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-DZT01W5W0503DH2-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.:	BST1608484190003SR-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-DZT01W5W0503DH2-R2
Rating ……	:	15-18V ⎓, 330mA, 5W
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=330mA	Ts=84.8℃ T_A=84.6℃ R.H.<65% I=330mA	Ts=104.9℃ T_A=104.7℃ R.H.<65% I=330mA
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	97.38%	96.72%	95.22%
Average Chromaticity Shift △u'v' at 6000 hour	0.0019	0.0033	0.0038
Failure	0	0	0
α	5.716E-06	6.057E-06	1.045E-05
β	1.008	1.002	1.014
Calculated L70(6k) (hours)	64000	59000	35000
Reported L70(6k) (hours)	>36000	>36000	>35000

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℃/330mA

No.	Φ(lm)	V_F(V)	Lumen maintenance (%)					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	656.2	17.1	100.30	99.86	99.49	99.19	98.56	96.99
2	652.5	17.2	100.05	99.64	99.27	100.21	96.63	96.60
3	658.8	17.1	100.26	100.18	99.32	100.42	98.32	98.95
4	657.1	17.1	99.71	99.57	99.01	98.74	98.45	98.58
5	655.7	17.2	99.35	99.11	98.85	96.92	97.15	96.08
6	653.7	17.3	99.18	98.94	98.76	97.07	97.04	95.88
7	656.2	17.2	102.81	102.92	102.13	101.13	100.27	99.38
8	657.0	17.2	99.71	99.45	98.89	97.91	98.18	96.94
9	654.1	17.1	99.42	99.39	99.15	96.01	95.80	96.62
10	656.8	17.2	99.40	99.32	99.29	98.51	98.06	97.61
11	651.9	17.3	99.87	98.60	98.33	95.92	95.28	95.25
12	656.8	17.2	100.40	99.73	99.71	98.54	98.81	97.83
13	653.7	17.1	100.03	99.55	99.08	97.92	98.26	97.44
14	655.9	17.1	99.14	98.73	98.52	98.05	98.31	97.63
15	659.7	17.2	101.44	100.63	99.58	98.77	98.22	97.82
16	660.3	17.1	99.95	99.74	99.46	99.01	98.31	97.82
17	652.9	17.2	100.21	99.07	98.89	97.34	97.62	96.64
18	657.3	17.2	100.16	99.30	99.06	97.32	96.99	96.11
19	655.8	17.1	98.60	100.73	100.19	98.92	98.14	98.62
20	659.1	17.2	99.68	100.78	100.32	98.57	98.84	98.82
Average	656.1	17.2	99.98	99.76	99.37	98.32	97.86	97.38
Median	656.2	17.2	99.91	99.56	99.21	98.53	98.20	97.53
St, Dev.	2.4	0.1	0.89	0.96	0.82	1.36	1.12	1.13
Max	660.3	17.3	102.81	102.92	102.13	101.13	100.27	99.38
Min	651.9	17.1	98.60	98.60	98.33	95.92	95.28	95.25

Operating Condition: 85℃/330mA

No.	Φ(lm)	V_F(V)	Lumen maintenance (%)					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	657.2	17.1	99.82	98.63	98.36	98.23	97.35	96.81
2	655.1	17.2	99.82	98.96	98.35	97.72	97.37	96.86
3	655.7	17.1	99.84	98.76	97.87	97.65	97.37	96.64
4	651.2	17.1	99.97	98.83	98.29	97.54	97.25	96.34
5	655.4	17.2	99.86	98.75	98.37	97.32	97.42	96.12
6	658.7	17.3	99.84	99.45	98.32	97.81	97.35	96.81
7	656.2	17.2	99.98	98.89	98.26	97.73	97.24	96.97
8	659.0	17.2	99.87	98.36	98.22	97.52	97.39	96.97
9	656.1	17.1	99.82	98.98	98.34	97.58	97.47	96.78
10	656.4	17.2	99.88	98.64	98.13	97.75	97.34	96.58
11	651.9	17.3	99.93	98.73	98.38	97.72	97.45	96.64
12	654.8	17.2	99.85	98.75	98.25	97.85	97.25	96.83
13	655.3	17.1	99.92	98.78	98.42	97.86	97.35	96.94
14	655.9	17.1	99.97	98.95	98.48	97.76	97.36	96.21
15	661.0	17.2	99.88	98.96	98.33	97.93	97.35	96.87
16	656.3	17.1	99.96	98.97	98.32	97.75	97.16	96.31
17	658.9	17.2	99.91	98.86	98.34	97.75	97.23	96.98
18	651.1	17.2	99.91	98.85	97.48	98.32	97.53	96.82
19	654.8	17.1	99.88	98.87	98.24	97.75	97.46	96.94
20	658.2	17.2	99.73	98.82	98.35	97.81	97.47	96.96
Average	656.0	17.2	99.9	98.84	98.26	97.77	97.36	96.72
Median	656.0	17.2	99.9	98.84	98.33	97.75	97.36	96.82
St, Dev.	2.6	0.1	0.1	0.21	0.22	0.22	0.10	0.27
Max	661.0	17.3	100.0	99.45	98.48	98.32	97.53	96.98
Min	651.1	17.1	99.7	98.36	97.48	97.32	97.16	96.12

Operating Condition: 105℃/330mA

No.	Φ(lm)	V_F(V)	Lumen maintenance (%)					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	657.4	17.1	99.95	99.68	98.55	97.21	95.91	94.99
2	652.1	17.2	99.87	99.51	98.54	97.14	96.06	95.33
3	655.7	17.1	99.81	99.52	98.54	97.17	95.82	95.02
4	651.3	17.1	100.13	99.76	98.62	97.14	96.17	95.47
5	655.7	17.2	99.87	99.63	98.46	97.07	95.98	95.13
6	659.6	17.3	99.92	99.66	98.55	97.25	96.24	95.45
7	656.1	17.2	99.90	99.63	98.56	97.04	96.05	95.21
8	652.3	17.2	99.95	99.57	98.74	97.36	96.26	95.37
9	656.1	17.1	99.87	99.55	98.61	97.27	96.02	95.16
10	655.5	17.2	99.92	99.63	98.59	97.05	95.91	95.27
11	659.9	17.3	99.87	99.60	98.73	97.25	96.18	95.18
12	656.4	17.2	100.05	99.73	98.52	97.07	95.94	95.19
13	654.7	17.1	99.97	99.57	98.72	97.26	96.09	95.16
14	655.9	17.1	99.87	99.52	98.53	97.03	95.83	95.10
15	656.7	17.2	100.13	99.68	98.41	97.12	96.29	95.40
16	656.2	17.1	99.97	99.60	98.64	97.23	96.17	95.23
17	652.9	17.2	99.97	99.69	98.67	97.20	95.76	95.03
18	656.2	17.2	99.92	99.68	98.60	97.15	96.12	95.22
19	658.8	17.1	99.97	99.59	98.51	97.08	96.08	95.35
20	659.2	17.2	99.84	99.52	98.62	97.26	96.19	95.10
Average	655.9	17.2	99.94	99.62	98.59	97.17	96.05	95.22
Median	656.1	17.2	99.92	99.62	98.58	97.16	96.07	95.20
St, Dev.	2.4	0.1	0.09	0.07	0.09	0.09	0.15	0.14
Max	659.9	17.3	100.13	99.76	98.74	97.36	96.29	95.47
Min	651.3	17.1	99.81	99.51	98.41	97.03	95.76	94.99

Operating Condition: 55℃/330mA

No.	Ra	CCT(K)	Chromaticity Shift △u'v'					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	81.2	3068	0.0007	0.0013	0.0014	0.0015	0.0019	0.0025
2	80.7	3089	0.0009	0.0015	0.0016	0.0018	0.0021	0.0023
3	81.0	3033	0.0008	0.0013	0.0016	0.0017	0.0019	0.0024
4	80.6	3002	0.0008	0.0010	0.0013	0.0016	0.0018	0.0023
5	81.0	3088	0.0010	0.0012	0.0013	0.0016	0.0018	0.0019
6	80.8	3043	0.0008	0.0014	0.0016	0.0017	0.0018	0.0019
7	80.6	3070	0.0009	0.0011	0.0013	0.0014	0.0015	0.0019
8	80.5	3074	0.0011	0.0013	0.0014	0.0015	0.0017	0.0019
9	81.1	3042	0.0011	0.0012	0.0013	0.0014	0.0015	0.0016
10	81.0	3072	0.0009	0.0011	0.0012	0.0013	0.0016	0.0018
11	80.4	3112	0.0007	0.0010	0.0011	0.0013	0.0015	0.0016
12	80.6	3085	0.0007	0.0010	0.0013	0.0015	0.0017	0.0018
13	81.2	3035	0.0008	0.0009	0.0011	0.0012	0.0015	0.0017
14	81.4	3083	0.0011	0.0012	0.0013	0.0015	0.0016	0.0018
15	81.3	3033	0.0011	0.0013	0.0014	0.0016	0.0017	0.0019
16	81.1	3060	0.0009	0.0009	0.0013	0.0013	0.0015	0.0019
17	80.9	2981	0.0012	0.0013	0.0014	0.0015	0.0016	0.0019
18	81.0	2989	0.0008	0.0009	0.0011	0.0012	0.0013	0.0017
19	81.2	3002	0.0009	0.0012	0.0013	0.0015	0.0018	0.0022
20	80.7	3042	0.0007	0.0008	0.0010	0.0012	0.0016	0.0019
Average	80.9	3050	0.0009	0.0011	0.0013	0.0015	0.0017	0.0019
Median	81.0	3052	0.0009	0.0012	0.0013	0.0015	0.0017	0.0019
St, Dev.	0.3	36	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003
Max	81.4	3112	0.0012	0.0015	0.0016	0.0018	0.0021	0.0025
Min	80.4	2981	0.0007	0.0008	0.0010	0.0012	0.0013	0.0016

Operating Condition: 85℃/330mA

No.	Ra	CCT(K)	Chromaticity Shift △u'v'					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	80.9	3076	0.0014	0.0015	0.0018	0.0024	0.0027	0.0034
2	80.8	3068	0.0013	0.0015	0.0023	0.0027	0.0028	0.0034
3	80.8	3069	0.0014	0.0017	0.0022	0.0026	0.0029	0.0034
4	81.1	3069	0.0012	0.0014	0.002	0.0022	0.0024	0.0031
5	80.7	3073	0.0013	0.0015	0.0021	0.0025	0.0028	0.0033
6	81.1	3043	0.0009	0.0014	0.002	0.0024	0.0028	0.0035
7	81.2	3064	0.0016	0.0017	0.0019	0.0023	0.0025	0.0034
8	80.6	3065	0.0014	0.0016	0.0024	0.0026	0.0028	0.0032
9	80.8	3047	0.0012	0.0013	0.0024	0.0026	0.0028	0.0033
10	81.1	3064	0.0015	0.0017	0.0023	0.0025	0.0028	0.0033
11	80.8	3065	0.0014	0.0016	0.0021	0.0023	0.0024	0.003
12	80.8	3061	0.0014	0.0016	0.0021	0.0023	0.0026	0.0029
13	80.7	3094	0.0015	0.0017	0.0021	0.0024	0.0027	0.0033
14	80.9	3058	0.0012	0.0014	0.0021	0.0025	0.0026	0.0032
15	80.8	3037	0.0013	0.0016	0.0019	0.0024	0.0026	0.0034
16	81.0	2998	0.0012	0.0015	0.0021	0.0026	0.0028	0.0035
17	80.6	3050	0.0013	0.0016	0.002	0.0023	0.0026	0.0032
18	80.8	3056	0.0013	0.0016	0.0021	0.0023	0.0028	0.0032
19	80.7	3051	0.0013	0.0015	0.0023	0.0024	0.0028	0.0031
20	81.2	3084	0.0015	0.0017	0.0023	0.0025	0.0028	0.0033
Average	80.9	3060	0.0013	0.0016	0.0021	0.0024	0.0027	0.0033
Median	80.8	3064	0.0013	0.0016	0.0021	0.0024	0.0028	0.0033
St, Dev.	0.2	20	0.0002	0.0001	0.0002	0.0001	0.0001	0.0002
Max	81.2	3094	0.0016	0.0017	0.0024	0.0027	0.0029	0.0035
Min	80.6	2998	0.0009	0.0013	0.0018	0.0022	0.0024	0.0029

Operating Condition: 105℃/330mA

No.	Ra	CCT(K)	Chromaticity Shift △u'v'					
	0h(Initial)		1000h	2000h	3000h	4000h	5000h	6000h
1	81.0	3071	0.0015	0.0018	0.0025	0.0027	0.0035	0.0043
2	80.6	3062	0.0014	0.0019	0.0023	0.0028	0.0033	0.0042
3	80.9	3065	0.0018	0.0019	0.0021	0.0024	0.0031	0.004
4	81.0	3069	0.0013	0.0015	0.0019	0.0025	0.003	0.0041
5	81.1	3071	0.0013	0.0016	0.0021	0.0024	0.0029	0.0038
6	80.7	3043	0.0014	0.0018	0.002	0.0025	0.0031	0.0039
7	80.8	3064	0.0015	0.0017	0.0022	0.0025	0.0032	0.0039
8	80.7	3065	0.0014	0.0018	0.002	0.0027	0.0034	0.0042
9	81.0	3043	0.0015	0.0018	0.0021	0.0025	0.003	0.0039
10	81.1	3061	0.0015	0.0016	0.0024	0.0026	0.003	0.0038
11	81.0	3065	0.0014	0.0017	0.0019	0.0024	0.0029	0.0037
12	80.9	3061	0.0015	0.0017	0.0019	0.0026	0.003	0.0036
13	80.7	3060	0.0015	0.0016	0.0019	0.0025	0.0031	0.0036
14	80.7	3058	0.0013	0.0016	0.0018	0.0025	0.0032	0.0037
15	80.9	3034	0.0015	0.0016	0.0019	0.0025	0.0029	0.0036
16	81.2	2998	0.0014	0.0017	0.0019	0.0025	0.0032	0.0036
17	81.1	3051	0.0013	0.0016	0.0019	0.0024	0.0033	0.0038
18	80.6	3056	0.0014	0.0017	0.0023	0.0027	0.0033	0.0037
19	80.5	3051	0.0016	0.0021	0.0025	0.0027	0.003	0.0038
20	80.9	3084	0.0015	0.0017	0.0019	0.0023	0.0029	0.0036
Average	80.9	3057	0.0015	0.0017	0.0021	0.0025	0.0031	0.0038
Median	80.9	3061	0.0015	0.0017	0.0020	0.0025	0.0031	0.0038
St, Dev.	0.2	18	0.0001	0.0001	0.0002	0.0001	0.0002	0.0002
Max	81.2	3084	0.0018	0.0021	0.0025	0.0028	0.0035	0.0043
Min	80.5	2998	0.0013	0.0015	0.0018	0.0023	0.0029	0.0036

Photo 1 General Appearance of the EUT