

Signify Classified - Internal
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: P832808

Luminaire Tested: **TTN-D0-735-U-DL-UPL2**

Issue Date: 5/15/2024

Test Information

Test Method: LM-79-08
Report Number: P832808
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-D0-735-U-DL-UPL2
Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
3500K, 70 CRI LEDS AND DRIVE LANE DISTRIBUTION
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1635.8 lumens
Efficiency: N/A
Efficacy: 107.6 lumens/watt
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')
IES Classification: Type IV - Short
BUG Rating: B0 - U4 - G1

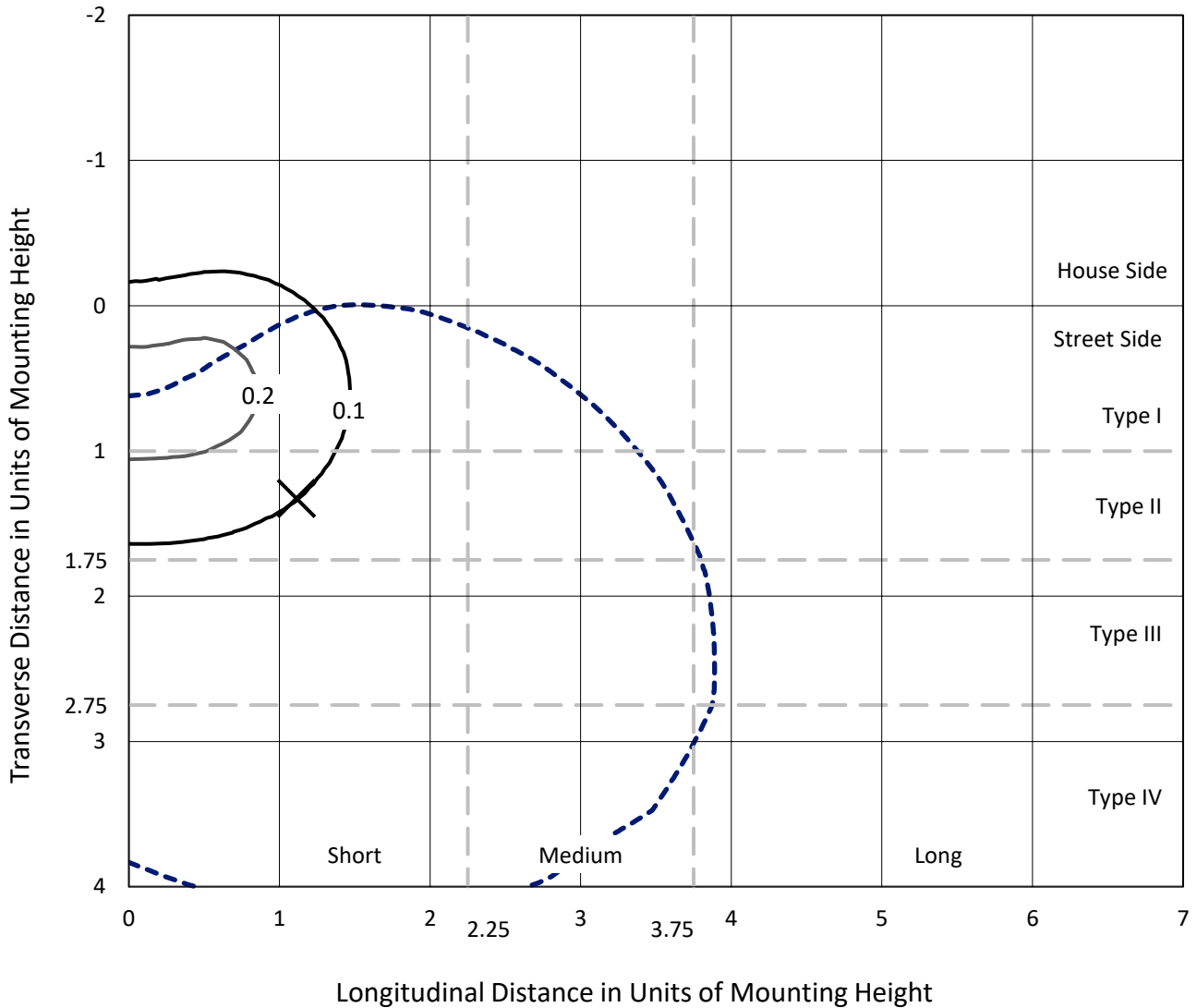
Input Watts (W): 15.2
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Iso-Footcandle Lines of Horizontal Illumination

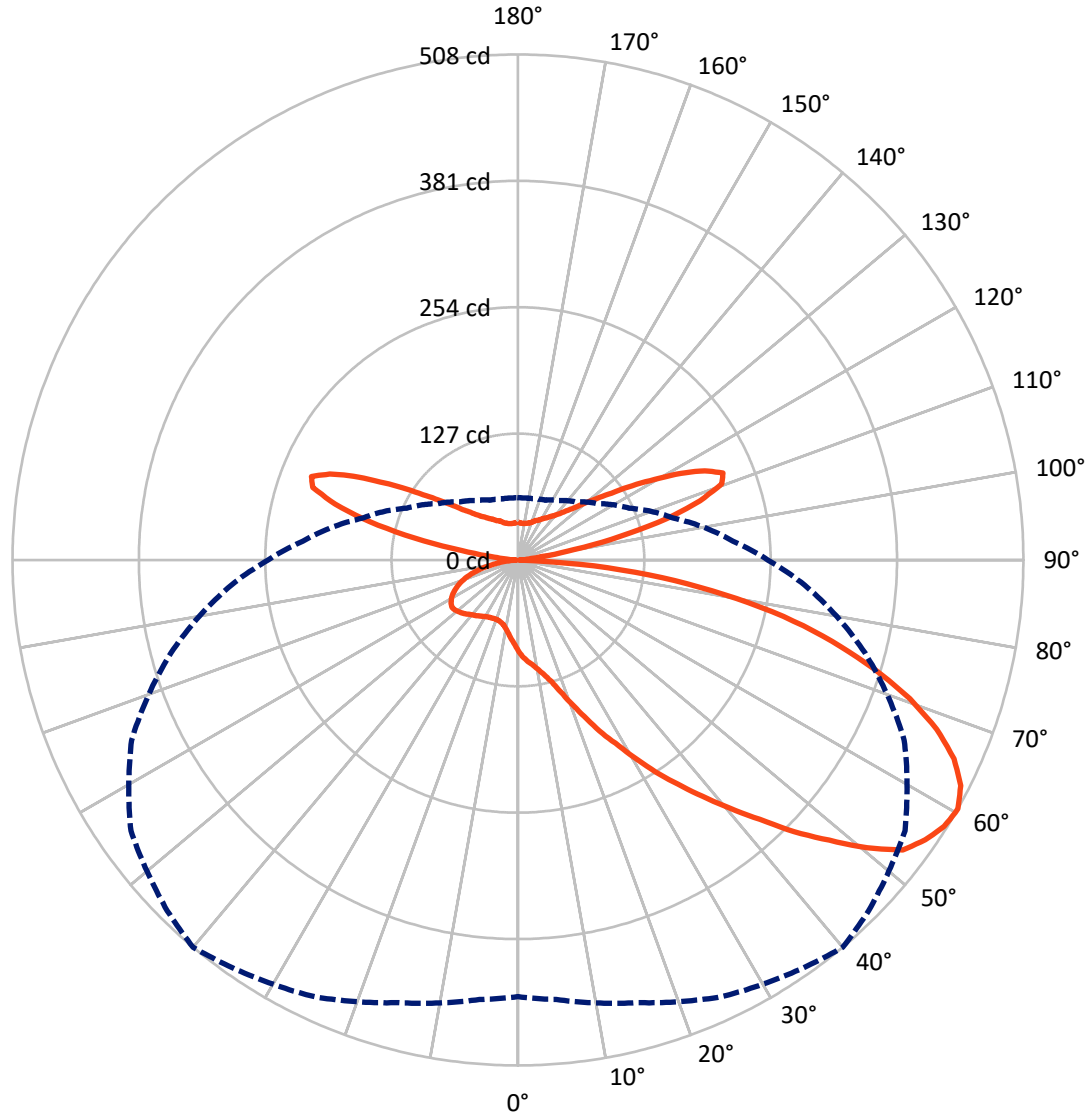
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.2 fc
 Type IV - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 40-Deg Lateral - - - Horizontal Cone Through 60-Deg Vertical

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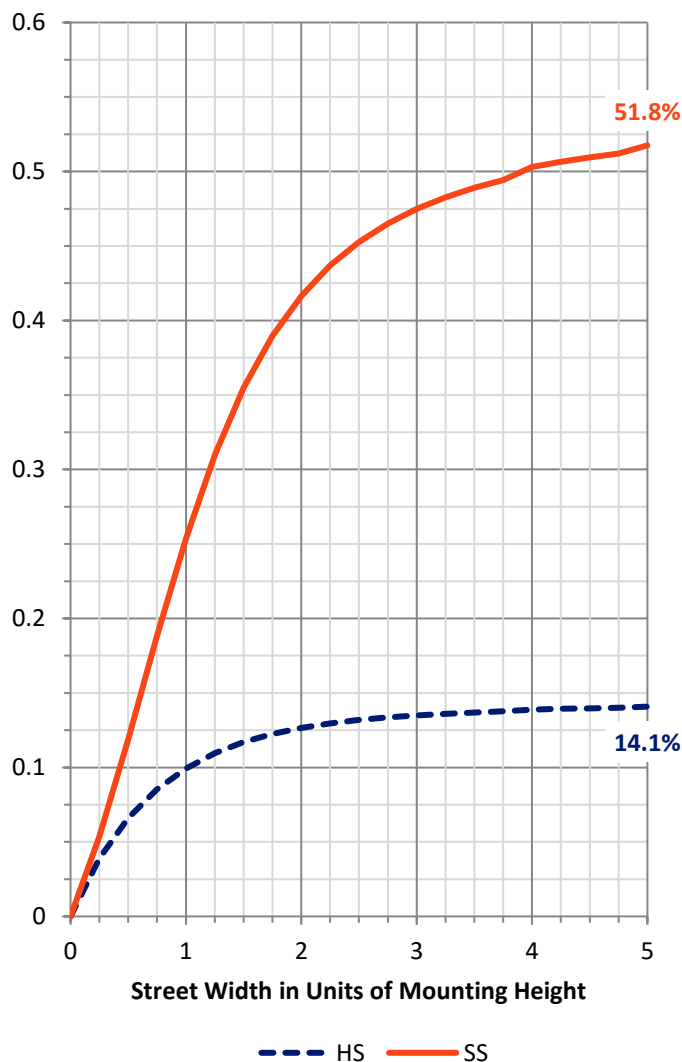
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	232.9	271.5	504.4
	% Fixture	14.2	16.6	30.8
Street Side	Lumens	859.8	271.5	1131.3
	% Fixture	52.6	16.6	69.2
Total	Lumens	1092.7	543.0	1635.8
	% Fixture	66.8	33.2	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	8.7	0.5
10°-20°	27.7	1.7
20°-30°	58.5	3.6
30°-40°	106.9	6.5
40°-50°	173.7	10.6
50°-60°	241.4	14.8
60°-70°	250.2	15.3
70°-80°	179.3	11.0
80°-90°	46.5	2.8
90°-100°	12.1	0.7
100°-110°	123.2	7.5
110°-120°	180.1	11.0
120°-130°	104.5	6.4
130°-140°	55.4	3.4
140°-150°	32.9	2.0
150°-160°	20.2	1.2
160°-170°	11.0	0.7
170°-180°	3.6	0.2
0°-90°	1092.7	66.8
0°-180°	1635.8	100.0

Coefficient of Utilization



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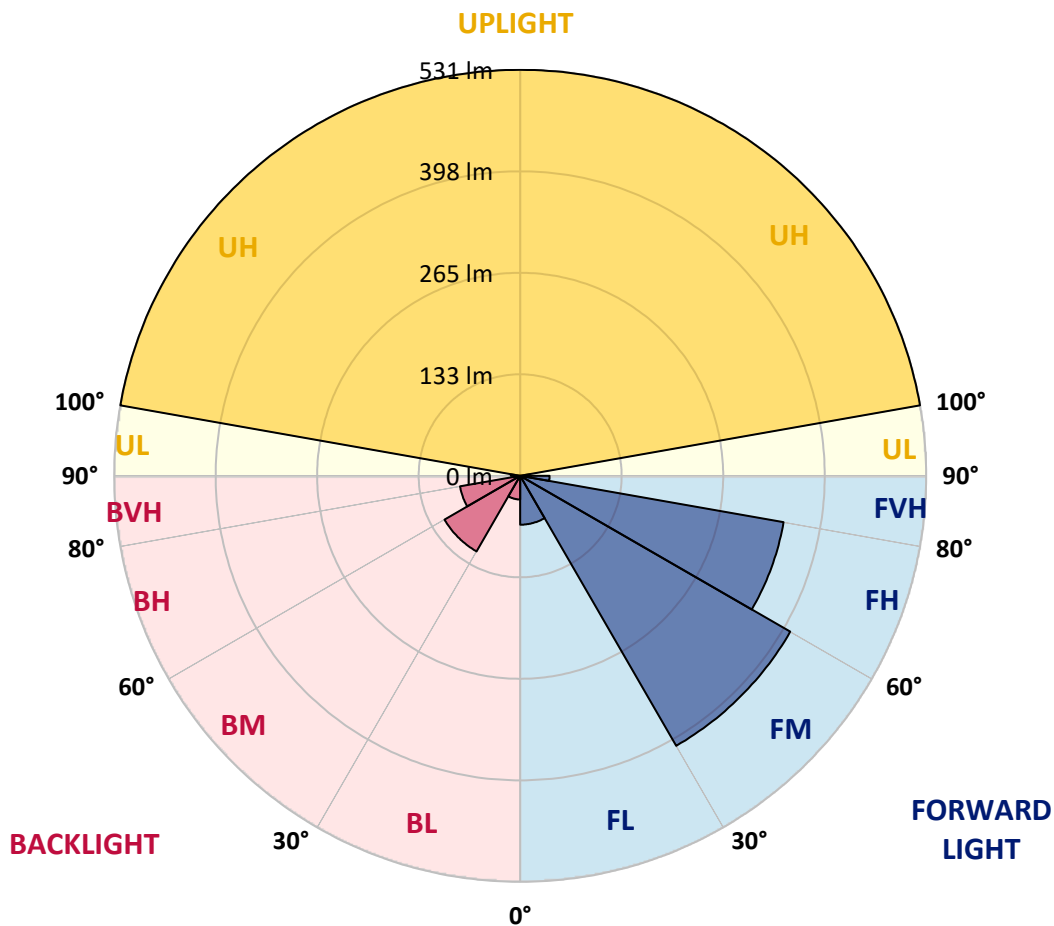
CATALOG NUMBER: TTN-D0-735-U-DL-UPL2

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	63.9	3.9			
FM (30°-60°)	407.8	24.9			
FH (60°-80°)	349.7	21.4			G0/660
FVH (80°-90°)	38.5	2.4			G1/100
BL (0°-30°)	30.9	1.9	B0/110		
BM (30°-60°)	114.2	7.0	B0/220		
BH (60°-80°)	79.8	4.9	B0/110		G0/110
BVH (80°-90°)	8.0	0.5			G0/10
UL (90°-100°)	12.1	0.7		U2/50	
UH (100°-180°)	530.9	32.5		U4/1000	

BUG Rating: B0-U4-G1

Type IV Short





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	40°	45°	55°	65°	75°	85°
0°	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0
2.5°	98.6	98.6	98.6	98.6	97.7	97.7	96.7	95.8	94.8	93.9	92.0
5°	107.1	107.1	106.2	105.2	103.3	102.4	101.5	99.6	97.7	95.8	92.9
7.5°	110.9	110.9	110.9	110.0	107.1	106.2	104.3	101.5	98.6	95.8	92.0
10°	117.6	117.6	116.6	115.7	112.8	111.9	110.0	106.2	101.5	96.7	92.0
12.5°	126.1	125.2	124.2	123.3	120.4	118.5	115.7	111.9	106.2	100.5	94.8
15°	136.5	134.6	134.6	132.7	129.9	127.1	125.2	119.5	113.8	106.2	98.6
17.5°	147.9	147.0	146.0	144.1	141.3	139.4	136.5	129.9	122.3	112.8	104.3
20°	162.1	160.2	161.2	158.3	155.5	154.5	149.8	142.2	132.7	122.3	111.9
22.5°	179.2	177.3	177.3	174.5	172.6	170.7	165.9	157.4	145.1	133.7	120.4
25°	198.2	196.3	196.3	194.4	192.5	190.6	184.9	175.4	161.2	147.0	131.8
27.5°	219.0	217.1	217.1	216.2	211.4	208.6	203.9	193.4	179.2	161.2	143.2
30°	240.8	238.9	240.8	238.9	236.1	230.4	224.7	213.3	197.2	177.3	155.5
32.5°	257.9	257.9	258.8	260.7	258.8	254.1	247.5	238.0	216.2	191.5	166.9
35°	277.8	277.8	279.7	282.5	281.6	276.9	270.2	259.8	237.0	207.6	179.2
37.5°	299.6	299.6	301.5	306.3	304.4	301.5	296.8	283.5	257.9	223.8	192.5
40°	323.3	322.4	324.3	330.9	331.9	328.1	322.4	309.1	279.7	244.6	206.7
42.5°	347.0	346.1	349.9	356.5	357.5	356.5	350.8	335.6	302.5	265.5	220.9
45°	370.7	370.7	376.4	386.8	391.6	389.7	384.9	366.0	330.9	287.3	239.9
47.5°	395.4	395.4	403.0	416.2	421.9	421.0	419.1	396.3	358.4	310.0	256.0
50°	414.3	414.3	426.7	441.8	451.3	455.1	445.6	424.8	382.1	330.0	269.3
52.5°	433.3	433.3	445.6	469.3	478.8	484.5	472.2	450.4	408.7	348.0	281.6
55°	442.8	444.7	461.7	484.5	499.7	496.8	501.6	472.2	425.7	361.2	289.2
57.5°	443.7	446.6	465.5	489.2	506.3	505.4	506.3	479.8	432.4	364.1	290.1
60°	439.0	443.7	460.8	484.5	500.6	508.2	498.7	475.0	428.6	361.2	289.2
62.5°	427.6	437.1	455.1	473.1	496.8	499.7	492.1	472.2	418.1	358.4	284.4
65°	402.0	412.4	438.0	458.9	477.9	481.7	473.1	456.1	407.7	345.1	269.3
67.5°	376.4	383.1	404.9	437.1	450.4	454.2	451.3	431.4	389.7	318.6	251.3
70°	347.0	355.6	372.6	405.8	419.1	418.1	426.7	403.9	362.2	295.8	232.3
72.5°	307.2	319.5	336.6	364.1	380.2	374.5	387.8	368.8	326.2	267.4	206.7
75°	260.7	271.2	293.0	314.8	332.8	326.2	336.6	323.3	284.4	233.2	177.3
77.5°	208.6	220.9	240.8	260.7	273.1	273.1	277.8	266.4	236.1	191.5	145.1
80°	154.5	165.9	183.9	198.2	209.5	210.5	215.2	209.5	182.0	148.9	110.9
82.5°	102.4	108.1	124.2	135.6	147.0	146.0	153.6	149.8	127.1	102.4	74.0
85°	43.6	47.4	60.7	70.2	80.6	76.8	87.2	86.3	68.3	49.3	33.2
87.5°	1.9	2.8	2.8	1.9	2.8	0.9	2.8	3.8	2.8	1.9	1.9
90°	4.6	4.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	4.6
92.5°	4.6	4.6	4.6	6.5	7.4	7.0	6.5	7.4	5.6	5.6	4.6
95°	5.6	5.6	6.5	8.4	10.2	10.6	11.1	11.1	6.5	6.5	5.6
97.5°	7.4	8.4	8.4	10.2	16.7	23.7	30.7	18.6	9.3	9.3	8.4
100°	12.1	13.0	13.0	23.2	49.2	57.6	66.0	47.4	24.2	17.7	13.0
102.5°	39.0	40.9	50.2	75.3	111.5	106.4	101.3	85.5	80.8	55.7	44.6
105°	99.4	98.5	105.9	125.4	156.1	154.7	153.3	141.2	128.2	110.6	102.2
107.5°	131.0	131.0	137.5	154.2	177.4	192.3	207.2	210.0	166.3	145.9	136.6
110°	147.7	147.7	153.3	167.2	197.9	218.8	239.7	237.8	205.3	180.2	168.2



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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	40°	45°	55°	65°	75°	85°
112.5°	151.4	152.4	159.8	181.2	214.6	223.9	233.2	224.8	211.8	200.7	191.4
115°	157.0	157.0	165.4	185.8	204.4	208.1	211.8	202.5	192.3	184.9	181.2
117.5°	155.1	157.9	159.8	170.9	183.0	185.8	188.6	183.9	170.0	164.4	162.6
120°	144.0	144.0	145.9	151.4	157.9	159.3	160.7	158.9	149.6	144.9	144.0
122.5°	128.2	129.1	128.2	131.0	135.6	137.0	138.4	136.6	129.1	127.3	127.3
125°	112.4	112.4	111.5	113.3	116.1	115.6	115.2	116.1	112.4	111.5	111.5
127.5°	101.3	100.3	98.5	99.4	100.3	100.3	100.3	101.3	97.5	98.5	99.4
130°	90.1	90.1	88.3	88.3	88.3	87.4	86.4	88.3	86.4	87.3	88.3
132.5°	79.9	79.9	77.1	76.2	76.2	76.2	76.2	77.1	76.2	78.0	79.9
135°	71.5	71.5	68.7	69.7	69.7	69.2	68.7	69.7	68.7	70.6	71.5
137.5°	65.0	65.0	63.2	63.2	63.2	62.7	62.2	63.2	63.2	64.1	66.0
140°	59.5	59.5	58.5	58.5	57.6	58.0	58.5	58.5	58.5	59.5	60.4
142.5°	56.7	55.7	54.8	53.9	54.8	54.8	54.8	54.8	53.9	54.8	56.7
145°	52.0	52.0	51.1	51.1	51.1	51.6	52.0	51.1	51.1	52.0	52.0
147.5°	49.2	49.2	48.3	49.2	49.2	49.2	49.2	49.2	48.3	49.2	49.2
150°	48.3	47.4	46.5	47.4	47.4	47.0	46.5	46.5	46.5	46.5	47.4
152.5°	45.5	45.5	44.6	45.5	44.6	44.6	44.6	44.6	44.6	44.6	45.5
155°	43.7	43.7	42.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7
157.5°	41.8	42.7	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	42.7
160°	40.9	40.9	40.9	40.9	39.9	39.9	39.9	39.9	40.9	40.9	40.9
162.5°	39.9	39.9	39.9	39.9	39.0	39.0	39.0	39.0	39.0	39.9	39.9
165°	39.9	39.0	39.0	39.0	38.1	38.1	38.1	38.1	38.1	39.0	39.9
167.5°	38.1	38.1	38.1	38.1	38.1	37.7	37.2	37.2	38.1	38.1	38.1
170°	38.1	38.1	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2
172.5°	38.1	38.1	38.1	38.1	37.2	37.2	37.2	37.2	37.2	37.2	38.1
175°	38.1	38.1	38.1	38.1	37.2	37.2	37.2	37.2	38.1	38.1	38.1
177.5°	38.1	38.1	38.1	38.1	37.2	37.7	38.1	38.1	38.1	38.1	38.1
180°	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1



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CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0
2.5°	92.0	91.0	89.1	88.2	87.2	85.3	85.3	84.4	84.4	84.4	83.4
5°	92.0	90.1	88.2	85.3	83.4	81.5	79.6	77.7	76.8	76.8	75.9
7.5°	90.1	88.2	85.3	82.5	79.6	75.9	74.0	70.2	69.2	68.3	68.3
10°	90.1	88.2	83.4	79.6	75.9	72.1	69.2	65.4	62.6	61.6	61.6
12.5°	91.0	88.2	83.4	78.7	74.0	69.2	65.4	61.6	58.8	56.9	56.9
15°	94.8	91.0	85.3	78.7	73.0	67.3	63.5	58.8	55.9	54.0	54.0
17.5°	99.6	95.8	87.2	79.6	73.0	66.4	61.6	56.9	54.0	52.1	51.2
20°	106.2	100.5	91.0	80.6	73.0	66.4	60.7	55.9	52.1	50.3	50.3
22.5°	113.8	107.1	94.8	82.5	74.0	66.4	60.7	55.0	51.2	49.3	49.3
25°	123.3	114.7	100.5	86.3	75.9	67.3	60.7	55.0	51.2	49.3	49.3
27.5°	133.7	124.2	106.2	90.1	77.7	68.3	60.7	55.0	51.2	49.3	49.3
30°	143.2	132.7	111.9	93.9	80.6	69.2	61.6	55.9	52.1	50.3	49.3
32.5°	153.6	140.3	117.6	97.7	82.5	71.1	62.6	56.9	52.1	50.3	50.3
35°	164.0	149.8	123.3	102.4	85.3	73.0	63.5	57.8	53.1	51.2	51.2
37.5°	175.4	160.2	129.9	106.2	88.2	74.9	65.4	58.8	54.0	52.1	52.1
40°	188.7	170.7	136.5	110.9	91.0	76.8	66.4	60.7	55.9	54.0	54.0
42.5°	201.0	180.1	143.2	114.7	93.9	78.7	68.3	61.6	57.8	55.9	55.9
45°	213.3	191.5	149.8	119.5	96.7	81.5	70.2	64.5	59.7	57.8	57.8
47.5°	227.6	202.0	157.4	123.3	99.6	83.4	72.1	66.4	61.6	60.7	59.7
50°	238.9	209.5	162.1	127.1	101.5	85.3	74.0	67.3	63.5	61.6	61.6
52.5°	249.4	217.1	165.9	128.9	102.4	86.3	75.9	69.2	65.4	63.5	63.5
55°	255.1	220.0	168.8	128.9	103.3	87.2	75.9	69.2	65.4	64.5	63.5
57.5°	255.1	220.0	166.9	127.1	101.5	85.3	74.9	68.3	65.4	63.5	63.5
60°	251.3	217.1	162.1	123.3	98.6	82.5	73.0	66.4	63.5	62.6	62.6
62.5°	245.6	212.4	158.3	118.5	94.8	78.7	70.2	63.5	61.6	61.6	60.7
65°	230.4	198.2	149.8	111.9	89.1	74.0	66.4	60.7	58.8	57.8	56.9
67.5°	214.3	184.9	136.5	104.3	81.5	69.2	61.6	56.9	54.0	54.0	53.1
70°	198.2	170.7	124.2	93.9	73.0	63.5	55.9	51.2	49.3	49.3	49.3
72.5°	176.4	152.7	110.0	82.5	64.5	55.9	50.3	45.5	44.6	44.6	43.6
75°	150.8	129.9	92.9	70.2	54.0	47.4	42.7	37.9	37.9	37.9	37.9
77.5°	123.3	105.2	74.0	55.9	42.7	37.9	35.1	31.3	31.3	31.3	31.3
80°	92.9	77.7	54.0	40.8	31.3	27.5	25.6	23.7	24.7	24.7	23.7
82.5°	60.7	51.2	34.1	25.6	19.9	18.0	18.0	16.1	17.1	17.1	17.1
85°	26.5	22.8	14.2	11.4	9.5	9.5	9.5	8.5	9.5	9.5	9.5
87.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	0.0	0.9	1.9	0.9
90°	4.6	4.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	4.6	4.6
92.5°	4.6	4.6	5.6	5.6	7.4	6.5	7.4	6.5	4.6	4.6	4.6
95°	5.6	5.6	6.5	6.5	11.1	11.1	10.2	8.4	6.5	5.6	5.6
97.5°	7.4	8.4	9.3	9.3	18.6	30.7	16.7	10.2	8.4	8.4	7.4
100°	13.0	13.0	17.7	24.2	47.4	66.0	49.2	23.2	13.0	13.0	12.1
102.5°	42.7	44.6	55.7	80.8	85.5	101.3	111.5	75.3	50.2	40.9	39.0
105°	102.2	102.2	110.6	128.2	141.2	153.3	156.1	125.4	105.9	98.5	99.4
107.5°	135.6	136.6	145.9	166.3	210.0	207.2	177.4	154.2	137.5	131.0	131.0
110°	166.3	168.2	180.2	205.3	237.8	239.7	197.9	167.2	153.3	147.7	147.7



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 CATALOG NUMBER: TTN-D0-735-U-DL-UPL2

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	189.5	191.4	200.7	211.8	224.8	233.2	214.6	181.2	159.8	152.4	151.4
115°	183.0	181.2	184.9	192.3	202.5	211.8	204.4	185.8	165.4	157.0	157.0
117.5°	159.8	162.6	164.4	170.0	183.9	188.6	183.0	170.9	159.8	157.9	155.1
120°	142.1	144.0	144.9	149.6	158.9	160.7	157.9	151.4	145.9	144.0	144.0
122.5°	125.4	127.3	127.3	129.1	136.6	138.4	135.6	131.0	128.2	129.1	128.2
125°	110.6	111.5	111.5	112.4	116.1	115.2	116.1	113.3	111.5	112.4	112.4
127.5°	98.5	99.4	98.5	97.5	101.3	100.3	100.3	99.4	98.5	100.3	101.3
130°	89.2	88.3	87.3	86.4	88.3	86.4	88.3	88.3	88.3	90.1	90.1
132.5°	79.9	79.9	78.0	76.2	77.1	76.2	76.2	76.2	77.1	79.9	79.9
135°	71.5	71.5	70.6	68.7	69.7	68.7	69.7	69.7	68.7	71.5	71.5
137.5°	66.9	66.0	64.1	63.2	63.2	62.2	63.2	63.2	63.2	65.0	65.0
140°	60.4	60.4	59.5	58.5	58.5	58.5	57.6	58.5	58.5	59.5	59.5
142.5°	56.7	56.7	54.8	53.9	54.8	54.8	54.8	53.9	54.8	55.7	56.7
145°	53.0	52.0	52.0	51.1	51.1	52.0	51.1	51.1	51.1	52.0	52.0
147.5°	50.2	49.2	49.2	48.3	49.2	49.2	49.2	49.2	48.3	49.2	49.2
150°	47.4	47.4	46.5	46.5	46.5	46.5	47.4	47.4	46.5	47.4	48.3
152.5°	46.5	45.5	44.6	44.6	44.6	44.6	44.6	45.5	44.6	45.5	45.5
155°	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7	42.7	43.7	43.7
157.5°	42.7	42.7	41.8	41.8	41.8	41.8	41.8	41.8	41.8	42.7	41.8
160°	41.8	40.9	40.9	40.9	39.9	39.9	39.9	40.9	40.9	40.9	40.9
162.5°	40.9	39.9	39.9	39.0	39.0	39.0	39.0	39.9	39.9	39.9	39.9
165°	39.0	39.9	39.0	38.1	38.1	38.1	38.1	39.0	39.0	39.0	39.9
167.5°	39.0	38.1	38.1	38.1	37.2	37.2	38.1	38.1	38.1	38.1	38.1
170°	38.1	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2	38.1	38.1
172.5°	38.1	38.1	37.2	37.2	37.2	37.2	37.2	38.1	38.1	38.1	38.1
175°	37.2	38.1	38.1	38.1	37.2	37.2	37.2	38.1	38.1	38.1	38.1
177.5°	38.1	38.1	38.1	38.1	38.1	38.1	37.2	38.1	38.1	38.1	38.1
180°	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1

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: SP1-2411-284-1

Test Date: 11/15/2024

Luminaire Tested: TTN-D0-735-U-WQ

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

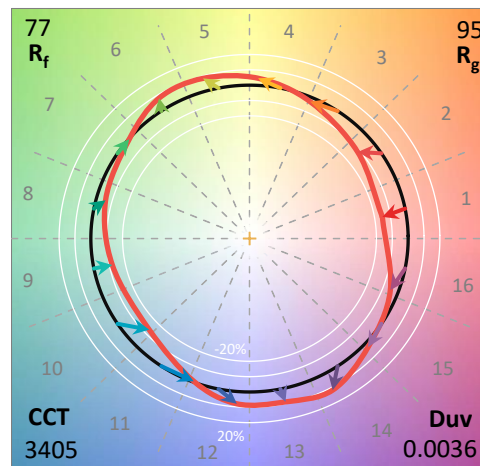
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2411-284-1
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 11/15/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW EDISON
 Catalog Number: **TTN-D0-735-U-WQ**
 Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 3500K, 70 CRI LEDS AND WIDE DISTRIBUTION

Spectral Parameters

CCT (K): 3405
 CIE u': 0.2365
 CIE v': 0.5180
 Duv: 0.0036
 CIE x: 0.4148
 CIE y: 0.4038
 CIE z: 0.1814
 Peak Wavelength (nm): 596
 Dominant Wavelength (nm): 579
 Purity: 45.70672
 Rf: 76.6
 Rg: 95.4

CRI (Ra):	73.9		
R1:	71.3	R9:	-18.0
R2:	80.3	R10:	53.1
R3:	87.8	R11:	68.6
R4:	73.2	R12:	42.6
R5:	69.8	R13:	72.5
R6:	71.8	R14:	92.7
R7:	82.8	R15:	64.3
R8:	54.1		



Test Conditions

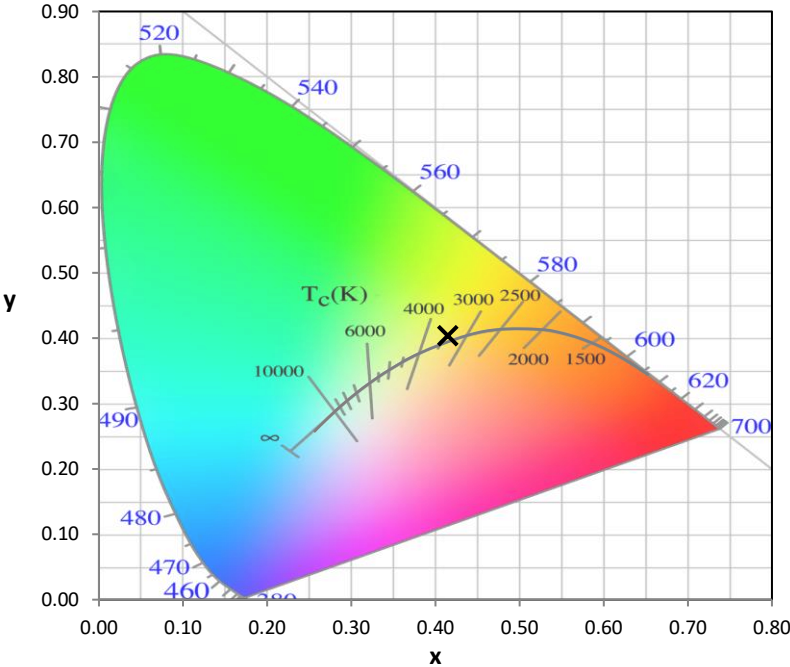
Stabilization Time: 38M
 Operation Time: 1H 38M
 Sphere Temperature (°C): 24.9

REPORT NUMBER: SP1-2411-284-1

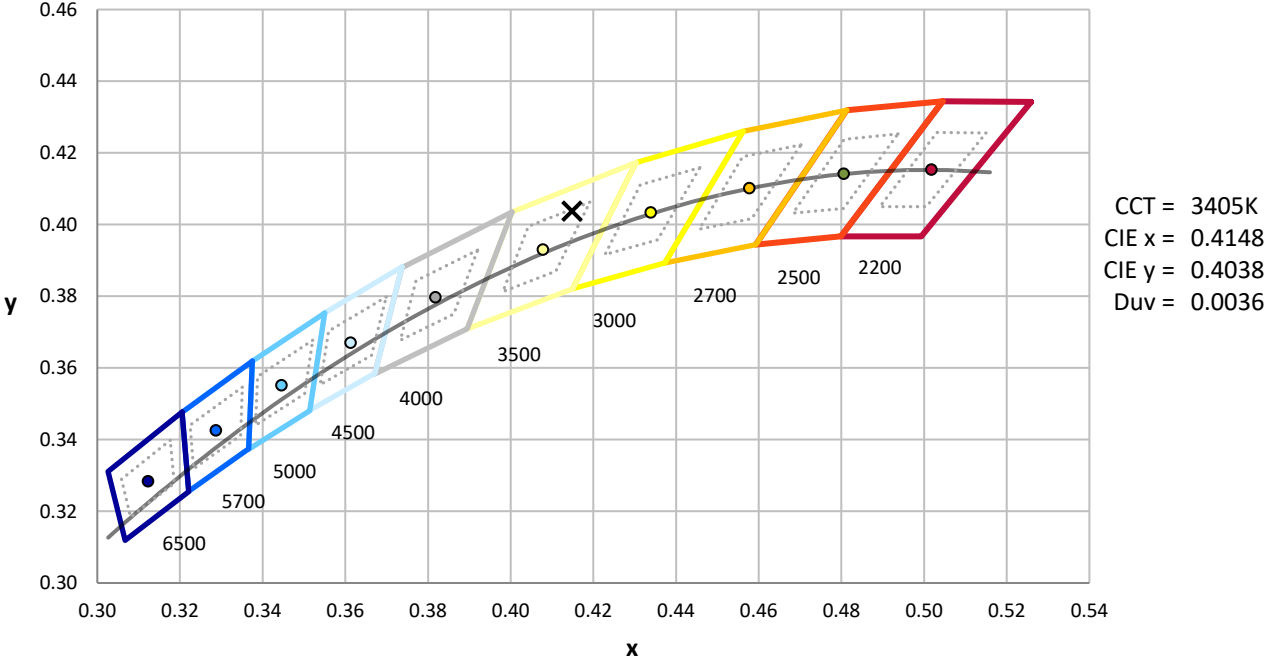
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2411-284-1

CIE 1931 Chromaticity Diagram



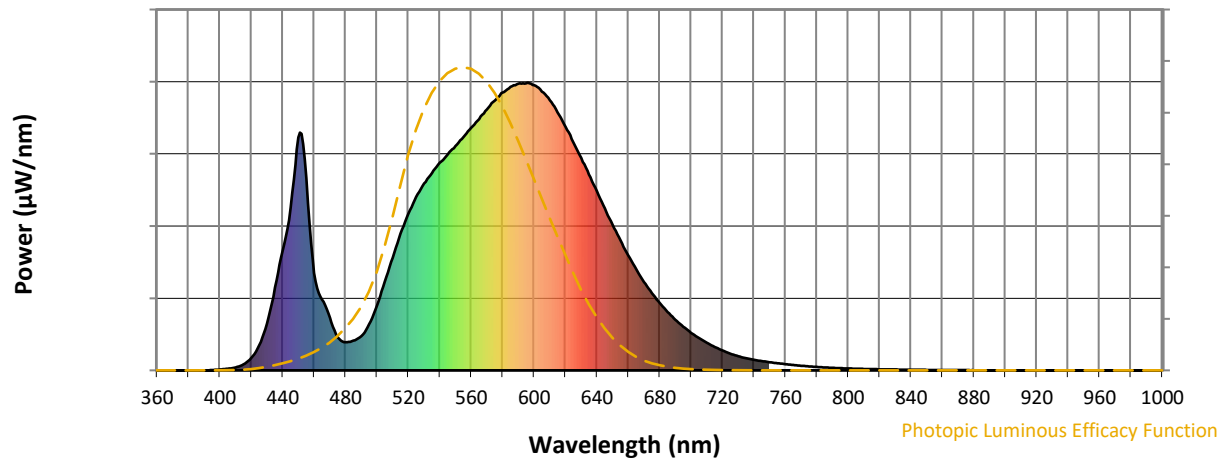
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2411-284-1

Photopic Flux vs. Wavelength

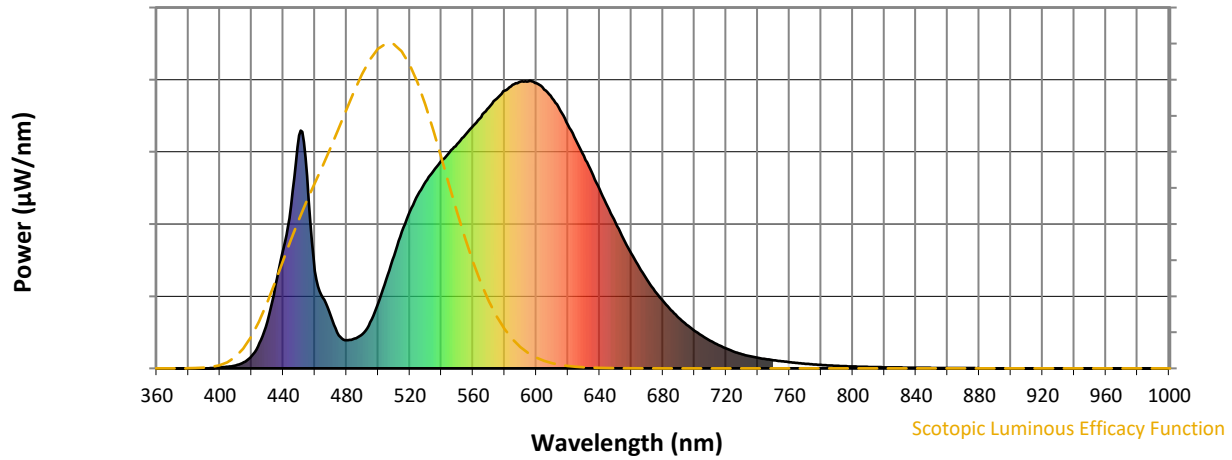


Photopic Lumens: NR

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	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			

REPORT NUMBER: SP1-2411-284-1

Scotopic Flux vs. Wavelength



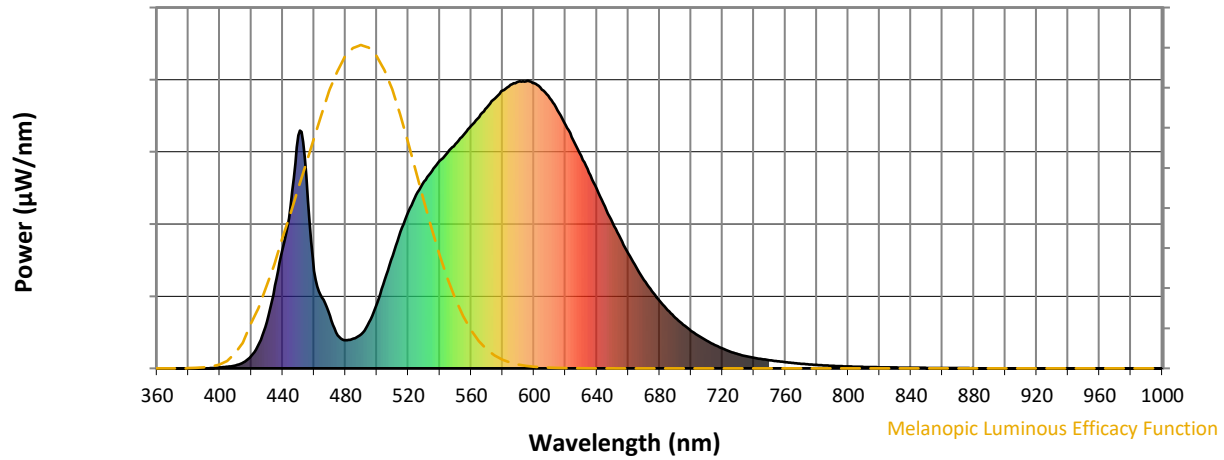
Scotopic Lumens: NR

S/P: 1.33

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	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			

REPORT NUMBER: SP1-2411-284-1

Melanopic Flux vs. Wavelength



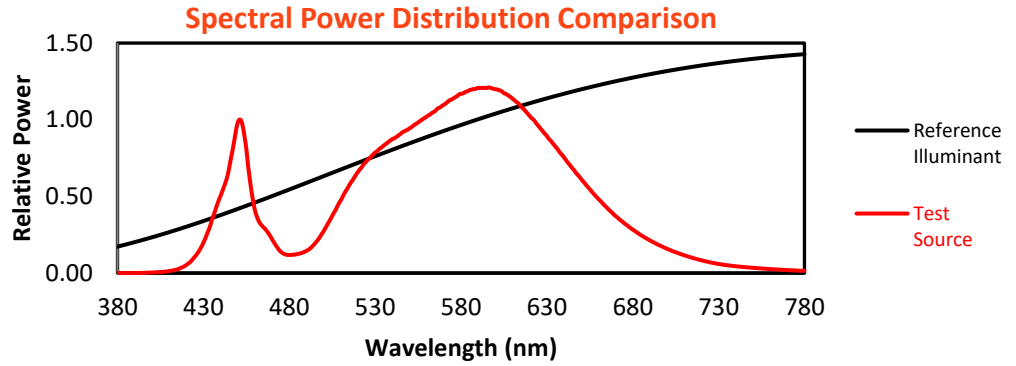
Melanopic Lumens: NR

M/P: 2.47

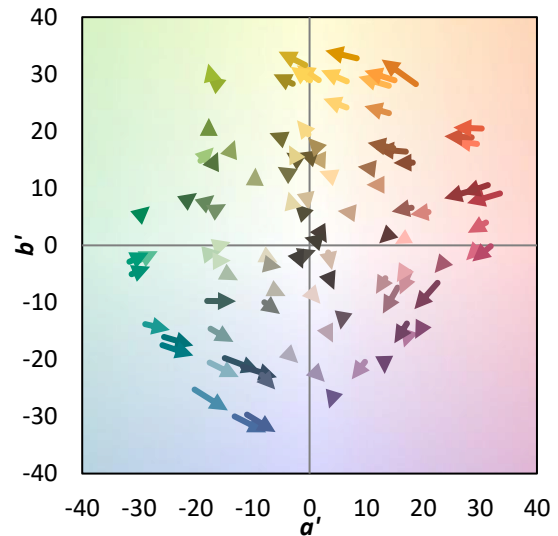
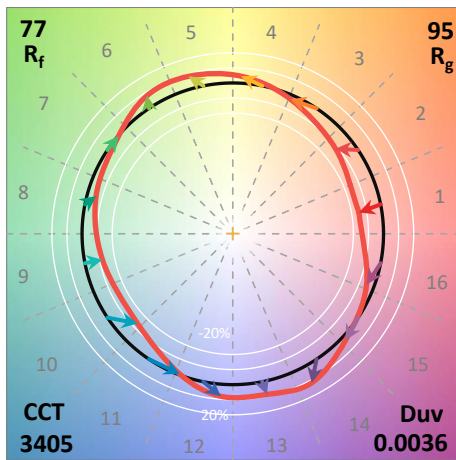
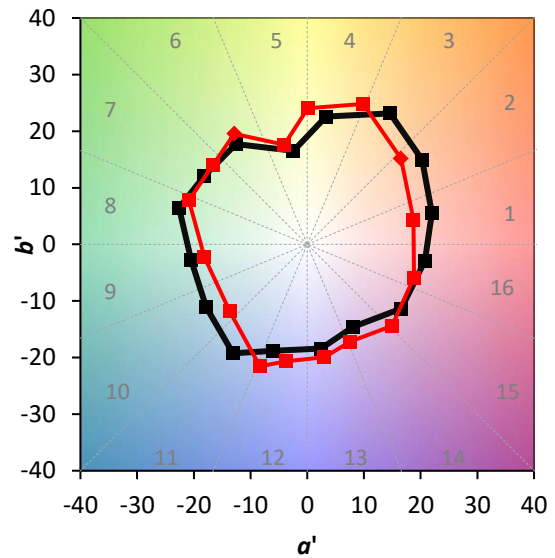
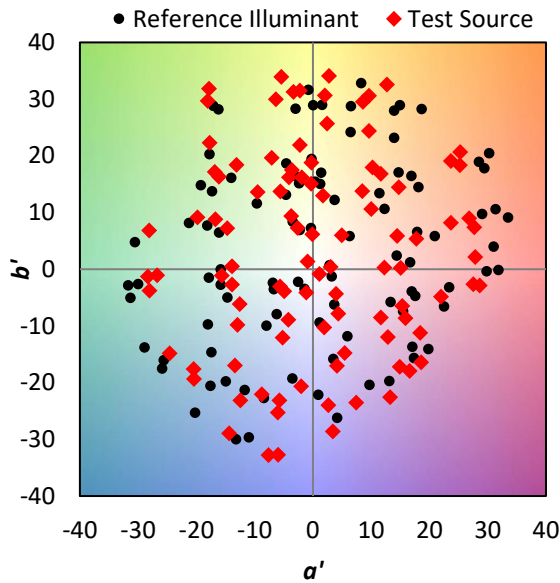
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			

Summary

$R_f = 76.6$
 $R_g = 95.4$
 $CIE R_a = 73.9$
 $R_9 = -18.0$

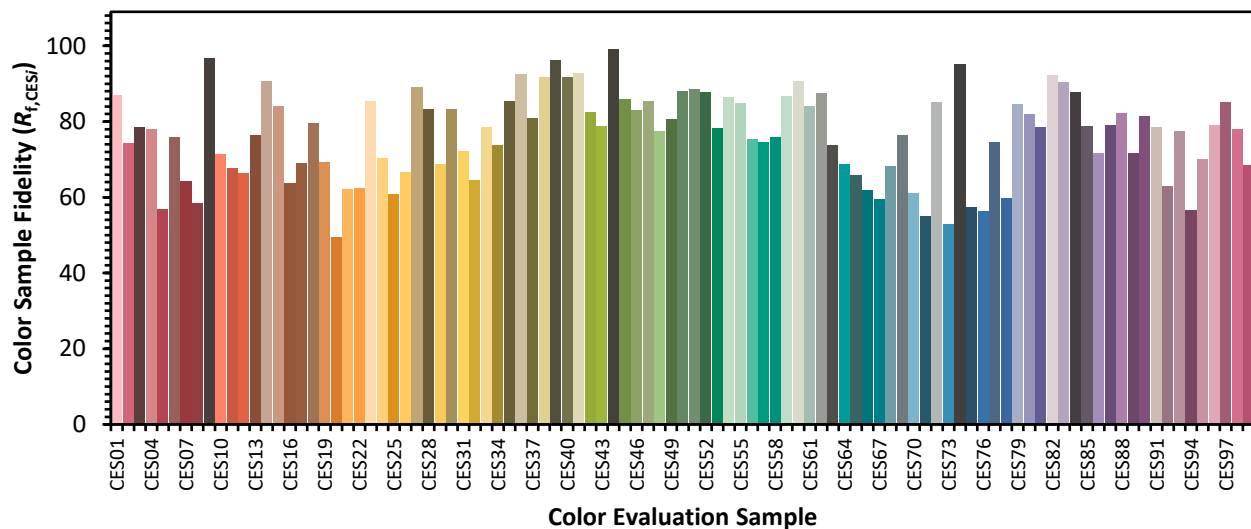


Color Vector Graphics

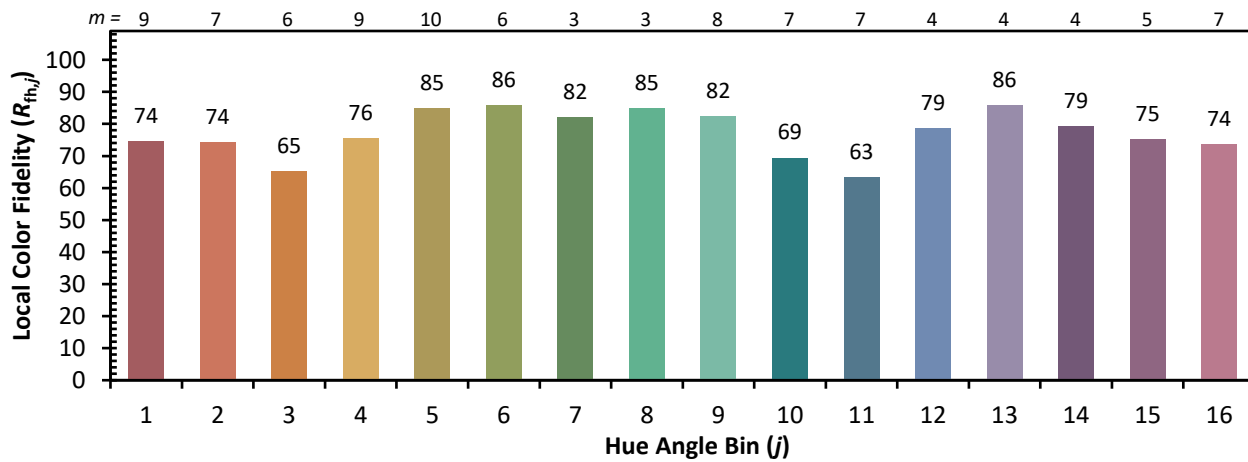
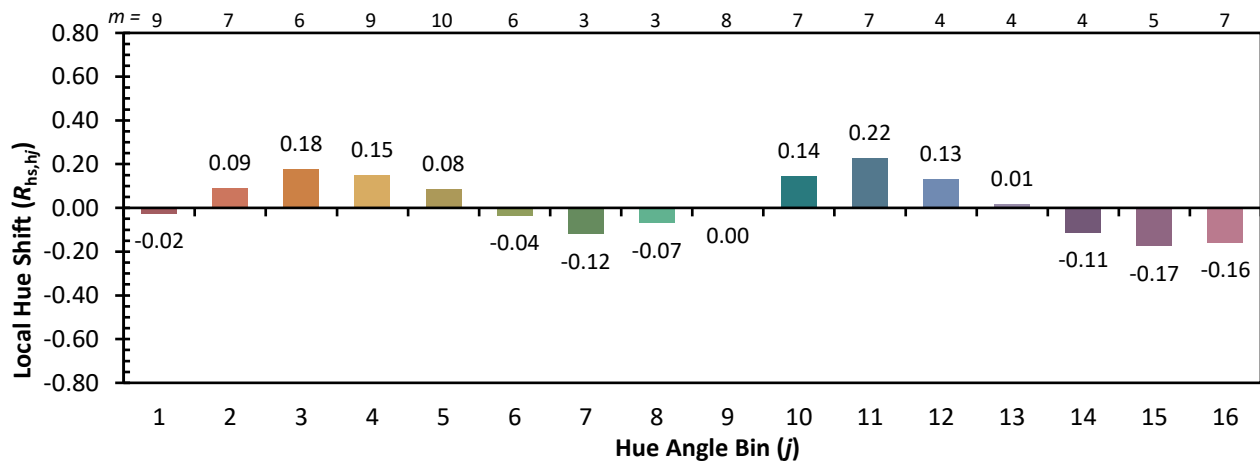
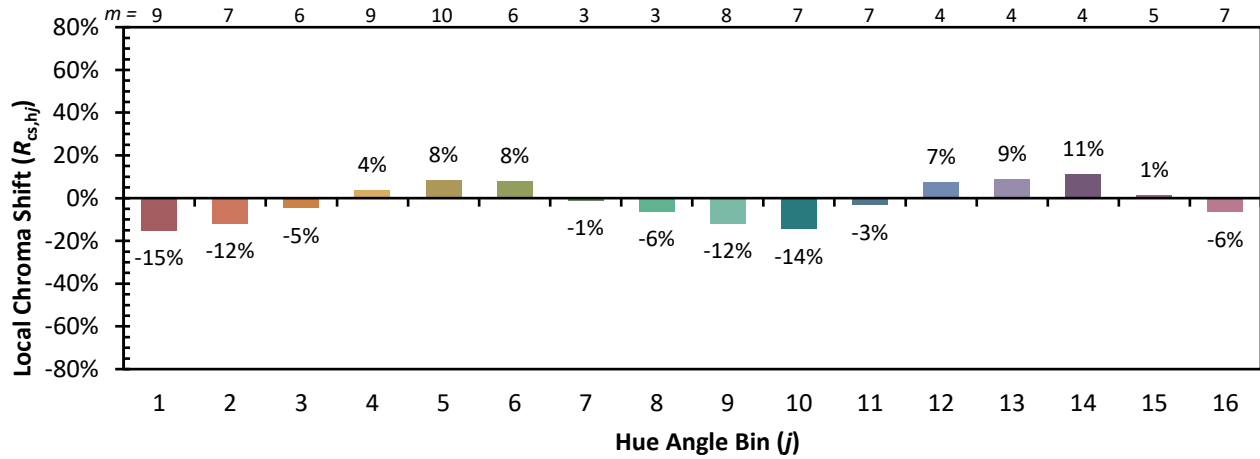


Individual Sample Fidelity Index ($R_{f,i}$)

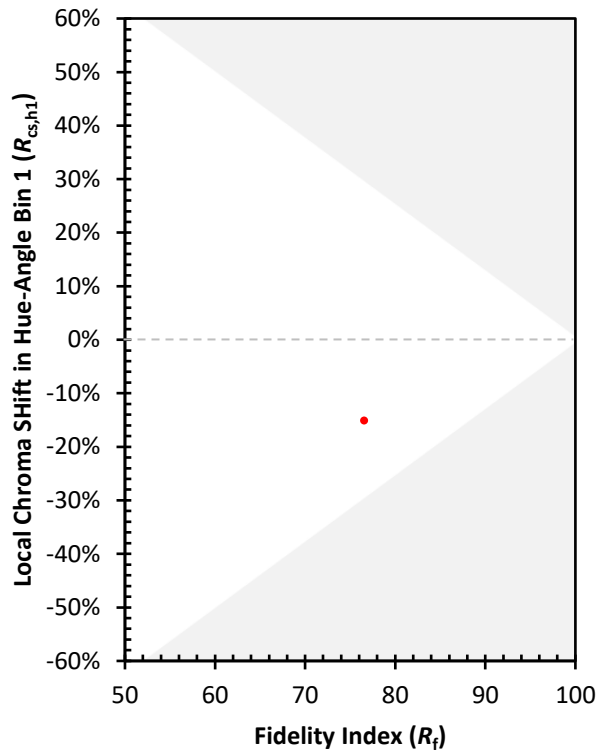
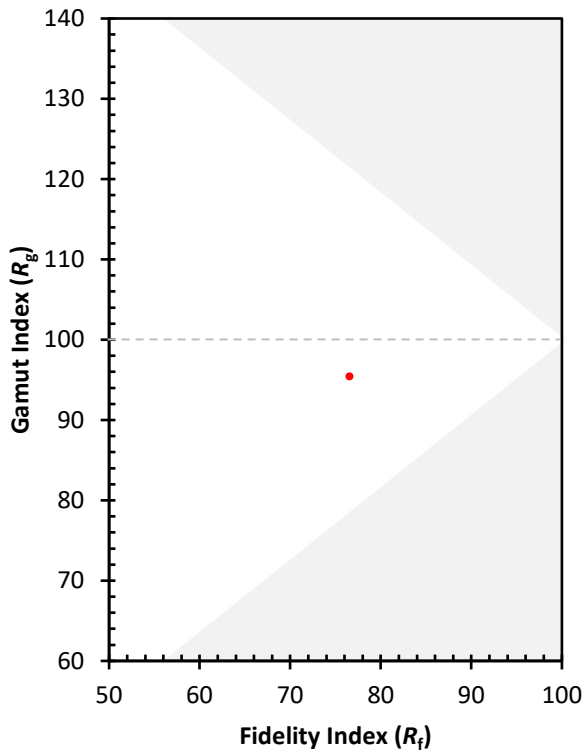
CES01 = 86	CES26 = 67	CES51 = 88	CES76 = 56
CES02 = 62	CES27 = 89	CES52 = 88	CES77 = 75
CES03 = 31	CES28 = 83	CES53 = 78	CES78 = 60
CES04 = 70	CES29 = 69	CES54 = 86	CES79 = 85
CES05 = 48	CES30 = 83	CES55 = 85	CES80 = 82
CES06 = 51	CES31 = 72	CES56 = 75	CES81 = 78
CES07 = 41	CES32 = 65	CES57 = 75	CES82 = 92
CES08 = 40	CES33 = 78	CES58 = 76	CES83 = 90
CES09 = 29	CES34 = 74	CES59 = 87	CES84 = 88
CES10 = 75	CES35 = 86	CES60 = 91	CES85 = 79
CES11 = 58	CES36 = 93	CES61 = 84	CES86 = 72
CES12 = 64	CES37 = 81	CES62 = 88	CES87 = 79
CES13 = 43	CES38 = 92	CES63 = 74	CES88 = 82
CES14 = 74	CES39 = 96	CES64 = 69	CES89 = 72
CES15 = 71	CES40 = 92	CES65 = 66	CES90 = 82
CES16 = 47	CES41 = 93	CES66 = 62	CES91 = 79
CES17 = 50	CES42 = 83	CES67 = 60	CES92 = 63
CES18 = 56	CES43 = 79	CES68 = 68	CES93 = 77
CES19 = 72	CES44 = 99	CES69 = 76	CES94 = 56
CES20 = 65	CES45 = 86	CES70 = 61	CES95 = 70
CES21 = 86	CES46 = 83	CES71 = 55	CES96 = 79
CES22 = 79	CES47 = 85	CES72 = 85	CES97 = 85
CES23 = 92	CES48 = 78	CES73 = 53	CES98 = 78
CES24 = 91	CES49 = 81	CES74 = 95	CES99 = 68
CES25 = 72	CES50 = 88	CES75 = 57	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)