.5251	0.5250															
6	0.5274	0.5274	0.5273															
7	0.5247	0.5247	0.5247															
8	0.5237	0.5237	0.5237															
9	0.5230	0.5230	0.5230															
10	0.5244	0.5244	0.5244															
11	0.5275	0.5274	0.5274															
12	0.5234	0.5234	0.5234															
13	0.5278	0.5278	0.5277															
14	0.5271	0.5270	0.5270															
15	0.5260	0.5259	0.5259															
16	0.5237	0.5235	0.5236															
17	0.5269	0.5269	0.5269															
18	0.5242	0.5242	0.5242															
19	0.5249	0.5249	0.5249															
20	0.5256	0.5256	0.5256															
21	0.5260	0.5260	0.5260															
22	0.5238	0.5238	0.5238															
23	0.5283	0.5283	0.5283															
24	0.5249	0.5248	0.5249															
25	0.5237	0.5237	0.5237															
n	25	25	25															
Avg.	0.5255	0.5254	0.5254															
Med.	0.5251	0.5251	0.5250															
σ	0.0016	0.0016	0.0016															
Min.	0.5230	0.5230	0.5230															
Max.	0.5283	0.5283	0.5283															

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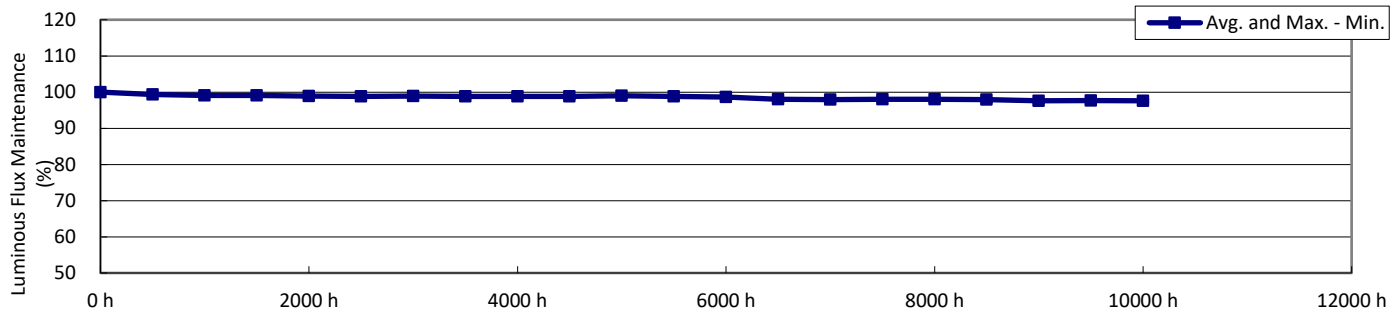
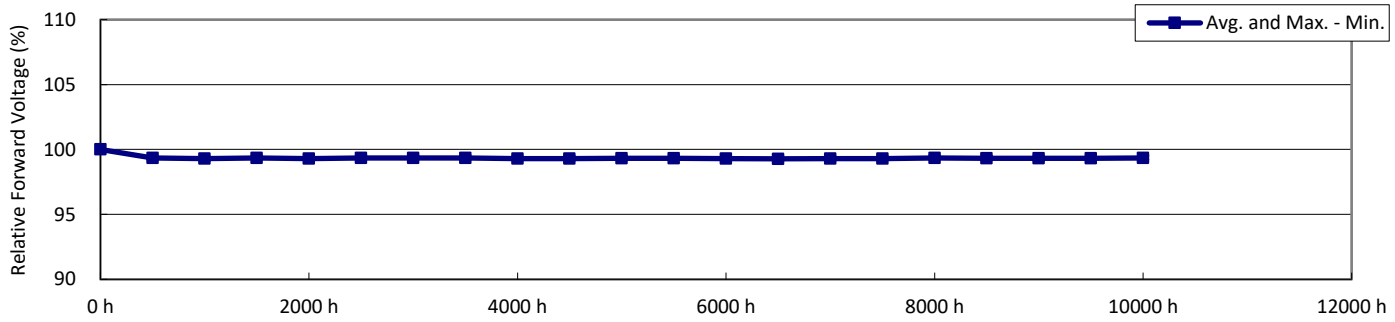
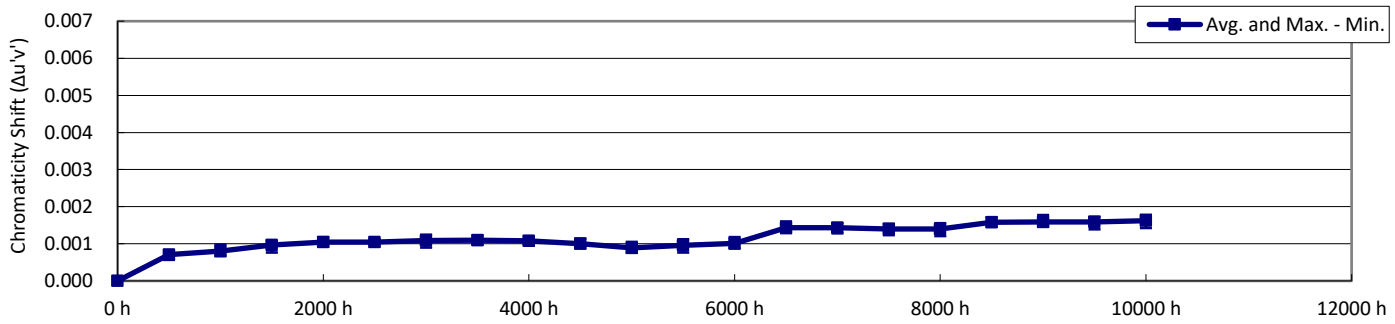
Data Set 3 : 55 °C, 180 mA

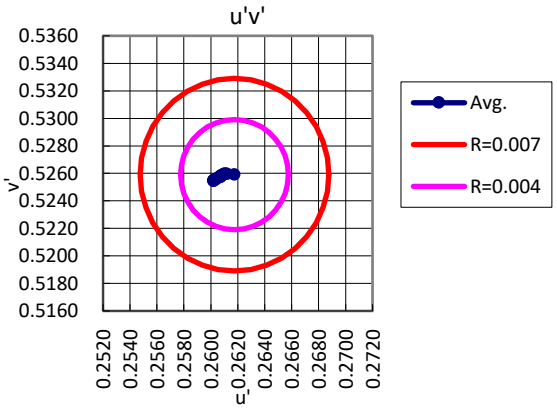
Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

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









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Data Set 3 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °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 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	87.2	2.95	2700	0.53	0.456	0.404	0.263	0.524						
2	87.4	2.94	2704	0.53	0.455	0.403	0.263	0.524						
3	87.6	2.94	2704	0.53	0.457	0.406	0.263	0.525						
4	87.7	2.94	2701	0.53	0.456	0.404	0.263	0.524						
5	88.7	2.94	2701	0.53	0.459	0.410	0.263	0.527						
6	88.6	2.94	2772	0.53	0.456	0.412	0.259	0.527						
7	87.6	2.94	2706	0.53	0.458	0.408	0.262	0.526						
8	87.5	2.94	2709	0.53	0.457	0.406	0.262	0.525						
9	87.4	2.95	2675	0.53	0.462	0.411	0.264	0.528						
10	87.6	2.94	2679	0.53	0.458	0.405	0.264	0.525						
11	88.5	2.94	2744	0.53	0.456	0.409	0.261	0.526						
12	87.6	2.95	2704	0.53	0.456	0.405	0.263	0.525						
13	87.6	2.94	2687	0.53	0.459	0.408	0.263	0.526						
14	87.4	2.95	2729	0.53	0.456	0.407	0.261	0.525						
15	88.1	2.94	2745	0.53	0.458	0.413	0.260	0.528						
16	88.5	2.94	2769	0.53	0.455	0.411	0.259	0.527						
17	88.3	2.94	2736	0.53	0.457	0.410	0.261	0.527						
18	88.5	2.94	2784	0.53	0.453	0.408	0.259	0.525						
19	88.7	2.94	2781	0.53	0.454	0.410	0.259	0.526						
20	87.9	2.95	2725	0.53	0.456	0.407	0.262	0.525						
21	88.4	2.93	2755	0.53	0.456	0.411	0.260	0.527						
22	87.0	2.94	2695	0.53	0.456	0.404	0.263	0.524						
23	88.8	2.94	2762	0.53	0.456	0.412	0.260	0.528						
24	87.7	2.95	2695	0.53	0.458	0.406	0.263	0.525						
25	87.8	2.94	2727	0.53	0.456	0.407	0.262	0.525						
n	25	25	25	25	25	25	25	25						
Avg.	87.9	2.94	2724	0.53	0.457	0.408	0.262	0.526						
Med.	87.7	2.94	2709	0.53	0.456	0.408	0.262	0.525						
σ	0.53	0.004	32.7	0.001	0.0018	0.0030	0.0017	0.0012						
Min.	87.0	2.93	2675	0.53	0.453	0.403	0.259	0.524						
Max.	88.8	2.95	2784	0.53	0.462	0.413	0.264	0.528						

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Data Set 3 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °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 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	99.5	99.3	99.3	99.1	98.9	99.1	98.9	98.9	98.9	99.1	98.8	98.7	98.2	98.0	98.1	98.1	97.9
2	100.0	99.2	99.0	99.0	98.8	98.7	98.9	98.8	98.8	98.8	99.0	98.8	98.7	98.1	97.9	98.0	98.1	97.9
3	100.0	99.4	99.3	99.4	99.2	99.0	99.2	99.0	99.1	99.1	99.3	99.0	98.9	98.3	98.2	98.3	98.3	98.2
4	100.0	99.1	99.0	99.1	98.9	98.8	98.9	98.8	98.8	98.8	99.0	98.8	98.7	98.1	97.9	98.1	98.1	97.9
5	100.0	99.1	99.0	98.7	98.3	98.4	98.5	98.4	98.3	98.2	98.5	98.2	98.3	97.5	97.5	97.6	97.3	97.2
6	100.0	99.2	99.0	99.0	98.8	98.7	98.9	98.7	98.7	98.6	98.8	98.6	98.5	97.9	97.7	97.9	97.9	97.7
7	100.0	99.3	99.1	99.1	98.8	98.6	98.8	98.7	98.7	98.6	98.9	98.7	98.5	97.9	97.9	97.9	97.8	97.8
8	100.0	99.2	98.9	98.9	98.7	98.6	98.7	98.6	98.6	98.5	98.8	98.6	98.4	97.8	97.8	97.9	97.8	97.7
9	100.0	99.4	99.2	99.3	99.1	98.9	99.1	98.9	99.0	98.9	99.2	99.0	98.7	98.2	98.2	98.2	98.2	98.1
10	100.0	99.1	98.9	99.0	98.8	98.7	98.8	98.7	98.7	98.6	98.9	98.8	98.4	97.9	97.9	97.9	97.8	97.7
11	100.0	99.1	99.0	99.2	98.7	98.7	98.6	98.9	98.7	98.7	98.8	98.7	98.5	97.8	97.8	98.0	97.5	97.5
12	100.0	99.4	99.2	99.2	99.1	98.9	99.0	98.9	99.0	98.8	99.1	98.9	98.7	98.1	98.1	98.1	98.1	98.0
13	100.0	99.0	98.8	98.8	98.7	98.5	98.7	98.6	98.6	98.6	98.7	98.6	98.4	97.8	97.8	97.8	97.8	97.7
14	100.0	99.5	99.3	99.4	99.2	99.1	99.2	99.1	99.1	99.0	99.2	99.0	98.8	98.3	98.2	98.4	98.3	98.2
15	100.0	99.1	98.9	98.8	98.7	98.5	98.7	98.6	98.6	98.5	98.7	98.5	98.3	97.7	97.6	97.7	97.7	97.5
16	100.0	99.2	99.1	99.0	98.8	98.8	99.0	98.8	98.8	98.8	98.9	98.8	98.6	98.0	97.9	98.0	98.0	97.8
17	100.0	99.3	99.2	99.2	98.9	98.8	99.1	98.9	98.7	98.7	98.8	98.9	98.7	98.1	98.1	97.9	97.8	97.9
18	100.0	99.1	98.9	99.0	98.8	98.7	98.8	98.8	98.4	98.7	98.8	98.7	98.5	98.0	98.0	98.0	98.0	97.9
19	100.0	99.2	99.0	99.1	98.9	98.8	99.0	98.8	98.9	98.8	99.0	98.9	98.7	98.1	97.9	98.1	98.0	97.9
20	100.0	99.6	99.4	99.4	99.2	99.0	99.2	99.0	99.1	99.0	99.2	99.1	98.9	98.2	98.1	98.2	98.2	98.1
21	100.0	99.2	99.1	99.0	98.9	98.9	99.0	98.8	98.9	98.9	99.1	98.9	98.7	98.1	98.0	98.1	98.1	98.0
22	100.0	99.3	98.9	98.8	98.6	98.7	98.9	98.7	98.5	98.8	98.9	98.7	98.6	97.9	97.8	97.9	97.8	97.8
23	100.0	99.4	99.4	99.4	99.2	99.1	99.1	99.1	98.8	99.1	99.1	98.9	98.9	98.2	98.2	98.1	97.9	98.2
24	100.0	99.3	99.0	99.0	98.9	98.7	98.8	98.7	98.8	98.7	98.9	98.8	98.7	98.0	97.9	98.1	98.1	97.9
25	100.0	99.3	99.3	99.3	99.1	99.0	99.0	98.9	99.0	98.9	99.1	98.9	98.7	98.1	98.0	98.1	98.1	97.9
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.3	99.1	99.1	98.9	98.8	98.9	98.8	98.8	98.8	99.0	98.8	98.6	98.0	97.9	98.0	98.0	97.9
Med.	100.0	99.2	99.0	99.1	98.9	98.8	98.9	98.8	98.8	98.8	98.9	98.8	98.7	98.1	97.9	98.0	98.0	97.9
σ	0.00	0.15	0.17	0.21	0.22	0.18	0.19	0.16	0.21	0.20	0.19	0.19	0.18	0.19	0.18	0.18	0.24	0.23
Min.	100.0	99.0	98.8	98.7	98.3	98.4	98.5	98.4	98.3	98.2	98.5	98.2	98.3	97.5	97.5	97.6	97.3	97.2
Max.	100.0	99.6	99.4	99.4	99.2	99.1	99.2	99.1	99.1	99.1	99.3	99.1	98.9	98.3	98.2	98.4	98.3	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.)	-0.0101	-0.0121	-0.0141	-0.0202	-0.0212	-0.0202	-0.0202	-0.0212	-0.0243	-0.0233	-0.0243							

Test duration used	5000 h to 10000 h	
B	1.001	
α	2.68E-06	
R^2	0.826	
Calculated L_{70} (10K)	133000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	83600	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	39700	hours
Reported L_{90} (10K)	39700	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, 180 mA

Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °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 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	97.7	97.7															
2	97.6	97.6	97.7															
3	98.0	97.9	98.0															
4	97.7	97.7	97.7															
5	97.1	97.1	97.2															
6	97.5	97.5	97.5															
7	97.6	97.6	97.4															
8	97.6	97.6	97.4															
9	97.9	98.0	97.8															
10	97.6	97.6	97.6															
11	97.2	97.5	97.2															
12	97.8	97.8	97.6															
13	97.4	97.4	97.3															
14	97.9	97.9	97.8															
15	97.3	97.3	97.2															
16	97.6	97.7	97.5															
17	97.6	97.7	97.4															
18	97.6	97.6	97.5															
19	97.7	97.7	97.6															
20	97.9	98.0	97.9															
21	97.8	97.8	97.8															
22	97.6	97.6	97.5															
23	97.7	97.6	97.6															
24	97.8	97.8	97.7															
25	97.7	97.8	97.6															
n	25	25	25															
Avg.	97.6	97.7	97.6															
Med.	97.6	97.7	97.6															
σ	0.22	0.21	0.22															
Min.	97.1	97.1	97.2															
Max.	98.0	98.0	98.0															

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Data Set 3 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °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 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	99.3	99.2	99.3	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.1	99.2	99.2	99.3	99.2
2	100.0	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.2	99.2	99.3	99.3	99.3	99.3
3	100.0	99.4	99.3	99.4	99.3	99.4	99.4	99.4	99.3	99.3	99.3	99.4	99.3	99.4	99.3	99.3	99.3	99.3
4	100.0	99.4	99.3	99.3	99.3	99.4	99.4	99.4	99.3	99.3	99.3	99.4	99.3	99.3	99.4	99.3	99.5	99.3
5	100.0	99.3	99.2	99.3	99.2	99.3	99.3	99.3	99.2	99.3	99.2	99.2	99.2	99.3	99.2	99.2	99.4	99.3
6	100.0	99.4	99.3	99.4	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.4	99.3	99.3	99.3	99.4	99.3
7	100.0	99.4	99.4	99.4	99.4	99.5	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4
8	100.0	99.3	99.3	99.3	99.2	99.3	99.3	99.3	99.3	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.3	99.3
9	100.0	99.4	99.4	99.5	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.5
10	100.0	99.3	99.2	99.3	99.2	99.3	99.3	99.2	99.2	99.2	99.2	99.3	99.2	99.2	99.2	99.3	99.3	99.4
11	100.0	99.3	99.2	99.3	99.3	99.3	99.3	99.2	99.2	99.2	99.2	99.3	99.2	99.3	99.2	99.3	99.3	99.2
12	100.0	99.3	99.3	99.4	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.2	99.4	99.3	99.3	99.3
13	100.0	99.5	99.4	99.5	99.4	99.5	99.5	99.5	99.4	99.4	99.4	99.5	99.4	99.4	99.4	99.4	99.4	99.4
14	100.0	99.3	99.2	99.3	99.2	99.3	99.3	99.3	99.2	99.2	99.3	99.2	99.2	99.1	99.2	99.2	99.3	99.2
15	100.0	99.3	99.3	99.4	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.2	99.3	99.3	99.4	99.4
16	100.0	99.3	99.3	99.4	99.3	99.3	99.3	99.4	99.3	99.3	99.3	99.3	99.3	99.2	99.3	99.3	99.3	99.3
17	100.0	99.4	99.3	99.4	99.3	99.4	99.4	99.4	99.4	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.3
18	100.0	99.3	99.3	99.3	99.2	99.3	99.3	99.3	99.2	99.2	99.2	99.3	99.2	99.3	99.2	99.2	99.3	99.3
19	100.0	99.4	99.3	99.4	99.3	99.4	99.4	99.4	99.3	99.3	99.3	99.4	99.3	99.3	99.4	99.4	99.4	99.3
20	100.0	99.2	99.2	99.3	99.3	99.3	99.3	99.3	99.2	99.2	99.2	99.3	99.3	99.2	99.3	99.2	99.3	99.3
21	100.0	99.5	99.4	99.5	99.4	99.5	99.5	99.5	99.4	99.5	99.5	99.5	99.5	99.5	99.4	99.5	99.5	99.4
22	100.0	99.3	99.3	99.3	99.2	99.3	99.3	99.3	99.3	99.2	99.3	99.3	99.3	99.2	99.2	99.3	99.3	99.3
23	100.0	99.4	99.3	99.4	99.3	99.4	99.4	99.4	99.3	99.3	99.4	99.3	99.3	99.4	99.3	99.3	99.4	99.4
24	100.0	99.3	99.2	99.3	99.2	99.3	99.3	99.3	99.2	99.2	99.2	99.3	99.2	99.2	99.2	99.2	99.3	99.2
25	100.0	99.4	99.4	99.4	99.3	99.4	99.4	99.4	99.4	99.4	99.3	99.4	99.4	99.3	99.4	99.3	99.4	99.4
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	99.4	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	99.3
Med.	100.0	99.3	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	99.3	99.3	99.3
σ	0.00	0.06	0.06	0.07	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.09	0.08	0.07	0.07	0.07
Min.	100.0	99.2	99.2	99.3	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.1	99.2	99.2	99.3	99.2
Max.	100.0	99.5	99.4	99.5	99.4	99.5	99.5	99.5	99.4	99.5	99.5	99.5	99.5	99.5	99.4	99.5	99.5	99.5

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Data Set 3 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °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 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	99.3	99.3	99.3															
3	99.3	99.4	99.4															
4	99.4	99.4	99.4															
5	99.3	99.3	99.3															
6	99.4	99.3	99.4															
7	99.4	99.4	99.5															
8	99.2	99.3	99.3															
9	99.4	99.4	99.5															
10	99.3	99.3	99.3															
11	99.3	99.3	99.2															
12	99.3	99.3	99.3															
13	99.5	99.4	99.5															
14	99.2	99.2	99.2															
15	99.3	99.3	99.3															
16	99.3	99.3	99.4															
17	99.3	99.4	99.4															
18	99.2	99.2	99.2															
19	99.3	99.4	99.3															
20	99.2	99.2	99.3															
21	99.5	99.5	99.5															
22	99.2	99.4	99.3															
23	99.4	99.4	99.4															
24	99.2	99.2	99.2															
25	99.5	99.4	99.4															
n	25	25	25															
Avg.	99.3	99.3	99.3															
Med.	99.3	99.3	99.3															
σ	0.09	0.08	0.09															
Min.	99.2	99.2	99.2															
Max.	99.5	99.5	99.5															

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Data Set 3 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °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 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	0.0008	0.0008	0.0010	0.0011	0.0011	0.0011	0.0011	0.0012	0.0010	0.0010	0.0011	0.0010	0.0015	0.0015	0.0015	0.0015	0.0017
2	0.0000	0.0007	0.0007	0.0009	0.0010	0.0009	0.0010	0.0011	0.0010	0.0009	0.0009	0.0009	0.0009	0.0013	0.0013	0.0012	0.0013	0.0015
3	0.0000	0.0008	0.0008	0.0009	0.0011	0.0010	0.0011	0.0011	0.0010	0.0010	0.0008	0.0009	0.0010	0.0014	0.0014	0.0014	0.0014	0.0016
4	0.0000	0.0007	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0011	0.0010	0.0009	0.0010	0.0011	0.0015	0.0014	0.0014	0.0014	0.0015
5	0.0000	0.0007	0.0008	0.0008	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0008	0.0008	0.0009	0.0013	0.0014	0.0014	0.0012	0.0015
6	0.0000	0.0007	0.0008	0.0009	0.0010	0.0010	0.0011	0.0010	0.0010	0.0009	0.0008	0.0009	0.0010	0.0014	0.0014	0.0014	0.0013	0.0016
7	0.0000	0.0008	0.0009	0.0010	0.0011	0.0010	0.0011	0.0012	0.0011	0.0011	0.0010	0.0010	0.0011	0.0015	0.0016	0.0014	0.0015	0.0017
8	0.0000	0.0008	0.0009	0.0011	0.0011	0.0011	0.0012	0.0012	0.0012	0.0011	0.0010	0.0011	0.0012	0.0016	0.0015	0.0015	0.0016	0.0017
9	0.0000	0.0008	0.0008	0.0010	0.0011	0.0011	0.0012	0.0011	0.0011	0.0011	0.0009	0.0009	0.0010	0.0014	0.0014	0.0013	0.0013	0.0015
10	0.0000	0.0006	0.0007	0.0010	0.0010	0.0011	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010	0.0010	0.0014	0.0015	0.0014	0.0014	0.0015
11	0.0000	0.0006	0.0007	0.0009	0.0009	0.0010	0.0009	0.0010	0.0009	0.0009	0.0008	0.0008	0.0009	0.0013	0.0013	0.0013	0.0012	0.0015
12	0.0000	0.0007	0.0008	0.0010	0.0011	0.0011	0.0012	0.0012	0.0011	0.0011	0.0009	0.0010	0.0010	0.0015	0.0015	0.0015	0.0014	0.0017
13	0.0000	0.0006	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0008	0.0009	0.0010	0.0014	0.0014	0.0013	0.0013	0.0015
14	0.0000	0.0007	0.0007	0.0011	0.0010	0.0010	0.0011	0.0010	0.0011	0.0009	0.0009	0.0010	0.0010	0.0014	0.0015	0.0014	0.0014	0.0017
15	0.0000	0.0007	0.0008	0.0010	0.0010	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0010	0.0010	0.0015	0.0015	0.0014	0.0015	0.0016
16	0.0000	0.0007	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0010	0.0011	0.0009	0.0009	0.0010	0.0014	0.0014	0.0014	0.0014	0.0015
17	0.0000	0.0006	0.0007	0.0010	0.0010	0.0011	0.0012	0.0011	0.0010	0.0010	0.0009	0.0010	0.0010	0.0014	0.0015	0.0015	0.0014	0.0015
18	0.0000	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010	0.0008	0.0009	0.0010	0.0013	0.0014	0.0013	0.0013	0.0015
19	0.0000	0.0008	0.0008	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0010	0.0009	0.0014	0.0015	0.0015	0.0014	0.0017
20	0.0000	0.0007	0.0008	0.0010	0.0011	0.0011	0.0012	0.0012	0.0012	0.0011	0.0010	0.0011	0.0010	0.0015	0.0015	0.0015	0.0014	0.0017
21	0.0000	0.0008	0.0008	0.0010	0.0011	0.0011	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010	0.0010	0.0015	0.0014	0.0014	0.0015	0.0015
22	0.0000	0.0007	0.0010	0.0011	0.0012	0.0011	0.0011	0.0012	0.0010	0.0011	0.0010	0.0010	0.0011	0.0016	0.0015	0.0015	0.0015	0.0017
23	0.0000	0.0007	0.0008	0.0010	0.0011	0.0010	0.0011	0.0010	0.0011	0.0009	0.0009	0.0010	0.0010	0.0014	0.0014	0.0013	0.0013	0.0016
24	0.0000	0.0007	0.0008	0.0009	0.0010	0.0011	0.0011	0.0011	0.0011	0.0010	0.0008	0.0009	0.0011	0.0014	0.0014	0.0014	0.0014	0.0016
25	0.0000	0.0007	0.0008	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0010	0.0009	0.0010	0.0011	0.0015	0.0015	0.0015	0.0015	0.0016
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	0.0010	0.0010	0.0010	0.0011	0.0011	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0016
Med.	0.0000	0.0007	0.0008	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0016
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	0.0007	0.0008	0.0009	0.0009	0.0009	0.0010	0.0009	0.0009	0.0008	0.0008	0.0009	0.0013	0.0013	0.0012	0.0012	0.0015
Max.	0.0000	0.0008	0.0010	0.0011	0.0012	0.0011	0.0012	0.0012	0.0012	0.0011	0.0010	0.0011	0.0012	0.0016	0.0016	0.0015	0.0016	0.0017

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Data Set 3 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °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 3-4 (Continued)
Chromaticity Shift

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

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Data Set 3 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °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 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	0.2634	0.2627	0.2626	0.2624	0.2624	0.2624	0.2623	0.2623	0.2623	0.2624	0.2625	0.2623	0.2624	0.2620	0.2620	0.2620	0.2620	0.2618
2	0.2632	0.2625	0.2625	0.2624	0.2622	0.2623	0.2622	0.2622	0.2622	0.2623	0.2623	0.2623	0.2623	0.2620	0.2620	0.2620	0.2619	0.2618
3	0.2630	0.2623	0.2622	0.2621	0.2620	0.2620	0.2619	0.2620	0.2620	0.2620	0.2622	0.2621	0.2620	0.2616	0.2617	0.2616	0.2617	0.2614
4	0.2639	0.2632	0.2630	0.2629	0.2629	0.2628	0.2628	0.2627	0.2628	0.2629	0.2629	0.2629	0.2628	0.2624	0.2625	0.2625	0.2625	0.2624
5	0.2652	0.2645	0.2644	0.2644	0.2642	0.2641	0.2641	0.2641	0.2641	0.2643	0.2644	0.2644	0.2643	0.2639	0.2638	0.2638	0.2640	0.2637
6	0.2598	0.2591	0.2590	0.2589	0.2588	0.2588	0.2587	0.2588	0.2588	0.2589	0.2590	0.2589	0.2588	0.2584	0.2584	0.2584	0.2585	0.2583
7	0.2627	0.2620	0.2618	0.2617	0.2617	0.2617	0.2616	0.2616	0.2616	0.2617	0.2618	0.2617	0.2616	0.2613	0.2612	0.2614	0.2613	0.2611
8	0.2628	0.2620	0.2619	0.2618	0.2617	0.2617	0.2616	0.2616	0.2616	0.2617	0.2619	0.2618	0.2616	0.2613	0.2613	0.2613	0.2613	0.2612
9	0.2641	0.2633	0.2632	0.2631	0.2630	0.2630	0.2628	0.2630	0.2630	0.2630	0.2632	0.2631	0.2630	0.2627	0.2627	0.2628	0.2627	0.2626
10	0.2647	0.2640	0.2639	0.2637	0.2637	0.2636	0.2636	0.2636	0.2636	0.2637	0.2637	0.2637	0.2637	0.2633	0.2633	0.2634	0.2633	0.2633
11	0.2633	0.2628	0.2627	0.2624	0.2624	0.2624	0.2624	0.2624	0.2624	0.2624	0.2626	0.2625	0.2624	0.2620	0.2621	0.2621	0.2621	0.2619
12	0.2635	0.2628	0.2627	0.2625	0.2624	0.2624	0.2623	0.2623	0.2624	0.2624	0.2626	0.2626	0.2625	0.2620	0.2621	0.2621	0.2621	0.2619
13	0.2636	0.2629	0.2628	0.2627	0.2626	0.2626	0.2626	0.2625	0.2625	0.2626	0.2628	0.2627	0.2626	0.2623	0.2623	0.2623	0.2623	0.2621
14	0.2617	0.2610	0.2610	0.2607	0.2607	0.2608	0.2607	0.2607	0.2606	0.2608	0.2608	0.2608	0.2607	0.2604	0.2603	0.2604	0.2604	0.2602
15	0.2605	0.2598	0.2597	0.2595	0.2595	0.2594	0.2594	0.2595	0.2594	0.2595	0.2596	0.2595	0.2595	0.2590	0.2591	0.2591	0.2590	0.2589
16	0.2599	0.2593	0.2592	0.2590	0.2589	0.2590	0.2589	0.2589	0.2589	0.2589	0.2591	0.2591	0.2590	0.2586	0.2586	0.2586	0.2586	0.2585
17	0.2636	0.2630	0.2629	0.2627	0.2626	0.2626	0.2625	0.2625	0.2626	0.2627	0.2628	0.2626	0.2626	0.2623	0.2622	0.2622	0.2622	0.2622
18	0.2596	0.2589	0.2588	0.2586	0.2586	0.2586	0.2585	0.2586	0.2586	0.2587	0.2589	0.2587	0.2586	0.2583	0.2583	0.2583	0.2584	0.2582
19	0.2592	0.2584	0.2583	0.2582	0.2581	0.2581	0.2581	0.2581	0.2581	0.2581	0.2582	0.2582	0.2582	0.2578	0.2577	0.2577	0.2578	0.2575
20	0.2618	0.2610	0.2610	0.2607	0.2607	0.2606	0.2606	0.2606	0.2606	0.2607	0.2607	0.2607	0.2607	0.2603	0.2603	0.2603	0.2604	0.2601
21	0.2602	0.2594	0.2593	0.2592	0.2591	0.2591	0.2590	0.2591	0.2591	0.2592	0.2592	0.2592	0.2592	0.2587	0.2588	0.2588	0.2587	0.2587
22	0.2640	0.2633	0.2631	0.2630	0.2629	0.2629	0.2629	0.2628	0.2630	0.2630	0.2630	0.2631	0.2630	0.2625	0.2626	0.2626	0.2626	0.2624
23	0.2621	0.2615	0.2613	0.2612	0.2610	0.2611	0.2611	0.2611	0.2611	0.2612	0.2613	0.2611	0.2612	0.2608	0.2608	0.2609	0.2608	0.2605
24	0.2638	0.2631	0.2630	0.2629	0.2628	0.2628	0.2628	0.2627	0.2627	0.2628	0.2630	0.2629	0.2628	0.2624	0.2624	0.2624	0.2624	0.2623
25	0.2619	0.2611	0.2610	0.2609	0.2608	0.2608	0.2608	0.2608	0.2608	0.2608	0.2609	0.2609	0.2608	0.2605	0.2604	0.2604	0.2604	0.2603
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2625	0.2618	0.2617	0.2615	0.2614	0.2614	0.2614	0.2614	0.2614	0.2615	0.2616	0.2615	0.2615	0.2611	0.2611	0.2611	0.2611	0.2609
Med.	0.2630	0.2623	0.2622	0.2621	0.2620	0.2620	0.2619	0.2620	0.2620	0.2620	0.2622	0.2621	0.2620	0.2616	0.2617	0.2616	0.2617	0.2614
σ	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017
Min.	0.2592	0.2584	0.2583	0.2582	0.2581	0.2581	0.2581	0.2581	0.2581	0.2581	0.2582	0.2582	0.2582	0.2578	0.2577	0.2577	0.2578	0.2575
Max.	0.2652	0.2645	0.2644	0.2644	0.2642	0.2641	0.2641	0.2641	0.2641	0.2643	0.2644	0.2644	0.2643	0.2639	0.2638	0.2638	0.2640	0.2637

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Data Set 3 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °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 3-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2617	0.2618	0.2618															
2	0.2618	0.2617	0.2618															
3	0.2615	0.2615	0.2615															
4	0.2624	0.2624	0.2624															
5	0.2637	0.2637	0.2637															
6	0.2584	0.2583	0.2583															
7	0.2611	0.2612	0.2611															
8	0.2611	0.2612	0.2611															
9	0.2625	0.2625	0.2625															
10	0.2631	0.2632	0.2631															
11	0.2619	0.2620	0.2619															
12	0.2619	0.2620	0.2619															
13	0.2620	0.2621	0.2620															
14	0.2603	0.2602	0.2602															
15	0.2589	0.2590	0.2588															
16	0.2585	0.2584	0.2585															
17	0.2621	0.2622	0.2620															
18	0.2582	0.2582	0.2581															
19	0.2575	0.2575	0.2575															
20	0.2602	0.2602	0.2601															
21	0.2586	0.2587	0.2586															
22	0.2624	0.2624	0.2623															
23	0.2607	0.2607	0.2607															
24	0.2623	0.2622	0.2623															
25	0.2602	0.2602	0.2602															
n	25	25	25															
Avg.	0.2609	0.2609	0.2609															
Med.	0.2615	0.2615	0.2615															
σ	0.0017	0.0017	0.0017															
Min.	0.2575	0.2575	0.2575															
Max.	0.2637	0.2637	0.2637															

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Data Set 3 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °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 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	0.5244	0.5245	0.5244	0.5243	0.5243	0.5243	0.5242	0.5242	0.5243	0.5243	0.5244	0.5243	0.5243	0.5240	0.5240	0.5240	0.5240	0.5239
2	0.5236	0.5238	0.5237	0.5236	0.5235	0.5236	0.5235	0.5235	0.5236	0.5236	0.5237	0.5236	0.5236	0.5234	0.5234	0.5233	0.5234	0.5233
3	0.5251	0.5252	0.5251	0.5250	0.5249	0.5250	0.5249	0.5249	0.5250	0.5251	0.5251	0.5250	0.5250	0.5248	0.5248	0.5247	0.5248	0.5247
4	0.5244	0.5244	0.5244	0.5242	0.5242	0.5243	0.5242	0.5242	0.5242	0.5243	0.5244	0.5243	0.5243	0.5240	0.5240	0.5240	0.5241	0.5240
5	0.5283	0.5284	0.5283	0.5282	0.5281	0.5282	0.5281	0.5282	0.5282	0.5282	0.5283	0.5282	0.5281	0.5279	0.5280	0.5280	0.5280	0.5279
6	0.5278	0.5278	0.5278	0.5276	0.5276	0.5276	0.5276	0.5276	0.5276	0.5276	0.5277	0.5277	0.5276	0.5274	0.5274	0.5274	0.5274	0.5273
7	0.5262	0.5262	0.5262	0.5260	0.5259	0.5259	0.5259	0.5259	0.5259	0.5260	0.5260	0.5260	0.5260	0.5257	0.5257	0.5257	0.5257	0.5257
8	0.5253	0.5254	0.5253	0.5252	0.5251	0.5252	0.5251	0.5251	0.5251	0.5252	0.5253	0.5252	0.5252	0.5249	0.5249	0.5250	0.5250	0.5248
9	0.5279	0.5279	0.5279	0.5278	0.5277	0.5278	0.5278	0.5277	0.5277	0.5278	0.5279	0.5279	0.5278	0.5276	0.5276	0.5276	0.5276	0.5275
10	0.5251	0.5251	0.5252	0.5250	0.5249	0.5250	0.5249	0.5249	0.5249	0.5250	0.5251	0.5250	0.5249	0.5248	0.5247	0.5247	0.5248	0.5247
11	0.5277	0.5278	0.5278	0.5276	0.5276	0.5276	0.5276	0.5276	0.5276	0.5276	0.5277	0.5276	0.5277	0.5274	0.5274	0.5274	0.5274	0.5273
12	0.5251	0.5250	0.5251	0.5249	0.5249	0.5249	0.5249	0.5249	0.5249	0.5249	0.5250	0.5249	0.5249	0.5247	0.5247	0.5247	0.5247	0.5246
13	0.5265	0.5265	0.5265	0.5264	0.5263	0.5264	0.5263	0.5263	0.5264	0.5264	0.5264	0.5264	0.5264	0.5262	0.5262	0.5261	0.5261	0.5261
14	0.5254	0.5255	0.5254	0.5253	0.5252	0.5253	0.5252	0.5253	0.5252	0.5253	0.5254	0.5253	0.5253	0.5251	0.5251	0.5250	0.5250	0.5250
15	0.5280	0.5280	0.5280	0.5279	0.5278	0.5279	0.5278	0.5278	0.5278	0.5279	0.5279	0.5279	0.5279	0.5276	0.5276	0.5276	0.5277	0.5275
16	0.5271	0.5272	0.5271	0.5270	0.5269	0.5270	0.5270	0.5269	0.5270	0.5270	0.5271	0.5270	0.5270	0.5268	0.5268	0.5268	0.5268	0.5267
17	0.5282	0.5283	0.5282	0.5281	0.5281	0.5281	0.5281	0.5280	0.5281	0.5281	0.5282	0.5281	0.5281	0.5279	0.5278	0.5279	0.5279	0.5278
18	0.5257	0.5258	0.5257	0.5255	0.5255	0.5256	0.5255	0.5255	0.5256	0.5256	0.5257	0.5256	0.5256	0.5254	0.5254	0.5254	0.5254	0.5253
19	0.5262	0.5263	0.5263	0.5261	0.5261	0.5262	0.5261	0.5260	0.5261	0.5262	0.5262	0.5262	0.5262	0.5259	0.5259	0.5259	0.5259	0.5258
20	0.5255	0.5255	0.5255	0.5253	0.5253	0.5253	0.5253	0.5253	0.5253	0.5253	0.5254	0.5253	0.5253	0.5251	0.5251	0.5251	0.5251	0.5250
21	0.5271	0.5271	0.5271	0.5270	0.5269	0.5269	0.5269	0.5269	0.5269	0.5270	0.5271	0.5271	0.5269	0.5268	0.5268	0.5268	0.5268	0.5267
22	0.5244	0.5245	0.5245	0.5243	0.5241	0.5242	0.5242	0.5242	0.5243	0.5243	0.5243	0.5243	0.5243	0.5240	0.5240	0.5240	0.5240	0.5239
23	0.5288	0.5289	0.5289	0.5287	0.5287	0.5287	0.5287	0.5286	0.5287	0.5288	0.5289	0.5288	0.5287	0.5286	0.5285	0.5286	0.5286	0.5285
24	0.5256	0.5256	0.5256	0.5254	0.5254	0.5254	0.5254	0.5254	0.5254	0.5255	0.5255	0.5255	0.5255	0.5253	0.5253	0.5253	0.5253	0.5252
25	0.5255	0.5256	0.5255	0.5254	0.5254	0.5254	0.5253	0.5253	0.5253	0.5254	0.5255	0.5254	0.5254	0.5251	0.5251	0.5251	0.5251	0.5250
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5262	0.5263	0.5262	0.5261	0.5260	0.5261	0.5260	0.5260	0.5260	0.5261	0.5262	0.5261	0.5261	0.5259	0.5258	0.5259	0.5259	0.5258
Med.	0.5257	0.5258	0.5257	0.5255	0.5255	0.5256	0.5255	0.5255	0.5256	0.5256	0.5257	0.5256	0.5256	0.5254	0.5254	0.5254	0.5254	0.5253
σ	0.0014	0.0014	0.0014	0.0015	0.0015	0.0015	0.0015	0.0015	0.0014	0.0015	0.0014	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Min.	0.5236	0.5238	0.5237	0.5236	0.5235	0.5236	0.5235	0.5235	0.5236	0.5236	0.5237	0.5236	0.5236	0.5234	0.5234	0.5233	0.5234	0.5233
Max.	0.5288	0.5289	0.5289	0.5287	0.5287	0.5287	0.5287	0.5286	0.5287	0.5288	0.5289	0.5288	0.5287	0.5286	0.5285	0.5286	0.5286	0.5285

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Data Set 3 : 55 °C, 180 mA

Actual Case Temperature [T_S]	56.0 °C
Actual Ambient Temperature [T_A]	54.7 °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 3-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5239	0.5239	0.5238															
2	0.5233	0.5233	0.5232															
3	0.5247	0.5247	0.5247															
4	0.5240	0.5240	0.5239															
5	0.5279	0.5279	0.5279															
6	0.5273	0.5273	0.5272															
7	0.5256	0.5256	0.5256															
8	0.5248	0.5248	0.5248															
9	0.5275	0.5275	0.5275															
10	0.5246	0.5246	0.5246															
11	0.5274	0.5273	0.5273															
12	0.5246	0.5246	0.5246															
13	0.5261	0.5260	0.5260															
14	0.5250	0.5249	0.5249															
15	0.5275	0.5275	0.5275															
16	0.5267	0.5267	0.5266															
17	0.5278	0.5278	0.5278															
18	0.5253	0.5253	0.5253															
19	0.5258	0.5258	0.5258															
20	0.5250	0.5249	0.5249															
21	0.5267	0.5267	0.5267															
22	0.5239	0.5239	0.5239															
23	0.5285	0.5285	0.5284															
24	0.5252	0.5252	0.5252															
25	0.5250	0.5250	0.5250															
n	25	25	25															
Avg.	0.5258	0.5258	0.5257															
Med.	0.5253	0.5253	0.5253															
σ	0.0015	0.0015	0.0015															
Min.	0.5233	0.5233	0.5232															
Max.	0.5285	0.5285	0.5284															

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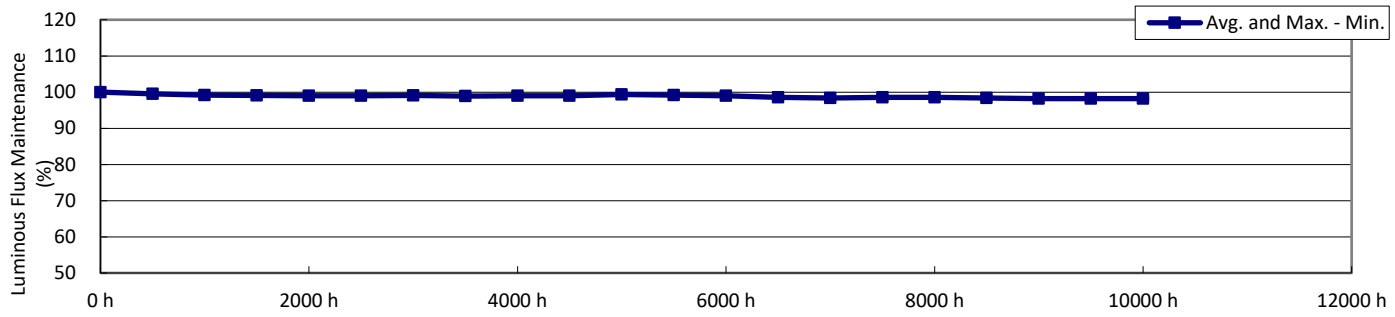
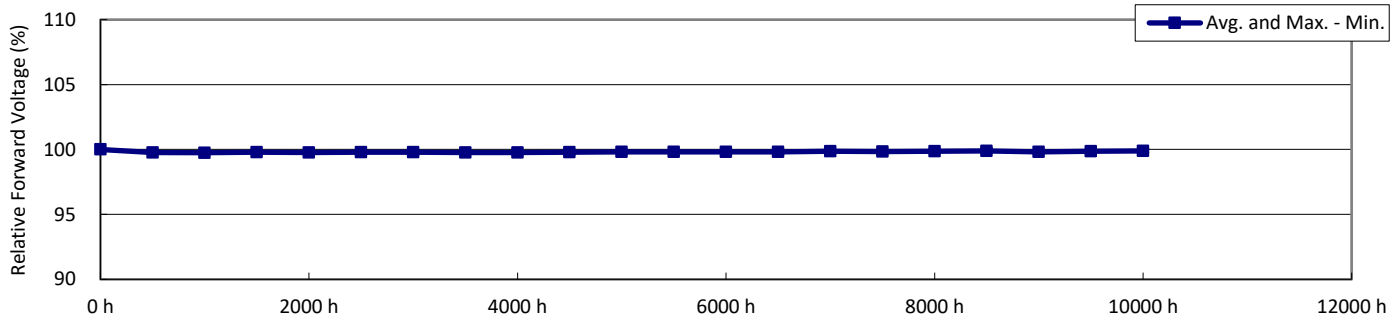
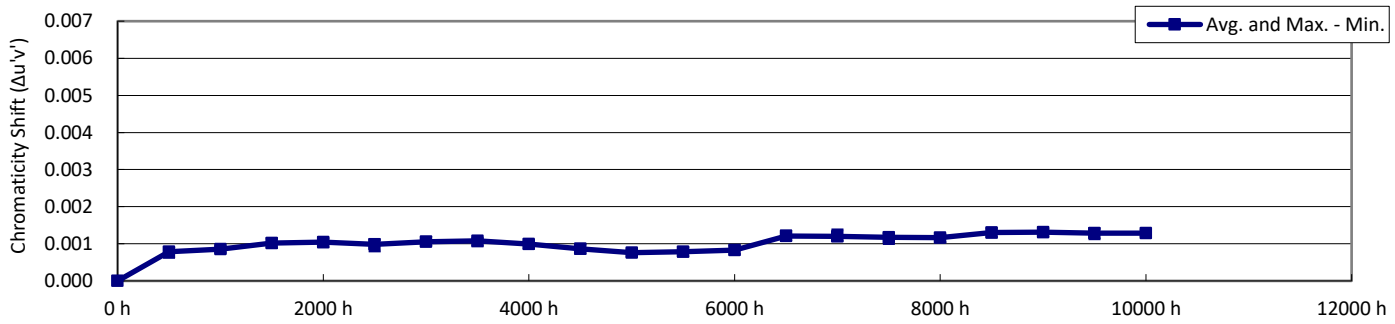
Data Set 4 : 85 °C, 65 mA

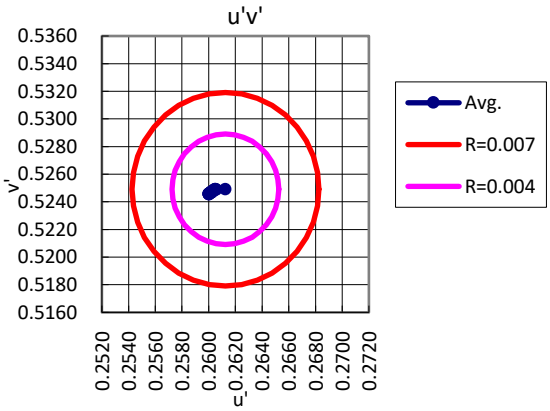
Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 mA

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









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Data Set 4 : 85 °C, 65 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	33.3	2.73	2698	0.18	0.456	0.404	0.263	0.524						
2	33.7	2.73	2738	0.18	0.454	0.405	0.261	0.524						
3	33.3	2.73	2692	0.18	0.456	0.403	0.264	0.524						
4	33.6	2.73	2799	0.18	0.453	0.410	0.258	0.526						
5	33.2	2.74	2762	0.18	0.451	0.403	0.260	0.523						
6	33.4	2.73	2776	0.18	0.451	0.405	0.260	0.524						
7	33.1	2.73	2718	0.18	0.456	0.405	0.262	0.525						
8	33.2	2.73	2701	0.18	0.456	0.404	0.263	0.524						
9	33.3	2.73	2698	0.18	0.456	0.403	0.263	0.524						
10	33.3	2.73	2720	0.18	0.457	0.408	0.262	0.526						
11	33.5	2.73	2741	0.18	0.454	0.405	0.261	0.524						
12	33.1	2.73	2689	0.18	0.459	0.408	0.263	0.526						
13	33.0	2.73	2690	0.18	0.457	0.404	0.264	0.524						
14	33.4	2.72	2774	0.18	0.451	0.405	0.260	0.524						
15	33.2	2.73	2753	0.18	0.452	0.402	0.261	0.523						
16	33.7	2.73	2753	0.18	0.457	0.413	0.260	0.528						
17	33.8	2.73	2772	0.18	0.457	0.414	0.259	0.528						
18	33.8	2.73	2762	0.18	0.456	0.412	0.260	0.527						
19	33.9	2.73	2779	0.18	0.454	0.411	0.259	0.527						
20	33.6	2.73	2783	0.18	0.454	0.411	0.259	0.527						
21	33.0	2.73	2700	0.18	0.457	0.405	0.263	0.525						
22	33.4	2.73	2750	0.18	0.452	0.403	0.261	0.523						
23	33.5	2.73	2789	0.18	0.453	0.409	0.259	0.526						
24	33.4	2.73	2781	0.18	0.452	0.406	0.259	0.524						
25	33.2	2.73	2748	0.18	0.452	0.403	0.261	0.523						
n	25	25	25	25	25	25	25	25						
Avg.	33.4	2.73	2743	0.18	0.455	0.406	0.261	0.525						
Med.	33.4	2.73	2750	0.18	0.454	0.405	0.261	0.524						
σ	0.25	0.003	35.8	0.000	0.0023	0.0036	0.0018	0.0015						
Min.	33.0	2.72	2689	0.18	0.451	0.402	0.258	0.523						
Max.	33.9	2.74	2799	0.18	0.459	0.414	0.264	0.528						

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Data Set 4 : 85 °C, 65 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	99.4	99.1	98.9	98.9	99.0	99.0	98.9	99.0	98.9	99.2	99.1	99.0	98.3	98.3	98.4	98.3	98.3
2	100.0	99.6	99.3	99.1	99.0	99.0	99.1	98.9	99.0	99.0	99.3	99.1	99.0	98.4	98.4	98.5	98.4	98.4
3	100.0	99.4	99.1	98.9	98.9	98.8	99.0	98.8	98.9	98.9	99.2	99.0	99.0	98.3	98.3	98.4	98.3	98.3
4	100.0	99.5	99.2	99.1	99.0	98.9	99.0	98.9	99.0	99.0	99.2	99.1	99.0	98.5	98.4	98.5	98.4	98.4
5	100.0	99.9	99.4	99.5	99.0	99.5	99.4	99.2	99.2	99.0	99.8	99.2	99.1	98.6	98.7	98.9	98.3	98.8
6	100.0	99.4	99.1	99.1	98.9	99.0	99.1	98.9	99.0	99.0	99.3	99.1	99.1	98.5	98.5	98.6	98.5	98.5
7	100.0	99.4	99.3	99.2	99.1	99.0	99.2	99.0	99.1	99.1	99.4	99.2	99.1	98.6	98.6	98.6	98.6	98.5
8	100.0	99.7	99.5	99.4	99.2	99.1	99.4	99.2	99.3	99.2	99.5	99.4	99.3	98.7	98.7	98.8	98.7	98.6
9	100.0	99.3	99.1	99.0	98.9	98.8	99.0	98.8	98.9	98.9	99.2	99.0	98.9	98.3	98.2	98.3	98.3	98.2
10	100.0	99.4	99.3	99.1	99.1	99.1	99.3	99.1	99.2	99.2	99.5	99.3	99.1	98.5	98.5	98.5	98.6	98.5
11	100.0	99.6	99.3	99.3	98.9	98.9	99.2	98.8	98.7	98.8	99.2	99.2	98.9	98.4	98.4	98.3	98.5	98.4
12	100.0	99.3	99.1	99.0	98.8	98.7	99.0	98.7	98.8	98.8	99.1	99.0	98.8	98.3	98.2	98.3	98.3	98.3
13	100.0	99.4	99.2	99.1	98.9	98.9	99.1	98.9	99.1	99.1	99.2	99.2	99.1	98.6	98.4	98.5	98.5	98.5
14	100.0	99.2	99.0	98.9	98.9	98.7	98.9	98.8	98.9	98.8	99.0	98.9	98.8	98.3	98.2	98.2	98.3	98.2
15	100.0	99.2	99.0	98.9	98.8	98.8	99.0	98.8	99.0	98.9	99.1	99.0	98.7	98.2	98.1	98.1	98.1	98.1
16	100.0	99.4	99.2	99.1	99.1	99.0	99.2	99.0	99.1	99.1	99.2	99.1	99.1	98.5	98.5	98.5	98.5	98.5
17	100.0	99.5	99.3	99.3	99.1	99.0	99.1	99.1	99.1	99.1	99.1	99.3	99.2	98.7	98.4	98.6	98.5	98.5
18	100.0	99.5	99.2	99.1	99.0	98.9	99.1	99.0	99.1	99.1	99.3	99.2	99.1	98.6	98.5	98.5	98.5	98.5
19	100.0	99.6	99.3	99.2	99.1	99.0	99.2	99.0	99.1	99.2	99.4	99.2	99.1	98.7	98.5	98.6	98.6	98.5
20	100.0	99.7	99.5	99.4	99.4	99.2	99.4	99.2	99.4	99.4	99.5	99.4	99.4	98.9	98.7	98.8	98.7	98.7
21	100.0	99.4	99.3	99.2	99.1	99.0	99.1	98.9	99.0	99.1	99.3	99.2	99.0	98.5	98.4	98.4	98.4	98.3
22	100.0	99.3	99.1	99.0	98.9	98.7	98.9	98.7	98.9	98.9	99.1	99.0	98.8	98.3	98.3	98.3	98.2	98.2
23	100.0	99.8	99.6	99.4	99.3	99.0	99.4	99.1	99.1	99.4	99.7	99.5	99.1	98.7	98.6	98.6	98.6	98.3
24	100.0	99.4	99.2	99.1	99.0	98.8	99.0	98.9	99.0	99.0	99.3	99.2	99.0	98.4	98.4	98.5	98.5	98.4
25	100.0	99.4	99.2	99.2	99.0	99.0	99.1	99.0	99.1	99.2	99.4	99.3	99.2	98.6	98.6	98.7	98.7	98.5
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.5	99.2	99.1	99.0	99.0	99.1	98.9	99.0	99.0	99.3	99.2	99.0	98.5	98.4	98.5	98.5	98.4
Med.	100.0	99.4	99.2	99.1	99.0	99.0	99.1	98.9	99.0	99.0	99.3	99.2	99.1	98.5	98.4	98.5	98.5	98.4
σ	0.00	0.17	0.15	0.17	0.15	0.17	0.15	0.15	0.15	0.17	0.19	0.15	0.16	0.17	0.17	0.19	0.16	0.16
Min.	100.0	99.2	99.0	98.9	98.8	98.7	98.9	98.7	98.7	98.8	99.0	98.9	98.7	98.2	98.1	98.1	98.1	98.1
Max.	100.0	99.9	99.6	99.5	99.4	99.5	99.4	99.2	99.4	99.4	99.8	99.5	99.4	98.9	98.7	98.9	98.7	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.)	-0.0070	-0.0080	-0.0101	-0.0151	-0.0161	-0.0151	-0.0151	-0.0161	-0.0182	-0.0182	-0.0182							

Test duration used	5000 h to 10000 h	
B	1.002	
α	2.22E-06	
R^2	0.823	
Calculated L_{70} (10K)	162000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	101000	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	48400	hours
Reported L_{90} (10K)	48400	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 : 85 °C, 65 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	98.2	98.1	98.0															
2	98.2	98.2	98.1															
3	98.1	98.1	98.1															
4	98.2	98.2	98.1															
5	98.2	98.2	98.0															
6	98.3	98.3	98.3															
7	98.4	98.4	98.3															
8	98.5	98.6	98.5															
9	98.1	98.1	98.0															
10	98.3	98.3	98.3															
11	97.9	97.9	98.2															
12	98.1	98.1	98.1															
13	98.3	98.3	98.3															
14	98.1	98.1	98.0															
15	97.9	97.9	97.9															
16	98.3	98.4	98.3															
17	98.5	98.3	98.4															
18	98.4	98.4	98.4															
19	98.3	98.4	98.3															
20	98.6	98.6	98.5															
21	98.2	98.3	98.2															
22	97.9	98.0	98.0															
23	97.9	98.3	98.2															
24	98.2	98.2	98.2															
25	98.4	98.4	98.3															
n	25	25	25															
Avg.	98.2	98.2	98.2															
Med.	98.2	98.3	98.2															
σ	0.19	0.18	0.17															
Min.	97.9	97.9	97.9															
Max.	98.6	98.6	98.5															

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Data Set 4 : 85 °C, 65 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	99.7	99.7	99.8	99.7	99.8	99.7	99.7	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9
2	100.0	99.7	99.7	99.8	99.8	99.8	99.7	99.7	99.7	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8
3	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.9	99.8	99.9	99.9
4	100.0	99.8	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	100.0	99.9
5	100.0	99.7	99.6	99.7	99.7	99.6	99.6	99.7	99.6	99.6	99.7	99.6	99.6	99.6	99.7	99.6	99.7	99.8
6	100.0	99.8	99.8	99.9	99.9	99.9	99.9	99.8	99.9	99.9	99.9	99.9	99.9	99.9	100.0	99.9	100.0	99.9
7	100.0	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.9	99.9	99.9	99.8	99.9	99.9	99.9	99.9	99.9
8	100.0	99.8	99.8	99.8	99.7	99.8	99.7	99.7	99.7	99.8	99.8	99.7	99.7	99.7	99.8	99.8	99.8	99.8
9	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.8
10	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.9
11	100.0	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.9	99.8	99.9	99.8	99.9	100.0
12	100.0	99.7	99.7	99.8	99.7	99.8	99.8	99.7	99.7	99.8	99.7	99.8	99.7	99.7	99.8	99.8	99.8	99.9
13	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.8	99.9	99.9
14	100.0	99.8	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.1
15	100.0	99.8	99.7	99.8	99.7	99.7	99.8	99.7	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.9
16	100.0	99.8	99.7	99.7	99.7	99.8	99.7	99.7	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9
17	100.0	99.7	99.7	99.8	99.7	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8
18	100.0	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.9	99.9	99.9	100.0
19	100.0	99.7	99.8	99.8	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.8
20	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.7	99.8	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.9
21	100.0	99.8	99.7	99.8	99.7	99.8	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.7	99.9	99.9
22	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.8	99.9	99.8	99.9	99.9
23	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.8	99.8	99.7	99.8	99.9
24	100.0	99.8	99.7	99.8	99.7	99.8	99.8	99.7	99.8	99.8	99.8	99.9	99.8	99.8	99.8	99.8	99.8	99.8
25	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.9	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	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.9	99.9
Med.	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.9	99.9
σ	0.00	0.03	0.04	0.05	0.05	0.06	0.06	0.05	0.06	0.06	0.06	0.08	0.08	0.07	0.06	0.08	0.07	0.07
Min.	100.0	99.7	99.6	99.7	99.7	99.6	99.6	99.7	99.6	99.6	99.7	99.6	99.6	99.6	99.7	99.6	99.7	99.8
Max.	100.0	99.8	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.1

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Data Set 4 : 85 °C, 65 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	99.8	99.9	99.8															
2	99.8	99.8	99.9															
3	99.9	100.0	100.0															
4	99.9	99.9	99.8															
5	99.7	99.6	99.8															
6	99.9	100.0	100.0															
7	99.9	99.9	100.0															
8	99.8	99.8	99.9															
9	99.8	99.9	100.0															
10	99.8	99.9	99.9															
11	99.9	99.9	100.0															
12	99.8	99.7	99.9															
13	99.8	99.9	99.8															
14	99.9	100.0	100.0															
15	99.9	99.8	99.8															
16	99.8	99.9	100.0															
17	99.9	99.8	100.0															
18	99.9	99.8	99.8															
19	99.8	99.8	99.8															
20	99.8	99.9	99.9															
21	99.8	99.8	99.9															
22	99.8	99.9	99.9															
23	99.8	99.9	99.8															
24	99.8	99.9	99.9															
25	99.8	100.0	99.8															
n	25	25	25															
Avg.	99.8	99.9	99.9															
Med.	99.8	99.9	99.9															
σ	0.06	0.08	0.07															
Min.	99.7	99.6	99.8															
Max.	99.9	100.0	100.0															

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Data Set 4 : 85 °C, 65 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.0008	0.0008	0.0010	0.0011	0.0009	0.0010	0.0010	0.0010	0.0008	0.0007	0.0007	0.0007	0.0011	0.0011	0.0011	0.0012	0.0012
2	0.0000	0.0008	0.0009	0.0010	0.0010	0.0009	0.0010	0.0010	0.0009	0.0008	0.0007	0.0008	0.0008	0.0011	0.0012	0.0011	0.0011	0.0013
3	0.0000	0.0008	0.0009	0.0010	0.0011	0.0010	0.0011	0.0011	0.0009	0.0009	0.0007	0.0008	0.0009	0.0012	0.0012	0.0013	0.0012	0.0014
4	0.0000	0.0008	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0008	0.0008	0.0009	0.0009	0.0012	0.0012	0.0012	0.0012	0.0013
5	0.0000	0.0008	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0008	0.0009	0.0009	0.0009	0.0012	0.0014	0.0012	0.0012	0.0014
6	0.0000	0.0009	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0009	0.0008	0.0008	0.0009	0.0013	0.0012	0.0013	0.0012	0.0014
7	0.0000	0.0008	0.0009	0.0011	0.0011	0.0010	0.0011	0.0011	0.0011	0.0009	0.0008	0.0008	0.0009	0.0012	0.0013	0.0012	0.0012	0.0014
8	0.0000	0.0008	0.0009	0.0011	0.0011	0.0010	0.0010	0.0012	0.0010	0.0009	0.0008	0.0008	0.0010	0.0013	0.0012	0.0013	0.0012	0.0013
9	0.0000	0.0008	0.0008	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0008	0.0007	0.0007	0.0007	0.0011	0.0011	0.0011	0.0010	0.0013
10	0.0000	0.0008	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0008	0.0008	0.0008	0.0008	0.0012	0.0012	0.0011	0.0012	0.0013
11	0.0000	0.0007	0.0009	0.0010	0.0010	0.0010	0.0010	0.0011	0.0009	0.0008	0.0008	0.0008	0.0008	0.0013	0.0012	0.0012	0.0012	0.0014
12	0.0000	0.0008	0.0009	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0008	0.0008	0.0008	0.0009	0.0012	0.0013	0.0013	0.0012	0.0013
13	0.0000	0.0009	0.0009	0.0010	0.0012	0.0010	0.0012	0.0011	0.0011	0.0010	0.0008	0.0008	0.0009	0.0013	0.0013	0.0013	0.0012	0.0014
14	0.0000	0.0008	0.0009	0.0011	0.0011	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0008	0.0008	0.0012	0.0012	0.0012	0.0012	0.0013
15	0.0000	0.0008	0.0008	0.0009	0.0010	0.0009	0.0010	0.0010	0.0010	0.0008	0.0007	0.0007	0.0008	0.0012	0.0011	0.0011	0.0011	0.0013
16	0.0000	0.0008	0.0008	0.0010	0.0010	0.0009	0.0010	0.0011	0.0009	0.0009	0.0007	0.0008	0.0008	0.0012	0.0011	0.0011	0.0011	0.0013
17	0.0000	0.0008	0.0009	0.0010	0.0011	0.0010	0.0010	0.0011	0.0010	0.0010	0.0007	0.0008	0.0009	0.0012	0.0012	0.0012	0.0012	0.0013
18	0.0000	0.0009	0.0009	0.0011	0.0011	0.0010	0.0011	0.0011	0.0011	0.0010	0.0008	0.0008	0.0009	0.0013	0.0012	0.0012	0.0012	0.0014
19	0.0000	0.0007	0.0008	0.0010	0.0011	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0007	0.0009	0.0012	0.0012	0.0011	0.0011	0.0013
20	0.0000	0.0006	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	0.0007	0.0007	0.0007	0.0007	0.0011	0.0011	0.0010	0.0011	0.0012
21	0.0000	0.0008	0.0008	0.0009	0.0010	0.0009	0.0010	0.0010	0.0009	0.0008	0.0007	0.0008	0.0007	0.0012	0.0011	0.0011	0.0011	0.0013
22	0.0000	0.0008	0.0008	0.0010	0.0010	0.0010	0.0010	0.0011	0.0009	0.0008	0.0007	0.0007	0.0007	0.0012	0.0012	0.0012	0.0011	0.0013
23	0.0000	0.0007	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0008	0.0008	0.0013	0.0013	0.0012	0.0012	0.0013
24	0.0000	0.0007	0.0009	0.0010	0.0010	0.0010	0.0010	0.0011	0.0010	0.0010	0.0008	0.0008	0.0009	0.0011	0.0012	0.0012	0.0011	0.0013
25	0.0000	0.0007	0.0009	0.0010	0.0011	0.0010	0.0011	0.0011	0.0011	0.0009	0.0008	0.0008	0.0009	0.0012	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	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0008	0.0008	0.0012	0.0012	0.0012	0.0012	0.0013
Med.	0.0000	0.0008	0.0009	0.0010	0.0011	0.0010	0.0010	0.0011	0.0010	0.0009	0.0008	0.0008	0.0009	0.0012	0.0012	0.0012	0.0012	0.0013
σ	0.0000	0.0001	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
Min.	0.0000	0.0006	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	0.0007	0.0007	0.0007	0.0007	0.0011	0.0011	0.0010	0.0010	0.0012
Max.	0.0000	0.0009	0.0009	0.0011	0.0012	0.0011	0.0012	0.0012	0.0011	0.0010	0.0009	0.0009	0.0010	0.0013	0.0014	0.0013	0.0012	0.0014

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Data Set 4 : 85 °C, 65 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.0013	0.0011	0.0013															
2	0.0012	0.0013	0.0013															
3	0.0013	0.0013	0.0014															
4	0.0013	0.0013	0.0013															
5	0.0013	0.0014	0.0013															
6	0.0014	0.0014	0.0013															
7	0.0014	0.0013	0.0013															
8	0.0014	0.0014	0.0014															
9	0.0012	0.0012	0.0012															
10	0.0013	0.0012	0.0013															
11	0.0013	0.0013	0.0013															
12	0.0014	0.0013	0.0014															
13	0.0013	0.0014	0.0013															
14	0.0014	0.0014	0.0013															
15	0.0012	0.0013	0.0013															
16	0.0013	0.0013	0.0012															
17	0.0014	0.0014	0.0014															
18	0.0014	0.0013	0.0014															
19	0.0012	0.0013	0.0012															
20	0.0012	0.0011	0.0012															
21	0.0012	0.0011	0.0012															
22	0.0012	0.0012	0.0012															
23	0.0013	0.0013	0.0013															
24	0.0013	0.0012	0.0012															
25	0.0013	0.0013	0.0013															
n	25	25	25															
Avg.	0.0013	0.0013	0.0013															
Med.	0.0013	0.0013	0.0013															
σ	0.0001	0.0001	0.0001															
Min.	0.0012	0.0011	0.0012															
Max.	0.0014	0.0014	0.0014															

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Data Set 4 : 85 °C, 65 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.2636	0.2628	0.2628	0.2626	0.2626	0.2627	0.2626	0.2626	0.2627	0.2628	0.2629	0.2629	0.2629	0.2625	0.2625	0.2625	0.2625	0.2624
2	0.2617	0.2609	0.2609	0.2607	0.2608	0.2608	0.2608	0.2608	0.2609	0.2609	0.2610	0.2609	0.2609	0.2607	0.2606	0.2606	0.2607	0.2605
3	0.2640	0.2632	0.2631	0.2630	0.2629	0.2630	0.2630	0.2629	0.2631	0.2631	0.2633	0.2632	0.2631	0.2628	0.2628	0.2628	0.2628	0.2627
4	0.2589	0.2581	0.2580	0.2579	0.2579	0.2580	0.2579	0.2579	0.2579	0.2581	0.2581	0.2580	0.2581	0.2577	0.2577	0.2578	0.2578	0.2576
5	0.2634	0.2625	0.2625	0.2623	0.2623	0.2623	0.2623	0.2623	0.2623	0.2626	0.2625	0.2625	0.2625	0.2622	0.2620	0.2622	0.2622	0.2620
6	0.2605	0.2596	0.2596	0.2595	0.2594	0.2594	0.2594	0.2594	0.2595	0.2596	0.2597	0.2597	0.2597	0.2593	0.2593	0.2593	0.2593	0.2592
7	0.2626	0.2617	0.2617	0.2615	0.2615	0.2616	0.2615	0.2614	0.2615	0.2617	0.2618	0.2617	0.2617	0.2614	0.2613	0.2614	0.2614	0.2612
8	0.2634	0.2626	0.2625	0.2623	0.2623	0.2624	0.2623	0.2622	0.2623	0.2624	0.2625	0.2625	0.2624	0.2621	0.2622	0.2621	0.2621	0.2621
9	0.2635	0.2627	0.2627	0.2625	0.2625	0.2625	0.2625	0.2626	0.2626	0.2627	0.2628	0.2628	0.2628	0.2624	0.2625	0.2625	0.2625	0.2623
10	0.2625	0.2618	0.2617	0.2616	0.2616	0.2616	0.2616	0.2615	0.2616	0.2617	0.2618	0.2618	0.2618	0.2614	0.2613	0.2615	0.2614	0.2613
11	0.2641	0.2634	0.2632	0.2631	0.2631	0.2632	0.2631	0.2631	0.2632	0.2633	0.2633	0.2634	0.2634	0.2629	0.2630	0.2630	0.2630	0.2628
12	0.2641	0.2633	0.2632	0.2631	0.2631	0.2630	0.2630	0.2630	0.2630	0.2633	0.2633	0.2633	0.2632	0.2629	0.2629	0.2629	0.2629	0.2628
13	0.2640	0.2631	0.2631	0.2630	0.2629	0.2630	0.2628	0.2629	0.2630	0.2630	0.2632	0.2632	0.2632	0.2628	0.2628	0.2628	0.2628	0.2627
14	0.2601	0.2593	0.2592	0.2591	0.2591	0.2592	0.2591	0.2590	0.2591	0.2593	0.2594	0.2594	0.2593	0.2590	0.2590	0.2590	0.2590	0.2589
15	0.2613	0.2605	0.2605	0.2603	0.2603	0.2604	0.2602	0.2602	0.2603	0.2604	0.2606	0.2605	0.2605	0.2601	0.2602	0.2602	0.2602	0.2601
16	0.2606	0.2599	0.2599	0.2597	0.2596	0.2597	0.2596	0.2596	0.2597	0.2598	0.2600	0.2599	0.2598	0.2595	0.2596	0.2596	0.2596	0.2594
17	0.2616	0.2608	0.2607	0.2606	0.2606	0.2606	0.2606	0.2605	0.2606	0.2607	0.2609	0.2608	0.2607	0.2604	0.2604	0.2604	0.2604	0.2603
18	0.2604	0.2596	0.2595	0.2593	0.2593	0.2594	0.2593	0.2593	0.2594	0.2594	0.2596	0.2596	0.2595	0.2591	0.2592	0.2592	0.2593	0.2591
19	0.2593	0.2587	0.2585	0.2584	0.2583	0.2583	0.2582	0.2583	0.2583	0.2585	0.2586	0.2586	0.2585	0.2581	0.2582	0.2582	0.2582	0.2581
20	0.2591	0.2584	0.2583	0.2582	0.2582	0.2583	0.2581	0.2581	0.2582	0.2583	0.2584	0.2584	0.2583	0.2580	0.2580	0.2581	0.2580	0.2579
21	0.2634	0.2625	0.2625	0.2624	0.2623	0.2624	0.2623	0.2623	0.2624	0.2626	0.2627	0.2626	0.2626	0.2622	0.2623	0.2623	0.2623	0.2621
22	0.2617	0.2609	0.2608	0.2607	0.2607	0.2607	0.2607	0.2606	0.2608	0.2609	0.2610	0.2610	0.2610	0.2605	0.2605	0.2605	0.2606	0.2605
23	0.2614	0.2607	0.2605	0.2604	0.2604	0.2604	0.2603	0.2603	0.2604	0.2605	0.2606	0.2606	0.2606	0.2601	0.2602	0.2602	0.2602	0.2601
24	0.2603	0.2595	0.2594	0.2593	0.2593	0.2593	0.2592	0.2592	0.2593	0.2593	0.2594	0.2595	0.2594	0.2591	0.2591	0.2591	0.2591	0.2590
25	0.2615	0.2608	0.2606	0.2605	0.2605	0.2605	0.2604	0.2604	0.2605	0.2606	0.2607	0.2607	0.2606	0.2603	0.2604	0.2603	0.2603	0.2602
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2619	0.2611	0.2610	0.2609	0.2609	0.2609	0.2608	0.2608	0.2609	0.2610	0.2611	0.2611	0.2611	0.2607	0.2607	0.2607	0.2607	0.2606
Med.	0.2617	0.2609	0.2608	0.2607	0.2607	0.2607	0.2607	0.2606	0.2608	0.2609	0.2610	0.2609	0.2609	0.2605	0.2605	0.2605	0.2606	0.2605
σ	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017
Min.	0.2589	0.2581	0.2580	0.2579	0.2579	0.2580	0.2579	0.2579	0.2579	0.2581	0.2581	0.2580	0.2581	0.2577	0.2577	0.2578	0.2578	0.2576
Max.	0.2641	0.2634	0.2632	0.2631	0.2631	0.2632	0.2631	0.2631	0.2632	0.2633	0.2633	0.2634	0.2634	0.2629	0.2630	0.2630	0.2630	0.2628

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Data Set 4 : 85 °C, 65 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.2624	0.2625	0.2624															
2	0.2606	0.2605	0.2605															
3	0.2627	0.2627	0.2627															
4	0.2576	0.2577	0.2577															
5	0.2621	0.2621	0.2621															
6	0.2592	0.2592	0.2592															
7	0.2612	0.2613	0.2613															
8	0.2620	0.2620	0.2620															
9	0.2623	0.2624	0.2624															
10	0.2613	0.2614	0.2613															
11	0.2628	0.2629	0.2629															
12	0.2628	0.2628	0.2628															
13	0.2627	0.2627	0.2627															
14	0.2588	0.2589	0.2589															
15	0.2601	0.2601	0.2601															
16	0.2594	0.2594	0.2595															
17	0.2602	0.2603	0.2603															
18	0.2591	0.2591	0.2591															
19	0.2582	0.2581	0.2582															
20	0.2578	0.2580	0.2579															
21	0.2622	0.2623	0.2622															
22	0.2606	0.2605	0.2605															
23	0.2602	0.2601	0.2601															
24	0.2590	0.2591	0.2590															
25	0.2602	0.2603	0.2602															
n	25	25	25															
Avg.	0.2606	0.2606	0.2606															
Med.	0.2606	0.2605	0.2605															
σ	0.0017	0.0017	0.0017															
Min.	0.2576	0.2577	0.2577															
Max.	0.2628	0.2629	0.2629															

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Data Set 4 : 85 °C, 65 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.5242	0.5242	0.5242	0.5240	0.5240	0.5240	0.5240	0.5240	0.5240	0.5241	0.5243	0.5242	0.5242	0.5239	0.5239	0.5239	0.5239	0.5239
2	0.5243	0.5243	0.5243	0.5241	0.5241	0.5242	0.5241	0.5242	0.5241	0.5243	0.5243	0.5243	0.5243	0.5241	0.5240	0.5241	0.5240	0.5239
3	0.5240	0.5240	0.5239	0.5238	0.5238	0.5238	0.5237	0.5238	0.5238	0.5239	0.5240	0.5239	0.5239	0.5236	0.5237	0.5237	0.5237	0.5236
4	0.5262	0.5262	0.5262	0.5260	0.5261	0.5261	0.5260	0.5260	0.5261	0.5262	0.5262	0.5262	0.5262	0.5260	0.5260	0.5260	0.5260	0.5259
5	0.5247	0.5246	0.5246	0.5244	0.5244	0.5245	0.5245	0.5245	0.5245	0.5246	0.5247	0.5246	0.5246	0.5244	0.5244	0.5244	0.5244	0.5243
6	0.5241	0.5241	0.5241	0.5240	0.5239	0.5240	0.5240	0.5240	0.5240	0.5241	0.5241	0.5242	0.5241	0.5239	0.5239	0.5239	0.5239	0.5238
7	0.5248	0.5248	0.5248	0.5247	0.5246	0.5247	0.5247	0.5247	0.5247	0.5248	0.5249	0.5248	0.5248	0.5246	0.5246	0.5246	0.5246	0.5245
8	0.5242	0.5242	0.5241	0.5240	0.5240	0.5241	0.5240	0.5240	0.5241	0.5241	0.5242	0.5242	0.5241	0.5239	0.5239	0.5239	0.5240	0.5238
9	0.5237	0.5237	0.5237	0.5236	0.5235	0.5235	0.5236	0.5235	0.5236	0.5236	0.5237	0.5237	0.5237	0.5234	0.5234	0.5234	0.5235	0.5234
10	0.5262	0.5262	0.5262	0.5261	0.5260	0.5261	0.5260	0.5261	0.5261	0.5262	0.5262	0.5262	0.5262	0.5259	0.5259	0.5260	0.5260	0.5259
11	0.5257	0.5257	0.5256	0.5255	0.5255	0.5255	0.5255	0.5255	0.5255	0.5256	0.5257	0.5256	0.5256	0.5254	0.5253	0.5254	0.5254	0.5254
12	0.5265	0.5264	0.5264	0.5263	0.5262	0.5263	0.5263	0.5263	0.5263	0.5263	0.5264	0.5264	0.5264	0.5261	0.5261	0.5262	0.5261	0.5261
13	0.5243	0.5243	0.5243	0.5241	0.5241	0.5241	0.5241	0.5241	0.5241	0.5243	0.5243	0.5242	0.5242	0.5240	0.5240	0.5240	0.5241	0.5240
14	0.5238	0.5237	0.5237	0.5236	0.5235	0.5236	0.5235	0.5236	0.5236	0.5237	0.5237	0.5237	0.5237	0.5235	0.5235	0.5235	0.5235	0.5234
15	0.5231	0.5230	0.5230	0.5228	0.5228	0.5229	0.5229	0.5229	0.5229	0.5230	0.5231	0.5231	0.5230	0.5228	0.5227	0.5228	0.5228	0.5226
16	0.5283	0.5283	0.5282	0.5281	0.5281	0.5281	0.5281	0.5281	0.5281	0.5282	0.5282	0.5282	0.5282	0.5280	0.5280	0.5280	0.5280	0.5279
17	0.5294	0.5294	0.5293	0.5292	0.5292	0.5292	0.5292	0.5292	0.5293	0.5293	0.5294	0.5294	0.5293	0.5292	0.5292	0.5291	0.5291	0.5291
18	0.5276	0.5277	0.5276	0.5275	0.5274	0.5275	0.5275	0.5275	0.5275	0.5276	0.5277	0.5277	0.5276	0.5274	0.5274	0.5274	0.5274	0.5274
19	0.5267	0.5266	0.5266	0.5265	0.5264	0.5265	0.5265	0.5265	0.5265	0.5266	0.5267	0.5266	0.5266	0.5264	0.5263	0.5264	0.5264	0.5263
20	0.5266	0.5266	0.5266	0.5264	0.5264	0.5265	0.5265	0.5265	0.5266	0.5266	0.5267	0.5266	0.5266	0.5264	0.5264	0.5264	0.5264	0.5264
21	0.5249	0.5248	0.5248	0.5247	0.5246	0.5247	0.5247	0.5246	0.5247	0.5248	0.5248	0.5248	0.5248	0.5246	0.5245	0.5246	0.5246	0.5245
22	0.5236	0.5236	0.5235	0.5233	0.5233	0.5233	0.5233	0.5234	0.5234	0.5235	0.5236	0.5235	0.5235	0.5233	0.5233	0.5233	0.5233	0.5232
23	0.5272	0.5273	0.5273	0.5271	0.5270	0.5271	0.5271	0.5271	0.5272	0.5272	0.5273	0.5272	0.5272	0.5270	0.5270	0.5270	0.5271	0.5270
24	0.5246	0.5246	0.5246	0.5245	0.5245	0.5245	0.5245	0.5244	0.5245	0.5246	0.5247	0.5246	0.5246	0.5244	0.5243	0.5244	0.5244	0.5243
25	0.5234	0.5234	0.5233	0.5232	0.5232	0.5232	0.5232	0.5232	0.5233	0.5233	0.5235	0.5234	0.5234	0.5231	0.5231	0.5231	0.5232	0.5231
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5253	0.5253	0.5252	0.5251	0.5251	0.5251	0.5251	0.5251	0.5251	0.5252	0.5253	0.5252	0.5252	0.5250	0.5250	0.5250	0.5250	0.5249
Med.	0.5247	0.5246	0.5246	0.5245	0.5245	0.5245	0.5245	0.5245	0.5245	0.5246	0.5247	0.5246	0.5246	0.5244	0.5244	0.5244	0.5244	0.5243
σ	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017
Min.	0.5231	0.5230	0.5230	0.5228	0.5228	0.5229	0.5229	0.5229	0.5229	0.5230	0.5231	0.5231	0.5230	0.5228	0.5227	0.5228	0.5228	0.5226
Max.	0.5294	0.5294	0.5293	0.5292	0.5292	0.5292	0.5292	0.5292	0.5293	0.5293	0.5294	0.5294	0.5293	0.5292	0.5292	0.5291	0.5291	0.5291

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Data Set 4 : 85 °C, 65 mA

Actual Case Temperature [T_S]	85.3 °C
Actual Ambient Temperature [T_A]	82.1 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.5239	0.5239	0.5238															
2	0.5239	0.5239	0.5239															
3	0.5236	0.5236	0.5236															
4	0.5259	0.5259	0.5259															
5	0.5243	0.5243	0.5244															
6	0.5238	0.5238	0.5238															
7	0.5245	0.5245	0.5245															
8	0.5239	0.5238	0.5238															
9	0.5234	0.5234	0.5233															
10	0.5259	0.5259	0.5258															
11	0.5253	0.5253	0.5253															
12	0.5261	0.5261	0.5261															
13	0.5240	0.5239	0.5240															
14	0.5234	0.5233	0.5233															
15	0.5227	0.5227	0.5226															
16	0.5279	0.5279	0.5279															
17	0.5290	0.5291	0.5290															
18	0.5273	0.5274	0.5273															
19	0.5263	0.5264	0.5263															
20	0.5264	0.5263	0.5263															
21	0.5245	0.5245	0.5245															
22	0.5232	0.5232	0.5232															
23	0.5270	0.5270	0.5269															
24	0.5243	0.5243	0.5243															
25	0.5230	0.5230	0.5231															
n	25	25	25															
Avg.	0.5249	0.5249	0.5249															
Med.	0.5243	0.5243	0.5244															
σ	0.0017	0.0017	0.0017															
Min.	0.5227	0.5227	0.5226															
Max.	0.5290	0.5291	0.5290															

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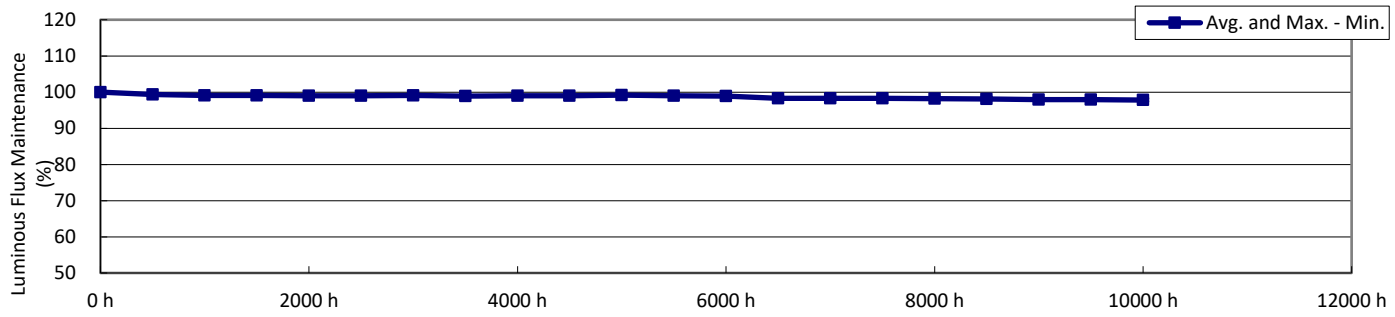
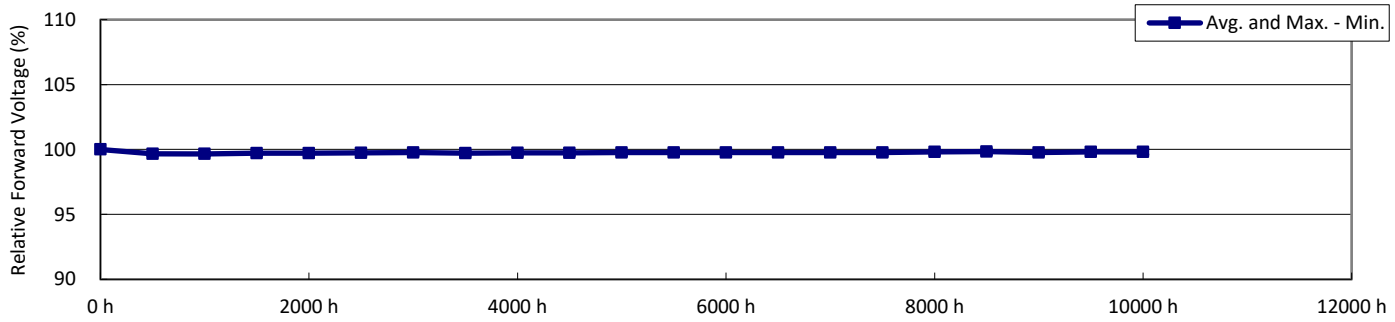
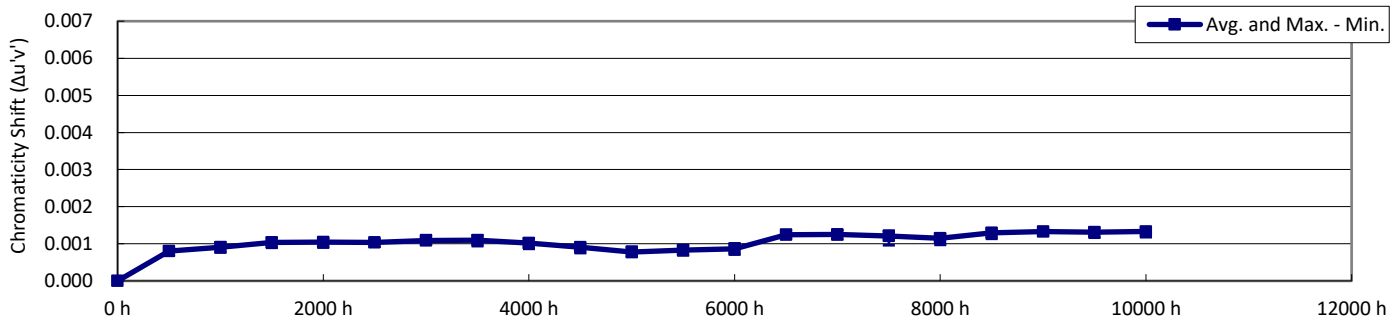
Data Set 5 : 85 °C, 100 mA

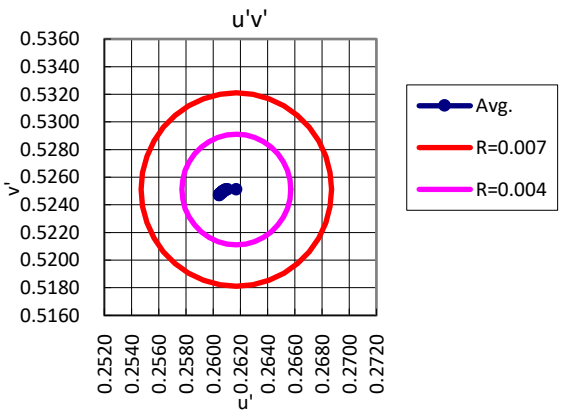
Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 mA

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, 100 mA

Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	Forward voltage	CCT	Input Power	CIE1931		CIE1976							
	Φ_V [lm]	V_F [V]	T_{CP} [K]	P [W]	x	y	u'	v'						
1	50.9	2.80	2757	0.28	0.453	0.406	0.260	0.525						
2	50.7	2.80	2770	0.28	0.454	0.410	0.259	0.526						
3	50.5	2.79	2680	0.28	0.458	0.405	0.264	0.525						
4	50.4	2.80	2708	0.28	0.456	0.405	0.263	0.525						
5	50.6	2.80	2713	0.28	0.457	0.408	0.262	0.526						
6	50.4	2.80	2711	0.28	0.455	0.403	0.263	0.524						
7	50.4	2.80	2784	0.28	0.452	0.406	0.259	0.525						
8	50.4	2.80	2687	0.28	0.458	0.405	0.264	0.525						
9	50.5	2.81	2718	0.28	0.456	0.406	0.262	0.525						
10	50.1	2.82	2700	0.28	0.458	0.407	0.263	0.526						
11	50.7	2.80	2766	0.28	0.456	0.412	0.259	0.527						
12	50.5	2.79	2726	0.28	0.454	0.404	0.262	0.524						
13	50.3	2.80	2709	0.28	0.455	0.403	0.263	0.524						
14	50.6	2.80	2726	0.28	0.456	0.406	0.262	0.525						
15	50.2	2.80	2717	0.28	0.455	0.403	0.262	0.524						
16	50.3	2.80	2677	0.28	0.460	0.408	0.264	0.526						
17	50.2	2.80	2717	0.28	0.455	0.403	0.262	0.524						
18	50.6	2.80	2702	0.28	0.457	0.406	0.263	0.525						
19	50.2	2.80	2675	0.28	0.459	0.406	0.264	0.526						
20	50.8	2.80	2775	0.28	0.455	0.411	0.259	0.527						
21	50.4	2.80	2745	0.28	0.455	0.407	0.261	0.525						
22	50.8	2.80	2733	0.28	0.456	0.407	0.261	0.525						
23	50.9	2.80	2790	0.28	0.454	0.412	0.258	0.527						
24	51.0	2.80	2761	0.28	0.456	0.412	0.260	0.527						
25	50.2	2.80	2689	0.28	0.457	0.404	0.264	0.524						
n	25	25	25	25	25	25	25	25						
Avg.	50.5	2.80	2725	0.28	0.456	0.407	0.262	0.525						
Med.	50.5	2.80	2717	0.28	0.456	0.406	0.262	0.525						
σ	0.26	0.005	34.5	0.000	0.0018	0.0028	0.0017	0.0011						
Min.	50.1	2.79	2675	0.28	0.452	0.403	0.258	0.524						
Max.	51.0	2.82	2790	0.28	0.460	0.412	0.264	0.527						

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Data Set 5 : 85 °C, 100 mA

Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	99.2	98.9	98.9	98.9	98.8	98.9	98.8	98.8	98.9	99.1	98.9	98.7	98.2	98.1	98.2	98.1	98.0
2	100.0	99.5	99.1	99.2	99.2	99.1	99.2	99.0	99.1	99.2	99.3	99.2	99.1	98.5	98.4	98.1	98.1	98.0
3	100.0	99.3	99.2	99.2	99.1	99.0	99.1	98.9	99.0	99.0	99.2	99.1	98.8	98.3	98.2	98.3	98.2	98.2
4	100.0	99.2	98.9	98.9	98.7	98.7	98.9	98.7	98.5	98.7	98.9	98.7	98.6	98.0	98.0	98.0	97.9	97.9
5	100.0	99.2	99.0	98.9	98.7	98.9	99.0	98.7	98.6	98.8	98.9	98.8	98.6	98.0	98.0	98.3	97.9	98.1
6	100.0	99.2	99.0	99.0	98.9	98.8	99.0	98.8	98.8	98.9	99.1	98.9	98.8	98.2	98.1	98.2	98.1	98.0
7	100.0	99.4	99.3	99.3	99.2	99.2	99.3	99.1	99.2	99.2	99.4	99.2	99.1	98.4	98.4	98.6	98.4	98.4
8	100.0	99.2	99.0	99.0	98.8	98.8	98.9	98.7	98.9	98.9	99.1	99.0	98.8	98.3	98.2	98.3	98.2	98.1
9	100.0	99.4	99.3	99.2	99.2	99.1	99.2	99.0	99.2	99.1	99.2	99.1	99.0	98.4	98.4	98.2	98.1	98.1
10	100.0	99.6	99.4	99.5	99.3	99.2	99.3	99.2	99.2	99.2	99.3	99.2	99.0	98.4	98.4	98.4	98.3	98.3
11	100.0	99.6	99.3	99.3	99.2	99.3	99.4	99.2	99.0	99.2	99.3	99.4	99.1	98.6	98.6	98.5	98.3	98.1
12	100.0	99.3	99.0	99.1	98.9	98.9	99.1	98.9	98.9	98.9	99.0	99.0	98.8	98.2	98.2	98.3	98.2	98.0
13	100.0	99.4	99.1	99.2	99.1	99.1	99.1	98.9	99.1	99.1	99.3	99.1	99.1	98.5	98.4	98.5	98.4	98.2
14	100.0	99.3	99.0	99.0	98.9	98.9	98.9	98.8	98.9	98.9	99.1	98.8	98.9	98.3	98.2	98.3	98.2	98.2
15	100.0	99.4	99.1	99.2	99.2	99.1	99.1	99.0	99.2	99.1	99.3	99.1	99.1	98.6	98.4	98.4	98.3	98.2
16	100.0	99.2	98.9	98.9	98.8	98.8	98.8	98.6	98.9	98.8	99.0	98.8	98.8	98.2	98.2	98.2	98.2	98.1
17	100.0	99.3	99.2	99.2	99.1	99.1	98.8	98.7	98.9	99.0	99.2	99.2	99.1	98.5	98.4	98.4	97.9	98.2
18	100.0	99.7	99.5	99.5	99.4	99.4	99.4	99.1	99.4	99.3	99.5	99.4	99.4	98.8	98.7	98.7	98.6	98.6
19	100.0	99.2	98.9	98.9	98.8	98.7	98.9	98.7	98.9	98.8	99.0	98.8	98.7	98.2	98.0	98.2	98.1	98.0
20	100.0	99.3	99.1	99.1	99.0	98.9	99.1	98.9	99.0	98.9	99.2	98.9	98.9	98.3	98.1	98.3	98.1	98.1
21	100.0	99.4	99.2	99.3	99.1	99.1	99.2	99.1	99.1	99.1	99.3	99.1	99.1	98.5	98.3	98.5	98.4	98.2
22	100.0	99.1	98.9	98.9	98.8	98.7	98.8	98.6	98.7	98.6	98.9	98.7	98.5	98.0	97.8	98.0	97.9	97.8
23	100.0	99.5	99.2	99.5	99.0	99.2	99.5	99.1	99.1	99.1	99.5	98.9	99.1	98.7	98.7	98.5	98.3	98.2
24	100.0	99.2	99.0	99.1	98.9	98.9	99.1	98.8	99.0	98.9	99.2	98.9	98.8	98.3	98.2	98.3	98.2	98.1
25	100.0	99.1	99.0	98.8	98.8	98.7	98.8	98.6	98.8	98.8	98.9	98.8	98.6	98.1	97.9	98.1	98.0	97.8
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	99.1	99.0	99.0	99.1	98.9	99.0	99.0	99.2	99.0	98.9	98.3	98.3	98.3	98.2	98.1
Med.	100.0	99.3	99.1	99.1	99.0	98.9	99.1	98.9	99.0	98.9	99.2	99.0	98.9	98.3	98.2	98.3	98.2	98.1
σ	0.00	0.16	0.17	0.20	0.20	0.20	0.21	0.19	0.21	0.18	0.18	0.20	0.22	0.21	0.23	0.18	0.18	0.17
Min.	100.0	99.1	98.9	98.8	98.7	98.7	98.8	98.6	98.5	98.6	98.9	98.7	98.5	98.0	97.8	98.0	97.9	97.8
Max.	100.0	99.7	99.5	99.5	99.4	99.4	99.5	99.2	99.4	99.3	99.5	99.4	99.4	98.8	98.7	98.7	98.6	98.6

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.)	-0.0080	-0.0101	-0.0111	-0.0171	-0.0171	-0.0171	-0.0182	-0.0192	-0.0212	-0.0212	-0.0222							

Test duration used	5000 h to 10000 h	
B	1.004	
α	2.74E-06	
R^2	0.900	
Calculated L_{70} (10K)	132000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	82900	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	39900	hours
Reported L_{90} (10K)	39900	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, 100 mA

Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	97.8	97.8	97.7															
2	97.8	97.9	97.7															
3	98.0	98.0	97.8															
4	97.7	97.6	97.5															
5	97.7	97.7	97.5															
6	97.8	97.8	97.7															
7	98.1	98.2	98.1															
8	97.9	98.0	97.9															
9	97.8	97.9	97.8															
10	98.0	98.1	98.0															
11	97.9	98.3	97.9															
12	97.8	97.9	97.8															
13	98.0	98.1	98.0															
14	97.9	98.0	97.8															
15	97.9	98.0	97.9															
16	97.8	97.9	97.8															
17	97.7	97.7	97.7															
18	98.3	98.4	98.3															
19	97.8	97.9	97.8															
20	97.9	97.9	97.8															
21	98.0	98.1	98.0															
22	97.6	97.6	97.5															
23	97.8	97.7	97.8															
24	97.9	97.9	97.8															
25	97.6	97.6	97.5															
n	25	25	25															
Avg.	97.9	97.9	97.8															
Med.	97.8	97.9	97.8															
σ	0.16	0.21	0.19															
Min.	97.6	97.6	97.5															
Max.	98.3	98.4	98.3															

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Data Set 5 : 85 °C, 100 mA

Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	99.7	99.7	99.7	99.7	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.7	99.8	99.9
2	100.0	99.7	99.7	99.7	99.7	99.8	99.8	99.7	99.8	99.7	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8
3	100.0	99.7	99.6	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.9	99.9
4	100.0	99.6	99.6	99.7	99.6	99.7	99.7	99.6	99.7	99.7	99.6	99.7	99.7	99.6	99.7	99.7	99.7	99.7
5	100.0	99.7	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.8	99.7	99.8	99.8
6	100.0	99.7	99.7	99.7	99.7	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.9
7	100.0	99.7	99.7	99.8	99.8	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9
8	100.0	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	99.9	100.0	100.1
9	100.0	99.5	99.5	99.6	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.7	99.6
10	100.0	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.6	99.6	99.5	99.6	99.6
11	100.0	99.6	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.8	99.7	99.8	99.8	99.9
12	100.0	99.7	99.7	99.8	99.8	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8
13	100.0	99.7	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.8	99.8	99.8
14	100.0	99.7	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.7	99.8	99.9
15	100.0	99.7	99.7	99.8	99.7	99.7	99.8	99.7	99.7	99.7	99.7	99.8	99.7	99.8	99.8	99.8	99.8	99.8
16	100.0	99.7	99.6	99.7	99.7	99.8	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8
17	100.0	99.7	99.6	99.7	99.7	99.7	99.8	99.7	99.7	99.7	99.8	99.8	99.8	99.9	99.8	99.8	99.9	99.9
18	100.0	99.6	99.6	99.6	99.7	99.7	99.7	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.8	99.8
19	100.0	99.7	99.6	99.7	99.7	99.8	99.8	99.7	99.7	99.7	99.8	99.8	99.7	99.7	99.7	99.7	99.8	99.8
20	100.0	99.7	99.7	99.7	99.8	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.8	99.8	99.9
21	100.0	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	99.9	99.9
22	100.0	99.6	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.7	99.7	99.6	99.7	99.8
23	100.0	99.6	99.7	99.7	99.7	99.7	99.8	99.7	99.8	99.7	99.8	99.7	99.8	99.8	99.7	99.7	99.8	99.9
24	100.0	99.8	99.8	99.9	99.8	99.9	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	99.9	99.9	100.0	100.0
25	100.0	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.8	99.8	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	99.7	99.7	99.7	99.7	99.8	99.8	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8
Med.	100.0	99.7	99.6	99.7	99.7	99.8	99.8	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9
σ	0.00	0.06	0.06	0.08	0.08	0.08	0.08	0.09	0.08	0.09	0.09	0.10	0.10	0.09	0.09	0.10	0.09	0.10
Min.	100.0	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.6	99.6	99.5	99.6	99.6
Max.	100.0	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.1

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Data Set 5 : 85 °C, 100 mA

Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	99.8	99.8	99.9															
2	99.8	99.9	99.8															
3	99.9	100.0	99.9															
4	99.6	99.7	99.7															
5	99.8	99.8	99.8															
6	99.9	99.8	99.8															
7	99.7	99.7	99.9															
8	100.0	99.9	100.0															
9	99.5	99.6	99.7															
10	99.6	99.6	99.6															
11	99.8	99.8	99.8															
12	99.8	99.8	99.9															
13	99.8	99.7	99.8															
14	99.7	99.8	99.8															
15	99.8	99.8	99.8															
16	99.7	99.8	99.8															
17	99.9	99.9	99.9															
18	99.8	99.7	99.8															
19	99.7	99.9	99.8															
20	99.8	99.8	99.9															
21	99.9	99.9	99.9															
22	99.7	99.7	99.7															
23	99.8	99.8	99.8															
24	99.9	100.0	100.0															
25	99.8	99.9	100.0															
n	25	25	25															
Avg.	99.8	99.8	99.8															
Med.	99.8	99.8	99.8															
σ	0.10	0.11	0.11															
Min.	99.5	99.6	99.6															
Max.	100.0	100.0	100.0															

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Data Set 5 : 85 °C, 100 mA

Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.0008	0.0009	0.0010	0.0010	0.0010	0.0010	0.0011	0.0009	0.0009	0.0007	0.0008	0.0008	0.0012	0.0012	0.0012	0.0012	0.0013
2	0.0000	0.0008	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0010	0.0010	0.0009	0.0009	0.0010	0.0013	0.0013	0.0013	0.0011	0.0013
3	0.0000	0.0009	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0009	0.0008	0.0009	0.0009	0.0013	0.0013	0.0012	0.0012	0.0013
4	0.0000	0.0008	0.0009	0.0010	0.0011	0.0010	0.0011	0.0010	0.0009	0.0008	0.0006	0.0007	0.0007	0.0012	0.0011	0.0010	0.0010	0.0011
5	0.0000	0.0008	0.0010	0.0010	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0007	0.0008	0.0008	0.0012	0.0012	0.0012	0.0011	0.0013
6	0.0000	0.0009	0.0009	0.0010	0.0012	0.0011	0.0012	0.0011	0.0011	0.0009	0.0008	0.0009	0.0009	0.0013	0.0013	0.0013	0.0012	0.0014
7	0.0000	0.0008	0.0010	0.0011	0.0011	0.0011	0.0012	0.0012	0.0011	0.0009	0.0009	0.0009	0.0010	0.0013	0.0013	0.0014	0.0012	0.0014
8	0.0000	0.0008	0.0010	0.0011	0.0011	0.0011	0.0011	0.0012	0.0011	0.0009	0.0009	0.0009	0.0009	0.0013	0.0013	0.0013	0.0012	0.0013
9	0.0000	0.0007	0.0008	0.0010	0.0010	0.0010	0.0010	0.0012	0.0010	0.0009	0.0007	0.0008	0.0008	0.0012	0.0012	0.0011	0.0010	0.0011
10	0.0000	0.0007	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0007	0.0008	0.0008	0.0013	0.0012	0.0012	0.0011	0.0012
11	0.0000	0.0007	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0010	0.0010	0.0008	0.0009	0.0009	0.0013	0.0013	0.0012	0.0013	0.0013
12	0.0000	0.0007	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0007	0.0008	0.0008	0.0012	0.0012	0.0012	0.0011	0.0013
13	0.0000	0.0008	0.0008	0.0010	0.0010	0.0010	0.0011	0.0010	0.0010	0.0008	0.0007	0.0008	0.0008	0.0012	0.0013	0.0012	0.0012	0.0013
14	0.0000	0.0008	0.0009	0.0010	0.0010	0.0009	0.0010	0.0010	0.0009	0.0008	0.0007	0.0007	0.0008	0.0012	0.0012	0.0012	0.0011	0.0013
15	0.0000	0.0009	0.0010	0.0011	0.0011	0.0011	0.0012	0.0012	0.0011	0.0010	0.0008	0.0009	0.0009	0.0014	0.0013	0.0013	0.0012	0.0013
16	0.0000	0.0008	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0008	0.0008	0.0009	0.0012	0.0012	0.0011	0.0011	0.0013
17	0.0000	0.0008	0.0010	0.0010	0.0011	0.0011	0.0010	0.0011	0.0011	0.0010	0.0008	0.0009	0.0009	0.0013	0.0013	0.0013	0.0012	0.0013
18	0.0000	0.0008	0.0009	0.0011	0.0010	0.0011	0.0011	0.0012	0.0010	0.0010	0.0008	0.0010	0.0009	0.0013	0.0012	0.0013	0.0012	0.0013
19	0.0000	0.0009	0.0009	0.0011	0.0010	0.0011	0.0011	0.0010	0.0010	0.0008	0.0007	0.0007	0.0008	0.0012	0.0012	0.0012	0.0012	0.0013
20	0.0000	0.0009	0.0009	0.0011	0.0011	0.0010	0.0011	0.0011	0.0011	0.0010	0.0008	0.0008	0.0008	0.0013	0.0013	0.0012	0.0012	0.0013
21	0.0000	0.0009	0.0009	0.0010	0.0011	0.0010	0.0011	0.0011	0.0010	0.0010	0.0008	0.0008	0.0009	0.0013	0.0012	0.0012	0.0011	0.0014
22	0.0000	0.0008	0.0008	0.0010	0.0010	0.0010	0.0010	0.0009	0.0009	0.0008	0.0007	0.0008	0.0008	0.0011	0.0012	0.0012	0.0011	0.0013
23	0.0000	0.0007	0.0008	0.0009	0.0009	0.0010	0.0011	0.0010	0.0010	0.0008	0.0008	0.0007	0.0008	0.0011	0.0012	0.0013	0.0012	0.0013
24	0.0000	0.0009	0.0010	0.0012	0.0011	0.0011	0.0012	0.0012	0.0011	0.0010	0.0008	0.0009	0.0010	0.0013	0.0014	0.0013	0.0012	0.0014
25	0.0000	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0009	0.0009	0.0007	0.0008	0.0008	0.0012	0.0012	0.0012	0.0011	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	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0008	0.0009	0.0012	0.0012	0.0012	0.0011	0.0013
Med.	0.0000	0.0008	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0008	0.0008	0.0013	0.0012	0.0012	0.0012	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	0.0007	0.0008	0.0009	0.0009	0.0009	0.0010	0.0009	0.0009	0.0008	0.0006	0.0007	0.0007	0.0011	0.0011	0.0010	0.0010	0.0011
Max.	0.0000	0.0009	0.0010	0.0012	0.0012	0.0011	0.0012	0.0012	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0013	0.0014

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Data Set 5 : 85 °C, 100 mA

Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.0013	0.0013	0.0013															
2	0.0014	0.0013	0.0013															
3	0.0014	0.0014	0.0013															
4	0.0012	0.0012	0.0012															
5	0.0013	0.0012	0.0013															
6	0.0014	0.0014	0.0013															
7	0.0014	0.0014	0.0014															
8	0.0014	0.0014	0.0014															
9	0.0012	0.0012	0.0012															
10	0.0013	0.0014	0.0013															
11	0.0013	0.0014	0.0013															
12	0.0013	0.0013	0.0013															
13	0.0014	0.0013	0.0014															
14	0.0013	0.0013	0.0012															
15	0.0014	0.0014	0.0013															
16	0.0013	0.0013	0.0013															
17	0.0013	0.0013	0.0014															
18	0.0014	0.0014	0.0014															
19	0.0013	0.0013	0.0014															
20	0.0014	0.0013	0.0014															
21	0.0013	0.0013	0.0014															
22	0.0013	0.0013	0.0013															
23	0.0013	0.0013	0.0014															
24	0.0014	0.0014	0.0014															
25	0.0013	0.0013	0.0014															
n	25	25	25															
Avg.	0.0013	0.0013	0.0013															
Med.	0.0013	0.0013	0.0013															
σ	0.0001	0.0001	0.0001															
Min.	0.0012	0.0012	0.0012															
Max.	0.0014	0.0014	0.0014															

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Data Set 5 : 85 °C, 100 mA

Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.2607	0.2599	0.2598	0.2597	0.2597	0.2597	0.2597	0.2597	0.2598	0.2598	0.2600	0.2599	0.2599	0.2596	0.2596	0.2595	0.2596	0.2595
2	0.2599	0.2590	0.2589	0.2588	0.2588	0.2588	0.2588	0.2588	0.2589	0.2589	0.2590	0.2590	0.2589	0.2586	0.2586	0.2586	0.2588	0.2586
3	0.2644	0.2635	0.2635	0.2633	0.2634	0.2634	0.2634	0.2633	0.2634	0.2635	0.2636	0.2635	0.2635	0.2631	0.2631	0.2633	0.2633	0.2631
4	0.2635	0.2627	0.2626	0.2625	0.2625	0.2625	0.2624	0.2625	0.2626	0.2626	0.2629	0.2628	0.2628	0.2623	0.2624	0.2625	0.2624	0.2624
5	0.2646	0.2638	0.2636	0.2636	0.2636	0.2636	0.2636	0.2636	0.2636	0.2637	0.2639	0.2638	0.2638	0.2635	0.2634	0.2635	0.2635	0.2633
6	0.2636	0.2628	0.2627	0.2626	0.2625	0.2625	0.2624	0.2625	0.2625	0.2627	0.2628	0.2627	0.2627	0.2623	0.2624	0.2624	0.2624	0.2623
7	0.2594	0.2585	0.2584	0.2583	0.2583	0.2583	0.2582	0.2582	0.2583	0.2584	0.2585	0.2584	0.2584	0.2581	0.2581	0.2580	0.2582	0.2580
8	0.2639	0.2630	0.2629	0.2627	0.2628	0.2628	0.2627	0.2627	0.2628	0.2630	0.2630	0.2630	0.2629	0.2626	0.2626	0.2627	0.2627	0.2626
9	0.2624	0.2617	0.2616	0.2614	0.2614	0.2614	0.2614	0.2612	0.2614	0.2615	0.2617	0.2616	0.2616	0.2612	0.2613	0.2613	0.2615	0.2613
10	0.2634	0.2627	0.2626	0.2625	0.2625	0.2624	0.2625	0.2624	0.2624	0.2625	0.2627	0.2626	0.2626	0.2622	0.2622	0.2623	0.2623	0.2623
11	0.2619	0.2612	0.2610	0.2609	0.2610	0.2609	0.2608	0.2607	0.2609	0.2610	0.2611	0.2610	0.2610	0.2607	0.2607	0.2607	0.2607	0.2607
12	0.2626	0.2620	0.2618	0.2617	0.2617	0.2616	0.2617	0.2617	0.2617	0.2617	0.2620	0.2619	0.2619	0.2615	0.2615	0.2615	0.2616	0.2614
13	0.2630	0.2622	0.2623	0.2620	0.2621	0.2621	0.2620	0.2620	0.2621	0.2622	0.2623	0.2622	0.2622	0.2619	0.2618	0.2619	0.2619	0.2618
14	0.2618	0.2610	0.2609	0.2609	0.2609	0.2609	0.2608	0.2608	0.2609	0.2611	0.2611	0.2611	0.2610	0.2606	0.2607	0.2607	0.2608	0.2606
15	0.2627	0.2619	0.2617	0.2616	0.2616	0.2617	0.2616	0.2616	0.2616	0.2618	0.2619	0.2618	0.2618	0.2614	0.2615	0.2614	0.2616	0.2614
16	0.2645	0.2637	0.2635	0.2634	0.2634	0.2634	0.2634	0.2634	0.2634	0.2636	0.2637	0.2637	0.2636	0.2633	0.2633	0.2634	0.2634	0.2632
17	0.2651	0.2642	0.2641	0.2641	0.2640	0.2640	0.2641	0.2640	0.2640	0.2641	0.2643	0.2642	0.2642	0.2638	0.2638	0.2638	0.2640	0.2638
18	0.2635	0.2627	0.2626	0.2625	0.2625	0.2624	0.2624	0.2623	0.2625	0.2626	0.2627	0.2626	0.2627	0.2623	0.2623	0.2623	0.2624	0.2622
19	0.2644	0.2635	0.2635	0.2634	0.2634	0.2633	0.2633	0.2634	0.2634	0.2636	0.2637	0.2636	0.2636	0.2632	0.2632	0.2633	0.2633	0.2631
20	0.2593	0.2585	0.2584	0.2583	0.2583	0.2584	0.2582	0.2583	0.2583	0.2584	0.2586	0.2585	0.2585	0.2581	0.2581	0.2582	0.2582	0.2581
21	0.2610	0.2601	0.2601	0.2600	0.2599	0.2600	0.2599	0.2599	0.2599	0.2600	0.2602	0.2601	0.2601	0.2597	0.2598	0.2598	0.2599	0.2597
22	0.2619	0.2611	0.2610	0.2609	0.2609	0.2609	0.2609	0.2609	0.2609	0.2611	0.2612	0.2611	0.2611	0.2608	0.2607	0.2608	0.2608	0.2607
23	0.2609	0.2601	0.2601	0.2600	0.2600	0.2599	0.2598	0.2599	0.2599	0.2601	0.2601	0.2602	0.2601	0.2598	0.2597	0.2596	0.2598	0.2596
24	0.2604	0.2595	0.2594	0.2593	0.2593	0.2593	0.2592	0.2592	0.2593	0.2594	0.2596	0.2595	0.2594	0.2591	0.2591	0.2591	0.2592	0.2590
25	0.2639	0.2631	0.2630	0.2628	0.2629	0.2629	0.2628	0.2628	0.2630	0.2630	0.2632	0.2631	0.2631	0.2627	0.2627	0.2627	0.2628	0.2627
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2625	0.2617	0.2616	0.2615	0.2615	0.2615	0.2614	0.2614	0.2615	0.2616	0.2617	0.2617	0.2617	0.2613	0.2613	0.2613	0.2614	0.2613
Med.	0.2627	0.2620	0.2618	0.2617	0.2617	0.2617	0.2617	0.2617	0.2617	0.2618	0.2620	0.2619	0.2619	0.2615	0.2615	0.2615	0.2616	0.2614
σ	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017
Min.	0.2593	0.2585	0.2584	0.2583	0.2583	0.2583	0.2582	0.2582	0.2583	0.2584	0.2585	0.2584	0.2584	0.2581	0.2581	0.2580	0.2582	0.2580
Max.	0.2651	0.2642	0.2641	0.2641	0.2640	0.2640	0.2641	0.2640	0.2640	0.2641	0.2643	0.2642	0.2642	0.2638	0.2638	0.2638	0.2640	0.2638

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Data Set 5 : 85 °C, 100 mA

Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.2594	0.2594	0.2595															
2	0.2586	0.2586	0.2586															
3	0.2631	0.2631	0.2632															
4	0.2623	0.2623	0.2623															
5	0.2634	0.2634	0.2634															
6	0.2623	0.2623	0.2623															
7	0.2580	0.2580	0.2580															
8	0.2625	0.2625	0.2626															
9	0.2612	0.2613	0.2613															
10	0.2622	0.2621	0.2622															
11	0.2607	0.2606	0.2607															
12	0.2614	0.2614	0.2614															
13	0.2617	0.2618	0.2617															
14	0.2606	0.2606	0.2606															
15	0.2614	0.2614	0.2614															
16	0.2632	0.2632	0.2632															
17	0.2638	0.2639	0.2637															
18	0.2622	0.2622	0.2622															
19	0.2632	0.2632	0.2631															
20	0.2581	0.2581	0.2581															
21	0.2597	0.2597	0.2597															
22	0.2606	0.2606	0.2606															
23	0.2596	0.2596	0.2595															
24	0.2590	0.2590	0.2590															
25	0.2626	0.2627	0.2626															
n	25	25	25															
Avg.	0.2612	0.2613	0.2612															
Med.	0.2614	0.2614	0.2614															
σ	0.0017	0.0017	0.0017															
Min.	0.2580	0.2580	0.2580															
Max.	0.2638	0.2639	0.2637															

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Data Set 5 : 85 °C, 100 mA

Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.5246	0.5246	0.5246	0.5244	0.5244	0.5246	0.5244	0.5245	0.5245	0.5246	0.5247	0.5246	0.5246	0.5244	0.5243	0.5243	0.5244	0.5243
2	0.5263	0.5263	0.5262	0.5261	0.5261	0.5261	0.5262	0.5261	0.5262	0.5262	0.5262	0.5263	0.5262	0.5260	0.5260	0.5260	0.5260	0.5260
3	0.5250	0.5250	0.5249	0.5248	0.5247	0.5248	0.5247	0.5247	0.5248	0.5248	0.5249	0.5249	0.5248	0.5247	0.5246	0.5247	0.5247	0.5246
4	0.5250	0.5250	0.5248	0.5247	0.5246	0.5248	0.5247	0.5248	0.5250	0.5250	0.5251	0.5250	0.5251	0.5248	0.5247	0.5248	0.5248	0.5248
5	0.5271	0.5271	0.5271	0.5270	0.5270	0.5270	0.5270	0.5270	0.5271	0.5271	0.5272	0.5271	0.5271	0.5269	0.5269	0.5269	0.5269	0.5268
6	0.5240	0.5240	0.5239	0.5237	0.5237	0.5238	0.5238	0.5238	0.5238	0.5238	0.5239	0.5239	0.5239	0.5237	0.5236	0.5237	0.5237	0.5236
7	0.5246	0.5246	0.5246	0.5245	0.5244	0.5245	0.5245	0.5244	0.5245	0.5246	0.5246	0.5246	0.5246	0.5243	0.5244	0.5244	0.5243	0.5243
8	0.5250	0.5250	0.5249	0.5248	0.5248	0.5248	0.5248	0.5248	0.5248	0.5249	0.5250	0.5249	0.5249	0.5247	0.5247	0.5247	0.5247	0.5246
9	0.5253	0.5253	0.5253	0.5251	0.5251	0.5252	0.5251	0.5251	0.5251	0.5252	0.5252	0.5252	0.5252	0.5250	0.5249	0.5250	0.5250	0.5250
10	0.5261	0.5261	0.5260	0.5259	0.5259	0.5259	0.5258	0.5259	0.5259	0.5260	0.5261	0.5260	0.5259	0.5258	0.5257	0.5258	0.5257	0.5257
11	0.5285	0.5285	0.5285	0.5283	0.5283	0.5284	0.5283	0.5284	0.5284	0.5284	0.5285	0.5284	0.5284	0.5282	0.5282	0.5282	0.5282	0.5282
12	0.5242	0.5242	0.5241	0.5240	0.5240	0.5240	0.5240	0.5240	0.5240	0.5241	0.5242	0.5242	0.5241	0.5239	0.5239	0.5239	0.5239	0.5238
13	0.5240	0.5240	0.5239	0.5238	0.5237	0.5239	0.5238	0.5238	0.5238	0.5239	0.5239	0.5239	0.5239	0.5236	0.5236	0.5237	0.5237	0.5235
14	0.5252	0.5252	0.5252	0.5250	0.5250	0.5250	0.5250	0.5250	0.5251	0.5251	0.5252	0.5252	0.5251	0.5249	0.5250	0.5249	0.5249	0.5249
15	0.5239	0.5238	0.5238	0.5237	0.5236	0.5237	0.5236	0.5237	0.5238	0.5238	0.5239	0.5238	0.5238	0.5236	0.5235	0.5236	0.5236	0.5235
16	0.5266	0.5265	0.5264	0.5263	0.5263	0.5264	0.5264	0.5264	0.5265	0.5265	0.5266	0.5265	0.5265	0.5263	0.5262	0.5263	0.5263	0.5263
17	0.5253	0.5253	0.5253	0.5251	0.5251	0.5251	0.5251	0.5251	0.5252	0.5252	0.5253	0.5252	0.5252	0.5249	0.5249	0.5250	0.5250	0.5249
18	0.5255	0.5256	0.5255	0.5253	0.5253	0.5254	0.5253	0.5254	0.5254	0.5254	0.5255	0.5255	0.5255	0.5252	0.5252	0.5252	0.5253	0.5252
19	0.5257	0.5257	0.5256	0.5255	0.5255	0.5255	0.5255	0.5255	0.5256	0.5256	0.5257	0.5256	0.5257	0.5254	0.5253	0.5254	0.5254	0.5253
20	0.5267	0.5267	0.5266	0.5266	0.5265	0.5265	0.5266	0.5265	0.5265	0.5266	0.5267	0.5267	0.5266	0.5265	0.5264	0.5265	0.5264	0.5264
21	0.5253	0.5254	0.5253	0.5251	0.5251	0.5252	0.5251	0.5251	0.5252	0.5253	0.5253	0.5253	0.5252	0.5250	0.5250	0.5250	0.5250	0.5249
22	0.5257	0.5257	0.5257	0.5255	0.5255	0.5256	0.5256	0.5256	0.5257	0.5257	0.5258	0.5257	0.5257	0.5254	0.5254	0.5254	0.5254	0.5254
23	0.5283	0.5283	0.5283	0.5282	0.5281	0.5282	0.5281	0.5282	0.5282	0.5283	0.5283	0.5283	0.5283	0.5281	0.5281	0.5281	0.5280	0.5280
24	0.5275	0.5275	0.5274	0.5273	0.5273	0.5274	0.5273	0.5273	0.5274	0.5274	0.5276	0.5275	0.5275	0.5272	0.5272	0.5273	0.5272	0.5272
25	0.5243	0.5242	0.5242	0.5241	0.5241	0.5241	0.5241	0.5241	0.5241	0.5242	0.5243	0.5242	0.5242	0.5240	0.5239	0.5240	0.5240	0.5238
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5256	0.5256	0.5255	0.5254	0.5254	0.5254	0.5254	0.5254	0.5255	0.5255	0.5256	0.5255	0.5255	0.5253	0.5253	0.5253	0.5253	0.5252
Med.	0.5253	0.5253	0.5253	0.5251	0.5251	0.5252	0.5251	0.5251	0.5252	0.5252	0.5253	0.5252	0.5252	0.5250	0.5250	0.5250	0.5250	0.5249
σ	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
Min.	0.5239	0.5238	0.5238	0.5237	0.5236	0.5237	0.5236	0.5237	0.5238	0.5238	0.5239	0.5238	0.5238	0.5236	0.5235	0.5236	0.5236	0.5235
Max.	0.5285	0.5285	0.5285	0.5283	0.5283	0.5284	0.5283	0.5284	0.5284	0.5284	0.5285	0.5284	0.5284	0.5282	0.5282	0.5282	0.5282	0.5282

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Data Set 5 : 85 °C, 100 mA

Actual Case Temperature [T_S]	85.6 °C
Actual Ambient Temperature [T_A]	84.5 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.5243	0.5242	0.5243															
2	0.5259	0.5259	0.5259															
3	0.5245	0.5245	0.5245															
4	0.5247	0.5247	0.5247															
5	0.5268	0.5268	0.5268															
6	0.5236	0.5235	0.5235															
7	0.5242	0.5243	0.5242															
8	0.5246	0.5246	0.5245															
9	0.5249	0.5249	0.5249															
10	0.5257	0.5256	0.5256															
11	0.5282	0.5281	0.5281															
12	0.5238	0.5238	0.5238															
13	0.5236	0.5235	0.5235															
14	0.5248	0.5248	0.5248															
15	0.5234	0.5235	0.5235															
16	0.5262	0.5262	0.5262															
17	0.5249	0.5249	0.5250															
18	0.5252	0.5251	0.5252															
19	0.5253	0.5253	0.5253															
20	0.5263	0.5263	0.5263															
21	0.5249	0.5249	0.5249															
22	0.5254	0.5253	0.5253															
23	0.5280	0.5280	0.5279															
24	0.5272	0.5272	0.5272															
25	0.5239	0.5238	0.5238															
n	25	25	25															
Avg.	0.5252	0.5252	0.5252															
Med.	0.5249	0.5249	0.5249															
σ	0.0013	0.0013	0.0013															
Min.	0.5234	0.5235	0.5235															
Max.	0.5282	0.5281	0.5281															

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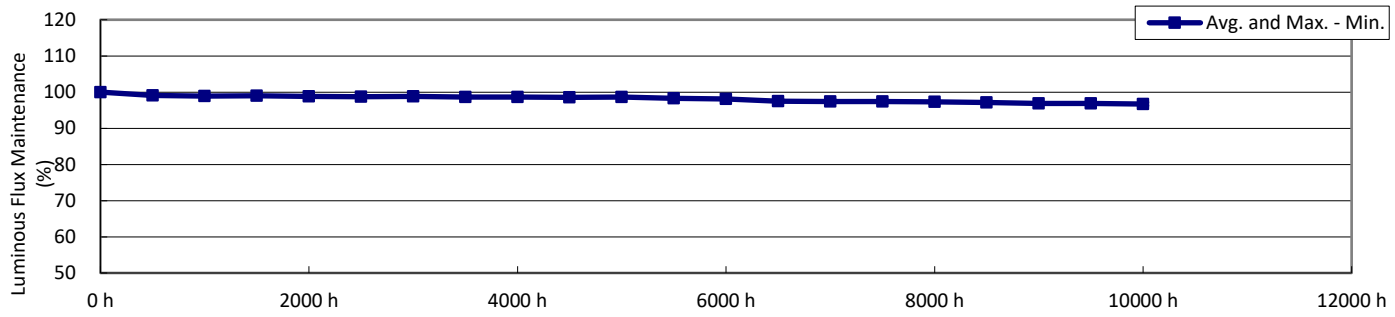
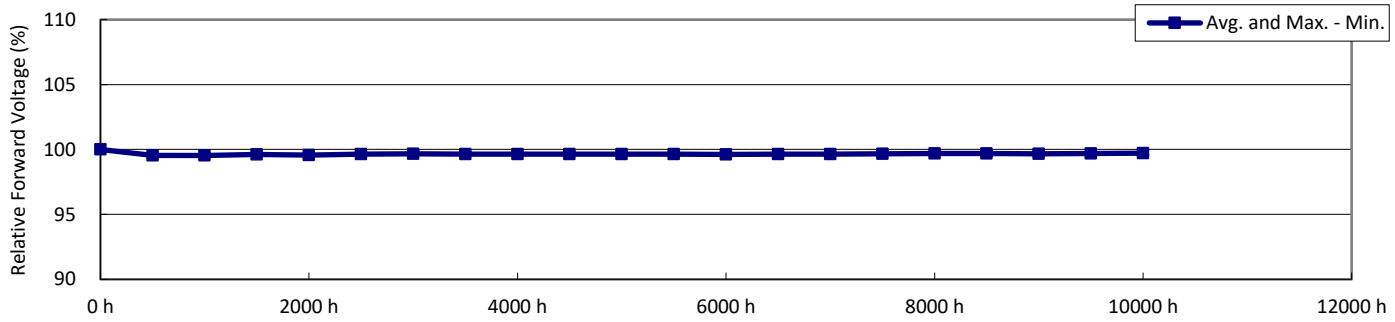
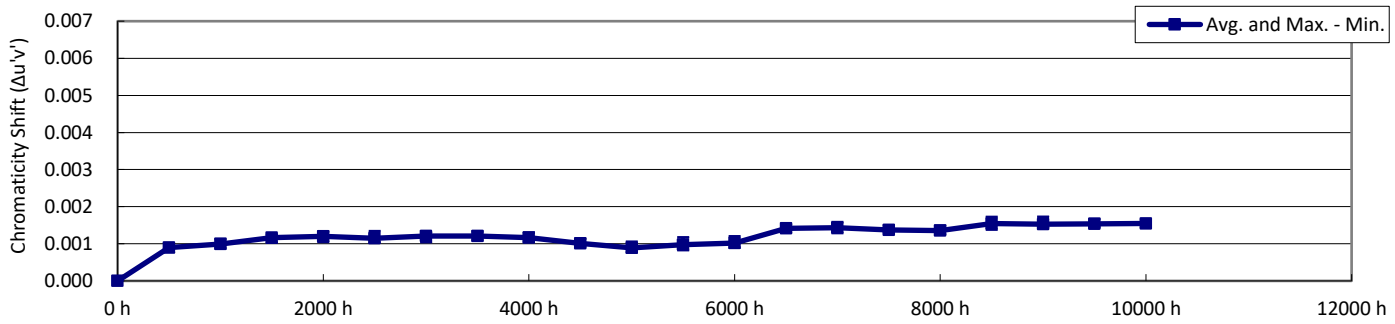
Data Set 6 : 85 °C, 180 mA

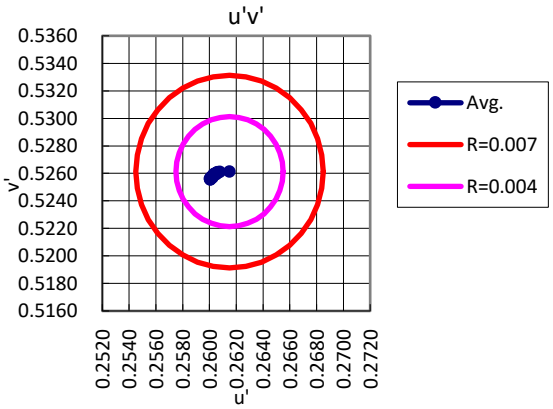
Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

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









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Data Set 6 : 85 °C, 180 mA

Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °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 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	88.0	2.94	2721	0.53	0.456	0.406	0.262	0.525						
2	87.6	2.93	2725	0.53	0.456	0.406	0.262	0.525						
3	87.6	2.94	2739	0.53	0.453	0.403	0.261	0.524						
4	87.5	2.94	2701	0.53	0.458	0.407	0.263	0.525						
5	88.1	2.94	2751	0.53	0.457	0.412	0.260	0.527						
6	87.9	2.94	2751	0.53	0.455	0.407	0.261	0.525						
7	88.7	2.94	2775	0.53	0.452	0.406	0.260	0.525						
8	88.4	2.95	2774	0.53	0.455	0.412	0.259	0.527						
9	87.5	2.94	2663	0.53	0.460	0.407	0.265	0.526						
10	87.7	2.94	2698	0.53	0.459	0.408	0.263	0.526						
11	88.1	2.93	2753	0.53	0.453	0.405	0.261	0.524						
12	87.8	2.94	2747	0.53	0.453	0.404	0.261	0.524						
13	88.9	2.94	2786	0.53	0.456	0.414	0.258	0.528						
14	88.3	2.95	2754	0.53	0.457	0.413	0.260	0.528						
15	88.2	2.95	2723	0.53	0.460	0.415	0.261	0.529						
16	87.3	2.94	2681	0.53	0.459	0.407	0.264	0.526						
17	88.1	2.95	2756	0.53	0.456	0.410	0.260	0.526						
18	88.0	2.94	2720	0.53	0.457	0.409	0.262	0.526						
19	87.2	2.94	2680	0.53	0.459	0.406	0.264	0.525						
20	87.7	2.94	2720	0.53	0.456	0.406	0.262	0.525						
21	87.4	2.94	2700	0.53	0.457	0.405	0.263	0.525						
22	87.9	2.95	2740	0.53	0.458	0.412	0.261	0.527						
23	88.0	2.94	2719	0.53	0.457	0.407	0.262	0.525						
24	87.5	2.94	2718	0.53	0.460	0.413	0.261	0.528						
25	88.4	2.95	2744	0.53	0.458	0.413	0.260	0.528						
n	25	25	25	25	25	25	25	25						
Avg.	87.9	2.94	2730	0.53	0.457	0.408	0.261	0.526						
Med.	87.9	2.94	2725	0.53	0.457	0.407	0.261	0.526						
σ	0.42	0.005	31.0	0.001	0.0023	0.0034	0.0015	0.0015						
Min.	87.2	2.93	2663	0.53	0.452	0.403	0.258	0.524						
Max.	88.9	2.95	2786	0.53	0.460	0.415	0.265	0.529						

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Data Set 6 : 85 °C, 180 mA

Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °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 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	99.3	99.1	99.1	98.9	98.9	98.9	98.8	98.7	98.7	98.7	98.5	98.3	97.6	97.5	97.5	97.5	97.3
2	100.0	99.2	98.9	98.9	98.8	98.7	98.7	98.5	98.6	98.5	98.6	98.3	98.1	97.5	97.3	97.3	97.3	97.1
3	100.0	99.0	98.7	98.7	98.6	98.4	98.5	98.3	98.3	98.2	98.3	98.1	97.8	97.2	97.0	97.0	97.0	96.9
4	100.0	98.9	98.7	98.8	98.7	98.6	98.6	98.5	98.5	98.5	98.5	98.2	98.0	97.4	97.3	97.2	97.2	97.0
5	100.0	99.4	99.1	99.0	98.7	99.1	98.7	98.7	98.5	98.4	98.4	98.3	98.1	97.4	97.6	97.0	97.0	97.1
6	100.0	99.1	98.8	98.9	98.8	98.7	98.8	98.6	98.5	98.4	98.5	98.3	98.1	97.4	97.4	97.3	97.3	97.2
7	100.0	99.0	98.7	98.8	98.6	98.6	98.7	98.3	98.5	98.4	98.4	98.1	97.8	97.3	97.2	97.1	97.1	96.9
8	100.0	99.1	98.9	98.9	98.8	98.7	98.7	98.4	98.6	98.5	98.5	98.2	97.9	97.4	97.2	97.3	97.2	97.0
9	100.0	99.2	99.0	99.0	98.8	98.8	98.8	98.6	98.7	98.6	98.7	98.4	98.2	97.6	97.4	97.5	97.5	97.3
10	100.0	98.8	98.6	98.7	98.5	98.5	98.5	98.3	98.4	98.3	98.3	98.1	97.8	97.3	97.0	97.1	97.0	96.8
11	100.0	99.1	98.9	98.9	98.5	98.9	98.8	98.5	98.5	98.4	98.4	98.1	97.7	97.6	97.3	97.3	96.9	97.0
12	100.0	99.1	98.9	98.8	98.7	98.8	98.8	98.5	98.6	98.5	98.6	98.3	98.1	97.6	97.4	97.5	97.3	97.2
13	100.0	99.1	98.7	98.8	98.6	98.6	98.6	98.5	98.4	98.4	98.4	98.2	97.9	97.3	97.2	97.2	97.1	97.0
14	100.0	99.4	99.1	99.3	99.0	99.0	99.0	98.8	98.8	98.7	98.8	98.6	98.2	97.7	97.6	97.5	97.5	97.3
15	100.0	99.3	99.0	99.1	98.8	98.8	98.8	98.7	98.7	98.6	98.7	98.4	98.1	97.6	97.4	97.4	97.3	97.1
16	100.0	99.1	98.8	99.0	98.7	98.7	98.7	98.6	98.5	98.5	98.6	98.3	98.1	97.5	97.3	97.4	97.3	97.2
17	100.0	99.4	99.3	99.3	99.1	99.0	99.1	98.8	98.6	98.7	99.0	98.7	98.2	97.9	97.5	97.6	97.3	97.5
18	100.0	99.1	98.9	99.0	98.7	98.7	98.7	98.5	98.5	98.5	98.5	98.3	98.0	97.5	97.3	97.4	97.2	97.1
19	100.0	99.0	98.7	98.8	98.6	98.5	98.7	98.4	98.5	98.5	98.5	98.3	98.0	97.4	97.3	97.4	97.2	97.0
20	100.0	99.0	98.9	98.9	98.7	98.6	98.8	98.5	98.6	98.5	98.5	98.3	98.0	97.4	97.3	97.4	97.2	97.1
21	100.0	99.0	98.8	98.9	98.6	98.5	98.7	98.5	98.5	98.5	98.5	98.3	98.0	97.4	97.4	97.4	97.3	97.1
22	100.0	99.3	99.1	99.2	99.0	98.9	99.1	98.8	98.9	98.8	98.8	98.6	98.3	97.7	97.6	97.6	97.5	97.3
23	100.0	99.4	99.1	99.2	98.9	98.8	99.0	98.9	98.7	98.7	98.7	98.6	98.3	97.9	97.9	97.6	97.4	97.4
24	100.0	99.4	99.3	99.3	99.2	99.1	99.3	99.0	99.1	98.9	98.9	98.8	98.5	98.0	97.8	97.9	97.8	97.5
25	100.0	99.0	98.8	98.8	98.6	98.6	98.6	98.4	98.5	98.4	98.5	98.2	97.9	97.4	97.3	97.2	97.2	96.9
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	99.0	98.8	98.7	98.8	98.6	98.6	98.5	98.6	98.3	98.1	97.5	97.4	97.4	97.3	97.1
Med.	100.0	99.1	98.9	98.9	98.7	98.7	98.7	98.5	98.5	98.5	98.5	98.3	98.1	97.5	97.3	97.4	97.3	97.1
σ	0.00	0.17	0.19	0.18	0.18	0.19	0.19	0.19	0.17	0.16	0.18	0.19	0.19	0.20	0.21	0.21	0.20	0.19
Min.	100.0	98.8	98.6	98.7	98.5	98.4	98.5	98.3	98.3	98.2	98.3	98.1	97.7	97.2	97.0	97.0	96.9	96.8
Max.	100.0	99.4	99.3	99.3	99.2	99.1	99.3	99.0	99.1	98.9	99.0	98.8	98.5	98.0	97.9	97.9	97.8	97.5

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.)	-0.0141	-0.0171	-0.0192	-0.0253	-0.0263	-0.0263	-0.0274	-0.0294	-0.0315	-0.0315	-0.0336							

Test duration used	5000 h to 10000 h	
B	1.002	
α	3.66E-06	
R^2	0.926	
Calculated L_{70} (10K)	98000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	61500	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	29300	hours
Reported L_{90} (10K)	29300	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, 180 mA

Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °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 6-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	97.1	97.1	97.0															
2	96.8	96.8	96.8															
3	96.6	96.5	96.6															
4	96.8	96.7	96.7															
5	96.8	96.8	96.6															
6	96.9	96.9	96.8															
7	96.7	96.7	96.6															
8	96.8	96.8	96.6															
9	97.0	97.0	96.9															
10	96.6	96.5	96.4															
11	96.6	96.7	96.2															
12	96.9	96.9	96.7															
13	96.8	96.7	96.5															
14	97.1	97.1	96.9															
15	96.9	97.0	96.7															
16	96.9	96.9	96.7															
17	97.1	97.3	96.9															
18	96.9	96.9	96.7															
19	96.8	96.8	96.7															
20	96.7	96.8	96.6															
21	96.9	96.9	96.8															
22	97.0	97.1	96.9															
23	96.9	97.0	97.0															
24	97.2	97.2	97.2															
25	96.8	96.7	96.6															
n	25	25	25															
Avg.	96.9	96.9	96.7															
Med.	96.9	96.9	96.7															
σ	0.16	0.20	0.21															
Min.	96.6	96.5	96.2															
Max.	97.2	97.3	97.2															

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Data Set 6 : 85 °C, 180 mA

Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °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 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	99.6	99.6	99.7	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.7
2	100.0	99.5	99.5	99.6	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6
3	100.0	99.7	99.7	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.7	99.8	99.8	99.8
4	100.0	99.6	99.6	99.6	99.6	99.6	99.7	99.6	99.6	99.7	99.6	99.6	99.6	99.7	99.6	99.7	99.7	99.7
5	100.0	99.5	99.4	99.5	99.5	99.6	99.6	99.6	99.6	99.6	99.5	99.5	99.6	99.5	99.6	99.6	99.6	99.6
6	100.0	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.8	99.9	99.9	99.9
7	100.0	99.6	99.6	99.7	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.7
8	100.0	99.4	99.5	99.5	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.5	99.6	99.6	99.6	99.6	99.6
9	100.0	99.6	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.8
10	100.0	99.5	99.5	99.6	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.5	99.6	99.6	99.7	99.6	99.6
11	100.0	99.7	99.7	99.8	99.8	99.8	99.9	99.8	99.8	99.8	99.8	99.7	99.9	99.8	99.8	99.8	99.8	99.9
12	100.0	99.6	99.6	99.6	99.6	99.7	99.7	99.7	99.6	99.7	99.7	99.6	99.6	99.7	99.8	99.7	99.7	99.7
13	100.0	99.5	99.5	99.7	99.6	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.6	99.6	99.6	99.7	99.7	99.8
14	100.0	99.5	99.5	99.6	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.7	99.6	99.6	99.6	99.6	99.6	99.6
15	100.0	99.4	99.4	99.5	99.4	99.6	99.5	99.5	99.5	99.5	99.6	99.5	99.5	99.5	99.6	99.6	99.6	99.5
16	100.0	99.6	99.5	99.6	99.5	99.6	99.6	99.6	99.6	99.6	99.7	99.6	99.6	99.6	99.6	99.7	99.6	99.6
17	100.0	99.5	99.4	99.6	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.7	99.6	99.7	99.6	99.6	99.6	99.7
18	100.0	99.5	99.5	99.5	99.5	99.5	99.6	99.6	99.5	99.6	99.6	99.6	99.6	99.5	99.6	99.6	99.6	99.7
19	100.0	99.6	99.6	99.7	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.6	99.6	99.7	99.7	99.7	99.7	99.7
20	100.0	99.5	99.5	99.6	99.5	99.6	99.6	99.6	99.6	99.5	99.6	99.6	99.5	99.6	99.6	99.6	99.6	99.6
21	100.0	99.5	99.4	99.5	99.5	99.5	99.6	99.6	99.5	99.5	99.6	99.6	99.5	99.6	99.6	99.6	99.6	99.6
22	100.0	99.5	99.5	99.6	99.6	99.6	99.7	99.6	99.6	99.6	99.7	99.7	99.6	99.7	99.6	99.7	99.7	99.7
23	100.0	99.5	99.5	99.6	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.5	99.5	99.5	99.6	99.5	99.6	99.7
24	100.0	99.5	99.6	99.6	99.6	99.6	99.7	99.7	99.6	99.6	99.7	99.6	99.6	99.7	99.7	99.6	99.7	99.7
25	100.0	99.6	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.8	99.7
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.6	99.5	99.6	99.6	99.6	99.7	99.6	99.6	99.6	99.7	99.6	99.6	99.6	99.6	99.7	99.7	99.7
Med.	100.0	99.5	99.5	99.6	99.6	99.6	99.7	99.6	99.6	99.6	99.7	99.6	99.6	99.7	99.6	99.7	99.7	99.7
σ	0.00	0.08	0.08	0.08	0.09	0.08	0.09	0.08	0.08	0.09	0.08	0.08	0.10	0.09	0.08	0.09	0.08	0.09
Min.	100.0	99.4	99.4	99.5	99.4	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.6	99.5	99.6	99.5
Max.	100.0	99.7	99.7	99.8	99.8	99.8	99.9	99.8	99.8	99.8	99.8	99.9	99.9	99.8	99.8	99.9	99.9	99.9

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Data Set 6 : 85 °C, 180 mA

Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °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 6-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	99.7	99.8	99.8															
2	99.7	99.6	99.7															
3	99.8	99.8	99.8															
4	99.6	99.7	99.7															
5	99.6	99.6	99.7															
6	99.9	99.9	100.0															
7	99.7	99.7	99.7															
8	99.6	99.7	99.6															
9	99.8	99.8	99.7															
10	99.5	99.7	99.6															
11	99.8	99.9	99.8															
12	99.8	99.7	99.8															
13	99.7	99.8	99.7															
14	99.6	99.6	99.7															
15	99.5	99.5	99.6															
16	99.6	99.6	99.7															
17	99.6	99.7	99.7															
18	99.7	99.6	99.6															
19	99.7	99.8	99.8															
20	99.6	99.6	99.6															
21	99.6	99.5	99.6															
22	99.8	99.6	99.7															
23	99.7	99.6	99.7															
24	99.6	99.7	99.7															
25	99.7	99.7	99.8															
n	25	25	25															
Avg.	99.7	99.7	99.7															
Med.	99.7	99.7	99.7															
σ	0.09	0.11	0.10															
Min.	99.5	99.5	99.6															
Max.	99.9	99.9	100.0															

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Data Set 6 : 85 °C, 180 mA

Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °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 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	0.0010	0.0011	0.0012	0.0011	0.0012	0.0012	0.0011	0.0010	0.0009	0.0009	0.0011	0.0014	0.0014	0.0014	0.0013	0.0015
2	0.0000	0.0008	0.0009	0.0012	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0008	0.0009	0.0010	0.0014	0.0014	0.0014	0.0013	0.0016
3	0.0000	0.0010	0.0011	0.0012	0.0013	0.0012	0.0013	0.0013	0.0013	0.0011	0.0011	0.0012	0.0012	0.0015	0.0015	0.0015	0.0015	0.0017
4	0.0000	0.0008	0.0010	0.0011	0.0012	0.0011	0.0010	0.0011	0.0011	0.0009	0.0009	0.0009	0.0009	0.0013	0.0014	0.0013	0.0013	0.0015
5	0.0000	0.0010	0.0011	0.0012	0.0013	0.0013	0.0012	0.0012	0.0013	0.0011	0.0010	0.0012	0.0012	0.0015	0.0016	0.0014	0.0013	0.0016
6	0.0000	0.0009	0.0009	0.0012	0.0012	0.0012	0.0012	0.0013	0.0012	0.0010	0.0009	0.0010	0.0011	0.0014	0.0014	0.0013	0.0013	0.0015
7	0.0000	0.0009	0.0010	0.0011	0.0012	0.0011	0.0012	0.0011	0.0011	0.0011	0.0009	0.0010	0.0011	0.0014	0.0015	0.0014	0.0013	0.0016
8	0.0000	0.0009	0.0010	0.0012	0.0012	0.0011	0.0012	0.0012	0.0012	0.0010	0.0009	0.0009	0.0010	0.0014	0.0014	0.0014	0.0013	0.0015
9	0.0000	0.0009	0.0010	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0009	0.0008	0.0009	0.0010	0.0014	0.0014	0.0013	0.0014	0.0015
10	0.0000	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0012	0.0012	0.0009	0.0009	0.0010	0.0009	0.0013	0.0013	0.0013	0.0013	0.0014
11	0.0000	0.0008	0.0010	0.0011	0.0012	0.0013	0.0013	0.0012	0.0012	0.0011	0.0009	0.0010	0.0009	0.0015	0.0015	0.0014	0.0014	0.0016
12	0.0000	0.0009	0.0009	0.0011	0.0011	0.0011	0.0012	0.0012	0.0011	0.0010	0.0008	0.0009	0.0010	0.0014	0.0014	0.0013	0.0013	0.0015
13	0.0000	0.0010	0.0011	0.0012	0.0013	0.0012	0.0012	0.0013	0.0012	0.0011	0.0010	0.0011	0.0010	0.0015	0.0015	0.0014	0.0015	0.0017
14	0.0000	0.0009	0.0010	0.0012	0.0012	0.0011	0.0012	0.0012	0.0012	0.0010	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0013	0.0015
15	0.0000	0.0009	0.0010	0.0011	0.0012	0.0012	0.0011	0.0012	0.0011	0.0010	0.0009	0.0010	0.0011	0.0014	0.0014	0.0014	0.0013	0.0015
16	0.0000	0.0009	0.0010	0.0012	0.0012	0.0011	0.0012	0.0012	0.0011	0.0010	0.0009	0.0009	0.0011	0.0015	0.0015	0.0014	0.0014	0.0016
17	0.0000	0.0009	0.0010	0.0011	0.0012	0.0012	0.0012	0.0012	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0015	0.0013	0.0013	0.0015
18	0.0000	0.0008	0.0009	0.0011	0.0011	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0008	0.0010	0.0013	0.0013	0.0013	0.0014	0.0015
19	0.0000	0.0009	0.0010	0.0012	0.0012	0.0012	0.0013	0.0012	0.0012	0.0010	0.0009	0.0010	0.0010	0.0013	0.0014	0.0014	0.0013	0.0015
20	0.0000	0.0010	0.0010	0.0012	0.0012	0.0012	0.0013	0.0012	0.0012	0.0010	0.0009	0.0010	0.0011	0.0015	0.0015	0.0014	0.0014	0.0016
21	0.0000	0.0009	0.0010	0.0012	0.0011	0.0011	0.0012	0.0012	0.0011	0.0010	0.0008	0.0009	0.0010	0.0015	0.0014	0.0014	0.0014	0.0016
22	0.0000	0.0009	0.0010	0.0012	0.0013	0.0011	0.0012	0.0012	0.0012	0.0011	0.0009	0.0010	0.0010	0.0015	0.0015	0.0014	0.0013	0.0015
23	0.0000	0.0009	0.0011	0.0012	0.0012	0.0012	0.0012	0.0013	0.0012	0.0010	0.0009	0.0009	0.0010	0.0014	0.0014	0.0013	0.0013	0.0015
24	0.0000	0.0010	0.0010	0.0012	0.0013	0.0011	0.0013	0.0013	0.0011	0.0011	0.0009	0.0010	0.0010	0.0015	0.0014	0.0014	0.0014	0.0016
25	0.0000	0.0009	0.0010	0.0012	0.0012	0.0011	0.0013	0.0012	0.0013	0.0010	0.0009	0.0009	0.0010	0.0014	0.0014	0.0014	0.0014	0.0015
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0009	0.0010	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0010	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0015
Med.	0.0000	0.0009	0.0010	0.0012	0.0012	0.0011	0.0012	0.0012	0.0012	0.0010	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0013	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	0.0008	0.0009	0.0010	0.0011	0.0010	0.0010	0.0011	0.0010	0.0009	0.0008	0.0008	0.0009	0.0013	0.0013	0.0013	0.0013	0.0014
Max.	0.0000	0.0010	0.0011	0.0012	0.0013	0.0013	0.0013	0.0013	0.0013	0.0011	0.0011	0.0012	0.0012	0.0015	0.0016	0.0015	0.0015	0.0017

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Data Set 6 : 85 °C, 180 mA

Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °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 6-4 (Continued)
Chromaticity Shift

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

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Data Set 6 : 85 °C, 180 mA

Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °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 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	0.2622	0.2614	0.2612	0.2611	0.2611	0.2612	0.2611	0.2611	0.2611	0.2612	0.2614	0.2613	0.2612	0.2609	0.2609	0.2609	0.2610	0.2608
2	0.2620	0.2612	0.2610	0.2608	0.2609	0.2609	0.2609	0.2609	0.2609	0.2610	0.2612	0.2611	0.2610	0.2606	0.2607	0.2607	0.2608	0.2606
3	0.2618	0.2608	0.2607	0.2606	0.2605	0.2606	0.2605	0.2605	0.2605	0.2607	0.2607	0.2606	0.2606	0.2603	0.2603	0.2604	0.2604	0.2602
4	0.2635	0.2627	0.2625	0.2624	0.2624	0.2624	0.2625	0.2624	0.2624	0.2626	0.2627	0.2626	0.2626	0.2622	0.2622	0.2623	0.2623	0.2622
5	0.2626	0.2616	0.2615	0.2614	0.2613	0.2613	0.2614	0.2614	0.2613	0.2615	0.2616	0.2614	0.2614	0.2612	0.2611	0.2612	0.2613	0.2610
6	0.2612	0.2603	0.2603	0.2600	0.2601	0.2600	0.2600	0.2600	0.2601	0.2602	0.2603	0.2602	0.2601	0.2599	0.2598	0.2599	0.2599	0.2598
7	0.2598	0.2589	0.2588	0.2586	0.2586	0.2587	0.2586	0.2586	0.2586	0.2587	0.2589	0.2588	0.2587	0.2584	0.2584	0.2585	0.2585	0.2583
8	0.2593	0.2584	0.2583	0.2581	0.2582	0.2582	0.2581	0.2581	0.2581	0.2583	0.2584	0.2584	0.2583	0.2579	0.2580	0.2579	0.2581	0.2579
9	0.2647	0.2639	0.2637	0.2636	0.2636	0.2636	0.2636	0.2635	0.2637	0.2638	0.2639	0.2638	0.2637	0.2634	0.2635	0.2635	0.2634	0.2634
10	0.2634	0.2625	0.2624	0.2624	0.2623	0.2623	0.2623	0.2623	0.2623	0.2625	0.2625	0.2624	0.2625	0.2621	0.2621	0.2622	0.2622	0.2621
11	0.2633	0.2625	0.2623	0.2622	0.2621	0.2621	0.2621	0.2622	0.2622	0.2623	0.2624	0.2623	0.2624	0.2619	0.2619	0.2620	0.2619	0.2619
12	0.2617	0.2608	0.2608	0.2606	0.2606	0.2607	0.2606	0.2606	0.2607	0.2607	0.2610	0.2608	0.2607	0.2605	0.2604	0.2605	0.2605	0.2603
13	0.2587	0.2577	0.2576	0.2575	0.2575	0.2575	0.2575	0.2574	0.2575	0.2576	0.2577	0.2577	0.2577	0.2573	0.2573	0.2574	0.2573	0.2572
14	0.2600	0.2591	0.2590	0.2588	0.2588	0.2589	0.2588	0.2588	0.2588	0.2590	0.2591	0.2590	0.2590	0.2586	0.2586	0.2587	0.2587	0.2586
15	0.2613	0.2604	0.2603	0.2602	0.2601	0.2601	0.2602	0.2601	0.2602	0.2603	0.2604	0.2603	0.2602	0.2599	0.2599	0.2599	0.2600	0.2599
16	0.2645	0.2636	0.2636	0.2633	0.2634	0.2634	0.2633	0.2634	0.2634	0.2635	0.2637	0.2636	0.2635	0.2631	0.2631	0.2631	0.2632	0.2630
17	0.2628	0.2618	0.2618	0.2617	0.2616	0.2616	0.2616	0.2616	0.2617	0.2618	0.2619	0.2618	0.2618	0.2614	0.2614	0.2615	0.2615	0.2614
18	0.2624	0.2616	0.2615	0.2613	0.2614	0.2614	0.2613	0.2613	0.2613	0.2615	0.2616	0.2616	0.2614	0.2611	0.2612	0.2611	0.2611	0.2610
19	0.2641	0.2631	0.2631	0.2629	0.2629	0.2629	0.2628	0.2629	0.2629	0.2631	0.2632	0.2631	0.2631	0.2628	0.2628	0.2628	0.2629	0.2627
20	0.2623	0.2613	0.2612	0.2611	0.2611	0.2611	0.2610	0.2611	0.2611	0.2613	0.2613	0.2612	0.2612	0.2608	0.2608	0.2609	0.2610	0.2608
21	0.2632	0.2623	0.2623	0.2621	0.2621	0.2621	0.2620	0.2621	0.2621	0.2623	0.2624	0.2623	0.2623	0.2618	0.2619	0.2619	0.2619	0.2617
22	0.2612	0.2603	0.2602	0.2600	0.2600	0.2601	0.2600	0.2600	0.2600	0.2602	0.2603	0.2602	0.2602	0.2598	0.2598	0.2599	0.2600	0.2597
23	0.2647	0.2638	0.2637	0.2635	0.2636	0.2636	0.2635	0.2635	0.2636	0.2637	0.2638	0.2638	0.2637	0.2634	0.2634	0.2635	0.2635	0.2633
24	0.2622	0.2612	0.2611	0.2609	0.2609	0.2610	0.2609	0.2609	0.2610	0.2610	0.2613	0.2611	0.2612	0.2607	0.2608	0.2608	0.2608	0.2606
25	0.2605	0.2596	0.2595	0.2593	0.2593	0.2594	0.2592	0.2593	0.2592	0.2595	0.2596	0.2596	0.2595	0.2592	0.2591	0.2591	0.2592	0.2590
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2621	0.2612	0.2611	0.2610	0.2610	0.2610	0.2610	0.2609	0.2610	0.2611	0.2613	0.2612	0.2611	0.2608	0.2608	0.2608	0.2609	0.2607
Med.	0.2622	0.2613	0.2612	0.2611	0.2611	0.2611	0.2610	0.2611	0.2611	0.2612	0.2613	0.2612	0.2612	0.2608	0.2608	0.2609	0.2610	0.2608
σ	0.0017	0.0017	0.0016	0.0017	0.0017	0.0016	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0016	0.0017
Min.	0.2587	0.2577	0.2576	0.2575	0.2575	0.2575	0.2575	0.2574	0.2575	0.2576	0.2577	0.2577	0.2577	0.2573	0.2573	0.2574	0.2573	0.2572
Max.	0.2647	0.2639	0.2637	0.2636	0.2636	0.2636	0.2636	0.2635	0.2637	0.2638	0.2639	0.2638	0.2637	0.2634	0.2635	0.2635	0.2635	0.2634

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Data Set 6 : 85 °C, 180 mA

Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °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 6-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2609	0.2609	0.2608															
2	0.2605	0.2605	0.2606															
3	0.2601	0.2602	0.2603															
4	0.2622	0.2622	0.2622															
5	0.2610	0.2611	0.2611															
6	0.2598	0.2598	0.2598															
7	0.2583	0.2584	0.2585															
8	0.2579	0.2578	0.2579															
9	0.2633	0.2634	0.2633															
10	0.2620	0.2620	0.2620															
11	0.2619	0.2619	0.2619															
12	0.2603	0.2603	0.2603															
13	0.2573	0.2572	0.2572															
14	0.2586	0.2586	0.2586															
15	0.2599	0.2598	0.2598															
16	0.2630	0.2631	0.2631															
17	0.2613	0.2613	0.2613															
18	0.2610	0.2610	0.2609															
19	0.2627	0.2627	0.2627															
20	0.2608	0.2607	0.2607															
21	0.2618	0.2617	0.2618															
22	0.2598	0.2598	0.2598															
23	0.2633	0.2634	0.2633															
24	0.2606	0.2607	0.2607															
25	0.2591	0.2591	0.2590															
n	25	25	25															
Avg.	0.2607	0.2607	0.2607															
Med.	0.2608	0.2607	0.2607															
σ	0.0016	0.0017	0.0017															
Min.	0.2573	0.2572	0.2572															
Max.	0.2633	0.2634	0.2633															

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Data Set 6 : 85 °C, 180 mA

Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °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 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	0.5250	0.5250	0.5249	0.5248	0.5247	0.5248	0.5248	0.5248	0.5248	0.5248	0.5249	0.5248	0.5248	0.5246	0.5245	0.5245	0.5246	0.5245
2	0.5251	0.5251	0.5250	0.5250	0.5249	0.5249	0.5249	0.5249	0.5249	0.5250	0.5250	0.5250	0.5250	0.5247	0.5246	0.5247	0.5247	0.5245
3	0.5237	0.5237	0.5236	0.5234	0.5234	0.5235	0.5234	0.5234	0.5235	0.5235	0.5236	0.5235	0.5235	0.5232	0.5232	0.5232	0.5232	0.5231
4	0.5258	0.5257	0.5257	0.5256	0.5256	0.5256	0.5256	0.5256	0.5256	0.5256	0.5257	0.5256	0.5256	0.5254	0.5253	0.5253	0.5254	0.5253
5	0.5286	0.5286	0.5285	0.5284	0.5284	0.5284	0.5284	0.5284	0.5285	0.5285	0.5285	0.5285	0.5284	0.5282	0.5282	0.5282	0.5282	0.5281
6	0.5258	0.5257	0.5257	0.5256	0.5255	0.5256	0.5255	0.5255	0.5256	0.5256	0.5257	0.5257	0.5256	0.5254	0.5253	0.5254	0.5254	0.5253
7	0.5247	0.5246	0.5246	0.5244	0.5244	0.5244	0.5244	0.5244	0.5244	0.5245	0.5246	0.5245	0.5244	0.5242	0.5242	0.5242	0.5242	0.5241
8	0.5272	0.5271	0.5271	0.5269	0.5269	0.5270	0.5270	0.5269	0.5270	0.5270	0.5271	0.5269	0.5269	0.5267	0.5267	0.5267	0.5266	0.5266
9	0.5261	0.5261	0.5260	0.5259	0.5258	0.5260	0.5259	0.5259	0.5259	0.5260	0.5261	0.5260	0.5259	0.5257	0.5256	0.5257	0.5257	0.5256
10	0.5265	0.5265	0.5265	0.5263	0.5263	0.5264	0.5263	0.5263	0.5263	0.5264	0.5264	0.5264	0.5263	0.5262	0.5262	0.5261	0.5261	0.5260
11	0.5255	0.5255	0.5254	0.5253	0.5252	0.5253	0.5253	0.5253	0.5253	0.5254	0.5254	0.5254	0.5253	0.5251	0.5251	0.5251	0.5251	0.5249
12	0.5240	0.5239	0.5239	0.5237	0.5237	0.5238	0.5238	0.5238	0.5238	0.5238	0.5239	0.5238	0.5238	0.5235	0.5236	0.5236	0.5235	0.5234
13	0.5280	0.5279	0.5279	0.5278	0.5277	0.5278	0.5277	0.5278	0.5278	0.5279	0.5279	0.5278	0.5277	0.5275	0.5275	0.5276	0.5275	0.5275
14	0.5279	0.5279	0.5278	0.5277	0.5276	0.5277	0.5277	0.5277	0.5277	0.5278	0.5278	0.5278	0.5277	0.5275	0.5275	0.5275	0.5275	0.5274
15	0.5290	0.5291	0.5291	0.5289	0.5289	0.5289	0.5289	0.5289	0.5289	0.5290	0.5290	0.5289	0.5289	0.5287	0.5287	0.5287	0.5287	0.5286
16	0.5260	0.5260	0.5259	0.5258	0.5257	0.5258	0.5258	0.5258	0.5258	0.5259	0.5260	0.5259	0.5259	0.5256	0.5256	0.5256	0.5256	0.5255
17	0.5279	0.5279	0.5278	0.5277	0.5277	0.5277	0.5277	0.5277	0.5278	0.5278	0.5279	0.5278	0.5278	0.5275	0.5275	0.5275	0.5275	0.5275
18	0.5266	0.5266	0.5265	0.5264	0.5264	0.5264	0.5264	0.5264	0.5265	0.5265	0.5266	0.5265	0.5265	0.5262	0.5262	0.5263	0.5262	0.5262
19	0.5255	0.5254	0.5253	0.5252	0.5252	0.5253	0.5253	0.5252	0.5253	0.5253	0.5254	0.5254	0.5253	0.5251	0.5250	0.5250	0.5250	0.5250
20	0.5250	0.5250	0.5250	0.5247	0.5248	0.5249	0.5248	0.5248	0.5248	0.5249	0.5249	0.5248	0.5247	0.5246	0.5245	0.5245	0.5245	0.5244
21	0.5248	0.5247	0.5247	0.5245	0.5245	0.5246	0.5245	0.5245	0.5245	0.5246	0.5247	0.5246	0.5245	0.5243	0.5243	0.5243	0.5243	0.5242
22	0.5276	0.5276	0.5276	0.5274	0.5274	0.5275	0.5274	0.5274	0.5275	0.5275	0.5276	0.5275	0.5275	0.5273	0.5273	0.5273	0.5272	0.5272
23	0.5270	0.5269	0.5269	0.5268	0.5267	0.5268	0.5268	0.5268	0.5269	0.5269	0.5270	0.5268	0.5268	0.5266	0.5266	0.5266	0.5266	0.5265
24	0.5287	0.5286	0.5286	0.5285	0.5285	0.5286	0.5285	0.5285	0.5286	0.5287	0.5287	0.5286	0.5286	0.5284	0.5283	0.5284	0.5284	0.5283
25	0.5283	0.5283	0.5282	0.5281	0.5281	0.5281	0.5281	0.5281	0.5281	0.5282	0.5282	0.5281	0.5282	0.5280	0.5279	0.5279	0.5279	0.5278
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5264	0.5264	0.5263	0.5262	0.5262	0.5262	0.5262	0.5262	0.5262	0.5263	0.5263	0.5263	0.5262	0.5260	0.5260	0.5260	0.5260	0.5259
Med.	0.5261	0.5261	0.5260	0.5259	0.5258	0.5260	0.5259	0.5259	0.5259	0.5260	0.5261	0.5260	0.5259	0.5257	0.5256	0.5257	0.5257	0.5256
σ	0.0015	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
Min.	0.5237	0.5237	0.5236	0.5234	0.5234	0.5235	0.5234	0.5234	0.5235	0.5235	0.5236	0.5235	0.5235	0.5232	0.5232	0.5232	0.5232	0.5231
Max.	0.5290	0.5291	0.5291	0.5289	0.5289	0.5289	0.5289	0.5289	0.5289	0.5290	0.5290	0.5289	0.5289	0.5287	0.5287	0.5287	0.5287	0.5286

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Data Set 6 : 85 °C, 180 mA

Actual Case Temperature [T_S]	86.4 °C
Actual Ambient Temperature [T_A]	84.4 °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 6-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5245	0.5244	0.5244															
2	0.5245	0.5246	0.5245															
3	0.5231	0.5230	0.5231															
4	0.5252	0.5252	0.5251															
5	0.5281	0.5281	0.5281															
6	0.5253	0.5253	0.5252															
7	0.5241	0.5240	0.5240															
8	0.5266	0.5266	0.5266															
9	0.5256	0.5255	0.5255															
10	0.5260	0.5260	0.5259															
11	0.5250	0.5249	0.5249															
12	0.5234	0.5234	0.5234															
13	0.5275	0.5274	0.5274															
14	0.5274	0.5274	0.5274															
15	0.5286	0.5286	0.5286															
16	0.5255	0.5255	0.5255															
17	0.5275	0.5274	0.5274															
18	0.5261	0.5261	0.5261															
19	0.5249	0.5249	0.5249															
20	0.5244	0.5244	0.5243															
21	0.5242	0.5241	0.5241															
22	0.5272	0.5272	0.5271															
23	0.5265	0.5265	0.5265															
24	0.5283	0.5283	0.5283															
25	0.5278	0.5278	0.5277															
n	25	25	25															
Avg.	0.5259	0.5259	0.5258															
Med.	0.5256	0.5255	0.5255															
σ	0.0016	0.0016	0.0016															
Min.	0.5231	0.5230	0.5231															
Max.	0.5286	0.5286	0.5286															

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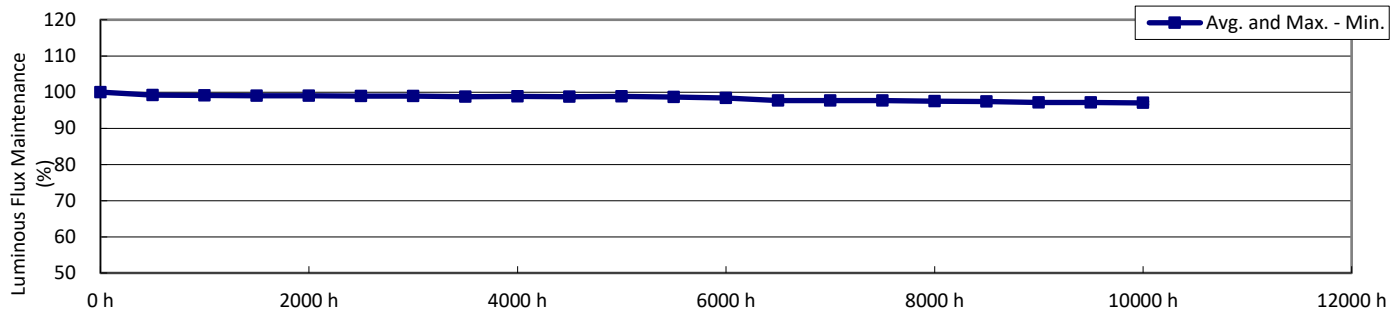
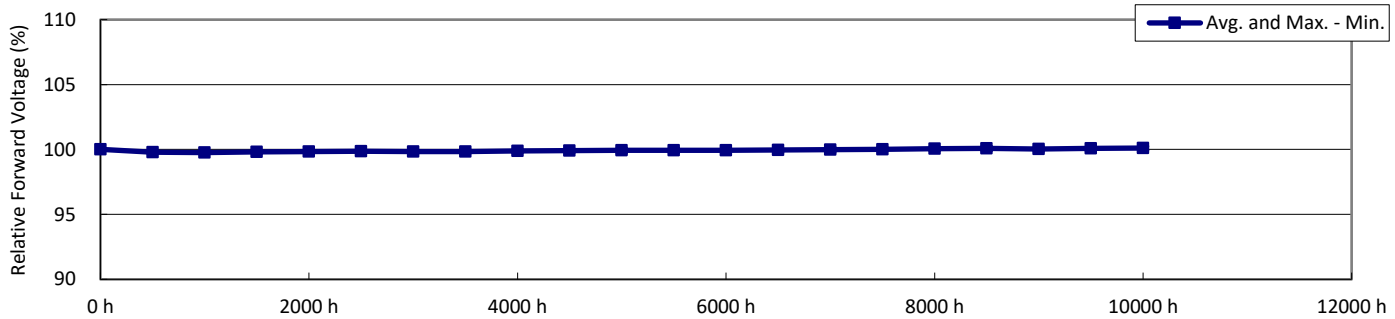
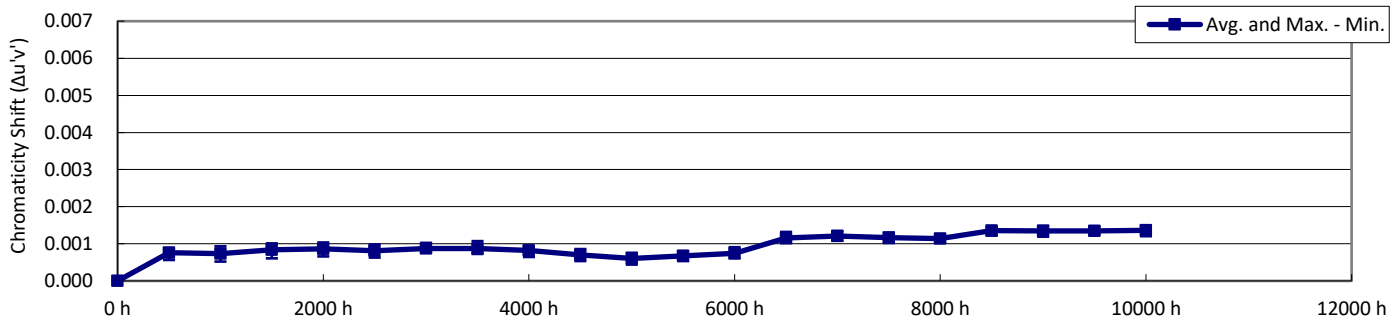
Data Set 7 : 105 °C, 65 mA

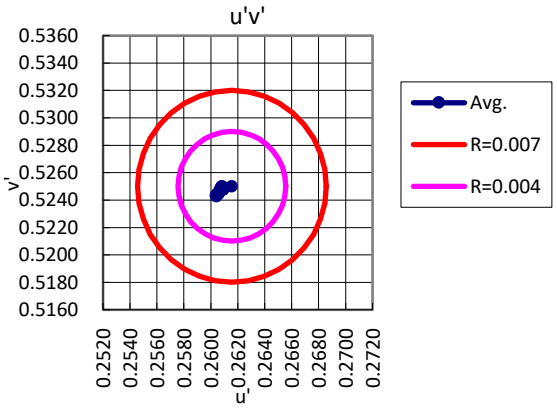
Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 mA

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









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Data Set 7 : 105 °C, 65 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	33.4	2.73	2731	0.18	0.454	0.403	0.262	0.524						
2	33.2	2.73	2702	0.18	0.457	0.406	0.263	0.525						
3	33.2	2.74	2680	0.18	0.459	0.406	0.264	0.525						
4	33.6	2.73	2745	0.18	0.454	0.406	0.261	0.525						
5	32.9	2.74	2695	0.18	0.456	0.403	0.263	0.524						
6	33.9	2.73	2772	0.18	0.456	0.412	0.259	0.527						
7	33.3	2.73	2743	0.18	0.453	0.404	0.261	0.524						
8	33.8	2.74	2793	0.18	0.453	0.411	0.258	0.526						
9	33.4	2.73	2696	0.18	0.458	0.407	0.263	0.526						
10	33.5	2.73	2714	0.18	0.459	0.410	0.262	0.527						
11	33.2	2.73	2678	0.18	0.458	0.405	0.264	0.525						
12	33.3	2.73	2717	0.18	0.455	0.405	0.262	0.524						
13	33.3	2.74	2734	0.18	0.454	0.404	0.262	0.524						
14	33.4	2.73	2728	0.18	0.454	0.404	0.262	0.524						
15	33.4	2.73	2699	0.18	0.456	0.403	0.263	0.524						
16	33.9	2.73	2758	0.18	0.457	0.413	0.260	0.528						
17	33.4	2.73	2669	0.18	0.459	0.405	0.264	0.525						
18	33.7	2.73	2783	0.18	0.452	0.407	0.259	0.525						
19	33.2	2.74	2677	0.18	0.458	0.405	0.264	0.525						
20	33.6	2.73	2784	0.18	0.453	0.410	0.259	0.526						
21	33.2	2.73	2728	0.18	0.453	0.402	0.262	0.523						
22	33.7	2.73	2801	0.18	0.452	0.409	0.258	0.526						
23	33.3	2.74	2684	0.18	0.458	0.405	0.264	0.525						
24	33.7	2.73	2786	0.18	0.455	0.413	0.258	0.528						
25	33.9	2.74	2790	0.18	0.454	0.411	0.258	0.527						
n	25	25	25	25	25	25	25	25						
Avg.	33.5	2.73	2731	0.18	0.456	0.407	0.261	0.525						
Med.	33.4	2.73	2728	0.18	0.455	0.406	0.262	0.525						
σ	0.26	0.004	42.2	0.000	0.0022	0.0034	0.0021	0.0013						
Min.	32.9	2.73	2669	0.18	0.452	0.402	0.258	0.523						
Max.	33.9	2.74	2801	0.18	0.459	0.413	0.264	0.528						

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NICHIA

Data Set 7 : 105 °C, 65 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	99.0	98.8	98.7	98.7	98.5	98.6	98.4	98.4	98.3	98.5	98.3	98.0	97.4	97.3	97.2	97.2	97.1
2	100.0	99.2	99.0	99.0	99.0	98.9	99.0	98.8	98.9	98.8	99.0	98.7	98.6	97.9	97.8	97.7	97.8	97.5
3	100.0	99.2	99.0	99.0	98.9	98.8	98.9	98.6	98.7	98.6	98.8	98.6	98.4	97.8	97.6	97.6	97.6	97.3
4	100.0	99.1	98.8	98.8	98.7	98.6	98.6	98.5	98.5	98.4	98.6	98.3	98.2	97.5	97.4	97.3	97.3	97.1
5	100.0	99.4	99.2	99.1	98.9	99.3	99.0	98.8	98.8	98.8	98.9	98.6	98.4	98.0	97.7	97.5	97.4	97.3
6	100.0	99.1	99.0	98.9	98.8	98.7	98.8	98.6	98.7	98.6	98.8	98.5	98.3	97.7	97.6	97.5	97.4	97.3
7	100.0	99.3	99.1	99.0	99.1	98.9	99.0	98.8	99.0	98.8	98.8	98.8	98.5	97.8	97.7	97.9	97.6	97.5
8	100.0	99.4	99.1	99.0	99.1	98.8	98.9	98.7	98.9	98.8	98.8	98.6	98.4	97.7	97.6	97.6	97.4	97.3
9	100.0	99.1	98.9	98.8	98.8	98.6	98.6	98.5	98.6	98.5	98.6	98.5	98.3	97.6	97.5	97.6	97.4	97.3
10	100.0	99.0	98.9	98.9	98.9	98.7	98.8	98.6	98.7	98.6	98.6	98.5	98.2	97.6	97.5	97.5	97.3	97.2
11	100.0	99.0	98.9	98.5	98.7	98.8	98.8	98.4	98.6	98.6	98.4	98.4	98.2	97.4	97.5	97.6	97.1	97.3
12	100.0	99.2	99.0	99.0	99.0	98.9	99.0	98.8	98.9	98.8	98.9	98.8	98.6	97.9	97.9	97.9	97.7	97.6
13	100.0	99.3	99.2	99.2	99.1	99.0	99.1	98.9	99.0	98.9	99.0	98.8	98.6	97.9	97.8	97.9	97.8	97.6
14	100.0	99.1	99.0	98.9	98.9	98.7	98.8	98.6	98.6	98.6	98.7	98.4	98.3	97.7	97.5	97.6	97.5	97.3
15	100.0	99.3	99.2	99.1	99.1	98.8	99.0	98.8	98.8	98.8	98.9	98.7	98.4	97.8	97.7	97.7	97.6	97.5
16	100.0	99.2	99.1	99.1	98.9	98.8	98.9	98.6	98.6	98.6	98.7	98.4	98.2	97.6	97.4	97.4	97.3	97.1
17	100.0	99.1	99.1	99.3	98.9	99.1	99.0	98.6	98.6	98.7	98.7	98.6	98.6	97.7	97.8	97.7	97.4	97.5
18	100.0	99.1	99.0	99.0	98.9	98.8	98.8	98.6	98.7	98.6	98.7	98.5	98.3	97.7	97.5	97.6	97.4	97.3
19	100.0	99.3	99.1	99.1	99.1	99.0	99.1	98.9	99.0	98.8	99.0	98.7	98.5	97.8	97.8	97.8	97.7	97.5
20	100.0	99.3	99.2	99.2	99.2	99.0	99.1	98.9	99.0	98.9	99.1	98.8	98.6	97.9	97.8	97.9	97.7	97.6
21	100.0	99.1	99.0	99.0	98.9	98.9	98.8	98.7	98.8	98.7	98.8	98.6	98.4	97.7	97.6	97.7	97.5	97.4
22	100.0	99.3	99.1	99.2	99.1	99.0	99.0	98.9	98.9	98.9	99.0	98.7	98.5	97.8	97.8	97.8	97.7	97.5
23	100.0	99.1	99.0	99.0	98.9	98.9	99.0	98.6	98.5	98.6	98.7	98.6	98.5	97.7	97.7	97.6	97.2	97.2
24	100.0	99.4	99.3	99.4	99.3	98.9	98.9	98.8	98.9	98.8	99.0	98.7	98.7	98.0	97.9	98.0	97.7	97.6
25	100.0	99.4	99.3	99.2	99.2	99.0	99.1	98.9	99.0	98.9	99.1	98.9	98.6	98.0	97.9	97.9	97.8	97.6
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.2	99.1	99.0	99.0	98.9	98.9	98.7	98.8	98.7	98.8	98.6	98.4	97.7	97.7	97.7	97.5	97.4
Med.	100.0	99.2	99.0	99.0	98.9	98.9	98.9	98.7	98.8	98.7	98.8	98.6	98.4	97.7	97.7	97.6	97.5	97.3
σ	0.00	0.13	0.14	0.19	0.16	0.17	0.15	0.16	0.18	0.16	0.19	0.16	0.17	0.17	0.17	0.20	0.21	0.17
Min.	100.0	99.0	98.8	98.5	98.7	98.5	98.6	98.4	98.4	98.3	98.4	98.3	98.0	97.4	97.3	97.2	97.1	97.1
Max.	100.0	99.4	99.3	99.4	99.3	99.3	99.1	98.9	99.0	98.9	99.1	98.9	98.7	98.0	97.9	98.0	97.8	97.6

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.)	-0.0121	-0.0141	-0.0161	-0.0233	-0.0233	-0.0233	-0.0253	-0.0263	-0.0294	-0.0294	-0.0305							

Test duration used	5000 h to 10000 h	
B	1.004	
α	3.65E-06	
R^2	0.919	
Calculated L_{70} (10K)	98800	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	62200	hours
Reported L_{80} (10K)	> 60000	hours
Calculated L_{90} (10K)	30000	hours
Reported L_{90} (10K)	30000	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 : 105 °C, 65 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	96.8	96.8	96.7															
2	97.3	97.3	97.1															
3	97.1	97.1	97.0															
4	96.9	96.8	96.7															
5	97.1	97.0	96.9															
6	97.1	97.1	96.9															
7	97.3	97.3	97.3															
8	97.0	97.0	96.9															
9	97.0	97.1	96.9															
10	96.8	96.9	96.8															
11	96.7	96.7	96.6															
12	97.4	97.3	97.2															
13	97.3	97.4	97.2															
14	97.1	97.1	97.0															
15	97.2	97.3	97.1															
16	96.8	96.8	96.7															
17	96.9	97.2	96.9															
18	97.1	97.1	96.9															
19	97.3	97.3	97.2															
20	97.3	97.4	97.2															
21	97.2	97.2	97.1															
22	97.2	97.3	97.1															
23	96.9	97.0	97.0															
24	97.4	97.5	97.3															
25	97.5	97.4	97.3															
n	25	25	25															
Avg.	97.1	97.1	97.0															
Med.	97.1	97.1	97.0															
σ	0.22	0.22	0.20															
Min.	96.7	96.7	96.6															
Max.	97.5	97.5	97.3															

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Data Set 7 : 105 °C, 65 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.1	100.0
2	100.0	99.9	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.1	100.1	100.1
3	100.0	99.8	99.7	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	99.9
4	100.0	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.9	99.9	99.9	100.0	99.9	99.9	100.0	100.0	100.0	100.1
5	100.0	99.8	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	99.9	99.9	100.0
6	100.0	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.1	100.1	100.2
7	100.0	99.8	99.8	99.8	99.8	99.9	99.8	99.9	99.9	100.0	99.9	100.0	100.0	100.0	100.0	100.2	100.1	100.1
8	100.0	99.7	99.7	99.8	99.8	99.9	99.8	99.8	99.9	99.9	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0
9	100.0	99.8	99.8	99.8	99.8	99.9	99.9	99.8	99.8	99.9	99.9	100.0	99.9	100.0	100.0	100.0	100.0	100.0
10	100.0	99.8	99.8	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.1	100.1	100.1	100.2	100.1	100.2	100.2
11	100.0	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	99.9	100.0	100.1	100.1	100.1
12	100.0	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.1	100.1	100.1	100.1
13	100.0	99.7	99.7	99.7	99.7	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.9	100.0	99.9	100.0
14	100.0	99.7	99.8	99.8	99.8	99.9	99.8	99.8	99.8	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0
15	100.0	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.1	100.1	100.1
16	100.0	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.1	100.2
17	100.0	99.7	99.7	99.8	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.1	100.1	100.2
18	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0
19	100.0	99.7	99.7	99.7	99.7	99.8	99.7	99.7	99.8	99.8	99.7	99.9	99.8	99.8	99.9	99.9	99.9	100.0
20	100.0	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.1	100.1	100.1	100.1	100.2	100.2
21	100.0	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	100.0	99.9	100.0	100.0	100.0	100.1	100.1	100.1	100.1
22	100.0	99.8	99.8	99.9	99.8	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.1	100.1	100.1	100.2
23	100.0	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	100.0	99.9	99.9	99.9	100.0	100.0	100.0	100.1
24	100.0	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.1	100.1	100.0	100.1	100.1	100.1	100.2	100.2
25	100.0	99.7	99.7	99.7	99.7	99.7	99.8	99.7	99.8	99.8	99.8	99.8	99.9	99.8	99.9	99.9	99.9	100.0
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.8	99.8	99.8	99.8	99.9	99.8	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.1	100.1
Med.	100.0	99.8	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.1	100.1
σ	0.00	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.07	0.09	0.08	0.08	0.08	0.09	0.08	0.08	0.09
Min.	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.8	99.7	99.8	99.8	99.8	99.8	99.9	99.9	99.9
Max.	100.0	99.9	99.8	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.1	100.1	100.1	100.1	100.2	100.2	100.2	100.2

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Data Set 7 : 105 °C, 65 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	100.0	100.1	100.1															
2	100.1	100.1	100.1															
3	99.9	100.0	100.0															
4	100.0	100.0	100.0															
5	99.9	100.0	100.0															
6	100.1	100.1	100.2															
7	100.2	100.1	100.2															
8	99.9	100.0	100.1															
9	100.0	100.0	100.0															
10	100.2	100.2	100.2															
11	100.1	100.2	100.1															
12	100.2	100.1	100.2															
13	99.9	100.0	100.1															
14	99.9	100.0	100.1															
15	100.1	100.1	100.1															
16	100.1	100.2	100.2															
17	100.1	100.1	100.2															
18	100.1	100.0	100.0															
19	99.9	100.0	100.0															
20	100.2	100.3	100.2															
21	100.2	100.3	100.2															
22	100.1	100.2	100.2															
23	100.0	100.1	100.1															
24	100.2	100.2	100.2															
25	99.9	99.9	100.0															
n	25	25	25															
Avg.	100.0	100.1	100.1															
Med.	100.1	100.1	100.1															
σ	0.11	0.10	0.08															
Min.	99.9	99.9	100.0															
Max.	100.2	100.3	100.2															

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Data Set 7 : 105 °C, 65 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.0008	0.0008	0.0009	0.0008	0.0009	0.0009	0.0008	0.0007	0.0006	0.0007	0.0008	0.0011	0.0012	0.0012	0.0012	0.0014
2	0.0000	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0008	0.0008	0.0007	0.0007	0.0007	0.0008	0.0012	0.0012	0.0012	0.0011	0.0014
3	0.0000	0.0007	0.0006	0.0007	0.0008	0.0007	0.0008	0.0009	0.0008	0.0006	0.0005	0.0005	0.0007	0.0011	0.0012	0.0010	0.0011	0.0012
4	0.0000	0.0007	0.0007	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007	0.0005	0.0004	0.0005	0.0006	0.0011	0.0011	0.0010	0.0011	0.0013
5	0.0000	0.0006	0.0006	0.0007	0.0007	0.0008	0.0008	0.0008	0.0006	0.0005	0.0005	0.0006	0.0006	0.0011	0.0011	0.0011	0.0010	0.0013
6	0.0000	0.0009	0.0008	0.0010	0.0010	0.0009	0.0010	0.0009	0.0009	0.0008	0.0007	0.0007	0.0009	0.0013	0.0013	0.0012	0.0012	0.0014
7	0.0000	0.0008	0.0007	0.0008	0.0009	0.0009	0.0009	0.0010	0.0009	0.0008	0.0007	0.0007	0.0008	0.0012	0.0013	0.0013	0.0012	0.0014
8	0.0000	0.0008	0.0009	0.0010	0.0010	0.0009	0.0010	0.0010	0.0009	0.0008	0.0007	0.0007	0.0008	0.0013	0.0013	0.0013	0.0012	0.0014
9	0.0000	0.0008	0.0008	0.0009	0.0008	0.0008	0.0008	0.0009	0.0008	0.0006	0.0006	0.0007	0.0007	0.0012	0.0012	0.0012	0.0012	0.0014
10	0.0000	0.0009	0.0009	0.0010	0.0010	0.0009	0.0010	0.0011	0.0009	0.0008	0.0007	0.0008	0.0008	0.0012	0.0013	0.0012	0.0012	0.0014
11	0.0000	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0009	0.0009	0.0008	0.0007	0.0007	0.0009	0.0011	0.0013	0.0012	0.0012	0.0014
12	0.0000	0.0007	0.0008	0.0008	0.0009	0.0008	0.0008	0.0009	0.0008	0.0007	0.0006	0.0006	0.0007	0.0011	0.0011	0.0011	0.0011	0.0013
13	0.0000	0.0006	0.0006	0.0007	0.0008	0.0007	0.0009	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0010	0.0011	0.0011	0.0011	0.0013
14	0.0000	0.0007	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0007	0.0006	0.0007	0.0006	0.0012	0.0012	0.0011	0.0011	0.0013
15	0.0000	0.0008	0.0007	0.0008	0.0009	0.0008	0.0009	0.0009	0.0008	0.0008	0.0007	0.0008	0.0007	0.0012	0.0013	0.0012	0.0012	0.0014
16	0.0000	0.0009	0.0009	0.0010	0.0010	0.0008	0.0010	0.0010	0.0009	0.0009	0.0008	0.0008	0.0008	0.0013	0.0013	0.0013	0.0012	0.0014
17	0.0000	0.0007	0.0007	0.0009	0.0008	0.0008	0.0009	0.0009	0.0007	0.0007	0.0004	0.0005	0.0006	0.0010	0.0011	0.0011	0.0010	0.0012
18	0.0000	0.0008	0.0007	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0006	0.0005	0.0007	0.0007	0.0011	0.0012	0.0011	0.0011	0.0013
19	0.0000	0.0008	0.0007	0.0008	0.0008	0.0007	0.0009	0.0008	0.0008	0.0007	0.0007	0.0007	0.0009	0.0012	0.0012	0.0012	0.0012	0.0015
20	0.0000	0.0007	0.0007	0.0009	0.0010	0.0008	0.0009	0.0009	0.0008	0.0008	0.0006	0.0007	0.0008	0.0012	0.0012	0.0012	0.0011	0.0013
21	0.0000	0.0007	0.0008	0.0008	0.0009	0.0008	0.0008	0.0009	0.0008	0.0007	0.0006	0.0007	0.0008	0.0012	0.0012	0.0012	0.0012	0.0014
22	0.0000	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0007	0.0006	0.0007	0.0007	0.0012	0.0012	0.0011	0.0010	0.0013
23	0.0000	0.0007	0.0005	0.0006	0.0007	0.0006	0.0009	0.0008	0.0008	0.0007	0.0006	0.0006	0.0007	0.0010	0.0012	0.0011	0.0010	0.0013
24	0.0000	0.0008	0.0007	0.0009	0.0009	0.0010	0.0009	0.0010	0.0009	0.0008	0.0007	0.0008	0.0008	0.0012	0.0013	0.0012	0.0012	0.0014
25	0.0000	0.0007	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	0.0006	0.0005	0.0006	0.0007	0.0011	0.0011	0.0012	0.0011	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	0.0007	0.0008	0.0009	0.0008	0.0009	0.0009	0.0008	0.0007	0.0006	0.0007	0.0007	0.0012	0.0012	0.0012	0.0011	0.0014
Med.	0.0000	0.0008	0.0007	0.0008	0.0009	0.0008	0.0009	0.0009	0.0008	0.0007	0.0006	0.0007	0.0007	0.0012	0.0012	0.0012	0.0011	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	0.0005	0.0006	0.0007	0.0006	0.0008	0.0007	0.0006	0.0005	0.0004	0.0005	0.0006	0.0010	0.0011	0.0010	0.0010	0.0012
Max.	0.0000	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0011	0.0009	0.0009	0.0008	0.0008	0.0009	0.0013	0.0013	0.0013	0.0012	0.0015

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Data Set 7 : 105 °C, 65 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.0014															
2	0.0014	0.0014	0.0014															
3	0.0013	0.0013	0.0012															
4	0.0013	0.0012	0.0013															
5	0.0013	0.0013	0.0012															
6	0.0014	0.0014	0.0014															
7	0.0014	0.0014	0.0014															
8	0.0014	0.0015	0.0015															
9	0.0014	0.0013	0.0014															
10	0.0014	0.0014	0.0014															
11	0.0014	0.0014	0.0014															
12	0.0013	0.0013	0.0013															
13	0.0013	0.0013	0.0014															
14	0.0013	0.0013	0.0013															
15	0.0014	0.0014	0.0015															
16	0.0014	0.0014	0.0015															
17	0.0012	0.0012	0.0013															
18	0.0013	0.0013	0.0014															
19	0.0015	0.0014	0.0014															
20	0.0013	0.0013	0.0014															
21	0.0014	0.0014	0.0014															
22	0.0013	0.0013	0.0013															
23	0.0013	0.0013	0.0013															
24	0.0014	0.0014	0.0013															
25	0.0013	0.0013	0.0013															
n	25	25	25															
Avg.	0.0014	0.0013	0.0014															
Med.	0.0014	0.0013	0.0014															
σ	0.0001	0.0001	0.0001															
Min.	0.0012	0.0012	0.0012															
Max.	0.0015	0.0015	0.0015															

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Data Set 7 : 105 °C, 65 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.2620	0.2612	0.2612	0.2612	0.2611	0.2612	0.2612	0.2612	0.2612	0.2614	0.2615	0.2614	0.2613	0.2611	0.2610	0.2610	0.2611	0.2609
2	0.2633	0.2625	0.2625	0.2625	0.2625	0.2625	0.2624	0.2625	0.2625	0.2626	0.2627	0.2626	0.2626	0.2622	0.2622	0.2622	0.2623	0.2620
3	0.2641	0.2635	0.2635	0.2634	0.2634	0.2634	0.2634	0.2633	0.2634	0.2636	0.2637	0.2636	0.2635	0.2632	0.2631	0.2633	0.2633	0.2631
4	0.2615	0.2608	0.2608	0.2608	0.2608	0.2607	0.2608	0.2608	0.2609	0.2610	0.2611	0.2611	0.2610	0.2606	0.2606	0.2607	0.2607	0.2605
5	0.2661	0.2655	0.2655	0.2654	0.2654	0.2653	0.2653	0.2653	0.2654	0.2655	0.2656	0.2655	0.2655	0.2651	0.2651	0.2651	0.2651	0.2649
6	0.2599	0.2591	0.2591	0.2590	0.2589	0.2590	0.2589	0.2591	0.2591	0.2592	0.2592	0.2593	0.2591	0.2588	0.2588	0.2588	0.2589	0.2587
7	0.2615	0.2607	0.2608	0.2607	0.2606	0.2607	0.2607	0.2606	0.2606	0.2608	0.2609	0.2608	0.2608	0.2604	0.2604	0.2604	0.2605	0.2602
8	0.2587	0.2578	0.2578	0.2577	0.2577	0.2578	0.2578	0.2577	0.2578	0.2579	0.2580	0.2580	0.2579	0.2575	0.2575	0.2576	0.2576	0.2574
9	0.2633	0.2626	0.2626	0.2625	0.2625	0.2626	0.2626	0.2625	0.2626	0.2627	0.2628	0.2627	0.2627	0.2622	0.2622	0.2623	0.2623	0.2621
10	0.2626	0.2617	0.2616	0.2616	0.2615	0.2616	0.2616	0.2615	0.2617	0.2618	0.2618	0.2618	0.2618	0.2615	0.2614	0.2615	0.2615	0.2613
11	0.2669	0.2662	0.2662	0.2661	0.2661	0.2660	0.2660	0.2661	0.2660	0.2661	0.2663	0.2662	0.2661	0.2659	0.2658	0.2658	0.2659	0.2657
12	0.2628	0.2621	0.2620	0.2620	0.2620	0.2620	0.2620	0.2620	0.2621	0.2622	0.2622	0.2622	0.2621	0.2618	0.2618	0.2618	0.2618	0.2617
13	0.2618	0.2611	0.2612	0.2610	0.2610	0.2611	0.2609	0.2611	0.2611	0.2612	0.2612	0.2612	0.2612	0.2608	0.2608	0.2608	0.2609	0.2606
14	0.2621	0.2613	0.2613	0.2612	0.2613	0.2613	0.2612	0.2612	0.2612	0.2614	0.2615	0.2615	0.2615	0.2610	0.2610	0.2611	0.2611	0.2610
15	0.2634	0.2626	0.2627	0.2627	0.2625	0.2626	0.2626	0.2626	0.2626	0.2627	0.2628	0.2627	0.2628	0.2624	0.2623	0.2623	0.2624	0.2622
16	0.2605	0.2596	0.2596	0.2595	0.2595	0.2596	0.2595	0.2596	0.2596	0.2597	0.2597	0.2597	0.2597	0.2593	0.2594	0.2593	0.2594	0.2592
17	0.2671	0.2663	0.2664	0.2662	0.2663	0.2663	0.2662	0.2662	0.2664	0.2664	0.2666	0.2666	0.2664	0.2661	0.2661	0.2660	0.2661	0.2660
18	0.2597	0.2589	0.2590	0.2589	0.2589	0.2589	0.2589	0.2589	0.2589	0.2591	0.2592	0.2590	0.2591	0.2587	0.2587	0.2587	0.2587	0.2586
19	0.2643	0.2636	0.2636	0.2635	0.2636	0.2636	0.2635	0.2636	0.2636	0.2637	0.2637	0.2637	0.2635	0.2632	0.2633	0.2633	0.2633	0.2630
20	0.2590	0.2582	0.2582	0.2581	0.2581	0.2582	0.2581	0.2581	0.2582	0.2582	0.2584	0.2584	0.2583	0.2579	0.2580	0.2580	0.2580	0.2578
21	0.2622	0.2615	0.2615	0.2615	0.2614	0.2615	0.2614	0.2614	0.2614	0.2615	0.2616	0.2616	0.2615	0.2612	0.2611	0.2612	0.2612	0.2610
22	0.2589	0.2581	0.2581	0.2580	0.2580	0.2580	0.2581	0.2580	0.2581	0.2582	0.2583	0.2583	0.2582	0.2578	0.2578	0.2580	0.2580	0.2578
23	0.2664	0.2657	0.2659	0.2658	0.2657	0.2657	0.2655	0.2656	0.2656	0.2657	0.2658	0.2658	0.2657	0.2654	0.2652	0.2654	0.2655	0.2652
24	0.2591	0.2582	0.2583	0.2581	0.2582	0.2581	0.2582	0.2581	0.2582	0.2583	0.2583	0.2583	0.2583	0.2579	0.2579	0.2579	0.2580	0.2578
25	0.2586	0.2579	0.2579	0.2578	0.2578	0.2579	0.2578	0.2579	0.2579	0.2580	0.2581	0.2581	0.2579	0.2576	0.2576	0.2576	0.2576	0.2574
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2622	0.2615	0.2615	0.2614	0.2614	0.2614	0.2614	0.2614	0.2614	0.2616	0.2616	0.2616	0.2615	0.2612	0.2612	0.2612	0.2613	0.2611
Med.	0.2621	0.2613	0.2613	0.2612	0.2613	0.2613	0.2612	0.2612	0.2612	0.2614	0.2615	0.2615	0.2615	0.2611	0.2610	0.2611	0.2611	0.2610
σ	0.0026	0.0026	0.0026	0.0026	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
Min.	0.2586	0.2578	0.2578	0.2577	0.2577	0.2578	0.2578	0.2577	0.2578	0.2579	0.2580	0.2580	0.2579	0.2575	0.2575	0.2576	0.2576	0.2574
Max.	0.2671	0.2663	0.2664	0.2662	0.2663	0.2663	0.2662	0.2662	0.2664	0.2664	0.2666	0.2666	0.2664	0.2661	0.2661	0.2660	0.2661	0.2660

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Data Set 7 : 105 °C, 65 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.2609	0.2609	0.2609															
2	0.2620	0.2621	0.2621															
3	0.2630	0.2631	0.2632															
4	0.2605	0.2605	0.2605															
5	0.2650	0.2649	0.2650															
6	0.2587	0.2587	0.2587															
7	0.2604	0.2603	0.2603															
8	0.2574	0.2574	0.2574															
9	0.2622	0.2622	0.2622															
10	0.2613	0.2613	0.2613															
11	0.2657	0.2657	0.2658															
12	0.2617	0.2617	0.2617															
13	0.2607	0.2607	0.2606															
14	0.2610	0.2610	0.2610															
15	0.2622	0.2623	0.2622															
16	0.2592	0.2592	0.2592															
17	0.2660	0.2660	0.2660															
18	0.2585	0.2586	0.2585															
19	0.2630	0.2631	0.2631															
20	0.2578	0.2579	0.2578															
21	0.2610	0.2611	0.2611															
22	0.2578	0.2578	0.2578															
23	0.2653	0.2653	0.2652															
24	0.2579	0.2578	0.2579															
25	0.2574	0.2574	0.2575															
n	25	25	25															
Avg.	0.2611	0.2611	0.2611															
Med.	0.2610	0.2610	0.2610															
σ	0.0026	0.0026	0.0026															
Min.	0.2574	0.2574	0.2574															
Max.	0.2660	0.2660	0.2660															

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Data Set 7 : 105 °C, 65 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.5238	0.5238	0.5238	0.5236	0.5236	0.5236	0.5236	0.5235	0.5235	0.5236	0.5236	0.5235	0.5235	0.5232	0.5232	0.5232	0.5231	0.5231
2	0.5251	0.5250	0.5250	0.5249	0.5249	0.5249	0.5248	0.5248	0.5248	0.5249	0.5248	0.5249	0.5248	0.5245	0.5245	0.5245	0.5245	0.5244
3	0.5255	0.5255	0.5255	0.5253	0.5253	0.5253	0.5253	0.5252	0.5252	0.5253	0.5253	0.5253	0.5251	0.5250	0.5249	0.5249	0.5249	0.5248
4	0.5252	0.5252	0.5252	0.5251	0.5250	0.5251	0.5250	0.5250	0.5250	0.5250	0.5251	0.5249	0.5249	0.5247	0.5246	0.5246	0.5246	0.5244
5	0.5253	0.5254	0.5253	0.5252	0.5252	0.5253	0.5252	0.5252	0.5252	0.5252	0.5253	0.5252	0.5251	0.5250	0.5249	0.5249	0.5248	0.5248
6	0.5277	0.5277	0.5276	0.5275	0.5275	0.5275	0.5275	0.5274	0.5275	0.5275	0.5276	0.5275	0.5274	0.5272	0.5271	0.5272	0.5272	0.5271
7	0.5238	0.5238	0.5237	0.5236	0.5236	0.5236	0.5235	0.5235	0.5235	0.5235	0.5236	0.5235	0.5235	0.5232	0.5232	0.5232	0.5231	0.5231
8	0.5266	0.5266	0.5265	0.5264	0.5263	0.5264	0.5263	0.5263	0.5263	0.5264	0.5264	0.5264	0.5263	0.5260	0.5260	0.5260	0.5260	0.5259
9	0.5259	0.5259	0.5259	0.5258	0.5257	0.5257	0.5256	0.5256	0.5257	0.5257	0.5257	0.5257	0.5256	0.5254	0.5253	0.5254	0.5253	0.5253
10	0.5273	0.5272	0.5272	0.5271	0.5270	0.5271	0.5270	0.5270	0.5270	0.5270	0.5271	0.5270	0.5270	0.5267	0.5267	0.5267	0.5267	0.5266
11	0.5264	0.5264	0.5264	0.5263	0.5262	0.5262	0.5261	0.5262	0.5262	0.5262	0.5263	0.5262	0.5262	0.5260	0.5259	0.5259	0.5259	0.5257
12	0.5248	0.5248	0.5248	0.5247	0.5246	0.5247	0.5246	0.5246	0.5246	0.5246	0.5247	0.5246	0.5246	0.5243	0.5243	0.5243	0.5243	0.5241
13	0.5243	0.5243	0.5243	0.5242	0.5241	0.5242	0.5241	0.5240	0.5241	0.5241	0.5242	0.5241	0.5240	0.5238	0.5238	0.5237	0.5237	0.5236
14	0.5242	0.5242	0.5242	0.5241	0.5240	0.5240	0.5240	0.5240	0.5240	0.5240	0.5241	0.5239	0.5239	0.5237	0.5237	0.5236	0.5236	0.5235
15	0.5239	0.5239	0.5239	0.5237	0.5236	0.5237	0.5236	0.5236	0.5236	0.5236	0.5237	0.5237	0.5235	0.5233	0.5233	0.5233	0.5232	0.5231
16	0.5281	0.5281	0.5280	0.5279	0.5278	0.5279	0.5279	0.5278	0.5278	0.5279	0.5279	0.5278	0.5278	0.5275	0.5275	0.5275	0.5275	0.5274
17	0.5264	0.5264	0.5264	0.5262	0.5262	0.5263	0.5262	0.5262	0.5262	0.5262	0.5264	0.5262	0.5262	0.5260	0.5259	0.5260	0.5259	0.5259
18	0.5254	0.5254	0.5254	0.5252	0.5252	0.5253	0.5252	0.5252	0.5252	0.5252	0.5253	0.5252	0.5251	0.5250	0.5248	0.5249	0.5248	0.5248
19	0.5252	0.5252	0.5253	0.5251	0.5251	0.5251	0.5250	0.5250	0.5250	0.5251	0.5251	0.5249	0.5249	0.5246	0.5246	0.5247	0.5246	0.5245
20	0.5261	0.5261	0.5261	0.5259	0.5259	0.5259	0.5260	0.5259	0.5260	0.5259	0.5260	0.5259	0.5259	0.5256	0.5255	0.5256	0.5256	0.5255
21	0.5231	0.5231	0.5231	0.5230	0.5229	0.5230	0.5229	0.5229	0.5229	0.5230	0.5230	0.5229	0.5229	0.5225	0.5225	0.5224	0.5225	0.5224
22	0.5260	0.5260	0.5259	0.5258	0.5257	0.5259	0.5257	0.5257	0.5258	0.5258	0.5258	0.5257	0.5257	0.5255	0.5254	0.5255	0.5255	0.5254
23	0.5266	0.5267	0.5267	0.5265	0.5265	0.5265	0.5264	0.5264	0.5265	0.5264	0.5265	0.5264	0.5263	0.5262	0.5261	0.5261	0.5261	0.5260
24	0.5280	0.5280	0.5280	0.5278	0.5278	0.5279	0.5278	0.5278	0.5278	0.5278	0.5279	0.5277	0.5278	0.5275	0.5275	0.5275	0.5275	0.5274
25	0.5270	0.5270	0.5270	0.5269	0.5268	0.5269	0.5268	0.5268	0.5268	0.5268	0.5269	0.5268	0.5267	0.5265	0.5265	0.5265	0.5265	0.5264
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5257	0.5257	0.5256	0.5255	0.5255	0.5255	0.5254	0.5254	0.5254	0.5255	0.5255	0.5254	0.5254	0.5252	0.5251	0.5251	0.5251	0.5250
Med.	0.5255	0.5255	0.5255	0.5253	0.5253	0.5253	0.5253	0.5252	0.5252	0.5253	0.5253	0.5253	0.5251	0.5250	0.5249	0.5249	0.5249	0.5248
σ	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
Min.	0.5231	0.5231	0.5231	0.5230	0.5229	0.5230	0.5229	0.5229	0.5229	0.5230	0.5230	0.5229	0.5229	0.5225	0.5225	0.5224	0.5225	0.5224
Max.	0.5281	0.5281	0.5280	0.5279	0.5278	0.5279	0.5279	0.5278	0.5278	0.5279	0.5279	0.5278	0.5278	0.5275	0.5275	0.5275	0.5275	0.5274

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Data Set 7 : 105 °C, 65 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	103.3 °C
Drive Current [I_F]	65 mA
Measurement Current	65 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	0.5230	0.5230	0.5230															
2	0.5243	0.5243	0.5243															
3	0.5248	0.5247	0.5247															
4	0.5245	0.5245	0.5244															
5	0.5247	0.5247	0.5247															
6	0.5271	0.5271	0.5270															
7	0.5230	0.5230	0.5230															
8	0.5259	0.5259	0.5259															
9	0.5252	0.5252	0.5251															
10	0.5266	0.5266	0.5266															
11	0.5258	0.5257	0.5257															
12	0.5242	0.5241	0.5241															
13	0.5236	0.5236	0.5235															
14	0.5235	0.5235	0.5235															
15	0.5231	0.5231	0.5231															
16	0.5275	0.5274	0.5274															
17	0.5258	0.5258	0.5257															
18	0.5247	0.5247	0.5247															
19	0.5245	0.5245	0.5245															
20	0.5255	0.5255	0.5254															
21	0.5224	0.5223	0.5223															
22	0.5253	0.5253	0.5253															
23	0.5259	0.5259	0.5259															
24	0.5274	0.5274	0.5274															
25	0.5264	0.5263	0.5263															
n	25	25	25															
Avg.	0.5250	0.5250	0.5249															
Med.	0.5248	0.5247	0.5247															
σ	0.0014	0.0014	0.0014															
Min.	0.5224	0.5223	0.5223															
Max.	0.5275	0.5274	0.5274															

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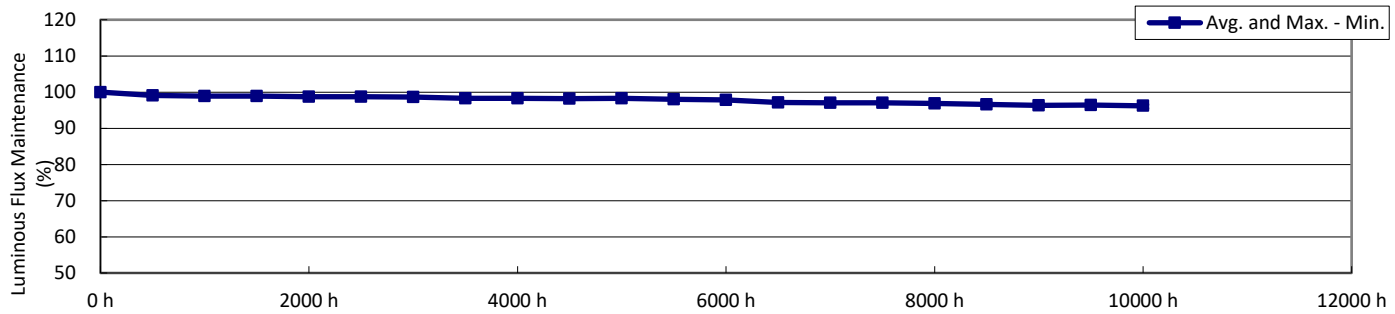
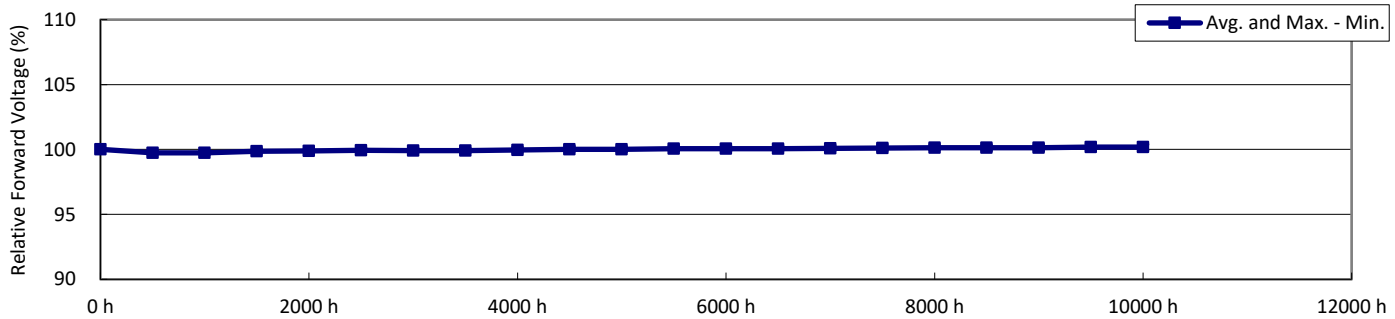
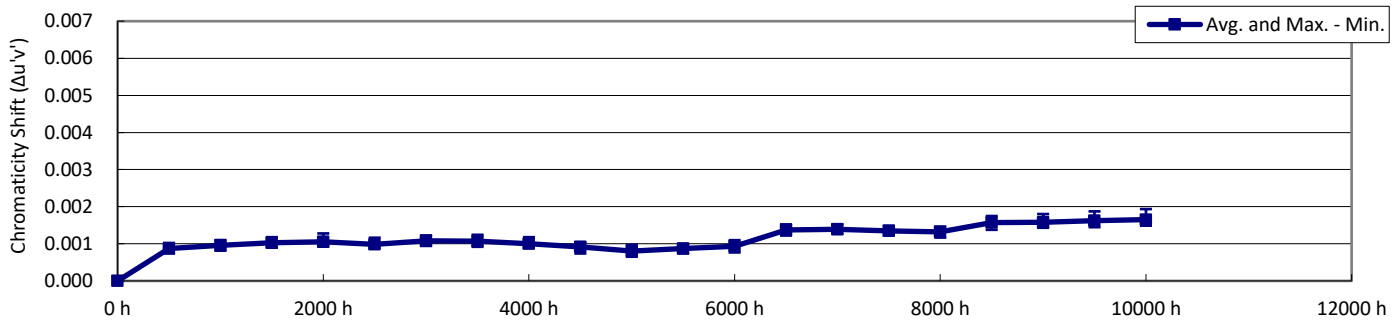
Data Set 8 : 105 °C, 100 mA

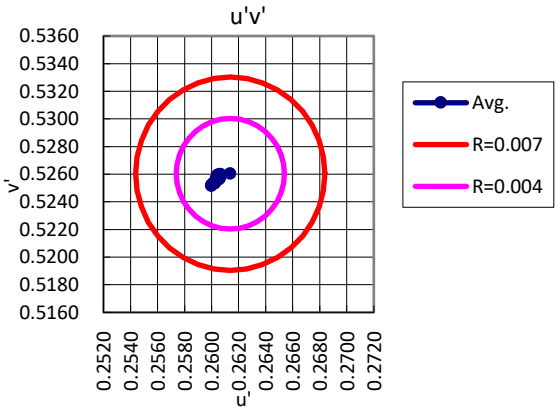
Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 mA

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









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Data Set 8 : 105 °C, 100 mA

Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	Forward voltage	CCT	Input Power	CIE1931		CIE1976							
	Φ_V [lm]	V_F [V]	T_{CP} [K]	P [W]	x	y	u'	v'						
1	50.7	2.80	2723	0.28	0.456	0.407	0.262	0.525						
2	50.5	2.80	2695	0.28	0.458	0.407	0.263	0.526						
3	50.8	2.80	2776	0.28	0.455	0.411	0.259	0.527						
4	50.6	2.80	2741	0.28	0.455	0.406	0.261	0.525						
5	50.1	2.80	2680	0.28	0.458	0.405	0.264	0.525						
6	50.6	2.80	2751	0.28	0.454	0.407	0.261	0.525						
7	50.5	2.80	2745	0.28	0.458	0.413	0.260	0.528						
8	49.9	2.80	2662	0.28	0.461	0.409	0.264	0.527						
9	50.9	2.80	2783	0.28	0.455	0.412	0.259	0.527						
10	50.9	2.80	2724	0.28	0.457	0.408	0.262	0.526						
11	50.5	2.80	2698	0.28	0.459	0.409	0.263	0.527						
12	50.8	2.80	2707	0.28	0.458	0.409	0.262	0.527						
13	50.8	2.80	2746	0.28	0.455	0.408	0.261	0.525						
14	50.7	2.80	2757	0.28	0.457	0.413	0.260	0.528						
15	50.5	2.80	2732	0.28	0.454	0.404	0.262	0.524						
16	51.0	2.81	2770	0.28	0.454	0.409	0.259	0.526						
17	50.4	2.80	2741	0.28	0.457	0.410	0.261	0.527						
18	50.8	2.80	2773	0.28	0.455	0.410	0.259	0.526						
19	51.0	2.80	2761	0.28	0.455	0.409	0.260	0.526						
20	51.2	2.79	2785	0.28	0.455	0.413	0.258	0.528						
21	50.8	2.79	2695	0.28	0.459	0.408	0.263	0.526						
22	50.2	2.80	2703	0.28	0.456	0.404	0.263	0.524						
23	50.2	2.80	2703	0.28	0.455	0.403	0.263	0.524						
24	50.2	2.80	2665	0.28	0.461	0.408	0.264	0.526						
25	50.9	2.80	2773	0.28	0.455	0.411	0.259	0.527						
n	25	25	25	25	25	25	25	25						
Avg.	50.6	2.80	2732	0.28	0.456	0.408	0.261	0.526						
Med.	50.7	2.80	2741	0.28	0.456	0.409	0.261	0.526						
σ	0.32	0.003	37.1	0.000	0.0021	0.0029	0.0019	0.0012						
Min.	49.9	2.79	2662	0.28	0.454	0.403	0.258	0.524						
Max.	51.2	2.81	2785	0.28	0.461	0.413	0.264	0.528						

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Data Set 8 : 105 °C, 100 mA

Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	99.0	98.9	98.8	98.6	98.6	98.4	98.3	98.3	98.4	98.0	97.8	97.1	96.9	96.9	96.6	96.2
2	100.0	99.2	99.2	99.0	99.0	98.8	98.7	98.5	98.5	98.4	98.4	98.1	97.8	97.2	97.1	97.1	96.8	96.6
3	100.0	99.3	99.2	99.1	98.9	98.9	98.8	98.6	98.6	98.4	98.5	98.1	97.9	97.4	97.2	97.2	97.0	96.8
4	100.0	99.1	98.9	98.9	98.7	98.6	98.5	98.3	98.3	98.2	98.3	97.9	97.8	97.1	97.0	97.0	96.9	96.7
5	100.0	99.3	99.3	99.1	99.1	98.9	98.8	98.5	98.2	98.3	98.3	97.9	97.8	97.1	96.9	96.9	96.6	96.7
6	100.0	98.9	98.7	98.7	98.6	98.5	98.3	98.0	98.1	98.0	98.0	97.7	97.6	96.9	96.7	96.8	96.7	96.4
7	100.0	99.2	99.0	99.0	98.9	98.8	98.7	98.4	98.4	98.3	98.3	98.1	98.0	97.2	97.2	97.1	97.1	96.8
8	100.0	98.9	98.8	98.5	98.5	98.4	98.4	98.0	98.1	98.1	98.1	97.8	97.6	96.9	96.7	96.7	96.6	96.3
9	100.0	99.3	99.1	99.1	98.9	98.8	98.8	98.4	98.5	98.4	98.4	98.2	97.9	97.3	97.1	97.2	97.1	96.8
10	100.0	99.2	99.0	99.1	98.6	98.9	98.6	98.3	98.1	98.1	98.0	98.2	97.5	97.1	96.9	96.7	96.8	96.4
11	100.0	99.1	99.0	99.0	98.9	98.8	98.8	98.5	98.5	98.5	98.5	98.3	98.0	97.4	97.3	97.3	97.2	96.9
12	100.0	99.0	98.7	98.6	98.6	98.4	98.3	98.0	98.1	98.0	98.0	97.7	97.6	96.9	96.7	96.9	96.7	96.5
13	100.0	99.0	98.7	98.7	98.7	98.5	98.4	98.1	98.2	98.1	98.3	98.0	97.8	97.1	97.0	97.1	96.9	96.7
14	100.0	98.9	98.7	98.7	98.6	98.4	98.4	98.0	98.2	98.1	98.1	97.8	97.6	97.0	96.8	96.7	96.5	96.3
15	100.0	98.9	98.7	98.8	98.7	98.5	98.4	98.1	98.2	98.1	98.2	97.9	97.7	97.0	96.9	97.0	96.8	96.6
16	100.0	99.3	99.0	99.3	98.9	99.0	98.8	98.4	98.3	98.5	98.5	98.3	97.9	97.3	97.4	97.2	97.2	97.0
17	100.0	99.2	99.1	99.1	99.0	98.9	98.8	98.4	98.6	98.4	98.5	98.2	98.0	97.3	97.3	97.3	97.2	96.9
18	100.0	98.9	98.7	98.8	98.5	98.5	98.4	98.1	98.1	98.0	98.0	97.8	97.6	96.9	96.7	96.8	96.7	96.5
19	100.0	99.1	98.9	98.9	98.6	98.6	98.5	98.2	98.2	98.2	98.2	97.9	97.7	97.0	96.8	97.0	96.8	96.6
20	100.0	98.9	98.7	98.7	98.5	98.6	98.4	98.2	98.2	98.2	98.2	98.0	97.8	97.1	96.9	97.1	96.9	96.7
21	100.0	99.3	99.1	99.1	98.9	98.8	98.7	98.4	98.5	98.4	98.5	98.2	98.0	97.4	97.1	97.2	97.1	96.9
22	100.0	99.1	98.9	99.0	98.6	98.8	98.6	98.3	98.2	98.3	98.4	97.9	97.9	97.0	97.0	96.9	96.7	96.7
23	100.0	99.0	98.8	98.8	98.5	98.4	98.3	98.0	98.0	98.0	97.9	97.7	97.5	96.8	96.6	96.8	96.6	96.4
24	100.0	98.9	98.9	98.8	98.7	98.6	98.6	98.2	98.2	98.2	98.3	98.0	97.7	97.2	97.1	97.1	97.0	96.8
25	100.0	99.1	98.8	98.9	98.7	98.5	98.4	98.1	98.1	98.0	98.1	97.8	97.6	96.9	96.9	96.9	96.8	96.6
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	98.9	98.7	98.7	98.6	98.3	98.3	98.2	98.3	98.0	97.8	97.1	97.0	97.0	96.9	96.6
Med.	100.0	99.1	98.9	98.9	98.7	98.6	98.6	98.3	98.2	98.2	98.3	98.0	97.8	97.1	96.9	97.0	96.8	96.7
σ	0.00	0.15	0.18	0.19	0.18	0.19	0.18	0.19	0.17	0.17	0.19	0.19	0.16	0.18	0.21	0.19	0.21	0.21
Min.	100.0	98.9	98.7	98.5	98.5	98.4	98.3	98.0	98.0	98.0	97.9	97.7	97.5	96.8	96.6	96.7	96.5	96.2
Max.	100.0	99.3	99.3	99.3	99.1	99.0	98.8	98.6	98.6	98.5	98.5	98.3	98.0	97.4	97.4	97.3	97.2	97.0

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.)	-0.0171	-0.0202	-0.0222	-0.0294	-0.0305	-0.0305	-0.0315	-0.0346	-0.0377	-0.0367	-0.0387							

Test duration used	5000 h to 10000 h	
B	1.002	
α	4.21E-06	
R^2	0.927	
Calculated L_{70} (10K)	85200	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	53500	hours
Reported L_{80} (10K)	53500	hours
Calculated L_{90} (10K)	25500	hours
Reported L_{90} (10K)	25500	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 : 105 °C, 100 mA

Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	95.9	95.8	95.5															
2	96.3	96.3	96.1															
3	96.6	96.6	96.3															
4	96.5	96.6	96.4															
5	96.2	96.7	96.0															
6	96.2	96.2	96.0															
7	96.5	96.5	96.3															
8	96.1	96.1	96.0															
9	96.6	96.6	96.4															
10	96.1	96.2	96.0															
11	96.8	96.7	96.5															
12	96.3	96.3	96.1															
13	96.5	96.5	96.3															
14	96.0	96.1	95.9															
15	96.3	96.3	96.2															
16	96.2	96.6	96.3															
17	96.6	96.7	96.4															
18	96.3	96.3	96.2															
19	96.4	96.3	96.2															
20	96.5	96.4	96.3															
21	96.6	96.6	96.4															
22	96.1	96.4	96.2															
23	96.1	96.1	96.0															
24	96.5	96.6	96.4															
25	96.4	96.5	96.2															
n	25	25	25															
Avg.	96.3	96.4	96.2															
Med.	96.3	96.4	96.2															
σ	0.23	0.23	0.22															
Min.	95.9	95.8	95.5															
Max.	96.8	96.7	96.5															

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Data Set 8 : 105 °C, 100 mA

Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	99.9	99.9	100.0	100.0	100.1	100.1	100.1	100.2	100.2	100.1	100.2	100.1	100.2	100.2	100.2	100.3	100.3
2	100.0	99.7	99.7	99.8	99.9	99.9	99.9	99.9	100.0	100.0	100.1	100.1	100.0	100.0	100.1	100.1	100.1	100.0
3	100.0	99.8	99.7	99.8	99.8	99.9	99.9	99.9	100.0	100.0	100.0	100.1	100.1	100.1	100.0	100.1	100.2	100.1
4	100.0	99.8	99.7	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	99.9	100.0	100.0	100.1	100.1
5	100.0	99.8	99.7	99.8	99.9	99.9	99.9	99.9	100.0	100.0	100.1	100.0	100.0	100.0	100.0	100.1	100.1	100.1
6	100.0	99.7	99.8	99.8	99.8	99.9	99.9	99.9	99.9	100.0	99.9	100.0	100.0	100.0	100.0	100.1	100.1	100.1
7	100.0	99.7	99.7	99.8	99.8	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.1	100.1	100.1	100.1	100.1
8	100.0	99.8	99.9	100.0	100.0	100.1	100.1	100.1	100.1	100.2	100.2	100.3	100.1	100.2	100.3	100.3	100.3	100.3
9	100.0	99.7	99.7	99.8	99.8	100.0	99.9	99.9	100.0	100.1	100.0	100.0	100.1	100.1	100.2	100.1	100.2	100.1
10	100.0	99.7	99.6	99.7	99.8	99.8	99.8	99.8	99.8	99.9	99.9	100.0	99.9	99.9	99.9	100.0	100.0	100.0
11	100.0	99.7	99.7	99.8	99.8	99.9	99.8	99.8	99.9	100.0	99.9	100.1	100.1	99.9	100.0	100.0	100.1	100.0
12	100.0	99.7	99.7	99.8	99.8	99.9	99.8	99.9	99.9	99.9	99.9	100.1	100.0	100.0	100.0	100.1	100.1	100.1
13	100.0	99.7	99.7	99.8	99.8	99.9	99.8	99.8	99.8	99.9	99.9	100.0	99.9	100.0	100.0	100.0	100.0	100.0
14	100.0	99.7	99.7	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.1	100.0	100.1	100.1	100.2	100.2	100.2
15	100.0	99.7	99.7	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.1	100.0	100.1	100.1
16	100.0	99.7	99.6	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.1	100.0	100.1	100.1
17	100.0	99.8	99.8	99.9	99.9	100.0	100.0	100.0	100.0	100.1	100.1	100.1	100.2	100.2	100.2	100.2	100.3	100.2
18	100.0	99.9	99.9	100.1	100.1	100.1	100.1	100.1	100.2	100.2	100.2	100.3	100.3	100.3	100.3	100.4	100.4	100.4
19	100.0	99.7	99.7	99.8	99.8	99.9	99.8	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0
20	100.0	99.8	99.9	100.0	100.0	100.1	100.1	100.1	100.1	100.2	100.2	100.2	100.3	100.2	100.2	100.3	100.3	100.3
21	100.0	99.8	99.8	99.9	99.9	100.0	100.0	100.0	100.0	100.1	100.1	100.1	100.2	100.2	100.2	100.2	100.2	100.2
22	100.0	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	100.0	99.9	99.9	99.9	99.9	100.0	99.9
23	100.0	99.7	99.7	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.1	100.0	100.0	100.1	100.1	100.1	100.1
24	100.0	99.9	99.9	100.0	100.0	100.1	100.1	100.1	100.1	100.2	100.2	100.2	100.2	100.2	100.3	100.2	100.3	100.3
25	100.0	99.7	99.7	99.8	99.8	99.9	99.9	99.9	99.9	100.0	99.9	100.0	99.9	100.0	100.1	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	99.7	99.7	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.1	100.1	100.1	100.1	100.1	100.1	100.1
Med.	100.0	99.7	99.7	99.8	99.8	99.9	99.9	99.9	99.9	100.0	100.0	100.1	100.0	100.0	100.1	100.1	100.1	100.1
σ	0.00	0.07	0.08	0.10	0.09	0.09	0.10	0.10	0.11	0.11	0.10	0.10	0.13	0.12	0.11	0.11	0.12	0.12
Min.	100.0	99.7	99.6	99.7	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.9	99.9	99.9	99.9	99.9	100.0	99.9
Max.	100.0	99.9	99.9	100.1	100.1	100.1	100.1	100.1	100.2	100.2	100.2	100.3	100.3	100.3	100.3	100.4	100.4	100.4

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Data Set 8 : 105 °C, 100 mA

Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	100.3	100.3	100.3															
2	100.1	100.0	100.1															
3	100.1	100.2	100.2															
4	100.1	100.1	100.1															
5	100.1	100.2	100.2															
6	100.0	100.1	100.0															
7	100.1	100.2	100.1															
8	100.3	100.3	100.3															
9	100.2	100.2	100.2															
10	100.0	100.0	100.1															
11	100.0	100.1	100.2															
12	100.0	100.1	100.1															
13	100.0	100.0	100.1															
14	100.2	100.2	100.2															
15	100.0	100.1	100.2															
16	100.1	100.1	100.2															
17	100.3	100.3	100.4															
18	100.3	100.4	100.4															
19	99.9	100.0	99.9															
20	100.4	100.4	100.4															
21	100.2	100.2	100.3															
22	99.9	100.0	100.1															
23	100.1	100.2	100.1															
24	100.3	100.5	100.4															
25	100.1	100.0	100.1															
n	25	25	25															
Avg.	100.1	100.2	100.2															
Med.	100.1	100.2	100.2															
σ	0.13	0.15	0.13															
Min.	99.9	100.0	99.9															
Max.	100.4	100.5	100.4															

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Data Set 8 : 105 °C, 100 mA

Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.0009	0.0011	0.0011	0.0012	0.0009	0.0011	0.0011	0.0010	0.0009	0.0008	0.0009	0.0009	0.0014	0.0013	0.0015	0.0014	0.0017
2	0.0000	0.0008	0.0009	0.0010	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0007	0.0008	0.0008	0.0013	0.0013	0.0013	0.0012	0.0015
3	0.0000	0.0008	0.0009	0.0010	0.0010	0.0009	0.0010	0.0010	0.0010	0.0008	0.0007	0.0009	0.0009	0.0014	0.0014	0.0013	0.0013	0.0015
4	0.0000	0.0009	0.0009	0.0010	0.0010	0.0009	0.0011	0.0010	0.0009	0.0009	0.0008	0.0009	0.0009	0.0014	0.0014	0.0013	0.0012	0.0015
5	0.0000	0.0008	0.0010	0.0010	0.0011	0.0010	0.0010	0.0011	0.0009	0.0007	0.0007	0.0007	0.0008	0.0013	0.0014	0.0013	0.0012	0.0015
6	0.0000	0.0008	0.0009	0.0010	0.0009	0.0009	0.0010	0.0010	0.0009	0.0009	0.0007	0.0009	0.0009	0.0013	0.0014	0.0013	0.0013	0.0015
7	0.0000	0.0009	0.0009	0.0011	0.0011	0.0010	0.0011	0.0011	0.0010	0.0010	0.0008	0.0009	0.0010	0.0014	0.0014	0.0014	0.0014	0.0016
8	0.0000	0.0010	0.0011	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0010	0.0010	0.0009	0.0011	0.0015	0.0015	0.0015	0.0014	0.0016
9	0.0000	0.0009	0.0011	0.0010	0.0012	0.0011	0.0012	0.0012	0.0011	0.0010	0.0009	0.0010	0.0010	0.0015	0.0015	0.0014	0.0015	0.0016
10	0.0000	0.0008	0.0008	0.0010	0.0010	0.0009	0.0011	0.0010	0.0009	0.0009	0.0007	0.0009	0.0008	0.0013	0.0013	0.0012	0.0012	0.0014
11	0.0000	0.0008	0.0008	0.0010	0.0009	0.0009	0.0010	0.0010	0.0009	0.0008	0.0008	0.0008	0.0008	0.0013	0.0013	0.0012	0.0012	0.0015
12	0.0000	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0008	0.0009	0.0009	0.0014	0.0014	0.0013	0.0013	0.0015
13	0.0000	0.0008	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0007	0.0008	0.0009	0.0013	0.0013	0.0013	0.0013	0.0016
14	0.0000	0.0007	0.0009	0.0009	0.0010	0.0009	0.0010	0.0011	0.0010	0.0009	0.0008	0.0008	0.0009	0.0014	0.0014	0.0014	0.0014	0.0016
15	0.0000	0.0009	0.0009	0.0010	0.0010	0.0009	0.0011	0.0010	0.0010	0.0008	0.0008	0.0008	0.0009	0.0013	0.0013	0.0013	0.0013	0.0015
16	0.0000	0.0008	0.0009	0.0011	0.0010	0.0011	0.0012	0.0011	0.0010	0.0010	0.0008	0.0009	0.0010	0.0014	0.0015	0.0013	0.0014	0.0016
17	0.0000	0.0008	0.0011	0.0011	0.0012	0.0011	0.0012	0.0012	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0014	0.0014	0.0014	0.0017
18	0.0000	0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012	0.0011	0.0010	0.0009	0.0009	0.0010	0.0014	0.0014	0.0014	0.0014	0.0016
19	0.0000	0.0008	0.0009	0.0009	0.0009	0.0009	0.0010	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0012	0.0014	0.0013	0.0013	0.0015
20	0.0000	0.0010	0.0010	0.0012	0.0012	0.0011	0.0011	0.0011	0.0011	0.0010	0.0008	0.0009	0.0010	0.0014	0.0014	0.0015	0.0014	0.0016
21	0.0000	0.0010	0.0010	0.0012	0.0013	0.0011	0.0012	0.0012	0.0012	0.0010	0.0009	0.0010	0.0011	0.0015	0.0015	0.0015	0.0014	0.0017
22	0.0000	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0009	0.0008	0.0008	0.0009	0.0013	0.0014	0.0012	0.0013	0.0016
23	0.0000	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012	0.0011	0.0011	0.0010	0.0009	0.0010	0.0010	0.0014	0.0015	0.0015	0.0014	0.0017
24	0.0000	0.0009	0.0011	0.0011	0.0012	0.0010	0.0012	0.0011	0.0011	0.0010	0.0009	0.0009	0.0010	0.0014	0.0015	0.0014	0.0014	0.0016
25	0.0000	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010	0.0009	0.0008	0.0007	0.0007	0.0009	0.0013	0.0013	0.0013	0.0012	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	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0009	0.0009	0.0014	0.0014	0.0013	0.0013	0.0016
Med.	0.0000	0.0009	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	0.0009	0.0008	0.0009	0.0009	0.0014	0.0014	0.0013	0.0013	0.0016
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	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0007	0.0007	0.0007	0.0008	0.0012	0.0013	0.0012	0.0012	0.0014
Max.	0.0000	0.0010	0.0011	0.0012	0.0013	0.0012	0.0012	0.0012	0.0012	0.0010	0.0010	0.0010	0.0011	0.0015	0.0015	0.0015	0.0015	0.0017

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Data Set 8 : 105 °C, 100 mA

Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.0018	0.0019	0.0019															
2	0.0016	0.0016	0.0016															
3	0.0016	0.0017	0.0016															
4	0.0015	0.0016	0.0015															
5	0.0015	0.0016	0.0015															
6	0.0016	0.0016	0.0017															
7	0.0016	0.0016	0.0017															
8	0.0017	0.0017	0.0017															
9	0.0016	0.0016	0.0017															
10	0.0015	0.0015	0.0015															
11	0.0014	0.0014	0.0015															
12	0.0016	0.0016	0.0017															
13	0.0015	0.0015	0.0016															
14	0.0015	0.0016	0.0016															
15	0.0016	0.0016	0.0016															
16	0.0016	0.0017	0.0018															
17	0.0016	0.0017	0.0016															
18	0.0016	0.0016	0.0016															
19	0.0015	0.0015	0.0016															
20	0.0016	0.0016	0.0017															
21	0.0016	0.0017	0.0017															
22	0.0015	0.0016	0.0016															
23	0.0017	0.0018	0.0019															
24	0.0016	0.0016	0.0017															
25	0.0015	0.0015	0.0015															
n	25	25	25															
Avg.	0.0016	0.0016	0.0017															
Med.	0.0016	0.0016	0.0016															
σ	0.0001	0.0001	0.0001															
Min.	0.0014	0.0014	0.0015															
Max.	0.0018	0.0019	0.0019															

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Data Set 8 : 105 °C, 100 mA

Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.2623	0.2613	0.2612	0.2611	0.2611	0.2613	0.2612	0.2612	0.2613	0.2614	0.2615	0.2614	0.2614	0.2610	0.2611	0.2609	0.2610	0.2607
2	0.2633	0.2624	0.2623	0.2623	0.2623	0.2624	0.2623	0.2624	0.2624	0.2625	0.2627	0.2625	0.2625	0.2621	0.2621	0.2621	0.2622	0.2619
3	0.2593	0.2584	0.2584	0.2583	0.2583	0.2584	0.2583	0.2583	0.2583	0.2585	0.2586	0.2584	0.2584	0.2580	0.2581	0.2582	0.2582	0.2579
4	0.2618	0.2610	0.2610	0.2608	0.2609	0.2610	0.2608	0.2610	0.2610	0.2610	0.2612	0.2611	0.2610	0.2607	0.2607	0.2607	0.2609	0.2606
5	0.2666	0.2658	0.2656	0.2656	0.2655	0.2656	0.2656	0.2655	0.2657	0.2659	0.2659	0.2659	0.2658	0.2654	0.2653	0.2654	0.2656	0.2652
6	0.2608	0.2600	0.2599	0.2599	0.2599	0.2599	0.2599	0.2599	0.2600	0.2600	0.2602	0.2600	0.2600	0.2597	0.2597	0.2597	0.2597	0.2595
7	0.2605	0.2596	0.2595	0.2594	0.2595	0.2595	0.2595	0.2594	0.2596	0.2596	0.2597	0.2596	0.2596	0.2593	0.2592	0.2592	0.2593	0.2591
8	0.2647	0.2637	0.2636	0.2636	0.2636	0.2636	0.2635	0.2635	0.2636	0.2638	0.2638	0.2638	0.2637	0.2633	0.2634	0.2634	0.2635	0.2633
9	0.2593	0.2584	0.2582	0.2583	0.2582	0.2582	0.2582	0.2582	0.2583	0.2584	0.2584	0.2584	0.2584	0.2580	0.2580	0.2581	0.2580	0.2579
10	0.2646	0.2638	0.2638	0.2637	0.2636	0.2637	0.2636	0.2636	0.2637	0.2637	0.2639	0.2638	0.2639	0.2635	0.2635	0.2635	0.2635	0.2634
11	0.2634	0.2626	0.2625	0.2624	0.2624	0.2625	0.2625	0.2624	0.2625	0.2626	0.2626	0.2627	0.2626	0.2623	0.2623	0.2623	0.2624	0.2621
12	0.2625	0.2617	0.2616	0.2617	0.2616	0.2616	0.2616	0.2615	0.2616	0.2617	0.2618	0.2618	0.2618	0.2614	0.2614	0.2614	0.2614	0.2613
13	0.2608	0.2599	0.2599	0.2599	0.2598	0.2599	0.2598	0.2598	0.2599	0.2600	0.2601	0.2601	0.2599	0.2596	0.2596	0.2597	0.2597	0.2594
14	0.2598	0.2591	0.2589	0.2590	0.2589	0.2590	0.2588	0.2589	0.2589	0.2590	0.2591	0.2591	0.2590	0.2586	0.2587	0.2586	0.2587	0.2585
15	0.2624	0.2615	0.2614	0.2614	0.2614	0.2615	0.2613	0.2614	0.2615	0.2616	0.2616	0.2616	0.2615	0.2612	0.2613	0.2613	0.2613	0.2611
16	0.2620	0.2611	0.2610	0.2608	0.2610	0.2609	0.2608	0.2609	0.2610	0.2610	0.2612	0.2612	0.2611	0.2606	0.2606	0.2608	0.2608	0.2605
17	0.2614	0.2605	0.2603	0.2603	0.2602	0.2603	0.2603	0.2603	0.2603	0.2604	0.2605	0.2605	0.2605	0.2601	0.2601	0.2601	0.2602	0.2599
18	0.2595	0.2586	0.2586	0.2585	0.2585	0.2585	0.2585	0.2584	0.2585	0.2586	0.2587	0.2587	0.2586	0.2583	0.2583	0.2583	0.2584	0.2582
19	0.2601	0.2593	0.2592	0.2592	0.2591	0.2591	0.2591	0.2592	0.2592	0.2593	0.2593	0.2594	0.2593	0.2590	0.2589	0.2590	0.2590	0.2588
20	0.2587	0.2577	0.2577	0.2576	0.2576	0.2576	0.2576	0.2576	0.2577	0.2578	0.2579	0.2579	0.2578	0.2574	0.2574	0.2574	0.2575	0.2573
21	0.2637	0.2628	0.2627	0.2626	0.2625	0.2627	0.2626	0.2626	0.2626	0.2628	0.2628	0.2628	0.2627	0.2624	0.2624	0.2624	0.2624	0.2622
22	0.2658	0.2649	0.2648	0.2648	0.2648	0.2648	0.2648	0.2648	0.2649	0.2649	0.2650	0.2650	0.2650	0.2646	0.2646	0.2647	0.2647	0.2644
23	0.2638	0.2629	0.2628	0.2628	0.2628	0.2628	0.2627	0.2628	0.2628	0.2629	0.2631	0.2630	0.2630	0.2626	0.2625	0.2626	0.2627	0.2624
24	0.2647	0.2638	0.2637	0.2637	0.2636	0.2637	0.2636	0.2637	0.2637	0.2638	0.2639	0.2639	0.2638	0.2635	0.2634	0.2635	0.2635	0.2633
25	0.2593	0.2585	0.2585	0.2585	0.2584	0.2584	0.2584	0.2584	0.2584	0.2586	0.2586	0.2587	0.2585	0.2582	0.2582	0.2582	0.2583	0.2582
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2620	0.2612	0.2611	0.2610	0.2610	0.2611	0.2610	0.2610	0.2611	0.2612	0.2613	0.2612	0.2612	0.2608	0.2608	0.2609	0.2609	0.2607
Med.	0.2620	0.2611	0.2610	0.2608	0.2610	0.2610	0.2608	0.2610	0.2610	0.2610	0.2612	0.2612	0.2611	0.2607	0.2607	0.2608	0.2609	0.2606
σ	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022
Min.	0.2587	0.2577	0.2577	0.2576	0.2576	0.2576	0.2576	0.2576	0.2577	0.2578	0.2579	0.2579	0.2578	0.2574	0.2574	0.2574	0.2575	0.2573
Max.	0.2666	0.2658	0.2656	0.2656	0.2655	0.2656	0.2656	0.2655	0.2657	0.2659	0.2659	0.2659	0.2658	0.2654	0.2653	0.2654	0.2656	0.2652

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Data Set 8 : 105 °C, 100 mA

Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.2607	0.2607	0.2606															
2	0.2618	0.2619	0.2619															
3	0.2579	0.2578	0.2579															
4	0.2606	0.2605	0.2606															
5	0.2652	0.2652	0.2653															
6	0.2594	0.2595	0.2594															
7	0.2591	0.2591	0.2590															
8	0.2632	0.2632	0.2632															
9	0.2579	0.2579	0.2579															
10	0.2633	0.2633	0.2633															
11	0.2622	0.2621	0.2621															
12	0.2612	0.2612	0.2611															
13	0.2595	0.2595	0.2595															
14	0.2585	0.2585	0.2586															
15	0.2611	0.2611	0.2611															
16	0.2605	0.2605	0.2604															
17	0.2599	0.2598	0.2599															
18	0.2582	0.2582	0.2582															
19	0.2588	0.2588	0.2588															
20	0.2573	0.2573	0.2572															
21	0.2623	0.2623	0.2623															
22	0.2645	0.2643	0.2644															
23	0.2624	0.2624	0.2623															
24	0.2633	0.2633	0.2633															
25	0.2580	0.2581	0.2581															
n	25	25	25															
Avg.	0.2607	0.2607	0.2606															
Med.	0.2606	0.2605	0.2606															
σ	0.0022	0.0022	0.0022															
Min.	0.2573	0.2573	0.2572															
Max.	0.2652	0.2652	0.2653															

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Data Set 8 : 105 °C, 100 mA

Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.5253	0.5253	0.5252	0.5250	0.5251	0.5251	0.5251	0.5250	0.5250	0.5250	0.5251	0.5250	0.5250	0.5247	0.5246	0.5247	0.5246	0.5245
2	0.5260	0.5260	0.5260	0.5258	0.5258	0.5259	0.5258	0.5258	0.5258	0.5258	0.5258	0.5257	0.5257	0.5254	0.5254	0.5254	0.5254	0.5253
3	0.5270	0.5270	0.5269	0.5268	0.5268	0.5268	0.5268	0.5268	0.5268	0.5268	0.5269	0.5267	0.5267	0.5265	0.5264	0.5264	0.5264	0.5264
4	0.5251	0.5250	0.5250	0.5248	0.5248	0.5248	0.5248	0.5247	0.5248	0.5248	0.5248	0.5247	0.5247	0.5244	0.5244	0.5244	0.5243	0.5242
5	0.5262	0.5261	0.5261	0.5259	0.5259	0.5260	0.5260	0.5259	0.5259	0.5259	0.5260	0.5259	0.5259	0.5256	0.5255	0.5256	0.5256	0.5255
6	0.5250	0.5249	0.5249	0.5248	0.5247	0.5247	0.5246	0.5246	0.5246	0.5246	0.5247	0.5246	0.5246	0.5243	0.5243	0.5243	0.5243	0.5242
7	0.5279	0.5279	0.5279	0.5276	0.5276	0.5276	0.5276	0.5276	0.5275	0.5276	0.5276	0.5275	0.5275	0.5272	0.5273	0.5273	0.5273	0.5272
8	0.5268	0.5267	0.5267	0.5266	0.5265	0.5266	0.5265	0.5265	0.5265	0.5265	0.5266	0.5265	0.5265	0.5262	0.5262	0.5262	0.5261	0.5261
9	0.5276	0.5275	0.5275	0.5273	0.5273	0.5274	0.5273	0.5272	0.5273	0.5273	0.5273	0.5272	0.5272	0.5270	0.5269	0.5270	0.5269	0.5268
10	0.5275	0.5274	0.5274	0.5272	0.5272	0.5272	0.5272	0.5271	0.5272	0.5272	0.5272	0.5271	0.5271	0.5269	0.5268	0.5268	0.5269	0.5267
11	0.5270	0.5270	0.5269	0.5269	0.5267	0.5267	0.5267	0.5267	0.5267	0.5267	0.5268	0.5267	0.5266	0.5264	0.5264	0.5264	0.5264	0.5263
12	0.5266	0.5265	0.5265	0.5263	0.5263	0.5263	0.5262	0.5262	0.5262	0.5262	0.5263	0.5262	0.5262	0.5259	0.5259	0.5259	0.5258	0.5258
13	0.5256	0.5255	0.5255	0.5253	0.5252	0.5253	0.5252	0.5252	0.5252	0.5252	0.5253	0.5253	0.5251	0.5249	0.5249	0.5249	0.5249	0.5248
14	0.5280	0.5279	0.5279	0.5277	0.5277	0.5277	0.5277	0.5276	0.5276	0.5276	0.5277	0.5276	0.5275	0.5274	0.5273	0.5272	0.5272	0.5272
15	0.5244	0.5243	0.5243	0.5242	0.5241	0.5242	0.5241	0.5240	0.5240	0.5241	0.5242	0.5241	0.5240	0.5237	0.5236	0.5237	0.5237	0.5236
16	0.5273	0.5272	0.5271	0.5270	0.5271	0.5270	0.5270	0.5270	0.5269	0.5269	0.5270	0.5269	0.5269	0.5267	0.5266	0.5267	0.5266	0.5265
17	0.5268	0.5268	0.5268	0.5266	0.5266	0.5266	0.5265	0.5265	0.5265	0.5266	0.5266	0.5265	0.5265	0.5263	0.5262	0.5263	0.5262	0.5261
18	0.5265	0.5264	0.5263	0.5262	0.5262	0.5262	0.5261	0.5261	0.5261	0.5261	0.5262	0.5262	0.5261	0.5258	0.5258	0.5258	0.5258	0.5257
19	0.5259	0.5258	0.5258	0.5257	0.5256	0.5257	0.5256	0.5255	0.5256	0.5256	0.5256	0.5255	0.5254	0.5252	0.5251	0.5252	0.5251	0.5250
20	0.5278	0.5276	0.5275	0.5274	0.5274	0.5275	0.5274	0.5274	0.5274	0.5275	0.5275	0.5274	0.5273	0.5271	0.5271	0.5271	0.5271	0.5270
21	0.5265	0.5264	0.5264	0.5263	0.5262	0.5262	0.5261	0.5261	0.5261	0.5261	0.5262	0.5261	0.5261	0.5259	0.5258	0.5258	0.5259	0.5257
22	0.5256	0.5255	0.5255	0.5254	0.5254	0.5253	0.5253	0.5253	0.5253	0.5254	0.5253	0.5253	0.5252	0.5251	0.5250	0.5250	0.5250	0.5249
23	0.5239	0.5238	0.5238	0.5236	0.5236	0.5236	0.5235	0.5235	0.5235	0.5235	0.5235	0.5235	0.5234	0.5232	0.5231	0.5231	0.5231	0.5230
24	0.5264	0.5264	0.5263	0.5262	0.5261	0.5262	0.5262	0.5260	0.5261	0.5262	0.5262	0.5261	0.5261	0.5259	0.5258	0.5258	0.5258	0.5257
25	0.5267	0.5266	0.5266	0.5265	0.5264	0.5265	0.5264	0.5263	0.5263	0.5264	0.5264	0.5263	0.5263	0.5261	0.5260	0.5261	0.5261	0.5260
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5264	0.5263	0.5263	0.5261	0.5261	0.5261	0.5261	0.5260	0.5260	0.5261	0.5261	0.5260	0.5260	0.5257	0.5257	0.5257	0.5257	0.5256
Med.	0.5265	0.5264	0.5264	0.5263	0.5262	0.5262	0.5262	0.5261	0.5261	0.5262	0.5262	0.5262	0.5261	0.5259	0.5258	0.5258	0.5258	0.5257
σ	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Min.	0.5239	0.5238	0.5238	0.5236	0.5236	0.5236	0.5235	0.5235	0.5235	0.5235	0.5235	0.5235	0.5234	0.5232	0.5231	0.5231	0.5231	0.5230
Max.	0.5280	0.5279	0.5279	0.5277	0.5277	0.5277	0.5277	0.5276	0.5276	0.5276	0.5277	0.5276	0.5275	0.5274	0.5273	0.5273	0.5273	0.5272

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Data Set 8 : 105 °C, 100 mA

Actual Case Temperature [T_S]	105.1 °C
Actual Ambient Temperature [T_A]	101.8 °C
Drive Current [I_F]	100 mA
Measurement Current	100 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	0.5244	0.5243	0.5243															
2	0.5252	0.5252	0.5252															
3	0.5263	0.5263	0.5262															
4	0.5243	0.5242	0.5242															
5	0.5254	0.5253	0.5254															
6	0.5242	0.5241	0.5241															
7	0.5271	0.5271	0.5270															
8	0.5261	0.5260	0.5260															
9	0.5268	0.5268	0.5267															
10	0.5267	0.5267	0.5267															
11	0.5262	0.5262	0.5262															
12	0.5257	0.5257	0.5257															
13	0.5247	0.5247	0.5246															
14	0.5272	0.5271	0.5271															
15	0.5235	0.5235	0.5235															
16	0.5265	0.5264	0.5264															
17	0.5261	0.5260	0.5261															
18	0.5257	0.5256	0.5256															
19	0.5250	0.5250	0.5249															
20	0.5270	0.5269	0.5269															
21	0.5257	0.5257	0.5256															
22	0.5249	0.5248	0.5248															
23	0.5230	0.5229	0.5228															
24	0.5257	0.5257	0.5256															
25	0.5260	0.5259	0.5259															
n	25	25	25															
Avg.	0.5256	0.5255	0.5255															
Med.	0.5257	0.5257	0.5256															
σ	0.0011	0.0011	0.0011															
Min.	0.5230	0.5229	0.5228															
Max.	0.5272	0.5271	0.5271															

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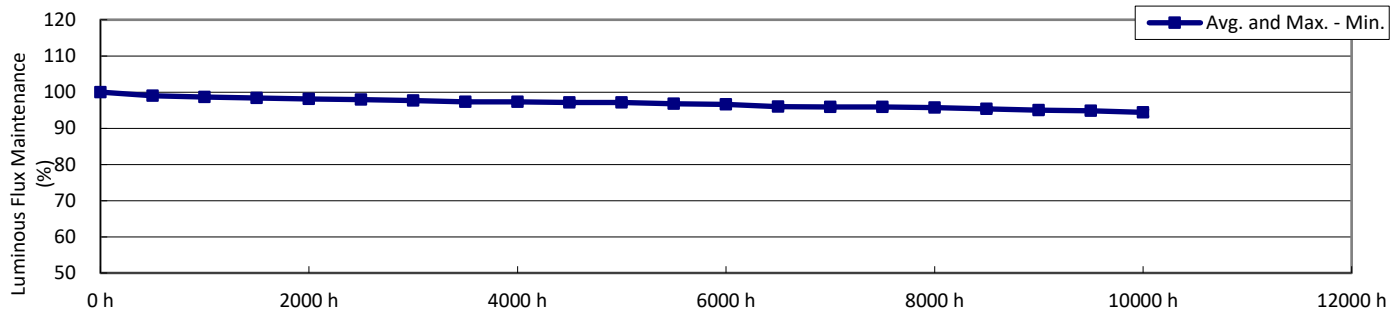
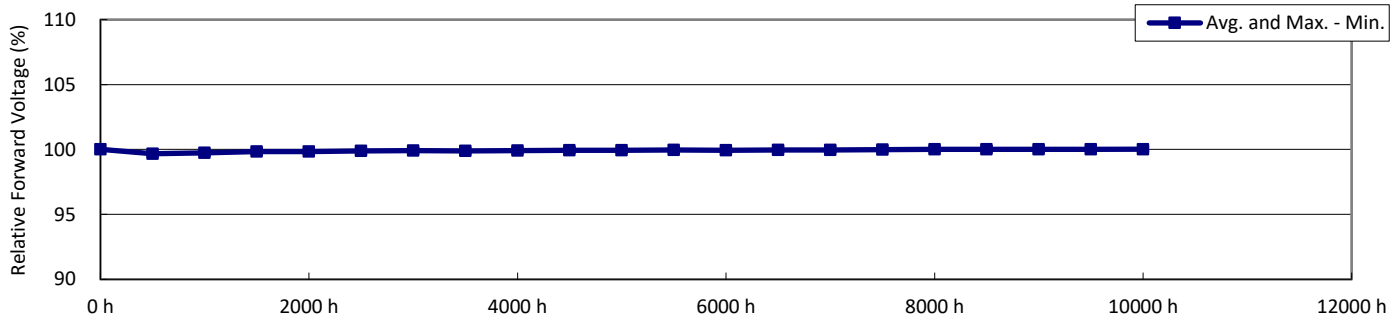
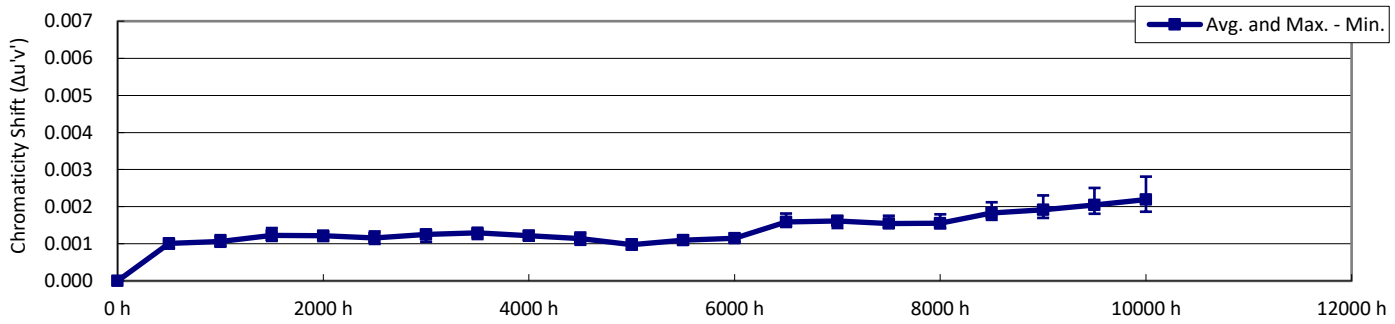
Data Set 9 : 105 °C, 180 mA

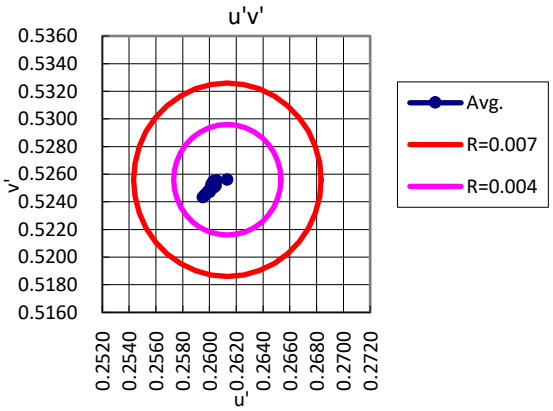
Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °C
Drive Current [I_F]	180 mA
Measurement Current	180 mA

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









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Data Set 9 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °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 9-1
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	87.1	2.94	2736	0.53	0.453	0.403	0.262	0.524						
2	87.0	2.94	2718	0.53	0.455	0.403	0.262	0.524						
3	89.0	2.94	2784	0.53	0.455	0.413	0.259	0.527						
4	87.7	2.94	2707	0.53	0.457	0.407	0.263	0.525						
5	88.0	2.94	2761	0.53	0.453	0.406	0.260	0.525						
6	88.1	2.96	2748	0.53	0.455	0.408	0.261	0.526						
7	88.0	2.94	2734	0.53	0.454	0.405	0.262	0.524						
8	87.4	2.94	2743	0.53	0.454	0.406	0.261	0.525						
9	87.1	2.96	2671	0.53	0.461	0.409	0.264	0.527						
10	88.2	2.94	2747	0.53	0.455	0.407	0.261	0.525						
11	87.2	2.94	2707	0.53	0.456	0.405	0.263	0.525						
12	87.1	2.94	2722	0.53	0.454	0.403	0.262	0.523						
13	87.8	2.94	2701	0.53	0.459	0.409	0.263	0.527						
14	87.5	2.94	2711	0.53	0.456	0.405	0.263	0.524						
15	87.3	2.93	2708	0.53	0.456	0.405	0.263	0.525						
16	87.2	2.94	2706	0.53	0.457	0.405	0.263	0.525						
17	87.1	2.94	2706	0.53	0.455	0.403	0.263	0.524						
18	87.5	2.94	2724	0.53	0.456	0.406	0.262	0.525						
19	87.3	2.94	2680	0.53	0.461	0.410	0.263	0.527						
20	88.6	2.95	2786	0.53	0.456	0.414	0.258	0.528						
21	88.3	2.94	2766	0.53	0.456	0.411	0.259	0.527						
22	87.5	2.94	2724	0.53	0.456	0.407	0.262	0.525						
23	88.5	2.94	2760	0.53	0.456	0.411	0.260	0.527						
24	87.6	2.94	2739	0.53	0.454	0.406	0.261	0.525						
25	88.1	2.95	2765	0.53	0.456	0.412	0.259	0.527						
n	25	25	25	25	25	25	25	25						
Avg.	87.7	2.94	2730	0.53	0.456	0.407	0.261	0.525						
Med.	87.5	2.94	2724	0.53	0.456	0.406	0.262	0.525						
σ	0.56	0.005	30.0	0.001	0.0019	0.0032	0.0015	0.0014						
Min.	87.0	2.93	2671	0.53	0.453	0.403	0.258	0.523						
Max.	89.0	2.96	2786	0.53	0.461	0.414	0.264	0.528						

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Data Set 9 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °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 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	99.1	98.6	98.5	98.2	97.9	97.7	97.4	97.3	97.2	97.2	97.0	96.6	96.1	96.0	96.0	95.9	95.6
2	100.0	99.0	98.6	98.4	98.1	97.8	97.6	97.3	97.2	97.1	97.2	96.9	96.7	96.1	96.0	96.0	95.9	95.6
3	100.0	98.7	98.3	98.2	97.9	97.7	97.5	97.3	97.1	97.0	97.1	96.7	96.5	96.0	95.7	95.8	95.6	95.2
4	100.0	98.8	98.4	98.1	97.9	97.5	97.3	97.1	96.9	96.8	96.9	96.6	96.3	95.9	95.7	95.7	95.6	95.3
5	100.0	98.8	98.4	98.2	97.7	97.6	97.1	97.1	96.8	96.5	96.5	96.3	95.9	95.6	95.3	95.2	94.9	94.6
6	100.0	99.2	98.8	98.5	98.2	97.9	97.7	97.4	97.3	97.2	97.2	96.9	96.7	96.1	95.9	95.9	95.7	95.2
7	100.0	98.8	98.4	98.2	98.0	97.7	97.5	97.1	97.2	97.0	97.1	96.7	96.5	95.8	95.9	95.8	95.6	95.2
8	100.0	98.8	98.6	98.3	98.2	97.8	97.7	97.4	97.4	97.1	97.2	96.9	96.7	95.9	95.9	96.0	95.7	95.2
9	100.0	99.4	99.0	98.9	98.6	98.3	98.2	97.7	97.8	97.6	97.7	97.4	97.1	96.4	96.4	96.4	96.2	95.8
10	100.0	98.8	98.5	98.3	98.1	97.5	97.4	97.1	97.0	96.8	96.8	96.4	96.0	95.3	95.3	95.3	95.1	94.7
11	100.0	99.2	99.0	98.7	98.5	98.3	97.8	97.5	97.4	97.3	97.5	97.4	96.7	96.3	96.5	95.8	95.7	95.6
12	100.0	98.7	98.4	98.1	98.0	97.6	97.4	97.1	97.0	96.9	97.0	96.7	96.5	95.8	95.9	95.9	95.8	95.6
13	100.0	99.0	98.7	98.5	98.3	98.0	97.9	97.6	97.5	97.3	97.4	97.1	96.8	96.3	96.1	96.2	96.0	95.6
14	100.0	98.8	98.4	98.2	97.9	97.7	97.6	97.1	97.2	97.0	97.0	96.7	96.4	95.8	95.7	95.6	95.5	95.1
15	100.0	98.7	98.3	98.2	97.8	97.6	97.4	97.0	96.9	96.7	96.8	96.4	96.2	95.7	95.5	95.5	95.5	95.2
16	100.0	99.0	98.7	98.5	98.2	98.0	97.8	97.5	97.4	97.2	97.2	96.8	96.6	96.1	95.9	96.0	95.9	95.6
17	100.0	99.0	98.6	98.5	98.0	98.2	97.5	97.4	97.1	97.1	96.9	97.0	96.5	96.3	96.1	95.9	95.6	95.7
18	100.0	99.1	98.7	98.5	98.2	97.9	97.7	97.3	97.2	97.1	97.0	96.7	96.5	96.0	95.8	95.9	95.7	95.5
19	100.0	99.0	98.7	98.5	98.2	98.0	97.8	97.5	97.4	97.3	97.4	97.0	96.8	96.2	96.0	96.1	96.0	95.6
20	100.0	99.3	99.0	98.8	98.5	98.3	98.1	97.8	97.7	97.6	97.7	97.3	97.1	96.5	96.3	96.3	96.2	95.6
21	100.0	99.1	98.9	98.6	98.4	98.2	98.0	97.8	97.7	97.6	97.6	97.3	97.1	96.5	96.3	96.4	96.2	95.8
22	100.0	98.7	98.5	98.3	98.0	97.7	97.5	97.2	97.0	96.9	96.9	96.4	96.3	95.7	95.4	95.4	95.4	94.9
23	100.0	99.0	98.7	98.5	98.1	97.8	97.6	97.1	97.0	96.9	96.9	96.4	96.5	95.9	95.8	95.7	95.5	95.5
24	100.0	98.9	98.6	98.3	98.0	97.7	97.5	97.2	97.1	97.0	97.1	96.6	96.5	95.9	95.7	95.7	95.4	94.8
25	100.0	99.2	98.8	98.7	98.4	98.2	98.1	97.7	97.7	97.4	97.4	97.2	96.8	96.3	96.2	96.1	96.0	95.7
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.0	98.6	98.4	98.1	97.9	97.7	97.3	97.3	97.1	97.1	96.8	96.6	96.0	95.9	95.9	95.7	95.4
Med.	100.0	99.0	98.6	98.5	98.1	97.8	97.6	97.3	97.2	97.1	97.1	96.8	96.5	96.0	95.9	95.9	95.7	95.5
σ	0.00	0.20	0.21	0.22	0.23	0.26	0.27	0.24	0.28	0.28	0.30	0.33	0.30	0.29	0.32	0.31	0.32	0.34
Min.	100.0	98.7	98.3	98.1	97.7	97.5	97.1	97.0	96.8	96.5	96.5	96.3	95.9	95.3	95.3	95.2	94.9	94.6
Max.	100.0	99.4	99.0	98.9	98.6	98.3	98.2	97.8	97.8	97.6	97.7	97.4	97.1	96.5	96.5	96.4	96.2	95.8

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.)	-0.0294	-0.0325	-0.0346	-0.0408	-0.0419	-0.0419	-0.0440	-0.0471	-0.0513	-0.0534	-0.0576							

Test duration used	5000 h to 10000 h	
B	0.996	
α	5.26E-06	
R^2	0.975	
Calculated L_{70} (10K)	67000	hours
Reported L_{70} (10K)	> 60000	hours
Calculated L_{80} (10K)	41700	hours
Reported L_{80} (10K)	41700	hours
Calculated L_{90} (10K)	19300	hours
Reported L_{90} (10K)	19300	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, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °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 9-2 (Continued)
Luminous Flux Maintenance

LED No.	Luminous Flux Maintenance % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	95.2	95.0	94.6															
2	95.2	95.1	94.7															
3	94.7	94.5	94.0															
4	94.9	94.9	94.4															
5	94.1	94.2	93.8															
6	94.8	94.5	94.0															
7	94.8	94.5	93.9															
8	94.7	94.5	94.0															
9	95.4	95.1	94.6															
10	94.2	93.9	93.4															
11	95.1	95.3	94.4															
12	95.2	95.2	94.8															
13	95.3	95.0	94.5															
14	94.5	94.2	93.7															
15	95.1	95.0	94.7															
16	95.3	95.3	94.9															
17	95.4	95.5	95.1															
18	95.2	95.2	94.8															
19	95.2	95.1	94.7															
20	95.1	94.9	94.4															
21	95.4	95.2	94.7															
22	94.5	94.3	93.9															
23	95.1	95.1	95.0															
24	94.2	93.9	93.3															
25	95.4	95.3	94.9															
n	25	25	25															
Avg.	95.0	94.8	94.4															
Med.	95.1	95.0	94.5															
σ	0.40	0.46	0.51															
Min.	94.1	93.9	93.3															
Max.	95.4	95.5	95.1															

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Data Set 9 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °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 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	99.8	99.9	100.0	100.0	100.1	100.1	100.1	100.1	100.1	100.1	100.2	100.1	100.1	100.1	100.2	100.2	100.2
2	100.0	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.8	99.9	99.8	99.9	99.9	99.9
3	100.0	99.9	100.0	100.1	100.0	100.1	100.1	100.1	100.1	100.2	100.1	100.1	100.2	100.2	100.3	100.3	100.3	100.2
4	100.0	99.7	99.8	99.9	99.8	99.9	99.9	99.9	99.9	100.0	100.0	99.9	99.9	99.9	100.0	100.0	100.0	99.9
5	100.0	99.7	99.7	99.7	99.7	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
6	100.0	99.5	99.5	99.6	99.6	99.7	99.7	99.7	99.7	99.8	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8
7	100.0	99.6	99.8	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0
8	100.0	99.7	99.7	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	99.9
9	100.0	99.5	99.6	99.7	99.7	99.7	99.7	99.7	99.7	99.8	99.8	99.8	99.7	99.8	99.8	99.8	99.9	99.8
10	100.0	99.6	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8	99.8	99.9	99.9	100.0	99.9	99.9	100.0
11	100.0	99.7	99.7	99.9	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0
12	100.0	99.8	99.9	100.0	100.0	100.1	100.1	100.0	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.2	100.2	100.2
13	100.0	99.7	99.7	99.9	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	99.9	100.0	99.9	99.9	100.0	100.0
14	100.0	99.8	99.8	99.9	100.0	100.0	100.0	100.0	100.0	100.1	100.1	100.1	100.0	100.0	100.1	100.1	100.1	100.1
15	100.0	99.8	99.9	100.0	100.0	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.2	100.1
16	100.0	99.6	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.9	99.8	99.8	100.0	99.9	99.9
17	100.0	99.7	99.7	99.8	99.9	99.9	99.9	99.9	99.9	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.1	100.0
18	100.0	99.5	99.6	99.8	99.7	99.7	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.9	99.8
19	100.0	99.8	99.8	100.0	100.0	100.0	100.0	100.0	100.0	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.2	100.1
20	100.0	99.6	99.7	99.8	99.8	99.9	99.9	99.9	99.9	100.0	100.0	100.0	99.9	99.9	100.0	100.0	100.0	100.0
21	100.0	99.7	99.7	99.9	99.9	99.9	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.1	100.0
22	100.0	99.7	99.7	99.8	99.8	99.8	99.9	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	99.9	100.0	99.9
23	100.0	99.6	99.7	99.8	99.8	99.9	99.9	99.8	99.9	99.9	99.9	100.0	99.9	99.9	100.0	100.0	100.0	100.0
24	100.0	99.7	99.7	99.8	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	99.9
25	100.0	99.6	99.7	99.8	99.8	99.9	99.9	99.9	99.9	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	100.0	99.7	99.7	99.8	99.8	99.9	99.9	99.9	99.9	99.9	99.9	100.0	99.9	100.0	100.0	100.0	100.0	100.0
Med.	100.0	99.7	99.7	99.8	99.8	99.9	99.9	99.9	99.9	100.0	100.0	100.0	99.9	99.9	100.0	100.0	100.0	100.0
σ	0.00	0.10	0.11	0.11	0.11	0.11	0.11	0.12	0.11	0.12	0.11	0.11	0.12	0.11	0.12	0.12	0.11	0.12
Min.	100.0	99.5	99.5	99.6	99.6	99.7	99.7	99.7	99.7	99.8	99.7	99.7	99.7	99.8	99.8	99.8	99.8	99.8
Max.	100.0	99.9	100.0	100.1	100.0	100.1	100.1	100.1	100.1	100.2	100.1	100.2	100.2	100.2	100.3	100.3	100.3	100.2

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Data Set 9 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °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 9-3 (Continued)
Forward Voltage

LED No.	Relative Forward Voltage % (Normalized to 100 % at 0 hours)																	
	9000 h	9500 h	10000 h															
1	100.2	100.2	100.2															
2	99.9	99.9	100.0															
3	100.2	100.3	100.2															
4	100.0	100.0	99.9															
5	99.9	99.9	99.9															
6	99.8	99.8	99.9															
7	100.0	100.0	100.0															
8	100.0	100.0	100.0															
9	99.8	99.9	99.9															
10	100.0	99.9	100.0															
11	100.1	100.0	100.1															
12	100.3	100.2	100.2															
13	99.9	100.1	100.0															
14	100.1	100.0	100.1															
15	100.2	100.1	100.2															
16	99.8	99.9	99.9															
17	100.0	100.1	100.1															
18	99.8	99.9	99.9															
19	100.1	100.1	100.1															
20	100.0	100.0	100.0															
21	100.1	100.2	100.1															
22	99.9	100.0	100.0															
23	100.0	100.0	100.0															
24	100.0	100.0	99.9															
25	100.0	100.0	100.0															
n	25	25	25															
Avg.	100.0	100.0	100.0															
Med.	100.0	100.0	100.0															
σ	0.13	0.11	0.10															
Min.	99.8	99.8	99.9															
Max.	100.3	100.3	100.2															

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Data Set 9 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °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 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	0.0011	0.0012	0.0014	0.0013	0.0012	0.0013	0.0013	0.0013	0.0012	0.0010	0.0011	0.0011	0.0016	0.0016	0.0016	0.0016	0.0017
2	0.0000	0.0010	0.0010	0.0012	0.0013	0.0012	0.0012	0.0013	0.0012	0.0011	0.0010	0.0011	0.0012	0.0015	0.0017	0.0015	0.0016	0.0019
3	0.0000	0.0010	0.0011	0.0012	0.0013	0.0011	0.0013	0.0012	0.0011	0.0011	0.0010	0.0010	0.0011	0.0016	0.0015	0.0015	0.0015	0.0018
4	0.0000	0.0009	0.0009	0.0011	0.0011	0.0010	0.0012	0.0012	0.0011	0.0010	0.0009	0.0010	0.0010	0.0015	0.0014	0.0015	0.0014	0.0016
5	0.0000	0.0009	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0008	0.0010	0.0011	0.0015	0.0016	0.0015	0.0015	0.0017
6	0.0000	0.0010	0.0011	0.0013	0.0013	0.0012	0.0013	0.0014	0.0013	0.0012	0.0010	0.0011	0.0012	0.0016	0.0016	0.0015	0.0016	0.0019
7	0.0000	0.0011	0.0011	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0012	0.0010	0.0012	0.0012	0.0016	0.0017	0.0016	0.0017	0.0020
8	0.0000	0.0011	0.0010	0.0012	0.0012	0.0011	0.0013	0.0012	0.0013	0.0011	0.0010	0.0011	0.0012	0.0016	0.0016	0.0016	0.0016	0.0019
9	0.0000	0.0010	0.0011	0.0011	0.0011	0.0011	0.0012	0.0013	0.0011	0.0011	0.0010	0.0011	0.0011	0.0015	0.0016	0.0015	0.0015	0.0018
10	0.0000	0.0009	0.0010	0.0011	0.0012	0.0011	0.0012	0.0013	0.0012	0.0012	0.0010	0.0011	0.0011	0.0015	0.0017	0.0017	0.0018	0.0020
11	0.0000	0.0011	0.0011	0.0013	0.0012	0.0012	0.0013	0.0013	0.0012	0.0011	0.0009	0.0011	0.0012	0.0016	0.0016	0.0015	0.0014	0.0018
12	0.0000	0.0011	0.0011	0.0013	0.0013	0.0012	0.0014	0.0013	0.0013	0.0011	0.0010	0.0011	0.0012	0.0016	0.0017	0.0015	0.0015	0.0018
13	0.0000	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0013	0.0011	0.0011	0.0009	0.0010	0.0011	0.0015	0.0016	0.0015	0.0015	0.0018
14	0.0000	0.0010	0.0011	0.0011	0.0012	0.0012	0.0013	0.0014	0.0013	0.0012	0.0010	0.0012	0.0012	0.0017	0.0017	0.0016	0.0017	0.0019
15	0.0000	0.0011	0.0011	0.0012	0.0012	0.0012	0.0013	0.0014	0.0013	0.0012	0.0010	0.0011	0.0012	0.0017	0.0017	0.0016	0.0016	0.0018
16	0.0000	0.0010	0.0010	0.0012	0.0011	0.0011	0.0012	0.0013	0.0011	0.0011	0.0010	0.0011	0.0012	0.0016	0.0017	0.0016	0.0015	0.0018
17	0.0000	0.0010	0.0011	0.0013	0.0013	0.0013	0.0014	0.0014	0.0013	0.0013	0.0010	0.0012	0.0011	0.0017	0.0017	0.0016	0.0015	0.0018
18	0.0000	0.0010	0.0011	0.0013	0.0013	0.0011	0.0012	0.0013	0.0013	0.0012	0.0010	0.0012	0.0013	0.0016	0.0017	0.0016	0.0016	0.0018
19	0.0000	0.0011	0.0012	0.0013	0.0013	0.0013	0.0013	0.0014	0.0012	0.0012	0.0010	0.0011	0.0012	0.0015	0.0016	0.0016	0.0016	0.0018
20	0.0000	0.0011	0.0010	0.0012	0.0012	0.0012	0.0012	0.0013	0.0012	0.0011	0.0009	0.0010	0.0011	0.0015	0.0016	0.0015	0.0015	0.0019
21	0.0000	0.0011	0.0011	0.0012	0.0012	0.0012	0.0013	0.0013	0.0012	0.0011	0.0009	0.0011	0.0011	0.0015	0.0015	0.0015	0.0014	0.0018
22	0.0000	0.0009	0.0010	0.0011	0.0012	0.0011	0.0012	0.0012	0.0012	0.0011	0.0010	0.0011	0.0012	0.0016	0.0016	0.0015	0.0016	0.0019
23	0.0000	0.0011	0.0011	0.0013	0.0012	0.0012	0.0012	0.0013	0.0012	0.0011	0.0011	0.0011	0.0012	0.0017	0.0016	0.0016	0.0015	0.0017
24	0.0000	0.0010	0.0011	0.0013	0.0013	0.0012	0.0013	0.0013	0.0013	0.0012	0.0011	0.0012	0.0013	0.0018	0.0017	0.0018	0.0018	0.0021
25	0.0000	0.0010	0.0011	0.0012	0.0011	0.0011	0.0012	0.0012	0.0012	0.0011	0.0009	0.0010	0.0011	0.0015	0.0015	0.0014	0.0014	0.0017
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.0000	0.0010	0.0011	0.0012	0.0012	0.0012	0.0013	0.0013	0.0012	0.0011	0.0010	0.0011	0.0011	0.0016	0.0016	0.0015	0.0016	0.0018
Med.	0.0000	0.0010	0.0011	0.0012	0.0012	0.0012	0.0013	0.0013	0.0012	0.0011	0.0010	0.0011	0.0012	0.0016	0.0016	0.0015	0.0015	0.0018
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	0.0009	0.0011	0.0011	0.0010	0.0011	0.0011	0.0011	0.0010	0.0008	0.0010	0.0010	0.0015	0.0014	0.0014	0.0014	0.0016
Max.	0.0000	0.0011	0.0012	0.0014	0.0013	0.0013	0.0014	0.0014	0.0013	0.0013	0.0011	0.0012	0.0013	0.0018	0.0017	0.0018	0.0018	0.0021

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Data Set 9 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °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 9-4 (Continued)
Chromaticity Shift

LED No.	Chromaticity Shift Δu'v'																	
	9000 h	9500 h	10000 h															
1	0.0019	0.0020	0.0021															
2	0.0020	0.0020	0.0021															
3	0.0019	0.0021	0.0023															
4	0.0017	0.0019	0.0020															
5	0.0017	0.0019	0.0020															
6	0.0019	0.0022	0.0023															
7	0.0021	0.0022	0.0024															
8	0.0021	0.0023	0.0024															
9	0.0018	0.0019	0.0021															
10	0.0022	0.0024	0.0026															
11	0.0018	0.0020	0.0021															
12	0.0019	0.0019	0.0020															
13	0.0018	0.0020	0.0022															
14	0.0021	0.0023	0.0024															
15	0.0019	0.0020	0.0020															
16	0.0019	0.0020	0.0021															
17	0.0019	0.0020	0.0020															
18	0.0019	0.0019	0.0021															
19	0.0019	0.0019	0.0021															
20	0.0020	0.0022	0.0023															
21	0.0019	0.0019	0.0022															
22	0.0020	0.0021	0.0022															
23	0.0017	0.0018	0.0019															
24	0.0023	0.0025	0.0028															
25	0.0018	0.0018	0.0020															
n	25	25	25															
Avg.	0.0019	0.0020	0.0022															
Med.	0.0019	0.0020	0.0021															
σ	0.0002	0.0002	0.0002															
Min.	0.0017	0.0018	0.0019															
Max.	0.0023	0.0025	0.0028															

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Data Set 9 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °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 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	0.2619	0.2609	0.2607	0.2605	0.2607	0.2607	0.2607	0.2607	0.2607	0.2608	0.2610	0.2609	0.2609	0.2605	0.2605	0.2606	0.2606	0.2605
2	0.2626	0.2616	0.2616	0.2614	0.2614	0.2615	0.2614	0.2614	0.2615	0.2616	0.2617	0.2616	0.2616	0.2613	0.2612	0.2613	0.2612	0.2610
3	0.2587	0.2577	0.2576	0.2576	0.2575	0.2577	0.2575	0.2576	0.2577	0.2577	0.2579	0.2579	0.2578	0.2573	0.2575	0.2574	0.2574	0.2571
4	0.2631	0.2623	0.2622	0.2621	0.2621	0.2622	0.2621	0.2621	0.2622	0.2623	0.2624	0.2623	0.2623	0.2619	0.2620	0.2620	0.2620	0.2618
5	0.2626	0.2617	0.2617	0.2615	0.2616	0.2615	0.2616	0.2616	0.2616	0.2616	0.2619	0.2617	0.2617	0.2613	0.2613	0.2614	0.2614	0.2612
6	0.2612	0.2602	0.2601	0.2600	0.2599	0.2601	0.2600	0.2599	0.2600	0.2601	0.2603	0.2602	0.2601	0.2598	0.2598	0.2599	0.2599	0.2596
7	0.2618	0.2607	0.2607	0.2606	0.2606	0.2606	0.2606	0.2606	0.2606	0.2607	0.2609	0.2608	0.2608	0.2604	0.2603	0.2604	0.2604	0.2601
8	0.2611	0.2600	0.2601	0.2599	0.2599	0.2601	0.2599	0.2599	0.2599	0.2600	0.2602	0.2601	0.2600	0.2597	0.2597	0.2597	0.2598	0.2594
9	0.2642	0.2632	0.2631	0.2631	0.2632	0.2632	0.2630	0.2630	0.2631	0.2632	0.2632	0.2632	0.2632	0.2628	0.2628	0.2629	0.2629	0.2627
10	0.2614	0.2605	0.2604	0.2603	0.2602	0.2604	0.2603	0.2602	0.2603	0.2604	0.2606	0.2604	0.2604	0.2601	0.2600	0.2600	0.2600	0.2598
11	0.2653	0.2642	0.2643	0.2641	0.2642	0.2642	0.2641	0.2641	0.2642	0.2644	0.2645	0.2644	0.2643	0.2639	0.2639	0.2641	0.2642	0.2638
12	0.2629	0.2618	0.2618	0.2616	0.2616	0.2618	0.2616	0.2617	0.2616	0.2618	0.2619	0.2619	0.2618	0.2615	0.2613	0.2616	0.2616	0.2613
13	0.2626	0.2616	0.2616	0.2615	0.2616	0.2616	0.2616	0.2615	0.2616	0.2617	0.2619	0.2618	0.2617	0.2614	0.2613	0.2614	0.2615	0.2612
14	0.2627	0.2617	0.2616	0.2616	0.2616	0.2616	0.2615	0.2615	0.2616	0.2617	0.2619	0.2618	0.2617	0.2613	0.2613	0.2614	0.2614	0.2612
15	0.2627	0.2617	0.2616	0.2616	0.2616	0.2616	0.2615	0.2615	0.2616	0.2617	0.2619	0.2617	0.2617	0.2613	0.2613	0.2613	0.2614	0.2612
16	0.2633	0.2624	0.2624	0.2621	0.2623	0.2623	0.2622	0.2622	0.2623	0.2623	0.2625	0.2624	0.2624	0.2620	0.2620	0.2620	0.2621	0.2618
17	0.2657	0.2647	0.2646	0.2645	0.2645	0.2644	0.2645	0.2644	0.2646	0.2645	0.2647	0.2646	0.2647	0.2642	0.2643	0.2644	0.2645	0.2642
18	0.2625	0.2614	0.2614	0.2612	0.2612	0.2614	0.2613	0.2612	0.2613	0.2614	0.2616	0.2614	0.2614	0.2610	0.2611	0.2610	0.2611	0.2609
19	0.2637	0.2626	0.2625	0.2625	0.2625	0.2624	0.2625	0.2624	0.2626	0.2626	0.2628	0.2627	0.2627	0.2624	0.2624	0.2623	0.2624	0.2622
20	0.2585	0.2574	0.2574	0.2573	0.2573	0.2573	0.2573	0.2572	0.2573	0.2574	0.2576	0.2575	0.2575	0.2571	0.2570	0.2571	0.2571	0.2568
21	0.2597	0.2586	0.2586	0.2585	0.2586	0.2586	0.2585	0.2585	0.2585	0.2587	0.2588	0.2587	0.2587	0.2583	0.2584	0.2584	0.2584	0.2582
22	0.2623	0.2614	0.2613	0.2612	0.2612	0.2613	0.2612	0.2612	0.2612	0.2613	0.2614	0.2613	0.2612	0.2609	0.2609	0.2610	0.2609	0.2607
23	0.2625	0.2614	0.2613	0.2612	0.2613	0.2613	0.2614	0.2612	0.2613	0.2614	0.2615	0.2615	0.2614	0.2610	0.2611	0.2611	0.2612	0.2610
24	0.2618	0.2608	0.2607	0.2606	0.2606	0.2607	0.2606	0.2606	0.2606	0.2607	0.2608	0.2608	0.2607	0.2602	0.2603	0.2603	0.2603	0.2600
25	0.2596	0.2586	0.2585	0.2584	0.2585	0.2585	0.2585	0.2584	0.2584	0.2586	0.2587	0.2586	0.2587	0.2582	0.2582	0.2583	0.2584	0.2581
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.2622	0.2612	0.2611	0.2610	0.2610	0.2611	0.2610	0.2610	0.2611	0.2611	0.2613	0.2612	0.2612	0.2608	0.2608	0.2609	0.2609	0.2606
Med.	0.2625	0.2614	0.2614	0.2612	0.2613	0.2614	0.2614	0.2612	0.2613	0.2614	0.2616	0.2615	0.2614	0.2610	0.2611	0.2611	0.2612	0.2610
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.	0.2585	0.2574	0.2574	0.2573	0.2573	0.2573	0.2573	0.2572	0.2573	0.2574	0.2576	0.2575	0.2575	0.2571	0.2570	0.2571	0.2571	0.2568
Max.	0.2657	0.2647	0.2646	0.2645	0.2645	0.2644	0.2645	0.2644	0.2646	0.2645	0.2647	0.2646	0.2647	0.2642	0.2643	0.2644	0.2645	0.2642

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Data Set 9 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °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 9-5 (Continued)
Chromaticity

LED No.	Chromaticity u'																	
	9000 h	9500 h	10000 h															
1	0.2604	0.2603	0.2602															
2	0.2609	0.2609	0.2609															
3	0.2571	0.2570	0.2568															
4	0.2618	0.2617	0.2616															
5	0.2612	0.2611	0.2610															
6	0.2596	0.2594	0.2593															
7	0.2600	0.2600	0.2599															
8	0.2593	0.2591	0.2591															
9	0.2627	0.2626	0.2624															
10	0.2596	0.2595	0.2593															
11	0.2638	0.2637	0.2636															
12	0.2613	0.2613	0.2613															
13	0.2612	0.2610	0.2609															
14	0.2611	0.2609	0.2609															
15	0.2612	0.2611	0.2611															
16	0.2618	0.2617	0.2617															
17	0.2641	0.2641	0.2640															
18	0.2609	0.2608	0.2607															
19	0.2621	0.2622	0.2620															
20	0.2566	0.2564	0.2564															
21	0.2581	0.2581	0.2578															
22	0.2606	0.2605	0.2604															
23	0.2610	0.2610	0.2609															
24	0.2599	0.2597	0.2595															
25	0.2581	0.2580	0.2578															
n	25	25	25															
Avg.	0.2606	0.2605	0.2604															
Med.	0.2609	0.2609	0.2609															
σ	0.0018	0.0018	0.0019															
Min.	0.2566	0.2564	0.2564															
Max.	0.2641	0.2641	0.2640															

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Data Set 9 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °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 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	0.5237	0.5235	0.5235	0.5233	0.5232	0.5233	0.5232	0.5231	0.5231	0.5232	0.5232	0.5232	0.5232	0.5229	0.5229	0.5228	0.5228	0.5227
2	0.5237	0.5237	0.5236	0.5234	0.5233	0.5234	0.5233	0.5232	0.5232	0.5232	0.5233	0.5232	0.5231	0.5229	0.5229	0.5229	0.5228	0.5227
3	0.5275	0.5274	0.5273	0.5272	0.5271	0.5272	0.5270	0.5271	0.5270	0.5271	0.5271	0.5270	0.5270	0.5268	0.5267	0.5268	0.5267	0.5267
4	0.5258	0.5257	0.5256	0.5255	0.5254	0.5254	0.5253	0.5253	0.5252	0.5253	0.5254	0.5252	0.5252	0.5250	0.5250	0.5249	0.5249	0.5248
5	0.5262	0.5261	0.5261	0.5259	0.5258	0.5258	0.5258	0.5257	0.5257	0.5257	0.5258	0.5257	0.5257	0.5253	0.5253	0.5253	0.5253	0.5252
6	0.5261	0.5261	0.5260	0.5258	0.5258	0.5258	0.5258	0.5257	0.5257	0.5257	0.5257	0.5257	0.5256	0.5254	0.5254	0.5254	0.5253	0.5252
7	0.5244	0.5242	0.5242	0.5240	0.5239	0.5239	0.5239	0.5238	0.5238	0.5239	0.5240	0.5239	0.5238	0.5235	0.5235	0.5235	0.5235	0.5233
8	0.5249	0.5247	0.5247	0.5245	0.5245	0.5245	0.5244	0.5243	0.5244	0.5244	0.5245	0.5244	0.5244	0.5241	0.5240	0.5241	0.5240	0.5238
9	0.5267	0.5267	0.5266	0.5265	0.5263	0.5264	0.5263	0.5262	0.5262	0.5262	0.5263	0.5262	0.5262	0.5260	0.5259	0.5259	0.5258	0.5257
10	0.5256	0.5255	0.5254	0.5253	0.5252	0.5252	0.5251	0.5250	0.5251	0.5250	0.5251	0.5250	0.5250	0.5247	0.5247	0.5247	0.5246	0.5245
11	0.5261	0.5260	0.5260	0.5258	0.5257	0.5258	0.5257	0.5256	0.5256	0.5256	0.5257	0.5256	0.5256	0.5253	0.5253	0.5253	0.5252	0.5252
12	0.5237	0.5236	0.5236	0.5233	0.5233	0.5233	0.5232	0.5232	0.5232	0.5233	0.5233	0.5232	0.5232	0.5229	0.5229	0.5230	0.5229	0.5228
13	0.5268	0.5266	0.5266	0.5264	0.5264	0.5263	0.5263	0.5262	0.5263	0.5262	0.5263	0.5262	0.5262	0.5260	0.5259	0.5259	0.5258	0.5257
14	0.5245	0.5243	0.5242	0.5241	0.5240	0.5240	0.5240	0.5239	0.5239	0.5239	0.5240	0.5239	0.5238	0.5236	0.5236	0.5235	0.5236	0.5233
15	0.5247	0.5246	0.5246	0.5244	0.5243	0.5244	0.5242	0.5241	0.5242	0.5242	0.5242	0.5242	0.5241	0.5238	0.5238	0.5239	0.5238	0.5237
16	0.5252	0.5251	0.5251	0.5249	0.5248	0.5249	0.5248	0.5247	0.5247	0.5247	0.5248	0.5247	0.5246	0.5243	0.5243	0.5244	0.5243	0.5242
17	0.5254	0.5252	0.5252	0.5250	0.5249	0.5249	0.5248	0.5248	0.5248	0.5248	0.5250	0.5248	0.5248	0.5245	0.5245	0.5246	0.5245	0.5244
18	0.5253	0.5253	0.5252	0.5250	0.5249	0.5249	0.5248	0.5248	0.5248	0.5248	0.5248	0.5248	0.5247	0.5245	0.5244	0.5245	0.5244	0.5243
19	0.5274	0.5273	0.5272	0.5271	0.5269	0.5270	0.5269	0.5269	0.5269	0.5269	0.5270	0.5269	0.5268	0.5266	0.5265	0.5266	0.5265	0.5264
20	0.5280	0.5279	0.5280	0.5278	0.5277	0.5278	0.5277	0.5276	0.5276	0.5277	0.5278	0.5277	0.5276	0.5274	0.5274	0.5274	0.5274	0.5272
21	0.5271	0.5270	0.5269	0.5267	0.5267	0.5267	0.5266	0.5266	0.5267	0.5266	0.5267	0.5266	0.5266	0.5264	0.5263	0.5264	0.5263	0.5262
22	0.5258	0.5257	0.5257	0.5255	0.5254	0.5255	0.5254	0.5253	0.5253	0.5253	0.5254	0.5253	0.5253	0.5250	0.5249	0.5249	0.5249	0.5248
23	0.5281	0.5281	0.5281	0.5278	0.5277	0.5278	0.5278	0.5277	0.5277	0.5277	0.5277	0.5277	0.5276	0.5274	0.5274	0.5274	0.5274	0.5272
24	0.5248	0.5248	0.5247	0.5245	0.5244	0.5245	0.5244	0.5243	0.5243	0.5243	0.5244	0.5243	0.5243	0.5240	0.5239	0.5239	0.5239	0.5237
25	0.5275	0.5274	0.5274	0.5273	0.5271	0.5272	0.5272	0.5271	0.5271	0.5271	0.5271	0.5271	0.5270	0.5268	0.5268	0.5268	0.5268	0.5266
n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Avg.	0.5258	0.5257	0.5257	0.5255	0.5254	0.5254	0.5253	0.5253	0.5253	0.5253	0.5254	0.5253	0.5253	0.5250	0.5250	0.5250	0.5249	0.5248
Med.	0.5258	0.5257	0.5256	0.5255	0.5254	0.5254	0.5253	0.5253	0.5252	0.5253	0.5254	0.5252	0.5252	0.5250	0.5249	0.5249	0.5249	0.5248
σ	0.0013	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
Min.	0.5237	0.5235	0.5235	0.5233	0.5232	0.5233	0.5232	0.5231	0.5231	0.5232	0.5232	0.5232	0.5231	0.5229	0.5229	0.5228	0.5228	0.5227
Max.	0.5281	0.5281	0.5281	0.5278	0.5277	0.5278	0.5278	0.5277	0.5277	0.5277	0.5278	0.5277	0.5276	0.5274	0.5274	0.5274	0.5274	0.5272

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Data Set 9 : 105 °C, 180 mA

Actual Case Temperature [T_S]	106.0 °C
Actual Ambient Temperature [T_A]	102.4 °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 9-6 (Continued)
Chromaticity

LED No.	Chromaticity v'																	
	9000 h	9500 h	10000 h															
1	0.5226	0.5226	0.5224															
2	0.5227	0.5226	0.5225															
3	0.5266	0.5265	0.5263															
4	0.5248	0.5247	0.5246															
5	0.5252	0.5250	0.5250															
6	0.5251	0.5250	0.5248															
7	0.5232	0.5231	0.5229															
8	0.5238	0.5236	0.5236															
9	0.5257	0.5255	0.5254															
10	0.5244	0.5242	0.5241															
11	0.5251	0.5250	0.5249															
12	0.5227	0.5227	0.5226															
13	0.5257	0.5255	0.5254															
14	0.5232	0.5231	0.5230															
15	0.5237	0.5237	0.5235															
16	0.5242	0.5240	0.5240															
17	0.5244	0.5243	0.5242															
18	0.5243	0.5243	0.5241															
19	0.5264	0.5263	0.5262															
20	0.5272	0.5271	0.5270															
21	0.5261	0.5260	0.5259															
22	0.5247	0.5247	0.5246															
23	0.5272	0.5271	0.5271															
24	0.5235	0.5234	0.5233															
25	0.5266	0.5266	0.5265															
n	25	25	25															
Avg.	0.5248	0.5247	0.5246															
Med.	0.5247	0.5247	0.5246															
σ	0.0014	0.0014	0.0014															
Min.	0.5226	0.5226	0.5224															
Max.	0.5272	0.5271	0.5271															

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