

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: P832868

Luminaire Tested: **TTN-D0-750-U-DL-UPL2**

Issue Date: 5/15/2024

**Test Information**

Test Method: LM-79-08  
Report Number: P832868  
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-D0-750-U-DL-UPL2  
Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE WITH UPLIGHT  
5000K, 70 CRI LEDS AND DRIVE LANE DISTRIBUTION  
Light Source: -  
Ballast/Driver: -

**Summary**

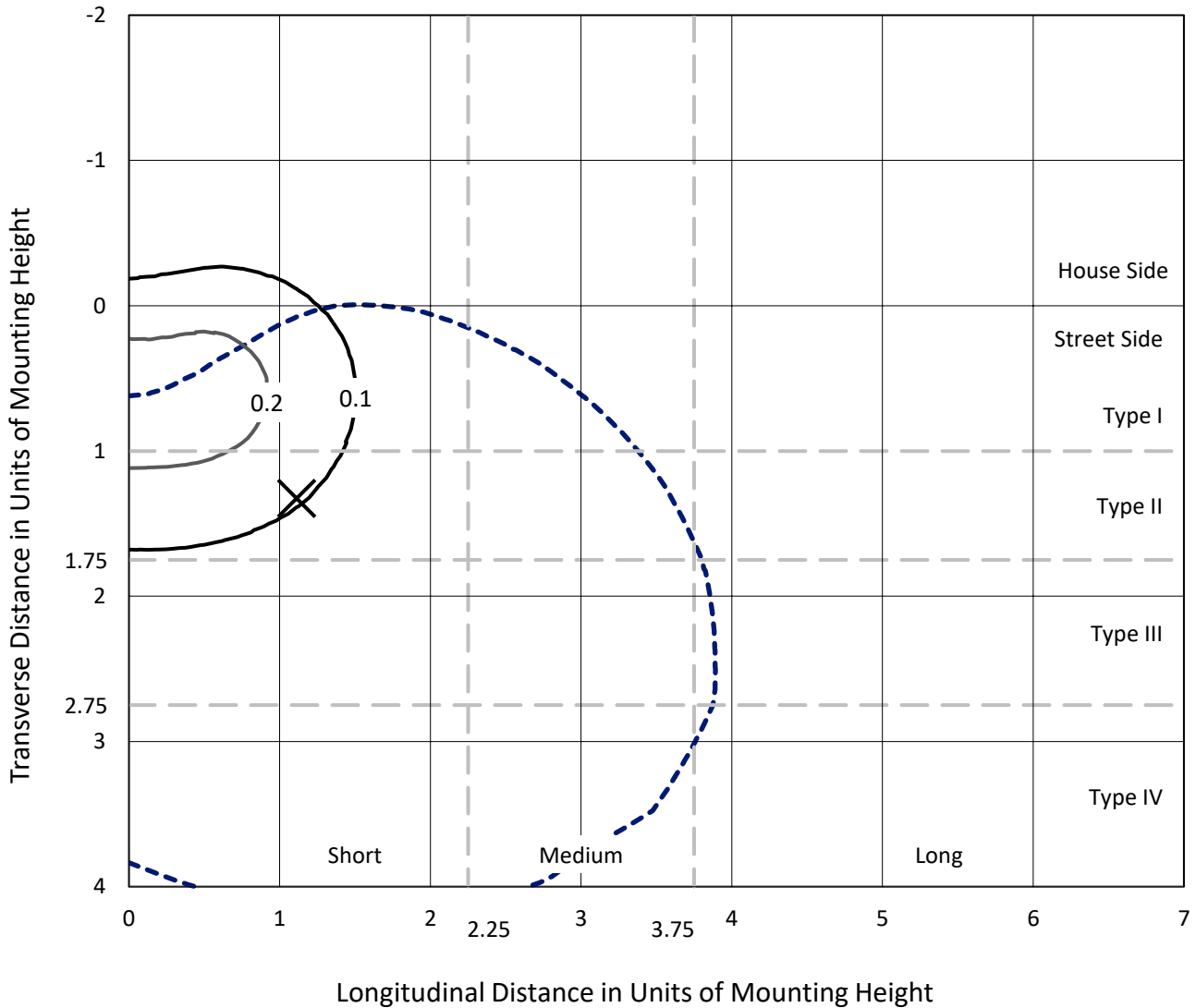
Lumens per Lamp: N/A  
Luminaire Lumens: 1737.6 lumens  
Efficiency: N/A  
Efficacy: 114.3 lumens/watt  
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U4 - G1  
  
Input Watts (W): 15.2  
Input Voltage (V): NR  
Input Current (Ain): 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

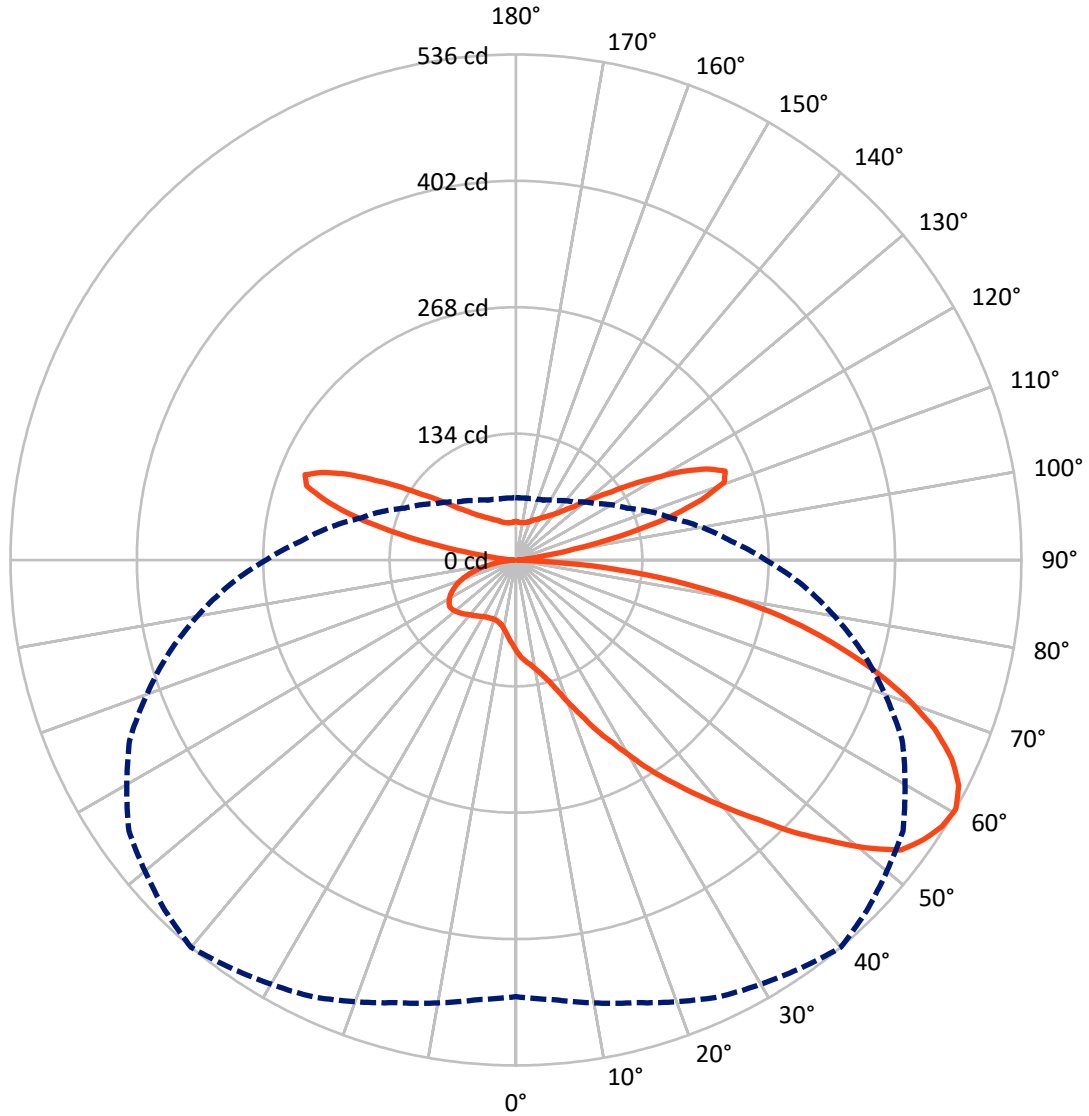
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.3 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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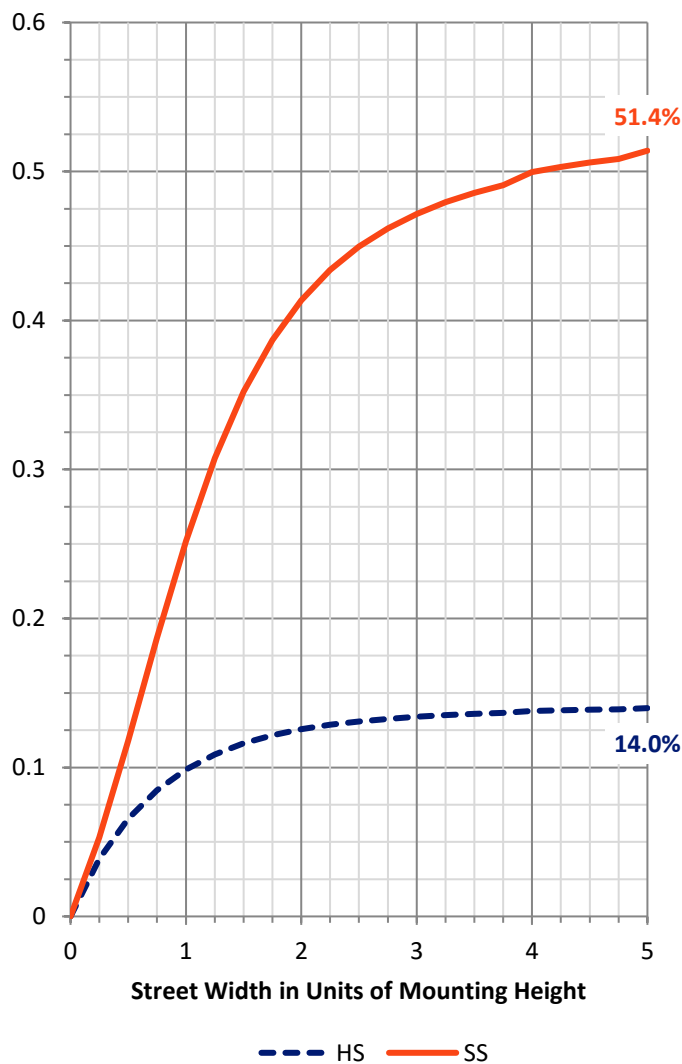
**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	245.7	292.5	538.1
	% Fixture	14.1	16.8	31.0
<b>Street Side</b>	Lumens	907.1	292.4	1199.5
	% Fixture	52.2	16.8	69.0
<b>Total</b>	Lumens	1152.7	584.9	1737.6
	% Fixture	66.3	33.7	100.0

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	9.1	0.5
10°-20°	29.2	1.7
20°-30°	61.7	3.5
30°-40°	112.7	6.5
40°-50°	183.2	10.5
50°-60°	254.6	14.7
60°-70°	264.0	15.2
70°-80°	189.2	10.9
80°-90°	49.0	2.8
90°-100°	13.1	0.8
100°-110°	132.7	7.6
110°-120°	194.0	11.2
120°-130°	112.6	6.5
130°-140°	59.7	3.4
140°-150°	35.4	2.0
150°-160°	21.8	1.3
160°-170°	11.9	0.7
170°-180°	3.9	0.2
0°-90°	1152.7	66.3
0°-180°	1737.6	100.0

**Coefficient of Utilization**



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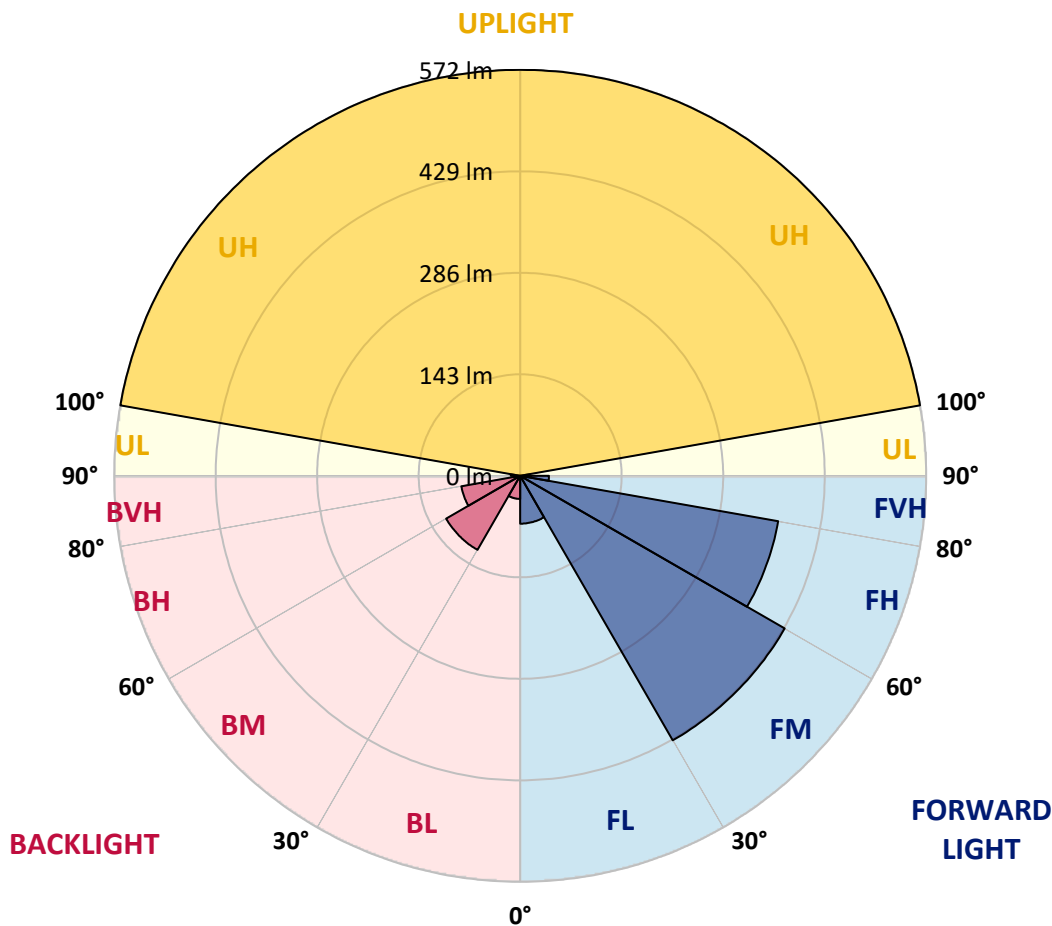
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	67.4	3.9			
FM (30°-60°)	430.2	24.8			
FH (60°-80°)	368.9	21.2			G0/660
FVH (80°-90°)	40.6	2.3			G1/100
BL (0°-30°)	32.6	1.9	B0/110		
BM (30°-60°)	120.4	6.9	B0/220		
BH (60°-80°)	84.2	4.8	B0/110		G0/110
BVH (80°-90°)	8.4	0.5			G0/10
UL (90°-100°)	13.1	0.8		U2/50	
UH (100°-180°)	571.8	32.9		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°	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0
2.5°	104.0	104.0	104.0	104.0	103.0	103.0	102.0	101.0	100.0	99.0	97.0
5°	113.0	113.0	112.0	111.0	109.0	108.0	107.0	105.0	103.0	101.0	98.0
7.5°	117.0	117.0	117.0	116.0	113.0	112.0	110.0	107.0	104.0	101.0	97.0
10°	124.0	124.0	123.0	122.0	119.0	118.0	116.0	112.0	107.0	102.0	97.0
12.5°	133.0	132.0	131.0	130.0	127.0	125.0	122.0	118.0	112.0	106.0	100.0
15°	144.0	142.0	142.0	140.0	137.0	134.0	132.0	126.0	120.0	112.0	104.0
17.5°	156.0	155.0	154.0	152.0	149.0	147.0	144.0	137.0	129.0	119.0	110.0
20°	171.0	169.0	170.0	167.0	164.0	163.0	158.0	150.0	140.0	129.0	118.0
22.5°	189.0	187.0	187.0	184.0	182.0	180.0	175.0	166.0	153.0	141.0	127.0
25°	209.1	207.1	207.1	205.1	203.0	201.0	195.0	185.0	170.0	155.0	139.0
27.5°	231.1	229.1	229.1	228.1	223.1	220.1	215.1	204.1	189.0	170.0	151.0
30°	254.1	252.1	254.1	252.1	249.1	243.1	237.1	225.1	208.1	187.0	164.0
32.5°	272.1	272.1	273.1	275.1	273.1	268.1	261.1	251.1	228.1	202.0	176.0
35°	293.1	293.1	295.1	298.1	297.1	292.1	285.1	274.1	250.1	219.1	189.0
37.5°	316.1	316.1	318.1	323.1	321.1	318.1	313.1	299.1	272.1	236.1	203.0
40°	341.1	340.1	342.1	349.1	350.1	346.1	340.1	326.1	295.1	258.1	218.1
42.5°	366.1	365.1	369.1	376.1	377.1	376.1	370.1	354.1	319.1	280.1	233.1
45°	391.1	391.1	397.1	408.1	413.1	411.1	406.1	386.1	349.1	303.1	253.1
47.5°	417.1	417.1	425.1	439.1	445.1	444.1	442.1	418.1	378.1	327.1	270.1
50°	437.1	437.1	450.1	466.1	476.1	480.1	470.1	448.1	403.1	348.1	284.1
52.5°	457.1	457.1	470.1	495.1	505.1	511.1	498.1	475.1	431.1	367.1	297.1
55°	467.1	469.1	487.1	511.1	527.1	524.1	529.1	498.1	449.1	381.1	305.1
57.5°	468.1	471.1	491.1	516.1	534.1	533.1	534.1	506.1	456.1	384.1	306.1
60°	463.1	468.1	486.1	511.1	528.1	536.1	526.1	501.1	452.1	381.1	305.1
62.5°	451.1	461.1	480.1	499.1	524.1	527.1	519.1	498.1	441.1	378.1	300.1
65°	424.1	435.1	462.1	484.1	504.1	508.1	499.1	481.1	430.1	364.1	284.1
67.5°	397.1	404.1	427.1	461.1	475.1	479.1	476.1	455.1	411.1	336.1	265.1
70°	366.1	375.1	393.1	428.1	442.1	441.1	450.1	426.1	382.1	312.1	245.1
72.5°	324.1	337.1	355.1	384.1	401.1	395.1	409.1	389.1	344.1	282.1	218.1
75°	275.1	286.1	309.1	332.1	351.1	344.1	355.1	341.1	300.1	246.1	187.0
77.5°	220.1	233.1	254.1	275.1	288.1	288.1	293.1	281.1	249.1	202.0	153.0
80°	163.0	175.0	194.0	209.1	221.1	222.1	227.1	221.1	192.0	157.0	117.0
82.5°	108.0	114.0	131.0	143.0	155.0	154.0	162.0	158.0	134.0	108.0	78.0
85°	46.0	50.0	64.0	74.0	85.0	81.0	92.0	91.0	72.0	52.0	35.0
87.5°	2.0	3.0	3.0	2.0	3.0	1.0	3.0	4.0	3.0	2.0	2.0
90°	5.0	5.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.0
92.5°	5.0	5.0	5.0	7.0	8.0	7.5	7.0	8.0	6.0	6.0	5.0
95°	6.0	6.0	7.0	9.0	11.0	11.5	12.0	12.0	7.0	7.0	6.0
97.5°	8.0	9.0	9.0	11.0	18.0	25.5	33.0	20.0	10.0	10.0	9.0
100°	13.0	14.0	14.0	25.0	53.0	62.0	71.1	51.0	26.0	19.0	14.0
102.5°	42.0	44.0	54.0	81.1	120.1	114.6	109.1	92.1	87.1	60.0	48.0
105°	107.1	106.1	114.1	135.1	168.1	166.6	165.1	152.1	138.1	119.1	110.1
107.5°	141.1	141.1	148.1	166.1	191.1	207.2	223.2	226.2	179.1	157.1	147.1
110°	159.1	159.1	165.1	180.1	213.2	235.7	258.2	256.2	221.2	194.1	181.1



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	15°	25°	35°	40°	45°	55°	65°	75°	85°
112.5°	163.1	164.1	172.1	195.1	231.2	241.2	251.2	242.2	228.2	216.2	206.2
115°	169.1	169.1	178.1	200.2	220.2	224.2	228.2	218.2	207.2	199.2	195.1
117.5°	167.1	170.1	172.1	184.1	197.1	200.1	203.2	198.1	183.1	177.1	175.1
120°	155.1	155.1	157.1	163.1	170.1	171.6	173.1	171.1	161.1	156.1	155.1
122.5°	138.1	139.1	138.1	141.1	146.1	147.6	149.1	147.1	139.1	137.1	137.1
125°	121.1	121.1	120.1	122.1	125.1	124.6	124.1	125.1	121.1	120.1	120.1
127.5°	109.1	108.1	106.1	107.1	108.1	108.1	108.1	109.1	105.1	106.1	107.1
130°	97.1	97.1	95.1	95.1	95.1	94.1	93.1	95.1	93.1	94.1	95.1
132.5°	86.1	86.1	83.1	82.1	82.1	82.1	82.1	83.1	82.1	84.1	86.1
135°	77.1	77.1	74.1	75.1	75.1	74.6	74.1	75.1	74.1	76.1	77.1
137.5°	70.1	70.1	68.1	68.1	68.1	67.6	67.1	68.1	68.1	69.1	71.1
140°	64.0	64.0	63.0	63.0	62.0	62.5	63.0	63.0	63.0	64.0	65.0
142.5°	61.0	60.0	59.0	58.0	59.0	59.0	59.0	59.0	58.0	59.0	61.0
145°	56.0	56.0	55.0	55.0	55.0	55.5	56.0	55.0	55.0	56.0	56.0
147.5°	53.0	53.0	52.0	53.0	53.0	53.0	53.0	53.0	52.0	53.0	53.0
150°	52.0	51.0	50.0	51.0	51.0	50.5	50.0	50.0	50.0	50.0	51.0
152.5°	49.0	49.0	48.0	49.0	48.0	48.0	48.0	48.0	48.0	48.0	49.0
155°	47.0	47.0	46.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0
157.5°	45.0	46.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.0
160°	44.0	44.0	44.0	44.0	43.0	43.0	43.0	43.0	44.0	44.0	44.0
162.5°	43.0	43.0	43.0	43.0	42.0	42.0	42.0	42.0	42.0	43.0	43.0
165°	43.0	42.0	42.0	42.0	41.0	41.0	41.0	41.0	41.0	42.0	43.0
167.5°	41.0	41.0	41.0	41.0	41.0	40.5	40.0	40.0	41.0	41.0	41.0
170°	41.0	41.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
172.5°	41.0	41.0	41.0	41.0	40.0	40.0	40.0	40.0	40.0	40.0	41.0
175°	41.0	41.0	41.0	41.0	40.0	40.0	40.0	40.0	41.0	41.0	41.0
177.5°	41.0	41.0	41.0	41.0	40.0	40.5	41.0	41.0	41.0	41.0	41.0
180°	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0





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**CANDELA DISTRIBUTION (continued):**

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0
2.5°	97.0	96.0	94.0	93.0	92.0	90.0	90.0	89.0	89.0	89.0	88.0
5°	97.0	95.0	93.0	90.0	88.0	86.0	84.0	82.0	81.0	81.0	80.0
7.5°	95.0	93.0	90.0	87.0	84.0	80.0	78.0	74.0	73.0	72.0	72.0
10°	95.0	93.0	88.0	84.0	80.0	76.0	73.0	69.0	66.0	65.0	65.0
12.5°	96.0	93.0	88.0	83.0	78.0	73.0	69.0	65.0	62.0	60.0	60.0
15°	100.0	96.0	90.0	83.0	77.0	71.0	67.0	62.0	59.0	57.0	57.0
17.5°	105.0	101.0	92.0	84.0	77.0	70.0	65.0	60.0	57.0	55.0	54.0
20°	112.0	106.0	96.0	85.0	77.0	70.0	64.0	59.0	55.0	53.0	53.0
22.5°	120.0	113.0	100.0	87.0	78.0	70.0	64.0	58.0	54.0	52.0	52.0
25°	130.0	121.0	106.0	91.0	80.0	71.0	64.0	58.0	54.0	52.0	52.0
27.5°	141.0	131.0	112.0	95.0	82.0	72.0	64.0	58.0	54.0	52.0	52.0
30°	151.0	140.0	118.0	99.0	85.0	73.0	65.0	59.0	55.0	53.0	52.0
32.5°	162.0	148.0	124.0	103.0	87.0	75.0	66.0	60.0	55.0	53.0	53.0
35°	173.0	158.0	130.0	108.0	90.0	77.0	67.0	61.0	56.0	54.0	54.0
37.5°	185.0	169.0	137.0	112.0	93.0	79.0	69.0	62.0	57.0	55.0	55.0
40°	199.0	180.0	144.0	117.0	96.0	81.0	70.0	64.0	59.0	57.0	57.0
42.5°	212.1	190.0	151.0	121.0	99.0	83.0	72.0	65.0	61.0	59.0	59.0
45°	225.1	202.0	158.0	126.0	102.0	86.0	74.0	68.0	63.0	61.0	61.0
47.5°	240.1	213.1	166.0	130.0	105.0	88.0	76.0	70.0	65.0	64.0	63.0
50°	252.1	221.1	171.0	134.0	107.0	90.0	78.0	71.0	67.0	65.0	65.0
52.5°	263.1	229.1	175.0	136.0	108.0	91.0	80.0	73.0	69.0	67.0	67.0
55°	269.1	232.1	178.0	136.0	109.0	92.0	80.0	73.0	69.0	68.0	67.0
57.5°	269.1	232.1	176.0	134.0	107.0	90.0	79.0	72.0	69.0	67.0	67.0
60°	265.1	229.1	171.0	130.0	104.0	87.0	77.0	70.0	67.0	66.0	66.0
62.5°	259.1	224.1	167.0	125.0	100.0	83.0	74.0	67.0	65.0	65.0	64.0
65°	243.1	209.1	158.0	118.0	94.0	78.0	70.0	64.0	62.0	61.0	60.0
67.5°	226.1	195.0	144.0	110.0	86.0	73.0	65.0	60.0	57.0	57.0	56.0
70°	209.1	180.0	131.0	99.0	77.0	67.0	59.0	54.0	52.0	52.0	52.0
72.5°	186.0	161.0	116.0	87.0	68.0	59.0	53.0	48.0	47.0	47.0	46.0
75°	159.0	137.0	98.0	74.0	57.0	50.0	45.0	40.0	40.0	40.0	40.0
77.5°	130.0	111.0	78.0	59.0	45.0	40.0	37.0	33.0	33.0	33.0	33.0
80°	98.0	82.0	57.0	43.0	33.0	29.0	27.0	25.0	26.0	26.0	25.0
82.5°	64.0	54.0	36.0	27.0	21.0	19.0	19.0	17.0	18.0	18.0	18.0
85°	28.0	24.0	15.0	12.0	10.0	10.0	10.0	9.0	10.0	10.0	10.0
87.5°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	1.0	2.0	1.0
90°	5.0	5.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0
92.5°	5.0	5.0	6.0	6.0	8.0	7.0	8.0	7.0	5.0	5.0	5.0
95°	6.0	6.0	7.0	7.0	12.0	12.0	11.0	9.0	7.0	6.0	6.0
97.5°	8.0	9.0	10.0	10.0	20.0	33.0	18.0	11.0	9.0	9.0	8.0
100°	14.0	14.0	19.0	26.0	51.0	71.1	53.0	25.0	14.0	14.0	13.0
102.5°	46.0	48.0	60.0	87.1	92.1	109.1	120.1	81.1	54.0	44.0	42.0
105°	110.1	110.1	119.1	138.1	152.1	165.1	168.1	135.1	114.1	106.1	107.1
107.5°	146.1	147.1	157.1	179.1	226.2	223.2	191.1	166.1	148.1	141.1	141.1
110°	179.1	181.1	194.1	221.2	256.2	258.2	213.2	180.1	165.1	159.1	159.1



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**CANDELA DISTRIBUTION (continued):**

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	204.2	206.2	216.2	228.2	242.2	251.2	231.2	195.1	172.1	164.1	163.1
115°	197.1	195.1	199.2	207.2	218.2	228.2	220.2	200.2	178.1	169.1	169.1
117.5°	172.1	175.1	177.1	183.1	198.1	203.2	197.1	184.1	172.1	170.1	167.1
120°	153.1	155.1	156.1	161.1	171.1	173.1	170.1	163.1	157.1	155.1	155.1
122.5°	135.1	137.1	137.1	139.1	147.1	149.1	146.1	141.1	138.1	139.1	138.1
125°	119.1	120.1	120.1	121.1	125.1	124.1	125.1	122.1	120.1	121.1	121.1
127.5°	106.1	107.1	106.1	105.1	109.1	108.1	108.1	107.1	106.1	108.1	109.1
130°	96.1	95.1	94.1	93.1	95.1	93.1	95.1	95.1	95.1	97.1	97.1
132.5°	86.1	86.1	84.1	82.1	83.1	82.1	82.1	82.1	83.1	86.1	86.1
135°	77.1	77.1	76.1	74.1	75.1	74.1	75.1	75.1	74.1	77.1	77.1
137.5°	72.1	71.1	69.1	68.1	68.1	67.1	68.1	68.1	68.1	70.1	70.1
140°	65.0	65.0	64.0	63.0	63.0	63.0	62.0	63.0	63.0	64.0	64.0
142.5°	61.0	61.0	59.0	58.0	59.0	59.0	59.0	58.0	59.0	60.0	61.0
145°	57.0	56.0	56.0	55.0	55.0	56.0	55.0	55.0	55.0	56.0	56.0
147.5°	54.0	53.0	53.0	52.0	53.0	53.0	53.0	53.0	52.0	53.0	53.0
150°	51.0	51.0	50.0	50.0	50.0	50.0	51.0	51.0	50.0	51.0	52.0
152.5°	50.0	49.0	48.0	48.0	48.0	48.0	48.0	49.0	48.0	49.0	49.0
155°	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	46.0	47.0	47.0
157.5°	46.0	46.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.0	45.0
160°	45.0	44.0	44.0	44.0	43.0	43.0	43.0	44.0	44.0	44.0	44.0
162.5°	44.0	43.0	43.0	42.0	42.0	42.0	42.0	43.0	43.0	43.0	43.0
165°	42.0	43.0	42.0	41.0	41.0	41.0	41.0	42.0	42.0	42.0	43.0
167.5°	42.0	41.0	41.0	41.0	40.0	40.0	41.0	41.0	41.0	41.0	41.0
170°	41.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	41.0	41.0
172.5°	41.0	41.0	40.0	40.0	40.0	40.0	40.0	41.0	41.0	41.0	41.0
175°	40.0	41.0	41.0	41.0	40.0	40.0	40.0	41.0	41.0	41.0	41.0
177.5°	41.0	41.0	41.0	41.0	41.0	41.0	40.0	41.0	41.0	41.0	41.0
180°	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0

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

MCGRAW EDISON

Report Number: SP1-2411-284-3

Test Date: 11/21/2024

Luminaire Tested: TTN-D0-750-U-WQ

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

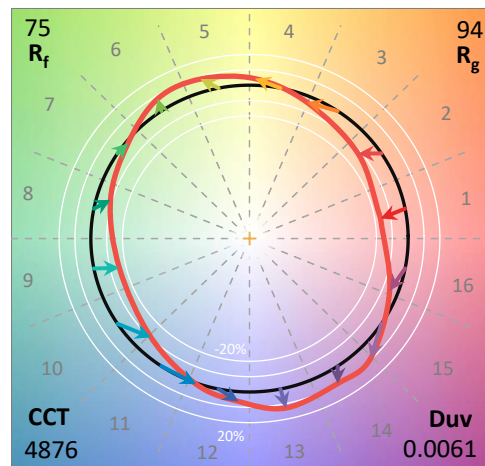
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2411-284-3  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 11/21/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW EDISON  
 Catalog Number: **TTN-D0-750-U-WQ**  
 Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 5000K, 70 CRI LEDS AND WIDE DISTRIBUTION

**Spectral Parameters**

CCT (K): 4876  
 CIE u': 0.2086  
 CIE v': 0.4932  
 Duv: 0.0061  
 CIE x: 0.3502  
 CIE y: 0.3680  
 CIE z: 0.2818  
 Peak Wavelength (nm): 451  
 Dominant Wavelength (nm): 569  
 Purity: 15.51324  
 Rf: 74.6  
 Rg: 94.4

CRI (Ra):	72.6		
R1:	69.5	R9:	-24.6
R2:	77.0	R10:	44.8
R3:	82.2	R11:	68.2
R4:	72.6	R12:	36.1
R5:	69.3	R13:	70.5
R6:	67.6	R14:	89.9
R7:	83.7	R15:	63.1
R8:	58.6		



**Test Conditions**

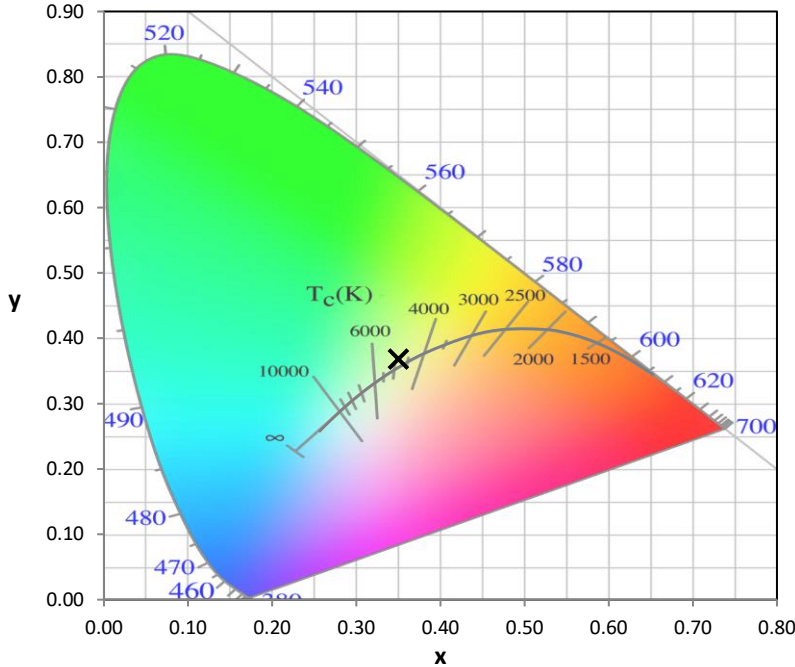
Stabilization Time: 51M  
 Operation Time: 1H 51M  
 Sphere Temperature (°C): 24.9

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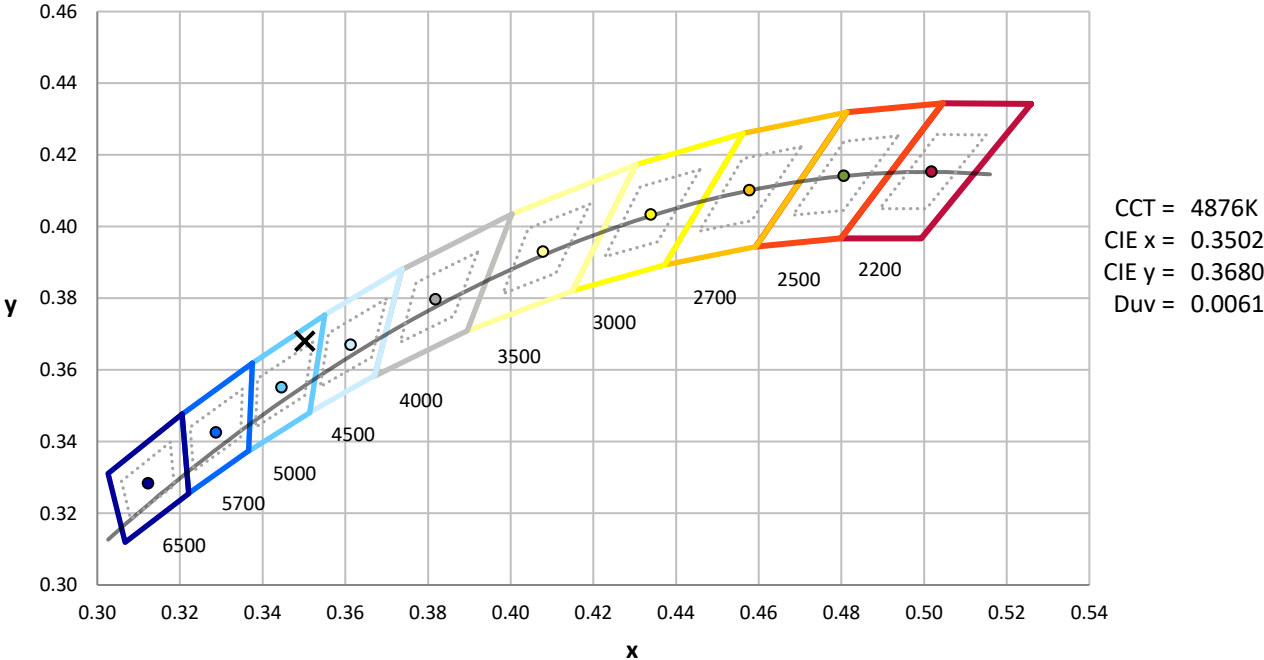
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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

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CIE 1931 Chromaticity Diagram



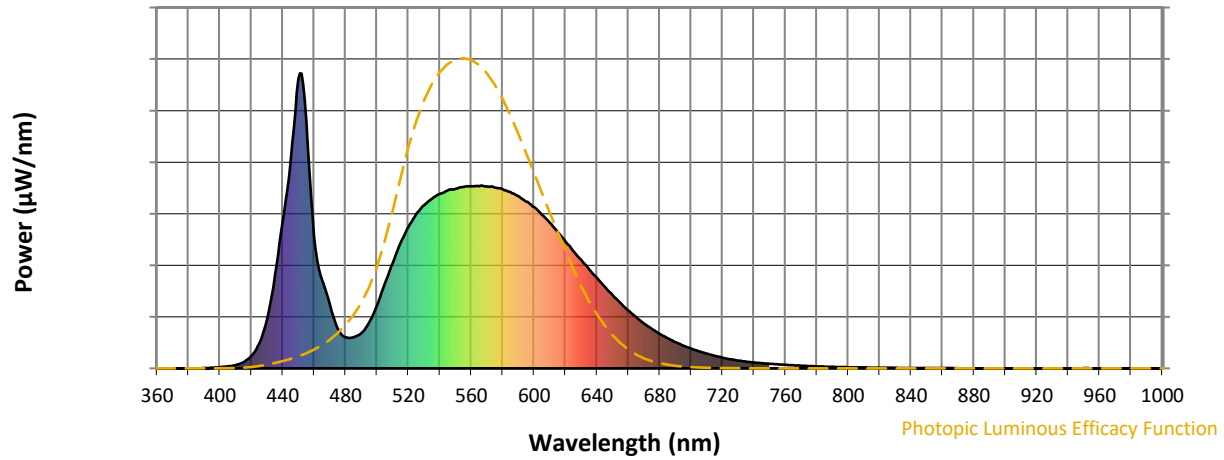
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5000K 7-step quadrangle

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**Photopic Flux vs. Wavelength**

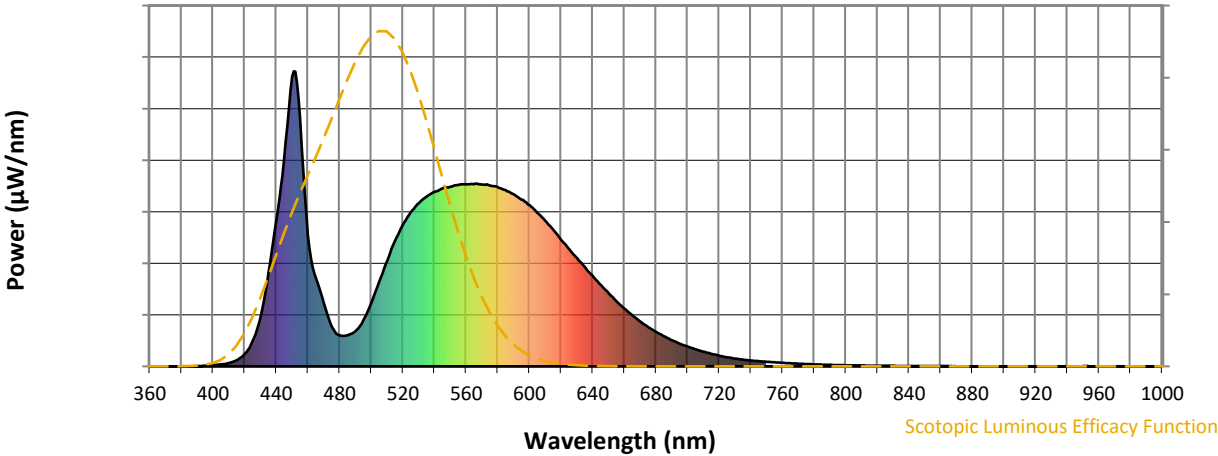


**Photopic Lumens: NR**

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	119	NR	620	430	NR	750	16	NR	880	0	NR
365	0	NR	495	156	NR	625	398	NR	755	14	NR	885	0	NR
370	0	NR	500	214	NR	630	368	NR	760	12	NR	890	0	NR
375	0	NR	505	286	NR	635	336	NR	765	11	NR	895	0	NR
380	0	NR	510	357	NR	640	306	NR	770	9	NR	900	0	NR
385	0	NR	515	425	NR	645	276	NR	775	8	NR	905	0	NR
390	1	NR	520	480	NR	650	248	NR	780	7	NR	910	0	NR
395	2	NR	525	523	NR	655	221	NR	785	6	NR	915	0	NR
400	4	NR	530	554	NR	660	196	NR	790	5	NR	920	0	NR
405	7	NR	535	575	NR	665	173	NR	795	4	NR	925	0	NR
410	11	NR	540	592	NR	670	152	NR	800	4	NR	930	0	NR
415	21	NR	545	603	NR	675	133	NR	805	3	NR	935	0	NR
420	42	NR	550	609	NR	680	117	NR	810	3	NR	940	0	NR
425	85	NR	555	615	NR	685	102	NR	815	3	NR	945	0	NR
430	165	NR	560	617	NR	690	89	NR	820	2	NR	950	1	NR
435	316	NR	565	617	NR	695	77	NR	825	2	NR	955	0	NR
440	497	NR	570	616	NR	700	67	NR	830	2	NR	960	0	NR
445	702	NR	575	613	NR	705	58	NR	835	2	NR	965	0	NR
450	981	NR	580	607	NR	710	50	NR	840	1	NR	970	0	NR
455	840	NR	585	598	NR	715	43	NR	845	1	NR	975	0	NR
460	446	NR	590	583	NR	720	36	NR	850	1	NR	980	0	NR
465	300	NR	595	566	NR	725	31	NR	855	1	NR	985	0	NR
470	215	NR	600	546	NR	730	26	NR	860	1	NR	990	0	NR
475	135	NR	605	521	NR	735	23	NR	865	1	NR	995	0	NR
480	105	NR	610	494	NR	740	20	NR	870	1	NR	1000	0	NR
485	106	NR	615	463	NR	745	18	NR	875	0	NR			

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Scotopic Flux vs. Wavelength



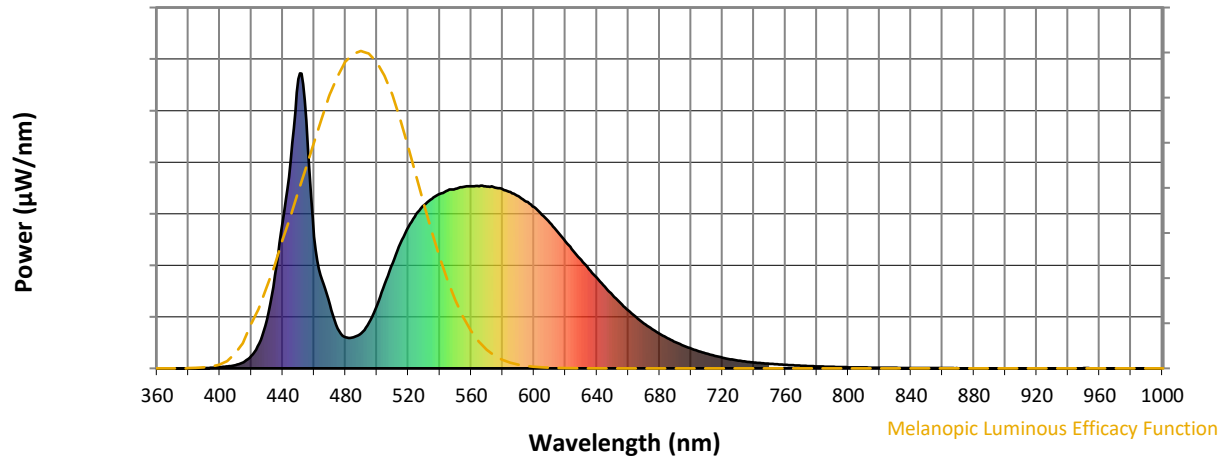
Scotopic Lumens: NR S/P: 1.74

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	119	NR	620	430	NR	750	16	NR	880	0	NR
365	0	NR	495	156	NR	625	398	NR	755	14	NR	885	0	NR
370	0	NR	500	214	NR	630	368	NR	760	12	NR	890	0	NR
375	0	NR	505	286	NR	635	336	NR	765	11	NR	895	0	NR
380	0	NR	510	357	NR	640	306	NR	770	9	NR	900	0	NR
385	0	NR	515	425	NR	645	276	NR	775	8	NR	905	0	NR
390	1	NR	520	480	NR	650	248	NR	780	7	NR	910	0	NR
395	2	NR	525	523	NR	655	221	NR	785	6	NR	915	0	NR
400	4	NR	530	554	NR	660	196	NR	790	5	NR	920	0	NR
405	7	NR	535	575	NR	665	173	NR	795	4	NR	925	0	NR
410	11	NR	540	592	NR	670	152	NR	800	4	NR	930	0	NR
415	21	NR	545	603	NR	675	133	NR	805	3	NR	935	0	NR
420	42	NR	550	609	NR	680	117	NR	810	3	NR	940	0	NR
425	85	NR	555	615	NR	685	102	NR	815	3	NR	945	0	NR
430	165	NR	560	617	NR	690	89	NR	820	2	NR	950	1	NR
435	316	NR	565	617	NR	695	77	NR	825	2	NR	955	0	NR
440	497	NR	570	616	NR	700	67	NR	830	2	NR	960	0	NR
445	702	NR	575	613	NR	705	58	NR	835	2	NR	965	0	NR
450	981	NR	580	607	NR	710	50	NR	840	1	NR	970	0	NR
455	840	NR	585	598	NR	715	43	NR	845	1	NR	975	0	NR
460	446	NR	590	583	NR	720	36	NR	850	1	NR	980	0	NR
465	300	NR	595	566	NR	725	31	NR	855	1	NR	985	0	NR
470	215	NR	600	546	NR	730	26	NR	860	1	NR	990	0	NR
475	135	NR	605	521	NR	735	23	NR	865	1	NR	995	0	NR
480	105	NR	610	494	NR	740	20	NR	870	1	NR	1000	0	NR
485	106	NR	615	463	NR	745	18	NR	875	0	NR			



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**Melanopic Flux vs. Wavelength**



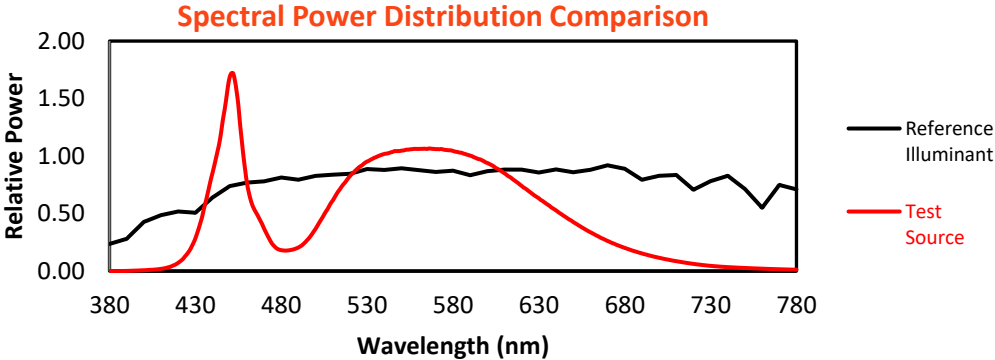
**Melanopic Lumens: NR**

**M/P: 3.51**

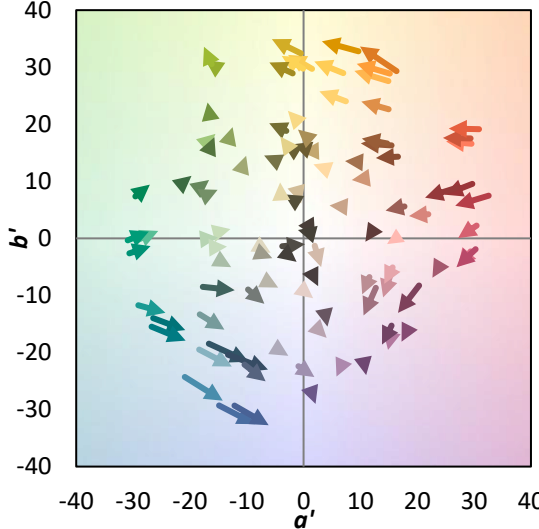
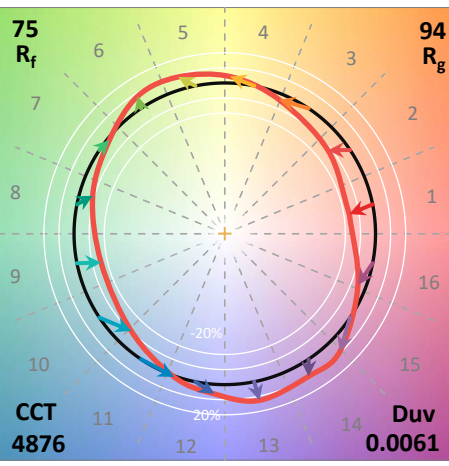
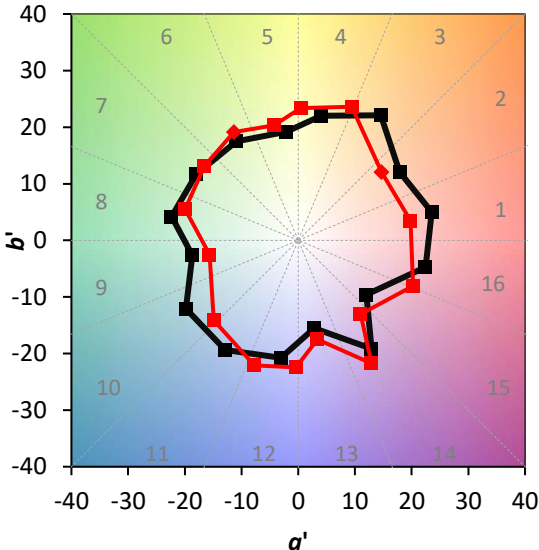
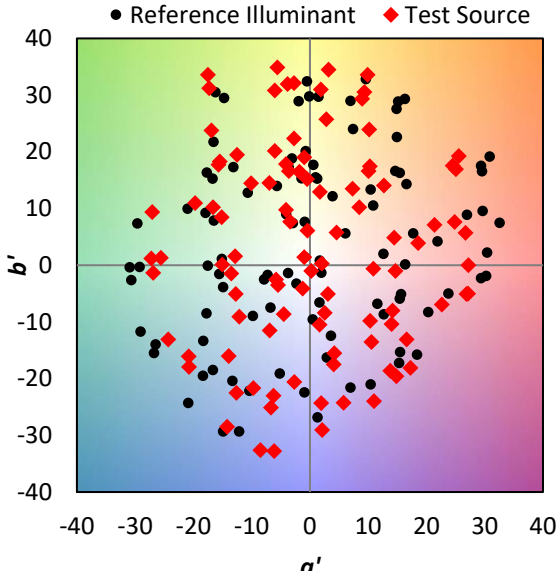
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	119	NR	620	430	NR	750	16	NR	880	0	NR
365	0	NR	495	156	NR	625	398	NR	755	14	NR	885	0	NR
370	0	NR	500	214	NR	630	368	NR	760	12	NR	890	0	NR
375	0	NR	505	286	NR	635	336	NR	765	11	NR	895	0	NR
380	0	NR	510	357	NR	640	306	NR	770	9	NR	900	0	NR
385	0	NR	515	425	NR	645	276	NR	775	8	NR	905	0	NR
390	1	NR	520	480	NR	650	248	NR	780	7	NR	910	0	NR
395	2	NR	525	523	NR	655	221	NR	785	6	NR	915	0	NR
400	4	NR	530	554	NR	660	196	NR	790	5	NR	920	0	NR
405	7	NR	535	575	NR	665	173	NR	795	4	NR	925	0	NR
410	11	NR	540	592	NR	670	152	NR	800	4	NR	930	0	NR
415	21	NR	545	603	NR	675	133	NR	805	3	NR	935	0	NR
420	42	NR	550	609	NR	680	117	NR	810	3	NR	940	0	NR
425	85	NR	555	615	NR	685	102	NR	815	3	NR	945	0	NR
430	165	NR	560	617	NR	690	89	NR	820	2	NR	950	1	NR
435	316	NR	565	617	NR	695	77	NR	825	2	NR	955	0	NR
440	497	NR	570	616	NR	700	67	NR	830	2	NR	960	0	NR
445	702	NR	575	613	NR	705	58	NR	835	2	NR	965	0	NR
450	981	NR	580	607	NR	710	50	NR	840	1	NR	970	0	NR
455	840	NR	585	598	NR	715	43	NR	845	1	NR	975	0	NR
460	446	NR	590	583	NR	720	36	NR	850	1	NR	980	0	NR
465	300	NR	595	566	NR	725	31	NR	855	1	NR	985	0	NR
470	215	NR	600	546	NR	730	26	NR	860	1	NR	990	0	NR
475	135	NR	605	521	NR	735	23	NR	865	1	NR	995	0	NR
480	105	NR	610	494	NR	740	20	NR	870	1	NR	1000	0	NR
485	106	NR	615	463	NR	745	18	NR	875	0	NR			

**Summary**

$R_f = 74.6$   
 $R_g = 94.4$   
 $CIE R_a = 72.6$   
 $R_9 = -24.6$

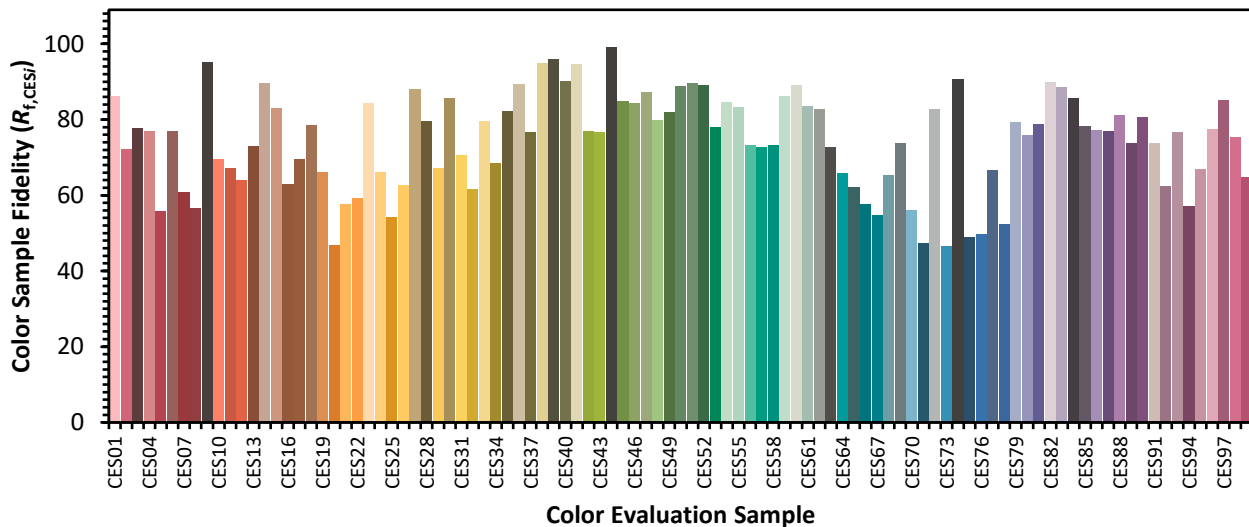


**Color Vector Graphics**

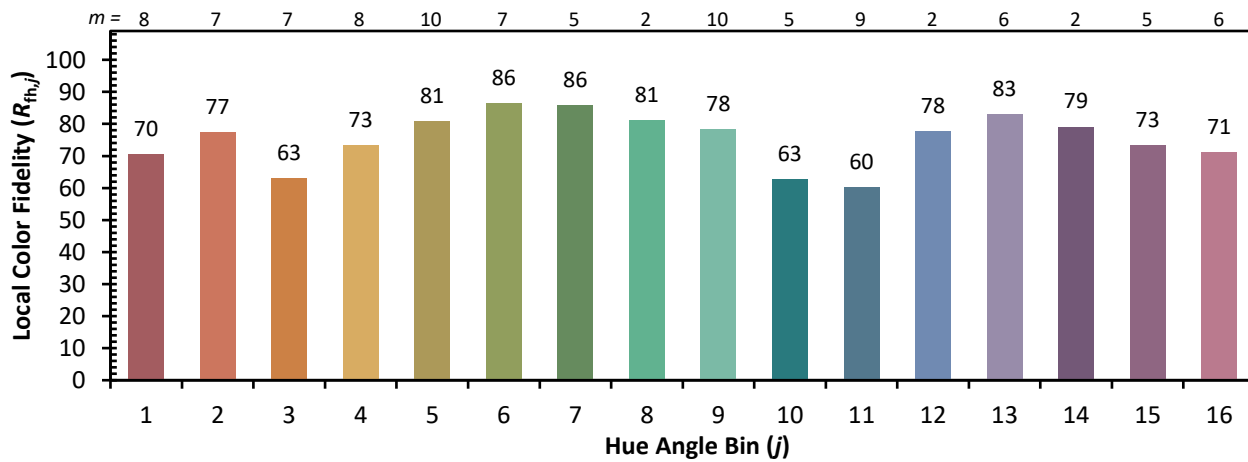
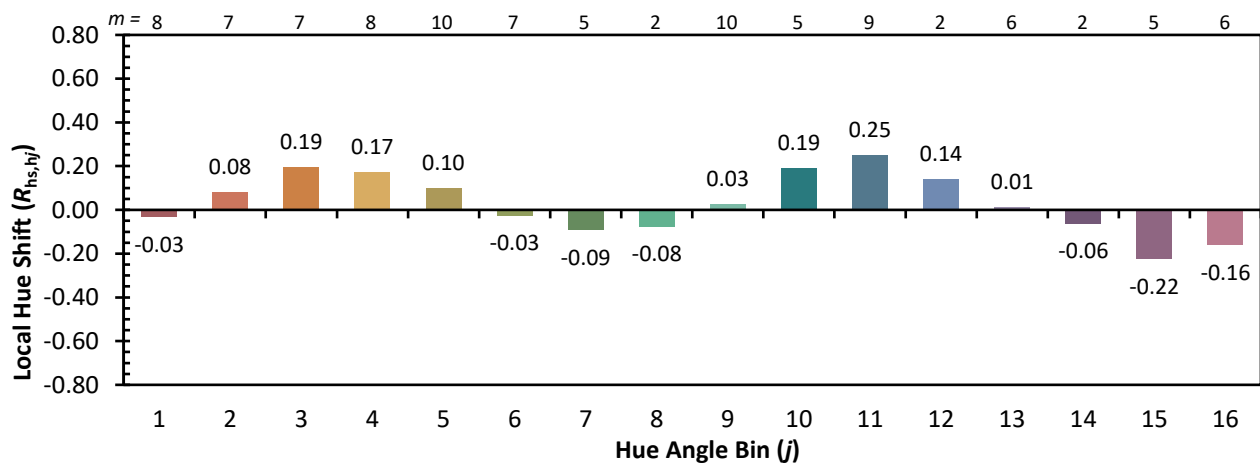
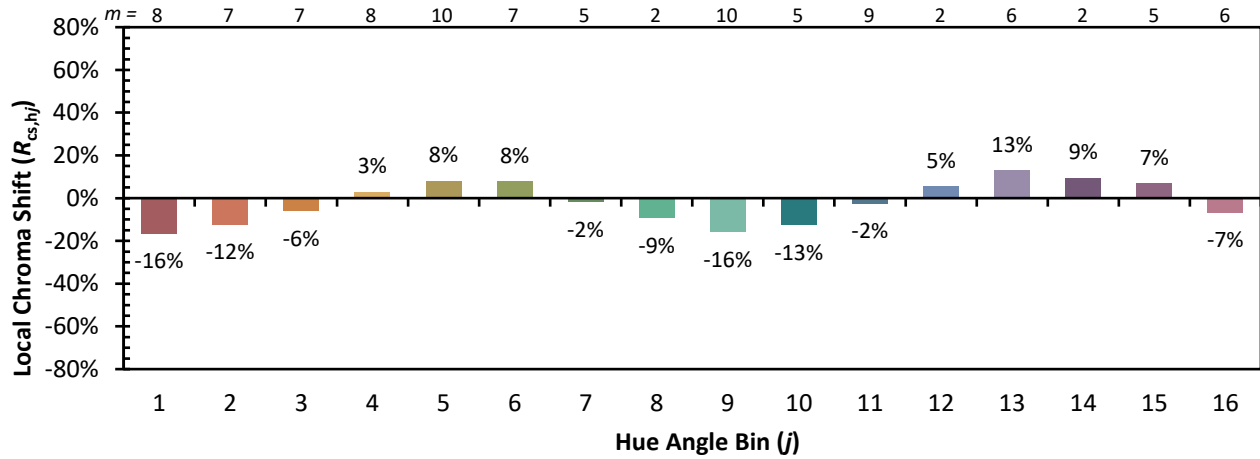


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

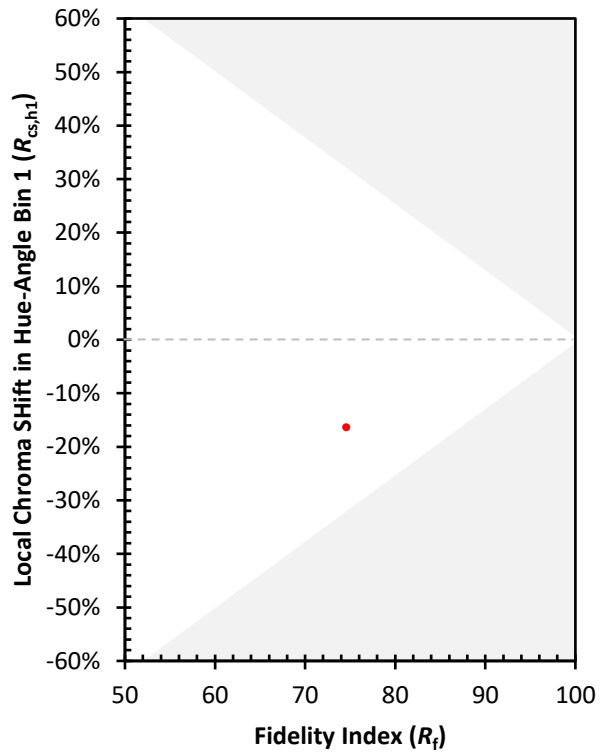
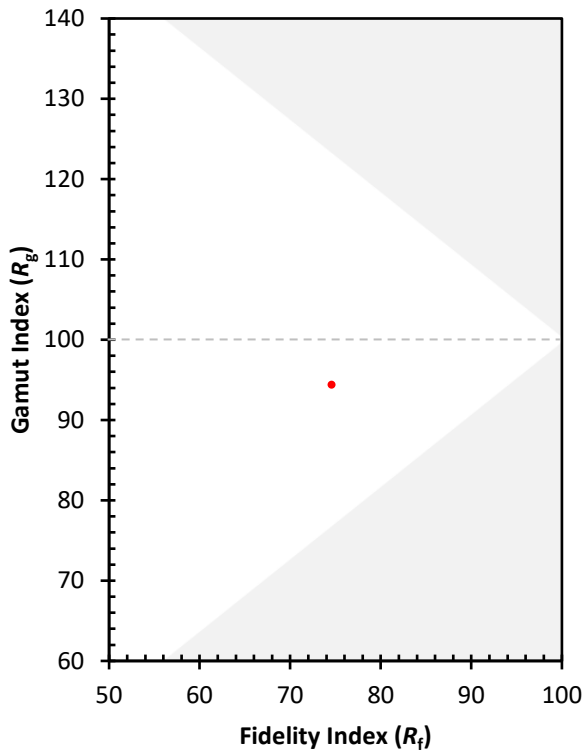
CES01 = 85	CES26 = 63	CES51 = 90	CES76 = 50
CES02 = 59	CES27 = 88	CES52 = 89	CES77 = 67
CES03 = 30	CES28 = 80	CES53 = 78	CES78 = 52
CES04 = 69	CES29 = 67	CES54 = 85	CES79 = 79
CES05 = 46	CES30 = 86	CES55 = 83	CES80 = 76
CES06 = 50	CES31 = 70	CES56 = 73	CES81 = 79
CES07 = 39	CES32 = 62	CES57 = 73	CES82 = 90
CES08 = 38	CES33 = 80	CES58 = 73	CES83 = 89
CES09 = 29	CES34 = 69	CES59 = 86	CES84 = 86
CES10 = 72	CES35 = 82	CES60 = 89	CES85 = 78
CES11 = 55	CES36 = 89	CES61 = 83	CES86 = 77
CES12 = 61	CES37 = 77	CES62 = 83	CES87 = 77
CES13 = 41	CES38 = 95	CES63 = 73	CES88 = 81
CES14 = 74	CES39 = 96	CES64 = 66	CES89 = 74
CES15 = 70	CES40 = 90	CES65 = 62	CES90 = 81
CES16 = 46	CES41 = 95	CES66 = 58	CES91 = 74
CES17 = 49	CES42 = 77	CES67 = 55	CES92 = 62
CES18 = 55	CES43 = 77	CES68 = 65	CES93 = 77
CES19 = 71	CES44 = 99	CES69 = 74	CES94 = 57
CES20 = 64	CES45 = 85	CES70 = 56	CES95 = 67
CES21 = 85	CES46 = 84	CES71 = 47	CES96 = 77
CES22 = 77	CES47 = 87	CES72 = 83	CES97 = 85
CES23 = 91	CES48 = 80	CES73 = 46	CES98 = 75
CES24 = 90	CES49 = 82	CES74 = 91	CES99 = 65
CES25 = 71	CES50 = 89	CES75 = 49	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)