

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: P834037

Luminaire Tested: **TTN-D3-830-U-DL-UPL1**

Issue Date: 5/15/2024

Test Information

Test Method: LM-79-08
Report Number: P834037
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-UPL1
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: 6272.9 lumens
Efficiency: N/A
Efficacy: 101.5 lumens/watt
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')
IES Classification: Type IV - Short
BUG Rating: B1 - U3 - G2

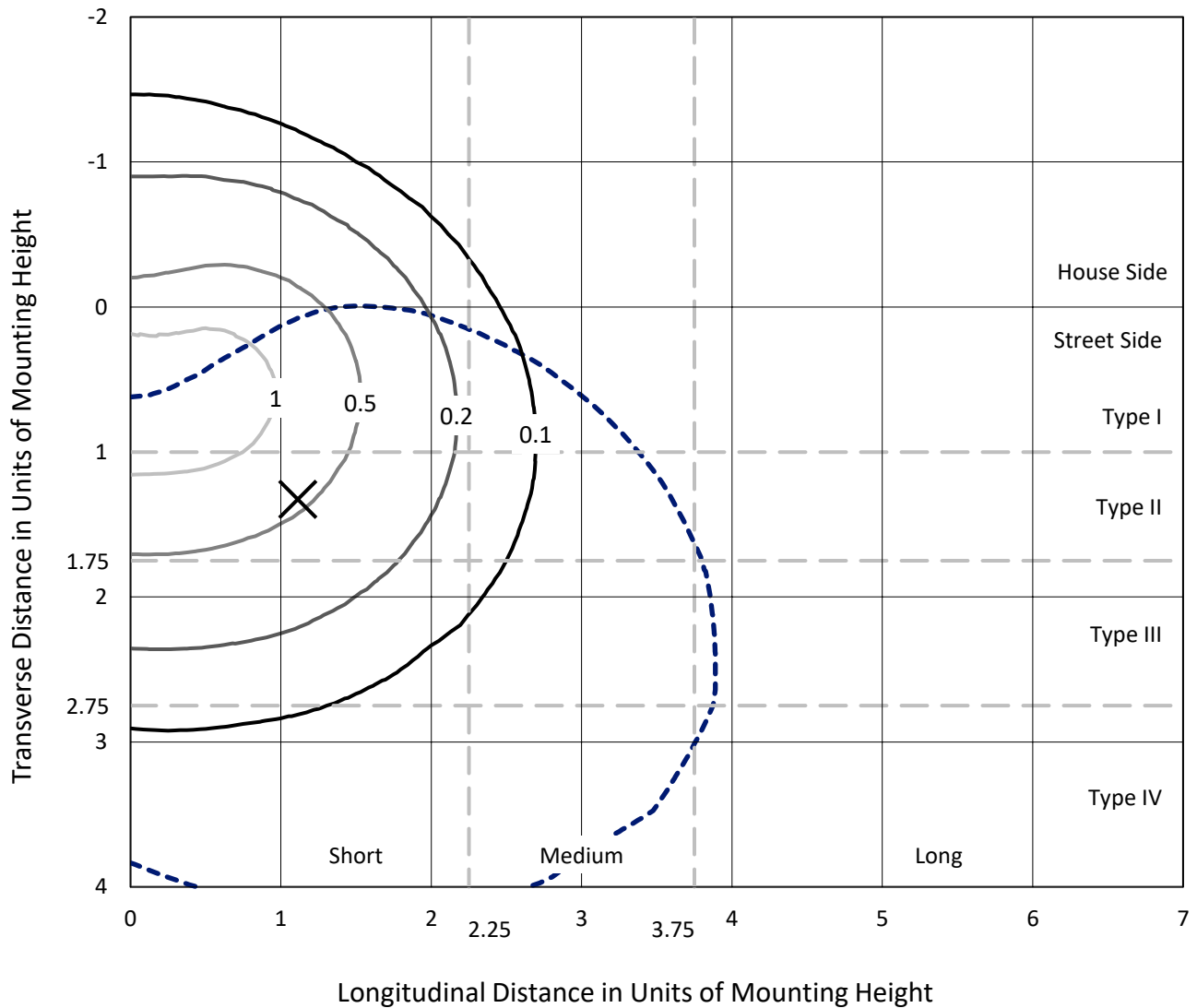
Input Watts (W): 61.8
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



REPORT NUMBER: P834037
 CATALOG NUMBER: TTN-D3-830-U-DL-UPL1

Iso-Footcandle Lines of Horizontal Illumination

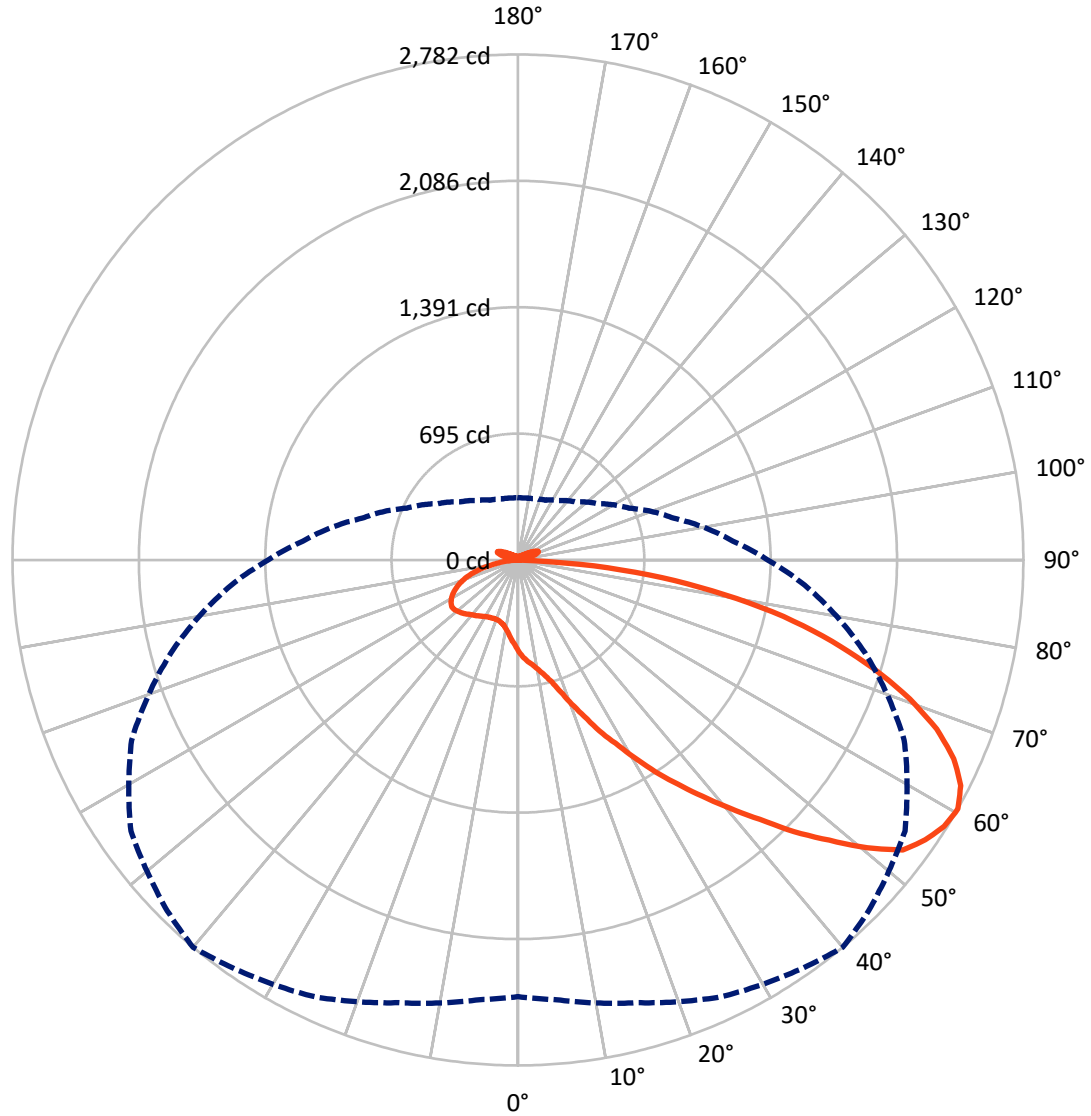
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.4 fc
 Type IV - Short - N/A

REPORT NUMBER: P834037
CATALOG NUMBER: TTN-D3-830-U-DL-UPL1

Luminous Intensity Polar Plot



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

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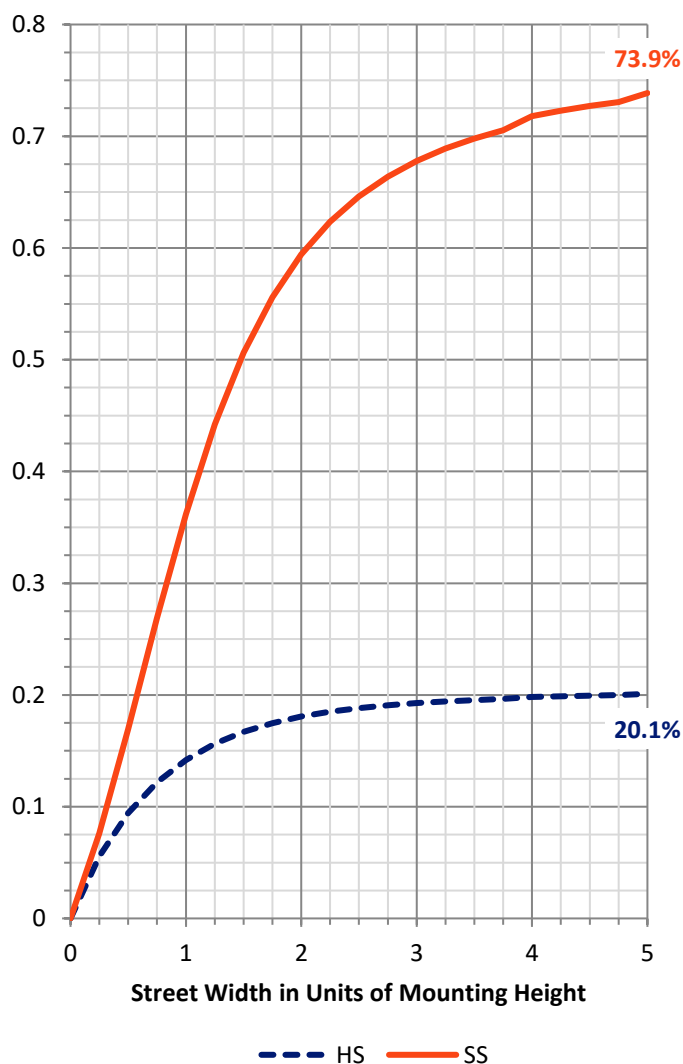
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	1273.0	147.7	1420.7
	% Fixture	20.3	2.4	22.6
Street Side	Lumens	4704.4	147.7	4852.1
	% Fixture	75.0	2.4	77.4
Total	Lumens	5977.4	295.5	6272.9
	% Fixture	95.3	4.7	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	47.5	0.8
10°-20°	151.5	2.4
20°-30°	320.1	5.1
30°-40°	585.0	9.3
40°-50°	950.5	15.2
50°-60°	1321.2	21.1
60°-70°	1369.6	21.8
70°-80°	981.4	15.6
80°-90°	250.6	4.0
90°-100°	6.6	0.1
100°-110°	67.0	1.1
110°-120°	98.0	1.6
120°-130°	56.9	0.9
130°-140°	30.1	0.5
140°-150°	17.9	0.3
150°-160°	11.0	0.2
160°-170°	6.0	0.1
170°-180°	2.0	0.0
0°-90°	5977.4	95.3
0°-180°	6272.9	100.0

Coefficient of Utilization

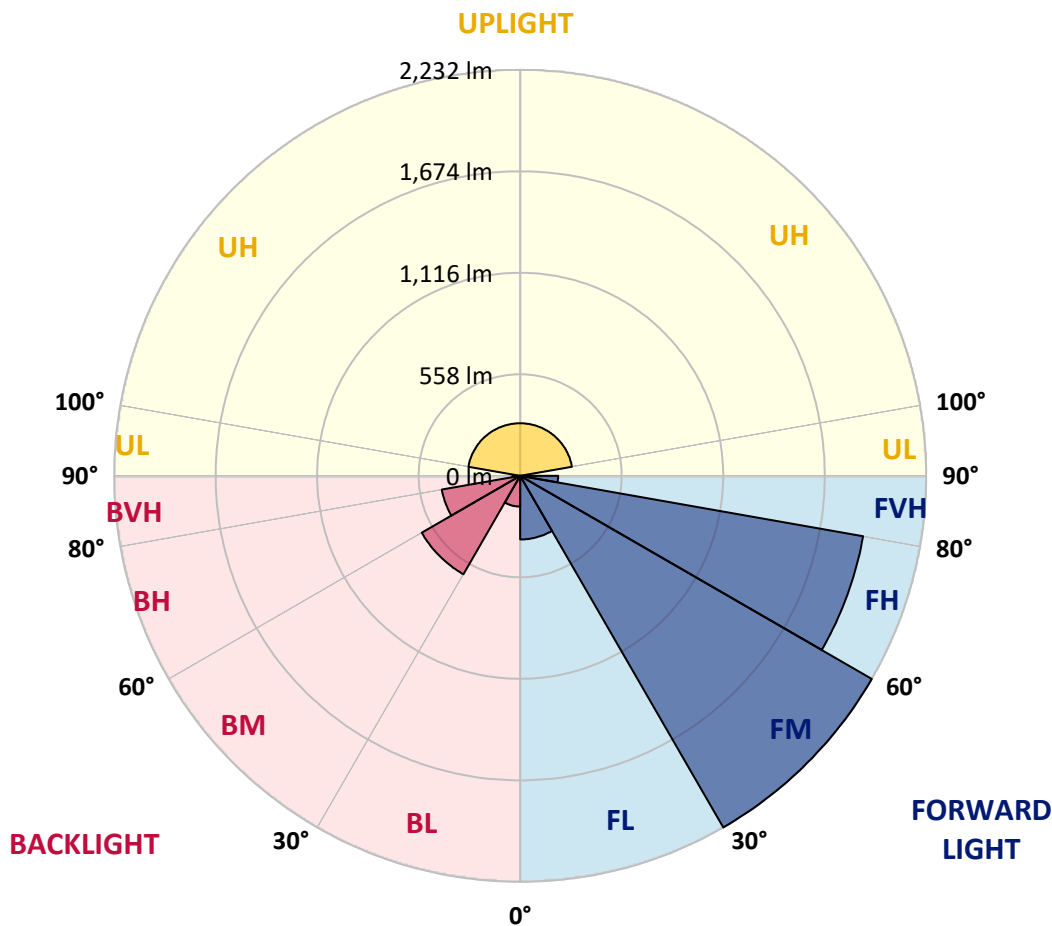


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	349.8	5.6			
FM (30°-60°)	2231.8	35.6			
FH (60°-80°)	1914.2	30.5			G2/5000
FVH (80°-90°)	208.7	3.3			G2/225
BL (0°-30°)	169.3	2.7	B1/500		
BM (30°-60°)	624.9	10.0	B1/1000		
BH (60°-80°)	436.9	7.0	B1/500		G1/500
BVH (80°-90°)	42.0	0.7			G1/100
UL (90°-100°)	6.6	0.1		U1/10	
UH (100°-180°)	288.9	4.6		U3/500	

BUG Rating: B1-U3-G2
 Type IV Short





REPORT NUMBER: P834037

CATALOG NUMBER: TTN-D3-830-U-DL-UPL1

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°	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5
92.5°	2.5	2.5	2.5	3.5	4.0	3.8	3.5	4.0	3.0	3.0	2.5
95°	3.0	3.0	3.5	4.5	5.6	5.8	6.1	6.1	3.5	3.5	3.0
97.5°	4.0	4.5	4.5	5.6	9.1	12.9	16.7	10.1	5.1	5.1	4.5
100°	6.6	7.1	7.1	12.6	26.8	31.4	35.9	25.8	13.1	9.6	7.1
102.5°	21.2	22.2	27.3	40.9	60.7	57.9	55.1	46.5	44.0	30.3	24.3
105°	54.1	53.6	57.6	68.2	84.9	84.2	83.4	76.8	69.8	60.2	55.6
107.5°	71.3	71.3	74.8	83.9	96.6	104.6	112.7	114.2	90.5	79.4	74.3
110°	80.4	80.4	83.4	91.0	107.7	119.0	130.4	129.4	111.7	98.1	91.5



REPORT NUMBER: P834037
 CATALOG NUMBER: TTN-D3-830-U-DL-UPL1

CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	40°	45°	55°	65°	75°	85°
112.5°	82.4	82.9	86.9	98.6	116.8	121.8	126.9	122.3	115.3	109.2	104.1
115°	85.4	85.4	90.0	101.1	111.2	113.2	115.3	110.2	104.6	100.6	98.6
117.5°	84.4	85.9	86.9	93.0	99.6	101.1	102.6	100.1	92.5	89.5	88.5
120°	78.4	78.4	79.4	82.4	85.9	86.7	87.5	86.4	81.4	78.9	78.4
122.5°	69.8	70.3	69.8	71.3	73.8	74.6	75.3	74.3	70.3	69.3	69.3
125°	61.2	61.2	60.7	61.7	63.2	63.0	62.7	63.2	61.2	60.7	60.7
127.5°	55.1	54.6	53.6	54.1	54.6	54.6	54.6	55.1	53.1	53.6	54.1
130°	49.0	49.0	48.0	48.0	48.0	47.5	47.0	48.0	47.0	47.5	48.0
132.5°	43.5	43.5	42.0	41.5	41.5	41.5	41.5	42.0	41.5	42.5	43.5
135°	38.9	38.9	37.4	37.9	37.9	37.6	37.4	37.9	37.4	38.4	38.9
137.5°	35.4	35.4	34.4	34.4	34.4	34.2	33.9	34.4	34.4	34.9	35.9
140°	32.4	32.4	31.8	31.8	31.3	31.6	31.8	31.8	31.8	32.4	32.9
142.5°	30.8	30.3	29.8	29.3	29.8	29.8	29.8	29.8	29.3	29.8	30.8
145°	28.3	28.3	27.8	27.8	27.8	28.0	28.3	27.8	27.8	28.3	28.3
147.5°	26.8	26.8	26.3	26.8	26.8	26.8	26.8	26.8	26.3	26.8	26.8
150°	26.3	25.8	25.3	25.8	25.8	25.6	25.3	25.3	25.3	25.3	25.8
152.5°	24.8	24.8	24.3	24.8	24.3	24.3	24.3	24.3	24.3	24.3	24.8
155°	23.8	23.8	23.3	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
157.5°	22.7	23.3	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	23.3
160°	22.2	22.2	22.2	22.2	21.7	21.7	21.7	21.7	22.2	22.2	22.2
162.5°	21.7	21.7	21.7	21.7	21.2	21.2	21.2	21.2	21.2	21.7	21.7
165°	21.7	21.2	21.2	21.2	20.7	20.7	20.7	20.7	20.7	21.2	21.7
167.5°	20.7	20.7	20.7	20.7	20.7	20.4	20.2	20.2	20.7	20.7	20.7
170°	20.7	20.7	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2
172.5°	20.7	20.7	20.7	20.7	20.2	20.2	20.2	20.2	20.2	20.2	20.7
175°	20.7	20.7	20.7	20.7	20.2	20.2	20.2	20.2	20.7	20.7	20.7
177.5°	20.7	20.7	20.7	20.7	20.2	20.4	20.7	20.7	20.7	20.7	20.7
180°	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7



REPORT NUMBER: P834037
 CATALOG NUMBER: TTN-D3-830-U-DL-UPL1

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°	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
92.5°	2.5	2.5	3.0	3.0	4.0	3.5	4.0	3.5	2.5	2.5	2.5
95°	3.0	3.0	3.5	3.5	6.1	6.1	5.6	4.5	3.5	3.0	3.0
97.5°	4.0	4.5	5.1	5.1	10.1	16.7	9.1	5.6	4.5	4.5	4.0
100°	7.1	7.1	9.6	13.1	25.8	35.9	26.8	12.6	7.1	7.1	6.6
102.5°	23.3	24.3	30.3	44.0	46.5	55.1	60.7	40.9	27.3	22.2	21.2
105°	55.6	55.6	60.2	69.8	76.8	83.4	84.9	68.2	57.6	53.6	54.1
107.5°	73.8	74.3	79.4	90.5	114.2	112.7	96.6	83.9	74.8	71.3	71.3
110°	90.5	91.5	98.1	111.7	129.4	130.4	107.7	91.0	83.4	80.4	80.4



REPORT NUMBER: P834037
 CATALOG NUMBER: TTN-D3-830-U-DL-UPL1

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	103.1	104.1	109.2	115.3	122.3	126.9	116.8	98.6	86.9	82.9	82.4
115°	99.6	98.6	100.6	104.6	110.2	115.3	111.2	101.1	90.0	85.4	85.4
117.5°	86.9	88.5	89.5	92.5	100.1	102.6	99.6	93.0	86.9	85.9	84.4
120°	77.3	78.4	78.9	81.4	86.4	87.5	85.9	82.4	79.4	78.4	78.4
122.5°	68.2	69.3	69.3	70.3	74.3	75.3	73.8	71.3	69.8	70.3	69.8
125°	60.2	60.7	60.7	61.2	63.2	62.7	63.2	61.7	60.7	61.2	61.2
127.5°	53.6	54.1	53.6	53.1	55.1	54.6	54.6	54.1	53.6	54.6	55.1
130°	48.5	48.0	47.5	47.0	48.0	47.0	48.0	48.0	48.0	49.0	49.0
132.5°	43.5	43.5	42.5	41.5	42.0	41.5	41.5	41.5	42.0	43.5	43.5
135°	38.9	38.9	38.4	37.4	37.9	37.4	37.9	37.9	37.4	38.9	38.9
137.5°	36.4	35.9	34.9	34.4	34.4	33.9	34.4	34.4	34.4	35.4	35.4
140°	32.9	32.9	32.4	31.8	31.8	31.8	31.3	31.8	31.8	32.4	32.4
142.5°	30.8	30.8	29.8	29.3	29.8	29.8	29.8	29.3	29.8	30.3	30.8
145°	28.8	28.3	28.3	27.8	27.8	28.3	27.8	27.8	27.8	28.3	28.3
147.5°	27.3	26.8	26.8	26.3	26.8	26.8	26.8	26.8	26.3	26.8	26.8
150°	25.8	25.8	25.3	25.3	25.3	25.3	25.8	25.8	25.3	25.8	26.3
152.5°	25.3	24.8	24.3	24.3	24.3	24.3	24.3	24.8	24.3	24.8	24.8
155°	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.3	23.8	23.8
157.5°	23.3	23.3	22.7	22.7	22.7	22.7	22.7	22.7	22.7	23.3	22.7
160°	22.7	22.2	22.2	22.2	21.7	21.7	21.7	22.2	22.2	22.2	22.2
162.5°	22.2	21.7	21.7	21.2	21.2	21.2	21.2	21.7	21.7	21.7	21.7
165°	21.2	21.7	21.2	20.7	20.7	20.7	20.7	21.2	21.2	21.2	21.7
167.5°	21.2	20.7	20.7	20.7	20.2	20.2	20.7	20.7	20.7	20.7	20.7
170°	20.7	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.7	20.7
172.5°	20.7	20.7	20.2	20.2	20.2	20.2	20.2	20.7	20.7	20.7	20.7
175°	20.2	20.7	20.7	20.7	20.2	20.2	20.2	20.7	20.7	20.7	20.7
177.5°	20.7	20.7	20.7	20.7	20.7	20.7	20.2	20.7	20.7	20.7	20.7
180°	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7

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

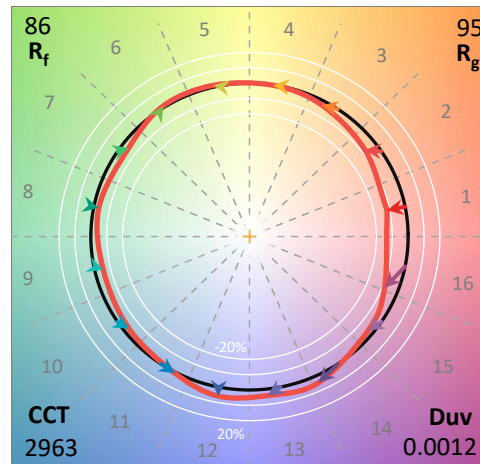
Test Information

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

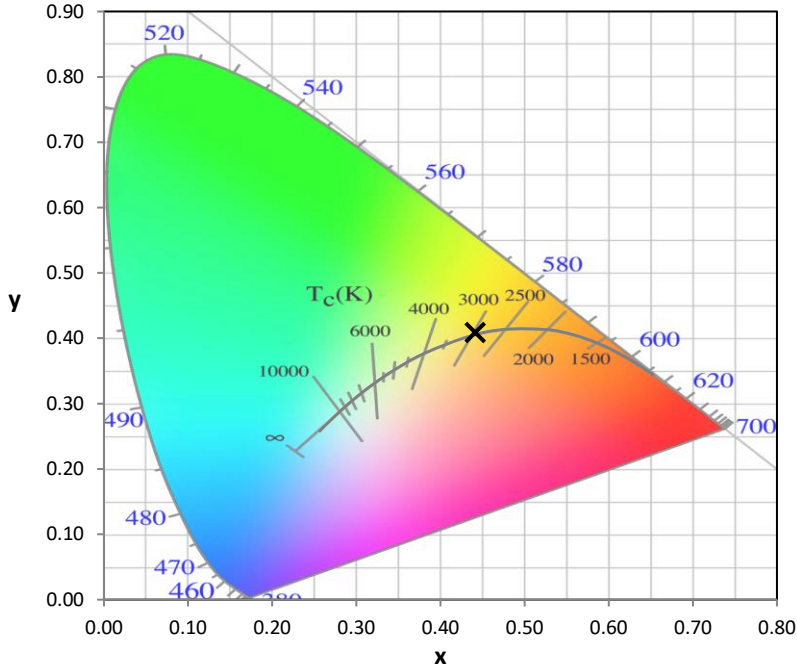
Stabilization Time: 37M
 Operation Time: 1H 37M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2411-284-4

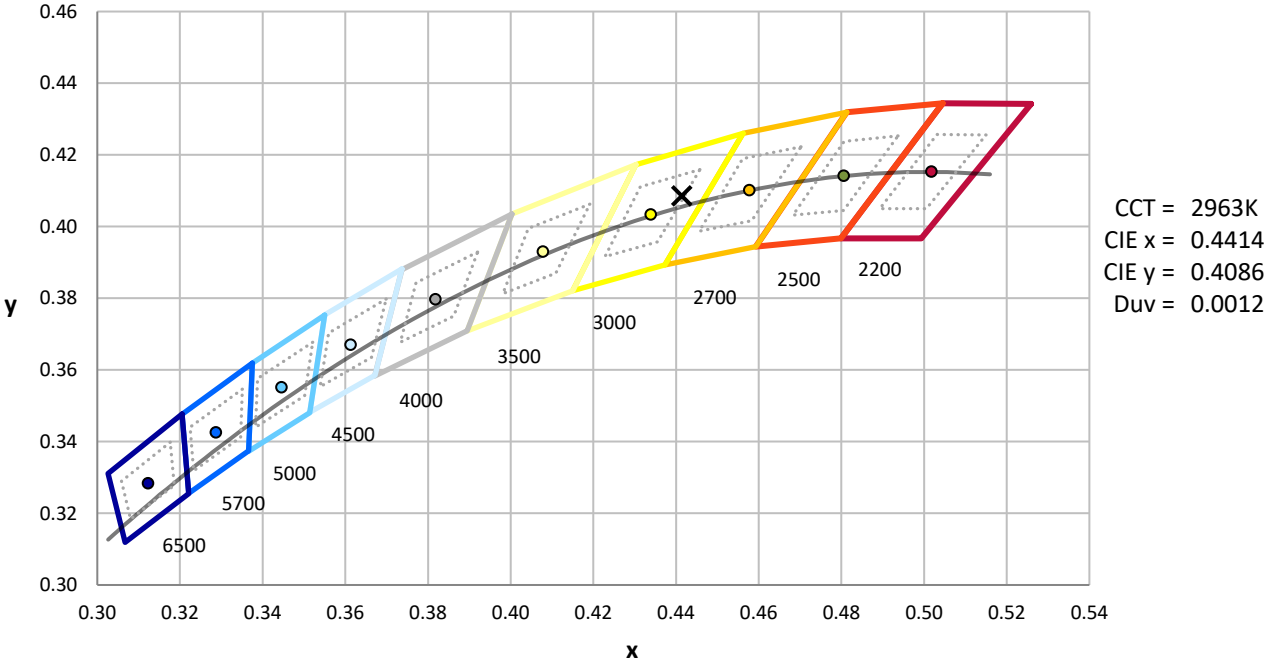
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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



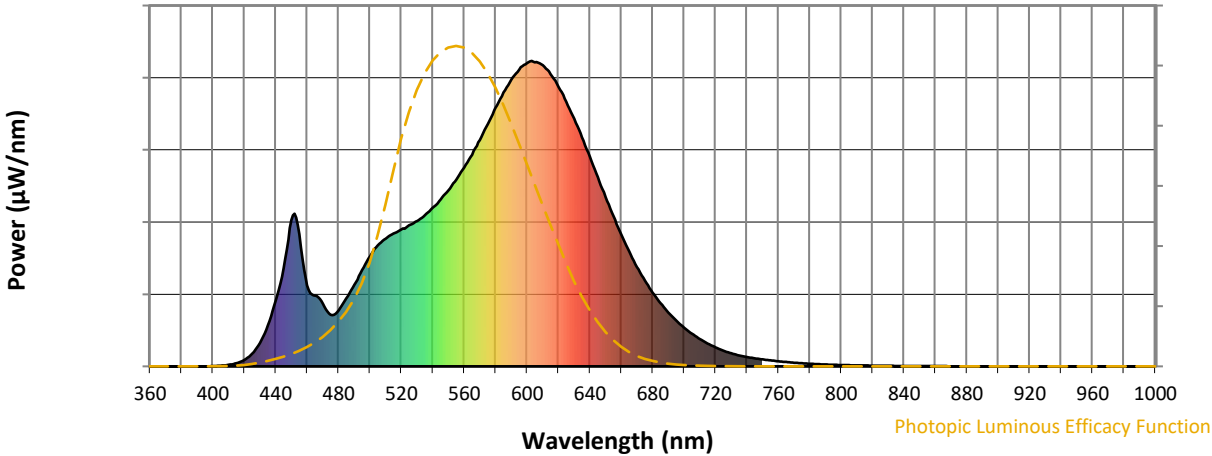
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2411-284-4

Photopic Flux vs. Wavelength

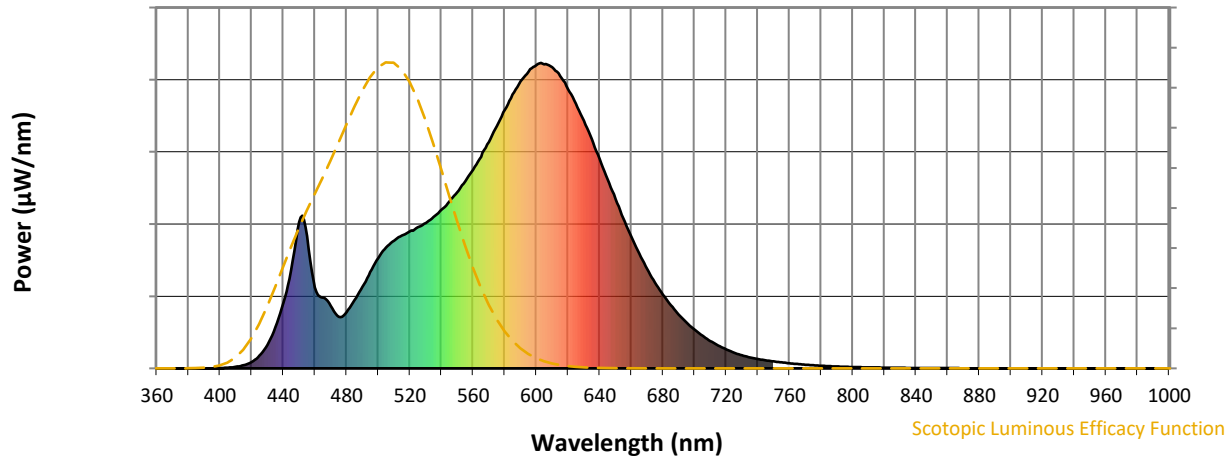


Photopic Lumens: NR

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			

REPORT NUMBER: SP1-2411-284-4

Scotopic Flux vs. Wavelength



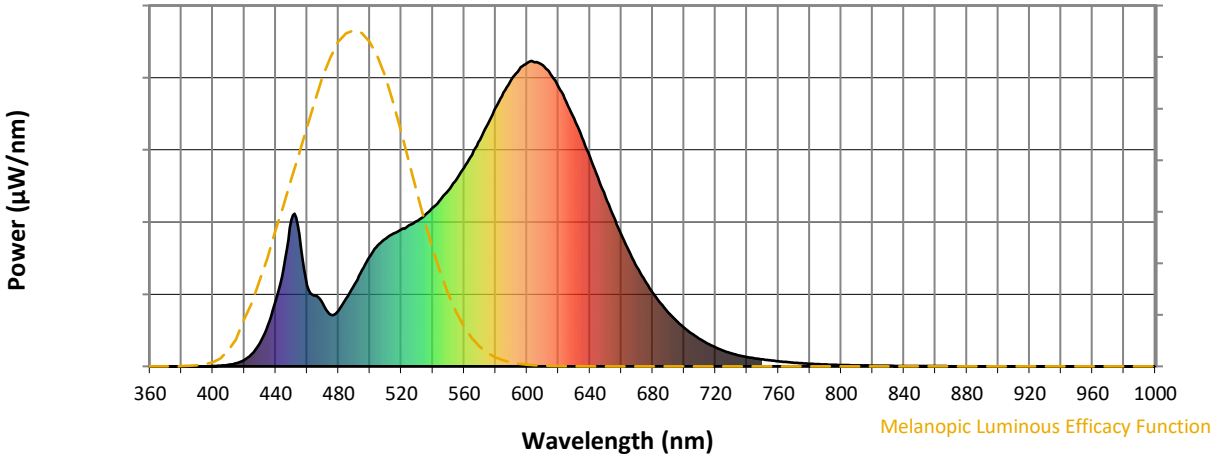
Scotopic Lumens: NR

S/P: 1.34

λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	267	NR	620	915	NR	750	23	NR	880	0	NR
365	0	NR	495	315	NR	625	866	NR	755	20	NR	885	0	NR
370	0	NR	500	360	NR	630	811	NR	760	17	NR	890	0	NR
375	0	NR	505	396	NR	635	750	NR	765	14	NR	895	0	NR
380	0	NR	510	418	NR	640	686	NR	770	12	NR	900	0	NR
385	0	NR	515	435	NR	645	619	NR	775	10	NR	905	0	NR
390	0	NR	520	448	NR	650	554	NR	780	9	NR	910	0	NR
395	0	NR	525	462	NR	655	491	NR	785	7	NR	915	0	NR
400	1	NR	530	476	NR	660	431	NR	790	6	NR	920	0	NR
405	2	NR	535	495	NR	665	376	NR	795	5	NR	925	0	NR
410	5	NR	540	520	NR	670	325	NR	800	4	NR	930	0	NR
415	10	NR	545	547	NR	675	280	NR	805	4	NR	935	0	NR
420	21	NR	550	576	NR	680	241	NR	810	3	NR	940	0	NR
425	42	NR	555	612	NR	685	207	NR	815	3	NR	945	0	NR
430	77	NR	560	651	NR	690	176	NR	820	2	NR	950	0	NR
435	135	NR	565	693	NR	695	149	NR	825	2	NR	955	0	NR
440	215	NR	570	741	NR	700	127	NR	830	2	NR	960	0	NR
445	321	NR	575	793	NR	705	107	NR	835	2	NR	965	0	NR
450	479	NR	580	847	NR	710	89	NR	840	1	NR	970	0	NR
455	432	NR	585	897	NR	715	75	NR	845	1	NR	975	0	NR
460	265	NR	590	940	NR	720	62	NR	850	1	NR	980	0	NR
465	231	NR	595	971	NR	725	51	NR	855	1	NR	985	0	NR
470	204	NR	600	993	NR	730	43	NR	860	1	NR	990	0	NR
475	168	NR	605	996	NR	735	36	NR	865	1	NR	995	0	NR
480	183	NR	610	986	NR	740	31	NR	870	1	NR	1000	0	NR
485	223	NR	615	957	NR	745	26	NR	875	0	NR			

REPORT NUMBER: SP1-2411-284-4

Melanopic Flux vs. Wavelength



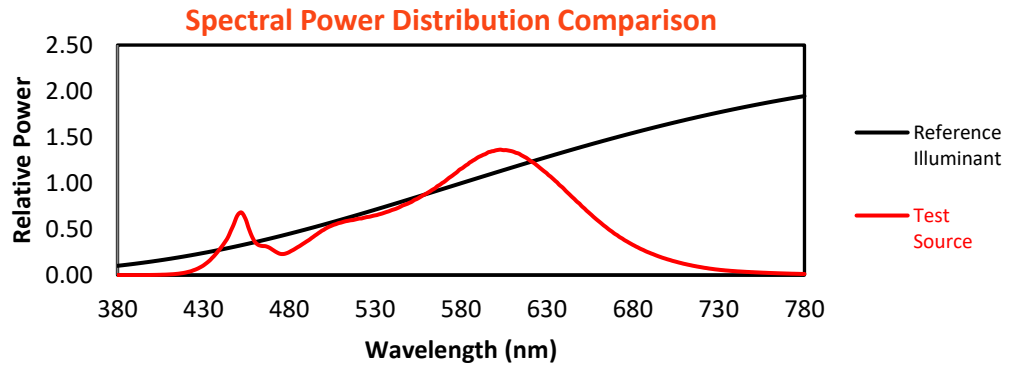
Melanopic Lumens: NR

M/P: 2.58

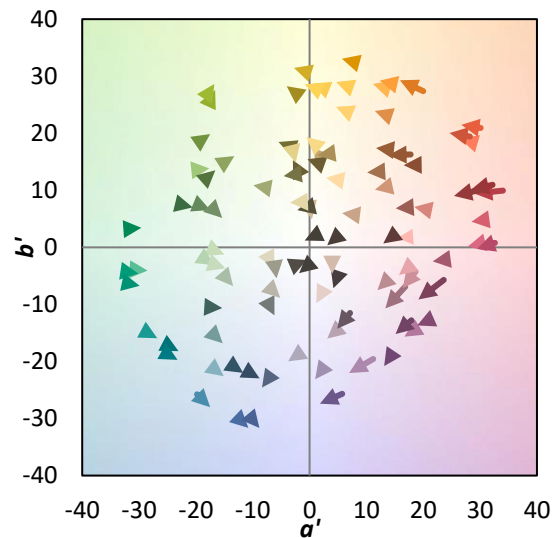
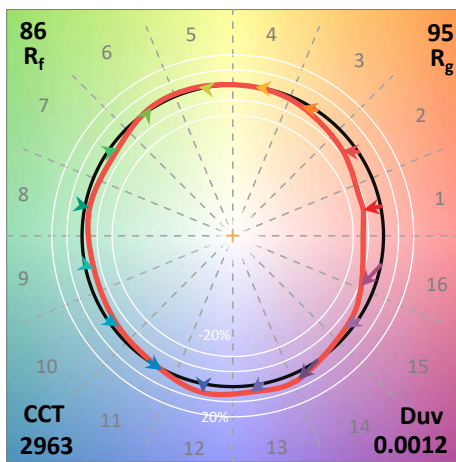
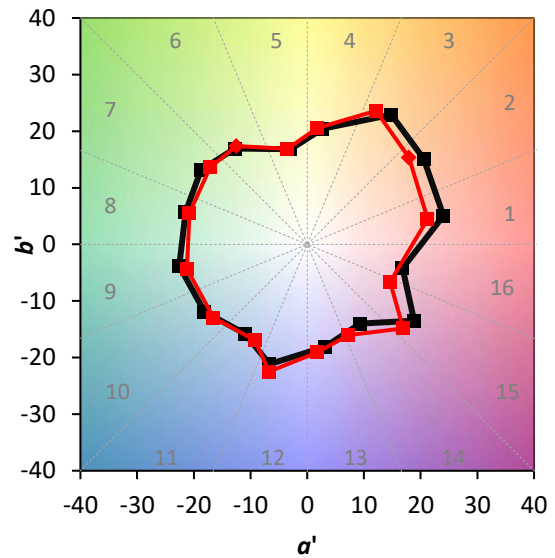
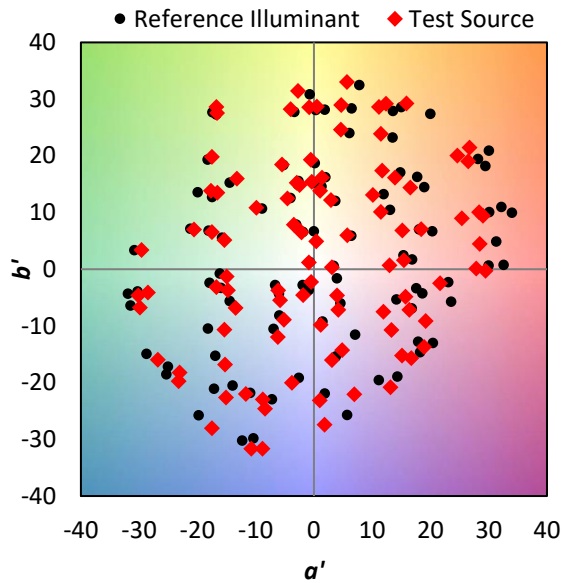
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	267	NR	620	915	NR	750	23	NR	880	0	NR
365	0	NR	495	315	NR	625	866	NR	755	20	NR	885	0	NR
370	0	NR	500	360	NR	630	811	NR	760	17	NR	890	0	NR
375	0	NR	505	396	NR	635	750	NR	765	14	NR	895	0	NR
380	0	NR	510	418	NR	640	686	NR	770	12	NR	900	0	NR
385	0	NR	515	435	NR	645	619	NR	775	10	NR	905	0	NR
390	0	NR	520	448	NR	650	554	NR	780	9	NR	910	0	NR
395	0	NR	525	462	NR	655	491	NR	785	7	NR	915	0	NR
400	1	NR	530	476	NR	660	431	NR	790	6	NR	920	0	NR
405	2	NR	535	495	NR	665	376	NR	795	5	NR	925	0	NR
410	5	NR	540	520	NR	670	325	NR	800	4	NR	930	0	NR
415	10	NR	545	547	NR	675	280	NR	805	4	NR	935	0	NR
420	21	NR	550	576	NR	680	241	NR	810	3	NR	940	0	NR
425	42	NR	555	612	NR	685	207	NR	815	3	NR	945	0	NR
430	77	NR	560	651	NR	690	176	NR	820	2	NR	950	0	NR
435	135	NR	565	693	NR	695	149	NR	825	2	NR	955	0	NR
440	215	NR	570	741	NR	700	127	NR	830	2	NR	960	0	NR
445	321	NR	575	793	NR	705	107	NR	835	2	NR	965	0	NR
450	479	NR	580	847	NR	710	89	NR	840	1	NR	970	0	NR
455	432	NR	585	897	NR	715	75	NR	845	1	NR	975	0	NR
460	265	NR	590	940	NR	720	62	NR	850	1	NR	980	0	NR
465	231	NR	595	971	NR	725	51	NR	855	1	NR	985	0	NR
470	204	NR	600	993	NR	730	43	NR	860	1	NR	990	0	NR
475	168	NR	605	996	NR	735	36	NR	865	1	NR	995	0	NR
480	183	NR	610	986	NR	740	31	NR	870	1	NR	1000	0	NR
485	223	NR	615	957	NR	745	26	NR	875	0	NR			

Summary

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

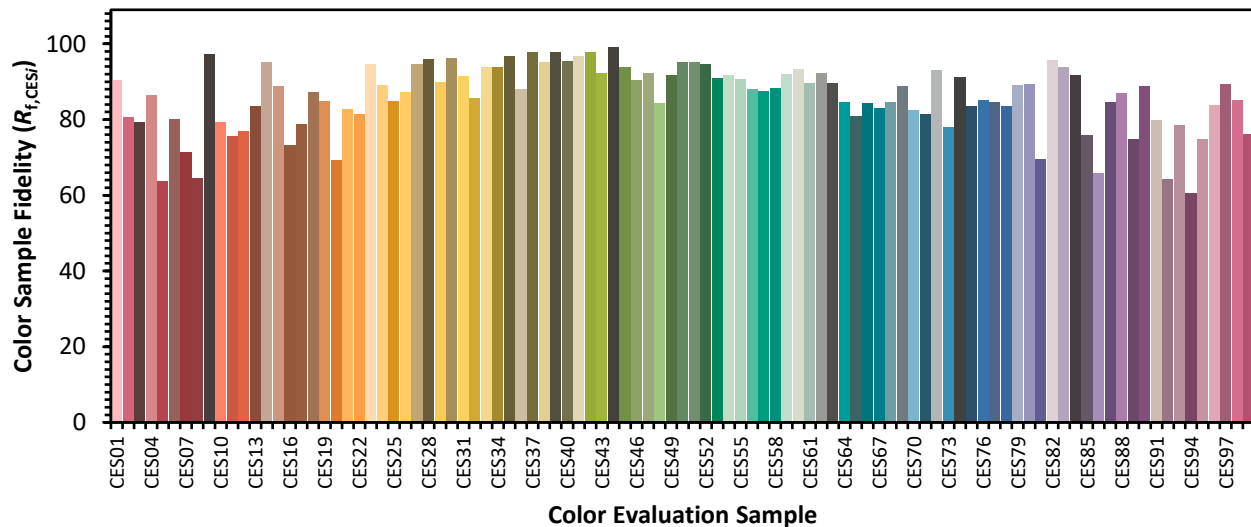


Color Vector Graphics

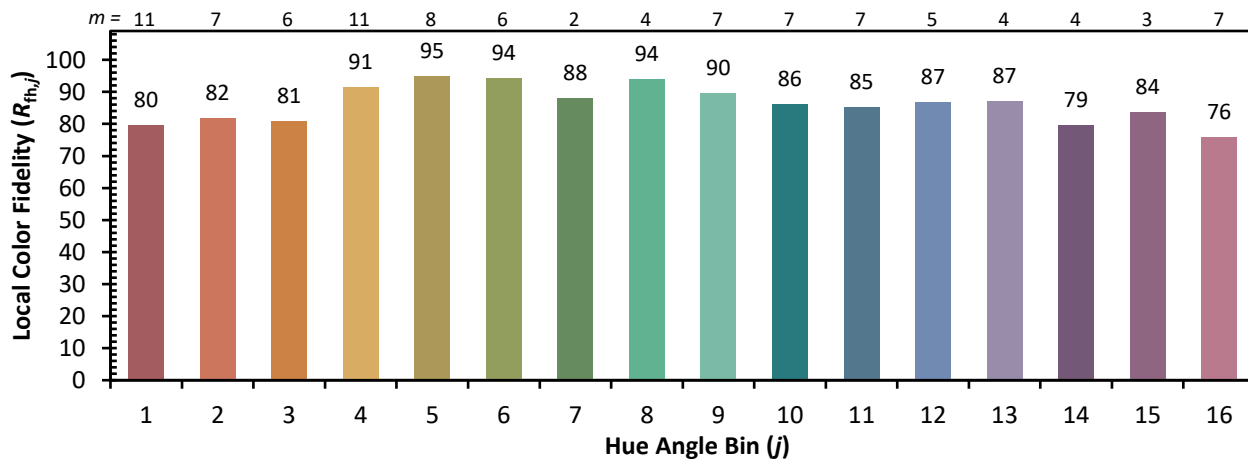
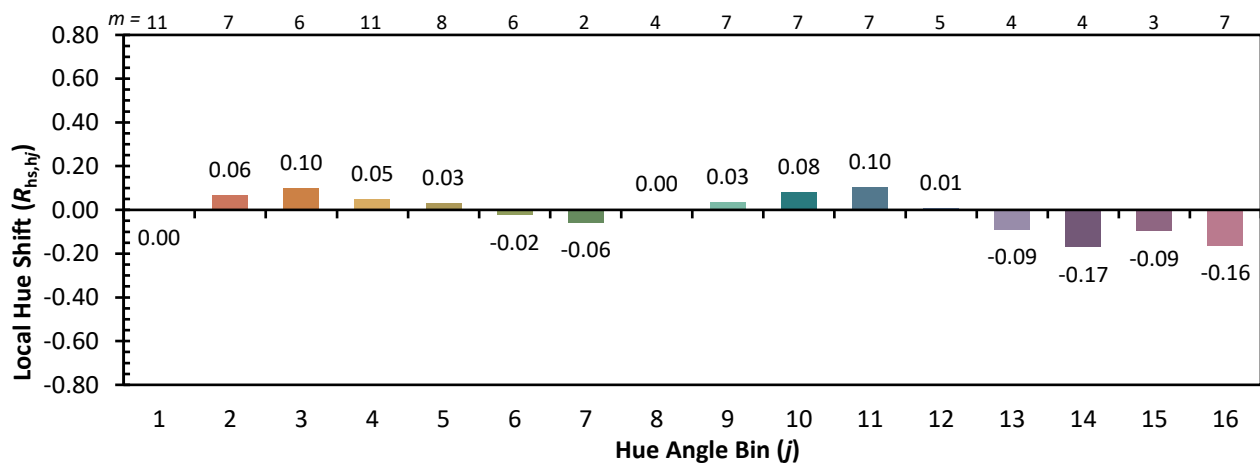
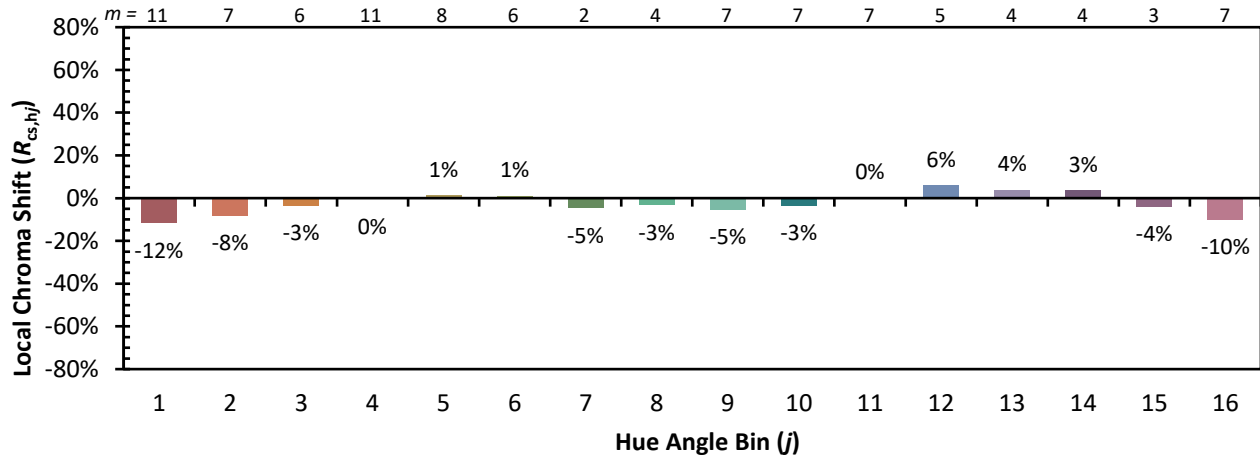


Individual Sample Fidelity Index ($R_{f,i}$)

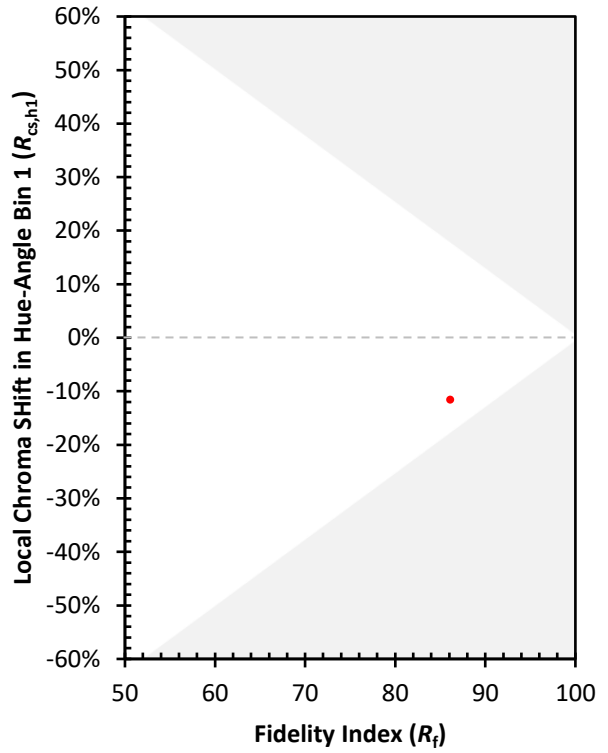
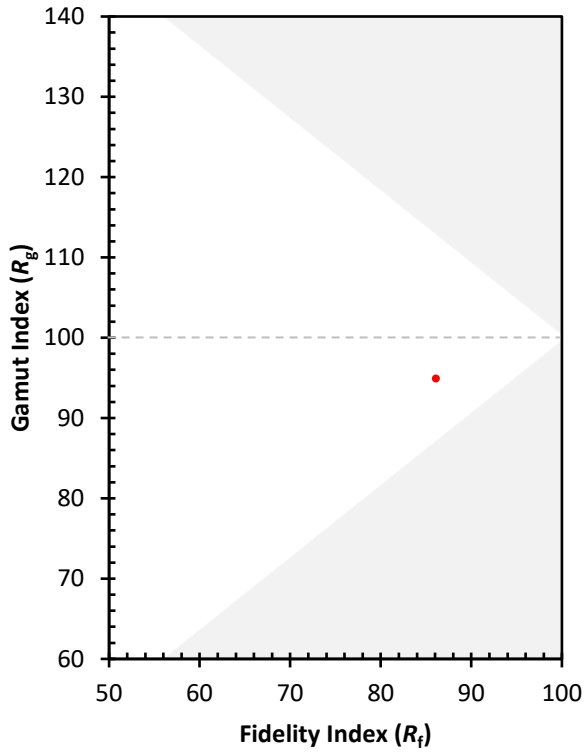
CES01 = 86	CES26 = 87	CES51 = 95	CES76 = 85
CES02 = 63	CES27 = 95	CES52 = 95	CES77 = 85
CES03 = 31	CES28 = 96	CES53 = 91	CES78 = 83
CES04 = 70	CES29 = 90	CES54 = 92	CES79 = 89
CES05 = 50	CES30 = 96	CES55 = 91	CES80 = 89
CES06 = 51	CES31 = 92	CES56 = 88	CES81 = 70
CES07 = 42	CES32 = 86	CES57 = 87	CES82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