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: P832955

Luminaire Tested: **TTN-D0-830-U-DL-CG-UPL2**

Issue Date: 5/15/2024

Report Generated By 670246001

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Scaled Data Report

Test Information

Test Method:	LM-79-08
Report Number:	P832955
	REPORT IS FROM IESNA LM-79-08 TEST DATA - UPLIGHT (G3-2308-121-4) AND
Test Lab:	INNOVATION CENTER
Issue Date:	5/15/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	McGRAW-EDISON
Catalog Number:	TTN-D0-830-U-DL-CG-UPL2
Description:	TOPTIER NANO LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
	3000K, 80 CRI LEDS AND DRIVE LANE DISTRIBUTION WITH CLEAR GLASS
Light Source:	-
Ballast/Driver:	-

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	1557.8 lumens
Efficiency:	N/A
Efficacy:	102.5 lumens/watt
Luminous Opening:	Vertical Cylinder (Dia: 0.71' x H: 0.1')
IES Classification:	Type IV - Short
BUG Rating:	B0 - U4 - G1

Input Watts (W):	15.2
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:	24 FT

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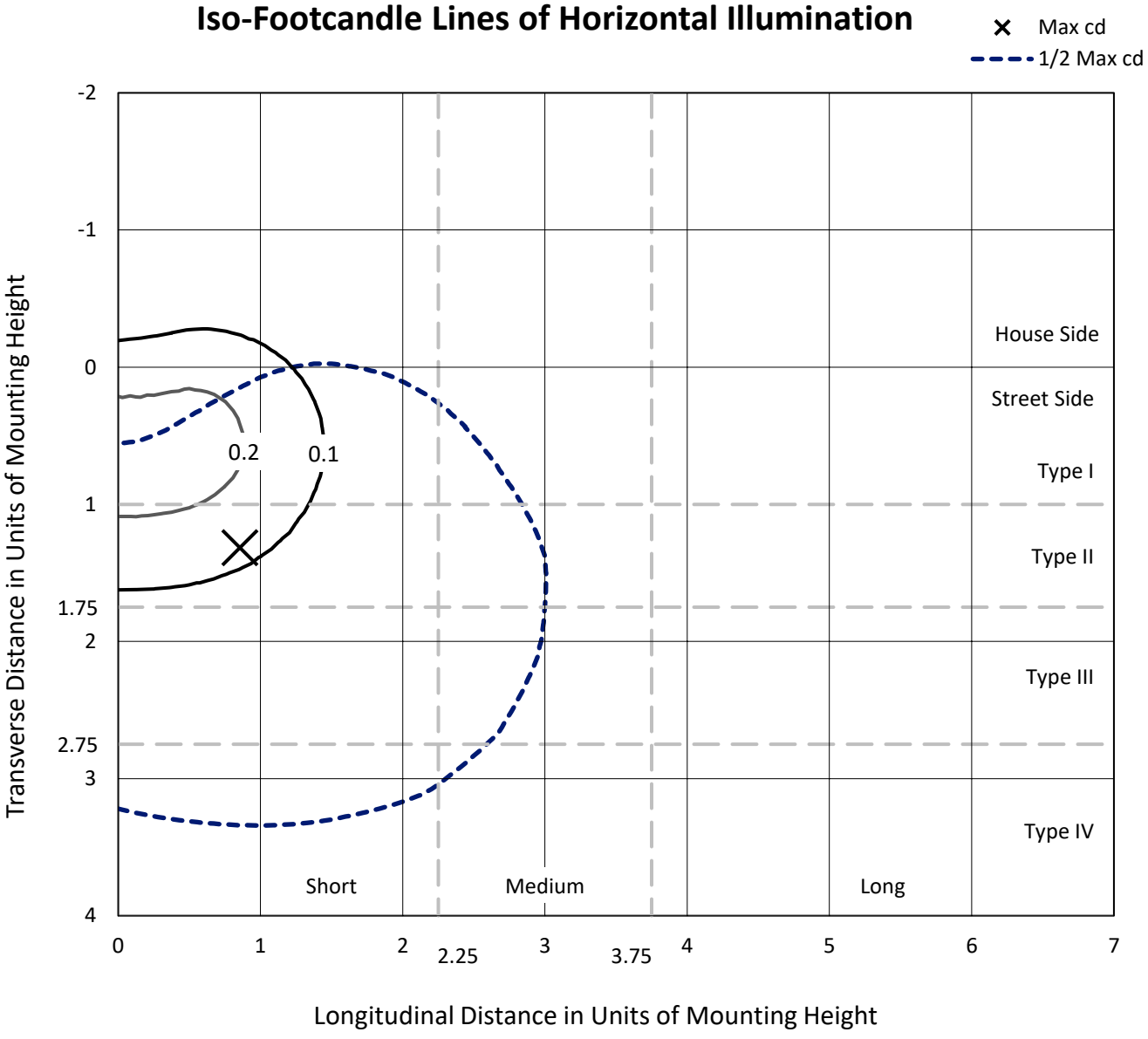
Iso-Footcandle Lines of Horizontal Illumination



Based on 25 foot mounting height. Maximum calculated value = 0.3 fc
Type IV - Short - N/A

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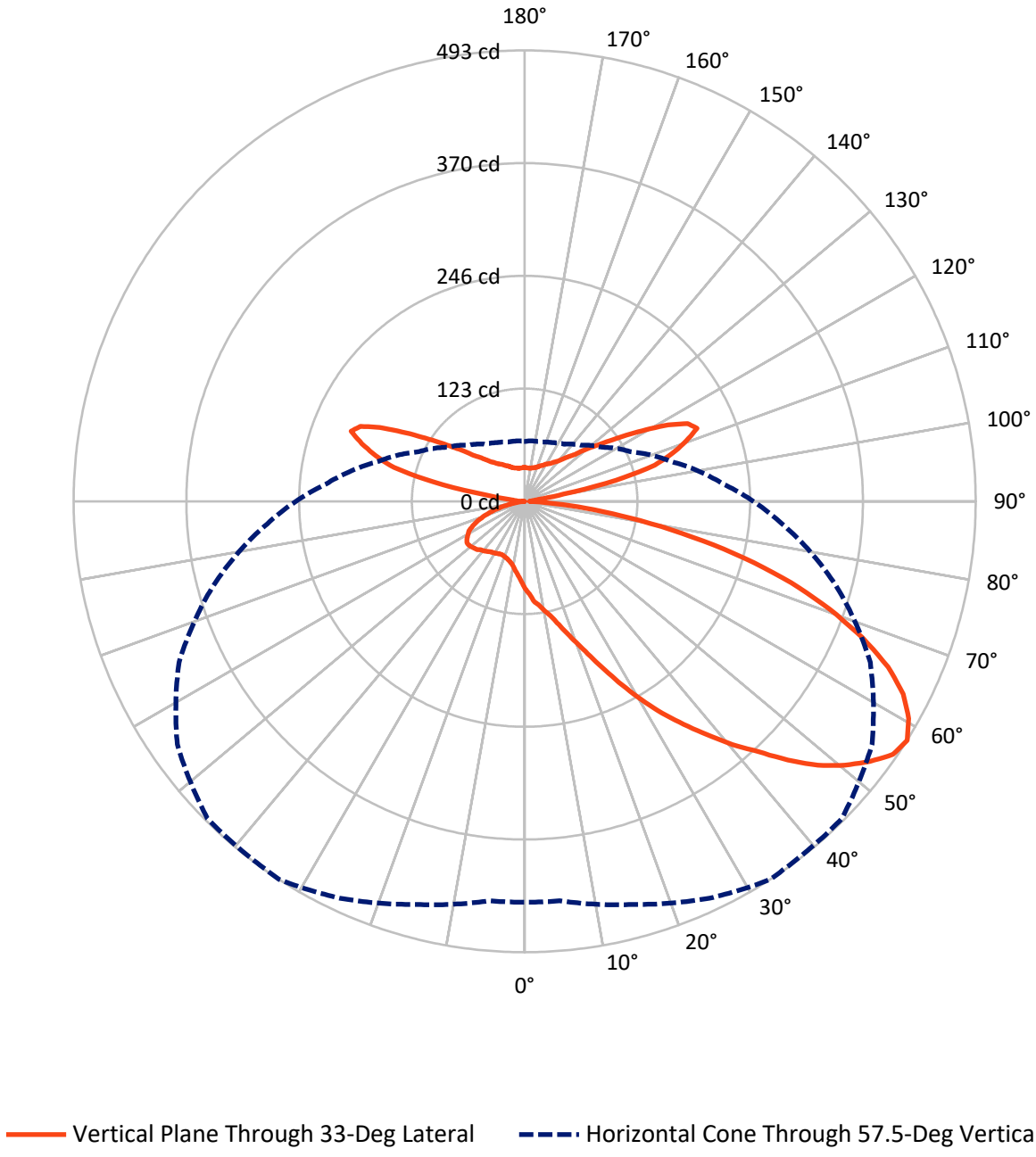
Luminous Intensity Polar Plot



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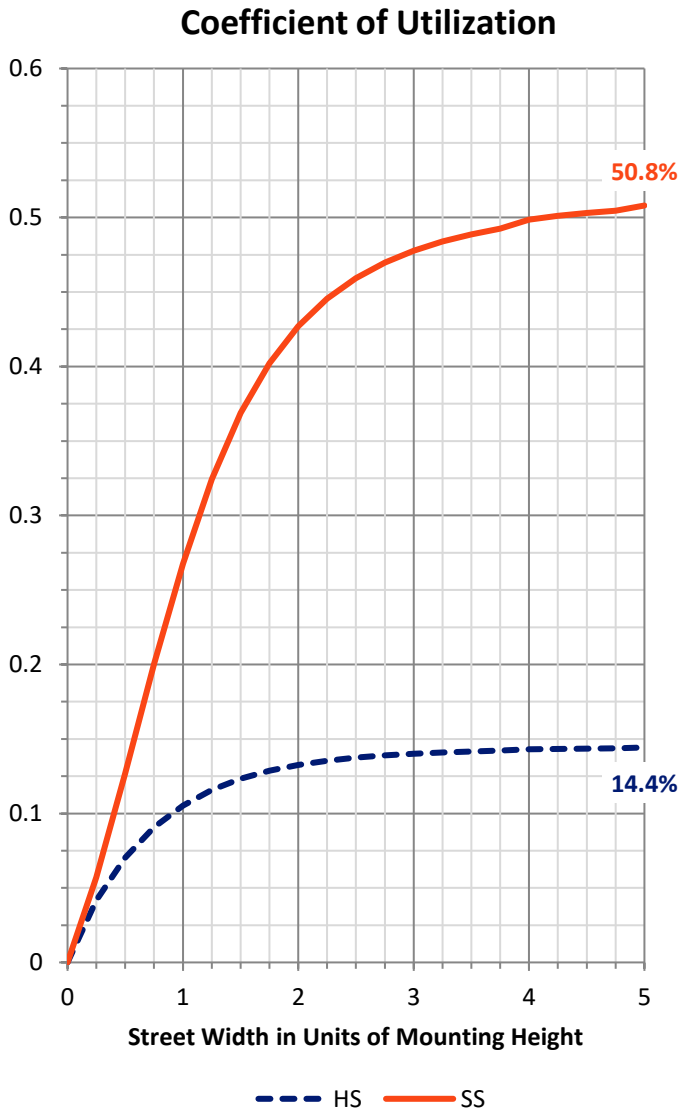
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	226.1	267.0	493.1
	% Fixture	14.5	17.1	31.7
Street Side	Lumens	797.6	267.0	1064.7
	% Fixture	51.2	17.1	68.3
Total	Lumens	1023.7	534.0	1557.8
	% Fixture	65.7	34.3	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	9.2	0.6
10°-20°	29.7	1.9
20°-30°	62.7	4.0
30°-40°	113.9	7.3
40°-50°	180.0	11.6
50°-60°	239.1	15.3
60°-70°	230.1	14.8
70°-80°	135.1	8.7
80°-90°	23.9	1.5
90°-100°	11.9	0.8
100°-110°	121.1	7.8
110°-120°	177.1	11.4
120°-130°	102.8	6.6
130°-140°	54.4	3.5
140°-150°	32.3	2.1
150°-160°	19.9	1.3
160°-170°	10.9	0.7
170°-180°	3.5	0.2
0°-90°	1023.7	65.7
0°-180°	1557.8	100.0



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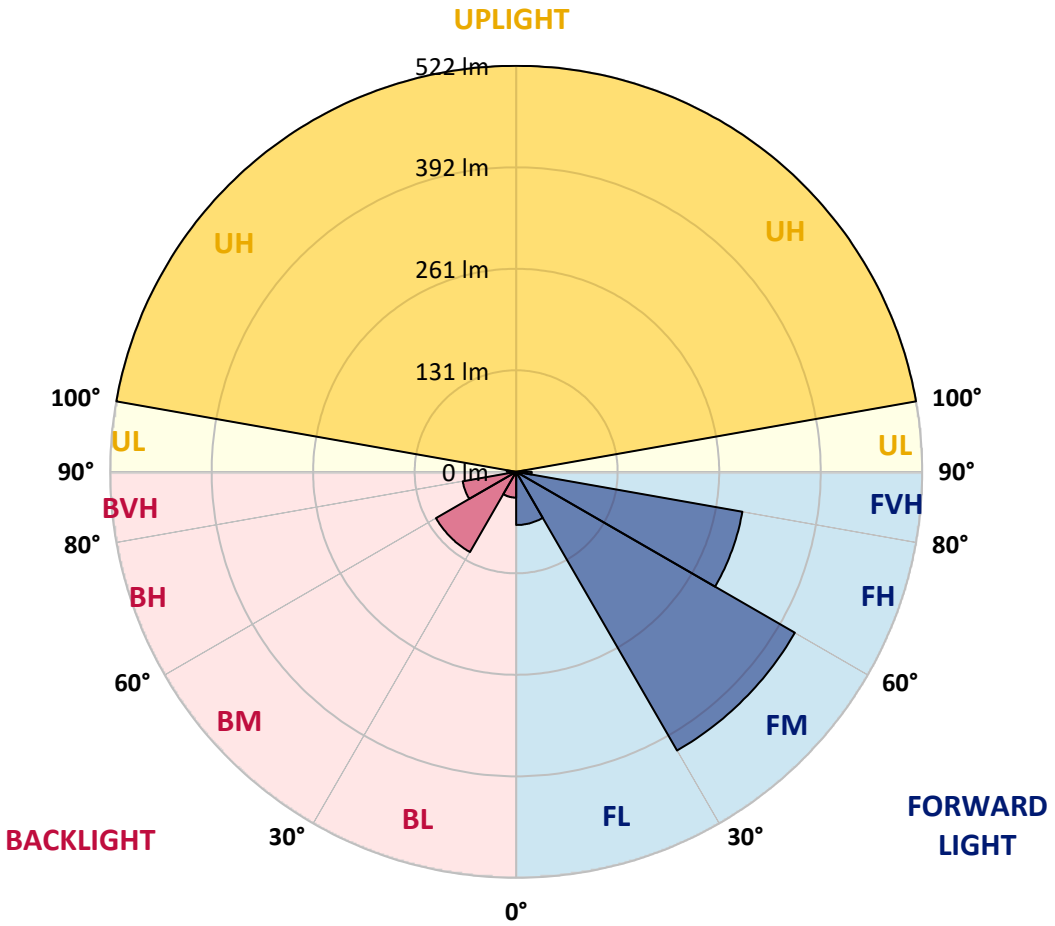
LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	68.4	4.4			
FM	(30°-60°)	413.9	26.6			
FH	(60°-80°)	295.4	19.0			G0/660
FVH	(80°-90°)	19.9	1.3			G1/100
BL	(0°-30°)	33.2	2.1	B0/110		
BM	(30°-60°)	119.1	7.6	B0/220		
BH	(60°-80°)	69.8	4.5	B0/110		G0/110
BVH	(80°-90°)	4.0	0.3			G0/10
UL	(90°-100°)	11.9	0.8		U2/50	
UH	(100°-180°)	522.1	33.5		U4/1000	

BUG Rating: B0-U4-G1
Type IV Short



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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
0°	95.9	95.9	95.9	95.9	*95.9*	95.9	95.9	95.9	95.9	95.9	95.9
2.5°	102.2	103.0	102.2	102.2	*101.3*	101.3	100.4	99.5	98.6	97.7	95.9
5°	113.8	113.8	112.9	111.1	*110.2*	109.3	107.5	104.8	103.0	100.4	97.7
7.5°	119.2	119.2	118.3	116.5	*114.7*	113.8	111.1	107.5	104.8	101.3	97.7
10°	126.3	127.2	125.5	123.7	*121.9*	121.0	117.4	112.9	108.4	103.9	98.6
12.5°	134.4	135.3	134.4	131.7	*129.0*	128.1	124.6	119.2	113.8	107.5	101.3
15°	145.2	147.0	144.3	142.5	*139.8*	138.9	134.4	128.1	121.9	113.8	105.7
17.5°	157.7	158.6	156.8	154.1	*152.3*	151.4	147.0	139.8	130.8	121.9	112.0
20°	172.0	172.9	172.0	168.5	*166.7*	165.8	161.3	153.2	142.5	132.6	120.1
22.5°	189.1	190.9	188.2	185.5	*183.7*	183.7	178.3	169.4	156.8	144.3	129.9
25°	208.8	211.5	207.9	206.1	*204.3*	203.4	198.9	188.2	173.8	158.6	140.7
27.5°	233.0	234.8	232.1	231.2	*227.6*	227.6	220.4	207.9	192.7	174.7	154.1
30°	254.5	256.3	254.5	254.5	*251.8*	250.9	243.7	231.2	212.4	190.9	165.8
32.5°	275.1	276.9	276.0	276.9	*276.0*	275.1	266.1	252.7	233.9	206.1	177.4
35°	295.7	298.4	297.5	300.2	*299.3*	298.4	291.2	275.1	252.7	224.9	190.0
37.5°	317.2	319.9	319.9	322.6	*323.5*	323.5	315.4	298.4	273.3	241.9	204.3
40°	340.5	343.2	343.2	347.7	*349.5*	349.5	340.5	323.5	295.7	260.8	219.5
42.5°	362.9	365.6	366.5	371.0	*373.7*	374.6	367.4	347.7	315.4	279.6	233.9
45°	384.4	387.1	389.8	398.8	*403.2*	402.3	397.0	376.4	340.5	299.3	249.1
47.5°	405.0	408.6	413.1	424.7	*431.0*	430.1	426.5	403.2	363.8	318.1	262.5
50°	421.2	423.8	432.8	445.3	*453.4*	454.3	448.9	426.5	383.5	332.4	272.4
52.5°	433.7	437.3	448.0	466.0	*472.2*	474.9	468.6	446.2	403.2	345.0	280.5
55°	442.7	442.7	458.8	479.4	*488.4*	490.2	490.2	462.4	414.9	353.1	285.0
57.5°	*438.2*	*438.2*	*456.1*	*478.5*	*492.8*	*491.9*	*490.2*	*463.3*	*416.7*	*351.3*	*282.3*
60°	425.6	428.3	445.3	467.8	*482.1*	481.2	475.8	451.6	407.7	344.1	276.9
62.5°	408.6	413.1	431.0	448.0	*464.2*	466.9	459.7	438.2	392.5	333.3	267.0
65°	376.4	382.6	405.0	423.8	*436.4*	441.8	432.8	413.1	371.9	312.7	246.4
67.5°	340.5	345.0	363.8	390.7	*397.9*	403.2	398.8	378.1	343.2	279.6	223.1
70°	299.3	306.5	319.0	345.9	*353.9*	359.3	359.3	338.7	305.6	245.5	195.3
72.5°	250.9	259.0	274.2	293.9	*304.7*	308.2	307.4	290.3	260.8	207.9	164.9
75°	198.0	204.3	222.2	236.6	*248.2*	250.9	250.0	235.7	208.8	167.6	130.8
77.5°	146.1	152.3	165.8	176.5	*187.3*	185.5	185.5	174.7	157.7	124.6	99.5
80°	95.9	101.3	112.9	116.5	*128.1*	127.2	127.2	119.2	107.5	83.3	66.3
82.5°	52.9	57.3	65.4	69.0	*76.2*	74.4	75.3	69.9	62.7	46.6	37.6
85°	18.8	22.4	26.9	29.6	*33.2*	33.2	33.2	28.7	26.9	17.9	15.2
87.5°	0.9	1.8	3.6	3.6	*5.4*	5.4	5.4	3.6	3.6	0.9	0.9
90°	4.6	4.6	5.5	5.5	*5.5*	5.5	5.5	5.5	5.5	5.5	4.6
92.5°	4.6	4.6	4.6	6.4	*7.1*	7.3	6.4	7.3	5.5	5.5	4.6
95°	5.5	5.5	6.4	8.2	*9.7*	10.1	11.0	11.0	6.4	6.4	5.5
97.5°	7.3	8.2	8.2	10.1	*15.1*	16.4	30.2	18.3	9.1	9.1	8.2
100°	11.9	12.8	12.8	22.8	*43.3*	48.4	64.9	46.6	23.8	17.4	12.8
102.5°	38.4	40.2	49.3	74.0	*102.5*	109.6	99.6	84.1	79.5	54.8	43.9
105°	97.8	96.8	104.2	123.3	*147.5*	153.5	150.8	138.9	126.1	108.7	100.5
107.5°	128.8	128.8	135.2	151.7	*169.9*	174.5	203.7	206.5	163.5	143.4	134.3
110°	145.3	145.3	150.8	164.5	*188.6*	194.6	235.7	233.9	201.9	177.3	165.4

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CATALOG NUMBER: TTN-D0-830-U-DL-CG-UPL2

CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
112.5°	148.9	149.8	157.1	178.2	*204.5*	211.1	229.3	221.1	208.3	197.4	188.2
115°	154.4	154.4	162.6	182.7	*197.3*	201.0	208.3	199.2	189.1	181.8	178.2
117.5°	152.6	155.3	157.1	168.1	*177.6*	180.0	185.5	180.9	167.2	161.7	159.9
120°	141.6	141.6	143.4	148.9	*154.0*	155.3	158.1	156.2	147.1	142.5	141.6
122.5°	126.1	127.0	126.1	128.8	*132.5*	133.4	136.1	134.3	127.0	125.2	125.2
125°	110.6	110.6	109.6	111.5	*113.7*	114.2	113.3	114.2	110.6	109.6	109.6
127.5°	99.6	98.7	96.8	97.8	*98.5*	98.7	98.7	99.6	95.9	96.8	97.8
130°	88.6	88.6	86.8	86.8	*86.8*	86.8	85.0	86.8	85.0	85.9	86.8
132.5°	78.6	78.6	75.8	74.9	*74.9*	74.9	74.9	75.8	74.9	76.7	78.6
135°	70.4	70.4	67.6	68.5	*68.5*	68.5	67.6	68.5	67.6	69.4	70.4
137.5°	64.0	64.0	62.1	62.1	*62.1*	62.1	61.2	62.1	62.1	63.0	64.9
140°	58.5	58.5	57.6	57.6	*56.8*	56.6	57.6	57.6	57.6	58.5	59.4
142.5°	55.7	54.8	53.9	53.0	*53.7*	53.9	53.9	53.9	53.0	53.9	55.7
145°	51.2	51.2	50.3	50.3	*50.3*	50.3	51.2	50.3	50.3	51.2	51.2
147.5°	48.4	48.4	47.5	48.4	*48.4*	48.4	48.4	48.4	47.5	48.4	48.4
150°	47.5	46.6	45.7	46.6	*46.6*	46.6	45.7	45.7	45.7	45.7	46.6
152.5°	44.8	44.8	43.9	44.8	*44.1*	43.9	43.9	43.9	43.9	43.9	44.8
155°	42.9	42.9	42.0	42.9	*42.9*	42.9	42.9	42.9	42.9	42.9	42.9
157.5°	41.1	42.0	41.1	41.1	*41.1*	41.1	41.1	41.1	41.1	41.1	42.0
160°	40.2	40.2	40.2	40.2	*39.5*	39.3	39.3	39.3	40.2	40.2	40.2
162.5°	39.3	39.3	39.3	39.3	*38.6*	38.4	38.4	38.4	38.4	39.3	39.3
165°	39.3	38.4	38.4	38.4	*37.7*	37.5	37.5	37.5	37.5	38.4	39.3
167.5°	37.5	37.5	37.5	37.5	*37.5*	37.5	36.5	36.5	37.5	37.5	37.5
170°	37.5	37.5	36.5	36.5	*36.5*	36.5	36.5	36.5	36.5	36.5	36.5
172.5°	37.5	37.5	37.5	37.5	*36.7*	36.5	36.5	36.5	36.5	36.5	37.5
175°	37.5	37.5	37.5	37.5	*36.7*	36.5	36.5	36.5	37.5	37.5	37.5
177.5°	37.5	37.5	37.5	37.5	*36.7*	36.5	37.5	37.5	37.5	37.5	37.5
180°	37.5	37.5	37.5	37.5	*37.5*	37.5	37.5	37.5	37.5	37.5	37.5

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CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	95.9	95.9	95.9	95.9	95.9	95.9	95.9	95.9	95.9	95.9	95.9
2.5°	95.0	94.1	93.2	91.4	90.5	89.6	88.7	87.8	87.8	87.8	87.8
5°	95.9	95.0	92.3	89.6	86.9	84.2	82.4	81.5	80.6	79.8	79.8
7.5°	95.9	94.1	90.5	86.9	84.2	80.6	78.0	75.3	73.5	72.6	72.6
10°	96.8	94.1	89.6	86.0	81.5	77.1	73.5	69.9	68.1	66.3	66.3
12.5°	98.6	95.9	89.6	85.1	79.8	74.4	69.9	66.3	63.6	61.8	61.8
15°	102.2	98.6	91.4	85.1	78.9	72.6	68.1	63.6	60.9	59.1	59.1
17.5°	107.5	103.0	94.1	85.1	78.0	71.7	66.3	61.8	58.2	56.5	56.5
20°	113.8	108.4	97.7	86.9	78.0	70.8	65.4	60.0	56.5	54.7	54.7
22.5°	122.8	114.7	102.2	89.6	79.8	71.7	64.5	59.1	55.6	53.8	53.8
25°	132.6	123.7	107.5	93.2	81.5	71.7	64.5	59.1	55.6	53.8	52.9
27.5°	143.4	133.5	113.8	96.8	83.3	73.5	65.4	59.1	55.6	53.8	53.8
30°	153.2	141.6	120.1	101.3	86.0	74.4	66.3	60.0	55.6	53.8	53.8
32.5°	164.0	150.5	126.3	105.7	88.7	76.2	67.2	60.9	56.5	54.7	53.8
35°	174.7	159.5	132.6	109.3	91.4	78.0	68.1	61.8	57.3	55.6	55.6
37.5°	186.4	169.4	138.9	113.8	94.1	79.8	69.9	62.7	58.2	56.5	56.5
40°	198.9	179.2	145.2	117.4	96.8	81.5	71.7	64.5	60.0	58.2	58.2
42.5°	211.5	190.0	152.3	121.9	99.5	83.3	72.6	66.3	61.8	60.0	60.0
45°	224.0	198.9	158.6	126.3	102.2	86.0	75.3	68.1	63.6	61.8	61.8
47.5°	235.7	208.8	164.0	129.0	104.8	87.8	76.2	69.9	65.4	64.5	63.6
50°	243.7	215.1	167.6	131.7	105.7	88.7	78.0	70.8	67.2	65.4	65.4
52.5°	250.0	221.3	170.3	133.5	106.6	89.6	78.9	72.6	69.0	67.2	66.3
55°	253.6	222.2	170.3	131.7	105.7	89.6	78.9	72.6	69.0	67.2	67.2
57.5°	*250.0*	*217.7*	*166.7*	*128.1*	*103.0*	*86.9*	*76.2*	*70.8*	*67.2*	*66.3*	*65.4*
60°	242.8	210.6	159.5	122.8	98.6	82.4	72.6	68.1	65.4	64.5	63.6
62.5°	233.0	201.6	152.3	115.6	92.3	77.1	69.9	64.5	62.7	61.8	60.9
65°	213.3	184.6	140.7	106.6	84.2	70.8	63.6	60.0	58.2	56.5	55.6
67.5°	191.8	165.8	124.6	95.9	74.4	63.6	57.3	53.8	51.1	51.1	50.2
70°	168.5	146.1	107.5	81.5	64.5	55.6	49.3	46.6	44.8	44.8	43.9
72.5°	140.7	122.8	89.6	66.3	52.9	45.7	41.2	38.5	37.6	37.6	36.7
75°	112.9	96.8	70.8	52.0	41.2	35.8	32.3	30.5	29.6	29.6	28.7
77.5°	83.3	70.8	51.1	37.6	29.6	26.0	23.3	22.4	21.5	21.5	20.6
80°	55.6	46.6	33.2	24.2	17.9	16.1	14.3	14.3	13.4	14.3	13.4
82.5°	30.5	25.1	17.9	12.5	9.0	8.1	7.2	7.2	8.1	8.1	7.2
85°	11.6	9.0	6.3	3.6	2.7	2.7	2.7	2.7	2.7	2.7	1.8
87.5°	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	4.6	4.6	5.5	5.5	5.5	5.5	5.5	5.5	5.5	4.6	4.6
92.5°	4.6	4.6	5.5	5.5	7.3	6.4	7.3	6.4	4.6	4.6	4.6
95°	5.5	5.5	6.4	6.4	11.0	11.0	10.1	8.2	6.4	5.5	5.5
97.5°	7.3	8.2	9.1	9.1	18.3	30.2	16.4	10.1	8.2	8.2	7.3
100°	12.8	12.8	17.4	23.8	46.6	64.9	48.4	22.8	12.8	12.8	11.9
102.5°	42.0	43.9	54.8	79.5	84.1	99.6	109.6	74.0	49.3	40.2	38.4
105°	100.5	100.5	108.7	126.1	138.9	150.8	153.5	123.3	104.2	96.8	97.8
107.5°	133.4	134.3	143.4	163.5	206.5	203.7	174.5	151.7	135.2	128.8	128.8
110°	163.5	165.4	177.3	201.9	233.9	235.7	194.6	164.5	150.8	145.3	145.3

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

Scaled Data Report

REPORT NUMBER: P832955
CATALOG NUMBER: TTN-D0-830-U-DL-CG-UPL2

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	186.4	188.2	197.4	208.3	221.1	229.3	211.1	178.2	157.1	149.8	148.9
115°	180.0	178.2	181.8	189.1	199.2	208.3	201.0	182.7	162.6	154.4	154.4
117.5°	157.1	159.9	161.7	167.2	180.9	185.5	180.0	168.1	157.1	155.3	152.6
120°	139.8	141.6	142.5	147.1	156.2	158.1	155.3	148.9	143.4	141.6	141.6
122.5°	123.3	125.2	125.2	127.0	134.3	136.1	133.4	128.8	126.1	127.0	126.1
125°	108.7	109.6	109.6	110.6	114.2	113.3	114.2	111.5	109.6	110.6	110.6
127.5°	96.8	97.8	96.8	95.9	99.6	98.7	98.7	97.8	96.8	98.7	99.6
130°	87.7	86.8	85.9	85.0	86.8	85.0	86.8	86.8	86.8	88.6	88.6
132.5°	78.6	78.6	76.7	74.9	75.8	74.9	74.9	74.9	75.8	78.6	78.6
135°	70.4	70.4	69.4	67.6	68.5	67.6	68.5	68.5	67.6	70.4	70.4
137.5°	65.8	64.9	63.0	62.1	62.1	61.2	62.1	62.1	62.1	64.0	64.0
140°	59.4	59.4	58.5	57.6	57.6	57.6	56.6	57.6	57.6	58.5	58.5
142.5°	55.7	55.7	53.9	53.0	53.9	53.9	53.9	53.0	53.9	54.8	55.7
145°	52.1	51.2	51.2	50.3	50.3	51.2	50.3	50.3	50.3	51.2	51.2
147.5°	49.3	48.4	48.4	47.5	48.4	48.4	48.4	48.4	47.5	48.4	48.4
150°	46.6	46.6	45.7	45.7	45.7	45.7	46.6	46.6	45.7	46.6	47.5
152.5°	45.7	44.8	43.9	43.9	43.9	43.9	43.9	44.8	43.9	44.8	44.8
155°	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.0	42.9	42.9
157.5°	42.0	42.0	41.1	41.1	41.1	41.1	41.1	41.1	41.1	42.0	41.1
160°	41.1	40.2	40.2	40.2	39.3	39.3	39.3	40.2	40.2	40.2	40.2
162.5°	40.2	39.3	39.3	38.4	38.4	38.4	38.4	39.3	39.3	39.3	39.3
165°	38.4	39.3	38.4	37.5	37.5	37.5	37.5	38.4	38.4	38.4	39.3
167.5°	38.4	37.5	37.5	37.5	36.5	36.5	37.5	37.5	37.5	37.5	37.5
170°	37.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	37.5	37.5
172.5°	37.5	37.5	36.5	36.5	36.5	36.5	36.5	37.5	37.5	37.5	37.5
175°	36.5	37.5	37.5	37.5	36.5	36.5	36.5	37.5	37.5	37.5	37.5
177.5°	37.5	37.5	37.5	37.5	37.5	37.5	36.5	37.5	37.5	37.5	37.5
180°	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5

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

MCGRAW EDISON

Report Number: SP1-2411-284-4

Test Date: 11/22/2024

Luminaire Tested: TTN-D0-830-U-WQ

Data in this report applies to TT and TTN families of products

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

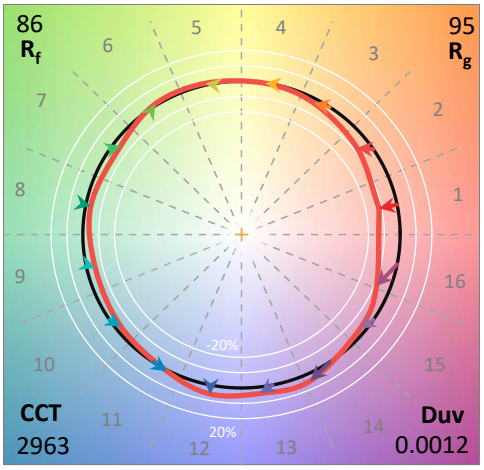
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2411-284-4
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	11/22/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	MCGRAW EDISON
Catalog Number:	**TTN-D0-830-U-WQ**
Description:	TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 3000K, 80 CRI LEDS AND WIDE DISTRIBUTION

Spectral Parameters

CCT (K):	2963
CIE u':	0.2515
CIE v':	0.5238
Duv:	0.0012
CIE x:	0.4414
CIE y:	0.4086
CIE z:	0.1501
Peak Wavelength (nm):	603
Dominant Wavelength (nm):	582
Purity:	55.12798
Rf:	86.1
Rg:	94.9

CRI (Ra):	82.9
R1:	81.4
R2:	91.9
R3:	95.2
R4:	81.6
R5:	82.3
R6:	91.4
R7:	82.0
R8:	57.2
R9:	3.9
R10:	82.5
R11:	82.3
R12:	76.5
R13:	83.9
R14:	97.8
R15:	72.6



Test Conditions

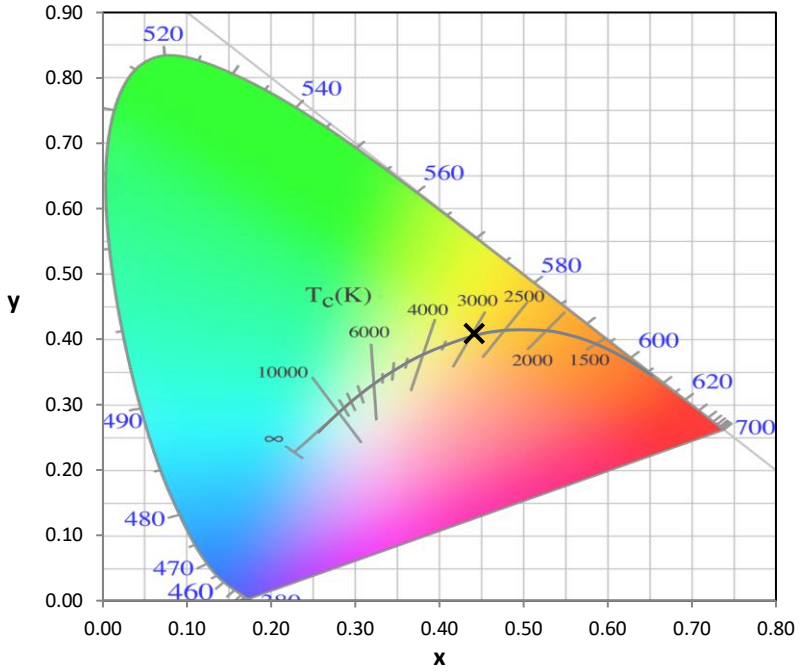
Stabilization Time:	37M
Operation Time:	1H 37M
Sphere Temperature (°C):	25.0

REPORT NUMBER: SP1-2411-284-4

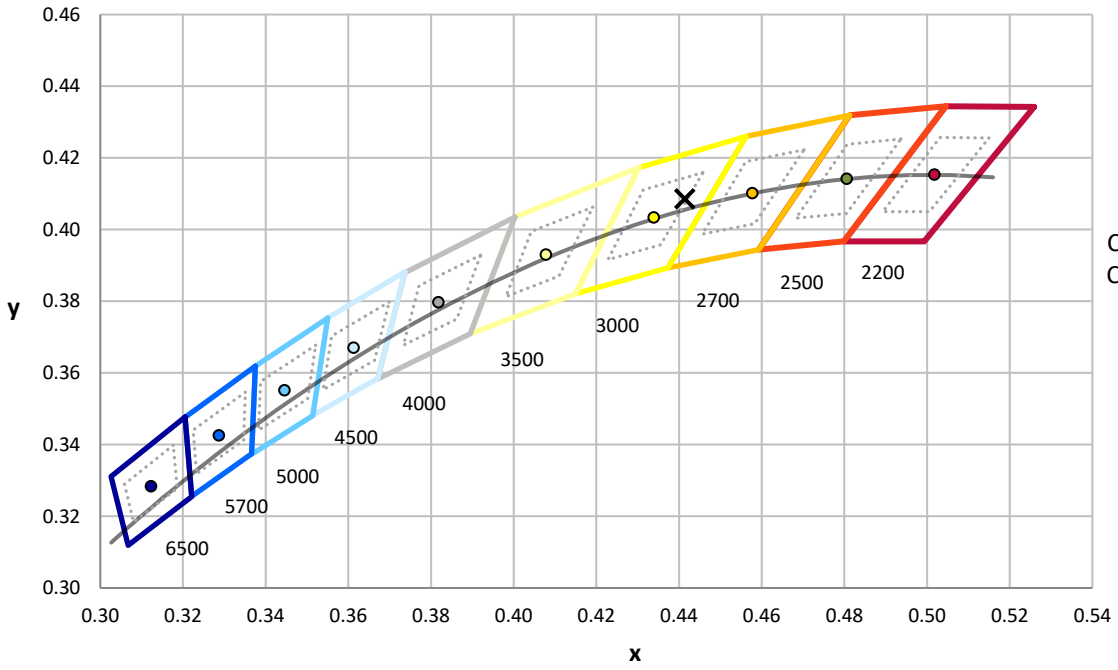
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085	10/22/2024	10/22/2025
Room Thermometer	IN0046	10/22/2024	10/22/2025

REPORT NUMBER: SP1-2411-284-4

CIE 1931 Chromaticity Diagram



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

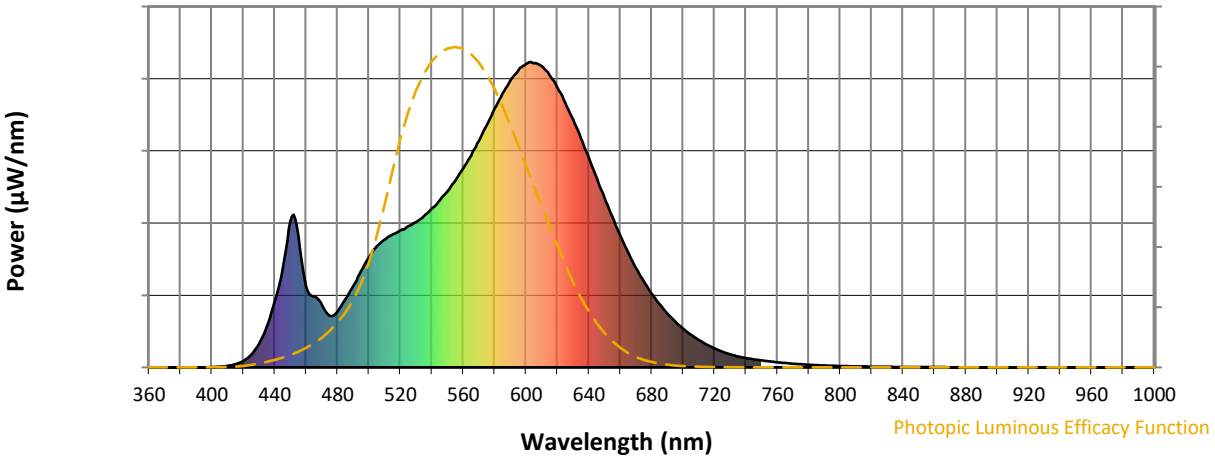


CCT = 2963K
CIE x = 0.4414
CIE y = 0.4086
Duv = 0.0012

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2411-284-4

Photopic Flux vs. Wavelength

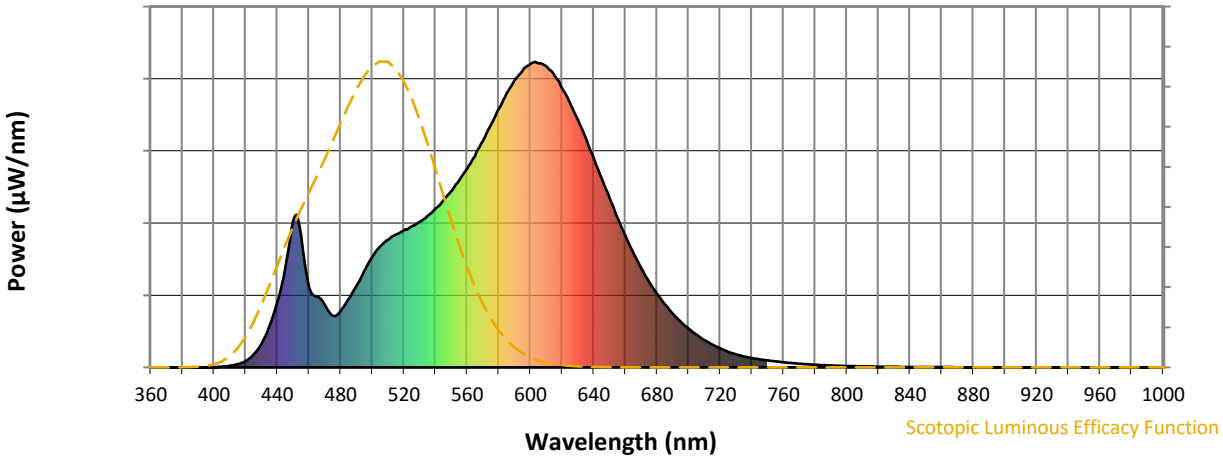


Photopic Lumens: NR

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	267	NR	620	915	NR	750	23	NR	880	0	NR
365	0	NR	495	315	NR	625	866	NR	755	20	NR	885	0	NR
370	0	NR	500	360	NR	630	811	NR	760	17	NR	890	0	NR
375	0	NR	505	396	NR	635	750	NR	765	14	NR	895	0	NR
380	0	NR	510	418	NR	640	686	NR	770	12	NR	900	0	NR
385	0	NR	515	435	NR	645	619	NR	775	10	NR	905	0	NR
390	0	NR	520	448	NR	650	554	NR	780	9	NR	910	0	NR
395	0	NR	525	462	NR	655	491	NR	785	7	NR	915	0	NR
400	1	NR	530	476	NR	660	431	NR	790	6	NR	920	0	NR
405	2	NR	535	495	NR	665	376	NR	795	5	NR	925	0	NR
410	5	NR	540	520	NR	670	325	NR	800	4	NR	930	0	NR
415	10	NR	545	547	NR	675	280	NR	805	4	NR	935	0	NR
420	21	NR	550	576	NR	680	241	NR	810	3	NR	940	0	NR
425	42	NR	555	612	NR	685	207	NR	815	3	NR	945	0	NR
430	77	NR	560	651	NR	690	176	NR	820	2	NR	950	0	NR
435	135	NR	565	693	NR	695	149	NR	825	2	NR	955	0	NR
440	215	NR	570	741	NR	700	127	NR	830	2	NR	960	0	NR
445	321	NR	575	793	NR	705	107	NR	835	2	NR	965	0	NR
450	479	NR	580	847	NR	710	89	NR	840	1	NR	970	0	NR
455	432	NR	585	897	NR	715	75	NR	845	1	NR	975	0	NR
460	265	NR	590	940	NR	720	62	NR	850	1	NR	980	0	NR
465	231	NR	595	971	NR	725	51	NR	855	1	NR	985	0	NR
470	204	NR	600	993	NR	730	43	NR	860	1	NR	990	0	NR
475	168	NR	605	996	NR	735	36	NR	865	1	NR	995	0	NR
480	183	NR	610	986	NR	740	31	NR	870	1	NR	1000	0	NR
485	223	NR	615	957	NR	745	26	NR	875	0	NR			

REPORT NUMBER: SP1-2411-284-4

Scotopic Flux vs. Wavelength

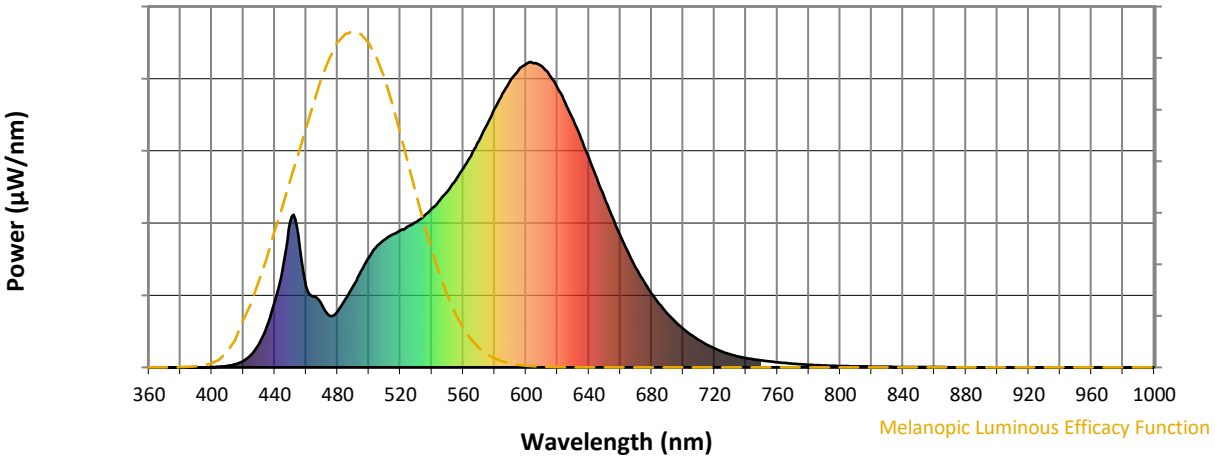


Scotopic Lumens: NR **S/P: 1.34**

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	267	NR	620	915	NR	750	23	NR	880	0	NR
365	0	NR	495	315	NR	625	866	NR	755	20	NR	885	0	NR
370	0	NR	500	360	NR	630	811	NR	760	17	NR	890	0	NR
375	0	NR	505	396	NR	635	750	NR	765	14	NR	895	0	NR
380	0	NR	510	418	NR	640	686	NR	770	12	NR	900	0	NR
385	0	NR	515	435	NR	645	619	NR	775	10	NR	905	0	NR
390	0	NR	520	448	NR	650	554	NR	780	9	NR	910	0	NR
395	0	NR	525	462	NR	655	491	NR	785	7	NR	915	0	NR
400	1	NR	530	476	NR	660	431	NR	790	6	NR	920	0	NR
405	2	NR	535	495	NR	665	376	NR	795	5	NR	925	0	NR
410	5	NR	540	520	NR	670	325	NR	800	4	NR	930	0	NR
415	10	NR	545	547	NR	675	280	NR	805	4	NR	935	0	NR
420	21	NR	550	576	NR	680	241	NR	810	3	NR	940	0	NR
425	42	NR	555	612	NR	685	207	NR	815	3	NR	945	0	NR
430	77	NR	560	651	NR	690	176	NR	820	2	NR	950	0	NR
435	135	NR	565	693	NR	695	149	NR	825	2	NR	955	0	NR
440	215	NR	570	741	NR	700	127	NR	830	2	NR	960	0	NR
445	321	NR	575	793	NR	705	107	NR	835	2	NR	965	0	NR
450	479	NR	580	847	NR	710	89	NR	840	1	NR	970	0	NR
455	432	NR	585	897	NR	715	75	NR	845	1	NR	975	0	NR
460	265	NR	590	940	NR	720	62	NR	850	1	NR	980	0	NR
465	231	NR	595	971	NR	725	51	NR	855	1	NR	985	0	NR
470	204	NR	600	993	NR	730	43	NR	860	1	NR	990	0	NR
475	168	NR	605	996	NR	735	36	NR	865	1	NR	995	0	NR
480	183	NR	610	986	NR	740	31	NR	870	1	NR	1000	0	NR
485	223	NR	615	957	NR	745	26	NR	875	0	NR			

REPORT NUMBER: SP1-2411-284-4

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 2.58**

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	267	NR	620	915	NR	750	23	NR	880	0	NR
365	0	NR	495	315	NR	625	866	NR	755	20	NR	885	0	NR
370	0	NR	500	360	NR	630	811	NR	760	17	NR	890	0	NR
375	0	NR	505	396	NR	635	750	NR	765	14	NR	895	0	NR
380	0	NR	510	418	NR	640	686	NR	770	12	NR	900	0	NR
385	0	NR	515	435	NR	645	619	NR	775	10	NR	905	0	NR
390	0	NR	520	448	NR	650	554	NR	780	9	NR	910	0	NR
395	0	NR	525	462	NR	655	491	NR	785	7	NR	915	0	NR
400	1	NR	530	476	NR	660	431	NR	790	6	NR	920	0	NR
405	2	NR	535	495	NR	665	376	NR	795	5	NR	925	0	NR
410	5	NR	540	520	NR	670	325	NR	800	4	NR	930	0	NR
415	10	NR	545	547	NR	675	280	NR	805	4	NR	935	0	NR
420	21	NR	550	576	NR	680	241	NR	810	3	NR	940	0	NR
425	42	NR	555	612	NR	685	207	NR	815	3	NR	945	0	NR
430	77	NR	560	651	NR	690	176	NR	820	2	NR	950	0	NR
435	135	NR	565	693	NR	695	149	NR	825	2	NR	955	0	NR
440	215	NR	570	741	NR	700	127	NR	830	2	NR	960	0	NR
445	321	NR	575	793	NR	705	107	NR	835	2	NR	965	0	NR
450	479	NR	580	847	NR	710	89	NR	840	1	NR	970	0	NR
455	432	NR	585	897	NR	715	75	NR	845	1	NR	975	0	NR
460	265	NR	590	940	NR	720	62	NR	850	1	NR	980	0	NR
465	231	NR	595	971	NR	725	51	NR	855	1	NR	985	0	NR
470	204	NR	600	993	NR	730	43	NR	860	1	NR	990	0	NR
475	168	NR	605	996	NR	735	36	NR	865	1	NR	995	0	NR
480	183	NR	610	986	NR	740	31	NR	870	1	NR	1000	0	NR
485	223	NR	615	957	NR	745	26	NR	875	0	NR			

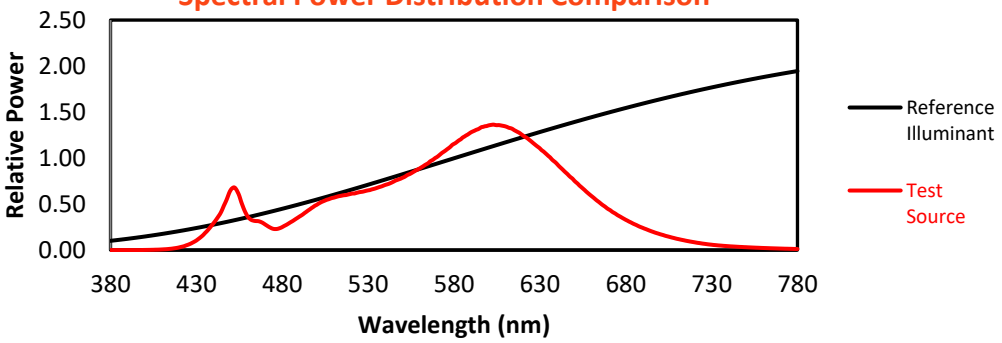
REPORT NUMBER: SP1-2411-284-4

TM-30-18

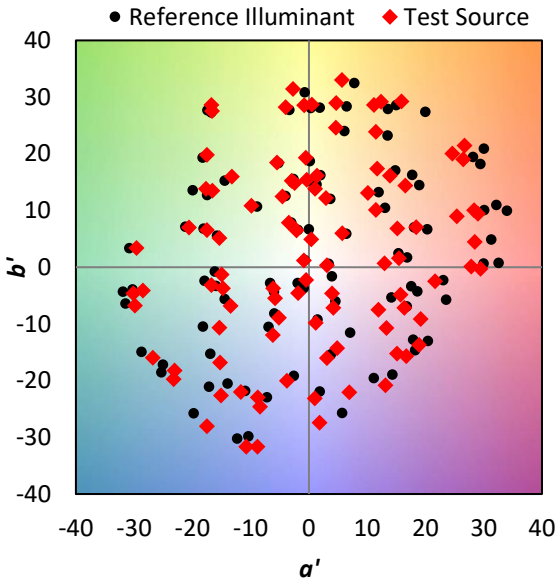
Summary

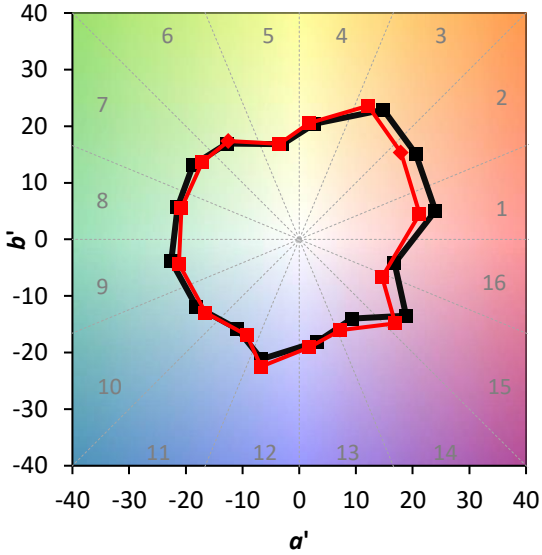
R_f = 86.1
R_g = 94.9
CIE R_a = 82.9
R_9 = 3.9

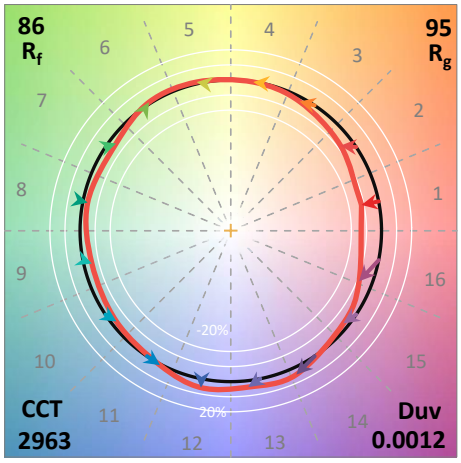
Spectral Power Distribution Comparison

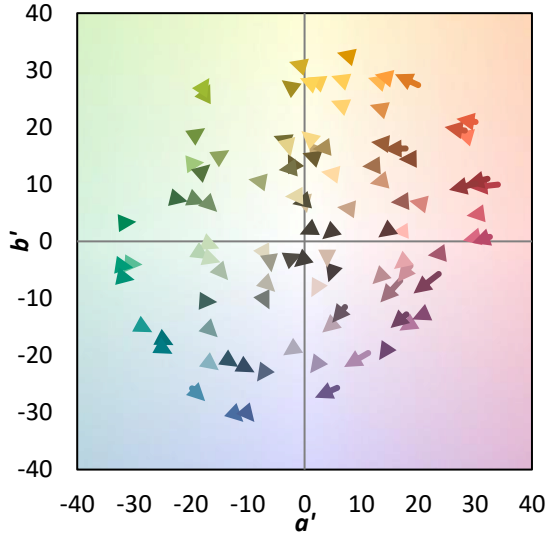


Color Vector Graphics







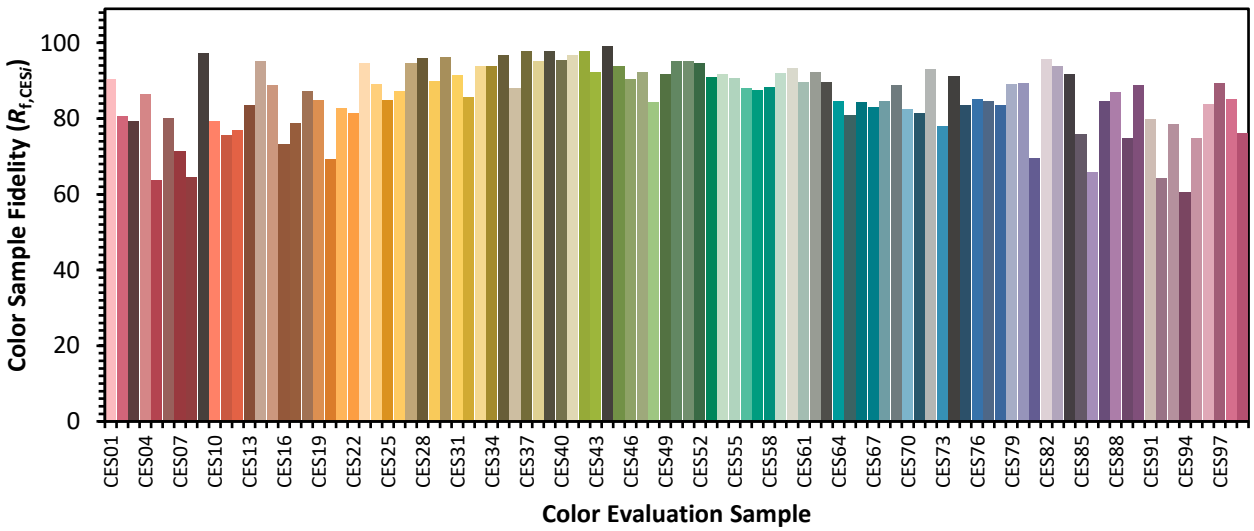


REPORT NUMBER: SP1-2411-284-4

TM-30-18

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

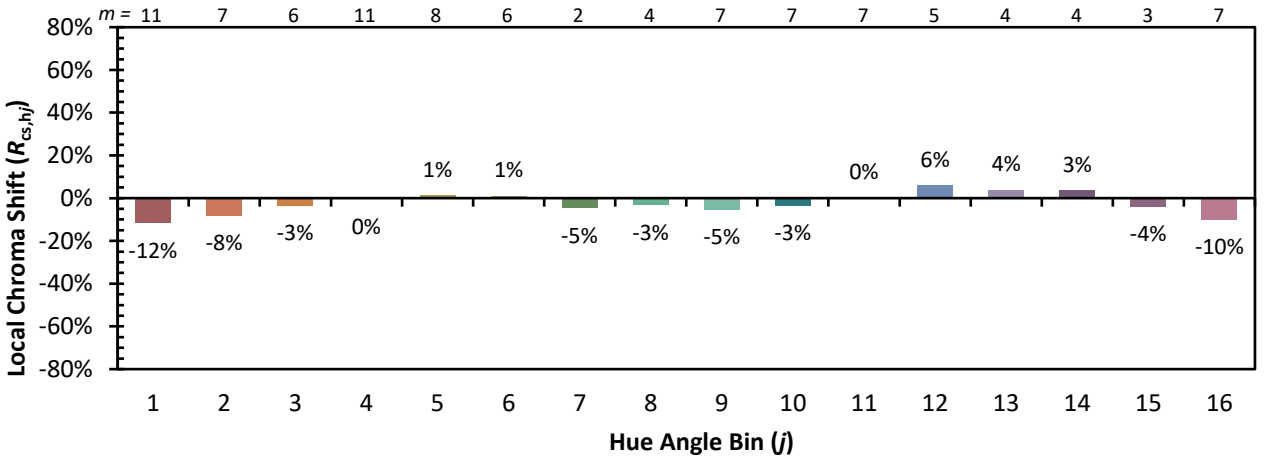
CES01 = 86	CES26 = 87	CES51 = 95	CES76 = 85
CES02 = 63	CES27 = 95	CES52 = 95	CES77 = 85
CES03 = 31	CES28 = 96	CES53 = 91	CES78 = 83
CES04 = 70	CES29 = 90	CES54 = 92	CES79 = 89
CES05 = 50	CES30 = 96	CES55 = 91	CES80 = 89
CES06 = 51	CES31 = 92	CES56 = 88	CES81 = 70
CES07 = 42	CES32 = 86	CES57 = 87	CES82 = 96
CES08 = 41	CES33 = 94	CES58 = 88	CES83 = 94
CES09 = 29	CES34 = 94	CES59 = 92	CES84 = 92
CES10 = 76	CES35 = 97	CES60 = 93	CES85 = 76
CES11 = 59	CES36 = 88	CES61 = 90	CES86 = 66
CES12 = 65	CES37 = 98	CES62 = 92	CES87 = 85
CES13 = 44	CES38 = 95	CES63 = 90	CES88 = 87
CES14 = 74	CES39 = 98	CES64 = 85	CES89 = 75
CES15 = 72	CES40 = 96	CES65 = 81	CES90 = 89
CES16 = 48	CES41 = 97	CES66 = 84	CES91 = 80
CES17 = 50	CES42 = 98	CES67 = 83	CES92 = 64
CES18 = 57	CES43 = 92	CES68 = 85	CES93 = 79
CES19 = 72	CES44 = 99	CES69 = 89	CES94 = 61
CES20 = 67	CES45 = 94	CES70 = 83	CES95 = 75
CES21 = 87	CES46 = 91	CES71 = 81	CES96 = 84
CES22 = 79	CES47 = 92	CES72 = 93	CES97 = 89
CES23 = 92	CES48 = 84	CES73 = 78	CES98 = 85
CES24 = 91	CES49 = 92	CES74 = 91	CES99 = 76
CES25 = 72	CES50 = 95	CES75 = 84	

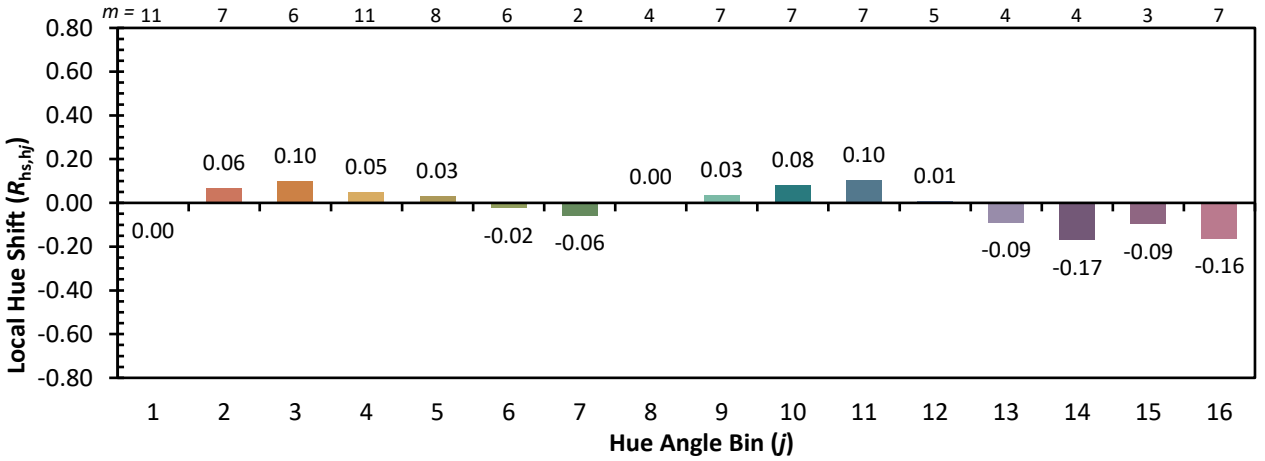


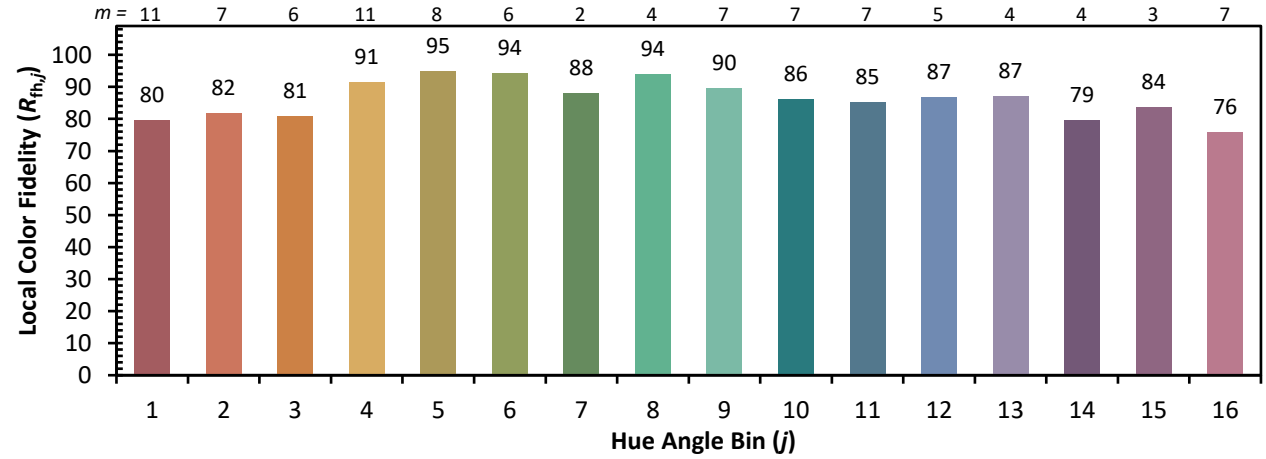
REPORT NUMBER: SP1-2411-284-4

TM-30-18

Color Rendition by Hue-Angle Bin







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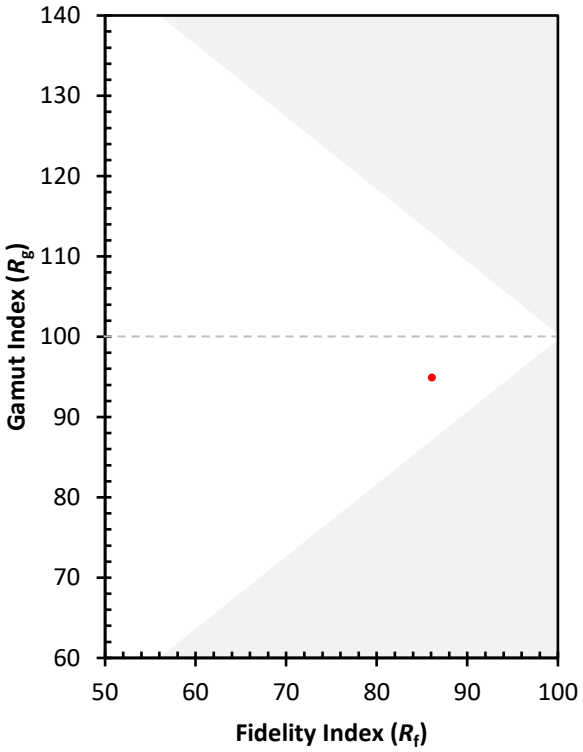
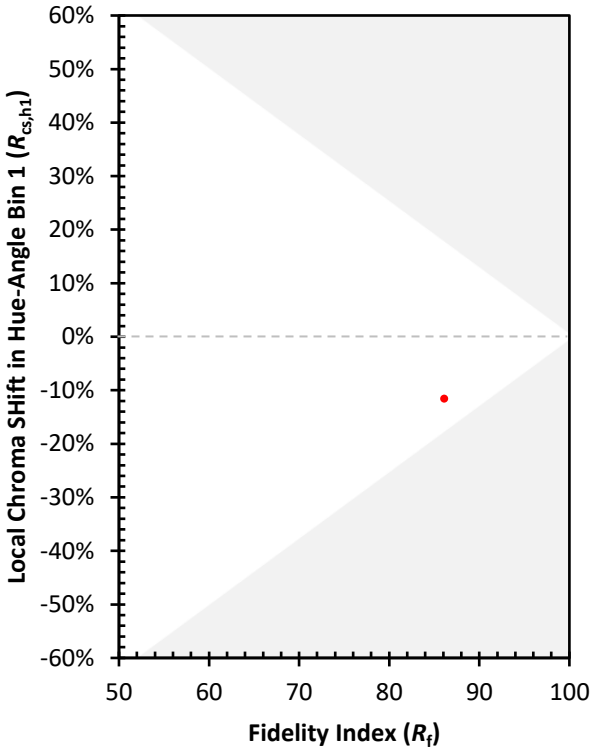
Measure Comparisons





(END OF REPORT)