Shenzhen Liang'an Photoelectricity Technology Co.,Ltd.

TEST REPORT

Prepared For:	Shenzhen Liang’an Photoelectricity Technology Co.,Ltd. No.1 Building,the 3rd Industrial Zone,Shiyan Town,Bao’an District, Shenzhen,China
Product Name:	LED
Model:	LA-DZL10N70W1109DH2-R2
Prepared By:	Shenzhen BST Technology Co., Ltd. Building No.23-24, Zhiheng industrial park, Guankouer Road, Nantou, Nanshan District, Shenzhen, Guangdong, China.
Test Date:	Nov. 21, 2015 – Aug. 23, 2016
Date of Report:	Aug. 25, 2016
Report No.:	BST1608484190005SR-2

TEST REPORT

LUMEN MAINTENANCE TESTING ACCORDING TO THE IESNA LM-80-08 TEST STANDARD

Testing laboratory ……..	:	Shenzhen BST Technology Co., Ltd.
Address ……..	:	Building No.23-24, Zhiheng industrial park, Guankouer Road, Nantou, Nanshan District, Shenzhen, Guangdong, China.
Testing location ……..	:	Shenzhen BST Technology Co., Ltd.
Applicant ……	:	Shenzhen Liang’an Photoelectricity Technology Co.,Ltd.
Address ……	:	No.1 Building,the 3rd Industrial Zone,Shiyan Town,Bao’an District, Shenzhen,China
Test Procedure……	:	The IESNA LM-80-2008: Measuring Lumen Maintenance of LED Light Sources.
Non-standard test method ……	:	N.A.
Type of test object ……	:	LED
Trademark ……	:	N.A.
Model/type reference ……	:	LA-DZL10N70W1109DH2-R2
Rating ……	:	33-38V ⎓, 2000mA, 70W
Manufacturer ……	:	Shenzhen Liang’an Photoelectricity Technology Co.,Ltd.
Address ……..	:	No.1 Building,the 3rd Industrial Zone,Shiyan Town,Bao’an District, Shenzhen,China

Name and address of the testing laboratory:	**Shenzhen BST Technology Co., Ltd.** **Building No.23-24, Zhiheng industrial park,** **Guankouer Road, Nantou, Nanshan District,** **Shenzhen, Guangdong, China**

Prepared by : Jacky Zhang

Engineer

Reviewer :

Supervisor

Approved & Authorized Signer :

Test Results Summary:

Summary	I	II	III
Condition	Ts=54.8℃ T_A=54.7℃ R.H.<65% I=2000mA	Ts=84.8℃ T_A=84.6℃ R.H.<65% I=2000mA	Ts=104.9℃ T_A=104.7℃ R.H.<65% I=2000mA
Duration(hour)	6000	6000	6000
Interval(hour)	0,1000,2000,3000,4000, 5000, 6000	0,1000,2000,3000,4000, 5000, 6000	0,1000,2000,3000,4000, 5000, 6000
Sample Size	20	20	20
Average Lumen Maintenance at 6000 hour	96.42%	95.74%	95.19%
Average Chromaticity Shift △u'v' at 6000 hour	0.0024	0.0030	0.0042
Failure	0	0	0
α	7.413E-06	8.585E-06	9.731E-05
β	1.016	1.009	1.011
Calculated L70(6k) (hours)	49000	43000	38000
Reported L70(6k) (hours)	>36000	>36000	>36000

Equipments Used for Testing:

Equipment	Model	Equipment No.
DC Power Supply	IT6122	BSTNX001
Power meter	WT210	BSTNX001
Spectroradiometer	SPEC300	BN067
0.3m Integrating Sphere	0.3m	BSTNX002

Test Data:
Operating Condition: 55℃/2000mA

No.	Φ(lm)	V_F(V)	Lumen maintenance (%)					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	7671.4	36.1	99.92	99.68	98.61	96.87	97.25	96.61
2	7667.8	36.2	99.69	99.18	98.25	97.43	96.79	95.88
3	7669.3	36.1	100.04	99.38	99.31	96.97	97.18	96.38
4	7665.7	36.2	99.98	99.12	98.85	97.38	97.23	96.79
5	7658.5	36.2	99.78	99.18	98.73	96.88	97.23	96.51
6	7663.9	36.3	99.67	99.21	98.37	97.48	97.22	96.43
7	7669.3	36.1	99.95	99.32	98.37	97.35	96.82	96.77
8	7664.5	36.2	99.96	99.36	98.81	97.42	96.81	95.92
9	7668.7	36.1	99.89	99.19	98.45	97.36	96.68	96.47
10	7667.5	36.2	99.92	99.74	98.26	97.43	96.85	96.66
11	7672.4	36.1	99.87	99.18	98.85	97.43	96.96	96.62
12	7673.1	36.2	100.06	99.28	98.73	97.65	96.75	96.33
13	7669.4	36.2	99.89	99.28	98.37	97.12	97.14	96.39
14	7673.3	36.3	99.96	99.31	98.11	97.43	97.12	96.66
15	7675.5	36.1	99.76	99.37	98.28	97.42	97.16	96.29
16	7666.7	36.2	99.92	99.21	98.57	97.49	96.83	96.34
17	7672.9	36.1	99.67	99.24	98.68	97.38	97.23	96.49
18	7669.8	36.2	99.95	99.42	98.62	97.41	96.82	96.28
19	7670.6	36.1	99.87	99.33	98.36	97.41	96.83	96.41
20	7672.4	36.2	99.93	99.28	98.28	97.43	96.92	96.25
Average	7669.1	36.2	99.88	99.31	98.54	97.34	96.99	96.42
Median	7669.4	36.2	99.92	99.28	98.51	97.42	96.94	96.42
St, Dev.	4.0	0.1	0.11	0.16	0.29	0.21	0.20	0.24
Max	7675.5	36.3	100.06	99.74	99.31	97.65	97.25	96.79
Min	7658.5	36.1	99.67	99.12	98.11	96.87	96.68	95.88

Operating Condition: 85℃/2000mA

No.	Φ(lm)	V_F(V)	Lumen maintenance (%)					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	7670.9	36.1	99.85	99.12	98.23	97.28	96.85	95.83
2	7667.6	36.2	99.69	99.18	98.26	97.33	97.07	95.68
3	7669.2	36.1	100.02	99.23	98.63	97.52	97.12	95.88
4	7665.7	36.2	99.98	99.12	98.85	97.44	96.33	95.49
5	7657.4	36.2	99.82	99.18	98.62	97.39	96.66	95.84
6	7662.4	36.3	99.87	99.21	98.37	97.62	96.28	95.85
7	7668.7	36.1	99.95	99.18	98.37	97.18	96.29	95.68
8	7664.8	36.2	99.93	99.25	98.62	97.39	96.39	95.67
9	7668.1	36.1	99.89	99.19	98.45	97.55	97.21	95.63
10	7666.7	36.2	99.98	99.33	98.54	97.52	97.15	95.46
11	7671.5	36.1	99.89	99.18	98.39	97.44	97.08	95.35
12	7672.6	36.2	99.85	99.28	98.73	97.34	97.12	95.28
13	7667.9	36.2	99.84	99.25	98.56	97.85	96.85	95.69
14	7671.8	36.3	99.96	99.31	98.26	97.82	96.78	95.89
15	7674.3	36.1	99.92	99.32	98.28	97.65	96.85	95.97
16	7665.6	36.2	99.92	99.21	98.33	97.12	96.28	95.87
17	7671.7	36.1	99.85	99.24	98.34	97.33	96.37	95.89
18	7669.3	36.2	99.95	99.26	98.35	97.39	96.25	96.11
19	7670.5	36.1	99.87	99.33	98.36	97.54	96.28	95.83
20	7672.1	36.2	99.93	99.28	98.28	97.53	96.54	95.94
Average	7668.4	36.2	99.90	99.23	98.44	97.46	96.69	95.74
Median	7669.0	36.2	99.91	99.24	98.37	97.44	96.72	95.83
St, Dev.	4.0	0.1	0.07	0.06	0.18	0.19	0.36	0.22
Max	7674.3	36.3	100.02	99.33	98.85	97.85	97.21	96.11
Min	7657.4	36.1	99.69	99.12	98.23	97.12	96.25	95.28

Operating Condition: 105℃/2000mA

No.	Φ(lm)	V_F(V)	Lumen maintenance (%)					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	7668.4	36.1	99.89	99.08	98.56	97.33	95.88	95.34
2	7664.2	36.2	99.77	99.18	98.64	97.28	96.29	95.32
3	7665.3	36.1	99.69	99.34	98.33	97.51	96.34	95.87
4	7661.7	36.2	99.88	98.96	98.25	97.34	96.33	95.37
5	7655.5	36.2	99.85	99.52	97.98	97.28	95.85	94.76
6	7659.5	36.3	99.87	99.21	98.12	97.66	95.58	94.56
7	7666.1	36.1	99.92	99.25	98.33	97.55	95.39	94.16
8	7662.2	36.2	99.96	99.25	98.08	97.74	95.28	95.07
9	7666.0	36.1	99.91	99.36	98.26	97.58	96.28	95.06
10	7665.5	36.2	99.92	99.33	98.39	97.52	96.33	95.19
11	7669.4	36.1	99.89	99.34	98.18	97.33	96.85	95.96
12	7666.3	36.2	100.08	99.37	98.54	97.28	96.84	94.97
13	7664.7	36.2	99.85	99.18	98.66	97.66	96.85	95.29
14	7671.7	36.3	99.96	99.09	98.71	97.69	96.71	95.86
15	7672.5	36.1	99.77	99.09	98.75	97.81	96.85	95.18
16	7666.2	36.2	100.05	99.21	98.84	97.89	96.74	95.03
17	7672.3	36.1	99.92	99.18	98.29	97.66	96.52	95.18
18	7666.2	36.2	99.95	99.21	98.39	97.54	96.18	95.15
19	7668.1	36.1	99.88	99.18	97.88	97.15	96.28	94.77
20	7669.3	36.2	99.93	99.28	98.42	97.34	96.45	95.61
Average	7666.1	36.2	99.90	99.23	98.38	97.51	96.29	95.19
Median	7666.2	36.2	99.90	99.21	98.36	97.53	96.33	95.18
St, Dev.	4.2	0.1	0.09	0.13	0.26	0.21	0.48	0.44
Max	7672.5	36.3	100.08	99.52	98.84	97.89	96.85	95.96
Min	7655.5	36.1	99.69	98.96	97.88	97.15	95.28	94.16

Operating Condition: 55℃/2000mA

No.	Ra	CCT(K)	Chromaticity Shift △u'v'					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	81.0	3025	0.0013	0.0014	0.0015	0.0019	0.0025	0.0022
2	80.7	3036	0.0015	0.0016	0.0018	0.0021	0.0023	0.0018
3	81.0	3017	0.0013	0.0016	0.0017	0.0019	0.0024	0.0025
4	80.4	3012	0.0010	0.0013	0.0016	0.0018	0.0023	0.0023
5	81.0	3018	0.0012	0.0013	0.0016	0.0018	0.0019	0.0025
6	80.7	2942	0.0014	0.0016	0.0017	0.0018	0.0019	0.0022
7	80.6	3051	0.0011	0.0013	0.0014	0.0015	0.0019	0.0025
8	80.7	3034	0.0013	0.0014	0.0015	0.0017	0.0019	0.0023
9	81.2	3043	0.0012	0.0013	0.0014	0.0015	0.0016	0.0025
10	81.0	3068	0.0011	0.0012	0.0013	0.0016	0.0018	0.0025
11	80.5	2952	0.0010	0.0011	0.0013	0.0015	0.0016	0.0028
12	80.6	2981	0.0010	0.0013	0.0015	0.0017	0.0018	0.0026
13	81.2	3035	0.0009	0.0011	0.0012	0.0015	0.0017	0.0024
14	81.3	3083	0.0012	0.0013	0.0015	0.0016	0.0018	0.0023
15	81.5	2961	0.0013	0.0014	0.0016	0.0017	0.0019	0.0022
16	81.1	3062	0.0009	0.0013	0.0013	0.0015	0.0019	0.0023
17	80.8	2980	0.0013	0.0014	0.0015	0.0016	0.0019	0.0024
18	81.3	2985	0.0009	0.0011	0.0012	0.0013	0.0017	0.0022
19	81.1	3005	0.0012	0.0013	0.0015	0.0018	0.0022	0.0023
20	80.9	3041	0.0008	0.0010	0.0012	0.0016	0.0019	0.0025
Average	80.9	3017	0.0011	0.0013	0.0015	0.0017	0.0019	0.0024
Median	81.0	3022	0.0012	0.0013	0.0015	0.0017	0.0019	0.0024
St, Dev.	0.3	39	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002
Max	81.5	3083	0.0015	0.0016	0.0018	0.0021	0.0025	0.0028
Min	80.4	2942	0.0008	0.0010	0.0012	0.0013	0.0016	0.0018

Operating Condition: 85℃/2000mA

No.	Ra	CCT(K)	Chromaticity Shift △u'v'					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	80.8	3041	0.0013	0.0015	0.0017	0.0023	0.0026	0.0031
2	80.7	3045	0.0012	0.0016	0.0019	0.0022	0.0024	0.0028
3	80.8	3018	0.0011	0.0015	0.0021	0.0023	0.0027	0.0031
4	81.2	3003	0.0012	0.0013	0.0018	0.0021	0.0025	0.0029
5	80.7	3012	0.0013	0.0015	0.0018	0.0023	0.0025	0.0031
6	81.1	2943	0.0013	0.0015	0.0021	0.0025	0.0028	0.0029
7	81.4	3041	0.0013	0.0015	0.0021	0.0026	0.0027	0.0032
8	80.9	3024	0.0012	0.0014	0.0021	0.0022	0.0025	0.0031
9	80.8	3036	0.0013	0.0013	0.0022	0.0025	0.0028	0.0032
10	81.2	3060	0.0012	0.0013	0.0022	0.0025	0.0026	0.0028
11	80.9	2952	0.0014	0.0016	0.0023	0.0023	0.0024	0.0026
12	80.8	2984	0.0014	0.0014	0.0022	0.0024	0.0023	0.0029
13	80.7	3032	0.0012	0.0015	0.0022	0.0025	0.0028	0.0031
14	81.0	3068	0.0013	0.0016	0.0019	0.0024	0.0025	0.0028
15	80.9	2960	0.0012	0.0014	0.0021	0.0023	0.0025	0.0027
16	81.1	3051	0.0013	0.0015	0.0022	0.0022	0.0028	0.0031
17	80.7	2973	0.0013	0.0014	0.0021	0.0024	0.0025	0.0029
18	80.9	2975	0.0013	0.0016	0.0021	0.0025	0.0026	0.0032
19	80.8	3002	0.0014	0.0016	0.0022	0.0024	0.0028	0.0032
20	81.3	3035	0.0013	0.0016	0.0021	0.0025	0.0027	0.0033
Average	80.9	3013	0.0013	0.0015	0.0021	0.0024	0.0026	0.0030
Median	80.9	3021	0.0013	0.0015	0.0021	0.0024	0.0026	0.0031
St, Dev.	0.2	37	0.0001	0.0001	0.0002	0.0001	0.0002	0.0002
Max	81.4	3068	0.0014	0.0016	0.0023	0.0026	0.0028	0.0033
Min	80.7	2943	0.0011	0.0013	0.0017	0.0021	0.0023	0.0026

Operating Condition: 105℃/2000mA

No.	Ra	CCT(K)	Chromaticity Shift △u'v'					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	80.7	3034	0.0018	0.0025	0.0027	0.0035	0.0043	0.0045
2	80.8	3048	0.0019	0.0023	0.0028	0.0033	0.0042	0.0045
3	80.9	3012	0.0019	0.0021	0.0024	0.0031	0.004	0.0043
4	81.0	2991	0.0015	0.0019	0.0025	0.003	0.0041	0.0043
5	81.1	3010	0.0016	0.0021	0.0024	0.0029	0.0038	0.0042
6	80.8	2941	0.0018	0.002	0.0025	0.0031	0.0039	0.0039
7	80.6	3043	0.0017	0.0022	0.0025	0.0032	0.0039	0.0043
8	80.7	3024	0.0018	0.002	0.0027	0.0034	0.0042	0.0044
9	81.1	3038	0.0018	0.0021	0.0025	0.003	0.0039	0.0044
10	81.3	3059	0.0016	0.0024	0.0026	0.003	0.0038	0.0042
11	81.2	2952	0.0017	0.0019	0.0024	0.0029	0.0037	0.0042
12	80.8	2989	0.0017	0.0019	0.0026	0.003	0.0036	0.0039
13	80.7	3032	0.0016	0.0019	0.0025	0.0031	0.0036	0.0039
14	80.6	3064	0.0016	0.0018	0.0025	0.0032	0.0037	0.004
15	80.9	2961	0.0016	0.0019	0.0025	0.0029	0.0036	0.0041
16	81.3	3046	0.0017	0.0019	0.0025	0.0032	0.0036	0.0043
17	81.0	2983	0.0016	0.0019	0.0024	0.0033	0.0038	0.0038
18	80.6	2978	0.0017	0.0023	0.0027	0.0033	0.0037	0.0039
19	80.8	3001	0.0021	0.0025	0.0027	0.003	0.0038	0.0042
20	81.1	3035	0.0017	0.0019	0.0023	0.0029	0.0036	0.0038
Average	80.9	3012	0.0017	0.0021	0.0025	0.0031	0.0038	0.0042
Median	80.9	3018	0.0017	0.0020	0.0025	0.0031	0.0038	0.0042
St, Dev.	0.2	36	0.0001	0.0002	0.0001	0.0002	0.0002	0.0002
Max	81.3	3064	0.0021	0.0025	0.0028	0.0035	0.0043	0.0045
Min	80.6	2941	0.0015	0.0018	0.0023	0.0029	0.0036	0.0035

Photo 1 General Appearance of the EUT