

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: P833919

Luminaire Tested: **TTN-D3-740-U-DL-UPL3**

Issue Date: 5/15/2024

Test Information

Test Method: LM-79-08
Report Number: P833919
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-D3-740-U-DL-UPL3
Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
4000K, 70 CRI LEDS AND DRIVE LANE DISTRIBUTION
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 7482.6 lumens
Efficiency: N/A
Efficacy: 113.0 lumens/watt
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')
IES Classification: Type IV - Short
BUG Rating: B1 - U4 - G3

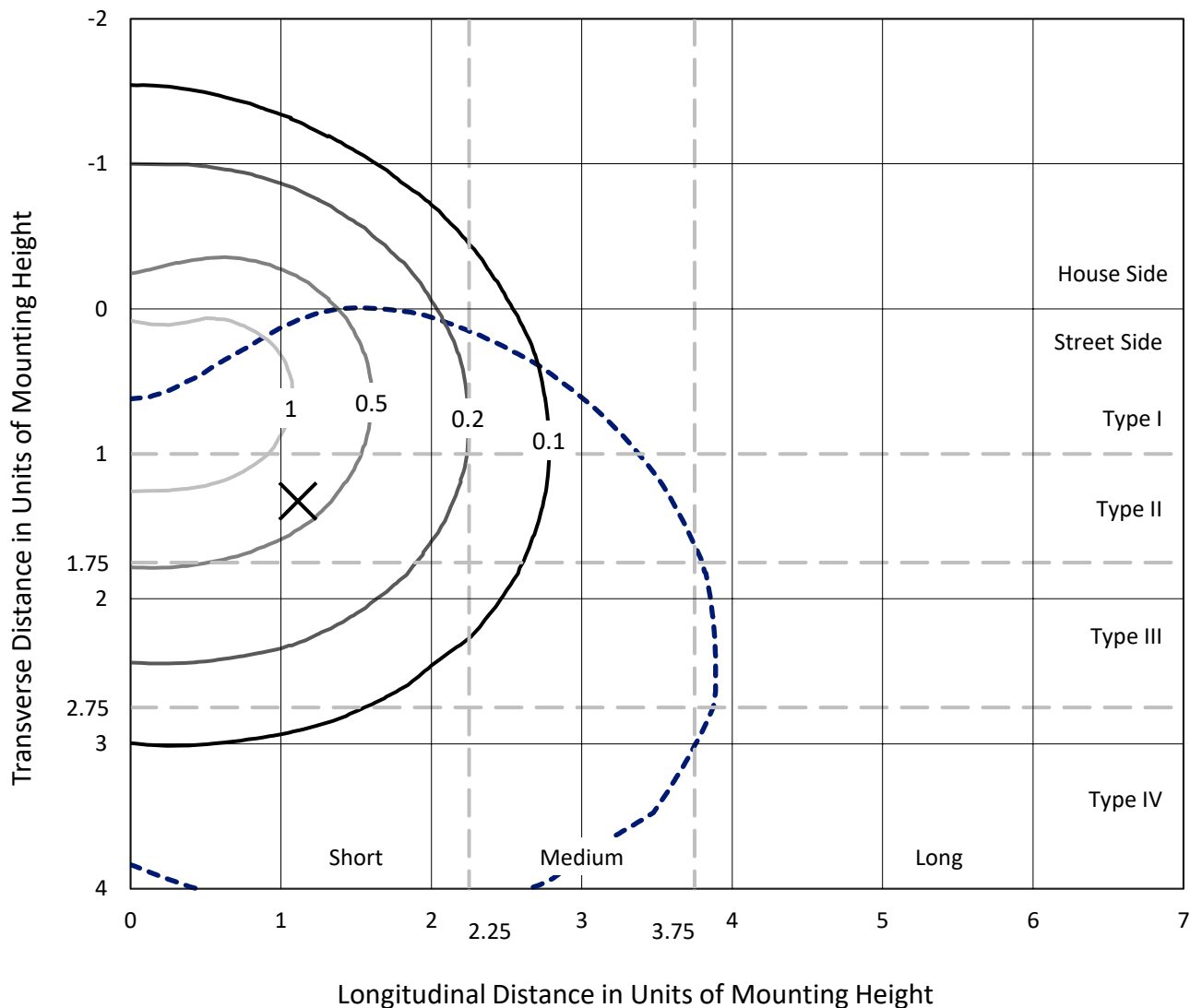
Input Watts (W): 66.2
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Iso-Footcandle Lines of Horizontal Illumination

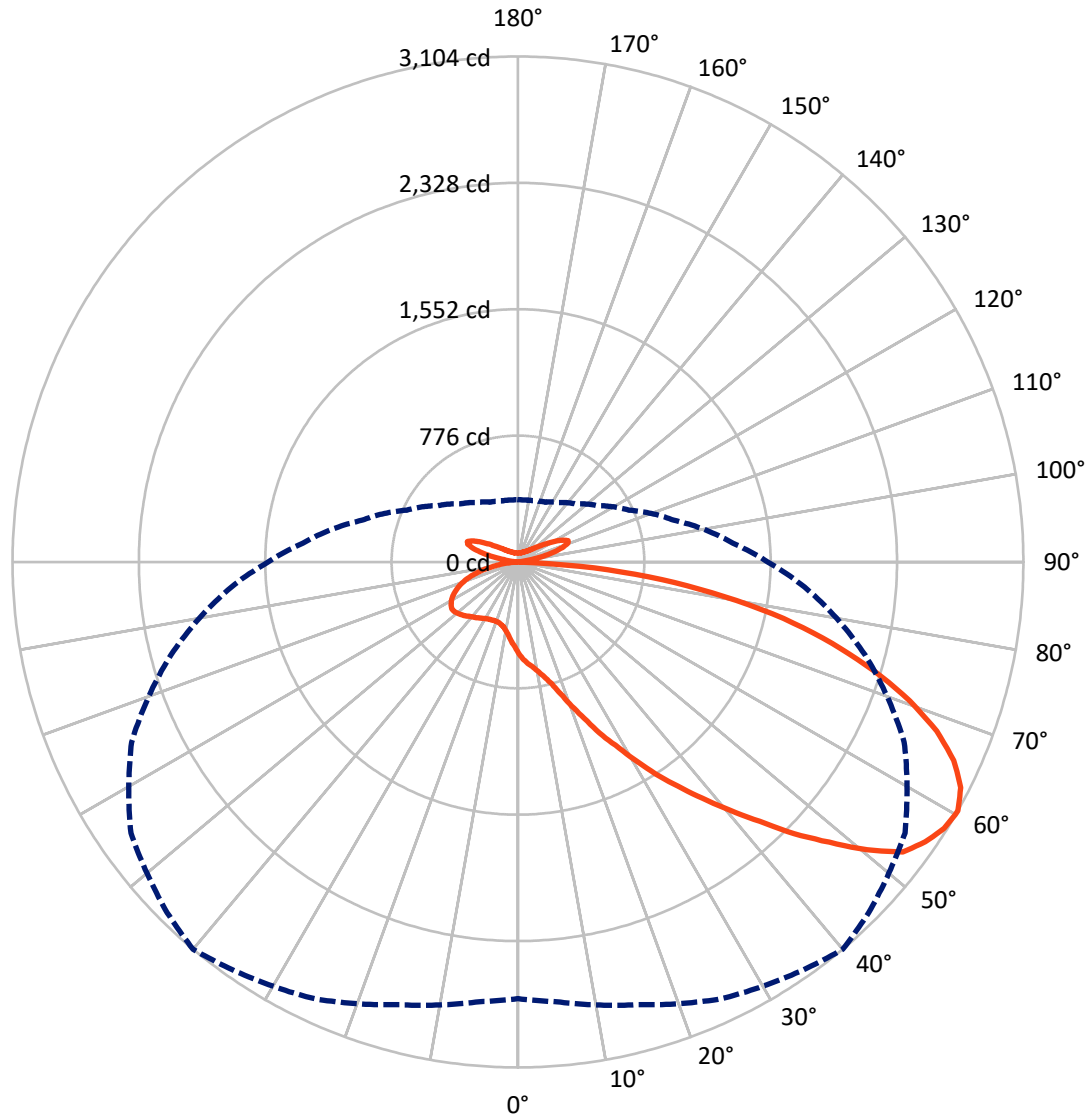
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.5 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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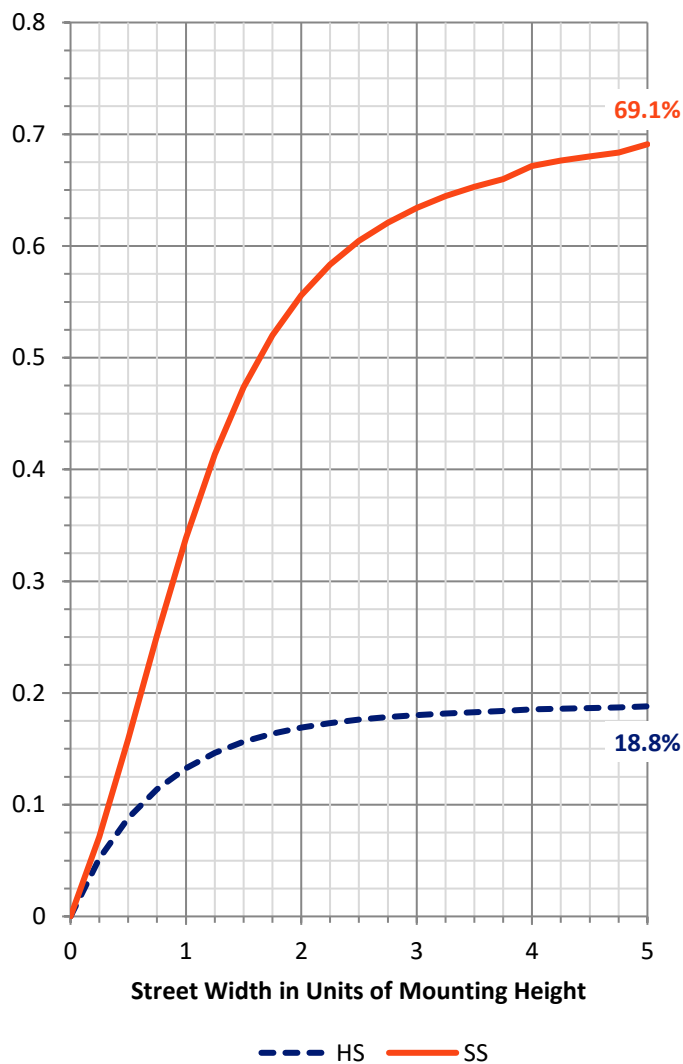
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	1420.9	405.8	1826.7
	% Fixture	19.0	5.4	24.4
Street Side	Lumens	5250.2	405.8	5655.9
	% Fixture	70.2	5.4	75.6
Total	Lumens	6671.1	811.5	7482.6
	% Fixture	89.2	10.8	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	53.0	0.7
10°-20°	169.1	2.3
20°-30°	357.2	4.8
30°-40°	652.8	8.7
40°-50°	1060.8	14.2
50°-60°	1474.4	19.7
60°-70°	1528.4	20.4
70°-80°	1095.2	14.6
80°-90°	280.3	3.7
90°-100°	18.1	0.2
100°-110°	184.1	2.5
110°-120°	269.1	3.6
120°-130°	156.2	2.1
130°-140°	82.7	1.1
140°-150°	49.1	0.7
150°-160°	30.3	0.4
160°-170°	16.5	0.2
170°-180°	5.4	0.1
0°-90°	6671.1	89.2
0°-180°	7482.6	100.0

Coefficient of Utilization

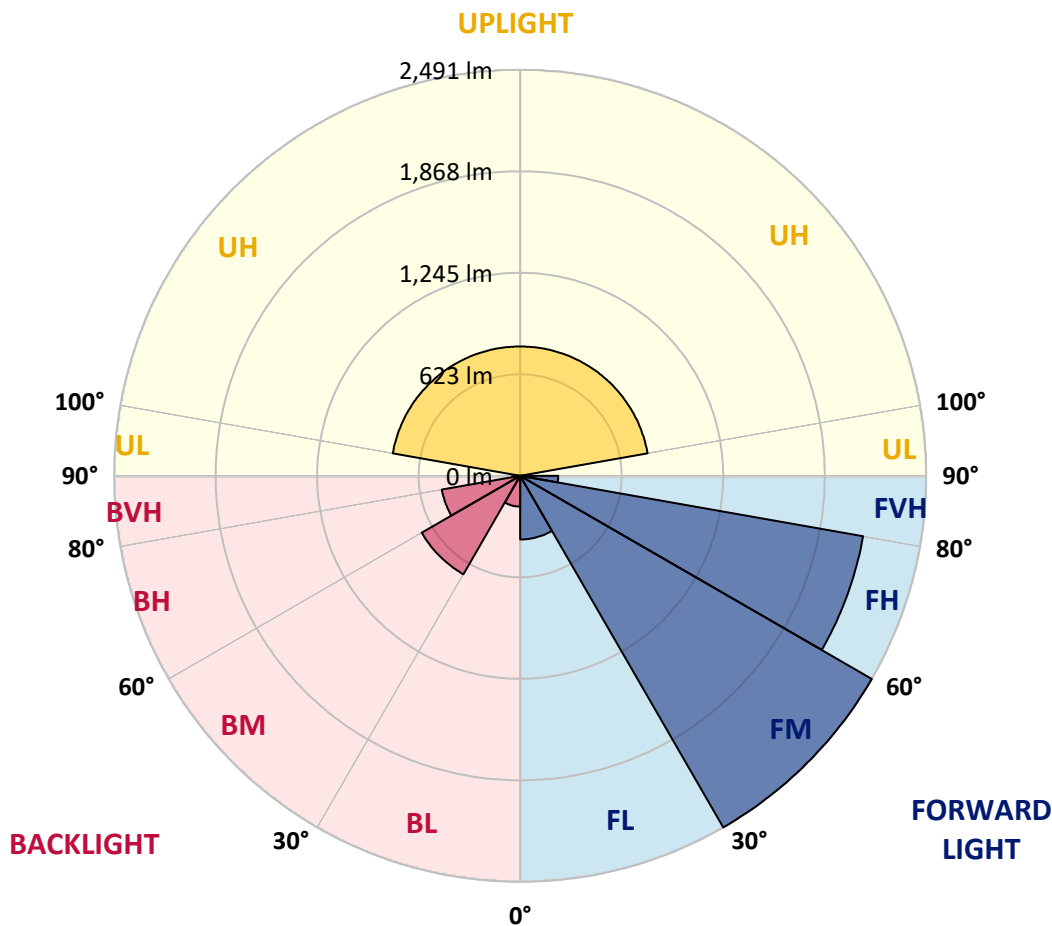


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	390.3	5.2			
FM (30°-60°)	2490.6	33.3			
FH (60°-80°)	2136.1	28.5			G2/5000
FVH (80°-90°)	233.2	3.1			G3/500
BL (0°-30°)	188.9	2.5	B1/500		
BM (30°-60°)	697.3	9.3	B1/1000		
BH (60°-80°)	487.5	6.5	B1/500		G1/500
BVH (80°-90°)	47.2	0.6			G1/100
UL (90°-100°)	18.1	0.2		U2/50	
UH (100°-180°)	793.4	10.6		U4/1000	

BUG Rating: B1-U4-G3
 Type IV Short





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	40°	45°	55°	65°	75°	85°
0°	561.8	561.8	561.8	561.8	561.8	561.8	561.8	561.8	561.8	561.8	561.8
2.5°	602.3	602.3	602.3	602.3	596.5	596.5	590.7	584.9	579.1	573.3	561.8
5°	654.4	654.4	648.6	642.8	631.3	625.5	619.7	608.1	596.5	584.9	567.6
7.5°	677.6	677.6	677.6	671.8	654.4	648.6	637.0	619.7	602.3	584.9	561.8
10°	718.1	718.1	712.3	706.5	689.2	683.4	671.8	648.6	619.7	590.7	561.8
12.5°	770.2	764.5	758.7	752.9	735.5	723.9	706.5	683.4	648.6	613.9	579.1
15°	834.0	822.4	822.4	810.8	793.4	776.0	764.5	729.7	695.0	648.6	602.3
17.5°	903.5	897.7	891.9	880.3	862.9	851.3	834.0	793.4	747.1	689.2	637.0
20°	990.3	978.7	984.5	967.2	949.8	944.0	915.0	868.7	810.8	747.1	683.4
22.5°	1094.6	1083.0	1083.0	1065.6	1054.0	1042.4	1013.5	961.4	886.1	816.6	735.5
25°	1210.4	1198.8	1198.8	1187.2	1175.6	1164.1	1129.3	1071.4	984.5	897.7	805.0
27.5°	1337.8	1326.2	1326.2	1320.4	1291.5	1274.1	1245.1	1181.4	1094.6	984.5	874.5
30°	1471.0	1459.4	1471.0	1459.4	1442.0	1407.3	1372.6	1303.1	1204.6	1083.0	949.8
32.5°	1575.2	1575.2	1581.0	1592.6	1581.0	1552.1	1511.5	1453.6	1320.4	1169.9	1019.3
35°	1696.9	1696.9	1708.4	1725.8	1720.0	1691.1	1650.5	1586.8	1447.8	1268.3	1094.6
37.5°	1830.1	1830.1	1841.6	1870.6	1859.0	1841.6	1812.7	1731.6	1575.2	1366.8	1175.6
40°	1974.9	1969.1	1980.6	2021.2	2027.0	2003.8	1969.1	1888.0	1708.4	1494.2	1262.5
42.5°	2119.6	2113.8	2137.0	2177.5	2183.3	2177.5	2142.8	2050.1	1847.4	1621.6	1349.4
45°	2264.4	2264.4	2299.2	2362.9	2391.8	2380.2	2351.3	2235.5	2021.2	1754.8	1465.2
47.5°	2415.0	2415.0	2461.3	2542.4	2577.2	2571.4	2559.8	2420.8	2189.1	1893.8	1563.7
50°	2530.8	2530.8	2606.1	2698.8	2756.7	2779.8	2721.9	2594.5	2333.9	2015.4	1644.7
52.5°	2646.6	2646.6	2721.9	2866.7	2924.6	2959.4	2884.1	2750.9	2496.1	2125.4	1720.0
55°	2704.6	2716.1	2820.4	2959.4	3052.0	3034.7	3063.6	2884.1	2600.3	2206.5	1766.4
57.5°	2710.4	2727.7	2843.6	2988.3	3092.6	3086.8	3092.6	2930.4	2640.9	2223.9	1772.2
60°	2681.4	2710.4	2814.6	2959.4	3057.8	3104.2	3046.3	2901.5	2617.7	2206.5	1766.4
62.5°	2611.9	2669.8	2779.8	2889.9	3034.7	3052.0	3005.7	2884.1	2554.0	2189.1	1737.4
65°	2455.5	2519.2	2675.6	2803.0	2918.8	2942.0	2889.9	2785.6	2490.3	2108.1	1644.7
67.5°	2299.2	2339.7	2472.9	2669.8	2750.9	2774.1	2756.7	2635.1	2380.2	1945.9	1534.7
70°	2119.6	2171.8	2276.0	2478.7	2559.8	2554.0	2606.1	2467.1	2212.3	1806.9	1418.9
72.5°	1876.4	1951.7	2055.9	2223.9	2322.3	2287.6	2368.7	2252.8	1992.2	1633.2	1262.5
75°	1592.6	1656.3	1789.5	1922.7	2032.8	1992.2	2055.9	1974.9	1737.4	1424.7	1083.0
77.5°	1274.1	1349.4	1471.0	1592.6	1667.9	1667.9	1696.9	1627.4	1442.0	1169.9	886.1
80°	944.0	1013.5	1123.5	1210.4	1279.9	1285.7	1314.6	1279.9	1111.9	909.2	677.6
82.5°	625.5	660.2	758.7	828.2	897.7	891.9	938.2	915.0	776.0	625.5	451.7
85°	266.4	289.6	370.6	428.6	492.3	469.1	532.8	527.0	417.0	301.2	202.7
87.5°	11.6	17.4	17.4	11.6	17.4	5.8	17.4	23.2	17.4	11.6	11.6
90°	6.9	6.9	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	6.9
92.5°	6.9	6.9	6.9	9.7	11.1	10.4	9.7	11.1	8.3	8.3	6.9
95°	8.3	8.3	9.7	12.5	15.3	16.0	16.7	16.7	9.7	9.7	8.3
97.5°	11.1	12.5	12.5	15.3	25.0	35.4	45.8	27.8	13.9	13.9	12.5
100°	18.0	19.4	19.4	34.7	73.6	86.1	98.6	70.8	36.1	26.4	19.4
102.5°	58.3	61.1	75.0	112.5	166.6	159.0	151.3	127.7	120.8	83.3	66.6
105°	148.6	147.2	158.3	187.4	233.3	231.2	229.1	211.0	191.6	165.2	152.7
107.5°	195.8	195.8	205.5	230.5	265.2	287.4	309.6	313.8	248.5	218.0	204.1
110°	220.8	220.8	229.1	249.9	295.7	327.0	358.2	355.4	306.8	269.4	251.3



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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	40°	45°	55°	65°	75°	85°
112.5°	226.3	227.7	238.8	270.7	320.7	334.6	348.5	336.0	316.6	299.9	286.0
115°	234.6	234.6	247.1	277.7	305.5	311.0	316.6	302.7	287.4	276.3	270.7
117.5°	231.9	236.0	238.8	255.5	273.5	277.6	281.8	274.9	254.1	245.8	243.0
120°	215.2	215.2	218.0	226.3	236.0	238.1	240.2	237.4	223.5	216.6	215.2
122.5°	191.6	193.0	191.6	195.8	202.7	204.8	206.9	204.1	193.0	190.2	190.2
125°	168.0	168.0	166.6	169.4	173.6	172.9	172.2	173.6	168.0	166.6	166.6
127.5°	151.3	149.9	147.2	148.6	149.9	149.9	149.9	151.3	145.8	147.2	148.6
130°	134.7	134.7	131.9	131.9	131.9	130.5	129.1	131.9	129.1	130.5	131.9
132.5°	119.4	119.4	115.2	113.9	113.9	113.9	113.9	115.2	113.9	116.6	119.4
135°	106.9	106.9	102.7	104.1	104.1	103.4	102.7	104.1	102.7	105.5	106.9
137.5°	97.2	97.2	94.4	94.4	94.4	93.7	93.0	94.4	94.4	95.8	98.6
140°	88.9	88.9	87.5	87.5	86.1	86.8	87.5	87.5	87.5	88.9	90.2
142.5°	84.7	83.3	81.9	80.5	81.9	81.9	81.9	81.9	80.5	81.9	84.7
145°	77.8	77.8	76.4	76.4	76.4	77.1	77.8	76.4	76.4	77.8	77.8
147.5°	73.6	73.6	72.2	73.6	73.6	73.6	73.6	73.6	72.2	73.6	73.6
150°	72.2	70.8	69.4	70.8	70.8	70.1	69.4	69.4	69.4	69.4	70.8
152.5°	68.0	68.0	66.6	68.0	66.6	66.6	66.6	66.6	66.6	66.6	68.0
155°	65.3	65.3	63.9	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3
157.5°	62.5	63.9	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	63.9
160°	61.1	61.1	61.1	61.1	59.7	59.7	59.7	59.7	61.1	61.1	61.1
162.5°	59.7	59.7	59.7	59.7	58.3	58.3	58.3	58.3	58.3	59.7	59.7
165°	59.7	58.3	58.3	58.3	56.9	56.9	56.9	56.9	56.9	58.3	59.7
167.5°	56.9	56.9	56.9	56.9	56.9	56.2	55.5	55.5	56.9	56.9	56.9
170°	56.9	56.9	55.5	55.5	55.5	55.5	55.5	55.5	55.5	55.5	55.5
172.5°	56.9	56.9	56.9	56.9	55.5	55.5	55.5	55.5	55.5	55.5	56.9
175°	56.9	56.9	56.9	56.9	55.5	55.5	55.5	55.5	56.9	56.9	56.9
177.5°	56.9	56.9	56.9	56.9	55.5	56.2	56.9	56.9	56.9	56.9	56.9
180°	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9



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CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	561.8	561.8	561.8	561.8	561.8	561.8	561.8	561.8	561.8	561.8	561.8
2.5°	561.8	556.0	544.4	538.6	532.8	521.2	521.2	515.4	515.4	515.4	509.6
5°	561.8	550.2	538.6	521.2	509.6	498.1	486.5	474.9	469.1	469.1	463.3
7.5°	550.2	538.6	521.2	503.8	486.5	463.3	451.7	428.6	422.8	417.0	417.0
10°	550.2	538.6	509.6	486.5	463.3	440.1	422.8	399.6	382.2	376.4	376.4
12.5°	556.0	538.6	509.6	480.7	451.7	422.8	399.6	376.4	359.1	347.5	347.5
15°	579.1	556.0	521.2	480.7	445.9	411.2	388.0	359.1	341.7	330.1	330.1
17.5°	608.1	584.9	532.8	486.5	445.9	405.4	376.4	347.5	330.1	318.5	312.7
20°	648.6	613.9	556.0	492.3	445.9	405.4	370.6	341.7	318.5	306.9	306.9
22.5°	695.0	654.4	579.1	503.8	451.7	405.4	370.6	335.9	312.7	301.2	301.2
25°	752.9	700.8	613.9	527.0	463.3	411.2	370.6	335.9	312.7	301.2	301.2
27.5°	816.6	758.7	648.6	550.2	474.9	417.0	370.6	335.9	312.7	301.2	301.2
30°	874.5	810.8	683.4	573.3	492.3	422.8	376.4	341.7	318.5	306.9	301.2
32.5°	938.2	857.1	718.1	596.5	503.8	434.4	382.2	347.5	318.5	306.9	306.9
35°	1001.9	915.0	752.9	625.5	521.2	445.9	388.0	353.3	324.3	312.7	312.7
37.5°	1071.4	978.7	793.4	648.6	538.6	457.5	399.6	359.1	330.1	318.5	318.5
40°	1152.5	1042.4	834.0	677.6	556.0	469.1	405.4	370.6	341.7	330.1	330.1
42.5°	1227.8	1100.4	874.5	700.8	573.3	480.7	417.0	376.4	353.3	341.7	341.7
45°	1303.1	1169.9	915.0	729.7	590.7	498.1	428.6	393.8	364.9	353.3	353.3
47.5°	1389.9	1233.6	961.4	752.9	608.1	509.6	440.1	405.4	376.4	370.6	364.9
50°	1459.4	1279.9	990.3	776.0	619.7	521.2	451.7	411.2	388.0	376.4	376.4
52.5°	1523.1	1326.2	1013.5	787.6	625.5	527.0	463.3	422.8	399.6	388.0	388.0
55°	1557.9	1343.6	1030.9	787.6	631.3	532.8	463.3	422.8	399.6	393.8	388.0
57.5°	1557.9	1343.6	1019.3	776.0	619.7	521.2	457.5	417.0	399.6	388.0	388.0
60°	1534.7	1326.2	990.3	752.9	602.3	503.8	445.9	405.4	388.0	382.2	382.2
62.5°	1500.0	1297.3	967.2	723.9	579.1	480.7	428.6	388.0	376.4	376.4	370.6
65°	1407.3	1210.4	915.0	683.4	544.4	451.7	405.4	370.6	359.1	353.3	347.5
67.5°	1308.8	1129.3	834.0	637.0	498.1	422.8	376.4	347.5	330.1	330.1	324.3
70°	1210.4	1042.4	758.7	573.3	445.9	388.0	341.7	312.7	301.2	301.2	301.2
72.5°	1077.2	932.4	671.8	503.8	393.8	341.7	306.9	278.0	272.2	272.2	266.4
75°	920.8	793.4	567.6	428.6	330.1	289.6	260.6	231.7	231.7	231.7	231.7
77.5°	752.9	642.8	451.7	341.7	260.6	231.7	214.3	191.1	191.1	191.1	191.1
80°	567.6	474.9	330.1	249.0	191.1	167.9	156.4	144.8	150.6	150.6	144.8
82.5°	370.6	312.7	208.5	156.4	121.6	110.0	110.0	98.5	104.2	104.2	104.2
85°	162.2	139.0	86.9	69.5	57.9	57.9	57.9	52.1	57.9	57.9	57.9
87.5°	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0.0	5.8	11.6	5.8
90°	6.9	6.9	8.3	8.3	8.3	8.3	8.3	8.3	8.3	6.9	6.9
92.5°	6.9	6.9	8.3	8.3	11.1	9.7	11.1	9.7	6.9	6.9	6.9
95°	8.3	8.3	9.7	9.7	16.7	16.7	15.3	12.5	9.7	8.3	8.3
97.5°	11.1	12.5	13.9	13.9	27.8	45.8	25.0	15.3	12.5	12.5	11.1
100°	19.4	19.4	26.4	36.1	70.8	98.6	73.6	34.7	19.4	19.4	18.0
102.5°	63.9	66.6	83.3	120.8	127.7	151.3	166.6	112.5	75.0	61.1	58.3
105°	152.7	152.7	165.2	191.6	211.0	229.1	233.3	187.4	158.3	147.2	148.6
107.5°	202.7	204.1	218.0	248.5	313.8	309.6	265.2	230.5	205.5	195.8	195.8
110°	248.5	251.3	269.4	306.8	355.4	358.2	295.7	249.9	229.1	220.8	220.8



REPORT NUMBER: P833919
 CATALOG NUMBER: TTN-D3-740-U-DL-UPL3

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	283.2	286.0	299.9	316.6	336.0	348.5	320.7	270.7	238.8	227.7	226.3
115°	273.5	270.7	276.3	287.4	302.7	316.6	305.5	277.7	247.1	234.6	234.6
117.5°	238.8	243.0	245.8	254.1	274.9	281.8	273.5	255.5	238.8	236.0	231.9
120°	212.4	215.2	216.6	223.5	237.4	240.2	236.0	226.3	218.0	215.2	215.2
122.5°	187.4	190.2	190.2	193.0	204.1	206.9	202.7	195.8	191.6	193.0	191.6
125°	165.2	166.6	166.6	168.0	173.6	172.2	173.6	169.4	166.6	168.0	168.0
127.5°	147.2	148.6	147.2	145.8	151.3	149.9	149.9	148.6	147.2	149.9	151.3
130°	133.3	131.9	130.5	129.1	131.9	129.1	131.9	131.9	131.9	134.7	134.7
132.5°	119.4	119.4	116.6	113.9	115.2	113.9	113.9	113.9	115.2	119.4	119.4
135°	106.9	106.9	105.5	102.7	104.1	102.7	104.1	104.1	102.7	106.9	106.9
137.5°	100.0	98.6	95.8	94.4	94.4	93.0	94.4	94.4	94.4	97.2	97.2
140°	90.2	90.2	88.9	87.5	87.5	87.5	86.1	87.5	87.5	88.9	88.9
142.5°	84.7	84.7	81.9	80.5	81.9	81.9	81.9	80.5	81.9	83.3	84.7
145°	79.1	77.8	77.8	76.4	76.4	77.8	76.4	76.4	76.4	77.8	77.8
147.5°	75.0	73.6	73.6	72.2	73.6	73.6	73.6	73.6	72.2	73.6	73.6
150°	70.8	70.8	69.4	69.4	69.4	69.4	70.8	70.8	69.4	70.8	72.2
152.5°	69.4	68.0	66.6	66.6	66.6	66.6	66.6	68.0	66.6	68.0	68.0
155°	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	63.9	65.3	65.3
157.5°	63.9	63.9	62.5	62.5	62.5	62.5	62.5	62.5	62.5	63.9	62.5
160°	62.5	61.1	61.1	61.1	59.7	59.7	59.7	61.1	61.1	61.1	61.1
162.5°	61.1	59.7	59.7	58.3	58.3	58.3	58.3	59.7	59.7	59.7	59.7
165°	58.3	59.7	58.3	56.9	56.9	56.9	56.9	58.3	58.3	58.3	59.7
167.5°	58.3	56.9	56.9	56.9	55.5	55.5	56.9	56.9	56.9	56.9	56.9
170°	56.9	55.5	55.5	55.5	55.5	55.5	55.5	55.5	55.5	56.9	56.9
172.5°	56.9	56.9	55.5	55.5	55.5	55.5	55.5	56.9	56.9	56.9	56.9
175°	55.5	56.9	56.9	56.9	55.5	55.5	55.5	56.9	56.9	56.9	56.9
177.5°	56.9	56.9	56.9	56.9	56.9	56.9	55.5	56.9	56.9	56.9	56.9
180°	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9

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: SP1-2411-284-2

Test Date: 11/20/2024

Luminaire Tested: TTN-D0-740-U-WQ

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

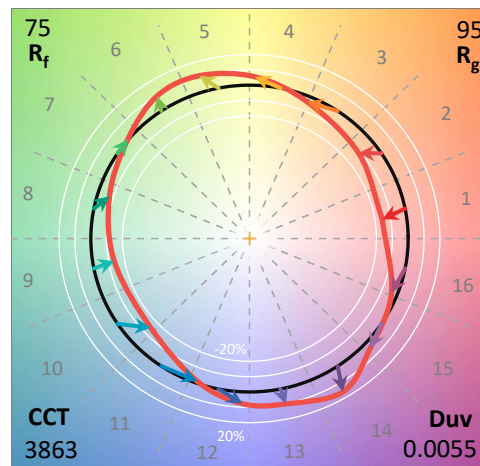
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2411-284-2
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 11/20/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW EDISON
 Catalog Number: **TTN-D0-740-U-WQ**
 Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 4000K, 70 CRI LEDS AND WIDE DISTRIBUTION

Spectral Parameters

CCT (K): 3863
 CIE u': 0.2247
 CIE v': 0.5111
 Duv: 0.0055
 CIE x: 0.3911
 CIE y: 0.3954
 CIE z: 0.2136
 Peak Wavelength (nm): 448
 Dominant Wavelength (nm): 577
 Purity: 36.03443
 Rf: 74.7
 Rg: 95.4

CRI (Ra):	71.9		
R1:	69.4	R9:	-23.5
R2:	76.9	R10:	45.4
R3:	83.3	R11:	68.7
R4:	72.7	R12:	38.7
R5:	68.4	R13:	70.0
R6:	67.5	R14:	90.3
R7:	82.0	R15:	62.1
R8:	55.3		



Test Conditions

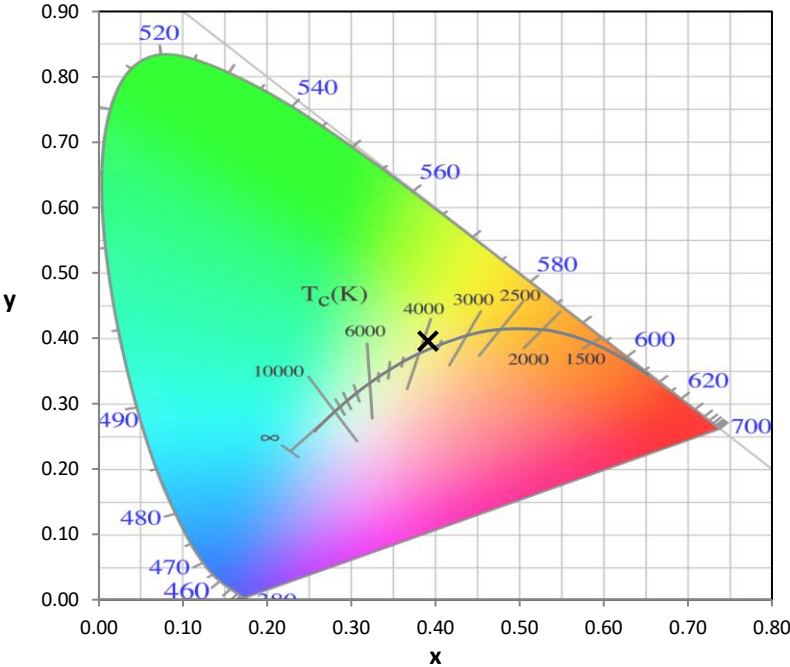
Stabilization Time: 37M
 Operation Time: 1H 37M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2411-284-2

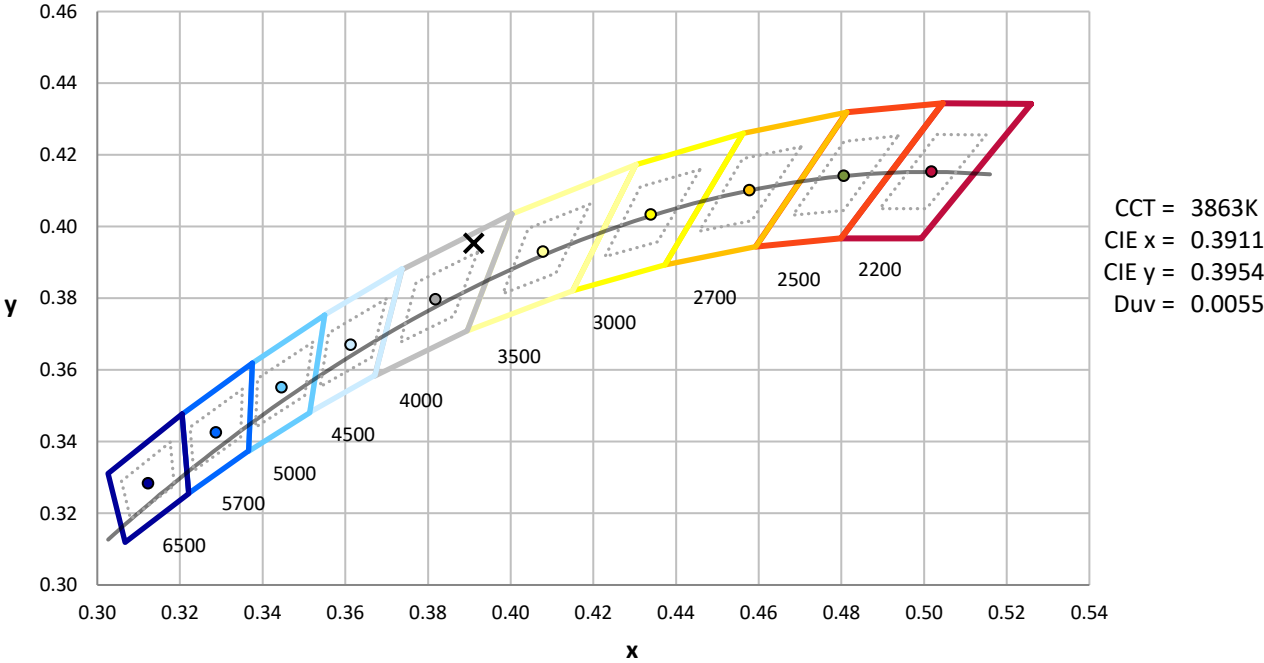
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2411-284-2

CIE 1931 Chromaticity Diagram



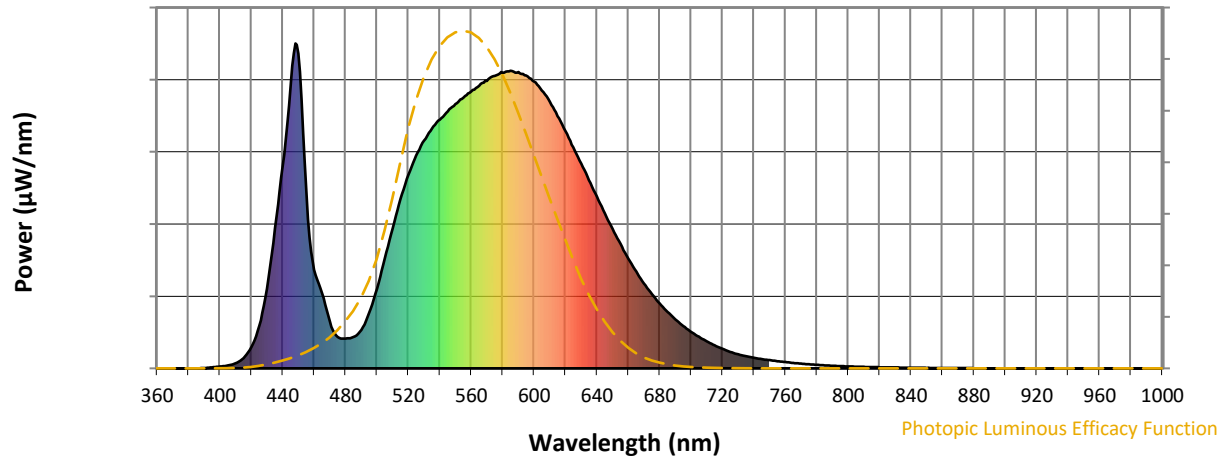
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 4000K 7-step quadrangle

REPORT NUMBER: SP1-2411-284-2

Photopic Flux vs. Wavelength

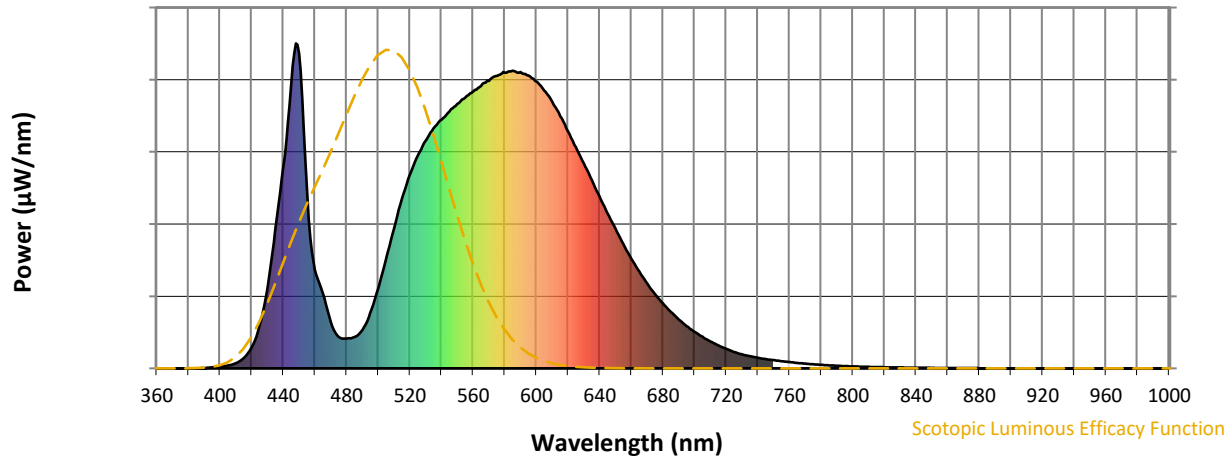


Photopic Lumens: NR

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	118	NR	620	730	NR	750	25	NR	880	1	NR
365	0	NR	495	170	NR	625	680	NR	755	22	NR	885	0	NR
370	0	NR	500	245	NR	630	630	NR	760	19	NR	890	0	NR
375	0	NR	505	338	NR	635	579	NR	765	17	NR	895	0	NR
380	0	NR	510	431	NR	640	529	NR	770	14	NR	900	0	NR
385	0	NR	515	521	NR	645	477	NR	775	13	NR	905	0	NR
390	1	NR	520	596	NR	650	429	NR	780	11	NR	910	0	NR
395	3	NR	525	655	NR	655	383	NR	785	9	NR	915	0	NR
400	6	NR	530	701	NR	660	338	NR	790	8	NR	920	0	NR
405	9	NR	535	739	NR	665	298	NR	795	7	NR	925	0	NR
410	16	NR	540	766	NR	670	261	NR	800	6	NR	930	0	NR
415	32	NR	545	791	NR	675	228	NR	805	5	NR	935	0	NR
420	65	NR	550	813	NR	680	200	NR	810	5	NR	940	0	NR
425	131	NR	555	833	NR	685	173	NR	815	4	NR	945	0	NR
430	245	NR	560	852	NR	690	151	NR	820	3	NR	950	0	NR
435	432	NR	565	870	NR	695	130	NR	825	3	NR	955	0	NR
440	622	NR	570	885	NR	700	112	NR	830	3	NR	960	0	NR
445	870	NR	575	900	NR	705	97	NR	835	2	NR	965	0	NR
450	969	NR	580	911	NR	710	83	NR	840	2	NR	970	0	NR
455	544	NR	585	916	NR	715	71	NR	845	2	NR	975	0	NR
460	304	NR	590	912	NR	720	60	NR	850	1	NR	980	0	NR
465	231	NR	595	901	NR	725	51	NR	855	1	NR	985	0	NR
470	142	NR	600	882	NR	730	43	NR	860	1	NR	990	0	NR
475	96	NR	605	855	NR	735	37	NR	865	1	NR	995	0	NR
480	92	NR	610	820	NR	740	32	NR	870	1	NR	1000	0	NR
485	96	NR	615	776	NR	745	29	NR	875	1	NR			

REPORT NUMBER: SP1-2411-284-2

Scotopic Flux vs. Wavelength



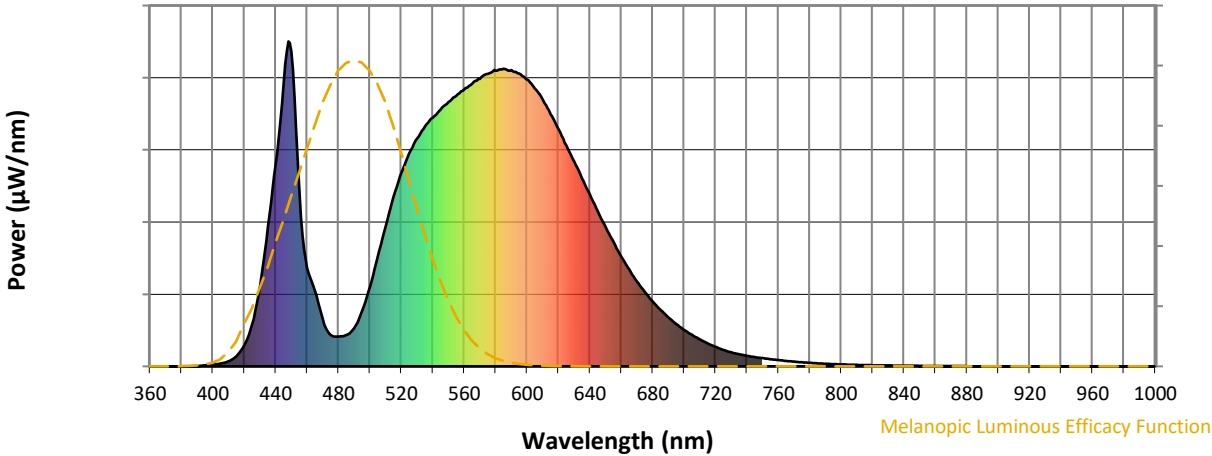
Scotopic Lumens: NR

S/P: 1.45

λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	118	NR	620	730	NR	750	25	NR	880	1	NR
365	0	NR	495	170	NR	625	680	NR	755	22	NR	885	0	NR
370	0	NR	500	245	NR	630	630	NR	760	19	NR	890	0	NR
375	0	NR	505	338	NR	635	579	NR	765	17	NR	895	0	NR
380	0	NR	510	431	NR	640	529	NR	770	14	NR	900	0	NR
385	0	NR	515	521	NR	645	477	NR	775	13	NR	905	0	NR
390	1	NR	520	596	NR	650	429	NR	780	11	NR	910	0	NR
395	3	NR	525	655	NR	655	383	NR	785	9	NR	915	0	NR
400	6	NR	530	701	NR	660	338	NR	790	8	NR	920	0	NR
405	9	NR	535	739	NR	665	298	NR	795	7	NR	925	0	NR
410	16	NR	540	766	NR	670	261	NR	800	6	NR	930	0	NR
415	32	NR	545	791	NR	675	228	NR	805	5	NR	935	0	NR
420	65	NR	550	813	NR	680	200	NR	810	5	NR	940	0	NR
425	131	NR	555	833	NR	685	173	NR	815	4	NR	945	0	NR
430	245	NR	560	852	NR	690	151	NR	820	3	NR	950	0	NR
435	432	NR	565	870	NR	695	130	NR	825	3	NR	955	0	NR
440	622	NR	570	885	NR	700	112	NR	830	3	NR	960	0	NR
445	870	NR	575	900	NR	705	97	NR	835	2	NR	965	0	NR
450	969	NR	580	911	NR	710	83	NR	840	2	NR	970	0	NR
455	544	NR	585	916	NR	715	71	NR	845	2	NR	975	0	NR
460	304	NR	590	912	NR	720	60	NR	850	1	NR	980	0	NR
465	231	NR	595	901	NR	725	51	NR	855	1	NR	985	0	NR
470	142	NR	600	882	NR	730	43	NR	860	1	NR	990	0	NR
475	96	NR	605	855	NR	735	37	NR	865	1	NR	995	0	NR
480	92	NR	610	820	NR	740	32	NR	870	1	NR	1000	0	NR
485	96	NR	615	776	NR	745	29	NR	875	1	NR			

REPORT NUMBER: SP1-2411-284-2

Melanopic Flux vs. Wavelength



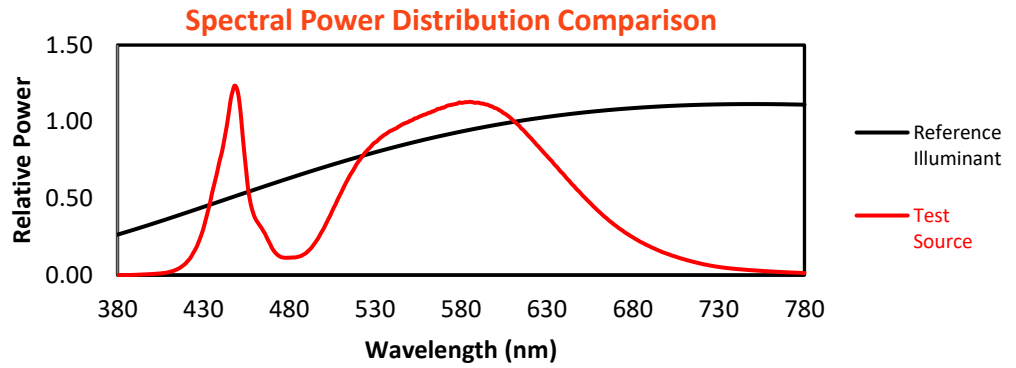
Melanopic Lumens: NR

M/P: 2.72

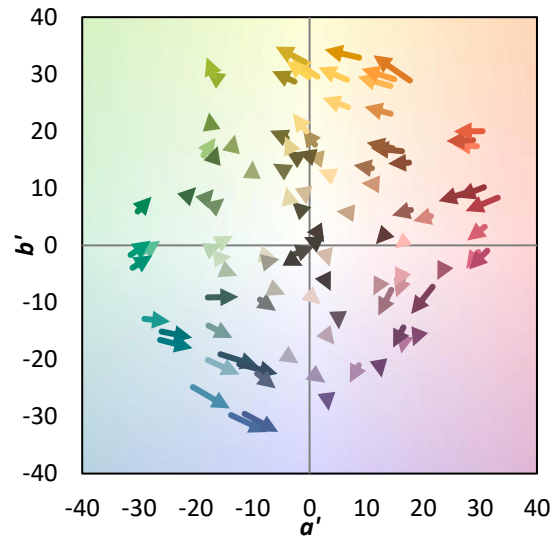
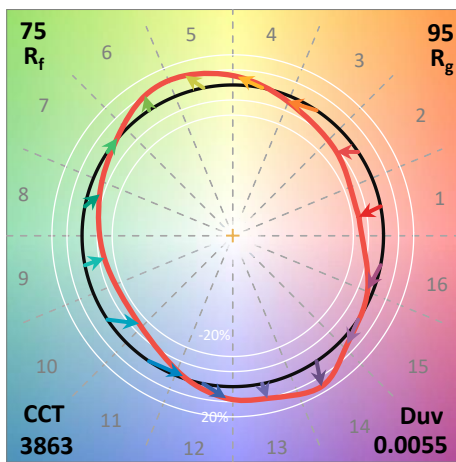
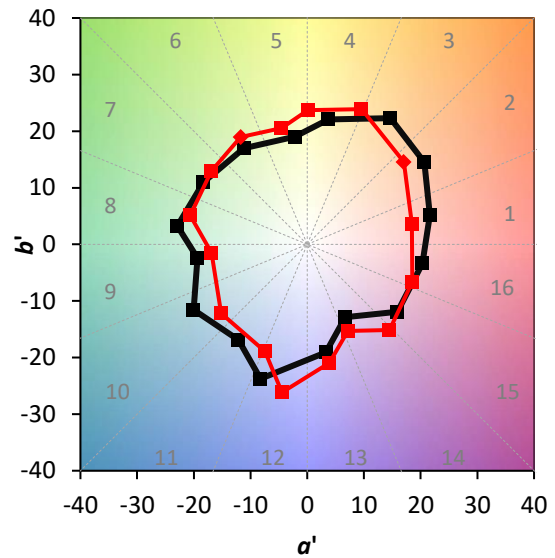
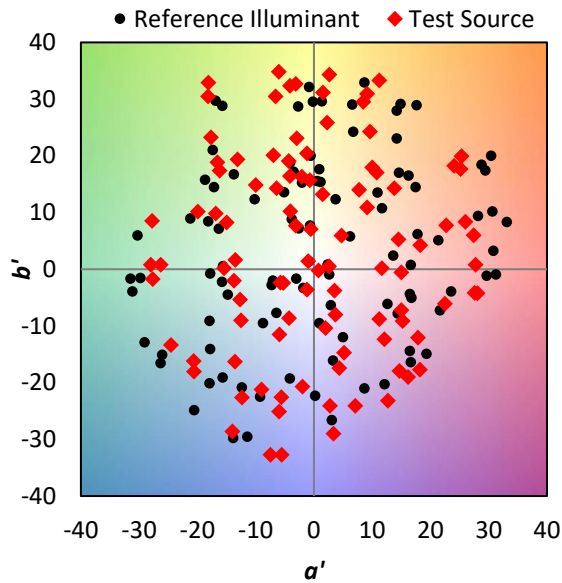
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	118	NR	620	730	NR	750	25	NR	880	1	NR
365	0	NR	495	170	NR	625	680	NR	755	22	NR	885	0	NR
370	0	NR	500	245	NR	630	630	NR	760	19	NR	890	0	NR
375	0	NR	505	338	NR	635	579	NR	765	17	NR	895	0	NR
380	0	NR	510	431	NR	640	529	NR	770	14	NR	900	0	NR
385	0	NR	515	521	NR	645	477	NR	775	13	NR	905	0	NR
390	1	NR	520	596	NR	650	429	NR	780	11	NR	910	0	NR
395	3	NR	525	655	NR	655	383	NR	785	9	NR	915	0	NR
400	6	NR	530	701	NR	660	338	NR	790	8	NR	920	0	NR
405	9	NR	535	739	NR	665	298	NR	795	7	NR	925	0	NR
410	16	NR	540	766	NR	670	261	NR	800	6	NR	930	0	NR
415	32	NR	545	791	NR	675	228	NR	805	5	NR	935	0	NR
420	65	NR	550	813	NR	680	200	NR	810	5	NR	940	0	NR
425	131	NR	555	833	NR	685	173	NR	815	4	NR	945	0	NR
430	245	NR	560	852	NR	690	151	NR	820	3	NR	950	0	NR
435	432	NR	565	870	NR	695	130	NR	825	3	NR	955	0	NR
440	622	NR	570	885	NR	700	112	NR	830	3	NR	960	0	NR
445	870	NR	575	900	NR	705	97	NR	835	2	NR	965	0	NR
450	969	NR	580	911	NR	710	83	NR	840	2	NR	970	0	NR
455	544	NR	585	916	NR	715	71	NR	845	2	NR	975	0	NR
460	304	NR	590	912	NR	720	60	NR	850	1	NR	980	0	NR
465	231	NR	595	901	NR	725	51	NR	855	1	NR	985	0	NR
470	142	NR	600	882	NR	730	43	NR	860	1	NR	990	0	NR
475	96	NR	605	855	NR	735	37	NR	865	1	NR	995	0	NR
480	92	NR	610	820	NR	740	32	NR	870	1	NR	1000	0	NR
485	96	NR	615	776	NR	745	29	NR	875	1	NR			

Summary

$R_f = 74.7$
 $R_g = 95.4$
 CIE $R_a = 71.9$
 $R_9 = -23.5$

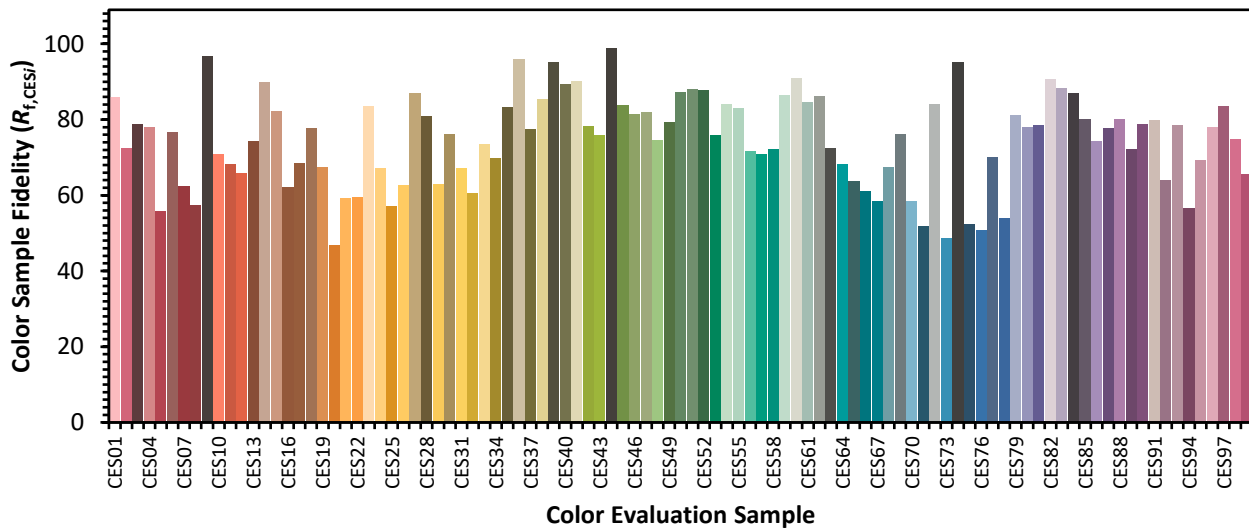


Color Vector Graphics

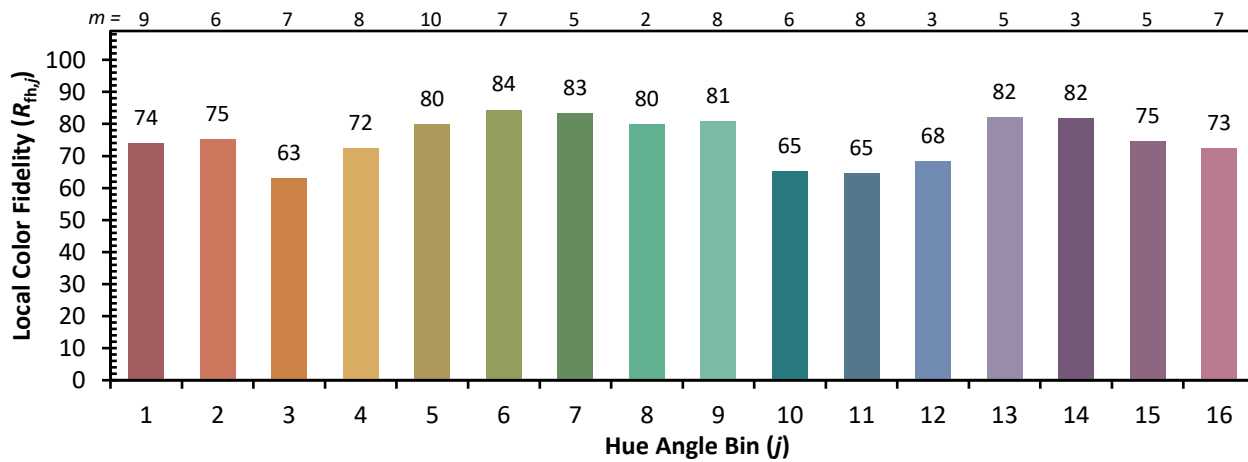
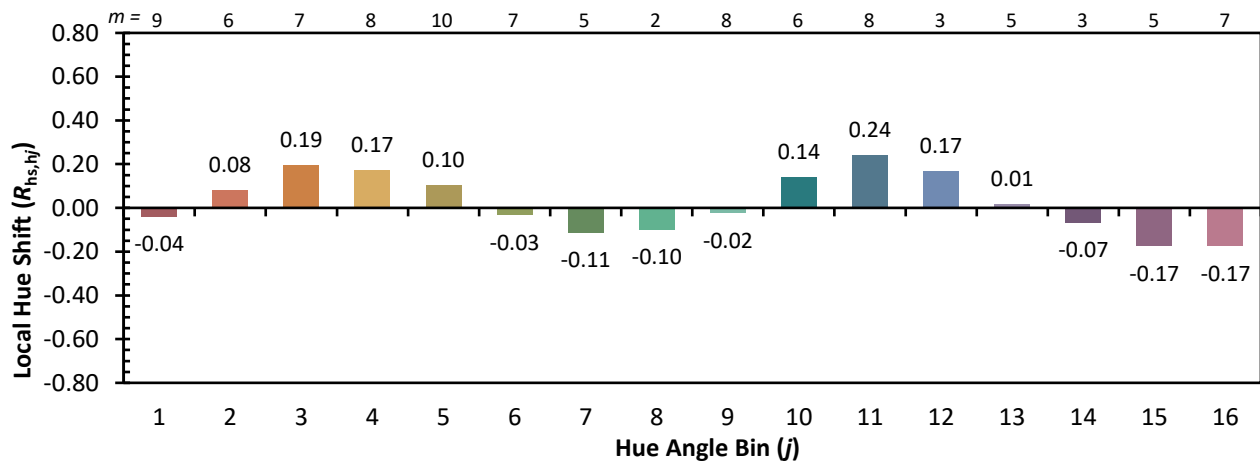
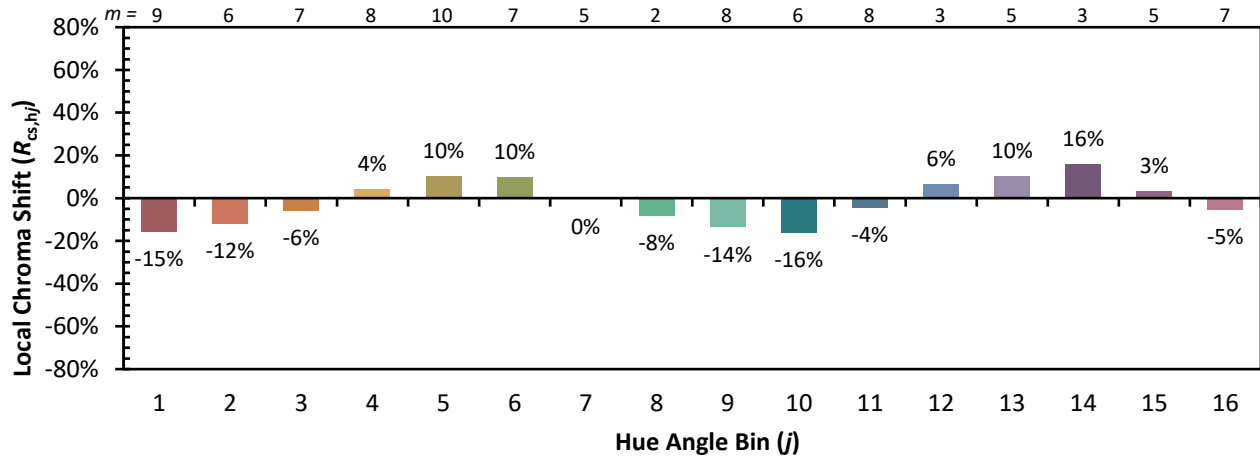


Individual Sample Fidelity Index ($R_{f,i}$)

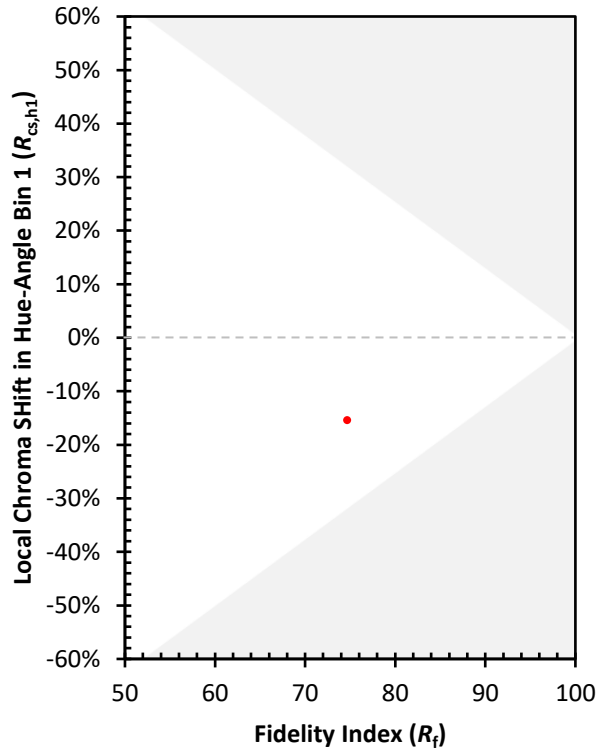
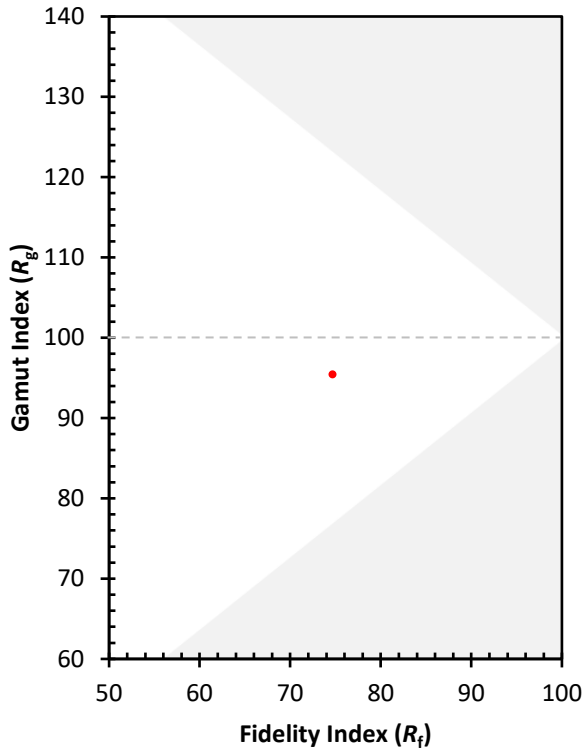
CES01 = 85	CES26 = 63	CES51 = 88	CES76 = 51
CES02 = 61	CES27 = 87	CES52 = 88	CES77 = 70
CES03 = 30	CES28 = 81	CES53 = 76	CES78 = 54
CES04 = 70	CES29 = 63	CES54 = 84	CES79 = 81
CES05 = 47	CES30 = 76	CES55 = 83	CES80 = 78
CES06 = 50	CES31 = 67	CES56 = 72	CES81 = 79
CES07 = 40	CES32 = 61	CES57 = 71	CES82 = 91
CES08 = 39	CES33 = 73	CES58 = 72	CES83 = 88
CES09 = 29	CES34 = 70	CES59 = 86	CES84 = 87
CES10 = 74	CES35 = 83	CES60 = 91	CES85 = 80
CES11 = 57	CES36 = 96	CES61 = 85	CES86 = 74
CES12 = 63	CES37 = 77	CES62 = 86	CES87 = 78
CES13 = 42	CES38 = 85	CES63 = 72	CES88 = 80
CES14 = 74	CES39 = 95	CES64 = 68	CES89 = 72
CES15 = 71	CES40 = 89	CES65 = 64	CES90 = 79
CES16 = 46	CES41 = 90	CES66 = 61	CES91 = 80
CES17 = 49	CES42 = 78	CES67 = 58	CES92 = 64
CES18 = 56	CES43 = 76	CES68 = 67	CES93 = 78
CES19 = 71	CES44 = 99	CES69 = 76	CES94 = 57
CES20 = 65	CES45 = 84	CES70 = 58	CES95 = 69
CES21 = 86	CES46 = 81	CES71 = 52	CES96 = 78
CES22 = 78	CES47 = 82	CES72 = 84	CES97 = 84
CES23 = 92	CES48 = 75	CES73 = 49	CES98 = 75
CES24 = 91	CES49 = 79	CES74 = 95	CES99 = 66
CES25 = 72	CES50 = 87	CES75 = 52	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)