

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: P910319

Luminaire Tested: DFN2DIP-TR4F0-120D120US840-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P910319
REPORT IS A COMBINATION OF REPORTS P902049 AND P898849
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-120D120US840-FLLONL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

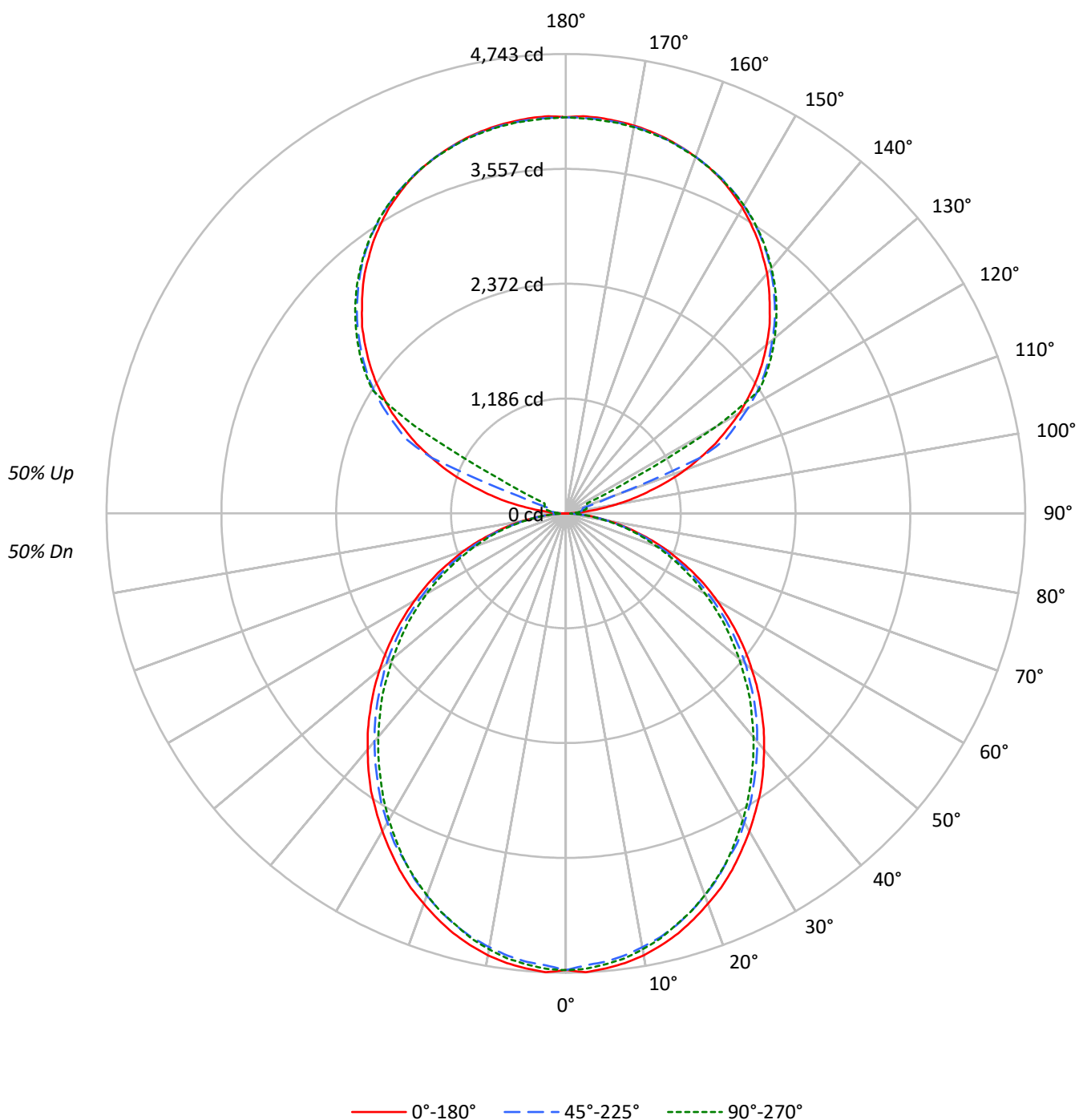
Lumens per Lamp: N/A
Luminaire Lumens: 23994.4 lumens
Efficiency: N/A
Efficacy: 110.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 217
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
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47
2	89	82	75	70	82	76	70	66	64	60	57	53	51	48	44	42	40
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	29
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	26
6	63	51	43	37	58	47	40	35	40	35	31	34	30	27	28	25	23
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	23	20
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3746	3746	3746
5°	3752	3694	3719
10°	3722	3644	3668
15°	3667	3584	3589
20°	3593	3501	3509
25°	3520	3401	3415
30°	3427	3308	3297
35°	3340	3199	3172
40°	3233	3088	3052
45°	3125	2977	2930
50°	3008	2861	2789
55°	2885	2726	2659
60°	2747	2567	2510
65°	2596	2401	2334
70°	2403	2200	2145
75°	2136	1958	1971
80°	1815	1651	1637
85°	1313	1120	1085

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3125 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	443.8	1.8
10°-20°	1248.7	5.2
20°-30°	1835.1	7.6
30°-40°	2131.4	8.9
40°-50°	2128.7	8.9
50°-60°	1856.2	7.7
60°-70°	1372.1	5.7
70°-80°	776.3	3.2
80°-90°	212.1	0.9
90°-100°	134.9	0.6
100°-110°	502.7	2.1
110°-120°	1333.3	5.6
120°-130°	2211.4	9.2
130°-140°	2349.0	9.8
140°-150°	2183.2	9.1
150°-160°	1755.2	7.3
160°-170°	1131.0	4.7
170°-180°	389.3	1.6
0°-30°	3527.6	14.7
0°-40°	5659.0	23.6
0°-60°	9643.8	40.2
0°-90°	12004.4	50.0
90°-120°	1970.9	8.2
90°-150°	8714.5	36.3
90°-180°	11990.0	50.0
0°-180°	23994.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4715	4715	4715	4715	4715	
5°	4715	4698	4648	4684	4675	448
15°	4489	4462	4403	4421	4398	1264
25°	4062	4026	3950	3958	3950	1869
35°	3505	3460	3387	3360	3337	2189
45°	2852	2820	2752	2703	2684	2201
55°	2158	2131	2077	2022	2000	1930
65°	1456	1428	1383	1342	1320	1439
75°	762	753	730	703	712	813
85°	186	181	177	163	159	207
90°	3	35	59	74	80	22
95°	192	94	115	130	127	228
105°	900	989	181	213	225	961
115°	1702	1752	1826	456	243	1675
125°	2406	2444	2501	2521	2530	2146
135°	2977	3025	3051	3081	3075	2300
145°	3454	3451	3501	3522	3507	2160
155°	3803	3776	3812	3829	3806	1752
165°	4007	3989	3998	4019	3998	1132
175°	4098	4078	4084	4105	4075	390
180°	4090	4090	4090	4090	4090	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4715.4	4715.4	4715.4	4715.4	4715.4
2.5°	4742.7	4720.1	4670.1	4715.4	4706.7
5°	4715.4	4697.5	4647.5	4683.6	4674.9
7.5°	4683.6	4656.6	4606.6	4643.2	4634.1
10°	4634.1	4602.3	4547.9	4584.0	4570.6
12.5°	4565.7	4538.7	4484.4	4507.0	4497.8
15°	4488.8	4461.8	4402.6	4420.9	4398.3
17.5°	4393.5	4366.6	4307.4	4330.0	4307.4
20°	4289.1	4262.1	4198.7	4212.1	4194.4
22.5°	4185.2	4144.3	4085.1	4085.1	4076.0
25°	4062.5	4026.4	3949.5	3958.2	3949.5
27.5°	3926.4	3894.6	3836.0	3822.4	3799.9
30°	3790.7	3754.2	3686.3	3672.9	3654.6
32.5°	3645.4	3618.6	3545.8	3518.5	3500.2
35°	3504.9	3459.8	3387.1	3359.7	3337.1
37.5°	3346.2	3305.4	3232.7	3201.0	3178.3
40°	3183.2	3146.6	3073.9	3033.5	3015.3
42.5°	3024.4	2987.9	2915.7	2870.0	2843.1
45°	2852.2	2820.5	2752.1	2702.6	2684.3
47.5°	2684.3	2652.5	2579.9	2529.9	2503.0
50°	2507.3	2484.7	2421.2	2357.6	2335.0
52.5°	2335.0	2303.3	2244.6	2194.5	2162.8
55°	2158.5	2131.1	2076.7	2022.4	1999.7
57.5°	1981.5	1958.8	1899.7	1845.3	1827.0
60°	1804.4	1786.7	1723.1	1673.1	1659.6
62.5°	1632.2	1600.4	1555.3	1510.1	1491.8
65°	1455.7	1428.3	1383.0	1342.1	1319.6
67.5°	1274.3	1251.2	1210.8	1179.1	1160.8
70°	1106.4	1088.1	1047.2	1015.5	997.7
72.5°	934.2	915.9	893.3	861.6	848.1
75°	761.5	752.9	729.7	702.9	712.0
77.5°	607.5	589.3	580.2	566.6	553.2
80°	453.6	448.8	439.7	426.3	417.1
82.5°	308.3	308.3	304.1	285.8	285.8
85°	185.7	181.4	177.0	163.1	158.8
87.5°	81.8	72.6	63.5	50.0	45.2
90°	2.8	35.4	59.1	74.1	79.8
92.5°	74.1	62.2	71.0	77.0	79.8
95°	192.2	94.5	115.2	130.4	127.2
97.5°	346.2	103.7	150.8	159.9	162.7
100°	523.9	118.5	168.6	192.2	198.2
102.5°	719.0	713.4	174.6	207.0	216.1
105°	899.6	988.6	180.7	213.0	224.9
107.5°	1109.7	1183.6	186.6	218.9	230.9
110°	1311.1	1373.0	518.0	222.1	233.7

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1500.6	1553.6	1503.4	227.7	236.8
115°	1701.5	1751.8	1825.9	455.8	242.9
117.5°	1876.2	1935.3	1985.9	1562.4	787.2
120°	2071.6	2115.9	2169.3	2204.8	1805.2
122.5°	2237.2	2284.6	2344.0	2361.6	2364.7
125°	2405.8	2444.5	2500.7	2521.4	2530.2
127.5°	2559.7	2601.2	2645.8	2675.3	2678.2
130°	2704.8	2752.3	2784.6	2817.3	2814.5
132.5°	2852.8	2891.4	2923.8	2950.5	2947.7
135°	2977.2	3024.6	3051.0	3080.9	3074.9
137.5°	3107.3	3142.7	3172.6	3202.1	3193.3
140°	3234.5	3258.3	3290.6	3317.4	3302.7
142.5°	3341.2	3362.0	3400.3	3423.8	3409.1
145°	3453.7	3450.6	3500.8	3521.6	3506.8
147.5°	3551.1	3542.3	3592.6	3607.3	3595.7
150°	3645.9	3625.2	3672.7	3690.3	3675.5
152.5°	3725.7	3702.2	3746.5	3764.4	3743.7
155°	3802.6	3776.3	3811.8	3829.4	3805.9
157.5°	3864.9	3841.3	3868.1	3888.8	3864.9
160°	3918.3	3900.4	3918.3	3935.8	3915.1
162.5°	3965.4	3947.9	3962.6	3983.3	3956.7
165°	4006.8	3989.3	3998.1	4018.9	3998.1
167.5°	4039.6	4021.6	4030.8	4051.5	4024.8
170°	4066.2	4048.3	4054.3	4075.0	4048.3
172.5°	4083.8	4066.2	4072.3	4093.0	4066.2
175°	4098.5	4077.8	4083.8	4104.6	4075.0
177.5°	4104.6	4083.8	4087.0	4107.7	4081.1
180°	4089.9	4089.9	4089.9	4089.9	4089.9

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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	11.86	12.72	12.81	13.69	14.96	11.43	12.29	12.38	13.26	14.53
	3H	13.52	14.29	14.49	15.27	16.57	13.05	13.82	14.01	14.80	16.09
	4H	14.11	14.84	15.09	15.82	17.12	13.63	14.36	14.61	15.35	16.65
	6H	14.51	15.18	15.50	16.17	17.48	14.03	14.70	15.02	15.69	17.01
	8H	14.61	15.25	15.61	16.26	17.57	14.14	14.78	15.13	15.78	17.10
	12H	14.66	15.27	15.66	16.27	17.61	14.18	14.79	15.18	15.79	17.13
4H	2H	12.32	13.05	13.31	14.04	15.34	11.98	12.71	12.96	13.69	14.99
	3H	14.19	14.80	15.18	15.81	17.13	13.79	14.40	14.79	15.42	16.73
	4H	14.90	15.46	15.91	16.47	17.80	14.49	15.05	15.50	16.06	17.40
	6H	15.41	15.90	16.43	16.93	18.26	15.01	15.49	16.02	16.52	17.85
	8H	15.56	16.01	16.58	17.04	18.39	15.15	15.60	16.17	16.63	17.98
	12H	15.64	16.04	16.67	17.08	18.44	15.22	15.62	16.25	16.66	18.02
8H	4H	15.10	15.55	16.11	16.57	17.92	14.74	15.19	15.75	16.21	17.56
	6H	15.73	16.10	16.77	17.17	18.51	15.37	15.74	16.41	16.80	18.15
	8H	15.95	16.28	17.00	17.33	18.69	15.58	15.91	16.63	16.96	18.33
	12H	16.08	16.37	17.13	17.41	18.82	15.70	15.98	16.75	17.03	18.44
12H	4H	15.08	15.49	16.12	16.53	17.88	14.73	15.14	15.77	16.18	17.53
	6H	15.76	16.09	16.81	17.14	18.50	15.41	15.73	16.46	16.79	18.15
	8H	16.00	16.29	17.05	17.33	18.74	15.64	15.93	16.70	16.98	18.39