

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: P833524

Luminaire Tested: **TTN-D2-735-U-DL-CG-UPL1**

Issue Date: 5/15/2024

**Test Information**

Test Method: LM-79-08  
Report Number: P833524  
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-UPL1  
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**

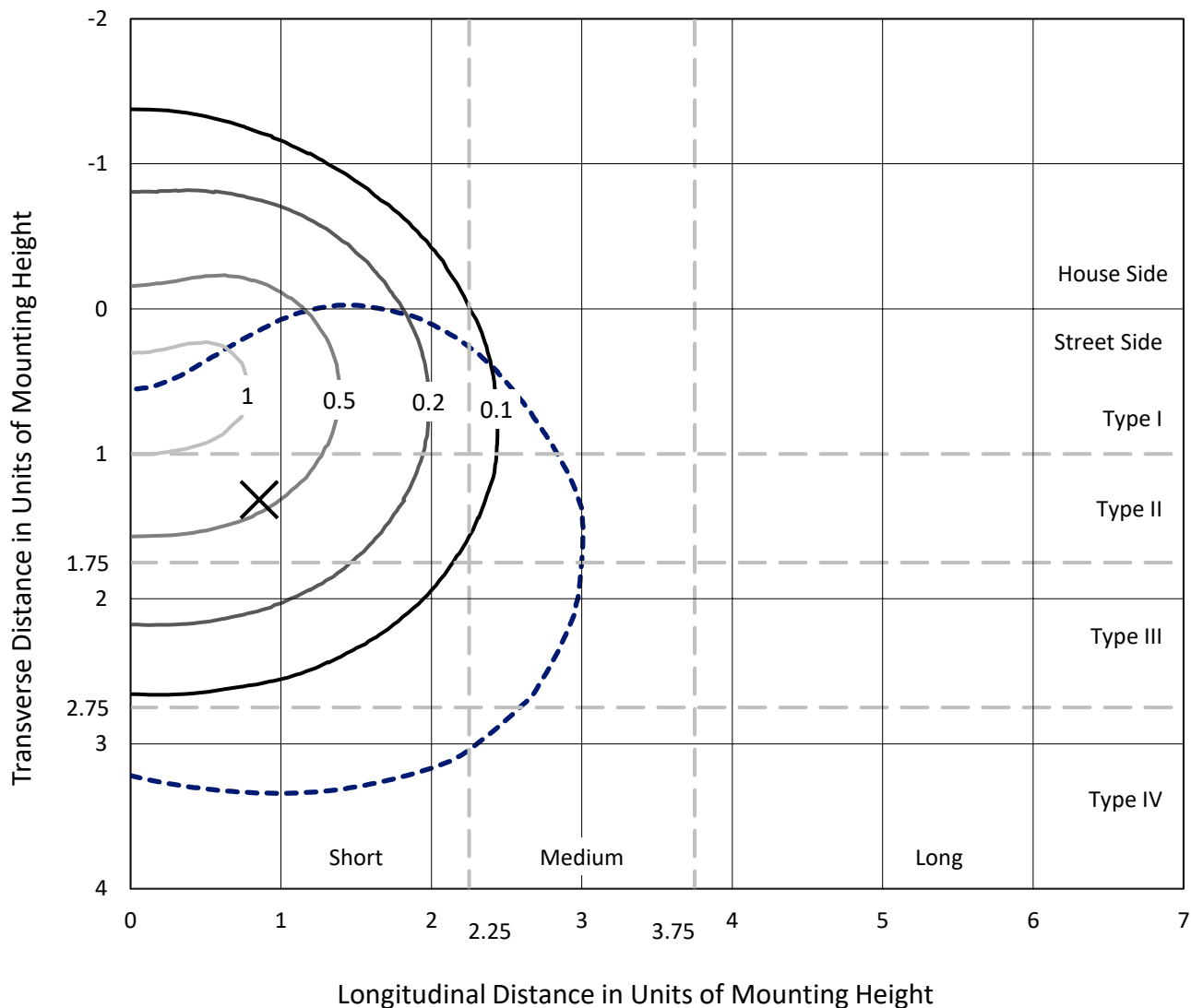
Lumens per Lamp: N/A  
Luminaire Lumens: 5010.9 lumens  
Efficiency: N/A  
Efficacy: 111.1 lumens/watt  
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U3 - G1  
  
Input Watts (W): 45.1  
Input Voltage (V): NR  
Input Current (Ain): 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



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### Iso-Footcandle Lines of Horizontal Illumination

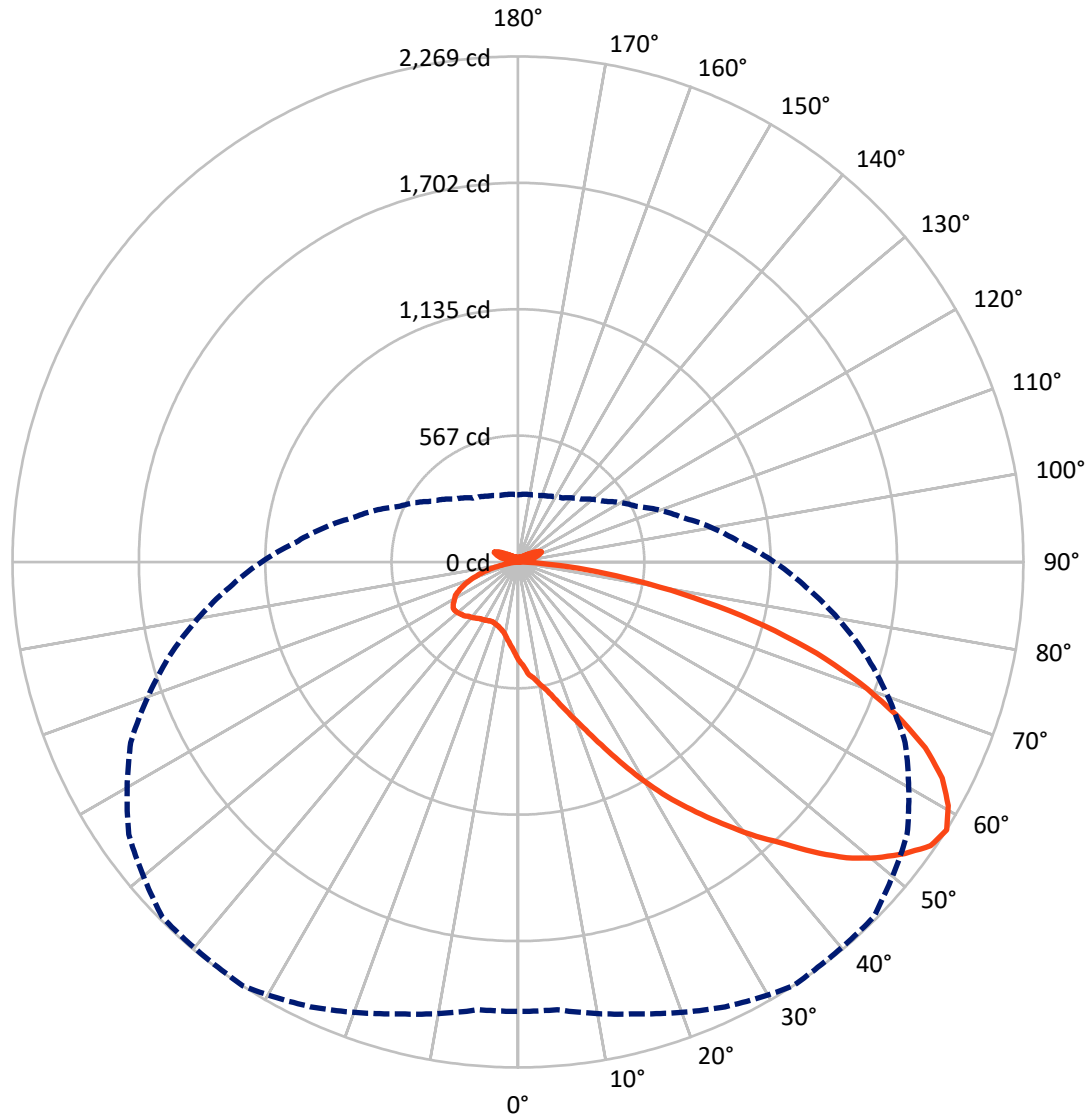
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.2 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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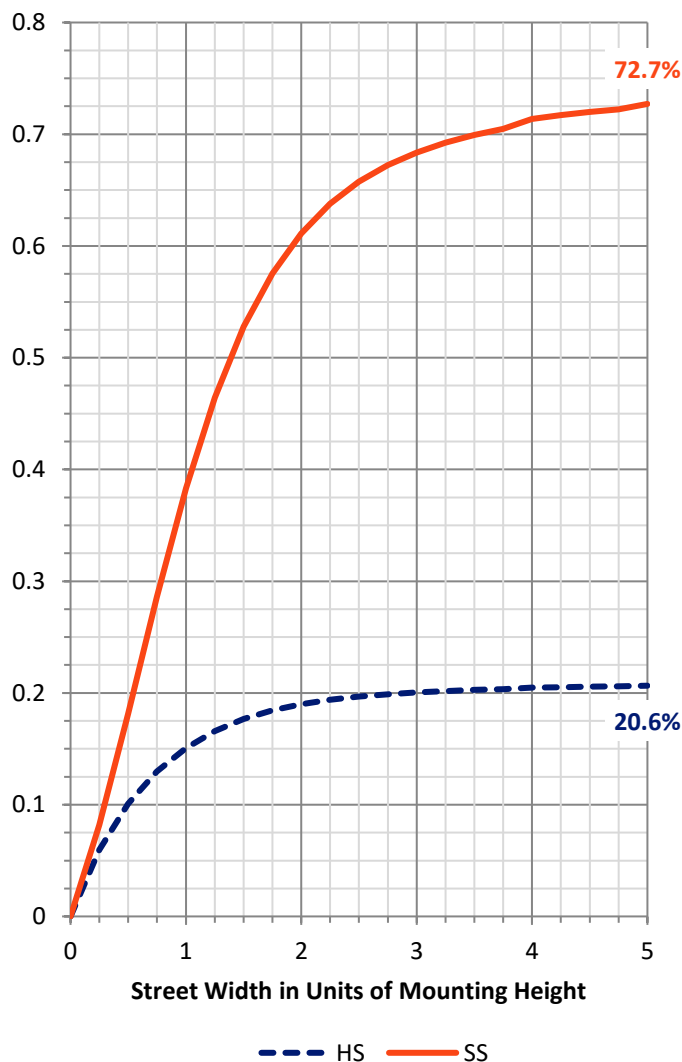
**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	1039.5	150.2	1189.8
	% Fixture	20.7	3.0	23.7
<b>Street Side</b>	Lumens	3670.9	150.2	3821.1
	% Fixture	73.3	3.0	76.3
<b>Total</b>	Lumens	4710.4	300.5	5010.9
	% Fixture	94.0	6.0	100.0

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	42.2	0.8
10°-20°	137.0	2.7
20°-30°	288.8	5.8
30°-40°	524.5	10.5
40°-50°	828.8	16.5
50°-60°	1100.7	22.0
60°-70°	1059.4	21.1
70°-80°	621.9	12.4
80°-90°	107.2	2.1
90°-100°	6.7	0.1
100°-110°	68.2	1.4
110°-120°	99.6	2.0
120°-130°	57.8	1.2
130°-140°	30.6	0.6
140°-150°	18.2	0.4
150°-160°	11.2	0.2
160°-170°	6.1	0.1
170°-180°	2.0	0.0
0°-90°	4710.4	94.0
0°-180°	5010.9	100.0

**Coefficient of Utilization**

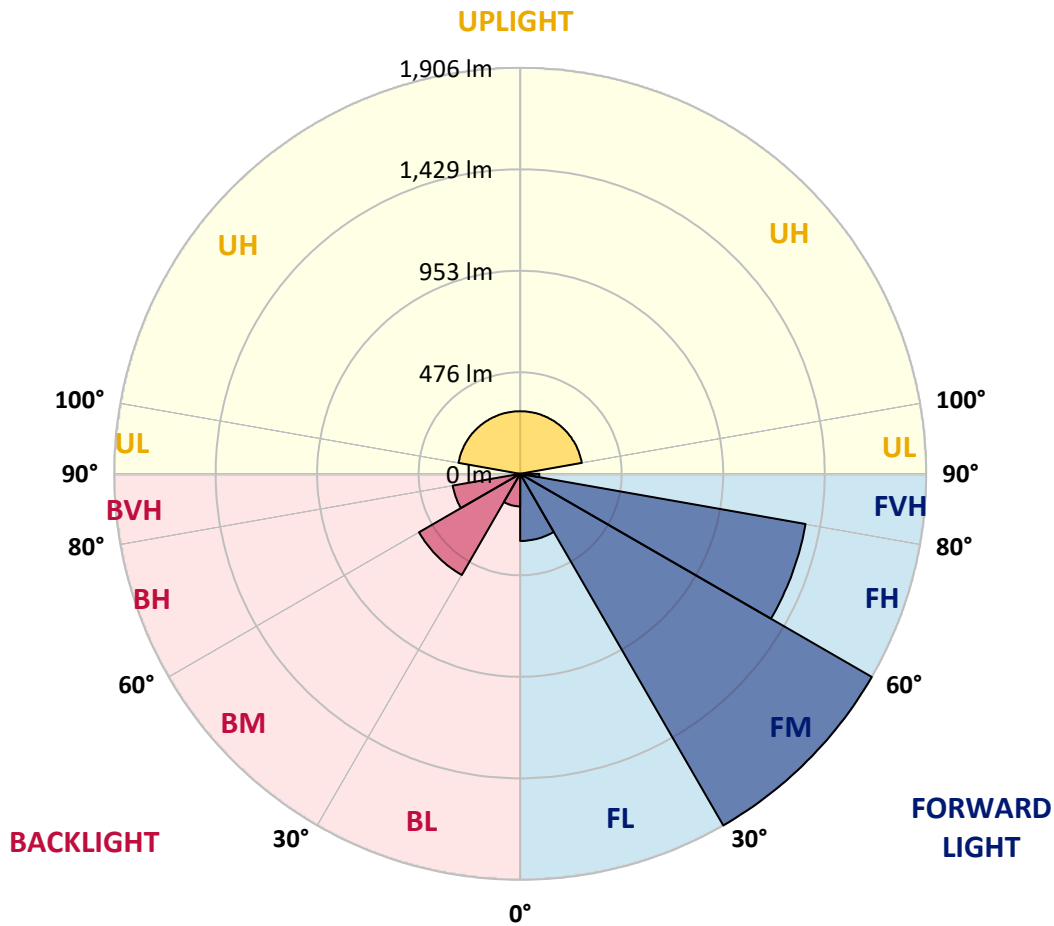


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	315.1	6.3			
FM (30°-60°)	1905.5	38.0			
FH (60°-80°)	1359.9	27.1			G1/1800
FVH (80°-90°)	90.4	1.8			G1/100
BL (0°-30°)	152.9	3.1	B1/500		
BM (30°-60°)	548.4	10.9	B1/1000		
BH (60°-80°)	321.4	6.4	B1/500		G1/500
BVH (80°-90°)	16.8	0.3			G1/100
UL (90°-100°)	6.7	0.1		U1/10	
UH (100°-180°)	293.8	5.9		U3/500	

**BUG Rating: B1-U3-G1**  
 Type IV Short





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**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°	2.6	2.6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	2.6
92.5°	2.6	2.6	2.6	3.6	4.0	4.1	3.6	4.1	3.1	3.1	2.6
95°	3.1	3.1	3.6	4.6	5.5	5.7	6.2	6.2	3.6	3.6	3.1
97.5°	4.1	4.6	4.6	5.7	8.6	9.3	17.0	10.3	5.1	5.1	4.6
100°	6.7	7.2	7.2	12.9	24.3	27.2	36.5	26.2	13.4	9.8	7.2
102.5°	21.6	22.6	27.8	41.6	57.7	61.7	56.0	47.3	44.7	30.8	24.7
105°	55.0	54.5	58.6	69.4	83.0	86.4	84.8	78.1	70.9	61.2	56.5
107.5°	72.5	72.5	76.1	85.3	95.6	98.2	114.6	116.2	92.0	80.7	75.6
110°	81.7	81.7	84.8	92.5	106.1	109.5	132.6	131.6	113.6	99.7	93.0



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
112.5°	83.8	84.3	88.4	100.2	115.0	118.7	129.0	124.4	117.2	111.0	105.9
115°	86.9	86.9	91.5	102.8	111.0	113.1	117.2	112.1	106.4	102.3	100.2
117.5°	85.8	87.4	88.4	94.6	100.0	101.3	104.4	101.8	94.1	91.0	90.0
120°	79.7	79.7	80.7	83.8	86.7	87.4	88.9	87.9	82.8	80.2	79.7
122.5°	70.9	71.5	70.9	72.5	74.5	75.0	76.6	75.6	71.5	70.4	70.4
125°	62.2	62.2	61.7	62.7	64.0	64.3	63.7	64.3	62.2	61.7	61.7
127.5°	56.0	55.5	54.5	55.0	55.4	55.5	55.5	56.0	54.0	54.5	55.0
130°	49.9	49.9	48.8	48.8	48.8	48.8	47.8	48.8	47.8	48.3	48.8
132.5°	44.2	44.2	42.7	42.2	42.2	42.2	42.2	42.7	42.2	43.2	44.2
135°	39.6	39.6	38.0	38.6	38.6	38.6	38.0	38.6	38.0	39.1	39.6
137.5°	36.0	36.0	35.0	35.0	35.0	35.0	34.4	35.0	35.0	35.5	36.5
140°	32.9	32.9	32.4	32.4	32.0	31.9	32.4	32.4	32.4	32.9	33.4
142.5°	31.4	30.8	30.3	29.8	30.2	30.3	30.3	30.3	29.8	30.3	31.4
145°	28.8	28.8	28.3	28.3	28.3	28.3	28.8	28.3	28.3	28.8	28.8
147.5°	27.2	27.2	26.7	27.2	27.2	27.2	27.2	27.2	26.7	27.2	27.2
150°	26.7	26.2	25.7	26.2	26.2	26.2	25.7	25.7	25.7	25.7	26.2
152.5°	25.2	25.2	24.7	25.2	24.8	24.7	24.7	24.7	24.7	24.7	25.2
155°	24.2	24.2	23.6	24.2	24.2	24.2	24.2	24.2	24.2	24.2	24.2
157.5°	23.1	23.6	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.6
160°	22.6	22.6	22.6	22.6	22.2	22.1	22.1	22.1	22.6	22.6	22.6
162.5°	22.1	22.1	22.1	22.1	21.7	21.6	21.6	21.6	21.6	22.1	22.1
165°	22.1	21.6	21.6	21.6	21.2	21.1	21.1	21.1	21.1	21.6	22.1
167.5°	21.1	21.1	21.1	21.1	21.1	21.1	20.6	20.6	21.1	21.1	21.1
170°	21.1	21.1	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6
172.5°	21.1	21.1	21.1	21.1	20.7	20.6	20.6	20.6	20.6	20.6	21.1
175°	21.1	21.1	21.1	21.1	20.7	20.6	20.6	20.6	21.1	21.1	21.1
177.5°	21.1	21.1	21.1	21.1	20.7	20.6	21.1	21.1	21.1	21.1	21.1
180°	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1





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**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°	2.6	2.6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	2.6	2.6
92.5°	2.6	2.6	3.1	3.1	4.1	3.6	4.1	3.6	2.6	2.6	2.6
95°	3.1	3.1	3.6	3.6	6.2	6.2	5.7	4.6	3.6	3.1	3.1
97.5°	4.1	4.6	5.1	5.1	10.3	17.0	9.3	5.7	4.6	4.6	4.1
100°	7.2	7.2	9.8	13.4	26.2	36.5	27.2	12.9	7.2	7.2	6.7
102.5°	23.6	24.7	30.8	44.7	47.3	56.0	61.7	41.6	27.8	22.6	21.6
105°	56.5	56.5	61.2	70.9	78.1	84.8	86.4	69.4	58.6	54.5	55.0
107.5°	75.0	75.6	80.7	92.0	116.2	114.6	98.2	85.3	76.1	72.5	72.5
110°	92.0	93.0	99.7	113.6	131.6	132.6	109.5	92.5	84.8	81.7	81.7



REPORT NUMBER: P833524  
 CATALOG NUMBER: TTN-D2-735-U-DL-CG-UPL1

**CANDELA DISTRIBUTION (continued):**

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	104.9	105.9	111.0	117.2	124.4	129.0	118.7	100.2	88.4	84.3	83.8
115°	101.3	100.2	102.3	106.4	112.1	117.2	113.1	102.8	91.5	86.9	86.9
117.5°	88.4	90.0	91.0	94.1	101.8	104.4	101.3	94.6	88.4	87.4	85.8
120°	78.6	79.7	80.2	82.8	87.9	88.9	87.4	83.8	80.7	79.7	79.7
122.5°	69.4	70.4	70.4	71.5	75.6	76.6	75.0	72.5	70.9	71.5	70.9
125°	61.2	61.7	61.7	62.2	64.3	63.7	64.3	62.7	61.7	62.2	62.2
127.5°	54.5	55.0	54.5	54.0	56.0	55.5	55.5	55.0	54.5	55.5	56.0
130°	49.3	48.8	48.3	47.8	48.8	47.8	48.8	48.8	48.8	49.9	49.9
132.5°	44.2	44.2	43.2	42.2	42.7	42.2	42.2	42.2	42.7	44.2	44.2
135°	39.6	39.6	39.1	38.0	38.6	38.0	38.6	38.6	38.0	39.6	39.6
137.5°	37.0	36.5	35.5	35.0	35.0	34.4	35.0	35.0	35.0	36.0	36.0
140°	33.4	33.4	32.9	32.4	32.4	32.4	31.9	32.4	32.4	32.9	32.9
142.5°	31.4	31.4	30.3	29.8	30.3	30.3	30.3	29.8	30.3	30.8	31.4
145°	29.3	28.8	28.8	28.3	28.3	28.8	28.3	28.3	28.3	28.8	28.8
147.5°	27.8	27.2	27.2	26.7	27.2	27.2	27.2	27.2	26.7	27.2	27.2
150°	26.2	26.2	25.7	25.7	25.7	25.7	26.2	26.2	25.7	26.2	26.7
152.5°	25.7	25.2	24.7	24.7	24.7	24.7	24.7	25.2	24.7	25.2	25.2
155°	24.2	24.2	24.2	24.2	24.2	24.2	24.2	24.2	23.6	24.2	24.2
157.5°	23.6	23.6	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.6	23.1
160°	23.1	22.6	22.6	22.6	22.1	22.1	22.1	22.6	22.6	22.6	22.6
162.5°	22.6	22.1	22.1	21.6	21.6	21.6	21.6	22.1	22.1	22.1	22.1
165°	21.6	22.1	21.6	21.1	21.1	21.1	21.1	21.6	21.6	21.6	22.1
167.5°	21.6	21.1	21.1	21.1	20.6	20.6	21.1	21.1	21.1	21.1	21.1
170°	21.1	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	21.1	21.1
172.5°	21.1	21.1	20.6	20.6	20.6	20.6	20.6	21.1	21.1	21.1	21.1
175°	20.6	21.1	21.1	21.1	20.6	20.6	20.6	21.1	21.1	21.1	21.1
177.5°	21.1	21.1	21.1	21.1	21.1	21.1	20.6	21.1	21.1	21.1	21.1
180°	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1

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

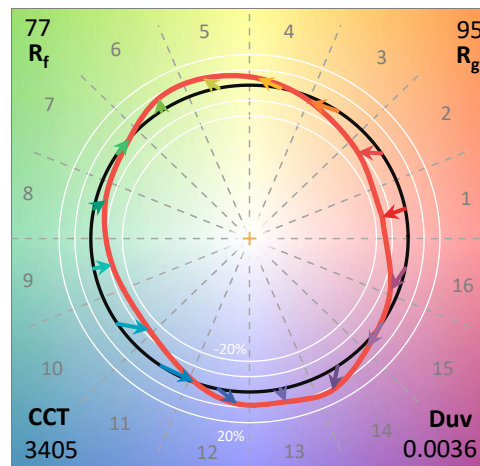
**Test Information**

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**

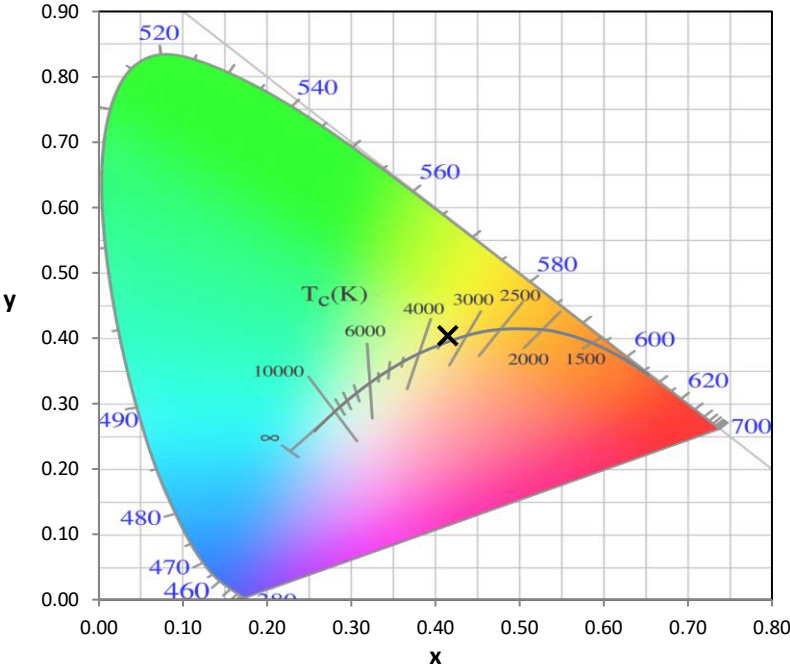
Stabilization Time: 38M  
 Operation Time: 1H 38M  
 Sphere Temperature (°C): 24.9

REPORT NUMBER: SP1-2411-284-1

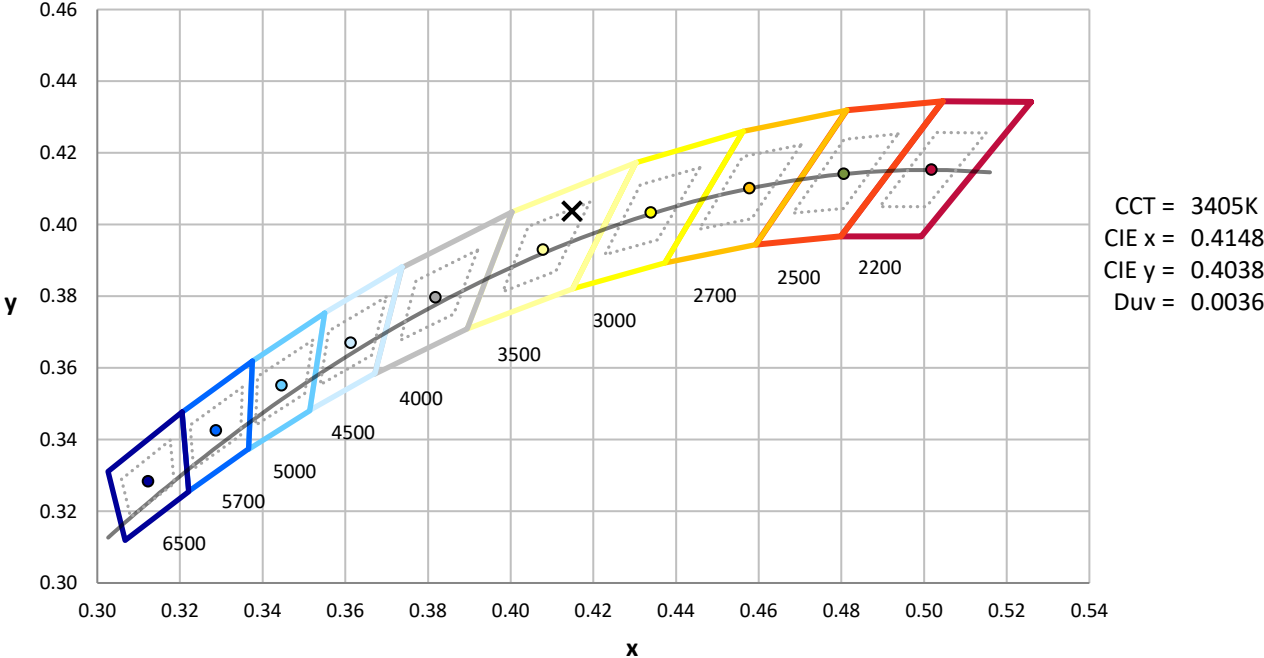
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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



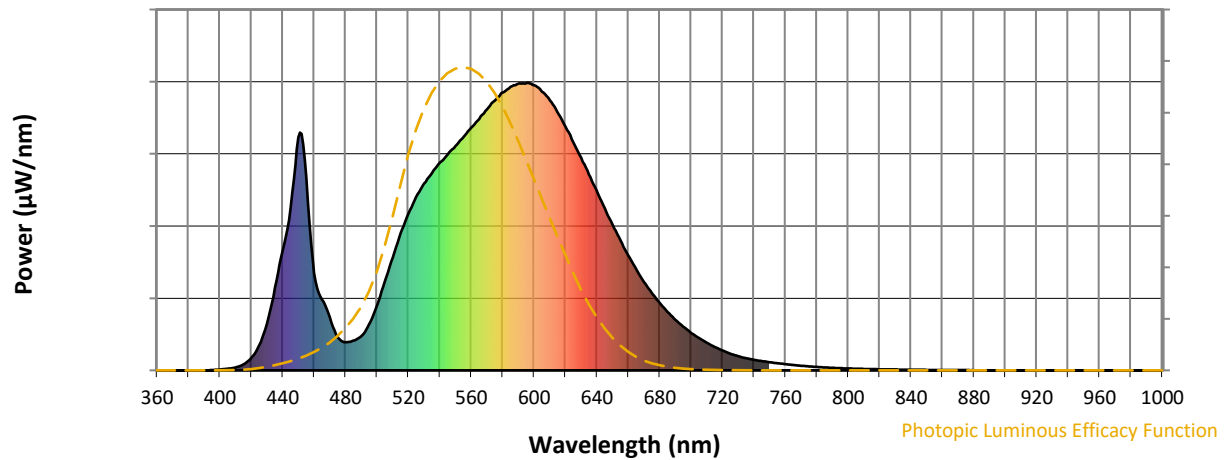
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2411-284-1

**Photopic Flux vs. Wavelength**

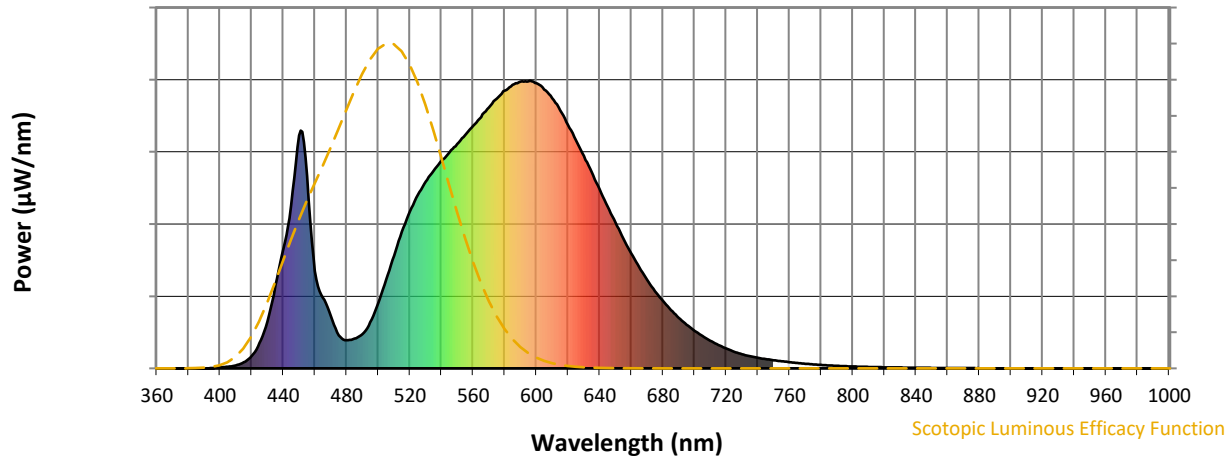


**Photopic Lumens: NR**

$\lambda$ (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	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**

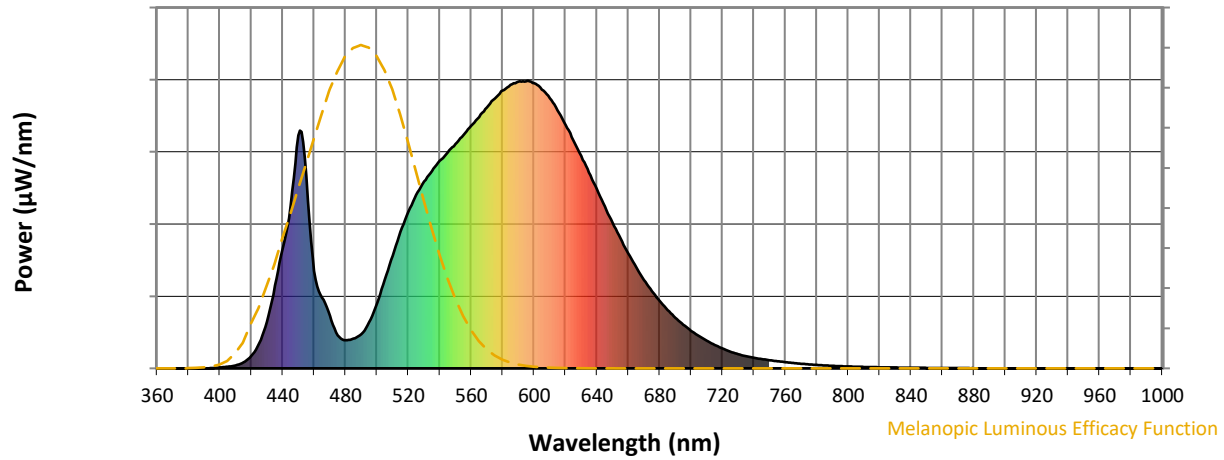
**S/P: 1.33**

λ (nm)	Power W <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	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



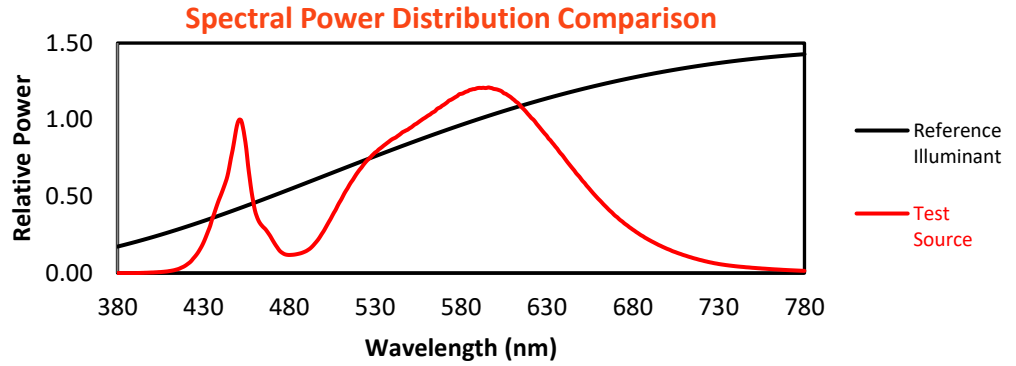
Melanopic Lumens: NR

M/P: 2.47

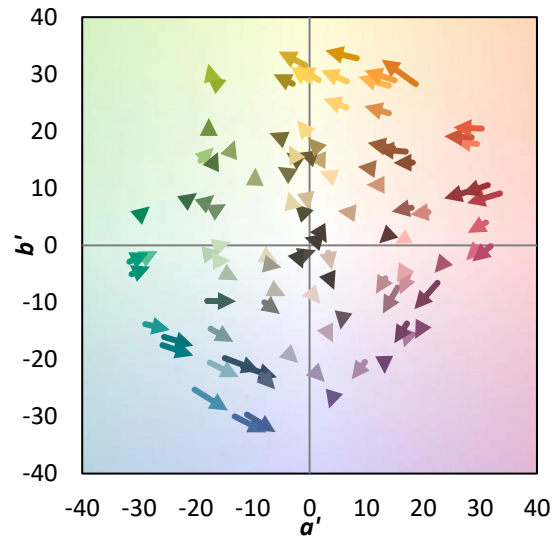
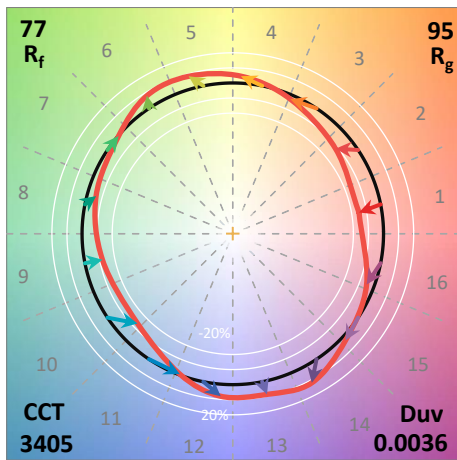
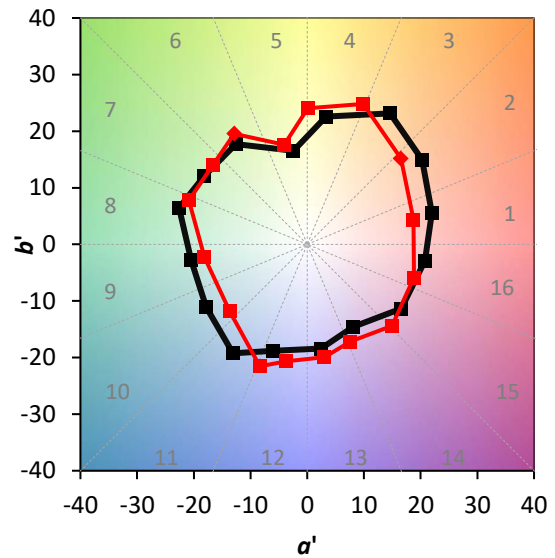
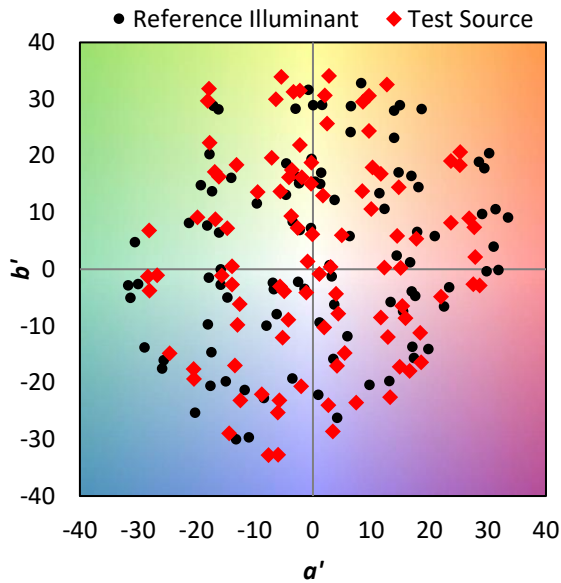
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	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**

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

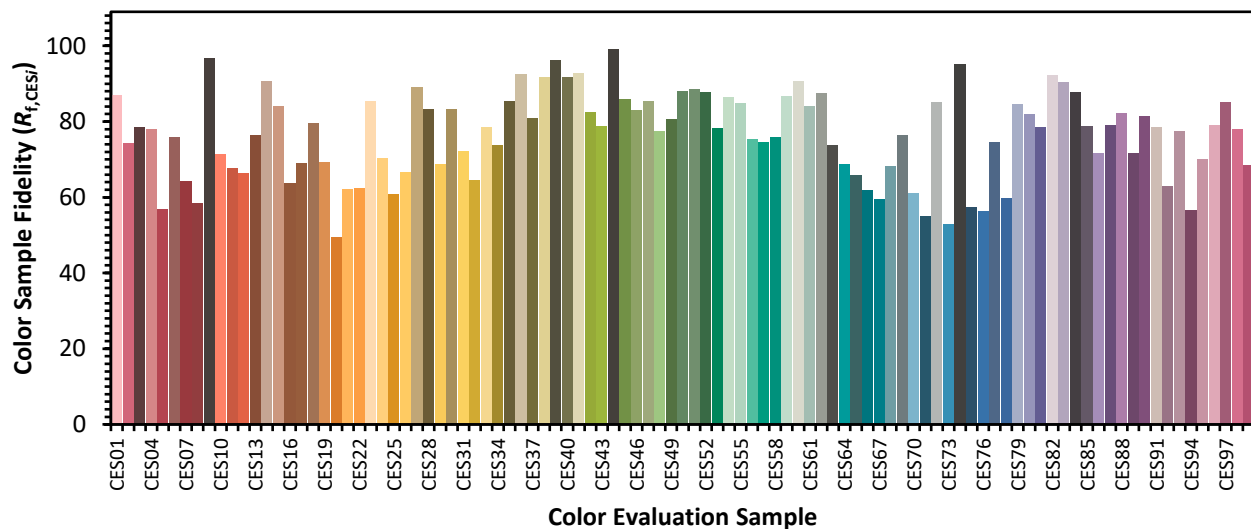


**Color Vector Graphics**

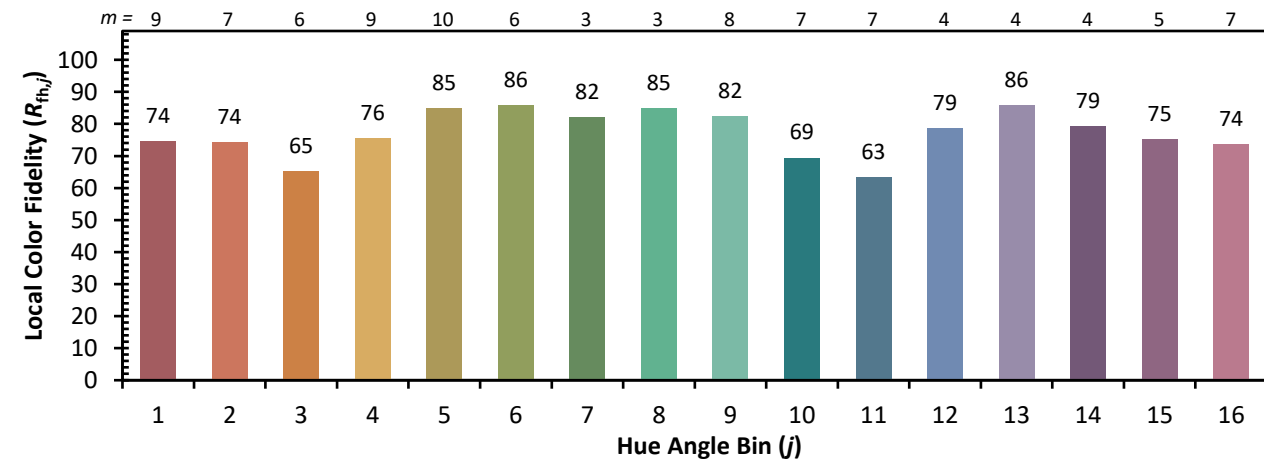
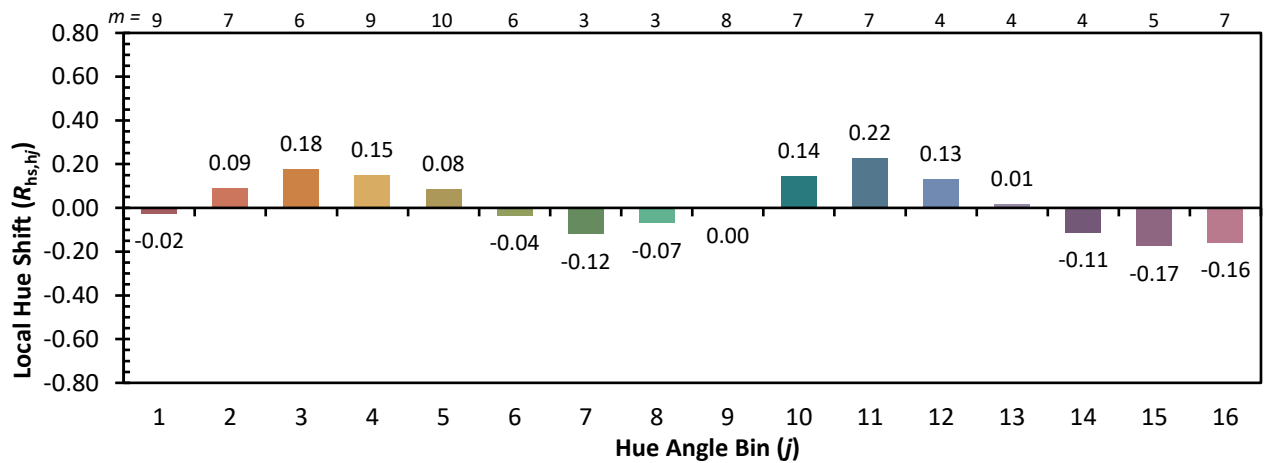
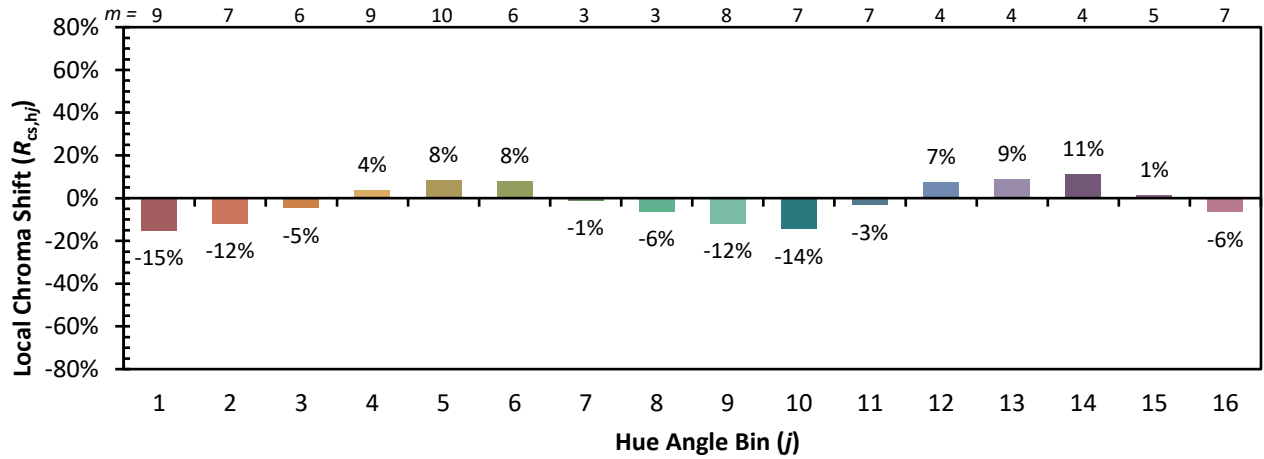


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

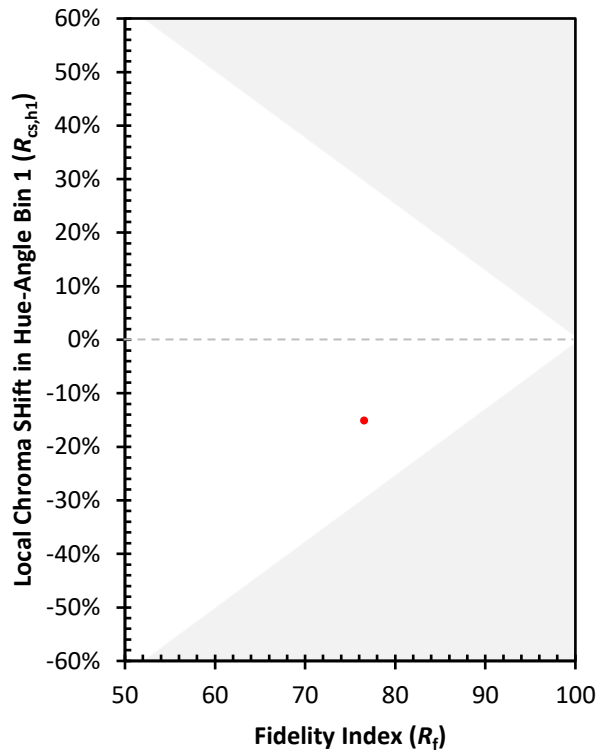
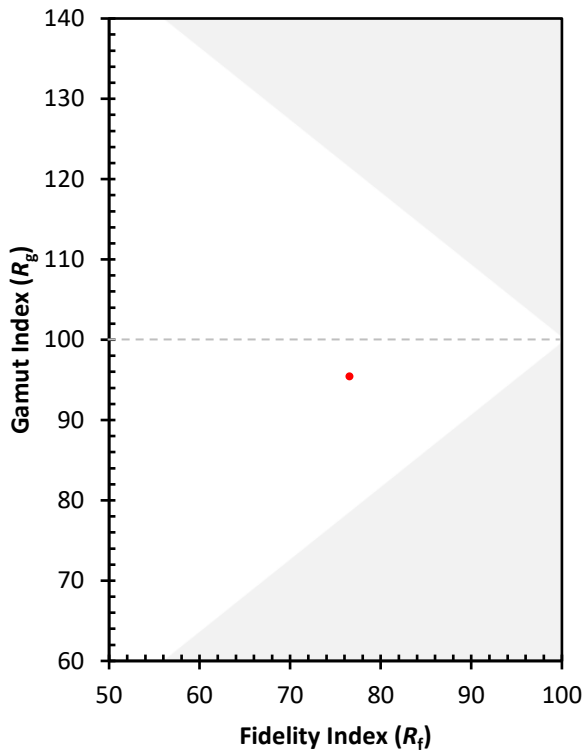
CES01 = 86	CES26 = 67	CES51 = 88	CES76 = 56
CES02 = 62	CES27 = 89	CES52 = 88	CES77 = 75
CES03 = 31	CES28 = 83	CES53 = 78	CES78 = 60
CES04 = 70	CES29 = 69	CES54 = 86	CES79 = 85
CES05 = 48	CES30 = 83	CES55 = 85	CES80 = 82
CES06 = 51	CES31 = 72	CES56 = 75	CES81 = 78
CES07 = 41	CES32 = 65	CES57 = 75	CES82 = 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)