

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: P833674

Luminaire Tested: **TTN-D2-830-U-DL-CG-UPL1**

Issue Date: 5/15/2024

Test Information

Test Method: LM-79-08
Report Number: P833674
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-D2-830-U-DL-CG-UPL1
Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
3000K, 80 CRI LEDS AND DRIVE LANE DISTRIBUTION WITH CLEAR GLASS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4747.9 lumens
Efficiency: N/A
Efficacy: 105.3 lumens/watt
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')
IES Classification: Type IV - Short
BUG Rating: B1 - U3 - G1

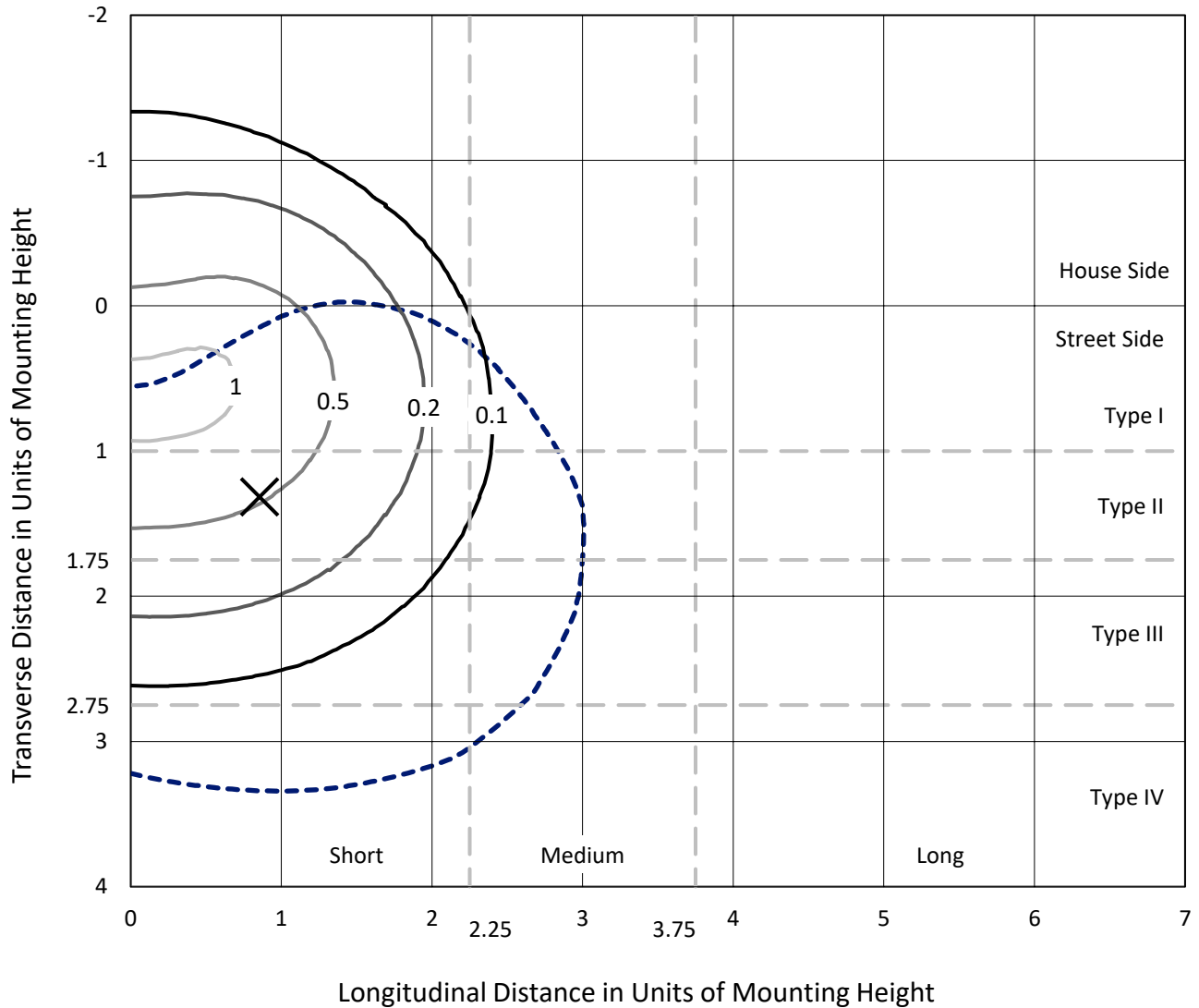
Input Watts (W): 45.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



REPORT NUMBER: P833674
 CATALOG NUMBER: TTN-D2-830-U-DL-CG-UPL1

Iso-Footcandle Lines of Horizontal Illumination

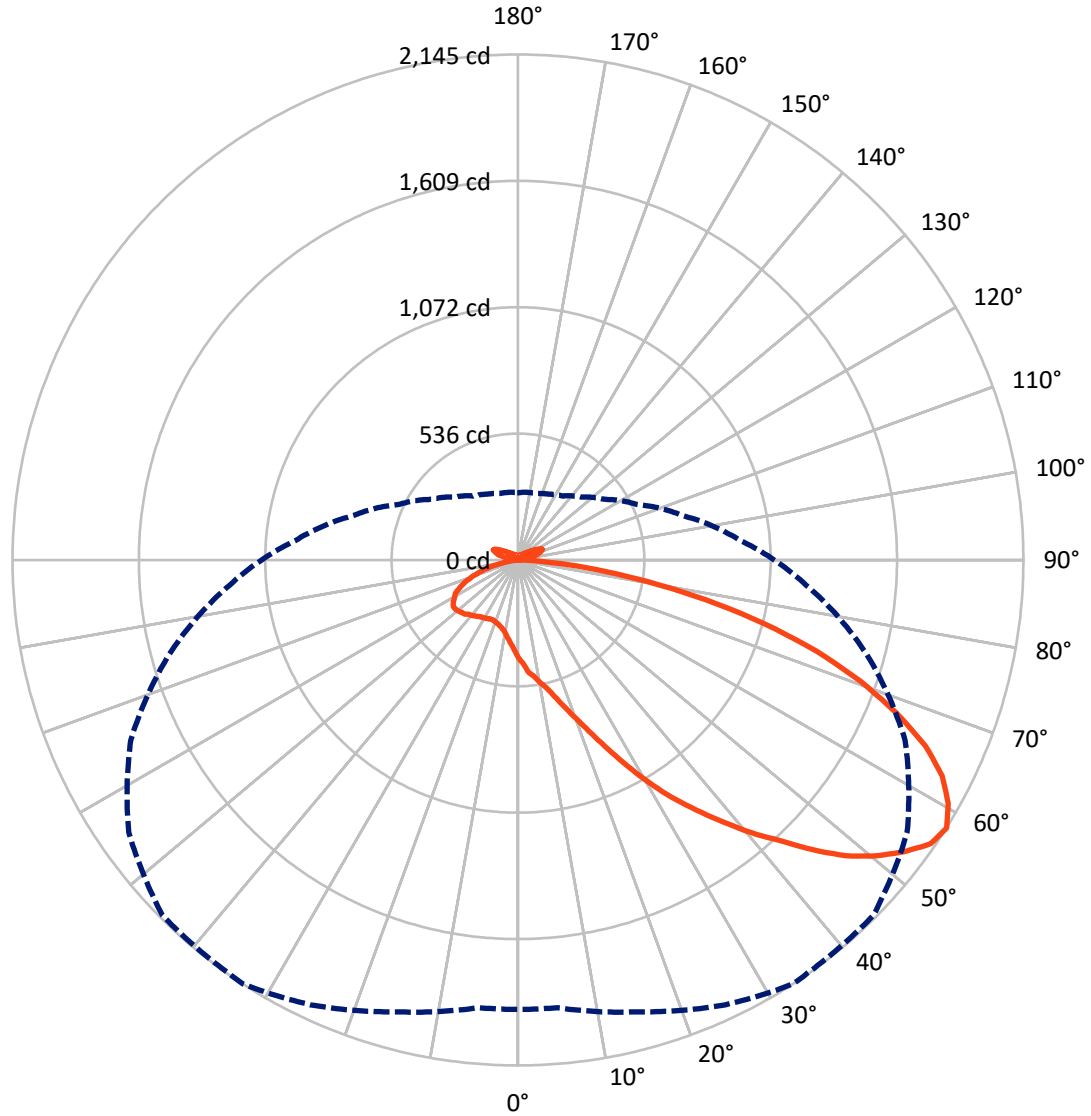
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.2 fc
 Type IV - Short - N/A

REPORT NUMBER: P833674
CATALOG NUMBER: TTN-D2-830-U-DL-CG-UPL1

Luminous Intensity Polar Plot



— Vertical Plane Through 33-Deg Lateral - - - Horizontal Cone Through 57.5-Deg Vertical

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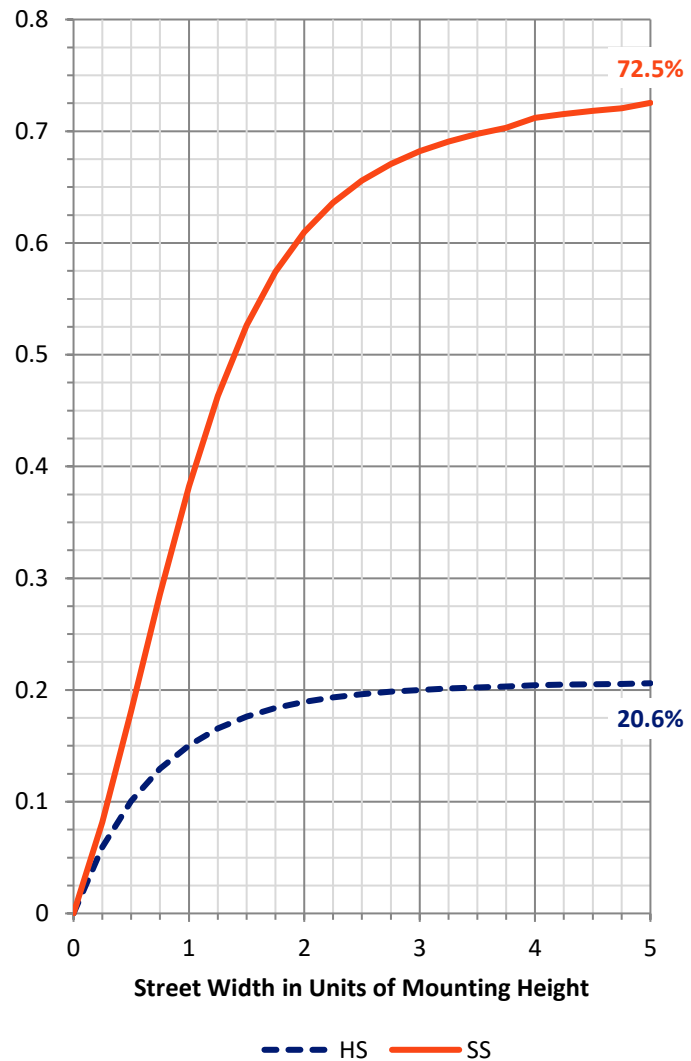
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	982.6	147.7	1130.4
	% Fixture	20.7	3.1	23.8
Street Side	Lumens	3469.8	147.7	3617.5
	% Fixture	73.1	3.1	76.2
Total	Lumens	4452.4	295.5	4747.9
	% Fixture	93.8	6.2	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	39.9	0.8
10°-20°	129.5	2.7
20°-30°	273.0	5.7
30°-40°	495.8	10.4
40°-50°	783.4	16.5
50°-60°	1040.4	21.9
60°-70°	1001.4	21.1
70°-80°	587.8	12.4
80°-90°	101.3	2.1
90°-100°	6.6	0.1
100°-110°	67.0	1.4
110°-120°	98.0	2.1
120°-130°	56.9	1.2
130°-140°	30.1	0.6
140°-150°	17.9	0.4
150°-160°	11.0	0.2
160°-170°	6.0	0.1
170°-180°	2.0	0.0
0°-90°	4452.4	93.8
0°-180°	4747.9	100.0

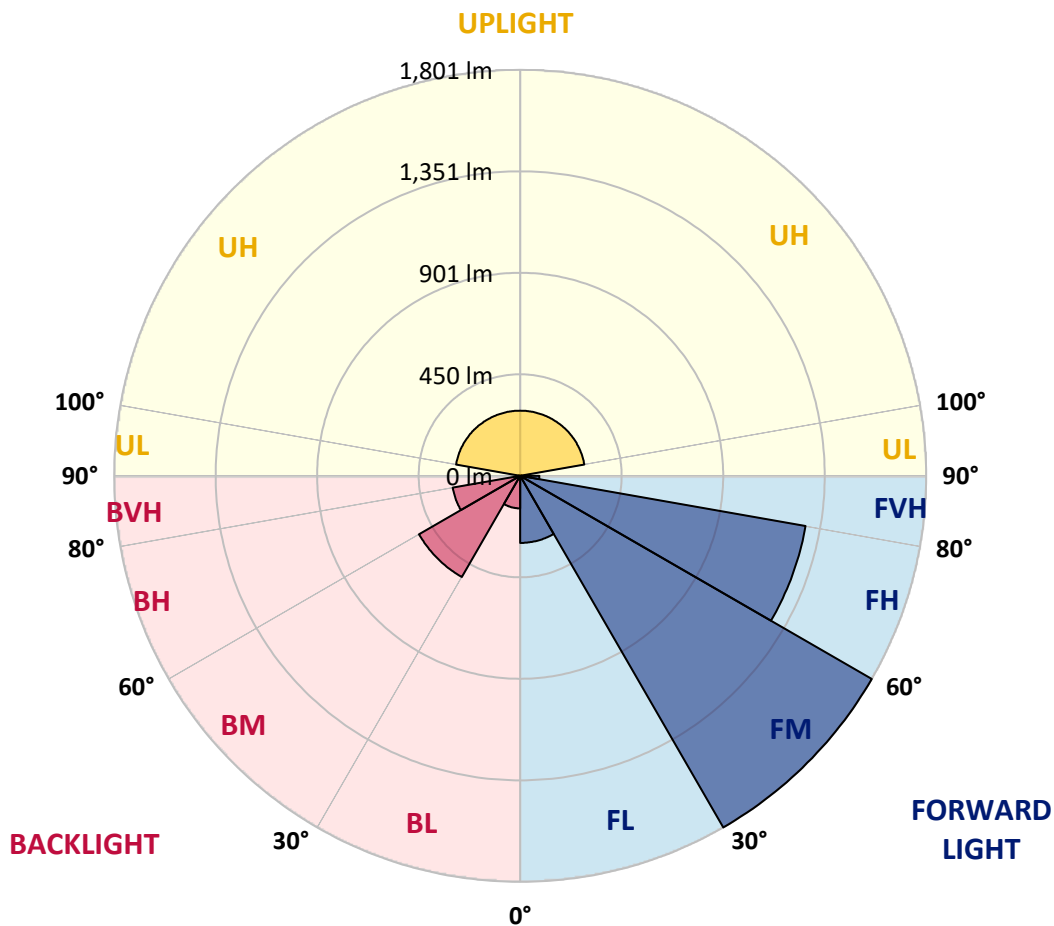


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	297.8	6.3			
FM (30°-60°)	1801.1	37.9			
FH (60°-80°)	1285.4	27.1			G1/1800
FVH (80°-90°)	85.4	1.8			G1/100
BL (0°-30°)	144.5	3.0	B1/500		
BM (30°-60°)	518.4	10.9	B1/1000		
BH (60°-80°)	303.8	6.4	B1/500		G1/500
BVH (80°-90°)	15.9	0.3			G1/100
UL (90°-100°)	6.6	0.1		U1/10	
UH (100°-180°)	288.9	6.1		U3/500	

BUG Rating: B1-U3-G1
 Type IV Short





REPORT NUMBER: P833674

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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
0°	417.3	417.3	417.3	417.3	417.3	417.3	417.3	417.3	417.3	417.3	417.3
2.5°	444.6	448.5	444.6	444.6	440.7	440.7	436.8	432.9	429.0	425.1	417.3
5°	495.3	495.3	491.4	483.6	479.7	475.8	468.0	456.3	448.5	436.8	425.1
7.5°	518.7	518.7	514.8	507.0	499.2	495.3	483.6	468.0	456.3	440.7	425.1
10°	549.8	553.7	545.9	538.1	530.3	526.4	510.9	491.4	471.9	452.4	429.0
12.5°	584.9	588.8	584.9	573.2	561.5	557.6	542.0	518.7	495.3	468.0	440.7
15°	631.7	639.5	627.8	620.0	608.3	604.4	584.9	557.6	530.3	495.3	460.2
17.5°	686.3	690.2	682.4	670.7	662.9	659.0	639.5	608.3	569.3	530.3	487.5
20°	748.7	752.6	748.7	733.1	725.3	721.4	701.9	666.8	620.0	577.1	522.6
22.5°	822.8	830.6	818.9	807.2	799.4	799.4	776.0	737.0	682.4	627.8	565.4
25°	908.6	920.3	904.7	896.9	889.1	885.2	865.7	818.9	756.5	690.2	612.2
27.5°	1013.9	1021.7	1010.0	1006.1	990.5	990.5	959.3	904.7	838.4	760.4	670.7
30°	1107.5	1115.3	1107.5	1107.5	1095.8	1091.9	1060.7	1006.1	924.2	830.6	721.4
32.5°	1197.2	1205.0	1201.1	1205.0	1201.1	1197.2	1158.2	1099.7	1017.8	896.9	772.1
35°	1286.9	1298.6	1294.7	1306.4	1302.5	1298.6	1267.4	1197.2	1099.7	978.8	826.7
37.5°	1380.5	1392.2	1392.2	1403.9	1407.8	1407.8	1372.7	1298.6	1189.4	1052.9	889.1
40°	1481.9	1493.6	1493.6	1513.1	1520.9	1520.9	1481.9	1407.8	1286.9	1134.8	955.4
42.5°	1579.3	1591.0	1594.9	1614.4	1626.1	1630.0	1598.8	1513.1	1372.7	1216.7	1017.8
45°	1672.9	1684.6	1696.3	1735.3	1754.8	1750.9	1727.5	1637.8	1481.9	1302.5	1084.1
47.5°	1762.6	1778.2	1797.7	1848.4	1875.7	1871.8	1856.2	1754.8	1583.2	1384.4	1142.6
50°	1832.8	1844.5	1883.5	1938.1	1973.2	1977.1	1953.7	1856.2	1669.0	1446.8	1185.5
52.5°	1887.4	1903.0	1949.8	2027.8	2055.1	2066.8	2039.5	1942.0	1754.8	1501.4	1220.6
55°	1926.4	1926.4	1996.6	2086.3	2125.3	2133.1	2133.1	2012.2	1805.5	1536.5	1240.1
57.5°	1906.9	1906.9	1984.9	2082.4	2144.8	2140.9	2133.1	2016.1	1813.3	1528.7	1228.4
60°	1852.3	1864.0	1938.1	2035.6	2098.0	2094.1	2070.7	1965.4	1774.3	1497.5	1205.0
62.5°	1778.2	1797.7	1875.7	1949.8	2020.0	2031.7	2000.5	1906.9	1708.0	1450.7	1162.1
65°	1637.8	1665.1	1762.6	1844.5	1899.1	1922.5	1883.5	1797.7	1618.3	1361.0	1072.4
67.5°	1481.9	1501.4	1583.2	1700.2	1731.4	1754.8	1735.3	1645.6	1493.6	1216.7	971.0
70°	1302.5	1333.7	1388.3	1505.3	1540.4	1563.8	1563.8	1474.1	1329.8	1068.5	850.1
72.5°	1091.9	1127.0	1193.3	1279.1	1325.9	1341.5	1337.6	1263.5	1134.8	904.7	717.5
75°	861.8	889.1	967.1	1029.5	1080.2	1091.9	1088.0	1025.6	908.6	729.2	569.3
77.5°	635.6	662.9	721.4	768.2	815.0	807.2	807.2	760.4	686.3	542.0	432.9
80°	417.3	440.7	491.4	507.0	557.6	553.7	553.7	518.7	468.0	362.7	288.6
82.5°	230.1	249.6	284.7	300.3	331.5	323.7	327.6	304.2	273.0	202.8	163.8
85°	81.9	97.5	117.0	128.7	144.3	144.3	144.3	124.8	117.0	78.0	66.3
87.5°	3.9	7.8	15.6	15.6	23.4	23.4	23.4	15.6	15.6	3.9	3.9
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	3.9	4.0	3.5	4.0	3.0	3.0	2.5
95°	3.0	3.0	3.5	4.5	5.4	5.6	6.1	6.1	3.5	3.5	3.0
97.5°	4.0	4.5	4.5	5.6	8.4	9.1	16.7	10.1	5.1	5.1	4.5
100°	6.6	7.1	7.1	12.6	24.0	26.8	35.9	25.8	13.1	9.6	7.1
102.5°	21.2	22.2	27.3	40.9	56.7	60.7	55.1	46.5	44.0	30.3	24.3
105°	54.1	53.6	57.6	68.2	81.6	84.9	83.4	76.8	69.8	60.2	55.6
107.5°	71.3	71.3	74.8	83.9	94.1	96.6	112.7	114.2	90.5	79.4	74.3
110°	80.4	80.4	83.4	91.0	104.4	107.7	130.4	129.4	111.7	98.1	91.5



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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
112.5°	82.4	82.9	86.9	98.6	113.2	116.8	126.9	122.3	115.3	109.2	104.1
115°	85.4	85.4	90.0	101.1	109.2	111.2	115.3	110.2	104.6	100.6	98.6
117.5°	84.4	85.9	86.9	93.0	98.3	99.6	102.6	100.1	92.5	89.5	88.5
120°	78.4	78.4	79.4	82.4	85.2	85.9	87.5	86.4	81.4	78.9	78.4
122.5°	69.8	70.3	69.8	71.3	73.3	73.8	75.3	74.3	70.3	69.3	69.3
125°	61.2	61.2	60.7	61.7	62.9	63.2	62.7	63.2	61.2	60.7	60.7
127.5°	55.1	54.6	53.6	54.1	54.5	54.6	54.6	55.1	53.1	53.6	54.1
130°	49.0	49.0	48.0	48.0	48.0	48.0	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	37.9	37.4	37.9	37.4	38.4	38.9
137.5°	35.4	35.4	34.4	34.4	34.4	34.4	33.9	34.4	34.4	34.9	35.9
140°	32.4	32.4	31.8	31.8	31.4	31.3	31.8	31.8	31.8	32.4	32.9
142.5°	30.8	30.3	29.8	29.3	29.7	29.8	29.8	29.8	29.3	29.8	30.8
145°	28.3	28.3	27.8	27.8	27.8	27.8	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	25.8	25.3	25.3	25.3	25.3	25.8
152.5°	24.8	24.8	24.3	24.8	24.4	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	21.8	21.7	21.7	21.7	22.2	22.2	22.2
162.5°	21.7	21.7	21.7	21.7	21.3	21.2	21.2	21.2	21.2	21.7	21.7
165°	21.7	21.2	21.2	21.2	20.8	20.7	20.7	20.7	20.7	21.2	21.7
167.5°	20.7	20.7	20.7	20.7	20.7	20.7	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	20.3	20.2	20.2	20.2	20.2	20.2	20.7
175°	20.7	20.7	20.7	20.7	20.3	20.2	20.2	20.2	20.7	20.7	20.7
177.5°	20.7	20.7	20.7	20.7	20.3	20.2	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: P833674

CATALOG NUMBER: TTN-D2-830-U-DL-CG-UPL1

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	417.3	417.3	417.3	417.3	417.3	417.3	417.3	417.3	417.3	417.3	417.3
2.5°	413.4	409.5	405.6	397.8	393.9	390.0	386.1	382.2	382.2	382.2	382.2
5°	417.3	413.4	401.7	390.0	378.3	366.6	358.8	354.9	351.0	347.1	347.1
7.5°	417.3	409.5	393.9	378.3	366.6	351.0	339.3	327.6	319.8	315.9	315.9
10°	421.2	409.5	390.0	374.4	354.9	335.4	319.8	304.2	296.4	288.6	288.6
12.5°	429.0	417.3	390.0	370.5	347.1	323.7	304.2	288.6	276.9	269.1	269.1
15°	444.6	429.0	397.8	370.5	343.2	315.9	296.4	276.9	265.2	257.4	257.4
17.5°	468.0	448.5	409.5	370.5	339.3	312.0	288.6	269.1	253.5	245.7	245.7
20°	495.3	471.9	425.1	378.3	339.3	308.1	284.7	261.3	245.7	237.9	237.9
22.5°	534.2	499.2	444.6	390.0	347.1	312.0	280.8	257.4	241.8	234.0	234.0
25°	577.1	538.1	468.0	405.6	354.9	312.0	280.8	257.4	241.8	234.0	230.1
27.5°	623.9	581.0	495.3	421.2	362.7	319.8	284.7	257.4	241.8	234.0	234.0
30°	666.8	616.1	522.6	440.7	374.4	323.7	288.6	261.3	241.8	234.0	234.0
32.5°	713.6	655.1	549.8	460.2	386.1	331.5	292.5	265.2	245.7	237.9	234.0
35°	760.4	694.1	577.1	475.8	397.8	339.3	296.4	269.1	249.6	241.8	241.8
37.5°	811.1	737.0	604.4	495.3	409.5	347.1	304.2	273.0	253.5	245.7	245.7
40°	865.7	779.9	631.7	510.9	421.2	354.9	312.0	280.8	261.3	253.5	253.5
42.5°	920.3	826.7	662.9	530.3	432.9	362.7	315.9	288.6	269.1	261.3	261.3
45°	974.9	865.7	690.2	549.8	444.6	374.4	327.6	296.4	276.9	269.1	269.1
47.5°	1025.6	908.6	713.6	561.5	456.3	382.2	331.5	304.2	284.7	280.8	276.9
50°	1060.7	935.9	729.2	573.2	460.2	386.1	339.3	308.1	292.5	284.7	284.7
52.5°	1088.0	963.2	740.9	581.0	464.1	390.0	343.2	315.9	300.3	292.5	288.6
55°	1103.6	967.1	740.9	573.2	460.2	390.0	343.2	315.9	300.3	292.5	292.5
57.5°	1088.0	947.6	725.3	557.6	448.5	378.3	331.5	308.1	292.5	288.6	284.7
60°	1056.8	916.4	694.1	534.2	429.0	358.8	315.9	296.4	284.7	280.8	276.9
62.5°	1013.9	877.4	662.9	503.1	401.7	335.4	304.2	280.8	273.0	269.1	265.2
65°	928.1	803.3	612.2	464.1	366.6	308.1	276.9	261.3	253.5	245.7	241.8
67.5°	834.5	721.4	542.0	417.3	323.7	276.9	249.6	234.0	222.3	222.3	218.4
70°	733.1	635.6	468.0	354.9	280.8	241.8	214.5	202.8	195.0	195.0	191.1
72.5°	612.2	534.2	390.0	288.6	230.1	198.9	179.4	167.7	163.8	163.8	159.9
75°	491.4	421.2	308.1	226.2	179.4	156.0	140.4	132.6	128.7	128.7	124.8
77.5°	362.7	308.1	222.3	163.8	128.7	113.1	101.4	97.5	93.6	93.6	89.7
80°	241.8	202.8	144.3	105.3	78.0	70.2	62.4	62.4	58.5	62.4	58.5
82.5°	132.6	109.2	78.0	54.6	39.0	35.1	31.2	31.2	35.1	35.1	31.2
85°	50.7	39.0	27.3	15.6	11.7	11.7	11.7	11.7	11.7	11.7	7.8
87.5°	3.9	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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



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 CATALOG NUMBER: TTN-D2-830-U-DL-CG-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

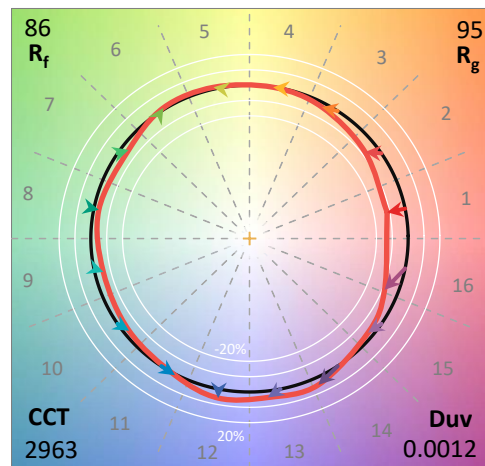
Test Information

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
 R_f: 86.1
 R_g: 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

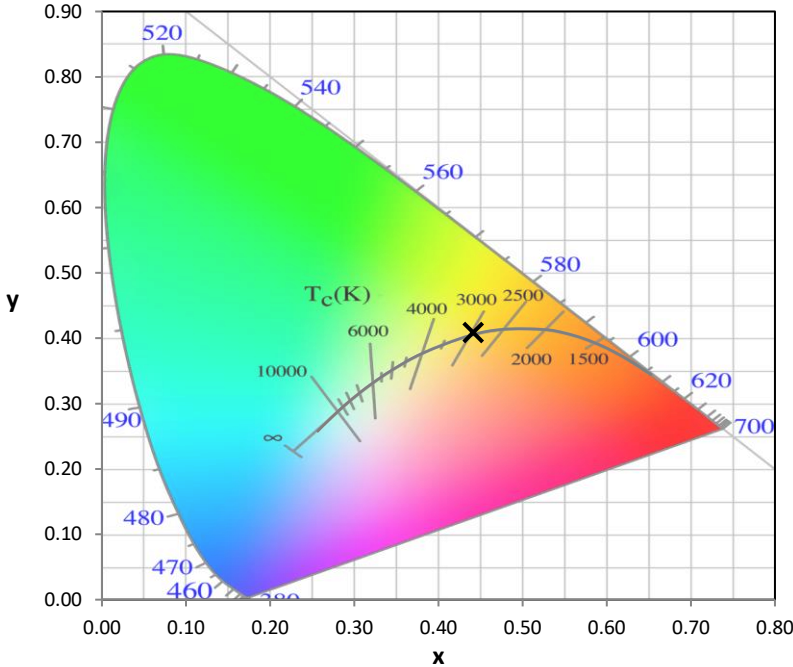
Stabilization Time: 37M
 Operation Time: 1H 37M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2411-284-4

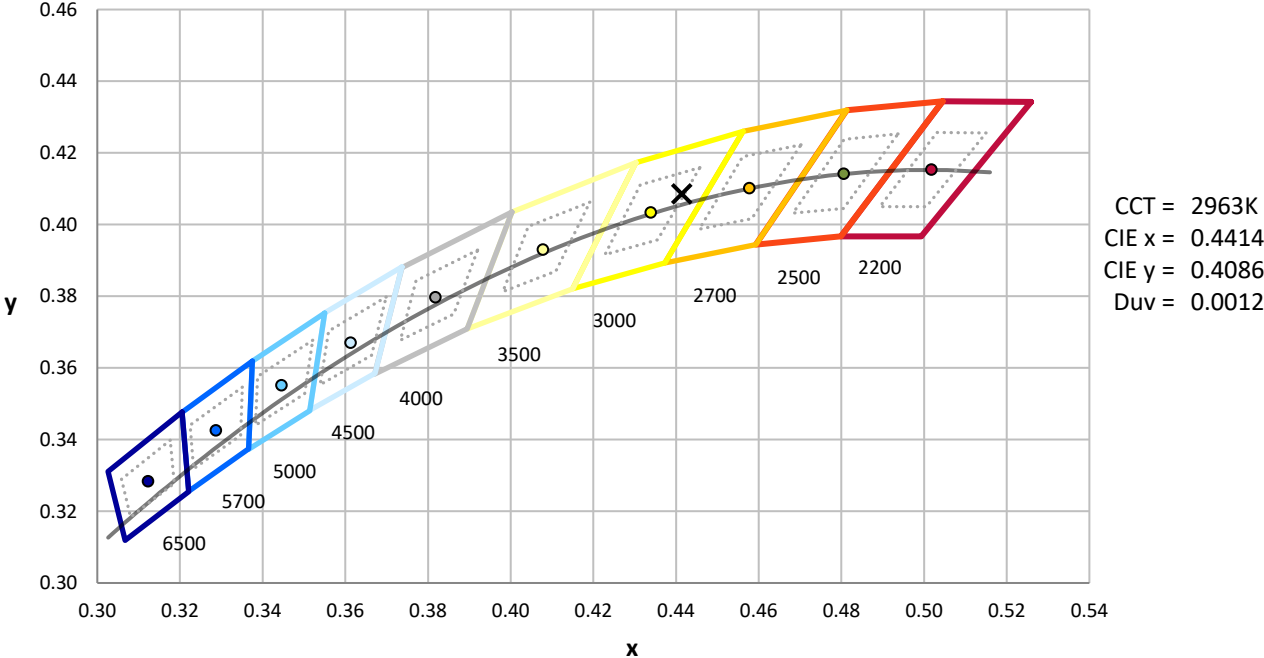
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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



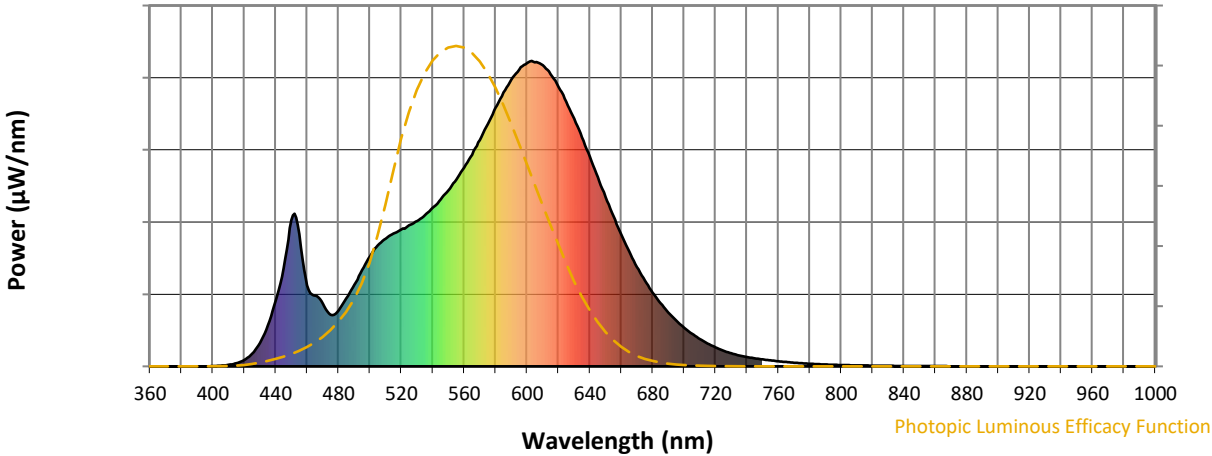
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2411-284-4

Photopic Flux vs. Wavelength

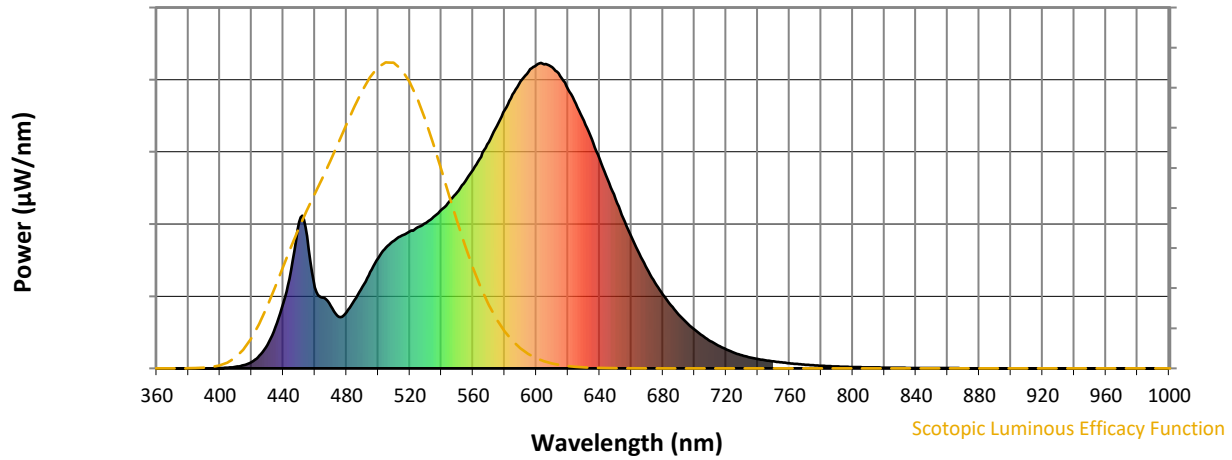


Photopic Lumens: NR

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



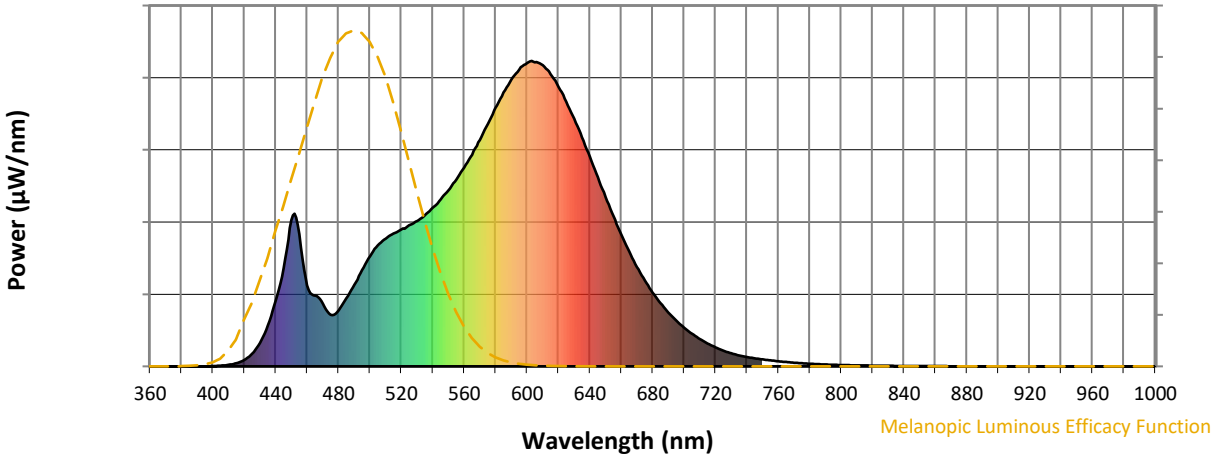
Scotopic Lumens: NR

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



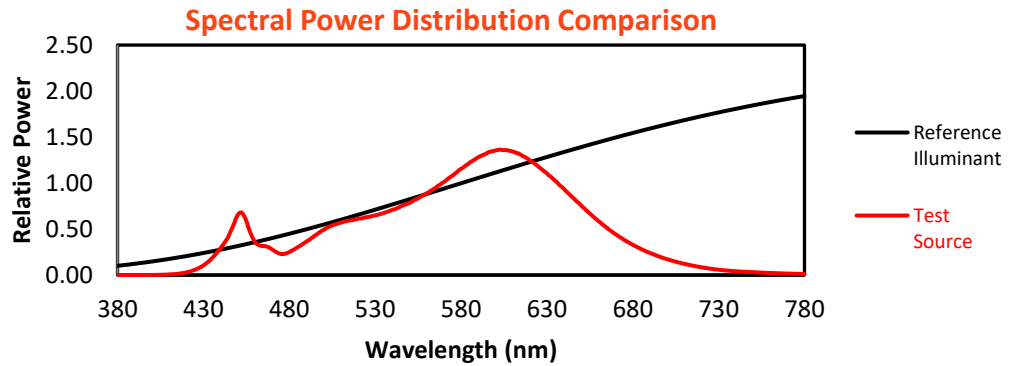
Melanopic Lumens: NR

M/P: 2.58

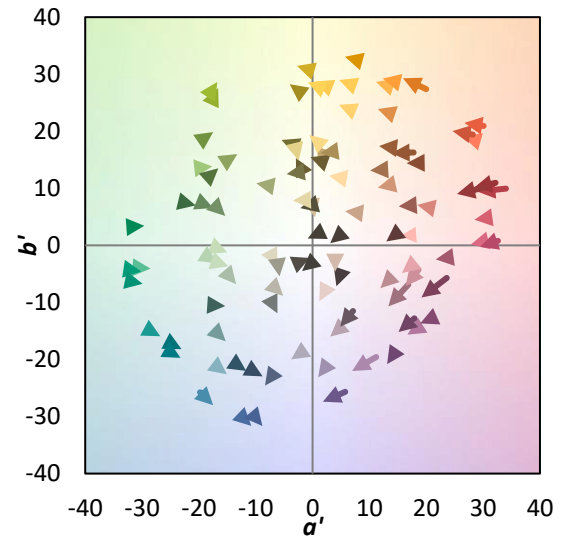
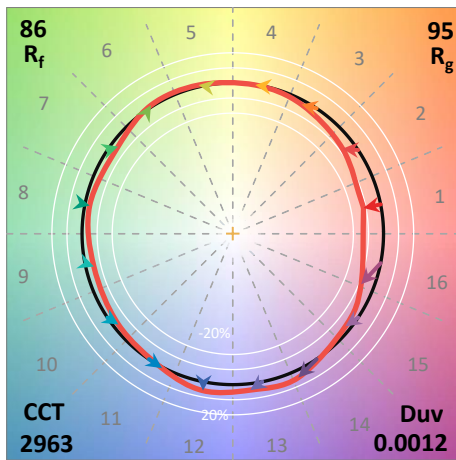
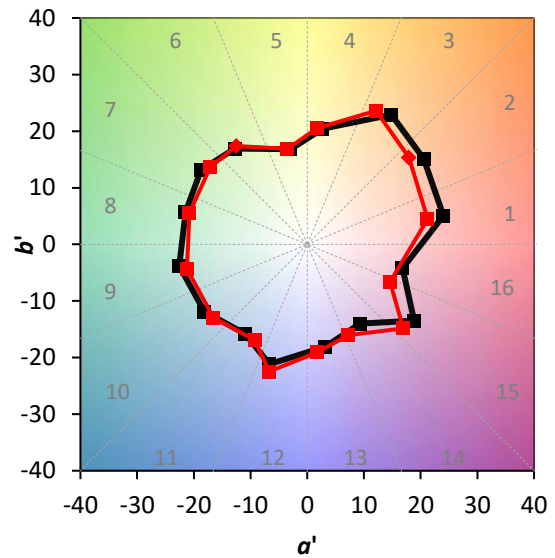
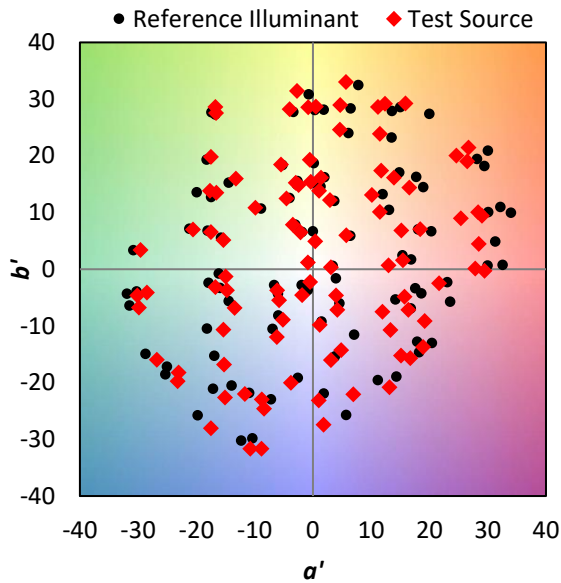
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	267	NR	620	915	NR	750	23	NR	880	0	NR
365	0	NR	495	315	NR	625	866	NR	755	20	NR	885	0	NR
370	0	NR	500	360	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 $R_a = 82.9$
 $R_9 = 3.9$

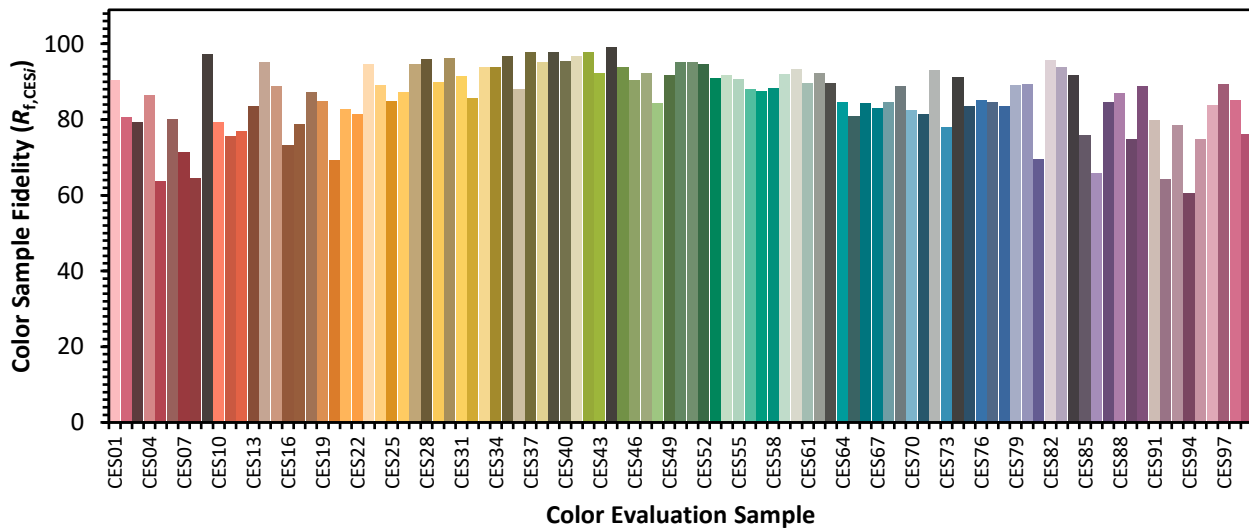


Color Vector Graphics

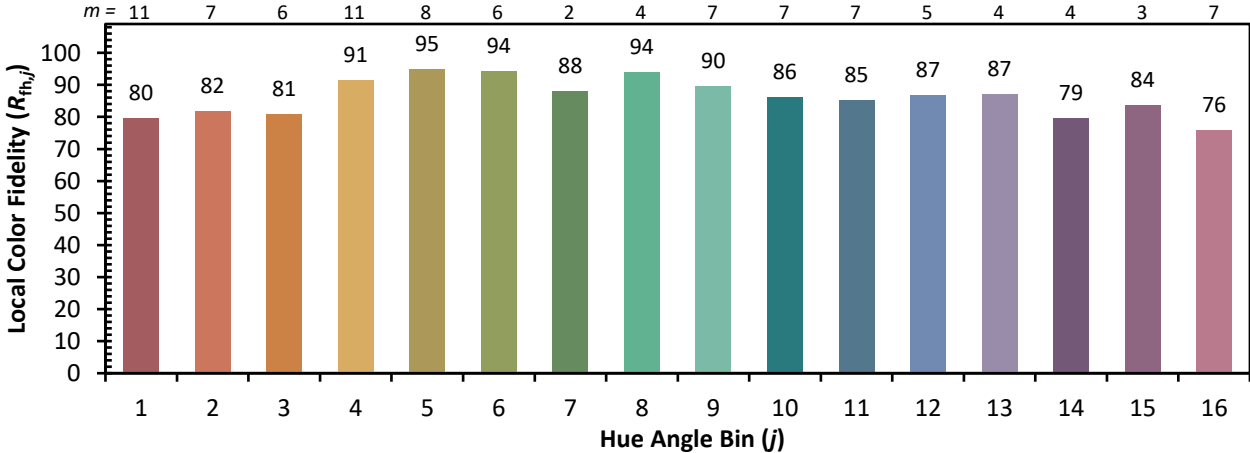
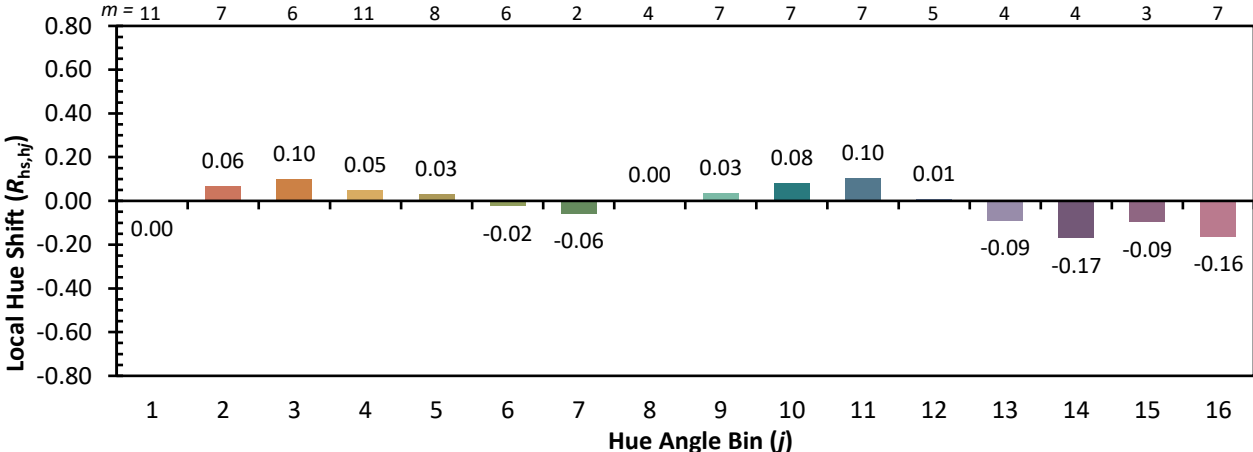
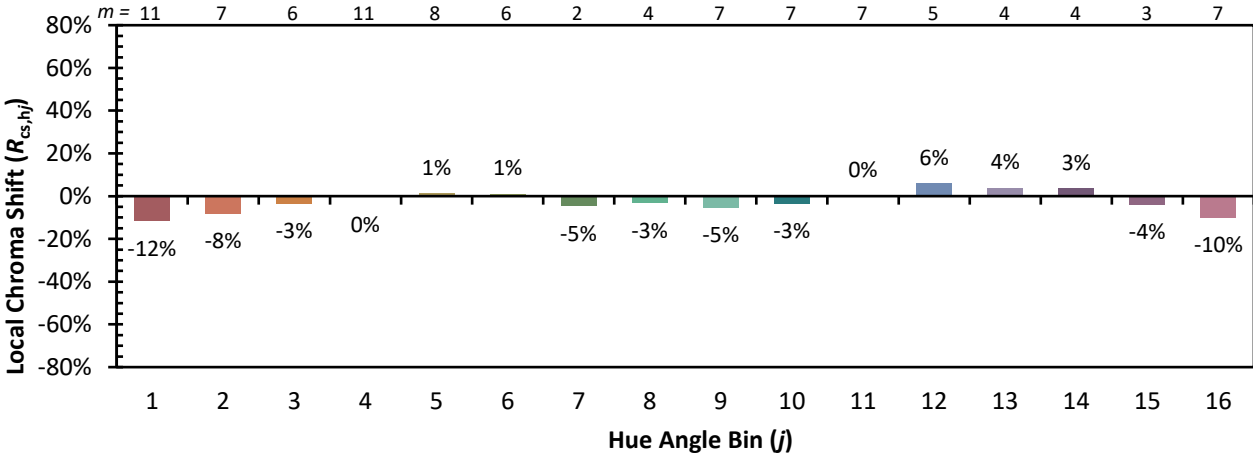


Individual Sample Fidelity Index ($R_{f,i}$)

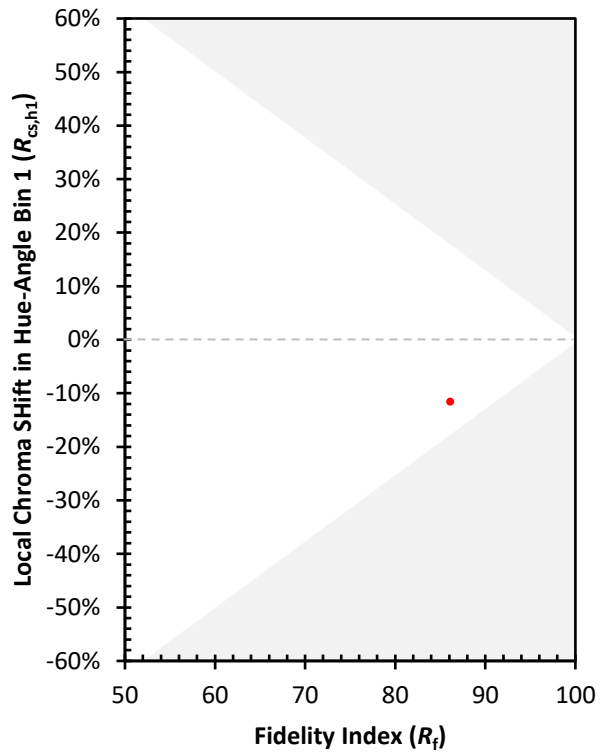
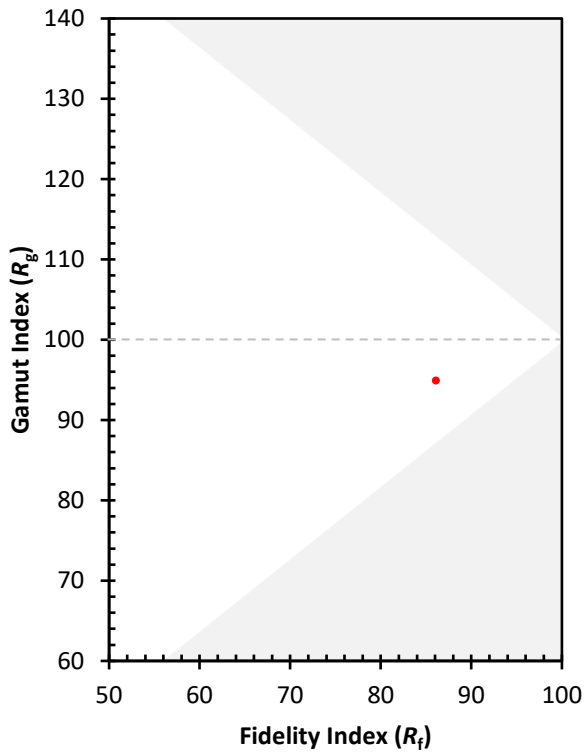
CES01 = 86	CES26 = 87	CES51 = 95	CES76 = 85
CES02 = 63	CES27 = 95	CES52 = 95	CES77 = 85
CES03 = 31	CES28 = 96	CES53 = 91	CES78 = 83
CES04 = 70	CES29 = 90	CES54 = 92	CES79 = 89
CES05 = 50	CES30 = 96	CES55 = 91	CES80 = 89
CES06 = 51	CES31 = 92	CES56 = 88	CES81 = 70
CES07 = 42	CES32 = 86	CES57 = 87	CES82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