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: P821181

Luminaire Tested: **TT-D5-830-24VDC-MQ**

Issue Date: 2/18/2020

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:	P821181
	TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1908-473-16)
Test Lab:	INNOVATIONS CENTER
Issue Date:	2/18/2020
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	McGRAW-EDISON
Catalog Number:	TT-D5-830-24VDC-MQ
Description:	TOPTIER LED PARKING GARAGE LUMINAIRE
	3000K, 80 CRI LEDS AND MEDIUM DISTRIBUTION
Light Source:	-
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	8968 lumens
Efficiency:	N/A
Efficacy:	122.8 lumens/watt
Luminous Opening:	Circular (Dia: 1.12' x H: 0')
IES Classification:	Type V - Short
BUG Rating:	B3 - U0 - G2

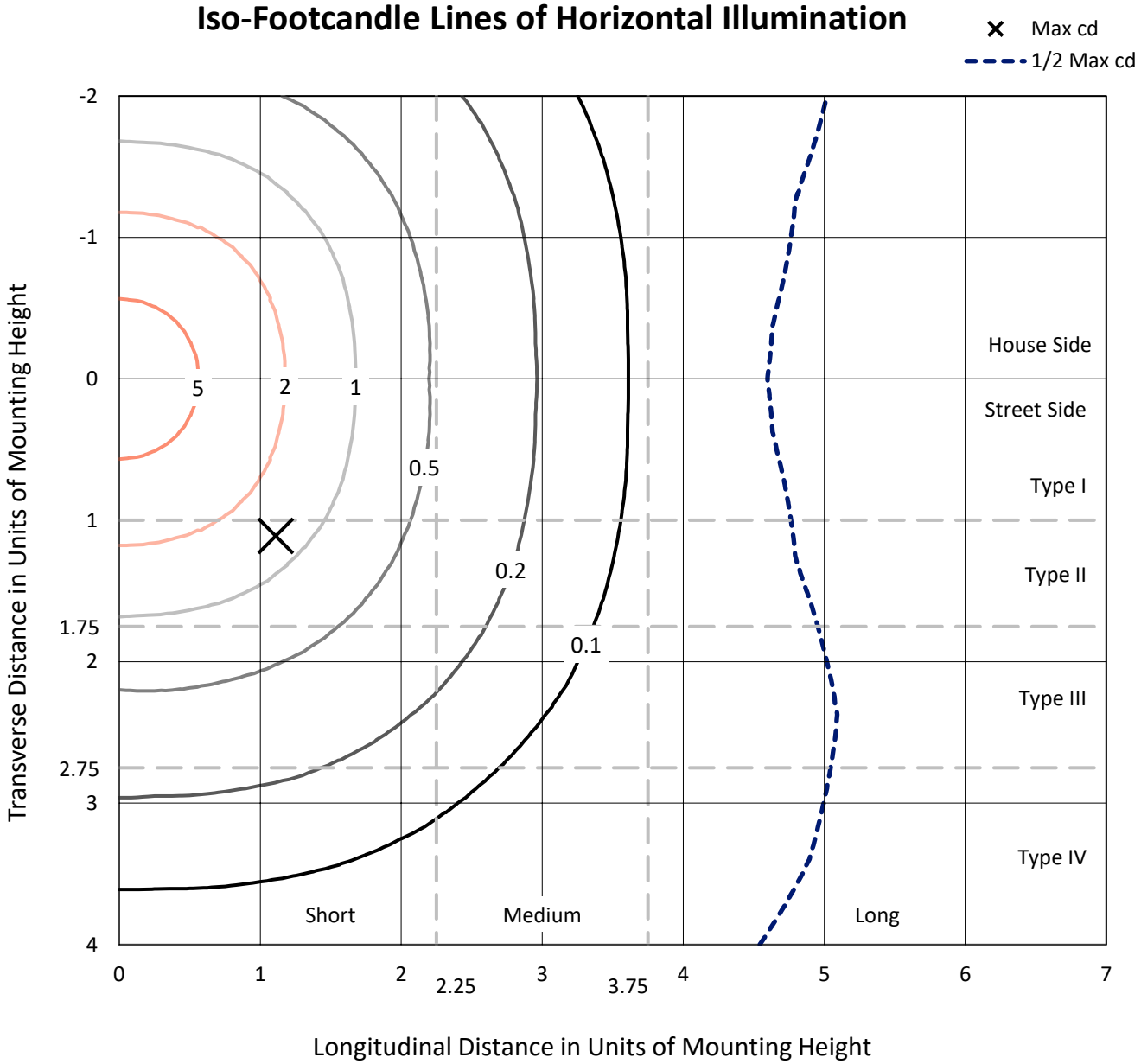
Input Watts (W):	73
Input Voltage (V):	NR
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	NR
Total Harmonic Distortion (THDi):	NR
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	25 FT

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Scaled Data Report

REPORT NUMBER: P821181
CATALOG NUMBER: TT-D5-830-24VDC-MQ

Iso-Footcandle Lines of Horizontal Illumination



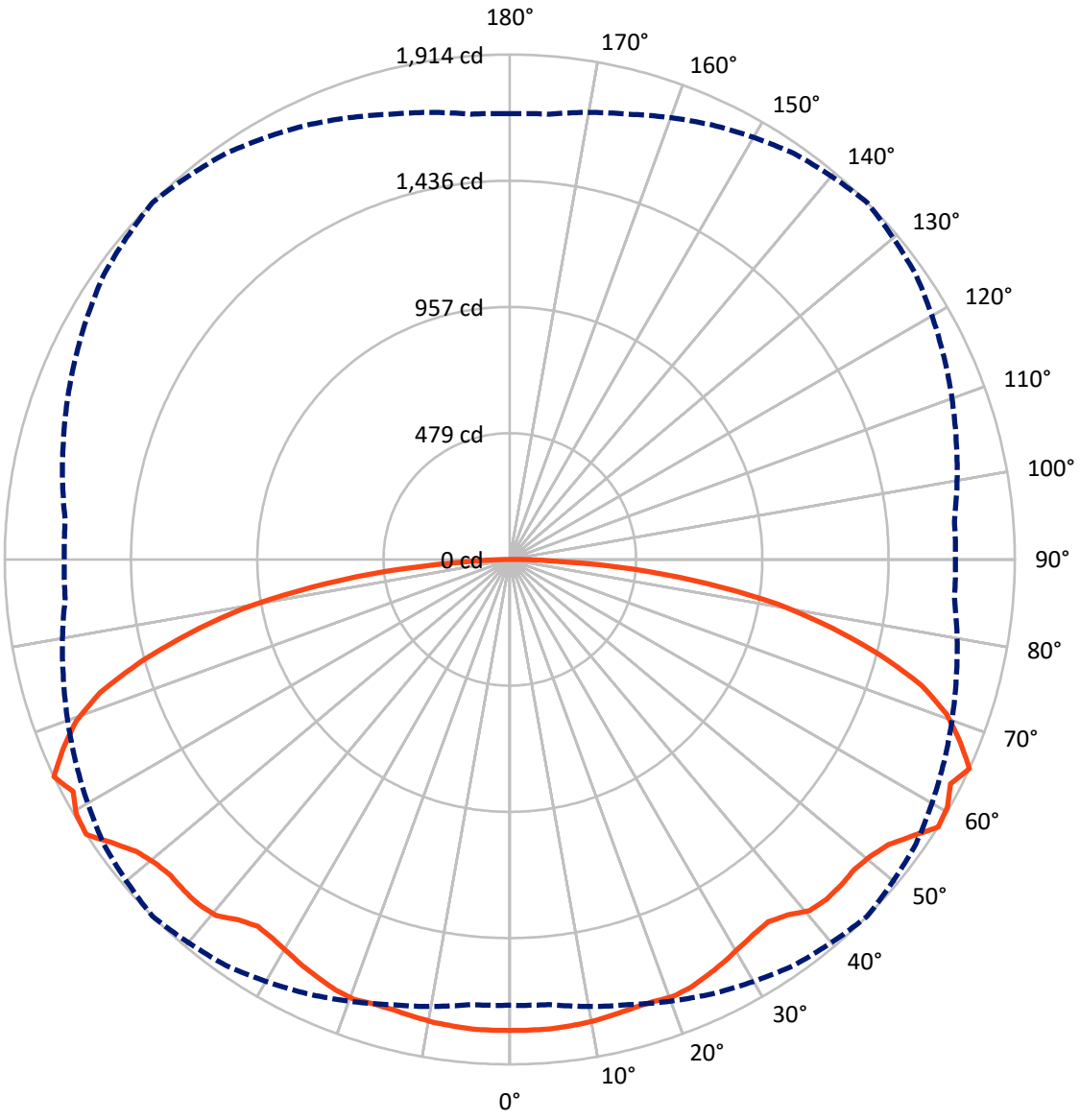
Based on 15 foot mounting height. Maximum calculated value = 7.9 fc
Type V - Short - N/A

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REPORT NUMBER: P821181
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Luminous Intensity Polar Plot



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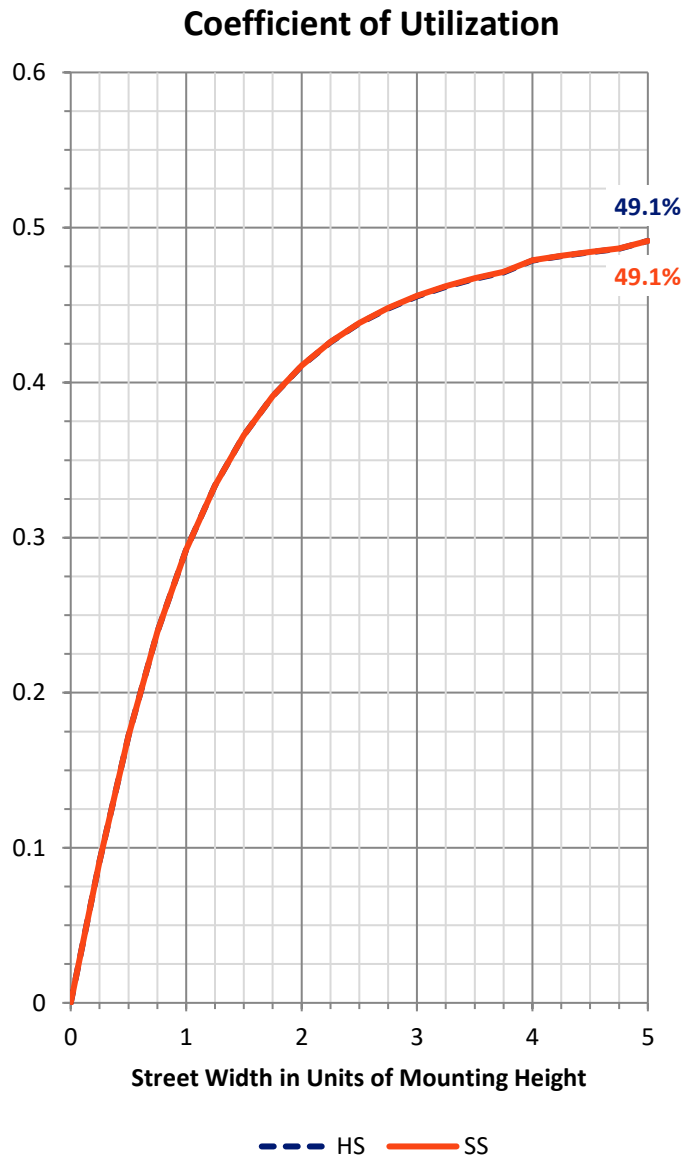
REPORT NUMBER: P821181
CATALOG NUMBER: TT-D5-830-24VDC-MQ

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	4484.0	0.0	4484.0
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	4484.0	0.0	4484.0
	% Fixture	50.0	0.0	50.0
Total	Lumens	8968.0	0.0	8968.0
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	170.2	1.9
10°-20°	500.6	5.6
20°-30°	804.4	9.0
30°-40°	1062.0	11.8
40°-50°	1328.7	14.8
50°-60°	1580.3	17.6
60°-70°	1714.0	19.1
70°-80°	1364.3	15.2
80°-90°	443.5	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°	8968.0	100.0
0°-180°	8968.0	100.0



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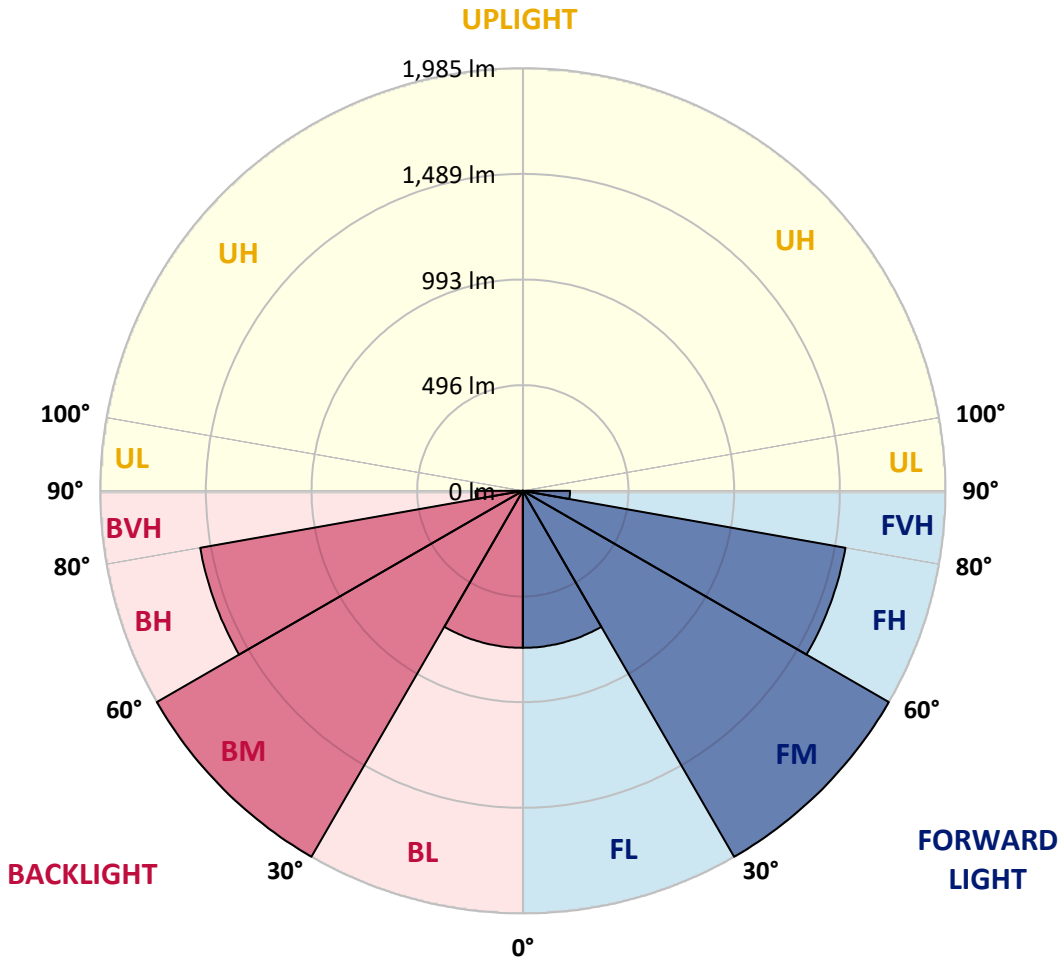
Scaled Data Report

REPORT NUMBER: P821181
CATALOG NUMBER: TT-D5-830-24VDC-MQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	737.6	8.2			
FM	(30°-60°)	1985.5	22.1			
FH	(60°-80°)	1539.2	17.2			G1/1800
FVH	(80°-90°)	221.7	2.5			G2/225
BL	(0°-30°)	737.6	8.2	B2/1000		
BM	(30°-60°)	1985.5	22.1	B2/2500		
BH	(60°-80°)	1539.2	17.2	B3/2500		G1/1800
BVH	(80°-90°)	221.7	2.5			G2/225
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G2
Type V Short



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REPORT NUMBER: P821181
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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1786.1	1786.1	1786.1	1786.1	1786.1	*1786.1*	1786.1	1786.1	1786.1	1786.1	1786.1
2.5°	1788.8	1787.5	1788.8	1787.5	1787.5	*1786.1*	1787.5	1787.5	1787.5	1787.5	1787.5
5°	1787.5	1786.1	1786.1	1787.5	1786.1	*1786.1*	1786.1	1786.1	1786.1	1786.1	1786.1
7.5°	1782.1	1782.1	1783.5	1782.1	1782.1	*1782.1*	1782.1	1782.1	1782.1	1783.5	1783.5
10°	1778.1	1776.8	1778.1	1778.1	1776.8	*1778.1*	1776.8	1778.1	1778.1	1778.1	1778.1
12.5°	1772.8	1771.5	1772.8	1772.8	1771.5	*1770.1*	1771.5	1771.5	1772.8	1772.8	1772.8
15°	1763.5	1763.5	1766.1	1764.8	1764.8	*1763.5*	1766.1	1764.8	1763.5	1764.8	1764.8
17.5°	1756.8	1756.8	1759.5	1762.1	1762.1	*1762.1*	1762.1	1760.8	1758.1	1759.5	1756.8
20°	1758.1	1759.5	1760.8	1764.8	1767.5	*1768.8*	1768.8	1764.8	1760.8	1762.1	1760.8
22.5°	1754.1	1752.8	1754.1	1756.8	1760.8	*1760.8*	1760.8	1755.5	1754.1	1752.8	1752.8
25°	1738.1	1738.1	1740.8	1743.5	1746.1	*1744.8*	1746.1	1743.5	1740.8	1738.1	1738.1
27.5°	1719.5	1719.5	1723.5	1726.1	1728.8	*1728.8*	1727.5	1724.8	1723.5	1720.8	1719.5
30°	1700.8	1700.8	1704.8	1707.4	1711.4	*1710.1*	1710.1	1706.1	1702.1	1699.4	1699.4
32.5°	1680.8	1679.4	1683.4	1690.1	1695.4	*1695.4*	1695.4	1687.4	1682.1	1679.4	1678.1
35°	1663.4	1663.4	1668.8	1680.8	1687.4	*1687.4*	1684.8	1679.4	1667.4	1663.4	1663.4
37.5°	1658.1	1662.1	1676.8	1694.1	1707.4	*1710.1*	1706.1	1691.4	1675.4	1663.4	1659.4
40°	1675.4	1679.4	1698.1	1726.1	1746.1	*1750.1*	1746.1	1724.8	1696.8	1678.1	1676.8
42.5°	1678.1	1680.8	1703.4	1735.5	1754.1	*1760.8*	1754.1	1732.8	1702.1	1679.4	1678.1
45°	1668.8	1670.1	1696.8	1730.1	1752.8	*1760.8*	1752.8	1727.5	1695.4	1670.1	1668.8
47.5°	1656.8	1659.4	1688.8	1723.5	1751.5	*1756.8*	1750.1	1722.1	1686.1	1660.8	1656.8
50°	1647.4	1655.4	1682.1	1720.8	1754.1	*1770.1*	1754.1	1716.8	1680.8	1652.8	1647.4
52.5°	1652.8	1655.4	1690.1	1744.8	1790.2	*1796.8*	1788.8	1744.8	1687.4	1655.4	1651.4
55°	1668.8	1680.8	1718.1	1796.8	1838.2	*1850.2*	1832.8	1794.2	1719.5	1680.8	1668.8
57.5°	*1690.1*	*1694.1*	*1747.5*	*1816.8*	*1878.2*	*1914.2*	*1879.5*	*1815.5*	*1751.5*	*1691.4*	*1688.8*
60°	1672.8	1660.8	1727.5	1808.8	1891.5	*1906.2*	1886.2	1810.2	1724.8	1659.4	1671.4
62.5°	1626.1	1634.1	1688.8	1800.8	1858.2	*1874.2*	1852.8	1800.8	1686.1	1640.7	1622.1
65°	1588.7	1636.7	1696.8	1776.8	1868.9	*1914.2*	1870.2	1774.1	1699.4	1628.7	1584.7
67.5°	1536.7	1546.0	1635.4	1734.1	1816.8	*1839.5*	1815.5	1735.5	1627.4	1539.4	1546.0
70°	1448.7	1435.3	1526.0	1640.7	1719.5	*1755.5*	1722.1	1635.4	1522.0	1432.7	1444.7
72.5°	1303.3	1311.3	1395.3	1516.7	1598.1	*1632.7*	1599.4	1507.4	1392.6	1319.3	1311.3
75°	1151.2	1160.5	1241.9	1352.6	1435.3	*1450.0*	1440.7	1345.9	1244.6	1159.2	1151.2
77.5°	977.8	987.1	1053.8	1175.2	1224.6	*1247.2*	1227.2	1181.9	1051.1	985.8	975.1
80°	785.7	783.0	841.7	945.8	1007.1	*1032.5*	1007.1	948.4	839.0	788.4	771.0
82.5°	561.6	564.3	618.9	691.0	749.7	*757.7*	745.7	697.7	613.6	570.9	546.9
85°	312.1	324.1	364.2	417.5	456.2	*469.5*	449.5	404.2	362.8	329.5	318.8
87.5°	74.7	81.4	94.7	120.1	134.7	*148.1*	134.7	125.4	89.4	81.4	74.7
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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LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-176-7

Test Date: 09/27/2024

Luminaire Tested: MEM2-HTN-VA-30-830-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-830-U-WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

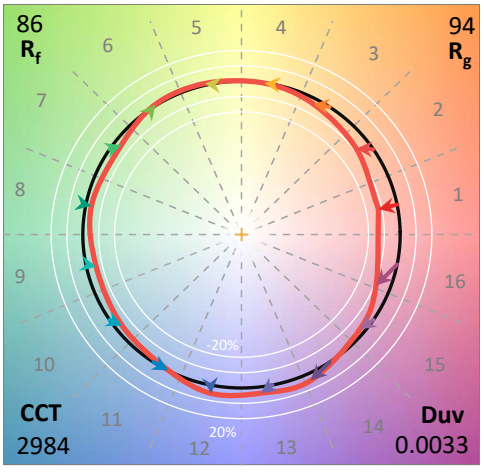
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-176-7
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-30-830-U-WQ**
Description:	EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K):	2984	CRI (Ra):	81.8		
CIE u':	0.2500	R1:	79.4	R9:	-1.1
CIE v':	0.5264	R2:	89.9	R10:	78.4
Duv:	0.0033	R3:	96.6	R11:	80.8
CIE x:	0.4431	R4:	80.6	R12:	72.8
CIE y:	0.4147	R5:	80.1	R13:	81.7
CIE z:	0.1422	R6:	88.9	R14:	98.5
Peak Wavelength (nm):	601	R7:	82.6	R15:	70.2
Dominant Wavelength (nm):	581	R8:	56.0		
Purity:	57.4798				

Rf:	85.8
Rg:	94.1



Test Conditions

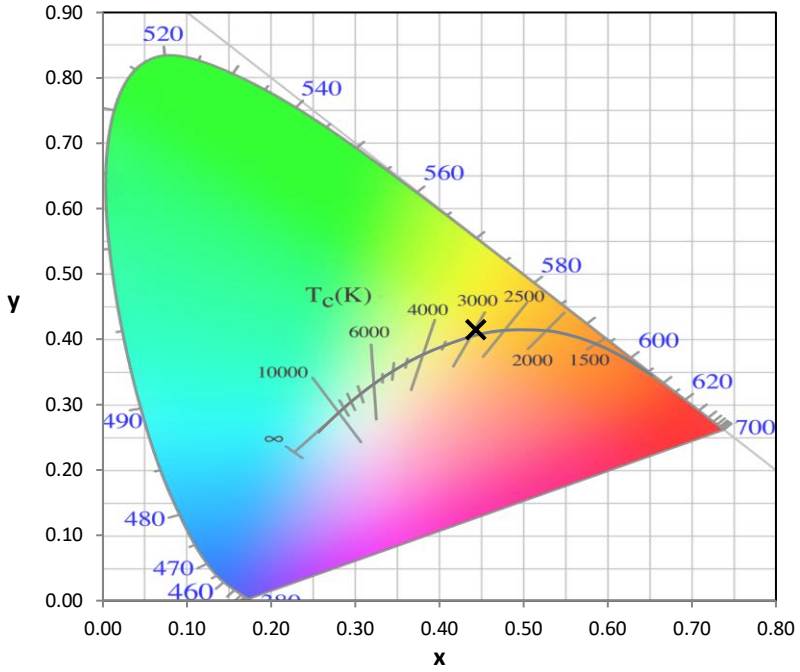
Stabilization Time:	29M
Operation Time:	1H 29M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-176-7

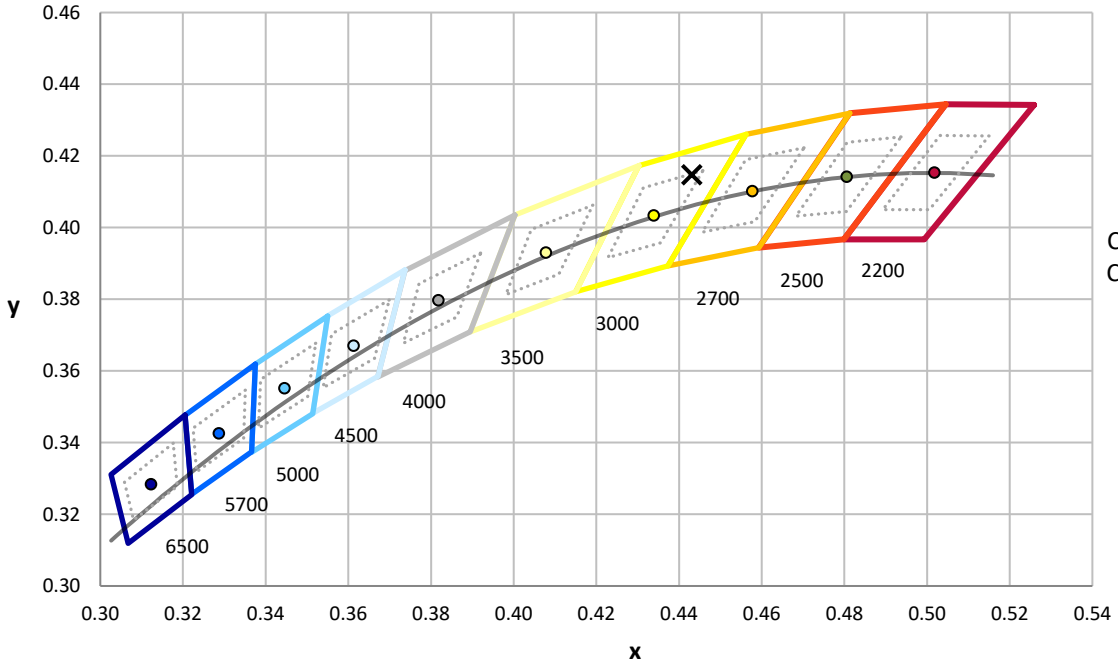
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

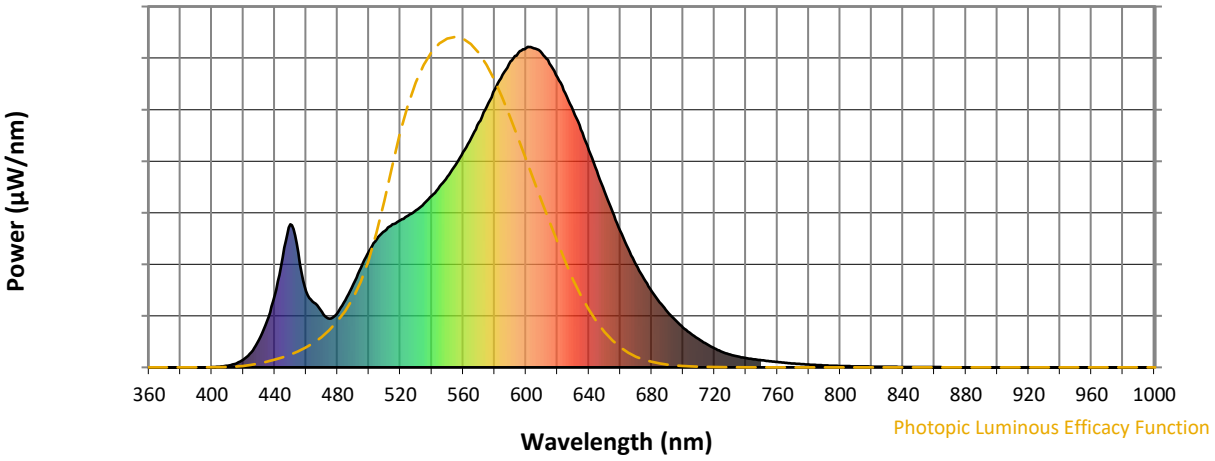


CCT = 2984K
CIE x = 0.4431
CIE y = 0.4147
Duv = 0.0033

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-176-7

Photopic Flux vs. Wavelength

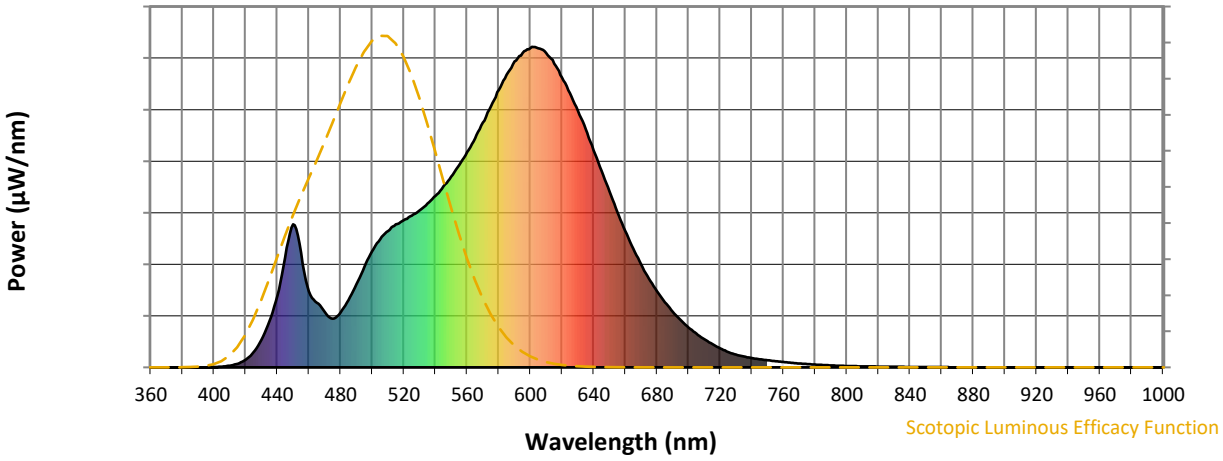


Photopic Lumens: NR

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	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-7

Scotopic Flux vs. Wavelength

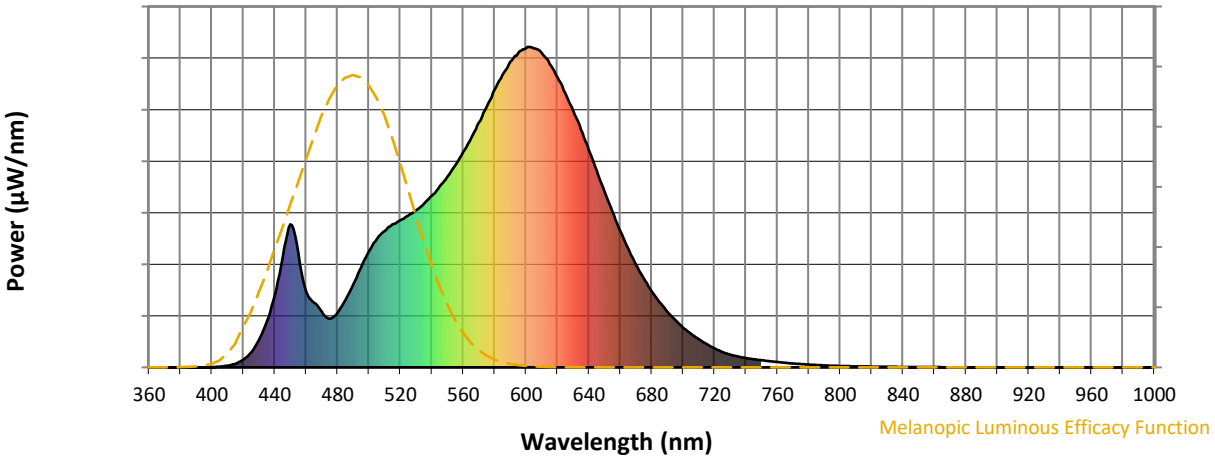


Scotopic Lumens: NR **S/P: 1.32**

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	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 2.51**

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	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

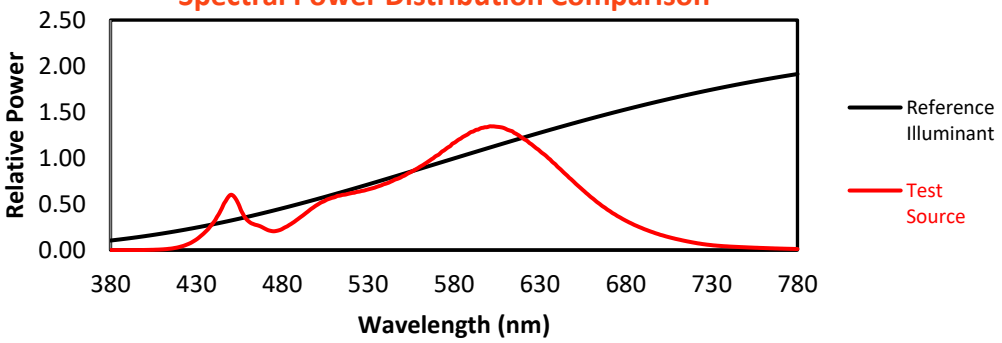
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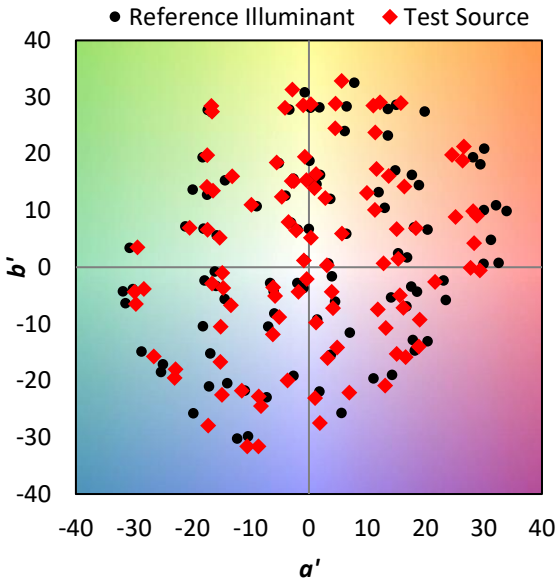
Summary

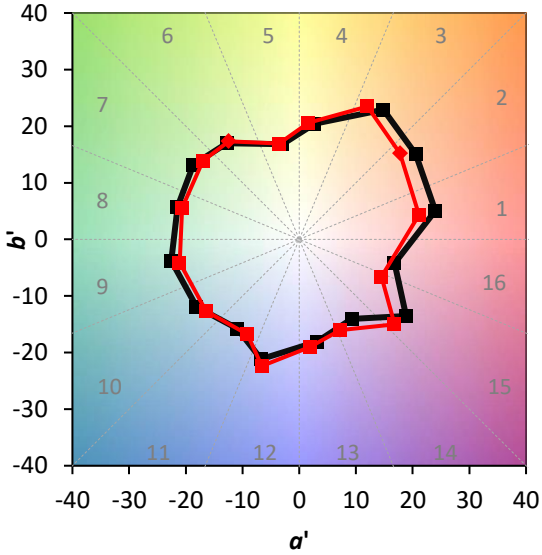
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R_g = 94.1
CIE R_a = 81.8
R_9 = -1.1

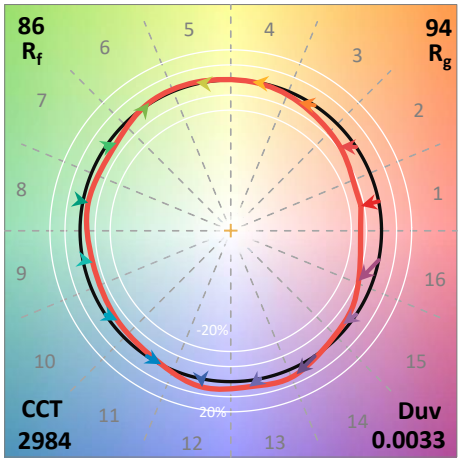
Spectral Power Distribution Comparison

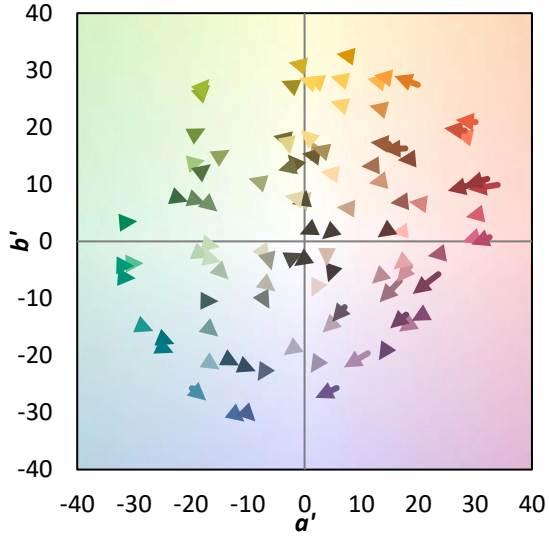


Color Vector Graphics







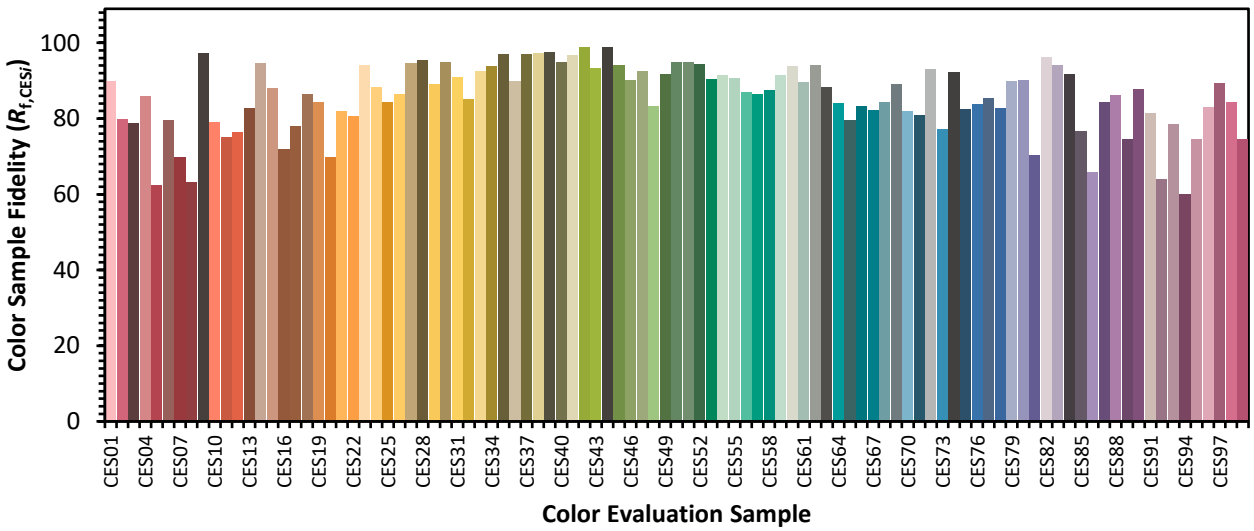


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Individual Sample Fidelity Index ($R_{f,i}$)

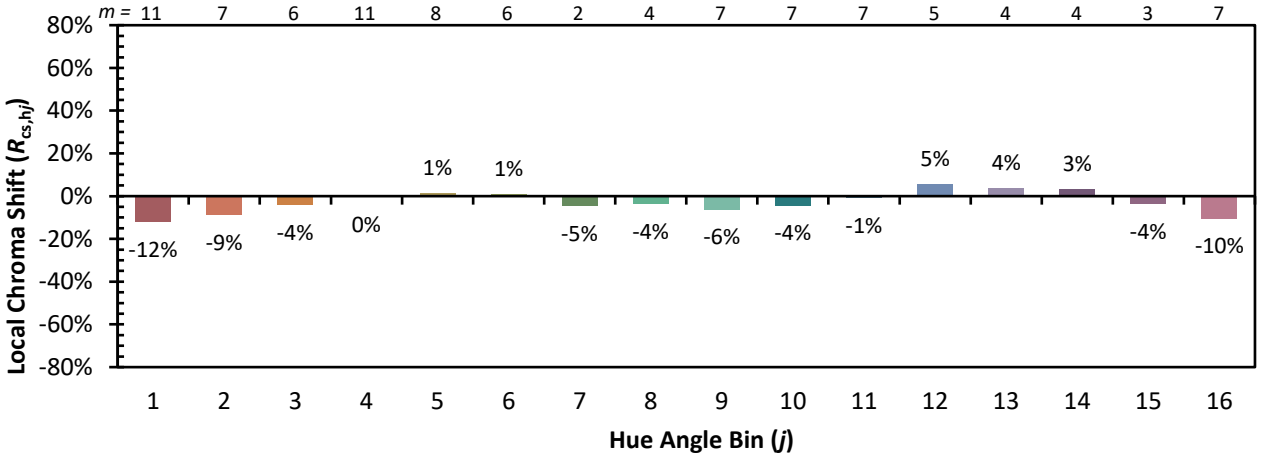
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CES02 = 63	CES27 = 95	CES52 = 94	CES77 = 86
CES03 = 31	CES28 = 95	CES53 = 90	CES78 = 83
CES04 = 70	CES29 = 89	CES54 = 91	CES79 = 90
CES05 = 50	CES30 = 95	CES55 = 91	CES80 = 90
CES06 = 51	CES31 = 91	CES56 = 87	CES81 = 70
CES07 = 42	CES32 = 85	CES57 = 86	CES82 = 96
CES08 = 41	CES33 = 93	CES58 = 87	CES83 = 94
CES09 = 29	CES34 = 94	CES59 = 92	CES84 = 92
CES10 = 76	CES35 = 97	CES60 = 94	CES85 = 77
CES11 = 59	CES36 = 90	CES61 = 90	CES86 = 66
CES12 = 65	CES37 = 97	CES62 = 94	CES87 = 84
CES13 = 43	CES38 = 97	CES63 = 88	CES88 = 86
CES14 = 74	CES39 = 98	CES64 = 84	CES89 = 75
CES15 = 72	CES40 = 95	CES65 = 80	CES90 = 88
CES16 = 47	CES41 = 97	CES66 = 83	CES91 = 81
CES17 = 50	CES42 = 99	CES67 = 82	CES92 = 64
CES18 = 56	CES43 = 93	CES68 = 84	CES93 = 79
CES19 = 72	CES44 = 99	CES69 = 89	CES94 = 60
CES20 = 67	CES45 = 94	CES70 = 82	CES95 = 74
CES21 = 87	CES46 = 90	CES71 = 81	CES96 = 83
CES22 = 79	CES47 = 93	CES72 = 93	CES97 = 89
CES23 = 92	CES48 = 83	CES73 = 77	CES98 = 84
CES24 = 91	CES49 = 92	CES74 = 92	CES99 = 75
CES25 = 72	CES50 = 95	CES75 = 83	

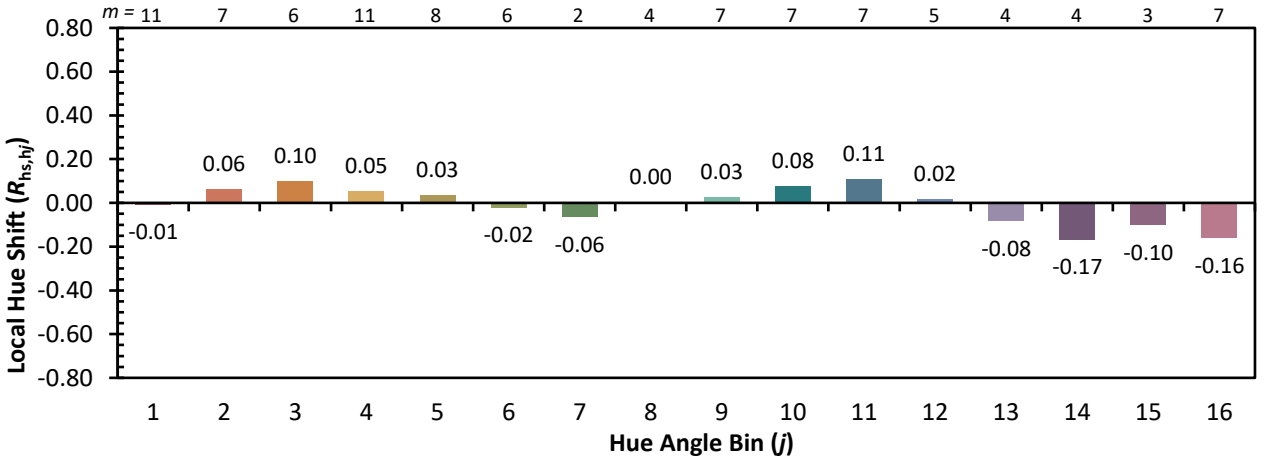


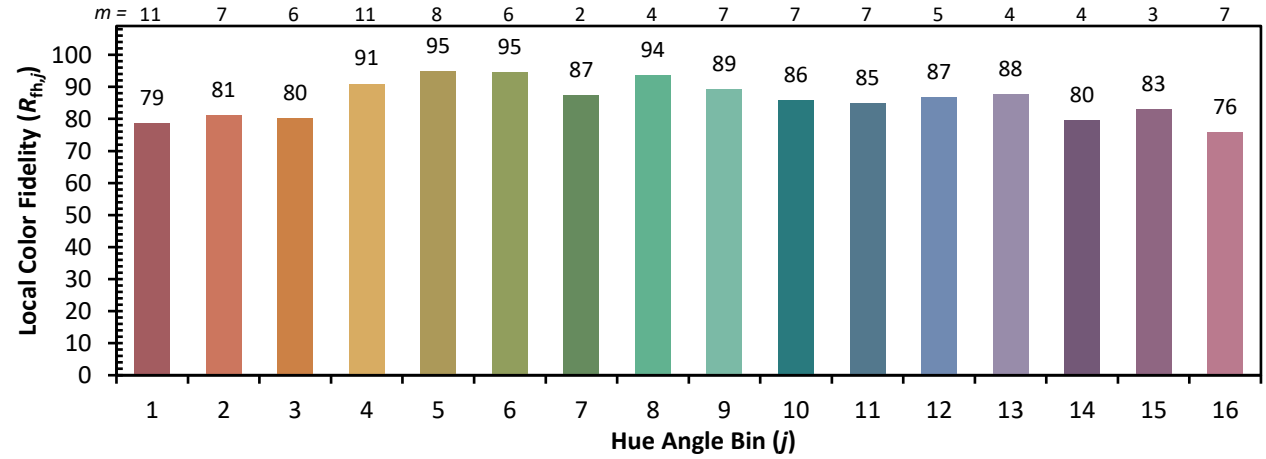
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Color Rendition by Hue-Angle Bin



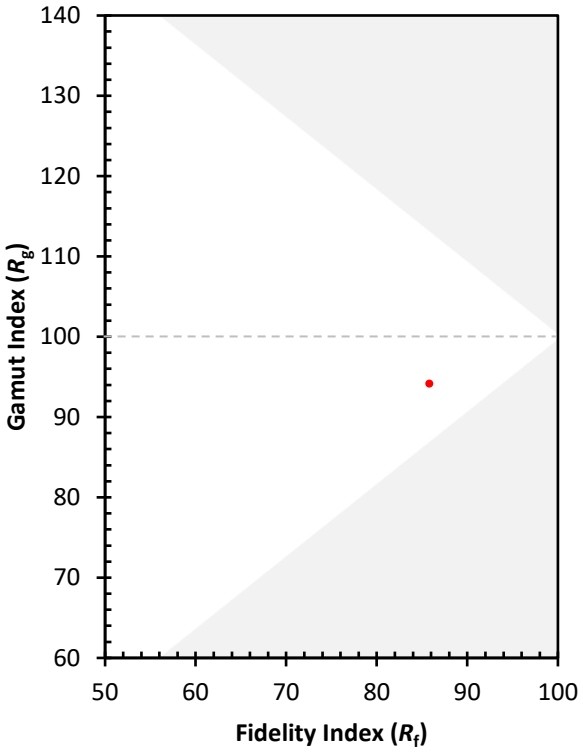


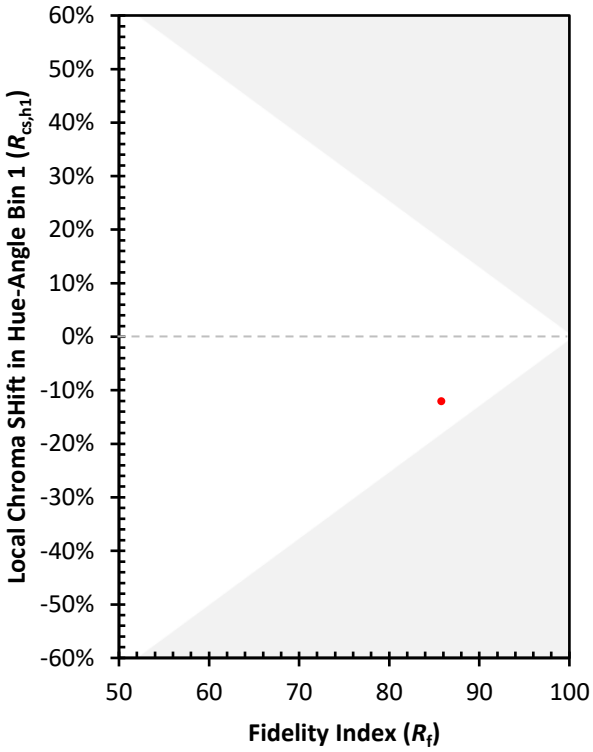


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Measure Comparisons





(END OF REPORT)