TEST REPORT

According to ANSI/IES LM-80-15
For

Hongli Zhihui Group Co.,Ltd. Guangzhou Branch

Room 316, Building 2, No.1, Xianke Yi Road, Huadong Town, Huadu District, Guangzhou, China

Model: HL-EMC-5050D90W-B6C2-S1-HR1

Report Type:	**Product Type:**
17000 Hours Test Report	LED Package

Test Date:	2021-05-20 to 2023-04-28
Report Date:	2023-08-31
Approved by:	Blake Zhang / EE Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 5/F(B-West) -7/F, the 3rd Phase of Wan Li Industrial Building D, Shihua Road, Futian Free Trade Zone Shenzhen, Guangdong, China. Tel: +86-755-33320018 Fax: +86-755-33320008
Test Facility:	Test facility was located at No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

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1 - General Information

1.1 Description of LED Light Sources#

Sample Size:

50 PCS test samples were in good condition and received on 2020-11-09. The samples were numbered from 1 to 25 and 26 to 50.

Manufacturer:	Hongli Zhihui Group Co.,Ltd. Guangzhou Branch
Part Number:	HL-EMC-5050D90W-B6C2-S1-HR1
Part Type:	LED Package
Drive Level:	DC 750mA
Nominal CCT:	3000K
Power:	5W
Average Current Density per LED die:	302mA/mm^2
Average Power Density per LED die:	1.71 W/mm^2
CRI:	70
Die Spacing:	0.25mm

Note:

1 The applicant Hongli Zhihui Group Co.,Ltd. Guangzhou Branch declare that their products with model HL-EMC-5050D90W-B6C2-S1-HR1 are the same to the products in report#DG3210517-31183E-EE-17000-M1 and is authorized by original applicant to use their test data.
2 All the data in previous report (DG3210517-31183E-EE-17000-M1) is shared in this report.

Sampling Method:

LED samples for IESNA LM-80 testing consist of units built from a minimum of three manufacturing lots with each manufacturing lot built from different wafer lots built on non-consecutive days.
These manufacturing lots are picked to represent a wide parametric distribution.

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 type	Model name of private label	Total Input Current (mA)	Power (W)	CCT (K)	Number of dies	Current Density per Die(mA/mm^2)	Power Density per PCB (W/mm^2)	Die Spacing (mm)
Test model	HL-EMC-5050D90W-B6C2-S1-HR1	750	5	3000	12	302	0.21	0.25

multiple mode	HL-EMC-5050****W-B2C4-S1-HR*-***	300	3.6	2700-6500	8	302	0.14	0.25
multiple mode	HL-EMC-5050****W-B1C4-S1-HR*-***	150	1.8	2700-6500	4	302	0.07	0.25
multiple mode	HL-EMC-5050****W-B2C5-S1-HR*-***	300	4.5	2700-6500	10	302	0.18	0.25
multiple mode	HL-EMC-5050****W-B1C5-S1-HR*-***	150	2.2	2700-6500	5	302	0.09	0.25
multiple mode	HL-EMC-5050****W-B2C6-S1-HR*-***	300	5	2700-6500	12	302	0.21	0.25
multiple mode	HL-EMC-5050****W-B1C7-S1-HR*-***	150	3.15	2700-6500	7	302	0.126	0.25
multiple mode	HL-EMC-5050****W-B1C9-S1-HR*-***	150	4	2700-6500	9	302	0.162	0.25
multiple mode	HL-EMC-5050****W-B1C10-S1-HR*-***	150	4.8	2700-6500	10	302	0.192	0.25
multiple mode	HL-EMC-5050****W-B1C11-S1-HR*-***	150	5	2700-6500	11	302	0.198	0.25
multiple mode	HL-EMC-5050****W-B1C12-S1-HR*-***		5	2700-6500	12	302	0.21	0.25

Notes:

The model name begins with "HL", such as "HL-EMC-5050****W- B6C2-S1-HR*-***" , "*" is described in detail as follows :

1. The first * is the letters H, D, F which stands for the chip level .
2. The second "***" is a number from 1 to 999 which stands for the brightness level.
3. The third "*" is the number 1 to 7 which stands for different product solution (Color coordinate and applications and special solution etc)
4. The forth "***" is the letter or None which stands for the customer code.

1.2 Standards and Reference Documentations

- ANSI/IES LM-80-15: IES Approved Method for Measuring Lumen Maintenance of LED Light Sources.
- *CIE 127:2007: Measurement of LEDs (This standard was not accredited by NVLAP)
- *ENERGY STAR® Requirements for the Use of LM-80 Data (This standard was not accredited by NVLAP)

1.3 Testing Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
0.5m Integrating Sphere/CCD Spectrometer	Hangzhouyuming	0.5m /SPM-5000	C612012A	2022-11-18	2023-11-17
CC&CV DC Power Supply	Hangzhouyuming	DPS-500	W412022M	2022-11-18	2023-11-17
Standard Light Source	EVERFINE	D204	G100283CA8351158	2021-09-15	2023-09-14
Multilayer aging machine	BACL	B2-270	20022	2022-10-19	2023-10-18
Multilayer aging machine	BACL	B2-270	20022	2022-10-19	2023-10-18
LED Test Source	EVERFINE	LTS-300	P185616CJ1391143	2022-11-18	2023-11-17

1.4 Drive Level

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.

1.5 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%.

1.6 Photometric Measurement Method and Uncertainty

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.

The uncertainty of the light output measurements is U=1.59% (K=2), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is U=21K (K=2), at the 95% confidence level.

The uncertainty of the temperature is U=0.8671°C (K=2), at the 95% confidence level.

1.7 Statement of Traceability

Bay Area Compliance Laboratories Corp. (Shenzhen) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

1.8 Sample Set

Data Set 1: 85°C, 750mA

Part Number:	HL-EMC-5050D90W-B6C2-S1-HR1
Number of Units:	25
Case Temperature:	>83°C
Ambient Temperature:	>80°C
Life Test Drive Current:	750mA
Measurement Current:	750mA

Data Set 2: 105°C, 750mA

Part Number:	HL-EMC-5050D90W-B6C2-S1-HR1
Number of Units:	25
Case Temperature:	>103°C
Ambient Temperature:	>100°C
Life Test Drive Current:	750mA
Measurement Current:	750mA

Bay Area Compliance Laboratories Corp. (Shenzhen)
5/F(B-West) -7/F, the 3rd Phase of Wan Li Industrial
Building D, Shihua Road, Futian Free Trade Zone Shenzhen, Guangdong, China.
The NVLAP Lab Code is 200707-0

2 - Summary of Test Result

Data Set:	Sample Size	Failures Observed:	Test Interval	Test Duration			Reported TM-21 L_{70} Lifetime	Reported TM-21 L_{90} Lifetime
1	25	0	1000hrs	17000hrs	2.414E-06	1.004	>102000 hours	45,000 hours
2	25	0	1000hrs	17000hrs	2.901E-06	1.004	>102000 hours	38,000 hours

Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs
1	100.20%	99.95%	99.71%	99.47%	99.22%	98.99%	98.76%	98.51%	98.28%	98.06%	97.81%	97.58%
2	100.05%	99.76%	99.48%	99.20%	98.92%	98.64%	98.35%	98.06%	97.80%	97.52%	97.24%	96.96%

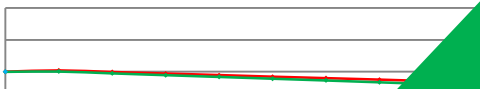
13000hrs	14000hrs	15000hrs	16000hrs	17000hrs
97.35%	97.11%	96.87%	96.63%	96.40%
96.67%	96.38%	96.12%	95.83%	95.54%

Average Chromaticity Shift

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs
1	0.0002	0.0003	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0013	0.0015
2	0.0003	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0014	0.0016

13000hrs	14000hrs	15000hrs	16000hrs	17000hrs
0.0017	0.0019	0.0021	0.0023	0.0025
0.0018	0.0020	0.0022	0.0024	0.0026

Average Lumen Maintenance and Chromaticity Shift VS. Time



3 - Test Data

3.1 Data Set 1, 85°C, 750mA (Lumen Maintenance)

No.	Φ(lm)	Lumen Maintenance (%)											
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs
1	742.70	100.05	99.81	99.60	99.27	99.03	98.77	98.60	98.49	98.21	98.09	97.89	97.75
2	742.80	100.19	99.97	99.73	99.56	99.41	99.11	98.80	98.59	98.29	98.02	97.89	97.62
3	748.90	100.23	99.93	99.73	99.59	99.39	99.09	98.89	98.66	98.50	98.24	97.97	97.74
4	747.30	100.07	99.83	99.65	99.33	99.13	99.00	98.69	98.37	98.14	98.02	97.68	97.47
5	736.60	100.12	99.93	99.74	99.55	99.33	99.02	98.75	98.52	98.26	98.09	97.81	97.53
6	747.80	100.24	100.07	99.71	99.56	99.32	99.18	98.93	98.64	98.44	98.15	97.91	97.55
7	742.90	100.07	99.78	99.58	99.37	99.19	98.96	98.63	98.32	98.16	98.02	97.83	97.51
8	748.20	100.21	100.01	99.83	99.43	99.22	99.01	98.70	98.42	98.18	98.04	97.83	97.61
9	743.70	100.24	99.88	99.73	99.37	99.06	98.75	98.53	98.25	98.05	97.77	97.62	97.39
10	743.90	100.12	99.99	99.74	99.53	99.19	98.91	98.70	98.48	98.31	98.00	97.84	97.69
11	742.50	100.13	99.88	99.58	99.37	99.02	98.76	98.57	98.21	97.99	97.85	97.67	97.48
12	741.00	100.19	100.03	99.73	99.53	99.33	99.11	98.87	98.61	98.37	98.16	97.92	97.77
13	746.70	100.32	100.13	99.80	99.57	99.28	99.05	98.73	98.41	98.15	97.99	97.63	97.25
14	743.70	100.23	99.95	99.80	99.58	99.35	99.10	98.94	98.62	98.44	98.18	97.89	97.66
15	747.80	100.29	99.93	99.59	99.29	99.02	98.89	98.74	98.49	98.34	98.18	97.91	97.73
16	750.50	100.31	99.97	99.73	99.52	99.21	98.89	98.76	98.48	98.31	98.07	97.84	97.68
17	746.40	100.19	99.99	99.85	99.58	99.37	99.16	98.87	98.69	98.49	98.33	98.06	97.87
18	745.70	100.17	99.92	99.72	99.41	99.05	98.89	98.58	98.38	98.10	97.91	97.63	97.39
19	742.90	100.24	99.91	99.72	99.53	99.31	99.06	98.79	98.43	98.20	97.90	97.55	97.33
20	742.30	100.32	100.00	99.84	99.49	99.30	99.06	98.77	98.60	98.29	97.94	97.71	97.52
21	748.70	100.24	99.99	99.67	99.44	99.13	98.86	98.69	98.46	98.22	97.92	97.72	97.52
22	745.10	100.23	100.05	99.80	99.60	99.34	99.17	99.03	98.81	98.66	98.54	98.24	98.00
23	746.80	100.24	99.97	99.69	99.48	99.30	99.16	98.94	98.77	98.53	98.17	97.79	97.54
24	743.50	100.17	99.81	99.57	99.19	99.06	98.82	98.59	98.41	98.08	97.90	97.70	97.43
25	745.00	100.20	99.99	99.73	99.53	99.21	99.01	98.87	98.54	98.30	97.93	97.66	97.50
Avg.	744.94	100.20	99.95	99.71	99.47	99.22	98.99	98.76	98.51	98.28	98.06	97.81	97.58
Med.	745.00	100.21	99.97	99.73	99.52	99.22	99.01	98.75	98.49	98.29	98.02	97.83	97.54
st dev	3.06	0.08	0.08	0.08	0.11	0.13	0.13	0.13	0.15	0.16	0.17	0.16	0.17
Min.	736.60	100.05	99.78	99.57	99.19	99.02	98.75	98.53	98.21	97.99	97.77	97.55	97.25
Max.	750.50	100.32	100.13	99.85	99.60	99.41	99.18	99.03	98.81	98.66	98.54	98.24	98.00

No.	Lumen Maintenance (%)				
	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs
1	97.63	97.40	97.17	96.93	96.63
2	97.29	97.07	96.89	96.57	96.43
3	97.46	97.12	96.78	96.55	96.33
4	97.26	97.10	96.98	96.67	96.53
5	97.26	97.11	96.88	96.73	96.46
6	97.31	97.03	96.86	96.60	96.47
7	97.31	97.12	96.97	96.69	96.46
8	97.45	97.19	97.03	96.82	96.51
9	97.11	96.95	96.67	96.36	96.21
10	97.45	97.20	97.04	96.84	96.63
11	97.31	97.12	96.79	96.47	96.18
12	97.58	97.29	97.11	96.86	96.60
13	97.08	96.80	96.52	96.29	96.14
14	97.43	97.19	96.93	96.72	96.42
15	97.39	97.19	96.88	96.75	96.56
16	97.47	97.32	97.18	96.95	96.76
17	97.55	97.31	97.15	96.96	96.73
18	97.20	97.00	96.73	96.57	96.43
19	97.11	96.81	96.63	96.35	96.23
20	97.31	97.12	96.90	96.62	96.28
21	97.32	97.03	96.69	96.46	96.23
22	97.68	97.33	97.09	96.86	96.63
23	97.27	96.95	96.67	96.45	96.05
24	97.05	96.79	96.46	96.18	95.88
25	97.38	97.17	96.86	96.58	96.24
Avg.	97.35	97.11	96.87	96.63	96.40
Med.	97.31	97.12	96.88	96.62	96.43
st dev	0.17	0.16	0.20	0.21	0.22
Min.	97.05	96.79	96.46	96.18	95.88
Max.	97.68	97.40	97.18	96.96	96.76

No.	Forward Voltage (V)				
	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs
1	7.930	7.646	7.436	7.590	8.218
2	7.886	7.695	7.550	7.612	7.713
3	7.798	7.716	7.518	7.534	7.542
4	7.904	7.656	7.152	7.626	7.409
5	7.782	7.677	7.954	7.625	7.605
6	7.855	7.591	7.481	7.671	7.496
7	7.804	7.489	7.260	7.676	7.720
8	7.816	7.589	7.426	7.576	7.648
9	7.782	7.580	7.437	7.572	7.603
10	7.823	7.577	7.463	7.739	7.786
11	7.700	7.658	7.424	7.650	7.670
12	7.813	7.691	7.733	7.621	7.697
13	7.748	[redacted]	7.858	7.737	7.754
[redacted]	[redacted]	7.575	7.929	7.691	7.934
15	7.721	7.647	7.537	7.904	7.822
16	7.786	7.698			

3.3 Data Set 1, 85°C, 750mA (Chromaticity Shift)

No.	u'	v'	CCT(K)	Chromaticity Shift (Δu'v')											
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs
1	0.2482	0.5130	3119	0.0004	0.0004	0.0004	0.0004	0.0006	0.0007	0.0008	0.0008	0.0008	0.0009	0.0010	0.0011
2	0.2488	0.5139	3096	0.0002	0.0004	0.0005	0.0005	0.0007	0.0009	0.0009	0.0010	0.0011	0.0011	0.0012	0.0012
3	0.2491	0.5146	3082	0.0001	0.0003	0.0004	0.0007	0.0007	0.0008	0.0008	0.0011	0.0012	0.0012	0.0012	0.0013
4	0.2485	0.5144	3100	0.0002	0.0004	0.0004	0.0006	0.0007	0.0009	0.0009	0.0011	0.0013	0.0013	0.0014	0.0014
5	0.2483	0.5125	3121	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008	0.0009	0.0009	0.0010	0.0012	0.0014	0.0017
6	0.2481	0.5149	3107	0.0002	0.0004	0.0005	0.0005	0.0007	0.0007	0.0009	0.0009	0.0009	0.0010	0.0013	0.0013
7	0.2479	0.5113	3141	0.0002	0.0002	0.0002	0.0004	0.0005	0.0006	0.0006	0.0006	0.0008	0.0008	0.0009	0.0012
8	0.2491	0.5144	3084	0.0001	0.0002	0.0005	0.0007	0.0009	0.0009	0.0010	0.0012	0.0011	0.0011	0.0012	0.0014
9	0.2486	0.5129	3107	0.0002	0.0004	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0011	0.0012	0.0013	0.0015
10	0.2489	0.5150	3086	0.0002	0.0003	0.0004	0.0008	0.0008	0.0009	0.0010	0.0012	0.0014	0.0016	0.0018	0.0020
11	0.2487	0.5143	3095	0.0002	0.0004	0.0004	0.0004	0.0005	0.0006	0.0006	0.0007	0.0009	0.0011	0.0013	0.0016
12	0.2486	0.5135	3106	0.0003	0.0004	0.0005	0.0004	0.0004	0.0004	0.0006	0.0008	0.0009	0.0009	0.0011	0.0012
13	0.2484	0.5123	3120	0.0004	0.0005	0.0004	0.0004	0.0004	0.0006	0.0006	0.0008	0.0009	0.0009	0.0	0.0013
14	0.2498	0.5127	3078	0.0002	0.0004	0.0005	0.0005	0.0006	0.0006	0.0007	0.0009	0.0010	0.0011	0.0014	0.0014

No.	Chromaticity Shift (Δu'v')				
	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs
1	0.0013	0.0015	0.0018	0.0021	0.0024
2	0.0013	0.0017	0.0020	0.0023	0.0026
3	0.0015	0.0017	0.0020	0.0023	0.0025
4	0.0015	0.0016	0.0019	0.0020	0.0023
5	0.0019	0.0019	0.0023	0.0025	0.0027
6	0.0014	0.0015	0.0019	0.0020	0.0022
7	0.0013	0.0015	0.0018	0.0021	0.0024
8	0.0015	0.0017	0.0020	0.0021	0.0024
9	0.0017	0.0018	0.0018	0.0019	0.0021
10	0.0021	0.0022	0.0024	0.0024	0.0025
11	0.0018	0.0021	0.0022	0.0023	0.0024
12	0.0017	0.0017	0.0019	0.0021	0.0022
13	0.0017	0.0019	0.0021	0.0024	0.0026
14	0.0017	0.0018	0.0020	0.0023	0.0025
15	0.0017	0.0019	0.0019	0.0023	0.0024
16	0.0017	0.0021	0.0022	0.0026	0.0028
17	0.0016	0.0020	0.0021	0.0025	0.0027
18	0.0014	0.0018	0.0020	0.0023	0.0025
19	0.0016	0.0019	0.0021	0.0023	0.0027
20	0.0018	0.0022	0.0022	0.0025	0.0027
21	0.0018	0.0021	0.0022	0.0024	0.0026
22	0.0020	0.0023	0.0023	0.0024	0.0026
23	0.0021	0.0024	0.0025	0.0026	0.0028
24	0.0017	0.0020	0.0021	0.0022	0.0023
25	0.0017	0.0021	0.0023	0.0024	0.0026
Avg.	0.0017	0.0019	0.0021	0.0023	0.0025
Med.	0.0017	0.0019	0.0021	0.0023	0.0025
st dev	0.0002	0.0003	0.0002	0.0002	0.0002
Min.	0.0013	0.0015	0.0018	0.0019	0.0021
Max.	0.0021	0.0024	0.0025	0.0026	0.0028

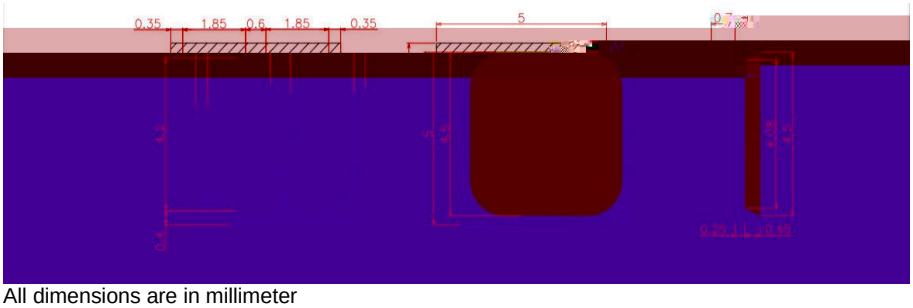
No.	Lumen Maintenance (%)				
	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs
26	96.98	96.79	96.47	96.14	95.86
27	96.50	96.21	96.00	95.67	95.36
28	96.66	96.27	95.95	95.62	95.32
29	96.55	96.34	96.07	95.71	95.33
30	97.11	96.87	96.61	96.43	96.28
31	96.96	96.56	96.27	96.00	95.60
32	96.68	96.39	96.08	95.76	95.44
33	96.78	96.50	96.20	95.80	95.42
34	96.79	96.47	96.28	95.94	95.59
35	96.89	96.65	96.37	96.01	95.63
36	96.58	96.32	96.05	95.80	95.57
37	96.44	96.13	95.82	95.55	95.24
38	96.53	96.20	95.92	95.57	95.22
39	96.49	96.14	95.90	95.50	95.28
40	96.98	96.63	96.40	96.11	95.84
41	96.55	96.23	96.02	95.83	95.49
42	96.60	96.28	95.96	95.58	95.35
43	96.54	96.16	96.01	95.73	95.36
44	96.59	96.42	96.19	95.95	95.66
45	96.80	96.55	96.25	96.09	95.80
46	96.61	96.27	96.03	95.79	95.53
47	96.44	96.25	95.93	95.67	95.39
48	96.42	96.06	95.79	95.59	95.28
49	96.63	96.40	96.22	96.04	95.88
50	96.74	96.50	96.11	95.95	95.71
Avg.	96.67	96.38	96.12	95.83	95.54
Med.	96.61	96.34	96.07	95.80	95.49
st dev	0.19	0.21	0.21	0.23	0.25
Min.	96.42	96.06	95.79	95.50	95.22
Max.	97.11	96.87	96.61	96.43	96.28

No.	Forward Voltage (V)				
	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs
26	8.045	7.557	7.886	7.819	7.769
27	7.751	7.562	7.806	7.689	7.765
28	7.795	7.699	7.788	7.674	7.960
29	7.807	7.588	7.759	7.856	7.988
30	7.737	7.534	7.698	7.581	7.729
31	7.717	7.577	7.926	7.881	7.757
32	7.610	7.502	7.729	7.706	7.783
33	7.681	7.647	7.581	7.674	7.826
34	7.685	7.626	7.637	7.693	7.857
35	7.578	7.613	7.599	7.753	7.698
36	7.644	7.688	7.665	8.013	8.241
37	7.549	7.788	7.575	8.155	7.898
38	7.701	7.858	7.606	7.850	8.966
39	7.593	7.657	7.583	8.195	8.554
40	7.512	7.558	7.806	8.082	8.097
41	7.724	7.769	7.889	8.191	8.311
42	7.679	7.822	7.804	8.157	8.182
43	7.584	7.768	7.727	8.057	8.043
44	7.556	7.784	7.894	8.082	7.747
45	7.473	7.738	7.778	8.023	7.875
46	7.520	7.631	7.660	8.021	8.344
47	7.626	7.748	7.552	8.142	7.902
48	7.547	7.549	7.546	7.892	8.371
49	7.517	7.636	7.621	7.912	7.759
50	7.478	7.620	7.629	7.999	7.815
Avg.	7.644	7.661	7.710	7.924	8.009
Med.	7.626	7.636	7.698	7.912	7.898
st dev	0.128	0.100	0.118	0.188	0.311
Min.	7.473	7.502	7.546	7.581	7.698
Max.	8.045	7.858	7.926	8.195	8.966

No.	naticity Shift (Δu'v')

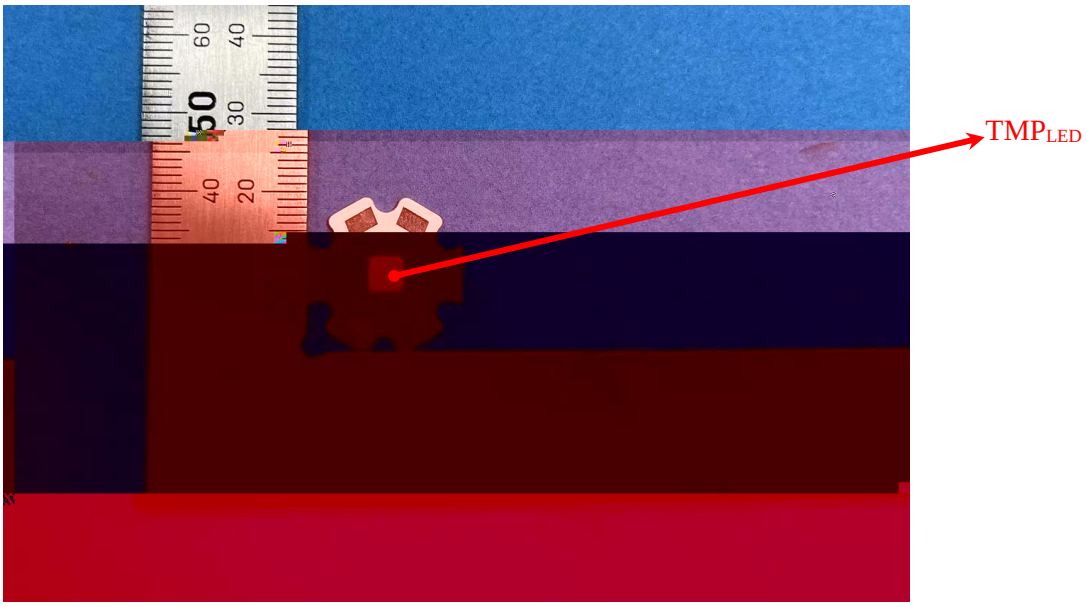
4 - DUT Photo

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 DUT Photo



Directions

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