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: P821118

Luminaire Tested: **TT-D1-830-24VDC-DL-UPL**

Issue Date: 7/23/2020

Report Generated By 670245763

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Peachtree City, GA 30269

Scaled Data Report

Test Information

Test Method:	LM-79-08
Report Number:	P821118
	REPORT IS FROM IESNA LM-79-08 TEST DATA - UPLIGHT (G2-2002-677-2) AND
Test Lab:	INNOVATION CENTER
Issue Date:	7/23/2020
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	McGRAW-EDISON
Catalog Number:	TT-D1-830-24VDC-DL-UPL
Description:	TOPTIER LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
	3000K, 80 CRI LEDS AND DRIVE LANE DISTRIBUTION
Light Source:	-
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	3794.7 lumens
Efficiency:	N/A
Efficacy:	135.5 lumens/watt
Luminous Opening:	Vertical Cylinder (Dia: 1.12' x H: 0.1')
IES Classification:	Type IV - Short
BUG Rating:	B1 - U4 - G2

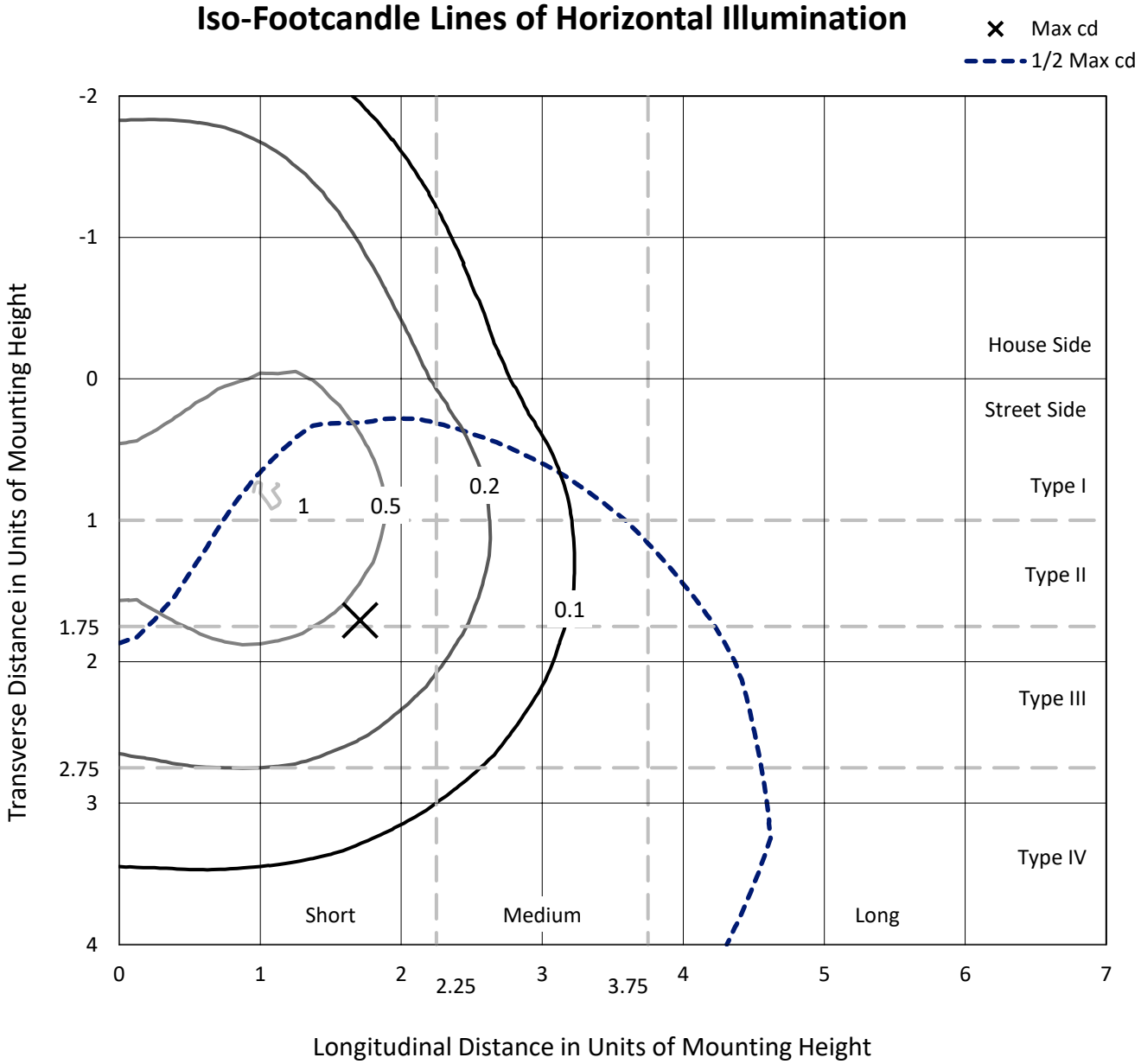
Input Watts (W):	28
Input Voltage (V):	NR
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	NR
Total Harmonic Distortion (THDi):	NR
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	25 FT

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Iso-Footcandle Lines of Horizontal Illumination



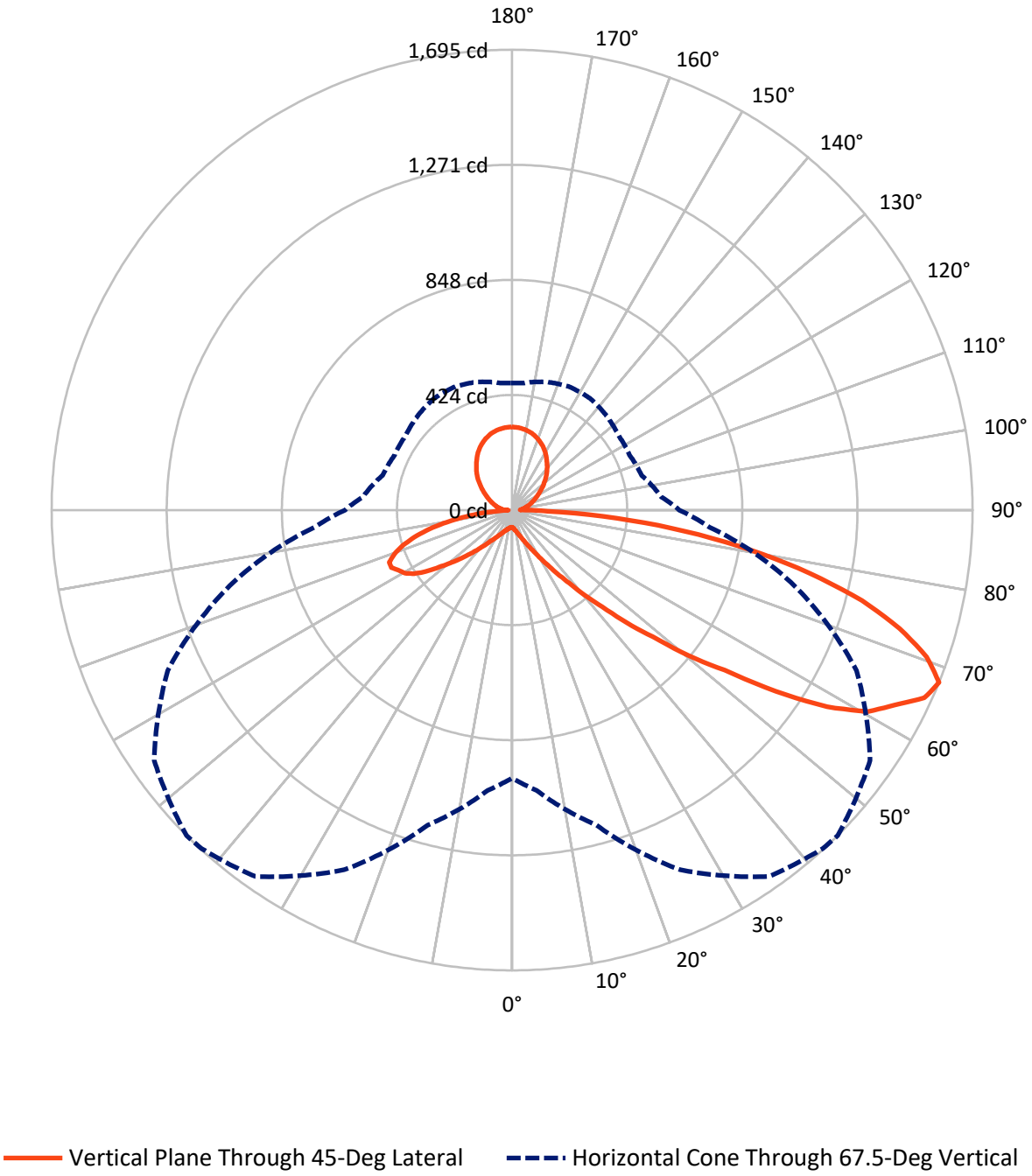
Based on 15 foot mounting height. Maximum calculated value = 1 fc
Type IV - Short - N/A

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Luminous Intensity Polar Plot



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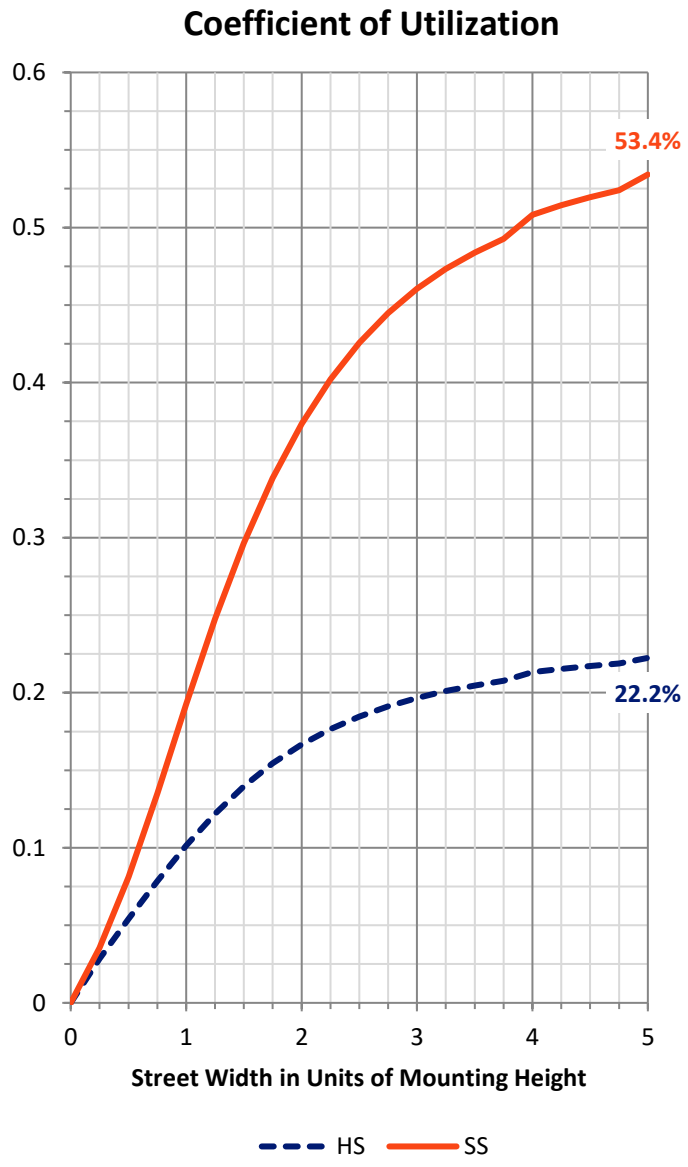
REPORT NUMBER: P821118
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FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	864.2	415.9	1280.1
	% Fixture	22.8	11.0	33.7
Street Side	Lumens	2098.7	415.9	2514.6
	% Fixture	55.3	11.0	66.3
Total	Lumens	2963.0	831.7	3794.7
	% Fixture	78.1	21.9	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	6.6	0.2
10°-20°	24.5	0.6
20°-30°	58.1	1.5
30°-40°	131.4	3.5
40°-50°	292.9	7.7
50°-60°	588.8	15.5
60°-70°	864.8	22.8
70°-80°	760.5	20.0
80°-90°	235.5	6.2
90°-100°	42.6	1.1
100°-110°	66.0	1.7
110°-120°	91.9	2.4
120°-130°	119.0	3.1
130°-140°	138.7	3.7
140°-150°	140.5	3.7
150°-160°	121.9	3.2
160°-170°	82.2	2.2
170°-180°	28.9	0.8
0°-90°	2963.0	78.1
0°-180°	3794.7	100.0



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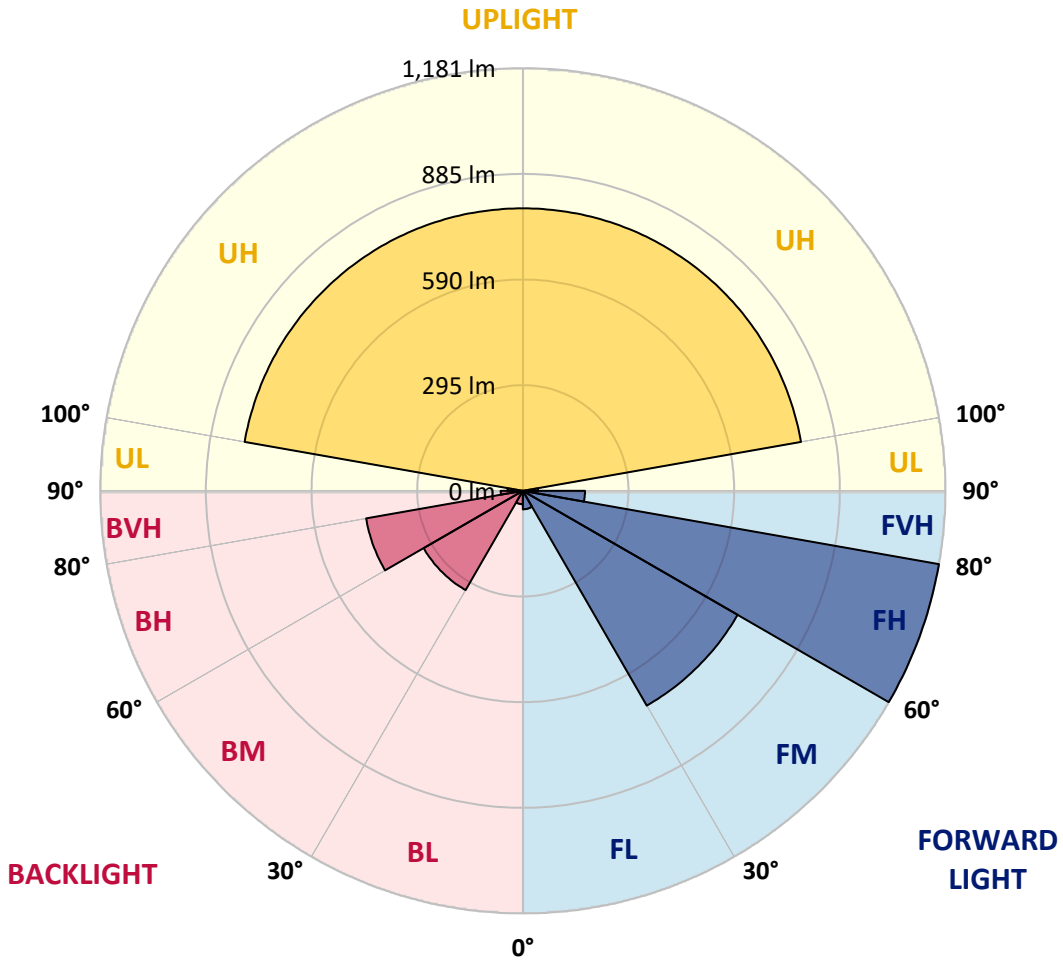
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	51.7	1.4			
FM	(30°-60°)	692.9	18.3			
FH	(60°-80°)	1180.6	31.1			G1/1800
FVH	(80°-90°)	173.5	4.6			G2/225
BL	(0°-30°)	37.5	1.0	B0/110		
BM	(30°-60°)	320.1	8.4	B1/1000		
BH	(60°-80°)	444.6	11.7	B1/500		G1/500
BVH	(80°-90°)	62.0	1.6			G1/100
UL	(90°-100°)	42.6	1.1		U2/50	
UH	(100°-180°)	789.1	20.8		U4/1000	

BUG Rating: B1-U4-G2
Type IV Short



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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	42.5°	45°	55°	65°	75°	85°
0°	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2
2.5°	66.9	66.4	66.4	66.4	65.8	65.8	65.8	65.8	65.3	65.3	65.3
5°	70.8	70.3	70.8	69.7	69.2	69.2	68.6	68.6	68.1	67.5	66.9
7.5°	76.4	75.8	75.8	74.7	74.1	73.6	73.6	72.5	71.9	70.8	69.7
10°	82.4	82.4	81.9	81.3	80.2	79.1	79.1	77.5	76.9	75.2	73.6
12.5°	89.6	89.6	89.6	88.5	87.4	86.9	85.8	84.7	83.0	80.2	78.6
15°	98.5	98.5	98.5	97.4	96.3	95.2	94.6	92.4	89.6	86.9	83.5
17.5°	109.6	108.4	108.4	107.3	106.2	105.7	104.6	102.4	98.5	95.2	90.7
20°	121.7	121.2	120.6	120.6	119.5	118.4	117.9	114.5	110.1	104.0	98.5
22.5°	135.6	135.0	135.0	136.1	135.6	133.9	133.9	128.9	122.8	115.6	107.3
25°	152.7	152.2	153.3	155.5	155.5	154.4	152.7	147.7	138.9	128.9	119.0
27.5°	171.5	171.0	173.2	177.1	178.2	176.5	175.4	169.9	159.9	146.6	132.2
30°	194.2	194.8	200.8	205.3	208.0	206.9	206.4	200.3	184.3	168.8	149.9
32.5°	221.9	220.2	228.0	235.2	240.1	242.9	241.2	234.0	220.2	195.9	172.1
35°	251.2	251.8	261.2	271.7	283.3	284.4	287.7	280.5	261.7	232.9	199.7
37.5°	289.4	285.0	297.1	317.0	330.9	343.0	340.8	336.4	314.3	276.1	230.7
40°	323.7	322.6	339.7	367.4	392.8	410.6	412.8	407.2	377.9	323.7	263.9
42.5°	363.0	366.3	390.1	428.3	467.0	492.4	486.4	483.6	449.3	380.1	309.3
45°	402.8	413.9	444.3	499.6	545.0	581.5	592.0	582.6	540.6	469.2	366.8
47.5°	450.9	465.9	503.5	578.2	652.3	695.0	697.2	725.4	661.8	555.0	426.6
50°	514.6	521.2	573.8	665.1	766.9	826.6	843.8	844.3	780.7	641.3	494.1
52.5°	577.1	582.1	651.2	769.1	907.4	975.5	979.4	1000.9	914.1	780.7	590.9
55°	652.3	650.1	745.3	886.9	1050.2	1149.2	1178.0	1207.3	1096.7	890.8	646.3
57.5°	725.4	722.1	836.6	1022.5	1245.5	1344.0	1367.8	1346.7	1182.4	936.7	673.4
60°	792.9	804.5	943.9	1172.5	1396.5	1490.6	1506.7	1449.7	1237.7	972.2	690.5
62.5°	863.2	886.4	1055.2	1297.5	1512.2	1579.7	1580.8	1513.8	1330.1	1040.8	746.4
65°	929.0	966.1	1141.5	1404.3	1593.0	1660.5	1668.2	1607.9	1420.9	1100.5	755.8
67.5°	987.1	1036.3	1201.2	1461.8	1647.7	1691.5	1695.3	1608.5	1399.3	1076.2	729.8
70°	1034.1	1074.0	1238.3	1462.9	1609.6	1621.7	1619.0	1526.6	1339.6	1028.0	686.1
72.5°	1052.4	1085.0	1220.6	1394.3	1497.2	1494.5	1492.3	1407.1	1241.1	947.8	623.0
75°	1026.4	1035.8	1123.8	1247.7	1313.0	1328.5	1330.7	1253.8	1088.9	828.9	534.5
77.5°	919.0	914.1	981.6	1063.5	1112.7	1123.8	1121.6	1057.4	913.0	688.9	448.2
80°	728.7	739.2	781.3	835.5	884.7	896.9	889.2	840.5	710.4	537.3	344.2
82.5°	509.6	522.3	557.7	598.7	635.7	635.7	642.9	595.9	503.5	385.7	240.7
85°	275.0	267.8	306.5	353.0	379.6	384.5	387.3	371.8	311.5	232.9	142.8
87.5°	45.4	48.7	60.3	92.4	105.1	121.7	129.5	101.3	61.4	39.3	28.8
90°	30.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1
92.5°	34.8	34.2	34.2	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8
95°	39.4	39.4	39.4	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5
97.5°	44.6	44.6	44.6	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2
100°	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8
102.5°	55.9	55.9	55.9	55.9	55.9	55.9	55.9	55.9	56.4	55.9	55.9
105°	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.9	62.0	62.0
107.5°	68.6	68.6	69.0	69.0	69.0	69.0	69.0	69.0	69.5	69.0	69.0
110°	75.1	75.1	76.1	76.1	76.1	76.1	76.1	76.1	76.1	76.1	76.1

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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	42.5°	45°	55°	65°	75°	85°
112.5°	83.1	83.1	84.0	84.0	84.0	84.0	*84.0*	84.6	84.6	84.0	84.0
115°	91.1	91.1	92.0	92.0	92.0	92.0	*92.0*	93.0	93.0	92.0	92.0
117.5°	100.5	100.5	101.0	101.4	101.4	101.4	*101.4*	102.4	102.4	101.4	101.4
120°	109.9	109.9	109.9	110.8	110.8	110.8	*110.8*	111.8	111.8	110.8	110.8
122.5°	120.7	120.7	121.2	121.6	121.6	121.6	*121.6*	122.6	122.6	122.1	122.1
125°	131.5	131.5	132.4	132.4	132.4	132.4	*132.4*	133.4	133.4	133.4	133.4
127.5°	143.2	143.2	144.2	144.2	144.2	144.2	*144.2*	145.1	145.1	145.1	145.1
130°	155.0	155.0	155.9	155.9	155.9	155.9	*155.9*	156.8	156.8	156.8	156.8
132.5°	167.2	167.2	167.6	167.6	167.6	168.0	*168.1*	168.6	168.6	168.6	168.6
135°	179.4	179.4	179.4	179.4	179.4	180.1	*180.3*	180.3	180.3	180.3	180.3
137.5°	191.2	190.6	191.2	190.6	191.2	191.5	*191.6*	191.6	191.6	191.6	191.6
140°	202.9	201.9	202.9	201.9	202.9	202.9	*202.9*	202.9	202.9	202.9	202.9
142.5°	213.7	213.2	213.7	212.7	213.7	213.7	*213.7*	213.7	213.7	213.7	213.7
145°	224.5	224.5	224.5	223.5	224.5	224.5	*224.5*	224.5	224.5	224.5	224.5
147.5°	235.8	235.3	235.8	234.8	235.8	235.8	*235.8*	235.8	235.8	235.8	235.8
150°	247.0	246.1	247.0	246.1	247.0	247.0	*247.0*	247.0	247.0	247.0	247.0
152.5°	256.0	255.5	256.4	255.5	256.0	256.0	*256.0*	256.4	256.0	256.0	256.0
155°	264.9	264.9	265.8	264.9	264.9	264.9	*264.9*	265.8	264.9	264.9	264.9
157.5°	272.4	272.4	273.3	272.4	272.4	272.4	*272.4*	273.3	272.4	272.4	272.4
160°	279.9	279.9	280.8	279.9	279.9	279.9	*279.9*	280.8	279.9	279.9	279.9
162.5°	286.0	286.0	286.9	286.0	286.0	286.0	*286.0*	286.9	286.0	286.0	286.0
165°	292.1	292.1	293.0	292.1	292.1	292.1	*292.1*	293.0	292.1	292.1	292.1
167.5°	295.8	295.8	296.8	295.8	295.8	295.8	*295.8*	296.8	295.8	295.8	295.8
170°	299.6	299.6	300.5	299.6	299.6	299.6	*299.6*	300.5	299.6	299.6	299.6
172.5°	302.0	302.0	302.8	302.0	302.4	302.1	*302.0*	302.8	302.0	302.0	302.0
175°	304.3	304.3	305.2	304.3	305.2	304.6	*304.3*	305.2	304.3	304.3	304.3
177.5°	305.2	305.2	305.7	305.2	305.7	305.4	*305.2*	305.7	305.2	305.2	305.2
180°	306.2	306.2	306.2	306.2	306.2	306.2	*306.2*	306.2	306.2	306.2	306.2

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CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2
2.5°	65.3	64.7	64.2	63.6	63.6	63.1	63.1	63.1	63.6	63.6	63.6
5°	66.9	66.4	65.8	65.3	64.2	64.2	64.2	64.2	64.2	64.2	64.2
7.5°	69.7	68.6	68.1	66.9	65.8	65.8	65.3	65.3	65.3	65.8	65.3
10°	73.0	71.9	70.8	69.2	68.6	68.1	67.5	67.5	68.1	68.1	67.5
12.5°	76.9	76.4	74.1	72.5	71.4	70.8	70.3	70.8	70.3	70.8	70.8
15°	82.4	80.8	78.0	76.4	74.7	74.1	73.6	74.1	74.1	74.7	74.1
17.5°	88.5	86.3	83.5	80.8	78.6	78.0	78.0	78.0	78.6	79.1	78.6
20°	95.7	93.0	89.1	85.8	83.5	83.0	83.0	83.5	84.1	84.7	84.7
22.5°	102.9	100.7	95.2	90.7	89.6	89.1	88.5	89.6	90.7	91.3	91.8
25°	114.0	109.6	102.9	97.9	95.7	95.7	96.3	97.4	97.9	99.0	98.5
27.5°	125.6	120.6	112.3	105.7	104.0	103.5	104.6	105.7	107.9	107.9	107.3
30°	141.6	133.3	122.8	116.7	112.3	112.9	114.5	116.2	118.4	119.5	119.5
32.5°	159.9	151.1	136.7	127.3	125.0	125.6	126.2	128.9	131.1	133.3	131.7
35°	183.7	172.6	154.9	144.4	138.9	138.3	140.5	143.9	146.1	147.2	147.2
37.5°	209.7	195.3	173.2	164.3	157.7	157.1	157.7	160.5	163.2	164.3	166.5
40°	241.2	223.5	197.5	183.1	178.2	177.1	179.3	183.1	183.1	184.8	185.4
42.5°	280.0	257.3	228.5	209.7	203.6	203.6	203.1	206.4	206.4	206.4	205.3
45°	329.2	303.8	266.1	246.8	236.3	230.7	232.4	230.2	229.6	231.3	226.3
47.5°	376.8	344.7	300.4	279.4	268.9	265.6	259.5	257.8	255.1	255.1	247.9
50°	432.1	392.3	349.7	319.8	309.9	300.4	295.5	287.7	279.4	277.8	275.0
52.5°	524.5	474.7	407.8	375.7	350.2	340.8	329.2	319.3	309.3	301.6	306.0
55°	562.2	511.3	447.6	416.6	398.9	390.1	368.5	355.2	340.3	329.2	335.3
57.5°	581.0	525.6	466.4	443.2	438.2	429.9	413.9	391.2	374.0	360.2	361.3
60°	591.5	533.4	476.4	455.4	452.6	458.1	449.8	434.3	407.8	394.0	392.3
62.5°	631.9	571.0	504.6	474.7	468.6	472.5	474.7	465.3	443.2	424.9	420.0
65°	640.2	575.4	510.1	490.8	491.3	492.4	494.1	484.1	473.1	450.4	446.0
67.5°	*615.3*	*551.6*	*493.5*	*477.5*	*478.6*	*491.3*	*501.3*	*500.7*	*488.6*	*469.2*	*467.5*
70°	577.7	515.7	462.0	447.6	450.4	462.0	483.6	494.7	492.4	479.7	482.5
72.5°	519.0	463.7	416.6	405.6	412.2	423.3	443.8	463.7	475.3	478.1	484.1
75°	450.4	406.1	361.9	355.2	360.2	372.9	391.7	415.0	440.4	454.3	458.1
77.5°	371.8	331.4	298.8	294.4	301.6	313.2	332.0	350.2	379.0	403.4	408.9
80°	291.0	256.2	232.9	229.1	233.5	243.5	257.8	272.8	300.4	319.3	322.0
82.5°	202.0	180.9	166.0	163.8	166.5	170.4	182.0	195.9	211.4	226.3	228.0
85°	117.3	104.0	100.1	96.8	102.9	102.9	105.7	113.4	121.2	122.3	125.6
87.5°	21.6	20.5	21.0	15.5	19.4	13.8	13.8	17.7	13.3	15.5	12.7
90°	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	30.1
92.5°	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8	34.2	34.2	34.8
95°	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	39.4	39.4	39.4
97.5°	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.6	44.6	44.6
100°	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8
102.5°	55.9	55.9	55.9	56.4	55.9	55.9	55.9	55.9	55.9	55.9	55.9
105°	62.0	62.0	62.0	62.9	62.0	62.0	62.0	62.0	62.0	62.0	62.0
107.5°	69.0	69.0	69.0	69.5	69.0	69.0	69.0	69.0	69.0	68.6	68.6
110°	76.1	76.1	76.1	76.1	76.1	76.1	76.1	76.1	76.1	75.1	75.1

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

Scaled Data Report

REPORT NUMBER: P821118
CATALOG NUMBER: TT-D1-830-24VDC-DL-UPL

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	84.0	84.0	84.0	84.6	84.6	84.0	84.0	84.0	84.0	83.1	83.1
115°	92.0	92.0	92.0	93.0	93.0	92.0	92.0	92.0	92.0	91.1	91.1
117.5°	101.4	101.4	101.4	102.4	102.4	101.4	101.4	101.4	101.0	100.5	100.5
120°	110.8	110.8	110.8	111.8	111.8	110.8	110.8	110.8	109.9	109.9	109.9
122.5°	121.6	122.1	122.1	122.6	122.6	121.6	121.6	121.6	121.2	120.7	120.7
125°	132.4	133.4	133.4	133.4	133.4	132.4	132.4	132.4	132.4	131.5	131.5
127.5°	144.2	145.1	145.1	145.1	145.1	144.2	144.2	144.2	144.2	143.2	143.2
130°	155.9	156.8	156.8	156.8	156.8	155.9	155.9	155.9	155.9	155.0	155.0
132.5°	168.1	168.6	168.6	168.6	168.6	168.1	167.6	167.6	167.6	167.2	167.2
135°	180.3	180.3	180.3	180.3	180.3	180.3	179.4	179.4	179.4	179.4	179.4
137.5°	191.6	191.6	191.6	191.6	191.6	191.6	191.2	190.6	191.2	190.6	191.2
140°	202.9	202.9	202.9	202.9	202.9	202.9	202.9	201.9	202.9	201.9	202.9
142.5°	213.7	213.7	213.7	213.7	213.7	213.7	213.7	212.7	213.7	213.2	213.7
145°	224.5	224.5	224.5	224.5	224.5	224.5	224.5	223.5	224.5	224.5	224.5
147.5°	235.8	235.8	235.8	235.8	235.8	235.8	235.8	234.8	235.8	235.3	235.8
150°	247.0	247.0	247.0	247.0	247.0	247.0	247.0	246.1	247.0	246.1	247.0
152.5°	256.0	256.0	256.0	256.0	256.4	256.0	256.0	255.5	256.4	255.5	256.0
155°	264.9	264.9	264.9	264.9	265.8	264.9	264.9	264.9	265.8	264.9	264.9
157.5°	272.4	272.4	272.4	272.4	273.3	272.4	272.4	272.4	273.3	272.4	272.4
160°	279.9	279.9	279.9	279.9	280.8	279.9	279.9	279.9	280.8	279.9	279.9
162.5°	286.0	286.0	286.0	286.0	286.9	286.0	286.0	286.0	286.9	286.0	286.0
165°	292.1	292.1	292.1	292.1	293.0	292.1	292.1	292.1	293.0	292.1	292.1
167.5°	295.8	295.8	295.8	295.8	296.8	295.8	295.8	295.8	296.8	295.8	295.8
170°	299.6	299.6	299.6	299.6	300.5	299.6	299.6	299.6	300.5	299.6	299.6
172.5°	302.0	302.0	302.0	302.0	302.8	302.0	302.4	302.0	302.8	302.0	302.0
175°	304.3	304.3	304.3	304.3	305.2	304.3	305.2	304.3	305.2	304.3	304.3
177.5°	305.2	305.2	305.2	305.2	305.7	305.2	305.7	305.2	305.7	305.2	305.2
180°	306.2	306.2	306.2	306.2	306.2	306.2	306.2	306.2	306.2	306.2	306.2

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: SP1-2407-176-7

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

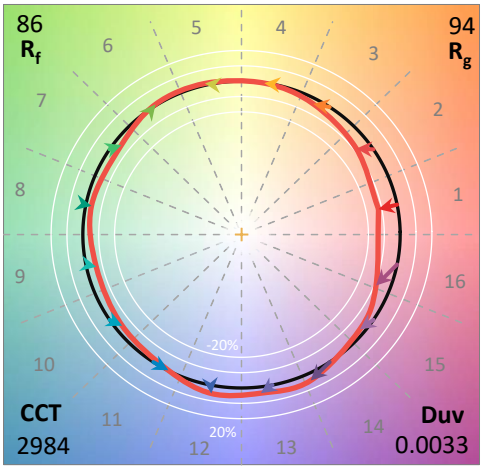
Test Information

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

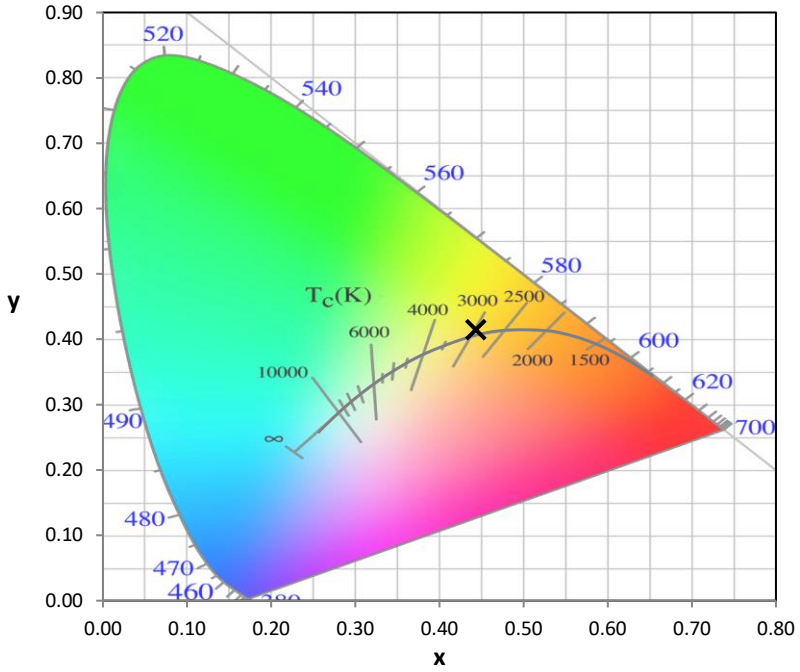
Stabilization Time:	29M
Operation Time:	1H 29M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-176-7

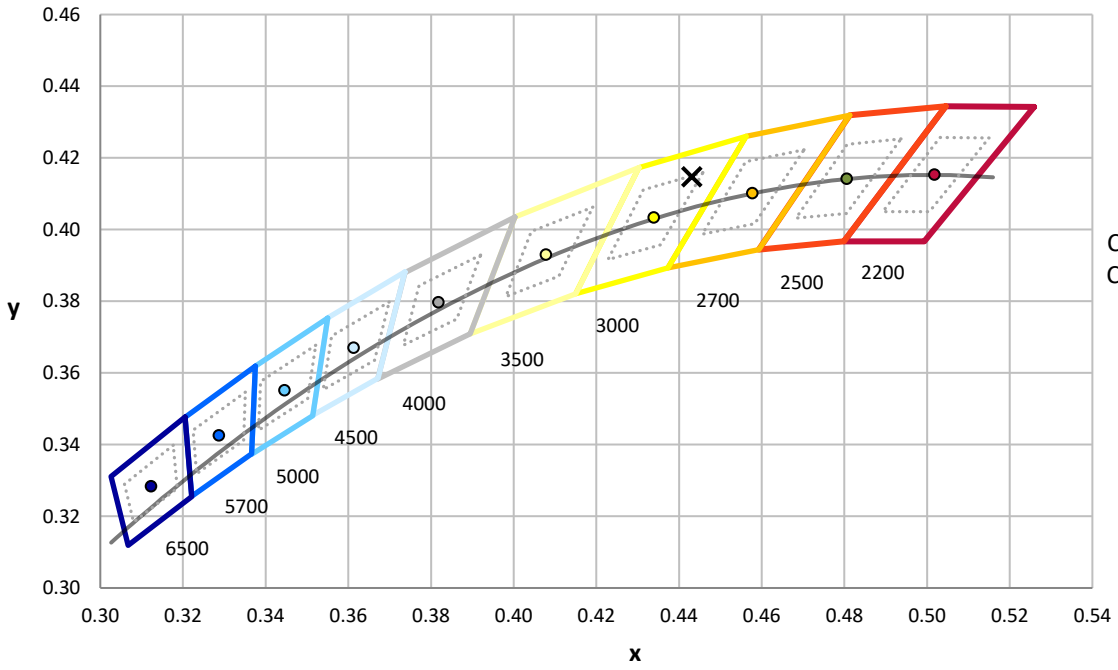
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

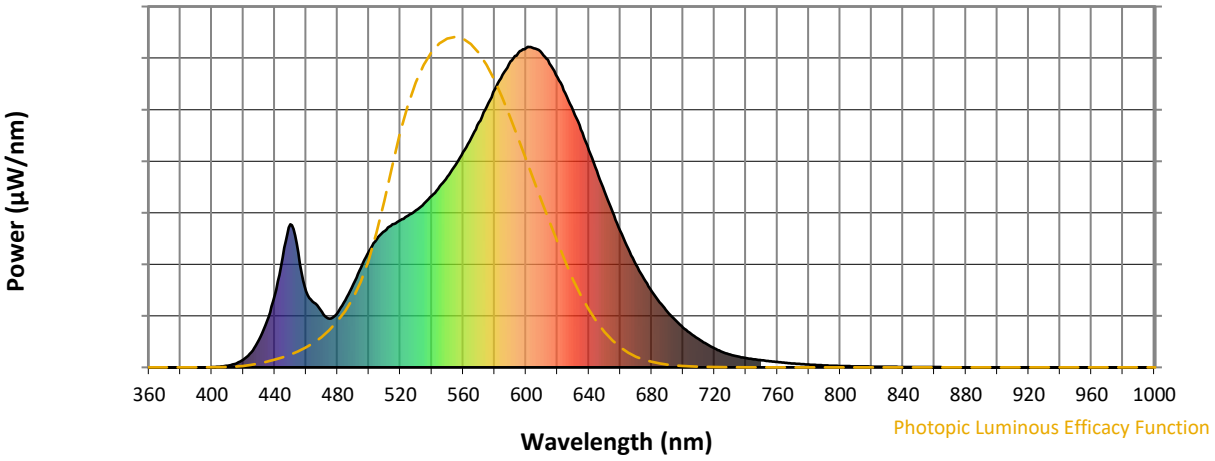


CCT = 2984K
CIE x = 0.4431
CIE y = 0.4147
Duv = 0.0033

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-176-7

Photopic Flux vs. Wavelength

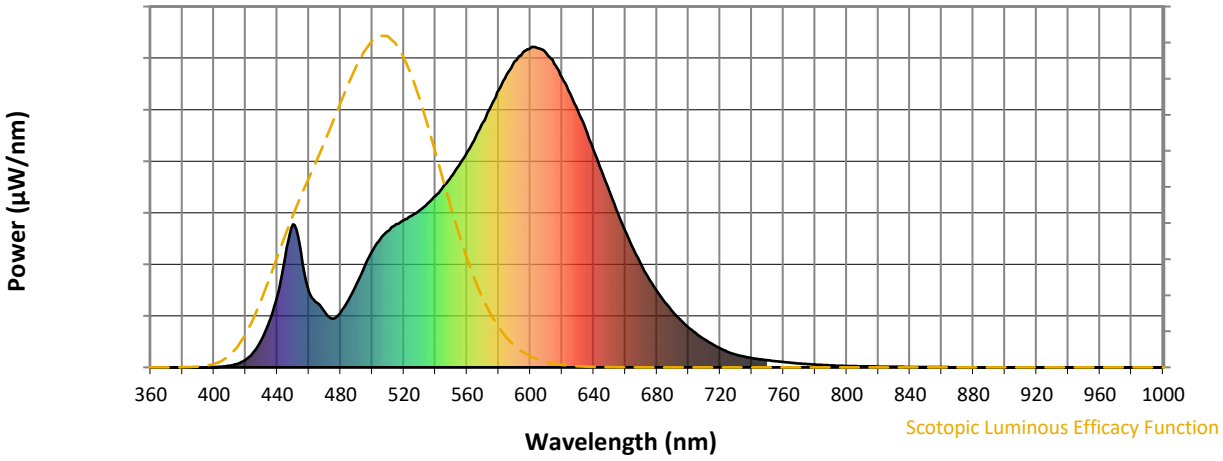


Photopic Lumens: NR

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

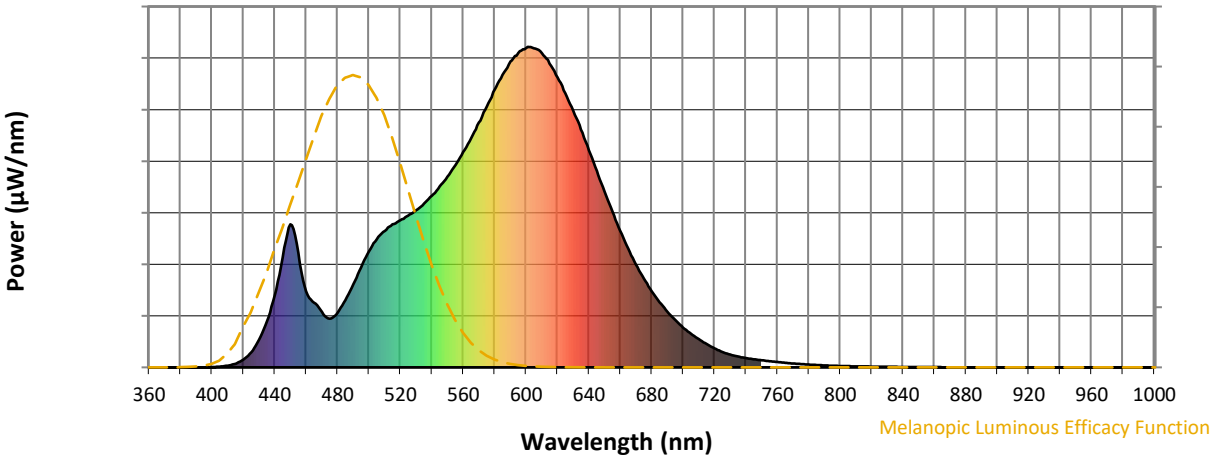


Scotopic Lumens: NR **S/P: 1.32**

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			

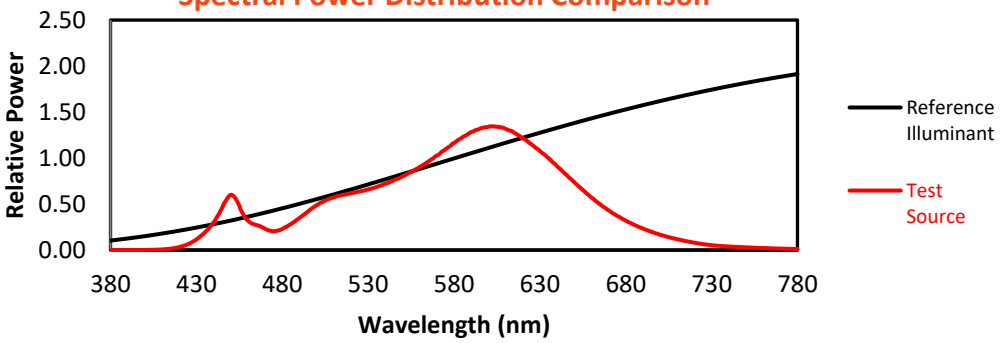
REPORT NUMBER: SP1-2407-176-7

TM-30-18

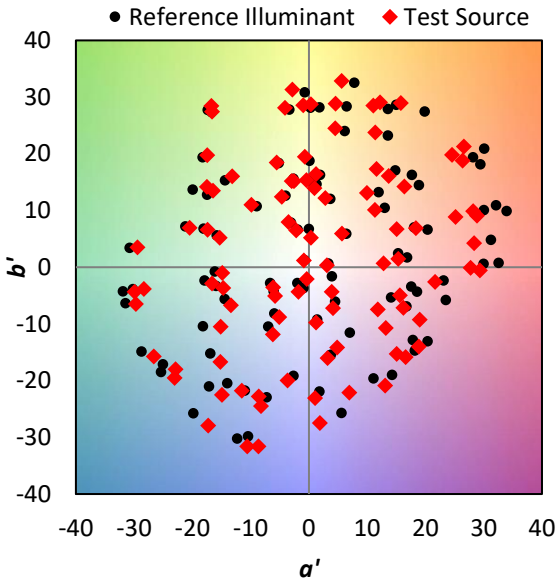
Summary

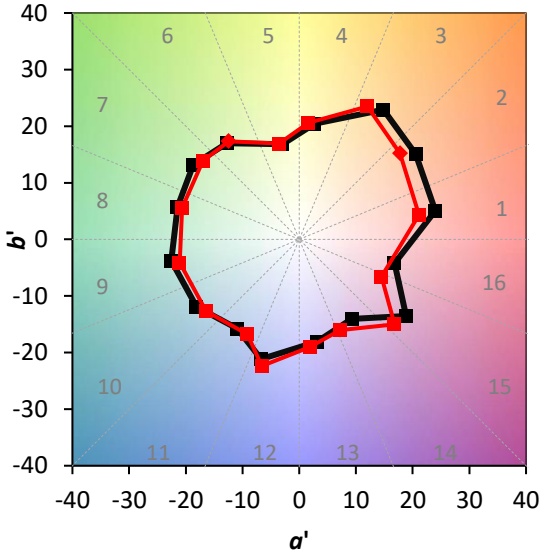
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R_g = 94.1
CIE R_a = 81.8
R_9 = -1.1

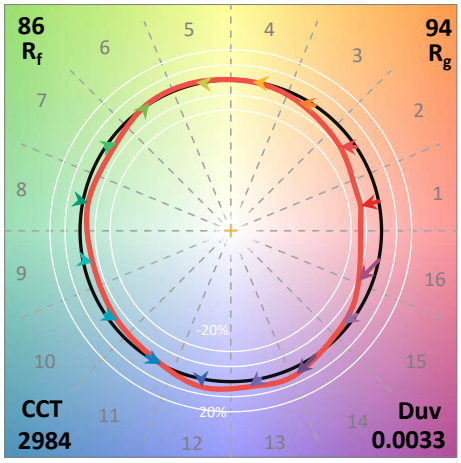
Spectral Power Distribution Comparison

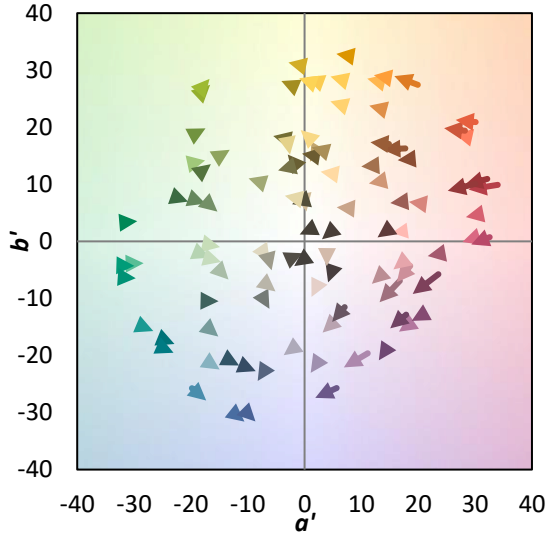


Color Vector Graphics







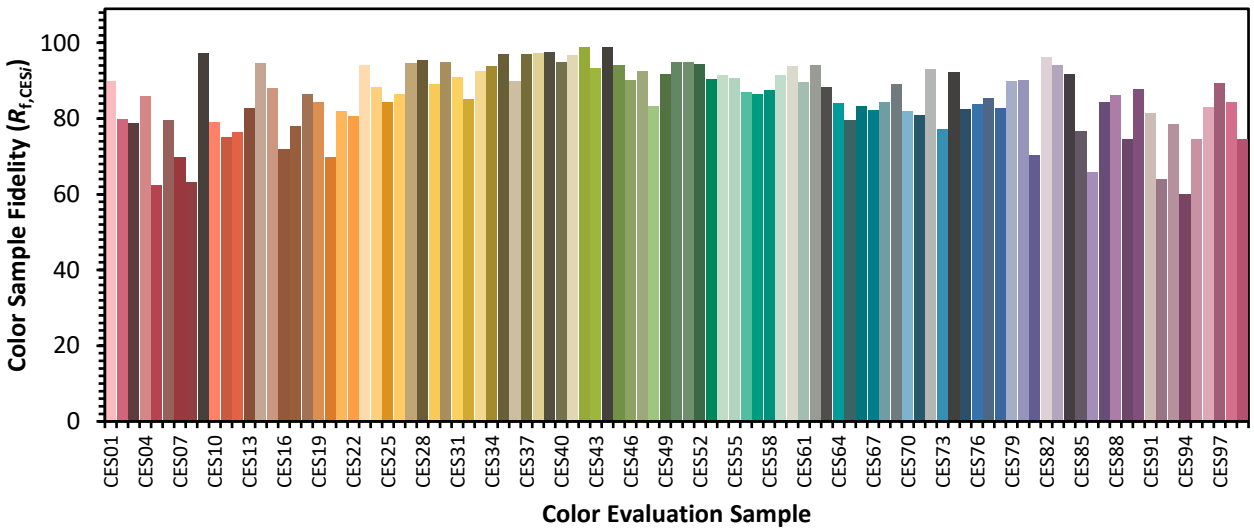


REPORT NUMBER: SP1-2407-176-7

TM-30-18

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

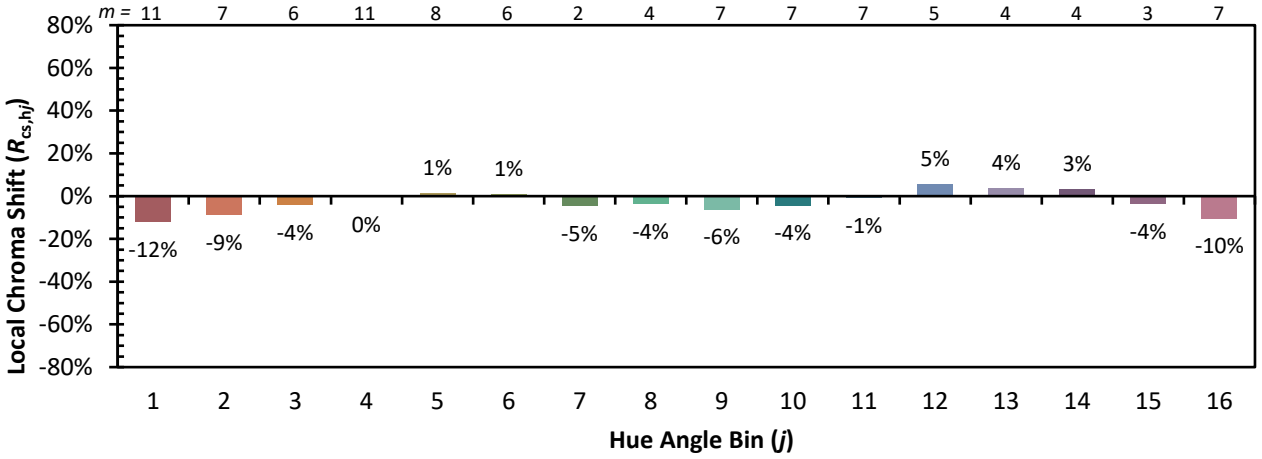
CES01 = 86	CES26 = 86	CES51 = 95	CES76 = 84
CES02 = 63	CES27 = 95	CES52 = 94	CES77 = 86
CES03 = 31	CES28 = 95	CES53 = 90	CES78 = 83
CES04 = 70	CES29 = 89	CES54 = 91	CES79 = 90
CES05 = 50	CES30 = 95	CES55 = 91	CES80 = 90
CES06 = 51	CES31 = 91	CES56 = 87	CES81 = 70
CES07 = 42	CES32 = 85	CES57 = 86	CES82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

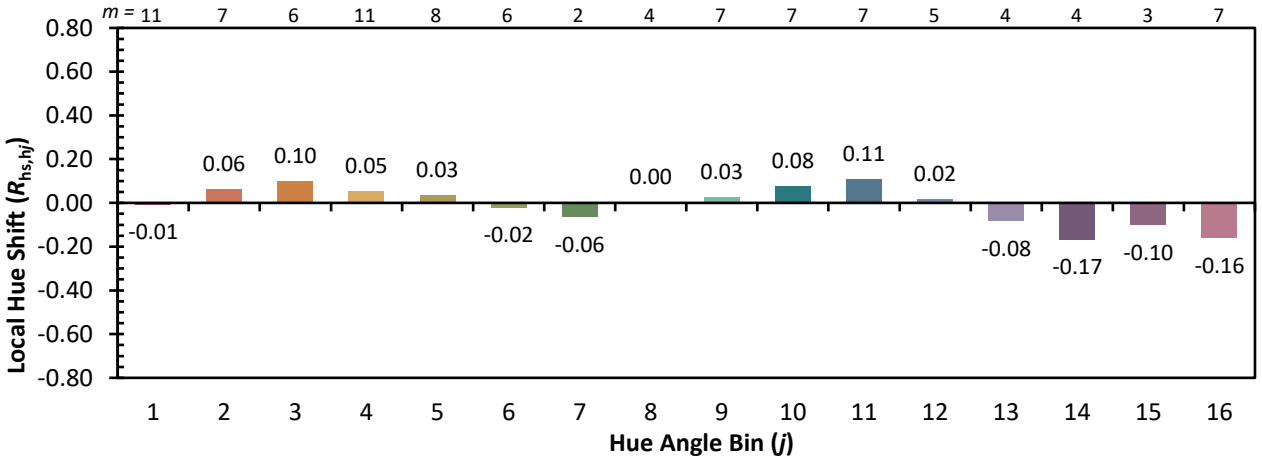


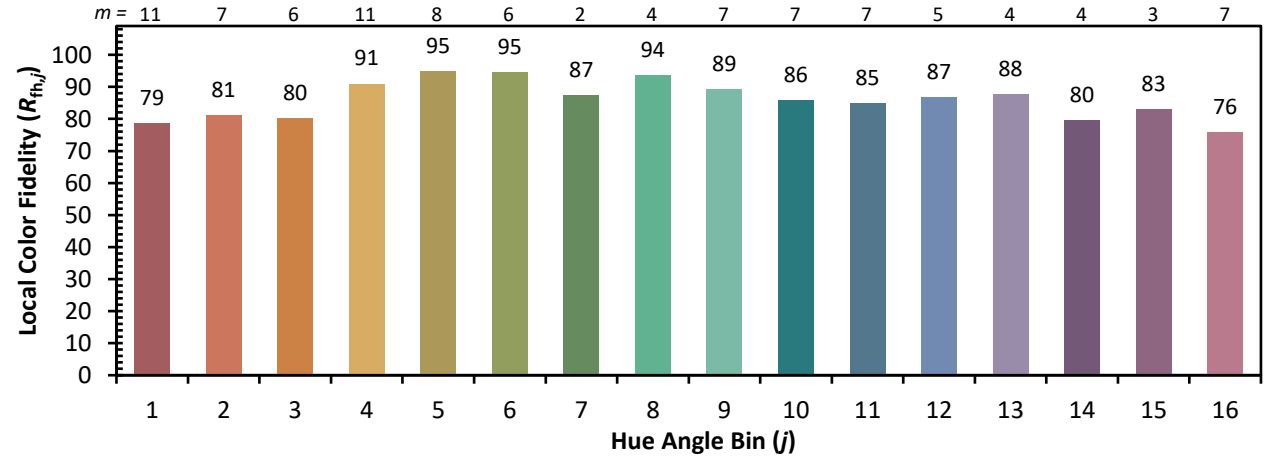
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Color Rendition by Hue-Angle Bin



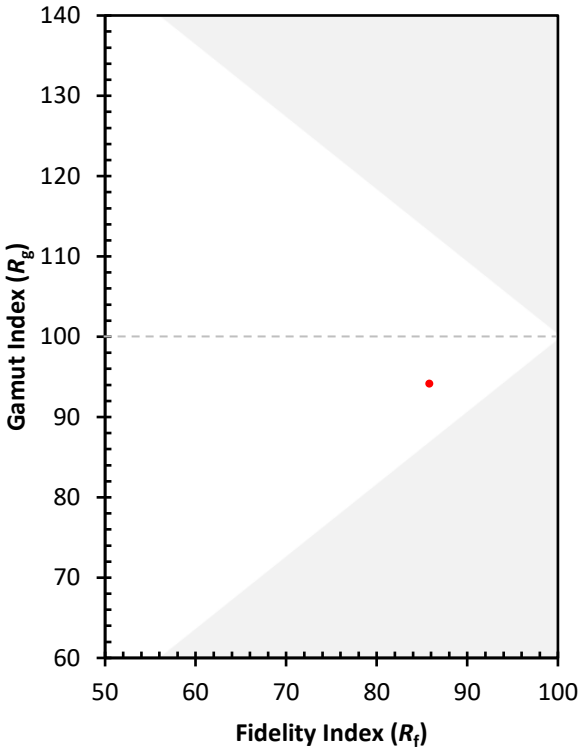


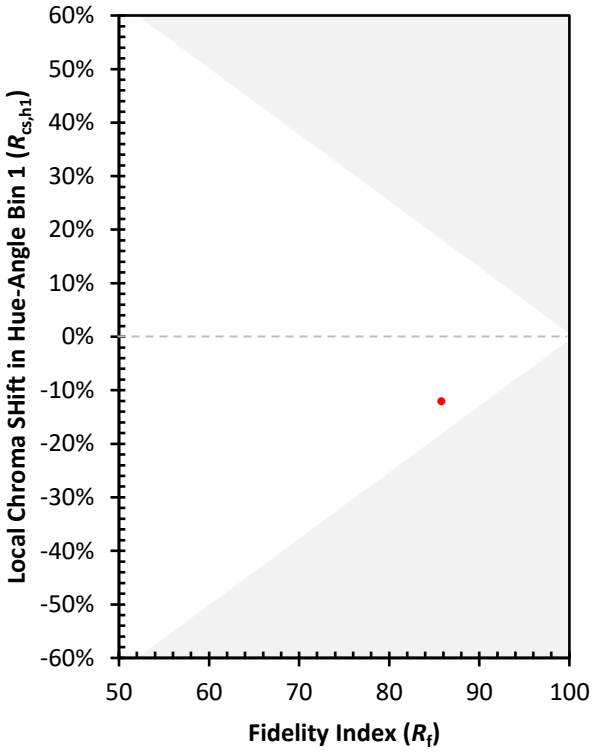


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Measure Comparisons





(END OF REPORT)