

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 SHEE2203000068LM1

Test Date 2022/03/10-2022/03/18

Issue Date 2022/05/09

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Technical Manager

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1.0 Production Description

Product Description: Fuel Pump Canopy Luminaires

Sample Receive date: 2022/03/08

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

Electrical Specification: 120-277V 50/60Hz, Field-Adjustable, 40W 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



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2.0 Goniometer Measurement and Test Results

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°C±1°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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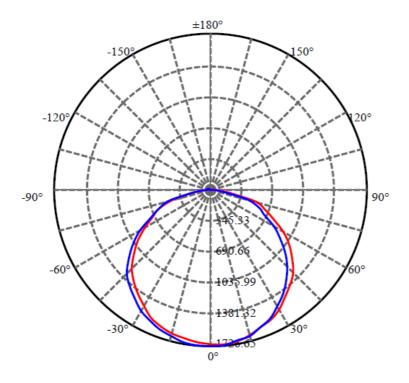
2.2 Electrical Characteristics

Model	Voltage	Frequency	Current	Power	Power
	(V)	(Hz)	(A)	(W)	Factor
SSC-A-FSC1-1[-PC, - MS, -SP][-BLK, WHT, - NA, -BRZ, -CC]	120.05	60	0.3330	39.86	0.9958

2.3 Photometric Characteristics

Model	Luminous	Luminous	Zonal Lumen	Zonal Lumen
	Flux	Efficacy	Requirement	Requirement
	(lm)	(Im/W)	(0 - 40°)	(40 - 70°)
SSC-A-FSC1-1[-PC, - MS, -SP][-BLK, WHT, -NA, -BRZ, -CC]	5531.33	138.77	40.49	46.87

Light Distribution Curve





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Zone Lumen Summary

(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1714.235	0.000	0	0.00%	0.00%
5.0	1706.481	40.894	40.894	0.00%	0.74%
10.0	1683.763	121.280	162.173	0.00%	2.93%
15.0	1655.395	198.077	360.25	0.00%	6.51%
20.0	1610.937	269.192	629.441	0.00%	11.38%
25.0	1560.724	332.649	962.09	0.00%	17.39%
30.0	1496.856	386.939	1349.029	0.00%	24.39%
35.0	1422.297	429.866	1778.895	0.00%	32.16%
40.0	1338.595	460.634	2239.529	0.00%	40.49%
45.0	1248.330	478.990	2718.519	0.00%	49.15%
50.0	1134.990	481.585	3200.104	0.00%	57.85%
55.0	1010.800	466.566	3666.67	0.00%	66.29%
60.0	875.734	436.067	4102.737	0.00%	74.17%
65.0	732.491	390.962	4493.699	0.00%	81.24%
70.0	603.829	338.365	4832.064	0.00%	87.36%
75.0	464.171	279.158	5111.222	0.00%	92.40%
80.0	260.685	193.951	5305.173	0.00%	95.91%
85.0	124.031	104.537	5409.71	0.00%	97.80%
90.0	55.995	49.293	5459.003	0.00%	98.69%
95.0	33.767	24.578	5483.58	0.00%	99.14%
100.0	26.053	16.254	5499.834	0.00%	99.43%
105.0	14.951	10.972	5510.806	0.00%	99.63%
110.0	11.723	6.972	5517.778	0.00%	99.75%
115.0	7.462	4.858	5522.636	0.00%	99.84%
120.0	3.427	2.647	5525.283	0.00%	99.89%
125.0	1.667	1.177	5526.461	0.00%	99.91%
130.0	1.482	0.685	5527.145	0.00%	99.92%
135.0	1.707	0.644	5527.79	0.00%	99.94%
140.0	1.813	0.652	5528.442	0.00%	99.95%
145.0	1.853	0.612	5529.053	0.00%	99.96%
150.0	2.011	0.569	5529.622	0.00%	99.97%
155.0	2.064	0.516	5530.138	0.00%	99.98%
160.0	2.011	0.427	5530.565	0.00%	99.99%
165.0	2.077	0.337	5530.902	0.00%	99.99%
170.0	1.945	0.239	5531.141	0.00%	100.00%
175.0	2.037	0.142	5531.283	0.00%	100.00%
180.0	2.249	0.051	5531.334	0.00%	100.00%



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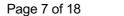
Intensity	-	(cd)	10.0	15.0	20.0	25.0	30.0	35.0	40.0	

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	1709.07	1706.11	1692.99	1657.84	1620.37	1576.34	1519.60	1442.75	1366.75
22.5	1712.67	1710.56	1693.83	1663.98	1608.94	1560.46	1509.23	1428.99	1339.87
45.0	1714.79	1713.73	1687.06	1657.63	1618.47	1550.09	1477.90	1401.89	1306.84
67.5	1716.27	1712.89	1681.34	1664.62	1604.71	1551.99	1475.99	1392.79	1292.87
90.0	1726.65	1724.11	1690.02	1670.12	1610.21	1561.94	1483.40	1400.62	1302.18
112.5	1715.21	1711.19	1671.18	1650.86	1600.05	1546.49	1471.76	1397.03	1299.01
135.0	1710.56	1698.91	1673.09	1629.26	1598.78	1530.40	1468.37	1393.64	1308.75
157.5	1708.65	1694.89	1672.45	1639.85	1586.50	1532.73	1475.14	1395.54	1302.18
180.0	1709.07	1691.08	1663.98	1638.37	1600.47	1549.45	1478.95	1397.87	1318.06
202.5	1712.67	1692.56	1671.60	1635.83	1598.78	1552.63	1480.22	1405.28	1328.65
225.0	1714.79	1699.97	1676.47	1642.18	1603.44	1542.46	1495.47	1424.76	1352.78
247.5	1716.27	1706.11	1683.46	1660.17	1609.57	1567.66	1499.28	1435.34	1355.96
270.0	1726.65	1720.08	1704.21	1674.14	1634.13	1588.62	1530.82	1460.75	1386.65
292.5	1715.21	1707.17	1697.22	1673.09	1623.55	1595.60	1528.07	1466.46	1384.75
315.0	1710.56	1708.23	1689.17	1668.22	1629.26	1577.18	1526.80	1459.05	1391.94
337.5	1708.65	1706.11	1692.14	1660.17	1627.78	1587.56	1528.70	1453.97	1380.30
360.0	1709.07	1706.11	1692.99	1657.84	1620.37	1576.34	1519.60	1442.75	1366.75
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	1295.20	1183.84	1057.03	929.37	766.79	646.54	523.54	290.88	137.61
22.5	1257.51	1148.91	1014.27	888.52	740.32	596.79	465.32	279.24	142.69
45.0	1203.74	1092.17	978.49	838.34	700.52	571.39	438.22	283.47	138.24
67.5	1192.52	1072.49	931.49	798.12	662.63	554.87	427.00	238.17	116.86
90.0	1203.53	1074.60	933.82	810.19	660.30	575.20	437.17	222.08	101.41
112.5	1193.79	1071.00	935.30	793.88	656.07	552.54	422.56	222.50	106.49
135.0	1205.86	1092.81	965.15	825.01	695.02	553.81	405.20	239.01	112.84
157.5	1213.90	1098.52	983.57	852.74	713.23	591.71	445.00	219.96	108.82
180.0	1225.97	1103.82	985.69	841.73	703.70	606.53	430.39	208.10	103.31
202.5	1243.12	1133.67	1020.19	890.00	755.36	612.67	475.91	231.60	109.66
225.0	1257.30	1162.88	1048.14	913.50	783.30	630.03	457.28	276.48	126.81
247.5	1272.33	1157.80	1035.44	896.14	753.66	610.55	495.81	277.54	124.69
270.0	1301.12	1174.53	1047.93	898.47	733.13	609.70	482.68	246.42	117.28
292.5	1302.61	1190.40	1063.38	925.56	771.02	619.87	494.33	293.63	137.18
315.0	1298.37	1201.62	1095.98	963.25	821.62	668.13	500.04	326.02	153.91
337.5	1306.42	1200.78	1076.93	946.95	803.20	660.94	526.29	315.86	146.71
360.0	1295.20	1183.84	1057.03	929.37	766.79	646.54	523.54	290.88	137.61
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	64.78	34.30	34.93	28.37	19.05	12.70	1.27	1.06	1.48
22.5	68.59	36.84	29.43	20.75	13.34	8.68	1.27	1.27	1.48
45.0	67.53	37.26	23.71	10.37	6.56	2.54	1.48	1.69	1.48
67.5	55.04	37.26	4.66	16.09	8.68	4.87	2.75	1.91	1.69
90.0	44.88	33.03	27.73	7.83	12.70	9.32	5.29	2.54	1.69
112.5	49.33	33.03	16.72	9.95	6.35	4.66	2.54	1.48	1.48
135.0	51.66	31.54	19.69	10.37	4.66	1.91	0.85	1.06	1.27
157.5	49.54	34.08	27.95	19.05	13.13	8.68	5.08	1.27	1.48
180.0	44.67	35.57	34.93	25.62	18.63	12.28	8.26	1.27	1.27
202.5	47.85	32.39	29.64	19.48	13.55	8.89	5.29	1.06	1.27
225.0	55.04	30.70	23.92	12.49	6.14	4.02	0.85	1.06	1.27
247.5	54.41	32.39	31.76	3.18	11.86	7.20	4.23	1.69	1.27
270.0	51.02	34.30	37.47	2.75	18.21	13.34	8.68	4.87	2.12
292.5	59.70	32.81	17.15	17.36	11.86	7.83	4.23	1.91	1.69
315.0	65.63	31.97	25.19	12.28	7.83	2.75	1.48	1.27	1.48
337.5	66.26	32.81	31.97	23.29	15.03	9.74	1.27	1.27	1.27
360.0	64.78	34.30	34.93	28.37	19.05	12.70	1.27	1.06	1.48



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Intensity	y Data(co	d)contin	ued						
C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	1.91	1.91	1.69	1.91	2.12	1.91	2.12	2.12	2.12
22.5	1.69	1.91	2.12	1.91	2.12	1.69	1.91	1.91	2.12
45.0	1.69	1.91	1.69	2.12	2.12	2.12	2.12	2.12	2.12
67.5	1.91	2.12	2.33	2.12	2.33	2.12	2.12	1.69	2.12
90.0	1.69	1.69	1.91	2.12	2.12	2.33	2.12	1.91	1.91
112.5	1.69	1.91	1.69	2.12	1.91	1.91	2.12	1.91	1.91
135.0	1.69	1.69	1.48	1.69	1.91	1.91	1.91	1.69	1.91
157.5	1.69	1.48	1.69	1.91	1.91	1.91	1.69	1.91	1.91
180.0	1.48	1.69	1.69	1.91	1.69	1.91	2.12	2.12	1.91
202.5	1.27	1.69	1.69	1.91	1.91	1.69	1.91	1.91	1.91
225.0	1.48	1.48	1.69	1.91	1.91	2.12	1.91	1.91	2.12
247.5	1.48	1.69	1.69	1.91	2.12	1.91	1.91	2.12	1.91
270.0	2.33	2.33	2.54	2.54	2.54	2.54	2.75	2.33	2.75
292.5	2.12	1.91	1.91	1.91	2.33	1.91	2.12	1.69	2.12
315.0	1.69	1.69	1.91	1.91	1.69	2.12	2.12	2.12	1.91
337 5	1.48	1 01	1 01	2 33	2 33	2 12	2 33	1 60	1 01

1.91

2.12

1.91

2.12

2.12

2.12

1.69

C/γ(°)	180.0
0.0	2.33
22.5	2.12
45.0	2.12
67.5	2.33
90.0	2.75
112.5	2.12
135.0	2.12
157.5	2.12
180.0	2.33
202.5	2.12
225.0	2.12
247.5	2.33
270.0	2.75
292.5	2.12
315.0	2.12
337.5	2.12
360.0	2.33

360.0

1.91

1.91



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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-A-FSC1-1[-PC, - MS, -SP][-BLK, WHT, -	120.01	60	0.337	40.32	0.996
	120.03	60	0.327	39.00	0.995
NA, -BRZ, -CC]	120.06	60	0.343	41.06	0.997

3.3 Photometric and Color Characteristics

Model	Luminous Flux (Im)	Luminous Efficacy (lm/W)	CCT (K)	CRI	R9
SSC-A-FSC1-1[-PC, - MS, -SP][-BLK, WHT, -	5588.47	138.6	3099	81.7	2
	5881.38	150.8	3734	83.5	10
NA, -BRZ, -CC]	5834.52	142.1	5226	82.6	5

Model	Rf	Rg	Rcs,h1(%)	-
SSC-A-FSC1-1[-PC, - MS, -SP][-BLK, WHT, -	83	97	-12	-
	84	97	-12	-
NA, -BRZ, -CC]	82	96	-13	-



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3.4 Chromaticity Coordinate

Model	Duv	x	у	u'	v'
SSC-A-FSC1-1[-PC, - MS, -SP][-BLK, WHT, -	-0.00167	0.4278	0.3967	0.2478	0.5171
	-0.00313	0.3903	0.3759	0.2320	0.5027
NA, -BRZ, -CC]	-0.00082	0.3390	0.3450	0.2098	0.4805



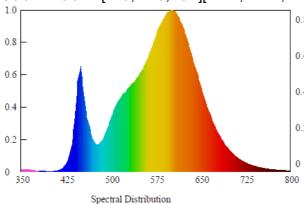
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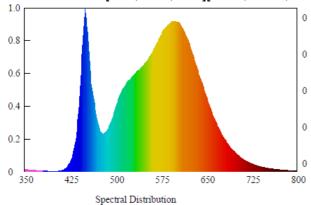


Spectrum

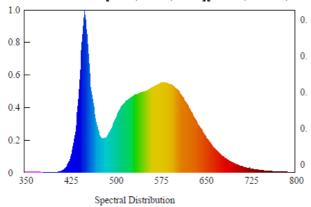
SSC-A-FSC1-1[-PC, -MS, -SP][-BLK, WHT, -NA, -BRZ, -CC], 3000K



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



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





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Manufacture

Theory

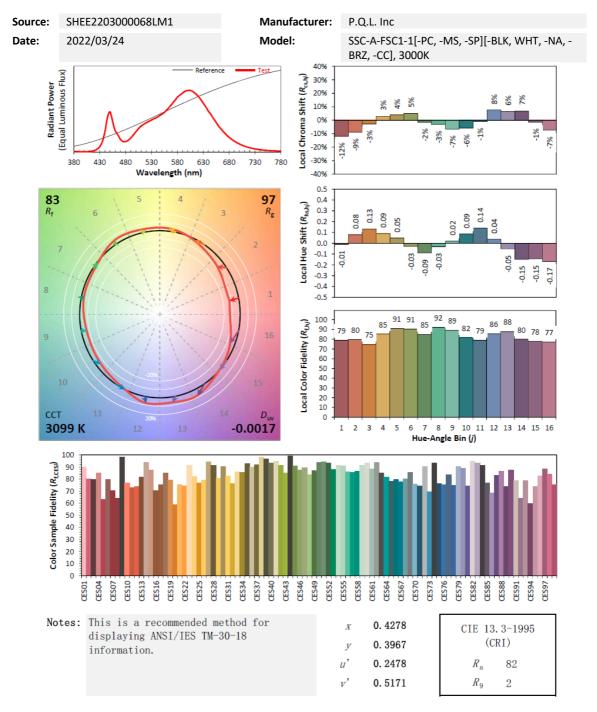
**Theory*

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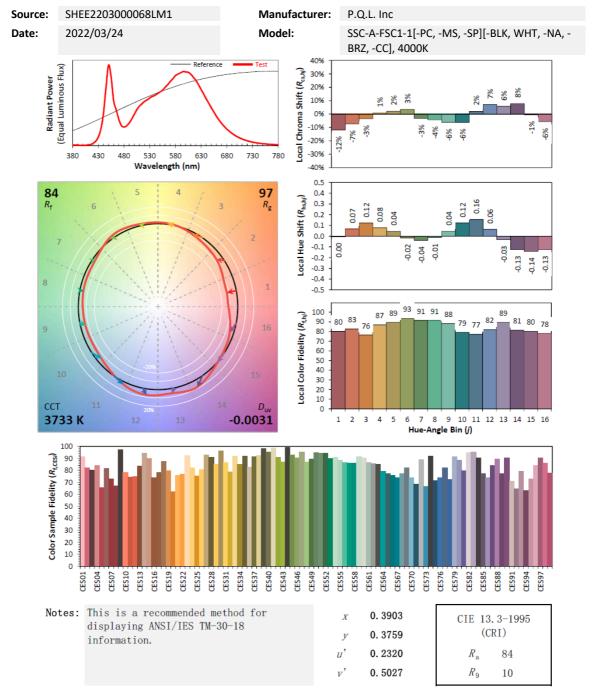
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ANSI/IES TM-30-18 Color Rendition Report



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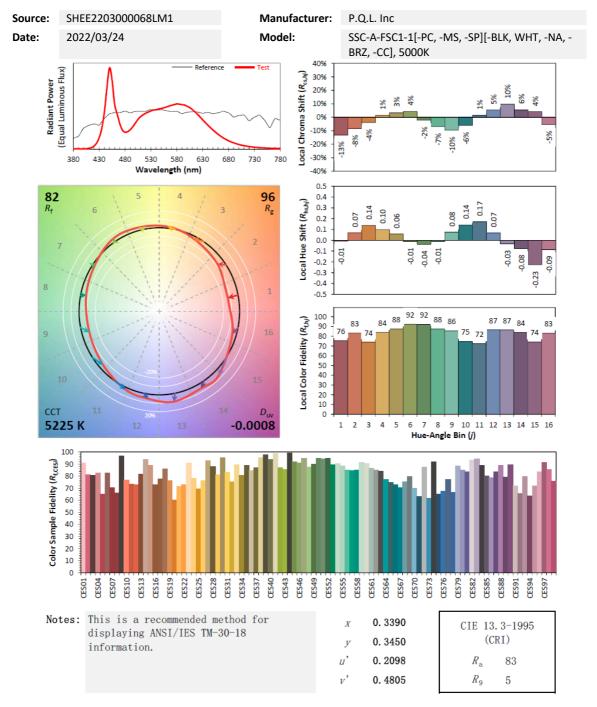
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4.0 THD and PF Test

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	ССТ	Voltage (V)	Frequenc y (Hz)	Power Factor	THDi
SSC-A-FSC1-1[-PC, - MS, -SP][-BLK, WHT, - NA, -BRZ, -CC]	2000	120	60	0.996	6.0%
	3000	277	60	0.975	3.9%
	4000	277	60	0.976	4.7%
	5000	277	60	0.976	4.1%



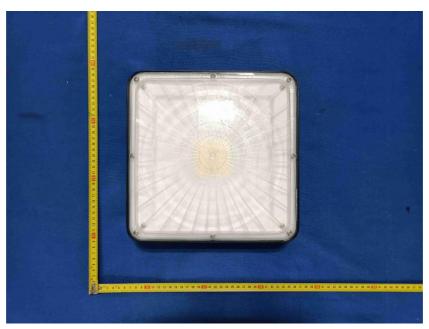
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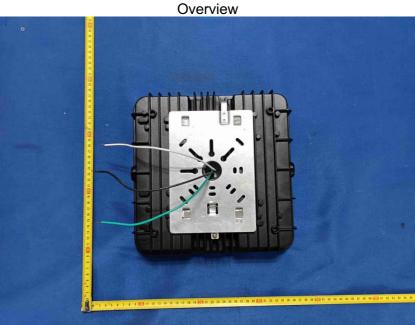
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Annex I Photo documentation





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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