

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: P833166

Luminaire Tested: **TTN-D1-735-U-DL-CG-UPL3**

Issue Date: 5/15/2024

**Test Information**

Test Method: LM-79-08  
Report Number: P833166  
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-UPL3  
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**

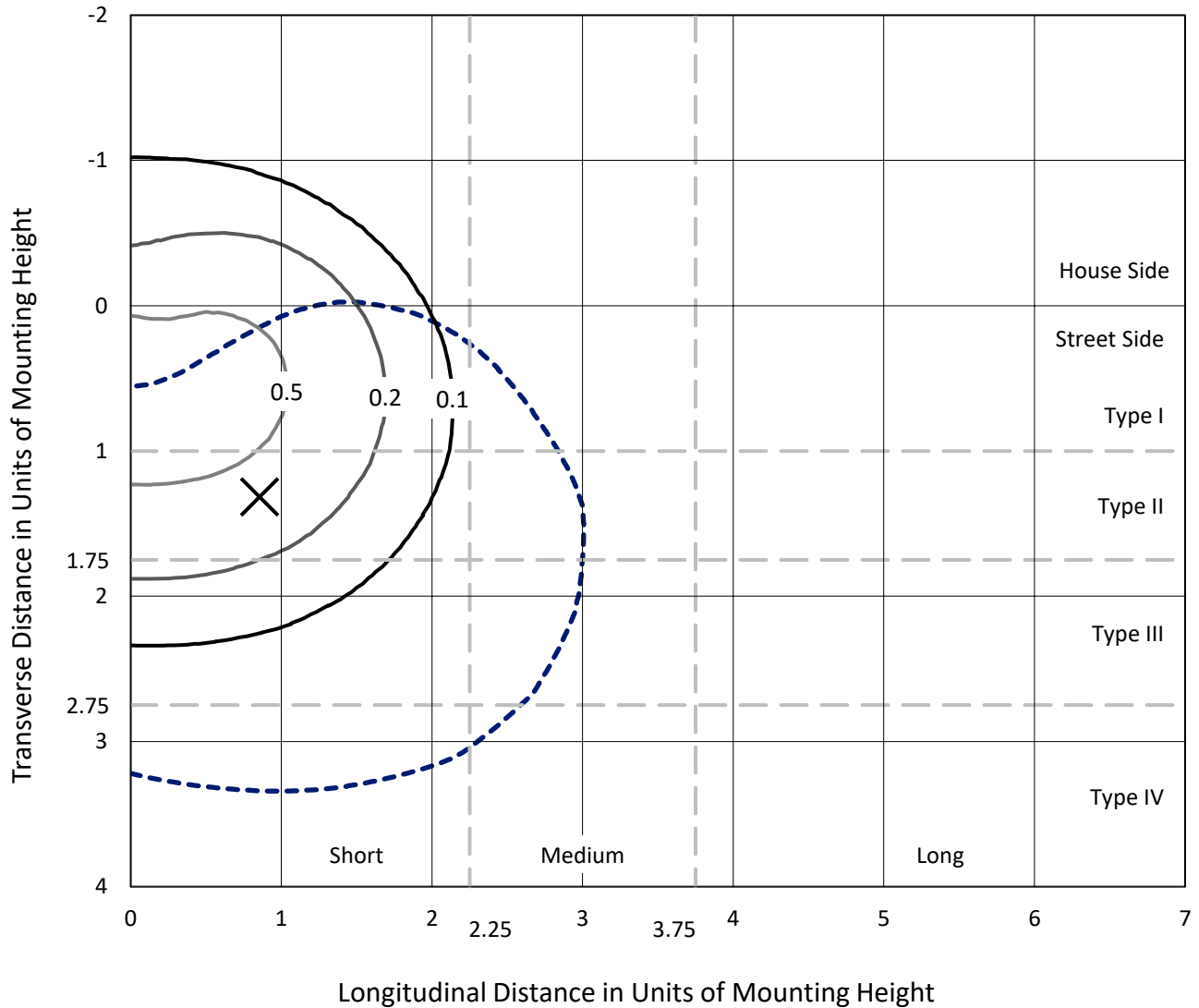
Lumens per Lamp: N/A  
Luminaire Lumens: 3748.7 lumens  
Efficiency: N/A  
Efficacy: 112.2 lumens/watt  
Luminous Opening: Vertical Cylinder (Dia: 0.71' x H: 0.1')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U4 - G1  
  
Input Watts (W): 33.4  
Input Voltage (V): NR  
Input Current (Ain): 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

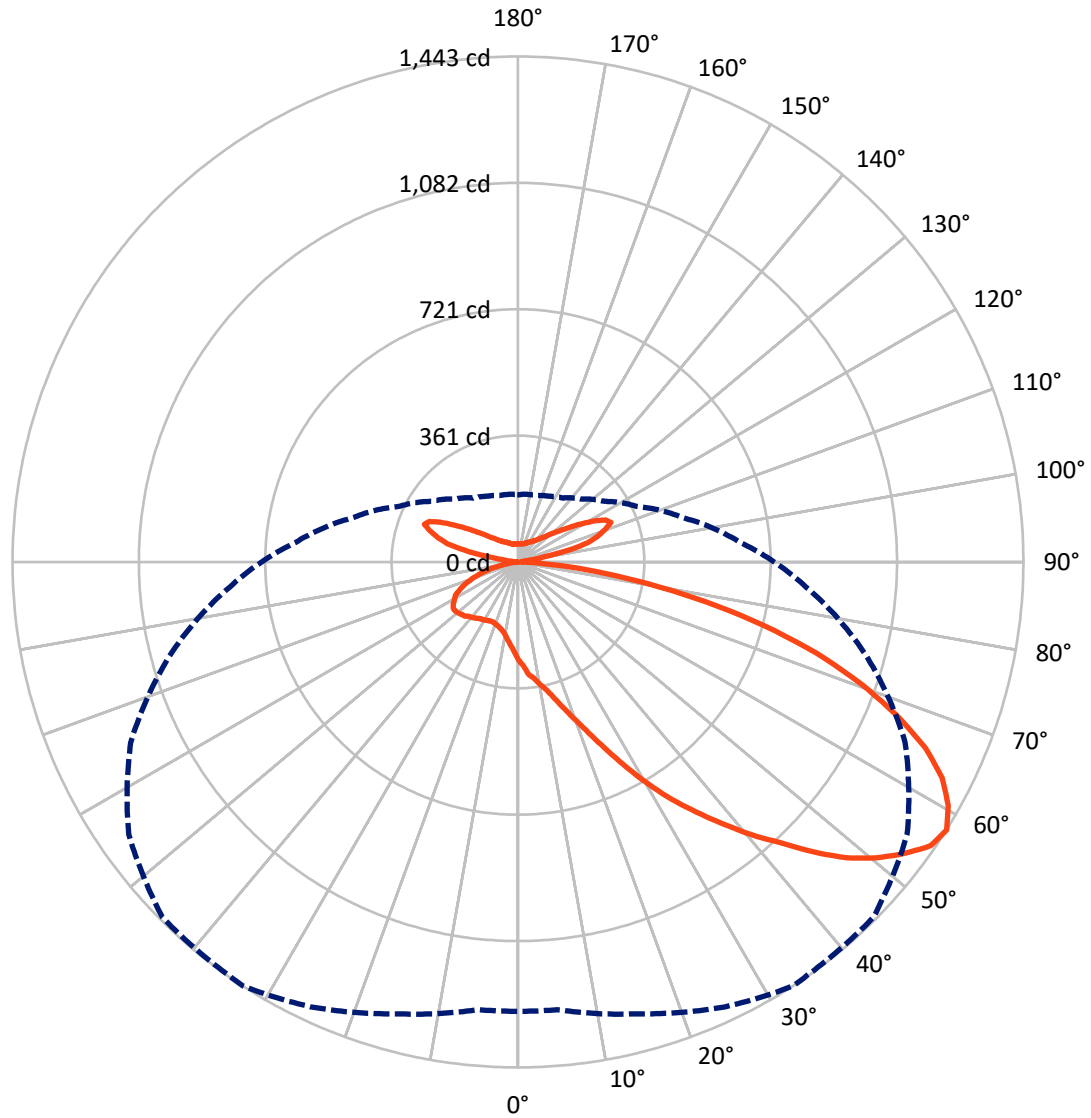
× Max cd  
 - - - 1/2 Max cd



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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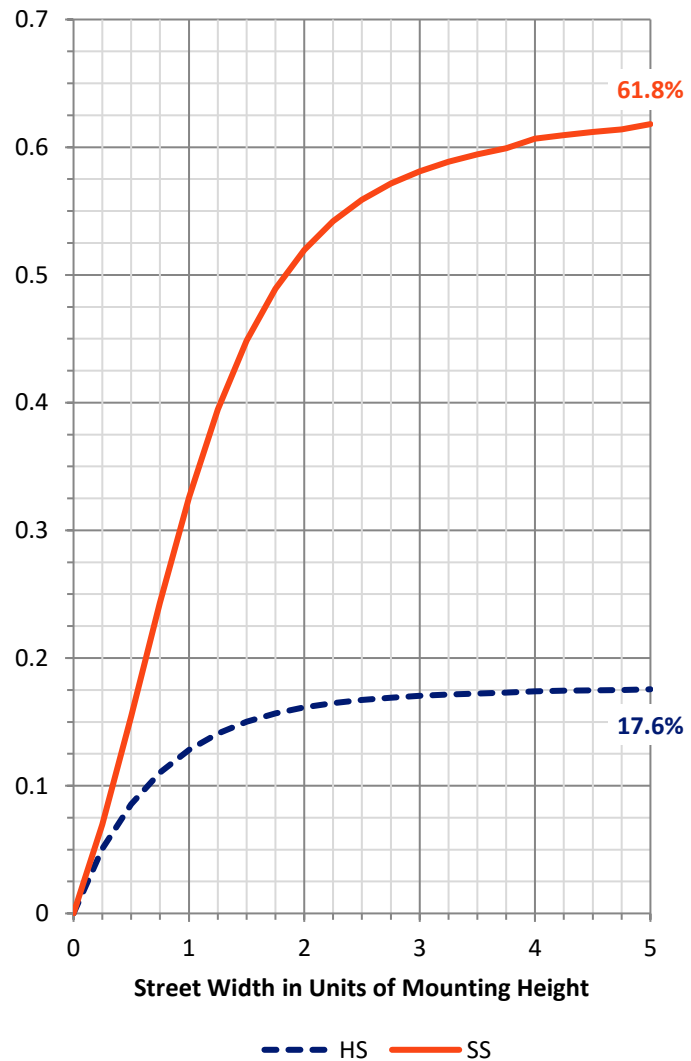
**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	661.4	376.3	1037.7
	% Fixture	17.6	10.0	27.7
<b>Street Side</b>	Lumens	2334.6	376.3	2710.9
	% Fixture	62.3	10.0	72.3
<b>Total</b>	Lumens	2996.0	752.7	3748.7
	% Fixture	79.9	20.1	100.0

**Coefficient of Utilization**

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	26.9	0.7
10°-20°	87.1	2.3
20°-30°	183.7	4.9
30°-40°	333.5	8.9
40°-50°	527.0	14.1
50°-60°	699.9	18.7
60°-70°	673.6	18.0
70°-80°	395.4	10.5
80°-90°	68.9	1.8
90°-100°	16.8	0.4
100°-110°	170.7	4.6
110°-120°	249.6	6.7
120°-130°	144.9	3.9
130°-140°	76.7	2.0
140°-150°	45.6	1.2
150°-160°	28.1	0.7
160°-170°	15.3	0.4
170°-180°	5.0	0.1
0°-90°	2996.0	79.9
0°-180°	3748.7	100.0

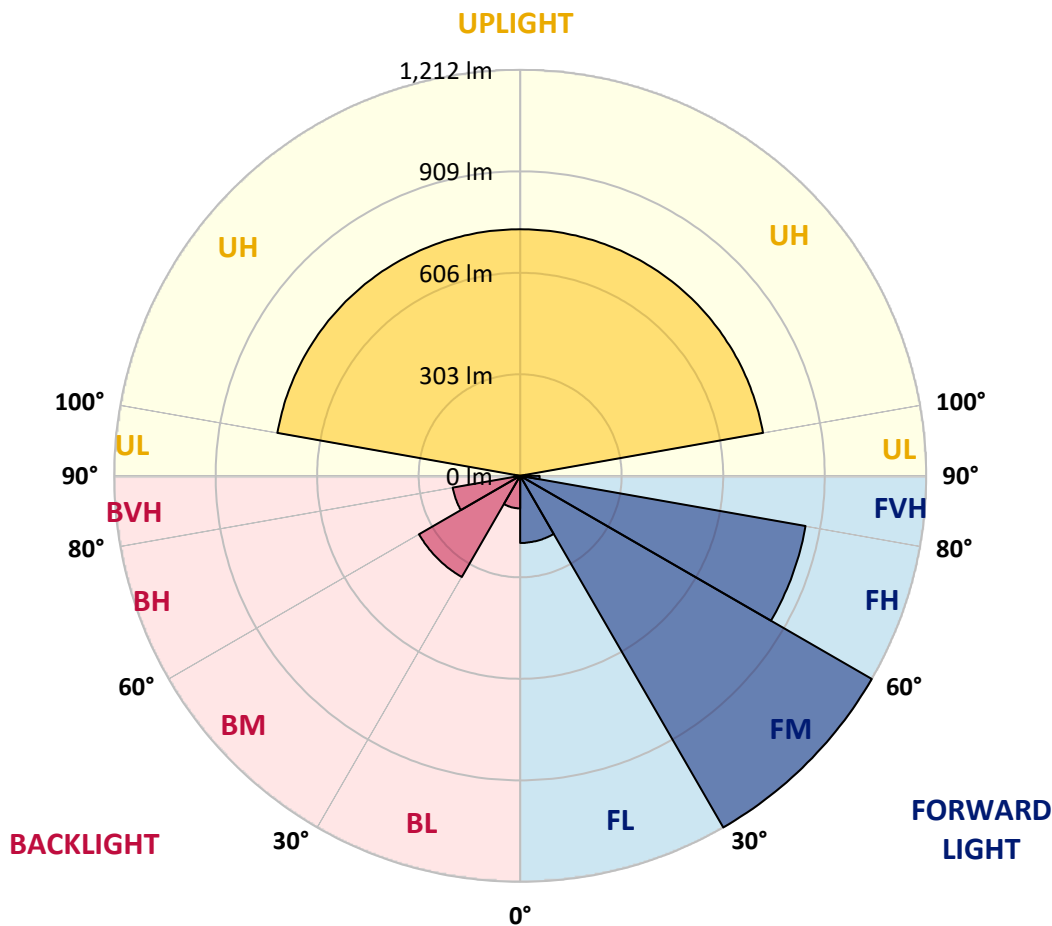


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	200.4	5.3			
FM (30°-60°)	1211.7	32.3			
FH (60°-80°)	864.7	23.1			G1/1800
FVH (80°-90°)	57.8	1.5			G1/100
BL (0°-30°)	97.2	2.6	B0/110		
BM (30°-60°)	348.7	9.3	B1/1000		
BH (60°-80°)	204.4	5.5	B1/500		G1/500
BVH (80°-90°)	11.1	0.3			G1/100
UL (90°-100°)	16.8	0.4		U2/50	
UH (100°-180°)	735.8	19.6		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°	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°	6.4	6.4	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	6.4
92.5°	6.4	6.4	6.4	9.0	10.0	10.3	9.0	10.3	7.7	7.7	6.4
95°	7.7	7.7	9.0	11.6	13.7	14.2	15.5	15.5	9.0	9.0	7.7
97.5°	10.3	11.6	11.6	14.2	21.4	23.2	42.5	25.8	12.9	12.9	11.6
100°	16.7	18.0	18.0	32.2	61.0	68.2	91.4	65.7	33.5	24.5	18.0
102.5°	54.1	56.7	69.5	104.3	144.5	154.5	140.4	118.5	112.0	77.3	61.8
105°	137.8	136.5	146.8	173.8	207.8	216.3	212.5	195.7	177.7	153.2	141.6
107.5°	181.6	181.6	190.6	213.8	239.5	245.9	287.1	291.0	230.5	202.2	189.3
110°	204.7	204.7	212.5	231.8	265.8	274.3	332.2	329.6	284.6	249.8	233.1



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	15°	25°	33°	35°	45°	55°	65°	75°	85°
112.5°	209.9	211.2	221.5	251.1	288.2	297.5	323.2	311.6	293.6	278.1	265.3
115°	217.6	217.6	229.2	257.5	278.1	283.3	293.6	280.7	266.5	256.2	251.1
117.5°	215.0	218.9	221.5	236.9	250.3	253.7	261.4	255.0	235.6	227.9	225.3
120°	199.6	199.6	202.2	209.9	217.1	218.9	222.8	220.2	207.3	200.9	199.6
122.5°	177.7	179.0	177.7	181.6	186.7	188.0	191.9	189.3	179.0	176.4	176.4
125°	155.8	155.8	154.5	157.1	160.2	161.0	159.7	161.0	155.8	154.5	154.5
127.5°	140.4	139.1	136.5	137.8	138.8	139.1	139.1	140.4	135.2	136.5	137.8
130°	124.9	124.9	122.3	122.3	122.3	122.3	119.8	122.3	119.8	121.0	122.3
132.5°	110.7	110.7	106.9	105.6	105.6	105.6	105.6	106.9	105.6	108.2	110.7
135°	99.2	99.2	95.3	96.6	96.6	96.6	95.3	96.6	95.3	97.9	99.2
137.5°	90.1	90.1	87.6	87.6	87.6	87.6	86.3	87.6	87.6	88.8	91.4
140°	82.4	82.4	81.1	81.1	80.1	79.8	81.1	81.1	81.1	82.4	83.7
142.5°	78.5	77.3	76.0	74.7	75.7	76.0	76.0	76.0	74.7	76.0	78.5
145°	72.1	72.1	70.8	70.8	70.8	70.8	72.1	70.8	70.8	72.1	72.1
147.5°	68.2	68.2	67.0	68.2	68.2	68.2	68.2	68.2	67.0	68.2	68.2
150°	67.0	65.7	64.4	65.7	65.7	65.7	64.4	64.4	64.4	64.4	65.7
152.5°	63.1	63.1	61.8	63.1	62.1	61.8	61.8	61.8	61.8	61.8	63.1
155°	60.5	60.5	59.2	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5
157.5°	57.9	59.2	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	59.2
160°	56.7	56.7	56.7	56.7	55.7	55.4	55.4	55.4	56.7	56.7	56.7
162.5°	55.4	55.4	55.4	55.4	54.4	54.1	54.1	54.1	54.1	55.4	55.4
165°	55.4	54.1	54.1	54.1	53.1	52.8	52.8	52.8	52.8	54.1	55.4
167.5°	52.8	52.8	52.8	52.8	52.8	52.8	51.5	51.5	52.8	52.8	52.8
170°	52.8	52.8	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5
172.5°	52.8	52.8	52.8	52.8	51.8	51.5	51.5	51.5	51.5	51.5	52.8
175°	52.8	52.8	52.8	52.8	51.8	51.5	51.5	51.5	52.8	52.8	52.8
177.5°	52.8	52.8	52.8	52.8	51.8	51.5	52.8	52.8	52.8	52.8	52.8
180°	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8





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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°	6.4	6.4	7.7	7.7	7.7	7.7	7.7	7.7	7.7	6.4	6.4
92.5°	6.4	6.4	7.7	7.7	10.3	9.0	10.3	9.0	6.4	6.4	6.4
95°	7.7	7.7	9.0	9.0	15.5	15.5	14.2	11.6	9.0	7.7	7.7
97.5°	10.3	11.6	12.9	12.9	25.8	42.5	23.2	14.2	11.6	11.6	10.3
100°	18.0	18.0	24.5	33.5	65.7	91.4	68.2	32.2	18.0	18.0	16.7
102.5°	59.2	61.8	77.3	112.0	118.5	140.4	154.5	104.3	69.5	56.7	54.1
105°	141.6	141.6	153.2	177.7	195.7	212.5	216.3	173.8	146.8	136.5	137.8
107.5°	188.0	189.3	202.2	230.5	291.0	287.1	245.9	213.8	190.6	181.6	181.6
110°	230.5	233.1	249.8	284.6	329.6	332.2	274.3	231.8	212.5	204.7	204.7



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 CATALOG NUMBER: TTN-D1-735-U-DL-CG-UPL3

**CANDELA DISTRIBUTION (continued):**

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
112.5°	262.7	265.3	278.1	293.6	311.6	323.2	297.5	251.1	221.5	211.2	209.9
115°	253.7	251.1	256.2	266.5	280.7	293.6	283.3	257.5	229.2	217.6	217.6
117.5°	221.5	225.3	227.9	235.6	255.0	261.4	253.7	236.9	221.5	218.9	215.0
120°	197.0	199.6	200.9	207.3	220.2	222.8	218.9	209.9	202.2	199.6	199.6
122.5°	173.8	176.4	176.4	179.0	189.3	191.9	188.0	181.6	177.7	179.0	177.7
125°	153.2	154.5	154.5	155.8	161.0	159.7	161.0	157.1	154.5	155.8	155.8
127.5°	136.5	137.8	136.5	135.2	140.4	139.1	139.1	137.8	136.5	139.1	140.4
130°	123.6	122.3	121.0	119.8	122.3	119.8	122.3	122.3	122.3	124.9	124.9
132.5°	110.7	110.7	108.2	105.6	106.9	105.6	105.6	105.6	106.9	110.7	110.7
135°	99.2	99.2	97.9	95.3	96.6	95.3	96.6	96.6	95.3	99.2	99.2
137.5°	92.7	91.4	88.8	87.6	87.6	86.3	87.6	87.6	87.6	90.1	90.1
140°	83.7	83.7	82.4	81.1	81.1	81.1	79.8	81.1	81.1	82.4	82.4
142.5°	78.5	78.5	76.0	74.7	76.0	76.0	76.0	74.7	76.0	77.3	78.5
145°	73.4	72.1	72.1	70.8	70.8	72.1	70.8	70.8	70.8	72.1	72.1
147.5°	69.5	68.2	68.2	67.0	68.2	68.2	68.2	68.2	67.0	68.2	68.2
150°	65.7	65.7	64.4	64.4	64.4	64.4	65.7	65.7	64.4	65.7	67.0
152.5°	64.4	63.1	61.8	61.8	61.8	61.8	61.8	63.1	61.8	63.1	63.1
155°	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	59.2	60.5	60.5
157.5°	59.2	59.2	57.9	57.9	57.9	57.9	57.9	57.9	57.9	59.2	57.9
160°	57.9	56.7	56.7	56.7	55.4	55.4	55.4	56.7	56.7	56.7	56.7
162.5°	56.7	55.4	55.4	54.1	54.1	54.1	54.1	55.4	55.4	55.4	55.4
165°	54.1	55.4	54.1	52.8	52.8	52.8	52.8	54.1	54.1	54.1	55.4
167.5°	54.1	52.8	52.8	52.8	51.5	51.5	52.8	52.8	52.8	52.8	52.8
170°	52.8	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5	52.8	52.8
172.5°	52.8	52.8	51.5	51.5	51.5	51.5	51.5	52.8	52.8	52.8	52.8
175°	51.5	52.8	52.8	52.8	51.5	51.5	51.5	52.8	52.8	52.8	52.8
177.5°	52.8	52.8	52.8	52.8	52.8	52.8	51.5	52.8	52.8	52.8	52.8
180°	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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

Report Prepared for

Cooper Lighting Solutions

MCGRAW EDISON

Report Number: SP1-2411-284-1

Test Date: 11/15/2024

Luminaire Tested: TTN-D0-735-U-WQ

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

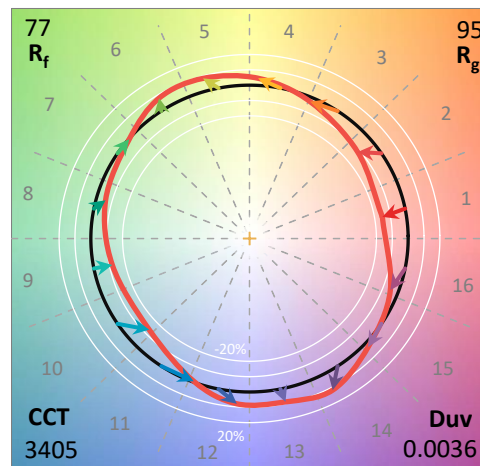
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2411-284-1  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 11/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW EDISON  
 Catalog Number: **TTN-D0-735-U-WQ**  
 Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 3500K, 70 CRI LEDS AND WIDE DISTRIBUTION

**Spectral Parameters**

CCT (K): 3405  
 CIE u': 0.2365  
 CIE v': 0.5180  
 Duv: 0.0036  
 CIE x: 0.4148  
 CIE y: 0.4038  
 CIE z: 0.1814  
 Peak Wavelength (nm): 596  
 Dominant Wavelength (nm): 579  
 Purity: 45.70672  
 Rf: 76.6  
 Rg: 95.4

CRI (Ra):	73.9		
R1:	71.3	R9:	-18.0
R2:	80.3	R10:	53.1
R3:	87.8	R11:	68.6
R4:	73.2	R12:	42.6
R5:	69.8	R13:	72.5
R6:	71.8	R14:	92.7
R7:	82.8	R15:	64.3
R8:	54.1		



**Test Conditions**

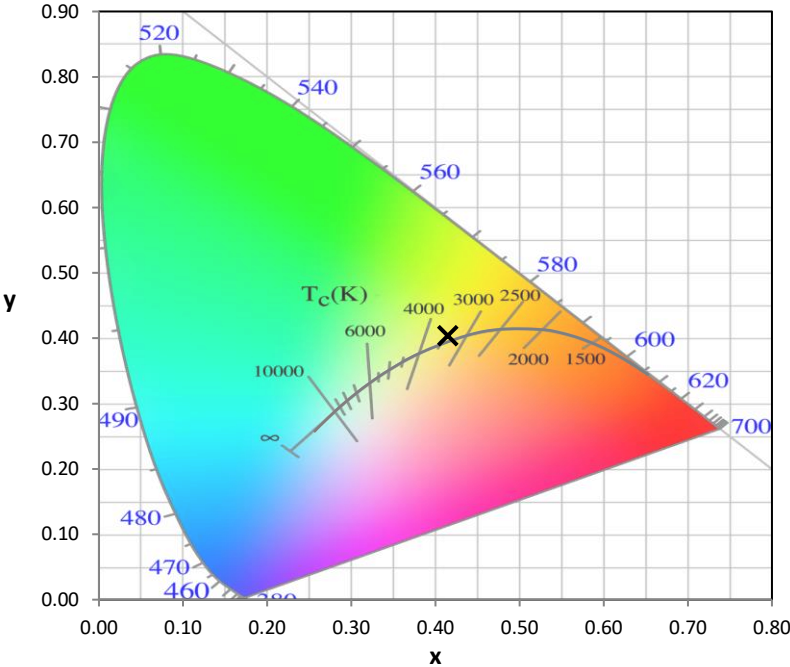
Stabilization Time: 38M  
 Operation Time: 1H 38M  
 Sphere Temperature (°C): 24.9

REPORT NUMBER: SP1-2411-284-1

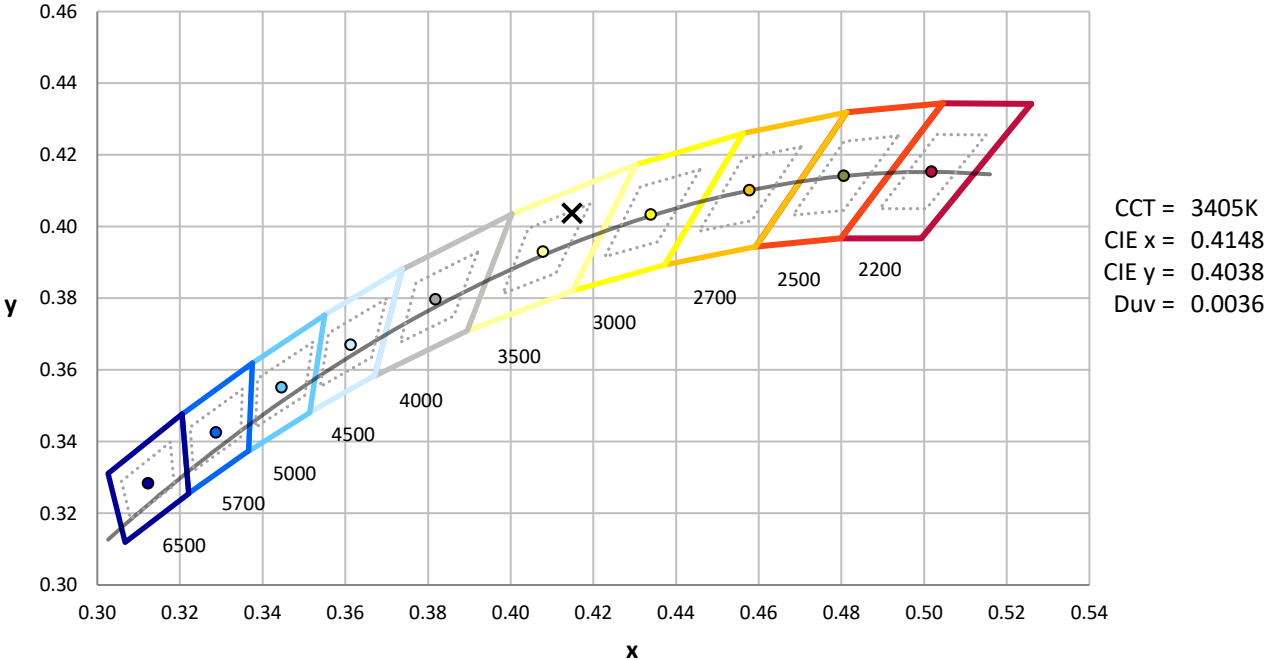
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2411-284-1

CIE 1931 Chromaticity Diagram



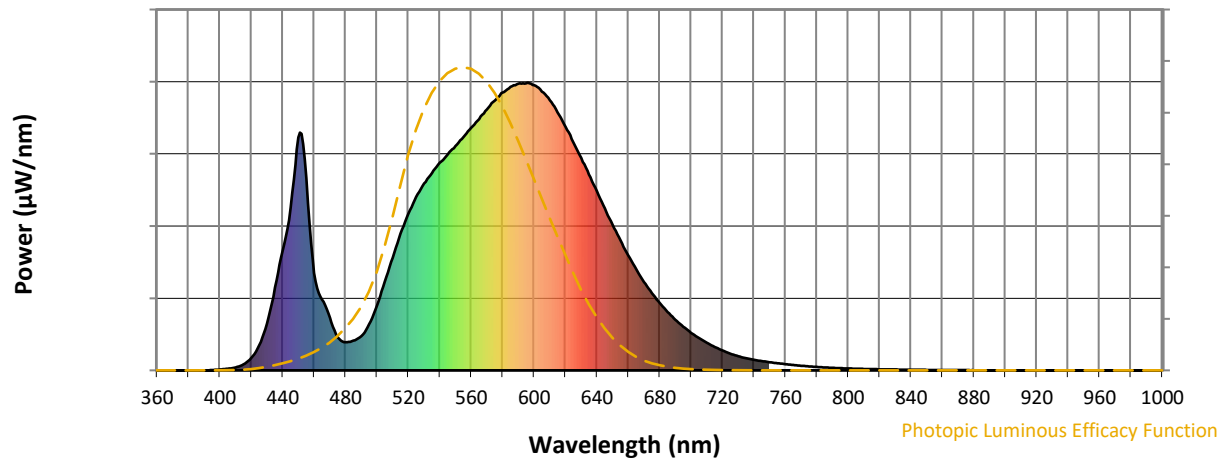
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2411-284-1

**Photopic Flux vs. Wavelength**

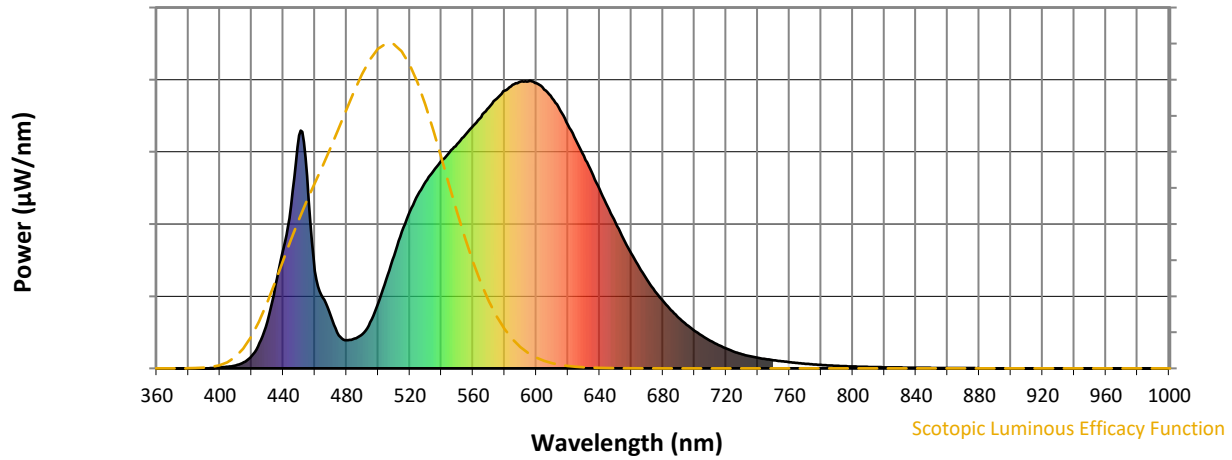


**Photopic Lumens: NR**

$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)
360	0	NR	490	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			

REPORT NUMBER: SP1-2411-284-1

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

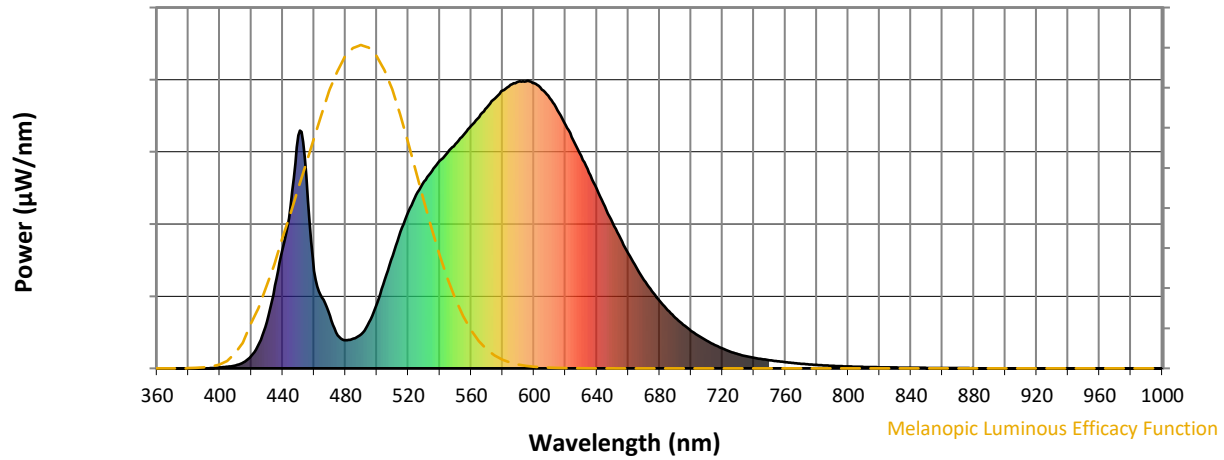
**S/P: 1.33**

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			



REPORT NUMBER: SP1-2411-284-1

Melanopic Flux vs. Wavelength



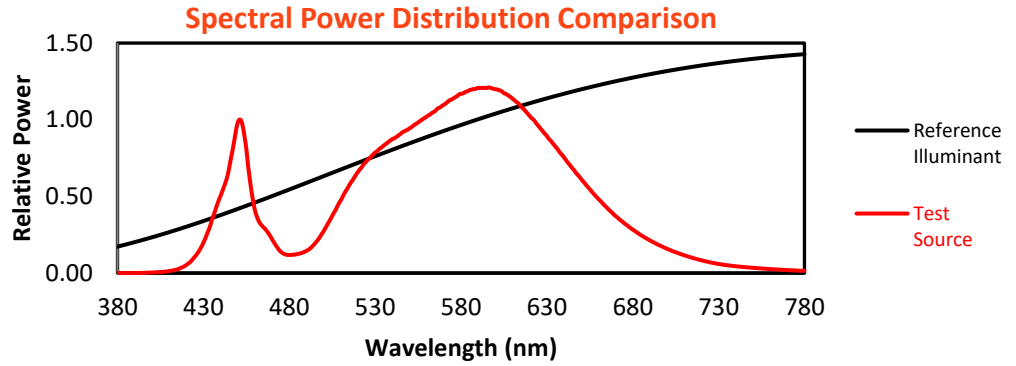
Melanopic Lumens: NR

M/P: 2.47

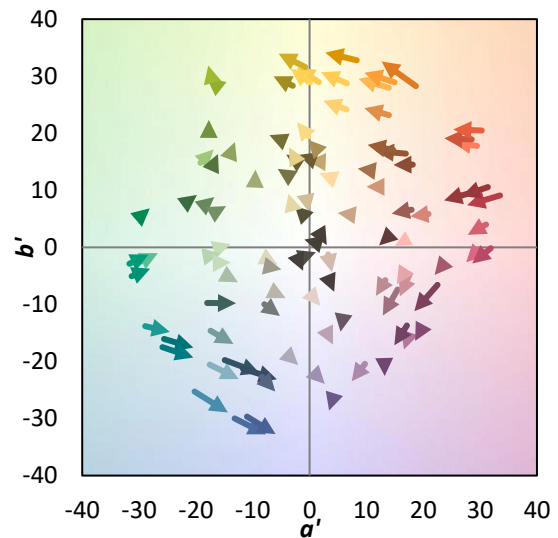
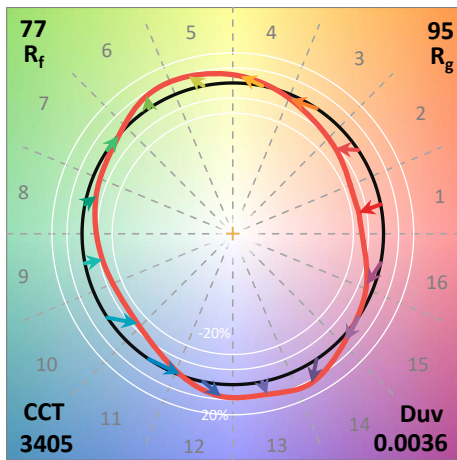
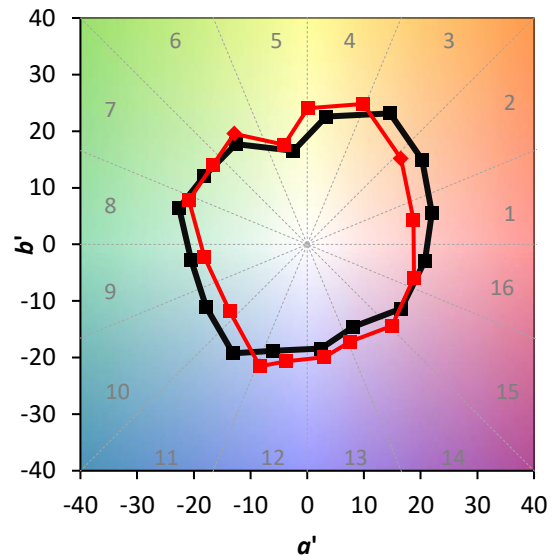
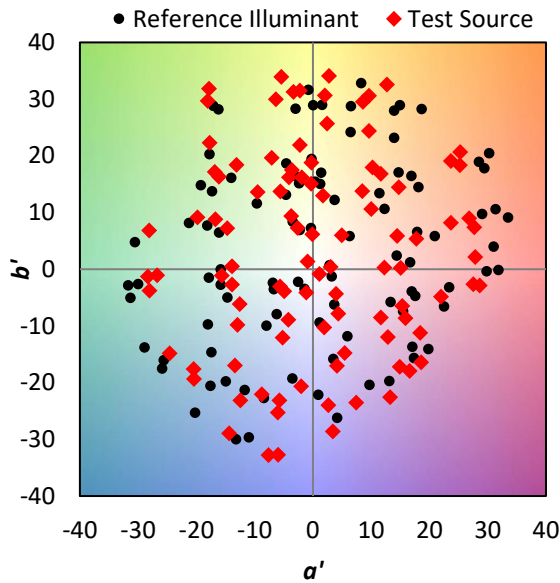
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	119	NR	620	846	NR	750	28	NR	880	1	NR
365	0	NR	495	160	NR	625	793	NR	755	25	NR	885	0	NR
370	0	NR	500	225	NR	630	739	NR	760	22	NR	890	0	NR
375	0	NR	505	308	NR	635	681	NR	765	19	NR	895	0	NR
380	0	NR	510	392	NR	640	623	NR	770	16	NR	900	0	NR
385	0	NR	515	474	NR	645	563	NR	775	14	NR	905	0	NR
390	0	NR	520	545	NR	650	506	NR	780	12	NR	910	0	NR
395	1	NR	525	603	NR	655	451	NR	785	10	NR	915	0	NR
400	3	NR	530	649	NR	660	399	NR	790	9	NR	920	0	NR
405	5	NR	535	687	NR	665	352	NR	795	8	NR	925	0	NR
410	11	NR	540	721	NR	670	307	NR	800	6	NR	930	0	NR
415	21	NR	545	751	NR	675	268	NR	805	6	NR	935	0	NR
420	43	NR	550	779	NR	680	234	NR	810	5	NR	940	0	NR
425	88	NR	555	811	NR	685	203	NR	815	4	NR	945	0	NR
430	163	NR	560	843	NR	690	176	NR	820	4	NR	950	0	NR
435	288	NR	565	873	NR	695	152	NR	825	3	NR	955	0	NR
440	416	NR	570	907	NR	700	131	NR	830	3	NR	960	0	NR
445	566	NR	575	938	NR	705	112	NR	835	3	NR	965	0	NR
450	810	NR	580	965	NR	710	96	NR	840	2	NR	970	0	NR
455	669	NR	585	986	NR	715	81	NR	845	2	NR	975	0	NR
460	338	NR	590	997	NR	720	69	NR	850	2	NR	980	0	NR
465	246	NR	595	997	NR	725	58	NR	855	1	NR	985	0	NR
470	182	NR	600	991	NR	730	49	NR	860	1	NR	990	0	NR
475	115	NR	605	968	NR	735	42	NR	865	1	NR	995	0	NR
480	97	NR	610	939	NR	740	37	NR	870	1	NR	1000	0	NR
485	103	NR	615	896	NR	745	32	NR	875	1	NR			

**Summary**

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

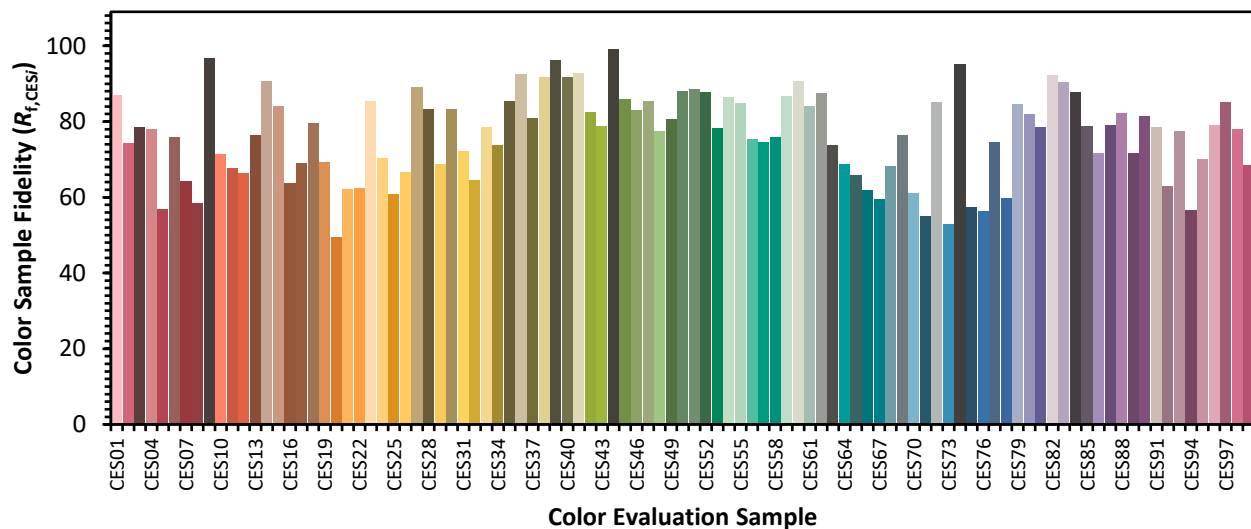


**Color Vector Graphics**

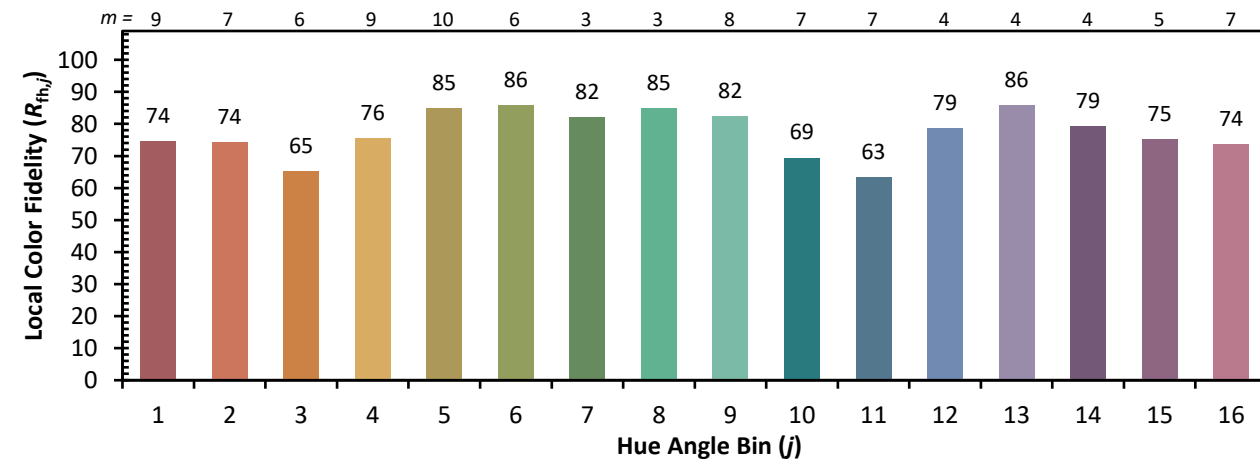
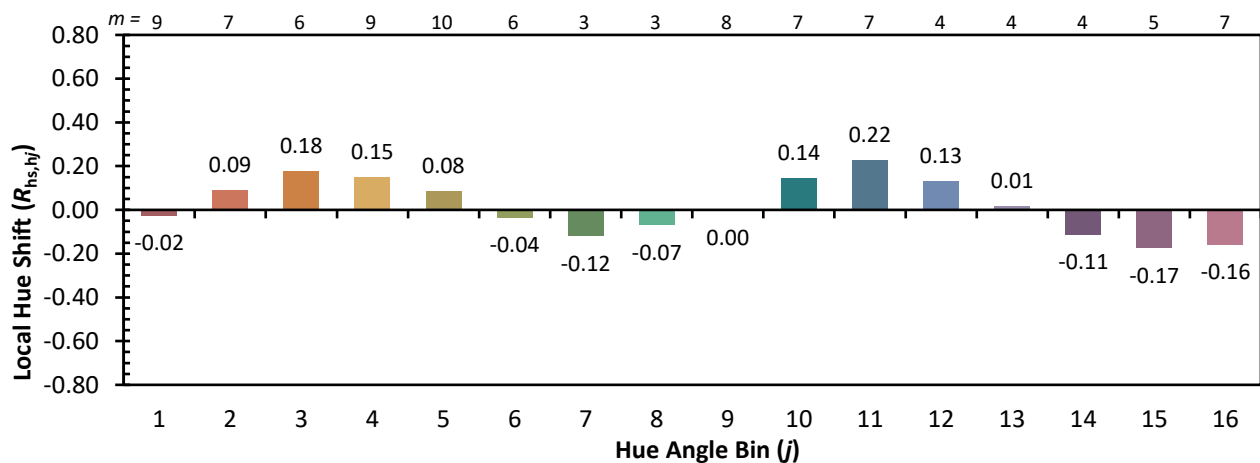
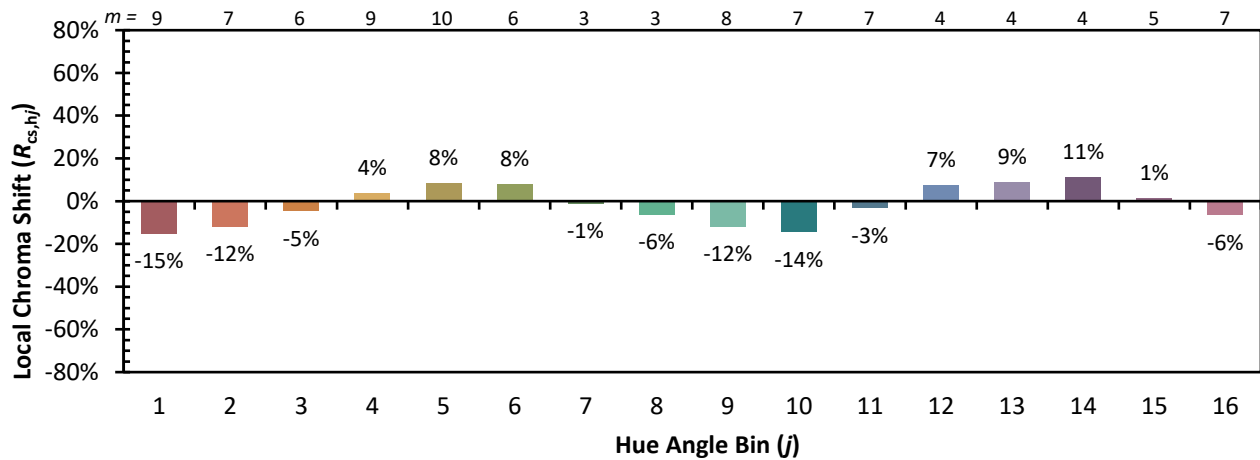


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

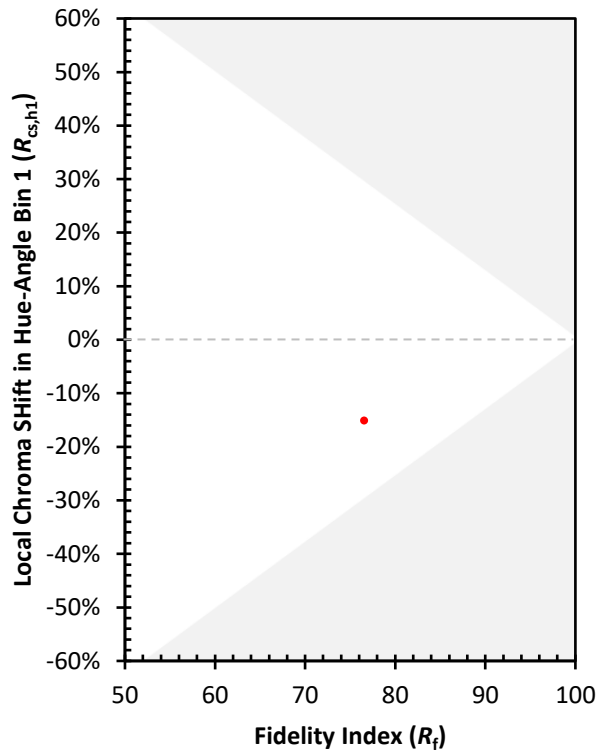
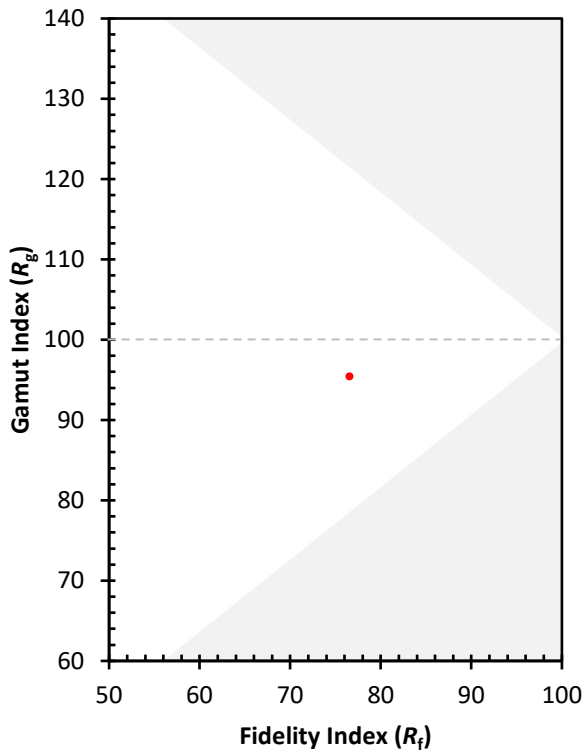
CES01 = 86	CES26 = 67	CES51 = 88	CES76 = 56
CES02 = 62	CES27 = 89	CES52 = 88	CES77 = 75
CES03 = 31	CES28 = 83	CES53 = 78	CES78 = 60
CES04 = 70	CES29 = 69	CES54 = 86	CES79 = 85
CES05 = 48	CES30 = 83	CES55 = 85	CES80 = 82
CES06 = 51	CES31 = 72	CES56 = 75	CES81 = 78
CES07 = 41	CES32 = 65	CES57 = 75	CES82 = 92
CES08 = 40	CES33 = 78	CES58 = 76	CES83 = 90
CES09 = 29	CES34 = 74	CES59 = 87	CES84 = 88
CES10 = 75	CES35 = 86	CES60 = 91	CES85 = 79
CES11 = 58	CES36 = 93	CES61 = 84	CES86 = 72
CES12 = 64	CES37 = 81	CES62 = 88	CES87 = 79
CES13 = 43	CES38 = 92	CES63 = 74	CES88 = 82
CES14 = 74	CES39 = 96	CES64 = 69	CES89 = 72
CES15 = 71	CES40 = 92	CES65 = 66	CES90 = 82
CES16 = 47	CES41 = 93	CES66 = 62	CES91 = 79
CES17 = 50	CES42 = 83	CES67 = 60	CES92 = 63
CES18 = 56	CES43 = 79	CES68 = 68	CES93 = 77
CES19 = 72	CES44 = 99	CES69 = 76	CES94 = 56
CES20 = 65	CES45 = 86	CES70 = 61	CES95 = 70
CES21 = 86	CES46 = 83	CES71 = 55	CES96 = 79
CES22 = 79	CES47 = 85	CES72 = 85	CES97 = 85
CES23 = 92	CES48 = 78	CES73 = 53	CES98 = 78
CES24 = 91	CES49 = 81	CES74 = 95	CES99 = 68
CES25 = 72	CES50 = 88	CES75 = 57	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)