

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: P833164

Luminaire Tested: **TTN-D1-735-U-DL-CG-UPL1**

Issue Date: 5/15/2024

Test Information

Test Method: LM-79-08
Report Number: P833164
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-D1-735-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: 3295.9 lumens
Efficiency: N/A
Efficacy: 113.7 lumens/watt
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')
IES Classification: Type IV - Short
BUG Rating: B1 - U3 - G1

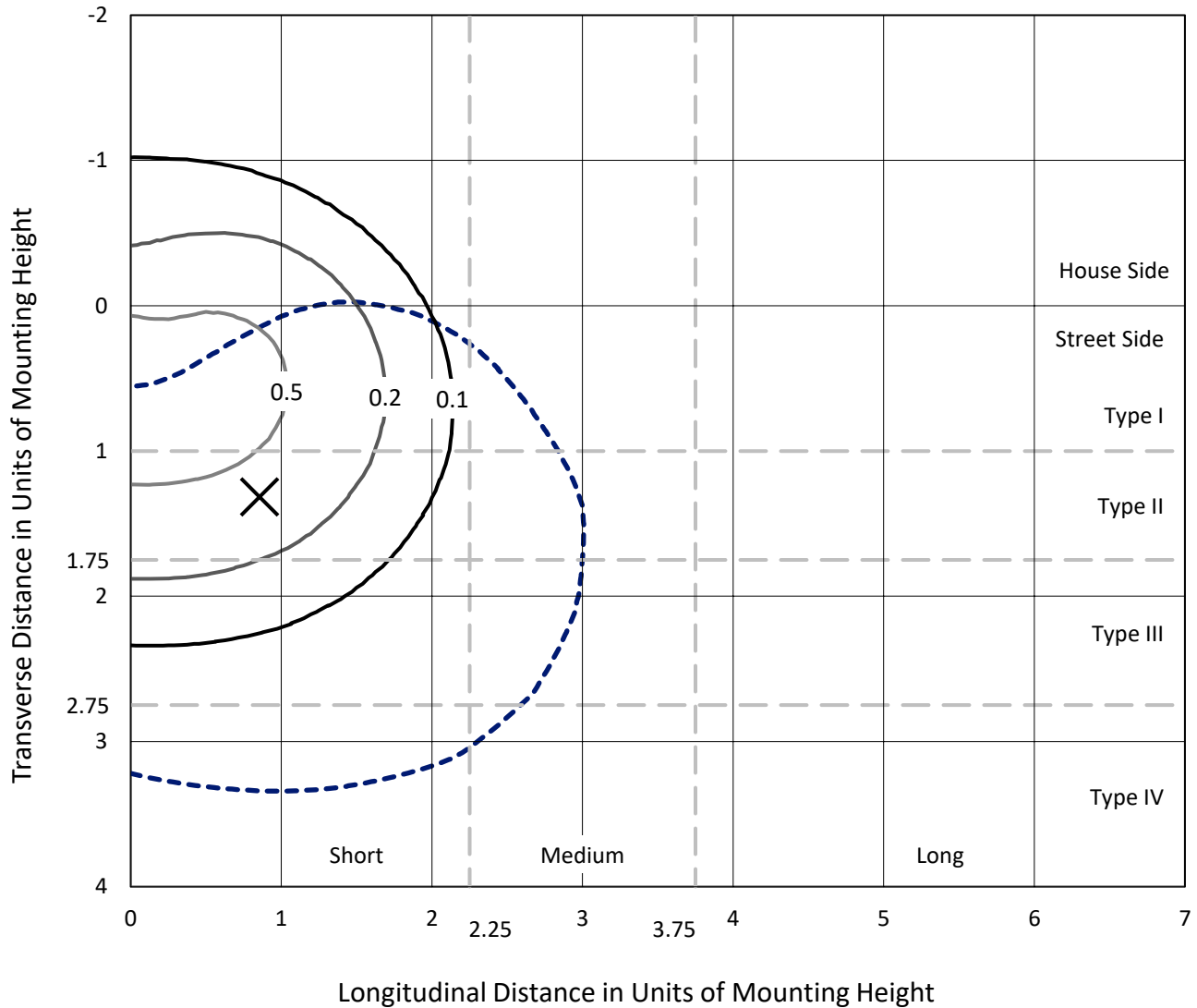
Input Watts (W): 29
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Iso-Footcandle Lines of Horizontal Illumination

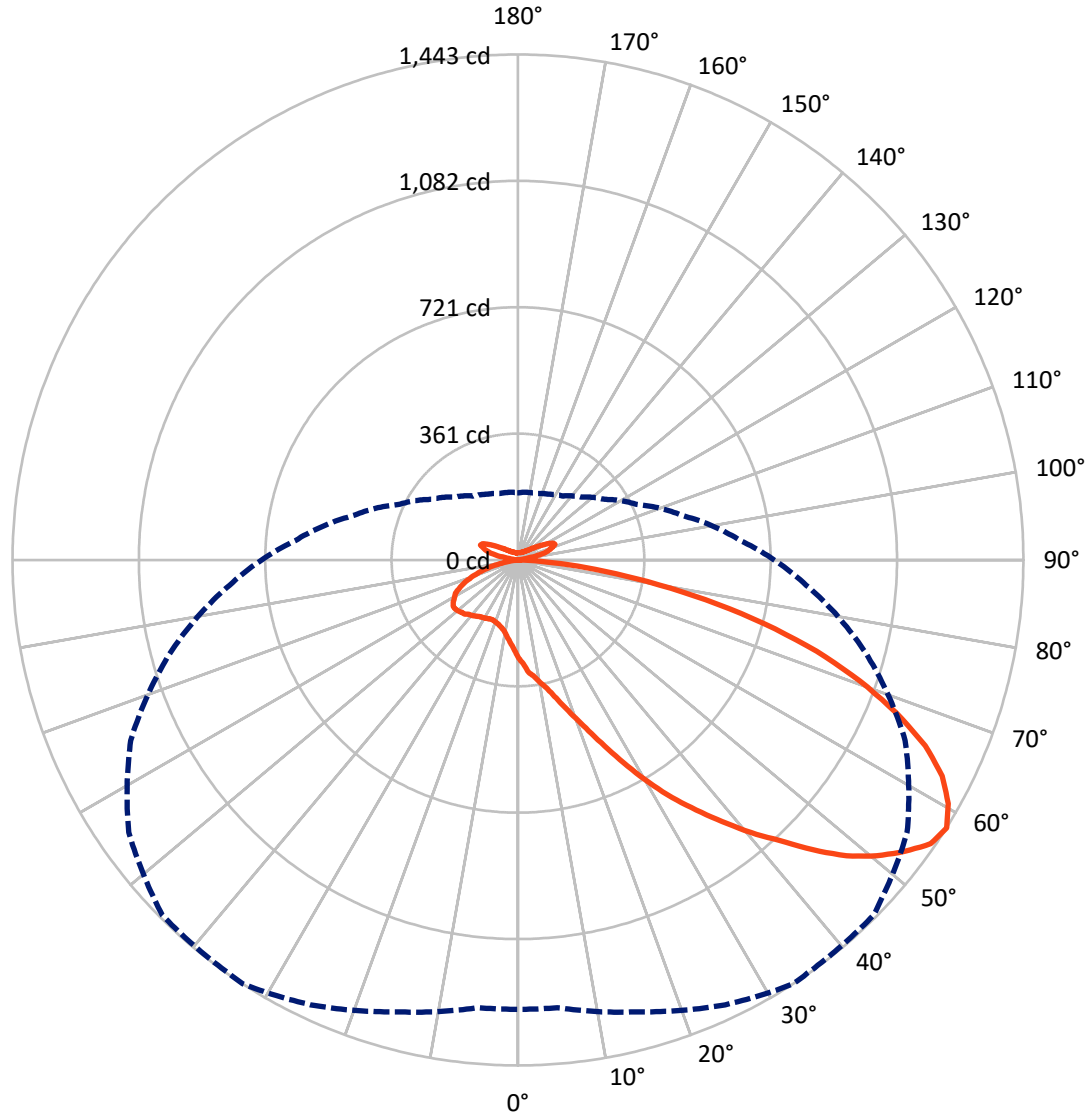
× Max cd
 - - - 1/2 Max cd



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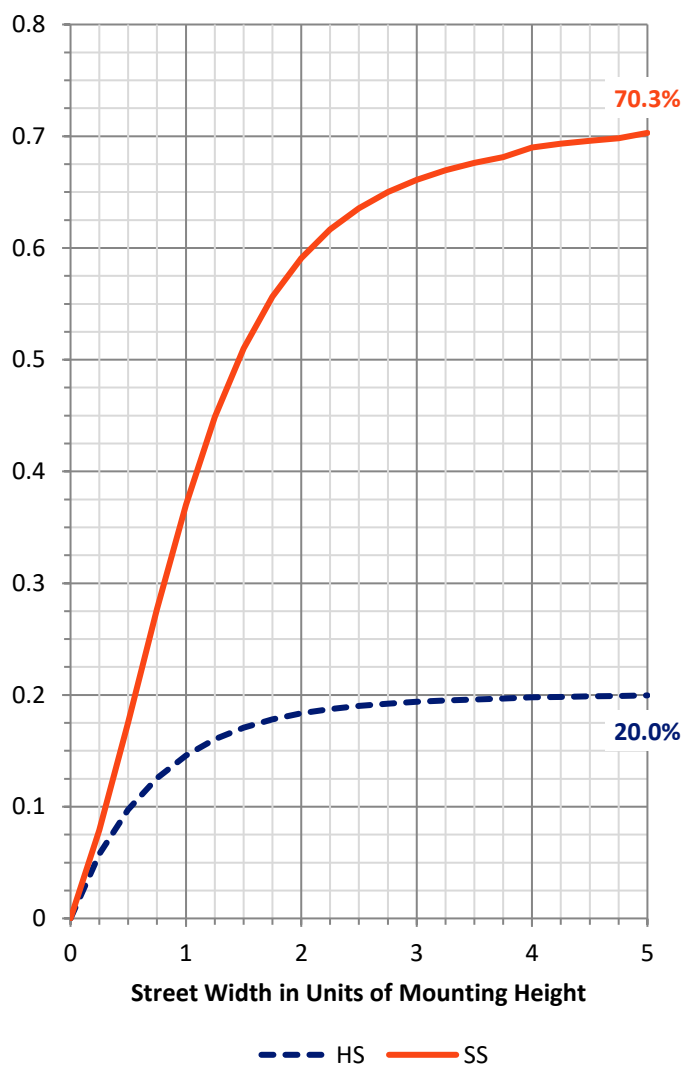
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	661.1	150.2	811.3
	% Fixture	20.1	4.6	24.6
Street Side	Lumens	2334.3	150.2	2484.6
	% Fixture	70.8	4.6	75.4
Total	Lumens	2995.4	300.5	3295.9
	% Fixture	90.9	9.1	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	26.9	0.8
10°-20°	87.1	2.6
20°-30°	183.7	5.6
30°-40°	333.5	10.1
40°-50°	527.0	16.0
50°-60°	699.9	21.2
60°-70°	673.6	20.4
70°-80°	395.4	12.0
80°-90°	68.3	2.1
90°-100°	6.7	0.2
100°-110°	68.2	2.1
110°-120°	99.6	3.0
120°-130°	57.8	1.8
130°-140°	30.6	0.9
140°-150°	18.2	0.6
150°-160°	11.2	0.3
160°-170°	6.1	0.2
170°-180°	2.0	0.1
0°-90°	2995.4	90.9
0°-180°	3295.9	100.0

Coefficient of Utilization



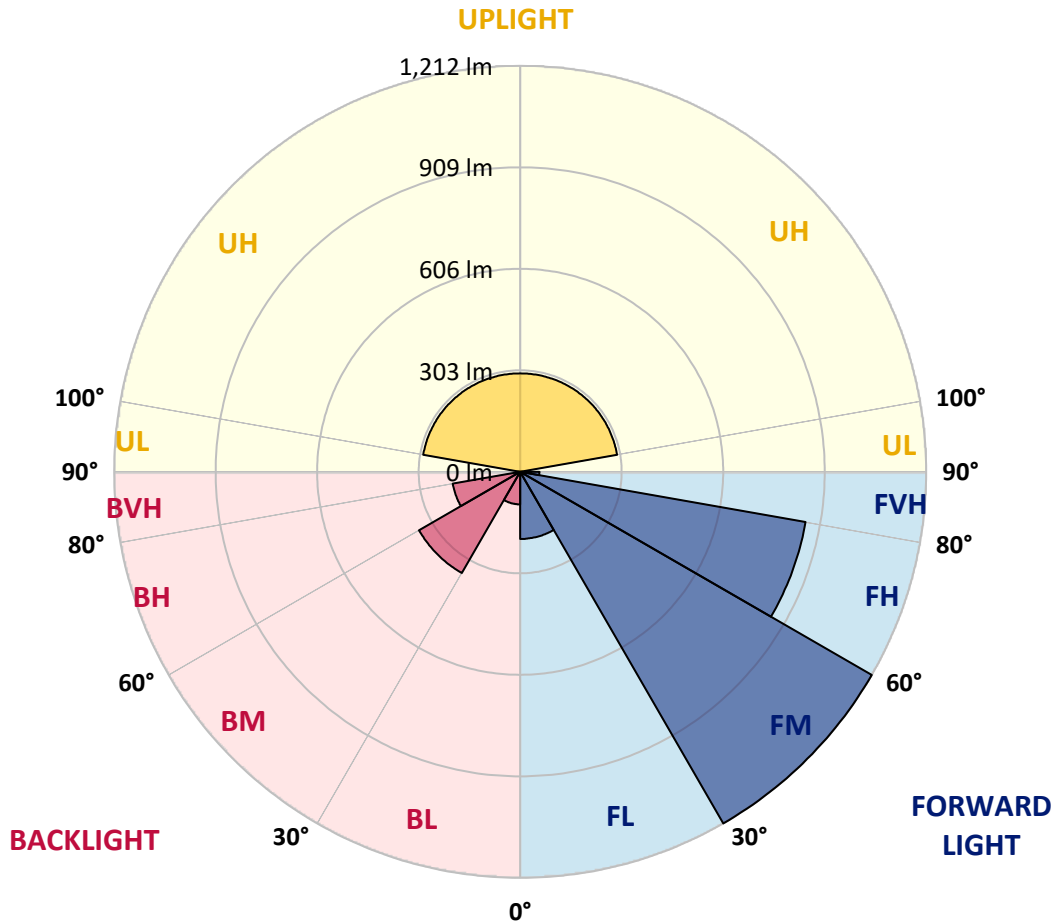
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	200.4	6.1			
FM (30°-60°)	1211.7	36.8			
FH (60°-80°)	864.7	26.2			G1/1800
FVH (80°-90°)	57.5	1.7			G1/100
BL (0°-30°)	97.2	2.9	B0/110		
BM (30°-60°)	348.7	10.6	B1/1000		
BH (60°-80°)	204.4	6.2	B1/500		G1/500
BVH (80°-90°)	10.8	0.3			G1/100
UL (90°-100°)	6.7	0.2		U1/10	
UH (100°-180°)	293.8	8.9		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°	280.7	280.7	280.7	280.7	280.7	280.7	280.7	280.7	280.7	280.7	280.7
2.5°	299.1	301.7	299.1	299.1	296.4	296.4	293.8	291.2	288.6	286.0	280.7
5°	333.2	333.2	330.5	325.3	322.7	320.1	314.8	306.9	301.7	293.8	286.0
7.5°	348.9	348.9	346.3	341.0	335.8	333.2	325.3	314.8	306.9	296.4	286.0
10°	369.9	372.5	367.3	362.0	356.8	354.2	343.7	330.5	317.4	304.3	288.6
12.5°	393.5	396.1	393.5	385.6	377.8	375.1	364.7	348.9	333.2	314.8	296.4
15°	425.0	430.2	422.4	417.1	409.3	406.6	393.5	375.1	356.8	333.2	309.6
17.5°	461.7	464.3	459.1	451.2	446.0	443.4	430.2	409.3	383.0	356.8	327.9
20°	503.7	506.3	503.7	493.2	488.0	485.3	472.2	448.6	417.1	388.3	351.5
22.5°	553.5	558.8	550.9	543.0	537.8	537.8	522.1	495.8	459.1	422.4	380.4
25°	611.3	619.1	608.6	603.4	598.1	595.5	582.4	550.9	508.9	464.3	411.9
27.5°	682.1	687.3	679.5	676.8	666.3	666.3	645.4	608.6	564.0	511.6	451.2
30°	745.0	750.3	745.0	745.0	737.2	734.6	713.6	676.8	621.7	558.8	485.3
32.5°	805.4	810.6	808.0	810.6	808.0	805.4	779.2	739.8	684.7	603.4	519.4
35°	865.7	873.6	871.0	878.8	876.2	873.6	852.6	805.4	739.8	658.5	556.2
37.5°	928.7	936.6	936.6	944.4	947.0	947.0	923.4	873.6	800.1	708.3	598.1
40°	996.9	1004.8	1004.8	1017.9	1023.1	1023.1	996.9	947.0	865.7	763.4	642.7
42.5°	1062.5	1070.3	1073.0	1086.1	1094.0	1096.6	1075.6	1017.9	923.4	818.5	684.7
45°	1125.4	1133.3	1141.2	1167.4	1180.5	1177.9	1162.2	1101.8	996.9	876.2	729.3
47.5°	1185.8	1196.3	1209.4	1243.5	1261.9	1259.2	1248.7	1180.5	1065.1	931.3	768.7
50°	1233.0	1240.9	1267.1	1303.8	1327.4	1330.1	1314.3	1248.7	1122.8	973.3	797.5
52.5°	1269.7	1280.2	1311.7	1364.2	1382.5	1390.4	1372.0	1306.5	1180.5	1010.0	821.1
55°	1296.0	1296.0	1343.2	1403.5	1429.8	1435.0	1435.0	1353.7	1214.6	1033.6	834.2
57.5°	1282.8	1282.8	1335.3	1400.9	1442.9	1440.2	1435.0	1356.3	1219.9	1028.4	826.4
60°	1246.1	1254.0	1303.8	1369.4	1411.4	1408.8	1393.0	1322.2	1193.6	1007.4	810.6
62.5°	1196.3	1209.4	1261.9	1311.7	1358.9	1366.8	1345.8	1282.8	1149.1	975.9	781.8
65°	1101.8	1120.2	1185.8	1240.9	1277.6	1293.3	1267.1	1209.4	1088.7	915.6	721.4
67.5°	996.9	1010.0	1065.1	1143.8	1164.8	1180.5	1167.4	1107.1	1004.8	818.5	653.2
70°	876.2	897.2	933.9	1012.6	1036.2	1052.0	1052.0	991.6	894.6	718.8	571.9
72.5°	734.6	758.2	802.8	860.5	892.0	902.5	899.8	850.0	763.4	608.6	482.7
75°	579.8	598.1	650.6	692.6	726.7	734.6	731.9	690.0	611.3	490.6	383.0
77.5°	427.6	446.0	485.3	516.8	548.3	543.0	543.0	511.6	461.7	364.7	291.2
80°	280.7	296.4	330.5	341.0	375.1	372.5	372.5	348.9	314.8	244.0	194.1
82.5°	154.8	167.9	191.5	202.0	223.0	217.7	220.4	204.6	183.6	136.4	110.2
85°	55.1	65.6	78.7	86.6	97.1	97.1	97.1	83.9	78.7	52.5	44.6
87.5°	2.6	5.2	10.5	10.5	15.7	15.7	15.7	10.5	10.5	2.6	2.6
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°	280.7	280.7	280.7	280.7	280.7	280.7	280.7	280.7	280.7	280.7	280.7
2.5°	278.1	275.5	272.8	267.6	265.0	262.3	259.7	257.1	257.1	257.1	257.1
5°	280.7	278.1	270.2	262.3	254.5	246.6	241.4	238.7	236.1	233.5	233.5
7.5°	280.7	275.5	265.0	254.5	246.6	236.1	228.2	220.4	215.1	212.5	212.5
10°	283.3	275.5	262.3	251.8	238.7	225.6	215.1	204.6	199.4	194.1	194.1
12.5°	288.6	280.7	262.3	249.2	233.5	217.7	204.6	194.1	186.3	181.0	181.0
15°	299.1	288.6	267.6	249.2	230.9	212.5	199.4	186.3	178.4	173.1	173.1
17.5°	314.8	301.7	275.5	249.2	228.2	209.9	194.1	181.0	170.5	165.3	165.3
20°	333.2	317.4	286.0	254.5	228.2	207.2	191.5	175.8	165.3	160.0	160.0
22.5°	359.4	335.8	299.1	262.3	233.5	209.9	188.9	173.1	162.7	157.4	157.4
25°	388.3	362.0	314.8	272.8	238.7	209.9	188.9	173.1	162.7	157.4	154.8
27.5°	419.7	390.9	333.2	283.3	244.0	215.1	191.5	173.1	162.7	157.4	157.4
30°	448.6	414.5	351.5	296.4	251.8	217.7	194.1	175.8	162.7	157.4	157.4
32.5°	480.1	440.7	369.9	309.6	259.7	223.0	196.8	178.4	165.3	160.0	157.4
35°	511.6	467.0	388.3	320.1	267.6	228.2	199.4	181.0	167.9	162.7	162.7
37.5°	545.7	495.8	406.6	333.2	275.5	233.5	204.6	183.6	170.5	165.3	165.3
40°	582.4	524.7	425.0	343.7	283.3	238.7	209.9	188.9	175.8	170.5	170.5
42.5°	619.1	556.2	446.0	356.8	291.2	244.0	212.5	194.1	181.0	175.8	175.8
45°	655.9	582.4	464.3	369.9	299.1	251.8	220.4	199.4	186.3	181.0	181.0
47.5°	690.0	611.3	480.1	377.8	306.9	257.1	223.0	204.6	191.5	188.9	186.3
50°	713.6	629.6	490.6	385.6	309.6	259.7	228.2	207.2	196.8	191.5	191.5
52.5°	731.9	648.0	498.4	390.9	312.2	262.3	230.9	212.5	202.0	196.8	194.1
55°	742.4	650.6	498.4	385.6	309.6	262.3	230.9	212.5	202.0	196.8	196.8
57.5°	731.9	637.5	488.0	375.1	301.7	254.5	223.0	207.2	196.8	194.1	191.5
60°	710.9	616.5	467.0	359.4	288.6	241.4	212.5	199.4	191.5	188.9	186.3
62.5°	682.1	590.3	446.0	338.4	270.2	225.6	204.6	188.9	183.6	181.0	178.4
65°	624.4	540.4	411.9	312.2	246.6	207.2	186.3	175.8	170.5	165.3	162.7
67.5°	561.4	485.3	364.7	280.7	217.7	186.3	167.9	157.4	149.5	149.5	146.9
70°	493.2	427.6	314.8	238.7	188.9	162.7	144.3	136.4	131.2	131.2	128.5
72.5°	411.9	359.4	262.3	194.1	154.8	133.8	120.7	112.8	110.2	110.2	107.6
75°	330.5	283.3	207.2	152.2	120.7	104.9	94.4	89.2	86.6	86.6	83.9
77.5°	244.0	207.2	149.5	110.2	86.6	76.1	68.2	65.6	63.0	63.0	60.3
80°	162.7	136.4	97.1	70.8	52.5	47.2	42.0	42.0	39.4	42.0	39.4
82.5°	89.2	73.5	52.5	36.7	26.2	23.6	21.0	21.0	23.6	23.6	21.0
85°	34.1	26.2	18.4	10.5	7.9	7.9	7.9	7.9	7.9	7.9	5.2
87.5°	2.6	2.6	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



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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

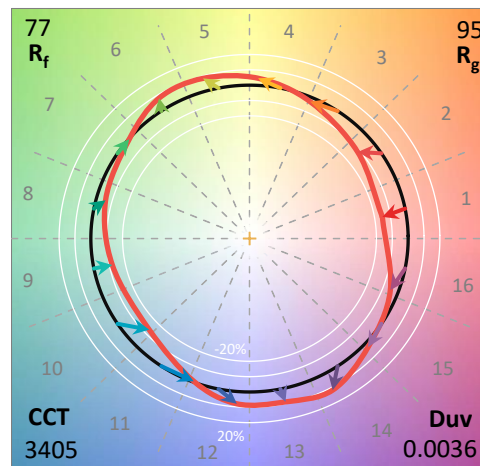
Test Information

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

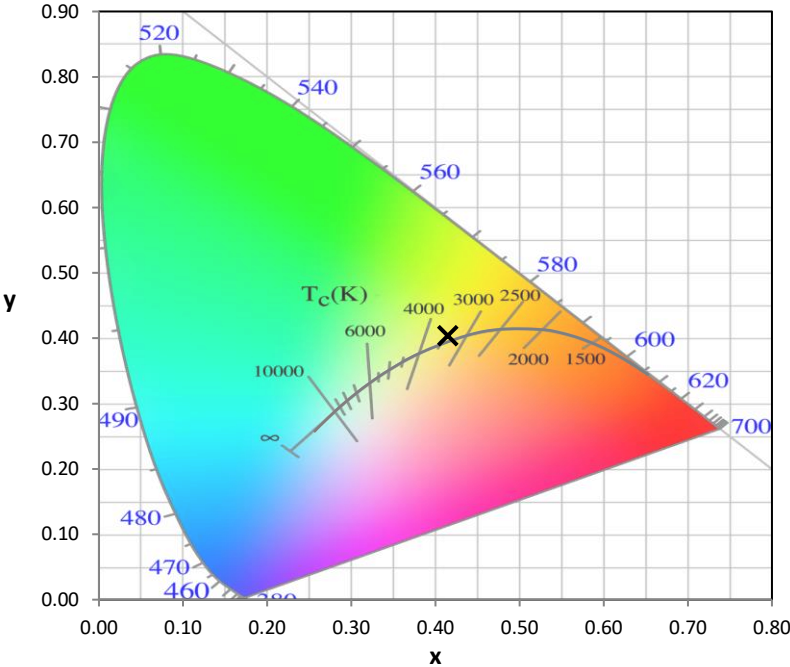
Stabilization Time: 38M
 Operation Time: 1H 38M
 Sphere Temperature (°C): 24.9

REPORT NUMBER: SP1-2411-284-1

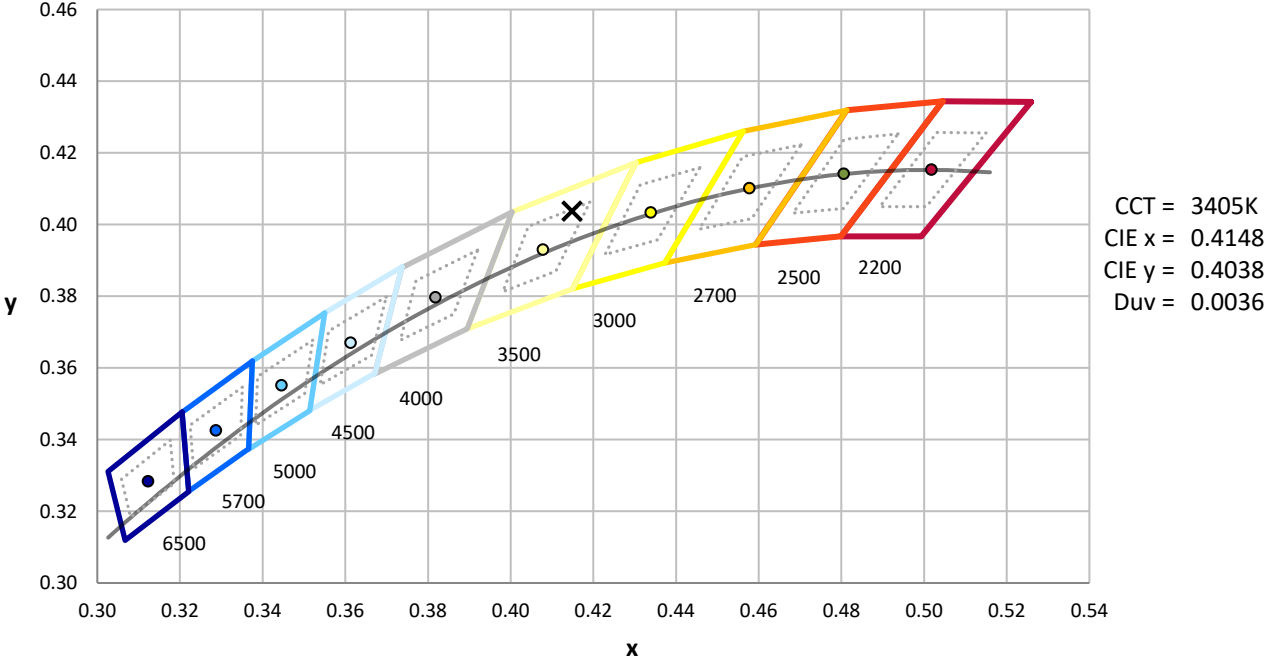
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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



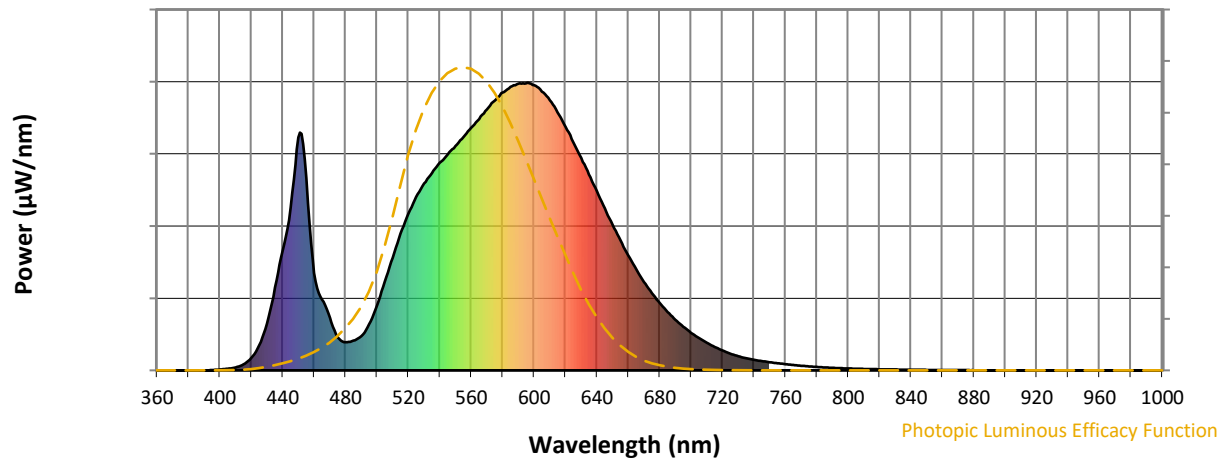
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2411-284-1

Photopic Flux vs. Wavelength

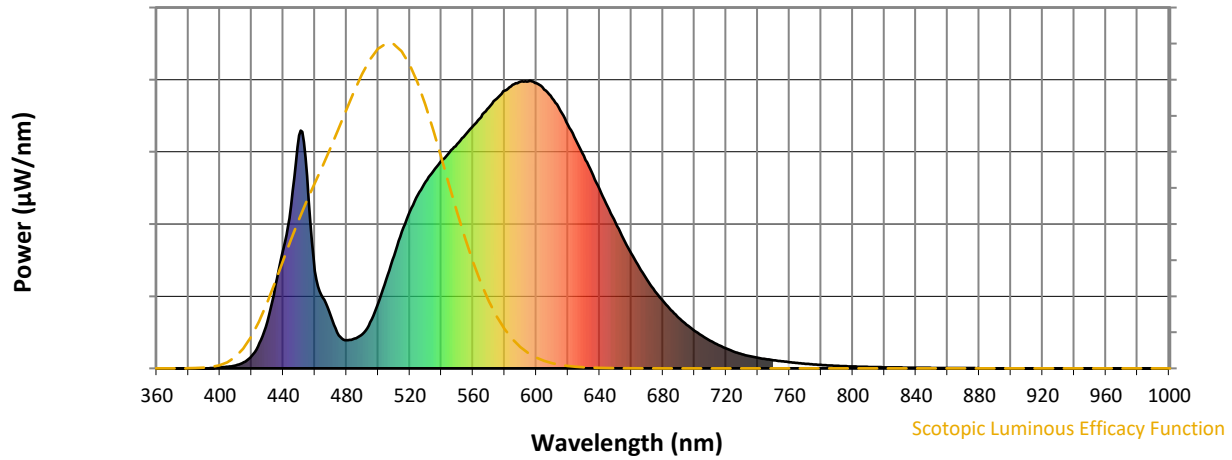


Photopic Lumens: NR

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	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



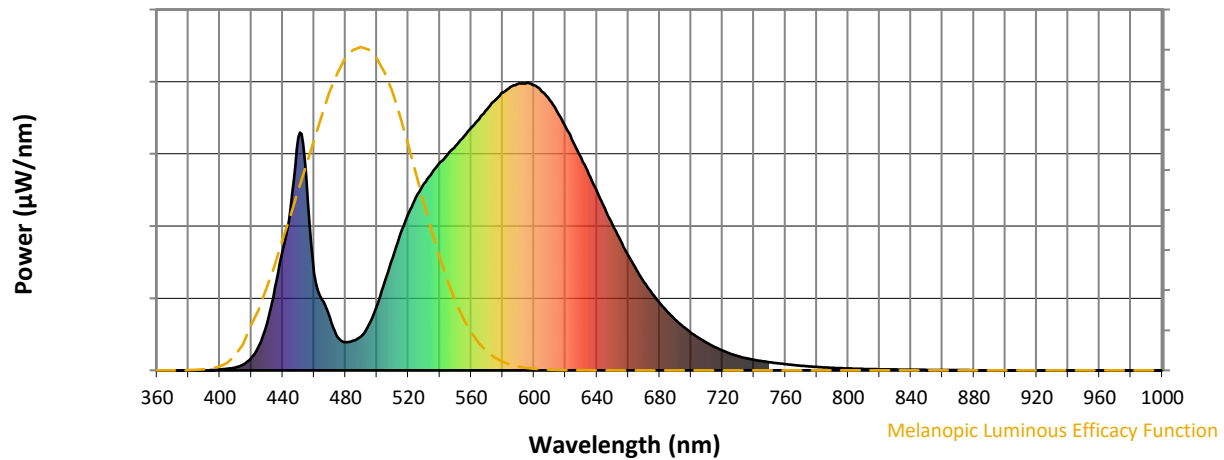
Scotopic Lumens: NR

S/P: 1.33

λ (nm)	Power W [^] /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	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



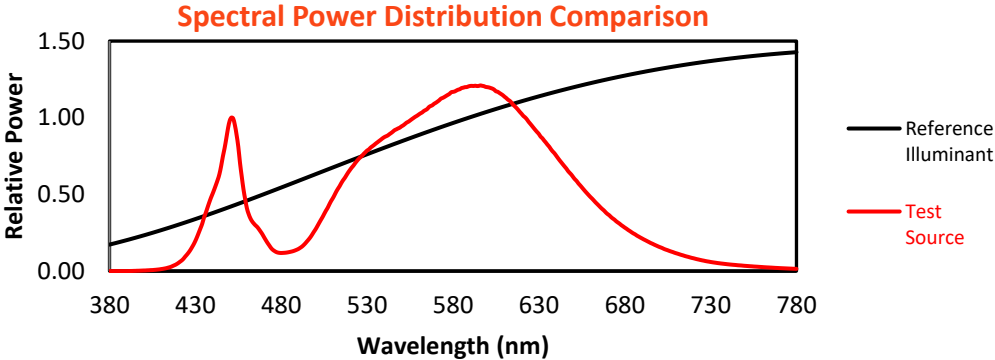
Melanopic Lumens: NR

M/P: 2.47

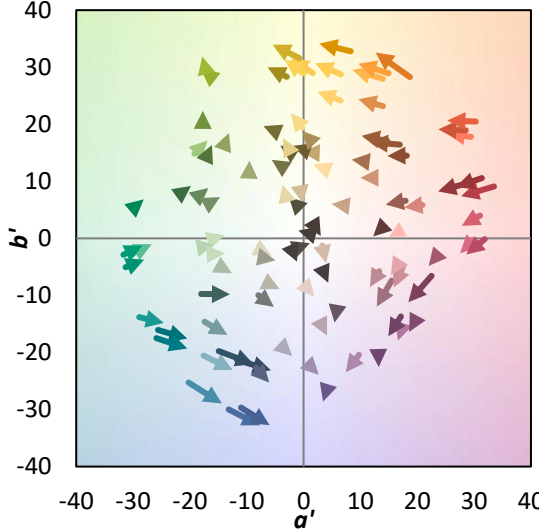
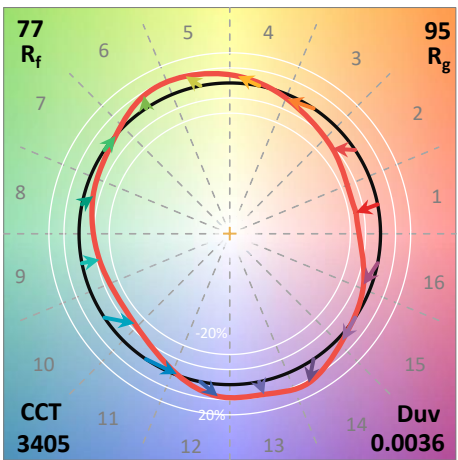
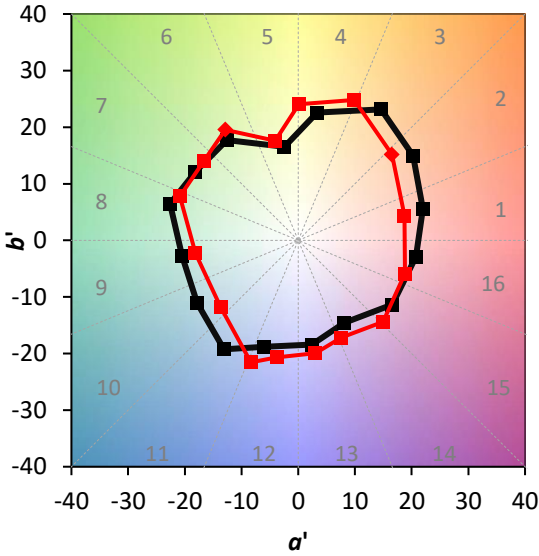
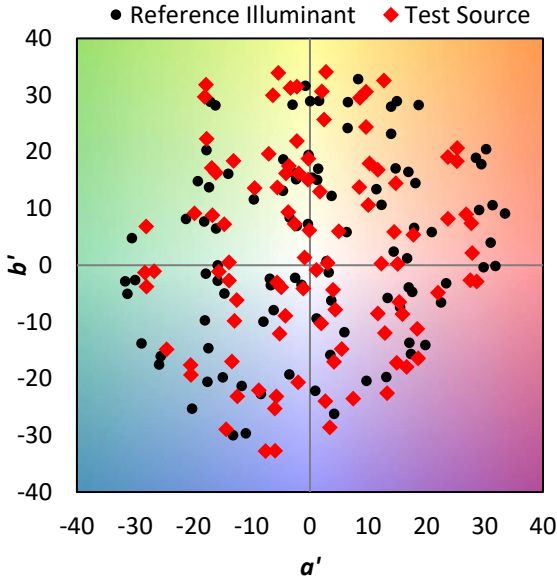
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	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

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

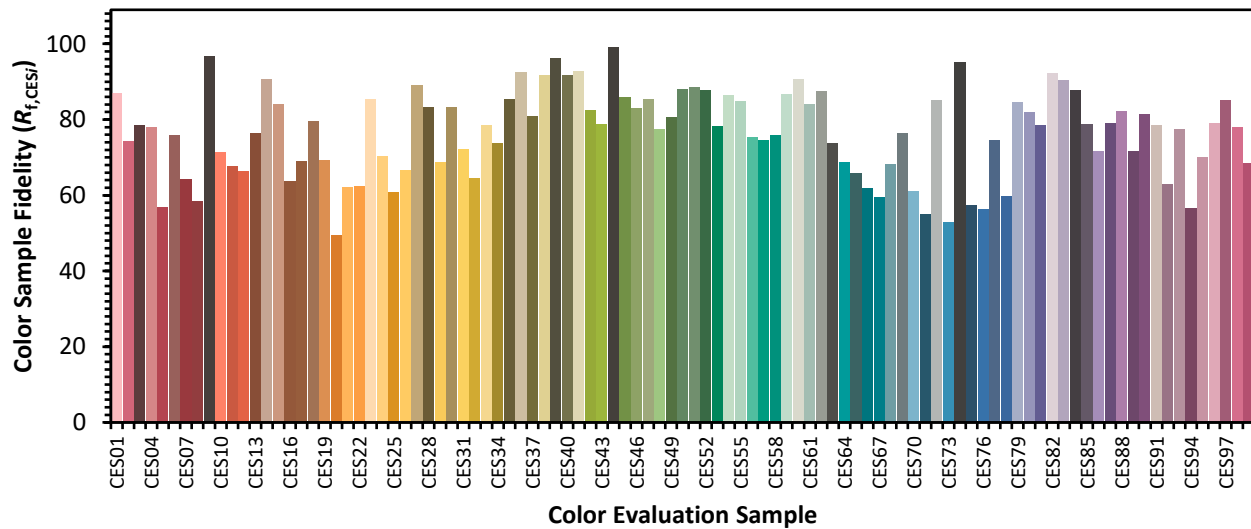


Color Vector Graphics

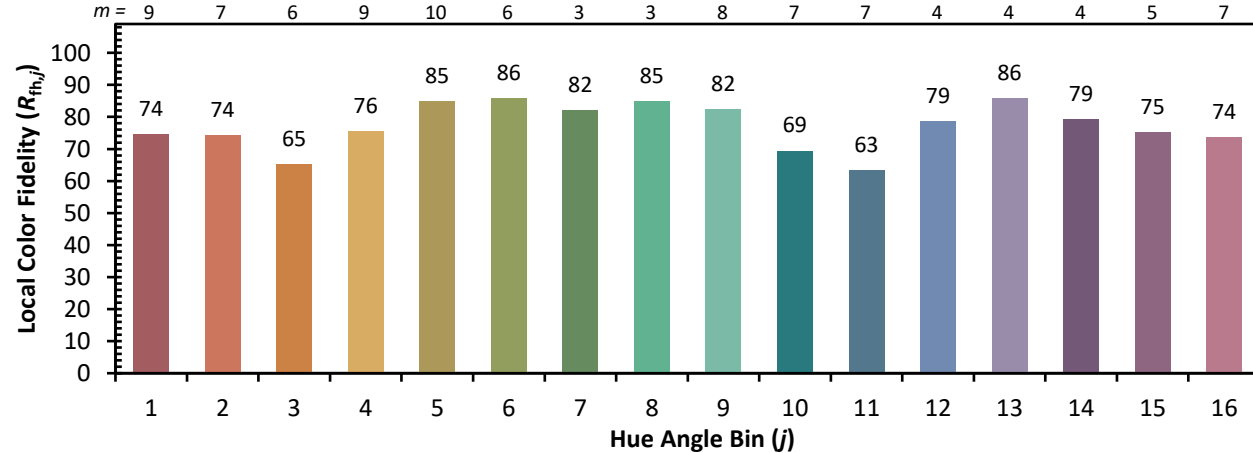
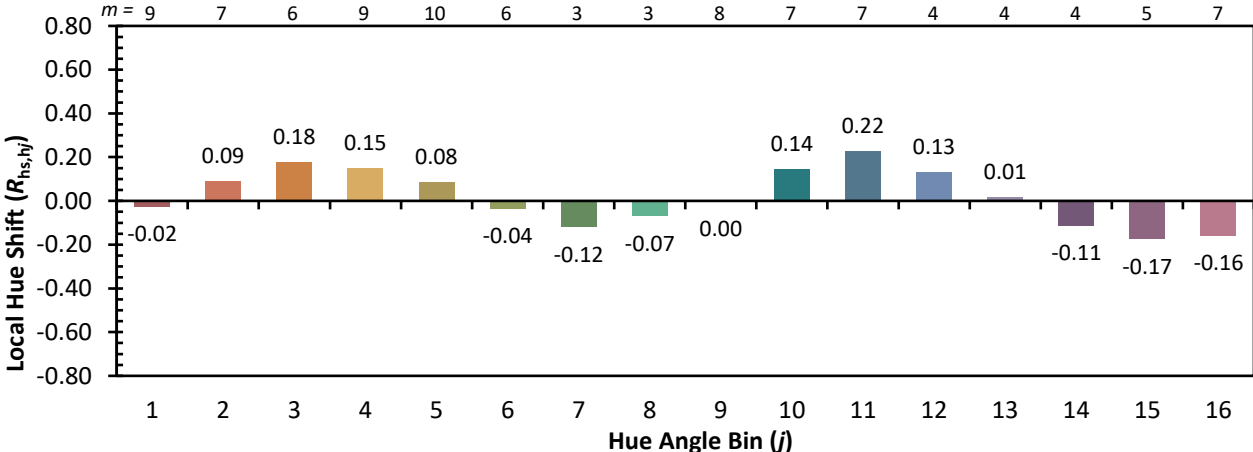
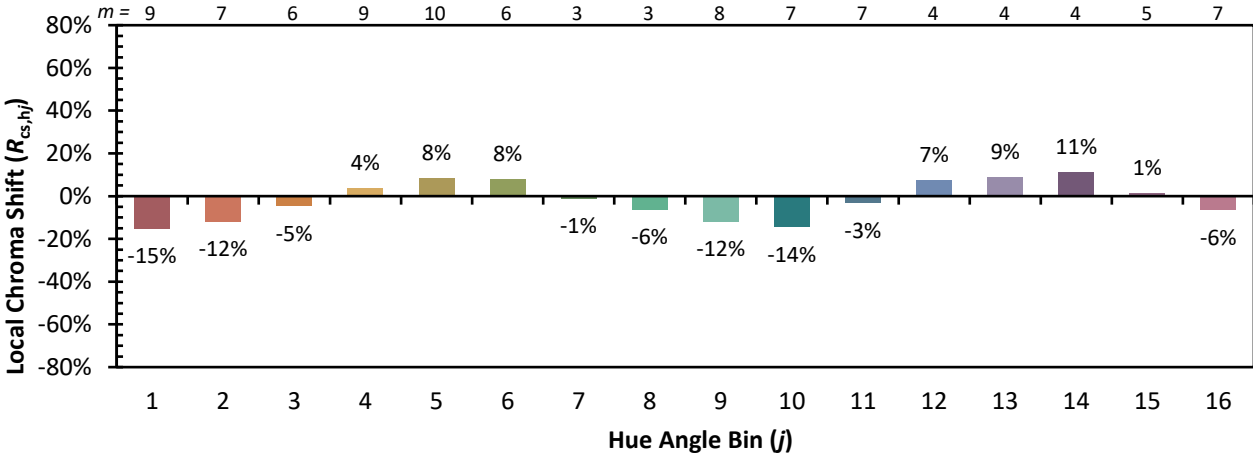


Individual Sample Fidelity Index ($R_{f,i}$)

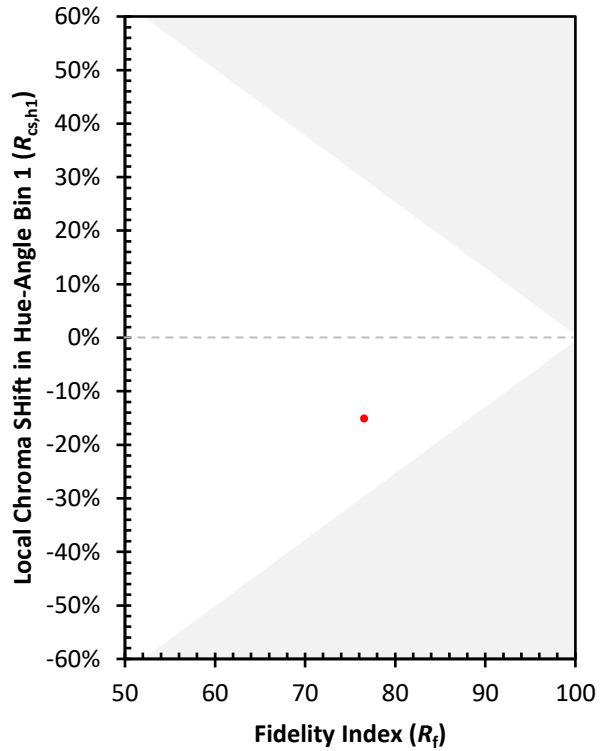
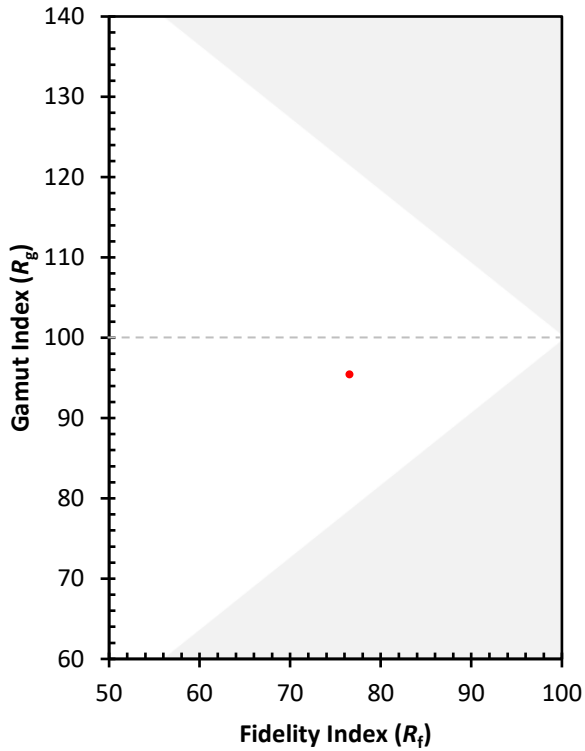
CES01 = 86	CES26 = 67	CES51 = 88	CES76 = 56
CES02 = 62	CES27 = 89	CES52 = 88	CES77 = 75
CES03 = 31	CES28 = 83	CES53 = 78	CES78 = 60
CES04 = 70	CES29 = 69	CES54 = 86	CES79 = 85
CES05 = 48	CES30 = 83	CES55 = 85	CES80 = 82
CES06 = 51	CES31 = 72	CES56 = 75	CES81 = 78
CES07 = 41	CES32 = 65	CES57 = 75	CES82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