

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: P833526

Luminaire Tested: **TTN-D2-735-U-DL-CG-UPL3**

Issue Date: 5/15/2024

Test Information

Test Method: LM-79-08
Report Number: P833526
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-D2-735-U-DL-CG-UPL3
Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
3500K, 70 CRI LEDS AND DRIVE LANE DISTRIBUTION WITH CLEAR GLASS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5463.7 lumens
Efficiency: N/A
Efficacy: 110.4 lumens/watt
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')
IES Classification: Type IV - Short
BUG Rating: B1 - U4 - G1

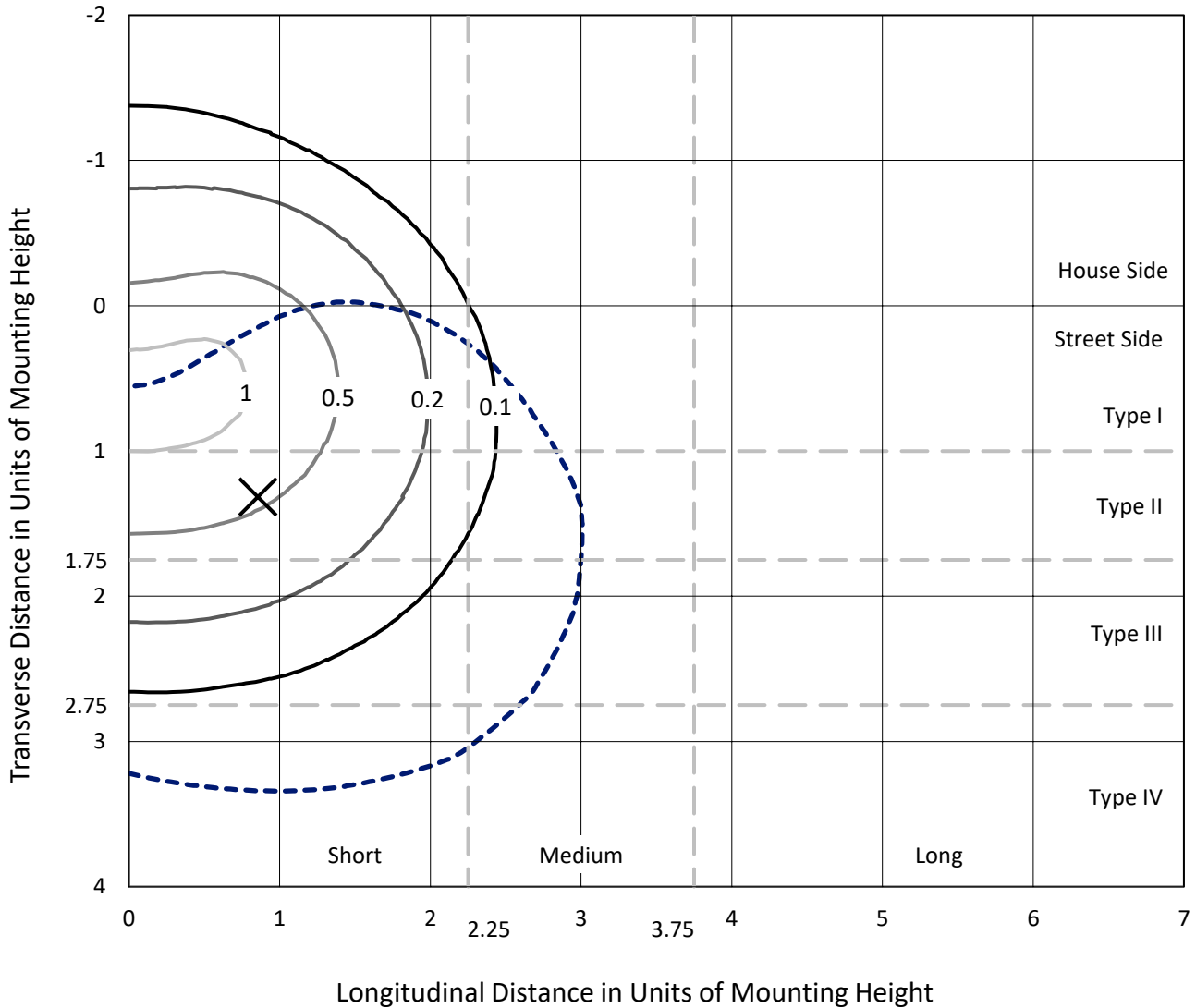
Input Watts (W): 49.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



REPORT NUMBER: P833526
 CATALOG NUMBER: TTN-D2-735-U-DL-CG-UPL3

Iso-Footcandle Lines of Horizontal Illumination

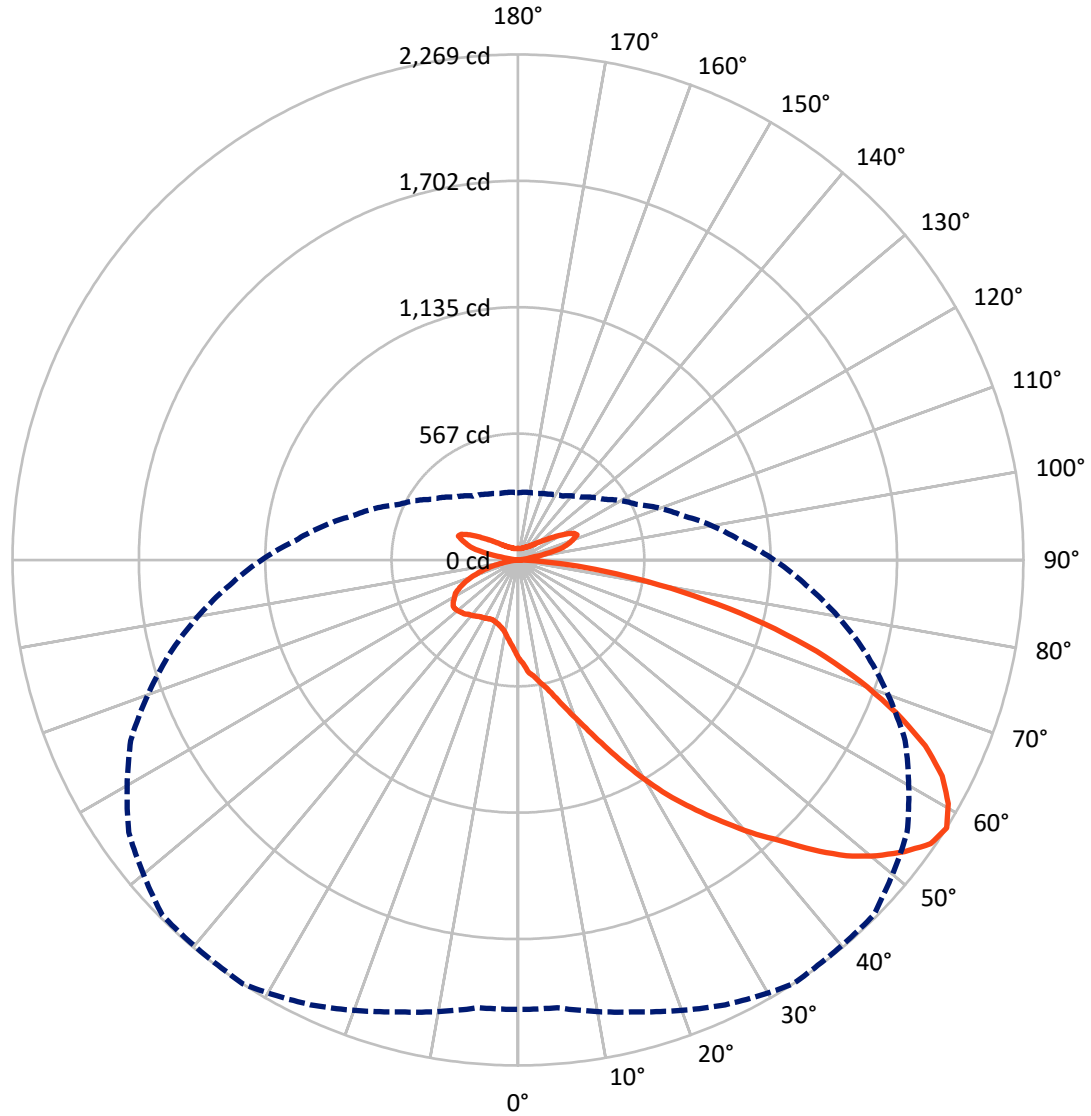
✕ Max cd
 - - - 1/2 Max cd



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

REPORT NUMBER: P833526
CATALOG NUMBER: TTN-D2-735-U-DL-CG-UPL3

Luminous Intensity Polar Plot



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

REPORT NUMBER: P833526
 CATALOG NUMBER: TTN-D2-735-U-DL-CG-UPL3

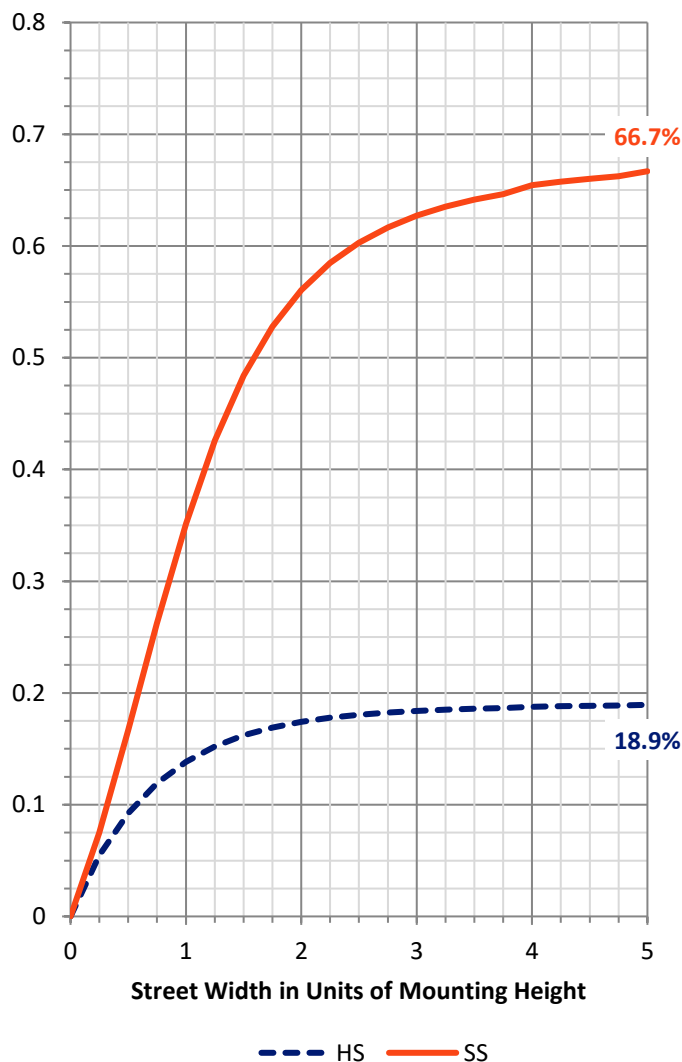
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	1039.8	376.3	1416.1
	% Fixture	19.0	6.9	25.9
Street Side	Lumens	3671.2	376.3	4047.5
	% Fixture	67.2	6.9	74.1
Total	Lumens	4711.0	752.7	5463.7
	% Fixture	86.2	13.8	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	42.2	0.8
10°-20°	137.0	2.5
20°-30°	288.8	5.3
30°-40°	524.5	9.6
40°-50°	828.8	15.2
50°-60°	1100.7	20.1
60°-70°	1059.4	19.4
70°-80°	621.9	11.4
80°-90°	107.8	2.0
90°-100°	16.8	0.3
100°-110°	170.7	3.1
110°-120°	249.6	4.6
120°-130°	144.9	2.7
130°-140°	76.7	1.4
140°-150°	45.6	0.8
150°-160°	28.1	0.5
160°-170°	15.3	0.3
170°-180°	5.0	0.1
0°-90°	4711.0	86.2
0°-180°	5463.7	100.0

Coefficient of Utilization



REPORT NUMBER: P833526

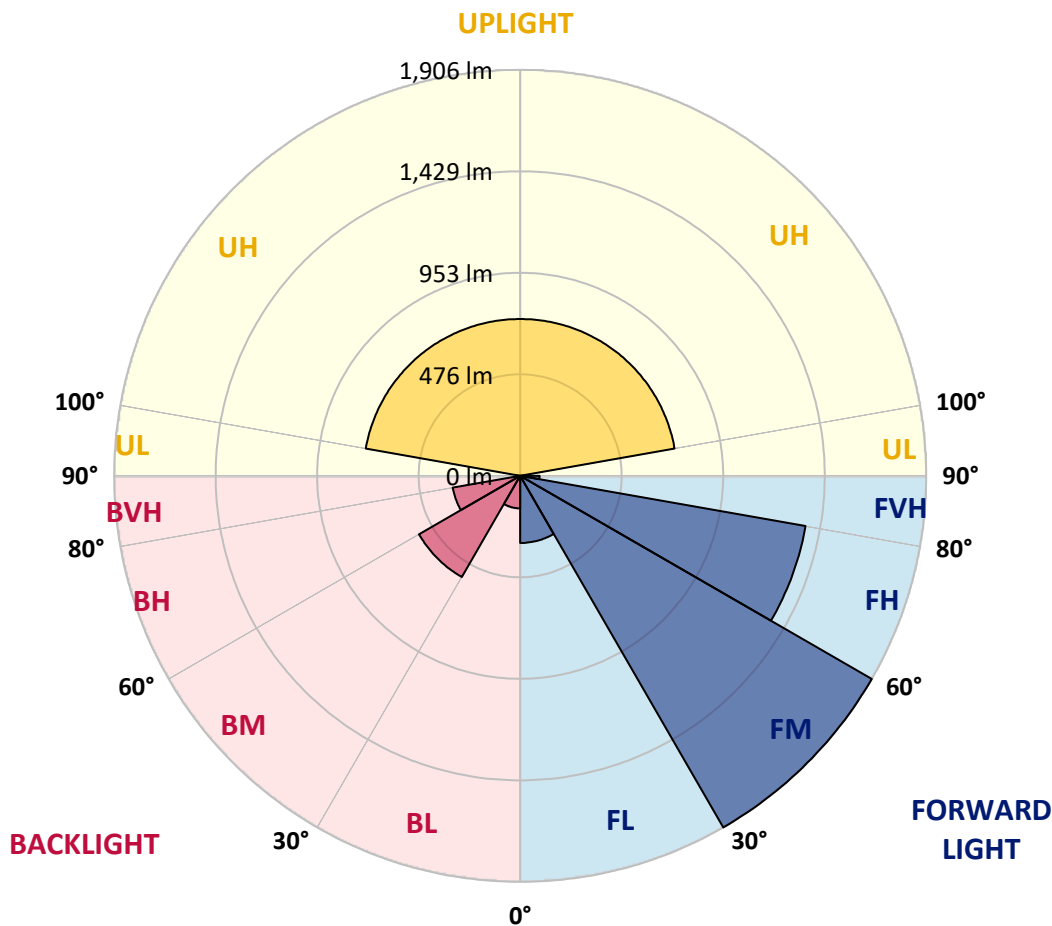
CATALOG NUMBER: TTN-D2-735-U-DL-CG-UPL3

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	315.1	5.8			
FM (30°-60°)	1905.5	34.9			
FH (60°-80°)	1359.9	24.9			G1/1800
FVH (80°-90°)	90.7	1.7			G1/100
BL (0°-30°)	152.9	2.8	B1/500		
BM (30°-60°)	548.4	10.0	B1/1000		
BH (60°-80°)	321.4	5.9	B1/500		G1/500
BVH (80°-90°)	17.1	0.3			G1/100
UL (90°-100°)	16.8	0.3		U2/50	
UH (100°-180°)	735.8	13.5		U4/1000	

BUG Rating: B1-U4-G1

Type IV Short





REPORT NUMBER: P833526

CATALOG NUMBER: TTN-D2-735-U-DL-CG-UPL3

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
0°	441.4	441.4	441.4	441.4	441.4	441.4	441.4	441.4	441.4	441.4	441.4
2.5°	470.3	474.4	470.3	470.3	466.2	466.2	462.1	457.9	453.8	449.7	441.4
5°	524.0	524.0	519.8	511.6	507.5	503.3	495.1	482.7	474.4	462.1	449.7
7.5°	548.7	548.7	544.6	536.3	528.1	524.0	511.6	495.1	482.7	466.2	449.7
10°	581.7	585.8	577.6	569.3	561.1	557.0	540.5	519.8	499.2	478.6	453.8
12.5°	618.8	623.0	618.8	606.5	594.1	590.0	573.5	548.7	524.0	495.1	466.2
15°	668.4	676.6	664.2	656.0	643.6	639.5	618.8	590.0	561.1	524.0	486.8
17.5°	726.1	730.2	722.0	709.6	701.4	697.2	676.6	643.6	602.3	561.1	515.7
20°	792.1	796.2	792.1	775.6	767.4	763.2	742.6	705.5	656.0	610.6	552.8
22.5°	870.5	878.8	866.4	854.0	845.8	845.8	821.0	779.7	722.0	664.2	598.2
25°	961.3	973.6	957.1	948.9	940.6	936.5	915.9	866.4	800.4	730.2	647.7
27.5°	1072.7	1080.9	1068.5	1064.4	1047.9	1047.9	1014.9	957.1	887.0	804.5	709.6
30°	1171.7	1179.9	1171.7	1171.7	1159.3	1155.2	1122.2	1064.4	977.8	878.8	763.2
32.5°	1266.6	1274.8	1270.7	1274.8	1270.7	1266.6	1225.3	1163.4	1076.8	948.9	816.9
35°	1361.5	1373.8	1369.7	1382.1	1378.0	1373.8	1340.8	1266.6	1163.4	1035.5	874.6
37.5°	1460.5	1472.8	1472.8	1485.2	1489.3	1489.3	1452.2	1373.8	1258.3	1113.9	940.6
40°	1567.7	1580.1	1580.1	1600.7	1609.0	1609.0	1567.7	1489.3	1361.5	1200.6	1010.8
42.5°	1670.9	1683.3	1687.4	1708.0	1720.4	1724.5	1691.5	1600.7	1452.2	1287.2	1076.8
45°	1769.9	1782.3	1794.6	1835.9	1856.5	1852.4	1827.6	1732.8	1567.7	1378.0	1146.9
47.5°	1864.8	1881.3	1901.9	1955.5	1984.4	1980.3	1963.8	1856.5	1675.0	1464.6	1208.8
50°	1939.0	1951.4	1992.7	2050.4	2087.6	2091.7	2066.9	1963.8	1765.8	1530.6	1254.2
52.5°	1996.8	2013.3	2062.8	2145.3	2174.2	2186.6	2157.7	2054.6	1856.5	1588.4	1291.3
55°	2038.1	2038.1	2112.3	2207.2	2248.5	2256.7	2256.7	2128.8	1910.2	1625.5	1311.9
57.5°	2017.4	2017.4	2099.9	2203.1	2269.1	2265.0	2256.7	2132.9	1918.4	1617.2	1299.6
60°	1959.7	1972.0	2050.4	2153.6	2219.6	2215.5	2190.7	2079.3	1877.2	1584.2	1274.8
62.5°	1881.3	1901.9	1984.4	2062.8	2137.1	2149.4	2116.4	2017.4	1807.0	1534.7	1229.4
65°	1732.8	1761.6	1864.8	1951.4	2009.2	2033.9	1992.7	1901.9	1712.1	1439.8	1134.5
67.5°	1567.7	1588.4	1675.0	1798.8	1831.8	1856.5	1835.9	1741.0	1580.1	1287.2	1027.3
70°	1378.0	1411.0	1468.7	1592.5	1629.6	1654.4	1654.4	1559.5	1406.8	1130.4	899.4
72.5°	1155.2	1192.3	1262.4	1353.2	1402.7	1419.2	1415.1	1336.7	1200.6	957.1	759.1
75°	911.8	940.6	1023.2	1089.2	1142.8	1155.2	1151.0	1085.0	961.3	771.5	602.3
77.5°	672.5	701.4	763.2	812.7	862.3	854.0	854.0	804.5	726.1	573.5	457.9
80°	441.4	466.2	519.8	536.3	590.0	585.8	585.8	548.7	495.1	383.7	305.3
82.5°	243.4	264.0	301.2	317.7	350.7	342.4	346.6	321.8	288.8	214.5	173.3
85°	86.6	103.1	123.8	136.1	152.6	152.6	152.6	132.0	123.8	82.5	70.1
87.5°	4.1	8.3	16.5	16.5	24.8	24.8	24.8	16.5	16.5	4.1	4.1
90°	6.4	6.4	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	6.4
92.5°	6.4	6.4	6.4	9.0	10.0	10.3	9.0	10.3	7.7	7.7	6.4
95°	7.7	7.7	9.0	11.6	13.7	14.2	15.5	15.5	9.0	9.0	7.7
97.5°	10.3	11.6	11.6	14.2	21.4	23.2	42.5	25.8	12.9	12.9	11.6
100°	16.7	18.0	18.0	32.2	61.0	68.2	91.4	65.7	33.5	24.5	18.0
102.5°	54.1	56.7	69.5	104.3	144.5	154.5	140.4	118.5	112.0	77.3	61.8
105°	137.8	136.5	146.8	173.8	207.8	216.3	212.5	195.7	177.7	153.2	141.6
107.5°	181.6	181.6	190.6	213.8	239.5	245.9	287.1	291.0	230.5	202.2	189.3
110°	204.7	204.7	212.5	231.8	265.8	274.3	332.2	329.6	284.6	249.8	233.1



REPORT NUMBER: P833526
 CATALOG NUMBER: TTN-D2-735-U-DL-CG-UPL3

CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
112.5°	209.9	211.2	221.5	251.1	288.2	297.5	323.2	311.6	293.6	278.1	265.3
115°	217.6	217.6	229.2	257.5	278.1	283.3	293.6	280.7	266.5	256.2	251.1
117.5°	215.0	218.9	221.5	236.9	250.3	253.7	261.4	255.0	235.6	227.9	225.3
120°	199.6	199.6	202.2	209.9	217.1	218.9	222.8	220.2	207.3	200.9	199.6
122.5°	177.7	179.0	177.7	181.6	186.7	188.0	191.9	189.3	179.0	176.4	176.4
125°	155.8	155.8	154.5	157.1	160.2	161.0	159.7	161.0	155.8	154.5	154.5
127.5°	140.4	139.1	136.5	137.8	138.8	139.1	139.1	140.4	135.2	136.5	137.8
130°	124.9	124.9	122.3	122.3	122.3	122.3	119.8	122.3	119.8	121.0	122.3
132.5°	110.7	110.7	106.9	105.6	105.6	105.6	105.6	106.9	105.6	108.2	110.7
135°	99.2	99.2	95.3	96.6	96.6	96.6	95.3	96.6	95.3	97.9	99.2
137.5°	90.1	90.1	87.6	87.6	87.6	87.6	86.3	87.6	87.6	88.8	91.4
140°	82.4	82.4	81.1	81.1	80.1	79.8	81.1	81.1	81.1	82.4	83.7
142.5°	78.5	77.3	76.0	74.7	75.7	76.0	76.0	76.0	74.7	76.0	78.5
145°	72.1	72.1	70.8	70.8	70.8	70.8	72.1	70.8	70.8	72.1	72.1
147.5°	68.2	68.2	67.0	68.2	68.2	68.2	68.2	68.2	67.0	68.2	68.2
150°	67.0	65.7	64.4	65.7	65.7	65.7	64.4	64.4	64.4	64.4	65.7
152.5°	63.1	63.1	61.8	63.1	62.1	61.8	61.8	61.8	61.8	61.8	63.1
155°	60.5	60.5	59.2	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5
157.5°	57.9	59.2	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	59.2
160°	56.7	56.7	56.7	56.7	55.7	55.4	55.4	55.4	56.7	56.7	56.7
162.5°	55.4	55.4	55.4	55.4	54.4	54.1	54.1	54.1	54.1	55.4	55.4
165°	55.4	54.1	54.1	54.1	53.1	52.8	52.8	52.8	52.8	54.1	55.4
167.5°	52.8	52.8	52.8	52.8	52.8	52.8	51.5	51.5	52.8	52.8	52.8
170°	52.8	52.8	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5
172.5°	52.8	52.8	52.8	52.8	51.8	51.5	51.5	51.5	51.5	51.5	52.8
175°	52.8	52.8	52.8	52.8	51.8	51.5	51.5	51.5	52.8	52.8	52.8
177.5°	52.8	52.8	52.8	52.8	51.8	51.5	52.8	52.8	52.8	52.8	52.8
180°	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8



REPORT NUMBER: P833526

CATALOG NUMBER: TTN-D2-735-U-DL-CG-UPL3

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	441.4	441.4	441.4	441.4	441.4	441.4	441.4	441.4	441.4	441.4	441.4
2.5°	437.3	433.2	429.1	420.8	416.7	412.6	408.4	404.3	404.3	404.3	404.3
5°	441.4	437.3	424.9	412.6	400.2	387.8	379.6	375.4	371.3	367.2	367.2
7.5°	441.4	433.2	416.7	400.2	387.8	371.3	358.9	346.6	338.3	334.2	334.2
10°	445.6	433.2	412.6	396.1	375.4	354.8	338.3	321.8	313.5	305.3	305.3
12.5°	453.8	441.4	412.6	391.9	367.2	342.4	321.8	305.3	292.9	284.7	284.7
15°	470.3	453.8	420.8	391.9	363.1	334.2	313.5	292.9	280.5	272.3	272.3
17.5°	495.1	474.4	433.2	391.9	358.9	330.0	305.3	284.7	268.2	259.9	259.9
20°	524.0	499.2	449.7	400.2	358.9	325.9	301.2	276.4	259.9	251.7	251.7
22.5°	565.2	528.1	470.3	412.6	367.2	330.0	297.0	272.3	255.8	247.5	247.5
25°	610.6	569.3	495.1	429.1	375.4	330.0	297.0	272.3	255.8	247.5	243.4
27.5°	660.1	614.7	524.0	445.6	383.7	338.3	301.2	272.3	255.8	247.5	247.5
30°	705.5	651.8	552.8	466.2	396.1	342.4	305.3	276.4	255.8	247.5	247.5
32.5°	755.0	693.1	581.7	486.8	408.4	350.7	309.4	280.5	259.9	251.7	247.5
35°	804.5	734.4	610.6	503.3	420.8	358.9	313.5	284.7	264.0	255.8	255.8
37.5°	858.1	779.7	639.5	524.0	433.2	367.2	321.8	288.8	268.2	259.9	259.9
40°	915.9	825.1	668.4	540.5	445.6	375.4	330.0	297.0	276.4	268.2	268.2
42.5°	973.6	874.6	701.4	561.1	457.9	383.7	334.2	305.3	284.7	276.4	276.4
45°	1031.4	915.9	730.2	581.7	470.3	396.1	346.6	313.5	292.9	284.7	284.7
47.5°	1085.0	961.3	755.0	594.1	482.7	404.3	350.7	321.8	301.2	297.0	292.9
50°	1122.2	990.1	771.5	606.5	486.8	408.4	358.9	325.9	309.4	301.2	301.2
52.5°	1151.0	1019.0	783.9	614.7	490.9	412.6	363.1	334.2	317.7	309.4	305.3
55°	1167.5	1023.2	783.9	606.5	486.8	412.6	363.1	334.2	317.7	309.4	309.4
57.5°	1151.0	1002.5	767.4	590.0	474.4	400.2	350.7	325.9	309.4	305.3	301.2
60°	1118.0	969.5	734.4	565.2	453.8	379.6	334.2	313.5	301.2	297.0	292.9
62.5°	1072.7	928.3	701.4	532.2	424.9	354.8	321.8	297.0	288.8	284.7	280.5
65°	981.9	849.9	647.7	490.9	387.8	325.9	292.9	276.4	268.2	259.9	255.8
67.5°	882.9	763.2	573.5	441.4	342.4	292.9	264.0	247.5	235.2	235.2	231.0
70°	775.6	672.5	495.1	375.4	297.0	255.8	226.9	214.5	206.3	206.3	202.2
72.5°	647.7	565.2	412.6	305.3	243.4	210.4	189.8	177.4	173.3	173.3	169.2
75°	519.8	445.6	325.9	239.3	189.8	165.0	148.5	140.3	136.1	136.1	132.0
77.5°	383.7	325.9	235.2	173.3	136.1	119.6	107.3	103.1	99.0	99.0	94.9
80°	255.8	214.5	152.6	111.4	82.5	74.3	66.0	66.0	61.9	66.0	61.9
82.5°	140.3	115.5	82.5	57.8	41.3	37.1	33.0	33.0	37.1	37.1	33.0
85°	53.6	41.3	28.9	16.5	12.4	12.4	12.4	12.4	12.4	12.4	8.3
87.5°	4.1	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	6.4	6.4	7.7	7.7	7.7	7.7	7.7	7.7	7.7	6.4	6.4
92.5°	6.4	6.4	7.7	7.7	10.3	9.0	10.3	9.0	6.4	6.4	6.4
95°	7.7	7.7	9.0	9.0	15.5	15.5	14.2	11.6	9.0	7.7	7.7
97.5°	10.3	11.6	12.9	12.9	25.8	42.5	23.2	14.2	11.6	11.6	10.3
100°	18.0	18.0	24.5	33.5	65.7	91.4	68.2	32.2	18.0	18.0	16.7
102.5°	59.2	61.8	77.3	112.0	118.5	140.4	154.5	104.3	69.5	56.7	54.1
105°	141.6	141.6	153.2	177.7	195.7	212.5	216.3	173.8	146.8	136.5	137.8
107.5°	188.0	189.3	202.2	230.5	291.0	287.1	245.9	213.8	190.6	181.6	181.6
110°	230.5	233.1	249.8	284.6	329.6	332.2	274.3	231.8	212.5	204.7	204.7



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 CATALOG NUMBER: TTN-D2-735-U-DL-CG-UPL3

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	262.7	265.3	278.1	293.6	311.6	323.2	297.5	251.1	221.5	211.2	209.9
115°	253.7	251.1	256.2	266.5	280.7	293.6	283.3	257.5	229.2	217.6	217.6
117.5°	221.5	225.3	227.9	235.6	255.0	261.4	253.7	236.9	221.5	218.9	215.0
120°	197.0	199.6	200.9	207.3	220.2	222.8	218.9	209.9	202.2	199.6	199.6
122.5°	173.8	176.4	176.4	179.0	189.3	191.9	188.0	181.6	177.7	179.0	177.7
125°	153.2	154.5	154.5	155.8	161.0	159.7	161.0	157.1	154.5	155.8	155.8
127.5°	136.5	137.8	136.5	135.2	140.4	139.1	139.1	137.8	136.5	139.1	140.4
130°	123.6	122.3	121.0	119.8	122.3	119.8	122.3	122.3	122.3	124.9	124.9
132.5°	110.7	110.7	108.2	105.6	106.9	105.6	105.6	105.6	106.9	110.7	110.7
135°	99.2	99.2	97.9	95.3	96.6	95.3	96.6	96.6	95.3	99.2	99.2
137.5°	92.7	91.4	88.8	87.6	87.6	86.3	87.6	87.6	87.6	90.1	90.1
140°	83.7	83.7	82.4	81.1	81.1	81.1	79.8	81.1	81.1	82.4	82.4
142.5°	78.5	78.5	76.0	74.7	76.0	76.0	76.0	74.7	76.0	77.3	78.5
145°	73.4	72.1	72.1	70.8	70.8	72.1	70.8	70.8	70.8	72.1	72.1
147.5°	69.5	68.2	68.2	67.0	68.2	68.2	68.2	68.2	67.0	68.2	68.2
150°	65.7	65.7	64.4	64.4	64.4	64.4	65.7	65.7	64.4	65.7	67.0
152.5°	64.4	63.1	61.8	61.8	61.8	61.8	61.8	63.1	61.8	63.1	63.1
155°	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	59.2	60.5	60.5
157.5°	59.2	59.2	57.9	57.9	57.9	57.9	57.9	57.9	57.9	59.2	57.9
160°	57.9	56.7	56.7	56.7	55.4	55.4	55.4	56.7	56.7	56.7	56.7
162.5°	56.7	55.4	55.4	54.1	54.1	54.1	54.1	55.4	55.4	55.4	55.4
165°	54.1	55.4	54.1	52.8	52.8	52.8	52.8	54.1	54.1	54.1	55.4
167.5°	54.1	52.8	52.8	52.8	51.5	51.5	52.8	52.8	52.8	52.8	52.8
170°	52.8	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5	52.8	52.8
172.5°	52.8	52.8	51.5	51.5	51.5	51.5	51.5	52.8	52.8	52.8	52.8
175°	51.5	52.8	52.8	52.8	51.5	51.5	51.5	52.8	52.8	52.8	52.8
177.5°	52.8	52.8	52.8	52.8	52.8	52.8	51.5	52.8	52.8	52.8	52.8
180°	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8

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: SP1-2411-284-1

Test Date: 11/15/2024

Luminaire Tested: TTN-D0-735-U-WQ

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

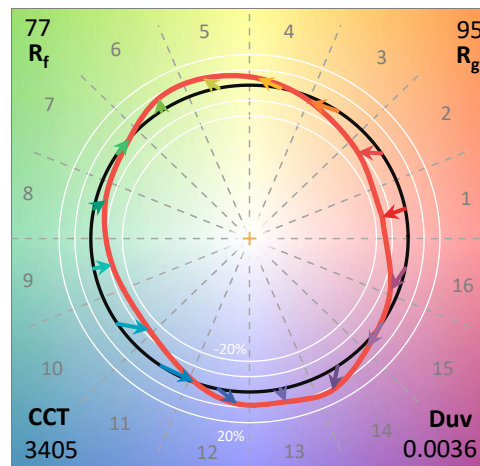
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2411-284-1
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 11/15/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW EDISON
 Catalog Number: **TTN-D0-735-U-WQ**
 Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 3500K, 70 CRI LEDS AND WIDE DISTRIBUTION

Spectral Parameters

CCT (K): 3405
 CIE u': 0.2365
 CIE v': 0.5180
 Duv: 0.0036
 CIE x: 0.4148
 CIE y: 0.4038
 CIE z: 0.1814
 Peak Wavelength (nm): 596
 Dominant Wavelength (nm): 579
 Purity: 45.70672
 Rf: 76.6
 Rg: 95.4

CRI (Ra):	73.9		
R1:	71.3	R9:	-18.0
R2:	80.3	R10:	53.1
R3:	87.8	R11:	68.6
R4:	73.2	R12:	42.6
R5:	69.8	R13:	72.5
R6:	71.8	R14:	92.7
R7:	82.8	R15:	64.3
R8:	54.1		



Test Conditions

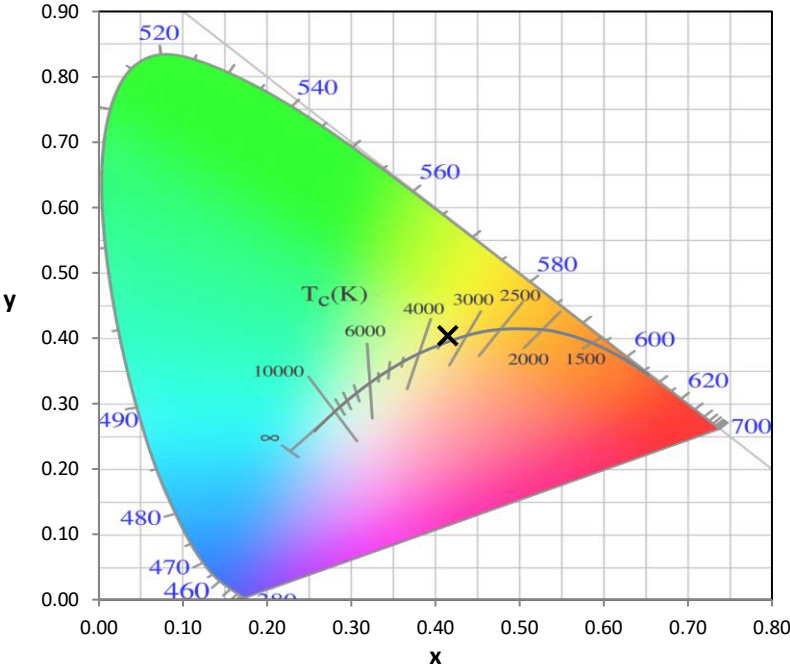
Stabilization Time: 38M
 Operation Time: 1H 38M
 Sphere Temperature (°C): 24.9

REPORT NUMBER: SP1-2411-284-1

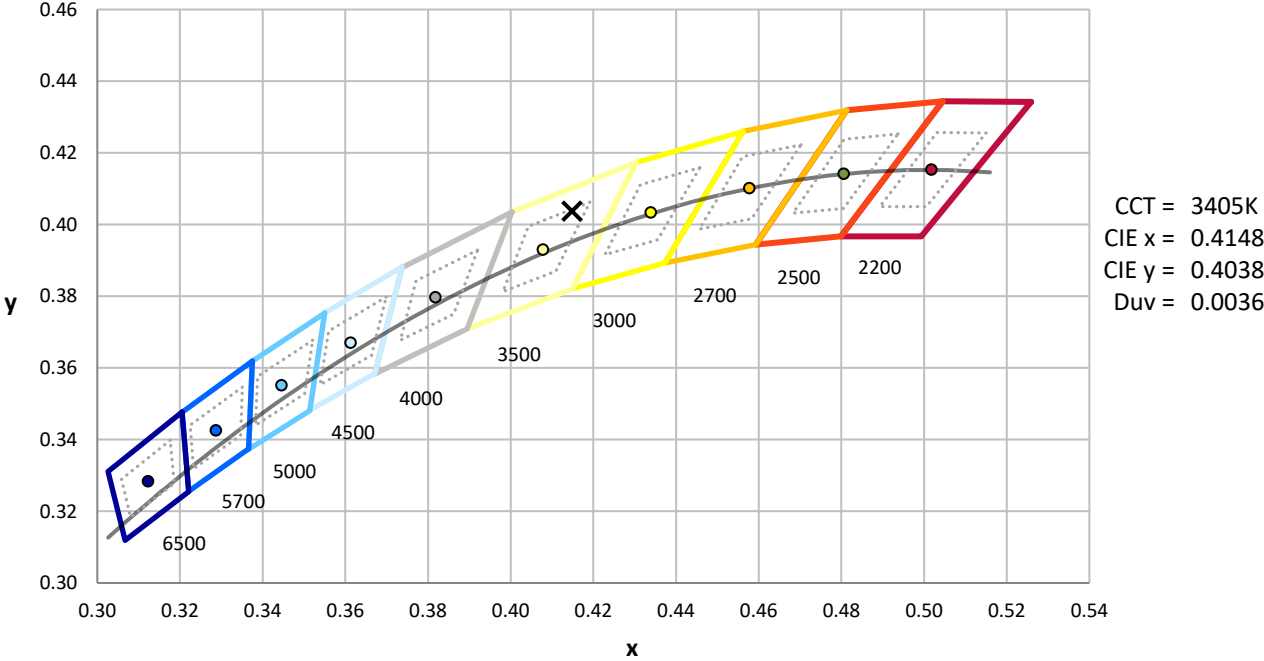
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2411-284-1

CIE 1931 Chromaticity Diagram



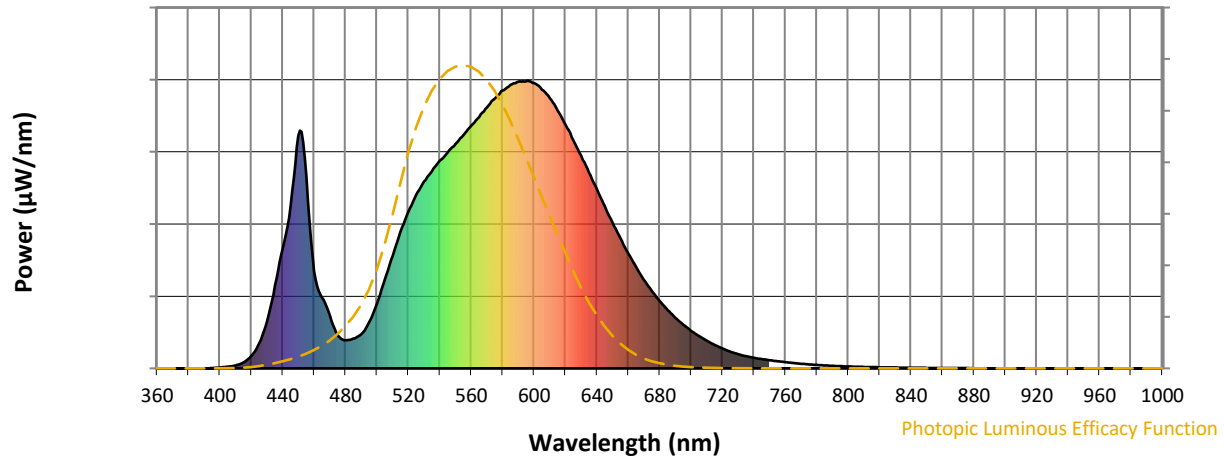
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2411-284-1

Photopic Flux vs. Wavelength

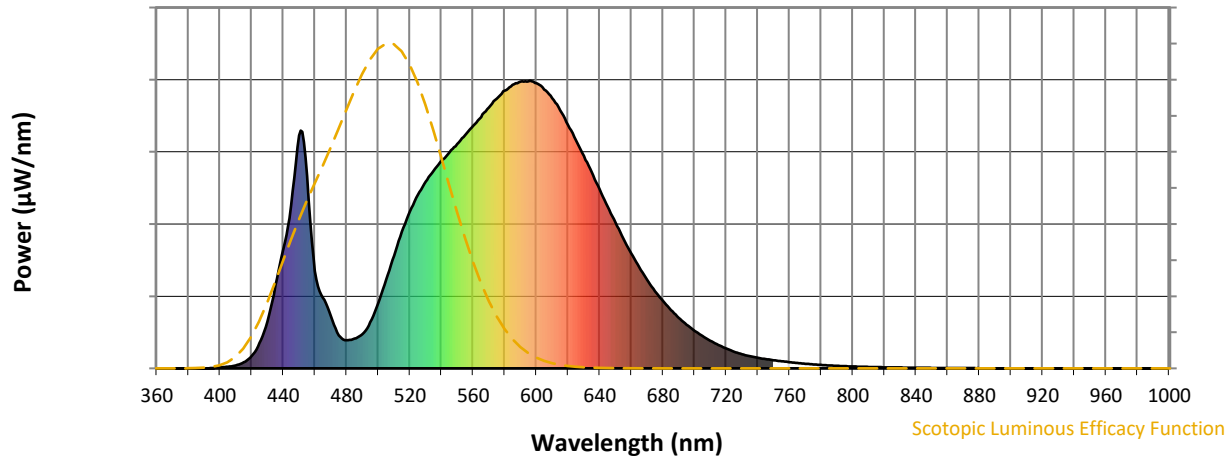


Photopic Lumens: NR

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	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			

REPORT NUMBER: SP1-2411-284-1

Scotopic Flux vs. Wavelength



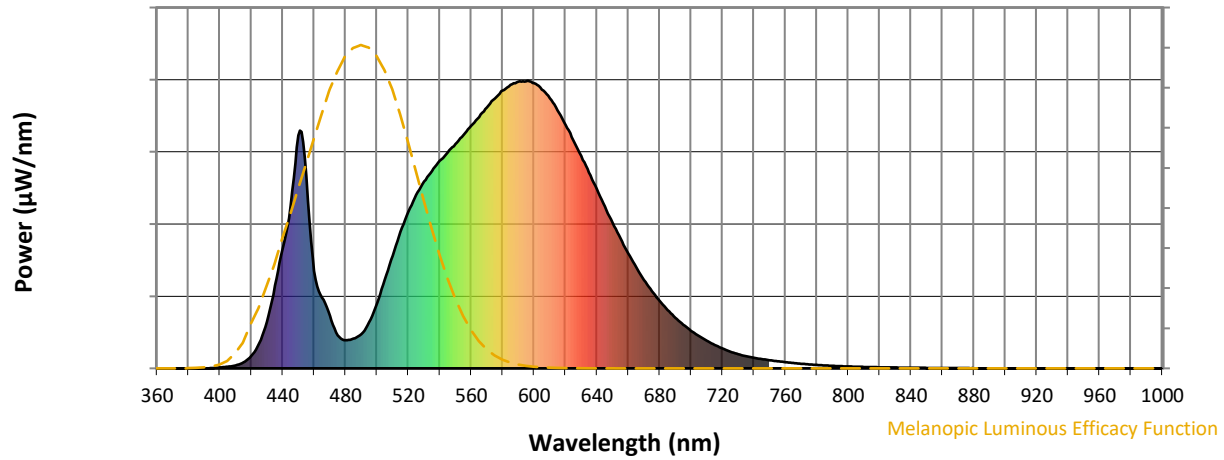
Scotopic Lumens: NR

S/P: 1.33

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	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			

REPORT NUMBER: SP1-2411-284-1

Melanopic Flux vs. Wavelength



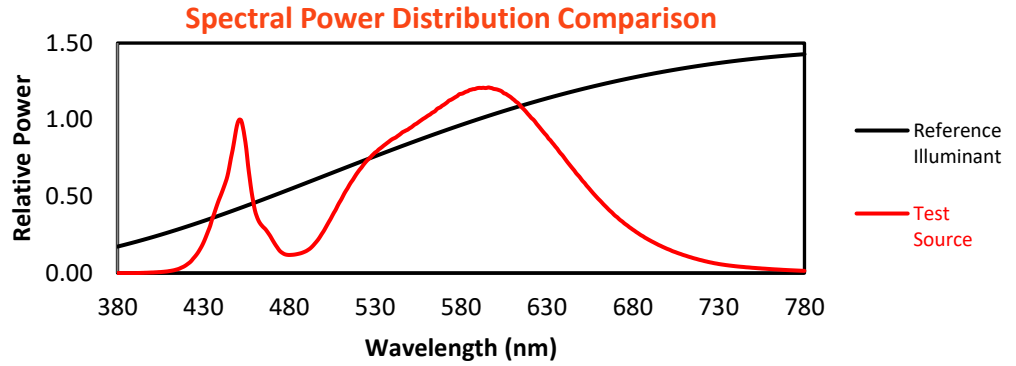
Melanopic Lumens: NR

M/P: 2.47

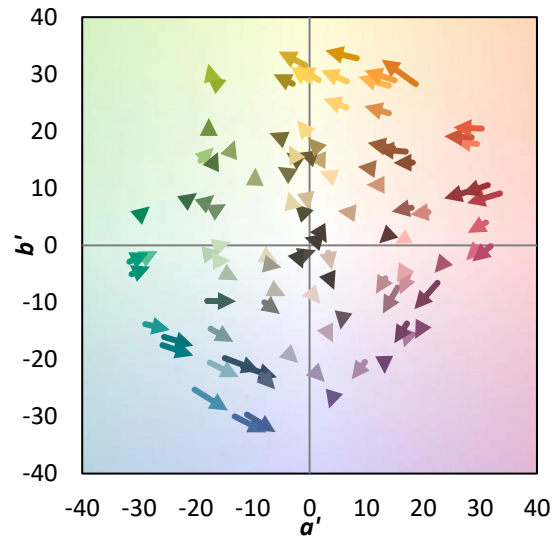
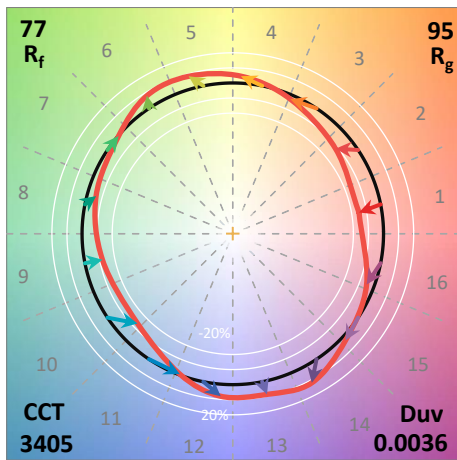
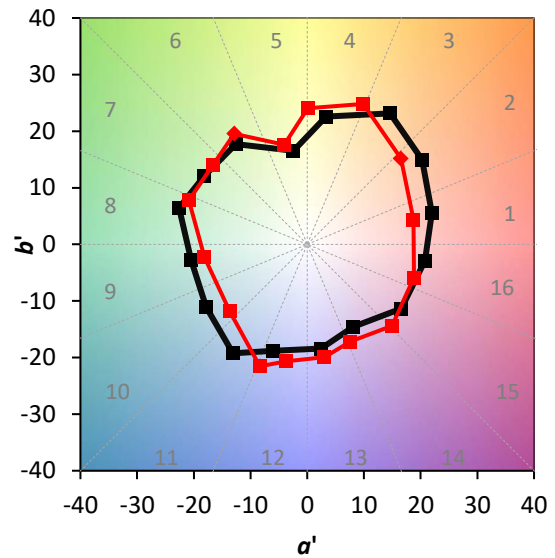
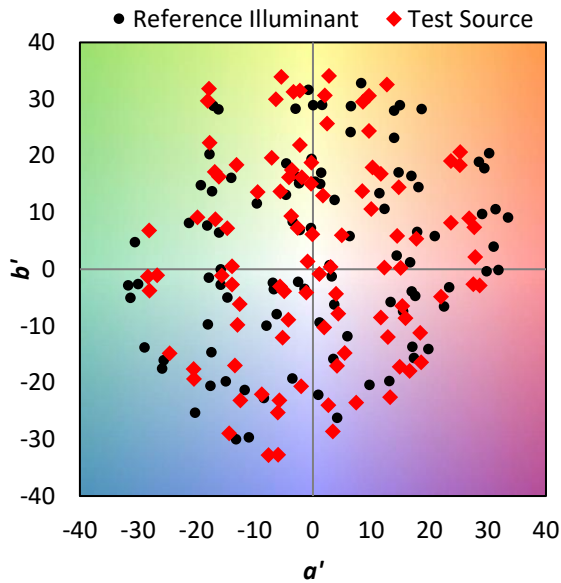
λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)
360	0	NR	490	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			

Summary

$R_f = 76.6$
 $R_g = 95.4$
 $CIE R_a = 73.9$
 $R_9 = -18.0$

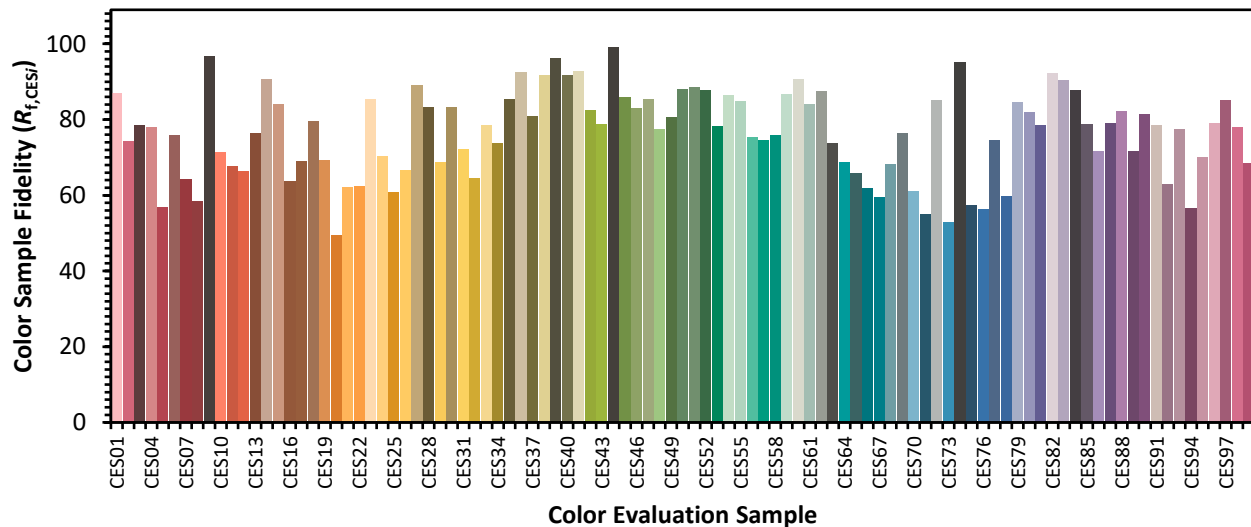


Color Vector Graphics

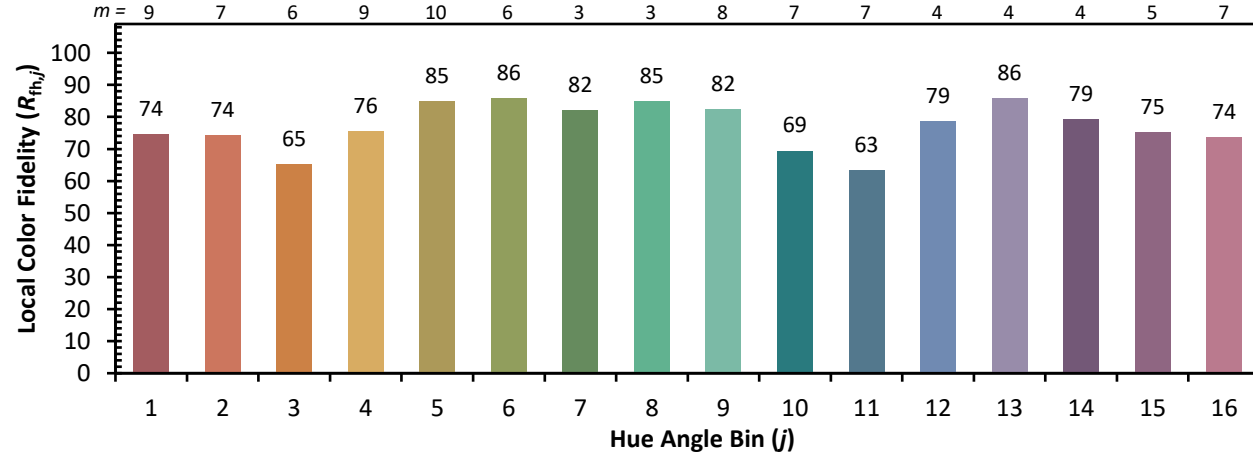
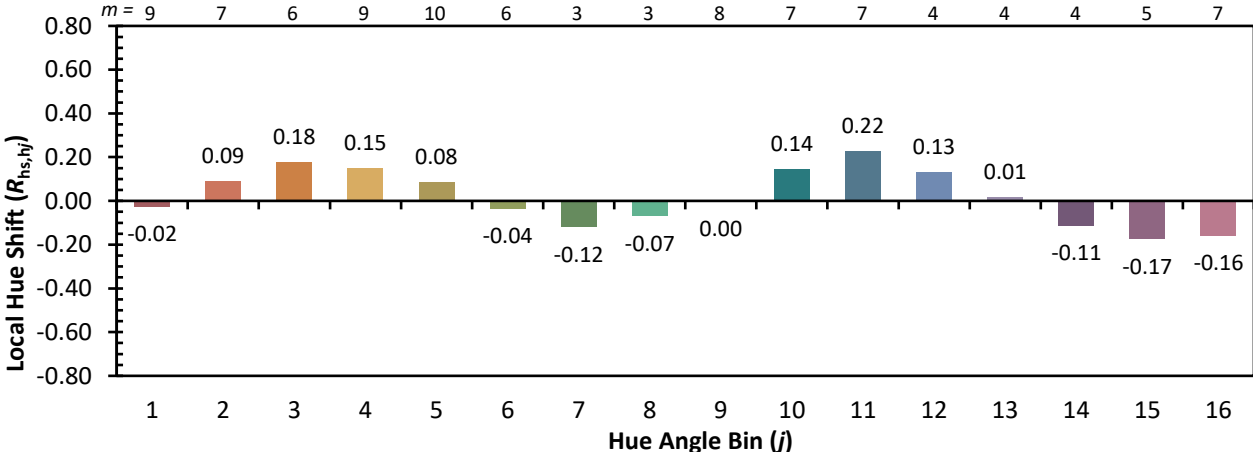
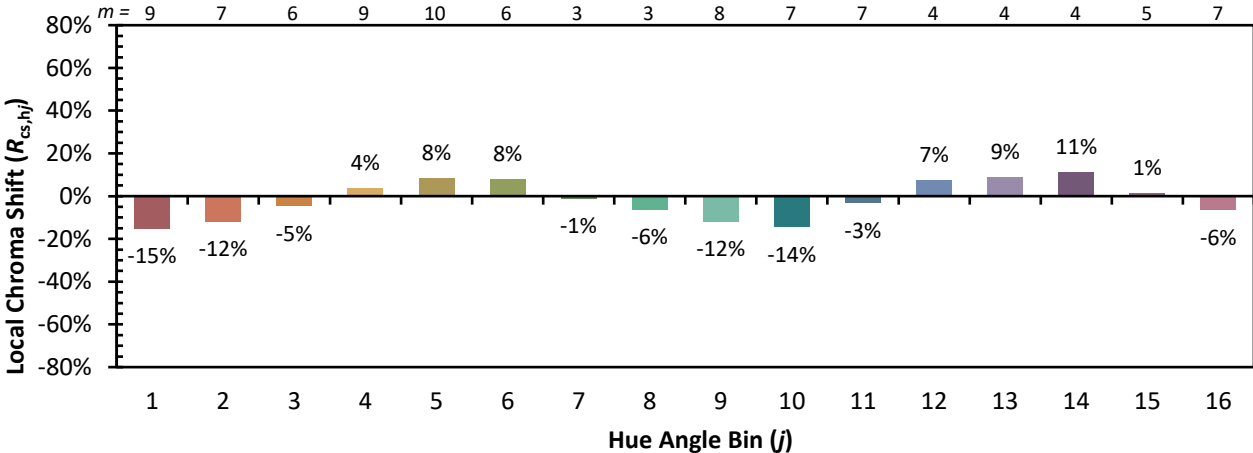


Individual Sample Fidelity Index ($R_{f,i}$)

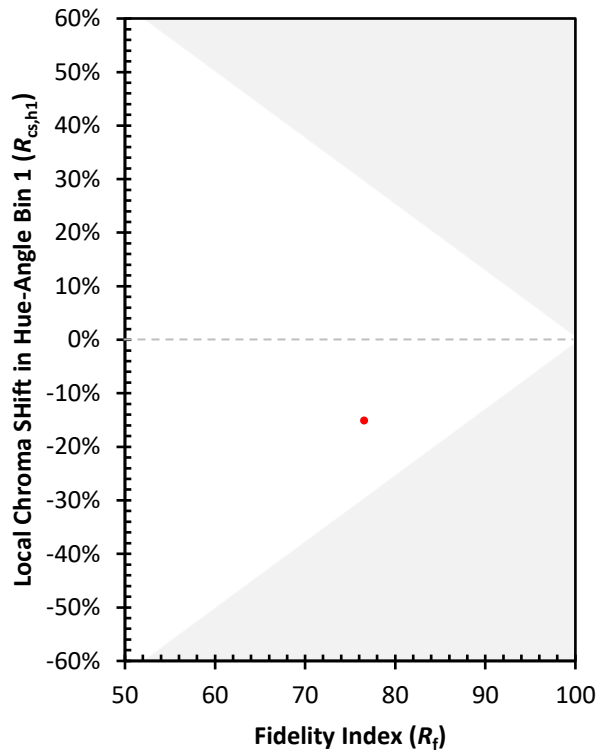
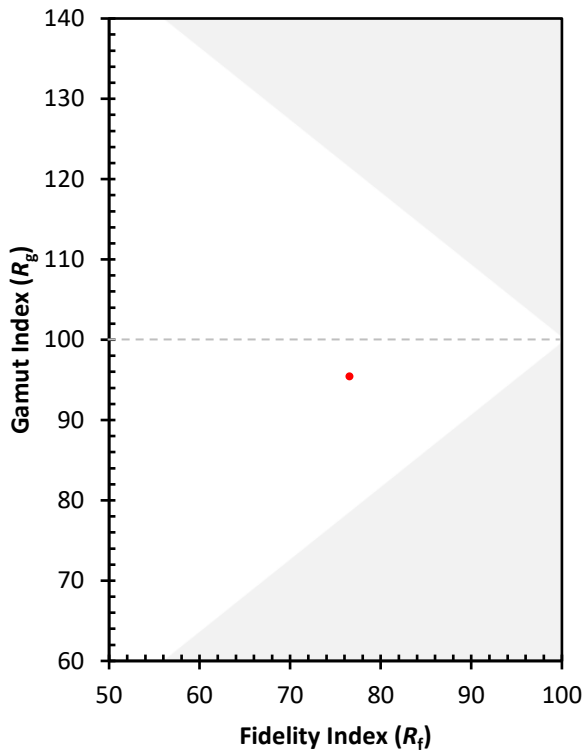
CES01 = 86	CES26 = 67	CES51 = 88	CES76 = 56
CES02 = 62	CES27 = 89	CES52 = 88	CES77 = 75
CES03 = 31	CES28 = 83	CES53 = 78	CES78 = 60
CES04 = 70	CES29 = 69	CES54 = 86	CES79 = 85
CES05 = 48	CES30 = 83	CES55 = 85	CES80 = 82
CES06 = 51	CES31 = 72	CES56 = 75	CES81 = 78
CES07 = 41	CES32 = 65	CES57 = 75	CES82 = 92
CES08 = 40	CES33 = 78	CES58 = 76	CES83 = 90
CES09 = 29	CES34 = 74	CES59 = 87	CES84 = 88
CES10 = 75	CES35 = 86	CES60 = 91	CES85 = 79
CES11 = 58	CES36 = 93	CES61 = 84	CES86 = 72
CES12 = 64	CES37 = 81	CES62 = 88	CES87 = 79
CES13 = 43	CES38 = 92	CES63 = 74	CES88 = 82
CES14 = 74	CES39 = 96	CES64 = 69	CES89 = 72
CES15 = 71	CES40 = 92	CES65 = 66	CES90 = 82
CES16 = 47	CES41 = 93	CES66 = 62	CES91 = 79
CES17 = 50	CES42 = 83	CES67 = 60	CES92 = 63
CES18 = 56	CES43 = 79	CES68 = 68	CES93 = 77
CES19 = 72	CES44 = 99	CES69 = 76	CES94 = 56
CES20 = 65	CES45 = 86	CES70 = 61	CES95 = 70
CES21 = 86	CES46 = 83	CES71 = 55	CES96 = 79
CES22 = 79	CES47 = 85	CES72 = 85	CES97 = 85
CES23 = 92	CES48 = 78	CES73 = 53	CES98 = 78
CES24 = 91	CES49 = 81	CES74 = 95	CES99 = 68
CES25 = 72	CES50 = 88	CES75 = 57	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)