

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: P834036

Luminaire Tested: **TTN-D3-830-U-DL-CG-UPL3**

Issue Date: 5/15/2024

**Test Information**

Test Method: LM-79-08  
Report Number: P834036  
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-CG-UPL3  
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**

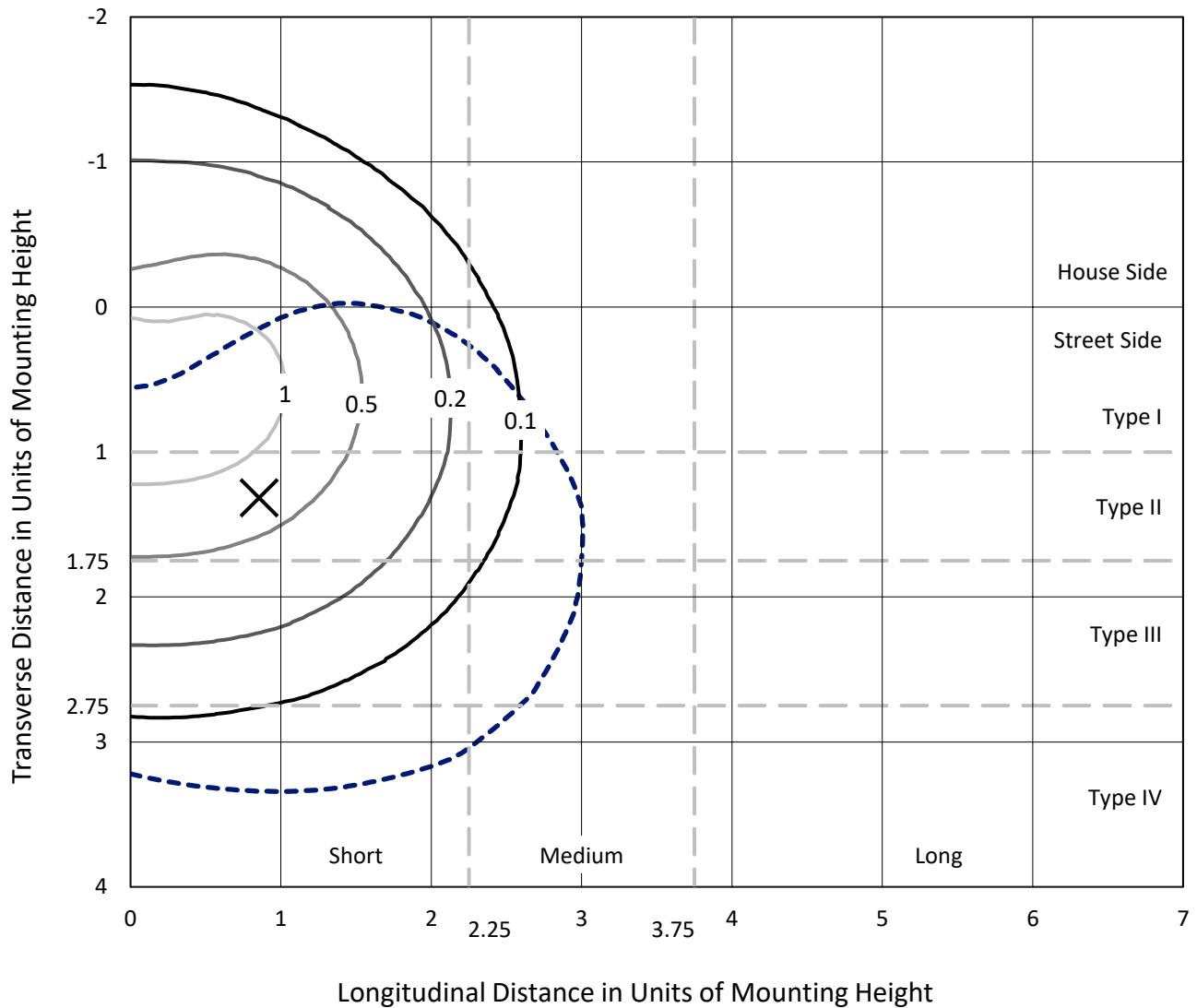
Lumens per Lamp: N/A  
Luminaire Lumens: 6666.7 lumens  
Efficiency: N/A  
Efficacy: 100.7 lumens/watt  
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U4 - G2  
  
Input Watts (W): 66.2  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Iso-Footcandle Lines of Horizontal Illumination

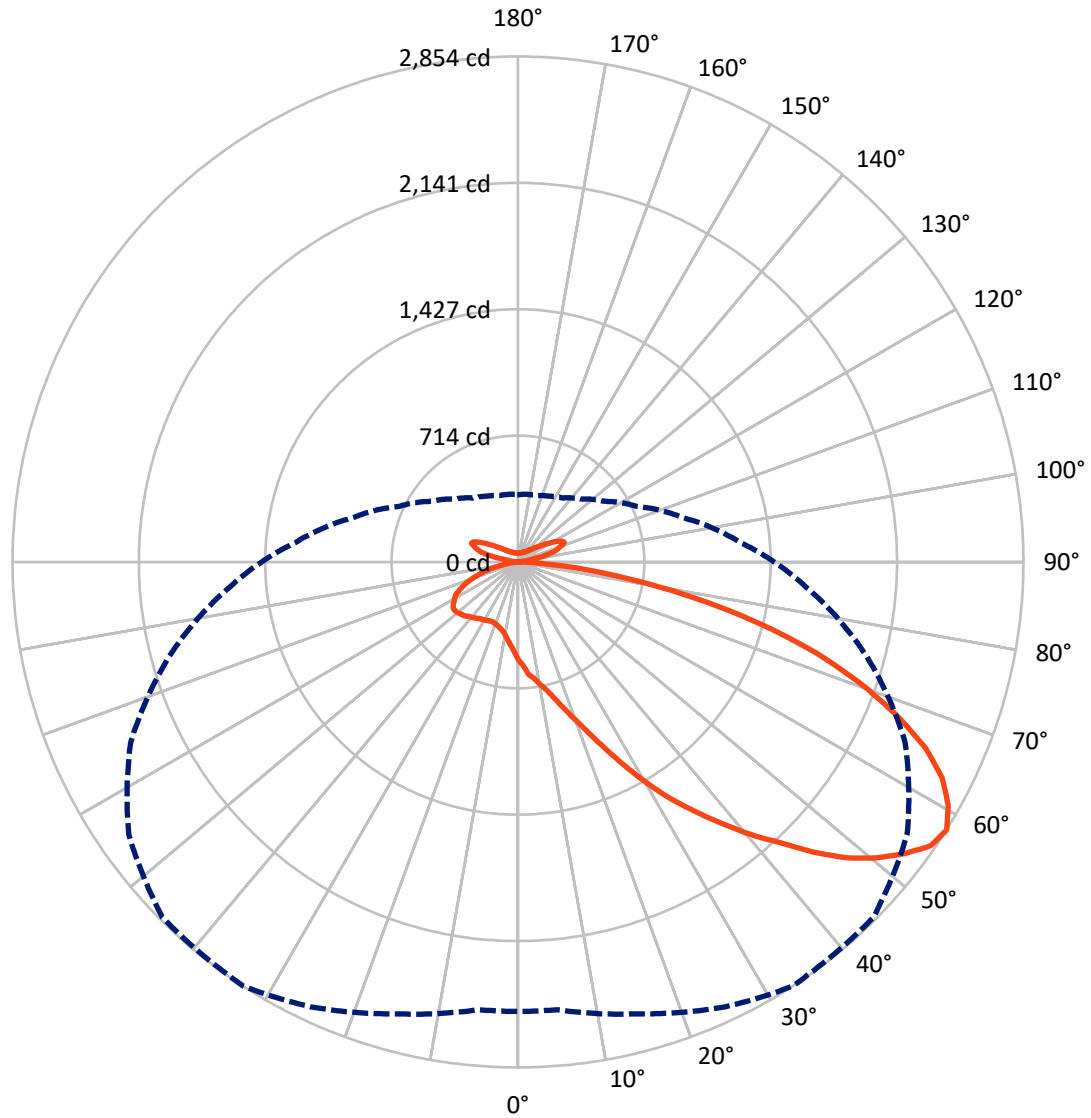
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.5 fc  
 Type IV - Short - N/A

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### Luminous Intensity Polar Plot



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

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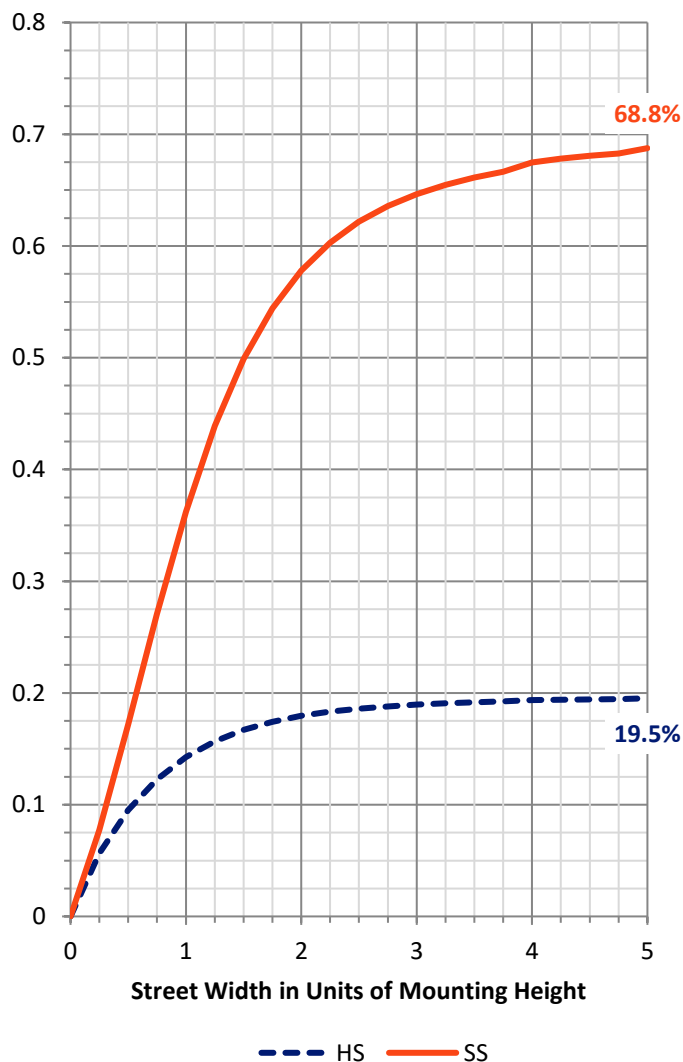
**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	1307.9	370.3	1678.3
	% Fixture	19.6	5.6	25.2
<b>Street Side</b>	Lumens	4618.1	370.3	4988.4
	% Fixture	69.3	5.6	74.8
<b>Total</b>	Lumens	5926.0	740.7	6666.7
	% Fixture	88.9	11.1	100.0

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	53.1	0.8
10°-20°	172.3	2.6
20°-30°	363.3	5.4
30°-40°	659.8	9.9
40°-50°	1042.6	15.6
50°-60°	1384.6	20.8
60°-70°	1332.7	20.0
70°-80°	782.3	11.7
80°-90°	135.3	2.0
90°-100°	16.5	0.2
100°-110°	168.0	2.5
110°-120°	245.6	3.7
120°-130°	142.5	2.1
130°-140°	75.5	1.1
140°-150°	44.8	0.7
150°-160°	27.6	0.4
160°-170°	15.1	0.2
170°-180°	4.9	0.1
0°-90°	5926.0	88.9
0°-180°	6666.7	100.0

**Coefficient of Utilization**

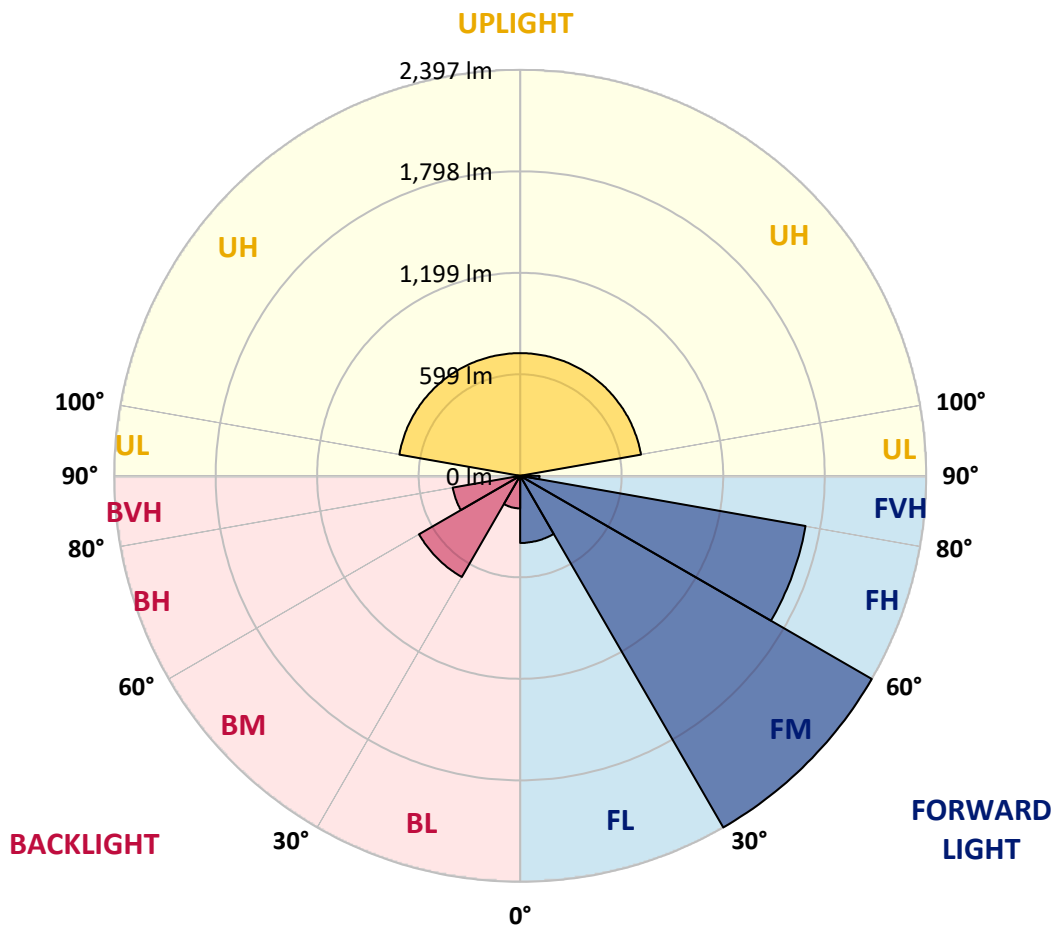


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	396.4	5.9			
FM (30°-60°)	2397.1	36.0			
FH (60°-80°)	1710.7	25.7			G1/1800
FVH (80°-90°)	113.9	1.7			G2/225
BL (0°-30°)	192.3	2.9	B1/500		
BM (30°-60°)	689.9	10.3	B1/1000		
BH (60°-80°)	404.3	6.1	B1/500		G1/500
BVH (80°-90°)	21.4	0.3			G1/100
UL (90°-100°)	16.5	0.2		U2/50	
UH (100°-180°)	724.1	10.9		U4/1000	

**BUG Rating: B1-U4-G2**  
 Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
0°	555.3	555.3	555.3	555.3	555.3	555.3	555.3	555.3	555.3	555.3	555.3
2.5°	591.6	596.8	591.6	591.6	586.5	586.5	581.3	576.1	570.9	565.7	555.3
5°	659.1	659.1	653.9	643.5	638.4	633.2	622.8	607.2	596.8	581.3	565.7
7.5°	690.3	690.3	685.1	674.7	664.3	659.1	643.5	622.8	607.2	586.5	565.7
10°	731.8	737.0	726.6	716.2	705.8	700.6	679.9	653.9	628.0	602.0	570.9
12.5°	778.5	783.7	778.5	762.9	747.3	742.2	721.4	690.3	659.1	622.8	586.5
15°	840.8	851.1	835.6	825.2	809.6	804.4	778.5	742.2	705.8	659.1	612.4
17.5°	913.4	918.6	908.2	892.7	882.3	877.1	851.1	809.6	757.7	705.8	648.7
20°	996.5	1001.6	996.5	975.7	965.3	960.1	934.2	887.5	825.2	768.1	695.4
22.5°	1095.1	1105.4	1089.9	1074.3	1063.9	1063.9	1032.8	980.9	908.2	835.6	752.5
25°	1209.2	1224.8	1204.0	1193.7	1183.3	1178.1	1152.2	1089.9	1006.8	918.6	814.8
27.5°	1349.4	1359.7	1344.2	1339.0	1318.2	1318.2	1276.7	1204.0	1115.8	1012.0	892.7
30°	1473.9	1484.3	1473.9	1473.9	1458.4	1453.2	1411.6	1339.0	1230.0	1105.4	960.1
32.5°	1593.3	1603.7	1598.5	1603.7	1598.5	1593.3	1541.4	1463.5	1354.6	1193.7	1027.6
35°	1712.7	1728.2	1723.0	1738.6	1733.4	1728.2	1686.7	1593.3	1463.5	1302.7	1100.3
37.5°	1837.2	1852.8	1852.8	1868.4	1873.5	1873.5	1826.8	1728.2	1582.9	1401.3	1183.3
40°	1972.2	1987.7	1987.7	2013.7	2024.0	2024.0	1972.2	1873.5	1712.7	1510.3	1271.5
42.5°	2101.9	2117.5	2122.7	2148.6	2164.2	2169.4	2127.8	2013.7	1826.8	1619.2	1354.6
45°	2226.5	2242.0	2257.6	2309.5	2335.4	2330.3	2299.1	2179.7	1972.2	1733.4	1442.8
47.5°	2345.8	2366.6	2392.5	2460.0	2496.3	2491.1	2470.4	2335.4	2107.1	1842.4	1520.6
50°	2439.2	2454.8	2506.7	2579.4	2626.1	2631.3	2600.1	2470.4	2221.3	1925.4	1577.7
52.5°	2511.9	2532.7	2594.9	2698.7	2735.1	2750.6	2714.3	2584.6	2335.4	1998.1	1624.4
55°	2563.8	2563.8	2657.2	2776.6	2828.5	2838.9	2838.9	2678.0	2402.9	2044.8	1650.4
57.5°	2537.8	2537.8	2641.6	2771.4	2854.4	2849.2	2838.9	2683.2	2413.3	2034.4	1634.8
60°	2465.2	2480.8	2579.4	2709.1	2792.1	2787.0	2755.8	2615.7	2361.4	1992.9	1603.7
62.5°	2366.6	2392.5	2496.3	2594.9	2688.4	2703.9	2662.4	2537.8	2273.2	1930.6	1546.6
65°	2179.7	2216.1	2345.8	2454.8	2527.5	2558.6	2506.7	2392.5	2153.8	1811.3	1427.2
67.5°	1972.2	1998.1	2107.1	2262.8	2304.3	2335.4	2309.5	2190.1	1987.7	1619.2	1292.3
70°	1733.4	1774.9	1847.6	2003.3	2050.0	2081.1	2081.1	1961.8	1769.7	1422.0	1131.4
72.5°	1453.2	1499.9	1588.1	1702.3	1764.6	1785.3	1780.1	1681.5	1510.3	1204.0	954.9
75°	1147.0	1183.3	1287.1	1370.1	1437.6	1453.2	1448.0	1364.9	1209.2	970.5	757.7
77.5°	845.9	882.3	960.1	1022.4	1084.7	1074.3	1074.3	1012.0	913.4	721.4	576.1
80°	555.3	586.5	653.9	674.7	742.2	737.0	737.0	690.3	622.8	482.7	384.1
82.5°	306.2	332.2	378.9	399.6	441.1	430.8	435.9	404.8	363.3	269.9	218.0
85°	109.0	129.7	155.7	171.3	192.0	192.0	192.0	166.1	155.7	103.8	88.2
87.5°	5.2	10.4	20.8	20.8	31.1	31.1	31.1	20.8	20.8	5.2	5.2
90°	6.3	6.3	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	6.3
92.5°	6.3	6.3	6.3	8.9	9.9	10.1	8.9	10.1	7.6	7.6	6.3
95°	7.6	7.6	8.9	11.4	13.4	13.9	15.2	15.2	8.9	8.9	7.6
97.5°	10.1	11.4	11.4	13.9	21.0	22.8	41.8	25.3	12.7	12.7	11.4
100°	16.5	17.7	17.7	31.7	60.1	67.2	90.0	64.6	32.9	24.1	17.7
102.5°	53.2	55.8	68.4	102.6	142.2	152.1	138.1	116.6	110.2	76.0	60.8
105°	135.6	134.3	144.5	171.1	204.5	212.9	209.1	192.6	174.9	150.8	139.4
107.5°	178.7	178.7	187.5	210.4	235.7	242.0	282.6	286.4	226.8	198.9	186.3
110°	201.5	201.5	209.1	228.1	261.5	269.9	326.9	324.4	280.0	245.8	229.4



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
112.5°	206.5	207.8	218.0	247.1	283.6	292.7	318.1	306.7	288.9	273.7	261.0
115°	214.2	214.2	225.6	253.4	273.7	278.8	288.9	276.2	262.3	252.2	247.1
117.5°	211.6	215.4	218.0	233.2	246.3	249.6	257.2	250.9	231.9	224.3	221.8
120°	196.4	196.4	198.9	206.5	213.6	215.4	219.2	216.7	204.0	197.7	196.4
122.5°	174.9	176.1	174.9	178.7	183.7	185.0	188.8	186.3	176.1	173.6	173.6
125°	153.3	153.3	152.1	154.6	157.6	158.4	157.1	158.4	153.3	152.1	152.1
127.5°	138.1	136.9	134.3	135.6	136.6	136.9	136.9	138.1	133.1	134.3	135.6
130°	122.9	122.9	120.4	120.4	120.4	120.4	117.8	120.4	117.8	119.1	120.4
132.5°	109.0	109.0	105.2	103.9	103.9	103.9	103.9	105.2	103.9	106.4	109.0
135°	97.6	97.6	93.8	95.0	95.0	95.0	93.8	95.0	93.8	96.3	97.6
137.5°	88.7	88.7	86.2	86.2	86.2	86.2	84.9	86.2	86.2	87.4	90.0
140°	81.1	81.1	79.8	79.8	78.8	78.6	79.8	79.8	79.8	81.1	82.4
142.5°	77.3	76.0	74.8	73.5	74.5	74.8	74.8	74.8	73.5	74.8	77.3
145°	71.0	71.0	69.7	69.7	69.7	69.7	71.0	69.7	69.7	71.0	71.0
147.5°	67.2	67.2	65.9	67.2	67.2	67.2	67.2	67.2	65.9	67.2	67.2
150°	65.9	64.6	63.4	64.6	64.6	64.6	63.4	63.4	63.4	63.4	64.6
152.5°	62.1	62.1	60.8	62.1	61.1	60.8	60.8	60.8	60.8	60.8	62.1
155°	59.6	59.6	58.3	59.6	59.6	59.6	59.6	59.6	59.6	59.6	59.6
157.5°	57.0	58.3	57.0	57.0	57.0	57.0	57.0	57.0	57.0	57.0	58.3
160°	55.8	55.8	55.8	55.8	54.8	54.5	54.5	54.5	55.8	55.8	55.8
162.5°	54.5	54.5	54.5	54.5	53.5	53.2	53.2	53.2	53.2	54.5	54.5
165°	54.5	53.2	53.2	53.2	52.2	52.0	52.0	52.0	52.0	53.2	54.5
167.5°	52.0	52.0	52.0	52.0	52.0	52.0	50.7	50.7	52.0	52.0	52.0
170°	52.0	52.0	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7
172.5°	52.0	52.0	52.0	52.0	51.0	50.7	50.7	50.7	50.7	50.7	52.0
175°	52.0	52.0	52.0	52.0	51.0	50.7	50.7	50.7	52.0	52.0	52.0
177.5°	52.0	52.0	52.0	52.0	51.0	50.7	52.0	52.0	52.0	52.0	52.0
180°	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0





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**CANDELA DISTRIBUTION (continued):**

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	555.3	555.3	555.3	555.3	555.3	555.3	555.3	555.3	555.3	555.3	555.3
2.5°	550.1	544.9	539.7	529.4	524.2	519.0	513.8	508.6	508.6	508.6	508.6
5°	555.3	550.1	534.6	519.0	503.4	487.8	477.5	472.3	467.1	461.9	461.9
7.5°	555.3	544.9	524.2	503.4	487.8	467.1	451.5	435.9	425.6	420.4	420.4
10°	560.5	544.9	519.0	498.2	472.3	446.3	425.6	404.8	394.4	384.1	384.1
12.5°	570.9	555.3	519.0	493.0	461.9	430.8	404.8	384.1	368.5	358.1	358.1
15°	591.6	570.9	529.4	493.0	456.7	420.4	394.4	368.5	352.9	342.5	342.5
17.5°	622.8	596.8	544.9	493.0	451.5	415.2	384.1	358.1	337.3	327.0	327.0
20°	659.1	628.0	565.7	503.4	451.5	410.0	378.9	347.7	327.0	316.6	316.6
22.5°	711.0	664.3	591.6	519.0	461.9	415.2	373.7	342.5	321.8	311.4	311.4
25°	768.1	716.2	622.8	539.7	472.3	415.2	373.7	342.5	321.8	311.4	306.2
27.5°	830.4	773.3	659.1	560.5	482.7	425.6	378.9	342.5	321.8	311.4	311.4
30°	887.5	820.0	695.4	586.5	498.2	430.8	384.1	347.7	321.8	311.4	311.4
32.5°	949.7	871.9	731.8	612.4	513.8	441.1	389.2	352.9	327.0	316.6	311.4
35°	1012.0	923.8	768.1	633.2	529.4	451.5	394.4	358.1	332.2	321.8	321.8
37.5°	1079.5	980.9	804.4	659.1	544.9	461.9	404.8	363.3	337.3	327.0	327.0
40°	1152.2	1038.0	840.8	679.9	560.5	472.3	415.2	373.7	347.7	337.3	337.3
42.5°	1224.8	1100.3	882.3	705.8	576.1	482.7	420.4	384.1	358.1	347.7	347.7
45°	1297.5	1152.2	918.6	731.8	591.6	498.2	435.9	394.4	368.5	358.1	358.1
47.5°	1364.9	1209.2	949.7	747.3	607.2	508.6	441.1	404.8	378.9	373.7	368.5
50°	1411.6	1245.6	970.5	762.9	612.4	513.8	451.5	410.0	389.2	378.9	378.9
52.5°	1448.0	1281.9	986.1	773.3	617.6	519.0	456.7	420.4	399.6	389.2	384.1
55°	1468.7	1287.1	986.1	762.9	612.4	519.0	456.7	420.4	399.6	389.2	389.2
57.5°	1448.0	1261.1	965.3	742.2	596.8	503.4	441.1	410.0	389.2	384.1	378.9
60°	1406.5	1219.6	923.8	711.0	570.9	477.5	420.4	394.4	378.9	373.7	368.5
62.5°	1349.4	1167.7	882.3	669.5	534.6	446.3	404.8	373.7	363.3	358.1	352.9
65°	1235.2	1069.1	814.8	617.6	487.8	410.0	368.5	347.7	337.3	327.0	321.8
67.5°	1110.6	960.1	721.4	555.3	430.8	368.5	332.2	311.4	295.8	295.8	290.6
70°	975.7	845.9	622.8	472.3	373.7	321.8	285.4	269.9	259.5	259.5	254.3
72.5°	814.8	711.0	519.0	384.1	306.2	264.7	238.7	223.2	218.0	218.0	212.8
75°	653.9	560.5	410.0	301.0	238.7	207.6	186.8	176.5	171.3	171.3	166.1
77.5°	482.7	410.0	295.8	218.0	171.3	150.5	134.9	129.7	124.6	124.6	119.4
80°	321.8	269.9	192.0	140.1	103.8	93.4	83.0	83.0	77.8	83.0	77.8
82.5°	176.5	145.3	103.8	72.7	51.9	46.7	41.5	41.5	46.7	46.7	41.5
85°	67.5	51.9	36.3	20.8	15.6	15.6	15.6	15.6	15.6	15.6	10.4
87.5°	5.2	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	6.3	6.3	7.6	7.6	7.6	7.6	7.6	7.6	7.6	6.3	6.3
92.5°	6.3	6.3	7.6	7.6	10.1	8.9	10.1	8.9	6.3	6.3	6.3
95°	7.6	7.6	8.9	8.9	15.2	15.2	13.9	11.4	8.9	7.6	7.6
97.5°	10.1	11.4	12.7	12.7	25.3	41.8	22.8	13.9	11.4	11.4	10.1
100°	17.7	17.7	24.1	32.9	64.6	90.0	67.2	31.7	17.7	17.7	16.5
102.5°	58.3	60.8	76.0	110.2	116.6	138.1	152.1	102.6	68.4	55.8	53.2
105°	139.4	139.4	150.8	174.9	192.6	209.1	212.9	171.1	144.5	134.3	135.6
107.5°	185.0	186.3	198.9	226.8	286.4	282.6	242.0	210.4	187.5	178.7	178.7
110°	226.8	229.4	245.8	280.0	324.4	326.9	269.9	228.1	209.1	201.5	201.5



REPORT NUMBER: P834036  
 CATALOG NUMBER: TTN-D3-830-U-DL-CG-UPL3

**CANDELA DISTRIBUTION (continued):**

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	258.5	261.0	273.7	288.9	306.7	318.1	292.7	247.1	218.0	207.8	206.5
115°	249.6	247.1	252.2	262.3	276.2	288.9	278.8	253.4	225.6	214.2	214.2
117.5°	218.0	221.8	224.3	231.9	250.9	257.2	249.6	233.2	218.0	215.4	211.6
120°	193.9	196.4	197.7	204.0	216.7	219.2	215.4	206.5	198.9	196.4	196.4
122.5°	171.1	173.6	173.6	176.1	186.3	188.8	185.0	178.7	174.9	176.1	174.9
125°	150.8	152.1	152.1	153.3	158.4	157.1	158.4	154.6	152.1	153.3	153.3
127.5°	134.3	135.6	134.3	133.1	138.1	136.9	136.9	135.6	134.3	136.9	138.1
130°	121.6	120.4	119.1	117.8	120.4	117.8	120.4	120.4	120.4	122.9	122.9
132.5°	109.0	109.0	106.4	103.9	105.2	103.9	103.9	103.9	105.2	109.0	109.0
135°	97.6	97.6	96.3	93.8	95.0	93.8	95.0	95.0	93.8	97.6	97.6
137.5°	91.2	90.0	87.4	86.2	86.2	84.9	86.2	86.2	86.2	88.7	88.7
140°	82.4	82.4	81.1	79.8	79.8	79.8	78.6	79.8	79.8	81.1	81.1
142.5°	77.3	77.3	74.8	73.5	74.8	74.8	74.8	73.5	74.8	76.0	77.3
145°	72.2	71.0	71.0	69.7	69.7	71.0	69.7	69.7	69.7	71.0	71.0
147.5°	68.4	67.2	67.2	65.9	67.2	67.2	67.2	67.2	65.9	67.2	67.2
150°	64.6	64.6	63.4	63.4	63.4	63.4	64.6	64.6	63.4	64.6	65.9
152.5°	63.4	62.1	60.8	60.8	60.8	60.8	60.8	62.1	60.8	62.1	62.1
155°	59.6	59.6	59.6	59.6	59.6	59.6	59.6	59.6	58.3	59.6	59.6
157.5°	58.3	58.3	57.0	57.0	57.0	57.0	57.0	57.0	57.0	58.3	57.0
160°	57.0	55.8	55.8	55.8	54.5	54.5	54.5	55.8	55.8	55.8	55.8
162.5°	55.8	54.5	54.5	53.2	53.2	53.2	53.2	54.5	54.5	54.5	54.5
165°	53.2	54.5	53.2	52.0	52.0	52.0	52.0	53.2	53.2	53.2	54.5
167.5°	53.2	52.0	52.0	52.0	50.7	50.7	52.0	52.0	52.0	52.0	52.0
170°	52.0	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	52.0	52.0
172.5°	52.0	52.0	50.7	50.7	50.7	50.7	50.7	52.0	52.0	52.0	52.0
175°	50.7	52.0	52.0	52.0	50.7	50.7	50.7	52.0	52.0	52.0	52.0
177.5°	52.0	52.0	52.0	52.0	52.0	52.0	50.7	52.0	52.0	52.0	52.0
180°	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0

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

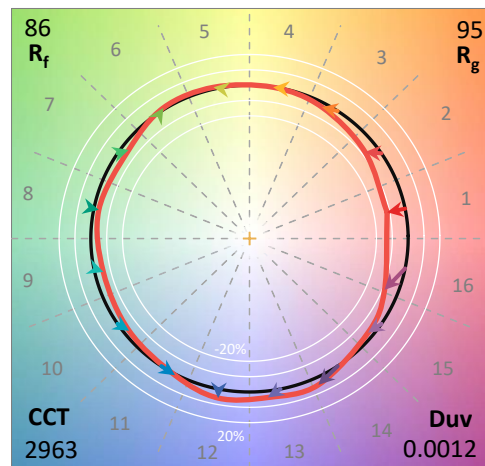
**Test Information**

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**

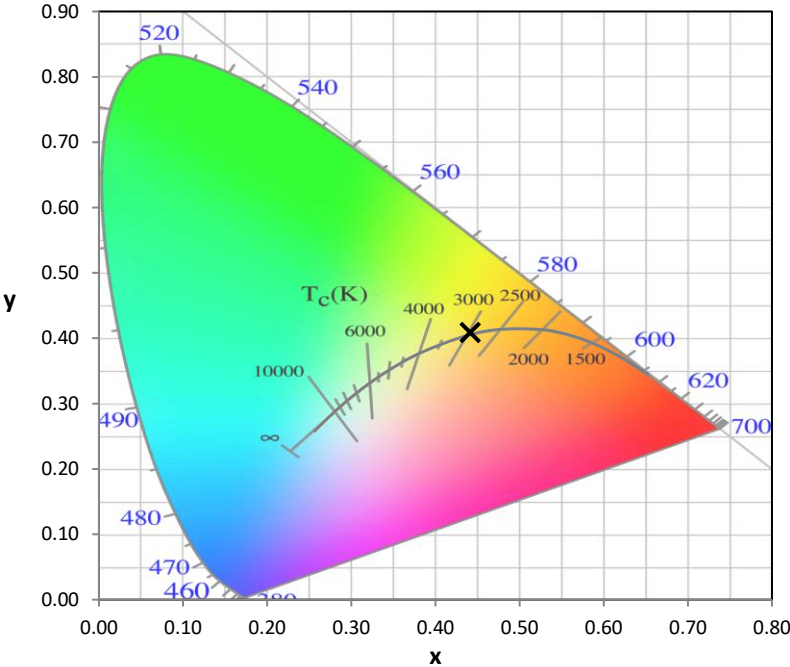
Stabilization Time: 37M  
 Operation Time: 1H 37M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2411-284-4

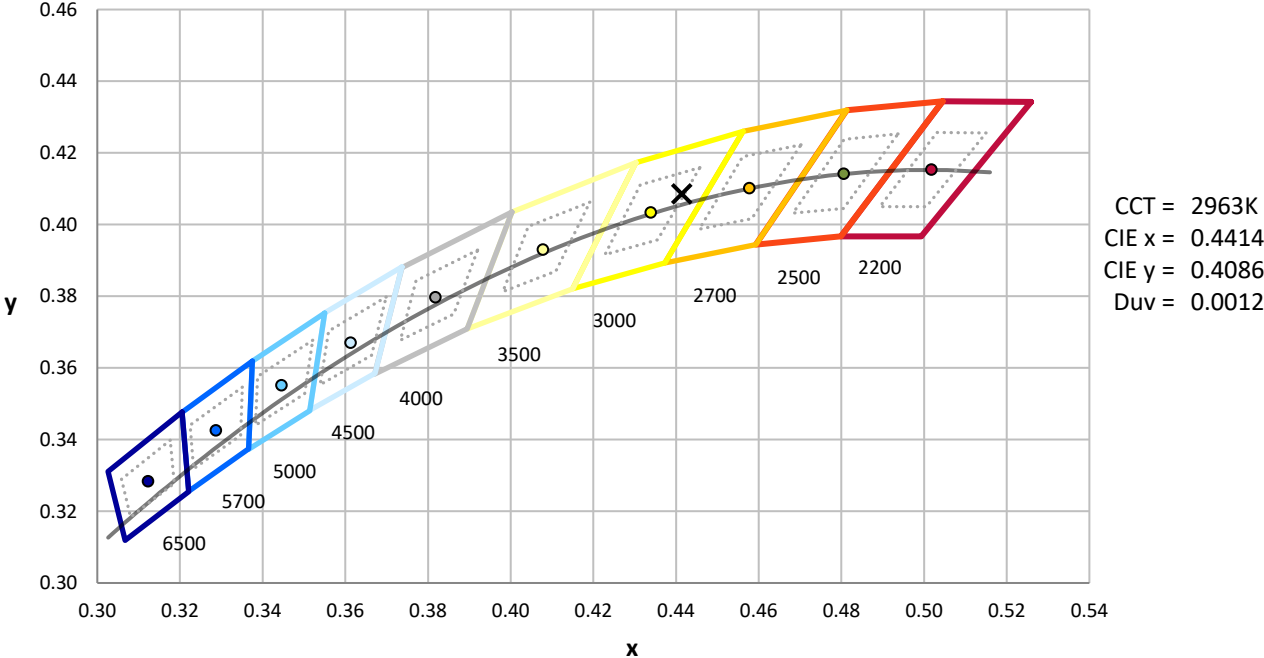
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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

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CIE 1931 Chromaticity Diagram



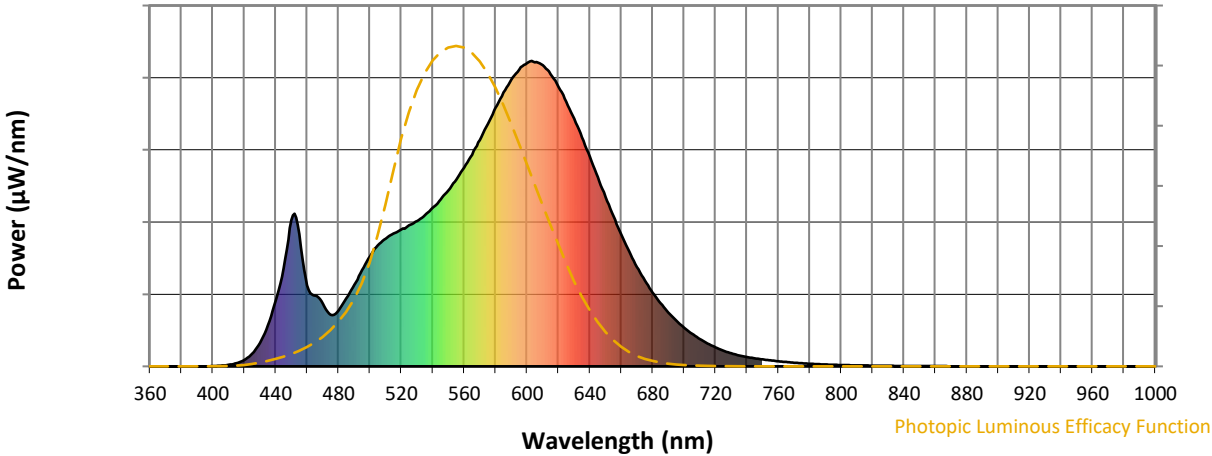
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2411-284-4

**Photopic Flux vs. Wavelength**

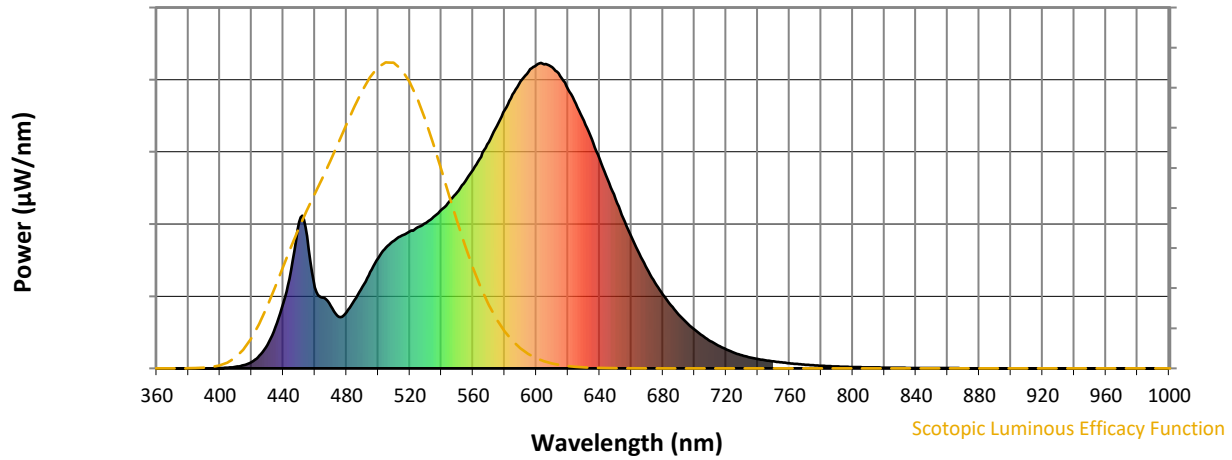


**Photopic Lumens: NR**

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /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**

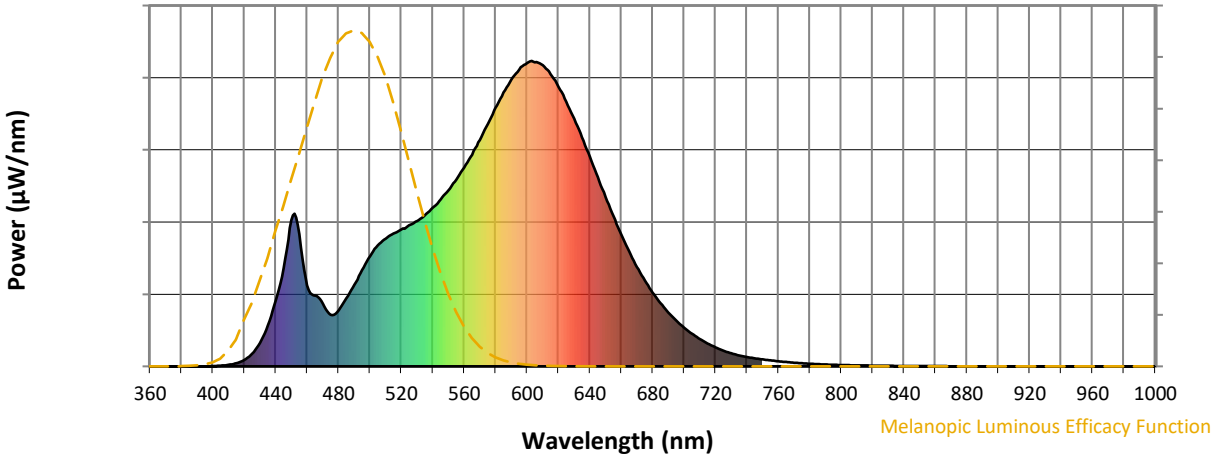
**S/P: 1.34**

$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /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



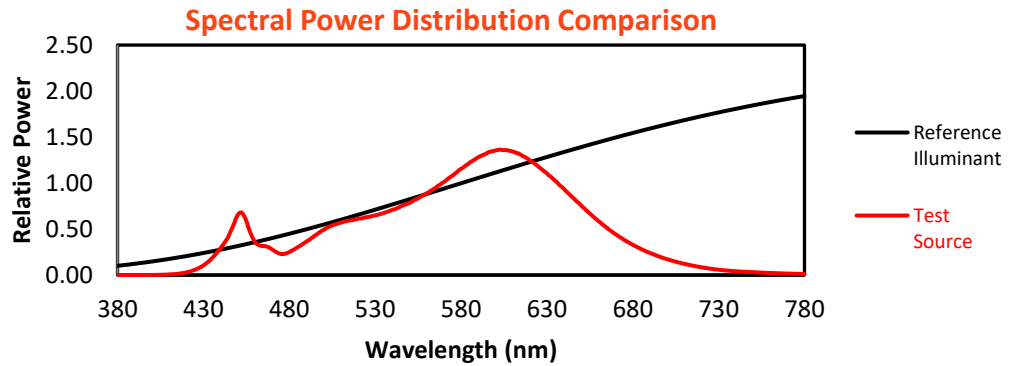
Melanopic Lumens: NR

M/P: 2.58

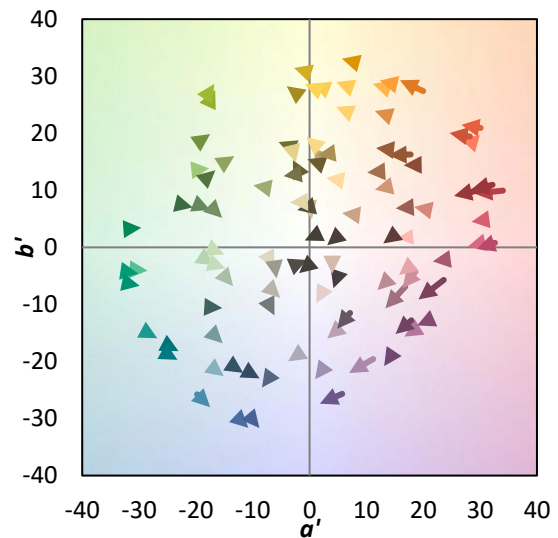
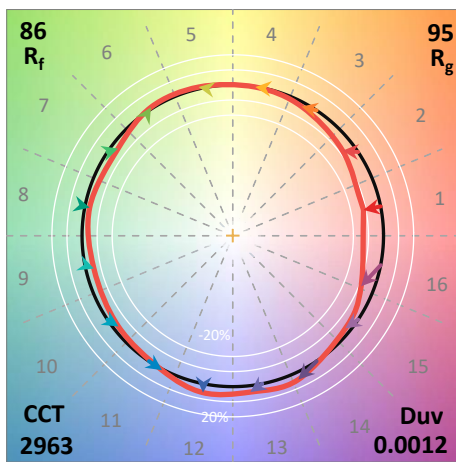
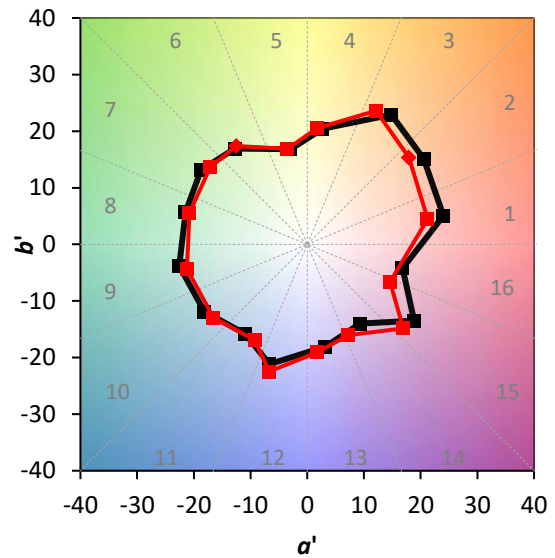
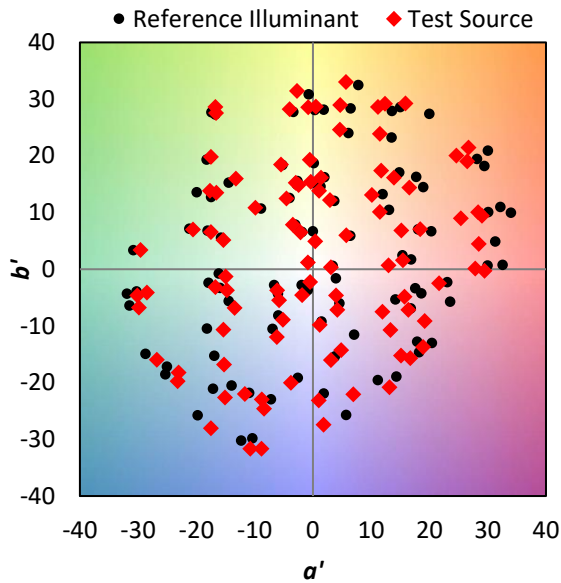
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	267	NR	620	915	NR	750	23	NR	880	0	NR
365	0	NR	495	315	NR	625	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  $R_a = 82.9$   
 $R_9 = 3.9$

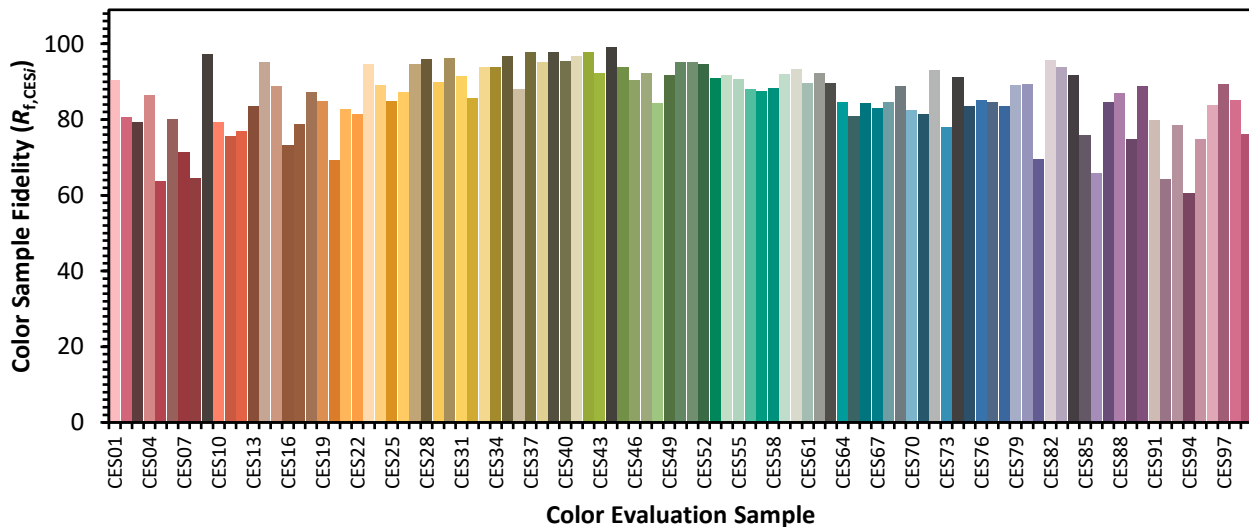


**Color Vector Graphics**

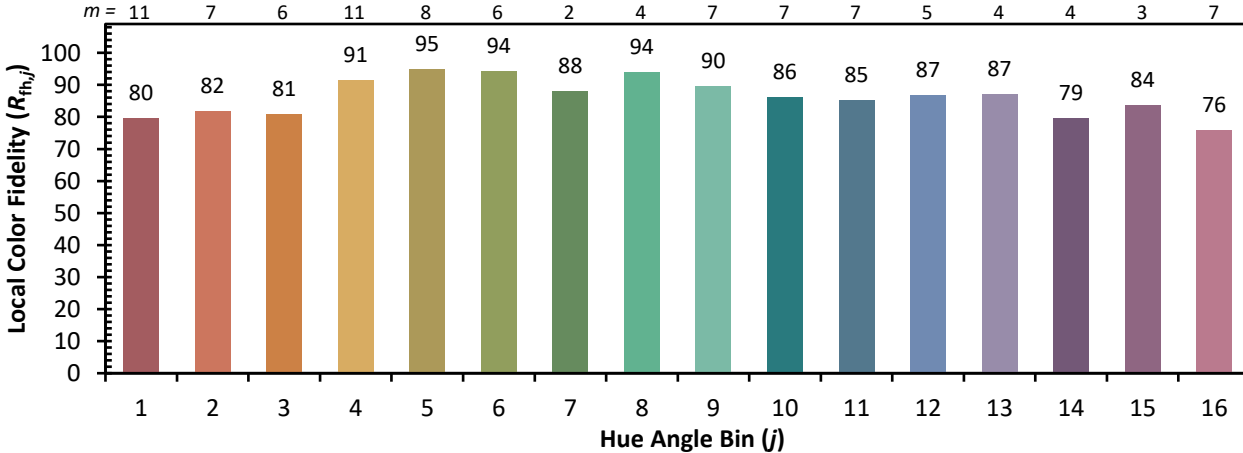
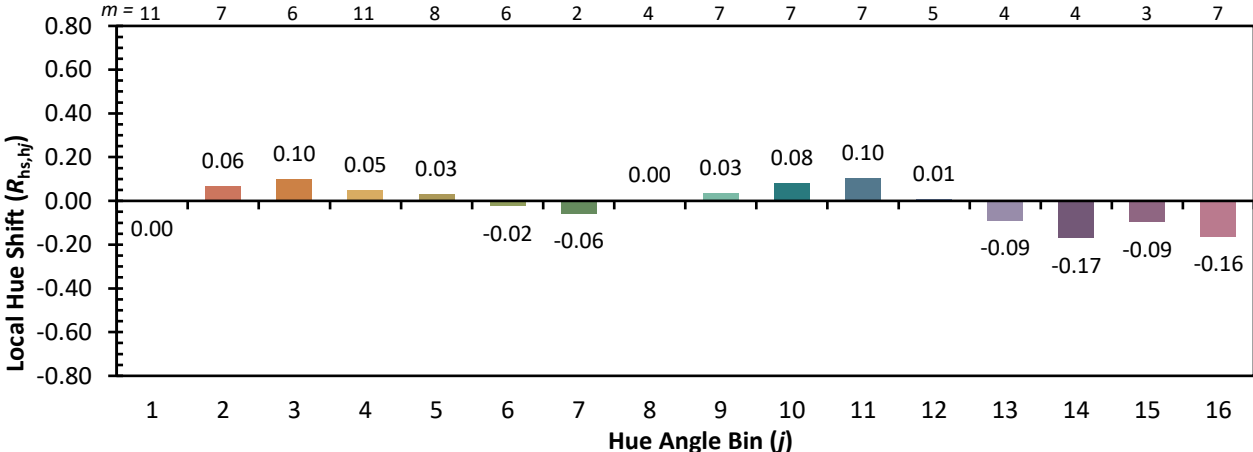
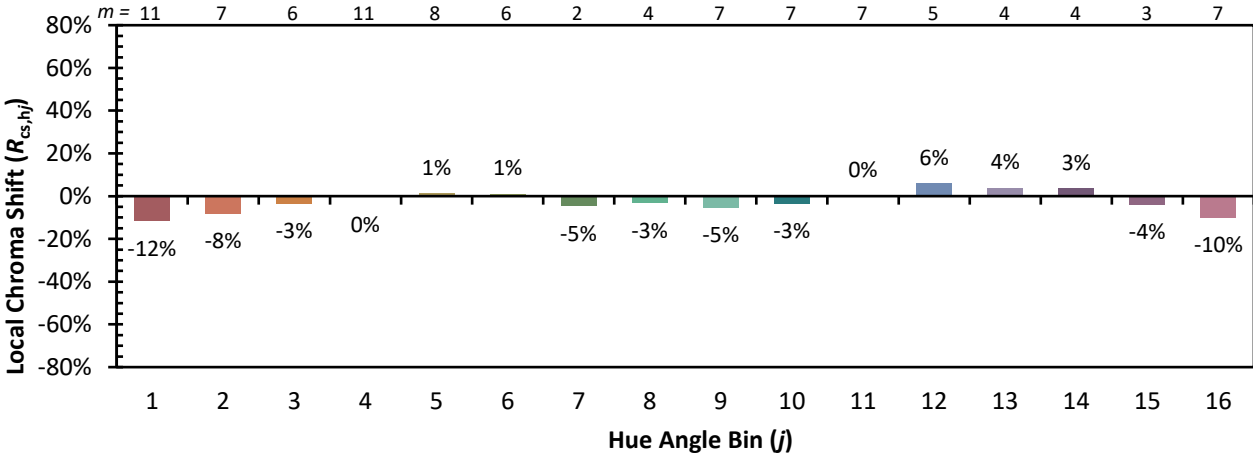


Individual Sample Fidelity Index ( $R_{f,i}$ )

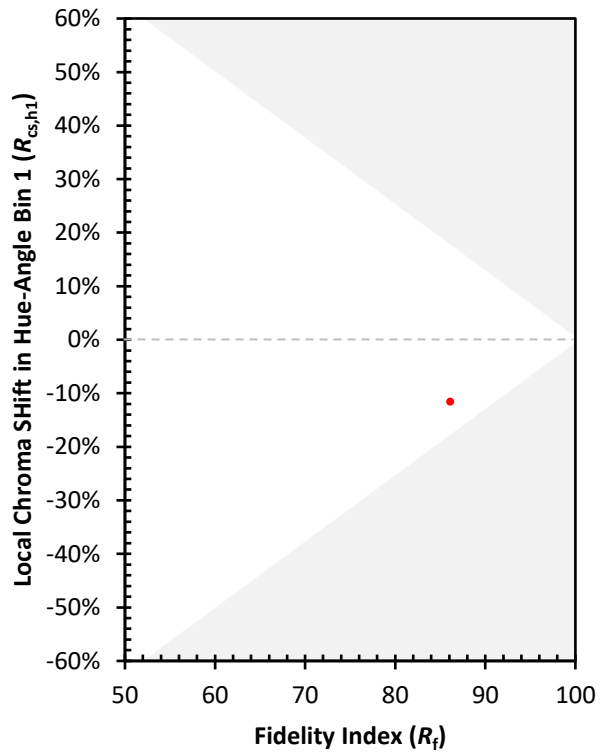
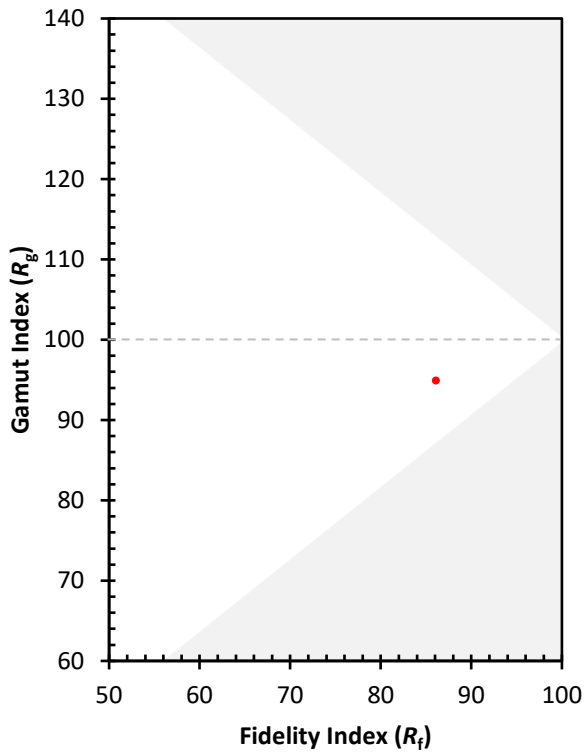
CES01 = 86	CES26 = 87	CES51 = 95	CES76 = 85
CES02 = 63	CES27 = 95	CES52 = 95	CES77 = 85
CES03 = 31	CES28 = 96	CES53 = 91	CES78 = 83
CES04 = 70	CES29 = 90	CES54 = 92	CES79 = 89
CES05 = 50	CES30 = 96	CES55 = 91	CES80 = 89
CES06 = 51	CES31 = 92	CES56 = 88	CES81 = 70
CES07 = 42	CES32 = 86	CES57 = 87	CES82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