

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: P908853

Luminaire Tested: DFN2DIP-PN4F0-110D040US840-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P908853
REPORT IS A COMBINATION OF REPORTS P901143 AND P898053
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-110D040US840-FLLONL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

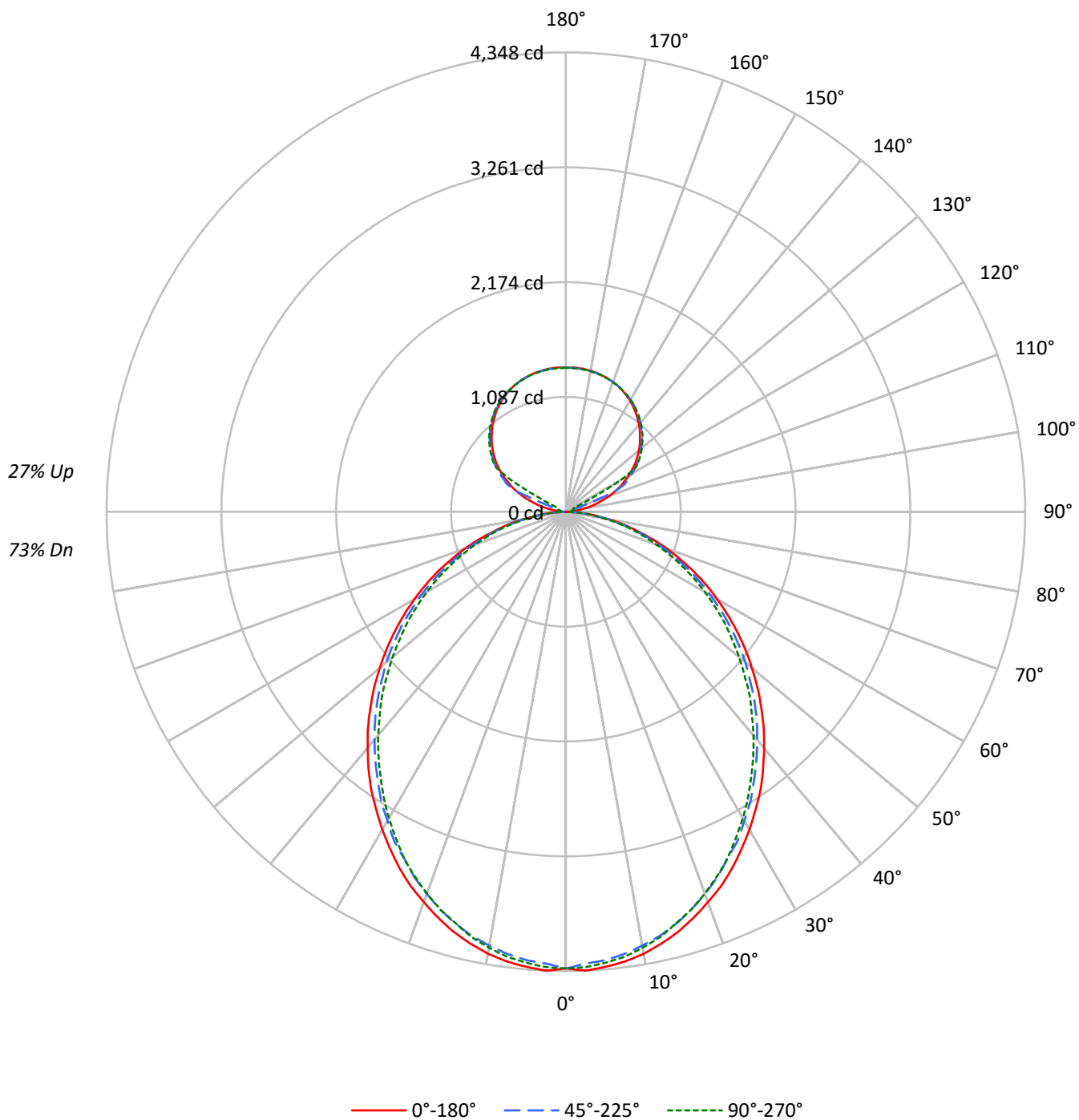
Lumens per Lamp: N/A
Luminaire Lumens: 14996.5 lumens
Efficiency: N/A
Efficacy: 103.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 144.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.996
Total Harmonic Distortion (THDi): 0.064
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
RCR																	
0	113	113	113	113	107	107	107	107	96	96	96		87	87	87		78
1	103	99	95	91	98	94	90	87	85	82	79		76	74	72		69
2	94	86	80	74	89	82	76	71	74	70	66		67	64	60		60
3	86	76	68	62	81	72	65	60	66	60	55		59	55	51		54
4	78	67	59	53	74	64	57	51	58	52	47		53	48	44		48
5	72	60	52	45	68	57	50	44	52	46	41		48	42	38		43
6	67	54	46	39	63	52	44	38	47	41	36		43	38	34		39
7	62	49	41	35	58	47	39	34	43	36	32		39	34	30		36
8	57	45	37	31	54	43	35	30	39	33	28		36	31	27		33
9	54	41	33	28	51	39	32	27	36	30	26		33	28	24		30
10	50	38	30	25	48	36	29	24	33	27	23		31	26	22		28

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3155	3155	3155
5°	3160	3112	3133
10°	3135	3070	3091
15°	3088	3020	3025
20°	3026	2950	2958
25°	2964	2867	2880
30°	2887	2789	2781
35°	2813	2697	2676
40°	2722	2605	2576
45°	2632	2512	2474
50°	2533	2414	2356
55°	2430	2302	2247
60°	2313	2168	2123
65°	2186	2029	1976
70°	2023	1861	1818
75°	1798	1659	1674
80°	1528	1401	1396
85°	1105	957	934

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2632 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	406.8	2.7
10°-20°	1144.7	7.6
20°-30°	1682.2	11.2
30°-40°	1953.7	13.0
40°-50°	1951.3	13.0
50°-60°	1701.5	11.3
60°-70°	1257.8	8.4
70°-80°	711.6	4.7
80°-90°	190.2	1.3
90°-100°	44.9	0.3
100°-110°	167.6	1.1
110°-120°	444.4	3.0
120°-130°	737.1	4.9
130°-140°	783.0	5.2
140°-150°	727.7	4.9
150°-160°	585.1	3.9
160°-170°	377.0	2.5
170°-180°	129.8	0.9
0°-30°	3233.7	21.6
0°-40°	5187.4	34.6
0°-60°	8840.2	58.9
0°-90°	10999.8	73.3
90°-120°	656.9	4.4
90°-150°	2904.8	19.4
90°-180°	3997.0	26.7
0°-180°	14996.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4322	4322	4322	4322	4322	
5°	4322	4306	4260	4293	4285	410
15°	4115	4090	4036	4052	4032	1159
25°	3724	3691	3620	3628	3620	1714
35°	3213	3172	3105	3080	3059	2006
45°	2614	2585	2523	2477	2461	2018
55°	1979	1954	1904	1854	1833	1769
65°	1334	1309	1268	1230	1210	1319
75°	698	690	669	644	653	745
85°	170	166	162	150	146	190
90°	1	12	20	25	27	14
95°	64	32	38	43	42	76
105°	300	330	60	71	75	320
115°	567	584	609	152	81	558
125°	802	815	834	840	843	715
135°	992	1008	1017	1027	1025	767
145°	1151	1150	1167	1174	1169	720
155°	1268	1259	1271	1276	1269	584
165°	1336	1330	1333	1340	1333	377
175°	1366	1359	1361	1368	1358	130
180°	1363	1363	1363	1363	1363	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4322.4	4322.4	4322.4	4322.4	4322.4
2.5°	4347.5	4326.8	4280.9	4322.4	4314.4
5°	4322.4	4306.1	4260.2	4293.2	4285.4
7.5°	4293.2	4268.6	4222.8	4256.3	4247.9
10°	4247.9	4218.7	4168.9	4201.9	4189.6
12.5°	4185.3	4160.5	4110.8	4131.5	4123.1
15°	4114.7	4090.0	4035.7	4052.5	4031.8
17.5°	4027.3	4002.7	3948.5	3969.2	3948.5
20°	3931.7	3907.0	3848.8	3861.1	3844.9
22.5°	3836.5	3798.9	3744.7	3744.7	3736.3
25°	3724.0	3691.0	3620.4	3628.3	3620.4
27.5°	3599.2	3570.1	3516.3	3503.9	3483.2
30°	3474.8	3441.3	3379.1	3366.8	3350.0
32.5°	3341.6	3317.0	3250.4	3225.2	3208.4
35°	3212.9	3171.5	3104.8	3079.7	3059.0
37.5°	3067.4	3029.9	2963.3	2934.2	2913.5
40°	2917.9	2884.4	2817.8	2780.8	2764.0
42.5°	2772.4	2738.9	2672.7	2630.8	2606.2
45°	2614.5	2585.4	2522.7	2477.4	2460.6
47.5°	2460.6	2431.6	2364.9	2319.1	2294.3
50°	2298.4	2277.7	2219.4	2161.2	2140.5
52.5°	2140.5	2111.3	2057.6	2011.7	1982.6
55°	1978.6	1953.5	1903.7	1853.8	1833.1
57.5°	1816.3	1795.6	1741.4	1691.5	1674.8
60°	1654.1	1637.8	1579.5	1533.7	1521.4
62.5°	1496.2	1467.1	1425.6	1384.2	1367.5
65°	1334.3	1309.2	1267.8	1230.3	1209.6
67.5°	1168.1	1147.0	1109.9	1080.9	1064.1
70°	1014.2	997.4	960.0	930.9	914.5
72.5°	856.4	839.6	818.9	789.8	777.4
75°	698.0	690.1	668.9	644.3	652.7
77.5°	556.9	540.2	531.8	519.5	507.2
80°	415.9	411.4	403.0	390.7	382.3
82.5°	282.7	282.7	278.7	262.0	262.0
85°	170.3	166.2	162.3	149.5	145.5
87.5°	74.9	66.6	58.2	45.8	41.4
90°	0.9	11.8	19.7	24.7	26.6
92.5°	24.7	20.7	23.6	25.7	26.6
95°	64.0	31.5	38.4	43.4	42.4
97.5°	115.4	34.5	50.3	53.3	54.2
100°	174.6	39.5	56.2	64.0	66.0
102.5°	239.6	237.8	58.2	69.0	72.0
105°	299.8	329.5	60.2	71.0	74.9
107.5°	369.9	394.6	62.2	73.0	77.0
110°	437.1	457.7	172.7	74.0	77.9

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	500.2	517.9	501.1	75.9	79.0
115°	567.1	583.9	608.6	151.9	81.0
117.5°	625.4	645.1	662.0	520.8	262.4
120°	690.5	705.3	723.1	735.0	601.8
122.5°	745.7	761.5	781.3	787.2	788.2
125°	801.9	814.9	833.5	840.5	843.4
127.5°	853.2	867.1	881.9	891.8	892.7
130°	901.6	917.5	928.2	939.1	938.2
132.5°	950.9	963.8	974.6	983.5	982.6
135°	992.4	1008.2	1017.0	1026.9	1025.0
137.5°	1035.7	1047.5	1057.5	1067.3	1064.4
140°	1078.1	1086.1	1096.9	1105.8	1100.9
142.5°	1113.8	1120.6	1133.5	1141.2	1136.4
145°	1151.2	1150.2	1166.9	1173.9	1168.9
147.5°	1183.7	1180.7	1197.5	1202.4	1198.6
150°	1215.3	1208.4	1224.3	1230.1	1225.2
152.5°	1241.9	1234.1	1248.8	1254.8	1247.9
155°	1267.6	1258.8	1270.6	1276.5	1268.6
157.5°	1288.3	1280.4	1289.4	1296.3	1288.3
160°	1306.1	1300.1	1306.1	1311.9	1305.0
162.5°	1321.8	1316.0	1320.9	1327.8	1318.9
165°	1335.6	1329.8	1332.7	1339.6	1332.7
167.5°	1346.6	1340.5	1343.6	1350.5	1341.6
170°	1355.4	1349.5	1351.4	1358.4	1349.5
172.5°	1361.3	1355.4	1357.5	1364.3	1355.4
175°	1366.1	1359.3	1361.3	1368.2	1358.4
177.5°	1368.2	1361.3	1362.3	1369.3	1360.4
180°	1363.3	1363.3	1363.3	1363.3	1363.3

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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	13.19	14.31	13.92	15.06	15.95	12.75	13.87	13.48	14.62	15.51
	3H	14.88	15.88	15.62	16.64	17.56	14.39	15.40	15.13	16.16	17.08
	4H	15.48	16.43	16.24	17.19	18.13	14.99	15.94	15.75	16.71	17.64
	6H	15.89	16.77	16.66	17.55	18.50	15.40	16.28	16.17	17.05	18.00
	8H	16.01	16.84	16.79	17.64	18.59	15.51	16.35	16.29	17.14	18.10
	12H	16.06	16.86	16.85	17.65	18.63	15.56	16.36	16.35	17.15	18.13
4H	2H	13.69	14.64	14.45	15.40	16.34	13.33	14.28	14.10	15.05	15.99
	3H	15.58	16.37	16.35	17.17	18.13	15.18	15.97	15.95	16.77	17.72
	4H	16.30	17.03	17.09	17.83	18.81	15.89	16.61	16.68	17.41	18.39
	6H	16.84	17.46	17.64	18.29	19.28	16.41	17.04	17.22	17.86	18.85
	8H	16.99	17.58	17.81	18.40	19.40	16.57	17.15	17.38	17.97	18.97
	12H	17.08	17.61	17.91	18.45	19.46	16.64	17.17	17.47	18.01	19.02
8H	4H	16.52	17.11	17.33	17.93	18.93	16.15	16.74	16.96	17.56	18.56
	6H	17.17	17.65	18.01	18.52	19.52	16.79	17.28	17.63	18.14	19.14
	8H	17.39	17.82	18.24	18.68	19.70	17.01	17.44	17.86	18.30	19.32
	12H	17.54	17.92	18.39	18.77	19.84	17.14	17.52	17.99	18.37	19.44
12H	4H	16.52	17.05	17.35	17.89	18.90	16.16	16.68	16.99	17.53	18.53
	6H	17.20	17.63	18.05	18.49	19.51	16.83	17.27	17.69	18.13	19.15
	8H	17.46	17.84	18.31	18.69	19.76	17.08	17.46	17.94	18.32	19.39