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: P821255

Luminaire Tested: **TT-D5-735-24VDC-MQ**

Issue Date: 5/19/2020

Report Generated By 670245763

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

Test Information

Test Method:	LM-79-08
Report Number:	P821255
	TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1908-473-16)
Test Lab:	INNOVATION CENTER
Issue Date:	5/19/2020
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	McGRAW-EDISON
Catalog Number:	TT-D5-735-24VDC-MQ
Description:	TOPTIER LED PARKING GARAGE LUMINAIRE
	3500K, 70 CRI LEDS AND MEDIUM DISTRIBUTION
Light Source:	-
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	9520 lumens
Efficiency:	N/A
Efficacy:	130.4 lumens/watt
Luminous Opening:	Circular (Dia: 1.12' x H: 0')
IES Classification:	Type V - Short
BUG Rating:	B3 - U0 - G3

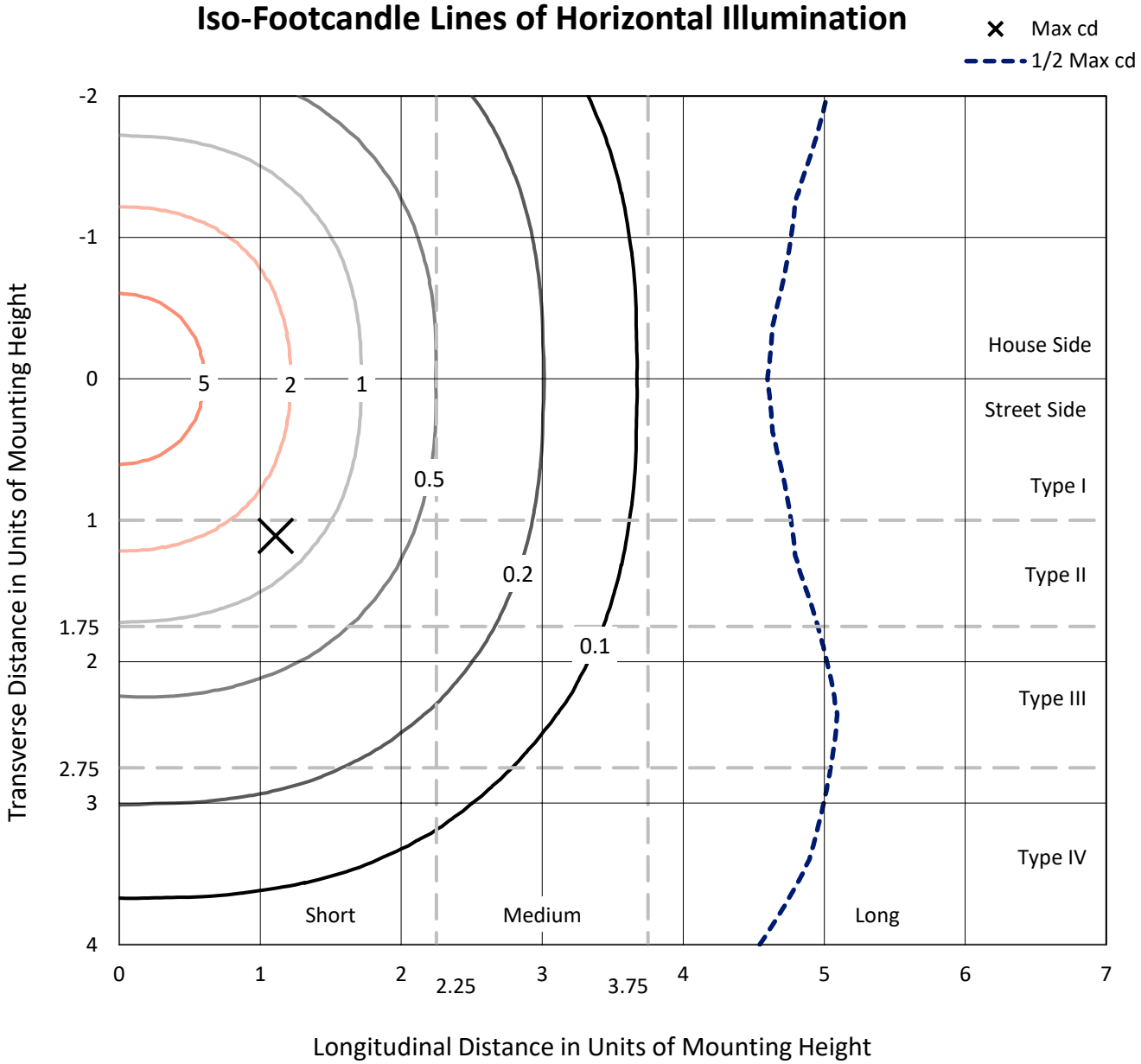
Input Watts (W):	73
Input Voltage (V):	NR
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	NR
Total Harmonic Distortion (THDi):	NR
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	25 FT

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Scaled Data Report

REPORT NUMBER: P821255
CATALOG NUMBER: TT-D5-735-24VDC-MQ

Iso-Footcandle Lines of Horizontal Illumination



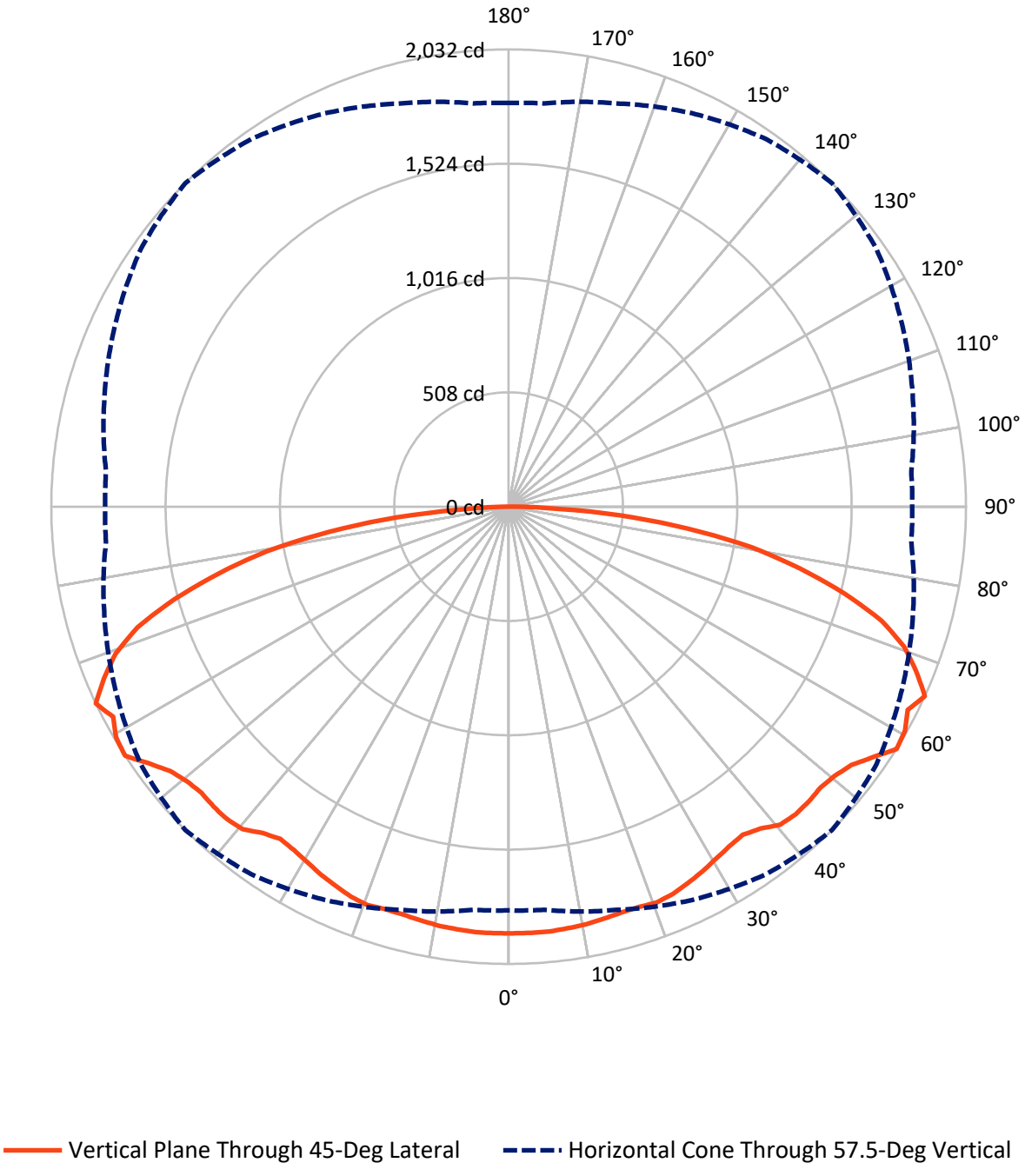
Based on 15 foot mounting height. Maximum calculated value = 8.4 fc
Type V - Short - N/A

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REPORT NUMBER: P821255
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Luminous Intensity Polar Plot



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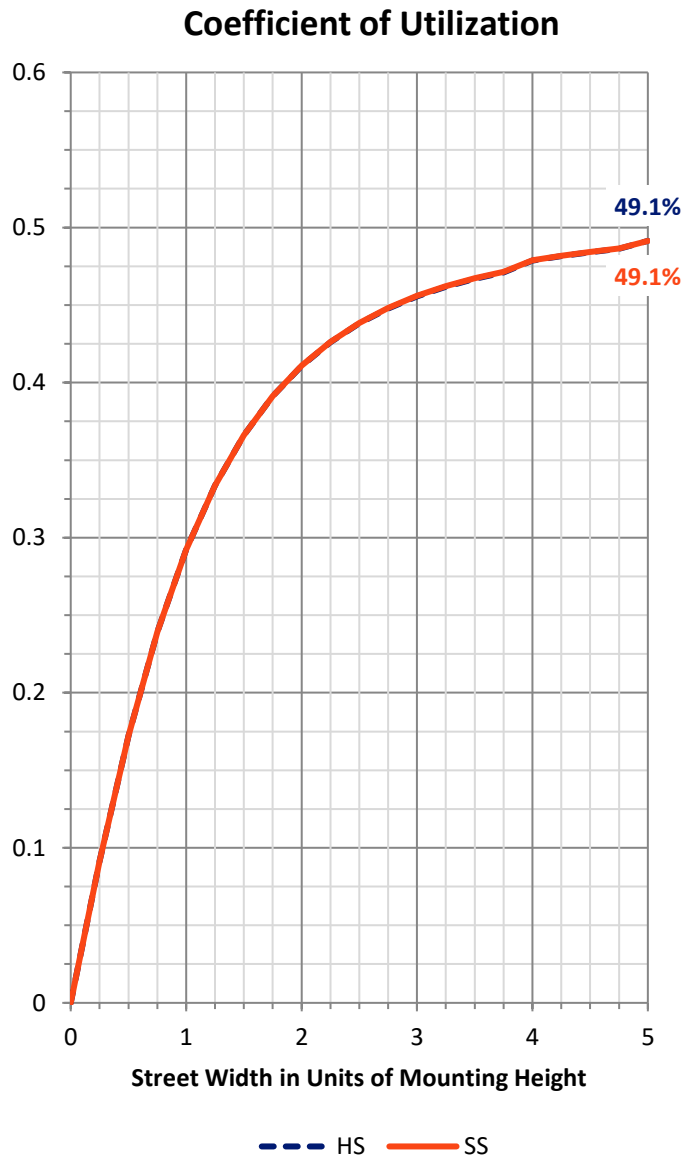
REPORT NUMBER: P821255
CATALOG NUMBER: TT-D5-735-24VDC-MQ

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	4760.0	0.0	4760.0
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	4760.0	0.0	4760.0
	% Fixture	50.0	0.0	50.0
Total	Lumens	9520.0	0.0	9520.0
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	180.7	1.9
10°-20°	531.4	5.6
20°-30°	853.9	9.0
30°-40°	1127.3	11.8
40°-50°	1410.4	14.8
50°-60°	1677.6	17.6
60°-70°	1819.5	19.1
70°-80°	1448.3	15.2
80°-90°	470.8	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°	9520.0	100.0
0°-180°	9520.0	100.0



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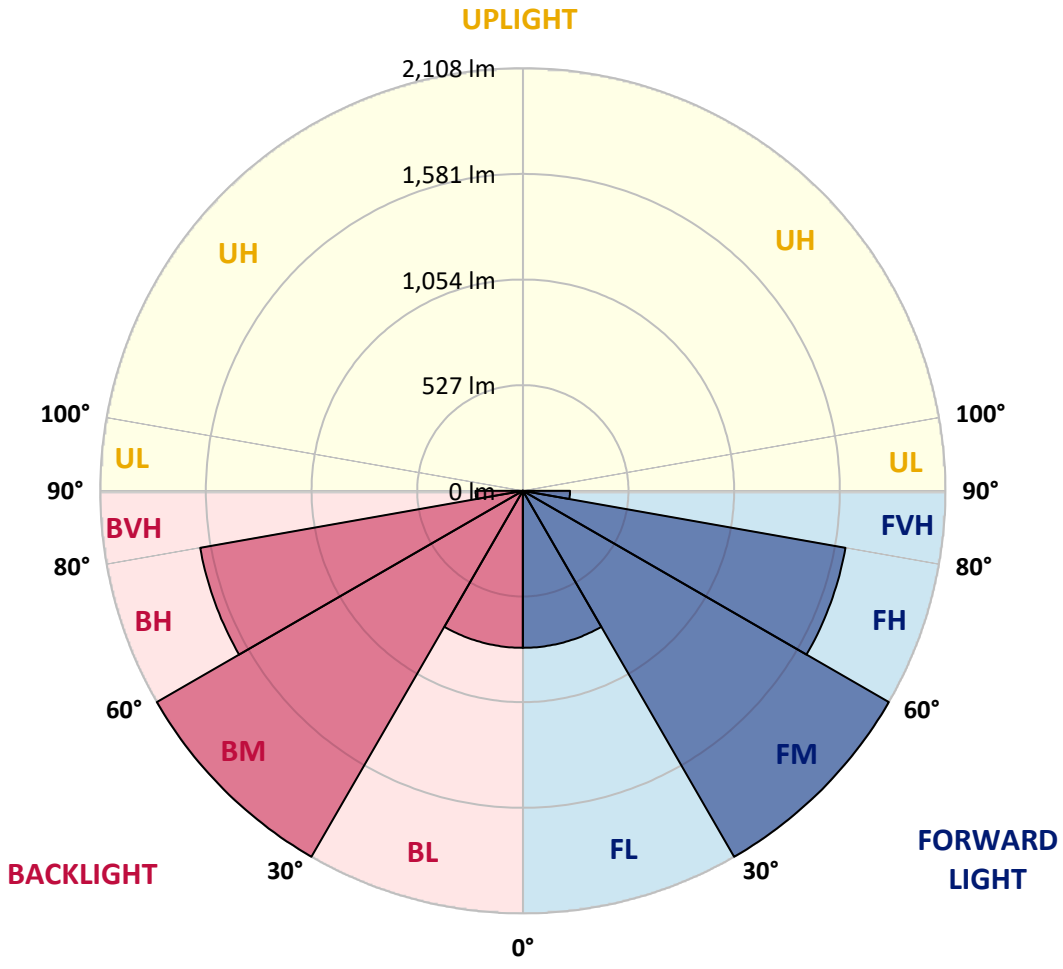
Scaled Data Report

REPORT NUMBER: P821255
CATALOG NUMBER: TT-D5-735-24VDC-MQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	783.0	8.2			
FM	(30°-60°)	2107.7	22.1			
FH	(60°-80°)	1633.9	17.2			G1/1800
FVH	(80°-90°)	235.4	2.5			G3/500
BL	(0°-30°)	783.0	8.2	B2/1000		
BM	(30°-60°)	2107.7	22.1	B2/2500		
BH	(60°-80°)	1633.9	17.2	B3/2500		G1/1800
BVH	(80°-90°)	235.4	2.5			G3/500
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G3
Type V Short



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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1896.1	1896.1	1896.1	1896.1	1896.1	*1896.1*	1896.1	1896.1	1896.1	1896.1	1896.1
2.5°	1898.9	1897.5	1898.9	1897.5	1897.5	*1896.1*	1897.5	1897.5	1897.5	1897.5	1897.5
5°	1897.5	1896.1	1896.1	1897.5	1896.1	*1896.1*	1896.1	1896.1	1896.1	1896.1	1896.1
7.5°	1891.8	1891.8	1893.3	1891.8	1891.8	*1891.8*	1891.8	1891.8	1891.8	1893.3	1893.3
10°	1887.6	1886.2	1887.6	1887.6	1886.2	*1887.6*	1886.2	1887.6	1887.6	1887.6	1887.6
12.5°	1881.9	1880.5	1881.9	1881.9	1880.5	*1879.1*	1880.5	1880.5	1881.9	1881.9	1881.9
15°	1872.0	1872.0	1874.8	1873.4	1873.4	*1872.0*	1874.8	1873.4	1872.0	1873.4	1873.4
17.5°	1864.9	1864.9	1867.8	1870.6	1870.6	*1870.6*	1870.6	1869.2	1866.4	1867.8	1864.9
20°	1866.4	1867.8	1869.2	1873.4	1876.3	*1877.7*	1877.7	1873.4	1869.2	1870.6	1869.2
22.5°	1862.1	1860.7	1862.1	1864.9	1869.2	*1869.2*	1869.2	1863.5	1862.1	1860.7	1860.7
25°	1845.1	1845.1	1847.9	1850.8	1853.6	*1852.2*	1853.6	1850.8	1847.9	1845.1	1845.1
27.5°	1825.3	1825.3	1829.5	1832.4	1835.2	*1835.2*	1833.8	1831.0	1829.5	1826.7	1825.3
30°	1805.5	1805.5	1809.7	1812.5	1816.8	*1815.4*	1815.4	1811.1	1806.9	1804.0	1804.0
32.5°	1784.2	1782.8	1787.1	1794.1	1799.8	*1799.8*	1799.8	1791.3	1785.6	1782.8	1781.4
35°	1765.8	1765.8	1771.5	1784.2	1791.3	*1791.3*	1788.5	1782.8	1770.1	1765.8	1765.8
37.5°	1760.1	1764.4	1780.0	1798.4	1812.5	*1815.4*	1811.1	1795.6	1778.6	1765.8	1761.6
40°	1778.6	1782.8	1802.6	1832.4	1853.6	*1857.9*	1853.6	1831.0	1801.2	1781.4	1780.0
42.5°	1781.4	1784.2	1808.3	1842.3	1862.1	*1869.2*	1862.1	1839.4	1806.9	1782.8	1781.4
45°	1771.5	1772.9	1801.2	1836.6	1860.7	*1869.2*	1860.7	1833.8	1799.8	1772.9	1771.5
47.5°	1758.7	1761.6	1792.7	1829.5	1859.3	*1864.9*	1857.9	1828.1	1789.9	1763.0	1758.7
50°	1748.8	1757.3	1785.6	1826.7	1862.1	*1879.1*	1862.1	1822.5	1784.2	1754.5	1748.8
52.5°	1754.5	1757.3	1794.1	1852.2	1900.3	*1907.4*	1898.9	1852.2	1791.3	1757.3	1753.1
55°	1771.5	1784.2	1823.9	1907.4	1951.3	*1964.1*	1945.7	1904.6	1825.3	1784.2	1771.5
57.5°	*1794.1*	*1798.4*	*1855.0*	*1928.7*	*1993.8*	*2032.0*	*1995.2*	*1927.2*	*1859.3*	*1795.6*	*1792.7*
60°	1775.7	1763.0	1833.8	1920.2	2008.0	*2023.5*	2002.3	1921.6	1831.0	1761.6	1774.3
62.5°	1726.2	1734.7	1792.7	1911.7	1972.6	*1989.5*	1966.9	1911.7	1789.9	1741.7	1721.9
65°	1686.5	1737.5	1801.2	1886.2	1983.9	*2032.0*	1985.3	1883.3	1804.0	1729.0	1682.3
67.5°	1631.3	1641.2	1736.1	1840.9	1928.7	*1952.7*	1927.2	1842.3	1727.6	1634.1	1641.2
70°	1537.8	1523.7	1620.0	1741.7	1825.3	*1863.5*	1828.1	1736.1	1615.7	1520.8	1533.6
72.5°	1383.5	1392.0	1481.2	1610.0	1696.4	*1733.2*	1697.8	1600.1	1478.4	1400.5	1392.0
75°	1222.1	1232.0	1318.3	1435.9	1523.7	*1539.2*	1529.3	1428.8	1321.2	1230.5	1222.1
77.5°	1038.0	1047.9	1118.7	1247.5	1299.9	*1324.0*	1302.8	1254.6	1115.8	1046.5	1035.1
80°	834.1	831.2	893.5	1004.0	1069.1	*1096.0*	1069.1	1006.8	890.7	836.9	818.5
82.5°	596.2	599.0	657.0	733.5	795.8	*804.3*	791.6	740.6	651.4	606.1	580.6
85°	331.4	344.1	386.6	443.2	484.3	*498.4*	477.2	429.1	385.2	349.8	338.4
87.5°	79.3	86.4	100.5	127.4	143.0	*157.2*	143.0	133.1	94.9	86.4	79.3
90°	0.0	0.0	0.0	0.0	0.0	*0.0*	0.0	0.0	0.0	0.0	0.0

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Peachtree City, GA 30269

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

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-176-4

Test Date: 09/24/2024

Luminaire Tested: MEM2-HTN-VA-30-735-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-735-U-WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

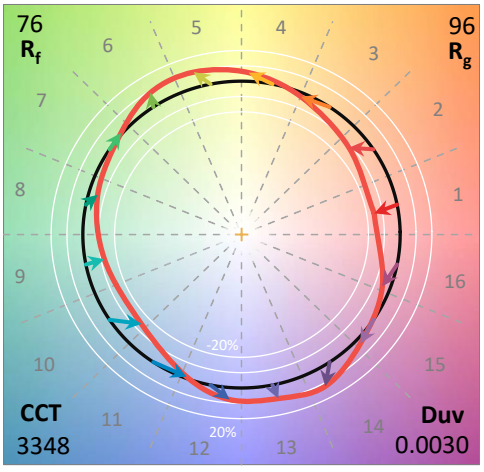
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-176-4
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	09/27/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	Streetworks
Catalog Number:	**MEM2-HTN-VA-30-735-U-WQ**
Description:	EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K):	3348
CIE u':	0.2384
CIE v':	0.5184
Duv:	0.0030
CIE x:	0.4177
CIE y:	0.4036
CIE z:	0.1787
Peak Wavelength (nm):	593
Dominant Wavelength (nm):	580
Purity:	46.5223
Rf:	75.8
Rg:	95.8

CRI (Ra):	73.4
R1:	70.8
R2:	79.9
R3:	87.6
R4:	72.6
R5:	69.3
R6:	71.3
R7:	82.1
R8:	53.3
R9:	-19.2
R10:	52.5
R11:	68.0
R12:	42.6
R13:	72.0
R14:	92.6
R15:	63.8



Test Conditions

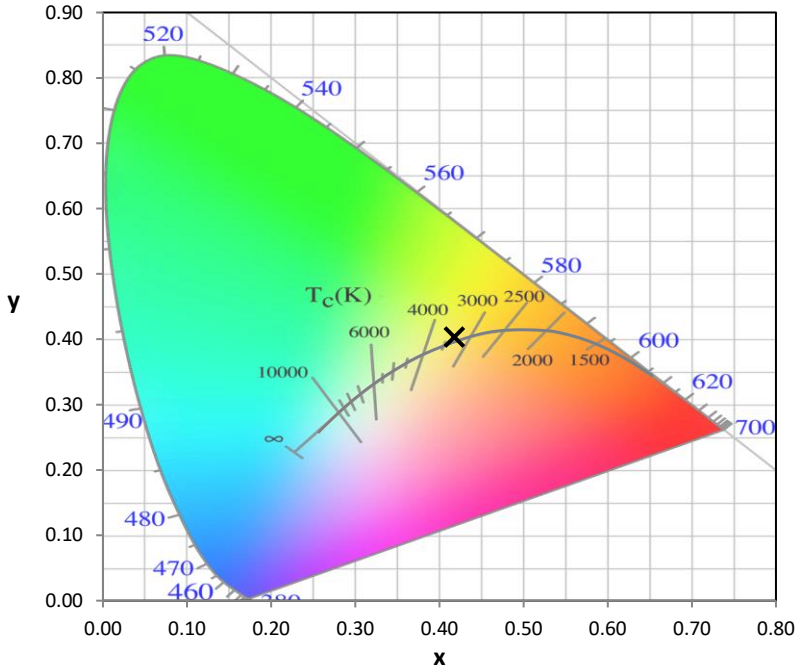
Stabilization Time:	30M
Operation Time:	1H 30M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-176-4

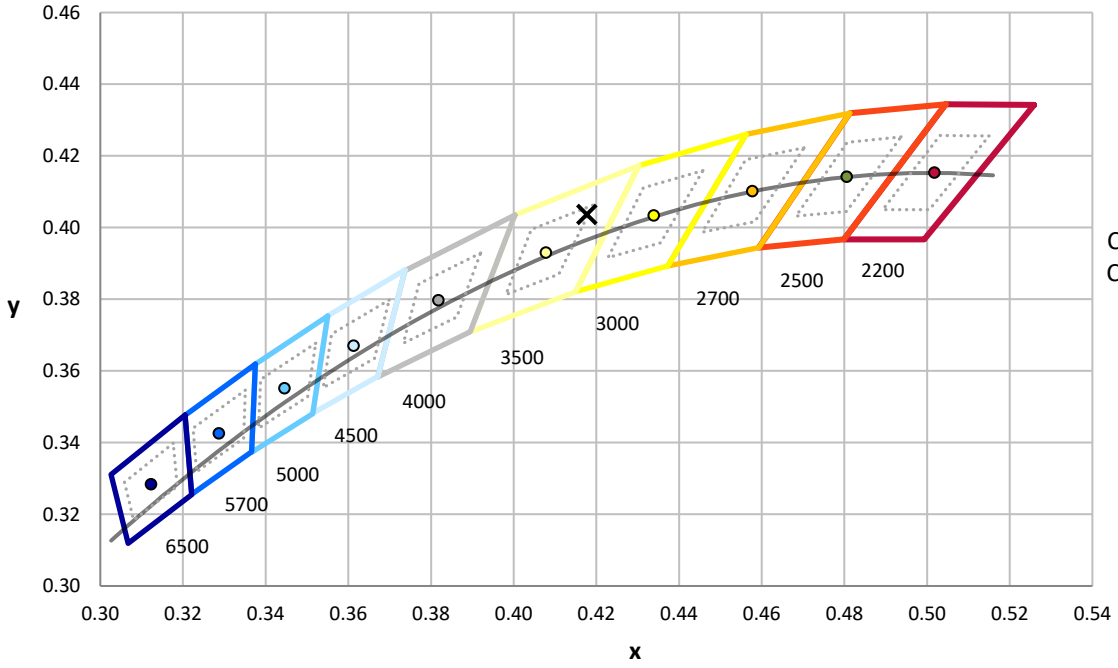
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085	10/24/2023	10/24/2024
Room Thermometer	IN0046	10/24/2023	10/24/2024

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CIE 1931 Chromaticity Diagram



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

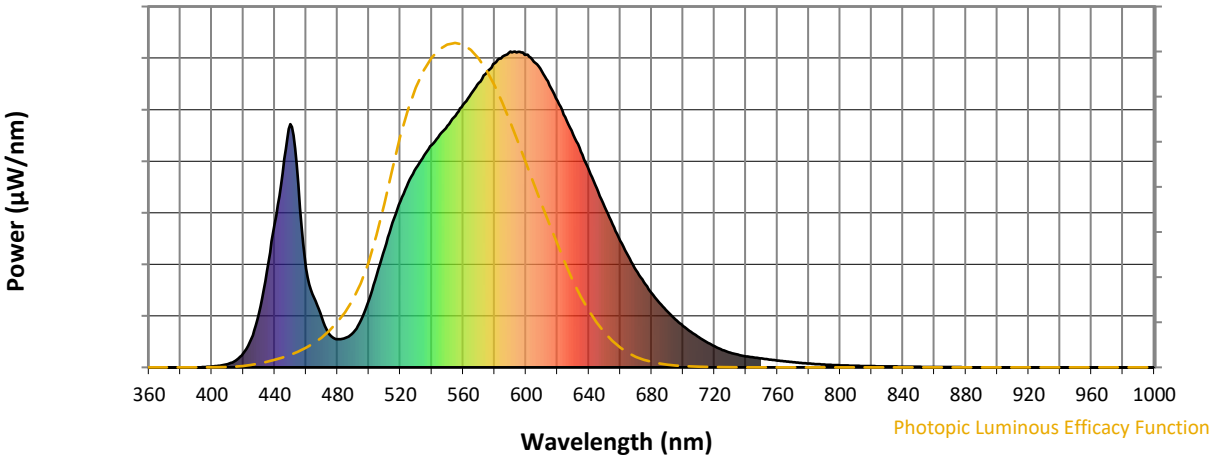


CCT = 3348K
CIE x = 0.4177
CIE y = 0.4036
Duv = 0.0030

Point lies inside the ANSI 3500K 4-step quadrangle

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Photopic Flux vs. Wavelength

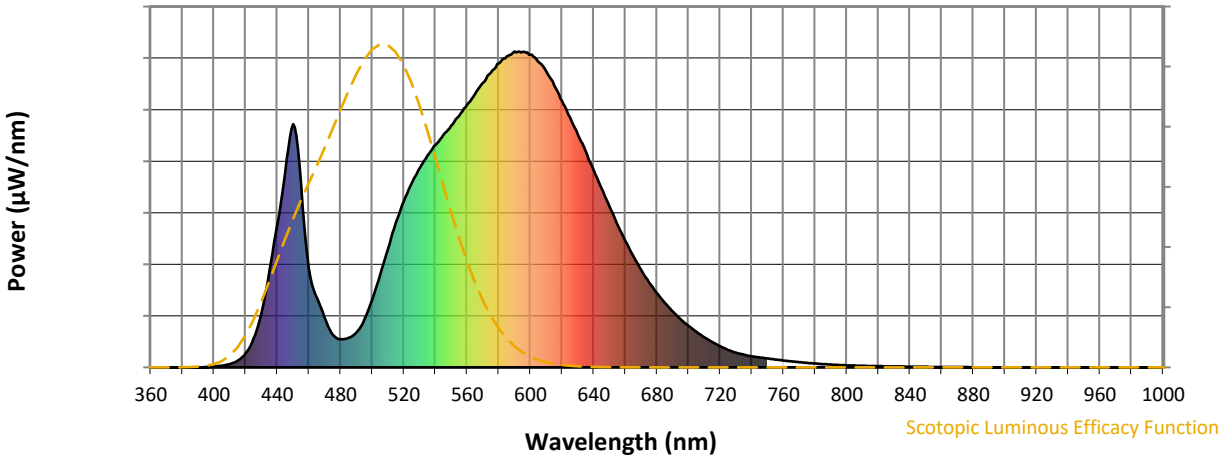


Photopic Lumens: NR

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	110	NR	620	844	NR	750	28	NR	880	0	NR
365	0	NR	495	150	NR	625	792	NR	755	25	NR	885	0	NR
370	0	NR	500	214	NR	630	737	NR	760	22	NR	890	0	NR
375	0	NR	505	293	NR	635	683	NR	765	19	NR	895	0	NR
380	0	NR	510	376	NR	640	625	NR	770	16	NR	900	0	NR
385	0	NR	515	458	NR	645	566	NR	775	14	NR	905	0	NR
390	0	NR	520	526	NR	650	509	NR	780	12	NR	910	0	NR
395	1	NR	525	584	NR	655	453	NR	785	10	NR	915	0	NR
400	3	NR	530	631	NR	660	401	NR	790	9	NR	920	0	NR
405	5	NR	535	671	NR	665	353	NR	795	8	NR	925	0	NR
410	10	NR	540	704	NR	670	308	NR	800	7	NR	930	0	NR
415	21	NR	545	737	NR	675	269	NR	805	6	NR	935	0	NR
420	44	NR	550	766	NR	680	235	NR	810	5	NR	940	0	NR
425	90	NR	555	797	NR	685	204	NR	815	4	NR	945	0	NR
430	171	NR	560	832	NR	690	177	NR	820	4	NR	950	0	NR
435	305	NR	565	866	NR	695	152	NR	825	3	NR	955	0	NR
440	455	NR	570	901	NR	700	131	NR	830	3	NR	960	0	NR
445	615	NR	575	933	NR	705	112	NR	835	3	NR	965	0	NR
450	771	NR	580	963	NR	710	96	NR	840	2	NR	970	0	NR
455	579	NR	585	984	NR	715	80	NR	845	2	NR	975	0	NR
460	313	NR	590	1000	NR	720	67	NR	850	2	NR	980	0	NR
465	221	NR	595	999	NR	725	55	NR	855	1	NR	985	0	NR
470	156	NR	600	990	NR	730	46	NR	860	1	NR	990	0	NR
475	103	NR	605	968	NR	735	40	NR	865	1	NR	995	0	NR
480	89	NR	610	937	NR	740	35	NR	870	1	NR	1000	0	NR
485	93	NR	615	893	NR	745	31	NR	875	1	NR			

REPORT NUMBER: SP1-2407-176-4

Scotopic Flux vs. Wavelength

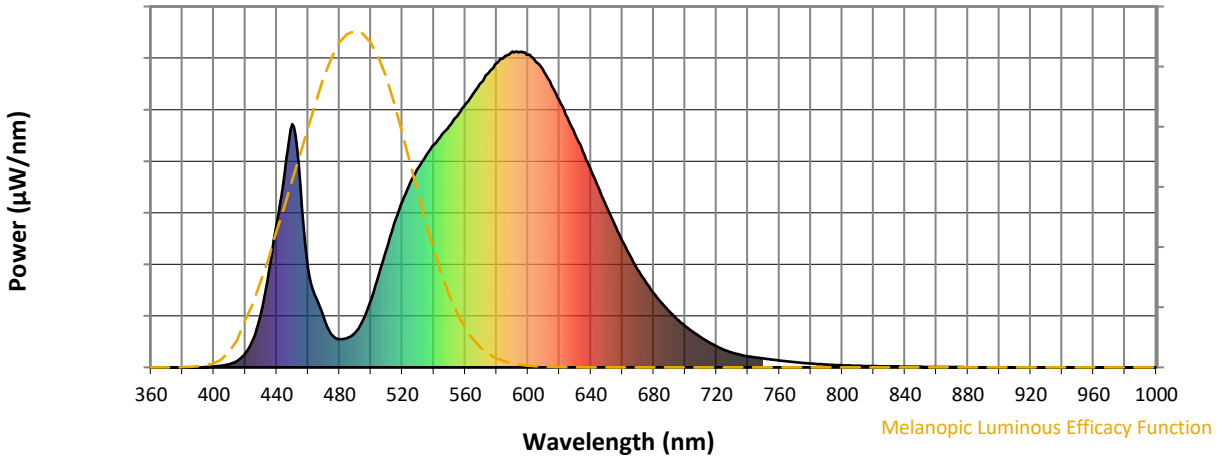


Scotopic Lumens: NR **S/P: 1.31**

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	110	NR	620	844	NR	750	28	NR	880	0	NR
365	0	NR	495	150	NR	625	792	NR	755	25	NR	885	0	NR
370	0	NR	500	214	NR	630	737	NR	760	22	NR	890	0	NR
375	0	NR	505	293	NR	635	683	NR	765	19	NR	895	0	NR
380	0	NR	510	376	NR	640	625	NR	770	16	NR	900	0	NR
385	0	NR	515	458	NR	645	566	NR	775	14	NR	905	0	NR
390	0	NR	520	526	NR	650	509	NR	780	12	NR	910	0	NR
395	1	NR	525	584	NR	655	453	NR	785	10	NR	915	0	NR
400	3	NR	530	631	NR	660	401	NR	790	9	NR	920	0	NR
405	5	NR	535	671	NR	665	353	NR	795	8	NR	925	0	NR
410	10	NR	540	704	NR	670	308	NR	800	7	NR	930	0	NR
415	21	NR	545	737	NR	675	269	NR	805	6	NR	935	0	NR
420	44	NR	550	766	NR	680	235	NR	810	5	NR	940	0	NR
425	90	NR	555	797	NR	685	204	NR	815	4	NR	945	0	NR
430	171	NR	560	832	NR	690	177	NR	820	4	NR	950	0	NR
435	305	NR	565	866	NR	695	152	NR	825	3	NR	955	0	NR
440	455	NR	570	901	NR	700	131	NR	830	3	NR	960	0	NR
445	615	NR	575	933	NR	705	112	NR	835	3	NR	965	0	NR
450	771	NR	580	963	NR	710	96	NR	840	2	NR	970	0	NR
455	579	NR	585	984	NR	715	80	NR	845	2	NR	975	0	NR
460	313	NR	590	1000	NR	720	67	NR	850	2	NR	980	0	NR
465	221	NR	595	999	NR	725	55	NR	855	1	NR	985	0	NR
470	156	NR	600	990	NR	730	46	NR	860	1	NR	990	0	NR
475	103	NR	605	968	NR	735	40	NR	865	1	NR	995	0	NR
480	89	NR	610	937	NR	740	35	NR	870	1	NR	1000	0	NR
485	93	NR	615	893	NR	745	31	NR	875	1	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 2.4**

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	110	NR	620	844	NR	750	28	NR	880	0	NR
365	0	NR	495	150	NR	625	792	NR	755	25	NR	885	0	NR
370	0	NR	500	214	NR	630	737	NR	760	22	NR	890	0	NR
375	0	NR	505	293	NR	635	683	NR	765	19	NR	895	0	NR
380	0	NR	510	376	NR	640	625	NR	770	16	NR	900	0	NR
385	0	NR	515	458	NR	645	566	NR	775	14	NR	905	0	NR
390	0	NR	520	526	NR	650	509	NR	780	12	NR	910	0	NR
395	1	NR	525	584	NR	655	453	NR	785	10	NR	915	0	NR
400	3	NR	530	631	NR	660	401	NR	790	9	NR	920	0	NR
405	5	NR	535	671	NR	665	353	NR	795	8	NR	925	0	NR
410	10	NR	540	704	NR	670	308	NR	800	7	NR	930	0	NR
415	21	NR	545	737	NR	675	269	NR	805	6	NR	935	0	NR
420	44	NR	550	766	NR	680	235	NR	810	5	NR	940	0	NR
425	90	NR	555	797	NR	685	204	NR	815	4	NR	945	0	NR
430	171	NR	560	832	NR	690	177	NR	820	4	NR	950	0	NR
435	305	NR	565	866	NR	695	152	NR	825	3	NR	955	0	NR
440	455	NR	570	901	NR	700	131	NR	830	3	NR	960	0	NR
445	615	NR	575	933	NR	705	112	NR	835	3	NR	965	0	NR
450	771	NR	580	963	NR	710	96	NR	840	2	NR	970	0	NR
455	579	NR	585	984	NR	715	80	NR	845	2	NR	975	0	NR
460	313	NR	590	1000	NR	720	67	NR	850	2	NR	980	0	NR
465	221	NR	595	999	NR	725	55	NR	855	1	NR	985	0	NR
470	156	NR	600	990	NR	730	46	NR	860	1	NR	990	0	NR
475	103	NR	605	968	NR	735	40	NR	865	1	NR	995	0	NR
480	89	NR	610	937	NR	740	35	NR	870	1	NR	1000	0	NR
485	93	NR	615	893	NR	745	31	NR	875	1	NR			

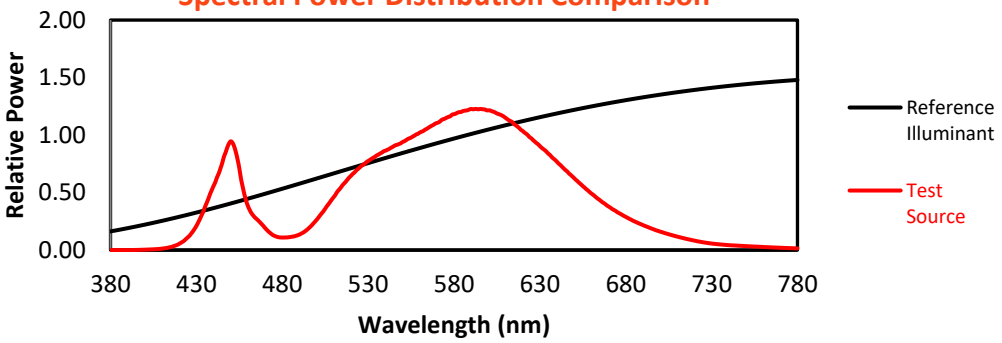
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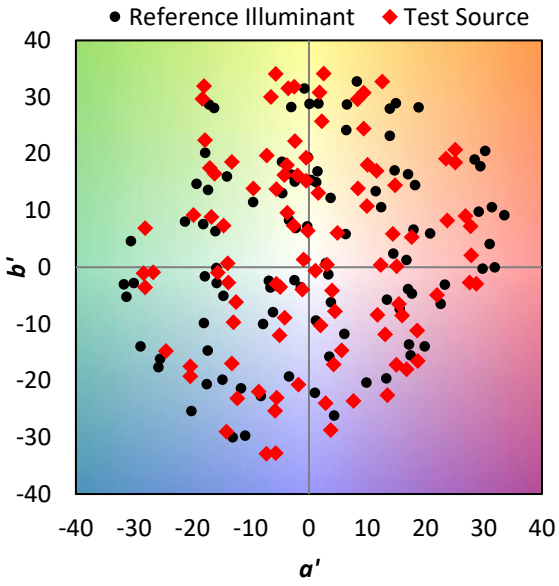
Summary

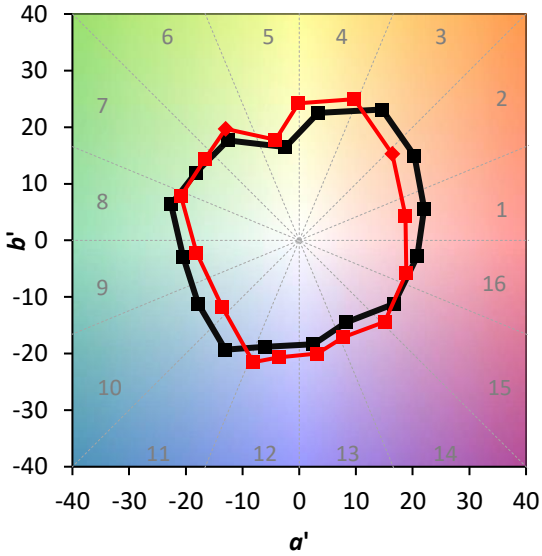
R_f = 75.8
R_g = 95.8
CIE R_a = 73.4
R_9 = -19.2

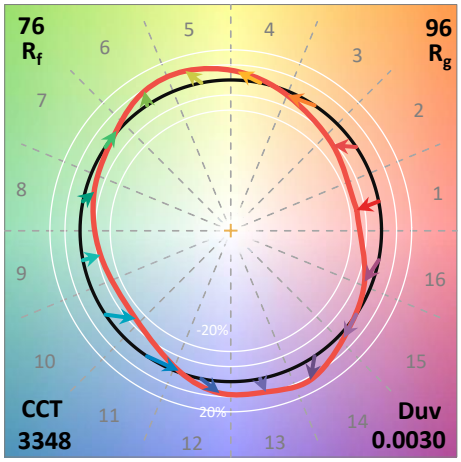
Spectral Power Distribution Comparison

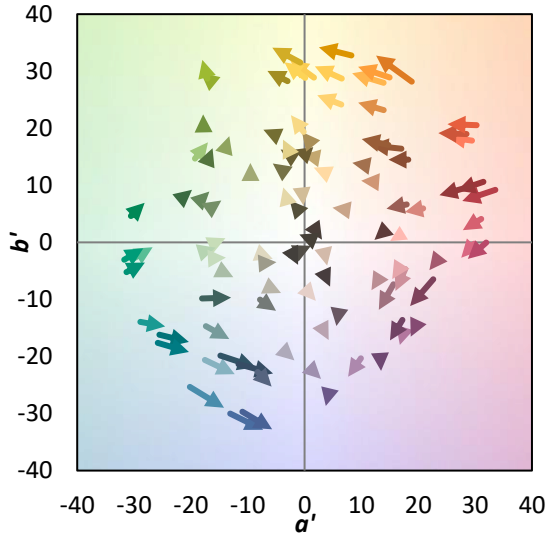


Color Vector Graphics







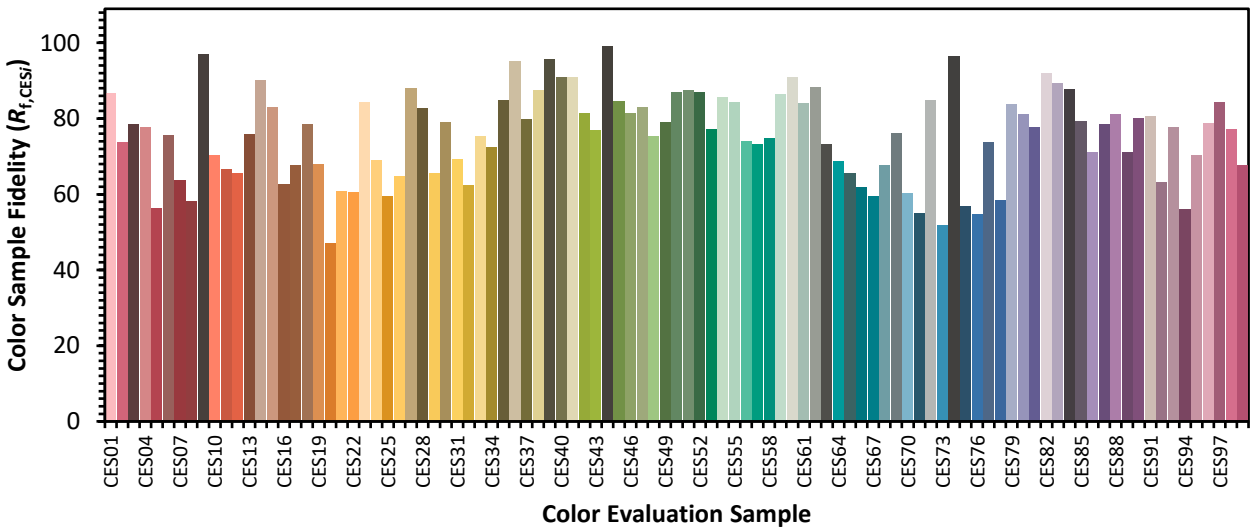


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Individual Sample Fidelity Index ($R_{f,i}$)

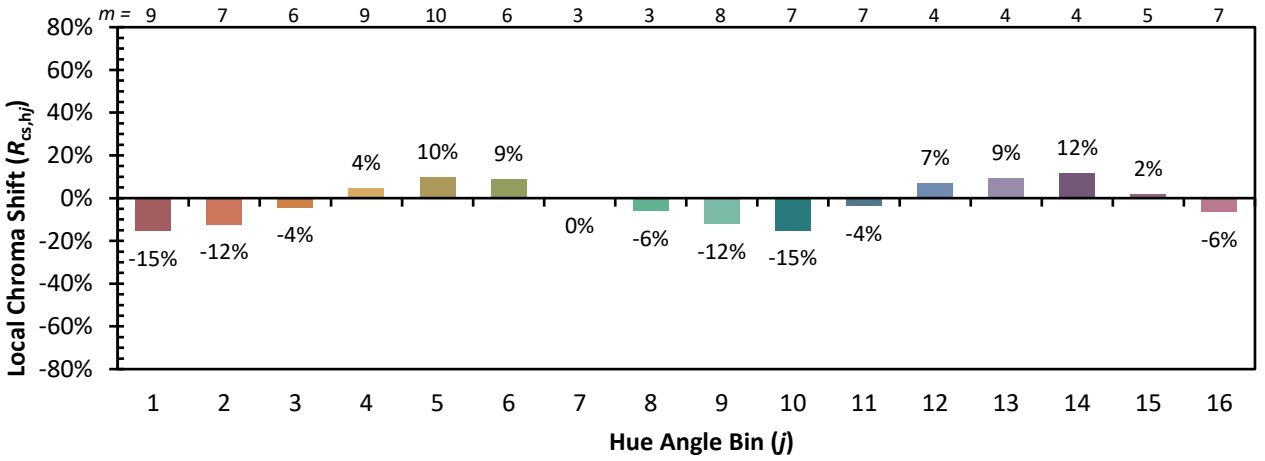
CES01 = 86	CES26 = 65	CES51 = 88	CES76 = 55
CES02 = 62	CES27 = 88	CES52 = 87	CES77 = 74
CES03 = 31	CES28 = 83	CES53 = 77	CES78 = 58
CES04 = 70	CES29 = 66	CES54 = 86	CES79 = 84
CES05 = 48	CES30 = 79	CES55 = 84	CES80 = 81
CES06 = 51	CES31 = 69	CES56 = 74	CES81 = 78
CES07 = 41	CES32 = 62	CES57 = 73	CES82 = 92
CES08 = 40	CES33 = 75	CES58 = 75	CES83 = 89
CES09 = 29	CES34 = 73	CES59 = 87	CES84 = 88
CES10 = 75	CES35 = 85	CES60 = 91	CES85 = 79
CES11 = 58	CES36 = 95	CES61 = 84	CES86 = 71
CES12 = 64	CES37 = 80	CES62 = 88	CES87 = 79
CES13 = 43	CES38 = 88	CES63 = 73	CES88 = 81
CES14 = 74	CES39 = 96	CES64 = 69	CES89 = 71
CES15 = 71	CES40 = 91	CES65 = 66	CES90 = 80
CES16 = 47	CES41 = 91	CES66 = 62	CES91 = 81
CES17 = 50	CES42 = 81	CES67 = 60	CES92 = 63
CES18 = 56	CES43 = 77	CES68 = 68	CES93 = 78
CES19 = 72	CES44 = 99	CES69 = 76	CES94 = 56
CES20 = 65	CES45 = 85	CES70 = 60	CES95 = 70
CES21 = 87	CES46 = 82	CES71 = 55	CES96 = 79
CES22 = 79	CES47 = 83	CES72 = 85	CES97 = 84
CES23 = 92	CES48 = 75	CES73 = 52	CES98 = 77
CES24 = 91	CES49 = 79	CES74 = 96	CES99 = 68
CES25 = 72	CES50 = 87	CES75 = 57	

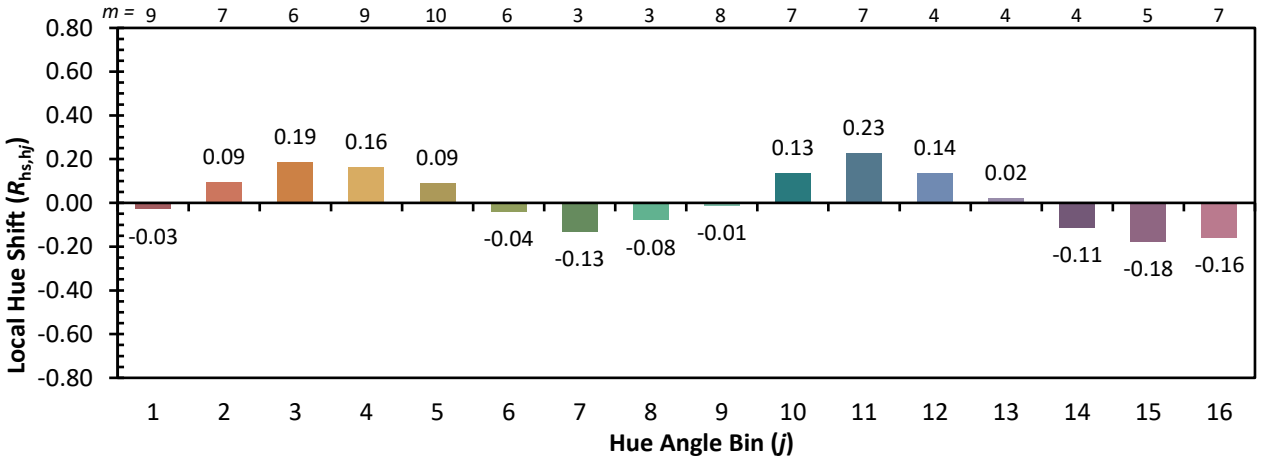


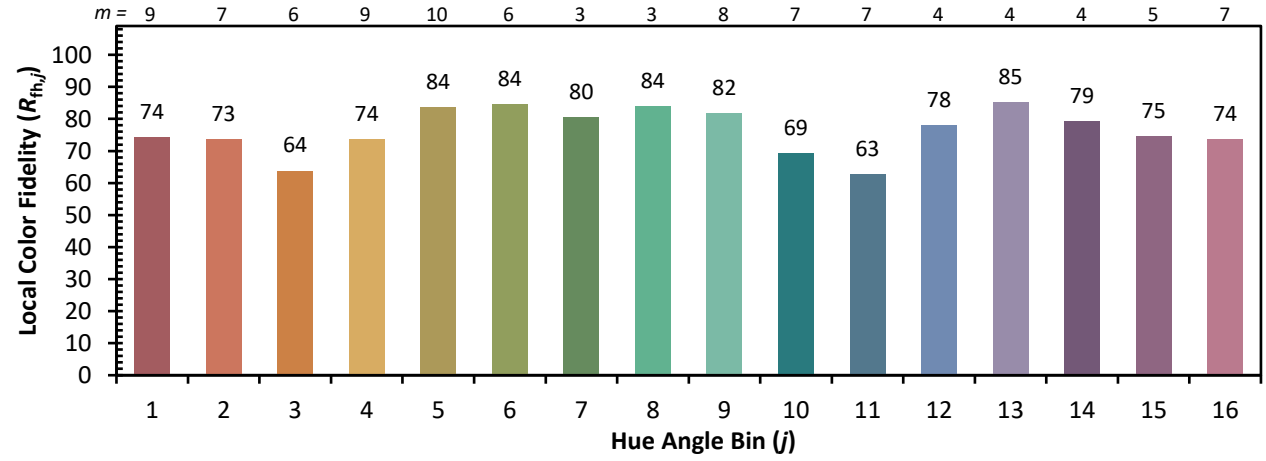
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Color Rendition by Hue-Angle Bin



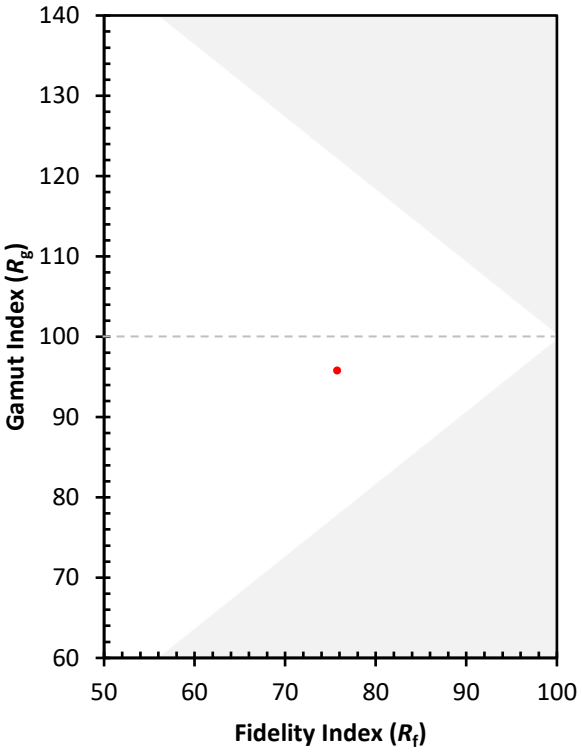


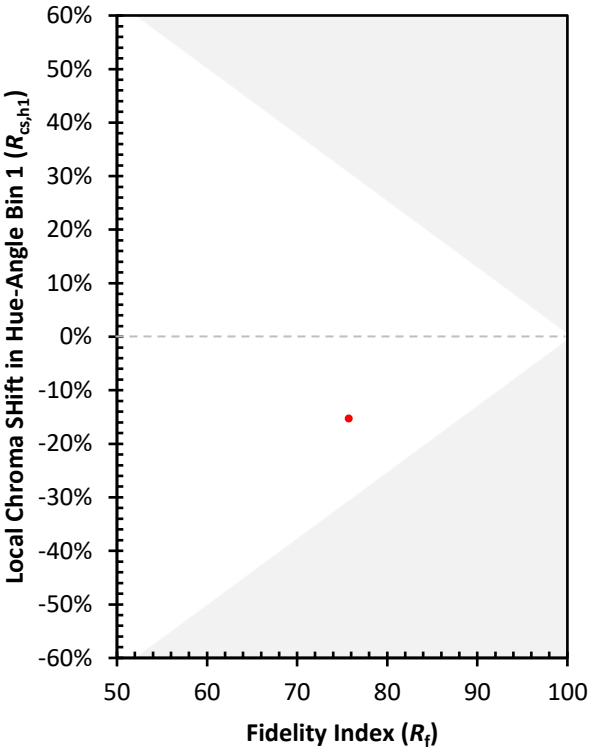


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Measure Comparisons





(END OF REPORT)