

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P629077

Luminaire Tested: GWS-SA1A-830-U-SLL-W-GRSWH

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P629077  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-39)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA1A-830-U-SLL-W-GRSWH  
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND SPILL LIGHT ELIMINATOR LEFT OPTICS W/ FACTORY INSTALLED GLARE SHIELD, WH  
Light Source: (16) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: -

**Summary**

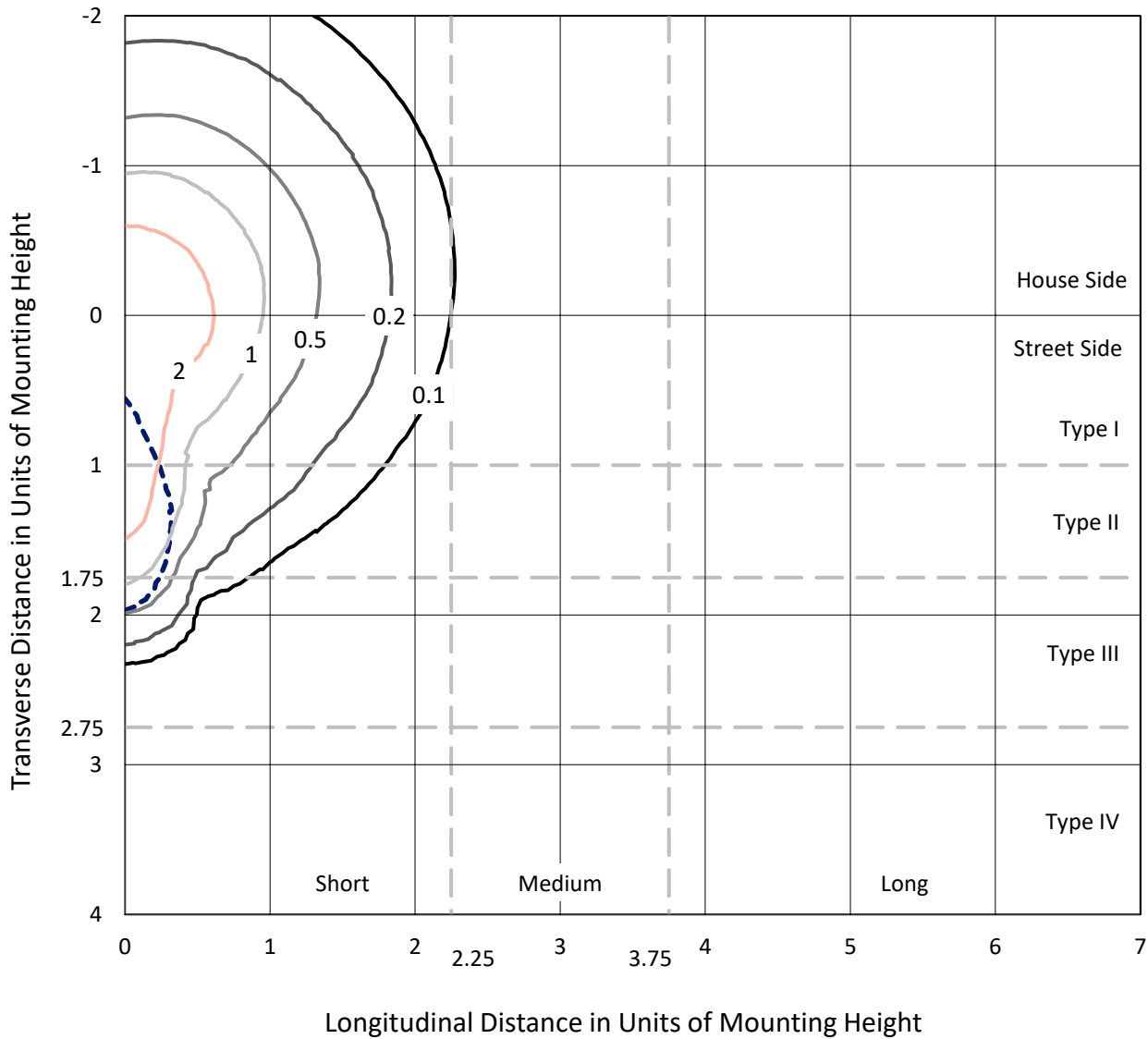
Lumens per Lamp: N/A  
Luminaire Lumens: 1758.4 lumens  
Efficiency: N/A  
Efficacy: 89.3 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B1 - U0 - G1  
  
Input Watts (W): 19.7  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 0  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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### Iso-Footcandle Lines of Horizontal Illumination

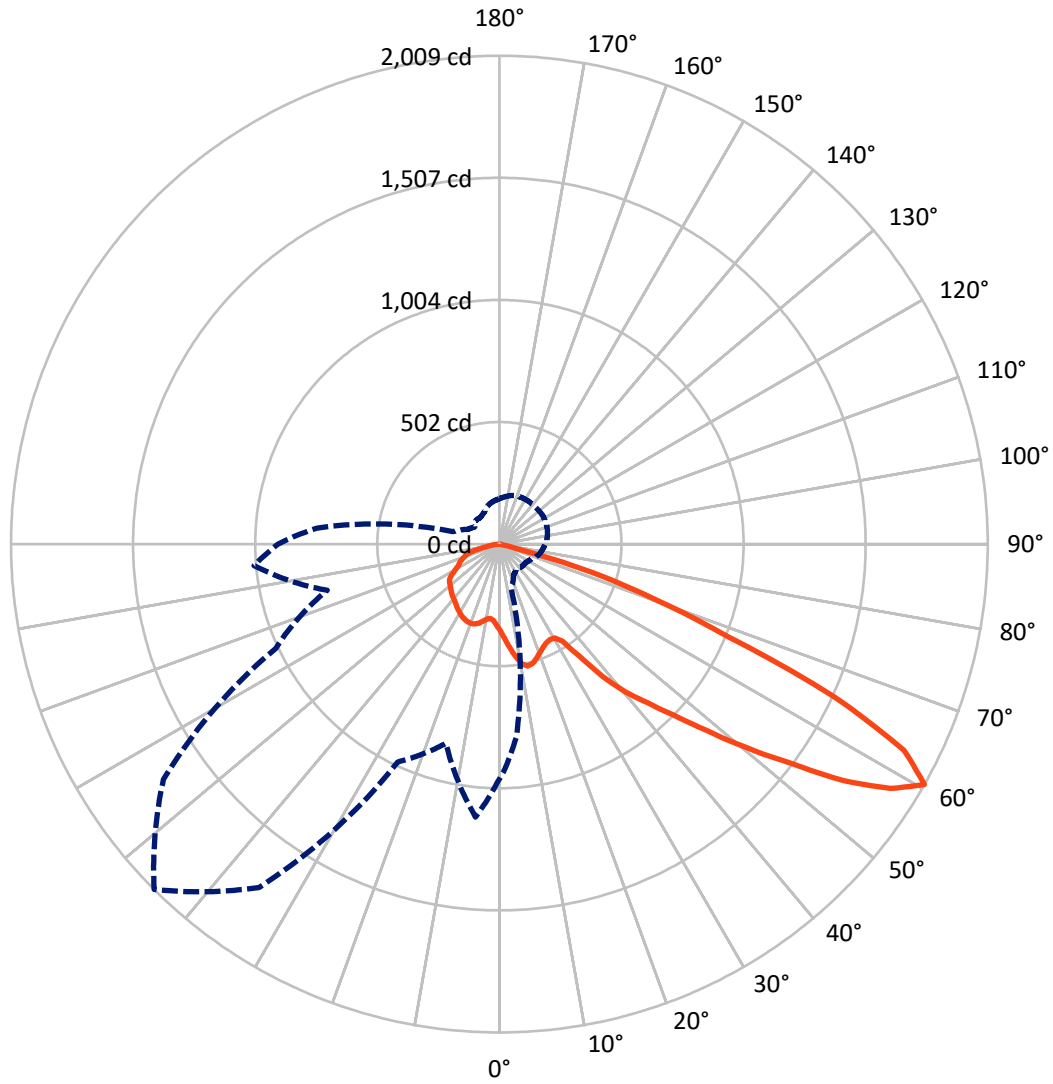
× Max cd  
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 4.3 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 315-Deg Lateral    - - - Horizontal Cone Through 60-Deg Vertical

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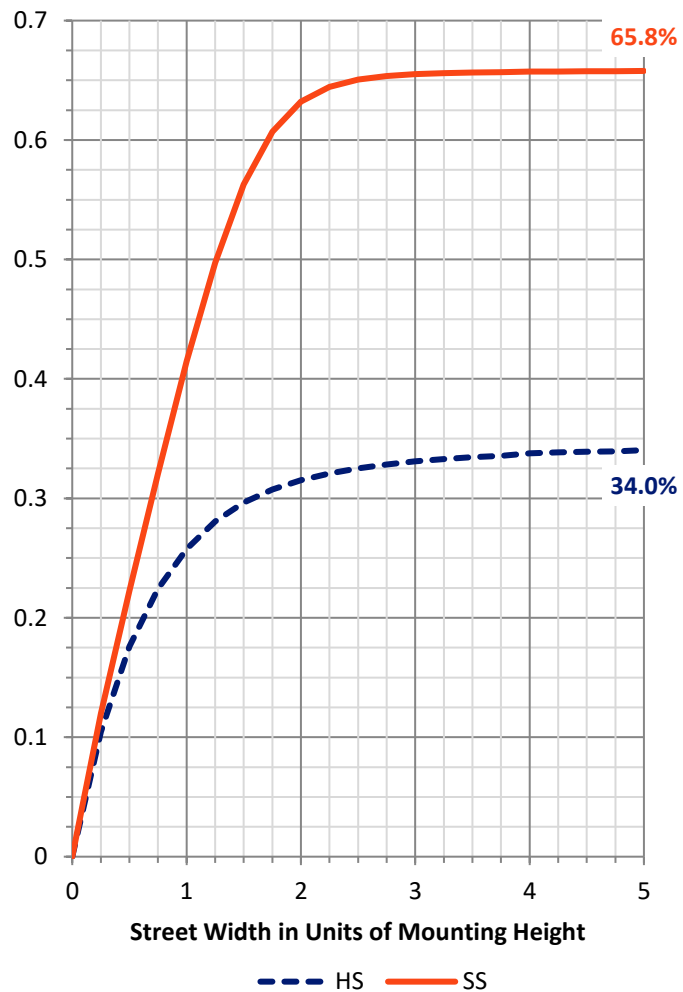
**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	601.5	0.0	601.5
	% Fixture	34.2	0.0	34.2
<b>Street Side</b>	Lumens	1156.9	0.0	1156.9
	% Fixture	65.8	0.0	65.8
<b>Total</b>	Lumens	1758.4	0.0	1758.4
	% Fixture	100.0	0.0	100.0

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	34.7	2.0
10°-20°	111.1	6.3
20°-30°	181.0	10.3
30°-40°	254.3	14.5
40°-50°	347.9	19.8
50°-60°	446.4	25.4
60°-70°	300.6	17.1
70°-80°	75.1	4.3
80°-90°	7.3	0.4
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-90°	1758.4	100.0
0°-180°	1758.4	100.0

**Coefficient of Utilization**



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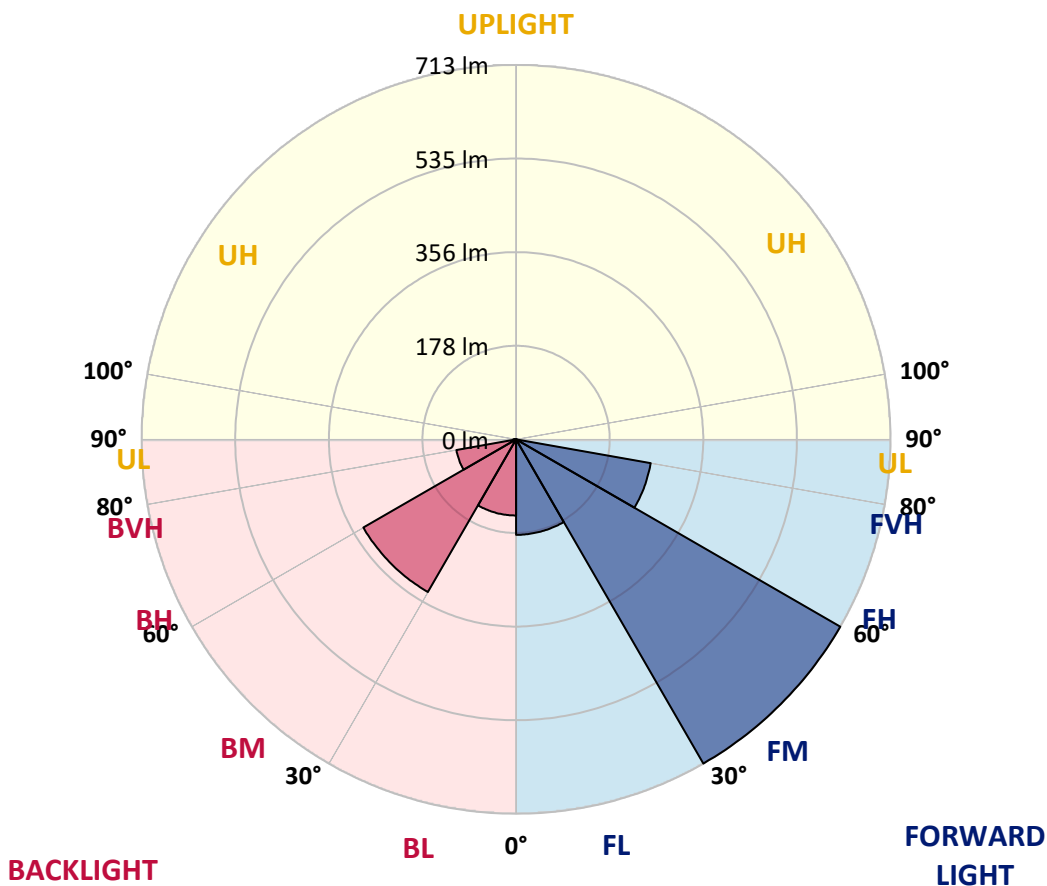
CATALOG NUMBER: GWS-SA1A-830-U-SLL-W-GRSWH

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

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	181.8	10.3			
FM (30°-60°)	712.9	40.5			
FH (60°-80°)	260.3	14.8			G0/660
FVH (80°-90°)	1.9	0.1			G0/10
BL (0°-30°)	145.0	8.2	B1/500		
BM (30°-60°)	335.7	19.1	B1/1000		
BH (60°-80°)	115.4	6.6	B1/500		G1/500
BVH (80°-90°)	5.4	0.3			G0/10
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

**BUG Rating: B1-U0-G1**

Type III Short





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**CANDELA DISTRIBUTION (FULL):**

	0°	1°	5°	15°	25°	35°	45°	55°	65°	75°	85°
0°	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7
2.5°	375.2	374.4	373.6	367.3	365.7	361.1	357.9	353.8	348.0	344.8	342.0
5°	398.7	397.4	393.0	380.1	371.7	362.4	354.8	346.4	337.5	331.7	327.1
7.5°	420.9	420.6	413.1	391.7	378.1	364.9	354.5	342.2	329.4	320.6	314.8
10°	441.5	439.0	430.1	402.3	384.4	369.2	358.1	344.4	329.5	317.7	310.0
12.5°	459.6	456.5	444.2	412.0	390.0	371.2	359.0	347.8	338.0	328.1	319.2
15°	474.5	470.8	458.3	421.0	394.8	370.0	353.0	344.3	347.7	352.1	342.2
17.5°	488.4	484.5	469.3	427.7	396.3	363.1	338.3	334.6	351.7	371.7	367.1
20°	500.1	495.7	478.0	430.9	393.7	349.8	319.2	325.7	348.3	372.1	379.4
22.5°	512.7	509.1	487.9	435.6	390.4	331.5	303.2	319.0	342.5	363.4	374.4
25°	532.9	528.6	503.3	443.9	388.8	314.3	291.7	312.5	334.4	353.4	361.9
27.5°	562.3	554.2	524.4	458.3	390.6	298.1	284.4	304.6	325.0	341.2	348.2
30°	594.2	584.4	547.7	473.2	393.2	288.3	280.5	295.5	310.6	326.8	334.4
32.5°	631.9	623.3	572.6	484.4	387.7	283.7	277.6	285.7	297.6	310.6	316.9
35°	676.9	661.5	599.8	493.4	369.9	277.1	275.0	274.8	281.1	293.8	300.9
37.5°	725.3	708.8	633.4	503.2	342.2	266.6	268.8	262.0	267.9	277.9	286.0
40°	765.0	747.7	667.2	516.4	307.5	250.0	255.2	247.9	251.5	261.9	270.9
42.5°	803.9	785.4	698.8	531.5	274.0	233.8	236.4	233.7	234.8	245.7	258.3
45°	854.9	834.2	737.6	542.2	243.9	221.0	218.6	213.9	219.9	234.0	247.4
47.5°	940.1	915.3	801.3	549.1	222.0	213.8	202.6	199.8	207.3	223.0	236.9
50°	1039.7	1018.3	903.0	548.8	205.7	207.6	187.0	184.6	196.9	212.8	227.5
52.5°	1121.3	1099.6	989.9	532.6	192.2	194.5	178.0	171.2	188.0	202.8	217.5
55°	1187.2	1162.7	1029.9	464.9	175.2	173.6	168.1	155.6	176.8	192.7	206.5
57.5°	1151.7	1122.6	981.5	353.5	157.7	147.5	151.1	141.9	161.6	181.5	194.8
60°	965.7	939.4	797.4	188.2	138.8	123.2	130.7	132.1	144.9	168.1	181.7
62.5°	663.3	644.2	540.4	114.2	109.5	98.9	110.6	121.1	130.7	150.3	162.1
65°	324.5	318.9	270.3	73.2	76.6	80.0	91.7	104.5	118.5	135.7	148.2
67.5°	89.4	90.0	81.9	57.2	60.4	69.8	79.0	89.2	103.3	119.2	131.8
70°	39.4	40.0	41.3	44.0	50.2	58.8	68.3	78.9	91.8	105.1	117.2
72.5°	27.4	28.0	30.0	33.5	39.0	47.1	56.2	66.2	79.7	90.8	100.9
75°	16.8	17.3	19.1	22.2	25.9	32.1	41.0	50.2	62.0	72.2	81.1
77.5°	8.9	8.6	9.7	11.8	15.1	18.3	24.3	30.1	38.5	46.8	54.3
80°	4.9	4.7	5.3	6.5	7.4	10.0	14.1	18.0	22.8	27.5	31.6
82.5°	2.1	1.9	2.1	2.8	3.4	4.9	7.1	9.9	12.6	15.9	18.5
85°	0.0	0.0	0.0	0.2	0.8	1.3	2.4	3.6	5.2	7.1	8.7
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.5
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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**CANDELA DISTRIBUTION (continued):**

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7
2.5°	340.4	336.4	336.0	332.8	333.1	333.3	330.0	328.7	329.9	331.2	330.5
5°	325.5	321.3	319.5	316.4	316.1	314.7	313.4	311.7	312.9	314.0	314.7
7.5°	312.5	309.8	308.7	307.8	308.2	307.5	304.9	303.5	303.3	303.8	304.4
10°	308.3	306.1	307.5	309.8	311.4	312.5	309.8	307.4	305.1	304.1	304.1
12.5°	317.4	314.5	317.4	319.8	323.1	323.9	320.8	318.2	317.4	318.4	320.3
15°	337.5	330.7	330.5	332.0	334.6	335.9	333.0	331.7	331.7	337.8	342.7
17.5°	357.6	346.4	341.7	340.9	342.5	343.0	340.6	339.4	342.3	354.3	363.4
20°	371.7	358.1	347.8	345.9	346.4	346.6	344.6	343.8	348.0	362.6	370.2
22.5°	370.2	360.2	347.7	345.3	346.1	345.7	344.0	343.6	347.0	359.7	363.2
25°	360.2	352.4	341.9	340.2	341.5	341.4	339.6	338.8	340.2	348.7	349.0
27.5°	348.7	341.9	332.8	332.3	334.4	335.5	332.5	330.0	329.5	335.2	333.9
30°	334.9	329.9	322.6	322.9	326.8	327.4	323.7	320.2	319.2	322.3	320.5
32.5°	318.5	316.9	313.0	313.8	317.6	318.9	315.0	311.3	310.1	311.1	307.4
35°	304.6	304.0	304.3	305.7	309.0	310.0	306.7	303.8	302.2	298.8	293.9
37.5°	290.2	292.0	296.7	299.4	301.2	300.9	299.1	297.0	294.4	288.1	282.1
40°	276.8	281.3	289.7	292.8	293.4	293.6	292.3	290.5	287.3	278.9	272.1
42.5°	266.4	271.4	282.6	287.3	287.6	287.9	286.6	285.2	280.6	269.5	262.8
45°	255.5	262.2	275.3	281.0	280.6	280.5	279.3	278.7	273.4	260.4	253.1
47.5°	246.3	254.1	268.2	273.0	272.9	272.7	271.9	271.9	266.6	252.5	244.2
50°	237.2	246.2	260.9	264.9	265.3	264.9	264.6	265.1	258.8	243.7	235.6
52.5°	227.4	237.4	252.8	256.5	258.5	259.3	259.3	258.1	250.7	235.0	226.1
55°	216.5	226.1	243.9	248.9	250.5	252.0	252.0	249.7	242.7	226.9	217.3
57.5°	203.1	211.5	225.6	230.6	234.5	235.5	235.5	231.7	226.1	210.8	203.1
60°	188.5	195.8	205.3	210.7	213.6	211.7	213.1	212.1	207.6	193.5	187.0
62.5°	169.1	176.5	187.0	192.5	193.8	191.9	193.8	193.7	187.5	174.9	167.1
65°	155.1	162.4	172.8	179.9	182.0	181.5	182.8	180.9	173.3	161.3	153.8
67.5°	138.6	146.4	158.4	166.3	170.7	171.2	173.0	168.9	161.1	148.0	138.6
70°	122.9	129.6	138.8	146.2	152.4	155.5	155.8	150.0	140.2	129.4	122.6
72.5°	106.4	113.2	124.4	132.5	140.2	143.8	143.8	136.7	126.2	114.2	106.9
75°	86.3	92.6	102.8	111.6	120.5	125.0	124.9	118.7	107.0	95.7	88.1
77.5°	58.5	63.2	69.6	76.3	77.6	81.1	82.9	75.1	68.7	62.5	55.7
80°	34.0	36.9	40.5	44.2	45.0	46.2	43.2	40.3	36.9	32.9	29.8
82.5°	19.9	21.9	23.6	26.6	27.0	27.4	24.8	23.5	20.7	18.3	16.4
85°	9.7	10.4	12.0	13.4	12.8	12.5	11.3	10.0	8.9	7.9	7.0
87.5°	1.9	1.9	2.9	2.8	2.3	1.9	1.1	1.5	0.3	0.3	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0





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**CANDELA DISTRIBUTION (continued):**

	185°	195°	205°	215°	225°	235°	245°	255°	265°	270°	275°
0°	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7
2.5°	332.6	335.4	338.8	343.3	348.5	354.0	359.3	363.4	367.4	373.4	372.5
5°	315.6	320.3	325.7	332.6	341.0	350.6	361.3	372.0	383.5	393.2	397.4
7.5°	305.7	310.9	317.2	326.3	337.2	348.8	363.9	381.2	399.8	412.6	420.6
10°	305.7	312.4	320.6	329.4	338.9	350.9	369.5	391.2	415.2	432.1	441.3
12.5°	323.4	330.0	331.8	331.5	336.8	350.1	374.1	401.8	430.4	448.3	459.6
15°	350.9	353.2	339.8	327.4	328.3	344.3	376.2	410.2	443.6	464.9	477.2
17.5°	369.4	363.4	339.4	317.9	313.4	334.4	376.2	418.3	457.5	481.6	493.1
20°	370.8	355.9	331.2	308.7	297.0	321.3	373.6	424.4	470.9	497.6	510.0
22.5°	358.1	343.3	322.4	300.7	283.6	305.4	369.4	429.1	482.4	512.7	527.9
25°	343.5	331.2	313.5	292.6	274.3	289.4	365.5	437.1	498.5	533.1	548.5
27.5°	329.2	318.9	302.8	285.8	269.1	275.5	363.1	448.7	517.6	562.1	575.4
30°	315.3	305.9	291.3	279.3	266.4	266.4	361.0	462.2	542.8	594.6	607.9
32.5°	301.2	292.3	280.5	273.0	264.8	262.8	355.1	474.8	568.9	630.3	643.9
35°	288.1	279.2	270.1	267.0	264.0	260.1	340.7	484.7	594.3	671.9	683.6
37.5°	275.8	267.2	260.4	259.6	259.9	252.6	318.1	492.9	626.1	714.5	720.6
40°	265.1	255.5	250.2	250.0	251.7	240.6	289.4	504.8	662.3	750.6	748.0
42.5°	255.5	245.5	239.0	240.5	239.5	228.7	261.4	515.6	693.9	784.4	779.3
45°	246.2	236.4	227.4	229.5	228.3	221.2	237.6	523.6	728.9	825.1	825.7
47.5°	237.1	227.5	218.5	215.9	215.7	218.9	219.3	526.1	785.9	890.5	875.8
50°	228.7	219.1	209.7	201.0	204.4	214.4	205.7	524.2	871.2	962.7	921.6
52.5°	219.9	210.8	200.5	184.8	193.7	203.6	193.5	517.2	923.4	1026.5	1001.9
55°	209.9	201.3	187.2	168.1	178.9	181.0	181.0	449.9	945.6	1089.7	1104.9
57.5°	196.4	185.1	162.8	147.4	157.1	149.0	167.8	314.8	909.0	1069.8	1128.9
60°	181.2	169.1	145.4	134.4	137.3	123.1	143.0	197.4	753.3	910.3	1012.6
62.5°	161.1	150.0	130.4	121.8	115.8	100.4	115.1	124.9	516.4	675.9	745.7
65°	147.7	135.4	117.9	106.6	94.2	80.8	76.4	81.9	277.7	378.3	425.4
67.5°	131.8	119.7	103.2	88.9	79.0	69.3	61.7	59.8	95.2	126.0	136.4
70°	116.8	105.1	91.3	78.1	68.2	58.6	51.2	45.8	44.0	43.7	43.1
72.5°	101.4	90.5	79.0	66.7	55.9	47.1	40.5	34.3	31.7	30.9	30.1
75°	83.1	74.5	63.0	49.7	41.0	32.9	27.7	23.6	21.4	20.6	19.6
77.5°	53.4	49.6	39.5	32.1	24.8	19.6	16.8	14.3	12.8	12.5	11.7
80°	28.5	26.6	21.9	18.5	14.7	12.0	10.5	9.1	8.3	7.9	7.6
82.5°	15.9	14.4	12.1	10.7	8.6	7.3	6.5	5.8	5.3	5.2	5.0
85°	7.1	6.2	4.9	4.5	4.0	3.7	3.6	3.2	3.1	2.9	2.8
87.5°	0.3	0.6	0.8	0.6	0.6	1.0	1.1	1.1	1.0	1.0	0.8
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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**CANDELA DISTRIBUTION (continued):**

	285°	295°	305°	315°	325°	335°	345°	355°	359°	360°
0°	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7	354.7
2.5°	378.5	383.3	383.8	385.4	383.3	382.8	379.4	377.5	375.7	375.2
5°	407.9	417.6	421.5	424.3	421.7	420.4	412.9	405.2	400.8	398.7
7.5°	438.2	452.8	460.4	463.8	464.1	458.3	445.5	430.9	423.6	420.9
10°	465.3	483.2	493.3	499.7	497.5	490.4	472.9	453.1	443.9	441.5
12.5°	485.3	502.5	510.3	514.5	514.3	510.4	493.9	472.5	462.0	459.6
15°	498.3	508.5	509.0	510.0	512.7	517.9	509.3	489.5	477.9	474.5
17.5°	508.5	504.4	496.8	494.2	500.4	514.8	520.0	504.0	491.3	488.4
20°	515.0	494.6	481.1	476.1	483.2	506.7	526.5	516.9	503.8	500.1
22.5°	520.0	485.3	463.6	460.2	467.7	498.0	533.1	532.3	517.9	512.7
25°	527.9	479.2	451.3	448.9	455.9	493.8	542.0	553.2	540.4	532.9
27.5°	540.4	478.5	445.0	444.2	453.8	497.5	554.8	583.8	567.8	562.3
30°	557.7	484.7	446.5	448.1	459.8	510.9	574.7	618.8	602.7	594.2
32.5°	582.7	501.2	468.7	475.6	484.2	532.5	603.9	656.7	644.5	631.9
35°	615.5	546.6	534.2	563.9	555.8	579.6	639.0	702.7	687.9	676.9
37.5°	659.4	639.5	650.8	691.6	672.1	668.7	681.9	744.4	736.3	725.3
40°	721.0	725.0	745.9	799.5	771.2	749.3	734.6	775.9	778.6	765.0
42.5°	761.8	780.4	830.8	891.6	852.6	800.3	778.6	816.0	816.2	803.9
45°	777.0	825.7	931.0	1001.1	935.9	829.5	802.9	870.6	869.0	854.9
47.5°	771.5	864.0	1035.1	1142.3	1042.7	850.2	799.5	948.3	961.4	940.1
50°	760.0	902.3	1156.7	1315.3	1173.9	872.2	794.3	1034.5	1056.2	1039.7
52.5°	771.6	945.1	1300.5	1494.1	1338.4	907.4	829.3	1145.1	1141.2	1121.3
55°	808.6	995.6	1475.3	1718.7	1519.2	966.8	919.2	1250.5	1211.0	1187.2
57.5°	806.8	1031.7	1628.5	1896.3	1676.4	1015.5	950.4	1261.7	1181.8	1151.7
60°	732.3	1015.2	1686.8	2008.7	1723.9	988.6	847.6	1126.9	997.2	965.7
62.5°	546.6	900.9	1573.7	1868.0	1589.6	853.9	637.4	808.9	716.6	663.3
65°	349.6	704.8	1323.1	1513.3	1310.3	653.1	379.6	433.7	339.8	324.5
67.5°	148.8	497.5	1028.5	1011.5	980.2	423.2	146.6	122.1	91.0	89.4
70°	49.2	338.5	634.0	674.6	585.4	291.5	48.4	41.0	40.8	39.4
72.5°	32.2	181.7	356.9	397.4	376.7	167.8	29.3	27.4	28.0	27.4
75°	19.3	39.5	60.1	78.1	60.1	28.2	17.7	17.3	17.7	16.8
77.5°	11.3	11.0	10.7	10.7	10.5	9.7	8.9	8.6	8.7	8.9
80°	7.3	7.0	6.6	6.5	5.7	5.3	5.0	4.7	4.7	4.9
82.5°	4.7	4.4	4.0	3.6	2.9	2.4	2.3	1.9	1.9	2.1
85°	2.4	1.9	1.5	1.1	0.6	0.3	0.0	0.0	0.0	0.0
87.5°	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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: SP1-2408-195-9

Test Date: 08/07/2024

Luminaire Tested: GALN-SB1A-830-U-5WQ

Data in this report applies to families of products including GALN-SB1A-830-U-5WQ.

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2408-195-9  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 08/07/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW EDISON  
 Catalog Number: **GALN-SB1A-830-U-5WQ**  
 Description: GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS

**Spectral Parameters**

CCT (K): 3050  
 CIE u': 0.2476  
 CIE v': 0.5251  
 Duv: 0.0034  
 CIE x: 0.4383  
 CIE y: 0.4131  
 CIE z: 0.1487  
 Peak Wavelength (nm): 603  
 Dominant Wavelength (nm): 581  
 Purity: 55.55201  
 Rf: 81.5  
 Rg: 99.2

CRI (Ra):	81.0		
R1:	79.6	R9:	7.1
R2:	85.6	R10:	67.0
R3:	92.0	R11:	82.7
R4:	82.6	R12:	63.2
R5:	78.9	R13:	80.3
R6:	81.7	R14:	95.0
R7:	85.2	R15:	71.7
R8:	62.0		



**Test Conditions**

Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 24.2

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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	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085	10/24/2023	10/24/2024
Room Thermometer	IN0046	10/24/2023	10/24/2024

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CIE 1931 Chromaticity Diagram



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



CCT = 3050K  
 CIE x = 0.4383  
 CIE y = 0.4131  
 Duv = 0.0034

Point lies inside the ANSI 3000K 4-step quadrangle

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**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	168	NR	620	940	NR	750	35	NR	880	1	NR
365	0	NR	495	233	NR	625	897	NR	755	30	NR	885	1	NR
370	0	NR	500	300	NR	630	847	NR	760	26	NR	890	1	NR
375	0	NR	505	372	NR	635	790	NR	765	22	NR	895	1	NR
380	0	NR	510	430	NR	640	730	NR	770	19	NR	900	1	NR
385	0	NR	515	483	NR	645	668	NR	775	16	NR	905	1	NR
390	0	NR	520	524	NR	650	605	NR	780	14	NR	910	0	NR
395	2	NR	525	555	NR	655	545	NR	785	12	NR	915	0	NR
400	4	NR	530	581	NR	660	485	NR	790	10	NR	920	0	NR
405	7	NR	535	604	NR	665	430	NR	795	9	NR	925	0	NR
410	17	NR	540	623	NR	670	378	NR	800	8	NR	930	0	NR
415	34	NR	545	645	NR	675	331	NR	805	7	NR	935	0	NR
420	68	NR	550	667	NR	680	290	NR	810	6	NR	940	0	NR
425	128	NR	555	693	NR	685	251	NR	815	5	NR	945	0	NR
430	214	NR	560	719	NR	690	218	NR	820	4	NR	950	0	NR
435	339	NR	565	754	NR	695	188	NR	825	4	NR	955	0	NR
440	507	NR	570	791	NR	700	162	NR	830	3	NR	960	0	NR
445	573	NR	575	830	NR	705	139	NR	835	3	NR	965	0	NR
450	356	NR	580	873	NR	710	119	NR	840	3	NR	970	0	NR
455	217	NR	585	913	NR	715	102	NR	845	2	NR	975	0	NR
460	168	NR	590	948	NR	720	88	NR	850	2	NR	980	0	NR
465	113	NR	595	974	NR	725	76	NR	855	2	NR	985	0	NR
470	85	NR	600	994	NR	730	65	NR	860	1	NR	990	0	NR
475	85	NR	605	998	NR	735	55	NR	865	1	NR	995	0	NR
480	94	NR	610	994	NR	740	47	NR	870	1	NR	1000	0	NR
485	120	NR	615	973	NR	745	41	NR	875	1	NR			

REPORT NUMBER: SP1-2408-195-9

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.27**

$\lambda$ (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	168	NR	620	940	NR	750	35	NR	880	1	NR
365	0	NR	495	233	NR	625	897	NR	755	30	NR	885	1	NR
370	0	NR	500	300	NR	630	847	NR	760	26	NR	890	1	NR
375	0	NR	505	372	NR	635	790	NR	765	22	NR	895	1	NR
380	0	NR	510	430	NR	640	730	NR	770	19	NR	900	1	NR
385	0	NR	515	483	NR	645	668	NR	775	16	NR	905	1	NR
390	0	NR	520	524	NR	650	605	NR	780	14	NR	910	0	NR
395	2	NR	525	555	NR	655	545	NR	785	12	NR	915	0	NR
400	4	NR	530	581	NR	660	485	NR	790	10	NR	920	0	NR
405	7	NR	535	604	NR	665	430	NR	795	9	NR	925	0	NR
410	17	NR	540	623	NR	670	378	NR	800	8	NR	930	0	NR
415	34	NR	545	645	NR	675	331	NR	805	7	NR	935	0	NR
420	68	NR	550	667	NR	680	290	NR	810	6	NR	940	0	NR
425	128	NR	555	693	NR	685	251	NR	815	5	NR	945	0	NR
430	214	NR	560	719	NR	690	218	NR	820	4	NR	950	0	NR
435	339	NR	565	754	NR	695	188	NR	825	4	NR	955	0	NR
440	507	NR	570	791	NR	700	162	NR	830	3	NR	960	0	NR
445	573	NR	575	830	NR	705	139	NR	835	3	NR	965	0	NR
450	356	NR	580	873	NR	710	119	NR	840	3	NR	970	0	NR
455	217	NR	585	913	NR	715	102	NR	845	2	NR	975	0	NR
460	168	NR	590	948	NR	720	88	NR	850	2	NR	980	0	NR
465	113	NR	595	974	NR	725	76	NR	855	2	NR	985	0	NR
470	85	NR	600	994	NR	730	65	NR	860	1	NR	990	0	NR
475	85	NR	605	998	NR	735	55	NR	865	1	NR	995	0	NR
480	94	NR	610	994	NR	740	47	NR	870	1	NR	1000	0	NR
485	120	NR	615	973	NR	745	41	NR	875	1	NR			



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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.32

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	168	NR	620	940	NR	750	35	NR	880	1	NR
365	0	NR	495	233	NR	625	897	NR	755	30	NR	885	1	NR
370	0	NR	500	300	NR	630	847	NR	760	26	NR	890	1	NR
375	0	NR	505	372	NR	635	790	NR	765	22	NR	895	1	NR
380	0	NR	510	430	NR	640	730	NR	770	19	NR	900	1	NR
385	0	NR	515	483	NR	645	668	NR	775	16	NR	905	1	NR
390	0	NR	520	524	NR	650	605	NR	780	14	NR	910	0	NR
395	2	NR	525	555	NR	655	545	NR	785	12	NR	915	0	NR
400	4	NR	530	581	NR	660	485	NR	790	10	NR	920	0	NR
405	7	NR	535	604	NR	665	430	NR	795	9	NR	925	0	NR
410	17	NR	540	623	NR	670	378	NR	800	8	NR	930	0	NR
415	34	NR	545	645	NR	675	331	NR	805	7	NR	935	0	NR
420	68	NR	550	667	NR	680	290	NR	810	6	NR	940	0	NR
425	128	NR	555	693	NR	685	251	NR	815	5	NR	945	0	NR
430	214	NR	560	719	NR	690	218	NR	820	4	NR	950	0	NR
435	339	NR	565	754	NR	695	188	NR	825	4	NR	955	0	NR
440	507	NR	570	791	NR	700	162	NR	830	3	NR	960	0	NR
445	573	NR	575	830	NR	705	139	NR	835	3	NR	965	0	NR
450	356	NR	580	873	NR	710	119	NR	840	3	NR	970	0	NR
455	217	NR	585	913	NR	715	102	NR	845	2	NR	975	0	NR
460	168	NR	590	948	NR	720	88	NR	850	2	NR	980	0	NR
465	113	NR	595	974	NR	725	76	NR	855	2	NR	985	0	NR
470	85	NR	600	994	NR	730	65	NR	860	1	NR	990	0	NR
475	85	NR	605	998	NR	735	55	NR	865	1	NR	995	0	NR
480	94	NR	610	994	NR	740	47	NR	870	1	NR	1000	0	NR
485	120	NR	615	973	NR	745	41	NR	875	1	NR			

**Summary**

$R_f = 81.5$   
 $R_g = 99.2$   
 $CIE R_a = 81.0$   
 $R_9 = 7.1$



**Color Vector Graphics**



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

CES01 = 86	CES26 = 74	CES51 = 89	CES76 = 70
CES02 = 63	CES27 = 88	CES52 = 92	CES77 = 86
CES03 = 31	CES28 = 89	CES53 = 81	CES78 = 72
CES04 = 70	CES29 = 67	CES54 = 87	CES79 = 90
CES05 = 50	CES30 = 68	CES55 = 85	CES80 = 88
CES06 = 51	CES31 = 71	CES56 = 78	CES81 = 78
CES07 = 42	CES32 = 70	CES57 = 76	CES82 = 95
CES08 = 41	CES33 = 71	CES58 = 78	CES83 = 90
CES09 = 29	CES34 = 82	CES59 = 92	CES84 = 94
CES10 = 76	CES35 = 90	CES60 = 95	CES85 = 86
CES11 = 59	CES36 = 93	CES61 = 93	CES86 = 72
CES12 = 65	CES37 = 87	CES62 = 83	CES87 = 85
CES13 = 43	CES38 = 75	CES63 = 77	CES88 = 83
CES14 = 74	CES39 = 94	CES64 = 83	CES89 = 75
CES15 = 71	CES40 = 89	CES65 = 77	CES90 = 81
CES16 = 47	CES41 = 85	CES66 = 80	CES91 = 96
CES17 = 50	CES42 = 86	CES67 = 79	CES92 = 73
CES18 = 56	CES43 = 81	CES68 = 84	CES93 = 84
CES19 = 72	CES44 = 99	CES69 = 91	CES94 = 64
CES20 = 66	CES45 = 87	CES70 = 78	CES95 = 80
CES21 = 87	CES46 = 82	CES71 = 76	CES96 = 84
CES22 = 79	CES47 = 77	CES72 = 92	CES97 = 87
CES23 = 92	CES48 = 71	CES73 = 71	CES98 = 81
CES24 = 91	CES49 = 81	CES74 = 93	CES99 = 74
CES25 = 72	CES50 = 89	CES75 = 74	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)