

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: P833555

Luminaire Tested: **TTN-D2-740-U-DL-CG-UPL2**

Issue Date: 5/15/2024

Test Information

Test Method: LM-79-08
Report Number: P833555
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-D2-740-U-DL-CG-UPL2
Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
4000K, 70 CRI LEDS AND DRIVE LANE DISTRIBUTION WITH CLEAR GLASS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5553.7 lumens
Efficiency: N/A
Efficacy: 118.2 lumens/watt
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')
IES Classification: Type IV - Short
BUG Rating: B1 - U4 - G1

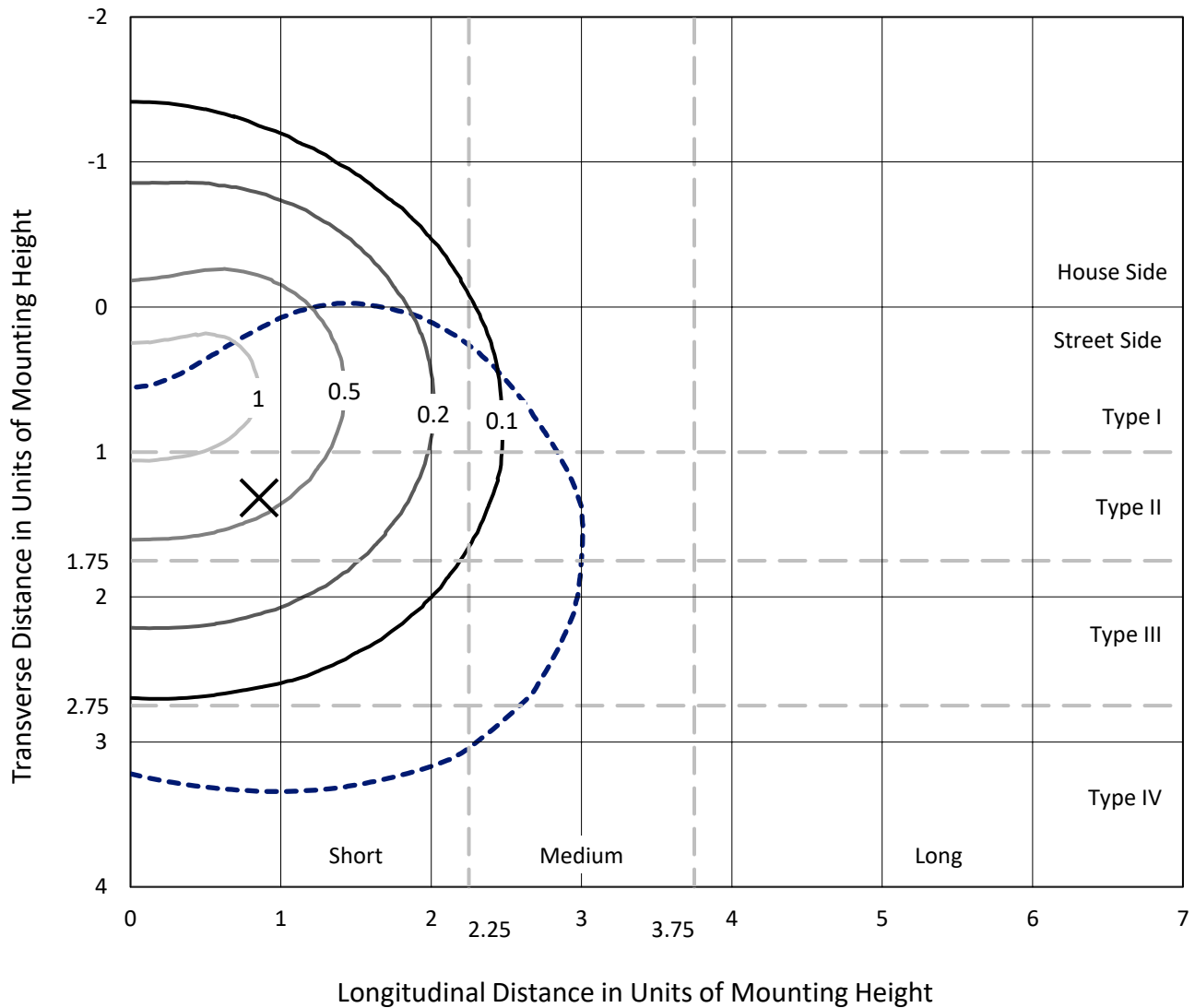
Input Watts (W): 47
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



REPORT NUMBER: P833555
 CATALOG NUMBER: TTN-D2-740-U-DL-CG-UPL2

Iso-Footcandle Lines of Horizontal Illumination

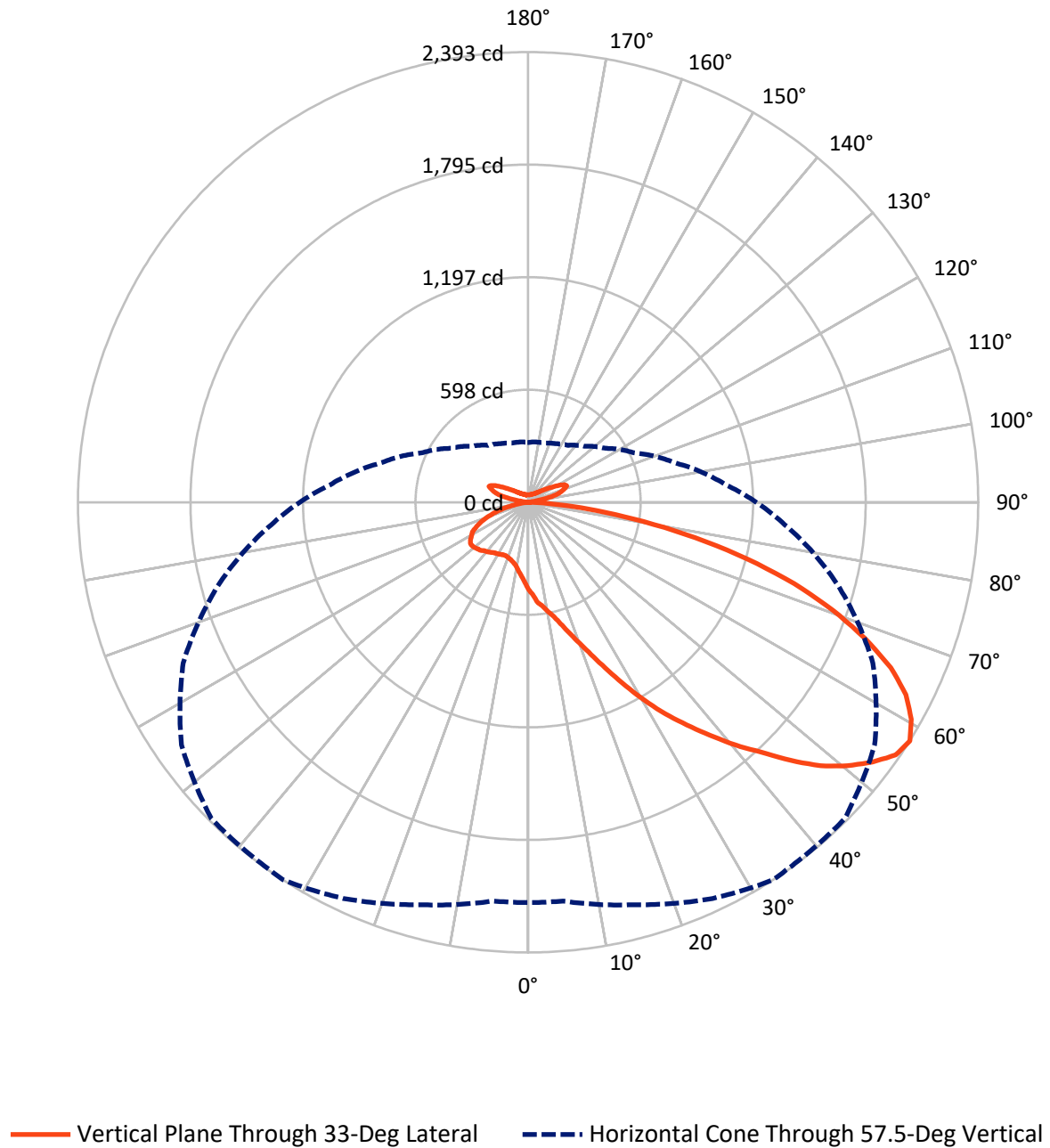
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.3 fc
 Type IV - Short - N/A

REPORT NUMBER: P833555
CATALOG NUMBER: TTN-D2-740-U-DL-CG-UPL2

Luminous Intensity Polar Plot



REPORT NUMBER: P833555

CATALOG NUMBER: TTN-D2-740-U-DL-CG-UPL2

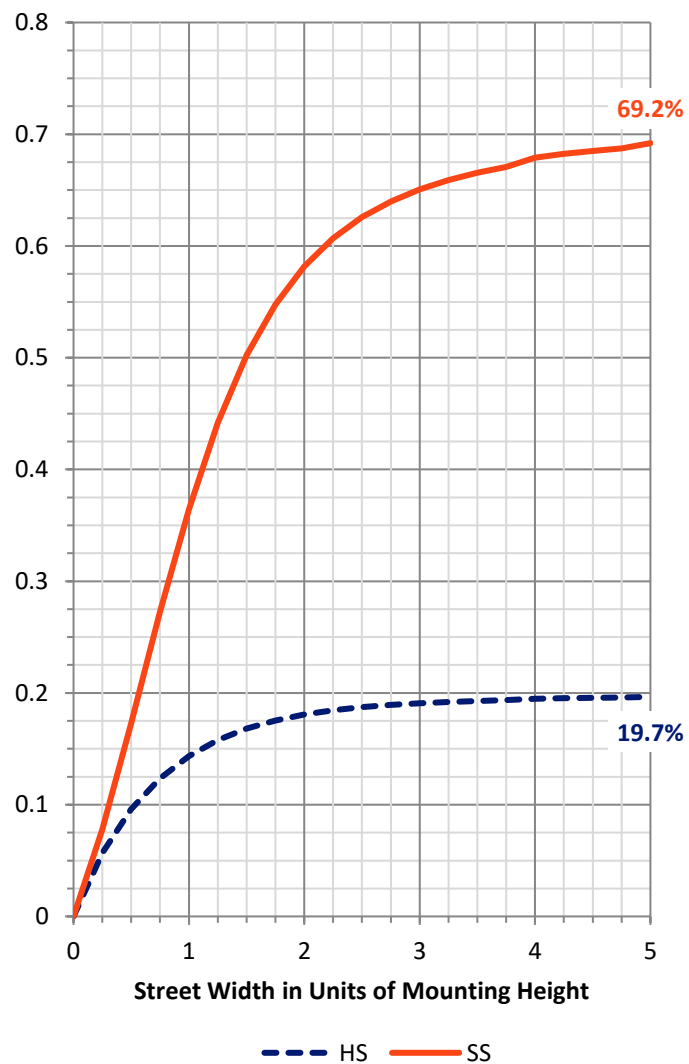
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	1096.7	292.5	1389.1
	% Fixture	19.7	5.3	25.0
Street Side	Lumens	3872.2	292.5	4164.6
	% Fixture	69.7	5.3	75.0
Total	Lumens	4968.8	584.9	5553.7
	% Fixture	89.5	10.5	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	44.6	0.8
10°-20°	144.5	2.6
20°-30°	304.6	5.5
30°-40°	553.2	10.0
40°-50°	874.2	15.7
50°-60°	1161.0	20.9
60°-70°	1117.4	20.1
70°-80°	655.9	11.8
80°-90°	113.4	2.0
90°-100°	13.1	0.2
100°-110°	132.7	2.4
110°-120°	194.0	3.5
120°-130°	112.6	2.0
130°-140°	59.7	1.1
140°-150°	35.4	0.6
150°-160°	21.8	0.4
160°-170°	11.9	0.2
170°-180°	3.9	0.1
0°-90°	4968.8	89.5
0°-180°	5553.7	100.0

Coefficient of Utilization



REPORT NUMBER: P833555

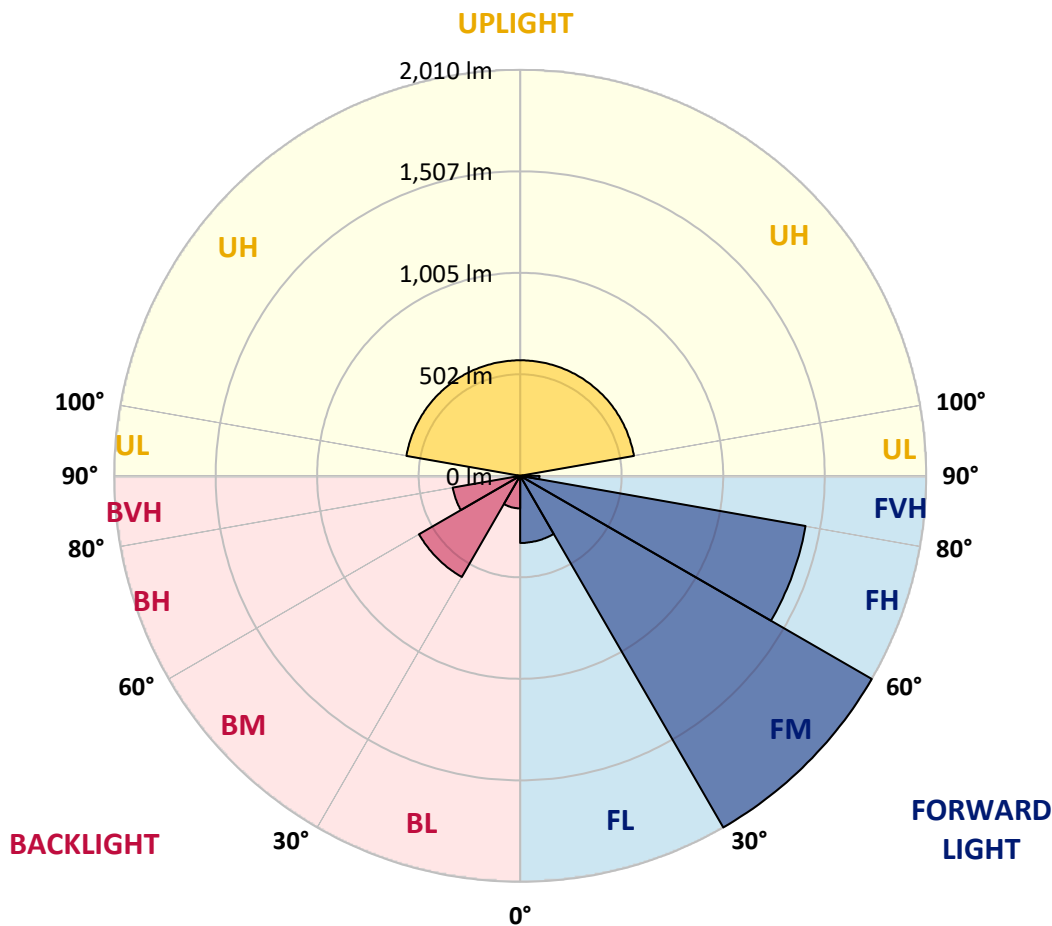
CATALOG NUMBER: TTN-D2-740-U-DL-CG-UPL2

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit		
				B	U	G
FL	(0°-30°)	332.4	6.0			
FM	(30°-60°)	2009.9	36.2			
FH	(60°-80°)	1434.4	25.8			G1/1800
FVH	(80°-90°)	95.5	1.7			G1/100
BL	(0°-30°)	161.3	2.9	B1/500		
BM	(30°-60°)	578.5	10.4	B1/1000		
BH	(60°-80°)	339.0	6.1	B1/500		G1/500
BVH	(80°-90°)	17.9	0.3			G1/100
UL	(90°-100°)	13.1	0.2		U2/50	
UH	(100°-180°)	571.8	10.3		U4/1000	

BUG Rating: B1-U4-G1

Type IV Short



REPORT NUMBER: P833555

CATALOG NUMBER: TTN-D2-740-U-DL-CG-UPL2

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
0°	465.6	465.6	465.6	465.6	465.6	465.6	465.6	465.6	465.6	465.6	465.6
2.5°	496.1	500.4	496.1	496.1	491.7	491.7	487.4	483.0	478.7	474.3	465.6
5°	552.7	552.7	548.3	539.6	535.2	530.9	522.2	509.1	500.4	487.4	474.3
7.5°	578.8	578.8	574.4	565.7	557.0	552.7	539.6	522.2	509.1	491.7	474.3
10°	613.6	617.9	609.2	600.5	591.8	587.5	570.1	548.3	526.5	504.8	478.7
12.5°	652.7	657.1	652.7	639.7	626.6	622.3	604.9	578.8	552.7	522.2	491.7
15°	705.0	713.7	700.6	691.9	678.9	674.5	652.7	622.3	591.8	552.7	513.5
17.5°	765.9	770.2	761.5	748.5	739.8	735.4	713.7	678.9	635.3	591.8	544.0
20°	835.5	839.9	835.5	818.1	809.4	805.0	783.3	744.1	691.9	644.0	583.1
22.5°	918.2	926.9	913.8	900.8	892.1	892.1	866.0	822.5	761.5	700.6	631.0
25°	1013.9	1027.0	1009.6	1000.9	992.2	987.8	966.1	913.8	844.2	770.2	683.2
27.5°	1131.4	1140.1	1127.1	1122.7	1105.3	1105.3	1070.5	1009.6	935.6	848.6	748.5
30°	1235.9	1244.6	1235.9	1235.9	1222.8	1218.4	1183.6	1122.7	1031.3	926.9	805.0
32.5°	1335.9	1344.6	1340.3	1344.6	1340.3	1335.9	1292.4	1227.2	1135.8	1000.9	861.6
35°	1436.0	1449.1	1444.7	1457.8	1453.4	1449.1	1414.3	1335.9	1227.2	1092.3	922.5
37.5°	1540.5	1553.5	1553.5	1566.6	1570.9	1570.9	1531.8	1449.1	1327.2	1174.9	992.2
40°	1653.6	1666.7	1666.7	1688.4	1697.1	1697.1	1653.6	1570.9	1436.0	1266.3	1066.1
42.5°	1762.4	1775.5	1779.8	1801.6	1814.6	1819.0	1784.2	1688.4	1531.8	1357.7	1135.8
45°	1866.8	1879.9	1892.9	1936.5	1958.2	1953.9	1927.8	1827.7	1653.6	1453.4	1209.7
47.5°	1966.9	1984.3	2006.1	2062.7	2093.1	2088.8	2071.4	1958.2	1766.8	1544.8	1275.0
50°	2045.3	2058.3	2101.8	2162.7	2201.9	2206.3	2180.2	2071.4	1862.5	1614.4	1322.9
52.5°	2106.2	2123.6	2175.8	2262.8	2293.3	2306.4	2275.9	2167.1	1958.2	1675.4	1362.1
55°	2149.7	2149.7	2228.0	2328.1	2371.6	2380.3	2380.3	2245.4	2014.8	1714.5	1383.8
57.5°	2127.9	2127.9	2215.0	2323.8	2393.4	2389.0	2380.3	2249.8	2023.5	1705.8	1370.8
60°	2067.0	2080.1	2162.7	2271.5	2341.2	2336.8	2310.7	2193.2	1980.0	1671.0	1344.6
62.5°	1984.3	2006.1	2093.1	2175.8	2254.1	2267.2	2232.4	2127.9	1906.0	1618.8	1296.8
65°	1827.7	1858.1	1966.9	2058.3	2119.2	2145.3	2101.8	2006.1	1805.9	1518.7	1196.7
67.5°	1653.6	1675.4	1766.8	1897.3	1932.1	1958.2	1936.5	1836.4	1666.7	1357.7	1083.6
70°	1453.4	1488.2	1549.2	1679.7	1718.9	1745.0	1745.0	1644.9	1483.9	1192.3	948.7
72.5°	1218.4	1257.6	1331.6	1427.3	1479.5	1497.0	1492.6	1409.9	1266.3	1009.6	800.7
75°	961.7	992.2	1079.2	1148.8	1205.4	1218.4	1214.1	1144.5	1013.9	813.8	635.3
77.5°	709.3	739.8	805.0	857.3	909.5	900.8	900.8	848.6	765.9	604.9	483.0
80°	465.6	491.7	548.3	565.7	622.3	617.9	617.9	578.8	522.2	404.7	322.0
82.5°	256.7	278.5	317.7	335.1	369.9	361.2	365.5	339.4	304.6	226.3	182.8
85°	91.4	108.8	130.5	143.6	161.0	161.0	161.0	139.3	130.5	87.0	74.0
87.5°	4.4	8.7	17.4	17.4	26.1	26.1	26.1	17.4	17.4	4.4	4.4
90°	5.0	5.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.0
92.5°	5.0	5.0	5.0	7.0	7.8	8.0	7.0	8.0	6.0	6.0	5.0
95°	6.0	6.0	7.0	9.0	10.6	11.0	12.0	12.0	7.0	7.0	6.0
97.5°	8.0	9.0	9.0	11.0	16.6	18.0	33.0	20.0	10.0	10.0	9.0
100°	13.0	14.0	14.0	25.0	47.4	53.0	71.1	51.0	26.0	19.0	14.0
102.5°	42.0	44.0	54.0	81.1	112.3	120.1	109.1	92.1	87.1	60.0	48.0
105°	107.1	106.1	114.1	135.1	161.5	168.1	165.1	152.1	138.1	119.1	110.1
107.5°	141.1	141.1	148.1	166.1	186.1	191.1	223.2	226.2	179.1	157.1	147.1
110°	159.1	159.1	165.1	180.1	206.6	213.2	258.2	256.2	221.2	194.1	181.1

REPORT NUMBER: P833555

CATALOG NUMBER: TTN-D2-740-U-DL-CG-UPL2

CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
112.5°	163.1	164.1	172.1	195.1	224.0	231.2	251.2	242.2	228.2	216.2	206.2
115°	169.1	169.1	178.1	200.2	216.2	220.2	228.2	218.2	207.2	199.2	195.1
117.5°	167.1	170.1	172.1	184.1	194.5	197.1	203.2	198.1	183.1	177.1	175.1
120°	155.1	155.1	157.1	163.1	168.7	170.1	173.1	171.1	161.1	156.1	155.1
122.5°	138.1	139.1	138.1	141.1	145.1	146.1	149.1	147.1	139.1	137.1	137.1
125°	121.1	121.1	120.1	122.1	124.5	125.1	124.1	125.1	121.1	120.1	120.1
127.5°	109.1	108.1	106.1	107.1	107.9	108.1	108.1	109.1	105.1	106.1	107.1
130°	97.1	97.1	95.1	95.1	95.1	95.1	93.1	95.1	93.1	94.1	95.1
132.5°	86.1	86.1	83.1	82.1	82.1	82.1	82.1	83.1	82.1	84.1	86.1
135°	77.1	77.1	74.1	75.1	75.1	75.1	74.1	75.1	74.1	76.1	77.1
137.5°	70.1	70.1	68.1	68.1	68.1	68.1	67.1	68.1	68.1	69.1	71.1
140°	64.0	64.0	63.0	63.0	62.2	62.0	63.0	63.0	63.0	64.0	65.0
142.5°	61.0	60.0	59.0	58.0	58.8	59.0	59.0	59.0	58.0	59.0	61.0
145°	56.0	56.0	55.0	55.0	55.0	55.0	56.0	55.0	55.0	56.0	56.0
147.5°	53.0	53.0	52.0	53.0	53.0	53.0	53.0	53.0	52.0	53.0	53.0
150°	52.0	51.0	50.0	51.0	51.0	51.0	50.0	50.0	50.0	50.0	51.0
152.5°	49.0	49.0	48.0	49.0	48.2	48.0	48.0	48.0	48.0	48.0	49.0
155°	47.0	47.0	46.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0
157.5°	45.0	46.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.0
160°	44.0	44.0	44.0	44.0	43.2	43.0	43.0	43.0	44.0	44.0	44.0
162.5°	43.0	43.0	43.0	43.0	42.2	42.0	42.0	42.0	42.0	43.0	43.0
165°	43.0	42.0	42.0	42.0	41.2	41.0	41.0	41.0	41.0	42.0	43.0
167.5°	41.0	41.0	41.0	41.0	41.0	41.0	40.0	40.0	41.0	41.0	41.0
170°	41.0	41.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
172.5°	41.0	41.0	41.0	41.0	40.2	40.0	40.0	40.0	40.0	40.0	41.0
175°	41.0	41.0	41.0	41.0	40.2	40.0	40.0	40.0	41.0	41.0	41.0
177.5°	41.0	41.0	41.0	41.0	40.2	40.0	41.0	41.0	41.0	41.0	41.0
180°	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0

REPORT NUMBER: P833555

CATALOG NUMBER: TTN-D2-740-U-DL-CG-UPL2

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	465.6	465.6	465.6	465.6	465.6	465.6	465.6	465.6	465.6	465.6	465.6
2.5°	461.3	456.9	452.6	443.9	439.5	435.2	430.8	426.5	426.5	426.5	426.5
5°	465.6	461.3	448.2	435.2	422.1	409.1	400.3	396.0	391.6	387.3	387.3
7.5°	465.6	456.9	439.5	422.1	409.1	391.6	378.6	365.5	356.8	352.5	352.5
10°	470.0	456.9	435.2	417.8	396.0	374.2	356.8	339.4	330.7	322.0	322.0
12.5°	478.7	465.6	435.2	413.4	387.3	361.2	339.4	322.0	309.0	300.3	300.3
15°	496.1	478.7	443.9	413.4	382.9	352.5	330.7	309.0	295.9	287.2	287.2
17.5°	522.2	500.4	456.9	413.4	378.6	348.1	322.0	300.3	282.9	274.2	274.2
20°	552.7	526.5	474.3	422.1	378.6	343.8	317.7	291.6	274.2	265.4	265.4
22.5°	596.2	557.0	496.1	435.2	387.3	348.1	313.3	287.2	269.8	261.1	261.1
25°	644.0	600.5	522.2	452.6	396.0	348.1	313.3	287.2	269.8	261.1	256.7
27.5°	696.3	648.4	552.7	470.0	404.7	356.8	317.7	287.2	269.8	261.1	261.1
30°	744.1	687.6	583.1	491.7	417.8	361.2	322.0	291.6	269.8	261.1	261.1
32.5°	796.3	731.1	613.6	513.5	430.8	369.9	326.4	295.9	274.2	265.4	261.1
35°	848.6	774.6	644.0	530.9	443.9	378.6	330.7	300.3	278.5	269.8	269.8
37.5°	905.1	822.5	674.5	552.7	456.9	387.3	339.4	304.6	282.9	274.2	274.2
40°	966.1	870.3	705.0	570.1	470.0	396.0	348.1	313.3	291.6	282.9	282.9
42.5°	1027.0	922.5	739.8	591.8	483.0	404.7	352.5	322.0	300.3	291.6	291.6
45°	1087.9	966.1	770.2	613.6	496.1	417.8	365.5	330.7	309.0	300.3	300.3
47.5°	1144.5	1013.9	796.3	626.6	509.1	426.5	369.9	339.4	317.7	313.3	309.0
50°	1183.6	1044.4	813.8	639.7	513.5	430.8	378.6	343.8	326.4	317.7	317.7
52.5°	1214.1	1074.8	826.8	648.4	517.8	435.2	382.9	352.5	335.1	326.4	322.0
55°	1231.5	1079.2	826.8	639.7	513.5	435.2	382.9	352.5	335.1	326.4	326.4
57.5°	1214.1	1057.4	809.4	622.3	500.4	422.1	369.9	343.8	326.4	322.0	317.7
60°	1179.3	1022.6	774.6	596.2	478.7	400.3	352.5	330.7	317.7	313.3	309.0
62.5°	1131.4	979.1	739.8	561.4	448.2	374.2	339.4	313.3	304.6	300.3	295.9
65°	1035.7	896.4	683.2	517.8	409.1	343.8	309.0	291.6	282.9	274.2	269.8
67.5°	931.2	805.0	604.9	465.6	361.2	309.0	278.5	261.1	248.0	248.0	243.7
70°	818.1	709.3	522.2	396.0	313.3	269.8	239.3	226.3	217.6	217.6	213.2
72.5°	683.2	596.2	435.2	322.0	256.7	221.9	200.2	187.1	182.8	182.8	178.4
75°	548.3	470.0	343.8	252.4	200.2	174.1	156.7	148.0	143.6	143.6	139.3
77.5°	404.7	343.8	248.0	182.8	143.6	126.2	113.1	108.8	104.4	104.4	100.1
80°	269.8	226.3	161.0	117.5	87.0	78.3	69.6	69.6	65.3	69.6	65.3
82.5°	148.0	121.8	87.0	60.9	43.5	39.2	34.8	34.8	39.2	39.2	34.8
85°	56.6	43.5	30.5	17.4	13.1	13.1	13.1	13.1	13.1	13.1	8.7
87.5°	4.4	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	5.0	5.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0
92.5°	5.0	5.0	6.0	6.0	8.0	7.0	8.0	7.0	5.0	5.0	5.0
95°	6.0	6.0	7.0	7.0	12.0	12.0	11.0	9.0	7.0	6.0	6.0
97.5°	8.0	9.0	10.0	10.0	20.0	33.0	18.0	11.0	9.0	9.0	8.0
100°	14.0	14.0	19.0	26.0	51.0	71.1	53.0	25.0	14.0	14.0	13.0
102.5°	46.0	48.0	60.0	87.1	92.1	109.1	120.1	81.1	54.0	44.0	42.0
105°	110.1	110.1	119.1	138.1	152.1	165.1	168.1	135.1	114.1	106.1	107.1
107.5°	146.1	147.1	157.1	179.1	226.2	223.2	191.1	166.1	148.1	141.1	141.1
110°	179.1	181.1	194.1	221.2	256.2	258.2	213.2	180.1	165.1	159.1	159.1

REPORT NUMBER: P833555

CATALOG NUMBER: TTN-D2-740-U-DL-CG-UPL2

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	204.2	206.2	216.2	228.2	242.2	251.2	231.2	195.1	172.1	164.1	163.1
115°	197.1	195.1	199.2	207.2	218.2	228.2	220.2	200.2	178.1	169.1	169.1
117.5°	172.1	175.1	177.1	183.1	198.1	203.2	197.1	184.1	172.1	170.1	167.1
120°	153.1	155.1	156.1	161.1	171.1	173.1	170.1	163.1	157.1	155.1	155.1
122.5°	135.1	137.1	137.1	139.1	147.1	149.1	146.1	141.1	138.1	139.1	138.1
125°	119.1	120.1	120.1	121.1	125.1	124.1	125.1	122.1	120.1	121.1	121.1
127.5°	106.1	107.1	106.1	105.1	109.1	108.1	108.1	107.1	106.1	108.1	109.1
130°	96.1	95.1	94.1	93.1	95.1	93.1	95.1	95.1	95.1	97.1	97.1
132.5°	86.1	86.1	84.1	82.1	83.1	82.1	82.1	82.1	83.1	86.1	86.1
135°	77.1	77.1	76.1	74.1	75.1	74.1	75.1	75.1	74.1	77.1	77.1
137.5°	72.1	71.1	69.1	68.1	68.1	67.1	68.1	68.1	68.1	70.1	70.1
140°	65.0	65.0	64.0	63.0	63.0	63.0	62.0	63.0	63.0	64.0	64.0
142.5°	61.0	61.0	59.0	58.0	59.0	59.0	59.0	58.0	59.0	60.0	61.0
145°	57.0	56.0	56.0	55.0	55.0	56.0	55.0	55.0	55.0	56.0	56.0
147.5°	54.0	53.0	53.0	52.0	53.0	53.0	53.0	53.0	52.0	53.0	53.0
150°	51.0	51.0	50.0	50.0	50.0	50.0	51.0	51.0	50.0	51.0	52.0
152.5°	50.0	49.0	48.0	48.0	48.0	48.0	48.0	49.0	48.0	49.0	49.0
155°	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	46.0	47.0	47.0
157.5°	46.0	46.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.0	45.0
160°	45.0	44.0	44.0	44.0	43.0	43.0	43.0	44.0	44.0	44.0	44.0
162.5°	44.0	43.0	43.0	42.0	42.0	42.0	42.0	43.0	43.0	43.0	43.0
165°	42.0	43.0	42.0	41.0	41.0	41.0	41.0	42.0	42.0	42.0	43.0
167.5°	42.0	41.0	41.0	41.0	40.0	40.0	41.0	41.0	41.0	41.0	41.0
170°	41.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	41.0	41.0
172.5°	41.0	41.0	40.0	40.0	40.0	40.0	40.0	41.0	41.0	41.0	41.0
175°	40.0	41.0	41.0	41.0	40.0	40.0	40.0	41.0	41.0	41.0	41.0
177.5°	41.0	41.0	41.0	41.0	41.0	41.0	40.0	41.0	41.0	41.0	41.0
180°	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

MCGRAW EDISON

Report Number: SP1-2411-284-2

Test Date: 11/20/2024

Luminaire Tested: TTN-D0-740-U-WQ

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

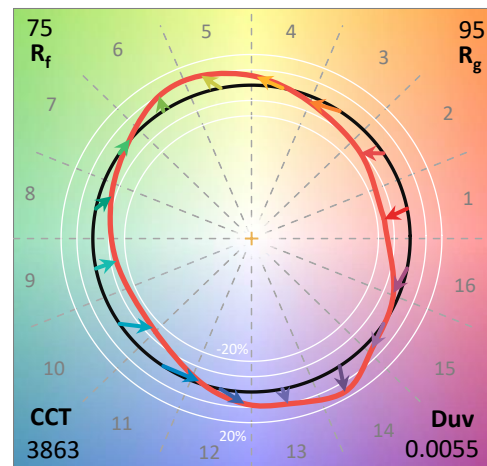
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2411-284-2
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 11/20/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW EDISON
 Catalog Number: **TTN-D0-740-U-WQ**
 Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 4000K, 70 CRI LEDS AND WIDE DISTRIBUTION

Spectral Parameters

CCT (K): 3863
 CIE u' : 0.2247
 CIE v' : 0.5111
 Duv: 0.0055
 CIE x: 0.3911
 CIE y: 0.3954
 CIE z: 0.2136
 Peak Wavelength (nm): 448
 Dominant Wavelength (nm): 577
 Purity: 36.03443
 R_f: 74.7
 R_g: 95.4

CRI (Ra): 71.9
 R1: 69.4
 R2: 76.9
 R3: 83.3
 R4: 72.7
 R5: 68.4
 R6: 67.5
 R7: 82.0
 R8: 55.3
 R9: -23.5
 R10: 45.4
 R11: 68.7
 R12: 38.7
 R13: 70.0
 R14: 90.3
 R15: 62.1



Test Conditions

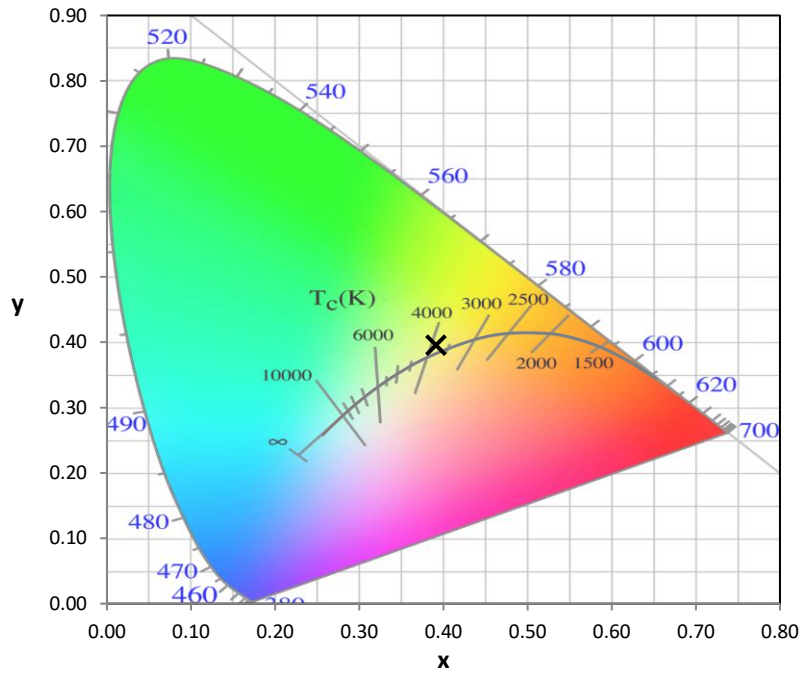
Stabilization Time: 37M
 Operation Time: 1H 37M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2411-284-2

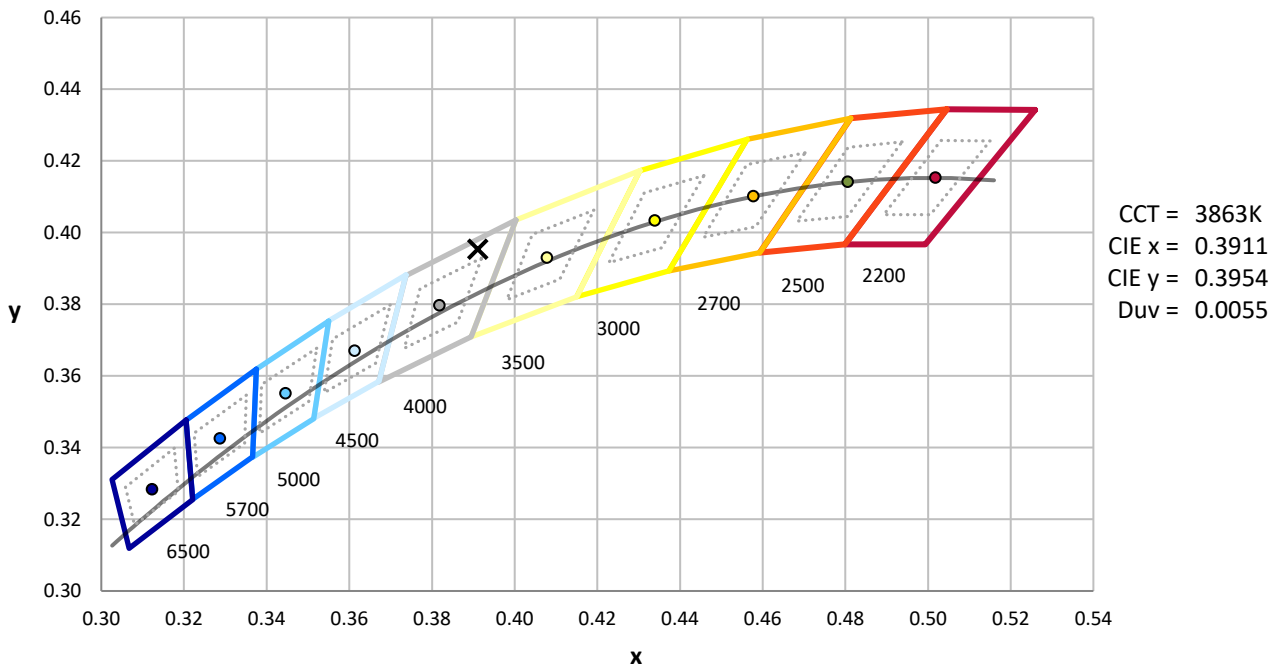
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2411-284-2

CIE 1931 Chromaticity Diagram



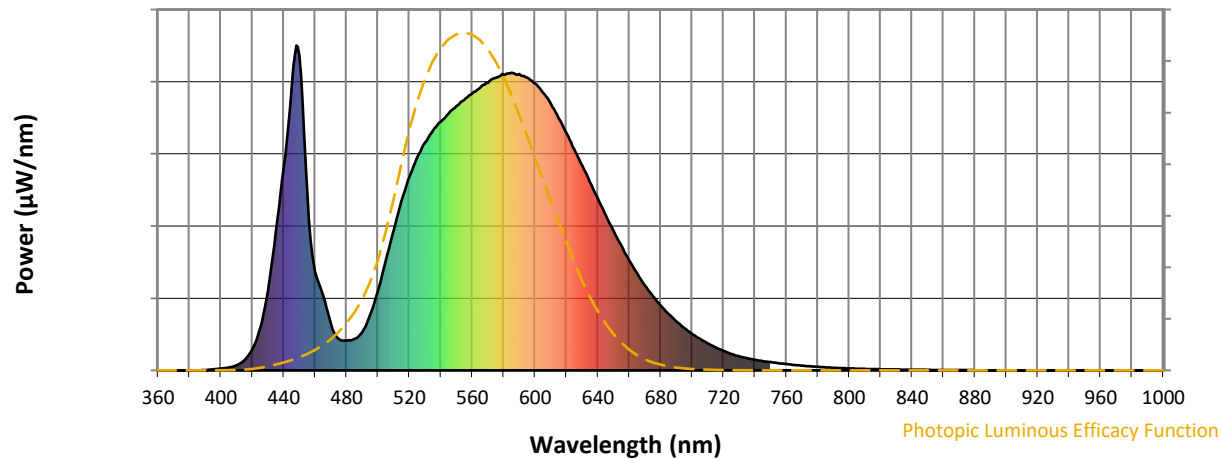
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 4000K 7-step quadrangle

REPORT NUMBER: SP1-2411-284-2

Photopic Flux vs. Wavelength

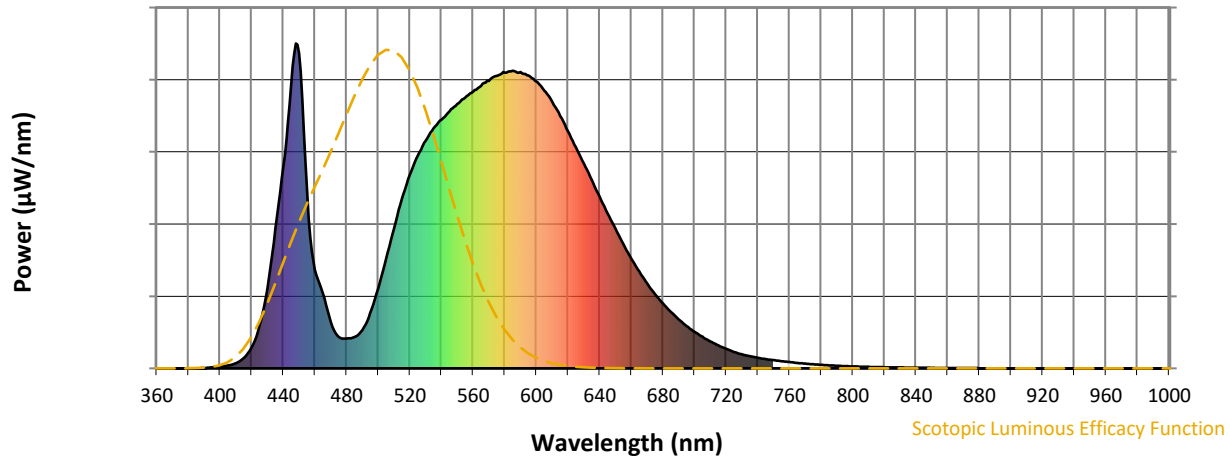


Photopic Lumens: NR

λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)
360	0	NR	490	118	NR	620	730	NR	750	25	NR	880	1	NR
365	0	NR	495	170	NR	625	680	NR	755	22	NR	885	0	NR
370	0	NR	500	245	NR	630	630	NR	760	19	NR	890	0	NR
375	0	NR	505	338	NR	635	579	NR	765	17	NR	895	0	NR
380	0	NR	510	431	NR	640	529	NR	770	14	NR	900	0	NR
385	0	NR	515	521	NR	645	477	NR	775	13	NR	905	0	NR
390	1	NR	520	596	NR	650	429	NR	780	11	NR	910	0	NR
395	3	NR	525	655	NR	655	383	NR	785	9	NR	915	0	NR
400	6	NR	530	701	NR	660	338	NR	790	8	NR	920	0	NR
405	9	NR	535	739	NR	665	298	NR	795	7	NR	925	0	NR
410	16	NR	540	766	NR	670	261	NR	800	6	NR	930	0	NR
415	32	NR	545	791	NR	675	228	NR	805	5	NR	935	0	NR
420	65	NR	550	813	NR	680	200	NR	810	5	NR	940	0	NR
425	131	NR	555	833	NR	685	173	NR	815	4	NR	945	0	NR
430	245	NR	560	852	NR	690	151	NR	820	3	NR	950	0	NR
435	432	NR	565	870	NR	695	130	NR	825	3	NR	955	0	NR
440	622	NR	570	885	NR	700	112	NR	830	3	NR	960	0	NR
445	870	NR	575	900	NR	705	97	NR	835	2	NR	965	0	NR
450	969	NR	580	911	NR	710	83	NR	840	2	NR	970	0	NR
455	544	NR	585	916	NR	715	71	NR	845	2	NR	975	0	NR
460	304	NR	590	912	NR	720	60	NR	850	1	NR	980	0	NR
465	231	NR	595	901	NR	725	51	NR	855	1	NR	985	0	NR
470	142	NR	600	882	NR	730	43	NR	860	1	NR	990	0	NR
475	96	NR	605	855	NR	735	37	NR	865	1	NR	995	0	NR
480	92	NR	610	820	NR	740	32	NR	870	1	NR	1000	0	NR
485	96	NR	615	776	NR	745	29	NR	875	1	NR			

REPORT NUMBER: SP1-2411-284-2

Scotopic Flux vs. Wavelength



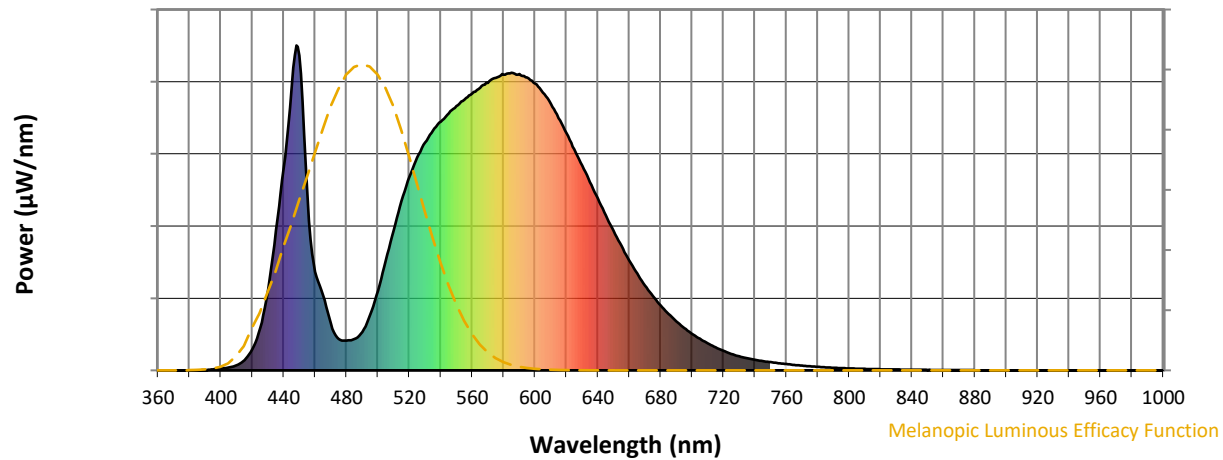
Scotopic Lumens: NR

S/P: 1.45

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	118	NR	620	730	NR	750	25	NR	880	1	NR
365	0	NR	495	170	NR	625	680	NR	755	22	NR	885	0	NR
370	0	NR	500	245	NR	630	630	NR	760	19	NR	890	0	NR
375	0	NR	505	338	NR	635	579	NR	765	17	NR	895	0	NR
380	0	NR	510	431	NR	640	529	NR	770	14	NR	900	0	NR
385	0	NR	515	521	NR	645	477	NR	775	13	NR	905	0	NR
390	1	NR	520	596	NR	650	429	NR	780	11	NR	910	0	NR
395	3	NR	525	655	NR	655	383	NR	785	9	NR	915	0	NR
400	6	NR	530	701	NR	660	338	NR	790	8	NR	920	0	NR
405	9	NR	535	739	NR	665	298	NR	795	7	NR	925	0	NR
410	16	NR	540	766	NR	670	261	NR	800	6	NR	930	0	NR
415	32	NR	545	791	NR	675	228	NR	805	5	NR	935	0	NR
420	65	NR	550	813	NR	680	200	NR	810	5	NR	940	0	NR
425	131	NR	555	833	NR	685	173	NR	815	4	NR	945	0	NR
430	245	NR	560	852	NR	690	151	NR	820	3	NR	950	0	NR
435	432	NR	565	870	NR	695	130	NR	825	3	NR	955	0	NR
440	622	NR	570	885	NR	700	112	NR	830	3	NR	960	0	NR
445	870	NR	575	900	NR	705	97	NR	835	2	NR	965	0	NR
450	969	NR	580	911	NR	710	83	NR	840	2	NR	970	0	NR
455	544	NR	585	916	NR	715	71	NR	845	2	NR	975	0	NR
460	304	NR	590	912	NR	720	60	NR	850	1	NR	980	0	NR
465	231	NR	595	901	NR	725	51	NR	855	1	NR	985	0	NR
470	142	NR	600	882	NR	730	43	NR	860	1	NR	990	0	NR
475	96	NR	605	855	NR	735	37	NR	865	1	NR	995	0	NR
480	92	NR	610	820	NR	740	32	NR	870	1	NR	1000	0	NR
485	96	NR	615	776	NR	745	29	NR	875	1	NR			

REPORT NUMBER: SP1-2411-284-2

Melanopic Flux vs. Wavelength


Melanopic Lumens: NR
M/P: 2.72

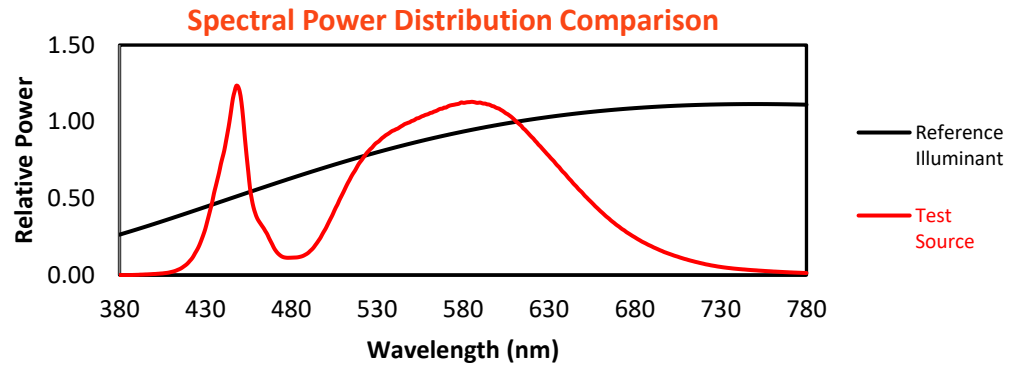
λ (nm)	Power $\text{W}^{\wedge}/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^{\wedge}/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^{\wedge}/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^{\wedge}/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^{\wedge}/\text{nm}$	Lumens (ϕ/nm)
360	0	NR	490	118	NR	620	730	NR	750	25	NR	880	1	NR
365	0	NR	495	170	NR	625	680	NR	755	22	NR	885	0	NR
370	0	NR	500	245	NR	630	630	NR	760	19	NR	890	0	NR
375	0	NR	505	338	NR	635	579	NR	765	17	NR	895	0	NR
380	0	NR	510	431	NR	640	529	NR	770	14	NR	900	0	NR
385	0	NR	515	521	NR	645	477	NR	775	13	NR	905	0	NR
390	1	NR	520	596	NR	650	429	NR	780	11	NR	910	0	NR
395	3	NR	525	655	NR	655	383	NR	785	9	NR	915	0	NR
400	6	NR	530	701	NR	660	338	NR	790	8	NR	920	0	NR
405	9	NR	535	739	NR	665	298	NR	795	7	NR	925	0	NR
410	16	NR	540	766	NR	670	261	NR	800	6	NR	930	0	NR
415	32	NR	545	791	NR	675	228	NR	805	5	NR	935	0	NR
420	65	NR	550	813	NR	680	200	NR	810	5	NR	940	0	NR
425	131	NR	555	833	NR	685	173	NR	815	4	NR	945	0	NR
430	245	NR	560	852	NR	690	151	NR	820	3	NR	950	0	NR
435	432	NR	565	870	NR	695	130	NR	825	3	NR	955	0	NR
440	622	NR	570	885	NR	700	112	NR	830	3	NR	960	0	NR
445	870	NR	575	900	NR	705	97	NR	835	2	NR	965	0	NR
450	969	NR	580	911	NR	710	83	NR	840	2	NR	970	0	NR
455	544	NR	585	916	NR	715	71	NR	845	2	NR	975	0	NR
460	304	NR	590	912	NR	720	60	NR	850	1	NR	980	0	NR
465	231	NR	595	901	NR	725	51	NR	855	1	NR	985	0	NR
470	142	NR	600	882	NR	730	43	NR	860	1	NR	990	0	NR
475	96	NR	605	855	NR	735	37	NR	865	1	NR	995	0	NR
480	92	NR	610	820	NR	740	32	NR	870	1	NR	1000	0	NR
485	96	NR	615	776	NR	745	29	NR	875	1	NR			

REPORT NUMBER: SP1-2411-284-2

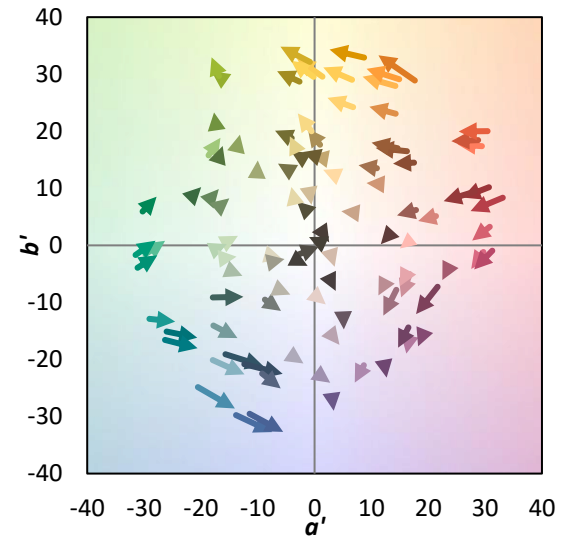
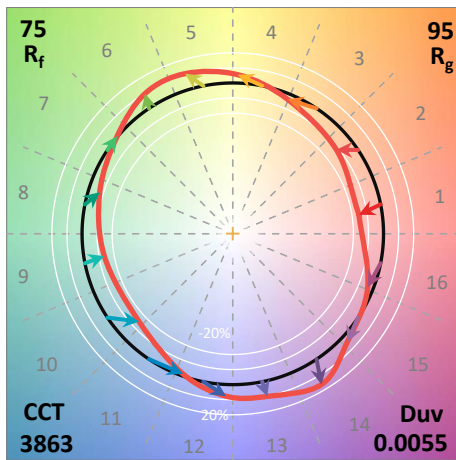
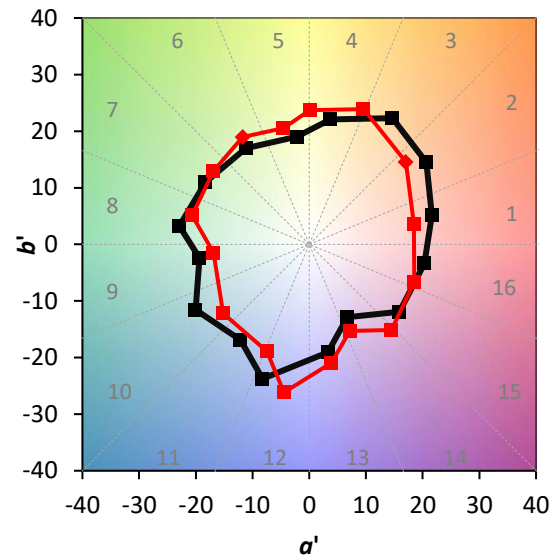
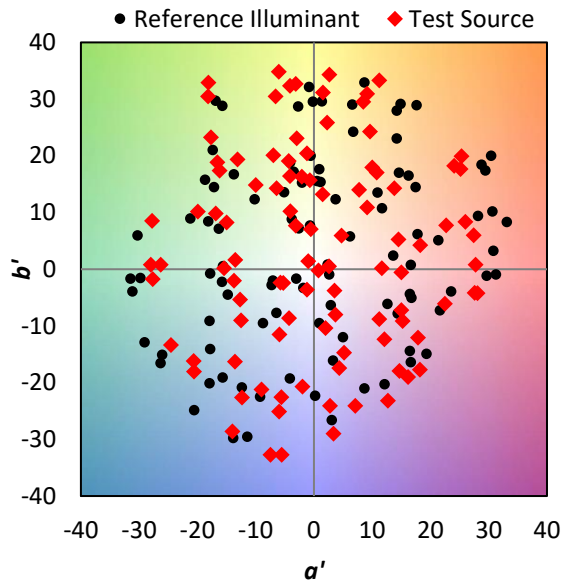
TM-30-18

Summary

$R_f = 74.7$
 $R_g = 95.4$
 $CIE R_a = 71.9$
 $R_g = -23.5$

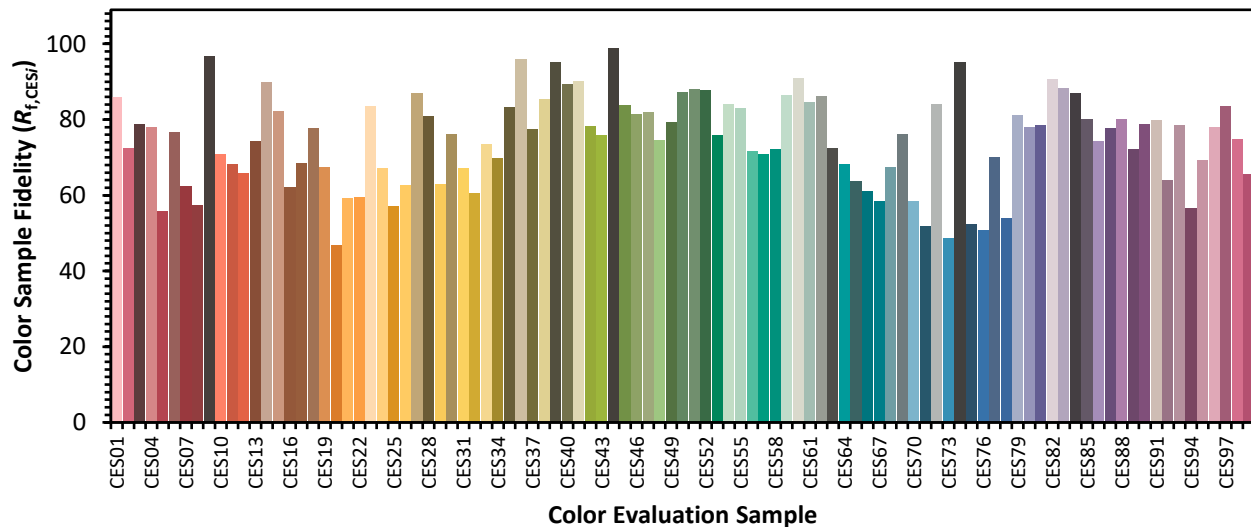


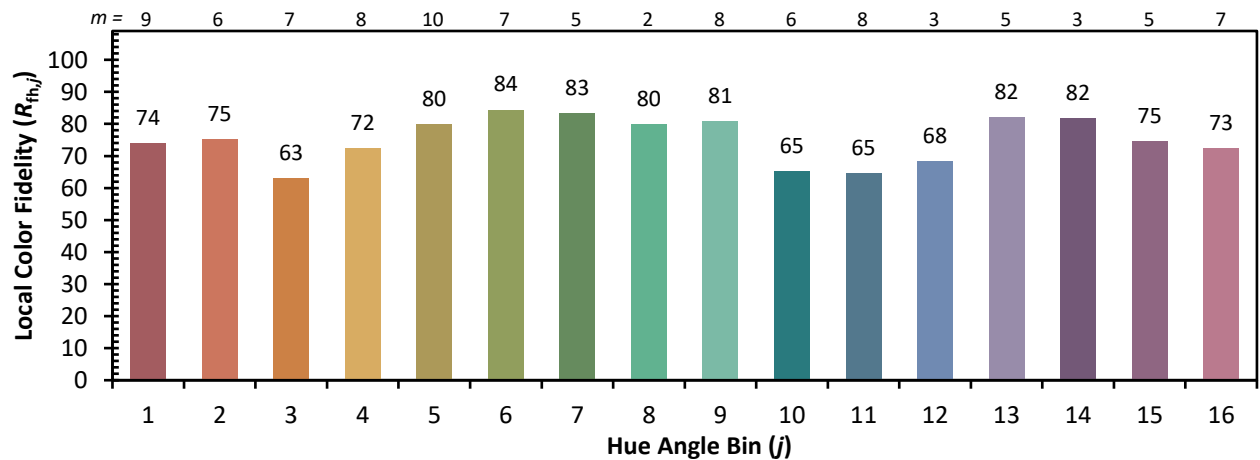
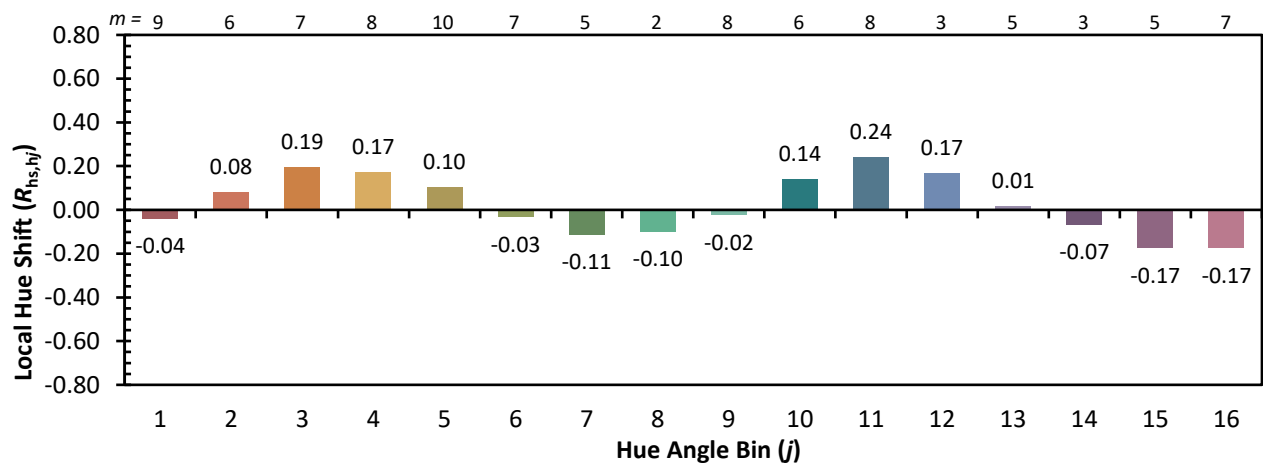
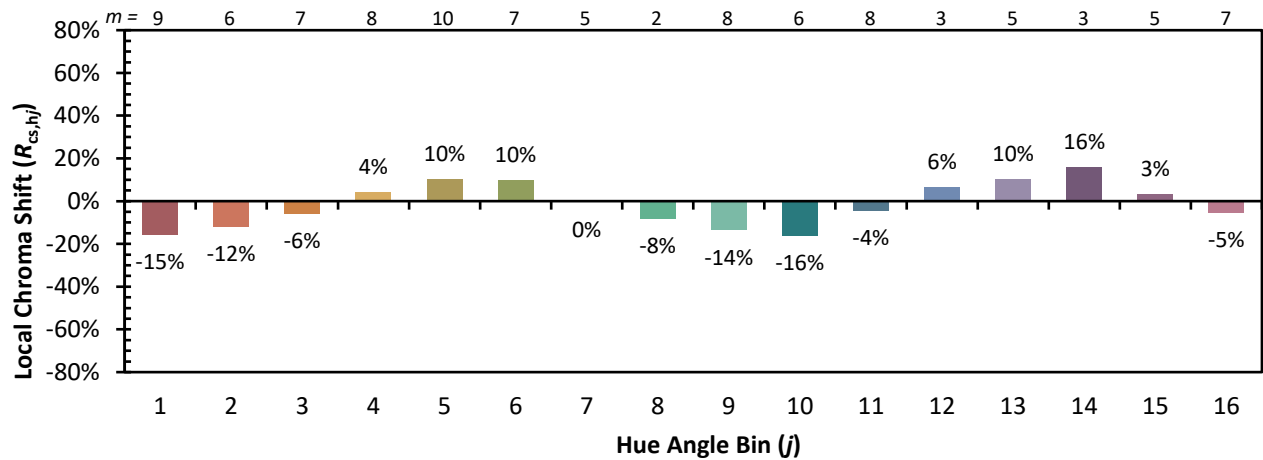
Color Vector Graphics



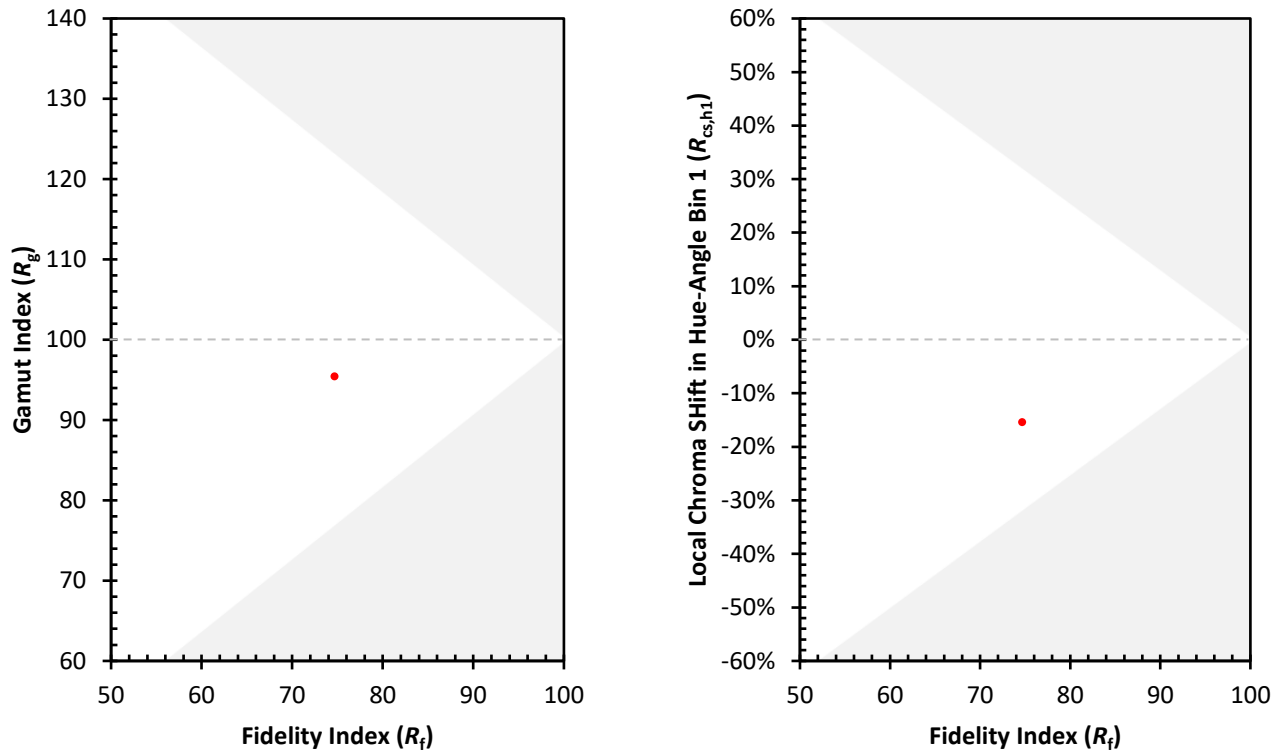
Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 85	CES26 = 63	CES51 = 88	CES76 = 51
CES02 = 61	CES27 = 87	CES52 = 88	CES77 = 70
CES03 = 30	CES28 = 81	CES53 = 76	CES78 = 54
CES04 = 70	CES29 = 63	CES54 = 84	CES79 = 81
CES05 = 47	CES30 = 76	CES55 = 83	CES80 = 78
CES06 = 50	CES31 = 67	CES56 = 72	CES81 = 79
CES07 = 40	CES32 = 61	CES57 = 71	CES82 = 91
CES08 = 39	CES33 = 73	CES58 = 72	CES83 = 88
CES09 = 29	CES34 = 70	CES59 = 86	CES84 = 87
CES10 = 74	CES35 = 83	CES60 = 91	CES85 = 80
CES11 = 57	CES36 = 96	CES61 = 85	CES86 = 74
CES12 = 63	CES37 = 77	CES62 = 86	CES87 = 78
CES13 = 42	CES38 = 85	CES63 = 72	CES88 = 80
CES14 = 74	CES39 = 95	CES64 = 68	CES89 = 72
CES15 = 71	CES40 = 89	CES65 = 64	CES90 = 79
CES16 = 46	CES41 = 90	CES66 = 61	CES91 = 80
CES17 = 49	CES42 = 78	CES67 = 58	CES92 = 64
CES18 = 56	CES43 = 76	CES68 = 67	CES93 = 78
CES19 = 71	CES44 = 99	CES69 = 76	CES94 = 57
CES20 = 65	CES45 = 84	CES70 = 58	CES95 = 69
CES21 = 86	CES46 = 81	CES71 = 52	CES96 = 78
CES22 = 78	CES47 = 82	CES72 = 84	CES97 = 84
CES23 = 92	CES48 = 75	CES73 = 49	CES98 = 75
CES24 = 91	CES49 = 79	CES74 = 95	CES99 = 66
CES25 = 72	CES50 = 87	CES75 = 52	



Color Rendition by Hue-Angle Bin


Measure Comparisons



(END OF REPORT)