



Photometric Test Report

Relevant Standards

IES LM-79-2008
ANSI C82.77-10:2014
CIE 13.3-1995

Prepared For

P.Q.L. Inc
2285 Ward Avenue SIMI VALLEY CA 93065

Prepared By

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Report Number

SHEE2203000069LM1

Test Date

2022/03/10-2022/03/18

Issue Date

2022/05/09

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1.0 Production Description

Product Description: Fuel Pump Canopy Luminaires

Sample Receive date: 2022/03/08

Model Number: SSC-B-FSC1-1[-PC, -MS, -SP][[-BLK, WHT, -NA, -BRZ, -CC]

Electrical Specification: 120-277V 50/60Hz, Field-Adjustable, 60W Max

Color-Tunable Product: Yes, CCT setting: 3000K, 4000K, 5000K

Applicant: P.Q.L. Inc

Brand Name: Superior Life

Manufacturer: P.Q.L. Inc

Address: 2285 Ward Avenue / Simi Valley, CA 93065

Testing Location: SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Address: 588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

2.0 Goniometer Measurement and Test Results



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2.1 Test Conditions

Before measurements are taken, there is no seasoning for the LED luminaires, and LED luminaires in emitting-light surface down position was stabilized for 1 hour in the ambient temperature $25^{\circ}\text{C}\pm 1^{\circ}\text{C}$.

The AC Power Source DPS-1060 (Everfine) as used to generate 120V/60Hz to the tested samples for the mentioned tests which was measured by Everfine GO-R5000 system.

The Electrical quantities are measured by means of a calibrated Digital Power Meter WT310 (Yokogawa).

The sample was mounted at emitting-light surface down position. The geometric centre of the LED luminaires was considered as optical reference centre for photometric test.

Light distribution was measured by calibrated Everfine GO-R5000 Type C goniophotometer with the distance 30 m between the detector and the sample's reference center.

The Total Luminous Flux of the light emitted by the LED luminaires was measured by calibrated Everfine GO-R5000 Type C goniophotometer with the distance 2,6 m between the detector and the sample's reference center.

The ambient temperature during measurements was 25°C

The uncertainty of luminous flux measurement is $U=2,30\%$ ($K=2$), the uncertainty of the CCT measurement is $U= 1,08\%$ ($K=2$), all measurements results are traceable to NIM.



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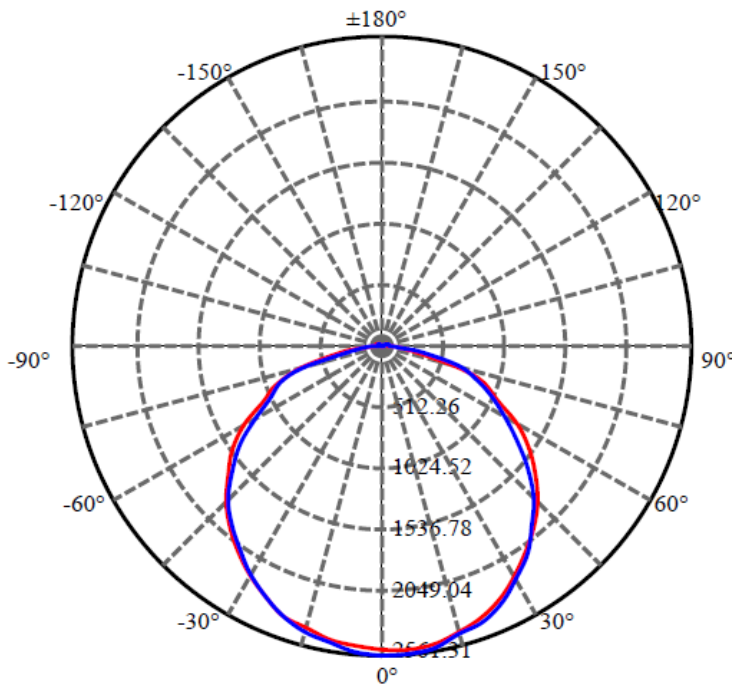
2.2 Electrical Characteristics

Model	Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC]	120.03	60	0.4890	58.40	0.9945

2.3 Photometric Characteristics

Model	Luminous Flux (lm)	Luminous Efficacy (lm/W)	Zonal Lumen Requirement (0 - 40°)	Zonal Lumen Requirement (40 - 70°)
SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC]	7934.92	135.87	41.22	46.45

Light Distribution Curve



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Zone Lumen Summary

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	2521.680	0.000	0	0.00%	0.00%
5.0	2505.798	60.102	60.102	0.00%	0.76%
10.0	2477.843	178.281	238.383	0.00%	3.00%
15.0	2431.029	291.191	529.574	0.00%	6.67%
20.0	2370.733	395.733	925.306	0.00%	11.66%
25.0	2288.050	488.620	1413.927	0.00%	17.82%
30.0	2182.563	565.760	1979.686	0.00%	24.95%
35.0	2061.757	625.006	2604.692	0.00%	32.83%
40.0	1928.745	665.785	3270.477	0.00%	41.22%
45.0	1783.956	687.437	3957.914	0.00%	49.88%
50.0	1616.174	687.046	4644.96	0.00%	58.54%
55.0	1436.240	663.697	5308.657	0.00%	66.90%
60.0	1241.551	618.964	5927.62	0.00%	74.70%
65.0	1034.534	553.321	6480.941	0.00%	81.68%
70.0	844.915	475.889	6956.83	0.00%	87.67%
75.0	638.851	387.833	7344.662	0.00%	92.56%
80.0	355.978	266.189	7610.851	0.00%	95.92%
85.0	170.330	143.011	7753.861	0.00%	97.72%
90.0	77.680	67.907	7821.768	0.00%	98.57%
95.0	52.127	35.542	7857.31	0.00%	99.02%
100.0	39.947	25.018	7882.329	0.00%	99.34%
105.0	25.714	17.569	7899.898	0.00%	99.56%
110.0	19.571	11.837	7911.735	0.00%	99.71%
115.0	12.569	8.138	7919.873	0.00%	99.81%
120.0	6.345	4.598	7924.471	0.00%	99.87%
125.0	3.380	2.248	7926.718	0.00%	99.90%
130.0	2.790	1.342	7928.06	0.00%	99.91%
135.0	2.736	1.117	7929.177	0.00%	99.93%
140.0	2.817	1.028	7930.205	0.00%	99.94%
145.0	3.166	0.998	7931.203	0.00%	99.95%
150.0	3.246	0.944	7932.147	0.00%	99.97%
155.0	3.327	0.832	7932.979	0.00%	99.98%
160.0	3.327	0.698	7933.677	0.00%	99.98%
165.0	3.300	0.546	7934.223	0.00%	99.99%
170.0	3.219	0.387	7934.61	0.00%	100.00%
175.0	3.246	0.231	7934.841	0.00%	100.00%
180.0	3.514	0.081	7934.922	0.00%	100.00%



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Intensity Data(cd)

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	2515.59	2520.96	2503.14	2457.00	2397.76	2308.69	2198.59	2078.19	1955.00
22.5	2510.44	2517.74	2478.03	2437.25	2384.46	2296.68	2177.35	2048.79	1921.30
45.0	2499.28	2493.48	2467.30	2442.19	2355.05	2288.09	2171.34	2045.78	1889.75
67.5	2492.41	2475.46	2467.52	2411.28	2364.50	2272.64	2178.63	2033.76	1873.65
90.0	2561.31	2551.86	2535.77	2472.02	2434.03	2338.53	2229.07	2094.93	1934.39
112.5	2541.77	2531.26	2507.43	2448.84	2402.48	2313.85	2221.56	2079.26	1930.96
135.0	2531.04	2518.38	2483.61	2446.05	2374.15	2307.62	2217.27	2107.38	1971.74
157.5	2521.60	2505.72	2475.46	2427.60	2373.08	2302.26	2203.96	2085.06	1973.24
180.0	2515.59	2497.13	2466.87	2423.52	2371.15	2292.17	2187.00	2067.89	1956.28
202.5	2510.44	2482.54	2442.83	2403.77	2336.60	2254.61	2155.02	2043.42	1915.72
225.0	2499.28	2463.01	2434.25	2370.51	2310.84	2225.64	2135.06	2018.10	1884.60
247.5	2492.41	2461.29	2425.23	2371.79	2304.83	2214.05	2098.15	1990.84	1867.65
270.0	2561.31	2537.05	2490.27	2453.14	2372.22	2287.45	2170.48	2053.72	1935.90
292.5	2541.77	2515.81	2487.90	2445.19	2381.88	2301.18	2181.85	2074.54	1943.41
315.0	2531.04	2510.23	2490.91	2440.90	2383.60	2309.12	2200.95	2083.56	1949.85
337.5	2521.60	2510.87	2488.98	2445.41	2385.10	2296.25	2194.73	2082.91	1956.50
360.0	2515.59	2520.96	2503.14	2457.00	2397.76	2308.69	2198.59	2078.19	1955.00

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	1831.37	1664.83	1495.49	1296.75	1067.75	879.09	664.69	339.53	169.34
22.5	1790.17	1625.12	1441.62	1235.80	1001.21	781.23	577.12	328.80	162.68
45.0	1720.84	1542.28	1360.28	1166.04	979.11	779.29	569.82	373.44	173.63
67.5	1712.26	1525.97	1335.38	1156.82	974.60	806.77	633.78	336.96	165.05
90.0	1767.42	1571.04	1381.31	1193.30	1002.29	853.34	658.89	328.59	165.47
112.5	1764.63	1570.61	1367.79	1175.27	978.89	789.17	627.77	351.55	157.96
135.0	1812.49	1644.87	1451.06	1231.50	1026.75	828.01	603.95	362.50	162.47
157.5	1849.62	1691.44	1519.74	1326.58	1105.09	907.00	680.35	331.16	160.32
180.0	1827.73	1667.40	1510.94	1312.63	1078.91	935.54	699.46	327.73	160.75
202.5	1783.94	1628.99	1471.02	1290.31	1072.04	864.50	656.32	361.42	172.99
225.0	1738.66	1603.23	1438.19	1263.91	1079.55	870.51	637.00	423.02	194.02
247.5	1733.72	1573.83	1392.69	1204.68	1022.89	848.19	676.49	396.19	182.86
270.0	1790.60	1619.11	1435.61	1231.72	1030.83	878.02	672.41	334.60	168.48
292.5	1799.61	1619.97	1431.10	1224.64	1008.30	809.77	618.11	356.06	170.20
315.0	1791.88	1639.72	1462.65	1264.34	1054.01	827.16	589.57	379.24	185.22
337.5	1828.37	1670.41	1484.97	1290.53	1070.32	861.07	655.89	364.86	173.84
360.0	1831.37	1664.83	1495.49	1296.75	1067.75	879.09	664.69	339.53	169.34

C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	74.05	47.22	50.65	40.13	27.90	19.10	2.36	2.15	2.36
22.5	74.47	47.22	42.50	29.83	19.10	12.66	1.72	2.15	2.36
45.0	81.56	52.58	38.42	16.96	10.73	4.94	3.01	2.79	2.58
67.5	81.77	58.16	31.12	25.97	16.74	9.66	5.58	3.86	3.01
90.0	82.63	62.67	56.88	1.72	26.40	18.89	11.59	6.87	3.65
112.5	72.76	55.37	40.35	21.68	15.88	9.23	5.37	3.43	2.58
135.0	73.19	50.65	37.99	18.89	10.73	3.65	1.93	1.72	2.36
157.5	68.68	50.22	47.22	32.62	22.75	15.88	9.23	1.72	2.15
180.0	67.61	48.93	51.51	39.06	28.33	20.39	13.95	1.72	2.15
202.5	76.84	47.65	41.85	28.97	19.10	13.09	7.30	1.93	2.15
225.0	86.92	51.30	37.13	17.81	9.44	5.37	3.01	2.15	2.58
247.5	88.42	58.81	27.90	32.19	24.04	15.02	9.01	4.29	2.58
270.0	77.05	59.24	43.35	28.97	33.05	23.82	16.31	9.44	4.94
292.5	77.69	52.15	15.45	27.69	16.31	10.73	7.08	4.94	3.22
315.0	83.27	46.79	33.27	17.17	11.38	4.29	2.36	2.79	3.01
337.5	75.98	45.07	43.57	31.76	21.25	14.38	1.72	2.15	3.01
360.0	74.05	47.22	50.65	40.13	27.90	19.10	2.36	2.15	2.36



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Intensity Data(cd)--continued

C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	2.79	3.01	3.22	3.22	3.01	3.22	3.01	3.01	3.22
22.5	3.01	3.01	3.22	3.01	3.22	3.22	3.22	3.22	3.22
45.0	2.58	2.79	2.79	3.43	3.22	3.22	3.01	3.22	3.22
67.5	2.79	3.01	3.01	3.01	3.22	3.01	3.01	3.22	3.01
90.0	3.22	3.22	3.22	3.22	3.43	3.43	3.43	3.43	3.22
112.5	2.36	2.79	3.01	3.22	3.22	3.22	3.22	3.22	3.43
135.0	2.36	2.58	2.79	3.22	3.01	3.22	3.43	3.01	3.22
157.5	2.36	0.00	3.01	3.22	3.22	3.22	3.22	3.22	3.22
180.0	2.36	3.22	3.43	3.22	3.22	3.22	3.22	3.01	3.01
202.5	2.15	3.01	3.22	3.22	3.43	3.22	3.22	3.22	3.22
225.0	2.58	2.79	2.79	3.01	3.22	3.43	3.43	3.22	3.22
247.5	2.58	2.58	2.79	3.22	3.22	3.43	3.43	3.22	3.22
270.0	3.86	3.86	4.29	4.08	4.08	4.08	4.29	3.86	3.86
292.5	2.79	3.22	3.43	3.22	3.86	3.43	3.43	3.22	3.22
315.0	2.79	2.79	3.22	3.22	3.22	3.43	3.01	3.01	3.22
337.5	3.22	3.22	3.22	3.22	3.43	3.22	3.22	3.22	3.22
360.0	2.79	3.01	3.22	3.22	3.01	3.22	3.01	3.01	3.22

C/γ(°)	180.0
0.0	3.43
22.5	3.22
45.0	3.43
67.5	3.43
90.0	4.29
112.5	3.43
135.0	3.43
157.5	3.43
180.0	3.43
202.5	3.22
225.0	3.43
247.5	3.43
270.0	4.29
292.5	3.43
315.0	3.43
337.5	3.43
360.0	3.43



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3.0 Integrating Sphere Measurement and Test Results

3.1 Test condition

Before measurements are taken, there is no seasoning for the LED luminaires, and LED luminaires in emitting-light surface down position was stabilized for 1 hour in the ambient temperature 25°C±1°C.

The AC Power Source DPS-1010 (Everfine) as used to generate 120V/60Hz to the tested samples for the mentioned tests which was measured by EVERFINE HAAS-2000 integrating sphere system.

The Color Characteristics of the light was measured by EVERFINE HAAS-2000 High accuracy array spectroradiometer integrated into 2 m integrating sphere with an interior coating reflectance of 98%; the 4 π geometry is used for photometric measurement.

3.2 Electrical Characteristics

Model	Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC]	120.02	60	0.498	59.48	0.996
	120.04	60	0.478	57.17	0.996
	120.05	60	0.507	60.57	0.996

3.3 Photometric and Color Characteristics

Model	Luminous Flux (lm)	Luminous Efficacy (lm/W)	CCT (K)	CRI	R9
SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC]	8053.42	135.4	3095	81.4	1
	8381.28	146.6	3712	83.4	9
	8376.45	138.3	5108	84.1	12

Model	Rf	Rg	Rcs,h1(%)	-
SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC]	83	97	-12	-
	84	97	-12	-
	83	97	-13	-



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3.4 Chromaticity Coordinate

Model	Duv	x	y	u'	v'
SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC]	-0.00166	0.4281	0.3968	0.2480	0.5172
	-0.00315	0.3913	0.3764	0.2324	0.5030
	-0.00397	0.3416	0.3410	0.2132	0.4789



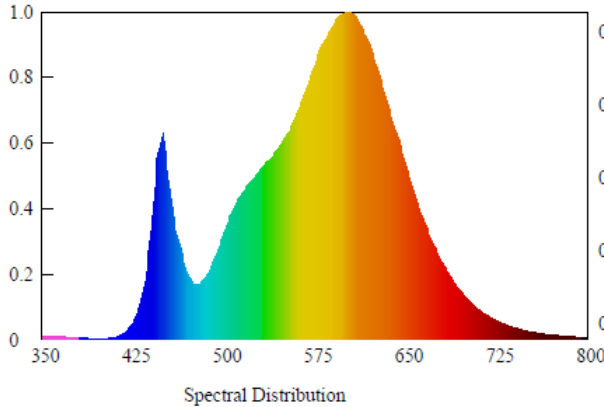
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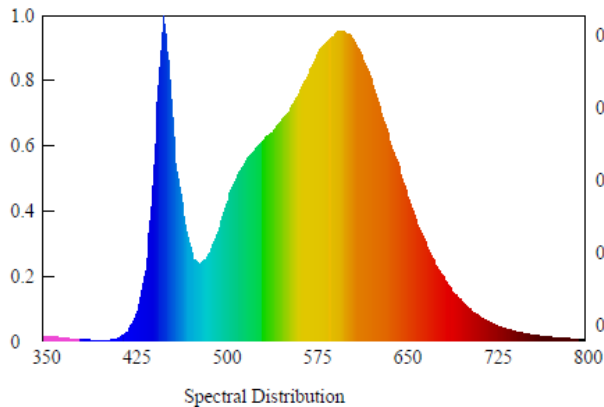
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Spectrum

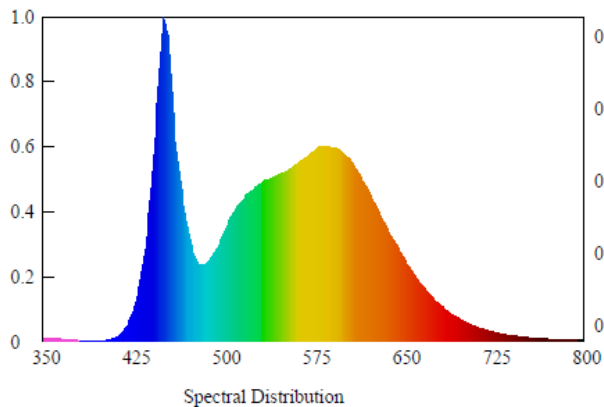
SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC], 3000K



SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC], 4000K



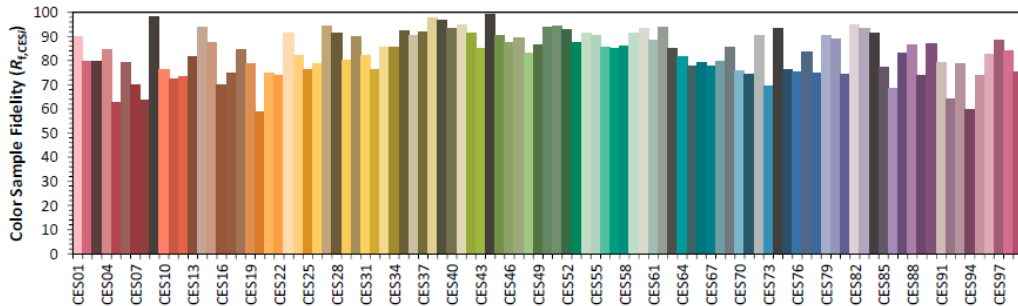
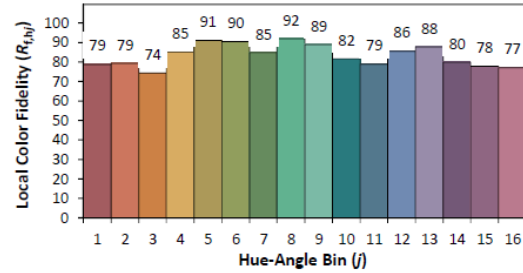
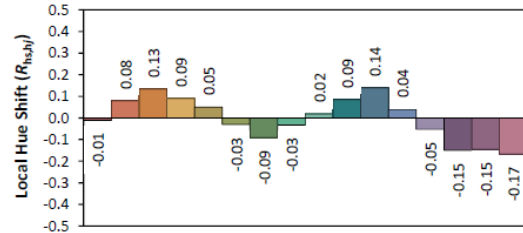
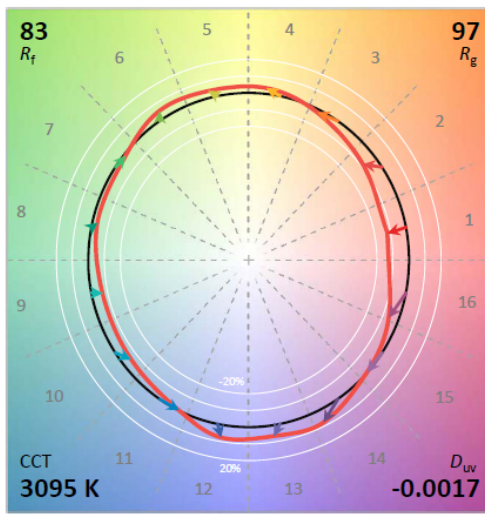
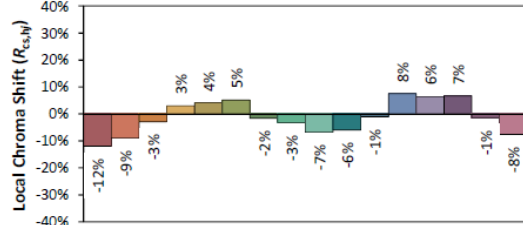
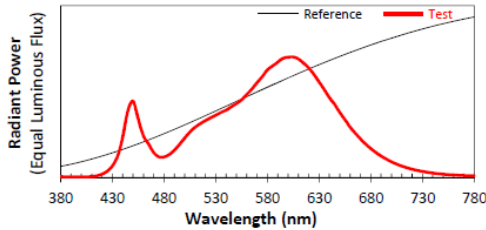
SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC], 5000K



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ANSI/IES TM-30-18 Color Rendition Report

Source: SHEE220300069LM1 Manufacturer: P.Q.L. Inc
 Date: 2022/03/24 Model: SSC-B-FSC1-1-[PC, -MS, -SP][BLK, WHT, -NA, -BRZ, -CC], 3000K



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

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y	0.3968	
u'	0.2480	
v'	0.5171	

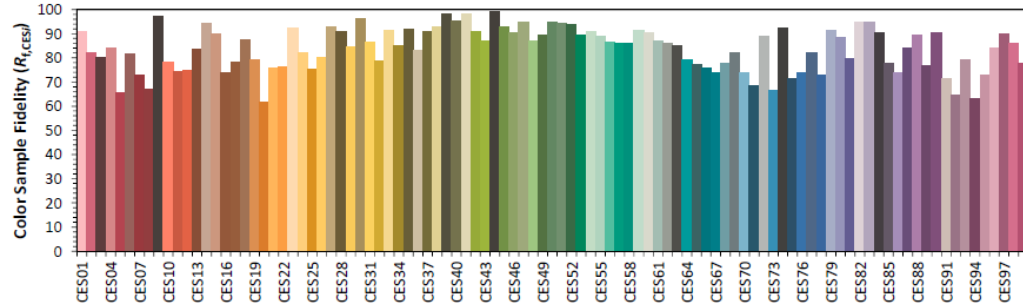
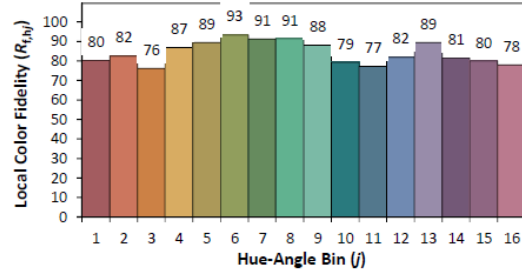
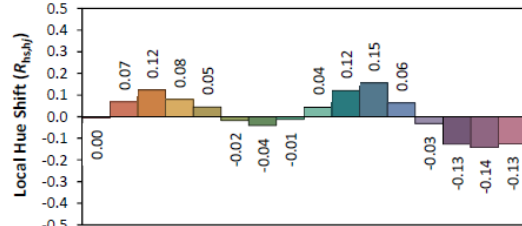
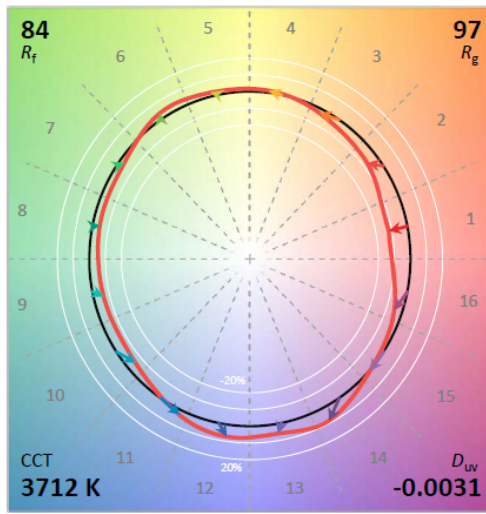
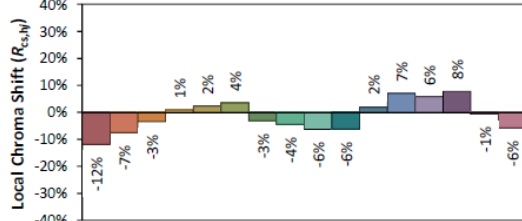
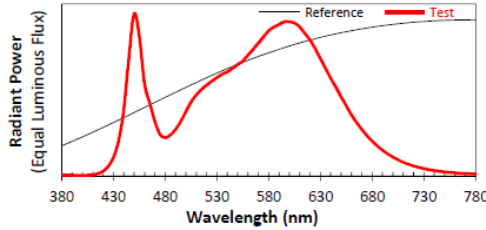
Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



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ANSI/IES TM-30-18 Color Rendition Report

Source: SHEE2203000069LM1 Manufacturer: P.Q.L. Inc
 Date: 2022/03/24 Model: SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC], 4000K



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

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y	0.3764	
u'	0.2324	
v'	0.5030	

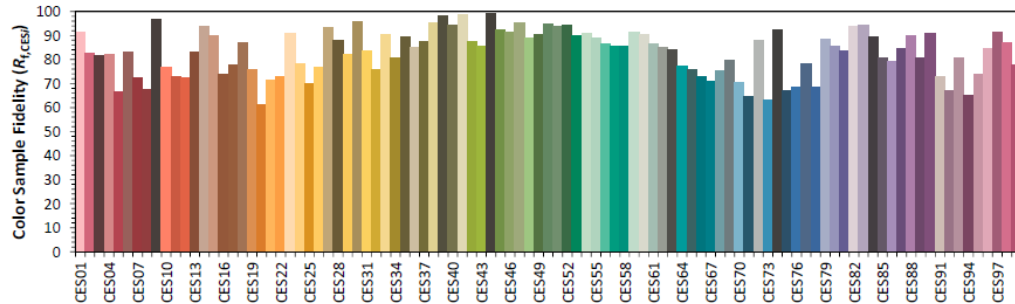
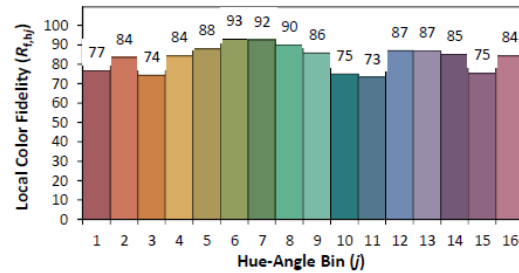
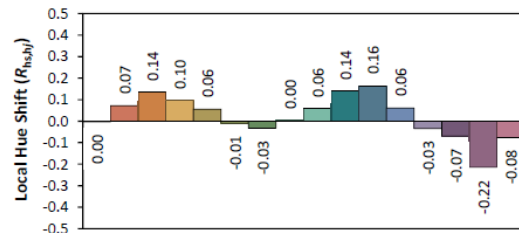
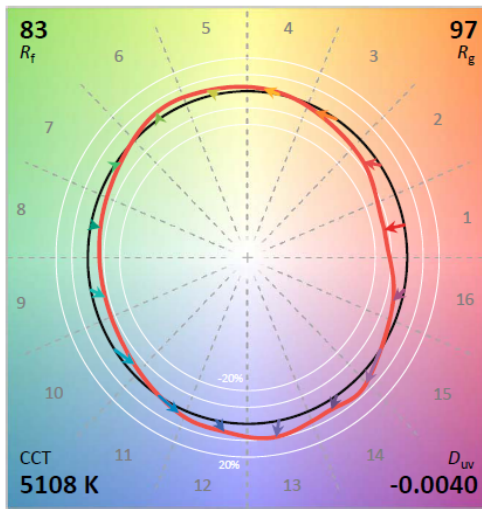
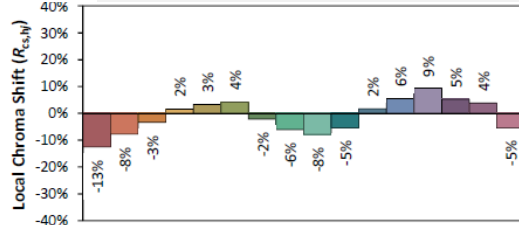
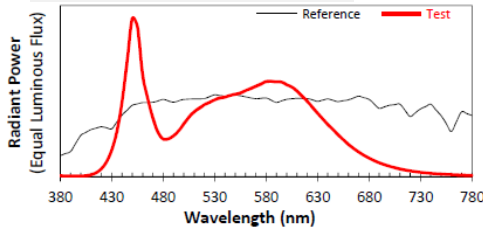
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ANSI/IES TM-30-18 Color Rendition Report

Source: SHEE2203000069LM1 Manufacturer: P.Q.L. Inc
 Date: 2022/03/24 Model: SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC], 5000K



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3416	CIE 13.3-1995 (CRI) R_a 84 R_g 12
y	0.3410	
u'	0.2132	
v'	0.4789	

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4.0 THD and PF Test

4.1 Test Conditions

The samples were tested according to the ANSI C82.77-10:2014.

The total harmonic distortion shall be measured to the 40th order.

The ambient temperature condition was maintained at 25°C±1°C. The sample measurements were made using a digital power meter and power supply. The sample was operated at rated voltage and was stabilized before measurement. The total harmonic distortion was calculated.

4.2 Test Results

Model	CCT	Voltage (V)	Frequency (Hz)	Power Factor	THDi
SSC-B-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC]	3000	120	60	0.996	6.3%
		277	60	0.978	5.0%
	4000	277	60	0.978	6.3%
	5000	277	60	0.979	5.4%

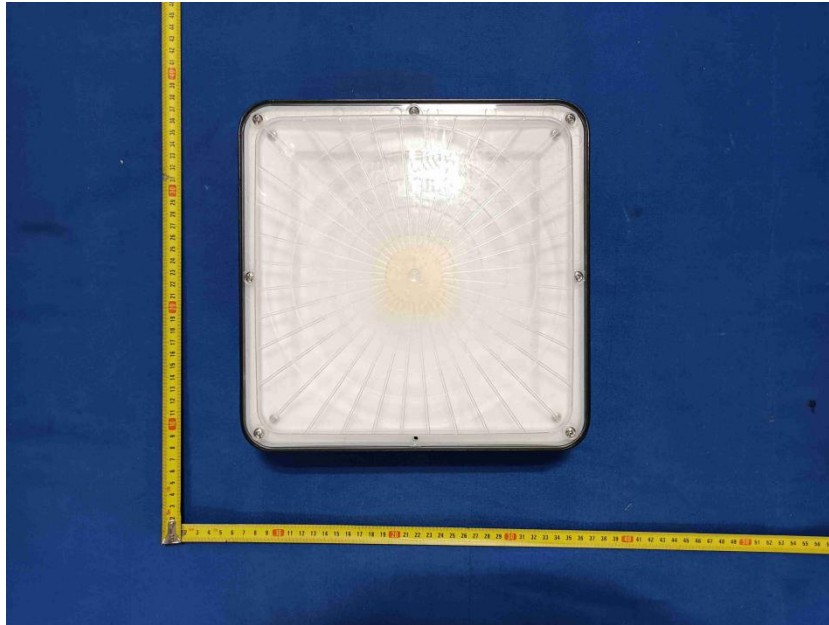


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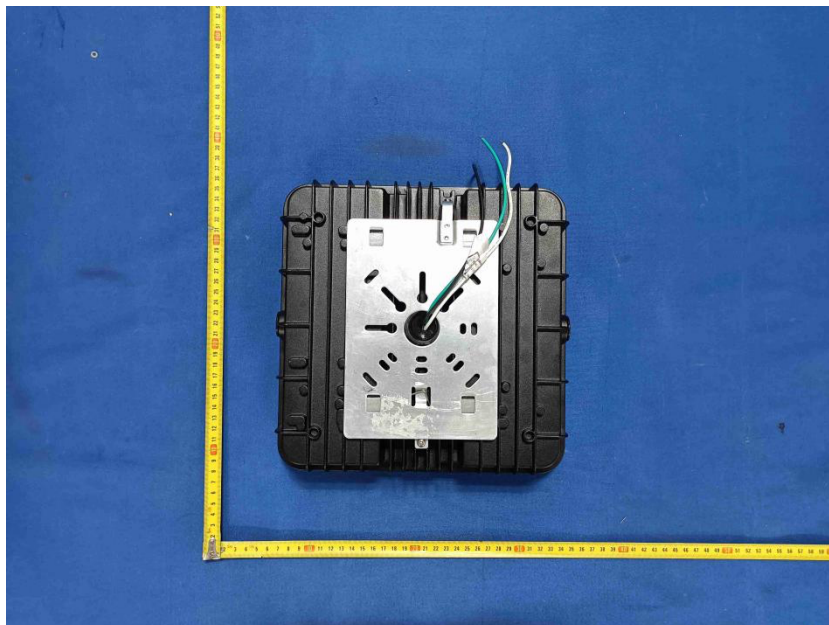
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Annex I Photo documentation



Overview



Overview



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Annex II: Standard Bulb Used for System Calibration

Everfine GO-R5000 system

Model	D908S
Intensity Distribution Type	Omni-Directional Type
Calibration current(A)	7,3200
Reference voltage (V)	90,30
Calibration CCT (K)	2856
Calibration luminous Flux (lm)	11270

Everfine HAAS-2000 integrating sphere system

Model	D204
Intensity Distribution Type	Omni-Directional Type
Calibration current (A)	3,9370
Reference voltage (V)	20,05
Calibration CCT (K)	2856
Calibration luminous Flux (lm)	1329



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Annex III: List of Equipment Used

Registration No	Equipment name	Model No	Manufacturer	Cal. Date	Due Date
SHES333401a	Goniophotometer	GO-R5000	Everfine	2022/02/23	2022/12/26
SHES333401b	The controller	CT500	Everfine	2022/02/23	2022/12/26
SHES333401c	Spectral radiometer	HAAS-2000	Everfine	2022/02/23	2022/12/26
SHES333401d	Standard light source for GO-R5000 system	D908S	Everfine	2021/7/3	2022/7/2
SHES333401h	AC Power source	DPS-1060	Everfine	2022/02/23	2022/12/26
SHES300310	Digital Power Meter	WT310	Yokogawa	2022/02/23	2022/12/26
SHES300311	Digital Power Meter	WT310	Yokogawa	2022/02/23	2022/12/26
SHES333301	High-precision rapid spectral radiometer	HAAS-2000	Everfine	2022/02/23	2022/12/26
SHES333301c	Power Meter	DPS1010	Everfine	2022/02/23	2022/12/26
SHES333301d	Integrating sphere	AIS-2_2.0m	Everfine	2022/02/23	2022/12/26
SHES331506	Standard light source	D204	Everfine	2021/4/3	2022/4/2
SHES300304	Power meter	WT1800	Yokogawa	2021/7/2	2022/7/1

— End of report —



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