

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: P903281

Luminaire Tested: DFN2DIP-PN4F0-070D110US830-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P903281
REPORT IS A COMBINATION OF REPORTS P901261 AND P898053
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-070D110US830-FLLONL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

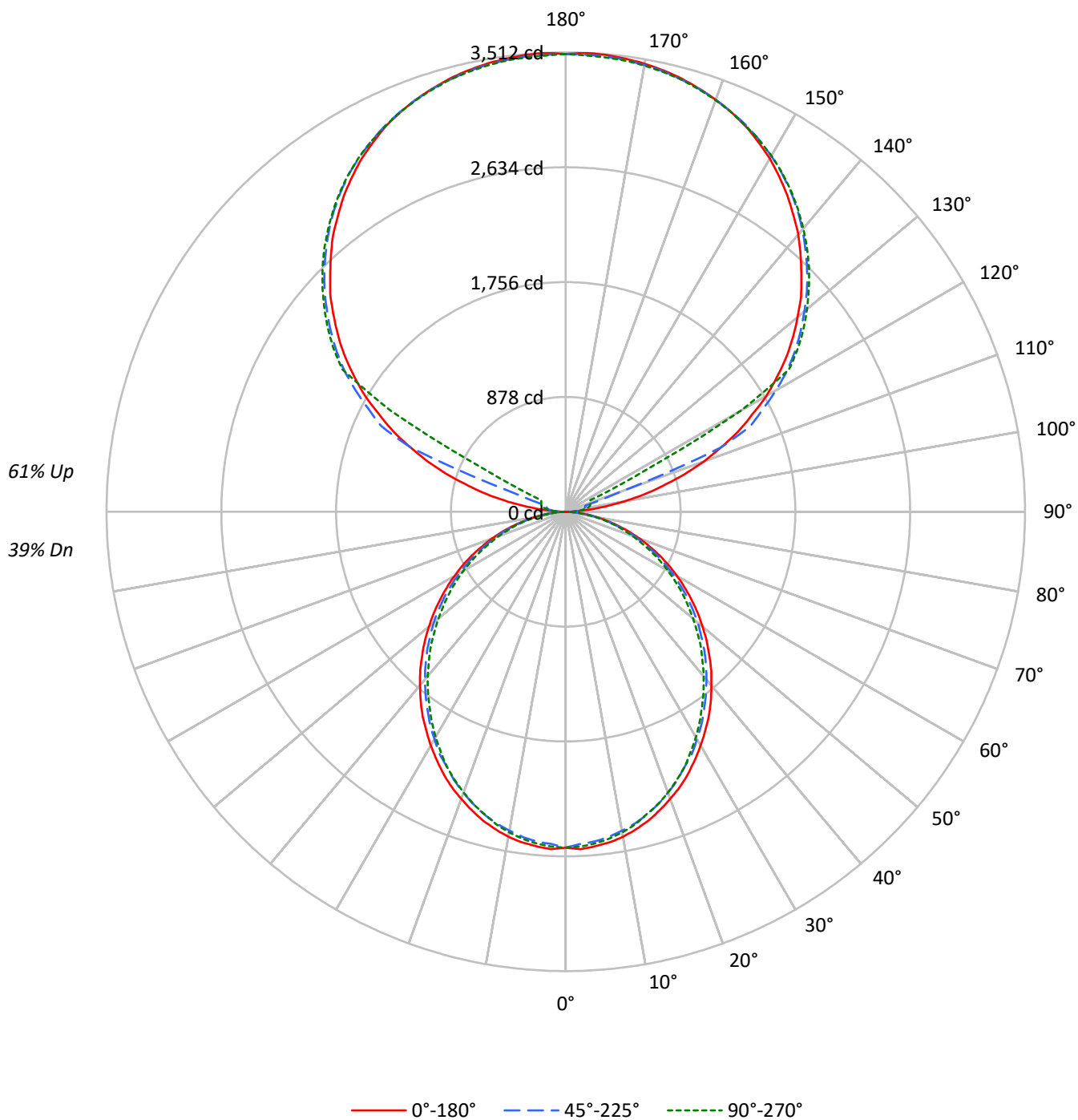
Lumens per Lamp: N/A
Luminaire Lumens: 16796.1 lumens
Efficiency: N/A
Efficacy: 106.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 158.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9789
Total Harmonic Distortion (THDi): 0.074
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
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	105	105	105	105	95	95	95	95	77	77	77	61	61	61	46	46	46
1	95	91	87	84	86	83	80	77	68	65	63	54	52	51	41	40	39
2	87	79	73	68	79	72	67	63	59	56	52	47	44	42	36	34	33
3	79	70	63	57	72	64	58	53	52	48	44	42	38	36	32	30	28
4	72	62	54	48	65	56	50	44	46	41	37	37	33	31	28	26	24
5	66	55	47	41	60	50	43	38	41	36	32	33	29	26	25	23	21
6	61	49	41	36	55	45	38	33	37	32	28	30	26	23	23	20	18
7	56	44	37	31	51	41	34	29	34	28	25	27	23	20	21	18	16
8	52	40	33	27	47	37	30	26	31	26	22	25	21	18	19	17	15
9	49	37	29	24	44	34	27	23	28	23	19	23	19	16	18	15	13
10	45	34	26	22	41	31	25	20	26	21	17	21	17	15	17	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1874	1874	1874
5°	1877	1848	1861
10°	1862	1823	1836
15°	1834	1794	1797
20°	1797	1752	1757
25°	1761	1703	1711
30°	1714	1656	1652
35°	1671	1602	1589
40°	1617	1547	1530
45°	1563	1492	1469
50°	1505	1434	1399
55°	1443	1367	1335
60°	1374	1288	1261
65°	1298	1205	1174
70°	1202	1105	1080
75°	1068	985	994
80°	907	832	829
85°	656	568	554

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1864 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	241.6	1.4
10°-20°	679.9	4.0
20°-30°	999.1	5.9
30°-40°	1160.4	6.9
40°-50°	1159.0	6.9
50°-60°	1010.6	6.0
60°-70°	747.1	4.4
70°-80°	422.7	2.5
80°-90°	117.7	0.7
90°-100°	115.4	0.7
100°-110°	430.1	2.6
110°-120°	1140.7	6.8
120°-130°	1892.0	11.3
130°-140°	2009.7	12.0
140°-150°	1867.8	11.1
150°-160°	1501.7	8.9
160°-170°	967.6	5.8
170°-180°	333.0	2.0
0°-30°	1920.6	11.4
0°-40°	3081.0	18.3
0°-60°	5250.6	31.3
0°-90°	6538.0	38.9
90°-120°	1686.2	10.0
90°-150°	7455.8	44.4
90°-180°	10258.0	61.1
0°-180°	16796.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2567	2567	2567	2567	2567	
5°	2567	2558	2530	2550	2545	244
15°	2444	2429	2397	2407	2395	688
25°	2212	2192	2150	2155	2150	1018
35°	1908	1884	1844	1829	1817	1192
45°	1553	1536	1498	1471	1461	1198
55°	1175	1160	1131	1101	1089	1051
65°	793	778	753	731	718	784
75°	415	410	397	383	388	443
85°	101	99	96	89	86	113
90°	2	30	50	63	68	15
95°	164	81	99	112	109	195
105°	770	846	155	182	192	822
115°	1456	1499	1562	390	208	1433
125°	2058	2091	2140	2157	2165	1836
135°	2547	2588	2610	2636	2631	1968
145°	2955	2952	2995	3013	3000	1848
155°	3254	3231	3261	3276	3256	1499
165°	3428	3413	3421	3438	3421	969
175°	3506	3489	3494	3512	3486	334
180°	3499	3499	3499	3499	3499	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2567.2	2567.2	2567.2	2567.2	2567.2
2.5°	2582.2	2569.8	2542.6	2567.2	2562.5
5°	2567.2	2557.6	2530.3	2550.0	2545.2
7.5°	2550.0	2535.3	2508.0	2528.0	2523.0
10°	2523.0	2505.7	2476.1	2495.8	2488.4
12.5°	2485.8	2471.2	2441.6	2453.8	2448.8
15°	2443.9	2429.2	2397.0	2407.0	2394.6
17.5°	2392.0	2377.4	2345.1	2357.5	2345.1
20°	2335.1	2320.5	2285.9	2293.3	2283.6
22.5°	2278.6	2256.4	2224.1	2224.1	2219.1
25°	2211.9	2192.2	2150.3	2155.0	2150.3
27.5°	2137.7	2120.4	2088.5	2081.1	2068.8
30°	2063.9	2043.9	2007.0	1999.7	1989.7
32.5°	1984.7	1970.1	1930.5	1915.6	1905.6
35°	1908.3	1883.7	1844.1	1829.2	1816.8
37.5°	1821.8	1799.6	1760.0	1742.8	1730.4
40°	1733.1	1713.2	1673.6	1651.6	1641.6
42.5°	1646.6	1626.7	1587.4	1562.5	1547.8
45°	1552.8	1535.6	1498.4	1471.4	1461.4
47.5°	1461.4	1444.2	1404.6	1377.3	1362.7
50°	1365.1	1352.7	1318.1	1283.6	1271.3
52.5°	1271.3	1254.1	1222.1	1194.9	1177.5
55°	1175.2	1160.3	1130.7	1101.1	1088.7
57.5°	1078.8	1066.5	1034.3	1004.7	994.8
60°	982.4	972.7	938.2	911.0	903.6
62.5°	888.6	871.4	846.8	822.2	812.2
65°	792.6	777.6	753.0	730.8	718.4
67.5°	693.8	681.3	659.2	642.0	632.0
70°	602.4	592.5	570.1	552.9	543.2
72.5°	508.6	498.7	486.4	469.1	461.8
75°	414.6	409.9	397.3	382.7	387.7
77.5°	330.8	320.8	315.8	308.5	301.2
80°	246.9	244.4	239.4	232.1	227.1
82.5°	167.9	167.9	165.5	155.6	155.6
85°	101.1	98.8	96.4	88.8	86.4
87.5°	44.5	39.6	34.6	27.2	24.6
90°	2.5	30.3	50.5	63.4	68.2
92.5°	63.4	53.3	60.7	65.9	68.2
95°	164.5	80.9	98.6	111.5	108.9
97.5°	296.1	88.7	128.9	136.8	139.2
100°	448.3	101.3	144.3	164.5	169.6
102.5°	615.1	610.3	149.4	177.1	184.9
105°	769.7	845.7	154.6	182.2	192.5
107.5°	949.5	1012.6	159.7	187.3	197.6
110°	1121.7	1174.7	443.2	190.0	199.9

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1283.8	1329.2	1286.2	194.8	202.6
115°	1455.8	1498.7	1562.3	389.9	207.7
117.5°	1605.2	1655.8	1699.0	1336.7	673.4
120°	1772.4	1810.2	1856.0	1886.3	1544.4
122.5°	1914.0	1954.5	2005.4	2020.4	2023.2
125°	2058.3	2091.4	2139.5	2157.2	2164.7
127.5°	2190.0	2225.4	2263.6	2288.9	2291.3
130°	2314.1	2354.8	2382.4	2410.4	2408.0
132.5°	2440.7	2473.8	2501.5	2524.3	2522.0
135°	2547.2	2587.7	2610.3	2635.9	2630.7
137.5°	2658.4	2688.8	2714.3	2739.6	2732.1
140°	2767.3	2787.7	2815.4	2838.2	2825.6
142.5°	2858.6	2876.4	2909.2	2929.3	2916.7
145°	2954.9	2952.1	2995.1	3012.9	3000.3
147.5°	3038.2	3030.7	3073.6	3086.3	3076.4
150°	3119.3	3101.6	3142.2	3157.2	3144.6
152.5°	3187.6	3167.4	3205.3	3220.7	3202.9
155°	3253.5	3230.8	3261.2	3276.3	3256.1
157.5°	3306.6	3286.5	3309.4	3327.1	3306.6
160°	3352.3	3337.0	3352.3	3367.3	3349.6
162.5°	3392.6	3377.6	3390.2	3408.0	3385.1
165°	3428.1	3413.0	3420.6	3438.3	3420.6
167.5°	3456.0	3440.8	3448.6	3466.3	3443.5
170°	3478.9	3463.6	3468.6	3486.5	3463.6
172.5°	3493.9	3478.9	3484.0	3501.7	3478.9
175°	3506.5	3488.8	3493.9	3511.7	3486.5
177.5°	3511.7	3493.9	3496.6	3514.4	3491.6
180°	3499.1	3499.1	3499.1	3499.1	3499.1

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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	8.34	9.11	9.39	10.16	11.58	7.90	8.67	8.95	9.72	11.14
	3H	10.00	10.69	11.05	11.75	13.19	9.51	10.20	10.57	11.26	12.70
	4H	10.58	11.24	11.65	12.30	13.75	10.10	10.75	11.16	11.81	13.26
	6H	10.98	11.58	12.06	12.65	14.11	10.49	11.09	11.57	12.16	13.62
	8H	11.08	11.66	12.17	12.74	14.19	10.59	11.16	11.67	12.25	13.70
	12H	11.13	11.68	12.22	12.75	14.23	10.63	11.18	11.72	12.25	13.73
4H	2H	8.79	9.45	9.87	10.51	11.96	8.44	9.10	9.52	10.16	11.60
	3H	10.65	11.20	11.74	12.29	13.75	10.25	10.80	11.33	11.89	13.35
	4H	11.37	11.87	12.45	12.95	14.43	10.95	11.45	12.04	12.53	14.01
	6H	11.88	12.31	12.97	13.41	14.89	11.45	11.88	12.55	12.99	14.46
	8H	12.03	12.43	13.12	13.52	15.02	11.60	12.00	12.70	13.10	14.59
	12H	12.10	12.46	13.21	13.57	15.07	11.66	12.02	12.77	13.13	14.63
8H	4H	11.56	11.96	12.65	13.05	14.54	11.18	11.59	12.28	12.68	14.17
	6H	12.19	12.52	13.30	13.66	15.14	11.81	12.14	12.93	13.28	14.77
	8H	12.41	12.70	13.53	13.82	15.32	12.02	12.31	13.15	13.43	14.94
	12H	12.54	12.79	13.67	13.91	15.45	12.14	12.39	13.26	13.51	15.05
12H	4H	11.54	11.90	12.65	13.01	14.50	11.17	11.54	12.29	12.65	14.14
	6H	12.22	12.51	13.34	13.63	15.13	11.85	12.14	12.98	13.26	14.77
	8H	12.46	12.71	13.58	13.83	15.37	12.08	12.34	13.21	13.45	15.00