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LM-79-19 Test Report

For

Beyond LED Technology

1939 Parker Court, Stone Mountain, GA 30087

Model name(s): CP08-10-80L-AD5C3

Report Type:	Testing and Report According to IES LM-79-2019
Type 1 of Luminaire:	Fuel Pump Canopy Luminaires
Type 2 of Luminaire:	Parking Garage Luminaires
Report Date:	2024-12-27

Test & Report By:

Ferrum Li

Engineer: Ferrum Li

Review By:

Garman Mo

Manager: Garman Mo

Note: 1.The results contained in this report pertain only to the tested samples.

2.This report does not imply product certification, approval, or endorsement by A2LA or any agency of the Federal Government.

1.1 Product Information:		
Model Number	CP08-10-80L-AD5C3	
Remark	The "[Blank;S;S1;S2]" denotes sensor,S = microwave motion sensor, S1 = PIR sensor, S2 = Photocell, Blank for no sensing function. The [A;D] indicates the dimming type,A=1-10V/0-10V, D=1-10V/0-10V power adjustment function and dimming wire The [Blank;5] represents wattage adjustable options, can be 5 or Blank	
Representative (Tested) Model	CP08-10-80L-AC3(0%,3000K) CP08-10-80L-AC3(50%,4000K) CP08-10-80L-AC3(100%,5000K)	
Model Difference	N/A	
SKU (if available)	--	
Type 1 of Luminaire (for integral lamps, list base type and lamp type)	Fuel Pump Canopy Luminaires	
Type 2 of Luminaire (for integral lamps, list base type and lamp type)	Parking Garage Luminaires	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-3080RC35004A1 L128-5080RC35004A1	
Integral Controls Availability	No	
Dimming	Continuous	
Sample Number	JBE241009-AA1	
Date of Receipt	2024-12-23	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaire Width	--	mm
Number of Units (modular products)	N/A	s

1.2 Rated Values:	
Rated Voltage / Frequency	120-277Vac, 50/60Hz
Nominal Power	20/40/60/70/80W(Power adjustable)
Rated Initial Lamp Lumen	--
Declared CCT	3000K,4000K,5000K(Color Tunable)

1.3 Test Specifications:

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-79-2019 Optical and Electrical Measurements of Solid-State Lighting Products 2. ANSI C78.377-2015 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	QD25

1.4 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 °C ±1.2 °C, measured at a point not more than 1.5 m from the sample and at the same height as the sample. The humidity should be maintained between 10% and 65%. 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 ºC ±1.2 ºC. The humidity should be maintained between 10% and 65%. 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.

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 ºC ±1.2 ºC. 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.

2.1 Summary of Test Result

Criteria Item	Measured Value		Compliance	Requirement (DLC V5.1)	
Minimum Total Luminous	11882		Pass	>=2000(-10%)	
Minimum Luminous Efficacy	150.80		Pass	Standard: >= 105(-3%)	Premium: >= 120(-3%)
Minimum Power Factor	0.9480		Pass	>= 0.9(-3%)	
Maximum THD %	7.95		Pass	<= 20(+5)	
Minimum CRI	82.4		Pass	>= 70(-1)	
Minimum R9	7		Pass	>= -40(-1)	
Minimum Rg	95		Pass	>= 89(-1)	
Minimum Rf	83		Pass	>= 70(-1)	
Rcs, h1(%)	-12		Pass	-18%-23%(-1%)	
CCT (K)	3000K	3112	Pass	<=6500K	
	4000K	4255			
	5000K	5162			
Zonal Lumen Requirement(%)	0-40 °	40.2	Pass	>=40(-3)	
	40-70 °	42.6		>=40(-3)	
	60-80 °	28.2		>=30(-3)	
	70-80 °	11.6		<=25(+3)	
BUG rating	B3-U3-G3		--	--	

2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2024-12-25	**Test Ambient:**	25±1 ºC
Test Orientation	As intended	**Stabilization Time (min)**	60
Model Number	CP08-10-80L-AC3(0%,3000K)	**Total Operating Time (min)**	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE241009-AA1	120.0	60	0.6708	80.25	0.9970	3.43
	277.1	60	0.2969	78.05	0.9486	7.91

Photometric Measurement – Goniophotometer Method(Test Distance:26.000m):

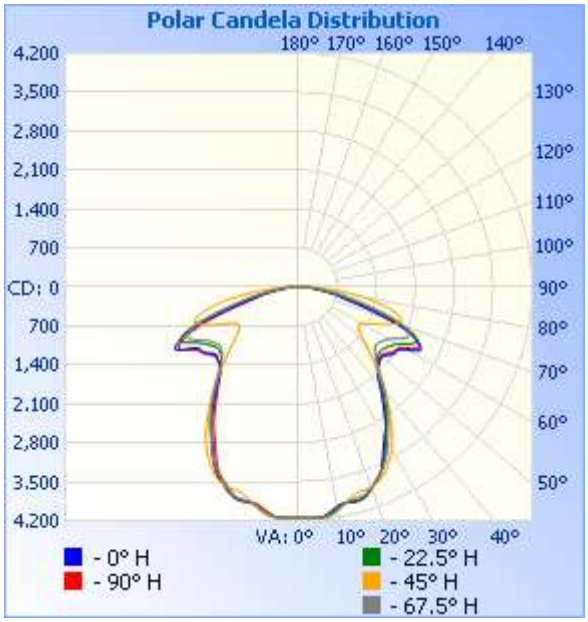
Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	12102	11882
Luminous Efficacy (lm/W)	150.80	152.23
Zonal lumens in the 0-40 °zone (%)	40.2	--
Zonal lumens in the 40-70 °zone (%)	42.6	--
Zonal lumens in the 60-80 °zone (%)	28.2	--
Zonal lumens in the 70-80 °zone (%)	11.6	--
BUG rating	B3-U3-G3	--
Beam Angle (°)	136.5	--
Center Beam Candle Power (cd)	4145	--

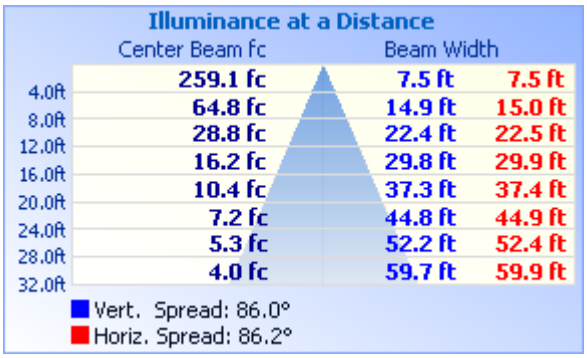
Zonal Lumen Tabulation

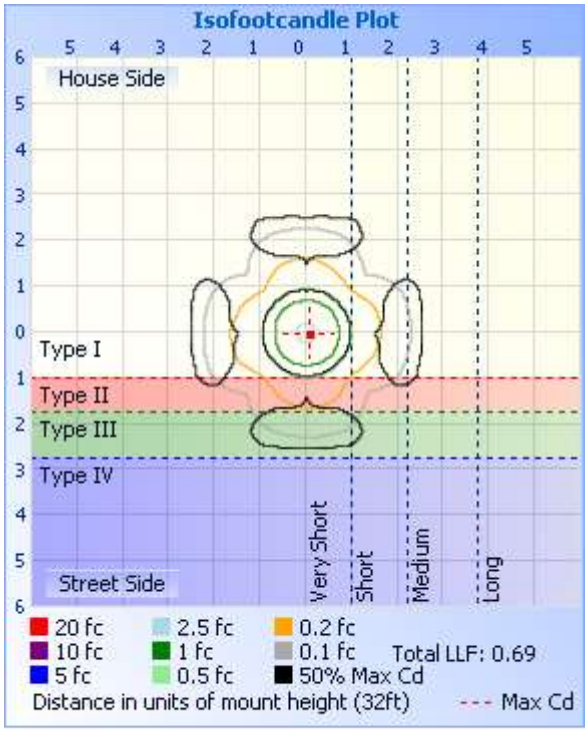
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	3,142.3	26%
0-40	4,869.7	40.2%
0-60	8,010.4	66.2%
60-90	3,900.0	32.2%
70-100	1,972.7	16.3%
90-120	149.7	1.2%
0-90	11,910.4	98.4%
90-180	191.2	1.6%
0-180	12,101.6	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	393.6	3.3%	90-100	86.8	0.7%
10-20	1,112.8	9.2%	100-110	40.3	0.3%
20-30	1,635.9	13.5%	110-120	22.5	0.2%
30-40	1,727.4	14.3%	120-130	11.4	0.1%
40-50	1,548.6	12.8%	130-140	9.8	0.1%
50-60	1,592.1	13.2%	140-150	8.3	0.1%
60-70	2,014.2	16.6%	150-160	6.5	0.1%
70-80	1,408.0	11.6%	160-170	3.9	0%
80-90	477.9	3.9%	170-180	1.6	0%

Photometric Data







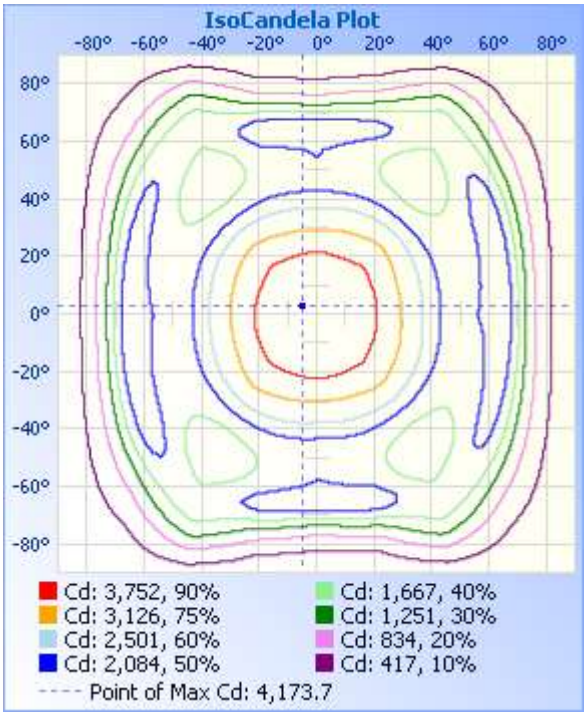
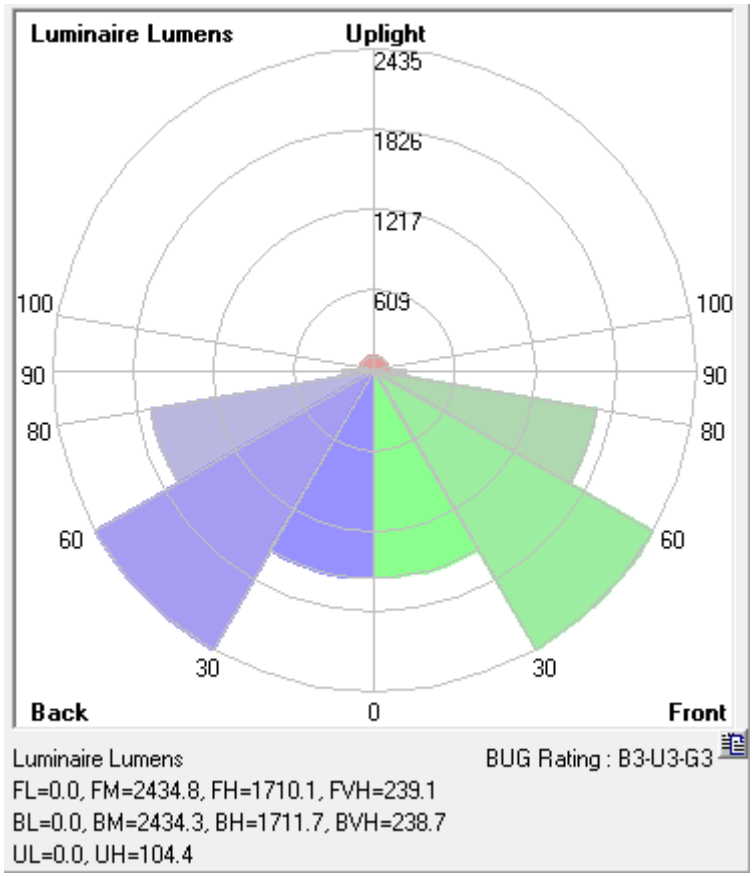


Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	4145	4145	4145	4145	4145	4145	4145	4145	4145	4145	4145	4145	4145	4145	4145	4145			
5	4156	4160	4170	4165	4158	4162	4173	4168	4162	4163	4159	4154	4149	4157	4161	4161			
10	3989	4008	4049	4030	3999	4025	4082	4061	4037	4057	4096	4067	4023	4055	4068	4025			
15	3979	3964	3841	3952	3991	3983	3863	3933	3975	3957	3871	3945	3968	3956	3853	3946			
20	3786	3805	3821	3816	3828	3844	3824	3834	3847	3864	3810	3855	3835	3838	3803	3808			
25	3485	3518	3652	3570	3547	3580	3670	3581	3571	3591	3693	3594	3571	3567	3652	3551			
30	3034	3084	3313	3165	3100	3135	3345	3212	3119	3177	3376	3197	3120	3143	3316	3152			
35	2614	2695	2849	2768	2678	2748	2891	2813	2707	2780	2940	2801	2699	2747	2861	2757			
40	2235	2301	2340	2348	2269	2337	2392	2404	2298	2374	2424	2381	2274	2332	2355	2347			
45	2002	1999	1884	1962	2016	2001	1929	2014	2017	2021	1952	1987	1996	1981	1897	1988			
50	1949	1881	1524	1774	1951	1877	1556	1796	1933	1878	1566	1773	1922	1838	1529	1800			
55	2065	1916	1312	1755	2090	1901	1317	1750	2041	1886	1319	1732	2063	1850	1300	1783			
60	2268	2075	1320	1891	2249	2051	1304	1864	2185	2016	1282	1859	2188	2013	1299	1915			
65	2330	2305	1603	2195	2389	2326	1574	2144	2381	2283	1522	2174	2418	2318	1586	2180			
70	1679	1895	1944	1991	1788	1985	1904	1986	1841	1992	1882	2049	1818	1987	1933	1937			
75	878	1097	1818	1269	962	1187	1821	1314	1015	1228	1853	1312	949	1158	1812	1222			
80	526	618	1284	731	564	663	1320	751	582	678	1358	738	561	640	1287	696			
85	256	303	649	366	272	327	694	386	289	339	708	368	267	309	635	352			
90	144	166	226	190	147	171	240	199	152	176	244	188	144	164	228	185			
95	72.1	59.5	17.9	17.9	6.18	7.25	56.3	107	104	94.7	45.8	20.3	8.31	14.1	10.1	54.9			
100	7.96	11.0	42.5	79.2	85.6	58.8	46.0	9.11	6.46	7.77	40.0	77.4	83.8	54.5	53.2	14.3			
105	39.4	39.8	37.7	48.5	59.8	40.1	41.9	18.1	9.22	16.0	36.1	46.9	58.4	36.6	38.6	34.2			
110	42.1	36.4	26.5	34.6	41.9	30.7	29.7	31.5	41.5	35.1	24.5	32.2	38.6	26.3	25.3	29.1			
115	31.2	28.6	14.5	23.0	29.6	20.5	12.8	25.9	31.1	27.7	12.6	18.9	24.9	17.1	10.2	23.7			
120	22.5	19.6	12.9	10.6	14.3	10.2	11.2	18.5	22.6	19.3	11.1	7.89	10.9	7.35	10.2	16.9			
125	16.8	15.3	12.5	9.84	11.4	9.51	10.6	14.9	16.4	15.2	10.9	10.2	9.85	9.50	10.3	14.0			
130	16.5	15.1	11.3	11.7	11.4	9.62	10.6	14.4	14.3	13.6	10.9	12.4	12.5	11.2	11.1	13.0			
135	16.0	14.8	10.7	13.5	11.4	10.5	10.7	13.7	13.7	12.8	10.9	13.7	12.6	12.5	11.6	13.3			
140	16.0	14.8	10.6	13.5	11.8	11.9	8.41	13.6	14.7	13.2	10.9	13.8	12.8	12.8	11.5	14.2			
145	17.0	15.1	10.7	14.4	11.1	13.4	9.05	13.3	14.9	13.8	10.9	13.8	12.6	13.1	11.7	14.8			
150	17.0	14.9	13.6	15.6	14.5	14.1	13.0	13.8	14.9	13.8	11.9	13.8	12.8	12.9	14.0	15.4			
155	15.8	13.5	15.5	15.3	14.5	14.4	15.5	13.8	14.5	13.3	13.3	13.5	12.5	12.5	15.0	15.3			
160	15.4	12.1	15.6	14.6	14.5	14.2	15.3	11.3	14.0	13.3	12.2	12.2	12.8	12.9	13.6	13.3			
165	14.2	11.4	15.6	11.7	12.7	12.0	14.8	10.7	13.2	13.3	12.2	12.2	12.8	12.9	12.8	13.6			
170	14.1	11.9	17.7	17.0	15.9	14.5	17.3	12.0	14.4	14.6	14.1	17.3	16.9	17.1	17.9	17.0			
175	15.2	13.2	18.9	17.7	19.5	14.7	18.8	13.5	16.4	16.3	13.7	18.4	18.0	21.5	18.9	19.2			
180	14.5	13.3	19.0	17.7	19.5	15.6	18.9	14.2	15.4	14.9	13.3	19.0	17.8	19.6	15.5	18.9			

BUG


Luminaire Lumens
Uplight
2435
1826
1217
609
100
100
90
90
80
80
60
60
30
30
Back
0
Front
Luminaire Lumens
BUG Rating : B3-U3-G3
FL=0.0, FM=2434.8, FH=1710.1, FVH=239.1
BL=0.0, BM=2434.3, BH=1711.7, BVH=238.7
UL=0.0, UH=104.4

2.3 Electrical, Photometric and Chromaticity Measurements

Test date	2024-12-25	**Test Ambient:**	25±1 ºC
Test Orientation	As intended	**Stabilization Time (min)**	60
Model Number	CP08-10-80L-AC3(0%,3000K)	**Total Operating Time (min)**	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE241009-AA1	120.0	60	0.6723	80.39	0.9964	3.47
	277.0	60	0.2978	78.19	0.9480	7.95

Chromaticity Measurement - Sphere-Spectroradiometer Method(Self-absorption:1.1267) (4π geometry):

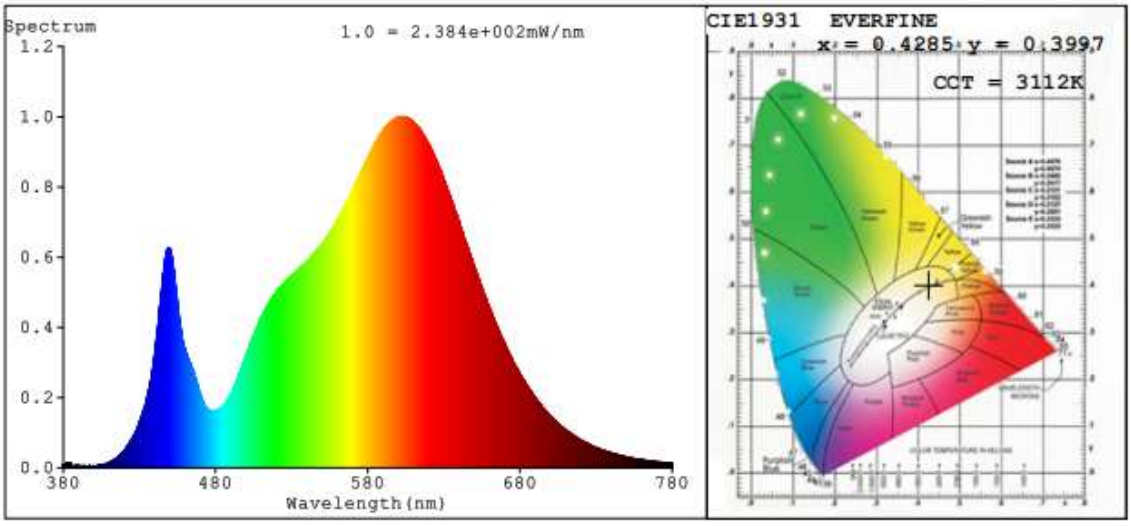
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3112
Duv	-0.0005
Chromaticity (x, y)	x=0.4285 y=0.3997
Chromaticity (u', v')	u'=0.2470 v'=0.5184

Parameter	Result
Color Rendering Index (CRI)	82.4
R9	7
Rg	97
Rf	83
Rcs,h1(%)	-12

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	12181	11960
Luminous Efficacy (lm/W)	151.52	152.96

Spectral Power Distribution & Chromaticity Diagram



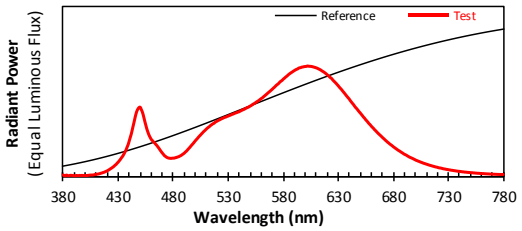
Special Color Rendering Indices

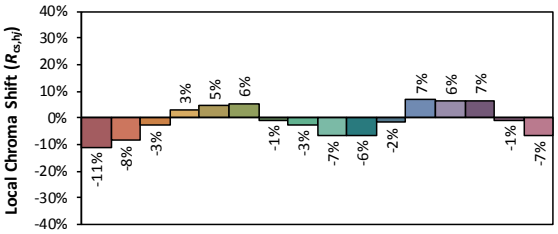
R1 =81	R2 =89	R3 =96	R4 =81	R5 =81	R6 =87	R7 =84	
R8 =60	R9 =7	R10=75	R11=81	R12=69	R13=83	R14=98	R15=74

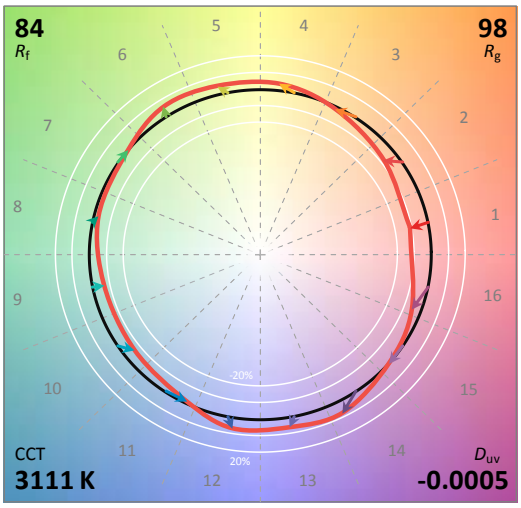
TM30

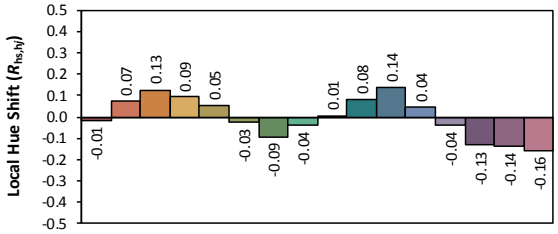
ANSI/IES TM-30-18 Color Rendition Report

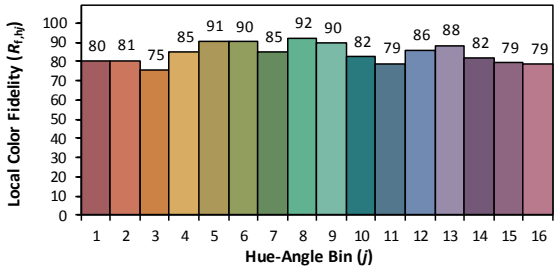
Source:	L128-3080RC35004A1	Manufacturer:	RZ LIGHTING CO LTD
Date:	2024-12-25	Model:	CP08-10-80L-AC3(0%,3000K)

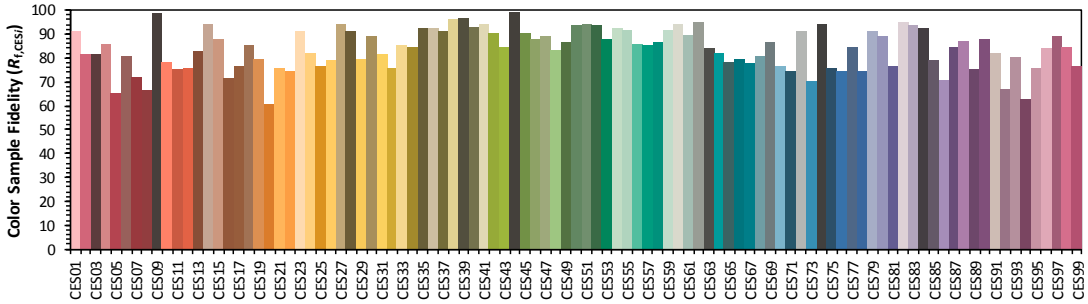












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4285
y	0.3997
u'	0.2470
v'	0.5184

CIE 13.3-1995 (CRI)

R_a	82
R_9	7

lors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

2.4 Electrical, Photometric and Chromaticity Measurements

Test date	2024-12-25	**Test Ambient:**	25±1 ºC
Test Orientation	As intended	**Stabilization Time (min)**	60
Model Number	CP08-10-80L-AC3(50%,4000K)	**Total Operating Time (min)**	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE241009-AA1	120.0	60	0.6597	78.89	0.9966	3.45
	277.0	60	0.2921	76.73	0.9482	7.93

Chromaticity Measurement - Sphere-Spectroradiometer Method(Self-absorption:1.1269) (4π geometry):

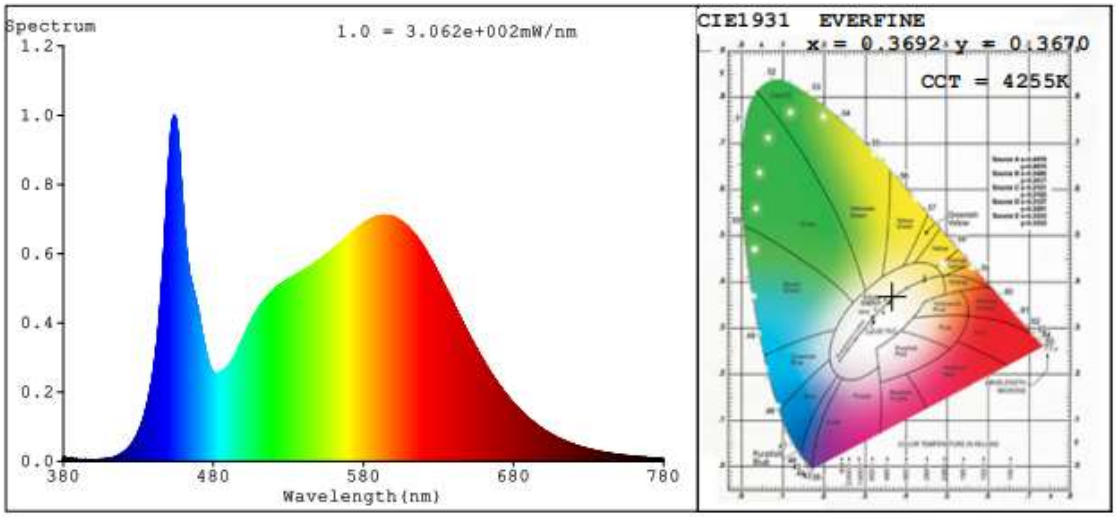
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	4255
Duv	-0.0012
Chromaticity (x, y)	x=0.3692 y=0.3670
Chromaticity (u', v')	u'=0.2215 v'=0.4955

Parameter	Result
Color Rendering Index (CRI)	85.3
R9	19
Rg	95
Rf	84
Rcs,h1(%)	-12

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	12806	12573
Luminous Efficacy (lm/W)	162.33	163.86

Spectral Power Distribution & Chromaticity Diagram



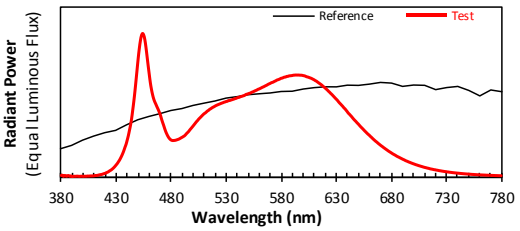
Special Color Rendering Indices

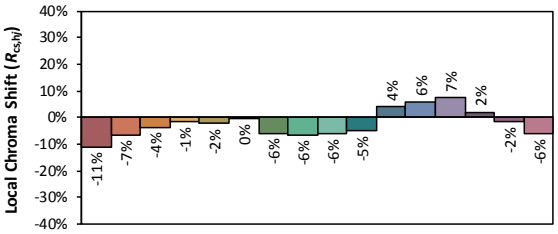
R1 =85	R2 =93	R3 =96	R4 =83	R5 =84	R6 =88	R7 =86	
R8 =68	R9 =19	R10=81	R11=82	R12=61	R13=87	R14=98	R15=79

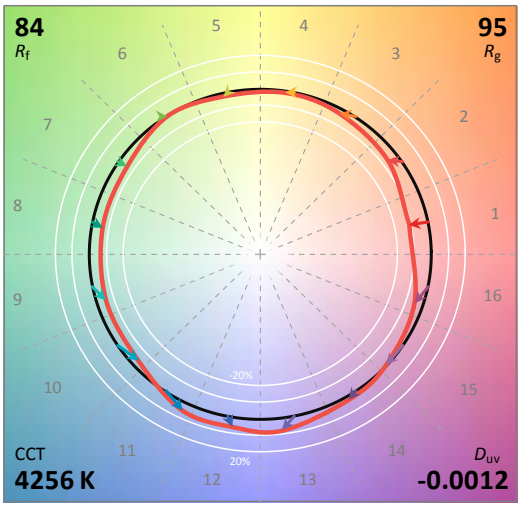
TM30

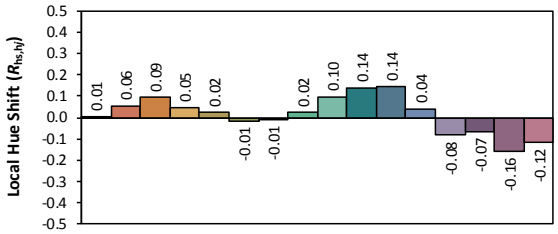
ANSI/IES TM-30-18 Color Rendition Report

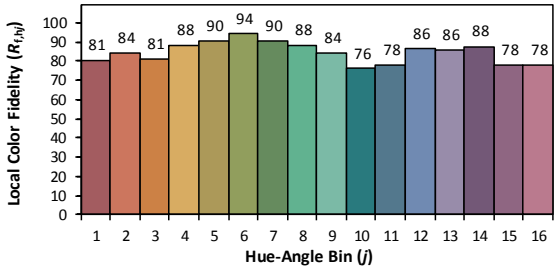
Source:	L128-3080RC35004A1 L128-5080RC35004A1	**Manufacturer:**	RZ LIGHTING CO LTD
Date:	2024-12-25	**Model:**	CP08-10-80L-AC3(50%,4000K)

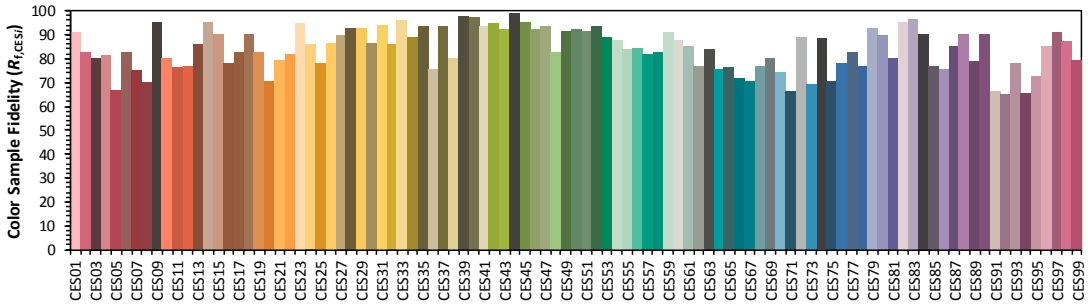












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3691
y	0.3669
u'	0.2216
v'	0.4955

CIE 13.3-1995 (CRI)

R_a	85
R_9	19

lors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

2.5 Electrical, Photometric and Chromaticity Measurements

Test date	2024-12-25	**Test Ambient:**	25±1 ºC
Test Orientation	As intended	**Stabilization Time (min)**	60
Model Number	CP08-10-80L-AC3(100%,5000 K)	**Total Operating Time (min)**	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE241009-AA1	120.0	60	0.6695	80.08	0.9967	3.44
	277.0	60	0.2965	77.88	0.9483	7.92

Chromaticity Measurement - Sphere-Spectroradiometer Method(Self-absorption:1.1266) (4π geometry):

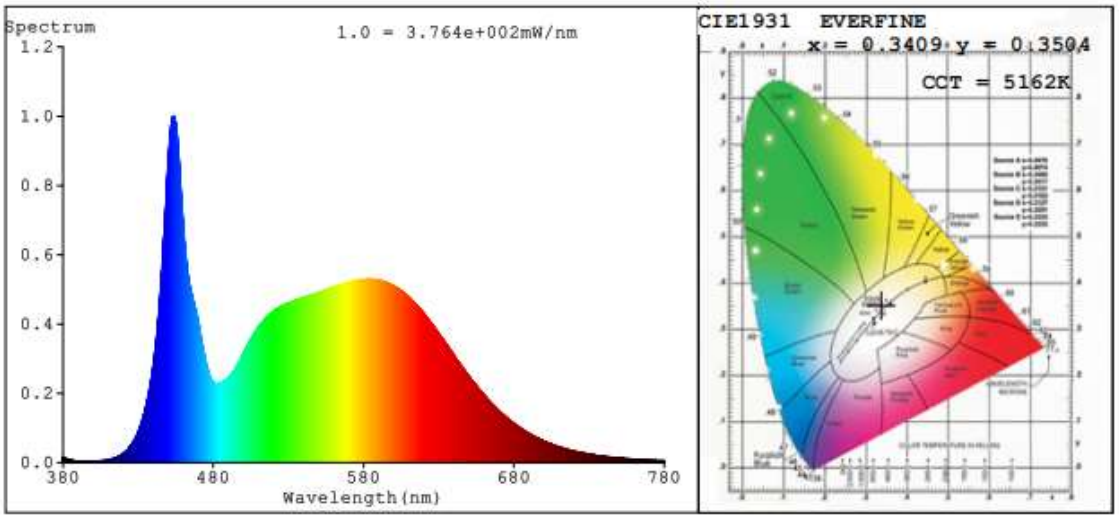
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	5162
Duv	0.0011
Chromaticity (x, y)	x=0.3409 y=0.3504
Chromaticity (u', v')	u'=0.2090 v'=0.4834

Parameter	Result
Color Rendering Index (CRI)	84.6
R9	15
Rg	95
Rf	84
Rcs,h1(%)	-12

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	12671	12441
Luminous Efficacy (lm/W)	158.23	159.75

Spectral Power Distribution & Chromaticity Diagram



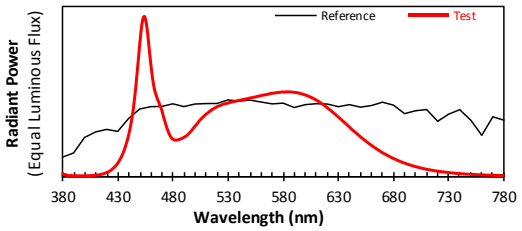
Special Color Rendering Indices

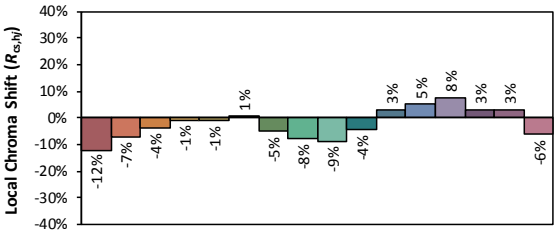
R1 =83	R2 =91	R3 =94	R4 =83	R5 =84	R6 =86	R7 =87	
R8 =69	R9 =15	R10=76	R11=83	R12=61	R13=86	R14=97	R15=79

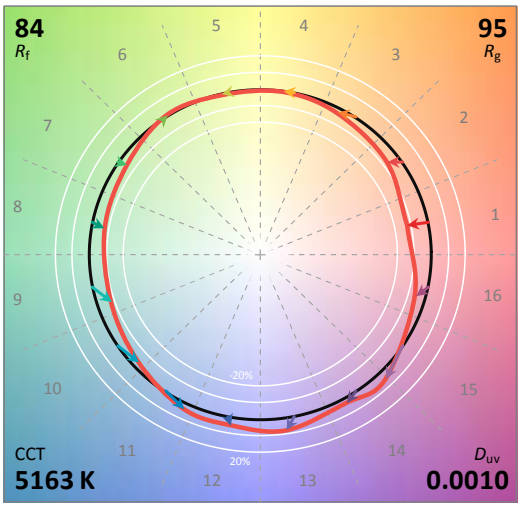
TM30

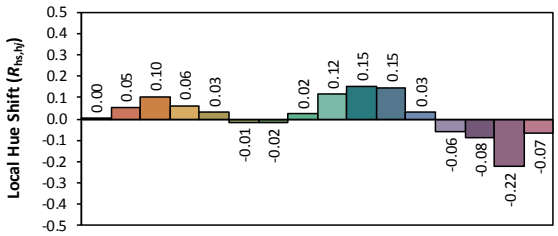
ANSI/IES TM-30-18 Color Rendition Report

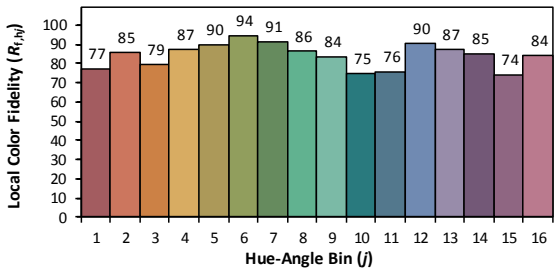
Source:	L128-5080RC35004A1	Manufacturer:	RZ LIGHTING CO LTD
Date:	2024-12-25	Model:	CP08-10-80L-AC3(100%,5000K)

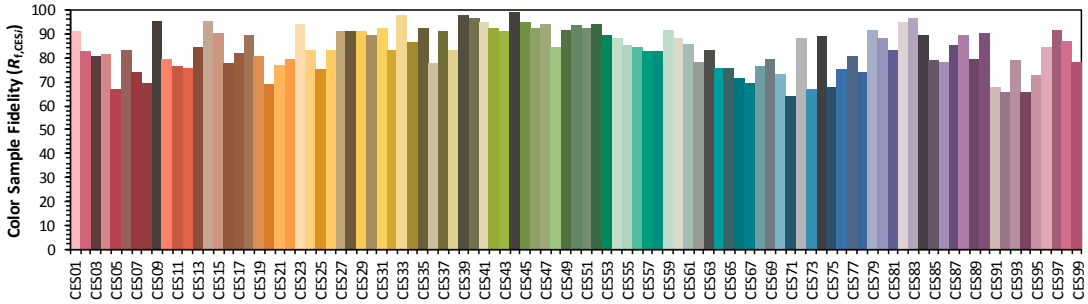












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3408
y	0.3502
u'	0.2091
v'	0.4833

CIE 13.3-1995 (CRI)

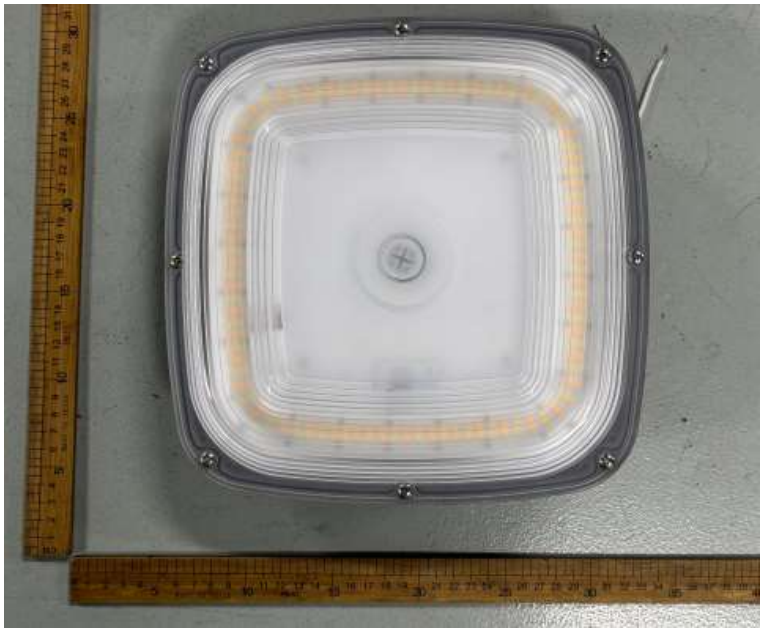
R_a	85
R_9	15

lors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-S-451	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-S-327	Spectral analysis system HAAS-2000	Verified by D204 standard lamp	
ST-R-S-452	Standard Lamp D204	2023-06-26	2026-06-25
ST-R-S-453	Power Meter for Integrating Sphere	2024-05-29	2025-05-28
ST-R-S-405	Hygrothermograph	2024-06-06	2025-06-05
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp D908S	2022-07-19	2025-07-18
ST-R-S-357	AC Power Source	2024-01-29	2025-01-28
ST-R-S-422	Power Meter for Goniophotometer	2024-05-29	2025-05-28
ST-R-S-354	hygrothermograph for Goniophotometer	2024-05-29	2025-05-28
Uncertainty: Photometric Measurement (Sphere):2.94%, k=2 Chromaticity Measurement(Sphere):52.28K, k=2 Photometric Measurement(Goniophotometer): 2.94%, k=2			

4. Product Photo



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