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: P821466

Luminaire Tested: **TT-D5-830-12VDC-RW**

Issue Date: 10/15/2020

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:	P821466
	TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2010-981-1)
Test Lab:	INNOVATION CENTER
Issue Date:	10/15/2020
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	McGRAW-EDISON
Catalog Number:	TT-D5-830-12VDC-RW
Description:	TOPTIER LED PARKING GARAGE LUMINAIRE
	3000K, 80 CRI LEDS AND RECTANGULAR DISTRIBUTION
Light Source:	-
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	6781 lumens
Efficiency:	N/A
Efficacy:	92.9 lumens/watt
Luminous Opening:	Circular (Dia: 1.12' x H: 0')
IES Classification:	Type IV - Short
BUG Rating:	B3 - U0 - G3

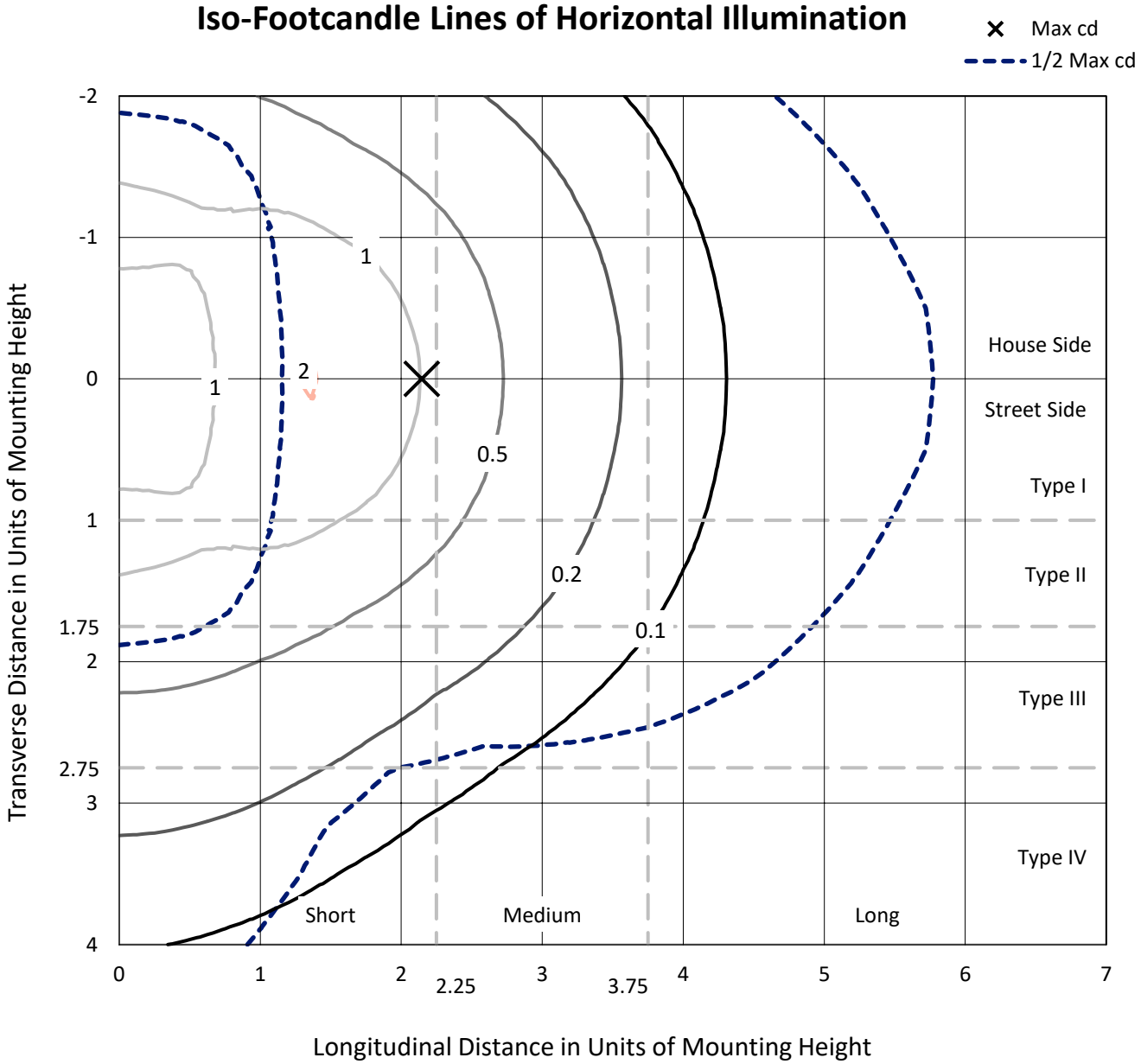
Input Watts (W):	73
Input Voltage (V):	NR
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	NR
Total Harmonic Distortion (THDi):	NR
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	25 FT

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Scaled Data Report

REPORT NUMBER: P821466
CATALOG NUMBER: TT-D5-830-12VDC-RW

Iso-Footcandle Lines of Horizontal Illumination



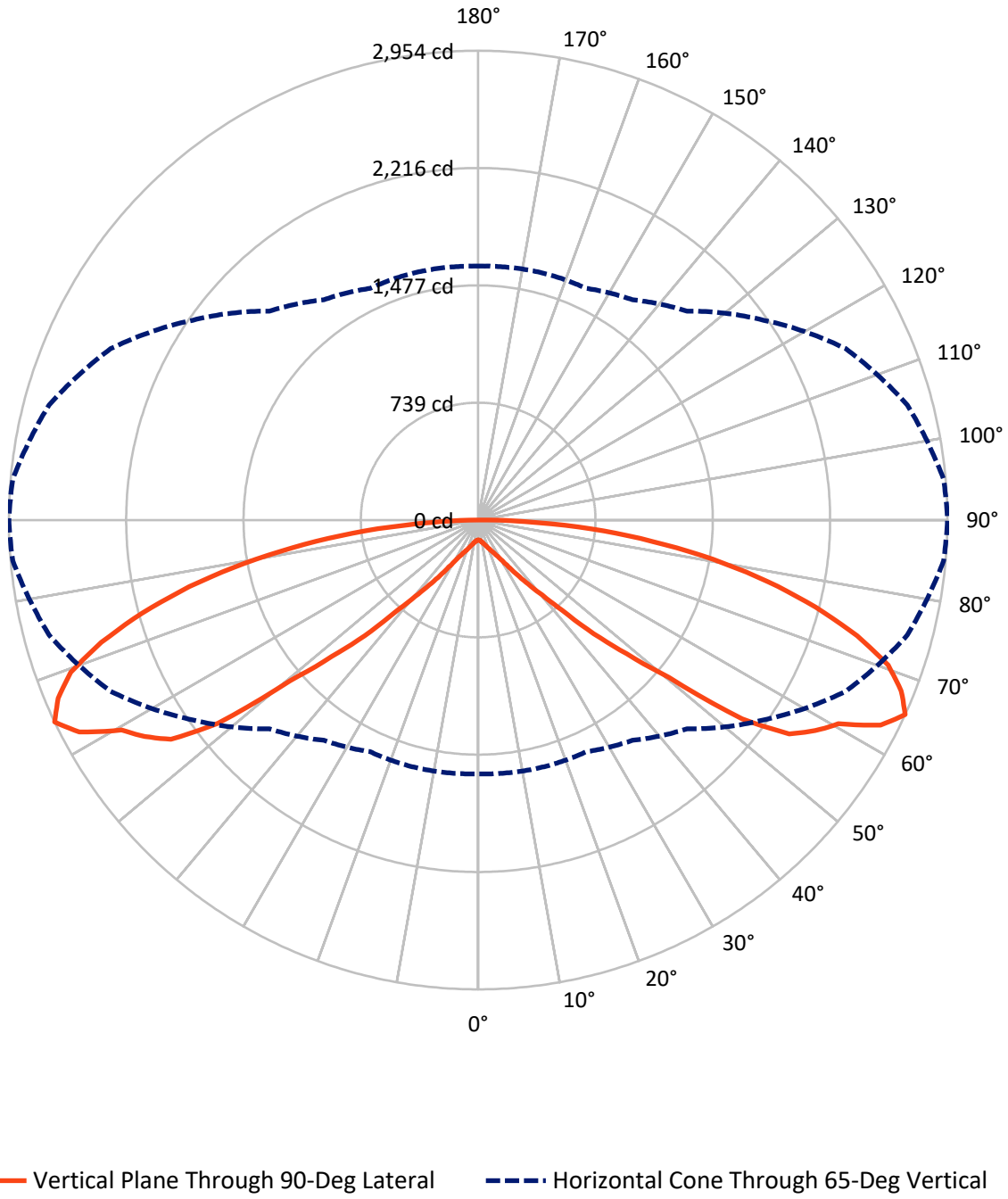
Based on 15 foot mounting height. Maximum calculated value = 2 fc
Type IV - Short - N/A

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Luminous Intensity Polar Plot



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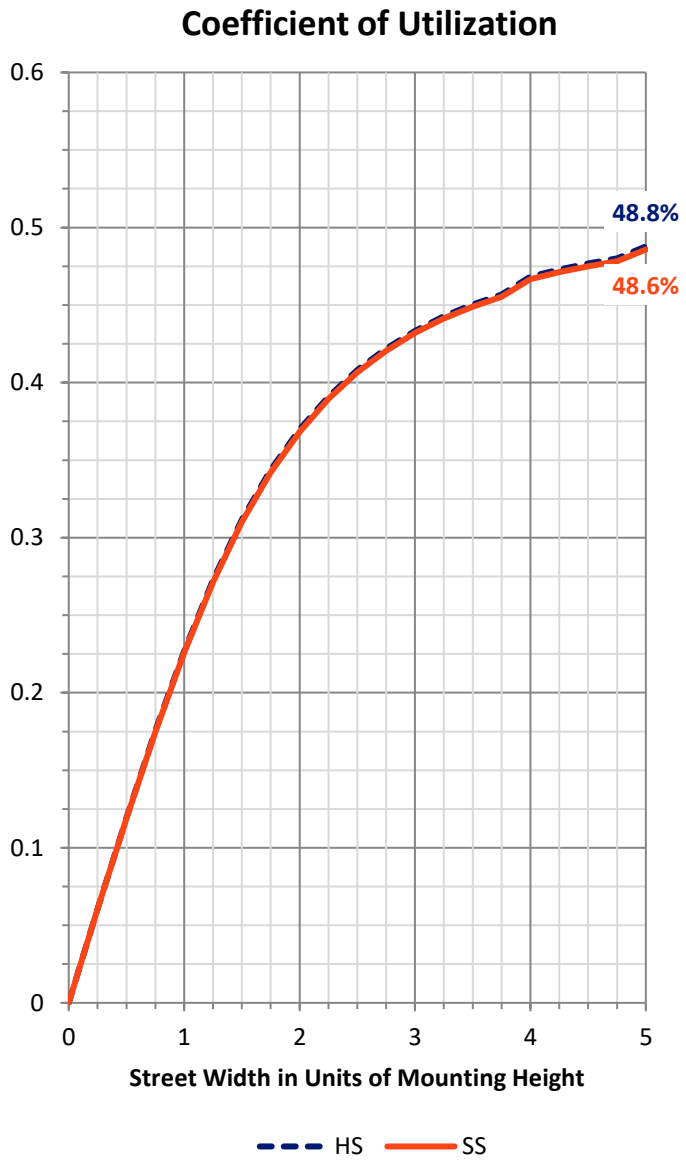
REPORT NUMBER: P821466
CATALOG NUMBER: TT-D5-830-12VDC-RW

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	3390.5	0.0	3390.5
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	3390.5	0.0	3390.5
	% Fixture	50.0	0.0	50.0
Total	Lumens	6781.0	0.0	6781.0
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	12.9	0.2
10°-20°	48.4	0.7
20°-30°	111.7	1.6
30°-40°	252.6	3.7
40°-50°	615.4	9.1
50°-60°	1383.9	20.4
60°-70°	2022.6	29.8
70°-80°	1762.4	26.0
80°-90°	570.9	8.4
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°	6781.0	100.0
0°-180°	6781.0	100.0



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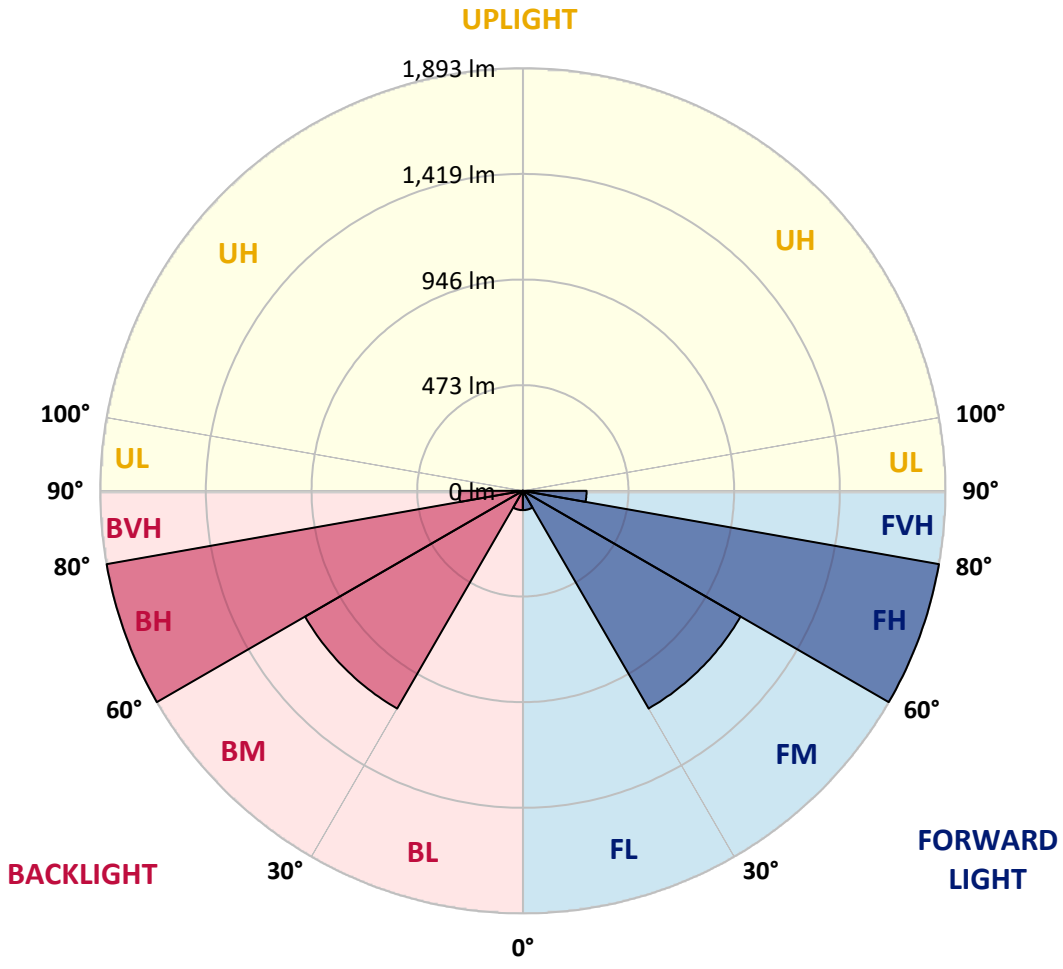
Scaled Data Report

REPORT NUMBER: P821466
CATALOG NUMBER: TT-D5-830-12VDC-RW

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	86.5	1.3			
FM	(30°-60°)	1126.0	16.6			
FH	(60°-80°)	1892.5	27.9			G2/5000
FVH	(80°-90°)	285.4	4.2			G3/500
BL	(0°-30°)	86.5	1.3	B0/110		
BM	(30°-60°)	1126.0	16.6	B2/2500		
BH	(60°-80°)	1892.5	27.9	B3/2500		G3/2500
BVH	(80°-90°)	285.4	4.2			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 IV Short



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REPORT NUMBER: P821466
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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	*123.9*
2.5°	125.5	125.5	127.1	127.1	127.1	127.1	127.1	127.1	127.1	127.1	*127.1*
5°	130.3	130.3	130.3	130.3	131.9	131.9	130.3	130.3	130.3	130.3	*130.3*
7.5°	138.4	136.8	138.4	138.4	138.4	136.8	136.8	136.8	135.2	135.2	*135.2*
10°	146.4	146.4	148.0	146.4	146.4	144.8	144.8	144.8	143.2	143.2	*143.2*
12.5°	157.7	157.7	157.7	157.7	156.1	156.1	154.5	152.9	151.2	151.2	*151.2*
15°	172.2	170.5	170.5	168.9	167.3	165.7	164.1	164.1	162.5	162.5	*162.5*
17.5°	186.6	186.6	185.0	183.4	180.2	178.6	178.6	177.0	175.4	175.4	*175.4*
20°	204.3	204.3	202.7	199.5	196.3	194.7	193.1	193.1	191.5	191.5	*191.5*
22.5°	225.3	223.6	220.4	217.2	214.0	212.4	210.8	209.2	209.2	209.2	*209.2*
25°	247.8	246.2	244.6	239.7	234.9	233.3	230.1	230.1	228.5	230.1	*230.1*
27.5°	275.1	273.5	270.3	265.5	259.0	255.8	254.2	254.2	255.8	255.8	*257.4*
30°	308.9	305.7	302.5	296.0	289.6	284.8	284.8	286.4	291.2	294.4	*294.4*
32.5°	349.1	347.5	342.7	336.3	325.0	321.8	325.0	334.7	341.1	345.9	*349.1*
35°	395.8	394.2	387.8	376.5	368.5	366.8	376.5	392.6	413.5	419.9	*423.2*
37.5°	447.3	448.9	440.9	428.0	419.9	423.2	442.5	473.0	494.0	508.4	*511.6*
40°	511.6	514.9	505.2	490.7	482.7	495.6	526.1	561.5	598.5	616.2	*621.1*
42.5°	587.3	592.1	579.2	564.7	559.9	580.8	624.3	682.2	748.2	769.1	*777.1*
45°	680.6	683.8	667.7	654.8	651.6	688.6	762.6	859.2	963.8	1012.0	*1020.1*
47.5°	791.6	790.0	775.5	759.4	762.6	815.7	926.8	1057.1	1168.1	1242.1	*1258.2*
50°	918.7	910.7	899.4	880.1	901.0	978.2	1118.2	1275.9	1462.5	1528.5	*1557.5*
52.5°	1045.8	1031.3	1021.7	1008.8	1045.8	1145.6	1341.9	1617.0	1898.6	2049.8	*2080.4*
55°	1160.1	1148.8	1144.0	1145.6	1203.5	1346.7	1604.1	1956.5	2228.4	2353.9	*2376.4*
57.5°	1272.7	1266.3	1261.4	1271.1	1362.8	1549.4	1839.0	2168.9	2392.5	2485.8	*2501.9*
60°	1378.9	1385.3	1382.1	1411.1	1522.1	1710.3	1961.3	2286.3	2501.9	2587.2	*2604.9*
62.5°	1496.3	1501.2	1501.2	1533.3	1623.4	1789.2	2045.0	2424.7	2698.2	2823.7	*2843.0*
65°	*1597.7*	*1600.9*	*1607.4*	*1609.0*	*1692.6*	*1858.3*	*2193.0*	*2551.8*	*2796.4*	*2941.2*	*2954.0*
67.5°	1673.3	1676.5	1668.5	1660.4	1724.8	1874.4	2181.7	2535.7	2752.9	2862.3	*2872.0*
70°	1734.5	1720.0	1697.5	1657.2	1678.1	1790.8	2088.4	2407.0	2625.8	2724.0	*2738.4*
72.5°	1742.5	1729.6	1658.8	1568.7	1543.0	1641.1	1924.3	2210.7	2399.0	2492.3	*2493.9*
75°	1694.2	1660.4	1543.0	1407.8	1359.6	1452.9	1695.8	1956.5	2107.7	2186.6	*2194.6*
77.5°	1531.7	1499.5	1351.5	1197.1	1142.4	1222.8	1428.8	1639.5	1784.3	1861.6	*1866.4*
80°	1243.7	1232.5	1097.3	955.7	889.8	936.4	1116.6	1282.3	1399.8	1491.5	*1499.5*
82.5°	917.1	907.5	804.5	680.6	627.5	666.1	794.8	917.1	1026.5	1100.5	*1105.4*
85°	572.8	553.5	489.1	402.2	366.8	392.6	477.9	559.9	658.1	716.0	*719.2*
87.5°	191.5	183.4	157.7	130.3	109.4	114.2	140.0	170.5	249.4	275.1	*291.2*
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

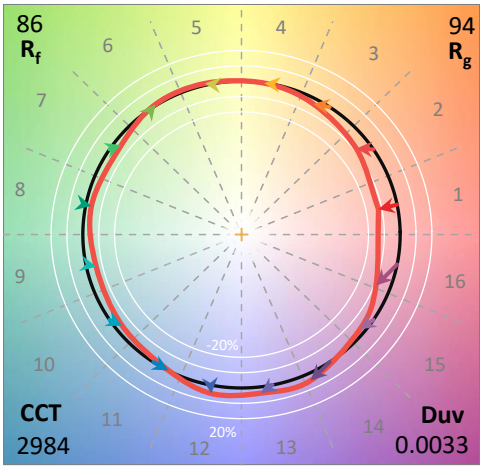
Test Information

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

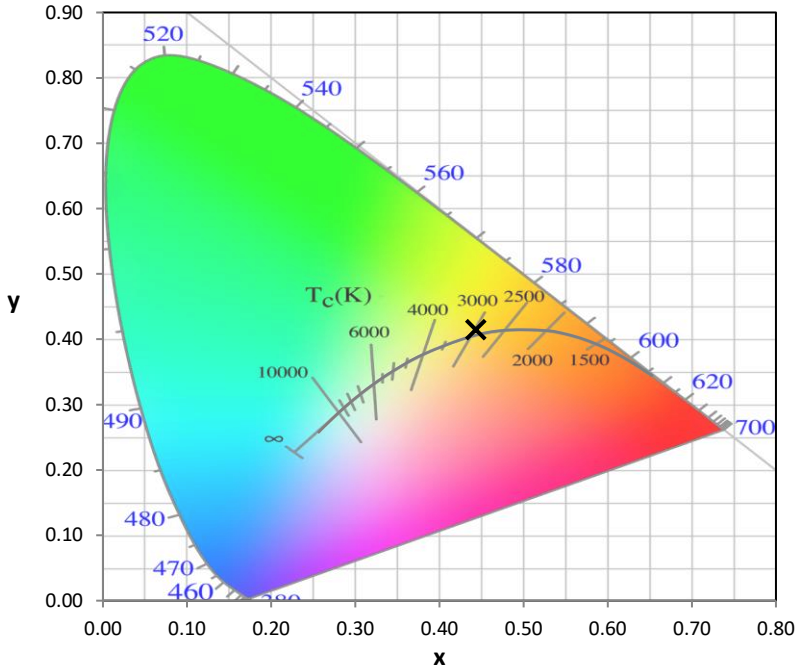
Stabilization Time:	29M
Operation Time:	1H 29M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-176-7

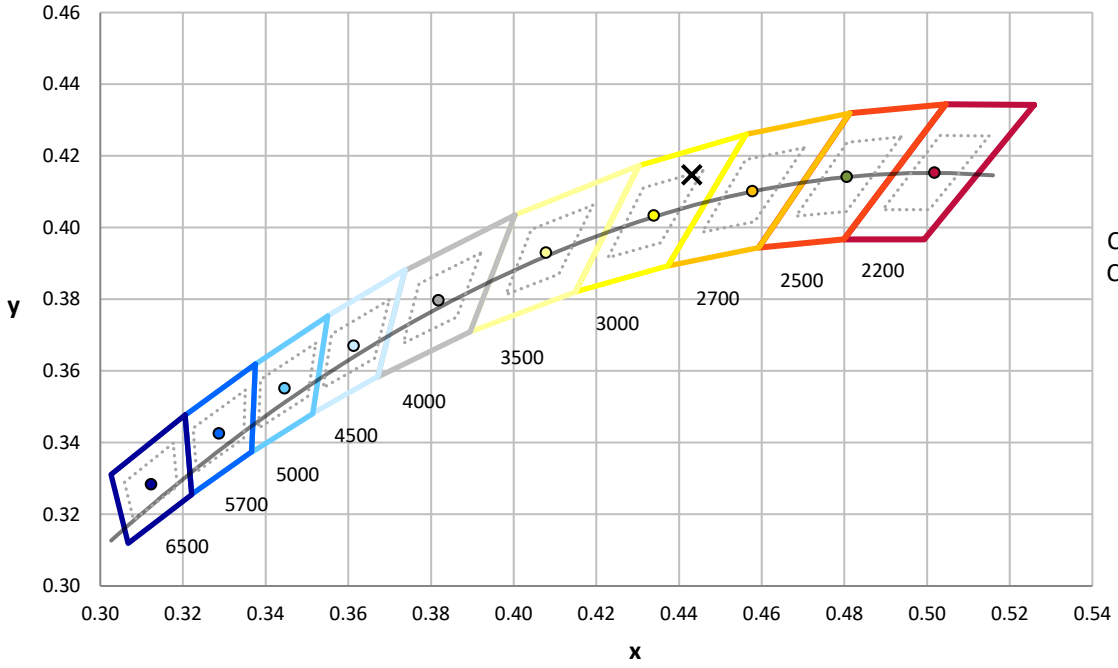
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2407-176-7

CIE 1931 Chromaticity Diagram



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

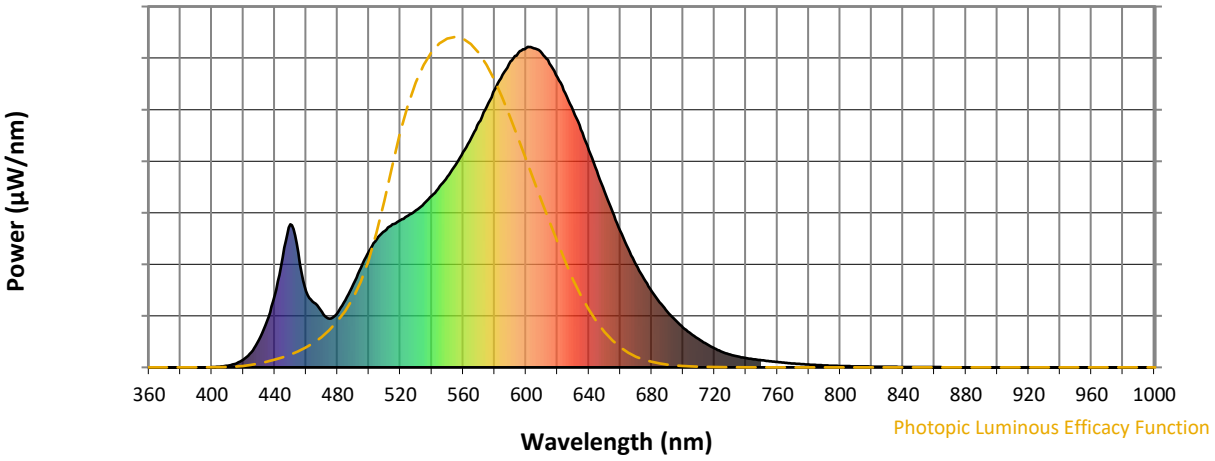


CCT = 2984K
CIE x = 0.4431
CIE y = 0.4147
Duv = 0.0033

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-176-7

Photopic Flux vs. Wavelength

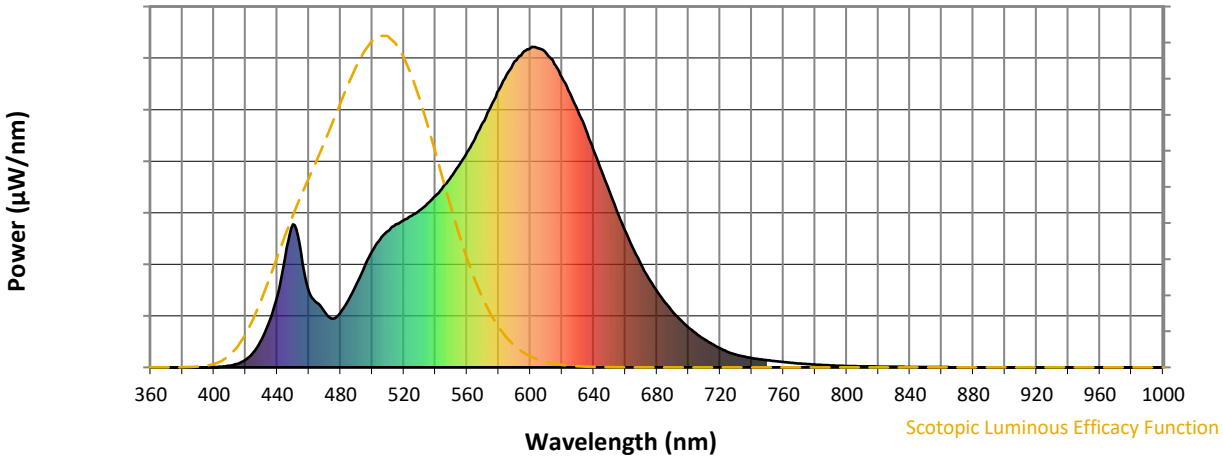


Photopic Lumens: NR

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

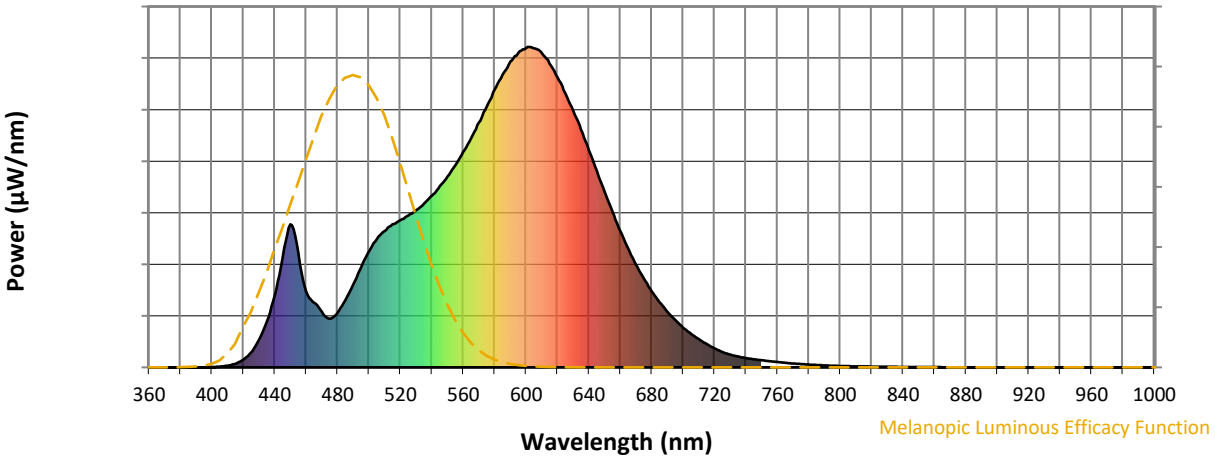


Scotopic Lumens: NR **S/P: 1.32**

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			

REPORT NUMBER: SP1-2407-176-7

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			

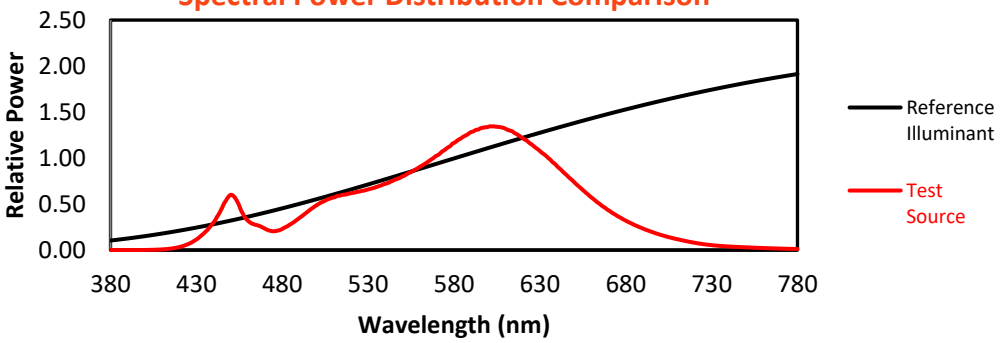
REPORT NUMBER: SP1-2407-176-7

TM-30-18

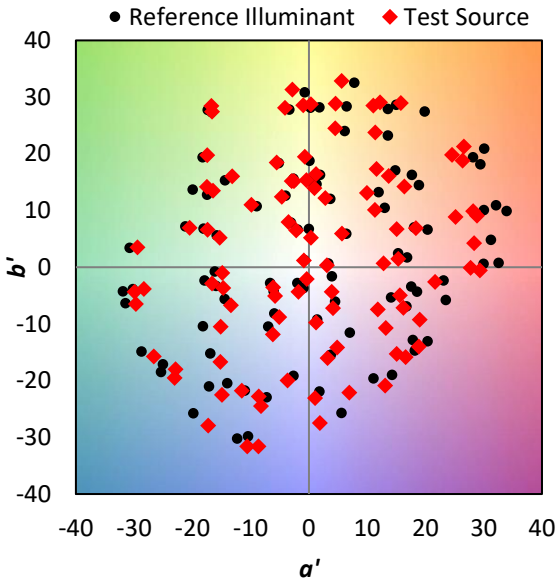
Summary

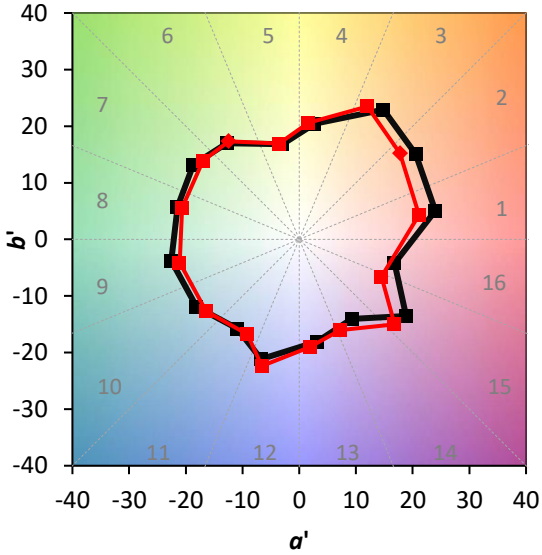
R_f = 85.8
R_g = 94.1
CIE R_a = 81.8
R_9 = -1.1

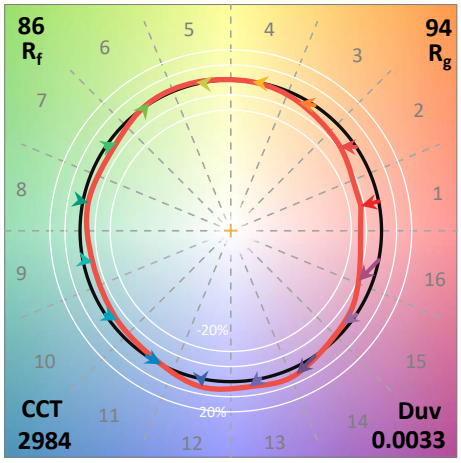
Spectral Power Distribution Comparison

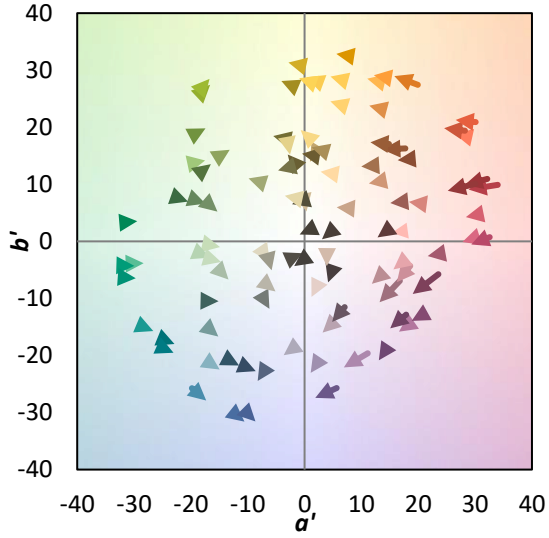


Color Vector Graphics







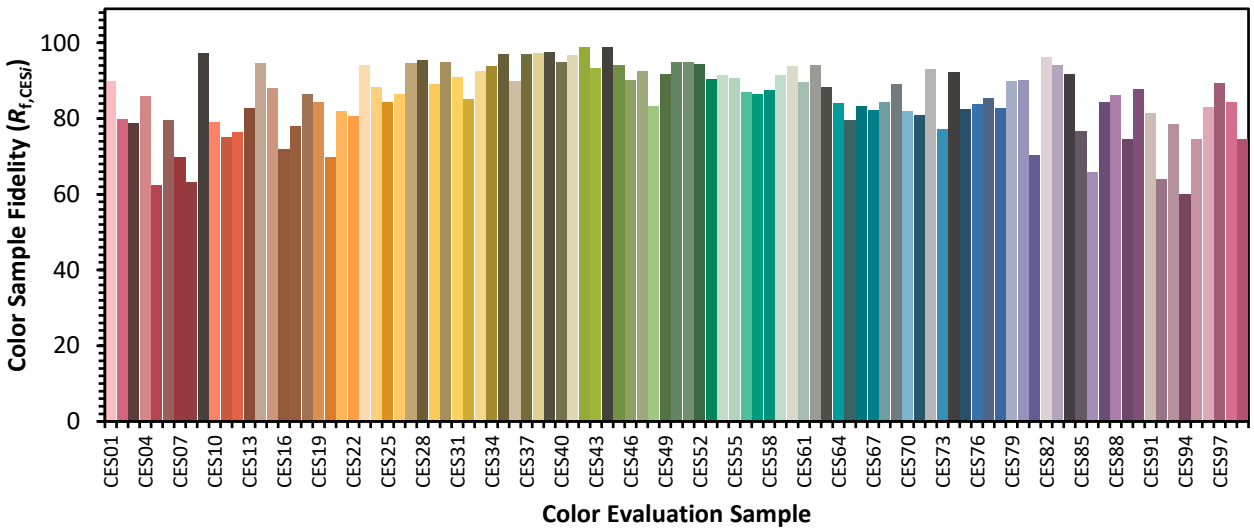


REPORT NUMBER: SP1-2407-176-7

TM-30-18

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

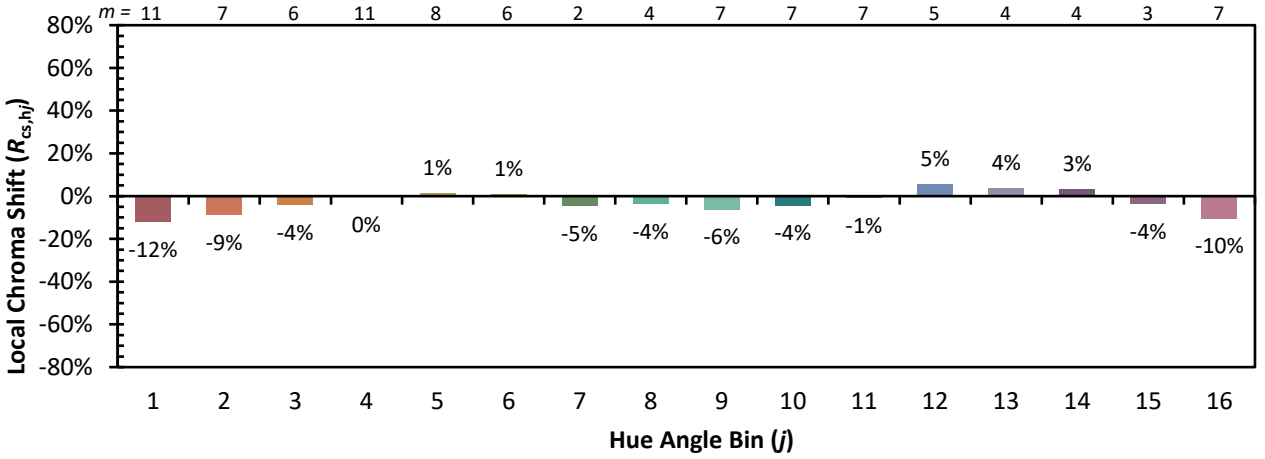
CES01 = 86	CES26 = 86	CES51 = 95	CES76 = 84
CES02 = 63	CES27 = 95	CES52 = 94	CES77 = 86
CES03 = 31	CES28 = 95	CES53 = 90	CES78 = 83
CES04 = 70	CES29 = 89	CES54 = 91	CES79 = 90
CES05 = 50	CES30 = 95	CES55 = 91	CES80 = 90
CES06 = 51	CES31 = 91	CES56 = 87	CES81 = 70
CES07 = 42	CES32 = 85	CES57 = 86	CES82 = 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	

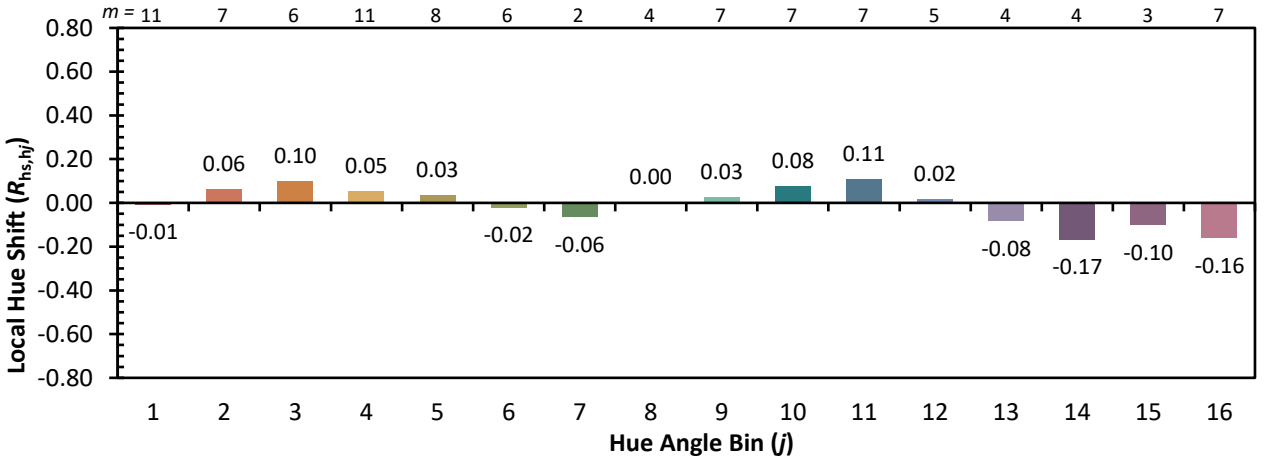


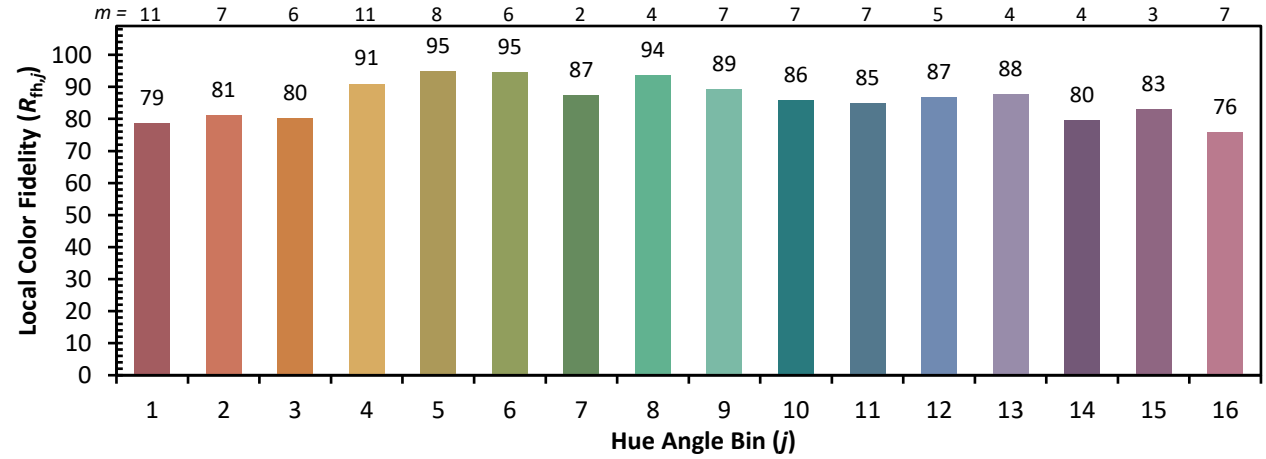
REPORT NUMBER: SP1-2407-176-7

TM-30-18

Color Rendition by Hue-Angle Bin



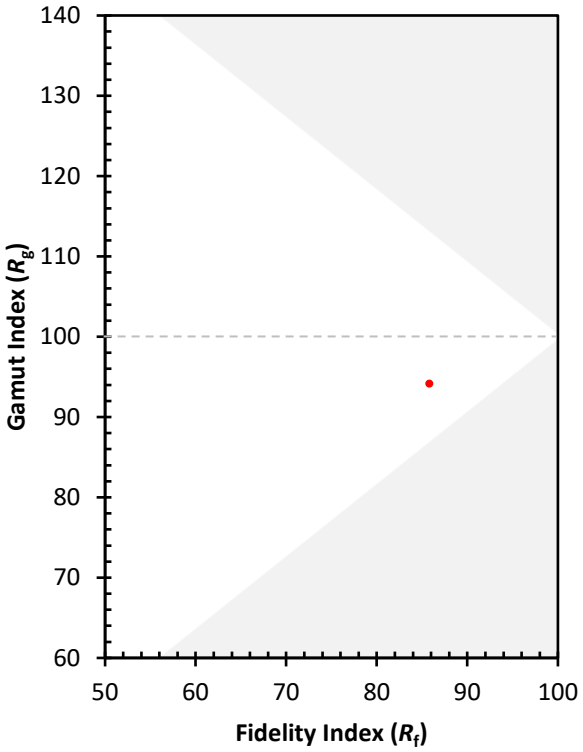


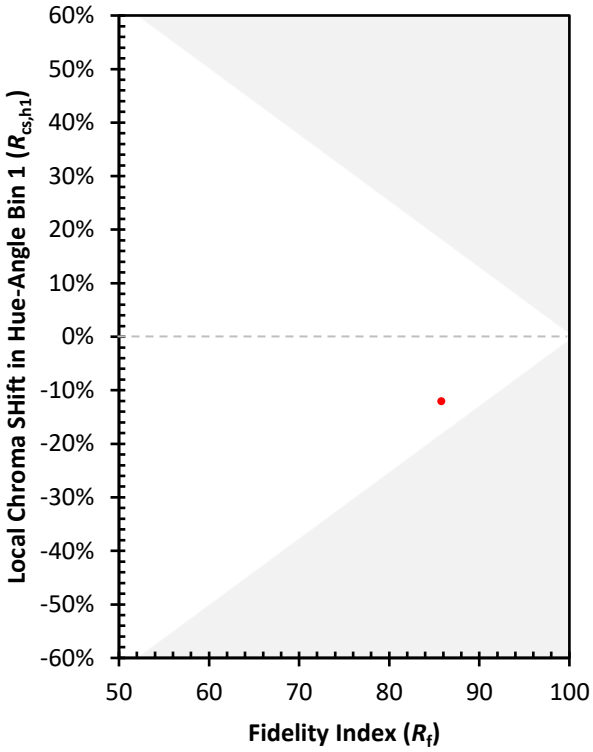


REPORT NUMBER: SP1-2407-176-7

TM-30-18

Measure Comparisons





(END OF REPORT)