

LM-79-08 Test Report

For

SATCO PRODUCTS INC.

(Brand Name: SATCO/NUVO)

110 Heartland Blvd. Brentwood NY 11717

LED Downlights

Model name(s):

S11871

Representative (Tested) Model:

S11871 (Setting at 2700K)

S11871 (Setting at 3000K)

S11871 (Setting at 3500K)

S11871 (Setting at 4000K)

S11871 (Setting at 5000K)

Test & Report By:



Engineer: Candy Chen

Date:2022-12-12

Review By:

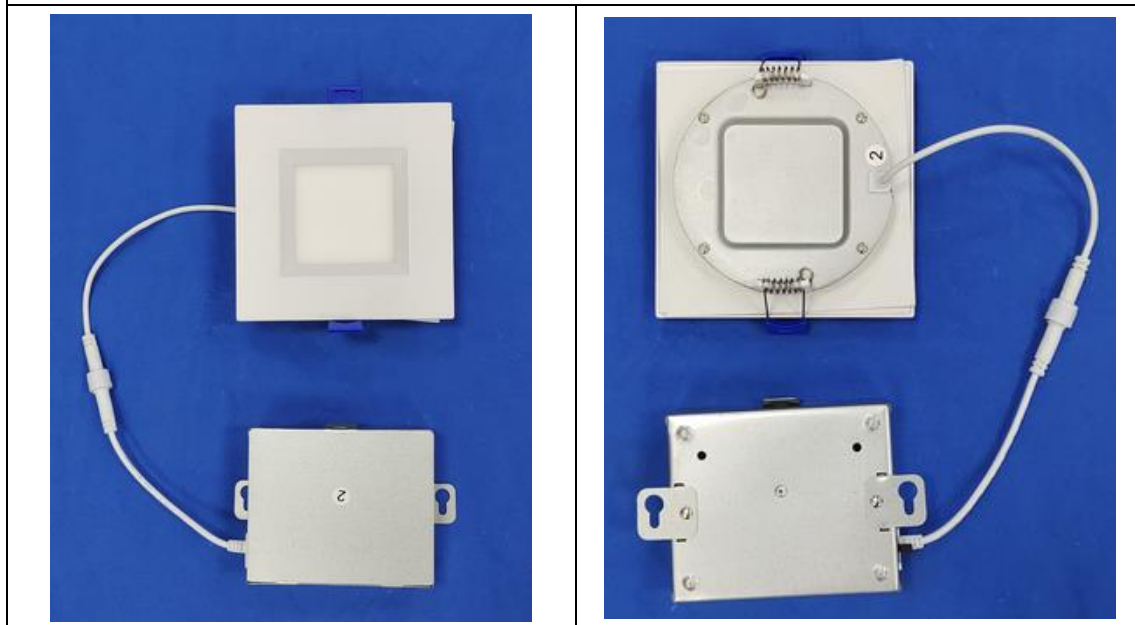


Manager: Jason Luo

1.1 Product Information:

Organization Name	SATCO PRODUCTS INC.	
Brand Name	SATCO/NUVO	
Model Number	S11871	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Downlights	
Rated Voltage / Frequency	120V/60HZ	
Nominal Power	12W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K, 3000K, 3500K, 4000K, 5000K(color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-##90RA35000U1	
Sample Number	BLC2212001E-C1-PL	
Luminaire Aperture (for Downlights Retrofit)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo



1.2 Test Specifications:

Date of Receipt	2022-12-06
Date of Test	2022-12-10
Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	BL-QP-033

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.
 Goniophotometer near field detector $f1'=1.13\%$, Test distance: 1.599m.

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

Self-absorption:
 S11871:1.0225

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2022-12-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	S11871 (Setting at 2700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
BLC2212001E-C1-PL	120.0	60	0.100	11.57	0.964

Sphere-Spectroradiometer Method:

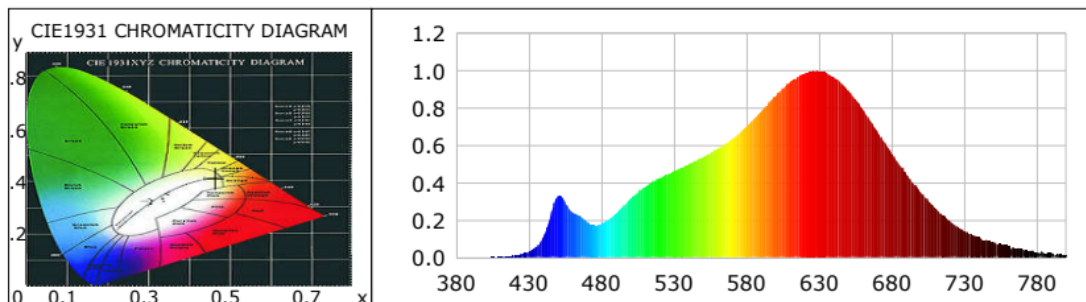
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	2665
Duv	0.00053
Chromaticity (x, y)	x=0.4637 y=0.4129
Chromaticity (u', v')	u(u')=0.2639 v'=0.5288
Color Rendering Index (CRI)	95.1
R9	67

Special Color Rendering Indices			
R1	96	R9	67
R2	98	R10	95
R3	99	R11	99
R4	96	R12	88
R5	96	R13	96
R6	98	R14	99
R7	92	R15	91
R8	85	--	--

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	756.2
Luminous Efficacy (lm/W)	65.36
Beam Angle °	110.1
Center Beam Candle Power (cd)	277

Spectral Power Distribution and Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0004	535	0.4435	7.6140	690	0.6738	11.5681
385	0.0010	0.0180	540	0.4625	7.9409	695	0.6135	10.5336
390	0.0017	0.0284	545	0.4814	8.2656	700	0.5541	9.5131
395	0.0008	0.0137	550	0.4980	8.5500	705	0.4996	8.5785
400	0.0015	0.0262	555	0.5188	8.9082	710	0.4462	7.6603
405	0.0017	0.0286	560	0.5374	9.2273	715	0.3938	6.7606
410	0.0016	0.0271	565	0.5603	9.6203	720	0.3461	5.9426
415	0.0047	0.0801	570	0.5818	9.9885	725	0.3022	5.1879
420	0.0109	0.1880	575	0.6049	10.3857	730	0.2627	4.5096
425	0.0183	0.3142	580	0.6335	10.8766	735	0.2245	3.8540
430	0.0312	0.5349	585	0.6649	11.4157	740	0.1936	3.3241
435	0.0561	0.9639	590	0.7008	12.0319	745	0.1665	2.8588
440	0.1098	1.8850	595	0.7395	12.6970	750	0.1413	2.4266
445	0.2203	3.7820	600	0.7820	13.4267	755	0.1181	2.0271
450	0.3272	5.6173	605	0.8253	14.1705	760	0.1072	1.8398
455	0.3004	5.1582	610	0.8661	14.8703	765	0.0956	1.6406
460	0.2425	4.1635	615	0.9060	15.5560	770	0.0815	1.3991
465	0.2240	3.8457	620	0.9411	16.1583	775	0.0712	1.2216
470	0.1934	3.3206	625	0.9671	16.6042	780	0.0605	1.0381
475	0.1710	2.9367	630	0.9869	16.9446	785	0.0509	0.8733
480	0.1788	3.0701	635	0.9985	17.1436	790	0.0454	0.7788
485	0.2025	3.4761	640	0.9980	17.1355	795	0.0374	0.6418
490	0.2348	4.0306	645	0.9876	16.9570	800	0.0285	0.4897
495	0.2753	4.7265	650	0.9668	16.6002			
500	0.3142	5.3954	655	0.9331	16.0207			
505	0.3480	5.9752	660	0.8929	15.3314			
510	0.3769	6.4705	665	0.8461	14.5266			
515	0.4018	6.8988	670	0.7917	13.5932			
520	0.4244	7.2874	675	0.7339	12.5999			
525	0.4435	7.6140	680	0.6738	11.5681			
530	0.4625	7.9409	685	0.6135	10.5336			

Zonal Lumen Tabulation

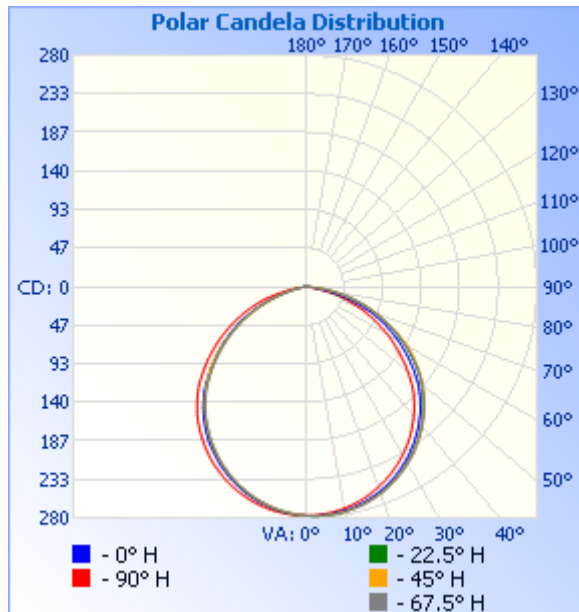
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	215.2	28.5%	28.5%
0-40	352.9	46.7%	46.7%
0-60	620.7	82.1%	82.1%
60-90	134.6	17.8%	17.8%
70-100	46.0	6.1%	6.1%
90-120	0.3	0%	0%
0-90	755.3	99.9%	99.9%
90-180	0.9	0.1%	0.1%
0-180	756.1	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	26.2	3.5%	90-100	0.1	0%
10-20	75.1	9.9%	100-110	0.1	0%
20-30	113.9	15.1%	110-120	0.1	0%
30-40	137.6	18.2%	120-130	0.1	0%
40-50	142.5	18.8%	130-140	0.1	0%
50-60	125.3	16.6%	140-150	0.1	0%
60-70	88.6	11.7%	150-160	0.1	0%
70-80	40.5	5.4%	160-170	0.1	0%
80-90	5.4	0.7%	170-180	0.0	0%

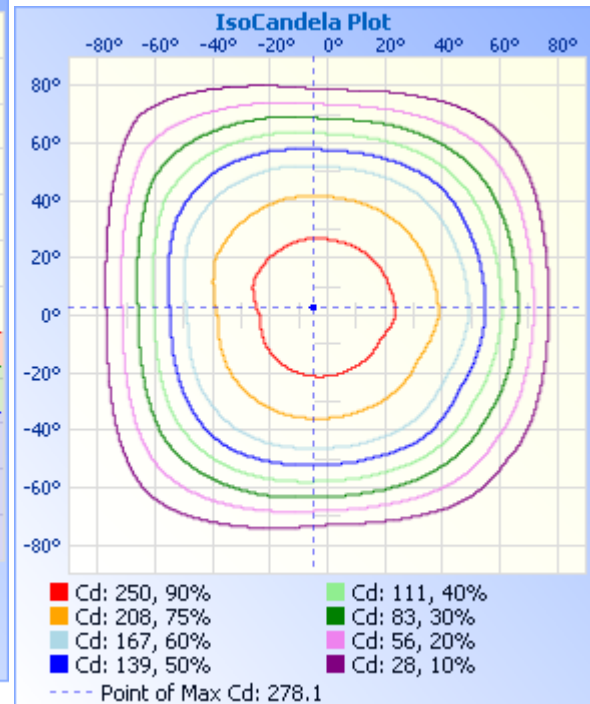
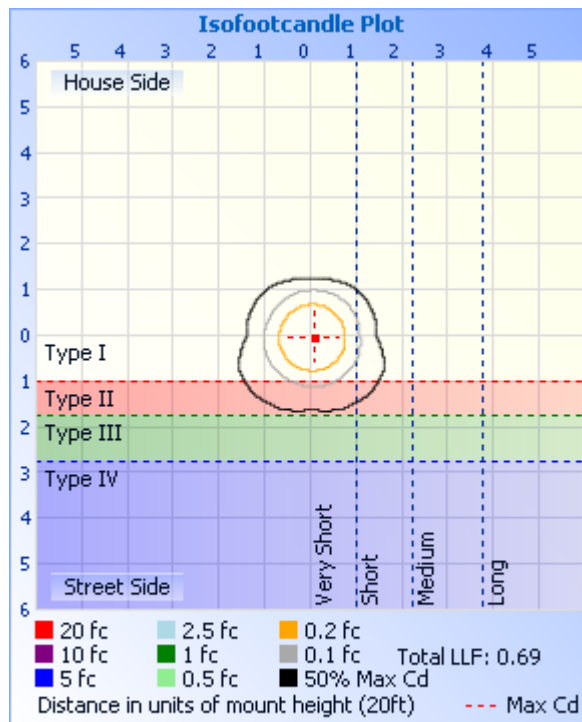
Photometric Data



Illuminance at a Distance

Center Beam fc	Beam Width
0.96 fc	48.7 ft 48.5 ft
0.24 fc	97.4 ft 96.9 ft
0.11 fc	146.0 ft 145.4 ft
0.06 fc	194.7 ft 193.8 ft
0.04 fc	243.4 ft 242.3 ft
0.03 fc	292.1 ft 290.7 ft

■ Vert. Spread: 110.1°
■ Horiz. Spread: 109.9°



Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	277	277	277	277	277	277	277	277	277	277	277	277	277	277	277	277	277
1	277	277	277	277	277	277	277	277	277	276	276	276	277	277	277	277	277
2	277	278	278	278	277	277	277	276	276	276	276	276	277	276	277	277	277
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5	277	278	278	278	276	276	275	275	274	274	273	273	275	276	276	277	277
6	277	278	278	278	275	275	275	274	273	273	273	272	275	275	276	276	277
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29	245	249	249	250	238	238	235	232	229	226	226	225	237	237	239	242	245

Laboratory: UTEST TECHNICAL LABORATORY CO. LTD A2LA Certificate# 4810.01

Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,
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114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
143	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2022-12-10	Test Ambient:	25.0 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	S11871 (Setting at 3000K)		

Sphere-Spectroradiometer Method:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
BLC2212001E-C1-PL	120.0	60	0.102	11.79	0.965

Sphere-Spectroradiometer Method:

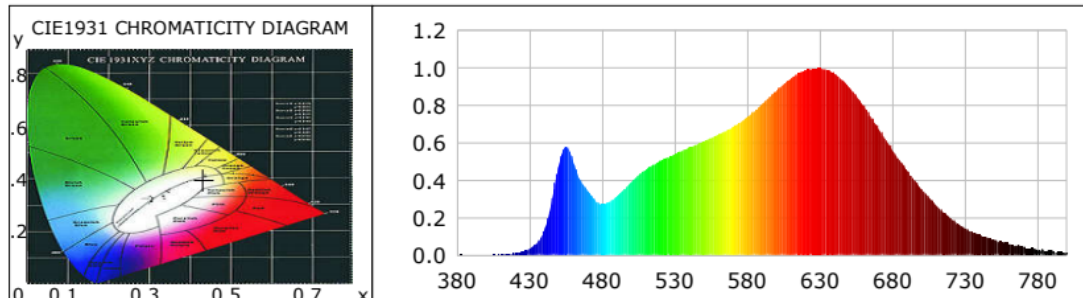
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3013
Duv	-0.00225
Chromaticity (x, y)	x=0.4328 y=0.3971
Chromaticity (u', v')	u(u')=0.2509 v'=0.5180
Color Rendering Index (CRI)	96.3
R9	80

Special Color Rendering Indices			
R1	99	R9	80
R2	99	R10	99
R3	99	R11	99
R4	98	R12	83
R5	98	R13	100
R6	95	R14	99
R7	93	R15	96
R8	90	--	--

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	802.9
Luminous Efficacy (lm/W)	67.10

Spectral Power Distribution and Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0012	535	0.5215	8.7417	690	0.6792	11.3861
385	0.0009	0.0153	540	0.5388	9.0316	695	0.6181	10.3618
390	0.0018	0.0302	545	0.5573	9.3431	700	0.5583	9.3588
395	0.0009	0.0156	550	0.5732	9.6095	705	0.5035	8.4406
400	0.0013	0.0216	555	0.5912	9.9114	710	0.4524	7.5847
405	0.0019	0.0312	560	0.6069	10.1738	715	0.3970	6.6545
410	0.0014	0.0235	565	0.6265	10.5028	720	0.3505	5.8749
415	0.0043	0.0729	570	0.6446	10.8067	725	0.3064	5.1367
420	0.0101	0.1699	575	0.6633	11.1202	730	0.2646	4.4349
425	0.0185	0.3102	580	0.6848	11.4804	735	0.2269	3.8035
430	0.0330	0.5534	585	0.7095	11.8945	740	0.1959	3.2834
435	0.0629	1.0542	590	0.7374	12.3620	745	0.1689	2.8313
440	0.1280	2.1453	595	0.7707	12.9202	750	0.1431	2.3993
445	0.2696	4.5199	600	0.8048	13.4912	755	0.1212	2.0310
450	0.4707	7.8907	605	0.8422	14.1177	760	0.1080	1.8107
455	0.5783	9.6944	610	0.8784	14.7253	765	0.0975	1.6337
460	0.5032	8.4363	615	0.9136	15.3161	770	0.0815	1.3655
465	0.4023	6.7448	620	0.9446	15.8351	775	0.0715	1.1980
470	0.3462	5.8036	625	0.9708	16.2738	780	0.0608	1.0199
475	0.2957	4.9577	630	0.9874	16.5529	785	0.0513	0.8596
480	0.2713	4.5483	635	0.9985	16.7389	790	0.0451	0.7553
485	0.2839	4.7588	640	0.9990	16.7472	795	0.0361	0.6058
490	0.3133	5.2521	645	0.9880	16.5631	800	0.0285	0.4770
495	0.3491	5.8528	650	0.9694	16.2503			
500	0.3896	6.5316	655	0.9388	15.7381			
505	0.4257	7.1360	660	0.8967	15.0317			
510	0.4547	7.6229	665	0.8521	14.2850			
515	0.4818	8.0766	670	0.7975	13.3693			
520	0.5033	8.4368	675	0.7381	12.3729			
525	0.5215	8.7417	680	0.6792	11.3861			
530	0.5388	9.0316	685	0.6181	10.3618			

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2022-12-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	S11871 (Setting at 3500K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
BLC2212001E-C1-PL	120.0	60	0.101	11.67	0.964

Sphere-Spectroradiometer Method:

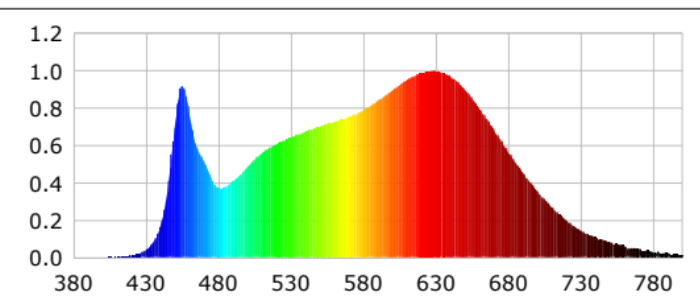
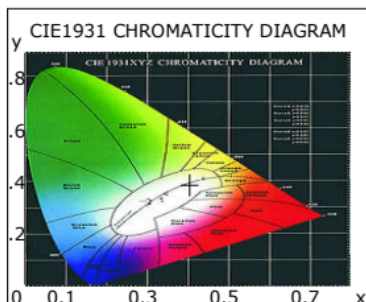
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3482
Duv	-0.00303
Chromaticity (x, y)	x=0.4032 y=0.3828
Chromaticity (u', v')	u(u')=0.2376 v'=0.5076
Color Rendering Index (CRI)	96.5
R9	90

Special Color Rendering Indices			
R1	98	R9	90
R2	98	R10	97
R3	99	R11	99
R4	97	R12	78
R5	97	R13	98
R6	95	R14	99
R7	94	R15	98
R8	94	--	--

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	852.2
Luminous Efficacy (lm/W)	73.02

Spectral Power Distribution and Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0019	535	0.6249	10.0577	690	0.6798	10.9423
385	0.0006	0.0101	540	0.6419	10.3312	695	0.6202	9.9829
390	0.0015	0.0241	545	0.6594	10.6137	700	0.5600	9.0140
395	0.0012	0.0191	550	0.6740	10.8488	705	0.5055	8.1368
400	0.0014	0.0226	555	0.6886	11.0836	710	0.4526	7.2857
405	0.0020	0.0325	560	0.7010	11.2837	715	0.3989	6.4203
410	0.0014	0.0221	565	0.7165	11.5319	720	0.3533	5.6869
415	0.0044	0.0713	570	0.7286	11.7269	725	0.3087	4.9683
420	0.0111	0.1789	575	0.7397	11.9068	730	0.2673	4.3031
425	0.0200	0.3225	580	0.7534	12.1264	735	0.2287	3.6805
430	0.0398	0.6403	585	0.7684	12.3686	740	0.1973	3.1763
435	0.0810	1.3036	590	0.7885	12.6910	745	0.1690	2.7195
440	0.1663	2.6769	595	0.8130	13.0864	750	0.1443	2.3222
445	0.3597	5.7904	600	0.8378	13.4850	755	0.1186	1.9089
450	0.6978	11.2315	605	0.8667	13.9507	760	0.1085	1.7464
455	0.9194	14.7983	610	0.8942	14.3936	765	0.0972	1.5641
460	0.7706	12.4033	615	0.9253	14.8929	770	0.0817	1.3155
465	0.5942	9.5635	620	0.9513	15.3116	775	0.0715	1.1512
470	0.5166	8.3153	625	0.9724	15.6514	780	0.0627	1.0088
475	0.4273	6.8781	630	0.9875	15.8952	785	0.0517	0.8321
480	0.3729	6.0020	635	0.9982	16.0670	790	0.0476	0.7656
485	0.3790	6.1001	640	0.9978	16.0599	795	0.0390	0.6269
490	0.4082	6.5707	645	0.9858	15.8672	800	0.0285	0.4591
495	0.4425	7.1219	650	0.9681	15.5828			
500	0.4864	7.8284	655	0.9397	15.1248			
505	0.5260	8.4672	660	0.8972	14.4415			
510	0.5576	8.9753	665	0.8495	13.6731			
515	0.5857	9.4278	670	0.7951	12.7980			
520	0.6070	9.7706	675	0.7391	11.8969			
525	0.6249	10.0577	680	0.6798	10.9423			
530	0.6419	10.3312	685	0.6202	9.9829			

2.4 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2022-12-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	S11871 (Setting at 4000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
BLC2212001E-C1-PL	120.0	60	0.102	11.76	0.965

Sphere-Spectroradiometer Method:

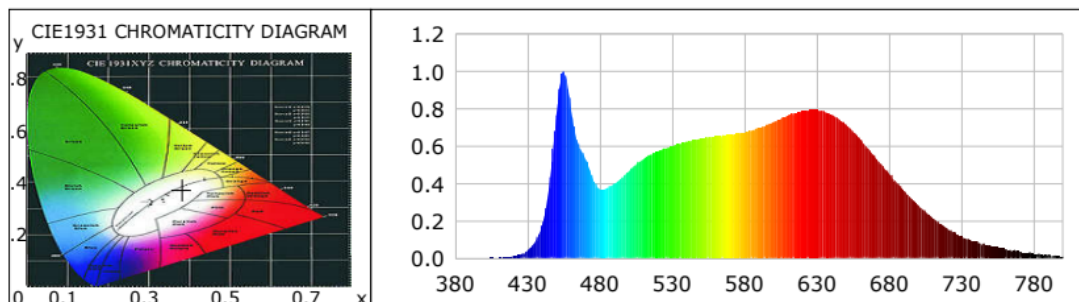
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3979
Duv	-0.00191
Chromaticity (x, y)	x=0.3800 y=0.3725
Chromaticity (u', v')	u(u')=0.2266 v'=0.4996
Color Rendering Index (CRI)	96.5
R9	93

Special Color Rendering Indices			
R1	98	R9	93
R2	98	R10	99
R3	99	R11	98
R4	96	R12	73
R5	96	R13	98
R6	96	R14	99
R7	95	R15	96
R8	95	--	--

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	879.9
Luminous Efficacy (lm/W)	74.82

Spectral Power Distribution and Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.0062	535	0.5867	11.1052	690	0.5426	10.2716
385	0.0010	0.0186	540	0.5995	11.3489	695	0.4957	9.3829
390	0.0008	0.0159	545	0.6119	11.5837	700	0.4497	8.5136
395	0.0011	0.0216	550	0.6228	11.7891	705	0.4044	7.6555
400	0.0013	0.0237	555	0.6316	11.9554	710	0.3628	6.8683
405	0.0020	0.0385	560	0.6420	12.1530	715	0.3208	6.0720
410	0.0011	0.0214	565	0.6485	12.2761	720	0.2829	5.3556
415	0.0036	0.0680	570	0.6516	12.3346	725	0.2470	4.6757
420	0.0102	0.1935	575	0.6577	12.4507	730	0.2133	4.0379
425	0.0194	0.3677	580	0.6601	12.4951	735	0.1822	3.4492
430	0.0407	0.7698	585	0.6657	12.6024	740	0.1588	3.0053
435	0.0846	1.6020	590	0.6736	12.7509	745	0.1373	2.5993
440	0.1745	3.3026	595	0.6854	12.9751	750	0.1154	2.1852
445	0.3795	7.1838	600	0.6975	13.2039	755	0.0973	1.8420
450	0.7627	14.4378	605	0.7153	13.5412	760	0.0885	1.6748
455	1.0000	18.9298	610	0.7294	13.8065	765	0.0791	1.4968
460	0.8040	15.2197	615	0.7468	14.1375	770	0.0641	1.2138
465	0.6158	11.6577	620	0.7650	14.4809	775	0.0585	1.1073
470	0.5337	10.1022	625	0.7797	14.7603	780	0.0503	0.9513
475	0.4308	8.1557	630	0.7893	14.9417	785	0.0402	0.7613
480	0.3696	6.9960	635	0.7947	15.0432	790	0.0361	0.6840
485	0.3748	7.0953	640	0.7952	15.0525	795	0.0296	0.5598
490	0.3991	7.5546	645	0.7866	14.8897	800	0.0208	0.3940
495	0.4287	8.1160	650	0.7699	14.5737			
500	0.4664	8.8294	655	0.7465	14.1305			
505	0.5015	9.4929	660	0.7157	13.5475			
510	0.5298	10.0287	665	0.6747	12.7715			
515	0.5541	10.4886	670	0.6366	12.0501			
520	0.5729	10.8455	675	0.5896	11.1612			
525	0.5867	11.1052	680	0.5426	10.2716			
530	0.5995	11.3489	685	0.4957	9.3829			

2.5 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2022-12-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	S11871 (Setting at 5000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
BLC2212001E-C1-PL	120.0	60	0.101	11.70	0.964

Sphere-Spectroradiometer Method:

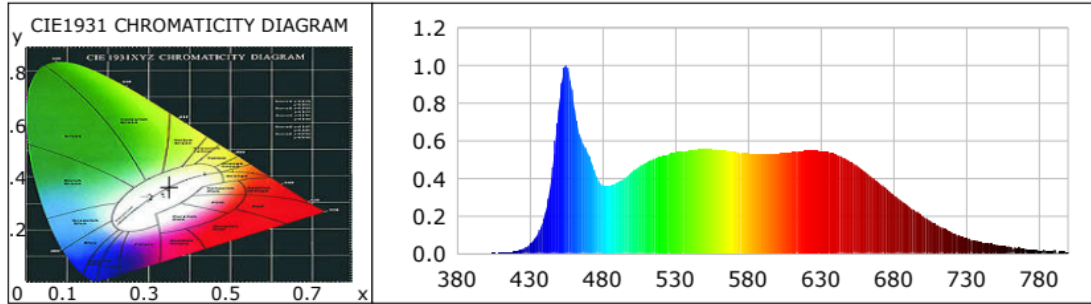
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	4914
Duv	0.00239
Chromaticity (x, y)	x=0.3481 y=0.3588
Chromaticity (u', v')	u(u')=0.2107 v'=0.4886
Color Rendering Index (CRI)	94.8
R9	87

Special Color Rendering Indices			
R1	96	R9	87
R2	99	R10	96
R3	99	R11	93
R4	91	R12	65
R5	93	R13	98
R6	95	R14	99
R7	93	R15	93
R8	92	--	--

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	874.8
Luminous Efficacy (lm/W)	74.77

Spectral Power Distribution and Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0006	535	0.5256	12.1020	690	0.3749	8.6320
385	0.0009	0.0207	540	0.5340	12.2958	695	0.3434	7.9081
390	0.0007	0.0158	545	0.5426	12.4935	700	0.3125	7.1969
395	0.0004	0.0102	550	0.5487	12.6354	705	0.2810	6.4714
400	0.0012	0.0275	555	0.5523	12.7186	710	0.2537	5.8408
405	0.0015	0.0348	560	0.5526	12.7246	715	0.2232	5.1389
410	0.0021	0.0488	565	0.5526	12.7252	720	0.1975	4.5484
415	0.0047	0.1090	570	0.5489	12.6389	725	0.1733	3.9913
420	0.0113	0.2591	575	0.5447	12.5427	730	0.1483	3.4148
425	0.0230	0.5295	580	0.5393	12.4183	735	0.1288	2.9667
430	0.0472	1.0879	585	0.5329	12.2702	740	0.1108	2.5506
435	0.0961	2.2120	590	0.5310	12.2275	745	0.0965	2.2217
440	0.1918	4.4163	595	0.5279	12.1562	750	0.0828	1.9059
445	0.3984	9.1735	600	0.5264	12.1202	755	0.0683	1.5717
450	0.7700	17.7309	605	0.5297	12.1966	760	0.0632	1.4542
455	1.0000	23.0266	610	0.5288	12.1774	765	0.0553	1.2732
460	0.8143	18.7515	615	0.5335	12.2841	770	0.0460	1.0583
465	0.6188	14.2479	620	0.5400	12.4338	775	0.0408	0.9400
470	0.5355	12.3301	625	0.5428	12.4978	780	0.0366	0.8428
475	0.4303	9.9076	630	0.5460	12.5736	785	0.0286	0.6595
480	0.3621	8.3371	635	0.5482	12.6233	790	0.0264	0.6072
485	0.3599	8.2864	640	0.5442	12.5303	795	0.0205	0.4724
490	0.3780	8.7035	645	0.5394	12.4203	800	0.0152	0.3492
495	0.3991	9.1906	650	0.5259	12.1095			
500	0.4313	9.9311	655	0.5119	11.7884			
505	0.4602	10.5974	660	0.4900	11.2833			
510	0.4824	11.1088	665	0.4659	10.7272			
515	0.5015	11.5479	670	0.4361	10.0427			
520	0.5148	11.8535	675	0.4056	9.3397			
525	0.5256	12.1020	680	0.3749	8.6320			
530	0.5340	12.2958	685	0.3434	7.9081			

3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2022-01-18
AC Power Source	CHP-500C	DYBWD010159	2022-01-25
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2022-01-25
Digital Power Meter	WT500	DYDWQ20010	2022-01-25
Integral Sphere (2M)	2M	DYJCE120067	2022-01-18
Digital Power Meter	WT500	DYDWQ200006	2022-01-25
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2022-01-18
Expand Uncertainty: Photometric Measurement (Sphere): 2.08%, k=2 Chromaticity Measurement(Sphere):25.6K, k=2 Photometric Measurement(Goniophotometer):2.645%, k=2			

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