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in APPENDIX. The ambient temperature T_A was measured by several thermocouples at a distance of 1.5 mm above the reliability test board. The relative humidity within chamber was less than 65%.

For photometry measurement, temperature was set to 25℃ ± 2℃, RH <65%.

1.7 Photometry Measurement Uncertainty

The uncertainty of the light output measurements is U=1.50% (K=2), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is U=14K (K=2), at the 95% confidence level. This calibration results traceable to the NATIONAL INSTITUTE OF METROLOGY (NIM).

1.8 Sample Set

Data Set 1: 55℃, 20mA	
Part Number:	3528HW
Number of Units:	25
Actual Case Temperature(T_S):	T_S =54.9℃
Actual Ambient Temperature(T_A):	T_A =54.8℃

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2 - SUMMARY OF TEST RESULT

Data Set:	**Data Set 1, 55℃, 20mA**
Number of Units:	25
Failures Observed:	0
Average. Lumen Maintenance at 6000 hours:	101.32%
Average Chromaticity Shift at 6000 hours (u v):	0.0024
Reported TM-21 L_{70} Lifetime	>36000 hours

Data Set:	**Data Set 2, 70℃, 20mA**
Number of Units:	25
Failures Observed:	0
Average. Lumen Maintenance at 6000 hours:	100.01%
Average Chromaticity Shift at 6000 hours :	0.0022
Reported TM-21 L_{70} Lifetime	>36000 hours

Data Set:	**Data Set 3, 85℃, 20mA**
Number of Units:	25
Failures Observed:	0
Average. Lumen Maintenance at 6000 hours:	99.13%
Average Chromaticity Shift at 6000 hours :	0.0015
Reported TM-21 L_{70} Lifetime	>36000 hours

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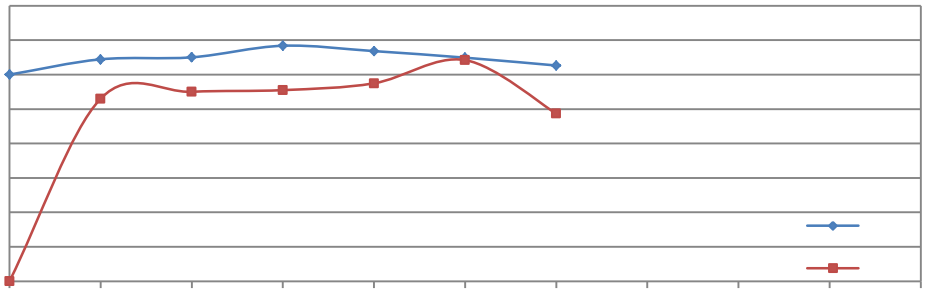
3 - Test Data

3.1 Data Set 1, 55°C, 20mA (Lumen Maintenance)

No.	VF(V)	Φ(lm)	Lumen Maintenance (%)					
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	3.024	7.802	102.36	100.14	101.36	100.85	100.67	100.19
2	3.031	7.516	103.58	102.01	105.84	105.20	104.23	102.82
3	3.018	7.473	103.04	103.25	106.25	105.77	104.31	103.28
4	3.016	8.026	102.19	99.94	100.85	100.45	99.44	99.05
5	3.026	7.642	101.99	101.53	104.42	104.08	103.35	102.07
6	3.026	7.590	100.83	100.76	104.15	103.65	103.28	102.09
7	3.022	7.542	102.17	102.19	105.10	104.64	104.19	102.63
8	3.023	7.513	102.40	102.01	104.75	103.94	102.65	101.38
9	3.017	7.798	99.08	99.15	101.38	100.73	100.00	99.51
10	3.024	7.943	101.91	99.71	100.65	99.89	99.36	99.13
11	3.026	7.530	104.04	105.27	106.39	104.99	103.68	102.22
12	3.025	7.439	103.90	105.38	106.22	105.61	104.58	102.85
13	3.019	7.712	99.70	100.23	101.96	101.45	100.34	98.98
14	3.030	7.418	103.95	104.85	106.69	105.51	103.95	102.10
15	3.024	7.861	101.90	100.03	100.59	100.08	99.03	98.65
16	3.028	7.480	103.16	104.53	106.07	105.61	104.32	103.10
17	3.021	7.560	102.31	103.62	105.50	105.09	103.60	101.92
18	3.022	7.459	103.31	104.73	105.55	105.05	104.14	102.75
19	3.021	7.568	102.29	103.66	104.82	102.63	102.27	100.81
20	3.018	7.873	99.12	100.06	101.71	101.23	99.95	99.56
21	3.018	7.523	102.59	104.60	105.85	102.50	101.95	100.64
22	3.022	7.625	101.90	103.58	104.50	103.93	102.65	100.80
23	3.026	7.560	102.34	103.51	104.71	104.10	103.56	102.04
24	3.020	7.662	102.00	102.34	103.15	102.41	101.57	100.80
25	3.024	7.296	103.48	105.56	106.35	105.83	104.45	103.74
Ave.	3.023	7.616	102.22	102.51	104.19	103.41		101.32
Med.	3.023	7.560	102.31	102.34	104.75	103.94	103.28	101.92
st dev	0.004	0.179	0.013	0.021	0.021			

3.2 Data Set 1, 55°C, 20mA (Chromaticity Shift)

No.	u'	v'	Chromaticity Shift (Δu'v')					
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	0.2005	0.4583	0.0015	0.0017	0.0014	0.0014	0.0016	0.0017
2	0.2017	0.4591	0.0032	0.0033	0.0033	0.0034	0.0037	0.0031
3	0.2014	0.4619	0.0028	0.0026	0.0029	0.0031	0.0032	0.0030
4	0.1989	0.4671	0.0014	0.0015	0.0014	0.0016	0.0019	0.0010
5	0.2003	0.4625	0.0031	0.0028	0.0030	0.0031	0.0036	0.0025
6	0.2002	0.4603	0.0014	0.0025	0.0031	0.0031	0.0038	0.0028
7	0.2001	0.463	0.0034	0.0031	0.0033	0.0035	0.0038	0.0031
8	0.2001	0.4617	0.0034	0.0032	0.0034	0.0035	0.0045	0.0032
9	0.1999	0.4631	0.0013	0.0013	0.0014	0.0014	0.0018	0.0016
10	0.2012	0.4666	0.0016	0.0017	0.0015	0.0016	0.0021	0.0017
11	0.2004	0.463	0.0033	0.0031	0.0032	0.0036	0.0037	0.0028
12	0.2021	0.461	0.0035	0.0036	0.0036	0.0036	0.0040	0.0029
13	0.2013	0.4641	0.0015	0.0016	0.0016	0.0016	0.0019	0.0018
14	0.2028	0.4595	0.0039	0.0038	0.0040	0.0039	0.0043	0.0057
15	0.2007	0.4597	0.0015	0.0015	0.0015	0.0015	0.0017	0.0017
16	0.2016	0.4624	0.0030	0.0030	0.0031	0.0032	0.0036	0.0022
17	0.2019	0.4649	0.0034	0.0034	0.0035	0.0036	0.0038	0.0026
18	0.2039	0.461	0.0037	0.0038	0.0039	0.0040	0.0045	0.0033
19	0.2007	0.459	0.0032	0.0032	0.0034	0.0037	0.0038	0.0027
20	0.2011	0.4636	0.0014	0.0016	0.0015	0.0015	0.0017	0.0011
21	0.1995	0.4632	0.0035	0.0036	0.0034	0.0036	0.0038	0.0021
22	0.2019	0.4645	0.0029	0.0031	0.0031	0.0034	0.0037	0.0019
23	0.2021	0.4628	0.0032	0.0037	0.0031	0.0031	0.0037	0.0022
24	0.2025	0.4619	0.0017	0.0025	0.0024	0.0023	0.0025	0.0015
25	0.2012	0.4564	0.0033	0.0034	0.0032	0.0033	0.0036	0.0025
Ave.	0.2011	0.4620	0.0026	0.0028	0.0028	0.0029	0.0032	0.0024
Med.	0.2012	0.4624	0.0031	0.0031	0.0031	0.0032	0.0037	0.0025
st dev	0.0011	0.0025	0.0009	0.0008	0.0009	0.0009	0.0010	0.0009
Min.	0.1989	0.4564	0.0013	0.0013	0.0014	0.0014	0.0016	0.0010
Max.	0.2039	0.4671	0.0039	0.0038	0.0040	0.0040	0.0045	0.0057



3.3 Data Set 2, 70°C, 20mA (Lumen Maintenance)

No.	VF(V)	Φ(lm)	Lumen Maintenance (%)					
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	3.032	7.443	103.39	100.99	102.83	101.32	100.55	99.45
2	3.032	7.834	101.86	98.02	99.62	99.40	98.39	97.79
3	3.024	8.021	101.06	98.94	99.39	99.34		

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3.4 Data Set 2, 70°C, 20mA (Chromaticity Shift)

No.	u'	v'	Chromaticity Shift (Δu'v')					
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	0.2017	0.456	0.0035	0.0036	0.0035	0.0039	0.0042	0.0035
2	0.2021	0.4604	0.0011	0.0009	0.0011	0.0011	0.0011	0.0010
3	0.2004							

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3.6 Data Set 3, 85°C, 20mA (Chromaticity Shift)

No.	u'	v'	Chromaticity Shift (Δu'v')					
	0hr(Initial)		1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	0.1997	0.4665	0.0018	0.0009	0.0021	0.0021	0.0021	0.0022
2	0.1982	0.4639	0.0004	0.0004	0.0002	0.0001	0.0004	0.0001
[redacted]						0.0006	0.0007	0.0005
						0009	0.0005	0.0007
						0003	0.0003	0.0009
						0027	0.0031	0.0008
						0009	0.0005	0.0008
						0010	0.0012	0.0007
						0018	0.0007	0.0008
						0034	0.0033	0.0022
						0013	0.0013	0.0015
						0025	0.0026	0.0019
						0032	0.0036	0.0020
						0031	0.0034	0.0024
						0017	0.0017	0.0027
						0033	0.0036	0.0017
						0012	0.0013	0.0011
						0039	0.0041	0.0020
						0036	0.0039	0.0021
						0045	0.0047	0.0026
						0038	0.0036	0.0013
						0020	0.0021	0.0009
						0033	0.0036	0.0006
						0032	0.0035	0.0018
						0033	0.0034	0.0021

Appendix B REVISION HISTORY

Report Number	Report Date	Contents
RSZ110803501-10	2012/04/09	Original report.
RSZ110803501-10-M1	2012/04/28	Correct the typos of some titles.
RSZ110803501-10-M2	2013/02/01	Update the Logo of lab, note information on page 1. Remove the inappropriate description in section 1.2 and 1.3. Correct typos in section 1.6. Update part of border, font and shading. Add unit for forward voltage and life time.
RSZ110803501-10-M3	2013/05/27	A foot note is added in the first page.
RSZ110803501-10-M4	2019/01/12	Update the Logo and address of lab on the Page1&3 Update Company name and address on page 1. Add DUT Characteristics on page 3 according to the latest ENERGY STAR Requirements.

******END OF REPORT*****

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