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: P821311

Luminaire Tested: **TT-D4-740-24VDC-DL-UPL**

Issue Date: 7/23/2020

Report Generated By 670245763

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Scaled Data Report

Test Information

Test Method:	LM-79-08
Report Number:	P821311
	REPORT IS FROM IESNA LM-79-08 TEST DATA - UPLIGHT (G2-2002-677-1) AND
Test Lab:	INNOVATION CENTER
Issue Date:	7/23/2020
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	McGRAW-EDISON
Catalog Number:	TT-D4-740-24VDC-DL-UPL
Description:	TOPTIER LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
	4000K, 70 CRI LEDS AND DRIVE LANE DISTRIBUTION
Light Source:	-
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	7203.7 lumens
Efficiency:	N/A
Efficacy:	126.4 lumens/watt
Luminous Opening:	Vertical Cylinder (Dia: 1.12' x H: 0.1')
IES Classification:	Type IV - Short
BUG Rating:	B2 - U4 - G3

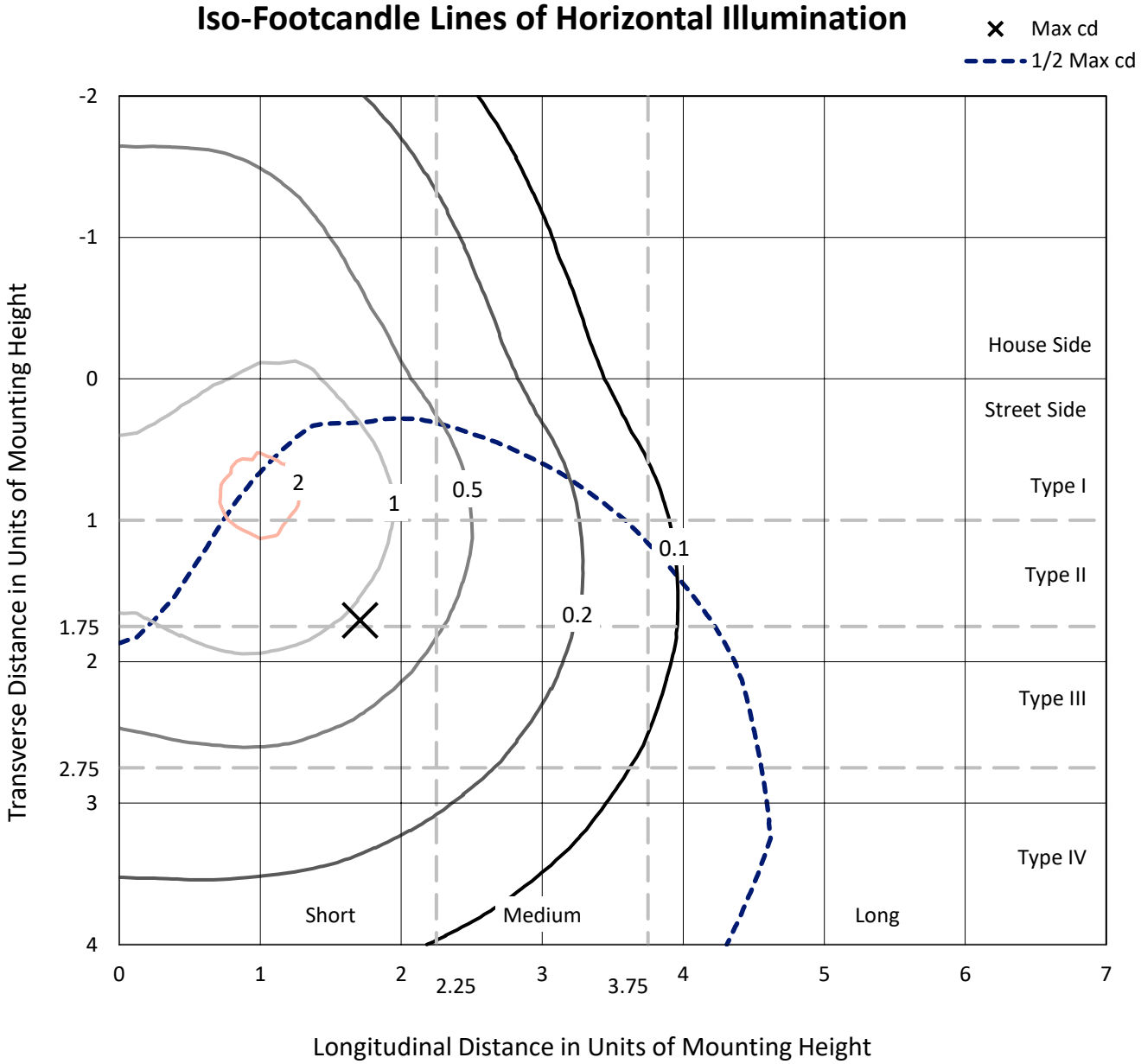
Input Watts (W):	57
Input Voltage (V):	NR
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	NR
Total Harmonic Distortion (THDi):	NR
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	25 FT

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Iso-Footcandle Lines of Horizontal Illumination



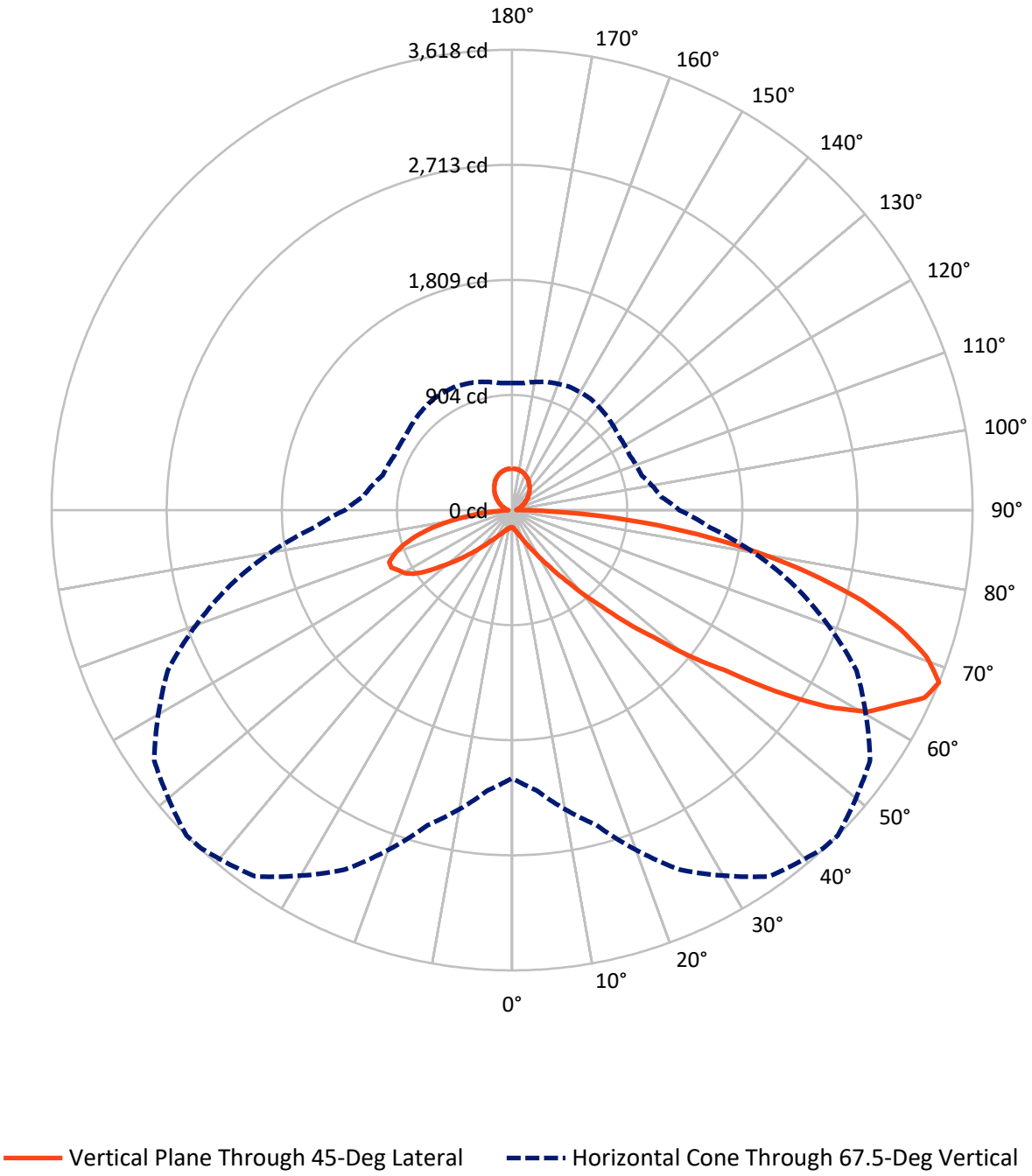
Based on 15 foot mounting height. Maximum calculated value = 2.1 fc
Type IV - Short - N/A

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Luminous Intensity Polar Plot



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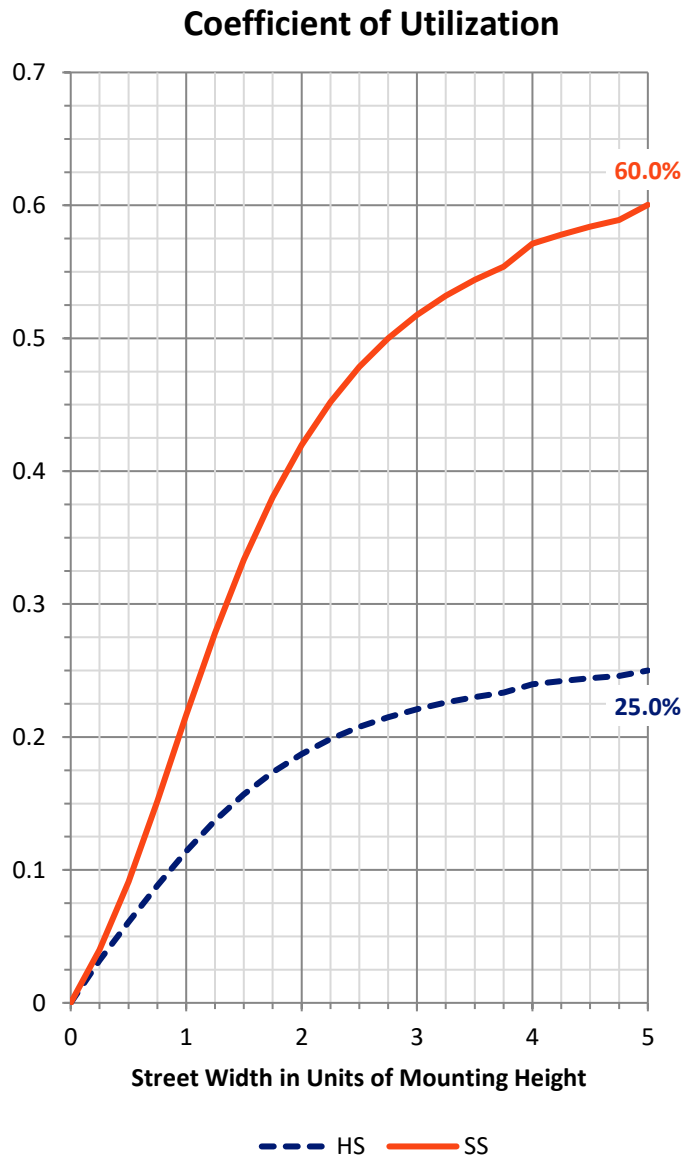
REPORT NUMBER: P821311
CATALOG NUMBER: TT-D4-740-24VDC-DL-UPL

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	1842.0	442.7	2284.8
	% Fixture	25.6	6.1	31.7
Street Side	Lumens	4476.2	442.7	4919.0
	% Fixture	62.1	6.1	68.3
Total	Lumens	6318.3	885.5	7203.7
	% Fixture	87.7	12.3	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	14.1	0.2
10°-20°	52.4	0.7
20°-30°	123.9	1.7
30°-40°	280.3	3.9
40°-50°	625.0	8.7
50°-60°	1256.4	17.4
60°-70°	1845.3	25.6
70°-80°	1622.7	22.5
80°-90°	498.2	6.9
90°-100°	45.4	0.6
100°-110°	70.3	1.0
110°-120°	97.7	1.4
120°-130°	126.6	1.8
130°-140°	147.6	2.0
140°-150°	149.5	2.1
150°-160°	129.8	1.8
160°-170°	87.7	1.2
170°-180°	30.8	0.4
0°-90°	6318.3	87.7
0°-180°	7203.7	100.0



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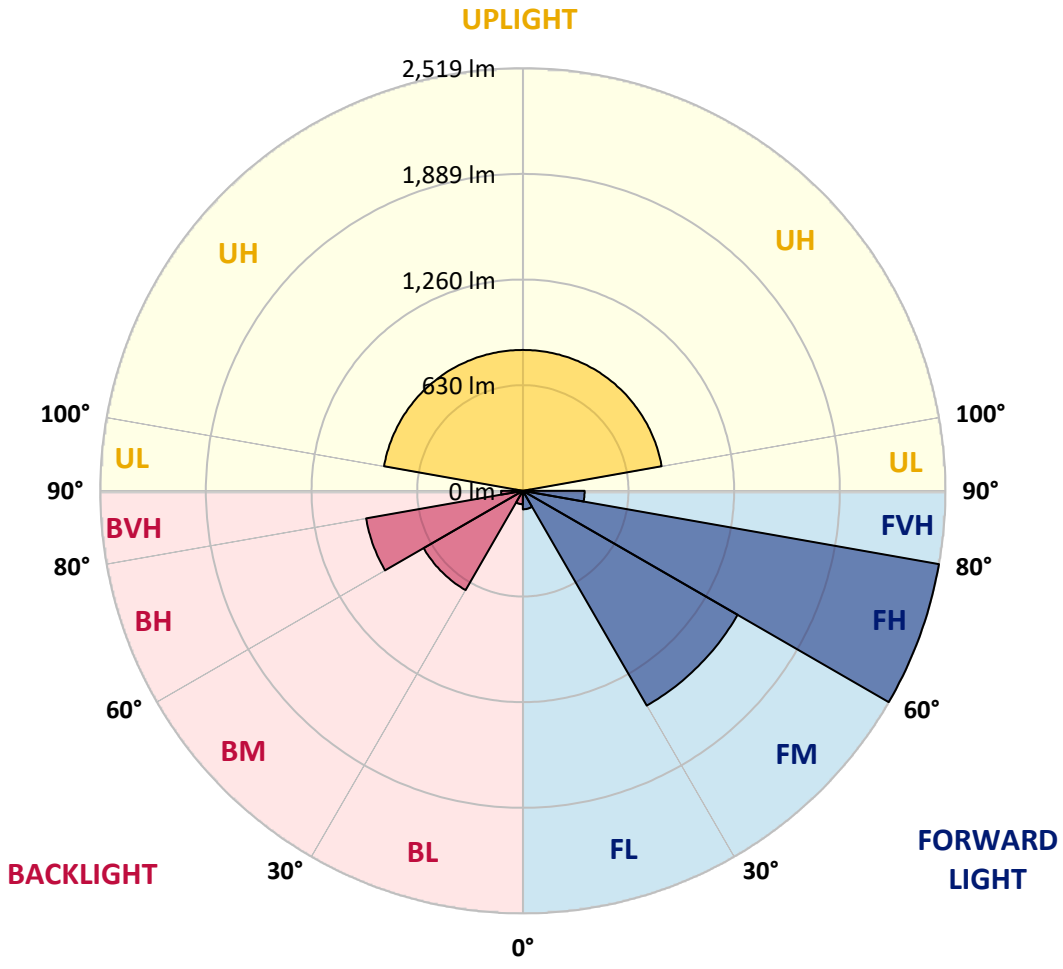
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	110.3	1.5			
FM	(30°-60°)	1478.6	20.5			
FH	(60°-80°)	2519.2	35.0			G2/5000
FVH	(80°-90°)	368.2	5.1			G3/500
BL	(0°-30°)	80.1	1.1	B0/110		
BM	(30°-60°)	683.1	9.5	B1/1000		
BH	(60°-80°)	948.8	13.2	B2/1000		G2/1000
BVH	(80°-90°)	130.1	1.8			G2/225
UL	(90°-100°)	45.4	0.6		U2/50	
UH	(100°-180°)	840.1	11.7		U4/1000	

BUG Rating: B2-U4-G3
Type IV Short



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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	42.5°	45°	55°	65°	75°	85°
0°	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0
2.5°	142.9	141.7	141.7	141.7	140.5	140.5	140.5	140.5	139.3	139.3	139.3
5°	151.1	149.9	151.1	148.8	147.6	147.6	146.4	146.4	145.2	144.0	142.9
7.5°	162.9	161.8	161.8	159.4	158.2	157.0	157.0	154.7	153.5	151.1	148.8
10°	175.9	175.9	174.7	173.6	171.2	168.8	168.8	165.3	164.1	160.6	157.0
12.5°	191.3	191.3	191.3	188.9	186.5	185.4	183.0	180.6	177.1	171.2	167.7
15°	210.2	210.2	210.2	207.8	205.4	203.1	201.9	197.2	191.3	185.4	178.3
17.5°	233.8	231.4	231.4	229.0	226.7	225.5	223.1	218.4	210.2	203.1	193.6
20°	259.7	258.6	257.4	257.4	255.0	252.7	251.5	244.4	235.0	222.0	210.2
22.5°	289.3	288.1	288.1	290.4	289.3	285.7	285.7	275.1	262.1	246.8	229.0
25°	325.9	324.7	327.0	331.8	331.8	329.4	325.9	315.2	296.3	275.1	253.8
27.5°	366.0	364.8	369.5	377.8	380.2	376.6	374.3	362.5	341.2	312.9	282.2
30°	414.4	415.6	428.6	438.0	443.9	441.6	440.4	427.4	393.2	360.1	320.0
32.5°	473.4	469.9	486.4	501.8	512.4	518.3	514.8	499.4	469.9	418.0	367.2
35°	536.0	537.2	557.3	579.7	604.5	606.9	613.9	598.6	558.5	497.1	426.2
37.5°	617.5	608.0	634.0	676.5	706.0	732.0	727.3	717.8	670.6	589.1	492.3
40°	690.7	688.3	724.9	784.0	838.3	876.0	880.8	869.0	806.4	690.7	563.2
42.5°	774.5	781.6	832.4	913.8	996.5	1050.8	1037.8	1031.9	958.7	811.1	660.0
45°	859.5	883.1	948.1	1066.1	1162.9	1240.9	1263.3	1243.2	1153.5	1001.2	782.8
47.5°	962.2	994.1	1074.4	1233.8	1392.0	1482.9	1487.6	1547.8	1412.1	1184.2	910.3
50°	1098.0	1112.2	1224.3	1419.2	1636.4	1763.9	1800.5	1801.7	1665.9	1368.4	1054.3
52.5°	1231.4	1242.1	1389.6	1641.1	1936.3	2081.5	2089.8	2135.8	1950.4	1665.9	1260.9
55°	1392.0	1387.3	1590.3	1892.6	2240.9	2452.2	2513.6	2576.2	2340.1	1900.9	1379.0
57.5°	1547.8	1540.8	1785.2	2181.9	2657.7	2867.8	2918.6	2873.7	2523.1	1998.9	1436.9
60°	1691.9	1716.7	2014.2	2501.8	2980.0	3180.7	3214.9	3093.3	2641.1	2074.4	1473.5
62.5°	1841.8	1891.4	2251.5	2768.6	3226.7	3370.8	3373.1	3230.3	2838.3	2220.8	1592.7
65°	1982.3	2061.4	2435.7	2996.5	3399.1	3543.2	3559.7	3431.0	3031.9	2348.3	1612.8
67.5°	2106.3	2211.4	2563.2	3119.3	3516.0	3609.3	3617.5	3432.2	2985.9	2296.4	1557.3
70°	2206.7	2291.7	2642.3	3121.7	3434.5	3460.5	3454.6	3257.4	2858.4	2193.7	1464.0
72.5°	2245.6	2315.3	2604.5	2975.3	3194.9	3189.0	3184.2	3002.4	2648.2	2022.5	1329.4
75°	2190.1	2210.2	2397.9	2662.4	2801.7	2834.8	2839.5	2675.4	2323.5	1768.6	1140.5
77.5°	1961.1	1950.4	2094.5	2269.2	2374.3	2397.9	2393.2	2256.2	1948.1	1469.9	956.3
80°	1554.9	1577.4	1667.1	1782.8	1887.9	1913.8	1897.3	1793.4	1516.0	1146.4	734.4
82.5°	1087.4	1114.5	1190.1	1277.5	1356.6	1356.6	1371.9	1271.6	1074.4	822.9	513.6
85°	586.8	571.4	654.1	753.3	809.9	820.6	826.5	793.4	664.7	497.1	304.6
87.5°	96.8	103.9	128.7	197.2	224.3	259.7	276.3	216.1	131.1	83.8	61.4
90°	32.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0
92.5°	37.0	37.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
95°	42.0	42.0	42.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0
97.5°	48.0	48.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0
100°	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0
102.5°	60.0	59.0	60.0	60.0	59.0	59.0	59.0	59.0	60.0	60.0	60.0
105°	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	67.0	66.0	66.0
107.5°	73.0	73.0	73.0	74.0	74.0	74.0	74.0	74.0	74.0	73.0	74.0
110°	80.0	80.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0

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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	42.5°	45°	55°	65°	75°	85°
112.5°	89.0	89.0	89.0	89.0	89.0	89.8	*90.0*	90.0	90.0	90.0	90.0
115°	97.0	97.0	98.0	98.0	98.0	98.0	*98.0*	99.0	99.0	98.0	98.0
117.5°	107.0	107.0	107.0	107.0	107.0	107.8	*108.0*	108.0	108.0	108.0	108.0
120°	117.0	117.0	117.0	118.0	118.0	118.0	*118.0*	119.0	119.0	118.0	118.0
122.5°	129.0	128.0	129.0	129.0	129.0	129.0	*129.0*	130.0	130.0	130.0	130.0
125°	140.0	140.0	141.0	141.0	141.0	141.0	*141.0*	142.0	142.0	142.0	142.0
127.5°	153.0	153.0	153.0	153.0	153.0	153.8	*154.0*	154.0	154.0	154.0	154.0
130°	165.0	165.0	166.0	166.0	166.0	166.0	*166.0*	167.0	167.0	167.0	167.0
132.5°	179.0	178.0	179.0	178.0	178.0	178.8	*179.0*	179.0	180.0	179.0	180.0
135°	191.0	191.0	191.0	191.0	191.0	191.8	*192.0*	192.0	192.0	192.0	192.0
137.5°	204.0	203.0	204.0	203.0	203.0	203.8	*204.0*	204.0	204.0	204.0	204.0
140°	216.0	215.0	216.0	215.0	216.0	216.0	*216.0*	216.0	216.0	216.0	216.0
142.5°	228.0	227.0	228.0	227.0	227.0	227.8	*228.0*	228.0	228.0	228.0	228.0
145°	239.0	239.0	239.0	238.0	239.0	239.0	*239.0*	239.0	239.0	239.0	239.0
147.5°	250.0	249.0	250.0	249.0	249.0	249.8	*250.0*	250.0	250.0	250.0	250.0
150°	263.0	262.0	263.0	262.0	263.0	263.0	*263.0*	263.0	263.0	263.0	263.0
152.5°	273.0	273.0	273.0	273.0	273.0	273.0	*273.0*	273.0	273.0	273.0	273.0
155°	282.0	282.0	283.0	282.0	282.0	282.0	*282.0*	283.0	282.0	282.0	282.0
157.5°	290.0	290.0	290.0	290.0	290.0	290.0	*290.0*	291.0	291.0	290.0	291.0
160°	298.0	298.0	299.0	298.0	298.0	298.0	*298.0*	299.0	298.0	298.0	298.0
162.5°	306.0	305.0	306.0	305.0	306.0	306.0	*306.0*	306.0	306.0	306.0	306.0
165°	311.0	311.0	312.0	311.0	311.0	311.0	*311.0*	312.0	311.0	311.0	311.0
167.5°	316.0	315.0	316.0	316.0	316.0	316.0	*316.0*	316.0	316.0	316.0	316.0
170°	319.0	319.0	320.0	319.0	319.0	319.0	*319.0*	320.0	319.0	319.0	319.0
172.5°	323.0	323.0	323.0	323.0	323.0	323.0	*323.0*	323.0	323.0	323.0	323.0
175°	324.0	324.0	325.0	324.0	325.0	324.2	*324.0*	325.0	324.0	324.0	324.0
177.5°	325.0	325.0	326.0	325.0	325.0	325.0	*325.0*	325.0	325.0	325.0	325.0
180°	326.0	326.0	326.0	326.0	326.0	326.0	*326.0*	326.0	326.0	326.0	326.0

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CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0
2.5°	139.3	138.1	137.0	135.8	135.8	134.6	134.6	134.6	135.8	135.8	135.8
5°	142.9	141.7	140.5	139.3	137.0	137.0	137.0	137.0	137.0	137.0	137.0
7.5°	148.8	146.4	145.2	142.9	140.5	140.5	139.3	139.3	139.3	140.5	139.3
10°	155.8	153.5	151.1	147.6	146.4	145.2	144.0	144.0	145.2	145.2	144.0
12.5°	164.1	162.9	158.2	154.7	152.3	151.1	149.9	151.1	149.9	151.1	151.1
15°	175.9	172.4	166.5	162.9	159.4	158.2	157.0	158.2	158.2	159.4	158.2
17.5°	188.9	184.2	178.3	172.4	167.7	166.5	166.5	166.5	167.7	168.8	167.7
20°	204.3	198.4	190.1	183.0	178.3	177.1	177.1	178.3	179.5	180.6	180.6
22.5°	219.6	214.9	203.1	193.6	191.3	190.1	188.9	191.3	193.6	194.8	196.0
25°	243.2	233.8	219.6	209.0	204.3	204.3	205.4	207.8	209.0	211.3	210.2
27.5°	268.0	257.4	239.7	225.5	222.0	220.8	223.1	225.5	230.2	230.2	229.0
30°	302.2	284.5	262.1	249.1	239.7	240.9	244.4	247.9	252.7	255.0	255.0
32.5°	341.2	322.3	291.6	271.6	266.8	268.0	269.2	275.1	279.8	284.5	281.0
35°	392.0	368.4	330.6	308.2	296.3	295.2	299.9	307.0	311.7	314.1	314.1
37.5°	447.5	416.8	369.5	350.7	336.5	335.3	336.5	342.4	348.3	350.7	355.4
40°	514.8	477.0	421.5	390.8	380.2	377.8	382.5	390.8	390.8	394.3	395.5
42.5°	597.4	549.0	487.6	447.5	434.5	434.5	433.3	440.4	440.4	440.4	438.0
45°	702.5	648.2	567.9	526.6	504.1	492.3	495.9	491.2	490.0	493.5	482.9
47.5°	804.0	735.6	641.1	596.2	573.8	566.7	553.7	550.2	544.3	544.3	528.9
50°	922.1	837.1	746.2	682.4	661.2	641.1	630.5	613.9	596.2	592.7	586.8
52.5°	1119.3	1013.0	870.1	801.7	747.4	727.3	702.5	681.2	660.0	643.5	652.9
55°	1199.5	1090.9	955.2	889.0	851.3	832.4	786.3	758.0	726.1	702.5	715.5
57.5°	1239.7	1121.6	995.3	945.7	935.1	917.4	883.1	834.7	798.1	768.6	771.0
60°	1262.1	1138.2	1016.5	971.7	965.8	977.6	959.9	926.8	870.1	840.6	837.1
62.5°	1348.3	1218.4	1076.8	1013.0	1000.0	1008.3	1013.0	992.9	945.7	906.7	896.1
65°	1366.0	1227.9	1088.6	1047.2	1048.4	1050.8	1054.3	1033.1	1009.5	961.1	951.6
67.5°	*1312.9*	*1177.1*	*1053.1*	*1018.9*	*1021.3*	*1048.4*	*1069.7*	*1068.5*	*1042.5*	*1001.2*	*997.7*
70°	1232.6	1100.4	985.9	955.2	961.1	985.9	1031.9	1055.5	1050.8	1023.6	1029.5
72.5°	1107.5	989.4	889.0	865.4	879.6	903.2	946.9	989.4	1014.2	1020.1	1033.1
75°	961.1	866.6	772.2	758.0	768.6	795.8	835.9	885.5	939.8	969.3	977.6
77.5°	793.4	707.2	637.6	628.1	643.5	668.3	708.4	747.4	808.8	860.7	872.5
80°	621.0	546.6	497.1	488.8	498.2	519.5	550.2	582.1	641.1	681.2	687.1
82.5°	430.9	386.1	354.2	349.5	355.4	363.6	388.4	418.0	451.0	482.9	486.4
85°	250.3	222.0	213.7	206.6	219.6	219.6	225.5	242.0	258.6	260.9	268.0
87.5°	46.0	43.7	44.9	33.1	41.3	29.5	29.5	37.8	28.3	33.1	27.2
90°	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	32.0
92.5°	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	37.0	37.0
95°	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	42.0	42.0	42.0
97.5°	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	48.0	48.0
100°	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0
102.5°	59.0	60.0	60.0	60.0	59.0	59.0	59.0	60.0	60.0	59.0	60.0
105°	66.0	66.0	66.0	67.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0
107.5°	73.0	74.0	73.0	74.0	74.0	74.0	74.0	74.0	73.0	73.0	73.0
110°	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	80.0	80.0

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

Scaled Data Report

REPORT NUMBER: P821311
CATALOG NUMBER: TT-D4-740-24VDC-DL-UPL

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	89.0	90.0	90.0	90.0	90.0	90.0	89.0	89.0	89.0	89.0	89.0
115°	98.0	98.0	98.0	99.0	99.0	98.0	98.0	98.0	98.0	97.0	97.0
117.5°	107.0	108.0	108.0	108.0	108.0	108.0	107.0	107.0	107.0	107.0	107.0
120°	118.0	118.0	118.0	119.0	119.0	118.0	118.0	118.0	117.0	117.0	117.0
122.5°	129.0	130.0	130.0	130.0	130.0	129.0	129.0	129.0	129.0	128.0	129.0
125°	141.0	142.0	142.0	142.0	142.0	141.0	141.0	141.0	141.0	140.0	140.0
127.5°	154.0	154.0	154.0	154.0	154.0	154.0	153.0	153.0	153.0	153.0	153.0
130°	166.0	167.0	167.0	167.0	167.0	166.0	166.0	166.0	166.0	165.0	165.0
132.5°	179.0	180.0	179.0	180.0	179.0	179.0	178.0	178.0	179.0	178.0	179.0
135°	192.0	192.0	192.0	192.0	192.0	192.0	191.0	191.0	191.0	191.0	191.0
137.5°	204.0	204.0	204.0	204.0	204.0	204.0	203.0	203.0	204.0	203.0	204.0
140°	216.0	216.0	216.0	216.0	216.0	216.0	216.0	215.0	216.0	215.0	216.0
142.5°	228.0	228.0	228.0	228.0	228.0	228.0	227.0	227.0	228.0	227.0	228.0
145°	239.0	239.0	239.0	239.0	239.0	239.0	239.0	238.0	239.0	239.0	239.0
147.5°	250.0	250.0	250.0	250.0	250.0	250.0	249.0	249.0	250.0	249.0	250.0
150°	263.0	263.0	263.0	263.0	263.0	263.0	263.0	262.0	263.0	262.0	263.0
152.5°	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0
155°	282.0	282.0	282.0	282.0	283.0	282.0	282.0	282.0	283.0	282.0	282.0
157.5°	290.0	291.0	290.0	291.0	291.0	290.0	290.0	290.0	290.0	290.0	290.0
160°	298.0	298.0	298.0	298.0	299.0	298.0	298.0	298.0	299.0	298.0	298.0
162.5°	306.0	306.0	306.0	306.0	306.0	306.0	306.0	305.0	306.0	305.0	306.0
165°	311.0	311.0	311.0	311.0	312.0	311.0	311.0	311.0	312.0	311.0	311.0
167.5°	316.0	316.0	316.0	316.0	316.0	316.0	316.0	316.0	316.0	315.0	316.0
170°	319.0	319.0	319.0	319.0	320.0	319.0	319.0	319.0	320.0	319.0	319.0
172.5°	323.0	323.0	323.0	323.0	323.0	323.0	323.0	323.0	323.0	323.0	323.0
175°	324.0	324.0	324.0	324.0	325.0	324.0	325.0	324.0	325.0	324.0	324.0
177.5°	325.0	325.0	325.0	325.0	325.0	325.0	325.0	325.0	326.0	325.0	325.0
180°	326.0	326.0	326.0	326.0	326.0	326.0	326.0	326.0	326.0	326.0	326.0

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
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: SP1-2407-176-5

Test Date: 09/24/2024

Luminaire Tested: MEM2-HTN-VA-30-740-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-740-U-WQ

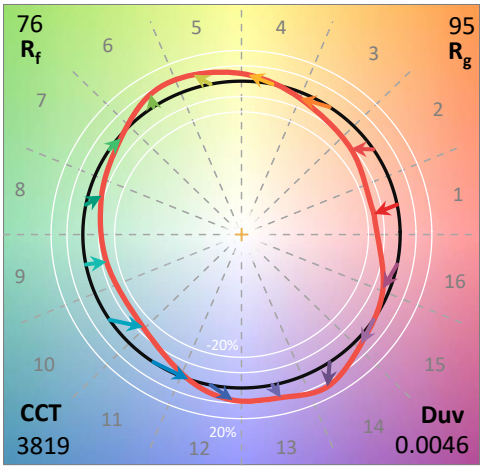
Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-176-5
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-30-740-U-WQ**
Description:	EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K):	3819	CRI (Ra):	72.9		
CIE u':	0.2261	R1:	70.1	R9:	-21.5
CIE v':	0.5108	R2:	78.4	R10:	48.5
Duv:	0.0046	R3:	85.0	R11:	68.4
CIE x:	0.3926	R4:	72.9	R12:	39.0
CIE y:	0.3942	R5:	69.1	R13:	71.1
CIE z:	0.2132	R6:	69.2	R14:	91.3
Peak Wavelength (nm):	450	R7:	82.8	R15:	63.2
Dominant Wavelength (nm):	577	R8:	55.4		
Purity:	36.15483				
Rf:	75.6				
Rg:	94.8				



Test Conditions

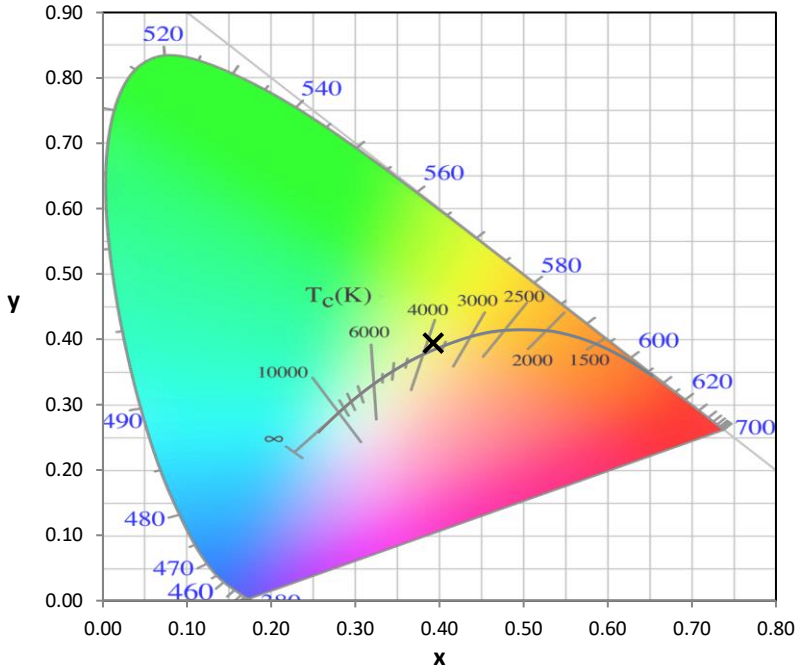
Stabilization Time:	30M
Operation Time:	1H 30M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-176-5

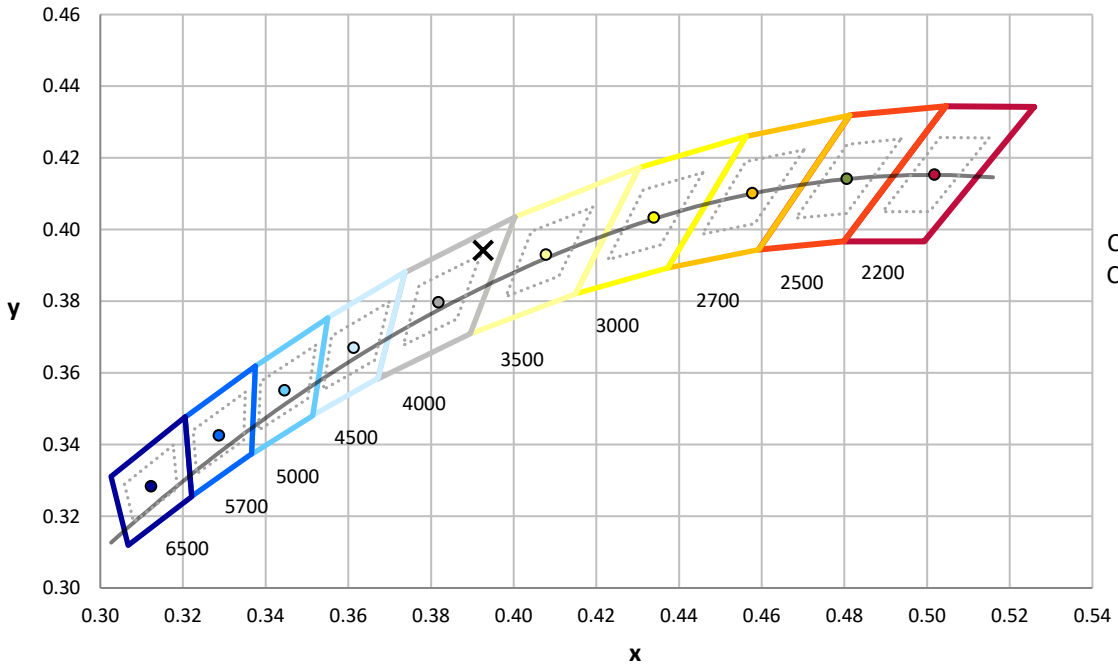
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2407-176-5

CIE 1931 Chromaticity Diagram



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

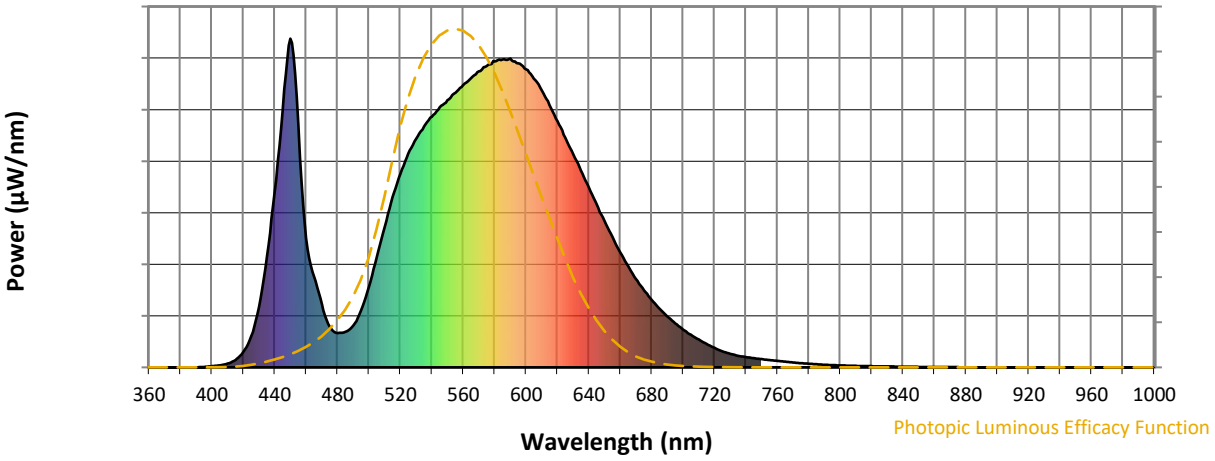


CCT = 3819K
CIE x = 0.3926
CIE y = 0.3942
Duv = 0.0046

Point lies inside the ANSI 4000K 7-step quadrangle

REPORT NUMBER: SP1-2407-176-5

Photopic Flux vs. Wavelength

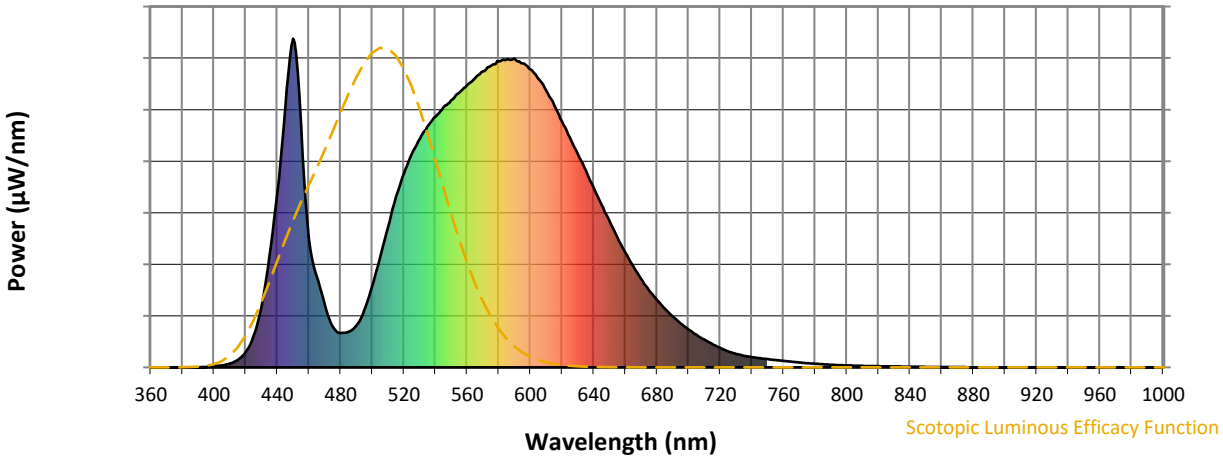


Photopic Lumens: NR

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	127	NR	620	748	NR	750	25	NR	880	0	NR
365	0	NR	495	173	NR	625	699	NR	755	22	NR	885	0	NR
370	0	NR	500	246	NR	630	648	NR	760	20	NR	890	0	NR
375	0	NR	505	335	NR	635	599	NR	765	17	NR	895	0	NR
380	0	NR	510	427	NR	640	547	NR	770	15	NR	900	0	NR
385	0	NR	515	517	NR	645	495	NR	775	13	NR	905	0	NR
390	0	NR	520	589	NR	650	445	NR	780	11	NR	910	0	NR
395	1	NR	525	649	NR	655	396	NR	785	9	NR	915	0	NR
400	4	NR	530	695	NR	660	349	NR	790	8	NR	920	0	NR
405	6	NR	535	733	NR	665	308	NR	795	7	NR	925	0	NR
410	11	NR	540	763	NR	670	269	NR	800	6	NR	930	0	NR
415	23	NR	545	792	NR	675	235	NR	805	5	NR	935	0	NR
420	46	NR	550	813	NR	680	205	NR	810	5	NR	940	0	NR
425	95	NR	555	835	NR	685	178	NR	815	4	NR	945	0	NR
430	183	NR	560	859	NR	690	155	NR	820	3	NR	950	0	NR
435	338	NR	565	880	NR	695	134	NR	825	3	NR	955	0	NR
440	534	NR	570	900	NR	700	115	NR	830	3	NR	960	0	NR
445	782	NR	575	918	NR	705	99	NR	835	2	NR	965	0	NR
450	1000	NR	580	931	NR	710	84	NR	840	2	NR	970	0	NR
455	739	NR	585	937	NR	715	71	NR	845	2	NR	975	0	NR
460	393	NR	590	939	NR	720	59	NR	850	1	NR	980	0	NR
465	276	NR	595	925	NR	725	49	NR	855	1	NR	985	0	NR
470	190	NR	600	907	NR	730	41	NR	860	1	NR	990	0	NR
475	123	NR	605	878	NR	735	35	NR	865	1	NR	995	0	NR
480	105	NR	610	842	NR	740	31	NR	870	1	NR	1000	0	NR
485	108	NR	615	797	NR	745	28	NR	875	1	NR			

REPORT NUMBER: SP1-2407-176-5

Scotopic Flux vs. Wavelength

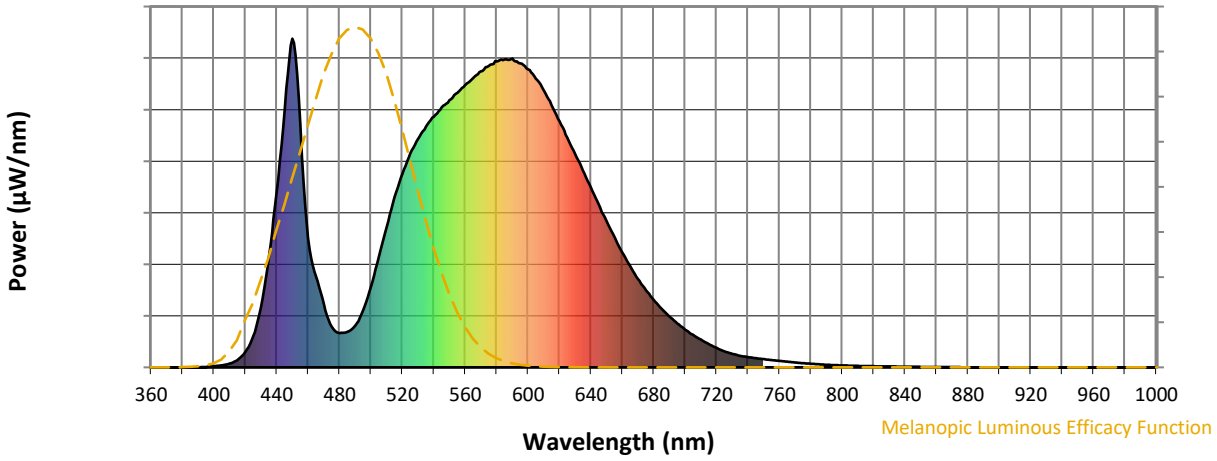


Scotopic Lumens: NR **S/P: 1.45**

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	127	NR	620	748	NR	750	25	NR	880	0	NR
365	0	NR	495	173	NR	625	699	NR	755	22	NR	885	0	NR
370	0	NR	500	246	NR	630	648	NR	760	20	NR	890	0	NR
375	0	NR	505	335	NR	635	599	NR	765	17	NR	895	0	NR
380	0	NR	510	427	NR	640	547	NR	770	15	NR	900	0	NR
385	0	NR	515	517	NR	645	495	NR	775	13	NR	905	0	NR
390	0	NR	520	589	NR	650	445	NR	780	11	NR	910	0	NR
395	1	NR	525	649	NR	655	396	NR	785	9	NR	915	0	NR
400	4	NR	530	695	NR	660	349	NR	790	8	NR	920	0	NR
405	6	NR	535	733	NR	665	308	NR	795	7	NR	925	0	NR
410	11	NR	540	763	NR	670	269	NR	800	6	NR	930	0	NR
415	23	NR	545	792	NR	675	235	NR	805	5	NR	935	0	NR
420	46	NR	550	813	NR	680	205	NR	810	5	NR	940	0	NR
425	95	NR	555	835	NR	685	178	NR	815	4	NR	945	0	NR
430	183	NR	560	859	NR	690	155	NR	820	3	NR	950	0	NR
435	338	NR	565	880	NR	695	134	NR	825	3	NR	955	0	NR
440	534	NR	570	900	NR	700	115	NR	830	3	NR	960	0	NR
445	782	NR	575	918	NR	705	99	NR	835	2	NR	965	0	NR
450	1000	NR	580	931	NR	710	84	NR	840	2	NR	970	0	NR
455	739	NR	585	937	NR	715	71	NR	845	2	NR	975	0	NR
460	393	NR	590	939	NR	720	59	NR	850	1	NR	980	0	NR
465	276	NR	595	925	NR	725	49	NR	855	1	NR	985	0	NR
470	190	NR	600	907	NR	730	41	NR	860	1	NR	990	0	NR
475	123	NR	605	878	NR	735	35	NR	865	1	NR	995	0	NR
480	105	NR	610	842	NR	740	31	NR	870	1	NR	1000	0	NR
485	108	NR	615	797	NR	745	28	NR	875	1	NR			

REPORT NUMBER: SP1-2407-176-5

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 2.76**

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	127	NR	620	748	NR	750	25	NR	880	0	NR
365	0	NR	495	173	NR	625	699	NR	755	22	NR	885	0	NR
370	0	NR	500	246	NR	630	648	NR	760	20	NR	890	0	NR
375	0	NR	505	335	NR	635	599	NR	765	17	NR	895	0	NR
380	0	NR	510	427	NR	640	547	NR	770	15	NR	900	0	NR
385	0	NR	515	517	NR	645	495	NR	775	13	NR	905	0	NR
390	0	NR	520	589	NR	650	445	NR	780	11	NR	910	0	NR
395	1	NR	525	649	NR	655	396	NR	785	9	NR	915	0	NR
400	4	NR	530	695	NR	660	349	NR	790	8	NR	920	0	NR
405	6	NR	535	733	NR	665	308	NR	795	7	NR	925	0	NR
410	11	NR	540	763	NR	670	269	NR	800	6	NR	930	0	NR
415	23	NR	545	792	NR	675	235	NR	805	5	NR	935	0	NR
420	46	NR	550	813	NR	680	205	NR	810	5	NR	940	0	NR
425	95	NR	555	835	NR	685	178	NR	815	4	NR	945	0	NR
430	183	NR	560	859	NR	690	155	NR	820	3	NR	950	0	NR
435	338	NR	565	880	NR	695	134	NR	825	3	NR	955	0	NR
440	534	NR	570	900	NR	700	115	NR	830	3	NR	960	0	NR
445	782	NR	575	918	NR	705	99	NR	835	2	NR	965	0	NR
450	1000	NR	580	931	NR	710	84	NR	840	2	NR	970	0	NR
455	739	NR	585	937	NR	715	71	NR	845	2	NR	975	0	NR
460	393	NR	590	939	NR	720	59	NR	850	1	NR	980	0	NR
465	276	NR	595	925	NR	725	49	NR	855	1	NR	985	0	NR
470	190	NR	600	907	NR	730	41	NR	860	1	NR	990	0	NR
475	123	NR	605	878	NR	735	35	NR	865	1	NR	995	0	NR
480	105	NR	610	842	NR	740	31	NR	870	1	NR	1000	0	NR
485	108	NR	615	797	NR	745	28	NR	875	1	NR			

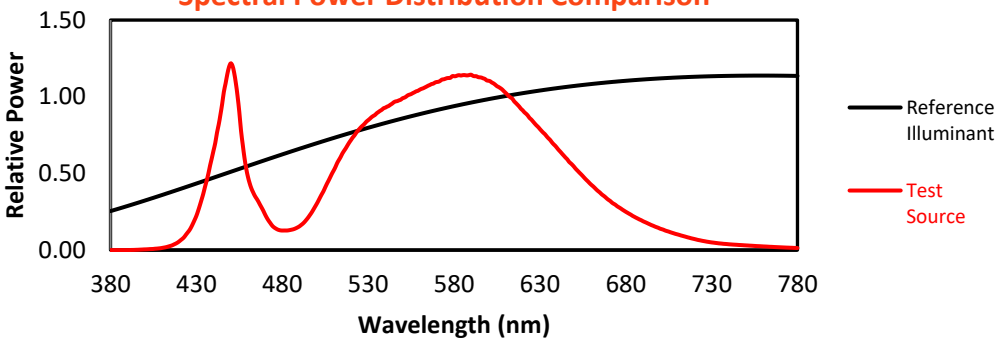
REPORT NUMBER: SP1-2407-176-5

TM-30-18

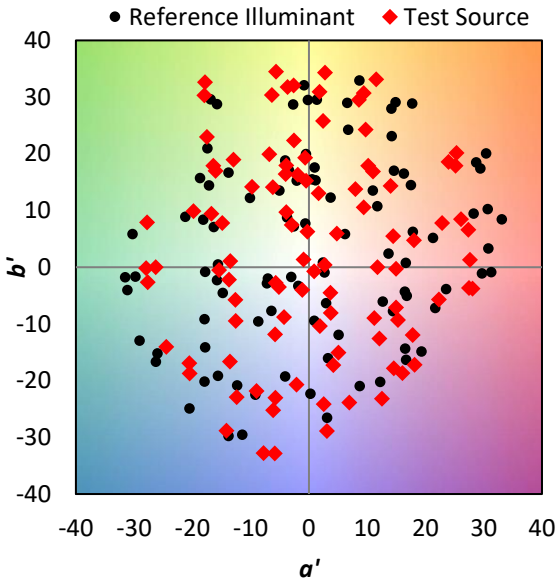
Summary

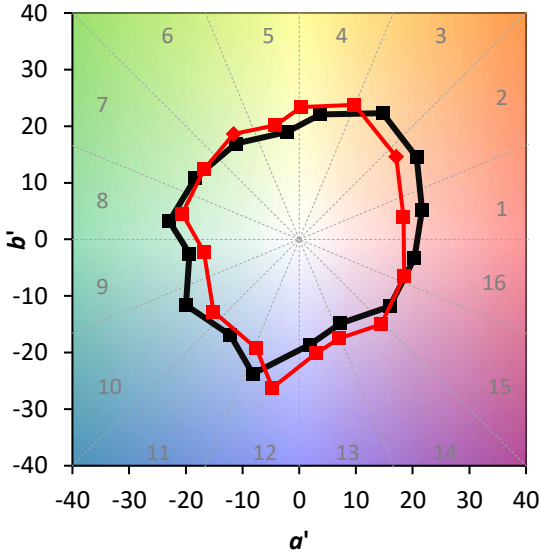
R_f = 75.6
R_g = 94.8
CIE R_a = 72.9
R_9 = -21.5

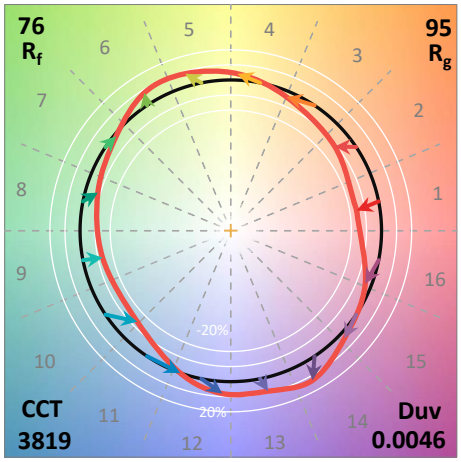
Spectral Power Distribution Comparison

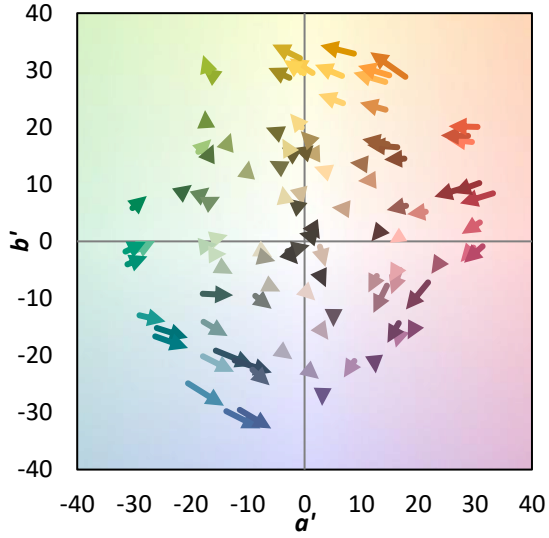


Color Vector Graphics







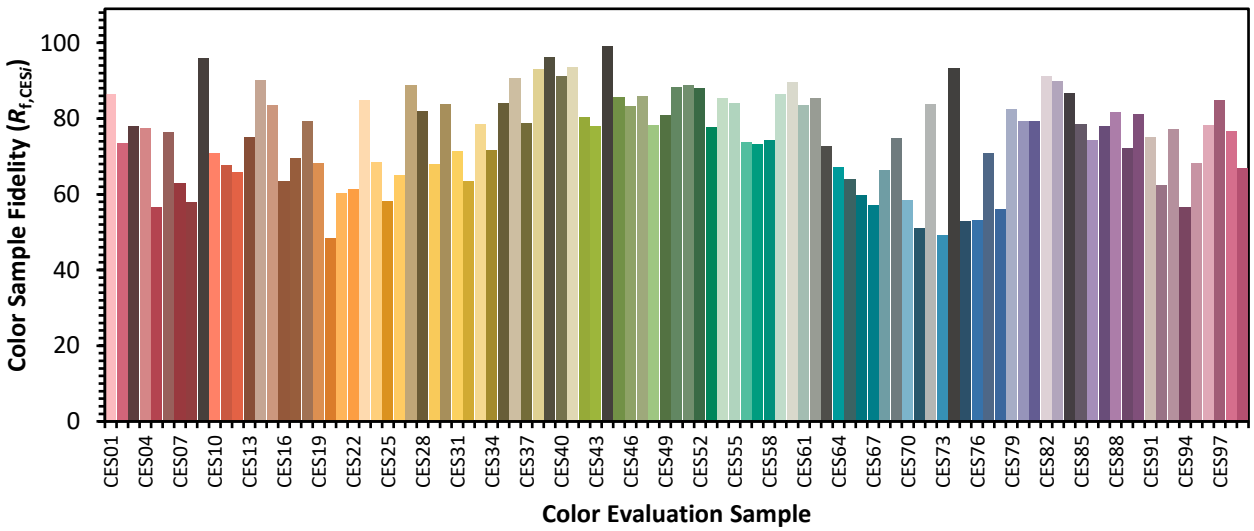


REPORT NUMBER: SP1-2407-176-5

TM-30-18

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

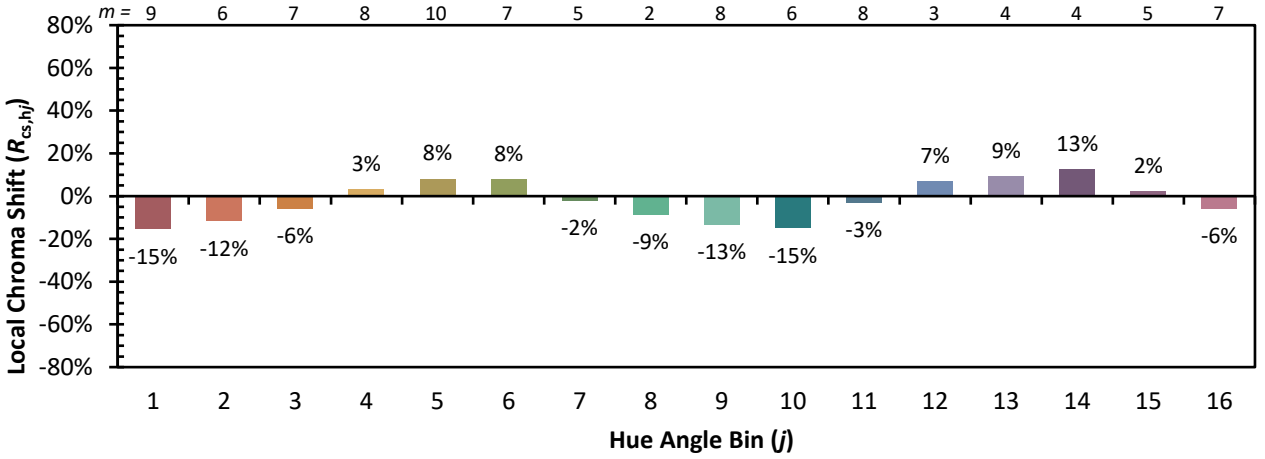
CES01 = 85	CES26 = 65	CES51 = 89	CES76 = 53
CES02 = 61	CES27 = 89	CES52 = 88	CES77 = 71
CES03 = 30	CES28 = 82	CES53 = 78	CES78 = 56
CES04 = 70	CES29 = 68	CES54 = 85	CES79 = 83
CES05 = 48	CES30 = 84	CES55 = 84	CES80 = 79
CES06 = 50	CES31 = 71	CES56 = 74	CES81 = 79
CES07 = 40	CES32 = 63	CES57 = 73	CES82 = 91
CES08 = 39	CES33 = 79	CES58 = 74	CES83 = 90
CES09 = 29	CES34 = 72	CES59 = 86	CES84 = 87
CES10 = 74	CES35 = 84	CES60 = 90	CES85 = 78
CES11 = 57	CES36 = 91	CES61 = 84	CES86 = 74
CES12 = 63	CES37 = 79	CES62 = 85	CES87 = 78
CES13 = 42	CES38 = 93	CES63 = 73	CES88 = 82
CES14 = 74	CES39 = 96	CES64 = 67	CES89 = 72
CES15 = 71	CES40 = 91	CES65 = 64	CES90 = 81
CES16 = 47	CES41 = 93	CES66 = 60	CES91 = 75
CES17 = 49	CES42 = 80	CES67 = 57	CES92 = 62
CES18 = 56	CES43 = 78	CES68 = 66	CES93 = 77
CES19 = 72	CES44 = 99	CES69 = 75	CES94 = 57
CES20 = 65	CES45 = 86	CES70 = 58	CES95 = 68
CES21 = 86	CES46 = 83	CES71 = 51	CES96 = 78
CES22 = 78	CES47 = 86	CES72 = 84	CES97 = 85
CES23 = 92	CES48 = 78	CES73 = 49	CES98 = 77
CES24 = 91	CES49 = 81	CES74 = 93	CES99 = 67
CES25 = 72	CES50 = 88	CES75 = 53	

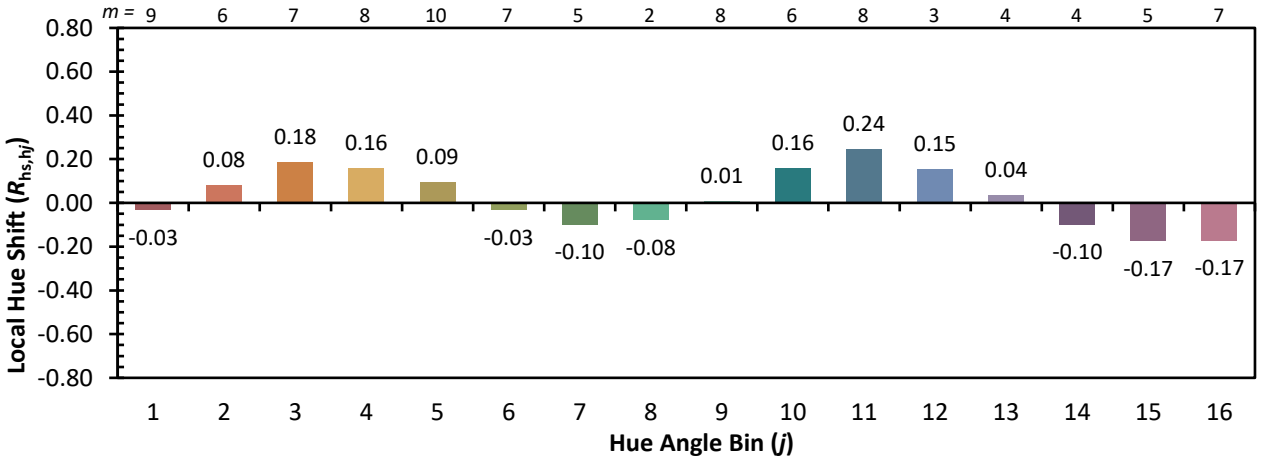


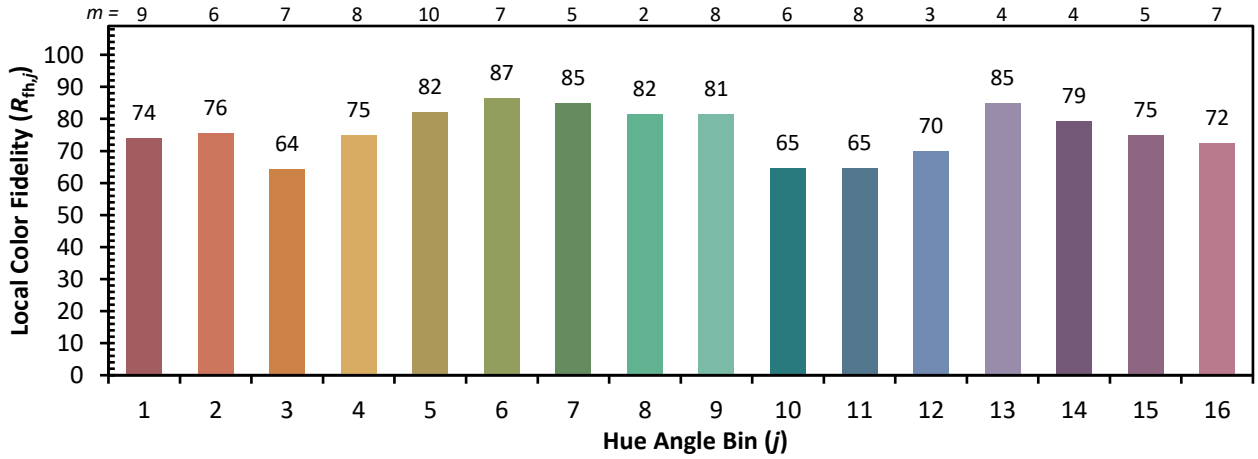
REPORT NUMBER: SP1-2407-176-5

TM-30-18

Color Rendition by Hue-Angle Bin



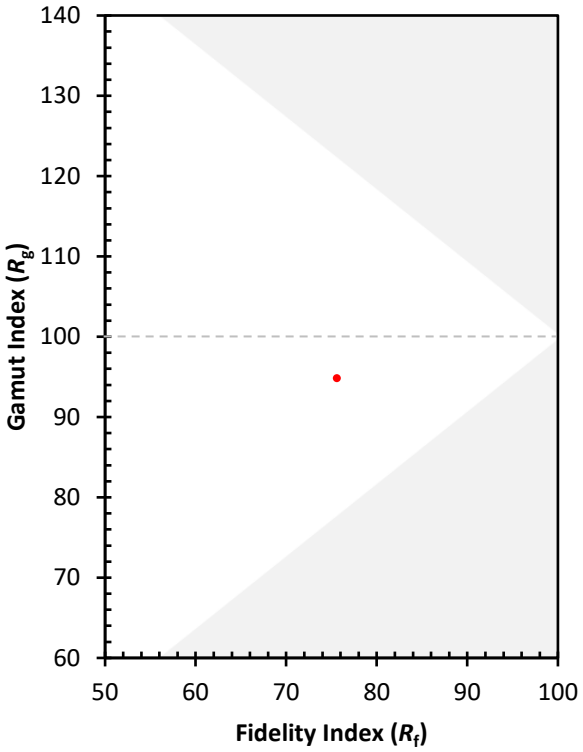


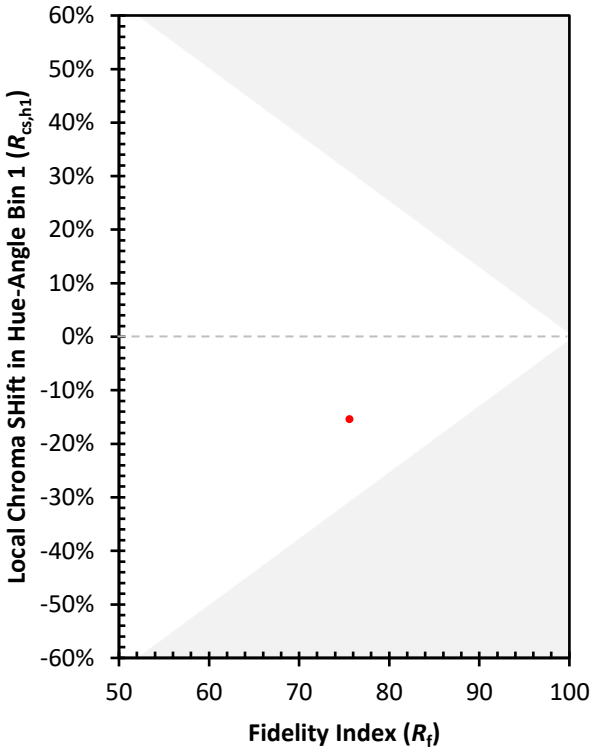


REPORT NUMBER: SP1-2407-176-5

TM-30-18

Measure Comparisons





(END OF REPORT)