

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: P833226

Luminaire Tested: **TTN-D1-750-U-DL-CG-UPL3**

Issue Date: 5/15/2024

Test Information

Test Method: LM-79-08
Report Number: P833226
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-D1-750-U-DL-CG-UPL3
Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
5000K, 70 CRI LEDS AND DRIVE LANE DISTRIBUTION WITH CLEAR GLASS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3971.6 lumens
Efficiency: N/A
Efficacy: 118.9 lumens/watt
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')
IES Classification: Type IV - Short
BUG Rating: B1 - U4 - G1

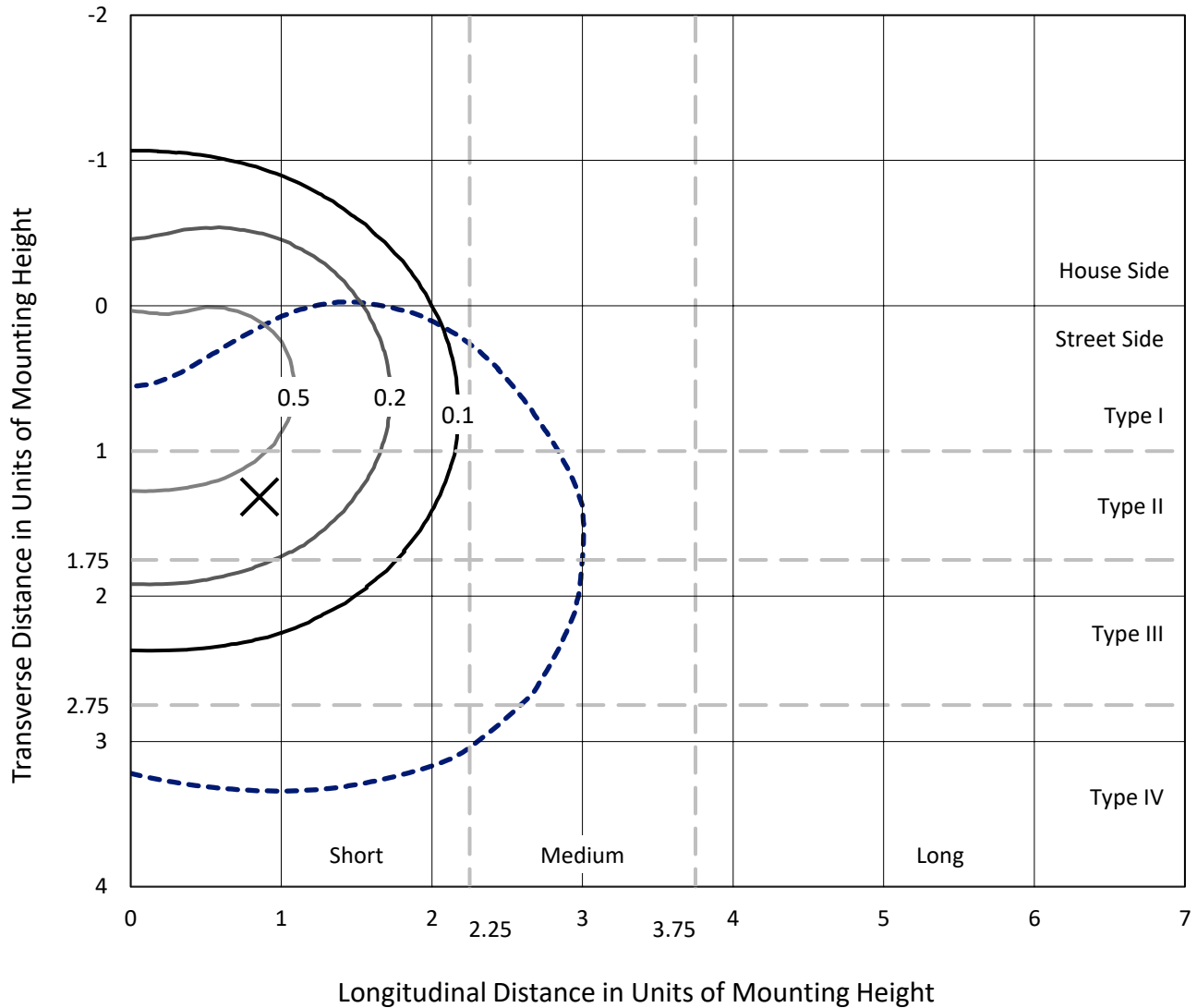
Input Watts (W): 33.4
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Iso-Footcandle Lines of Horizontal Illumination

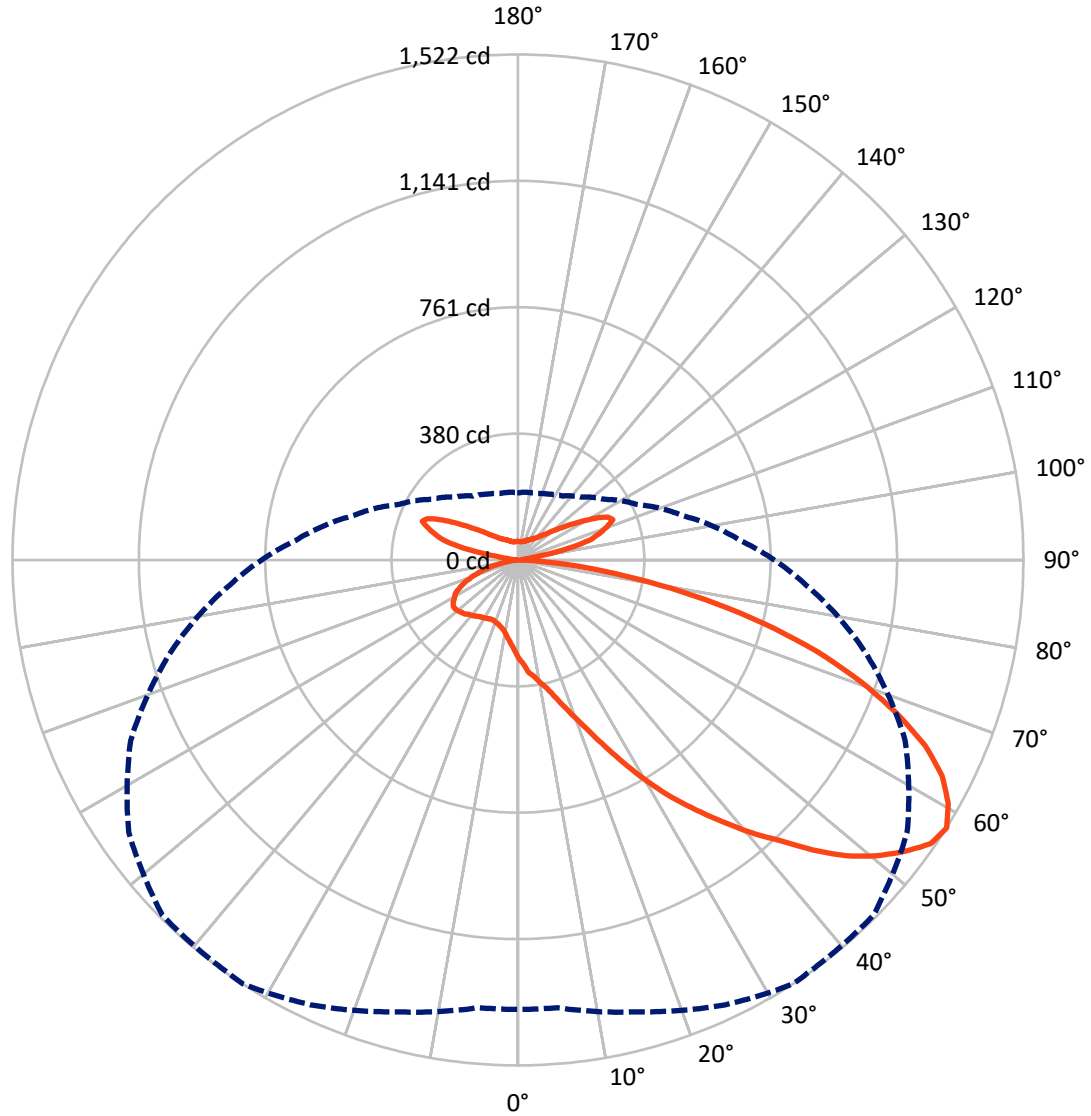
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.8 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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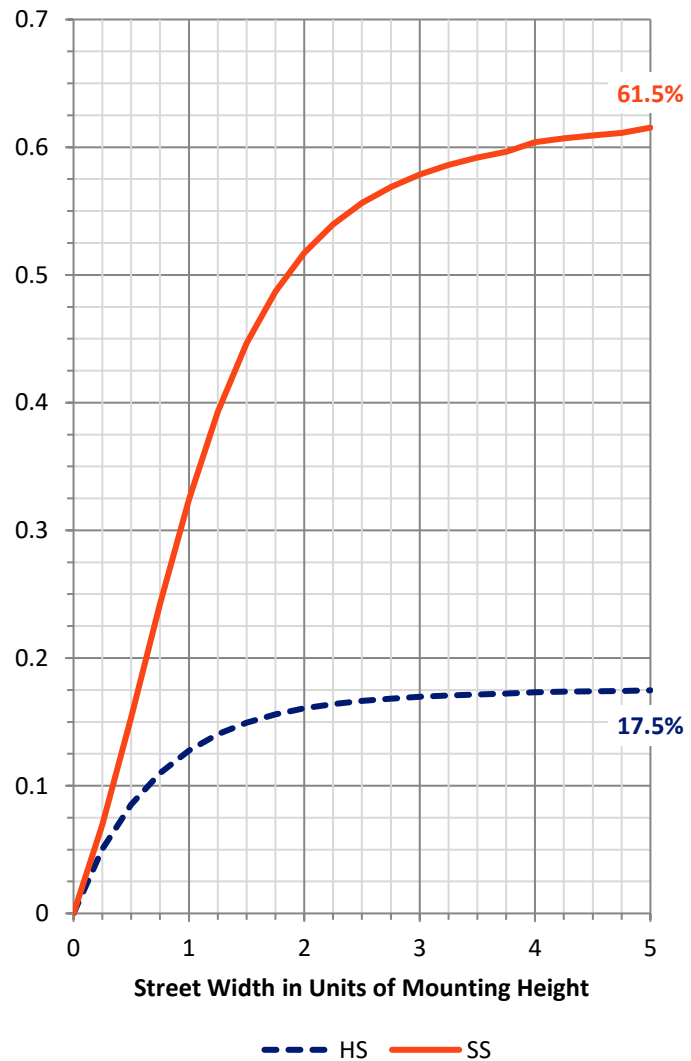
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	697.6	405.8	1103.4
	% Fixture	17.6	10.2	27.8
Street Side	Lumens	2462.5	405.8	2868.2
	% Fixture	62.0	10.2	72.2
Total	Lumens	3160.1	811.5	3971.6
	% Fixture	79.6	20.4	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	28.3	0.7
10°-20°	91.9	2.3
20°-30°	193.7	4.9
30°-40°	351.8	8.9
40°-50°	555.9	14.0
50°-60°	738.2	18.6
60°-70°	710.5	17.9
70°-80°	417.1	10.5
80°-90°	72.7	1.8
90°-100°	18.1	0.5
100°-110°	184.1	4.6
110°-120°	269.1	6.8
120°-130°	156.2	3.9
130°-140°	82.7	2.1
140°-150°	49.1	1.2
150°-160°	30.3	0.8
160°-170°	16.5	0.4
170°-180°	5.4	0.1
0°-90°	3160.1	79.6
0°-180°	3971.6	100.0

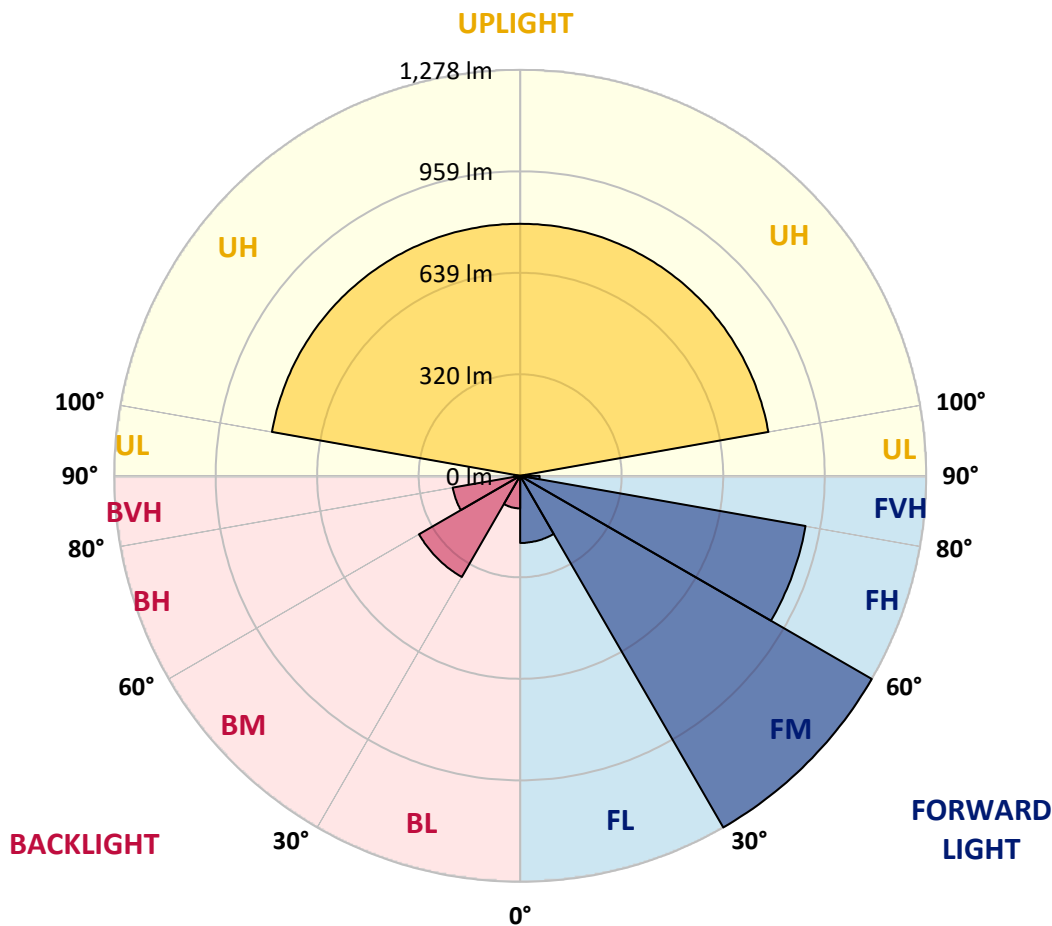


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	211.3	5.3			
FM (30°-60°)	1278.0	32.2			
FH (60°-80°)	912.1	23.0			G1/1800
FVH (80°-90°)	61.0	1.5			G1/100
BL (0°-30°)	102.6	2.6	B0/110		
BM (30°-60°)	367.8	9.3	B1/1000		
BH (60°-80°)	215.6	5.4	B1/500		G1/500
BVH (80°-90°)	11.7	0.3			G1/100
UL (90°-100°)	18.1	0.5		U2/50	
UH (100°-180°)	793.4	20.0		U4/1000	

BUG Rating: B1-U4-G1
 Type IV Short





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
0°	296.1	296.1	296.1	296.1	296.1	296.1	296.1	296.1	296.1	296.1	296.1
2.5°	315.4	318.2	315.4	315.4	312.7	312.7	309.9	307.1	304.4	301.6	296.1
5°	351.4	351.4	348.6	343.1	340.3	337.6	332.0	323.7	318.2	309.9	301.6
7.5°	368.0	368.0	365.3	359.7	354.2	351.4	343.1	332.0	323.7	312.7	301.6
10°	390.2	392.9	387.4	381.9	376.3	373.6	362.5	348.6	334.8	321.0	304.4
12.5°	415.1	417.8	415.1	406.8	398.5	395.7	384.6	368.0	351.4	332.0	312.7
15°	448.3	453.8	445.5	440.0	431.7	428.9	415.1	395.7	376.3	351.4	326.5
17.5°	487.0	489.8	484.2	475.9	470.4	467.6	453.8	431.7	404.0	376.3	345.9
20°	531.3	534.0	531.3	520.2	514.7	511.9	498.1	473.2	440.0	409.5	370.8
22.5°	583.8	589.4	581.1	572.8	567.2	567.2	550.6	523.0	484.2	445.5	401.2
25°	644.7	653.0	642.0	636.4	630.9	628.1	614.3	581.1	536.8	489.8	434.4
27.5°	719.4	725.0	716.7	713.9	702.8	702.8	680.7	642.0	594.9	539.6	475.9
30°	785.8	791.4	785.8	785.8	777.5	774.8	752.6	713.9	655.8	589.4	511.9
32.5°	849.5	855.0	852.3	855.0	852.3	849.5	821.8	780.3	722.2	636.4	547.9
35°	913.1	921.4	918.7	927.0	924.2	921.4	899.3	849.5	780.3	694.5	586.6
37.5°	979.5	987.8	987.8	996.1	998.9	998.9	974.0	921.4	844.0	747.1	630.9
40°	1051.5	1059.8	1059.8	1073.6	1079.2	1079.2	1051.5	998.9	913.1	805.2	677.9
42.5°	1120.7	1129.0	1131.7	1145.6	1153.9	1156.6	1134.5	1073.6	974.0	863.3	722.2
45°	1187.1	1195.4	1203.7	1231.3	1245.2	1242.4	1225.8	1162.2	1051.5	924.2	769.2
47.5°	1250.7	1261.8	1275.6	1311.6	1331.0	1328.2	1317.1	1245.2	1123.4	982.3	810.7
50°	1300.5	1308.8	1336.5	1375.2	1400.1	1402.9	1386.3	1317.1	1184.3	1026.6	841.2
52.5°	1339.3	1350.3	1383.5	1438.9	1458.2	1466.5	1447.2	1378.0	1245.2	1065.3	866.1
55°	1366.9	1366.9	1416.7	1480.4	1508.0	1513.6	1513.6	1427.8	1281.1	1090.2	879.9
57.5°	1353.1	1353.1	1408.4	1477.6	1521.9	1519.1	1513.6	1430.6	1286.7	1084.7	871.6
60°	1314.4	1322.7	1375.2	1444.4	1488.7	1485.9	1469.3	1394.6	1259.0	1062.5	855.0
62.5°	1261.8	1275.6	1331.0	1383.5	1433.3	1441.6	1419.5	1353.1	1212.0	1029.3	824.6
65°	1162.2	1181.5	1250.7	1308.8	1347.6	1364.2	1336.5	1275.6	1148.3	965.7	760.9
67.5°	1051.5	1065.3	1123.4	1206.4	1228.6	1245.2	1231.3	1167.7	1059.8	863.3	689.0
70°	924.2	946.3	985.1	1068.1	1093.0	1109.6	1109.6	1045.9	943.6	758.2	603.2
72.5°	774.8	799.7	846.7	907.6	940.8	951.9	949.1	896.5	805.2	642.0	509.1
75°	611.5	630.9	686.2	730.5	766.5	774.8	772.0	727.7	644.7	517.4	404.0
77.5°	451.0	470.4	511.9	545.1	578.3	572.8	572.8	539.6	487.0	384.6	307.1
80°	296.1	312.7	348.6	359.7	395.7	392.9	392.9	368.0	332.0	257.3	204.8
82.5°	163.3	177.1	202.0	213.1	235.2	229.7	232.4	215.8	193.7	143.9	116.2
85°	58.1	69.2	83.0	91.3	102.4	102.4	102.4	88.5	83.0	55.3	47.0
87.5°	2.8	5.5	11.1	11.1	16.6	16.6	16.6	11.1	11.1	2.8	2.8
90°	6.9	6.9	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	6.9
92.5°	6.9	6.9	6.9	9.7	10.8	11.1	9.7	11.1	8.3	8.3	6.9
95°	8.3	8.3	9.7	12.5	14.7	15.3	16.7	16.7	9.7	9.7	8.3
97.5°	11.1	12.5	12.5	15.3	23.1	25.0	45.8	27.8	13.9	13.9	12.5
100°	18.0	19.4	19.4	34.7	65.8	73.6	98.6	70.8	36.1	26.4	19.4
102.5°	58.3	61.1	75.0	112.5	155.8	166.6	151.3	127.7	120.8	83.3	66.6
105°	148.6	147.2	158.3	187.4	224.1	233.3	229.1	211.0	191.6	165.2	152.7
107.5°	195.8	195.8	205.5	230.5	258.3	265.2	309.6	313.8	248.5	218.0	204.1
110°	220.8	220.8	229.1	249.9	286.5	295.7	358.2	355.4	306.8	269.4	251.3



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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
112.5°	226.3	227.7	238.8	270.7	310.7	320.7	348.5	336.0	316.6	299.9	286.0
115°	234.6	234.6	247.1	277.7	299.9	305.5	316.6	302.7	287.4	276.3	270.7
117.5°	231.9	236.0	238.8	255.5	269.9	273.5	281.8	274.9	254.1	245.8	243.0
120°	215.2	215.2	218.0	226.3	234.1	236.0	240.2	237.4	223.5	216.6	215.2
122.5°	191.6	193.0	191.6	195.8	201.3	202.7	206.9	204.1	193.0	190.2	190.2
125°	168.0	168.0	166.6	169.4	172.8	173.6	172.2	173.6	168.0	166.6	166.6
127.5°	151.3	149.9	147.2	148.6	149.6	149.9	149.9	151.3	145.8	147.2	148.6
130°	134.7	134.7	131.9	131.9	131.9	131.9	129.1	131.9	129.1	130.5	131.9
132.5°	119.4	119.4	115.2	113.9	113.9	113.9	113.9	115.2	113.9	116.6	119.4
135°	106.9	106.9	102.7	104.1	104.1	104.1	102.7	104.1	102.7	105.5	106.9
137.5°	97.2	97.2	94.4	94.4	94.4	94.4	93.0	94.4	94.4	95.8	98.6
140°	88.9	88.9	87.5	87.5	86.4	86.1	87.5	87.5	87.5	88.9	90.2
142.5°	84.7	83.3	81.9	80.5	81.6	81.9	81.9	81.9	80.5	81.9	84.7
145°	77.8	77.8	76.4	76.4	76.4	76.4	77.8	76.4	76.4	77.8	77.8
147.5°	73.6	73.6	72.2	73.6	73.6	73.6	73.6	73.6	72.2	73.6	73.6
150°	72.2	70.8	69.4	70.8	70.8	70.8	69.4	69.4	69.4	69.4	70.8
152.5°	68.0	68.0	66.6	68.0	66.9	66.6	66.6	66.6	66.6	66.6	68.0
155°	65.3	65.3	63.9	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3
157.5°	62.5	63.9	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	63.9
160°	61.1	61.1	61.1	61.1	60.0	59.7	59.7	59.7	61.1	61.1	61.1
162.5°	59.7	59.7	59.7	59.7	58.6	58.3	58.3	58.3	58.3	59.7	59.7
165°	59.7	58.3	58.3	58.3	57.2	56.9	56.9	56.9	56.9	58.3	59.7
167.5°	56.9	56.9	56.9	56.9	56.9	56.9	55.5	55.5	56.9	56.9	56.9
170°	56.9	56.9	55.5	55.5	55.5	55.5	55.5	55.5	55.5	55.5	55.5
172.5°	56.9	56.9	56.9	56.9	55.8	55.5	55.5	55.5	55.5	55.5	56.9
175°	56.9	56.9	56.9	56.9	55.8	55.5	55.5	55.5	56.9	56.9	56.9
177.5°	56.9	56.9	56.9	56.9	55.8	55.5	56.9	56.9	56.9	56.9	56.9
180°	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9



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CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	296.1	296.1	296.1	296.1	296.1	296.1	296.1	296.1	296.1	296.1	296.1
2.5°	293.3	290.5	287.8	282.2	279.5	276.7	273.9	271.2	271.2	271.2	271.2
5°	296.1	293.3	285.0	276.7	268.4	260.1	254.6	251.8	249.0	246.3	246.3
7.5°	296.1	290.5	279.5	268.4	260.1	249.0	240.7	232.4	226.9	224.1	224.1
10°	298.8	290.5	276.7	265.6	251.8	238.0	226.9	215.8	210.3	204.8	204.8
12.5°	304.4	296.1	276.7	262.9	246.3	229.7	215.8	204.8	196.5	190.9	190.9
15°	315.4	304.4	282.2	262.9	243.5	224.1	210.3	196.5	188.2	182.6	182.6
17.5°	332.0	318.2	290.5	262.9	240.7	221.4	204.8	190.9	179.9	174.3	174.3
20°	351.4	334.8	301.6	268.4	240.7	218.6	202.0	185.4	174.3	168.8	168.8
22.5°	379.1	354.2	315.4	276.7	246.3	221.4	199.2	182.6	171.6	166.0	166.0
25°	409.5	381.9	332.0	287.8	251.8	221.4	199.2	182.6	171.6	166.0	163.3
27.5°	442.7	412.3	351.4	298.8	257.3	226.9	202.0	182.6	171.6	166.0	166.0
30°	473.2	437.2	370.8	312.7	265.6	229.7	204.8	185.4	171.6	166.0	166.0
32.5°	506.4	464.9	390.2	326.5	273.9	235.2	207.5	188.2	174.3	168.8	166.0
35°	539.6	492.5	409.5	337.6	282.2	240.7	210.3	190.9	177.1	171.6	171.6
37.5°	575.5	523.0	428.9	351.4	290.5	246.3	215.8	193.7	179.9	174.3	174.3
40°	614.3	553.4	448.3	362.5	298.8	251.8	221.4	199.2	185.4	179.9	179.9
42.5°	653.0	586.6	470.4	376.3	307.1	257.3	224.1	204.8	190.9	185.4	185.4
45°	691.8	614.3	489.8	390.2	315.4	265.6	232.4	210.3	196.5	190.9	190.9
47.5°	727.7	644.7	506.4	398.5	323.7	271.2	235.2	215.8	202.0	199.2	196.5
50°	752.6	664.1	517.4	406.8	326.5	273.9	240.7	218.6	207.5	202.0	202.0
52.5°	772.0	683.5	525.7	412.3	329.3	276.7	243.5	224.1	213.1	207.5	204.8
55°	783.1	686.2	525.7	406.8	326.5	276.7	243.5	224.1	213.1	207.5	207.5
57.5°	772.0	672.4	514.7	395.7	318.2	268.4	235.2	218.6	207.5	204.8	202.0
60°	749.9	650.3	492.5	379.1	304.4	254.6	224.1	210.3	202.0	199.2	196.5
62.5°	719.4	622.6	470.4	357.0	285.0	238.0	215.8	199.2	193.7	190.9	188.2
65°	658.6	570.0	434.4	329.3	260.1	218.6	196.5	185.4	179.9	174.3	171.6
67.5°	592.1	511.9	384.6	296.1	229.7	196.5	177.1	166.0	157.7	157.7	155.0
70°	520.2	451.0	332.0	251.8	199.2	171.6	152.2	143.9	138.4	138.4	135.6
72.5°	434.4	379.1	276.7	204.8	163.3	141.1	127.3	119.0	116.2	116.2	113.4
75°	348.6	298.8	218.6	160.5	127.3	110.7	99.6	94.1	91.3	91.3	88.5
77.5°	257.3	218.6	157.7	116.2	91.3	80.2	71.9	69.2	66.4	66.4	63.6
80°	171.6	143.9	102.4	74.7	55.3	49.8	44.3	44.3	41.5	44.3	41.5
82.5°	94.1	77.5	55.3	38.7	27.7	24.9	22.1	22.1	24.9	24.9	22.1
85°	36.0	27.7	19.4	11.1	8.3	8.3	8.3	8.3	8.3	8.3	5.5
87.5°	2.8	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	6.9	6.9	8.3	8.3	8.3	8.3	8.3	8.3	8.3	6.9	6.9
92.5°	6.9	6.9	8.3	8.3	11.1	9.7	11.1	9.7	6.9	6.9	6.9
95°	8.3	8.3	9.7	9.7	16.7	16.7	15.3	12.5	9.7	8.3	8.3
97.5°	11.1	12.5	13.9	13.9	27.8	45.8	25.0	15.3	12.5	12.5	11.1
100°	19.4	19.4	26.4	36.1	70.8	98.6	73.6	34.7	19.4	19.4	18.0
102.5°	63.9	66.6	83.3	120.8	127.7	151.3	166.6	112.5	75.0	61.1	58.3
105°	152.7	152.7	165.2	191.6	211.0	229.1	233.3	187.4	158.3	147.2	148.6
107.5°	202.7	204.1	218.0	248.5	313.8	309.6	265.2	230.5	205.5	195.8	195.8
110°	248.5	251.3	269.4	306.8	355.4	358.2	295.7	249.9	229.1	220.8	220.8



REPORT NUMBER: P833226
 CATALOG NUMBER: TTN-D1-750-U-DL-CG-UPL3

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	283.2	286.0	299.9	316.6	336.0	348.5	320.7	270.7	238.8	227.7	226.3
115°	273.5	270.7	276.3	287.4	302.7	316.6	305.5	277.7	247.1	234.6	234.6
117.5°	238.8	243.0	245.8	254.1	274.9	281.8	273.5	255.5	238.8	236.0	231.9
120°	212.4	215.2	216.6	223.5	237.4	240.2	236.0	226.3	218.0	215.2	215.2
122.5°	187.4	190.2	190.2	193.0	204.1	206.9	202.7	195.8	191.6	193.0	191.6
125°	165.2	166.6	166.6	168.0	173.6	172.2	173.6	169.4	166.6	168.0	168.0
127.5°	147.2	148.6	147.2	145.8	151.3	149.9	149.9	148.6	147.2	149.9	151.3
130°	133.3	131.9	130.5	129.1	131.9	129.1	131.9	131.9	131.9	134.7	134.7
132.5°	119.4	119.4	116.6	113.9	115.2	113.9	113.9	113.9	115.2	119.4	119.4
135°	106.9	106.9	105.5	102.7	104.1	102.7	104.1	104.1	102.7	106.9	106.9
137.5°	100.0	98.6	95.8	94.4	94.4	93.0	94.4	94.4	94.4	97.2	97.2
140°	90.2	90.2	88.9	87.5	87.5	87.5	86.1	87.5	87.5	88.9	88.9
142.5°	84.7	84.7	81.9	80.5	81.9	81.9	81.9	80.5	81.9	83.3	84.7
145°	79.1	77.8	77.8	76.4	76.4	77.8	76.4	76.4	76.4	77.8	77.8
147.5°	75.0	73.6	73.6	72.2	73.6	73.6	73.6	73.6	72.2	73.6	73.6
150°	70.8	70.8	69.4	69.4	69.4	69.4	70.8	70.8	69.4	70.8	72.2
152.5°	69.4	68.0	66.6	66.6	66.6	66.6	66.6	68.0	66.6	68.0	68.0
155°	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	63.9	65.3	65.3
157.5°	63.9	63.9	62.5	62.5	62.5	62.5	62.5	62.5	62.5	63.9	62.5
160°	62.5	61.1	61.1	61.1	59.7	59.7	59.7	61.1	61.1	61.1	61.1
162.5°	61.1	59.7	59.7	58.3	58.3	58.3	58.3	59.7	59.7	59.7	59.7
165°	58.3	59.7	58.3	56.9	56.9	56.9	56.9	58.3	58.3	58.3	59.7
167.5°	58.3	56.9	56.9	56.9	55.5	55.5	56.9	56.9	56.9	56.9	56.9
170°	56.9	55.5	55.5	55.5	55.5	55.5	55.5	55.5	55.5	56.9	56.9
172.5°	56.9	56.9	55.5	55.5	55.5	55.5	55.5	56.9	56.9	56.9	56.9
175°	55.5	56.9	56.9	56.9	55.5	55.5	55.5	56.9	56.9	56.9	56.9
177.5°	56.9	56.9	56.9	56.9	56.9	56.9	55.5	56.9	56.9	56.9	56.9
180°	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9

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: SP1-2411-284-3

Test Date: 11/21/2024

Luminaire Tested: TTN-D0-750-U-WQ

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

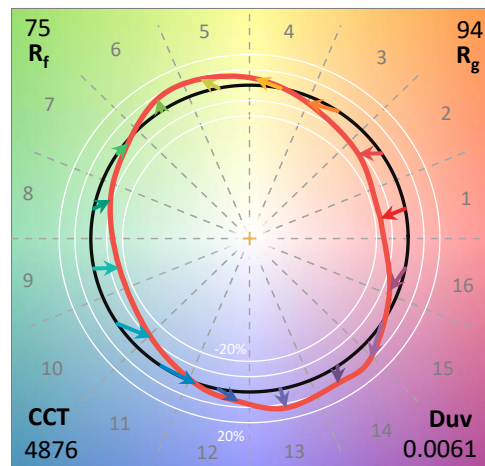
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2411-284-3
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 11/21/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW EDISON
 Catalog Number: **TTN-D0-750-U-WQ**
 Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 5000K, 70 CRI LEDS AND WIDE DISTRIBUTION

Spectral Parameters

CCT (K): 4876
 CIE u': 0.2086
 CIE v': 0.4932
 Duv: 0.0061
 CIE x: 0.3502
 CIE y: 0.3680
 CIE z: 0.2818
 Peak Wavelength (nm): 451
 Dominant Wavelength (nm): 569
 Purity: 15.51324
 Rf: 74.6
 Rg: 94.4

CRI (Ra):	72.6		
R1:	69.5	R9:	-24.6
R2:	77.0	R10:	44.8
R3:	82.2	R11:	68.2
R4:	72.6	R12:	36.1
R5:	69.3	R13:	70.5
R6:	67.6	R14:	89.9
R7:	83.7	R15:	63.1
R8:	58.6		



Test Conditions

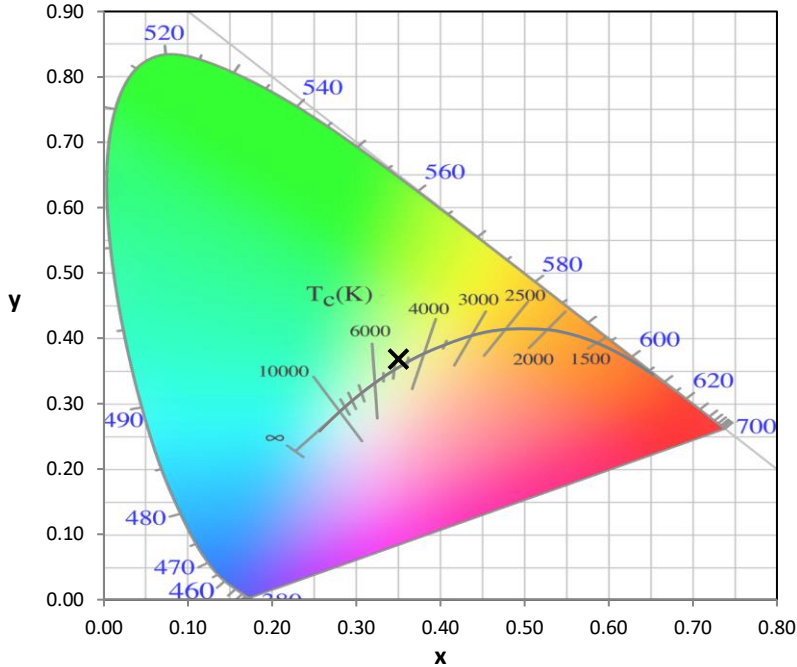
Stabilization Time: 51M
 Operation Time: 1H 51M
 Sphere Temperature (°C): 24.9

REPORT NUMBER: SP1-2411-284-3

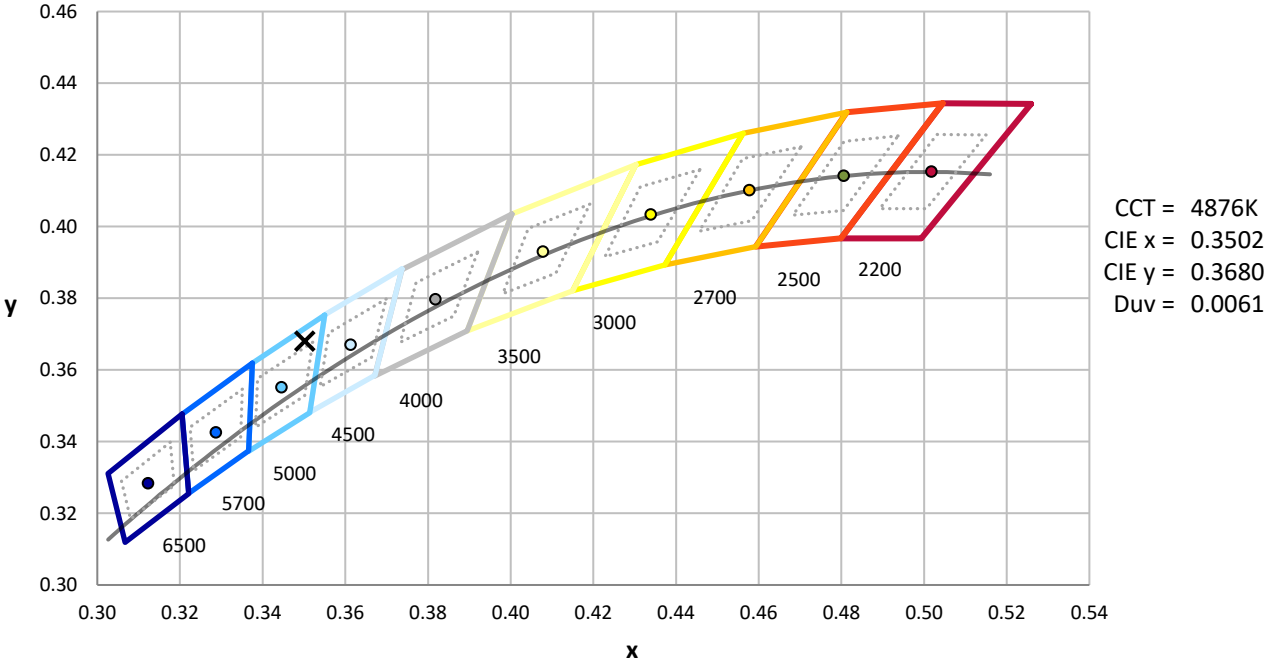
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2411-284-3

CIE 1931 Chromaticity Diagram



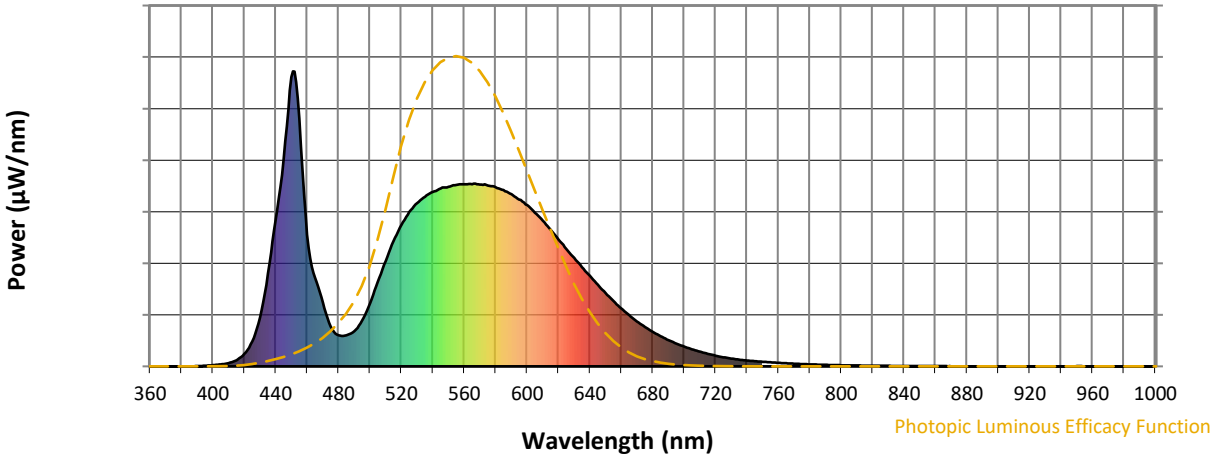
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5000K 7-step quadrangle

REPORT NUMBER: SP1-2411-284-3

Photopic Flux vs. Wavelength

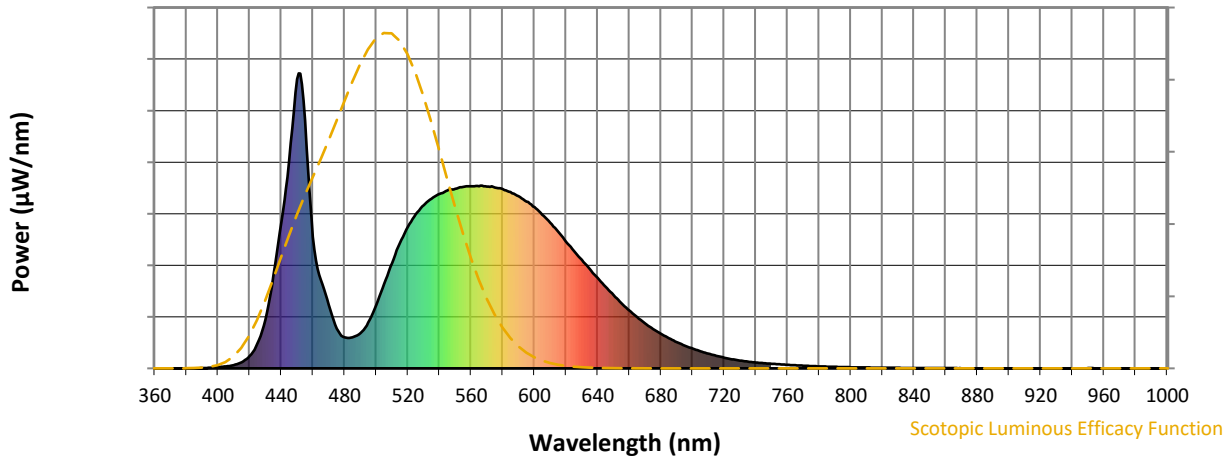


Photopic Lumens: NR

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	430	NR	750	16	NR	880	0	NR
365	0	NR	495	156	NR	625	398	NR	755	14	NR	885	0	NR
370	0	NR	500	214	NR	630	368	NR	760	12	NR	890	0	NR
375	0	NR	505	286	NR	635	336	NR	765	11	NR	895	0	NR
380	0	NR	510	357	NR	640	306	NR	770	9	NR	900	0	NR
385	0	NR	515	425	NR	645	276	NR	775	8	NR	905	0	NR
390	1	NR	520	480	NR	650	248	NR	780	7	NR	910	0	NR
395	2	NR	525	523	NR	655	221	NR	785	6	NR	915	0	NR
400	4	NR	530	554	NR	660	196	NR	790	5	NR	920	0	NR
405	7	NR	535	575	NR	665	173	NR	795	4	NR	925	0	NR
410	11	NR	540	592	NR	670	152	NR	800	4	NR	930	0	NR
415	21	NR	545	603	NR	675	133	NR	805	3	NR	935	0	NR
420	42	NR	550	609	NR	680	117	NR	810	3	NR	940	0	NR
425	85	NR	555	615	NR	685	102	NR	815	3	NR	945	0	NR
430	165	NR	560	617	NR	690	89	NR	820	2	NR	950	1	NR
435	316	NR	565	617	NR	695	77	NR	825	2	NR	955	0	NR
440	497	NR	570	616	NR	700	67	NR	830	2	NR	960	0	NR
445	702	NR	575	613	NR	705	58	NR	835	2	NR	965	0	NR
450	981	NR	580	607	NR	710	50	NR	840	1	NR	970	0	NR
455	840	NR	585	598	NR	715	43	NR	845	1	NR	975	0	NR
460	446	NR	590	583	NR	720	36	NR	850	1	NR	980	0	NR
465	300	NR	595	566	NR	725	31	NR	855	1	NR	985	0	NR
470	215	NR	600	546	NR	730	26	NR	860	1	NR	990	0	NR
475	135	NR	605	521	NR	735	23	NR	865	1	NR	995	0	NR
480	105	NR	610	494	NR	740	20	NR	870	1	NR	1000	0	NR
485	106	NR	615	463	NR	745	18	NR	875	0	NR			

REPORT NUMBER: SP1-2411-284-3

Scotopic Flux vs. Wavelength



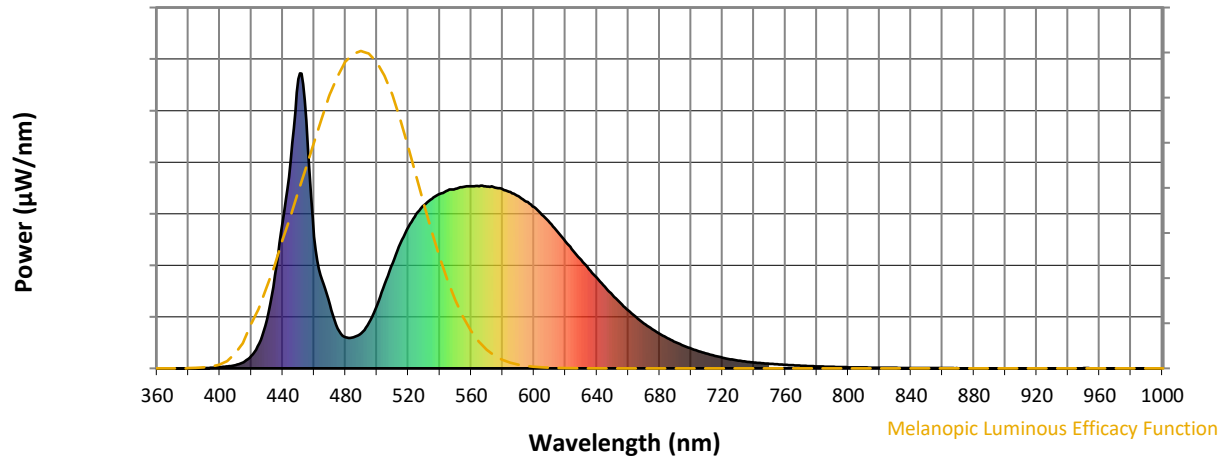
Scotopic Lumens: NR

S/P: 1.74

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	430	NR	750	16	NR	880	0	NR
365	0	NR	495	156	NR	625	398	NR	755	14	NR	885	0	NR
370	0	NR	500	214	NR	630	368	NR	760	12	NR	890	0	NR
375	0	NR	505	286	NR	635	336	NR	765	11	NR	895	0	NR
380	0	NR	510	357	NR	640	306	NR	770	9	NR	900	0	NR
385	0	NR	515	425	NR	645	276	NR	775	8	NR	905	0	NR
390	1	NR	520	480	NR	650	248	NR	780	7	NR	910	0	NR
395	2	NR	525	523	NR	655	221	NR	785	6	NR	915	0	NR
400	4	NR	530	554	NR	660	196	NR	790	5	NR	920	0	NR
405	7	NR	535	575	NR	665	173	NR	795	4	NR	925	0	NR
410	11	NR	540	592	NR	670	152	NR	800	4	NR	930	0	NR
415	21	NR	545	603	NR	675	133	NR	805	3	NR	935	0	NR
420	42	NR	550	609	NR	680	117	NR	810	3	NR	940	0	NR
425	85	NR	555	615	NR	685	102	NR	815	3	NR	945	0	NR
430	165	NR	560	617	NR	690	89	NR	820	2	NR	950	1	NR
435	316	NR	565	617	NR	695	77	NR	825	2	NR	955	0	NR
440	497	NR	570	616	NR	700	67	NR	830	2	NR	960	0	NR
445	702	NR	575	613	NR	705	58	NR	835	2	NR	965	0	NR
450	981	NR	580	607	NR	710	50	NR	840	1	NR	970	0	NR
455	840	NR	585	598	NR	715	43	NR	845	1	NR	975	0	NR
460	446	NR	590	583	NR	720	36	NR	850	1	NR	980	0	NR
465	300	NR	595	566	NR	725	31	NR	855	1	NR	985	0	NR
470	215	NR	600	546	NR	730	26	NR	860	1	NR	990	0	NR
475	135	NR	605	521	NR	735	23	NR	865	1	NR	995	0	NR
480	105	NR	610	494	NR	740	20	NR	870	1	NR	1000	0	NR
485	106	NR	615	463	NR	745	18	NR	875	0	NR			

REPORT NUMBER: SP1-2411-284-3

Melanopic Flux vs. Wavelength



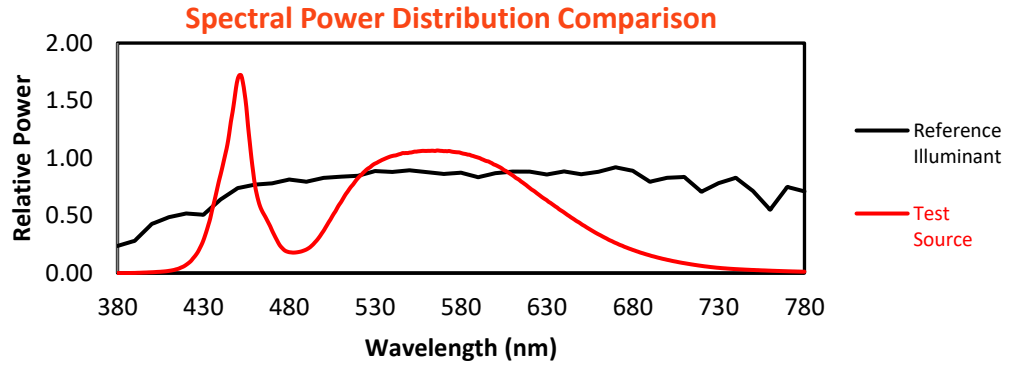
Melanopic Lumens: NR

M/P: 3.51

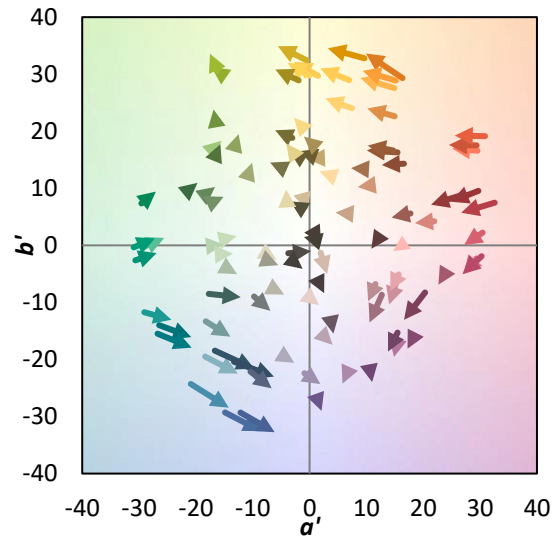
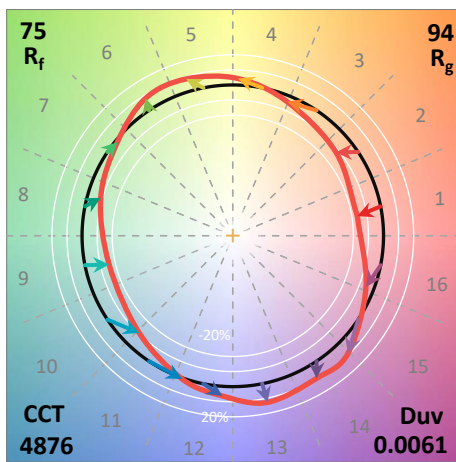
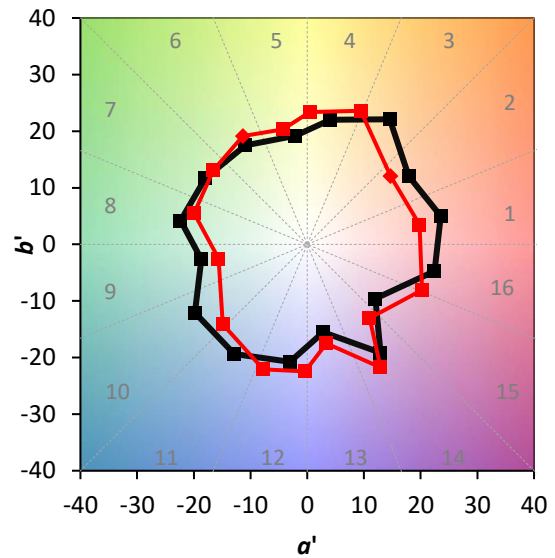
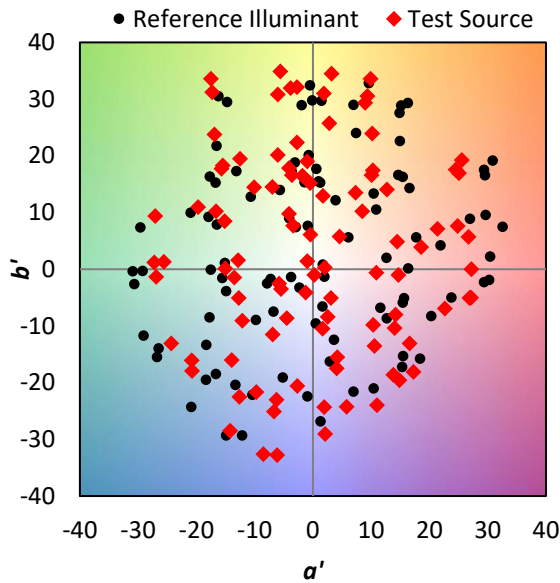
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	119	NR	620	430	NR	750	16	NR	880	0	NR
365	0	NR	495	156	NR	625	398	NR	755	14	NR	885	0	NR
370	0	NR	500	214	NR	630	368	NR	760	12	NR	890	0	NR
375	0	NR	505	286	NR	635	336	NR	765	11	NR	895	0	NR
380	0	NR	510	357	NR	640	306	NR	770	9	NR	900	0	NR
385	0	NR	515	425	NR	645	276	NR	775	8	NR	905	0	NR
390	1	NR	520	480	NR	650	248	NR	780	7	NR	910	0	NR
395	2	NR	525	523	NR	655	221	NR	785	6	NR	915	0	NR
400	4	NR	530	554	NR	660	196	NR	790	5	NR	920	0	NR
405	7	NR	535	575	NR	665	173	NR	795	4	NR	925	0	NR
410	11	NR	540	592	NR	670	152	NR	800	4	NR	930	0	NR
415	21	NR	545	603	NR	675	133	NR	805	3	NR	935	0	NR
420	42	NR	550	609	NR	680	117	NR	810	3	NR	940	0	NR
425	85	NR	555	615	NR	685	102	NR	815	3	NR	945	0	NR
430	165	NR	560	617	NR	690	89	NR	820	2	NR	950	1	NR
435	316	NR	565	617	NR	695	77	NR	825	2	NR	955	0	NR
440	497	NR	570	616	NR	700	67	NR	830	2	NR	960	0	NR
445	702	NR	575	613	NR	705	58	NR	835	2	NR	965	0	NR
450	981	NR	580	607	NR	710	50	NR	840	1	NR	970	0	NR
455	840	NR	585	598	NR	715	43	NR	845	1	NR	975	0	NR
460	446	NR	590	583	NR	720	36	NR	850	1	NR	980	0	NR
465	300	NR	595	566	NR	725	31	NR	855	1	NR	985	0	NR
470	215	NR	600	546	NR	730	26	NR	860	1	NR	990	0	NR
475	135	NR	605	521	NR	735	23	NR	865	1	NR	995	0	NR
480	105	NR	610	494	NR	740	20	NR	870	1	NR	1000	0	NR
485	106	NR	615	463	NR	745	18	NR	875	0	NR			

Summary

$R_f = 74.6$
 $R_g = 94.4$
 $CIE R_a = 72.6$
 $R_9 = -24.6$

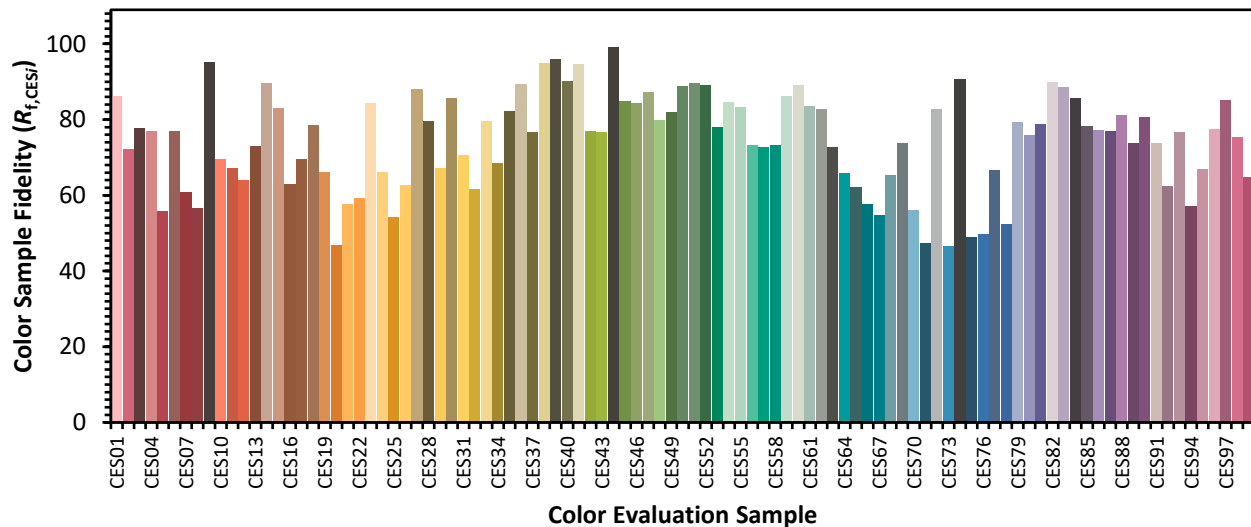


Color Vector Graphics

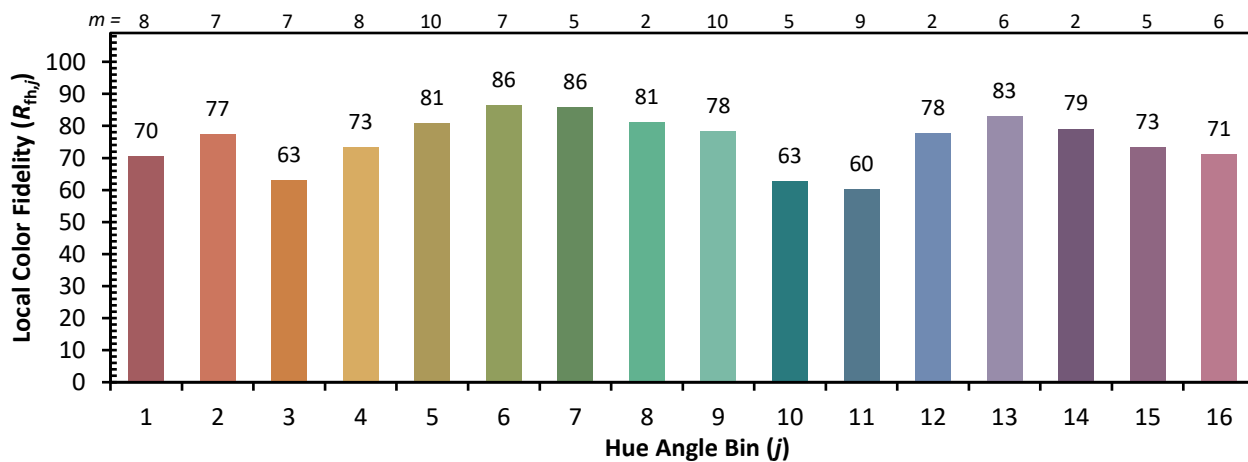
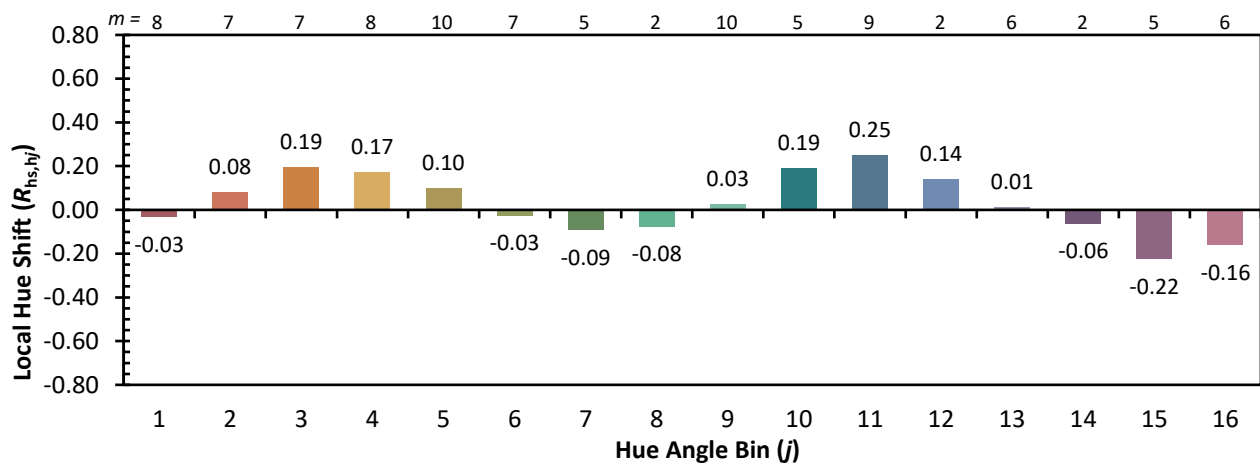
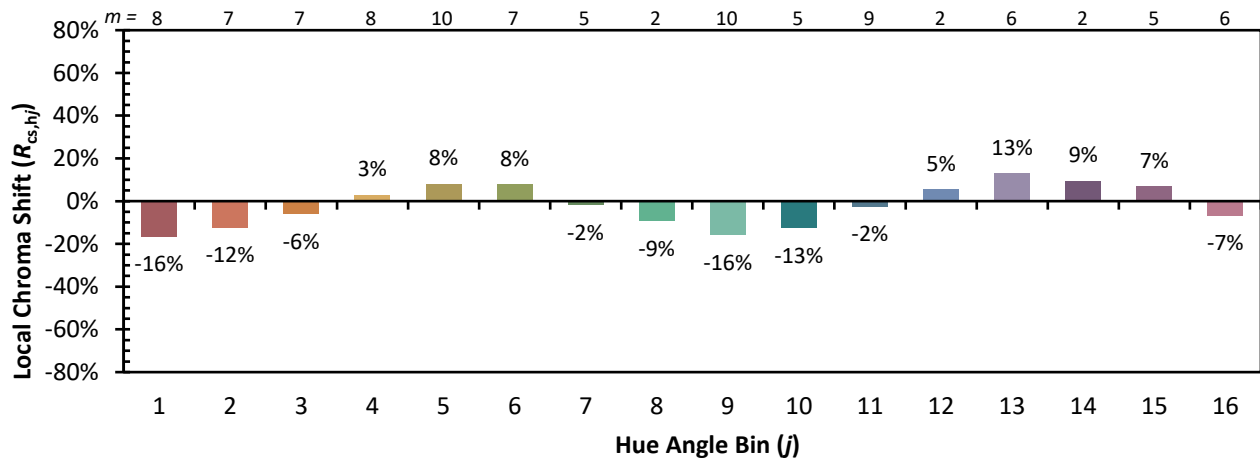


Individual Sample Fidelity Index ($R_{f,i}$)

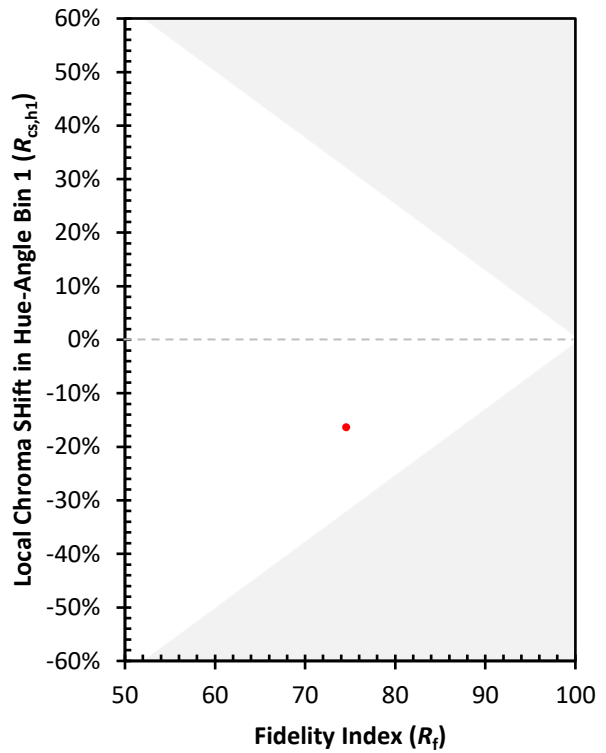
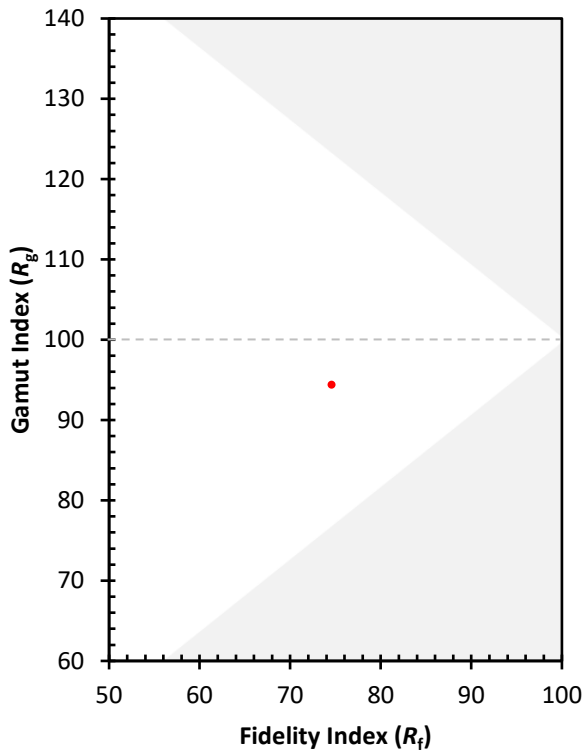
CES01 = 85	CES26 = 63	CES51 = 90	CES76 = 50
CES02 = 59	CES27 = 88	CES52 = 89	CES77 = 67
CES03 = 30	CES28 = 80	CES53 = 78	CES78 = 52
CES04 = 69	CES29 = 67	CES54 = 85	CES79 = 79
CES05 = 46	CES30 = 86	CES55 = 83	CES80 = 76
CES06 = 50	CES31 = 70	CES56 = 73	CES81 = 79
CES07 = 39	CES32 = 62	CES57 = 73	CES82 = 90
CES08 = 38	CES33 = 80	CES58 = 73	CES83 = 89
CES09 = 29	CES34 = 69	CES59 = 86	CES84 = 86
CES10 = 72	CES35 = 82	CES60 = 89	CES85 = 78
CES11 = 55	CES36 = 89	CES61 = 83	CES86 = 77
CES12 = 61	CES37 = 77	CES62 = 83	CES87 = 77
CES13 = 41	CES38 = 95	CES63 = 73	CES88 = 81
CES14 = 74	CES39 = 96	CES64 = 66	CES89 = 74
CES15 = 70	CES40 = 90	CES65 = 62	CES90 = 81
CES16 = 46	CES41 = 95	CES66 = 58	CES91 = 74
CES17 = 49	CES42 = 77	CES67 = 55	CES92 = 62
CES18 = 55	CES43 = 77	CES68 = 65	CES93 = 77
CES19 = 71	CES44 = 99	CES69 = 74	CES94 = 57
CES20 = 64	CES45 = 85	CES70 = 56	CES95 = 67
CES21 = 85	CES46 = 84	CES71 = 47	CES96 = 77
CES22 = 77	CES47 = 87	CES72 = 83	CES97 = 85
CES23 = 91	CES48 = 80	CES73 = 46	CES98 = 75
CES24 = 90	CES49 = 82	CES74 = 91	CES99 = 65
CES25 = 71	CES50 = 89	CES75 = 49	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)