

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: P833197

Luminaire Tested: **TTN-D1-740-U-DL-UPL1**

Issue Date: 5/15/2024

Test Information

Test Method: LM-79-08
Report Number: P833197
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-D1-740-U-DL-UPL1
Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
4000K, 70 CRI LEDS AND DRIVE LANE DISTRIBUTION
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3510.9 lumens
Efficiency: N/A
Efficacy: 121.1 lumens/watt
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')
IES Classification: Type IV - Short
BUG Rating: B1 - U3 - G2

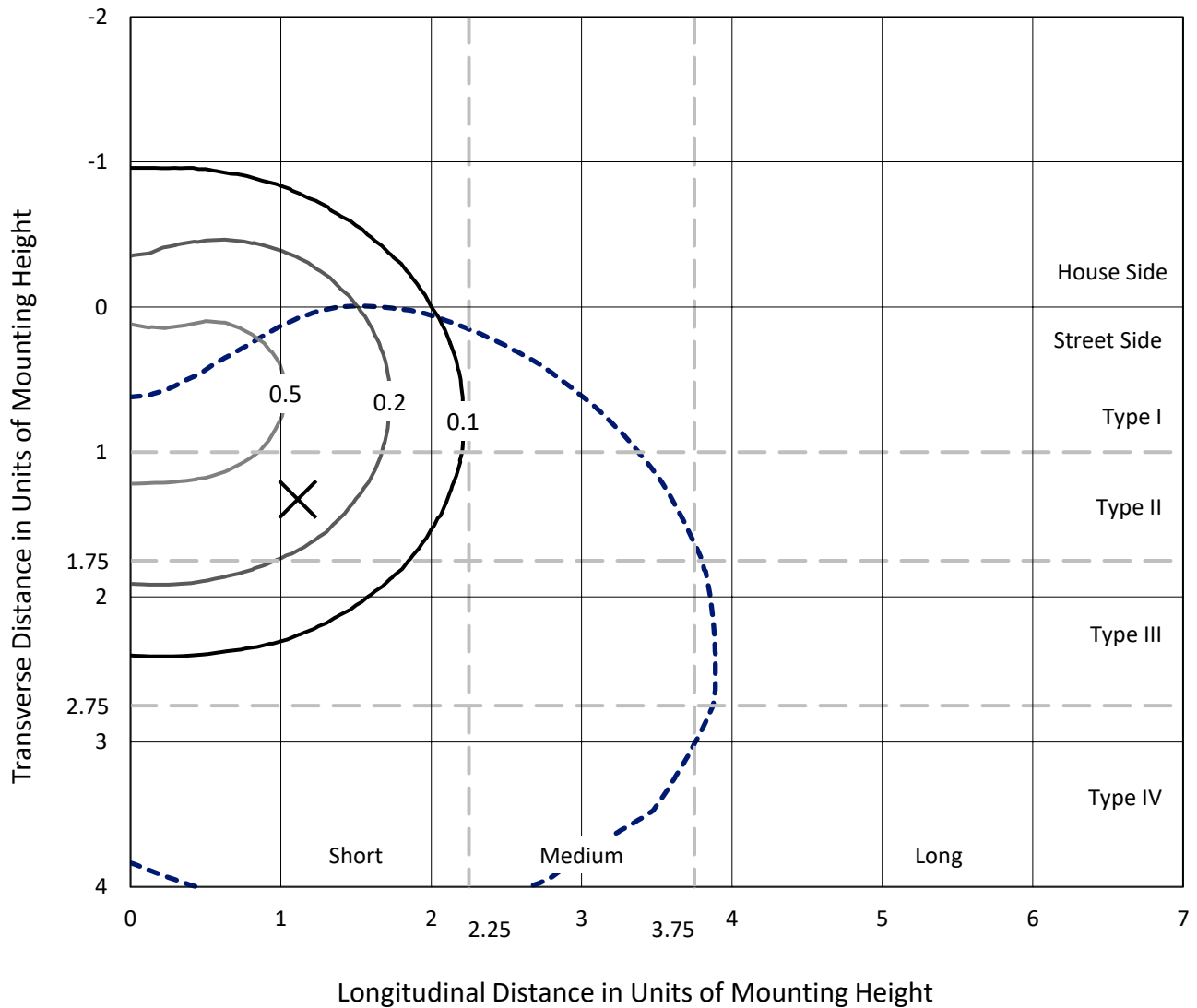
Input Watts (W): 29
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Iso-Footcandle Lines of Horizontal Illumination

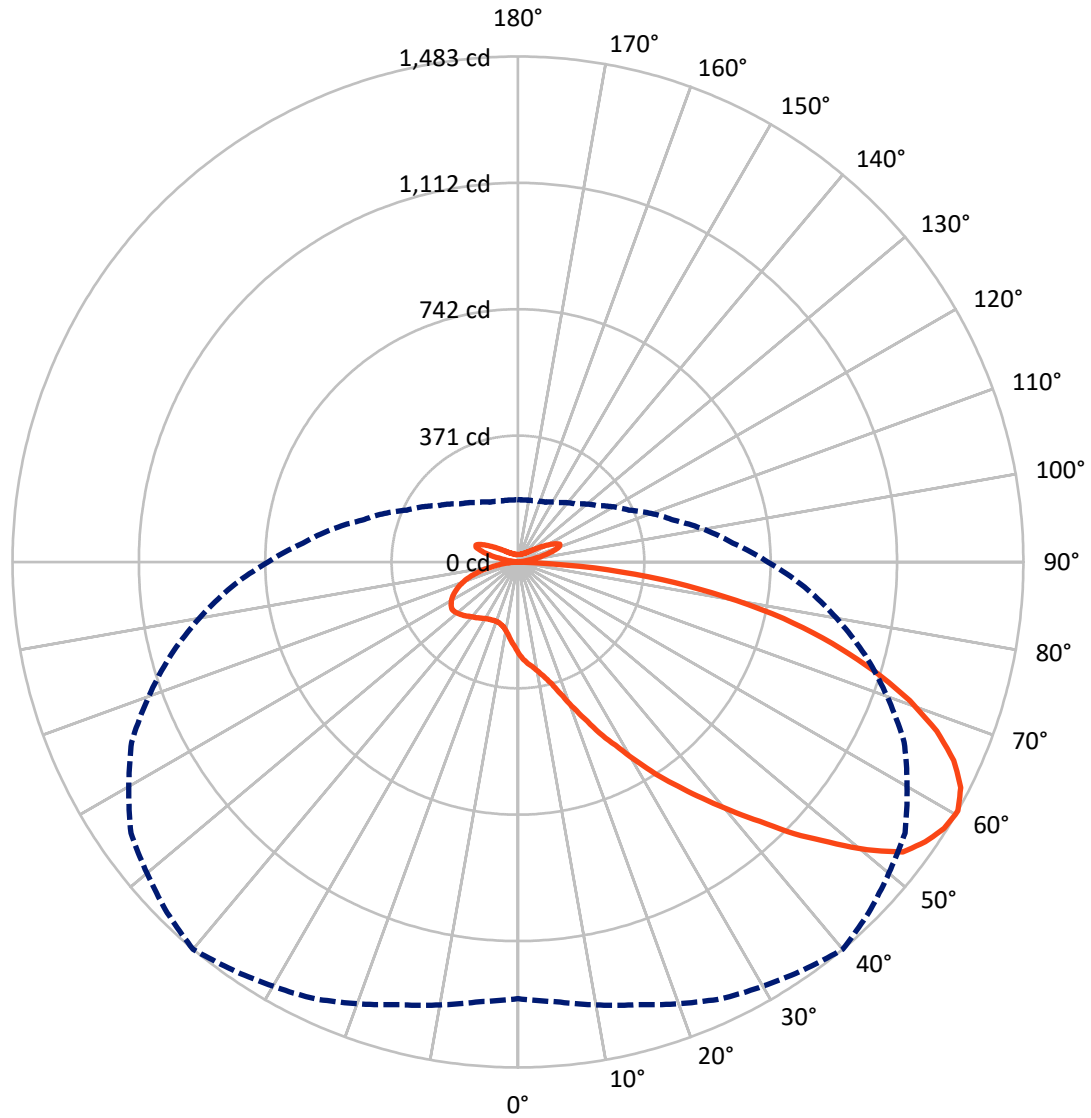
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.7 fc
 Type IV - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 40-Deg Lateral - - - Horizontal Cone Through 60-Deg Vertical

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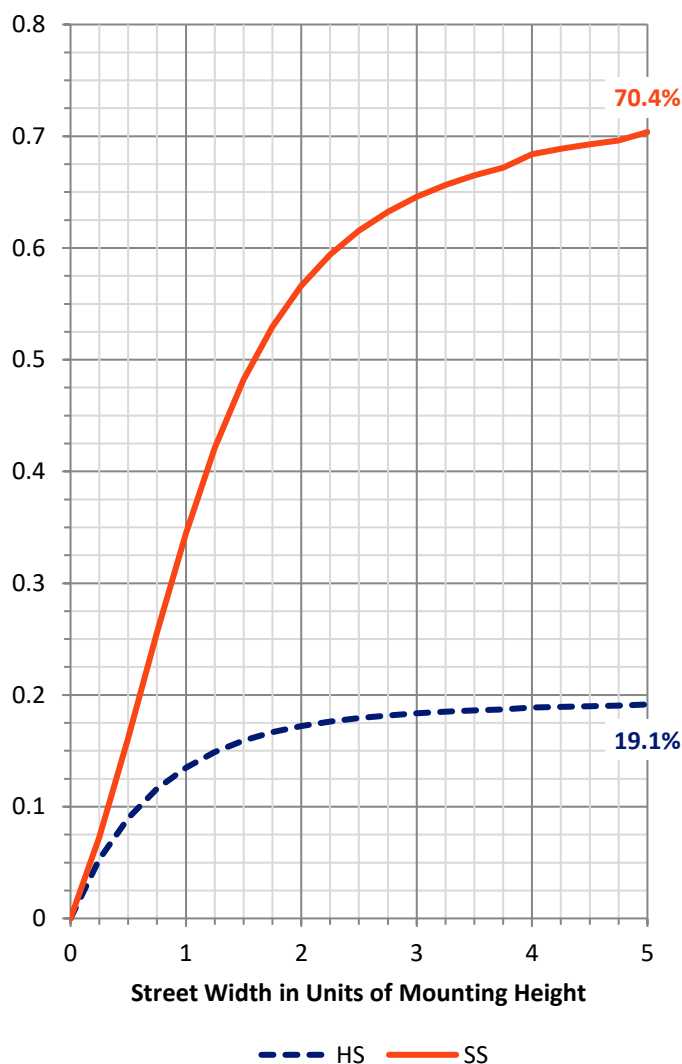
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	678.9	161.7	840.6
	% Fixture	19.3	4.6	23.9
Street Side	Lumens	2508.5	161.7	2670.3
	% Fixture	71.5	4.6	76.1
Total	Lumens	3187.4	323.4	3510.9
	% Fixture	90.8	9.2	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	25.3	0.7
10°-20°	80.8	2.3
20°-30°	170.7	4.9
30°-40°	311.9	8.9
40°-50°	506.8	14.4
50°-60°	704.5	20.1
60°-70°	730.3	20.8
70°-80°	523.3	14.9
80°-90°	133.9	3.8
90°-100°	7.2	0.2
100°-110°	73.4	2.1
110°-120°	107.3	3.1
120°-130°	62.3	1.8
130°-140°	33.0	0.9
140°-150°	19.6	0.6
150°-160°	12.1	0.3
160°-170°	6.6	0.2
170°-180°	2.1	0.1
0°-90°	3187.4	90.8
0°-180°	3510.9	100.0

Coefficient of Utilization



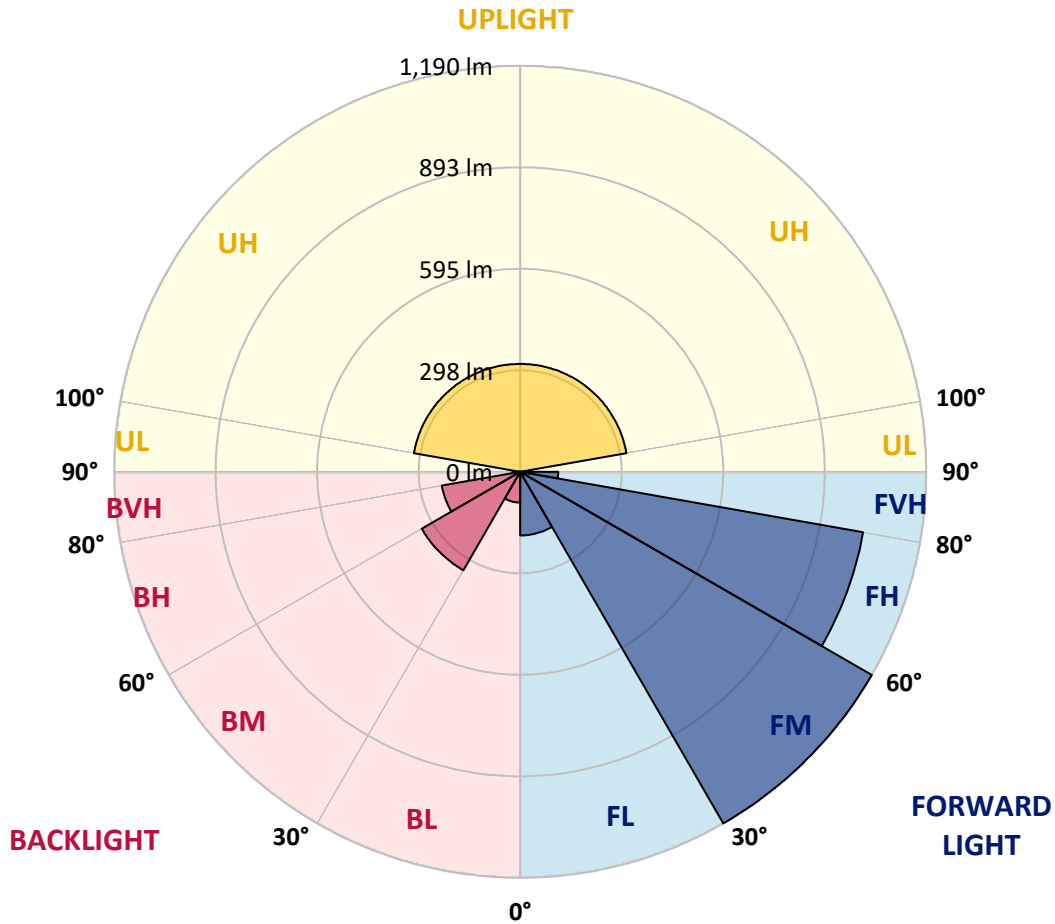
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	186.5	5.3			
FM (30°-60°)	1190.0	33.9			
FH (60°-80°)	1020.7	29.1			G1/1800
FVH (80°-90°)	111.4	3.2			G2/225
BL (0°-30°)	90.3	2.6	B0/110		
BM (30°-60°)	333.2	9.5	B1/1000		
BH (60°-80°)	233.0	6.6	B1/500		G1/500
BVH (80°-90°)	22.5	0.6			G1/100
UL (90°-100°)	7.2	0.2		U1/10	
UH (100°-180°)	316.2	9.0		U3/500	

BUG Rating: B1-U3-G2

Type IV Short





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	40°	45°	55°	65°	75°	85°
0°	268.4	268.4	268.4	268.4	268.4	268.4	268.4	268.4	268.4	268.4	268.4
2.5°	287.8	287.8	287.8	287.8	285.0	285.0	282.3	279.5	276.7	274.0	268.4
5°	312.7	312.7	309.9	307.2	301.6	298.9	296.1	290.6	285.0	279.5	271.2
7.5°	323.8	323.8	323.8	321.0	312.7	309.9	304.4	296.1	287.8	279.5	268.4
10°	343.1	343.1	340.4	337.6	329.3	326.5	321.0	309.9	296.1	282.3	268.4
12.5°	368.0	365.3	362.5	359.7	351.4	345.9	337.6	326.5	309.9	293.3	276.7
15°	398.5	392.9	392.9	387.4	379.1	370.8	365.3	348.7	332.1	309.9	287.8
17.5°	431.7	428.9	426.1	420.6	412.3	406.8	398.5	379.1	357.0	329.3	304.4
20°	473.2	467.7	470.4	462.1	453.8	451.0	437.2	415.1	387.4	357.0	326.5
22.5°	523.0	517.5	517.5	509.2	503.6	498.1	484.3	459.4	423.4	390.2	351.4
25°	578.3	572.8	572.8	567.3	561.7	556.2	539.6	511.9	470.4	428.9	384.6
27.5°	639.2	633.7	633.7	630.9	617.1	608.8	594.9	564.5	523.0	470.4	417.8
30°	702.9	697.3	702.9	697.3	689.0	672.4	655.8	622.6	575.6	517.5	453.8
32.5°	752.7	752.7	755.4	761.0	755.4	741.6	722.2	694.6	630.9	559.0	487.0
35°	810.8	810.8	816.3	824.6	821.9	808.0	788.6	758.2	691.8	606.0	523.0
37.5°	874.4	874.4	880.0	893.8	888.3	880.0	866.1	827.4	752.7	653.1	561.7
40°	943.6	940.8	946.4	965.7	968.5	957.4	940.8	902.1	816.3	713.9	603.2
42.5°	1012.8	1010.0	1021.1	1040.5	1043.2	1040.5	1023.9	979.6	882.7	774.8	644.8
45°	1082.0	1082.0	1098.6	1129.0	1142.8	1137.3	1123.5	1068.1	965.7	838.5	700.1
47.5°	1153.9	1153.9	1176.0	1214.8	1231.4	1228.6	1223.1	1156.7	1046.0	904.9	747.1
50°	1209.3	1209.3	1245.2	1289.5	1317.2	1328.2	1300.6	1239.7	1115.2	963.0	785.9
52.5°	1264.6	1264.6	1300.6	1369.8	1397.4	1414.0	1378.1	1314.4	1192.7	1015.6	821.9
55°	1292.3	1297.8	1347.6	1414.0	1458.3	1450.0	1463.8	1378.1	1242.5	1054.3	844.0
57.5°	1295.0	1303.3	1358.7	1427.9	1477.7	1474.9	1477.7	1400.2	1261.8	1062.6	846.8
60°	1281.2	1295.0	1344.8	1414.0	1461.1	1483.2	1455.5	1386.4	1250.8	1054.3	844.0
62.5°	1248.0	1275.7	1328.2	1380.8	1450.0	1458.3	1436.2	1378.1	1220.3	1046.0	830.2
65°	1173.3	1203.7	1278.4	1339.3	1394.7	1405.7	1380.8	1331.0	1189.9	1007.3	785.9
67.5°	1098.6	1117.9	1181.6	1275.7	1314.4	1325.5	1317.2	1259.1	1137.3	929.8	733.3
70°	1012.8	1037.7	1087.5	1184.3	1223.1	1220.3	1245.2	1178.8	1057.1	863.4	678.0
72.5°	896.6	932.5	982.3	1062.6	1109.6	1093.0	1131.8	1076.4	951.9	780.3	603.2
75°	761.0	791.4	855.1	918.7	971.3	951.9	982.3	943.6	830.2	680.7	517.5
77.5°	608.8	644.8	702.9	761.0	796.9	796.9	810.8	777.6	689.0	559.0	423.4
80°	451.0	484.3	536.8	578.3	611.5	614.3	628.1	611.5	531.3	434.4	323.8
82.5°	298.9	315.5	362.5	395.7	428.9	426.1	448.3	437.2	370.8	298.9	215.8
85°	127.3	138.4	177.1	204.8	235.2	224.1	254.6	251.8	199.2	143.9	96.9
87.5°	5.5	8.3	8.3	5.5	8.3	2.8	8.3	11.1	8.3	5.5	5.5
90°	2.8	2.8	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.8
92.5°	2.8	2.8	2.8	3.9	4.4	4.2	3.9	4.4	3.3	3.3	2.8
95°	3.3	3.3	3.9	5.0	6.1	6.4	6.6	6.6	3.9	3.9	3.3
97.5°	4.4	5.0	5.0	6.1	10.0	14.2	18.3	11.1	5.5	5.5	5.0
100°	7.2	7.7	7.7	13.8	29.3	34.3	39.3	28.2	14.4	10.5	7.7
102.5°	23.2	24.3	29.9	44.8	66.4	63.4	60.3	50.9	48.1	33.2	26.6
105°	59.2	58.7	63.1	74.7	93.0	92.2	91.3	84.1	76.4	65.8	60.9
107.5°	78.0	78.0	81.9	91.9	105.7	114.6	123.4	125.1	99.0	86.9	81.3
110°	88.0	88.0	91.3	99.6	117.9	130.4	142.8	141.6	122.3	107.3	100.2



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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	40°	45°	55°	65°	75°	85°
112.5°	90.2	90.7	95.2	107.9	127.8	133.4	138.9	133.9	126.2	119.5	114.0
115°	93.5	93.5	98.5	110.7	121.7	124.0	126.2	120.6	114.5	110.1	107.9
117.5°	92.4	94.1	95.2	101.8	109.0	110.6	112.3	109.6	101.3	97.9	96.8
120°	85.8	85.8	86.9	90.2	94.1	94.9	95.7	94.6	89.1	86.3	85.8
122.5°	76.4	76.9	76.4	78.0	80.8	81.6	82.4	81.3	76.9	75.8	75.8
125°	67.0	67.0	66.4	67.5	69.2	68.9	68.6	69.2	67.0	66.4	66.4
127.5°	60.3	59.8	58.7	59.2	59.8	59.8	59.8	60.3	58.1	58.7	59.2
130°	53.7	53.7	52.6	52.6	52.6	52.0	51.5	52.6	51.5	52.0	52.6
132.5°	47.6	47.6	45.9	45.4	45.4	45.4	45.4	45.9	45.4	46.5	47.6
135°	42.6	42.6	40.9	41.5	41.5	41.2	40.9	41.5	40.9	42.1	42.6
137.5°	38.7	38.7	37.6	37.6	37.6	37.4	37.1	37.6	37.6	38.2	39.3
140°	35.4	35.4	34.9	34.9	34.3	34.6	34.9	34.9	34.9	35.4	36.0
142.5°	33.8	33.2	32.6	32.1	32.6	32.6	32.6	32.6	32.1	32.6	33.8
145°	31.0	31.0	30.4	30.4	30.4	30.7	31.0	30.4	30.4	31.0	31.0
147.5°	29.3	29.3	28.8	29.3	29.3	29.3	29.3	29.3	28.8	29.3	29.3
150°	28.8	28.2	27.7	28.2	28.2	28.0	27.7	27.7	27.7	27.7	28.2
152.5°	27.1	27.1	26.6	27.1	26.6	26.6	26.6	26.6	26.6	26.6	27.1
155°	26.0	26.0	25.5	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
157.5°	24.9	25.5	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	25.5
160°	24.3	24.3	24.3	24.3	23.8	23.8	23.8	23.8	24.3	24.3	24.3
162.5°	23.8	23.8	23.8	23.8	23.2	23.2	23.2	23.2	23.2	23.8	23.8
165°	23.8	23.2	23.2	23.2	22.7	22.7	22.7	22.7	22.7	23.2	23.8
167.5°	22.7	22.7	22.7	22.7	22.7	22.4	22.1	22.1	22.7	22.7	22.7
170°	22.7	22.7	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1
172.5°	22.7	22.7	22.7	22.7	22.1	22.1	22.1	22.1	22.1	22.1	22.7
175°	22.7	22.7	22.7	22.7	22.1	22.1	22.1	22.1	22.7	22.7	22.7
177.5°	22.7	22.7	22.7	22.7	22.1	22.4	22.7	22.7	22.7	22.7	22.7
180°	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7



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CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	268.4	268.4	268.4	268.4	268.4	268.4	268.4	268.4	268.4	268.4	268.4
2.5°	268.4	265.6	260.1	257.3	254.6	249.0	249.0	246.3	246.3	246.3	243.5
5°	268.4	262.9	257.3	249.0	243.5	238.0	232.4	226.9	224.1	224.1	221.4
7.5°	262.9	257.3	249.0	240.7	232.4	221.4	215.8	204.8	202.0	199.2	199.2
10°	262.9	257.3	243.5	232.4	221.4	210.3	202.0	190.9	182.6	179.9	179.9
12.5°	265.6	257.3	243.5	229.7	215.8	202.0	190.9	179.9	171.6	166.0	166.0
15°	276.7	265.6	249.0	229.7	213.1	196.5	185.4	171.6	163.3	157.7	157.7
17.5°	290.6	279.5	254.6	232.4	213.1	193.7	179.9	166.0	157.7	152.2	149.4
20°	309.9	293.3	265.6	235.2	213.1	193.7	177.1	163.3	152.2	146.7	146.7
22.5°	332.1	312.7	276.7	240.7	215.8	193.7	177.1	160.5	149.4	143.9	143.9
25°	359.7	334.8	293.3	251.8	221.4	196.5	177.1	160.5	149.4	143.9	143.9
27.5°	390.2	362.5	309.9	262.9	226.9	199.2	177.1	160.5	149.4	143.9	143.9
30°	417.8	387.4	326.5	274.0	235.2	202.0	179.9	163.3	152.2	146.7	143.9
32.5°	448.3	409.5	343.1	285.0	240.7	207.5	182.6	166.0	152.2	146.7	146.7
35°	478.7	437.2	359.7	298.9	249.0	213.1	185.4	168.8	155.0	149.4	149.4
37.5°	511.9	467.7	379.1	309.9	257.3	218.6	190.9	171.6	157.7	152.2	152.2
40°	550.7	498.1	398.5	323.8	265.6	224.1	193.7	177.1	163.3	157.7	157.7
42.5°	586.6	525.8	417.8	334.8	274.0	229.7	199.2	179.9	168.8	163.3	163.3
45°	622.6	559.0	437.2	348.7	282.3	238.0	204.8	188.2	174.3	168.8	168.8
47.5°	664.1	589.4	459.4	359.7	290.6	243.5	210.3	193.7	179.9	177.1	174.3
50°	697.3	611.5	473.2	370.8	296.1	249.0	215.8	196.5	185.4	179.9	179.9
52.5°	727.8	633.7	484.3	376.3	298.9	251.8	221.4	202.0	190.9	185.4	185.4
55°	744.4	642.0	492.6	376.3	301.6	254.6	221.4	202.0	190.9	188.2	185.4
57.5°	744.4	642.0	487.0	370.8	296.1	249.0	218.6	199.2	190.9	185.4	185.4
60°	733.3	633.7	473.2	359.7	287.8	240.7	213.1	193.7	185.4	182.6	182.6
62.5°	716.7	619.8	462.1	345.9	276.7	229.7	204.8	185.4	179.9	179.9	177.1
65°	672.4	578.3	437.2	326.5	260.1	215.8	193.7	177.1	171.6	168.8	166.0
67.5°	625.4	539.6	398.5	304.4	238.0	202.0	179.9	166.0	157.7	157.7	155.0
70°	578.3	498.1	362.5	274.0	213.1	185.4	163.3	149.4	143.9	143.9	143.9
72.5°	514.7	445.5	321.0	240.7	188.2	163.3	146.7	132.8	130.1	130.1	127.3
75°	440.0	379.1	271.2	204.8	157.7	138.4	124.5	110.7	110.7	110.7	110.7
77.5°	359.7	307.2	215.8	163.3	124.5	110.7	102.4	91.3	91.3	91.3	91.3
80°	271.2	226.9	157.7	119.0	91.3	80.2	74.7	69.2	71.9	71.9	69.2
82.5°	177.1	149.4	99.6	74.7	58.1	52.6	52.6	47.0	49.8	49.8	49.8
85°	77.5	66.4	41.5	33.2	27.7	27.7	27.7	24.9	27.7	27.7	27.7
87.5°	5.5	5.5	5.5	5.5	5.5	5.5	5.5	0.0	2.8	5.5	2.8
90°	2.8	2.8	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.8	2.8
92.5°	2.8	2.8	3.3	3.3	4.4	3.9	4.4	3.9	2.8	2.8	2.8
95°	3.3	3.3	3.9	3.9	6.6	6.6	6.1	5.0	3.9	3.3	3.3
97.5°	4.4	5.0	5.5	5.5	11.1	18.3	10.0	6.1	5.0	5.0	4.4
100°	7.7	7.7	10.5	14.4	28.2	39.3	29.3	13.8	7.7	7.7	7.2
102.5°	25.5	26.6	33.2	48.1	50.9	60.3	66.4	44.8	29.9	24.3	23.2
105°	60.9	60.9	65.8	76.4	84.1	91.3	93.0	74.7	63.1	58.7	59.2
107.5°	80.8	81.3	86.9	99.0	125.1	123.4	105.7	91.9	81.9	78.0	78.0
110°	99.0	100.2	107.3	122.3	141.6	142.8	117.9	99.6	91.3	88.0	88.0



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 CATALOG NUMBER: TTN-D1-740-U-DL-UPL1

CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	112.9	114.0	119.5	126.2	133.9	138.9	127.8	107.9	95.2	90.7	90.2
115°	109.0	107.9	110.1	114.5	120.6	126.2	121.7	110.7	98.5	93.5	93.5
117.5°	95.2	96.8	97.9	101.3	109.6	112.3	109.0	101.8	95.2	94.1	92.4
120°	84.7	85.8	86.3	89.1	94.6	95.7	94.1	90.2	86.9	85.8	85.8
122.5°	74.7	75.8	75.8	76.9	81.3	82.4	80.8	78.0	76.4	76.9	76.4
125°	65.8	66.4	66.4	67.0	69.2	68.6	69.2	67.5	66.4	67.0	67.0
127.5°	58.7	59.2	58.7	58.1	60.3	59.8	59.8	59.2	58.7	59.8	60.3
130°	53.1	52.6	52.0	51.5	52.6	51.5	52.6	52.6	52.6	53.7	53.7
132.5°	47.6	47.6	46.5	45.4	45.9	45.4	45.4	45.4	45.9	47.6	47.6
135°	42.6	42.6	42.1	40.9	41.5	40.9	41.5	41.5	40.9	42.6	42.6
137.5°	39.8	39.3	38.2	37.6	37.6	37.1	37.6	37.6	37.6	38.7	38.7
140°	36.0	36.0	35.4	34.9	34.9	34.9	34.3	34.9	34.9	35.4	35.4
142.5°	33.8	33.8	32.6	32.1	32.6	32.6	32.6	32.1	32.6	33.2	33.8
145°	31.5	31.0	31.0	30.4	30.4	31.0	30.4	30.4	30.4	31.0	31.0
147.5°	29.9	29.3	29.3	28.8	29.3	29.3	29.3	29.3	28.8	29.3	29.3
150°	28.2	28.2	27.7	27.7	27.7	27.7	28.2	28.2	27.7	28.2	28.8
152.5°	27.7	27.1	26.6	26.6	26.6	26.6	26.6	27.1	26.6	27.1	27.1
155°	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	25.5	26.0	26.0
157.5°	25.5	25.5	24.9	24.9	24.9	24.9	24.9	24.9	24.9	25.5	24.9
160°	24.9	24.3	24.3	24.3	23.8	23.8	23.8	24.3	24.3	24.3	24.3
162.5°	24.3	23.8	23.8	23.2	23.2	23.2	23.2	23.8	23.8	23.8	23.8
165°	23.2	23.8	23.2	22.7	22.7	22.7	22.7	23.2	23.2	23.2	23.8
167.5°	23.2	22.7	22.7	22.7	22.1	22.1	22.7	22.7	22.7	22.7	22.7
170°	22.7	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.7	22.7
172.5°	22.7	22.7	22.1	22.1	22.1	22.1	22.1	22.7	22.7	22.7	22.7
175°	22.1	22.7	22.7	22.7	22.1	22.1	22.1	22.7	22.7	22.7	22.7
177.5°	22.7	22.7	22.7	22.7	22.7	22.7	22.1	22.7	22.7	22.7	22.7
180°	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7

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: SP1-2411-284-2

Test Date: 11/20/2024

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

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

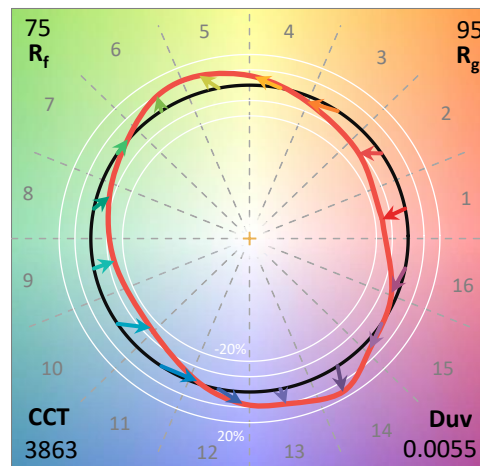
Test Information

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
 Rf: 74.7
 Rg: 95.4

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



Test Conditions

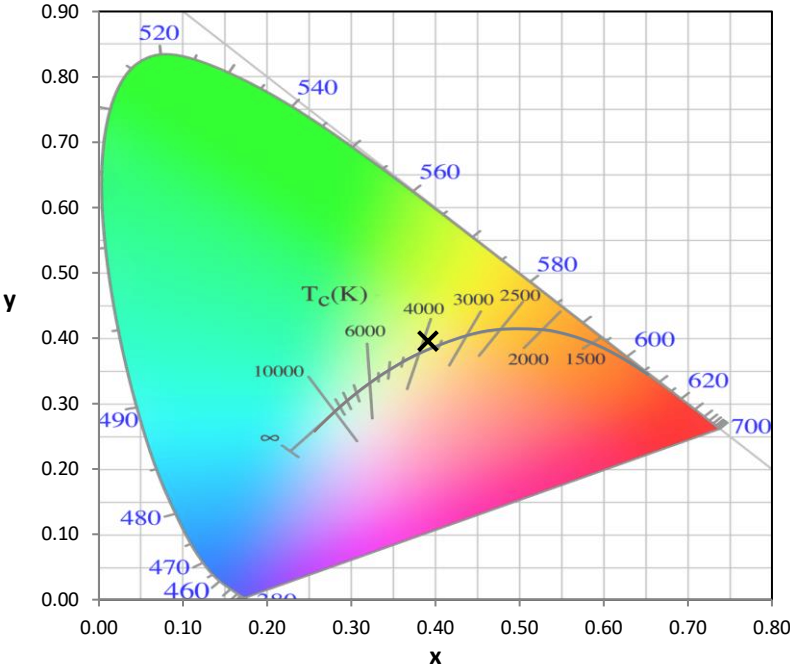
Stabilization Time: 37M
 Operation Time: 1H 37M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2411-284-2

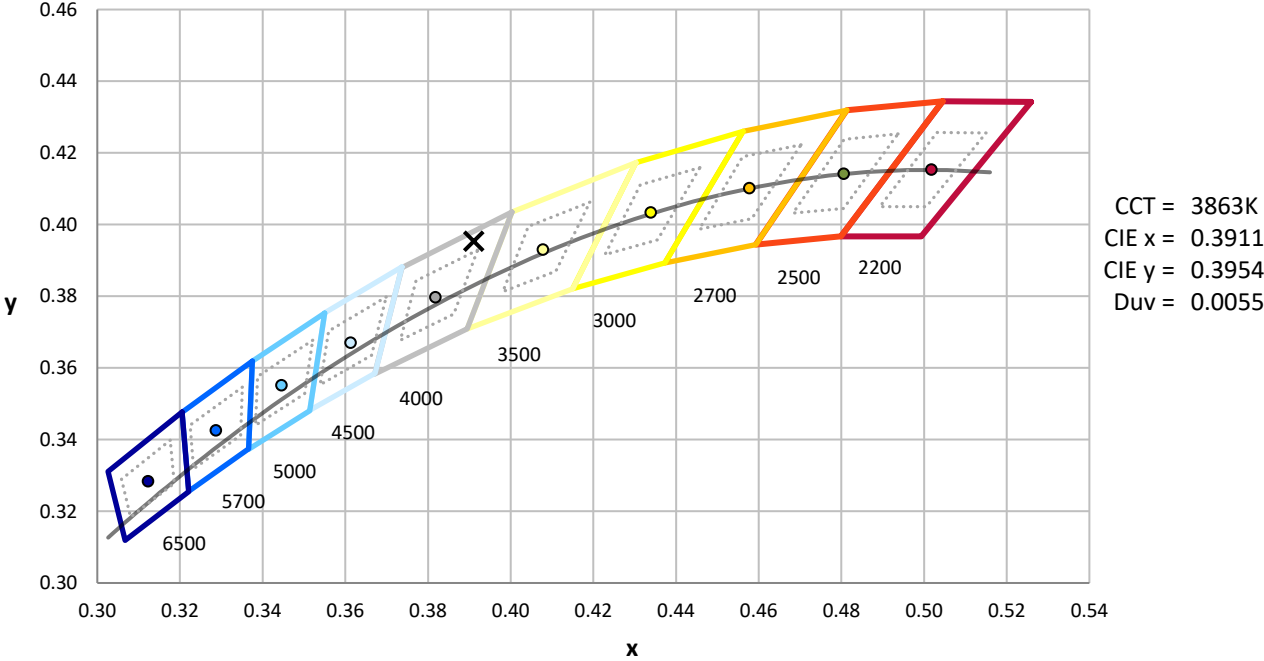
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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

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CIE 1931 Chromaticity Diagram



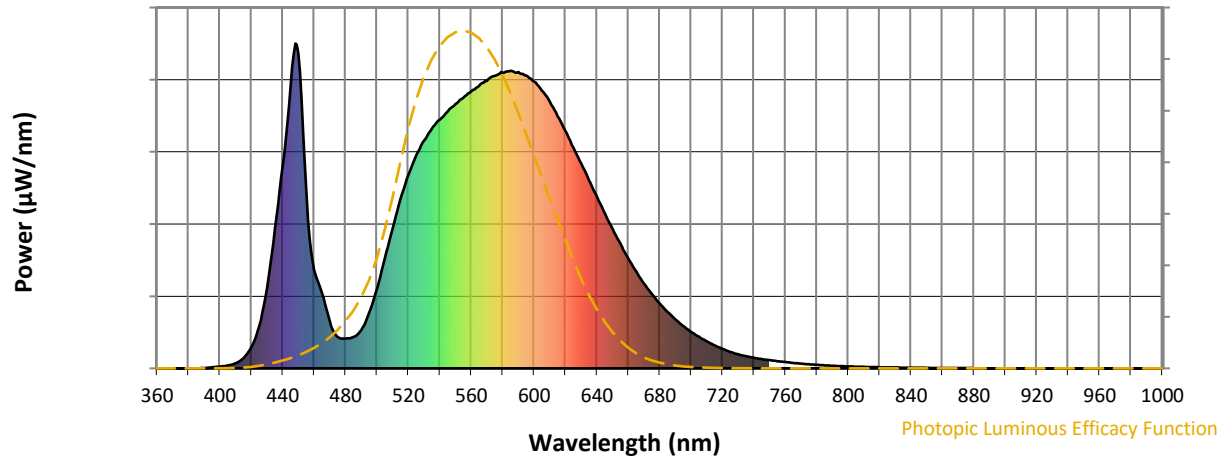
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 4000K 7-step quadrangle

REPORT NUMBER: SP1-2411-284-2

Photopic Flux vs. Wavelength

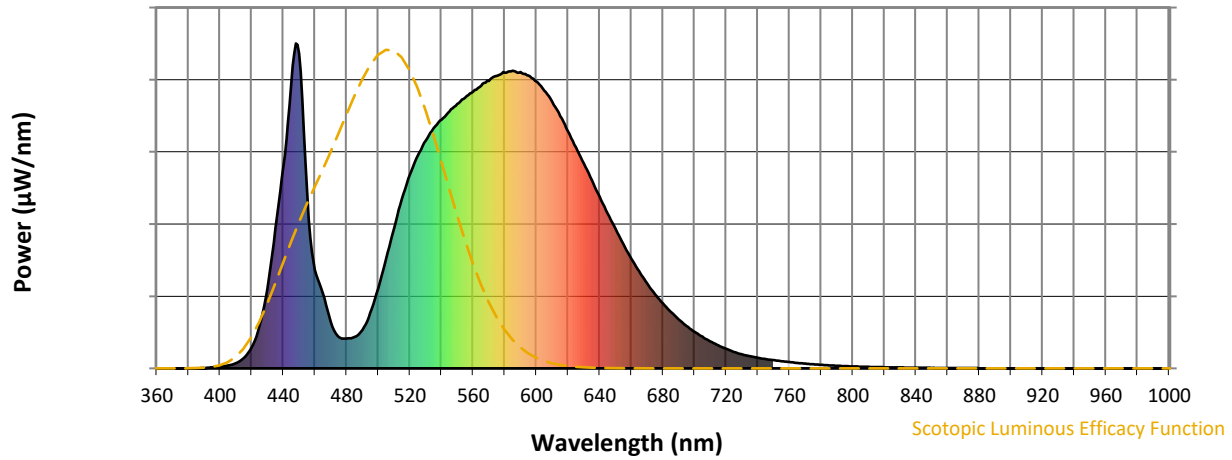


Photopic Lumens: NR

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	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



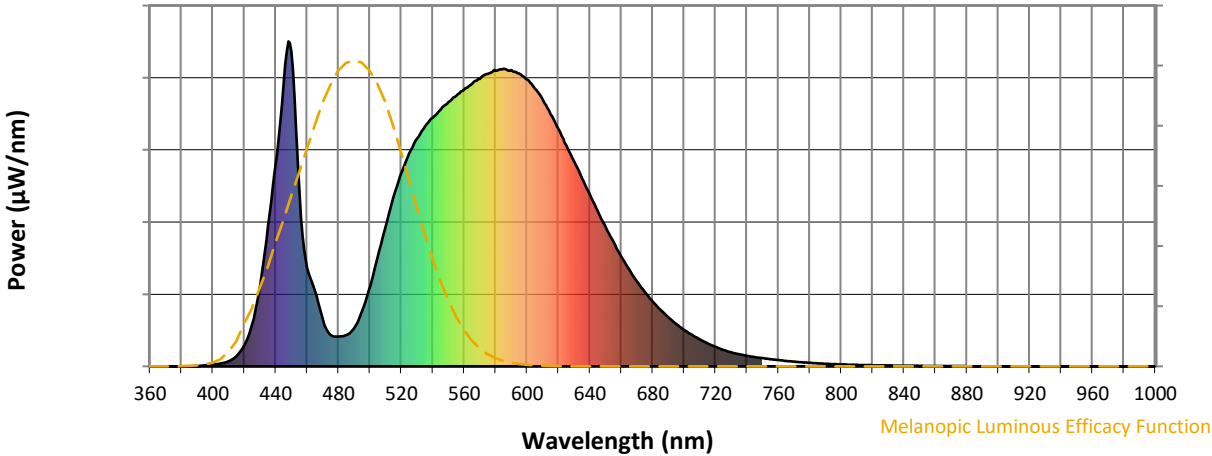
Scotopic Lumens: NR

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



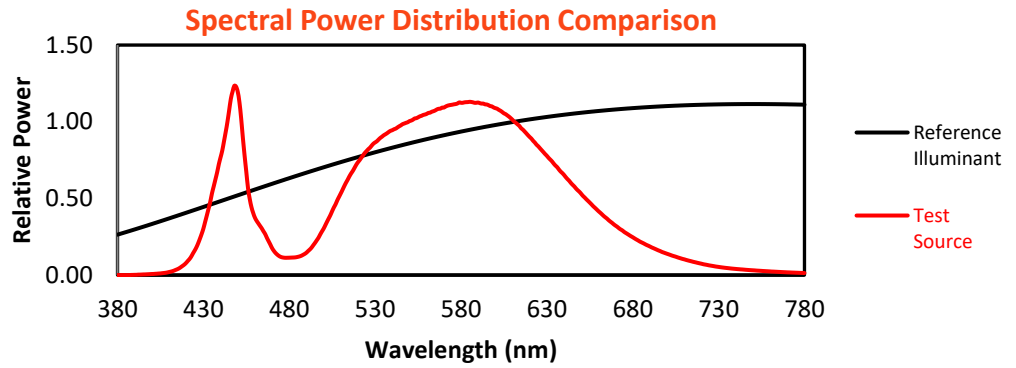
Melanopic Lumens: NR

M/P: 2.72

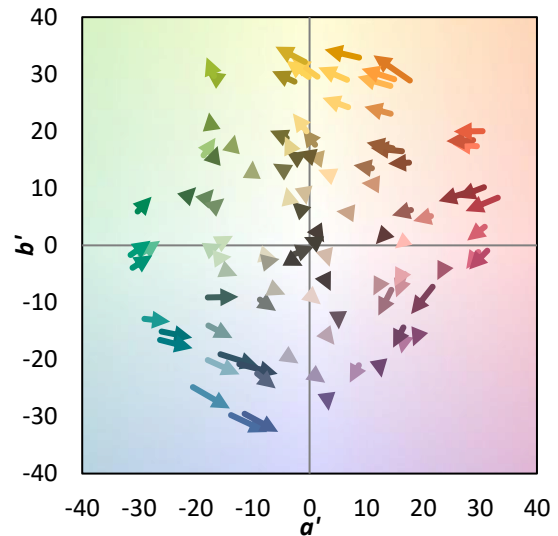
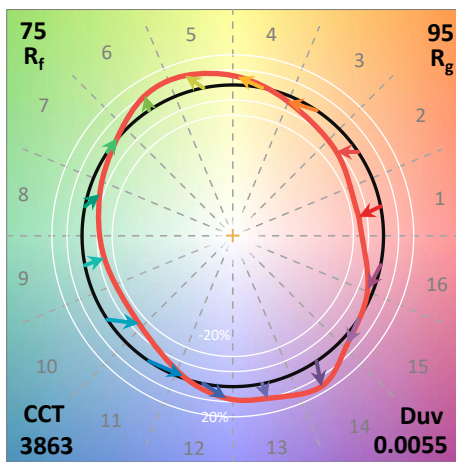
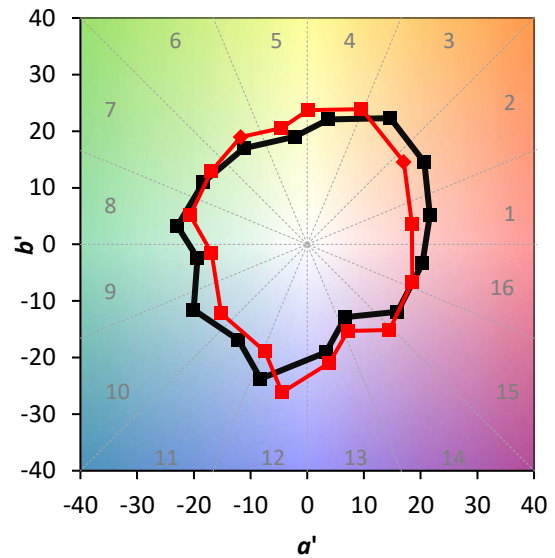
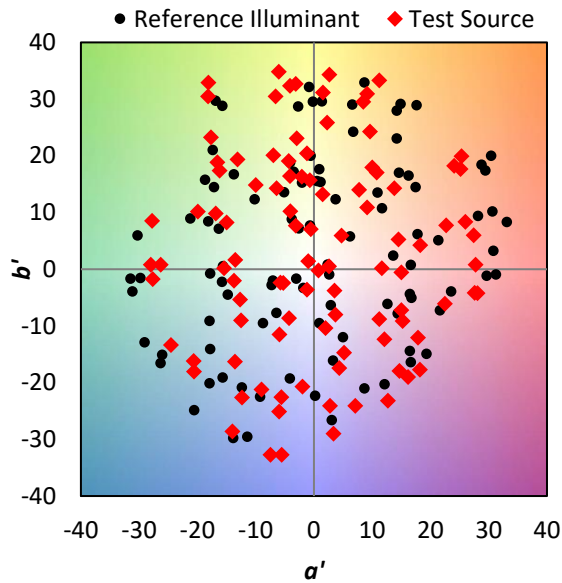
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	118	NR	620	730	NR	750	25	NR	880	1	NR
365	0	NR	495	170	NR	625	680	NR	755	22	NR	885	0	NR
370	0	NR	500	245	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			

Summary

$R_f = 74.7$
 $R_g = 95.4$
 CIE $R_a = 71.9$
 $R_9 = -23.5$

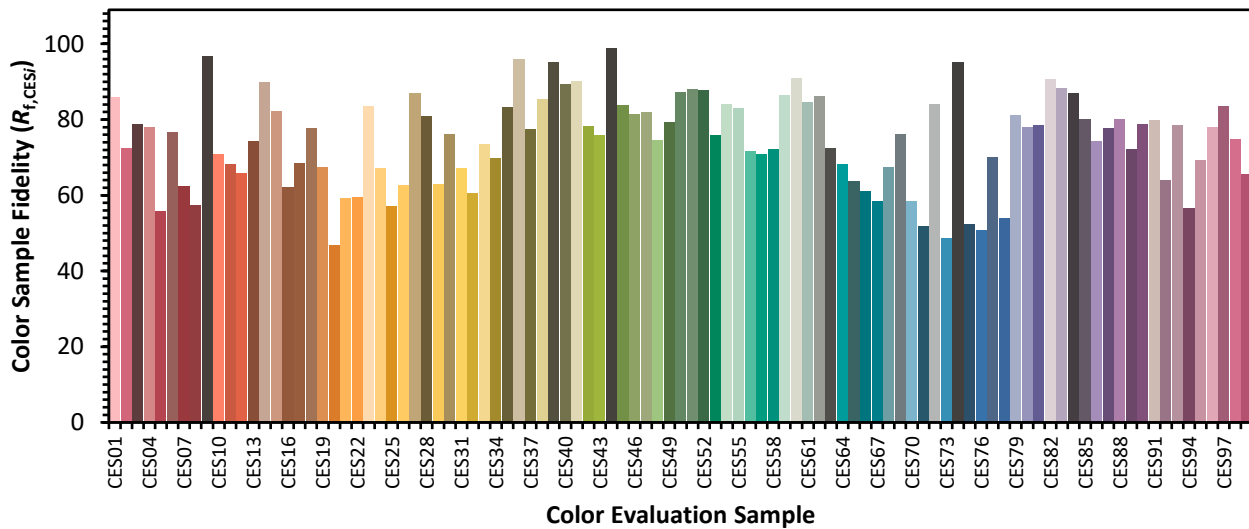


Color Vector Graphics

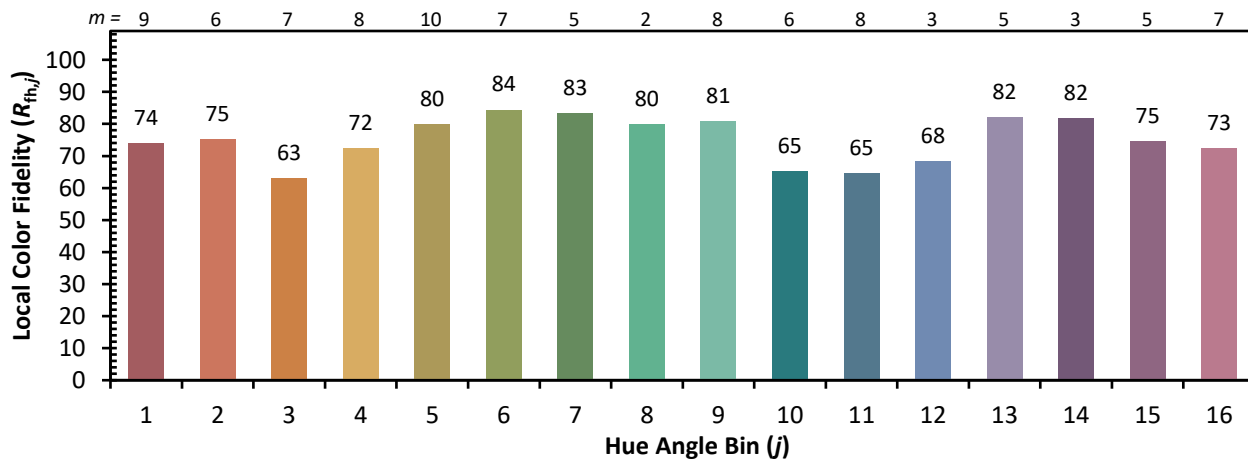
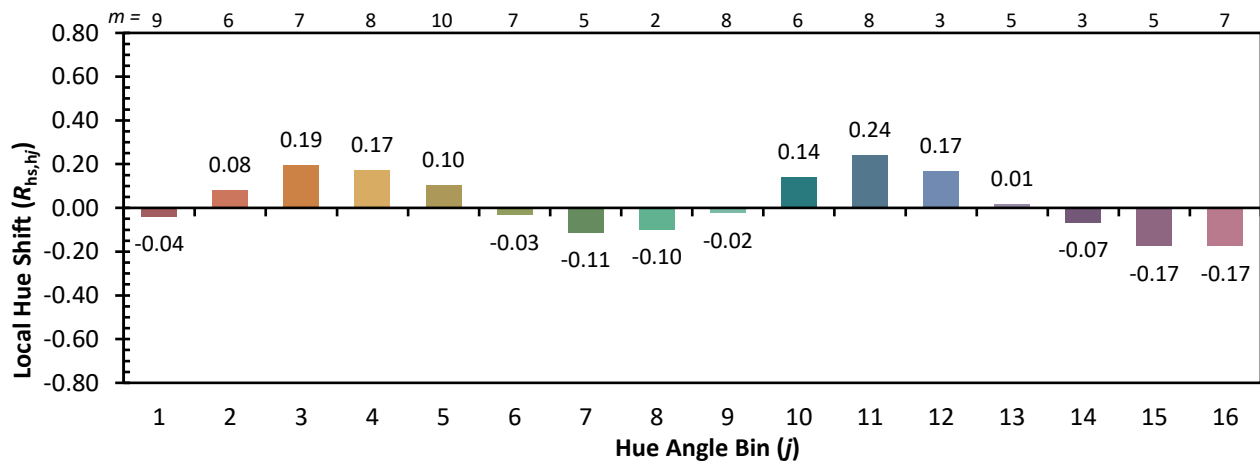
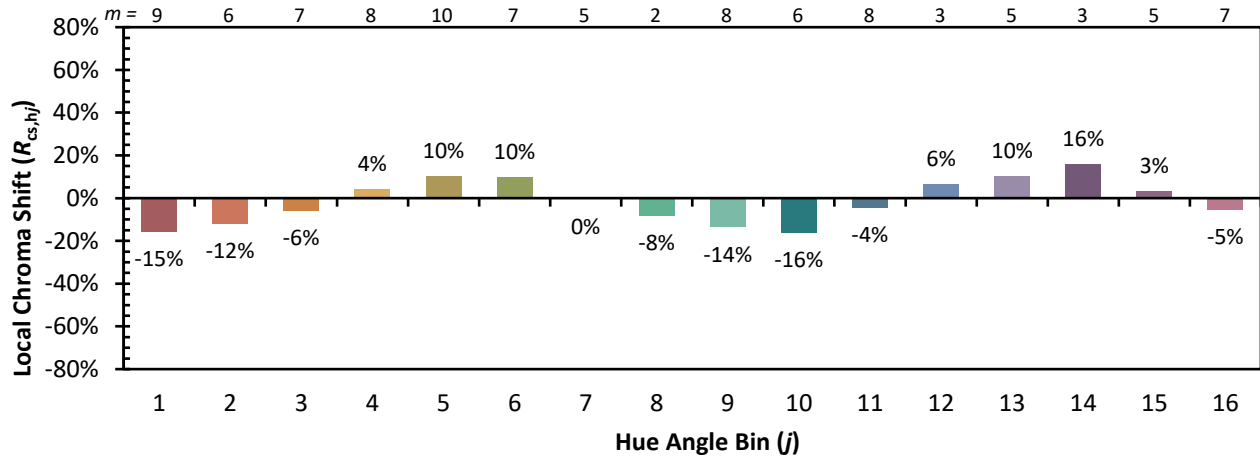


Individual Sample Fidelity Index ($R_{f,i}$)

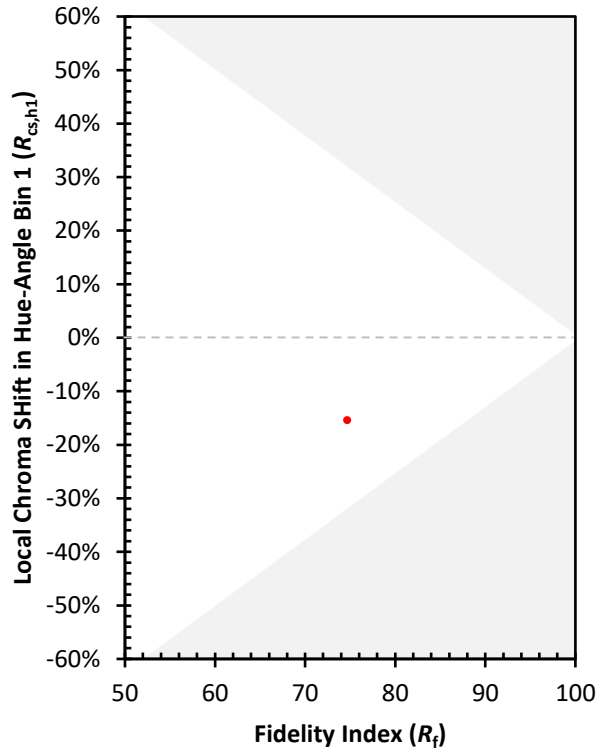
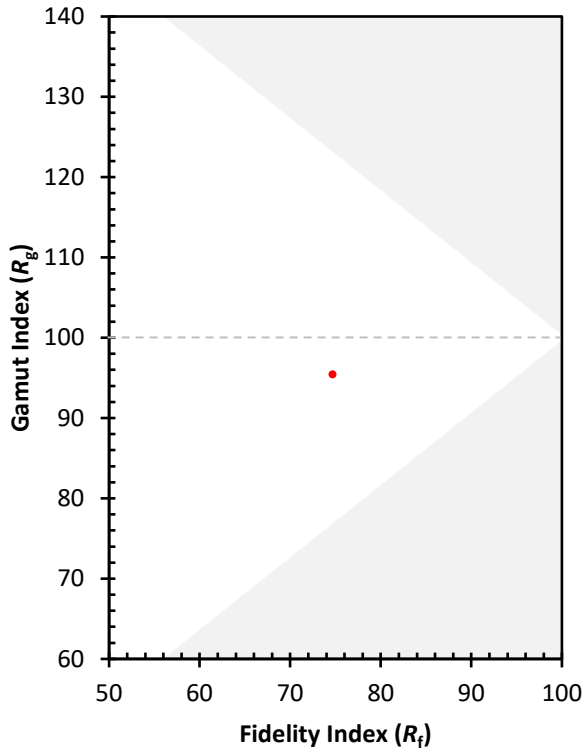
CES01 = 85	CES26 = 63	CES51 = 88	CES76 = 51
CES02 = 61	CES27 = 87	CES52 = 88	CES77 = 70
CES03 = 30	CES28 = 81	CES53 = 76	CES78 = 54
CES04 = 70	CES29 = 63	CES54 = 84	CES79 = 81
CES05 = 47	CES30 = 76	CES55 = 83	CES80 = 78
CES06 = 50	CES31 = 67	CES56 = 72	CES81 = 79
CES07 = 40	CES32 = 61	CES57 = 71	CES82 = 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)