

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: STREETWORKS

Report Number: P522131

Luminaire Tested: **CST-CA10-310-727-U-T5R-HSS-HM-EX90**

Issue Date: 5/10/2021

Test Information

Test Method: LM-79-08
Report Number: P522131
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1808-894-5)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 5/10/2021
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: CST-CA10-310-727-U-T5R-HSS-HM-EX90
Description: CELESTEON HIGH MAST LUMINAIRE
Light Source: (10) 2700K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 34741 lumens
Efficiency: N/A
Efficacy: 111.2 lumens/watt
Luminous Opening: Circular (Dia: 2.08' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B5 - U1 - G5

Input Watts (W): 312.4
Input Voltage (V): 120
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

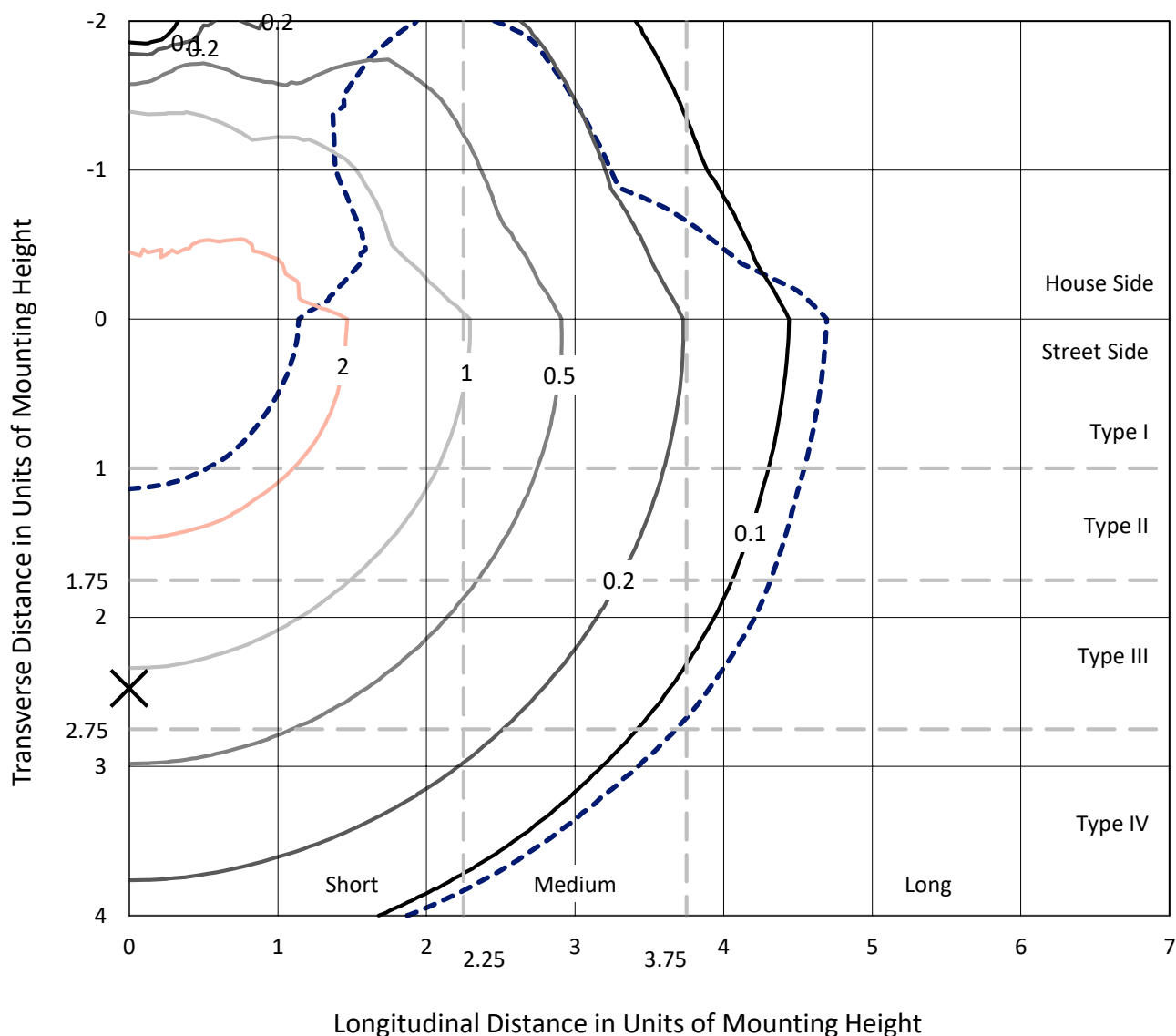


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Iso-Footcandle Lines of Horizontal Illumination

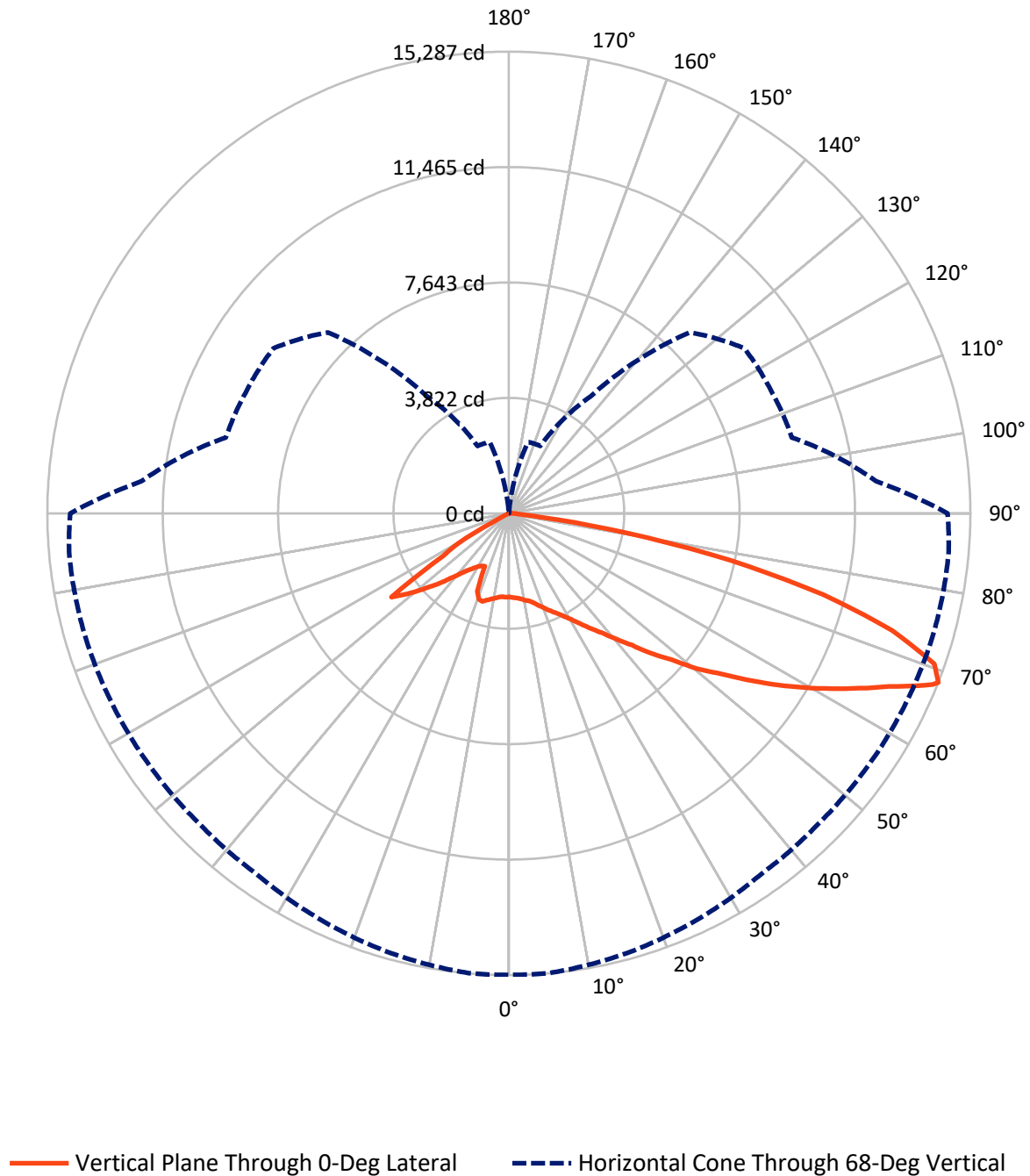
× Max cd
 --- 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 3.1 fc
 Type IV - Short - N/A

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Luminous Intensity Polar Plot



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FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	12226.5	2.1	12228.6
	% Fixture	35.2	0.0	35.2
Street Side	Lumens	22503.3	9.2	22512.4
	% Fixture	64.8	0.0	64.8
Total	Lumens	34729.7	11.2	34741.0
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	267.5	0.8
10°-20°	857.0	2.5
20°-30°	1529.8	4.4
30°-40°	2488.7	7.2
40°-50°	4250.0	12.2
50°-60°	7091.3	20.4
60°-70°	9865.4	28.4
70°-80°	7647.2	22.0
80°-90°	732.8	2.1
90°-100°	8.9	0.0
100°-110°	0.7	0.0
110°-120°	0.4	0.0
120°-130°	0.3	0.0
130°-140°	0.3	0.0
140°-150°	0.3	0.0
150°-160°	0.2	0.0
160°-170°	0.2	0.0
170°-180°	0.1	0.0
0°-90°	34729.7	100.0
0°-180°	34741.0	100.0

Coefficient of Utilization



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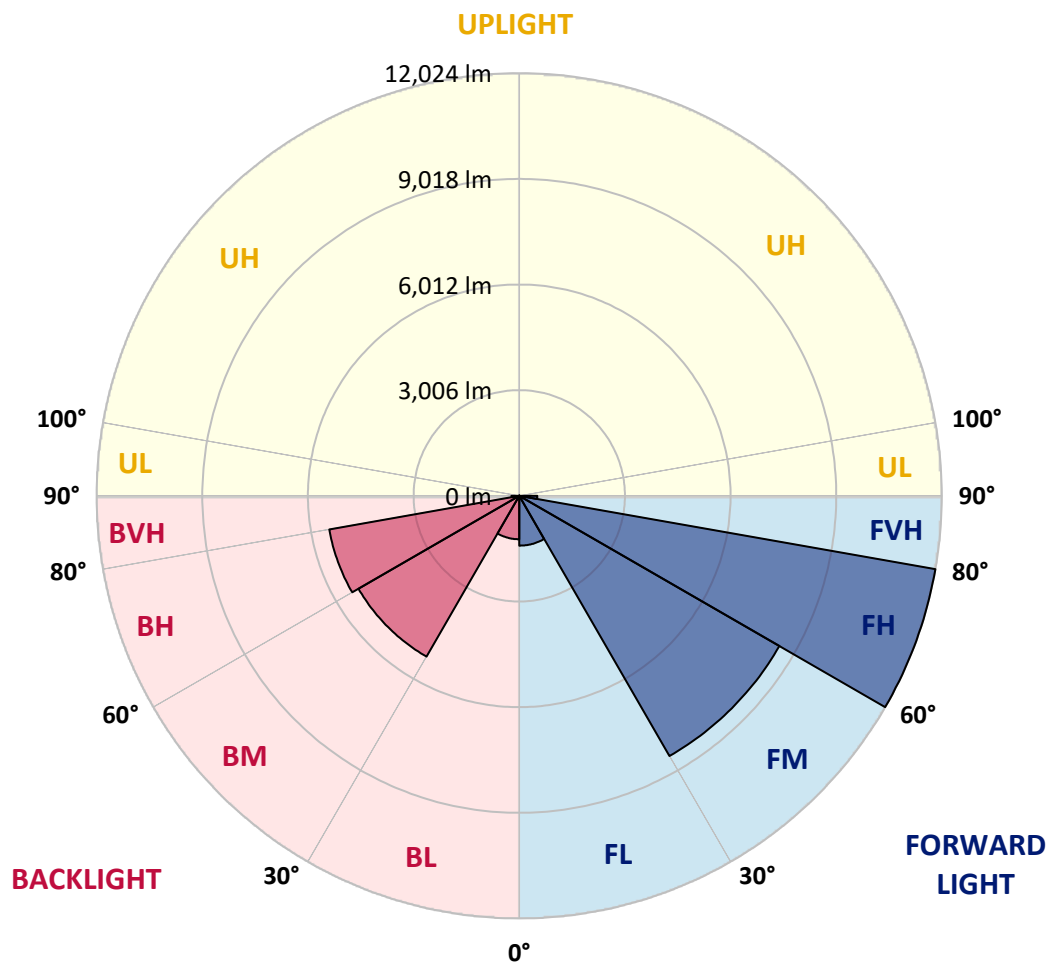
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit		
				B	U	G
FL	(0°-30°)	1417.9	4.1			
FM	(30°-60°)	8548.7	24.6			
FH	(60°-80°)	12024.0	34.6			G5
FVH	(80°-90°)	512.7	1.5			G4/750
BL	(0°-30°)	1236.3	3.6	B3/2500		
BM	(30°-60°)	5281.3	15.2	B4/8500		
BH	(60°-80°)	5488.7	15.8	B5		G5
BVH	(80°-90°)	220.1	0.6			G2/225
UL	(90°-100°)	8.9	0.0		U1/10	
UH	(100°-180°)	2.4	0.0		U1/10	

BUG Rating: B5-U1-G5

Type IV Short



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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	2764.8	2764.8	2764.8	2764.8	2764.8	2764.8	2764.8	2764.8	2764.8	2764.8	2764.8
2.5°	2796.2	2792.3	2789.6	2806.6	2758.3	2777.9	2764.8	2781.8	2777.9	2785.7	2787.0
5°	2815.8	2809.2	2800.1	2818.4	2789.6	2802.7	2788.3	2796.2	2771.3	2792.3	2794.9
7.5°	2860.2	2841.9	2840.6	2845.8	2826.2	2835.4	2810.6	2819.7	2806.6	2798.8	2806.6
10°	2926.9	2911.2	2894.2	2904.7	2872.0	2883.8	2857.6	2865.5	2858.9	2841.9	2857.6
12.5°	2972.6	2977.9	2966.1	2974.0	2945.2	2934.7	2925.6	2924.3	2920.4	2895.5	2891.6
15°	3074.6	3077.2	3056.3	3061.5	3055.0	3049.8	3036.7	3026.2	3005.3	2989.6	2979.2
17.5°	3208.0	3193.6	3174.0	3179.2	3197.5	3174.0	3166.1	3146.5	3116.4	3090.3	3085.1
20°	3347.8	3338.7	3320.4	3330.8	3329.5	3313.8	3317.8	3285.1	3241.9	3219.7	3202.7
22.5°	3503.4	3490.3	3477.2	3496.8	3481.2	3470.7	3466.8	3444.6	3391.0	3366.1	3362.2
25°	3658.9	3652.4	3661.6	3655.0	3632.8	3625.0	3630.2	3622.3	3559.6	3529.5	3511.2
27.5°	3853.7	3838.0	3852.4	3844.6	3821.0	3822.4	3823.7	3825.0	3754.4	3715.2	3689.0
30°	4076.0	4070.7	4089.0	4064.2	4042.0	4056.3	4068.1	4042.0	3980.5	3923.0	3913.9
32.5°	4364.9	4332.2	4353.1	4321.7	4287.7	4321.7	4342.6	4290.3	4240.7	4167.5	4180.5
35°	4685.1	4674.7	4674.7	4634.1	4615.8	4669.4	4690.4	4639.4	4562.2	4498.2	4482.5
37.5°	5025.0	5035.5	5068.1	5051.1	5034.2	5066.8	5113.9	5045.9	4946.6	4878.6	4860.3
40°	5476.0	5502.1	5524.4	5502.1	5482.5	5503.5	5557.0	5468.2	5398.9	5362.3	5323.1
42.5°	5961.0	6005.4	5991.1	5993.7	6010.7	6040.7	6094.3	6013.3	5933.5	5932.2	5874.7
45°	6617.2	6617.2	6587.1	6615.9	6613.3	6687.8	6711.3	6666.9	6600.2	6580.6	6530.9
47.5°	7230.3	7294.4	7282.6	7324.4	7291.7	7354.5	7434.2	7396.3	7319.2	7249.9	7239.5
50°	8085.2	8069.6	8053.9	8116.6	8111.4	8154.5	8227.7	8204.2	8097.0	8018.6	8004.2
52.5°	8836.9	8919.3	8899.6	8993.8	8941.5	9002.9	9090.5	9086.6	8955.9	8878.7	8856.5
55°	9785.9	9840.9	9836.9	9933.7	9861.8	9942.8	10016.0	10023.9	9881.4	9771.6	9805.6
57.5°	10774.2	10820.0	10793.8	10873.6	10803.0	10914.1	10958.5	10929.8	10846.1	10707.5	10758.5
60°	11763.8	11803.0	11833.1	11839.6	11799.1	11864.4	11906.3	11931.1	11799.1	11640.9	11702.4
62.5°	12769.1	12813.5	12787.4	12797.8	12685.4	12774.3	12826.6	12833.1	12681.5	12541.6	12584.7
65°	13827.9	13889.4	13795.2	13732.5	13593.9	13592.6	13661.9	13673.7	13566.5	13467.1	13450.1
67.5°	15139.1	15166.5	14965.2	14754.7	14520.7	14469.8	14518.1	14545.6	14607.0	14604.4	14527.3
68°	15286.8	15281.6	15077.6	14826.6	14575.7	14516.8	14540.4	14575.7	14616.2	14624.0	14531.2
70°	14950.8	14886.8	14770.4	14454.1	14205.7	14051.5	13969.1	14034.5	13924.6	13926.0	13752.1
72.5°	13280.2	13272.3	13058.0	12901.1	12680.2	12423.9	12306.3	12305.0	12315.4	12239.6	12060.5
75°	10757.2	10767.7	10518.0	10409.5	10341.5	10293.2	10318.0	10395.1	10403.0	10401.7	10338.9
77.5°	7502.2	7545.4	7478.7	7302.2	7491.8	7653.9	7966.3	8125.8	8074.8	8227.7	8324.5
80°	3932.2	4018.4	4021.0	4145.2	4298.2	4445.9	4715.2	4957.0	4779.2	4700.8	4619.8
82.5°	1034.0	1065.4	1112.5	1040.6	1062.8	1085.0	1294.2	1274.6	1176.5	1228.8	1307.2
85°	295.4	304.6	291.5	264.1	241.8	222.2	227.5	192.2	167.3	166.0	160.8
87.5°	207.9	223.5	197.4	169.9	152.9	142.5	137.3	116.3	94.1	82.4	65.4
90°	96.7	95.4	82.4	64.1	56.2	53.6	53.6	41.8	23.5	14.4	13.1
92.5°	40.5	41.8	34.0	27.5	23.5	18.3	14.4	9.2	5.2	2.6	1.3
95°	14.4	15.7	13.1	10.5	9.2	7.8	6.5	5.2	2.6	1.3	1.3
97.5°	3.9	3.9	3.9	3.9	3.9	3.9	3.9	2.6	2.6	1.3	1.3
100°	0.0	0.0	0.0	1.3	2.6	2.6	2.6	2.6	1.3	1.3	1.3
102.5°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3
105°	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3
107.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3



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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
110°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3
112.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3
115°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3
117.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3
120°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
122.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3
125°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3
130°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3
145°	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3
150°	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3
160°	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3
165°	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3
167.5°	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3
170°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3
172.5°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3
175°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3
177.5°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3
180°	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):

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	2764.8	2764.8	2764.8	2764.8	2764.8	2764.8	2764.8	2764.8	2764.8	2764.8
2.5°	2784.4	2777.9	2775.3	2742.6	2751.7	2732.1	2777.9	2764.8	2762.2	2780.5
5°	2790.9	2760.9	2779.2	2758.3	2763.5	2734.7	2771.3	2755.6	2757.0	2766.1
7.5°	2794.9	2777.9	2796.2	2759.6	2773.9	2763.5	2789.6	2773.9	2789.6	2797.5
10°	2834.1	2826.2	2813.2	2802.7	2813.2	2788.3	2821.0	2818.4	2827.5	2851.1
12.5°	2887.7	2878.5	2865.5	2847.2	2855.0	2845.8	2870.7	2873.3	2890.3	2902.1
15°	2967.4	2955.7	2949.1	2930.8	2933.4	2926.9	2941.3	2943.9	2977.9	2974.0
17.5°	3079.8	3066.8	3072.0	3055.0	3048.5	3032.8	3006.6	2997.5	3038.0	3049.8
20°	3202.7	3188.3	3194.9	3180.5	3058.9	2811.9	2977.9	3091.6	3005.3	2998.8
22.5°	3342.6	3326.9	3332.1	3309.9	3159.6	2696.8	2346.5	2317.7	2647.1	2780.5
25°	3496.8	3475.9	3473.3	3444.6	2950.4	2441.9	2402.7	2351.7	2111.2	1920.3
27.5°	3687.7	3656.3	3640.6	3206.6	2929.5	2537.3	2478.5	2296.8	1947.8	1959.5
30°	3894.2	3848.5	3554.4	3268.1	3082.5	2649.8	2571.3	2013.1	2015.8	2010.5
32.5°	4129.6	4027.6	3482.5	3456.3	3265.5	2770.0	2134.7	2111.2	2113.8	2121.6
35°	4438.1	3738.7	3724.3	3725.6	3489.0	2679.8	2261.5	2239.3	2241.9	2247.1
37.5°	4503.4	4030.2	4032.8	4002.7	3726.9	2448.4	2415.8	2414.5	2409.2	2404.0
40°	4555.7	4397.5	4359.6	4311.3	3455.0	2636.7	2626.2	2618.4	2622.3	2632.8
42.5°	4964.9	4845.9	4809.3	4751.8	3543.9	2921.7	2887.7	2878.5	2889.0	2883.8
45°	5508.7	5409.3	5337.4	4393.6	3915.2	3231.5	3204.0	3192.3	3196.2	3228.9
47.5°	6083.9	6025.0	5805.4	4746.6	4347.9	3597.5	3570.1	3551.8	3558.3	3550.4
50°	6710.0	6656.4	5374.0	5278.6	4826.3	3992.3	3951.8	3945.2	3947.8	3946.5
52.5°	7389.8	6269.5	5955.8	5856.4	5330.9	4405.4	4391.0	4355.7	4363.5	4355.7
55°	8187.2	6604.1	6596.3	6480.0	5898.2	4885.1	4868.1	4818.5	4506.0	4779.2
57.5°	8944.1	7243.4	7243.4	7131.0	6478.6	5362.3	5334.8	5298.2	3202.7	2583.1
60°	9772.9	7883.9	7865.6	7772.8	7038.1	5817.2	4728.3	4717.8	1934.7	1941.2
62.5°	10489.2	8455.2	8487.9	8401.6	7576.7	4355.7	2190.9	2146.5	190.9	294.1
65°	11291.9	9086.6	9125.8	9036.9	8159.8	4619.8	2377.9	2355.6	43.1	39.2
67.5°	12201.7	9716.7	9627.8	9529.7	8500.9	4757.0	2470.7	2451.1	11.8	7.8
68°	12209.6	9703.6	9588.6	9521.9	8468.3	4730.9	2462.8	2444.5	11.8	7.8
70°	11582.1	9214.7	9099.7	9116.6	8063.0	4524.3	2360.9	2326.9	11.8	7.8
72.5°	10161.1	8200.3	8070.9	7979.4	7150.6	4022.4	2116.4	2052.4	11.8	7.8
75°	8694.4	6949.3	6734.9	6533.6	5753.1	3291.6	1736.0	1664.1	11.8	7.8
77.5°	6852.5	5296.9	4992.3	4860.3	4323.0	2431.5	1290.2	1211.8	11.8	6.5
80°	3787.1	3039.3	2780.5	2699.4	2472.0	1428.8	739.9	692.8	10.5	6.5
82.5°	979.1	734.7	640.5	618.3	580.4	338.6	180.4	171.2	9.2	5.2
85°	139.9	103.3	113.7	134.6	129.4	87.6	62.7	53.6	7.8	3.9
87.5°	73.2	61.4	71.9	81.0	82.4	51.0	26.1	14.4	3.9	0.0
90°	11.8	11.8	13.1	14.4	14.4	6.5	5.2	0.0	0.0	0.0
92.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95°	1.3	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0
97.5°	1.3	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0
100°	1.3	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0
102.5°	1.3	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0
105°	1.3	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0
107.5°	1.3	2.6	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0

REPORT NUMBER: P522131

CATALOG NUMBER: CST-CA10-310-727-U-T5R-HSS-HM-EX90

CANDELA DISTRIBUTION (continued):

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
110°	1.3	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0
112.5°	1.3	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0
115°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
117.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
122.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
127.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
142.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

STREETWORKS

Report Number: SP1-2104-215-5

Luminaire Tested: CST-CA6-230-727-U-T4

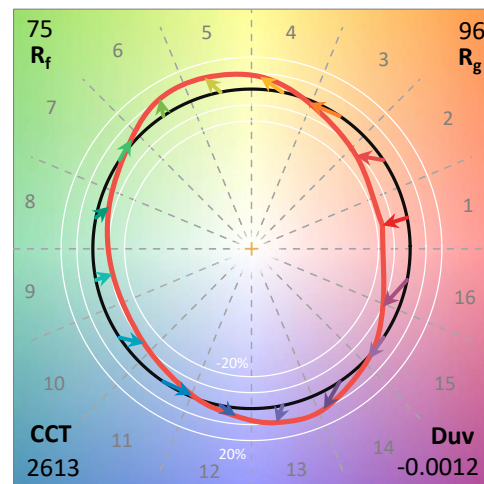
Test Date: 04/22/2021

Test Information

Test Method: LM-79-08
 Report Number: SP1-2104-215-5
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1
 Measurement Geometry: 4π
 Issue Date: 04/22/2021
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: STREETWORKS
 Catalog Number: **CST-CA6-230-727-U-T4**
 Description: STREETWORKS HIGH MAST LUMINAIRE

Spectral Parameters

CCT (K):	2613	CRI (Ra):	72.6		
CIE u':	0.2668	R1:	69.4	R9:	-28.6
CIE v':	0.5272	R2:	84.5	R10:	65.5
Duv:	-0.0012	R3:	95.0	R11:	63.4
CIE x:	0.4648	R4:	67.5	R12:	56.9
CIE y:	0.4082	R5:	68.5	R13:	72.3
CIE z:	0.1270	R6:	79.7	R14:	97.8
Peak Wavelength (nm):	603	R7:	75.4		
Dominant Wavelength (nm):	585	R8:	41.2		
Purity:	62.2				
Rf:	75.3				
Rg:	95.8				



Test Conditions

Stabilization Time: 121M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.5/25%
 Sphere Temperature (°C): 24.8

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Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	1/31/2021	7/31/2021
Power Meter	IN0071	12/1/2020	12/1/2021
AC Power Source	IN0063	12/1/2020	12/1/2021
DC Power Source	IN0208	12/1/2020	12/1/2021
Sphere Thermometer	IN0085	12/1/2020	12/1/2021
Room Thermometer	IN0046	12/1/2020	12/1/2021

REPORT NUMBER: SP1-2104-215-5

CIE 1931 Chromaticity Diagram



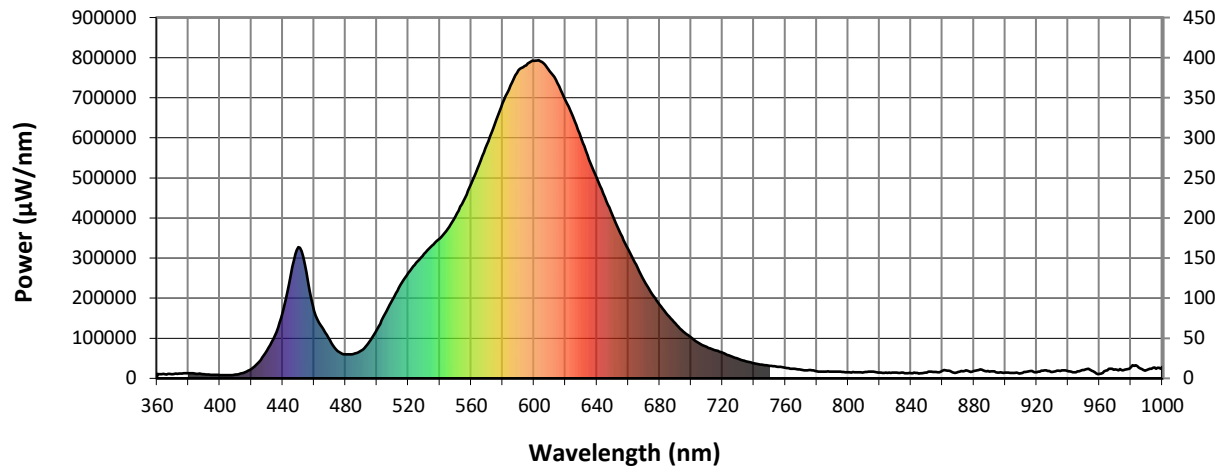
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 2700K 7-step quadrangle

REPORT NUMBER: SP1-2104-215-5

Photopic Flux vs. Wavelength



#####

λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)
360	11220	0.0	490	69401	9.9	620	692536	180.2	750	31541	0.0	880	18253	0.0
365	10182	0.0	495	90053	16.3	625	651217	143.7	755	28760	0.0	885	21369	0.0
370	10420	0.0	500	121940	26.9	630	598624	108.3	760	26534	0.0	890	16745	0.0
375	12164	0.0	505	159641	44.7	635	546251	82.1	765	24261	0.0	895	14205	0.0
380	12715	0.0	510	197034	67.7	640	499000	59.6	770	21584	0.0	900	14113	0.0
385	11387	0.0	515	232805	96.4	645	451749	43.5	775	20805	0.0	905	13457	0.0
390	10503	0.0	520	263165	127.6	650	406338	29.7	780	17853	0.0	910	12811	0.0
395	8950	0.0	525	288012	154.6	655	360522	20.7	785	17033	0.0	915	17471	0.0
400	8271	0.0	530	310825	183.0	660	321663	13.4	790	16986	0.0	920	15483	0.0
405	7777	0.0	535	330894	205.2	665	283133	9.0	795	16655	0.0	925	19757	0.0
410	9299	0.0	540	349086	227.5	670	244093	5.3	800	15070	0.0	930	16307	0.0
415	13971	0.0	545	372506	247.9	675	210996	3.5	805	15366	0.0	935	18687	0.0
420	23461	0.1	550	403721	274.3	680	183942	2.1	810	15472	0.0	940	17986	0.0
425	41887	0.2	555	442032	301.9	685	158373	1.4	815	17184	0.0	945	15266	0.0
430	69840	0.6	560	485515	329.9	690	137120	0.8	820	14166	0.0	950	21027	0.0
435	106868	1.3	565	532962	354.4	695	116757	0.5	825	13854	0.0	955	19232	0.0
440	164642	2.6	570	582457	378.7	700	102093	0.3	830	14283	0.0	960	11261	0.0
445	256049	5.3	575	634550	394.8	705	87819	0.2	835	14112	0.0	965	20156	0.0
450	327314	8.5	580	686476	407.9	710	78011	0.1	840	13092	0.0	970	22393	0.0
455	265614	8.9	585	730571	405.9	715	70264	0.1	845	12158	0.0	975	20121	0.0
460	168394	6.9	590	768228	397.2	720	63584	0.0	850	14790	0.0	980	28091	0.0
465	127370	6.6	595	780593	370.0	725	55749	0.0	855	15683	0.0	985	27040	0.0
470	94724	5.9	600	791888	341.3	730	48683	0.0	860	19011	0.0	990	20772	0.0
475	67810	5.3	605	789088	305.6	735	42520	0.0	865	18194	0.0	995	26800	0.0
480	59825	5.7	610	765121	262.9	740	37531	0.0	870	15713	0.0	1000	28539	0.0
485	61079	7.2	615	735839	222.1	745	34522	0.0	875	19703	0.0			

REPORT NUMBER: SP1-2104-215-5

Scotopic Flux vs. Wavelength



Scotopic Lumens: 37163.1

S/P: 1.07

λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)
360	11220	0.0	490	69401	106.9	620	692536	8.7	750	31541	0.0	880	18253	0.0
365	10182	0.0	495	90053	145.6	625	651217	5.5	755	28760	0.0	885	21369	0.0
370	10420	0.0	500	121940	204.0	630	598624	3.4	760	26534	0.0	890	16745	0.0
375	12164	0.0	505	159641	271.4	635	546251	2.1	765	24261	0.0	895	14205	0.0
380	12715	0.0	510	197034	334.0	640	499000	1.3	770	21584	0.0	900	14113	0.0
385	11387	0.0	515	232805	385.9	645	451749	0.8	775	20805	0.0	905	13457	0.0
390	10503	0.0	520	263165	418.3	650	406338	0.5	780	17853	0.0	910	12811	0.0
395	8950	0.1	525	288012	430.9	655	360522	0.3	785	17033	0.0	915	17471	0.0
400	8271	0.1	530	310825	428.5	660	321663	0.2	790	16986	0.0	920	15483	0.0
405	7777	0.2	535	330894	412.3	665	283133	0.1	795	16655	0.0	925	19757	0.0
410	9299	0.6	540	349086	385.7	670	244093	0.1	800	15070	0.0	930	16307	0.0
415	13971	1.4	545	372506	357.2	675	210996	0.0	805	15366	0.0	935	18687	0.0
420	23461	3.9	550	403721	330.1	680	183942	0.0	810	15472	0.0	940	17986	0.0
425	41887	10.2	555	442032	302.1	685	158373	0.0	815	17184	0.0	945	15266	0.0
430	69840	23.8	560	485515	271.4	690	137120	0.0	820	14166	0.0	950	21027	0.0
435	106868	47.8	565	532962	239.1	695	116757	0.0	825	13854	0.0	955	19232	0.0
440	164642	92.0	570	582457	205.6	700	102093	0.0	830	14283	0.0	960	11261	0.0
445	256049	171.5	575	634550	172.8	705	87819	0.0	835	14112	0.0	965	20156	0.0
450	327314	253.7	580	686476	141.4	710	78011	0.0	840	13092	0.0	970	22393	0.0
455	265614	232.1	585	730571	111.7	715	70264	0.0	845	12158	0.0	975	20121	0.0
460	168394	162.6	590	768228	85.5	720	63584	0.0	850	14790	0.0	980	28091	0.0
465	127370	134.5	595	780593	62.2	725	55749	0.0	855	15683	0.0	985	27040	0.0
470	94724	109.1	600	791888	44.6	730	48683	0.0	860	19011	0.0	990	20772	0.0
475	67810	84.8	605	789088	31.0	735	42520	0.0	865	18194	0.0	995	26800	0.0
480	59825	80.8	610	765121	20.7	740	37531	0.0	870	15713	0.0	1000	28539	0.0
485	61079	88.5	615	735839	13.6	745	34522	0.0	875	19703	0.0			

REPORT NUMBER: SP1-2104-215-5

Melanopic Flux vs. Wavelength


Melanopic Lumens: 13012.4 M/P: 0.38

λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)
360	11220	0.0	490	69401	57.8	620	692536	0.5	750	31541	0.0	880	18253	0.0
365	10182	0.0	495	90053	74.3	625	651217	0.3	755	28760	0.0	885	21369	0.0
370	10420	0.0	500	121940	98.0	630	598624	0.2	760	26534	0.0	890	16745	0.0
375	12164	0.0	505	159641	122.5	635	546251	0.1	765	24261	0.0	895	14205	0.0
380	12715	0.0	510	197034	141.5	640	499000	0.1	770	21584	0.0	900	14113	0.0
385	11387	0.0	515	232805	152.1	645	451749	0.0	775	20805	0.0	905	13457	0.0
390	10503	0.0	520	263165	153.2	650	406338	0.0	780	17853	0.0	910	12811	0.0
395	8950	0.0	525	288012	146.1	655	360522	0.0	785	17033	0.0	915	17471	0.0
400	8271	0.1	530	310825	134.3	660	321663	0.0	790	16986	0.0	920	15483	0.0
405	7777	0.1	535	330894	119.1	665	283133	0.0	795	16655	0.0	925	19757	0.0
410	9299	0.4	540	349086	102.2	670	244093	0.0	800	15070	0.0	930	16307	0.0
415	13971	0.9	545	372506	86.5	675	210996	0.0	805	15366	0.0	935	18687	0.0
420	23461	2.7	550	403721	72.5	680	183942	0.0	810	15472	0.0	940	17986	0.0
425	41887	6.5	555	442032	59.6	685	158373	0.0	815	17184	0.0	945	15266	0.0
430	69840	14.8	560	485515	47.9	690	137120	0.0	820	14166	0.0	950	21027	0.0
435	106868	28.5	565	532962	37.4	695	116757	0.0	825	13854	0.0	955	19232	0.0
440	164642	55.0	570	582457	28.5	700	102093	0.0	830	14283	0.0	960	11261	0.0
445	256049	101.0	575	634550	21.1	705	87819	0.0	835	14112	0.0	965	20156	0.0
450	327314	150.8	580	686476	15.4	710	78011	0.0	840	13092	0.0	970	22393	0.0
455	265614	139.2	585	730571	10.9	715	70264	0.0	845	12158	0.0	975	20121	0.0
460	168394	99.2	590	768228	7.5	720	63584	0.0	850	14790	0.0	980	28091	0.0
465	127370	83.2	595	780593	5.0	725	55749	0.0	855	15683	0.0	985	27040	0.0
470	94724	67.8	600	791888	3.3	730	48683	0.0	860	19011	0.0	990	20772	0.0
475	67810	51.8	605	789088	2.2	735	42520	0.0	865	18194	0.0	995	26800	0.0
480	59825	48.1	610	765121	1.4	740	37531	0.0	870	15713	0.0	1000	28539	0.0
485	61079	50.3	615	735839	0.9	745	34522	0.0	875	19703	0.0			

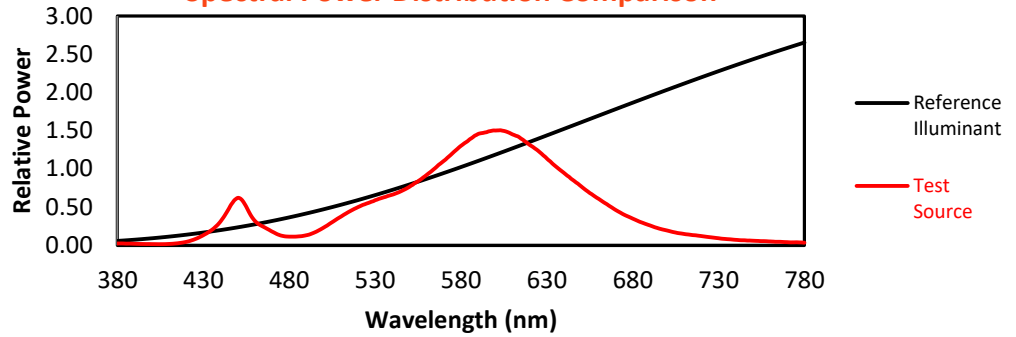
REPORT NUMBER: SP1-2104-215-5

TM-30-18

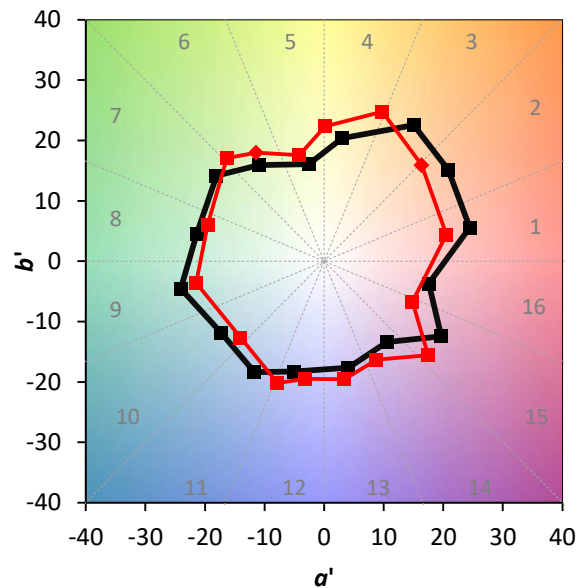
Summary

$R_f = 75.3$
 $R_g = 95.8$
 CIE $R_a = 72.6$
 $R_g = -28.6$

Spectral Power Distribution Comparison



Color Vector Graphics



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

CES01 = 87	CES26 = 66	CES51 = 86	CES76 = 63
CES02 = 64	CES27 = 88	CES52 = 84	CES77 = 79
CES03 = 31	CES28 = 86	CES53 = 77	CES78 = 66
CES04 = 71	CES29 = 65	CES54 = 86	CES79 = 87
CES05 = 50	CES30 = 77	CES55 = 85	CES80 = 85
CES06 = 52	CES31 = 69	CES56 = 75	CES81 = 67
CES07 = 42	CES32 = 63	CES57 = 75	CES82 = 93
CES08 = 41	CES33 = 74	CES58 = 77	CES83 = 89
CES09 = 29	CES34 = 77	CES59 = 85	CES84 = 90
CES10 = 77	CES35 = 88	CES60 = 92	CES85 = 74
CES11 = 60	CES36 = 98	CES61 = 83	CES86 = 59
CES12 = 66	CES37 = 86	CES62 = 93	CES87 = 77
CES13 = 44	CES38 = 85	CES63 = 76	CES88 = 79
CES14 = 74	CES39 = 95	CES64 = 70	CES89 = 65
CES15 = 72	CES40 = 91	CES65 = 68	CES90 = 78
CES16 = 48	CES41 = 89	CES66 = 66	CES91 = 86
CES17 = 51	CES42 = 86	CES67 = 64	CES92 = 59
CES18 = 57	CES43 = 75	CES68 = 70	CES93 = 74
CES19 = 73	CES44 = 99	CES69 = 80	CES94 = 50
CES20 = 67	CES45 = 83	CES70 = 65	CES95 = 69
CES21 = 88	CES46 = 78	CES71 = 64	CES96 = 77
CES22 = 80	CES47 = 80	CES72 = 87	CES97 = 81
CES23 = 92	CES48 = 70	CES73 = 58	CES98 = 76
CES24 = 91	CES49 = 76	CES74 = 93	CES99 = 66
CES25 = 73	CES50 = 85	CES75 = 67	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)