

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P543202

Luminaire Tested: **TT-D9-735-U-5WQ-PM**

Issue Date: 6/22/2021

Test Information

Test Method: LM-79-08
Report Number: P543202
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2012-100-4)
Test Lab: INNOVATION CENTER
Issue Date: 6/22/2021
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: MCGRAW-EDISON
Catalog Number: TT-D9-735-U-5WQ-PM
Description: TOPTIER LED SITE LUMINAIRE
3500K, 70 CRI LEDS AND WIDE DISTRIBUTION
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 20022 lumens
Efficiency: N/A
Efficacy: 115.7 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B4 - U0 - G3

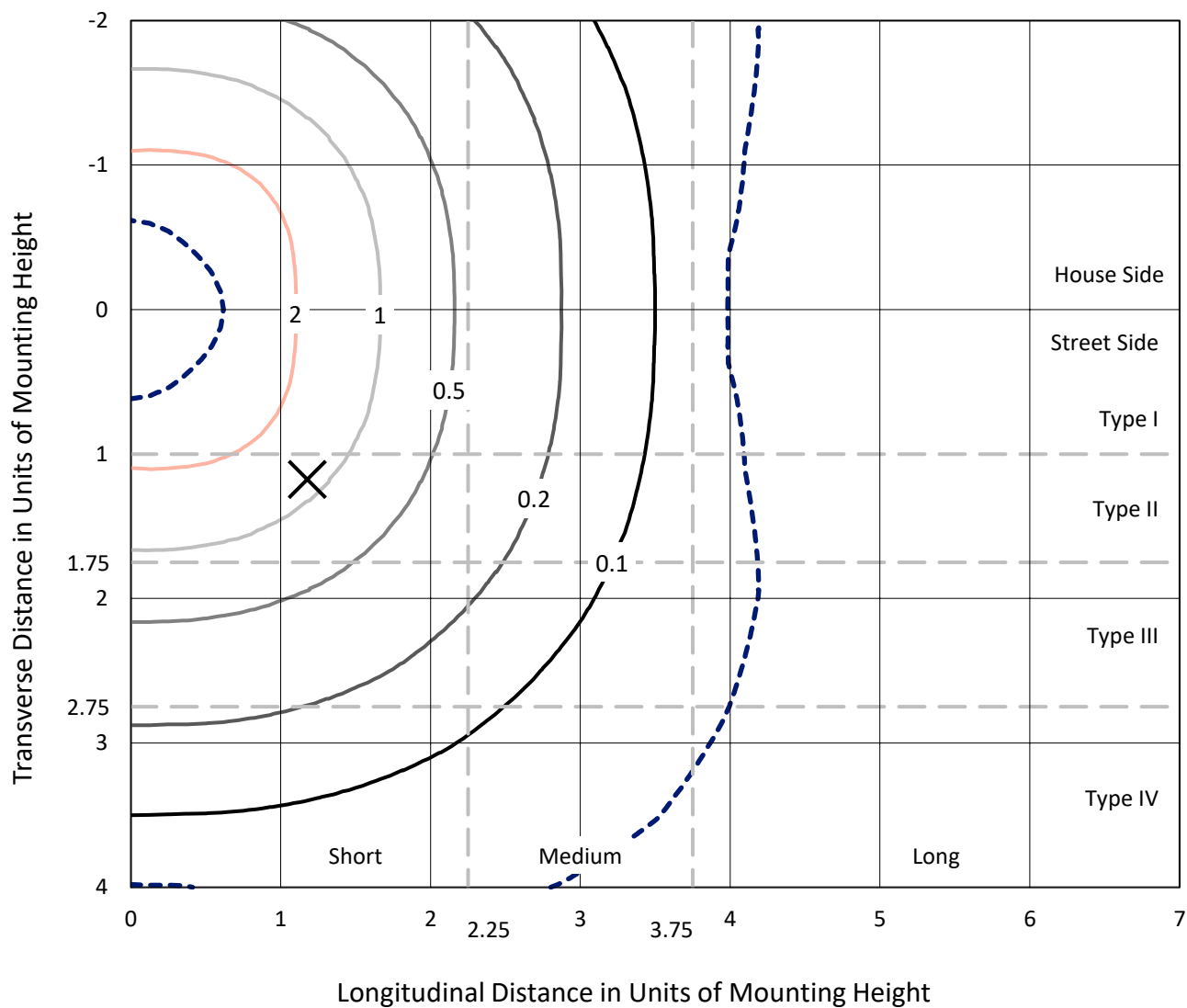
Input Watts (W): 173.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P543202
 CATALOG NUMBER: TT-D9-735-U-5WQ-PM

Iso-Footcandle Lines of Horizontal Illumination

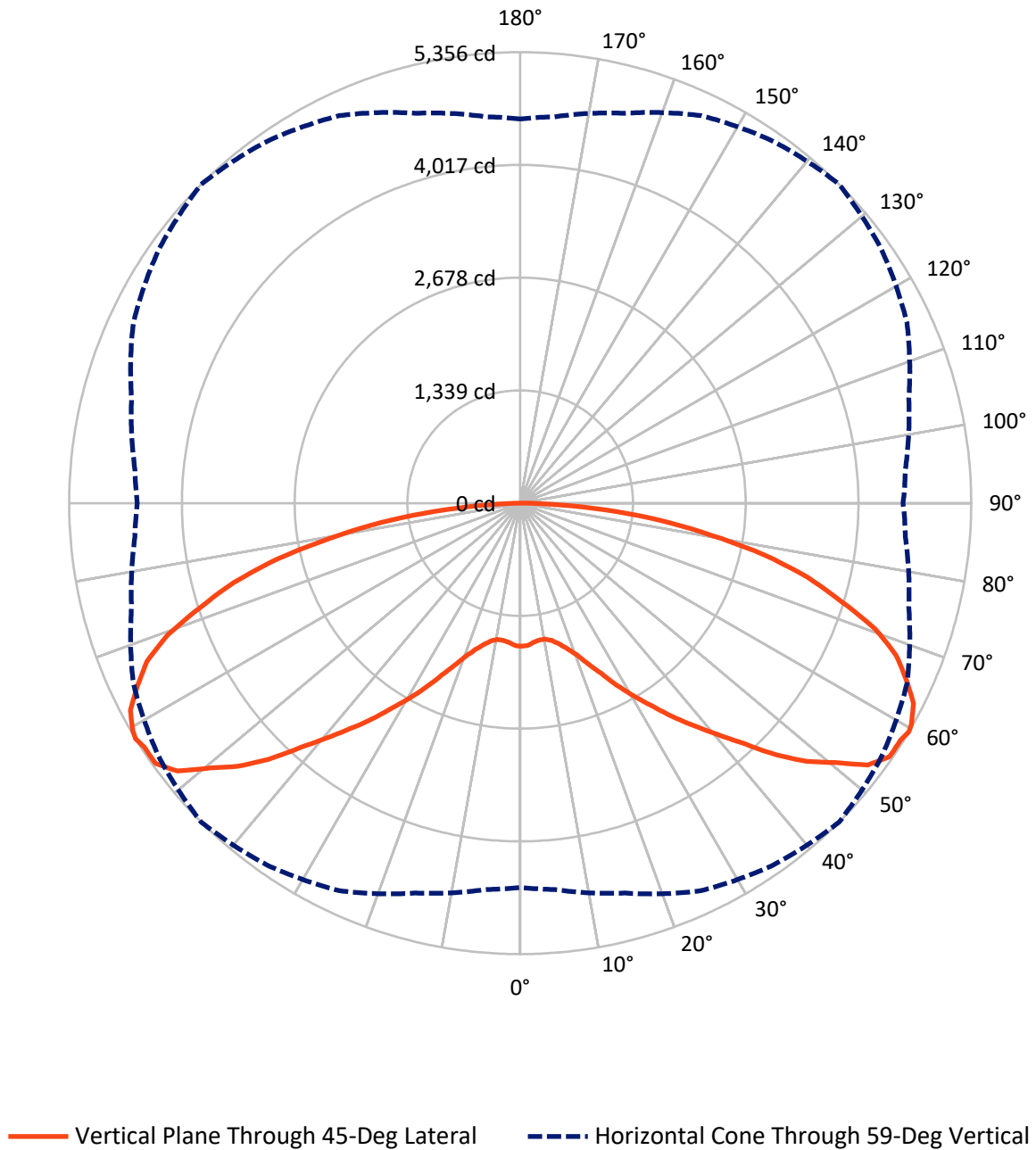
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 2.8 fc
 Type V - Short - N/A

REPORT NUMBER: P543202
CATALOG NUMBER: TT-D9-735-U-5WQ-PM

Luminous Intensity Polar Plot



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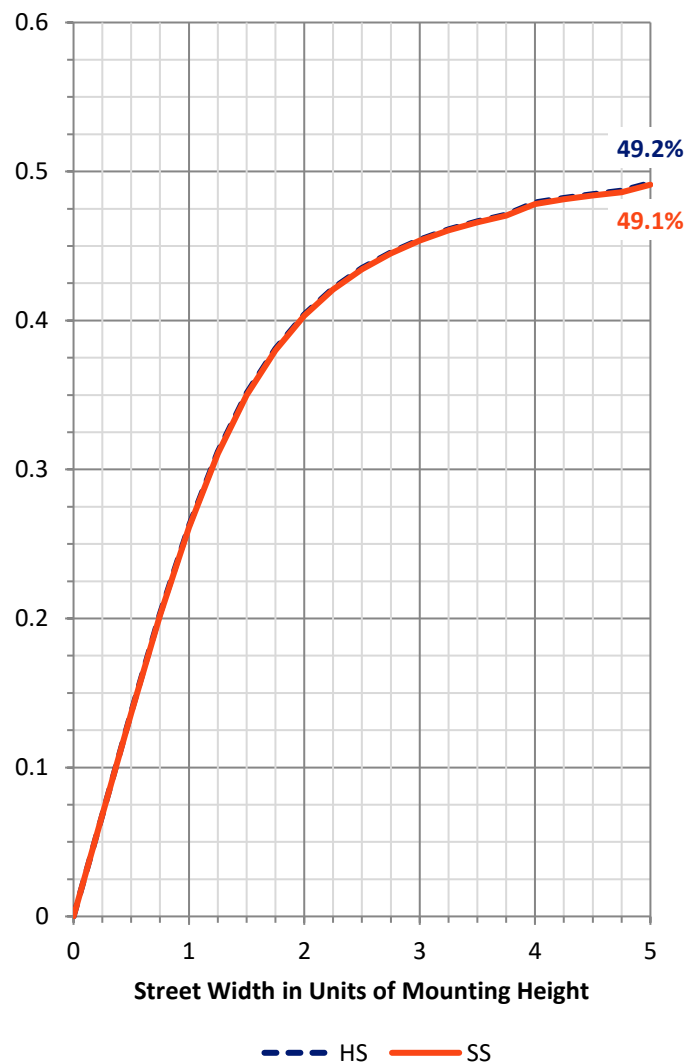
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	10011.0	0.0	10011.0
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	10011.0	0.0	10011.0
	% Fixture	50.0	0.0	50.0
Total	Lumens	20022.0	0.0	20022.0
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	157.3	0.8
10°-20°	497.1	2.5
20°-30°	1038.9	5.2
30°-40°	1911.1	9.5
40°-50°	3144.8	15.7
50°-60°	4387.1	21.9
60°-70°	4569.0	22.8
70°-80°	3329.6	16.6
80°-90°	987.1	4.9
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-90°	20022.0	100.0
0°-180°	20022.0	100.0

Coefficient of Utilization



REPORT NUMBER: P543202

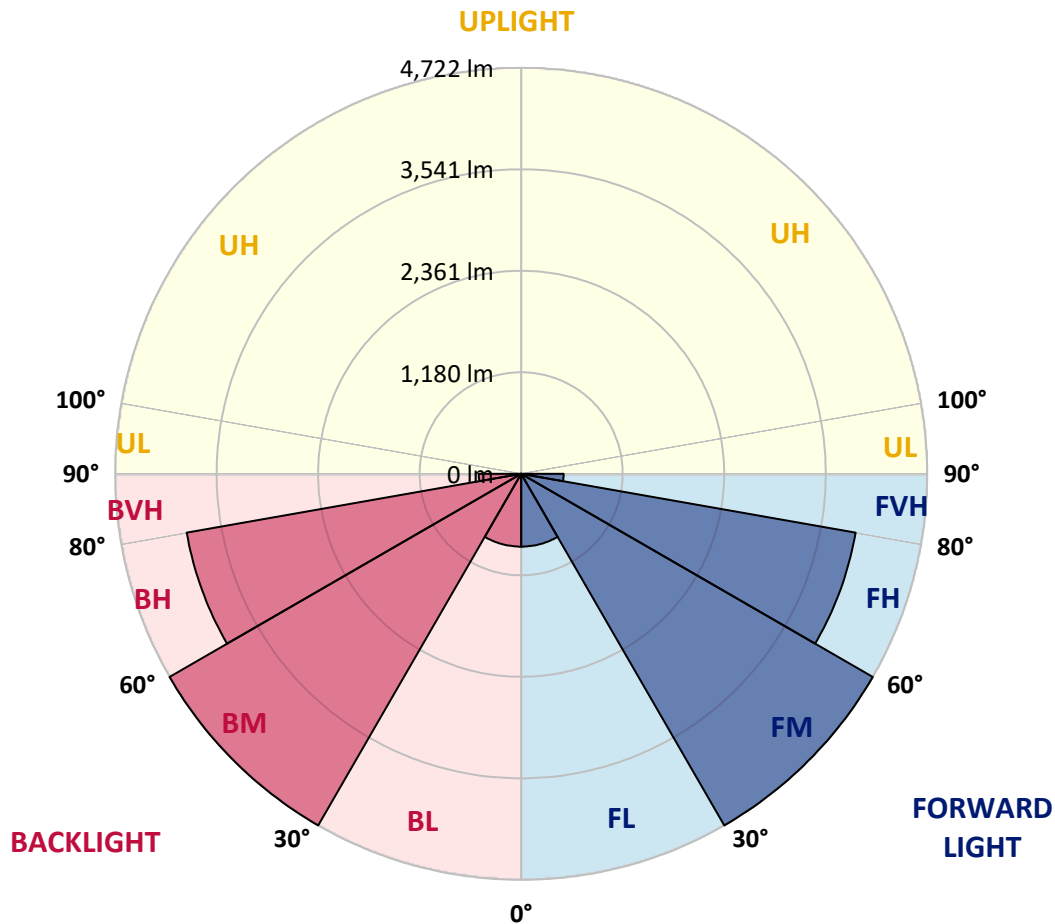
CATALOG NUMBER: TT-D9-735-U-5WQ-PM

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit		
				B	U	G
FL	(0°-30°)	846.7	4.2			
FM	(30°-60°)	4721.5	23.6			
FH	(60°-80°)	3949.3	19.7			G2/5000
FVH	(80°-90°)	493.5	2.5			G3/500
BL	(0°-30°)	846.7	4.2	B2/1000		
BM	(30°-60°)	4721.5	23.6	B3/5000		
BH	(60°-80°)	3949.3	19.7	B4/5000		G2/5000
BVH	(80°-90°)	493.5	2.5			G3/500
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B4-U0-G3

Type V Short



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CATALOG NUMBER: TT-D9-735-U-5WQ-PM

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1699.6	1699.6	1699.6	1699.6	1699.6	1699.6	1699.6	1699.6	1699.6	1699.6	1699.6
2.5°	1690.4	1691.4	1691.4	1692.3	1691.4	1692.3	1690.4	1689.5	1688.6	1689.5	1688.6
5°	1651.2	1653.9	1653.9	1656.7	1657.6	1660.3	1658.5	1657.6	1654.8	1653.9	1653.0
7.5°	1623.8	1624.7	1627.5	1632.9	1637.5	1641.2	1640.2	1636.6	1632.0	1628.4	1627.5
10°	1622.9	1622.0	1624.7	1629.3	1638.4	1641.2	1640.2	1633.8	1630.2	1627.5	1627.5
12.5°	1652.1	1651.2	1654.8	1661.2	1673.1	1673.1	1674.9	1664.9	1657.6	1655.8	1655.8
15°	1709.6	1706.9	1716.0	1721.5	1735.2	1735.2	1736.1	1724.2	1716.0	1713.3	1713.3
17.5°	1787.2	1784.5	1794.5	1803.6	1817.3	1818.2	1819.1	1806.4	1795.4	1790.8	1792.7
20°	1887.6	1883.9	1893.1	1905.9	1925.0	1924.1	1923.2	1910.4	1896.7	1891.2	1893.1
22.5°	2011.7	2016.3	2030.0	2047.3	2071.1	2074.7	2069.2	2051.9	2031.8	2023.6	2024.5
25°	2162.3	2166.9	2183.3	2210.7	2242.7	2241.8	2238.1	2212.5	2183.3	2171.5	2174.2
27.5°	2345.8	2348.5	2373.2	2401.5	2445.3	2449.9	2441.6	2401.5	2371.4	2347.6	2344.9
30°	2529.3	2532.9	2556.7	2597.7	2645.2	2657.1	2634.2	2595.9	2556.7	2531.1	2526.5
32.5°	2729.2	2737.4	2759.3	2799.4	2862.4	2868.8	2855.1	2800.4	2755.6	2732.8	2731.9
35°	2926.3	2938.2	2969.2	3024.9	3089.7	3112.5	3081.5	3024.9	2972.0	2929.1	2924.5
37.5°	3144.5	3160.0	3192.9	3265.0	3329.8	3351.7	3323.4	3260.4	3186.5	3149.0	3145.4
40°	3354.4	3379.1	3440.2	3516.0	3592.6	3611.8	3591.7	3507.8	3429.3	3378.1	3345.3
42.5°	3583.5	3599.0	3670.2	3786.1	3862.8	3905.7	3858.3	3780.7	3668.4	3595.4	3588.1
45°	3843.7	3892.0	3952.3	4091.0	4217.9	4265.3	4215.1	4082.8	3941.3	3882.9	3849.1
47.5°	4086.4	4123.0	4226.1	4384.0	4536.4	4581.2	4531.9	4379.4	4210.6	4112.9	4080.1
50°	4287.3	4338.4	4443.3	4650.5	4783.8	4841.3	4774.7	4639.6	4433.3	4326.5	4287.3
52.5°	4478.9	4536.4	4667.0	4872.3	5087.8	5166.2	5083.2	4856.8	4654.2	4519.1	4464.3
55°	4582.1	4635.0	4776.5	5046.7	5268.5	5320.5	5261.2	5032.1	4763.7	4617.7	4566.6
57.5°	4598.5	4642.3	4817.6	5103.3	5270.3	5321.4	5266.7	5090.5	4802.1	4626.8	4583.9
59°	4563.8	4605.8	4793.8	5078.6	5245.7	5356.1	5242.0	5067.7	4777.4	4592.1	4547.4
60°	4542.8	4583.0	4759.2	5043.0	5221.9	5336.0	5218.3	5033.9	4740.0	4571.1	4525.5
62.5°	4437.9	4475.3	4705.3	4955.4	5152.6	5242.0	5147.1	4946.3	4690.7	4463.4	4413.2
65°	4235.2	4253.5	4473.5	4720.8	4980.0	5033.9	4971.8	4718.1	4455.2	4240.7	4214.2
67.5°	4011.6	4035.3	4224.3	4496.3	4741.8	4813.9	4729.0	4495.4	4210.6	4018.0	3987.9
70°	3649.2	3673.9	3926.7	4159.5	4358.5	4469.8	4337.5	4152.2	3912.1	3666.6	3623.7
72.5°	3298.7	3310.6	3490.4	3764.2	4004.3	3982.4	3979.7	3760.6	3476.7	3315.2	3296.0
75°	2841.4	2847.8	3057.8	3285.0	3505.0	3528.7	3471.2	3280.5	3042.2	2845.1	2842.3
77.5°	2348.5	2367.7	2511.0	2722.8	2890.7	2971.0	2872.5	2733.7	2496.4	2369.5	2353.1
80°	1807.3	1831.0	1977.0	2145.9	2291.0	2297.4	2277.3	2160.5	1964.3	1833.7	1814.6
82.5°	1248.7	1273.3	1402.0	1528.0	1668.5	1675.8	1653.0	1541.7	1390.1	1277.9	1259.6
85°	690.1	712.0	799.6	896.3	1010.4	1010.4	978.5	913.7	790.5	719.3	701.9
87.5°	116.8	118.7	172.5	226.4	328.6	339.5	309.4	247.4	181.6	142.4	130.5
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

MCGRAW EDISON

Report Number: SP1-2411-284-1

Test Date: 11/15/2024

Luminaire Tested: TTN-D0-735-U-WQ

Data in this report applies to families of products including TT-D* and TTN-D*

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2411-284-1
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 11/15/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW EDISON
 Catalog Number: **TTN-D0-735-U-WQ**
 Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 3500K, 70 CRI LEDS AND WIDE DISTRIBUTION

Spectral Parameters

CCT (K):	3405	CRI (Ra):	73.9		
CIE u':	0.2365	R1:	71.3	R9:	-18.0
CIE v':	0.5180	R2:	80.3	R10:	53.1
Duv:	0.0036	R3:	87.8	R11:	68.6
CIE x:	0.4148	R4:	73.2	R12:	42.6
CIE y:	0.4038	R5:	69.8	R13:	72.5
CIE z:	0.1814	R6:	71.8	R14:	92.7
Peak Wavelength (nm):	596	R7:	82.8	R15:	64.3
Dominant Wavelength (nm):	579	R8:	54.1		
Purity:	45.70672				
Rf:	76.6				
Rg:	95.4				



Test Conditions

Stabilization Time: 38M
 Operation Time: 1H 38M
 Sphere Temperature (°C): 24.9

REPORT NUMBER: SP1-2411-284-1

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085	10/22/2024	10/22/2025
Room Thermometer	IN0046	10/22/2024	10/22/2025

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CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3500K 4-step quadrangle

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Photopic Flux vs. Wavelength

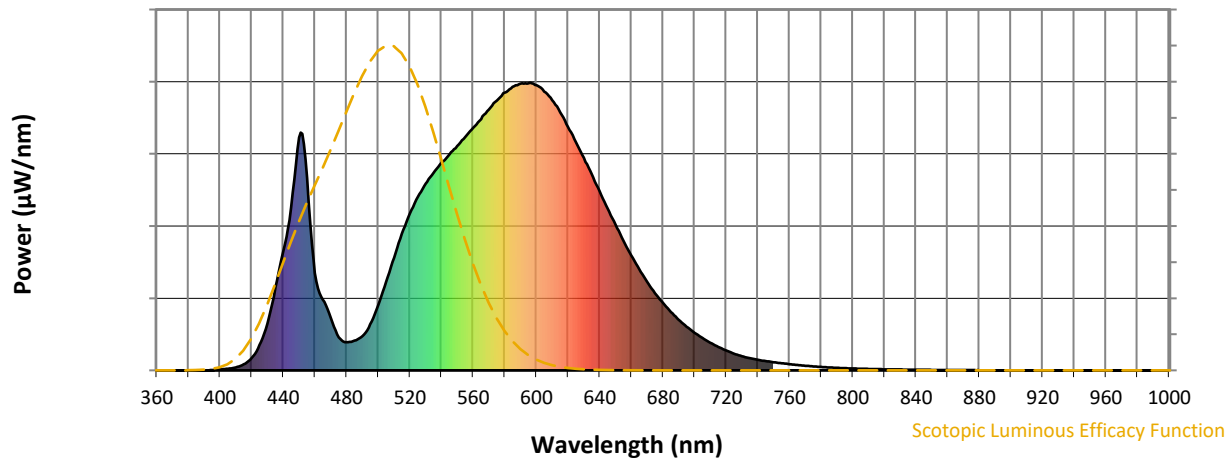


Photopic Lumens: NR

λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			

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Scotopic Flux vs. Wavelength



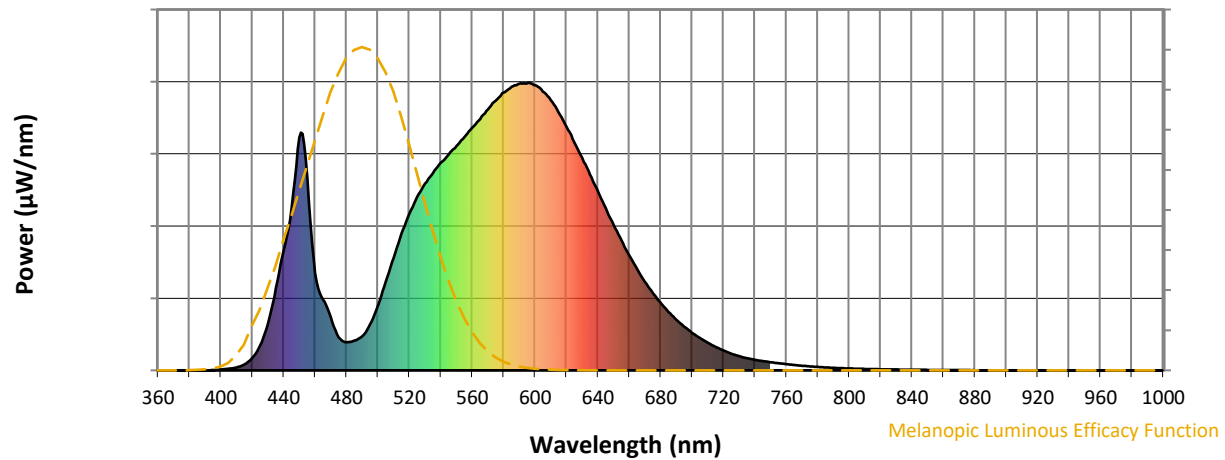
Scotopic Lumens: NR

S/P: 1.33

λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)
360	0	NR	490	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.47

λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			

REPORT NUMBER: SP1-2411-284-1

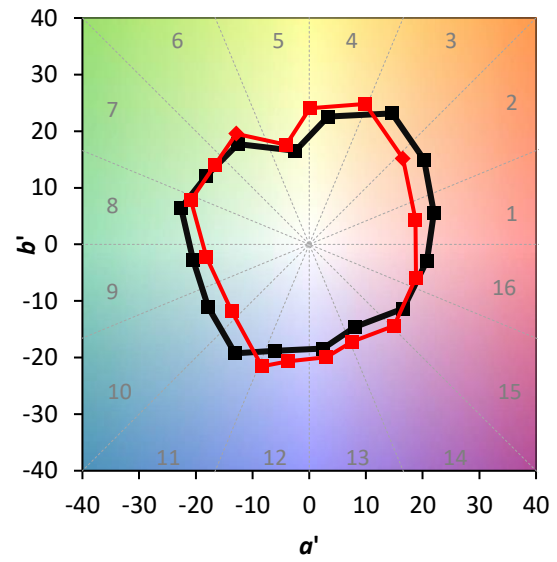
TM-30-18

Summary

$R_f = 76.6$
 $R_g = 95.4$
 $CIE R_a = 73.9$
 $R_g = -18.0$



Color Vector Graphics

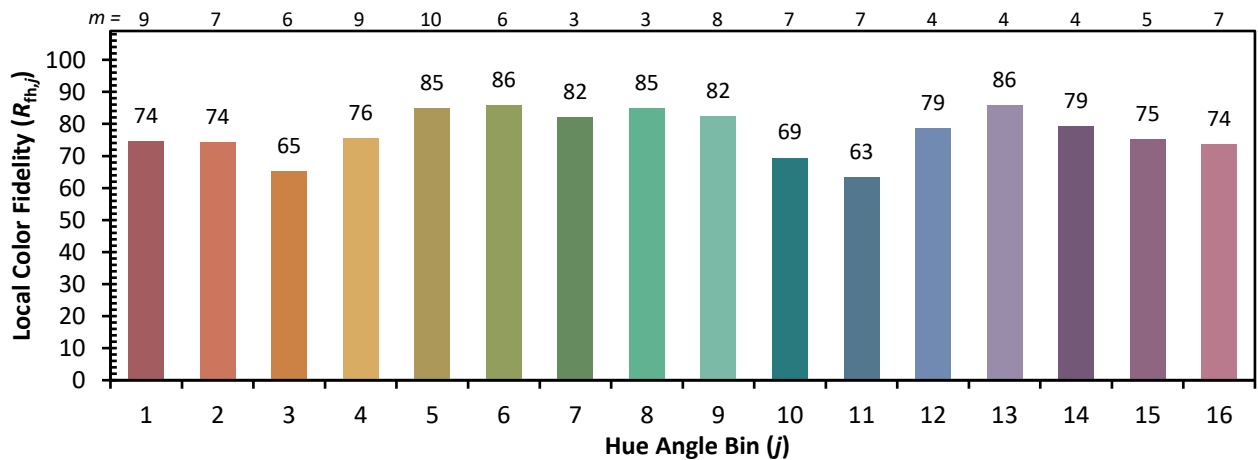


Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 86	CES26 = 67	CES51 = 88	CES76 = 56
CES02 = 62	CES27 = 89	CES52 = 88	CES77 = 75
CES03 = 31	CES28 = 83	CES53 = 78	CES78 = 60
CES04 = 70	CES29 = 69	CES54 = 86	CES79 = 85
CES05 = 48	CES30 = 83	CES55 = 85	CES80 = 82
CES06 = 51	CES31 = 72	CES56 = 75	CES81 = 78
CES07 = 41	CES32 = 65	CES57 = 75	CES82 = 92
CES08 = 40	CES33 = 78	CES58 = 76	CES83 = 90
CES09 = 29	CES34 = 74	CES59 = 87	CES84 = 88
CES10 = 75	CES35 = 86	CES60 = 91	CES85 = 79
CES11 = 58	CES36 = 93	CES61 = 84	CES86 = 72
CES12 = 64	CES37 = 81	CES62 = 88	CES87 = 79
CES13 = 43	CES38 = 92	CES63 = 74	CES88 = 82
CES14 = 74	CES39 = 96	CES64 = 69	CES89 = 72
CES15 = 71	CES40 = 92	CES65 = 66	CES90 = 82
CES16 = 47	CES41 = 93	CES66 = 62	CES91 = 79
CES17 = 50	CES42 = 83	CES67 = 60	CES92 = 63
CES18 = 56	CES43 = 79	CES68 = 68	CES93 = 77
CES19 = 72	CES44 = 99	CES69 = 76	CES94 = 56
CES20 = 65	CES45 = 86	CES70 = 61	CES95 = 70
CES21 = 86	CES46 = 83	CES71 = 55	CES96 = 79
CES22 = 79	CES47 = 85	CES72 = 85	CES97 = 85
CES23 = 92	CES48 = 78	CES73 = 53	CES98 = 78
CES24 = 91	CES49 = 81	CES74 = 95	CES99 = 68
CES25 = 72	CES50 = 88	CES75 = 57	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)