



TEST REPORT

According to ANSI/IES LM-80-15

For

HL

Report Type: 6000 Hours Test Report	Product Type: LED Package
Reviewed By:	Pote Wang
Report Number:	SZ2220119-02803E-10-6000
Test Date:	2022-01-26 to 2022-10-13
Report Date:	2022-10-31
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:

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TABLE OF CONTENTS

1 - General Information	3
1.1 Description of LED Light Sources#.....	3
1.2 Standards and Reference Documentations.....	3
1.3 Testing Equipment.....	4
1.4 Drive Level.....	4
1.5 Ambient Conditions for Maintenance Test.....	4
1.6 Photometric Measurement Method and Uncertainty.....	4
1.7 Statement of Traceability.....	4
1.8 Sample Set.....	4
2 - Summary of Test Result	6
3 - Test Data	7
3.1 Data Set 1, 55°C, 60mA (Lumen Maintenance).....	7
3.2 Data Set 1, 55°C, 60mA (Forward Voltage).....	8
3.3 Data Set 1, 55°C, 60mA (Chromaticity Shift).....	9
3.4 Data Set 2, 105°C, 60mA (Lumen Maintenance).....	10
3.5 Data Set 2, 105°C, 60mA (Forward Voltage).....	11
3.6 Data Set 2, 105°C, 60mA (Chromaticity Shift).....	12
4 - DUT Photo	13
4.1 Mechanical Dimensions.....	13
4.2 DUT Photo.....	13
Directions	14



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The NVLAP Lab Code is 200707-0

1 - General Information

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Part Number: HL-A-4014H489W-S1-HR3-DM-HL

Number of Units: 25

Case Temperature: >53°C

Ambient Temperature: >50°C

Life Test Drive Current: 60mA

Measurement Current: 60mA

Data Set 2: 105°C, 60mA

Part Number: HL-A-4014H489W-S1-HR3-



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2 - Summary of Test Result

Data Set:	Sample Size	Failures Observed:	Test Interval	Test Duration	
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3 - Test Data

3.1 Data Set 1, 55°C, 60mA (Lumen Maintenance)

No.	(lm)	Lumen Maintenance (%)					
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	24.60	100.28	99.88	99.76	99.47	99.27	99.07
2	24.68	100.20	99.92	99.80	99.64	99.43	99.31
3	25.25	100.12	99.92	99.72	99.56	99.37	99.09
4	25.25	100.08	99.88	99.72	99.56	99.29	99.05
5	24.93	100.24	100.16	99.84	99.68	99.56	99.28
6	25.55	100.20	99.96	99.57	99.22	99.02	98.79
7	24.89	100.00	99.76	99.48	99.16	98.92	98.71
8	25.13	100.28	99.96	99.72	99.40	99.12	98.85
9	24.84	100.36	100.20	99.88	99.60	99.44	99.15
10	25.20	99.88	99.60	99.29	99.05	98.85	98.65
11	24.84	100.24	99.96	99.68	99.44	99.19	98.95
12	25.56	100.04	99.88	99.53	99.30	99.02	98.83
13	24.92	100.12	99.96	99.68	99.48	99.32	99.16
14	25.01	99.84	99.44	99.16	98.92	98.64	98.44
15	25.65	100.16	99.92	99.73	99.45	99.30	99.10
16	25.00	99.88	99.56	99.20	98.92	98.64	98.52
17	25.06	100.20	99.88	99.76	99.56	99.40	99.24
18	25.13	100.32	99.92	99.68	99.40	99.20	99.01
19	25.05	99.88	99.72	99.48	99.32	99.08	98.88
20	24.90	100.20	99.96	99.76	99.60	99.36	99.20
21	24.98	100.08	99.92	99.60	99.40	99.20	98.88
22	25.27	99.96	99.84	99.53	99.33	99.09	98.85
23	25.54	99.84	99.65	99.45	99.26	99.10	98.86
24	25.45	99.92	99.72	99.61	99.41	99.14	98.86
25	25.04	99.92	99.56	99.52	99.28	99.04	98.84
Avg.	25.11	100.09	99.85	99.61	99.38	99.16	98.94
Med.	25.05	100.12	99.88	99.68	99.40	99.19	98.88
st dev	0.28	0.16	0.18	0.19	0.21	0.23	0.23
Min.	24.60	99.84	99.44	99.16	98.92	98.64	98.44
Max.	25.65	100.36	100.20	99.88	99.68	99.56	99.31



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3.2 Data Set 1, 55°C, 60mA (Forward Voltage)

No.	Forward Voltage (V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
1	3.074	3.091	3.092	3.090	3.100	3.097	3.084
2	3.093	3.082	3.091	3.087	3.077	3.082	3.096
3	3.084	3.074	3.086	3.102	3.101	3.071	3.082
4	3.109	3.091	3.102	3.097	3.088	3.097	3.105
5	3.076	3.078	3.109	3.106	3.087	3.105	3.100
6	3.082	3.105	3.101	3.078	3.101	3.091	3.092
7	3.091	3.080	3.086	3.074	3.089	3.094	3.077
8	3.086	3.072	3.073	3.065	3.092	3.082	3.106
9	3.105	3.091	3.094	3.093	3.094	3.091	3.091
10	3.097	3.084	3.097	3.114	3.083	3.104	3.096
11	3.102	3.103	3.101	3.102	3.094	3.109	3.095
12	3.082	3.074	3.087	3.083	3.091	3.104	3.102
13	3.088	3.084	3.084	3.079	3.077	3.108	3.098
14	3.107	3.088	3.087	3.084	3.103	3.101	3.092
15	3.093	3.084	3.106	3.106	3.079	3.092	3.106
16	3.095	3.095	3.123	3.119	3.099	3.083	3.092
17	3.080	3.078	3.089	3.094	3.081	3.109	3.095
18	3.070	3.072	3.079	3.090	3.109	3.079	3.077

3 . 30 . 9 0 2 9 2 3 . 0 3 9 . 2 0 3 9 . 2 0 3.099 2 3.076 . 0 9 2

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3.4 Data Set 2, 105°C, 60mA (Lumen Maintenance) 230.23 0.480010 g -0.00288 Tc{230.23 0.480010 g99.864 577.66 0.48 0.480010

No.	(lm)	Lumen Maintenance (%)					
	Ohr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
26	25.66	99.96	99.53	99.38	99.06	98.79	98.56
27	24.89	100.08	99.56	99.32	99.08	98.83	98.59
28	25.64	100.08	99.84	99.45	99.18	98.95	98.75
29	25.25	100.20	99.96	99.80	99.60	99.37	99.05
30	25.66	100.16	99.96	99.57	99.30	99.06	98.87
31	25.40	99.76	99.61	99.21	98.98	98.78	98.54
32	24.37	100.12	99.88	99.59	99.38	99.14	98.93
33	25.85	100.19	99.85	99.54	99.30	99.07	98.80
34	25.20	100.08	99.88	99.52	99.29	99.01	98.73
35	25.66	100.19	99.81	99.45	99.18	98.91	98.64
36	24.86	100.12	99.92	99.56	99.28	99.07	98.75



3.5 Data Set 2, 105°C, 60mA (Forward Voltage)

No.	Forward Voltage (V)						
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs
26	3.084	3.082	3.086	3.084	3.084	3.093	3.094
27	3.088	3.086	3.087	3.103	3.091	3.105	3.092
28	3.108	3.118	3.117	3.109	3.099	3.106	3.095
29	3.091	3.093	3.073	3.080	3.088	3.093	3.095
30	3.074	3.072	3.075	3.092	3.084	3.100	3.097
31	3.095	3.091	3.102	3.106	3.099	3.095	3.105
32	3.086	3.084	3.091	3.115	3.100	3.102	3.109
33	3.070	3.070	3.079	3.077	3.086	3.089	3.086
34	3.103	3.099	3.103	3.103	3.096	3.092	3.099
35	3.105	3.105	3.103	3.101	3.091	3.107	3.084
36	3.097	3.097	3.101	3.101	3.100	3.108	3.099
37	3.097	3.095	3.096	3.095	3.096	3.101	3.099
38	3.088	3.091	3.091	3.103	3.090	3.081	3.097
39	3.082	3.082	3.091	3.108	3.096	3.092	3.081
40	3.101	3.101	3.105	3.106	3.093	3.104	3.098
41	3.088	3.091	3.098	3.095	3.090	3.110	3.098
42	3.074	3.076	3.082	3.098	3.098	3.093	3.098
43	3.084	3.084	3.089	3.083	3.087	3.090	3.097
44	3.084	3.082	3.092	3.103	3.108	3.095	3.091
45	3.063	3.065	3.075	3.087	3.110	3.107	3.107
46	3.109	3.118	3.106	3.102	3.099	3.093	3.090
47	3.063	3.065	3.074	3.086	3.086	3.107	3.085
48	3.086	3.086	3.099	3.103	3.096	3.100	3.096
49	3.099	3.099	3.102	3.098	3.097	3.082	3.097
50	3.084	3.084	3.087	3.091	3.087	3.080	3.092
Avg.	3.088	3.089	3.092	3.097	3.094	3.097	3.095
Med.	3.088	3.086	3.091	3.101	3.096	3.095	3.097
st dev	0.013	0.014	0.012	0.010	0.007	0.009	0.007
Min.	3.063	3.065	3.073	3.077	3.084	3.080	3.081
Max.	3.109	3.118	3.117	3.115	3.110	3.110	3.109



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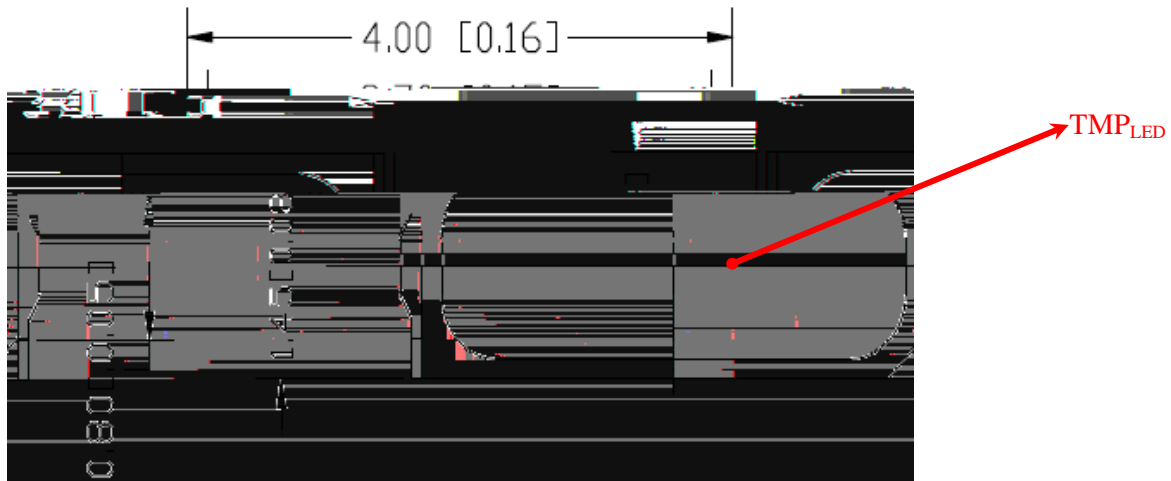
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3.6



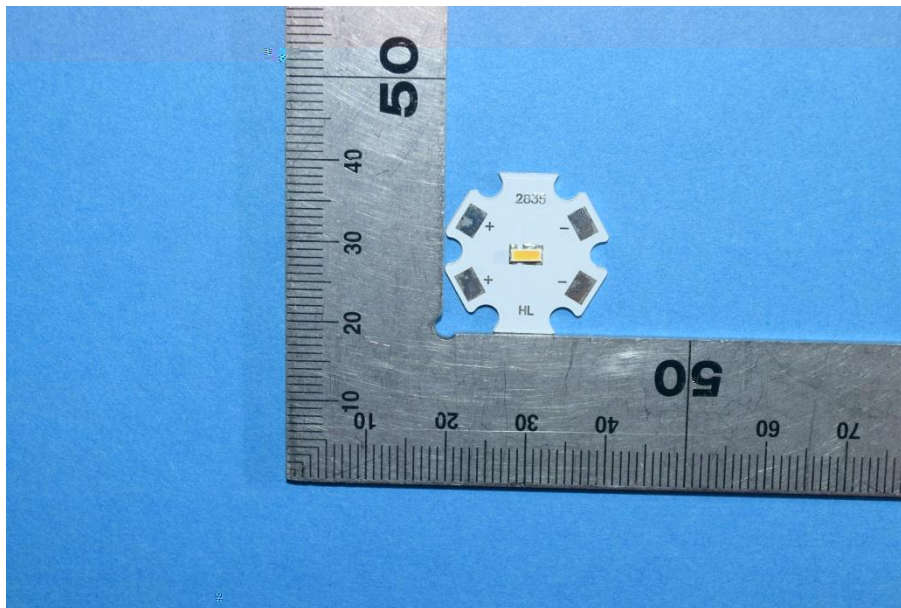
4 - DUT Photo

4.1 Mechanical Dimensions



All dimensions are in millimeter

4.2 DUT Photo





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Directions

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