

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: P834038

Luminaire Tested: **TTN-D3-830-U-DL-UPL2**

Issue Date: 5/15/2024

Test Information

Test Method: LM-79-08
Report Number: P834038
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-D3-830-U-DL-UPL2
Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
3000K, 80 CRI LEDS AND DRIVE LANE DISTRIBUTION
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 6511.8 lumens
Efficiency: N/A
Efficacy: 102.2 lumens/watt
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')
IES Classification: Type IV - Short
BUG Rating: B1 - U4 - G2

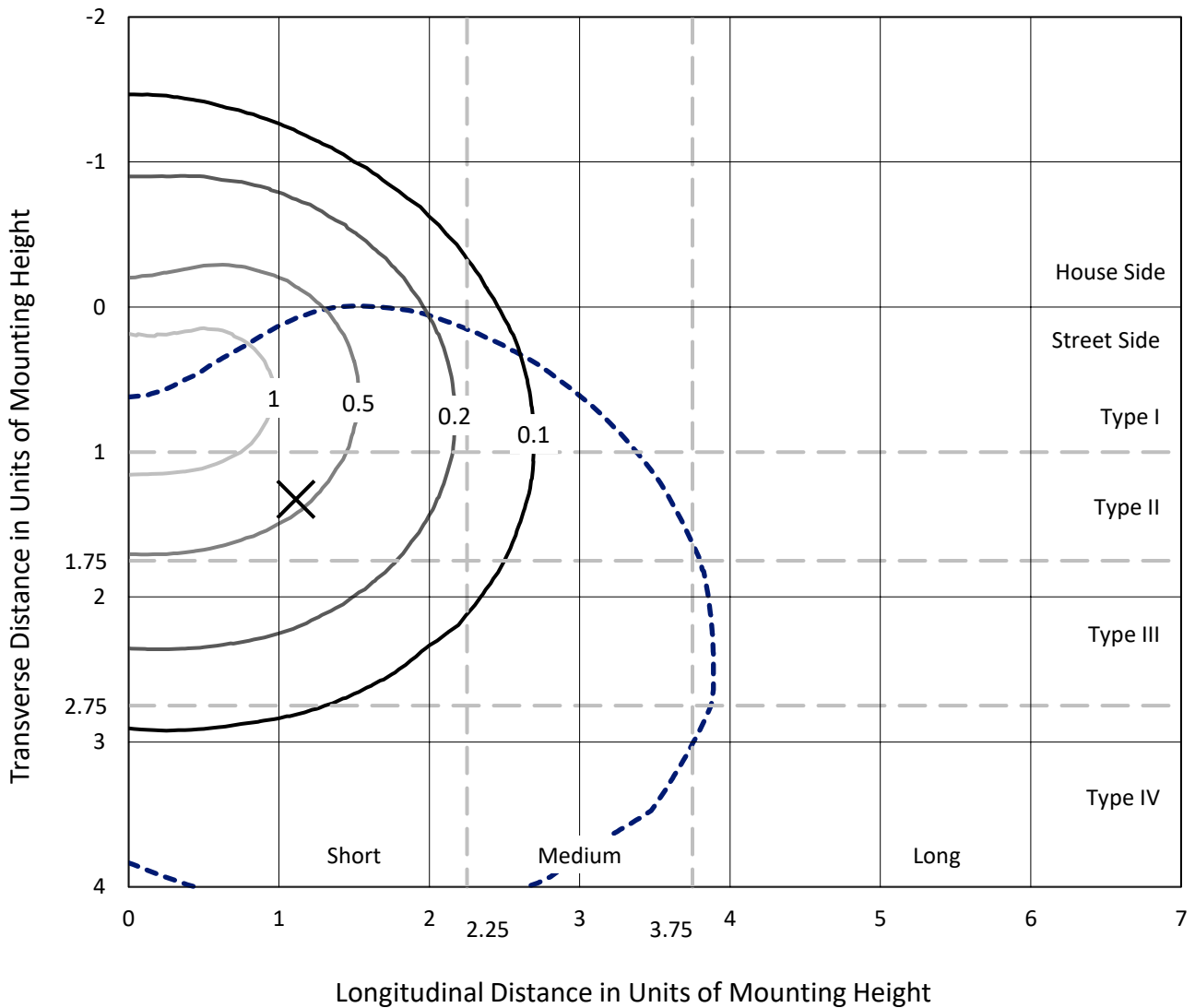
Input Watts (W): 63.7
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Iso-Footcandle Lines of Horizontal Illumination

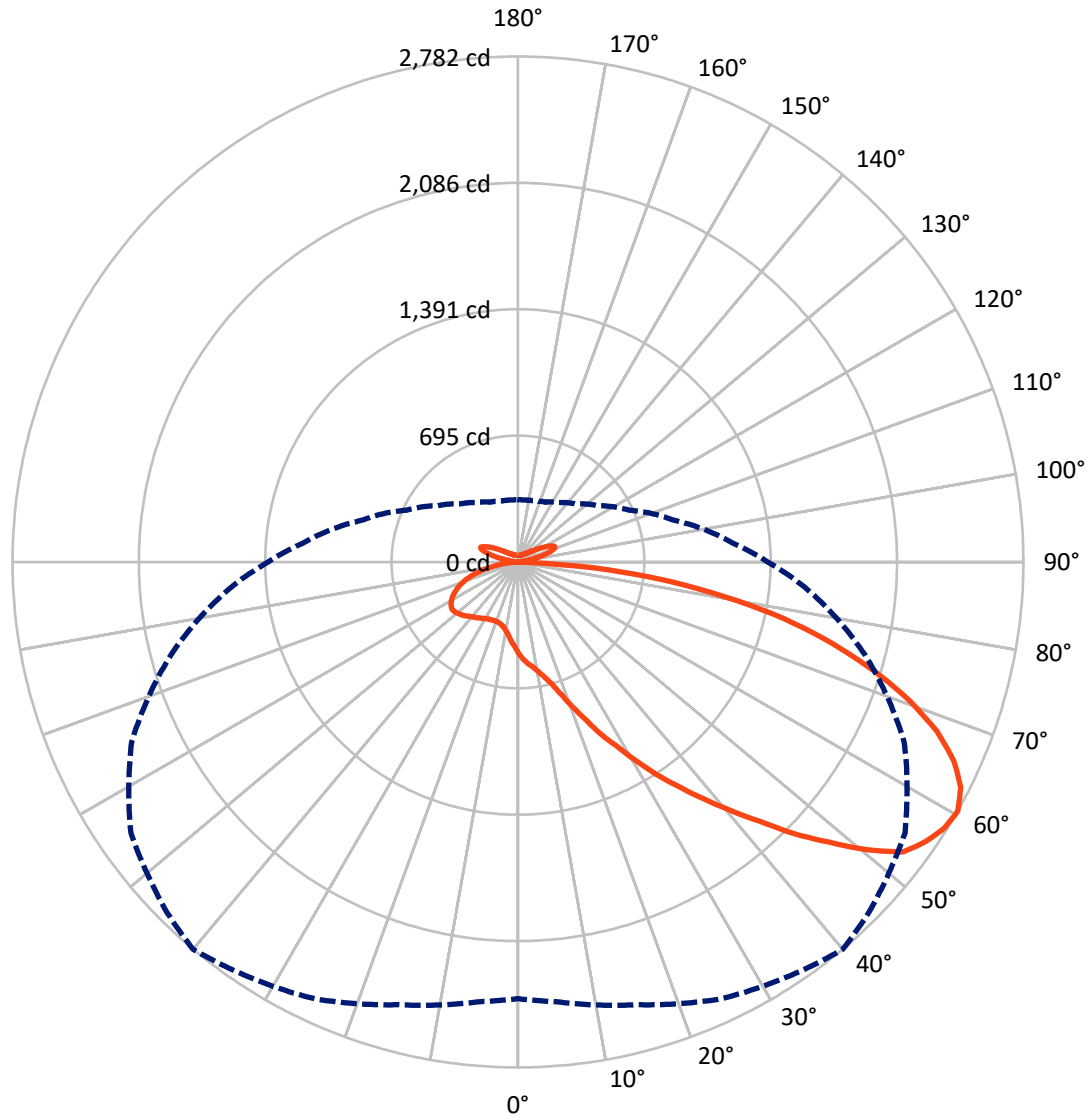
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.4 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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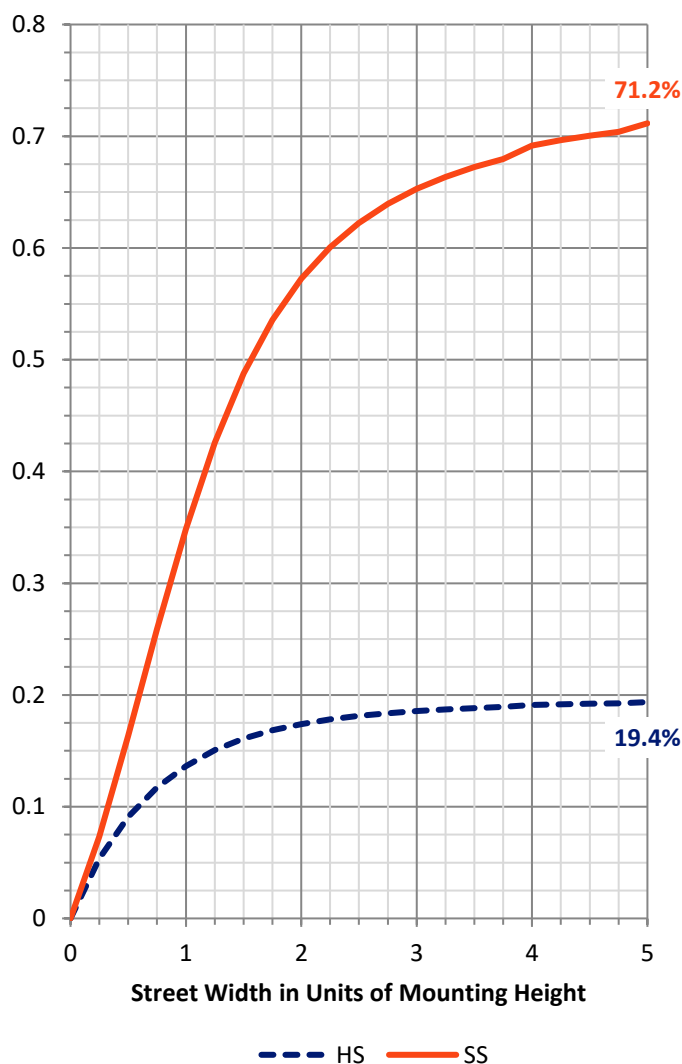
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	1273.2	267.0	1540.2
	% Fixture	19.6	4.1	23.7
Street Side	Lumens	4704.6	267.0	4971.6
	% Fixture	72.2	4.1	76.3
Total	Lumens	5977.7	534.0	6511.8
	% Fixture	91.8	8.2	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	47.5	0.7
10°-20°	151.5	2.3
20°-30°	320.1	4.9
30°-40°	585.0	9.0
40°-50°	950.5	14.6
50°-60°	1321.2	20.3
60°-70°	1369.6	21.0
70°-80°	981.4	15.1
80°-90°	251.0	3.9
90°-100°	11.9	0.2
100°-110°	121.1	1.9
110°-120°	177.1	2.7
120°-130°	102.8	1.6
130°-140°	54.4	0.8
140°-150°	32.3	0.5
150°-160°	19.9	0.3
160°-170°	10.9	0.2
170°-180°	3.5	0.1
0°-90°	5977.7	91.8
0°-180°	6511.8	100.0

Coefficient of Utilization



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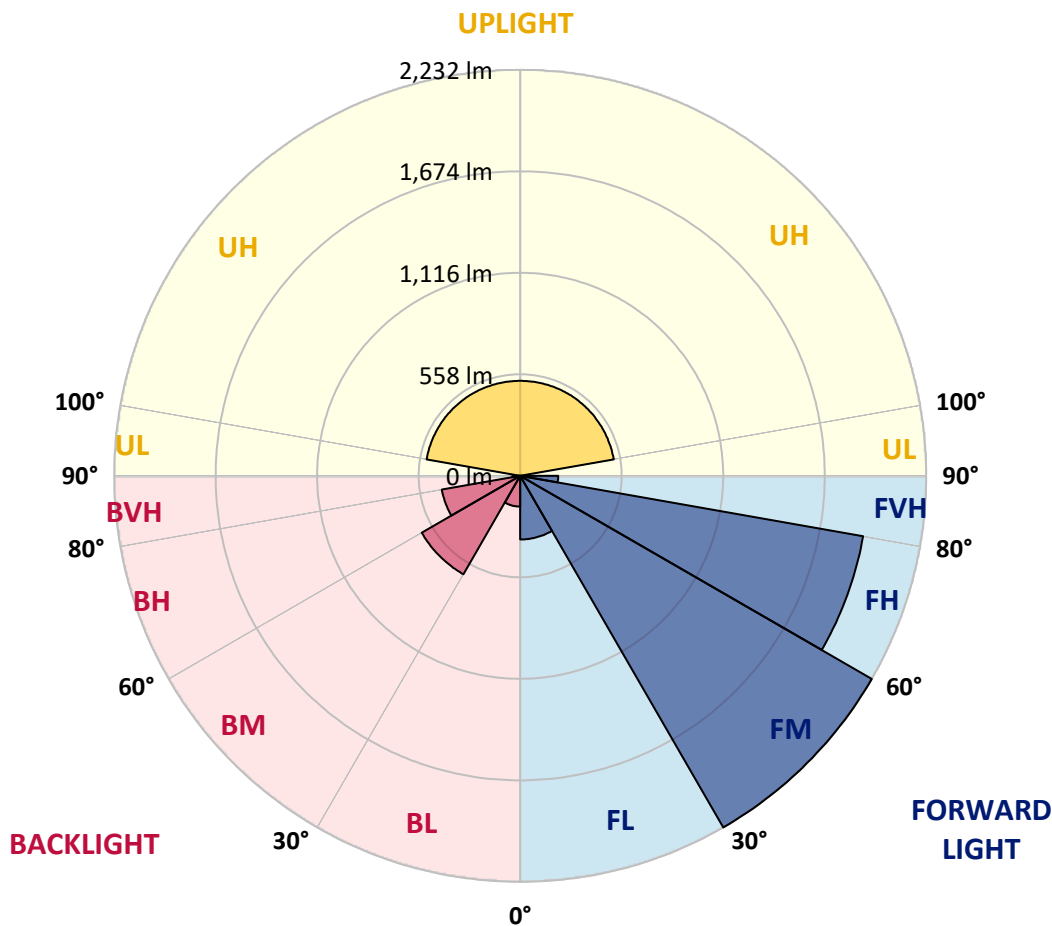
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	349.8	5.4			
FM (30°-60°)	2231.8	34.3			
FH (60°-80°)	1914.2	29.4			G2/5000
FVH (80°-90°)	208.8	3.2			G2/225
BL (0°-30°)	169.3	2.6	B1/500		
BM (30°-60°)	624.9	9.6	B1/1000		
BH (60°-80°)	436.9	6.7	B1/500		G1/500
BVH (80°-90°)	42.1	0.6			G1/100
UL (90°-100°)	11.9	0.2		U2/50	
UH (100°-180°)	522.1	8.0		U4/1000	

BUG Rating: B1-U4-G2

Type IV Short





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	40°	45°	55°	65°	75°	85°
0°	503.4	503.4	503.4	503.4	503.4	503.4	503.4	503.4	503.4	503.4	503.4
2.5°	539.7	539.7	539.7	539.7	534.5	534.5	529.3	524.2	519.0	513.8	503.4
5°	586.4	586.4	581.2	576.1	565.7	560.5	555.3	544.9	534.5	524.2	508.6
7.5°	607.2	607.2	607.2	602.0	586.4	581.2	570.9	555.3	539.7	524.2	503.4
10°	643.5	643.5	638.3	633.1	617.6	612.4	602.0	581.2	555.3	529.3	503.4
12.5°	690.2	685.0	679.8	674.7	659.1	648.7	633.1	612.4	581.2	550.1	519.0
15°	747.3	736.9	736.9	726.5	711.0	695.4	685.0	653.9	622.8	581.2	539.7
17.5°	809.6	804.4	799.2	788.8	773.3	762.9	747.3	711.0	669.5	617.6	570.9
20°	887.4	877.0	882.2	866.7	851.1	845.9	820.0	778.4	726.5	669.5	612.4
22.5°	980.8	970.5	970.5	954.9	944.5	934.1	908.2	861.5	794.0	731.7	659.1
25°	1084.6	1074.3	1074.3	1063.9	1053.5	1043.1	1012.0	960.1	882.2	804.4	721.4
27.5°	1198.8	1188.4	1188.4	1183.2	1157.3	1141.7	1115.8	1058.7	980.8	882.2	783.6
30°	1318.2	1307.8	1318.2	1307.8	1292.2	1261.1	1229.9	1167.7	1079.4	970.5	851.1
32.5°	1411.6	1411.6	1416.8	1427.2	1416.8	1390.8	1354.5	1302.6	1183.2	1048.3	913.4
35°	1520.6	1520.6	1530.9	1546.5	1541.3	1515.4	1479.0	1422.0	1297.4	1136.5	980.8
37.5°	1639.9	1639.9	1650.3	1676.3	1665.9	1650.3	1624.4	1551.7	1411.6	1224.8	1053.5
40°	1769.7	1764.5	1774.9	1811.2	1816.4	1795.6	1764.5	1691.8	1530.9	1338.9	1131.3
42.5°	1899.4	1894.2	1915.0	1951.3	1956.5	1951.3	1920.2	1837.1	1655.5	1453.1	1209.2
45°	2029.1	2029.1	2060.3	2117.4	2143.3	2132.9	2107.0	2003.2	1811.2	1572.5	1313.0
47.5°	2164.1	2164.1	2205.6	2278.3	2309.4	2304.2	2293.8	2169.3	1961.7	1697.0	1401.2
50°	2267.9	2267.9	2335.3	2418.4	2470.3	2491.0	2439.1	2325.0	2091.4	1806.0	1473.9
52.5°	2371.7	2371.7	2439.1	2568.9	2620.8	2651.9	2584.4	2465.1	2236.7	1904.6	1541.3
55°	2423.6	2433.9	2527.4	2651.9	2734.9	2719.4	2745.3	2584.4	2330.1	1977.3	1582.8
57.5°	2428.8	2444.3	2548.1	2677.9	2771.3	2766.1	2771.3	2626.0	2366.5	1992.8	1588.0
60°	2402.8	2428.8	2522.2	2651.9	2740.1	2781.6	2729.8	2600.0	2345.7	1977.3	1582.8
62.5°	2340.5	2392.4	2491.0	2589.6	2719.4	2734.9	2693.4	2584.4	2288.6	1961.7	1556.9
65°	2200.4	2257.5	2397.6	2511.8	2615.6	2636.3	2589.6	2496.2	2231.5	1889.0	1473.9
67.5°	2060.3	2096.6	2216.0	2392.4	2465.1	2485.8	2470.3	2361.3	2132.9	1743.7	1375.3
70°	1899.4	1946.1	2039.5	2221.2	2293.8	2288.6	2335.3	2210.8	1982.4	1619.2	1271.5
72.5°	1681.4	1748.9	1842.3	1992.8	2081.0	2049.9	2122.6	2018.8	1785.2	1463.5	1131.3
75°	1427.2	1484.2	1603.6	1723.0	1821.6	1785.2	1842.3	1769.7	1556.9	1276.7	970.5
77.5°	1141.7	1209.2	1318.2	1427.2	1494.6	1494.6	1520.6	1458.3	1292.2	1048.3	794.0
80°	845.9	908.2	1006.8	1084.6	1146.9	1152.1	1178.0	1146.9	996.4	814.8	607.2
82.5°	560.5	591.6	679.8	742.1	804.4	799.2	840.7	820.0	695.4	560.5	404.8
85°	238.7	259.5	332.1	384.0	441.1	420.4	477.4	472.3	373.7	269.9	181.6
87.5°	10.4	15.6	15.6	10.4	15.6	5.2	15.6	20.8	15.6	10.4	10.4
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	7.3	6.8	6.4	7.3	5.5	5.5	4.6
95°	5.5	5.5	6.4	8.2	10.1	10.6	11.0	11.0	6.4	6.4	5.5
97.5°	7.3	8.2	8.2	10.1	16.4	23.3	30.2	18.3	9.1	9.1	8.2
100°	11.9	12.8	12.8	22.8	48.4	56.6	64.9	46.6	23.8	17.4	12.8
102.5°	38.4	40.2	49.3	74.0	109.6	104.6	99.6	84.1	79.5	54.8	43.9
105°	97.8	96.8	104.2	123.3	153.5	152.2	150.8	138.9	126.1	108.7	100.5
107.5°	128.8	128.8	135.2	151.7	174.5	189.1	203.7	206.5	163.5	143.4	134.3
110°	145.3	145.3	150.8	164.5	194.6	215.2	235.7	233.9	201.9	177.3	165.4



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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	40°	45°	55°	65°	75°	85°
112.5°	148.9	149.8	157.1	178.2	211.1	220.2	229.3	221.1	208.3	197.4	188.2
115°	154.4	154.4	162.6	182.7	201.0	204.6	208.3	199.2	189.1	181.8	178.2
117.5°	152.6	155.3	157.1	168.1	180.0	182.8	185.5	180.9	167.2	161.7	159.9
120°	141.6	141.6	143.4	148.9	155.3	156.7	158.1	156.2	147.1	142.5	141.6
122.5°	126.1	127.0	126.1	128.8	133.4	134.8	136.1	134.3	127.0	125.2	125.2
125°	110.6	110.6	109.6	111.5	114.2	113.8	113.3	114.2	110.6	109.6	109.6
127.5°	99.6	98.7	96.8	97.8	98.7	98.7	98.7	99.6	95.9	96.8	97.8
130°	88.6	88.6	86.8	86.8	86.8	85.9	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	68.0	67.6	68.5	67.6	69.4	70.4
137.5°	64.0	64.0	62.1	62.1	62.1	61.6	61.2	62.1	62.1	63.0	64.9
140°	58.5	58.5	57.6	57.6	56.6	57.1	57.6	57.6	57.6	58.5	59.4
142.5°	55.7	54.8	53.9	53.0	53.9	53.9	53.9	53.9	53.0	53.9	55.7
145°	51.2	51.2	50.3	50.3	50.3	50.8	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	46.2	45.7	45.7	45.7	45.7	46.6
152.5°	44.8	44.8	43.9	44.8	43.9	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	39.3	39.3	39.3	39.3	40.2	40.2	40.2
162.5°	39.3	39.3	39.3	39.3	38.4	38.4	38.4	38.4	38.4	39.3	39.3
165°	39.3	38.4	38.4	38.4	37.5	37.5	37.5	37.5	37.5	38.4	39.3
167.5°	37.5	37.5	37.5	37.5	37.5	37.0	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	36.5	36.5	36.5	36.5	36.5	36.5	37.5
175°	37.5	37.5	37.5	37.5	36.5	36.5	36.5	36.5	37.5	37.5	37.5
177.5°	37.5	37.5	37.5	37.5	36.5	37.0	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°	503.4	503.4	503.4	503.4	503.4	503.4	503.4	503.4	503.4	503.4	503.4
2.5°	503.4	498.2	487.8	482.6	477.4	467.1	467.1	461.9	461.9	461.9	456.7
5°	503.4	493.0	482.6	467.1	456.7	446.3	435.9	425.6	420.4	420.4	415.2
7.5°	493.0	482.6	467.1	451.5	435.9	415.2	404.8	384.0	378.8	373.7	373.7
10°	493.0	482.6	456.7	435.9	415.2	394.4	378.8	358.1	342.5	337.3	337.3
12.5°	498.2	482.6	456.7	430.7	404.8	378.8	358.1	337.3	321.8	311.4	311.4
15°	519.0	498.2	467.1	430.7	399.6	368.5	347.7	321.8	306.2	295.8	295.8
17.5°	544.9	524.2	477.4	435.9	399.6	363.3	337.3	311.4	295.8	285.4	280.2
20°	581.2	550.1	498.2	441.1	399.6	363.3	332.1	306.2	285.4	275.1	275.1
22.5°	622.8	586.4	519.0	451.5	404.8	363.3	332.1	301.0	280.2	269.9	269.9
25°	674.7	627.9	550.1	472.3	415.2	368.5	332.1	301.0	280.2	269.9	269.9
27.5°	731.7	679.8	581.2	493.0	425.6	373.7	332.1	301.0	280.2	269.9	269.9
30°	783.6	726.5	612.4	513.8	441.1	378.8	337.3	306.2	285.4	275.1	269.9
32.5°	840.7	768.1	643.5	534.5	451.5	389.2	342.5	311.4	285.4	275.1	275.1
35°	897.8	820.0	674.7	560.5	467.1	399.6	347.7	316.6	290.6	280.2	280.2
37.5°	960.1	877.0	711.0	581.2	482.6	410.0	358.1	321.8	295.8	285.4	285.4
40°	1032.7	934.1	747.3	607.2	498.2	420.4	363.3	332.1	306.2	295.8	295.8
42.5°	1100.2	986.0	783.6	627.9	513.8	430.7	373.7	337.3	316.6	306.2	306.2
45°	1167.7	1048.3	820.0	653.9	529.3	446.3	384.0	352.9	326.9	316.6	316.6
47.5°	1245.5	1105.4	861.5	674.7	544.9	456.7	394.4	363.3	337.3	332.1	326.9
50°	1307.8	1146.9	887.4	695.4	555.3	467.1	404.8	368.5	347.7	337.3	337.3
52.5°	1364.9	1188.4	908.2	705.8	560.5	472.3	415.2	378.8	358.1	347.7	347.7
55°	1396.0	1204.0	923.8	705.8	565.7	477.4	415.2	378.8	358.1	352.9	347.7
57.5°	1396.0	1204.0	913.4	695.4	555.3	467.1	410.0	373.7	358.1	347.7	347.7
60°	1375.3	1188.4	887.4	674.7	539.7	451.5	399.6	363.3	347.7	342.5	342.5
62.5°	1344.1	1162.5	866.7	648.7	519.0	430.7	384.0	347.7	337.3	337.3	332.1
65°	1261.1	1084.6	820.0	612.4	487.8	404.8	363.3	332.1	321.8	316.6	311.4
67.5°	1172.9	1012.0	747.3	570.9	446.3	378.8	337.3	311.4	295.8	295.8	290.6
70°	1084.6	934.1	679.8	513.8	399.6	347.7	306.2	280.2	269.9	269.9	269.9
72.5°	965.3	835.5	602.0	451.5	352.9	306.2	275.1	249.1	243.9	243.9	238.7
75°	825.2	711.0	508.6	384.0	295.8	259.5	233.5	207.6	207.6	207.6	207.6
77.5°	674.7	576.1	404.8	306.2	233.5	207.6	192.0	171.3	171.3	171.3	171.3
80°	508.6	425.6	295.8	223.2	171.3	150.5	140.1	129.7	134.9	134.9	129.7
82.5°	332.1	280.2	186.8	140.1	109.0	98.6	98.6	88.2	93.4	93.4	93.4
85°	145.3	124.6	77.8	62.3	51.9	51.9	51.9	46.7	51.9	51.9	51.9
87.5°	10.4	10.4	10.4	10.4	10.4	10.4	10.4	0.0	5.2	10.4	5.2
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



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 CATALOG NUMBER: TTN-D3-830-U-DL-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

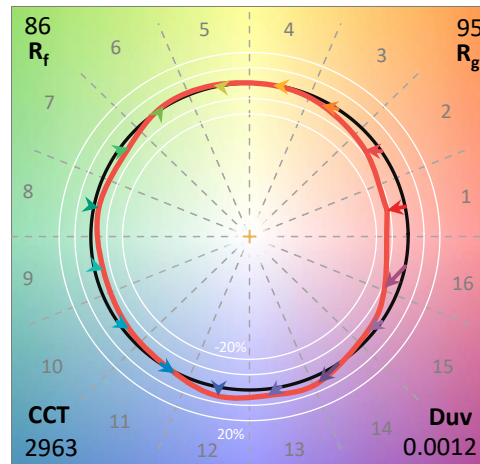
Test Information

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



Test Conditions

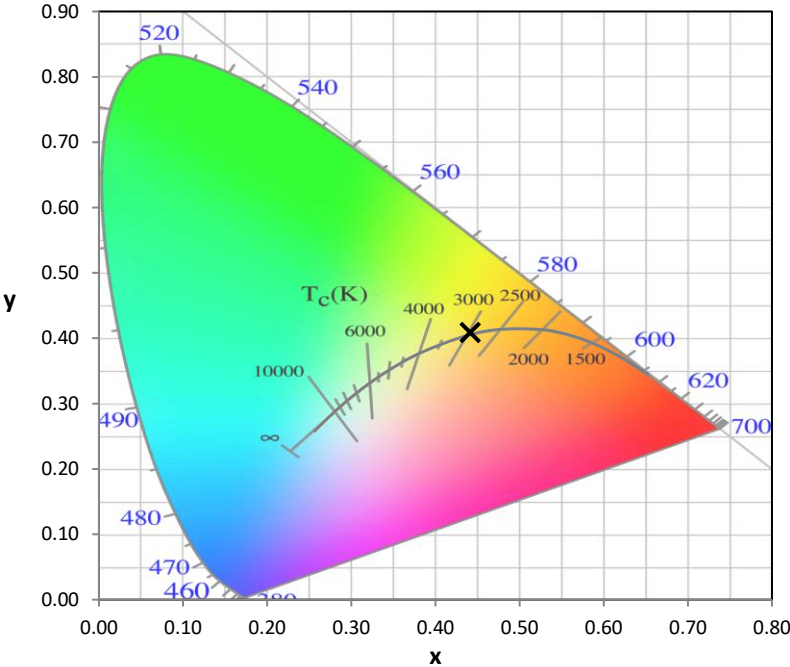
Stabilization Time: 37M
 Operation Time: 1H 37M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2411-284-4

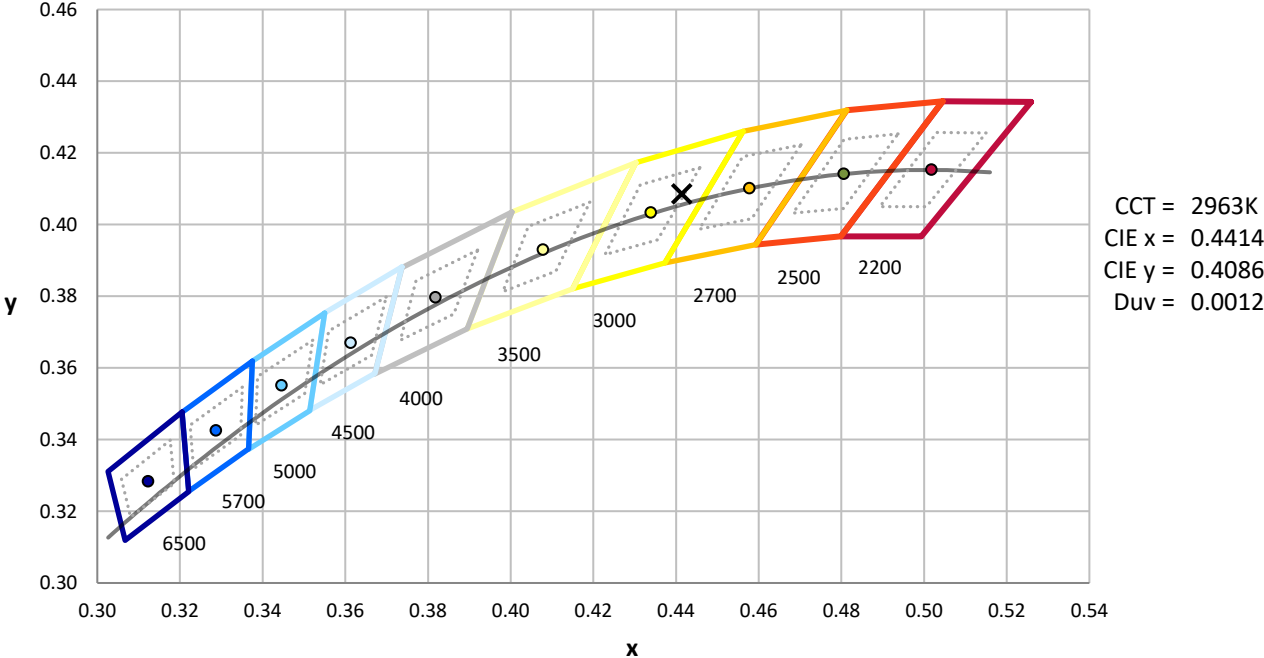
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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



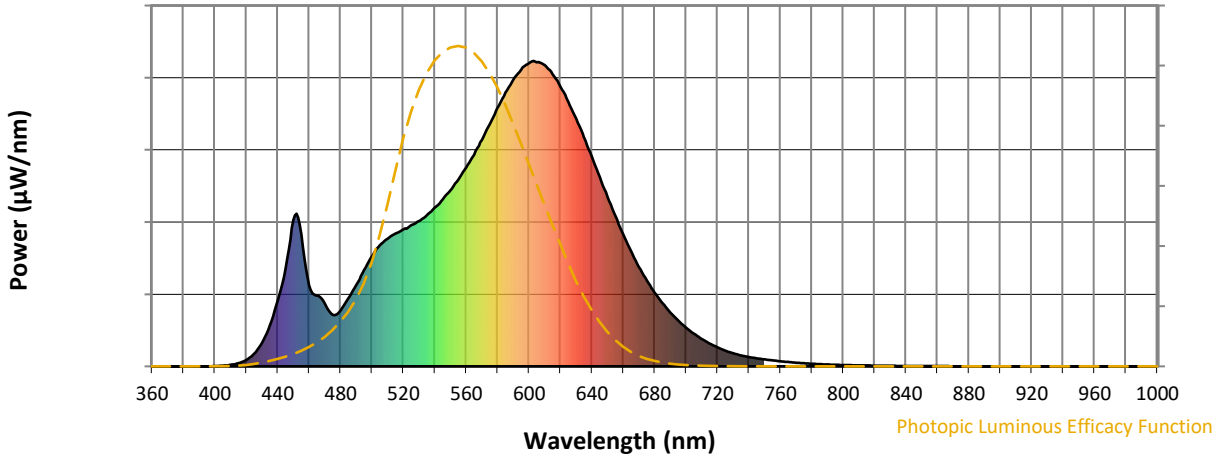
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2411-284-4

Photopic Flux vs. Wavelength

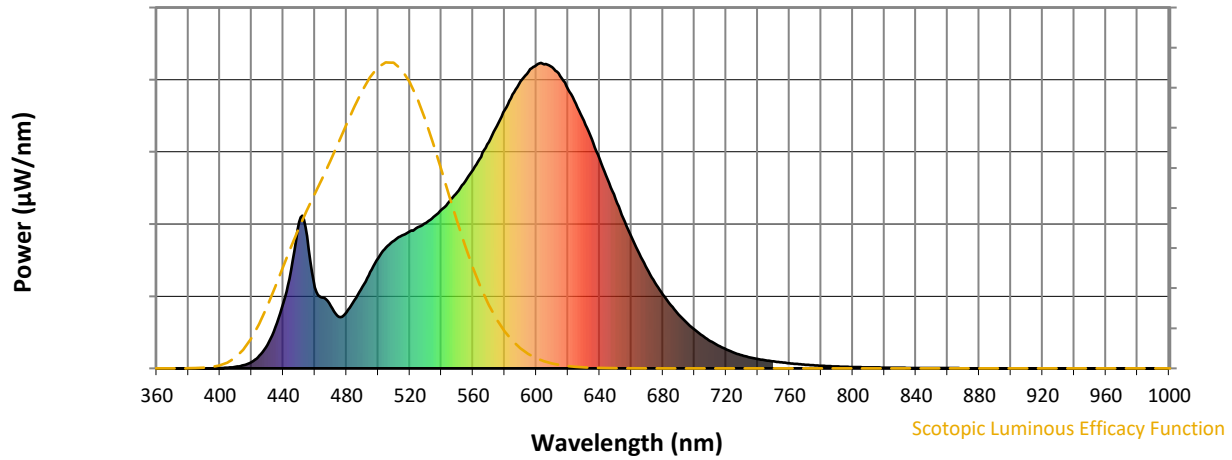


Photopic Lumens: NR

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			

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Scotopic Flux vs. Wavelength



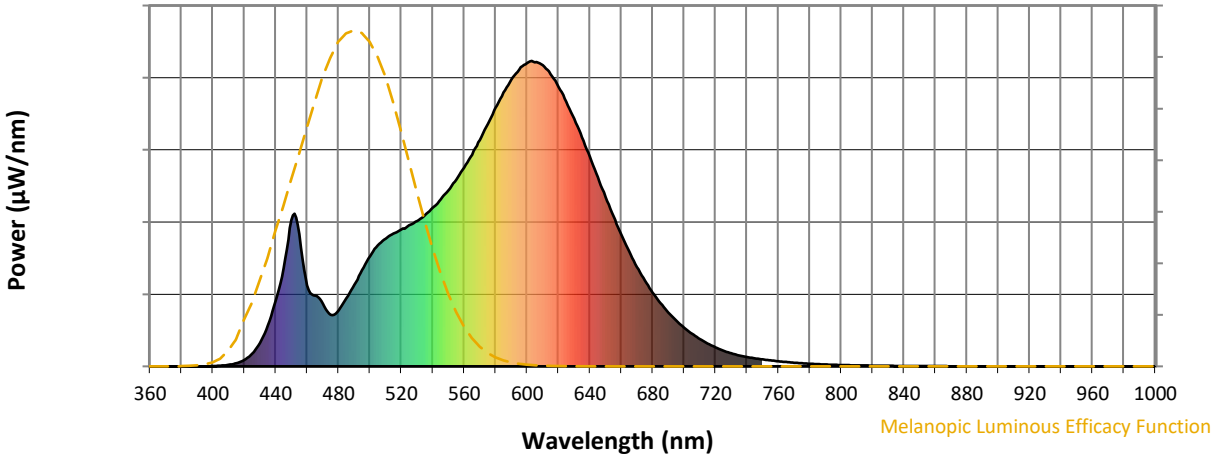
Scotopic Lumens: NR

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



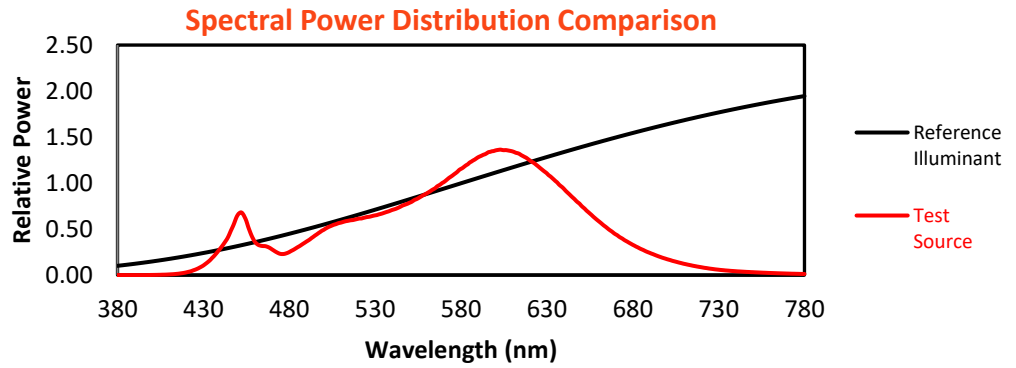
Melanopic Lumens: NR

M/P: 2.58

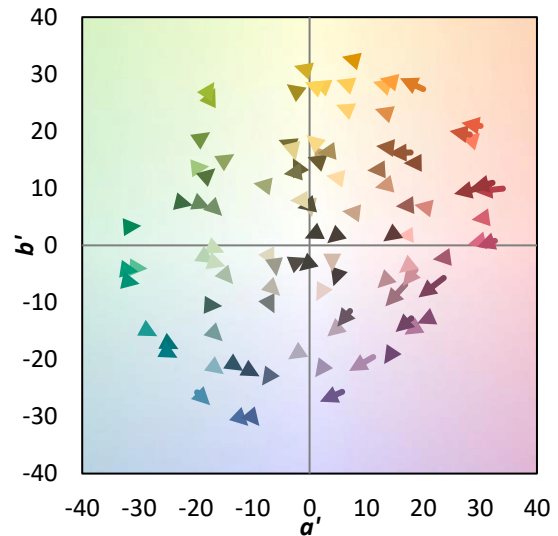
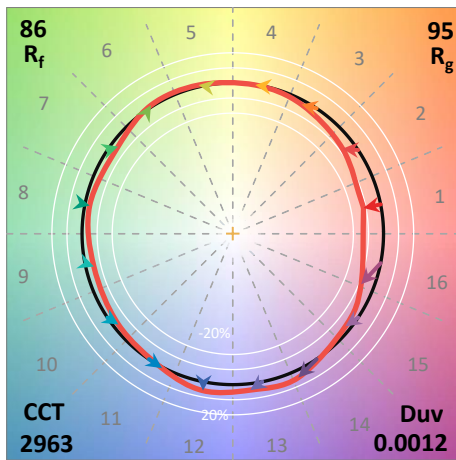
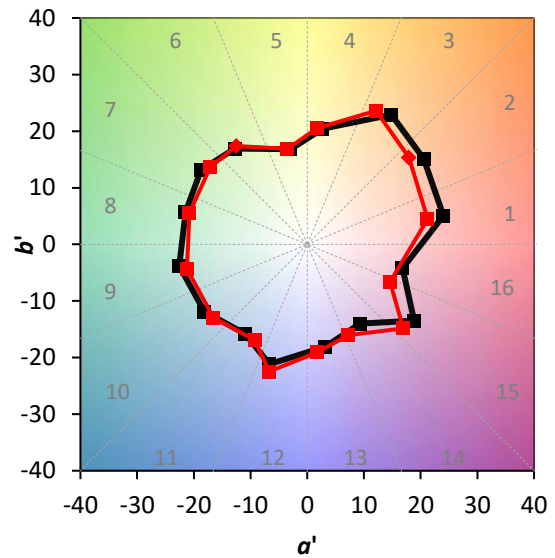
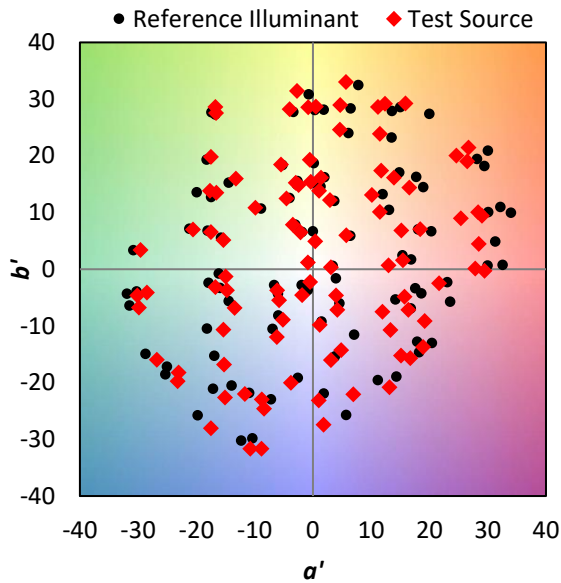
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	267	NR	620	915	NR	750	23	NR	880	0	NR
365	0	NR	495	315	NR	625	866	NR	755	20	NR	885	0	NR
370	0	NR	500	360	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			

Summary

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

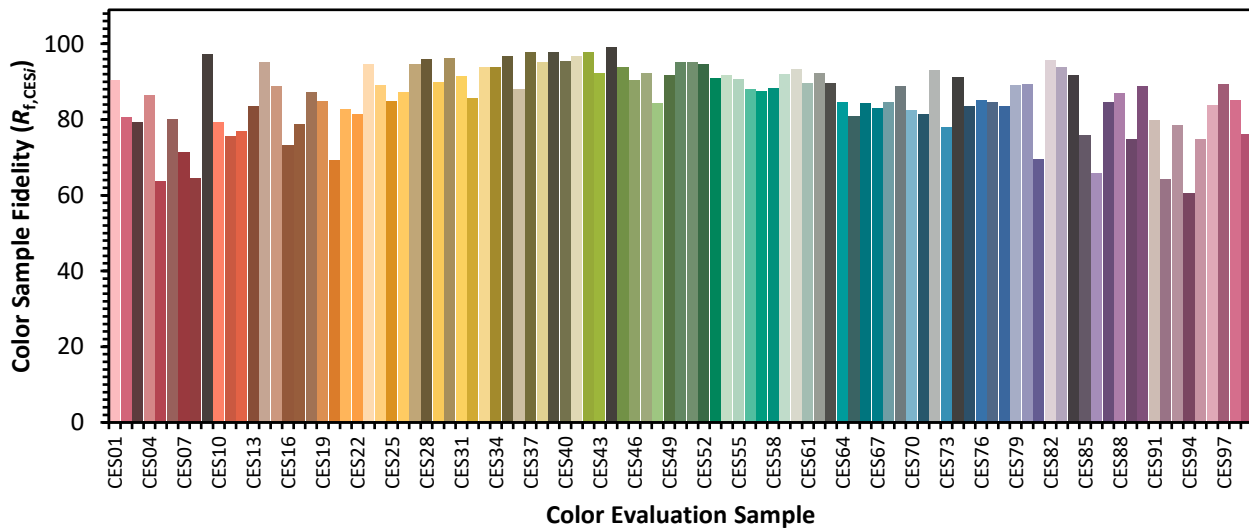


Color Vector Graphics

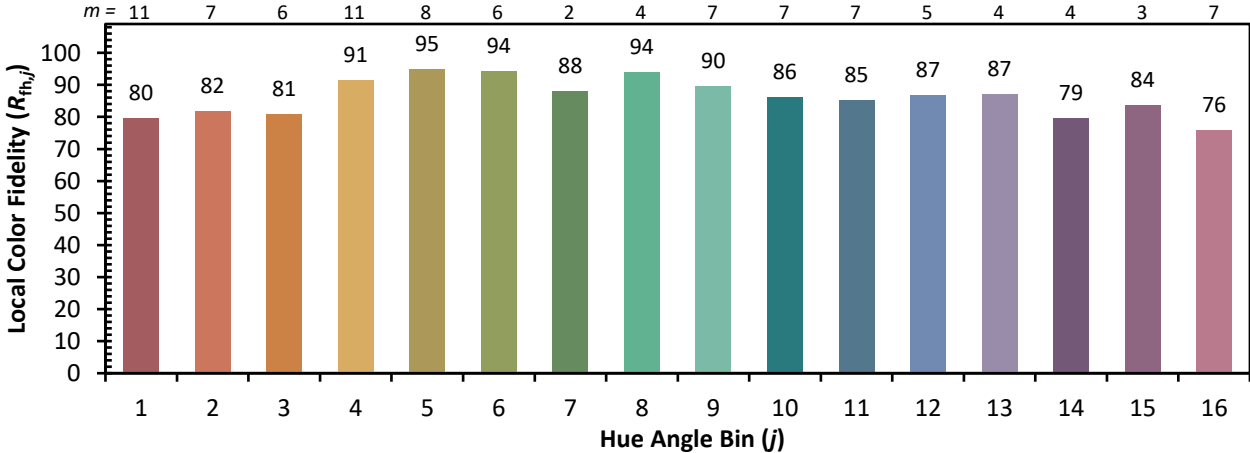
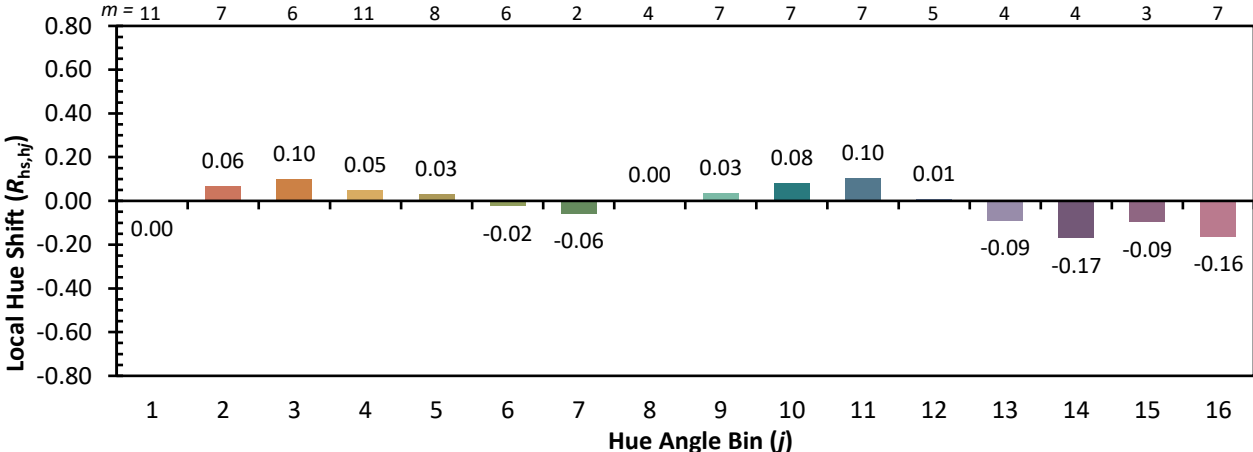
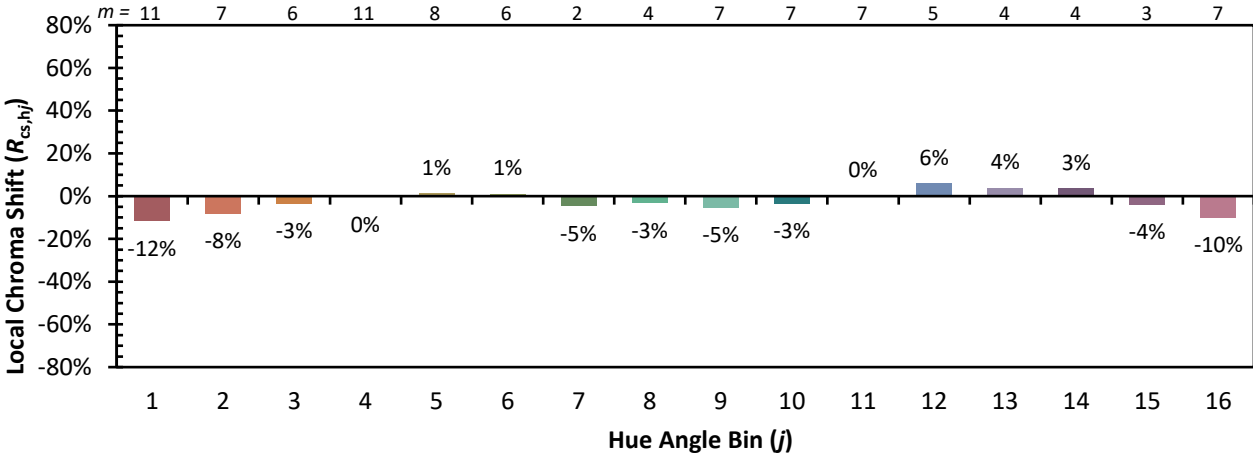


Individual Sample Fidelity Index ($R_{f,i}$)

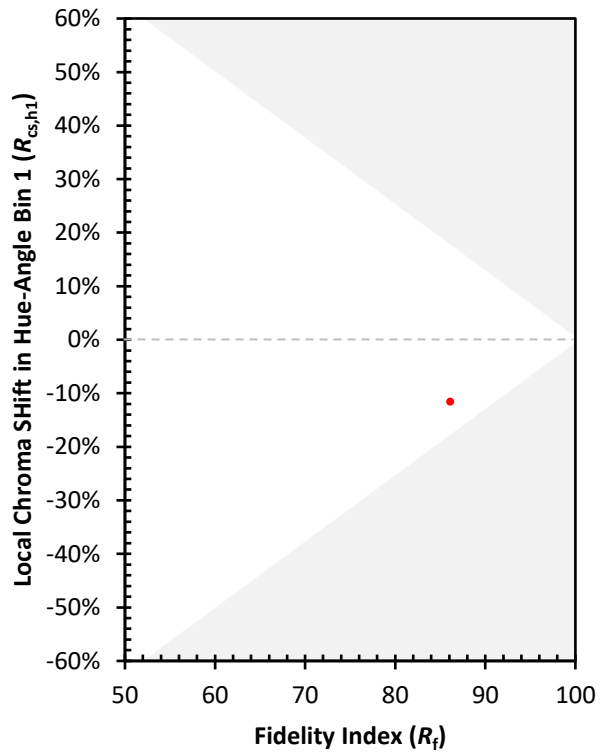
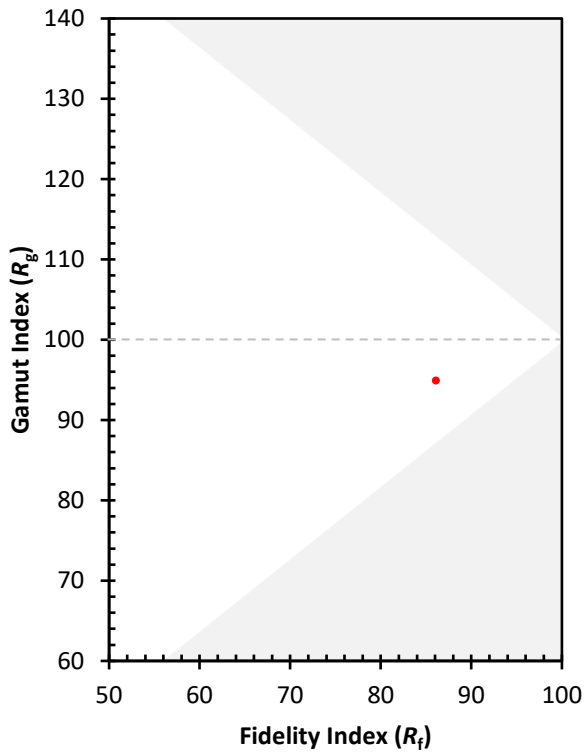
CES01 = 86	CES26 = 87	CES51 = 95	CES76 = 85
CES02 = 63	CES27 = 95	CES52 = 95	CES77 = 85
CES03 = 31	CES28 = 96	CES53 = 91	CES78 = 83
CES04 = 70	CES29 = 90	CES54 = 92	CES79 = 89
CES05 = 50	CES30 = 96	CES55 = 91	CES80 = 89
CES06 = 51	CES31 = 92	CES56 = 88	CES81 = 70
CES07 = 42	CES32 = 86	CES57 = 87	CES82 = 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	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)