TEST 675ETGS11 gI-3(a)7 I-5(o)7 -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-LH1308F95W-6B4C6(Ra4)-S-FC-DS

Report Type: 10000 Hours Test Report	**Product Type:** LED Module
Reviewed By:	Pote Wang
Report Number:	SZ2220407-12752E-10-10000
Test Date:	2022-04-10 to 2023-07-05
Report Date:	2023-07-17
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:

60 PCS test samples were in good condition and received on 2022-04-07. The samples were numbered from 1 to 15, 16 to 30, 31 to

1.3 Testing Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
High Accuracy Array Spectroradiometer	EVERFINE	HAAS 2000	P600674CM5391140	2022-11-18	2023-11-17
0.5M Integrating Sphere	EVERFINE	0.5m	NA	2022-11-18	2023-11-17
LED Test Source	EVERFINE	LTS-300	P185616CJ1391143	2022-11-18	2023-11-17
Standard Light Source	EVERFINE	D062	1011093	2021-09-15	2023-09-14
Multilayer aging machine	BACL	B2-270	20015	2022-10-19	2023-10-18
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090005	2022-10-20	2023-10-19
Digital CC&CV DC Power Supply	EVERFINE	WY5015	11090003	2022-10-20	2023-10-19

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 $_{LED}$) 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
.

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 . 2 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: 55°C, 700mA(1600K)

Part Number:	HL-LH1308F95W-6B4C6(Ra4)-S-FC-DS
Number of Units:	15
Case Temperature:	>53°C
Ambient Temperature:	>50°C
Life Test Drive Current:	700mA
Measurement Current:	700mA

Data Set 2: 105°C, 700mA(1600K)

Part Number:	HL-LH1308F95W-6B4C6(Ra4)-S-FC-DS
Number of Units:	15
Case Temperature:	>103°C
Ambient Temperature:	>100°C
Life Test Drive Current:	700mA
Measurement Current:	700mA

Data Set 3: 55°C, 700mA(8000K)

Part Number:	HL-LH1308F95W-6B4C6(Ra4)-S-FC-DS
Number of Units:	15
Case Temperature:	>53°C
Ambient Temperature:	>50°C
Life Test Drive Current:	700mA
Measurement Current:	700mA

Data Set 4: 105°C, 700mA(8000K)

Part Number:	HL-LH1308F95W-6B4C6(Ra4)-S-FC-DS
Number of Units:	15
Case Temperature:	>103°C
Ambient Temperature:	>100°C
Life Test Drive Current:	700mA
Measurement Current:	700mA

2 - Summary of Test Result

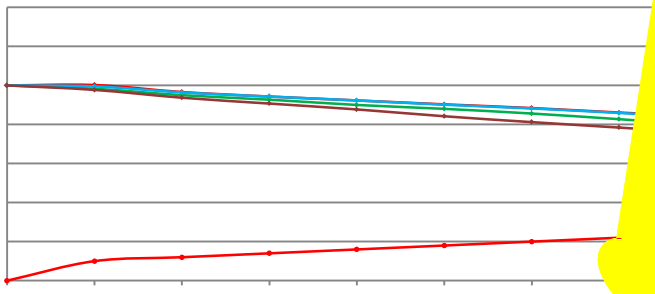
Data Set:	Sample Size	Failures Observed:	Test Interval	Test Duration	α	β	Reporte L_{70} Li
1	15	0	1000hrs	10000hrs	2.286E-06	1.002	>55,0
2	15	0	1000hrs	10000hrs	2.898E-06	1.003	>55,0
3	15	0	1000hrs	10000hrs	2.295E-06	1.002	>55,(
4	15	0	1000hrs	10000hrs	2.983E-06	0.999	>55,

Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Average Chromaticity Shift

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	700
1	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.(
2	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.
3	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0
4	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	(

Average Lumen Maintenance and Chromaticity Shift VS. Time



3 -

3.3 Data Set 1, 55°C, 700mA, 1600K (Chromaticity Shift)

No.			CCT(K)									
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
1	0.3324	0.5439	1710	0.0002	0.0003	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011
2	0.3369	0.5434	1669	0.0007	0.0008	0.0009	0.0011	0.0013	0.0014	0.0015	0.0016	0.0017	0.0019
3	0.3338	0.5441	1697	0.0002	0.0003	0.0004	0.0006	0.0007	0.0008	0.0010	0.0012	0.0013	0.0014
4	0.3365	0.5436	1673	0.0007	0.0009	0.0010	0.0011	0.0013	0.0014	0.0015	0.0016	0.0017	0.0017
5	0.3328	0.5439	1706	0.0008	0.0009	0.0008	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0011
6	0.3356	0.5437	1681	0.0005	0.0006	0.0008	0.0010	0.0011	0.0012	0.0013	0.0014	0.0014	0.0015
7	0.3361	0.5437	1677	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0013	0.0014	0.0015
8	0.3338	0.5437	1697	0.0002	0.0003	0.0004	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010
9	0.3347	0.5437	1689	0.0006	0.0008	0.0009	0.0010	0.0012	0.0013	0.0014	0.0015	0.0016	0.0017
10	0.3331	0.5437	1704	0.0003	0.0004	0.0005	0.0007	0.0008	0.0009	0.0011	0.0012	0.0014	0.0015
11	0.3351	0.5436	1686	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0014	0.0015	0.0016
12	0.3338	0.5439	1698	0.0004	0.0005	0.0006	0.0007	0.0008	0.0010	0.0012	0.0014	0.0015	0.0016
13	0.3356	0.5436	1681	0.0003	0.0005	0.0006	0.0007	0.0008	0.0008	0.0008	0.0008	0.0009	0.0010
14	0.3345	0.5437	1691	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0009
15	0.3384	0.5432	1656	0.0003	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0012	0.0013
Avg.	0.3349	0.5437	1688	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0013	0.0014
Med.	0.3347	0.5437	1689	0.0004	0.0005	0.0006	0.0007	0.0008	0.0010	0.0011	0.0012	0.0014	0.0015
st dev	0.0017	0.0002	15	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
Min.	0.3324	0.5432	1656	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0009
Max.	0.3384	0.5441	1710	0.0008	0.0009	0.0010	0.0011	0.0013	0.0014	0.0015	0.0016	0.0017	0.0019

3.4 Data Set 2, 105°C, 700mA, 1600K (Lumen Maintenance)

No.		Lumen Maintenance (%)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
16	574.20	99.65	99.44	99.36	99.27	98.97	98.85	98.57	98.29	98.07	98.00
17	572.90	99.35	99.25	99.14	99.01	98.87	98.80	98.45	97.94	97.78	97.49
18	603.90	99.67	99.59	99.35	99.22	98.97	98.64	98.49	98.43	97.93	97.50
19	572.80	99.39	99.34	99.32	99.28	99.07	98.73	98.50	98.29	97.87	97.57
20	557.90	100.34	99.71	99.57	99.48	99.27	98.98	98.83	98.46	98.10	97.88
21	580.80	99.98	99.43	99.16	98.86	98.79	98.52	98.38	97.95	97.81	97.52
22	577.80	100.17	99.57	99.29	98.72	98.43	98.15	97.92	97.78	97.65	97.51
23	602.50	99.92	99.50	99.07	98.51	98.29	97.71	97.29	97.08	96.71	96.50
24	566.70	99.22	99.08	98.99	98.91	98.71	98.57	98.29	97.86	97.58	97.16
25	577.80	100.28	99.57	99.29	99.15	98.91	98.82	98.44	98.22	98.08	97.58

3.5 Data Set 2, 105°C, 700mA, 1600K (Forward Voltage)

No.	Forward Voltage (V)										
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
16	17.29	17.29	17.20	17.40	17.36	17.22	17.39	17.36	17.38	17.23	17.39
17	17.28	17.29	17.27	17.29	17.26	17.22	17.35	17.38	17.40	17.39	17.32
18	17.27	17.29									

3.9 Data Set 3, 55°C, 700mA, 8000K (Chromaticity Shift)

No.			CCT(K)										
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
31	0.1976	0.4491	8042	0.0007	0.0008	0.0009	0.0010	0.0008	0.0009	0.0010	0.0011	0.0012	0.0014
32	0.1970	0.4483	8190	0.0003	0.0005	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0013	0.0014
33	0.1974	0.4462	8382	0.0006	0.0007	0.0008	0.0008	0.0010	0.0010	0.0011	0.0012	0.0013	0.0014
34	0.1966	0.4575	7350	0.0001	0.0002	0.0003	0.0004	0.0005	0.0007	0.0008	0.0009	0.0010	0.0011
35	0.1975	0.4467	8319	0.0001	0.0002	0.0003	0.0005	0.0006	0.0007	0.0008	0.0010	0.0011	0.0012
36	0.1959	0.4513	7965	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0009	0.0009	0.0011	0.0013
37	0.1964	0.4537	7705	0.0004	0.0005	0.0006	0.0006	0.0007	0.0009	0.0010	0.0011	0.0012	0.0012
38	0.1957	0.4540	7724	0.0001	0.0002	0.0003	0.0004	0.0005	0.0007	0.0008	0.0009	0.0010	0.0011
39	0.1969	0.4530	7717	0.0007	0.0008	0.0008	0.0009	0.0011	0.0012	0.0013	0.0014	0.0014	0.0016
40	0.1969	0.4502	7985	0.0007	0.0007	0.0008	0.0008	0.0009	0.0010	0.0011	0.0011	0.0012	0.0013
41	0.1972	0.4517	7818	0.0005	0.0006	0.0006	0.0006	0.0008	0.0009	0.0011	0.0011	0.0012	0.0013
42	0.1962	0.4530	7784	0.0004	0.0006	0.0006	0.0007	0.0008	0.0010	0.0011	0.0011	0.0012	0.0013
43	0.1964	0.4502	8030	0.0003	0.0004	0.0004	0.0005	0.0006	0.0007	0.0008	0.0008	0.0009	0.0010
44	0.1978	0.4530	7652	0.0003	0.0004	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011
45	0.1969	0.4552	7527	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0010	0.0011	0.0012
Avg.	0.1968	0.4515	7879	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0013
Med.	0.1969	0.4517	7818	0.0004	0.0005	0.0006	0.0006	0.0008	0.0009	0.0010	0.0011	0.0012	0.0013
st dev	0.0006	0.0031	288	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002
Min.	0.1957	0.4462	7350	0.0001	0.0002	0.0003	0.0004	0.0005	0.0007	0.0008	0.0008	0.0009	0.0010
Max.	0.1978	0.4575	8382	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0013	0.0014	0.0014	0.0016

3.10 Data Set 4, 105°C, 700mA, 8000K (Lumen Maintenance)

No.		Lumen Maintenance (%)									
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
46	1410.00	100.14	99.86	99.43	98.94	98.44	97.94	97.59	97.23	96.81	96.52
47	1406.00	99.64	99.50	99.22	98.93	98.51	98.15	97.80	97.51	97.23	97.08
48	1399.00	99.71	99.50	99.14	98.78	98.50	98.07	97.71	97.57	97.36	97.07
49	1404.00	99.72	99.29	99.00	98.72	98.36	98.08	97.86	97.58	97.28	96.35

3.11 Data Set 4, 105°C, 700mA, 8000K (Forward Voltage)

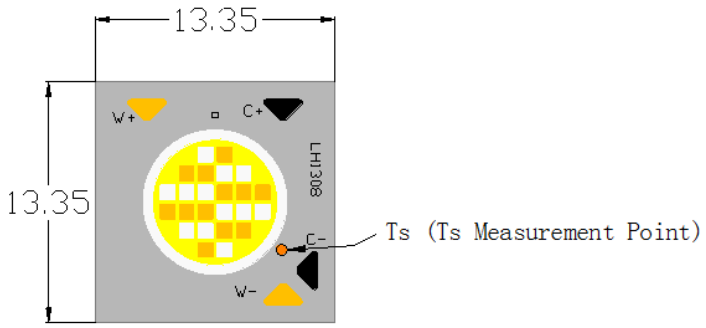
No.	Forward Voltage (V)										
	0hr(Initial)	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs
46	17.42	17.45	17.45	17.30	17.36	17.36	17.58	17.35	17.38	17.37	17.54
47	17.31	17.34	17.29	17.31	17.36	17.38	17.40	17.33	17.36	17.37	17.37
48	17.35	17.31	17.27	17.35	17.30	17.36	17.38	17.31	17.22	17.35	17.39
49	17.28	17.32	17.30	17.31	17.39	17.31	17.38	17.41	17.35	17.31	17.31
50	17.35	17.39	17.47	17.38	17.30	17.48	17.39	17.38	17.39	17.47	17.31
51	17.40	17.38	17.31	17.39	17.31	17.37	17.39	17.39	17.30	17.39	17.30
52	17.32	17.33	17.28	17.35	17.28	17.31	17.38	17.37	17.43	17.39	17.40
53	17.35	17.34	17.48	17.39	17.37	17.49	17.56	17.36	17.45	17.33	17.51
54	17.37	17.49	17.38	17.40	17.46	17.37	17.47	17.37	17.39	17.35	17.44
55	17.34	17.33	17.30	17.36	17.31	17.26	17.52	17.40	17.29	17.47	17.50
56	17.34	17.36	17.44	17.40	17.43	17.28	17.31	17.31	17.31	17.23	17.36
57	17.33	17.37	17.36	17.45	17.36	17.27	17.40	17.39	17.31	17.37	17.43
58	17.36	17.38	17.38	17.36	17.35	17.38	17.32	17.36	17.35	17.51	17.50
59	17.34	17.42	17.36	17.31	17.23	17.26	17.39	17.29	17.42	17.31	17.36
60	17.37	17.39	17.39	17.36	17.36	17.42	17.38	17.31	17.31	17.31	17.36
Avg.	17.35	17.37	17.36	17.36	17.34	17.35	17.42	17.35	17.35	17.37	17.41
Med.	17.35	17.37	17.36	17.36	17.36	17.36	17.39	17.36	17.35	17.37	17.39
st dev	0.03	0.05	0.07	0.04	0.06	0.07	0.08	0.04	0.06	0.07	0.08
Min.	17.28	17.31	17.27	17.30	17.23	17.26	17.31	17.29	17.22	17.23	17.30
Max.	17.42	17.49	17.48	17.45	17.46	17.49	17.58	17.41	17.45	17.51	17.54

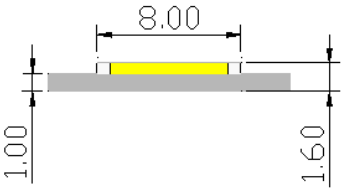
3.12 Data Set 4, 105°C, 700mA, 8000K (Chromaticity Shift)

No.			CCT(K)									
	0hr(Initial)			1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs

4 - DUT Photo

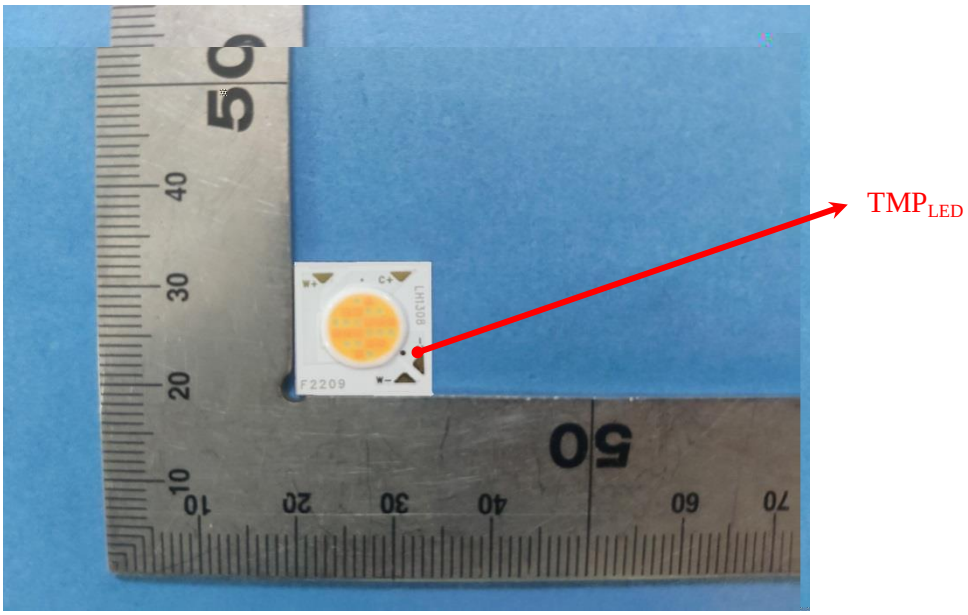
4.1 Mechanical Dimensions





All dimensions are in millimeter

4.2 DUT Photo



Directions

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