中国认可
国际互认
检测
TESTING
CNAS L6478

TEST REPORT

Reference No.	:	WTX22F09185175X1N
Applicant	:	Guangzhou Tianxin photoelectric Co., Ltd.
Address	:	#15-1., Jingu Road South, Huadong Town, Huadu District, Guangzhou, China
Manufacturer	:	The same as above
Address	:	The same as above
Product Name	:	LED Chip
Model No.	:	TX-5060RGBW
Test specification	:	ANSI/IES LM-80-15 Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules
Date of Receipt sample	:	2021-05-18
Date of Test	:	2021-05-18 to 2022-09-20
Date of Issue	:	2024-08-29
Test Report Form No.	:	WPL-LM8015A-01A
Test Result	:	**See following pages**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:
Waltek Testing Group (Foshan) Co., Ltd.
Address: No.13-19, 2/F., 2nd Building, Sunlink Machinery City, Xingye 4 Road, Guanglong Industrial Park, Chihua Neighborhood Committee, Chencun Town, Shunde District, Foshan, Guangdong, China
Tel:+86-757-23811398 Fax:+86-757-23811381 E-mail:info@waltek.com.cn

Tested by: Finn Yu

Approved by: Akin Xu

1. Description of Test Samples

Sample Size:

Total 33 samples were selected in this test. The samples were numbered from A1 to A11, B12 to B22 and C23 to C33.

Part Type:	LED Package
Part Number:	TX-5060RGBW
Drive Level:	DC 1500mA
Nominal CCT:	RGBW
Power:	18.6W
Average Current Density per LED die:	1500mA/mm^2
Average Power Density per LED die:	0.6823W/mm^2
CRI:	/
Die Spacing:	0.1mm

Family products covered by this report:

According to ENERGY STAR® Requirements for the Use of LM-80 Data, the following products can be covered by this report base on the information and declaration provided by manufacturer. The information of these models shows that the covered products meet all section 4 requirements of ENERGY STAR® Requirements for the Use of LM-80 Data (September 28, 2017)

This report covers the following models:

Model Name	Current (mA)	Power (W)	CCT (K)	Number of dies	Driver Current per die (mA)	Current Density per die (mA/mm^2)	Power Density per PCB (W/mm^2)	Die Spacing (mm)
TX-5060RGBW	1500	18.6	RGBW	4	1500	1500	0.6823	0.1
TX-5060RGBW20FC120-NUVCNG-	1500	18.6	RGBW	4	1500	1500	0.6823	0.1
TX-5060RGBA20FC120-NUVCNG-	1500	18.6	RGBW	4	1500	1500	0.6823	0.1
TX-5060RGBL20FC120-NUVCNG-	1500	18.6	RGBW	4	1500	1500	0.6823	0.1
TX-5060RGBS20FC120-NUVCNG-	1500	18.6	RGBW	4	1500	1500	0.6823	0.1
TX-5060RGBW15FC120-NUVCNG-02	1000	12.4	RGBW	4	1000	1051	0.4549	0.1
TX-5060RGBS15FC120-NUVCNG-	1000	12.4	RGBW	4	1000	1051	0.4549	0.1
TX-5060RGBY15FC120-NUVCNG-	1000	12.4	RGBW	4	1000	1051	0.4549	0.1
TX-5060RGBW12VCD1-NP4BG-	1000	12.4	RGBW	4	1000	1051	0.4549	0.1

Remark: This report is based on original test report WTX22F09185175N, for updating information, and replaced report WTX22F09185175N.

2. Standards Used

● IESNA LM-80-15: IESNA Approved Method for Measuring Lumen Maintenance of LED Light Sources
● CIE 127:2007: measurement of LEDs
● ENERGY STAR® Program Guidance Regarding LED Package, LED Array and LED Module Lumen Maintenance Performance Data Supporting Qualification of Lighting Products(This method was not accredited by CNAS)
● IES TM-21-19: PROJECTING LONG-TERM LUMEN, PHOTON, AND RADIANT FLUX MAINTENANCE OF LED LIGHT SOURCES

3. Test Facility

The testing facility used by Waltek Testing Group (Foshan) Co., Ltd. is located at No. 13-19, 2/F, 2nd Building, Sunlink International Machinery City, Chencun Town, Shunde District, Foshan, Guangdong, China

4. Operating Cycle

Samples are driven with a constant direct current (DC) during maintenance test, photometric and electrical measurement. The current value was regulated to within ±3% of the specified value of the manufacturer during maintenance test, and was within ±0.5% during photometric and electrical measurement test.

5. Ambient Conditions for Maintenance Test

For lumen maintenance test, samples within one data set, were installed on cooling boards in thermal chambers with minimal ambient airflow. The case temperature and ambient temperature was monitored by thermocouples which one was soldered to the coldest DUTs' case (TMP_{LED}) location, while the other is mounted at a distance of 5 mm above the TMP location.

During life testing, TMP_{LED} of the coldest LEDs were maintained at a temperature that was greater than or equal to 2°C below the corresponding nominal case temperature. Surrounding air was maintained at a temperature that was greater than or equal to 5°C below the corresponding nominal case temperature. Thermocouples were shielded from direct DUT optical radiation and comply with ASTM E230 Table 1 "Special Limits".

Samples were connected to DC power supply in series circuits with a constant current. The forward current was regulated to within ±3% of the specified value of the manufacturer.

The relative humidity within chamber was kept less than 65% during test.

For photometry measurement, the ambient temperature during test was set to 25°C ± 2°C, RH <65%.

6. Photometric Measurement Method

Integrating sphere and spectroradiometer is used to measure luminous flux and chromaticity coordinate u'v'. 2π measurement was used and sample was drived by DC power supply. The forward current was regulated to within ±0.5% of the nominal value. The test system was calibrated by halogen reference lamp. The ambient temperature during test was set to 25°C ± 2°C, RH <65%. The temperature measurement point was located in the sphere and the temperature was detected by a temperature probe.

7. Measurement Uncertainty

The uncertainty of power meter DC current U=0.08% of rdg (K=2), multimeter DC current U=0.20% of rdg (K=2), at the 95% confidence level.
The uncertainty of the light output measurements is U=1.8% (K=2), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is U=20K (K=2), at the 95% confidence level.
The uncertainty of the temperature is U=0.3°C (K=2), at the 95% confidence level.

8. Decision Rules:

For the measurement parameters that need to be assessed for compliance, the measurement uncertainty should be fully considered. In order to avoid mis-judgment on whether the measurement results meet the requirements of the standard, the following decision rules should be used:

For measurements results with only the lower limit of tolerance interval:

- When ηm ≥ Tl + U, we directly determine the measurement result as PASS (P).
- When ηm ≤ Tl - U, we directly determine the measurement result as FAIL (F).
- When Tl - U ≤ ηm ≤ Tl + U, we determine the measurement result as UNCERTAIN (UC).

For measurements results with only the upper limit of tolerance interval:

- When ηm ≤ Tu - U, we directly determine the measurement result as PASS (P).
- When ηm ≥ Tu + U, we directly determine the measurement result as FAIL (F).
- When Tu - U ≤ ηm ≤ Tu + U, we determine the measurement result as UNCERTAIN (UC).

For measurements results with the lower and upper limit of tolerance interval:

- When Tl + U ≤ ηm ≤ Tu - U, we directly determine the measurement result as PASS (P).
- When ηm ≤ Tl – U and ηm ≥ Tu + U, we directly determine the measurement result as FAIL (F).
- When Tl - U ≤ ηm ≤ Tl + U and Tu - U ≤ ηm ≤ Tu + U we determine the measurement result as UNCERTAIN (UC).

Here:
ηm: Measurement value
Tl: Lower limit of tolerance interval
Tu: Upper limit of tolerance interval
U: Expanded uncertainty

9. Sample Set

Data Set 1: 55°C, 1500mA	
Part Number:	TX-5060RGBW
Number of Units:	11
Actual Case Temperature(T_S):	T_S > 53°C
Actual Ambient Temperature(T_A):	T_A > 50°C
Life Test Drive Current:	I_F = 1500mA
Measurement Current:	I_F = 1500mA

Data Set 2: 85°C, 1500mA	
Part Number:	TX-5060RGBW
Number of Units:	11
Actual Case Temperature(T_S):	T_S > 83°C
Actual Ambient Temperature(T_A):	T_A > 80°C
Life Test Drive Current:	I_F = 1500mA
Measurement Current:	I_F = 1500mA

Data Set 3: 105°C, 1500mA	
Part Number:	TX-5060RGBW
Number of Units:	11
Actual Case Temperature(T_S):	T_S > 103°C
Actual Ambient Temperature(T_A):	T_A > 100°C
Life Test Drive Current:	I_F = 1500mA
Measurement Current:	I_F = 1500mA

10. Summary of Test Result

Data Set	Sample Size	Failures Observed	Test Interval	Test Duration	α	β	TM-21 Lifetime	
							L_{70}	L_{90}
1	25	0	1000h	10000h	2.8289E-06	1.0063	>55000h	39000h
2	25	0	1000h	10000h	3.2401E-06	1.0051	>55000h	34000h
3	25	0	1000h	10000h	4.3619E-06	0.9997	>55000h	24000h

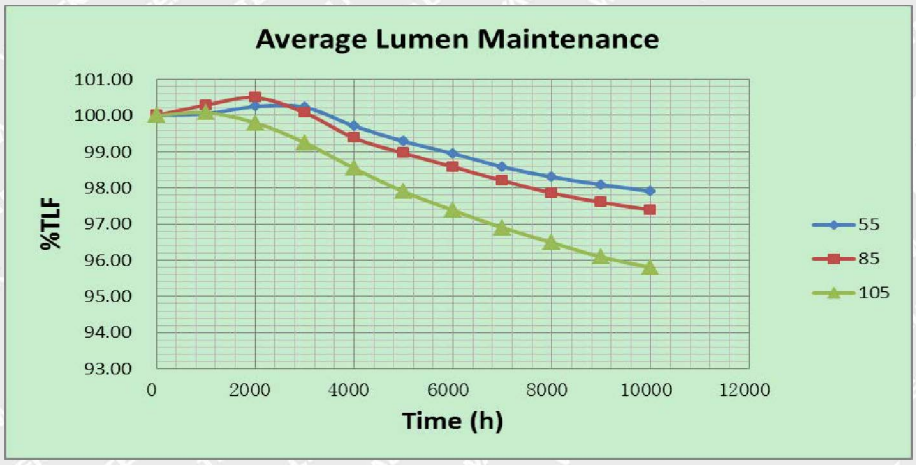
Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h	10000h
1	100.05	100.25	100.23	99.71	99.29	98.95	98.58	98.30	98.09	97.91
2	100.29	100.50	100.08	99.38	98.96	98.58	98.20	97.86	97.60	97.39
3	100.08	99.80	99.25	98.54	97.90	97.38	96.90	96.49	96.09	95.80

Average Chromaticity Shift

Data Set	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h	10000h
1	0.0008	0.0011	0.0012	0.0015	0.0019	0.0022	0.0026	0.0027	0.0029	0.0030
2	0.0009	0.0011	0.0015	0.0019	0.0023	0.0028	0.0032	0.0035	0.0038	0.0040
3	0.0010	0.0013	0.0017	0.0021	0.0027	0.0032	0.0037	0.0041	0.0044	0.0046

Average Lumen Maintenance and Chromaticity Shift VS. Time



Appendix: Data sheet

Data Set 1, 55°C, 1500mA (Lumen Maintenance)											
S/N	TLF(lm)	Lumen Maintenance (%)									
	Initial(0hr)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h	10000h
A01	675.34	99.61	99.82	99.77	99.19	98.83	98.39	97.91	97.75	97.50	97.33
A02	720.01	99.96	100.25	100.25	99.61	99.28	98.99	98.70	98.48	98.24	98.00
A03	682.48	100.19	100.29	100.27	99.70	99.09	98.78	98.40	98.18	97.96	97.80
A04	697.39	100.18	100.29	100.42	99.90	99.40	99.06	98.71	98.40	98.17	98.00
A05	715.47	100.00	100.10	100.12	99.60	99.14	98.87	98.66	98.36	98.17	98.00
A06	697.14	100.31	100.52	100.53	100.05	99.67	99.47	98.99	98.63	98.39	98.22
A07	698.30	99.90	100.14	100.05	99.44	98.97	98.56	98.22	97.93	97.87	97.71
A08	681.51	100.39	100.66	100.79	100.38	99.86	99.47	99.13	98.74	98.56	98.47
A09	707.55	99.84	100.17	100.03	99.43	99.09	98.65	98.22	97.88	97.66	97.44
A10	689.96	100.48	100.70	100.62	100.23	99.90	99.60	99.10	98.89	98.62	98.40
A11	678.57	99.71	99.82	99.71	99.26	98.91	98.60	98.35	98.06	97.84	97.61
Ave.	**694.88**	**100.05**	**100.25**	**100.23**	**99.71**	**99.29**	**98.95**	**98.58**	**98.30**	**98.09**	**97.91**
Max	720.01	100.48	100.70	100.79	100.38	99.90	99.60	99.13	98.89	98.62	98.47
Min	675.34	99.61	99.82	99.71	99.19	98.83	98.39	97.91	97.75	97.50	97.33
Med	697.14	100.00	100.25	100.25	99.61	99.14	98.87	98.66	98.36	98.17	98.00
Std.dev	14.28	0.27	0.28	0.32	0.37	0.36	0.39	0.38	0.35	0.34	0.35

Data Set 1, 55°C, 1500mA (Chromaticity Shift_Δu'v')												
S/N	Initial(0hr)		1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h	10000h
	CIE u'	CIE v'										
A01	0.2003	0.3674	0.0009	0.0012	0.0013	0.0017	0.0021	0.0024	0.0027	0.0029	0.0031	0.0032
A02	0.2031	0.3680	0.0007	0.0010	0.0011	0.0014	0.0017	0.0021	0.0025	0.0026	0.0028	0.0028
A03	0.2001	0.3664	0.0009	0.0013	0.0014	0.0017	0.0022	0.0025	0.0027	0.0029	0.0031	0.0032
A04	0.2001	0.3668	0.0008	0.0010	0.0012	0.0015	0.0018	0.0022	0.0024	0.0025	0.0027	0.0027
A05	0.2004	0.3663	0.0007	0.0009	0.0011	0.0015	0.0018	0.0021	0.0024	0.0027	0.0029	0.0029
A06	0.2030	0.3682	0.0009	0.0011	0.0012	0.0015	0.0018	0.0023	0.0027	0.0030	0.0031	0.0031
A07	0.2003	0.3671	0.0009	0.0010	0.0010	0.0013	0.0017	0.0020	0.0023	0.0024	0.0026	0.0026
A08	0.2031	0.3681	0.0007	0.0008	0.0010	0.0012	0.0016	0.0021	0.0024	0.0025	0.0028	0.0029
A09	0.2005	0.3665	0.0007	0.0011	0.0012	0.0016	0.0020	0.0022	0.0025	0.0028	0.0029	0.0030
A10	0.2002	0.3660	0.0006	0.0009	0.0010	0.0014	0.0018	0.0020	0.0024	0.0026	0.0028	0.0029
A11	0.2001	0.3672	0.0009	0.0013	0.0015	0.0020	0.0023	0.0027	0.0031	0.0033	0.0035	0.0036
Ave.	**0.2010**	**0.3671**	**0.0008**	**0.0011**	**0.0012**	**0.0015**	**0.0019**	**0.0022**	**0.0026**	**0.0027**	**0.0029**	**0.0030**
Max	0.2031	0.3682	0.0009	0.0013	0.0015	0.0020	0.0023	0.0027	0.0031	0.0033	0.0035	0.0036
Min	0.2001	0.3660	0.0006	0.0008	0.0010	0.0012	0.0016	0.0020	0.0023	0.0024	0.0026	0.0026
Med	0.2003	0.3671	0.0008	0.0010	0.0012	0.0015	0.0018	0.0022	0.0025	0.0027	0.0029	0.0029
Std.dev	0.0013	0.0007	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0003

Data Set 1, 55°C, 1500mA (Forward Voltage)											
S/N	VF(V)										
	Initial(0hr)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h	10000h
A01	12.06	12.07	12.08	12.07	12.06	12.05	12.03	12.03	12.01	12.01	11.99
A02	12.27	12.28	12.29	12.28	12.27	12.26	12.25	12.24	12.23	12.21	12.21
A03	12.14	12.15	12.17	12.16	12.15	12.13	12.11	12.10	12.09	12.08	12.07
A04	12.29	12.29	12.30	12.29	12.28	12.27	12.25	12.24	12.23	12.21	12.20
A05	12.23	12.25	12.26	12.25	12.24	12.22	12.20	12.19	12.19	12.18	12.17
A06	12.05	12.05	12.07	12.05	12.04	12.03	12.01	12.01	12.00	11.99	11.98
A07	12.07	12.08	12.09	12.08	12.07	12.05	12.04	12.03	12.02	12.01	12.00
A08	12.09	12.09	12.11	12.09	12.07	12.07	12.05	12.03	12.01	12.01	11.99
A09	12.17	12.19	12.19	12.18	12.17	12.17	12.15	12.15	12.13	12.12	12.11
A10	12.23	12.25	12.25	12.25	12.23	12.22	12.21	12.20	12.19	12.19	12.17
A11	12.07	12.08	12.09	12.07	12.05	12.05	12.03	12.02	12.01	12.01	12.00
Ave.	**12.15**	**12.16**	**12.17**	**12.16**	**12.15**	**12.14**	**12.12**	**12.11**	**12.10**	**12.09**	**12.08**
Max	12.29	12.29	12.30	12.29	12.28	12.27	12.25	12.24	12.23	12.21	12.21
Min	12.05	12.05	12.07	12.05	12.04	12.03	12.01	12.01	12.00	11.99	11.98
Med	12.14	12.15	12.17	12.16	12.15	12.13	12.11	12.10	12.09	12.08	12.07
Std.dev	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Data Set 2, 85°C, 1500mA (Lumen Maintenance)											
S/N	TLF(lm)	Lumen Maintenance (%)									
	Initial(0hr)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h	10000h
B01	708.42	100.09	100.26	99.93	99.30	98.93	98.43	98.22	97.98	97.75	97.62
B02	685.66	100.01	100.06	99.65	98.83	98.32	97.85	97.56	97.30	96.92	96.80
B03	721.49	100.45	100.78	100.55	99.92	99.48	98.99	98.50	98.22	97.87	97.54
B04	693.87	100.14	100.29	99.71	99.09	98.67	98.44	98.08	97.53	97.18	96.96
B05	703.64	100.14	100.25	99.67	98.87	98.44	98.08	97.62	97.17	96.98	96.88
B06	678.32	100.27	100.55	100.13	99.36	98.84	98.45	98.09	97.88	97.71	97.44
B07	676.07	100.48	100.65	100.27	99.62	99.40	98.99	98.56	98.28	97.97	97.74
B08	693.55	100.52	100.79	100.49	99.71	99.17	98.63	98.27	97.85	97.56	97.41
B09	685.77	100.30	100.45	99.95	99.35	98.91	98.58	98.06	97.71	97.52	97.32
B10	695.64	100.57	100.84	100.43	99.77	99.40	99.23	98.92	98.49	98.34	98.11
B11	720.57	100.25	100.60	100.10	99.40	99.05	98.76	98.32	98.01	97.76	97.52
Ave.	**696.64**	**100.29**	**100.50**	**100.08**	**99.38**	**98.96**	**98.58**	**98.20**	**97.86**	**97.60**	**97.39**
Max	721.49	100.57	100.84	100.55	99.92	99.48	99.23	98.92	98.49	98.34	98.11
Min	676.07	100.01	100.06	99.65	98.83	98.32	97.85	97.56	97.17	96.92	96.80
Med	693.87	100.27	100.55	100.10	99.36	98.93	98.58	98.22	97.88	97.71	97.44
Std.dev	14.75	0.18	0.25	0.31	0.34	0.37	0.39	0.38	0.39	0.41	0.37

Data Set 1, 85°C, 1500mA (Chromaticity Shift_Δu'v')												
S/N	Initial(0hr)		1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h	10000h
	CIE u'	CIE v'										
B01	0.2005	0.3672	0.0011	0.0013	0.0015	0.0019	0.0023	0.0029	0.0032	0.0035	0.0037	0.0039
B02	0.2002	0.3661	0.0009	0.0011	0.0014	0.0018	0.0022	0.0025	0.0028	0.0032	0.0034	0.0035
B03	0.2003	0.3664	0.0010	0.0012	0.0014	0.0018	0.0022	0.0027	0.0031	0.0036	0.0039	0.0039
B04	0.2031	0.3678	0.0012	0.0015	0.0018	0.0022	0.0027	0.0032	0.0035	0.0038	0.0041	0.0041
B05	0.2030	0.3683	0.0011	0.0013	0.0017	0.0022	0.0027	0.0033	0.0039	0.0043	0.0046	0.0047
B06	0.2001	0.3662	0.0006	0.0009	0.0014	0.0018	0.0022	0.0028	0.0031	0.0033	0.0035	0.0038
B07	0.2033	0.3683	0.0011	0.0014	0.0016	0.0020	0.0023	0.0026	0.0031	0.0035	0.0037	0.0041
B08	0.2005	0.3675	0.0009	0.0010	0.0015	0.0019	0.0023	0.0027	0.0032	0.0035	0.0038	0.0041
B09	0.2000	0.3662	0.0009	0.0011	0.0014	0.0019	0.0024	0.0028	0.0033	0.0035	0.0036	0.0036
B10	0.2032	0.3680	0.0006	0.0008	0.0012	0.0017	0.0023	0.0028	0.0031	0.0035	0.0037	0.0040
B11	0.2002	0.3663	0.0007	0.0008	0.0011	0.0015	0.0018	0.0023	0.0027	0.0032	0.0035	0.0038
Ave.	**0.2013**	**0.3671**	**0.0009**	**0.0011**	**0.0015**	**0.0019**	**0.0023**	**0.0028**	**0.0032**	**0.0035**	**0.0038**	**0.0040**
Max	0.2033	0.3683	0.0012	0.0015	0.0018	0.0022	0.0027	0.0033	0.0039	0.0043	0.0046	0.0047
Min	0.2000	0.3661	0.0006	0.0008	0.0011	0.0015	0.0018	0.0023	0.0027	0.0032	0.0034	0.0035
Med	0.2005	0.3672	0.0009	0.0011	0.0014	0.0019	0.0023	0.0028	0.0031	0.0035	0.0037	0.0039
Std.dev	0.0014	0.0009	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003

Data Set 1, 85°C, 1500mA (Forward Voltage)											
S/N	VF(V)										
	Initial(0hr)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h	10000h
B01	12.11	12.11	12.12	12.10	12.08	12.06	12.04	12.03	12.01	11.99	11.99
B02	12.08	12.09	12.09	12.07	12.05	12.04	12.02	12.01	12.01	11.99	11.99
B03	12.27	12.28	12.29	12.27	12.26	12.25	12.23	12.21	12.20	12.19	12.17
B04	12.10	12.11	12.11	12.11	12.10	12.08	12.07	12.06	12.04	12.03	12.02
B05	12.28	12.29	12.29	12.27	12.25	12.24	12.22	12.21	12.19	12.17	12.17
B06	12.14	12.15	12.15	12.13	12.11	12.10	12.08	12.06	12.05	12.04	12.03
B07	12.09	12.09	12.09	12.08	12.06	12.04	12.02	12.01	11.99	11.98	11.97
B08	12.05	12.07	12.07	12.05	12.03	12.02	12.00	11.99	11.98	11.97	11.96
B09	12.27	12.28	12.29	12.27	12.25	12.23	12.21	12.19	12.18	12.16	12.15
B10	12.23	12.24	12.25	12.23	12.21	12.19	12.18	12.17	12.16	12.14	12.13
B11	12.27	12.28	12.28	12.27	12.25	12.23	12.21	12.21	12.19	12.18	12.17
Ave.	**12.17**	**12.18**	**12.18**	**12.17**	**12.15**	**12.13**	**12.12**	**12.10**	**12.09**	**12.08**	**12.07**
Max	12.28	12.29	12.29	12.27	12.26	12.25	12.23	12.21	12.20	12.19	12.17
Min	12.05	12.07	12.07	12.05	12.03	12.02	12.00	11.99	11.98	11.97	11.96
Med	12.14	12.15	12.15	12.13	12.11	12.10	12.08	12.06	12.05	12.04	12.03
Std.dev	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.08

Data Set 1, 105°C, 1500mA (Lumen Maintenance)											
S/N	TLF(lm)	Lumen Maintenance (%)									
	Initial(0hr)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h	10000h
C01	686.98	100.21	99.82	99.45	98.66	98.11	97.78	97.31	97.02	96.81	96.67
C02	695.36	100.16	100.03	99.32	98.45	97.91	97.28	96.63	96.32	95.83	95.63
C03	710.30	100.00	99.87	99.35	98.50	97.65	96.98	96.44	95.88	95.55	95.23
C04	692.87	100.14	99.69	99.28	98.75	98.13	97.76	97.20	96.93	96.55	96.11
C05	715.63	100.23	100.04	99.39	98.76	98.26	97.66	97.24	96.66	96.29	96.05
C06	686.58	100.18	100.08	99.49	98.70	97.95	97.19	96.70	96.35	95.85	95.68
C07	679.42	99.74	99.39	98.70	97.95	97.09	96.58	96.03	95.61	95.24	95.02
C08	704.69	100.08	99.69	99.01	98.40	97.80	97.35	97.01	96.48	96.03	95.70
C09	682.57	100.21	99.77	99.38	98.57	98.09	97.61	97.27	96.88	96.37	95.98
C10	686.69	99.95	99.64	99.23	98.65	97.95	97.45	97.17	96.93	96.58	96.26
C11	687.35	100.03	99.74	99.13	98.56	98.00	97.50	96.88	96.32	95.84	95.49
Ave.	**693.49**	**100.08**	**99.80**	**99.25**	**98.54**	**97.90**	**97.38**	**96.90**	**96.49**	**96.09**	**95.80**
Max	715.63	100.23	100.08	99.49	98.76	98.26	97.78	97.31	97.02	96.81	96.67
Min	679.42	99.74	99.39	98.70	97.95	97.09	96.58	96.03	95.61	95.24	95.02
Med	687.35	100.14	99.77	99.32	98.57	97.95	97.45	97.01	96.48	96.03	95.70
Std.dev	11.25	0.14	0.19	0.22	0.22	0.30	0.34	0.39	0.43	0.46	0.45

Data Set 1, 105°C, 1500mA (Chromaticity Shift_Δu'v')												
S/N	Initial(0hr)		1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h	10000h
	CIE u'	CIE v'										
C01	0.2035	0.3680	0.0009	0.0011	0.0016	0.0021	0.0026	0.0030	0.0036	0.0040	0.0044	0.0046
C02	0.2003	0.3664	0.0008	0.0012	0.0017	0.0021	0.0026	0.0030	0.0034	0.0038	0.0041	0.0045
C03	0.2002	0.3662	0.0007	0.0011	0.0016	0.0020	0.0025	0.0032	0.0038	0.0040	0.0044	0.0047
C04	0.2004	0.3670	0.0013	0.0016	0.0021	0.0024	0.0029	0.0036	0.0042	0.0045	0.0047	0.0048
C05	0.2033	0.3681	0.0011	0.0014	0.0016	0.0019	0.0024	0.0029	0.0034	0.0037	0.0040	0.0043
C06	0.2003	0.3670	0.0012	0.0016	0.0020	0.0024	0.0029	0.0035	0.0040	0.0044	0.0048	0.0049
C07	0.2001	0.3663	0.0012	0.0014	0.0019	0.0023	0.0029	0.0034	0.0039	0.0044	0.0047	0.0050
C08	0.2032	0.3679	0.0012	0.0016	0.0019	0.0024	0.0029	0.0034	0.0039	0.0042	0.0045	0.0049
C09	0.2001	0.3662	0.0008	0.0012	0.0015	0.0019	0.0025	0.0030	0.0034	0.0039	0.0041	0.0044
C10	0.2003	0.3671	0.0008	0.0011	0.0014	0.0017	0.0024	0.0030	0.0033	0.0037	0.0040	0.0043
C11	0.2005	0.3660	0.0012	0.0015	0.0019	0.0023	0.0028	0.0035	0.0040	0.0042	0.0046	0.0047
Ave.	**0.2011**	**0.3669**	**0.0010**	**0.0013**	**0.0017**	**0.0021**	**0.0027**	**0.0032**	**0.0037**	**0.0041**	**0.0044**	**0.0046**
Max	0.2035	0.3681	0.0013	0.0016	0.0021	0.0024	0.0029	0.0036	0.0042	0.0045	0.0048	0.0050
Min	0.2001	0.3660	0.0007	0.0011	0.0014	0.0017	0.0024	0.0029	0.0033	0.0037	0.0040	0.0043
Med	0.2003	0.3670	0.0011	0.0014	0.0017	0.0021	0.0026	0.0032	0.0038	0.0040	0.0044	0.0047
Std.dev	0.0014	0.0007	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002

Data Set 1, 105°C, 1500mA (Forward Voltage)											
S/N	VF(V)										
	Initial(0hr)	1000h	2000h	3000h	4000h	5000h	6000h	7000h	8000h	9000h	10000h
C01	12.20	12.19	12.17	12.15	12.11	12.09	12.07	12.05	12.03	12.01	12.00
C02	12.28	12.28	12.27	12.25	12.23	12.21	12.19	12.17	12.15	12.14	12.13
C03	12.08	12.09	12.07	12.04	12.03	11.99	11.96	11.95	11.93	11.91	11.91
C04	12.22	12.22	12.21	12.19	12.17	12.14	12.11	12.09	12.07	12.05	12.05
C05	12.23	12.22	12.21	12.19	12.18	12.15	12.13	12.10	12.08	12.07	12.06
C06	12.09	12.09	12.09	12.06	12.03	12.01	11.99	11.98	11.95	11.94	11.93
C07	12.15	12.15	12.13	12.11	12.09	12.05	12.04	12.02	11.99	11.98	11.97
C08	12.19	12.18	12.17	12.15	12.12	12.09	12.06	12.05	12.03	12.03	12.02
C09	12.07	12.07	12.05	12.03	12.00	11.99	11.95	11.92	11.90	11.88	11.87
C10	12.27	12.27	12.27	12.25	12.22	12.20	12.17	12.14	12.13	12.12	12.11
C11	12.20	12.21	12.19	12.17	12.15	12.14	12.13	12.09	12.08	12.07	12.05
Ave.	**12.18**	**12.18**	**12.17**	**12.14**	**12.12**	**12.10**	**12.07**	**12.05**	**12.03**	**12.02**	**12.01**
Max	12.28	12.28	12.27	12.25	12.23	12.21	12.19	12.17	12.15	12.14	12.13
Min	12.07	12.07	12.05	12.03	12.00	11.99	11.95	11.92	11.90	11.88	11.87
Med	12.20	12.19	12.17	12.15	12.12	12.09	12.07	12.05	12.03	12.03	12.02
Std.dev	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.07	0.08	0.08	0.08

Attachment 1: Equipment List

Equipment	Model/Type	Cal. Due. Date
DC power supply	EVERFINE WY305-V1	2023-01-11
Digital Power Meter	EVERFINE PF2010A-V1	2023-01-11
High accuracy array spectroradio meter	EVERFINE HAAS-2000	2023-01-11
Integrating Sphere	EVERFINE R98&R80&0.3m	2023-01-11
Standard light source	EVERFINE D204	2023-01-11
Standard light source	EVERFINE D062	2023-01-11
Temperature & Humidity Datalogger	Testo 608-H1	2023-01-11
AC power supply	EVERFINE DPS 1060	2023-01-11
DC power supply	EVERFINE WY12010	2023-01-11
Digital Power Meter	EVERFINE PF2010A-V1-CAN	2023-01-11
Digital power meter	YOKOGAWA WT310E	2023-01-11
LED accelerated aging and longevity test system	EVERFINE LT-200A	2023-01-11
Walk-in Environmental Test Lab	Dongzhixu BUL-50-26	2023-01-11
Environmental Chamber	KSON THS-D4C-100	2023-01-11
Multimeter	FLUKE 15B	2023-01-11
Temperature Recorder	YOKOGAWA DR231-00-33-1R	2023-01-11

Attachment 2: Photo document

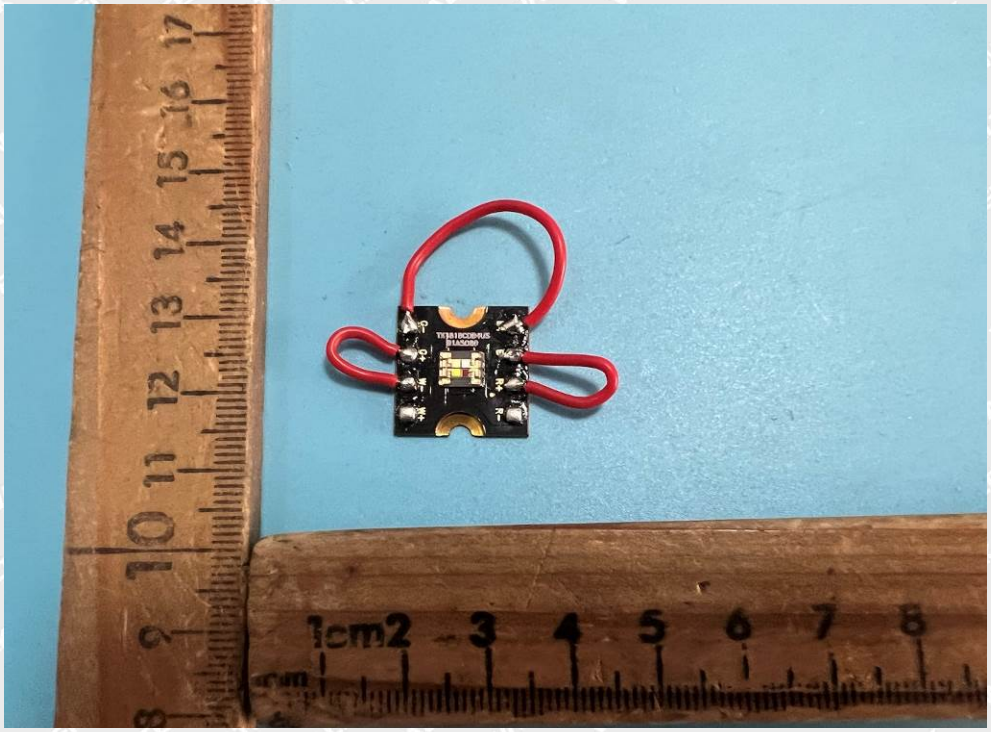


Photo 1

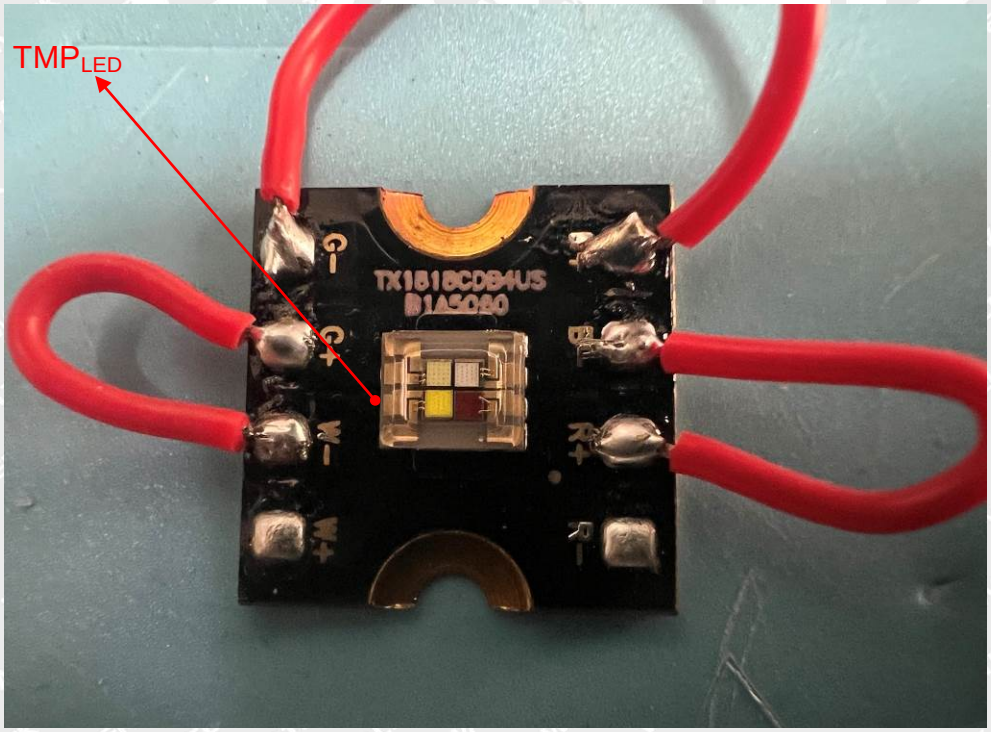


Photo 2

====== End of Report ======