

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: NEO-RAY

Report Number: P927069

Luminaire Tested: DFN2DIP-HX4F0-090D080US830-RLLFLL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927069
REPORT IS A COMBINATION OF REPORTS P899382 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D080US830-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

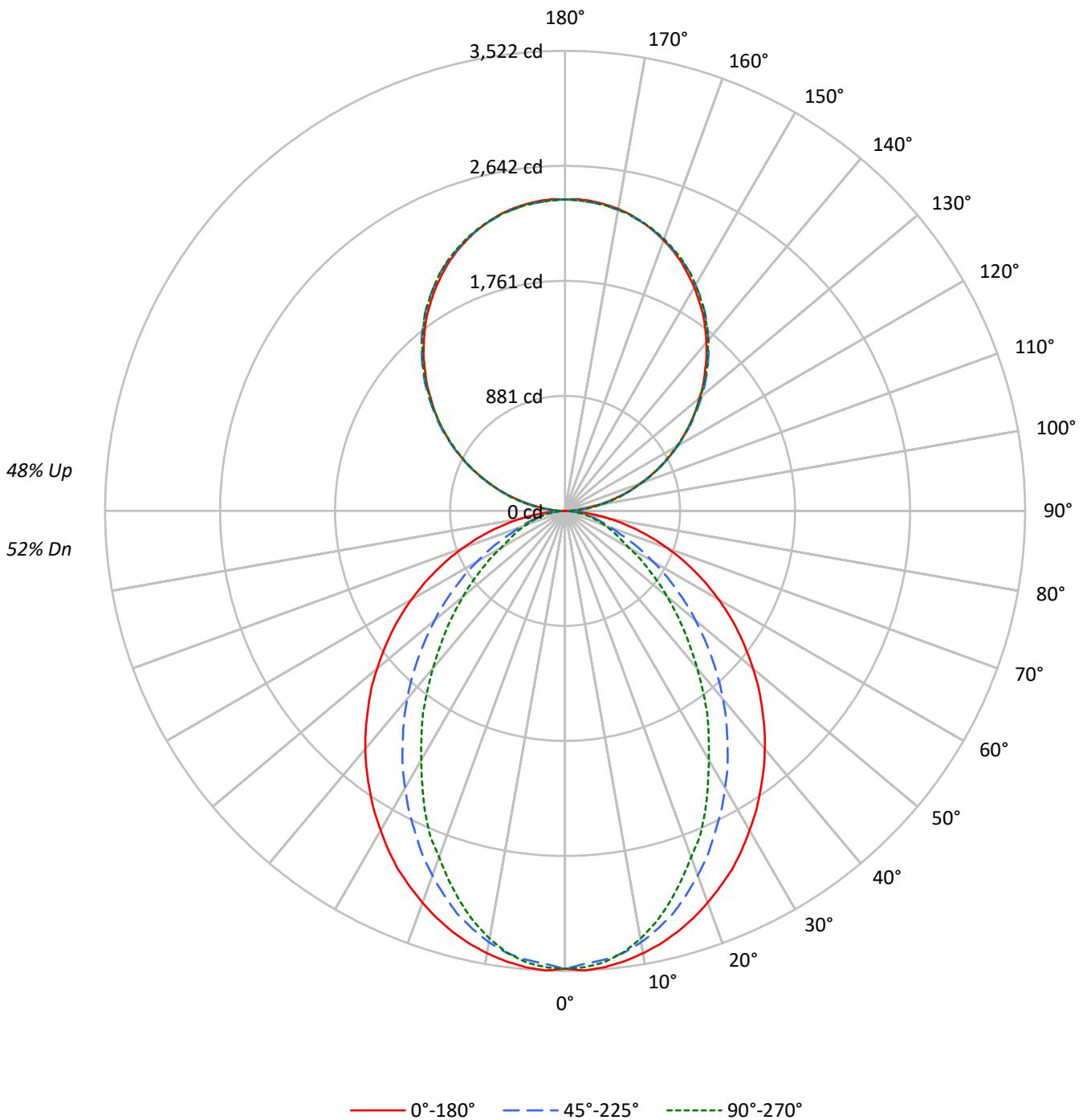
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13883.1 lumens
Efficiency: N/A
Efficacy: 94.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 147
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9821
Total Harmonic Distortion (THDi): 0.08
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Luminous Intensity Polar Plot





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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	0
RCR																					
0	108	108	108	108	100	100	100	100	84	84	84	71	71	71	58	58	58	52	52	52	52
1	99	95	91	88	91	88	84	82	75	72	70	63	61	60	52	51	50	45	45	45	45
2	90	83	77	72	83	77	72	68	66	62	59	56	53	51	46	44	43	38	38	38	38
3	83	74	66	61	76	68	62	57	59	54	50	50	46	44	42	39	37	33	33	33	33
4	76	65	58	52	70	61	54	49	53	47	43	45	41	38	37	35	32	29	29	29	29
5	70	59	51	45	65	55	48	42	47	42	38	40	36	33	34	31	28	25	25	25	25
6	65	53	45	39	60	49	42	37	43	37	33	37	32	29	31	28	25	23	23	23	23
7	60	48	40	35	55	45	38	33	39	33	29	34	29	26	28	25	23	20	20	20	20
8	56	44	36	31	51	41	34	29	36	30	26	31	27	23	26	23	21	18	18	18	18
9	52	40	33	28	48	37	31	26	33	27	24	28	24	21	24	21	19	17	17	17	17
10	49	37	30	25	45	34	28	24	30	25	21	26	22	19	23	19	17	15	15	15	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2607	2607	2607
5°	2611	2566	2582
10°	2586	2516	2498
15°	2550	2433	2368
20°	2503	2318	2209
25°	2455	2190	2055
30°	2391	2059	1860
35°	2328	1917	1689
40°	2263	1771	1492
45°	2188	1608	1314
50°	2111	1444	1140
55°	2031	1269	973
60°	1937	1086	801
65°	1830	899	721
70°	1700	726	653
75°	1537	640	594
80°	1300	538	516
85°	909	360	388

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2188 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	328.6	2.4
10°-20°	902.0	6.5
20°-30°	1266.4	9.1
30°-40°	1380.4	9.9
40°-50°	1268.7	9.1
50°-60°	996.4	7.2
60°-70°	648.6	4.7
70°-80°	333.9	2.4
80°-90°	92.0	0.7
90°-100°	147.6	1.1
100°-110°	468.9	3.4
110°-120°	802.3	5.8
120°-130°	1055.2	7.6
130°-140°	1184.4	8.5
140°-150°	1161.5	8.4
150°-160°	974.3	7.0
160°-170°	646.1	4.7
170°-180°	225.8	1.6
0°-30°	2496.9	18.0
0°-40°	3877.3	27.9
0°-60°	6142.5	44.2
0°-90°	7216.9	52.0
90°-120°	1418.8	10.2
90°-150°	4819.9	34.7
90°-180°	6666.0	48.0
0°-180°	13883.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3506	3506	3506	3506	3506	
5°	3506	3490	3449	3477	3468	332
15°	3334	3300	3192	3132	3100	940
25°	3027	2925	2716	2586	2538	1392
35°	2608	2446	2167	1967	1897	1632
45°	2132	1919	1586	1361	1285	1647
55°	1621	1374	1031	841	781	1449
65°	1095	838	552	444	435	1085
75°	584	362	254	232	229	617
85°	136	70	60	60	60	156
90°	2	26	70	66	68	14
95°	105	125	129	129	125	117
105°	433	438	443	446	446	457
115°	805	817	813	811	805	796
125°	1171	1189	1183	1177	1175	1047
135°	1515	1537	1541	1539	1533	1171
145°	1839	1853	1865	1867	1859	1149
155°	2103	2109	2115	2125	2119	968
165°	2288	2285	2285	2300	2290	645
175°	2380	2374	2370	2385	2372	226
180°	2385	2385	2385	2385	2385	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3505.8	3505.8	3505.8	3505.8	3505.8
2.5°	3521.7	3505.8	3470.8	3502.8	3496.4
5°	3505.8	3490.0	3448.6	3477.2	3467.7
7.5°	3477.2	3458.3	3413.9	3426.4	3410.5
10°	3439.2	3416.9	3353.7	3343.9	3325.0
12.5°	3391.7	3363.1	3277.3	3258.4	3223.4
15°	3334.5	3299.5	3191.8	3131.5	3099.9
17.5°	3267.8	3217.0	3083.7	3014.0	2963.2
20°	3191.8	3128.2	2969.5	2890.5	2820.4
22.5°	3109.3	3036.3	2852.1	2744.4	2697.0
25°	3026.8	2925.1	2715.8	2585.8	2538.1
27.5°	2928.5	2820.4	2588.9	2439.8	2366.7
30°	2823.8	2703.0	2449.2	2287.6	2201.8
32.5°	2722.1	2576.0	2316.2	2125.7	2046.3
35°	2608.1	2446.2	2167.1	1967.2	1897.2
37.5°	2497.0	2322.3	2027.4	1808.3	1729.2
40°	2379.5	2189.3	1881.3	1656.2	1573.7
42.5°	2259.0	2056.1	1735.5	1500.6	1421.5
45°	2132.1	1919.4	1586.4	1360.9	1284.8
47.5°	2011.6	1786.4	1443.7	1218.2	1148.5
50°	1878.3	1653.1	1304.0	1084.9	1018.6
52.5°	1748.1	1510.1	1170.8	961.4	901.1
55°	1621.1	1373.7	1031.0	840.9	780.6
57.5°	1491.2	1237.4	907.5	729.8	679.0
60°	1357.9	1104.0	777.3	615.6	564.8
62.5°	1228.0	974.2	666.2	514.0	488.8
65°	1094.6	837.5	552.0	444.3	434.6
67.5°	967.8	710.6	444.3	390.1	380.7
70°	834.5	587.1	368.0	336.3	323.5
72.5°	707.5	472.6	307.6	282.4	276.1
75°	583.7	361.5	253.8	231.6	228.6
77.5°	460.1	256.8	199.9	187.2	180.8
80°	345.7	184.2	152.1	139.7	139.7
82.5°	241.0	123.8	104.7	98.3	98.3
85°	136.3	69.7	60.2	60.2	60.2
87.5°	50.8	25.3	25.3	22.2	22.2
90°	2.2	25.9	70.5	66.2	68.3
92.5°	44.6	60.4	62.6	64.7	64.7
95°	105.0	125.1	128.7	128.7	125.1
97.5°	174.7	193.4	201.3	201.3	201.3
100°	255.2	271.7	277.5	277.5	275.3
102.5°	340.1	352.3	360.1	362.3	360.1
105°	432.8	438.5	442.9	446.5	446.5
107.5°	524.8	533.5	533.5	534.9	524.8
110°	613.9	625.4	625.4	625.4	619.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	710.3	722.5	720.4	714.6	710.3
115°	805.2	816.7	813.1	810.9	805.2
117.5°	899.3	915.2	905.1	899.3	893.6
120°	994.2	1010.1	994.2	994.2	987.7
122.5°	1080.5	1100.7	1090.6	1084.8	1080.5
125°	1171.1	1189.1	1183.3	1176.8	1174.7
127.5°	1259.6	1281.8	1273.9	1265.3	1259.6
130°	1342.2	1368.0	1364.5	1360.2	1352.3
132.5°	1435.0	1455.0	1456.5	1446.5	1440.7
135°	1514.7	1537.0	1541.4	1539.2	1533.4
137.5°	1603.9	1621.9	1625.4	1624.0	1615.4
140°	1682.3	1700.2	1710.3	1710.3	1702.3
142.5°	1762.8	1780.8	1786.5	1788.7	1780.8
145°	1839.0	1853.3	1864.8	1867.0	1859.1
147.5°	1907.2	1925.2	1933.8	1937.5	1929.6
150°	1977.7	1989.9	1997.8	2004.3	1997.8
152.5°	2040.2	2052.5	2062.6	2070.5	2062.6
155°	2102.8	2108.6	2115.1	2125.1	2118.6
157.5°	2156.7	2161.1	2164.6	2179.0	2169.0
160°	2204.9	2209.2	2211.4	2223.5	2215.0
162.5°	2249.5	2249.5	2251.6	2265.3	2255.2
165°	2287.5	2285.4	2285.4	2299.8	2289.7
167.5°	2322.0	2315.6	2315.6	2330.0	2319.9
170°	2348.0	2342.2	2340.0	2354.5	2342.2
172.5°	2366.0	2360.2	2358.0	2372.4	2360.2
175°	2380.3	2374.5	2370.2	2384.6	2372.4
177.5°	2388.2	2382.5	2378.1	2390.4	2378.1
180°	2384.6	2384.6	2384.6	2384.6	2384.6



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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	10.66	11.51	11.61	12.46	13.71	6.63	7.48	7.58	8.44	9.68
	3H	12.34	13.10	13.30	14.06	15.33	7.82	8.58	8.78	9.55	10.82
	4H	12.95	13.66	13.92	14.64	15.91	8.28	8.99	9.25	9.96	11.24
	6H	13.37	14.03	14.36	15.01	16.30	8.60	9.26	9.58	10.24	11.53
	8H	13.50	14.13	14.49	15.12	16.41	8.69	9.32	9.68	10.31	11.60
	12H	13.56	14.16	14.56	15.14	16.46	8.74	9.33	9.73	10.32	11.63
4H	2H	10.68	11.40	11.66	12.37	13.64	7.23	7.95	8.21	8.92	10.19
	3H	12.51	13.11	13.50	14.11	15.40	8.58	9.18	9.57	10.18	11.47
	4H	13.21	13.75	14.20	14.74	16.06	9.13	9.68	10.13	10.67	11.99
	6H	13.72	14.19	14.73	15.21	16.52	9.56	10.02	10.56	11.04	12.35
	8H	13.90	14.33	14.91	15.35	16.67	9.69	10.12	10.70	11.13	12.46
	12H	13.99	14.39	15.02	15.41	16.75	9.75	10.15	10.78	11.17	12.51
8H	4H	13.17	13.61	14.18	14.62	15.95	9.42	9.85	10.42	10.86	12.19
	6H	13.74	14.10	14.78	15.16	16.48	9.94	10.30	10.97	11.35	12.67
	8H	13.96	14.28	15.00	15.32	16.66	10.13	10.45	11.17	11.49	12.83
	12H	14.10	14.38	15.14	15.41	16.80	10.25	10.53	11.29	11.56	12.95
12H	4H	13.13	13.52	14.15	14.55	15.88	9.42	9.81	10.45	10.84	12.17
	6H	13.72	14.04	14.76	15.07	16.42	9.99	10.30	11.03	11.34	12.69
	8H	13.94	14.22	14.98	15.25	16.64	10.20	10.48	11.24	11.51	12.90