

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: METALUX

Report Number:

Luminaire Tested: EHBR1-18-UNV-TA-L950-UPL30

Issue Date: 3/20/2026

**Test Information**

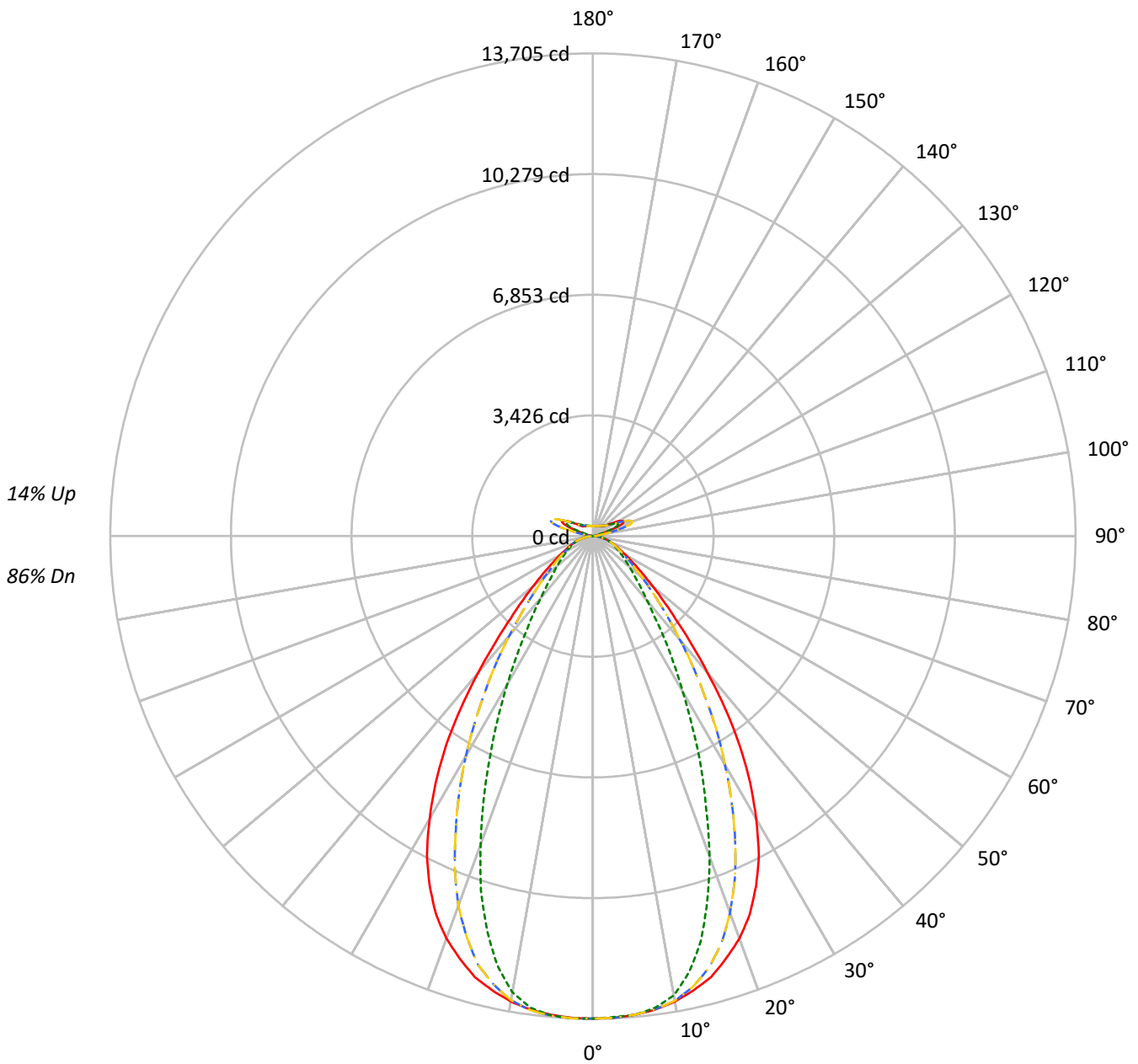
Test Method: LM-79-2019  
Report Number: REPORT IS A COMBINATION OF REPORTS P1431672 AND P1431635  
Test Lab: INNOVATION CENTER  
Issue Date: 3/20/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: METALUX  
Catalog Number: EHBR1-18-UNV-TA-L950-UPL30  
Description: Elevate Round Highbay at, 18000 lumens, 5000K 90CRI LEDs with TA lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 19852.4 lumens  
Efficiency: N/A  
Efficacy: 170.1 lumens/watt  
Spacing Criteria (0/90/45): 1.07 / 0.8 / 0.93  
Luminous Opening: Vertical Cylinder (Dia: 1.71' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 116.7  
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

TEST NUMBER:  
CATALOG NUMBER: EHBR1-18-UNV-TA-L950-UPL30

### Luminous Intensity Polar Plot



— 0°-180°    - - 45°-225°    - · - · 90°-270°    - · - · 135°-315°



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CATALOG NUMBER: EHBR1-18-UNV-TA-L950-UPL30

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20				20				20				20				20			
RC	80				70				50				30				10		0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	116	116	116	116	111	111	111	111	103	103	103	96	96	96	89	89	89	86	86	86
1	108	104	101	98	104	101	98	95	94	92	90	88	86	85	82	81	80	77	77	77
2	101	94	89	85	97	91	87	83	86	82	79	81	78	75	76	73	71	69	69	69
3	94	86	80	75	91	83	78	73	79	74	70	74	70	67	70	67	64	62	62	62
4	88	78	72	66	85	76	70	65	72	67	63	68	64	61	65	61	58	56	56	56
5	82	72	65	60	79	70	63	59	67	61	57	63	59	55	60	56	53	51	51	51
6	77	66	59	54	74	65	58	53	62	56	52	59	54	50	56	52	49	47	47	47
7	72	61	54	49	70	60	53	49	57	52	47	55	50	46	52	48	45	43	43	43
8	68	57	50	45	66	56	49	45	53	48	44	51	46	43	49	45	42	40	40	40
9	64	53	46	42	62	52	46	41	50	44	40	48	43	39	46	42	39	37	37	37
10	61	50	43	39	59	49	42	38	47	41	37	45	40	37	43	39	36	34	34	34

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°	270°
0°	64332	64332	64332	64332
5°	63900	63907	63900	63974
10°	63154	62327	63154	61919
15°	61777	56583	61777	55284
20°	59161	47151	59161	45316
25°	54883	36465	54883	34576
30°	48211	26580	48211	25229
35°	39622	19160	39622	17909
40°	29199	13784	29199	13359
45°	20394	10862	20394	10486
50°	14761	9011	14761	8875
55°	11178	7870	11178	7764
60°	8907	7098	8907	7148
65°	7485	6638	7485	6702
70°	6655	6305	6655	6367
75°	5881	5881	5881	5938
80°	4821	5313	4821	5313
85°	3090	3681	3090	3791

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 22.5°  
 Vertical Angle: 45°  
 Luminance: 21367 cd/sqm



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CATALOG NUMBER: EHBR1-18-UNV-TA-L950-UPL30

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	1293.7	6.5
10°-20°	3476.9	17.5
20°-30°	4227.9	21.3
30°-40°	3443.9	17.3
40°-50°	2067.7	10.4
50°-60°	1190.0	6.0
60°-70°	744.7	3.8
70°-80°	438.6	2.2
80°-90°	133.3	0.7
90°-100°	74.7	0.4
100°-110°	494.0	2.5
110°-120°	913.9	4.6
120°-130°	542.3	2.7
130°-140°	327.2	1.6
140°-150°	226.0	1.1
150°-160°	146.7	0.7
160°-170°	83.3	0.4
170°-180°	27.5	0.1
0°-30°	8998.5	45.3
0°-40°	12442.4	62.7
0°-60°	15700.1	79.1
0°-90°	17016.8	85.7
90°-120°	1482.6	7.5
90°-150°	2578.0	13.0
90°-180°	2836.0	14.3
0°-180°	19852.4	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	13699	13699	13699	13699	13699	
5°	13644	13645	13644	13660	13644	1295
15°	12960	11871	12960	11598	12960	3634
25°	10960	7282	10960	6905	10960	4996
35°	7272	3516	7272	3287	7272	4490
45°	3300	1757	3300	1697	3300	2629
55°	1511	1064	1511	1049	1511	1389
65°	781	693	781	700	781	790
75°	414	414	414	418	414	438
85°	106	126	106	130	106	116
90°	20	21	20	21	20	14
95°	39	35	39	35	39	42
105°	227	172	227	112	227	306
115°	973	791	973	829	973	887
125°	622	571	622	650	622	572
135°	392	417	392	452	392	310
145°	353	344	353	370	353	222
155°	313	303	313	327	313	146
165°	291	287	291	299	291	83
175°	288	286	288	292	288	27
180°	288	288	288	288	288	



TEST NUMBER:

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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	13699.0	13699.0	13699.0	13699.0	13699.0	13699.0	13699.0	13699.0	13699.0	13699.0	13699.0
2.5°	13692.4	13689.3	13686.4	13681.3	13668.9	13681.3	13686.4	13689.3	13692.4	13701.1	13704.8
5°	13643.7	13656.0	13643.1	13646.0	13645.2	13646.0	13643.1	13656.0	13643.7	13652.3	13667.8
7.5°	13558.5	13556.1	13551.9	13535.0	13506.3	13535.0	13551.9	13556.1	13558.5	13569.1	13580.0
10°	13417.9	13427.1	13396.6	13290.2	13242.3	13290.2	13396.6	13427.1	13417.9	13435.1	13380.0
12.5°	13209.3	13231.7	13108.6	12832.0	12663.5	12832.0	13108.6	13231.7	13209.3	13224.5	13036.9
15°	12960.5	12941.9	12699.1	12117.9	11870.8	12117.9	12699.1	12941.9	12960.5	12941.9	12597.3
17.5°	12573.1	12600.2	12129.0	11273.1	10816.9	11273.1	12129.0	12600.2	12573.1	12582.1	11927.9
20°	12159.4	12167.8	11381.9	10177.4	9691.0	10177.4	11381.9	12167.8	12159.4	12109.5	11167.6
22.5°	11633.0	11636.1	10525.7	9044.9	8417.7	9044.9	10525.7	11636.1	11633.0	11549.7	10241.6
25°	10960.1	10984.8	9562.3	7897.2	7282.0	7897.2	9562.3	10984.8	10960.1	10865.4	9213.0
27.5°	10204.6	10221.6	8533.6	6747.5	6108.0	6747.5	8533.6	10221.6	10204.6	10101.3	8229.7
30°	9273.3	9381.7	7500.7	5697.4	5112.6	5697.4	7500.7	9381.7	9273.3	9261.5	7216.1
32.5°	8311.6	8503.5	6526.8	4761.2	4259.9	4761.2	6526.8	8503.5	8311.6	8366.3	6205.8
35°	7272.0	7487.8	5516.3	3958.1	3516.5	3958.1	5516.3	7487.8	7272.0	7342.9	5278.8
37.5°	6170.0	6499.9	4659.9	3278.7	2854.1	3278.7	4659.9	6499.9	6170.0	6303.7	4463.4
40°	5061.0	5415.9	3847.6	2726.0	2389.2	2726.0	3847.6	5415.9	5061.0	5278.8	3685.2
42.5°	4108.7	4381.0	3175.6	2278.5	2058.6	2278.5	3175.6	4381.0	4108.7	4263.1	3037.4
45°	3299.6	3457.1	2627.6	1932.7	1757.4	1932.7	2627.6	3457.1	3299.6	3442.7	2513.7
47.5°	2693.9	2791.7	2163.1	1670.2	1535.0	1670.2	2163.1	2791.7	2693.9	2739.2	2099.4
50°	2199.9	2253.2	1818.5	1447.6	1343.0	1447.6	1818.5	2253.2	2199.9	2227.6	1758.5
52.5°	1825.4	1851.8	1525.2	1270.5	1193.9	1270.5	1525.2	1851.8	1825.4	1829.7	1498.6
55°	1510.6	1517.0	1302.1	1117.0	1063.6	1117.0	1302.1	1517.0	1510.6	1511.8	1280.2
57.5°	1265.1	1274.2	1119.0	993.9	949.7	993.9	1119.0	1274.2	1265.1	1267.0	1108.6
60°	1070.8	1076.8	966.9	882.8	853.3	882.8	966.9	1076.8	1070.8	1068.2	960.9
62.5°	911.6	923.0	845.0	786.8	767.8	786.8	845.0	923.0	911.6	914.2	844.7
65°	781.3	788.7	740.5	699.5	692.9	699.5	740.5	788.7	781.3	787.6	742.8
67.5°	674.3	682.9	650.5	626.3	619.7	626.3	650.5	682.9	674.3	679.5	651.0
70°	583.9	583.9	566.4	552.9	553.2	552.9	566.4	583.9	583.9	584.8	569.5
72.5°	495.2	498.4	486.6	482.6	484.3	482.6	486.6	498.4	495.2	506.1	490.1
75°	414.3	417.7	411.7	409.5	414.3	409.5	411.7	417.7	414.3	420.1	412.9
77.5°	330.9	337.2	336.2	339.1	348.3	339.1	336.2	337.2	330.9	339.4	341.2
80°	253.6	259.1	259.4	266.6	279.5	266.6	259.4	259.1	253.6	259.1	263.4
82.5°	178.5	181.9	184.2	196.2	207.5	196.2	184.2	181.9	178.5	181.6	187.4
85°	106.2	103.3	107.3	114.7	126.5	114.7	107.3	103.3	106.2	106.2	109.0
87.5°	33.8	33.0	32.7	39.9	45.6	39.9	32.7	33.0	33.8	35.0	36.4
90°	20.4	36.2	56.7	33.1	21.0	33.1	56.7	36.2	20.4	34.7	59.8
92.5°	26.8	47.2	91.3	50.4	30.2	50.4	91.3	47.2	26.8	47.2	85.0
95°	39.4	63.0	127.5	58.3	35.2	58.3	127.5	63.0	39.4	58.3	108.6
97.5°	61.4	77.1	146.4	64.6	44.6	64.6	146.4	77.1	61.4	72.4	122.8
100°	81.9	94.5	228.3	75.5	58.8	75.5	228.3	94.5	81.9	81.9	225.1
102.5°	124.4	177.9	484.8	160.6	99.7	160.6	484.8	177.9	124.4	160.6	522.6
105°	226.7	373.1	864.3	338.5	172.2	338.5	864.3	373.1	226.7	368.4	920.9
107.5°	429.7	661.2	1139.7	606.1	298.1	606.1	1139.7	661.2	429.7	687.9	1186.9
110°	687.9	908.3	1194.8	804.4	556.3	804.4	1194.8	908.3	687.9	961.8	1295.6



TEST NUMBER:

CATALOG NUMBER: EHBR1-18-UNV-TA-L950-UPL30

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	895.8	1002.8	1144.5	864.3	751.5	864.3	1144.5	1002.8	895.8	1072.0	1265.6
115°	972.9	979.2	1021.7	831.2	790.8	831.2	1021.7	979.2	972.9	1056.3	1130.3
117.5°	939.8	880.0	867.4	758.8	764.3	758.8	867.4	880.0	939.8	966.6	976.0
120°	848.5	768.2	724.2	675.4	707.3	675.4	724.2	768.2	848.5	837.5	821.7
122.5°	733.6	653.3	620.3	598.4	636.8	598.4	620.3	653.3	733.6	709.9	694.2
125°	621.9	554.1	546.2	532.4	570.7	532.4	546.2	554.1	621.9	598.2	604.8
127.5°	527.4	484.8	494.3	486.7	512.5	486.7	494.3	484.8	527.4	516.3	540.2
130°	459.9	439.2	461.5	450.8	473.1	450.8	461.5	439.2	459.9	463.1	494.8
132.5°	417.7	411.4	438.4	425.9	440.3	425.9	438.4	411.4	417.7	430.6	460.5
135°	391.5	392.8	418.3	404.1	417.0	404.1	418.3	392.8	391.5	410.4	437.1
137.5°	376.0	380.8	399.7	385.5	396.5	385.5	399.7	380.8	376.0	395.0	415.4
140°	367.0	370.2	384.3	368.6	378.2	368.6	384.3	370.2	367.0	385.9	395.3
142.5°	357.8	361.0	370.4	351.8	358.1	351.8	370.4	361.0	357.8	375.5	380.1
145°	353.3	354.9	359.7	339.5	344.2	339.5	359.7	354.9	353.3	366.3	363.1
147.5°	345.8	345.8	347.4	329.0	332.4	329.0	347.4	345.8	345.8	355.2	350.7
150°	336.6	335.0	336.6	318.3	321.8	318.3	336.6	335.0	336.6	342.9	336.9
152.5°	324.0	322.4	324.3	307.5	311.0	307.5	324.3	322.4	324.0	330.3	324.5
155°	313.0	313.0	313.6	299.9	303.4	299.9	313.6	313.0	313.0	316.5	313.9
157.5°	305.7	305.7	306.2	295.7	298.0	295.7	306.2	305.7	305.7	307.5	306.5
160°	298.3	299.9	300.5	291.7	293.9	291.7	300.5	299.9	298.3	301.8	300.8
162.5°	295.5	295.7	297.6	287.6	289.7	287.6	297.6	295.7	295.5	295.7	294.9
165°	291.4	292.9	293.6	286.3	286.8	286.3	293.6	292.9	291.4	292.9	290.7
167.5°	290.2	291.7	292.3	285.2	287.1	285.2	292.3	291.7	290.2	288.6	289.4
170°	287.0	288.9	291.0	285.5	285.8	285.5	291.0	288.9	287.0	287.3	286.5
172.5°	287.6	289.4	291.6	286.1	286.4	286.1	291.6	289.4	287.6	287.8	285.5
175°	288.1	288.4	289.2	285.1	285.7	285.1	289.2	288.4	288.1	286.8	286.1
177.5°	286.8	288.7	289.5	287.0	287.6	287.0	289.5	288.7	286.8	287.1	287.9
180°	287.9	287.9	287.9	287.9	287.9	287.9	287.9	287.9	287.9	287.9	287.9



TEST NUMBER:

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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	13699.0	13699.0	13699.0	13699.0	13699.0	13699.0
2.5°	13698.8	13704.0	13698.8	13704.8	13701.1	13692.4
5°	13661.8	13659.5	13661.8	13667.8	13652.3	13643.7
7.5°	13518.3	13509.1	13518.3	13580.0	13569.1	13558.5
10°	13218.8	13155.6	13218.8	13380.0	13435.1	13417.9
12.5°	12696.5	12500.9	12696.5	13036.9	13224.5	13209.3
15°	11934.2	11598.2	11934.2	12597.3	12941.9	12960.5
17.5°	10947.8	10563.3	10947.8	11927.9	12582.1	12573.1
20°	9875.0	9313.7	9875.0	11167.6	12109.5	12159.4
22.5°	8703.5	8099.2	8703.5	10241.6	11549.7	11633.0
25°	7534.8	6904.8	7534.8	9213.0	10865.4	10960.1
27.5°	6442.6	5842.8	6442.6	8229.7	10101.3	10204.6
30°	5431.1	4852.7	5431.1	7216.1	9261.5	9273.3
32.5°	4585.3	4012.0	4585.3	6205.8	8366.3	8311.6
35°	3762.4	3286.9	3762.4	5278.8	7342.9	7272.0
37.5°	3142.1	2761.0	3142.1	4463.4	6303.7	6170.0
40°	2620.8	2315.4	2620.8	3685.2	5278.8	5061.0
42.5°	2190.9	1962.6	2190.9	3037.4	4263.1	4108.7
45°	1868.2	1696.6	1868.2	2513.7	3442.7	3299.6
47.5°	1630.3	1490.9	1630.3	2099.4	2739.2	2693.9
50°	1418.6	1322.7	1418.6	1758.5	2227.6	2199.9
52.5°	1247.8	1178.4	1247.8	1498.6	1829.7	1825.4
55°	1105.8	1049.2	1105.8	1280.2	1511.8	1510.6
57.5°	982.2	945.7	982.2	1108.6	1267.0	1265.1
60°	872.0	859.3	872.0	960.9	1068.2	1070.8
62.5°	787.6	768.9	787.6	844.7	914.2	911.6
65°	703.8	699.5	703.8	742.8	787.6	781.3
67.5°	628.1	624.4	628.1	651.0	679.5	674.3
70°	555.8	558.7	555.8	569.5	584.8	583.9
72.5°	485.7	486.3	485.7	490.1	506.1	495.2
75°	418.3	418.3	418.3	412.9	420.1	414.3
77.5°	344.9	353.5	344.9	341.2	339.4	330.9
80°	271.1	279.5	271.1	263.4	259.1	253.6
82.5°	196.5	210.1	196.5	187.4	181.6	178.5
85°	121.9	130.3	121.9	109.0	106.2	106.2
87.5°	45.9	50.2	45.9	36.4	35.0	33.8
90°	31.5	20.7	31.5	59.8	34.7	20.4
92.5°	42.5	28.6	42.5	85.0	47.2	26.8
95°	47.2	34.9	47.2	108.6	58.3	39.4
97.5°	50.4	42.7	50.4	122.8	72.4	61.4
100°	58.3	49.3	58.3	225.1	81.9	81.9
102.5°	118.1	60.4	118.1	522.6	160.6	124.4
105°	308.6	112.3	308.6	920.9	368.4	226.7
107.5°	610.8	265.0	610.8	1186.9	687.9	429.7
110°	837.5	539.0	837.5	1295.6	961.8	687.9



TEST NUMBER:

CATALOG NUMBER: EHBR1-18-UNV-TA-L950-UPL30

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	928.7	746.7	928.7	1265.6	1072.0	895.8
115°	925.7	828.6	925.7	1130.3	1056.3	972.9
117.5°	869.0	833.3	869.0	976.0	966.6	939.8
120°	785.8	786.1	785.8	821.7	837.5	848.5
122.5°	700.8	721.8	700.8	694.2	709.9	733.6
125°	628.4	649.5	628.4	604.8	598.2	621.9
127.5°	567.3	584.9	567.3	540.2	516.3	527.4
130°	516.9	528.2	516.9	494.8	463.1	459.9
132.5°	479.7	485.9	479.7	460.5	430.6	417.7
135°	449.8	451.6	449.8	437.1	410.4	391.5
137.5°	424.9	422.1	424.9	415.4	395.0	376.0
140°	406.6	403.5	406.6	395.3	385.9	367.0
142.5°	388.0	385.1	388.0	380.1	375.5	357.8
145°	374.4	369.7	374.4	363.1	366.3	353.3
147.5°	360.5	356.0	360.5	350.7	355.2	345.8
150°	348.5	347.2	348.5	336.9	342.9	336.6
152.5°	337.5	336.4	337.5	324.5	330.3	324.0
155°	327.0	327.2	327.0	313.9	316.5	313.0
157.5°	318.1	318.5	318.1	306.5	307.5	305.7
160°	310.9	311.2	310.9	300.8	301.8	298.3
162.5°	305.1	305.4	305.1	294.9	295.7	295.5
165°	297.5	299.4	297.5	290.7	292.9	291.4
167.5°	294.7	296.6	294.7	289.4	288.6	290.2
170°	291.8	293.7	291.8	286.5	287.3	287.0
172.5°	289.2	292.7	289.2	285.5	287.8	287.6
175°	288.2	292.0	288.2	286.1	286.8	288.1
177.5°	290.2	295.5	290.2	287.9	287.1	286.8
180°	287.9	287.9	287.9	287.9	287.9	287.9



TEST NUMBER: CATALOG  
 CATALOG NUMBER: EHBR1-18-UNV-TA-L950-UPL30

**CIE UGR TABLE:**

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	16.61	17.66	17.20	18.24	18.90	14.87	15.92	15.47	16.51	17.17
	3H	17.76	18.69	18.37	19.29	19.99	16.47	17.40	17.08	18.00	18.70
	4H	18.21	19.08	18.84	19.69	20.41	17.11	17.99	17.75	18.60	19.31
	6H	18.52	19.33	19.16	19.95	20.67	17.62	18.43	18.27	19.05	19.77
	8H	18.60	19.37	19.26	20.01	20.74	17.79	18.55	18.44	19.19	19.92
	12H	18.63	19.36	19.29	20.00	20.75	17.88	18.60	18.53	19.24	19.99
4H	2H	16.85	17.73	17.48	18.34	19.05	15.41	16.29	16.04	16.90	17.61
	3H	18.24	18.96	18.88	19.61	20.34	17.21	17.93	17.85	18.58	19.31
	4H	18.82	19.47	19.48	20.13	20.89	17.97	18.62	18.63	19.28	20.04
	6H	19.26	19.82	19.94	20.50	21.28	18.60	19.16	19.28	19.84	20.62
	8H	19.38	19.90	20.07	20.58	21.37	18.80	19.33	19.49	20.01	20.79
	12H	19.44	19.90	20.14	20.61	21.39	18.92	19.39	19.63	20.10	20.88
8H	4H	18.98	19.50	19.66	20.18	20.96	18.21	18.73	18.89	19.41	20.19
	6H	19.52	19.95	20.24	20.67	21.46	18.95	19.38	19.66	20.10	20.89
	8H	19.70	20.08	20.43	20.81	21.61	19.23	19.61	19.96	20.34	21.14
	12H	19.81	20.14	20.54	20.86	21.73	19.41	19.74	20.14	20.46	21.33
12H	4H	18.97	19.43	19.67	20.14	20.92	18.21	18.67	18.91	19.38	20.16
	6H	19.54	19.92	20.27	20.65	21.45	18.98	19.36	19.71	20.09	20.89
	8H	19.75	20.09	20.48	20.80	21.67	19.29	19.63	20.02	20.34	21.21

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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-472-8

Test Date: 08/04/2025

Luminaire Tested: EHBR-60-L950-N

Data in this report applies to families of products including EHBR-60-L950-N

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2506-472-8  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 08/05/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Metalux  
 Catalog Number: **EHBR-60-L950-N**  
 Description: Elevate Round Highbay at, 60000 lumens, 5000K 90CRI LEDs with N lens

**Spectral Parameters**

CCT (K): 4901  
 CIE u': 0.2131  
 CIE v': 0.4853  
 Duv: -0.0008  
 CIE x: 0.3477  
 CIE y: 0.3520  
 CIE z: 0.3003  
 Peak Wavelength (nm): 630  
 Dominant Wavelength (nm): 574  
 Purity: 9.953987  
 Rf: 90.7  
 Rg: 100.5

CRI (Ra):	94.3		
R1:	95.8	R9:	72.3
R2:	96.5	R10:	89.1
R3:	94.4	R11:	94.9
R4:	95.3	R12:	68.4
R5:	94.1	R13:	96.4
R6:	92.5	R14:	96.4
R7:	95.5	R15:	93.9
R8:	90.1		



**Test Conditions**

Stabilization Time: 35M  
 Operation Time: 1H 35M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2506-472-8

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	6/16/2025	12/16/2025
Power Meter	XITRON INXT2011004	1/21/2025	1/21/2026
AC Power Source	CHROMA 61603 IN0063	10/22/2024	10/22/2025
DC Power Source	AGILENT E3634A IN0208	10/22/2024	10/22/2025
Sphere Thermometer	ONSET IN0085	10/22/2024	10/22/2025
Room Thermometer	ONSET IN0046	10/22/2024	10/22/2025

REPORT NUMBER: SP1-2506-472-8

CIE 1931 Chromaticity Diagram



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



CCT = 4901K  
 CIE x = 0.3477  
 CIE y = 0.3520  
 Duv = -0.0008

Point lies inside the ANSI 5000K 4-step quadrangle

REPORT NUMBER: SP1-2506-472-8

**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

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	221	NR	620	326	NR	750	7	NR	880	0	NR
365	0	NR	495	250	NR	625	325	NR	755	6	NR	885	0	NR
370	0	NR	500	284	NR	630	1000	NR	760	5	NR	890	0	NR
375	0	NR	505	311	NR	635	643	NR	765	4	NR	895	0	NR
380	0	NR	510	329	NR	640	206	NR	770	4	NR	900	0	NR
385	1	NR	515	344	NR	645	199	NR	775	3	NR	905	0	NR
390	2	NR	520	353	NR	650	172	NR	780	3	NR	910	0	NR
395	3	NR	525	357	NR	655	143	NR	785	2	NR	915	0	NR
400	5	NR	530	362	NR	660	122	NR	790	2	NR	920	0	NR
405	6	NR	535	365	NR	665	102	NR	795	2	NR	925	0	NR
410	9	NR	540	367	NR	670	94	NR	800	2	NR	930	0	NR
415	15	NR	545	369	NR	675	76	NR	805	1	NR	935	0	NR
420	26	NR	550	370	NR	680	65	NR	810	1	NR	940	0	NR
425	47	NR	555	372	NR	685	56	NR	815	1	NR	945	0	NR
430	81	NR	560	372	NR	690	48	NR	820	1	NR	950	0	NR
435	143	NR	565	371	NR	695	41	NR	825	1	NR	955	0	NR
440	243	NR	570	370	NR	700	35	NR	830	1	NR	960	0	NR
445	434	NR	575	367	NR	705	30	NR	835	1	NR	965	0	NR
450	675	NR	580	365	NR	710	25	NR	840	1	NR	970	0	NR
455	615	NR	585	361	NR	715	22	NR	845	0	NR	975	0	NR
460	418	NR	590	356	NR	720	19	NR	850	0	NR	980	0	NR
465	344	NR	595	348	NR	725	16	NR	855	0	NR	985	0	NR
470	272	NR	600	343	NR	730	13	NR	860	0	NR	990	0	NR
475	206	NR	605	337	NR	735	11	NR	865	0	NR	995	0	NR
480	190	NR	610	362	NR	740	10	NR	870	0	NR	1000	0	NR
485	202	NR	615	381	NR	745	8	NR	875	0	NR			

REPORT NUMBER: SP1-2506-472-8

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 2.04**

$\lambda$ (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	221	NR	620	326	NR	750	7	NR	880	0	NR
365	0	NR	495	250	NR	625	325	NR	755	6	NR	885	0	NR
370	0	NR	500	284	NR	630	1000	NR	760	5	NR	890	0	NR
375	0	NR	505	311	NR	635	643	NR	765	4	NR	895	0	NR
380	0	NR	510	329	NR	640	206	NR	770	4	NR	900	0	NR
385	1	NR	515	344	NR	645	199	NR	775	3	NR	905	0	NR
390	2	NR	520	353	NR	650	172	NR	780	3	NR	910	0	NR
395	3	NR	525	357	NR	655	143	NR	785	2	NR	915	0	NR
400	5	NR	530	362	NR	660	122	NR	790	2	NR	920	0	NR
405	6	NR	535	365	NR	665	102	NR	795	2	NR	925	0	NR
410	9	NR	540	367	NR	670	94	NR	800	2	NR	930	0	NR
415	15	NR	545	369	NR	675	76	NR	805	1	NR	935	0	NR
420	26	NR	550	370	NR	680	65	NR	810	1	NR	940	0	NR
425	47	NR	555	372	NR	685	56	NR	815	1	NR	945	0	NR
430	81	NR	560	372	NR	690	48	NR	820	1	NR	950	0	NR
435	143	NR	565	371	NR	695	41	NR	825	1	NR	955	0	NR
440	243	NR	570	370	NR	700	35	NR	830	1	NR	960	0	NR
445	434	NR	575	367	NR	705	30	NR	835	1	NR	965	0	NR
450	675	NR	580	365	NR	710	25	NR	840	1	NR	970	0	NR
455	615	NR	585	361	NR	715	22	NR	845	0	NR	975	0	NR
460	418	NR	590	356	NR	720	19	NR	850	0	NR	980	0	NR
465	344	NR	595	348	NR	725	16	NR	855	0	NR	985	0	NR
470	272	NR	600	343	NR	730	13	NR	860	0	NR	990	0	NR
475	206	NR	605	337	NR	735	11	NR	865	0	NR	995	0	NR
480	190	NR	610	362	NR	740	10	NR	870	0	NR	1000	0	NR
485	202	NR	615	381	NR	745	8	NR	875	0	NR			

REPORT NUMBER: SP1-2506-472-8

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 4.41

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	221	NR	620	326	NR	750	7	NR	880	0	NR
365	0	NR	495	250	NR	625	325	NR	755	6	NR	885	0	NR
370	0	NR	500	284	NR	630	1000	NR	760	5	NR	890	0	NR
375	0	NR	505	311	NR	635	643	NR	765	4	NR	895	0	NR
380	0	NR	510	329	NR	640	206	NR	770	4	NR	900	0	NR
385	1	NR	515	344	NR	645	199	NR	775	3	NR	905	0	NR
390	2	NR	520	353	NR	650	172	NR	780	3	NR	910	0	NR
395	3	NR	525	357	NR	655	143	NR	785	2	NR	915	0	NR
400	5	NR	530	362	NR	660	122	NR	790	2	NR	920	0	NR
405	6	NR	535	365	NR	665	102	NR	795	2	NR	925	0	NR
410	9	NR	540	367	NR	670	94	NR	800	2	NR	930	0	NR
415	15	NR	545	369	NR	675	76	NR	805	1	NR	935	0	NR
420	26	NR	550	370	NR	680	65	NR	810	1	NR	940	0	NR
425	47	NR	555	372	NR	685	56	NR	815	1	NR	945	0	NR
430	81	NR	560	372	NR	690	48	NR	820	1	NR	950	0	NR
435	143	NR	565	371	NR	695	41	NR	825	1	NR	955	0	NR
440	243	NR	570	370	NR	700	35	NR	830	1	NR	960	0	NR
445	434	NR	575	367	NR	705	30	NR	835	1	NR	965	0	NR
450	675	NR	580	365	NR	710	25	NR	840	1	NR	970	0	NR
455	615	NR	585	361	NR	715	22	NR	845	0	NR	975	0	NR
460	418	NR	590	356	NR	720	19	NR	850	0	NR	980	0	NR
465	344	NR	595	348	NR	725	16	NR	855	0	NR	985	0	NR
470	272	NR	600	343	NR	730	13	NR	860	0	NR	990	0	NR
475	206	NR	605	337	NR	735	11	NR	865	0	NR	995	0	NR
480	190	NR	610	362	NR	740	10	NR	870	0	NR	1000	0	NR
485	202	NR	615	381	NR	745	8	NR	875	0	NR			

**Summary**

$R_f = 90.7$   
 $R_g = 100.5$   
 CIE  $R_a = 94.3$   
 $R_9 = 72.3$



**Color Vector Graphics**



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

CES01 = 85	CES26 = 91	CES51 = 98	CES76 = 83
CES02 = 61	CES27 = 92	CES52 = 98	CES77 = 87
CES03 = 31	CES28 = 94	CES53 = 97	CES78 = 80
CES04 = 69	CES29 = 94	CES54 = 93	CES79 = 94
CES05 = 48	CES30 = 93	CES55 = 92	CES80 = 91
CES06 = 50	CES31 = 95	CES56 = 95	CES81 = 84
CES07 = 41	CES32 = 86	CES57 = 94	CES82 = 96
CES08 = 40	CES33 = 99	CES58 = 94	CES83 = 96
CES09 = 29	CES34 = 90	CES59 = 97	CES84 = 93
CES10 = 73	CES35 = 94	CES60 = 92	CES85 = 83
CES11 = 56	CES36 = 81	CES61 = 92	CES86 = 86
CES12 = 62	CES37 = 92	CES62 = 86	CES87 = 91
CES13 = 43	CES38 = 88	CES63 = 92	CES88 = 98
CES14 = 74	CES39 = 99	CES64 = 89	CES89 = 87
CES15 = 71	CES40 = 97	CES65 = 88	CES90 = 98
CES16 = 47	CES41 = 97	CES66 = 85	CES91 = 73
CES17 = 48	CES42 = 90	CES67 = 84	CES92 = 79
CES18 = 56	CES43 = 91	CES68 = 86	CES93 = 87
CES19 = 70	CES44 = 99	CES69 = 87	CES94 = 78
CES20 = 65	CES45 = 95	CES70 = 83	CES95 = 83
CES21 = 85	CES46 = 97	CES71 = 77	CES96 = 92
CES22 = 77	CES47 = 95	CES72 = 92	CES97 = 95
CES23 = 91	CES48 = 93	CES73 = 77	CES98 = 95
CES24 = 90	CES49 = 95	CES74 = 92	CES99 = 94
CES25 = 70	CES50 = 98	CES75 = 79	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)