

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: P910314

Luminaire Tested: DFN2DIP-TR4F0-120D110US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P910314
REPORT IS A COMBINATION OF REPORTS P900511 AND P897293
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-120D110US840-FLLFLL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

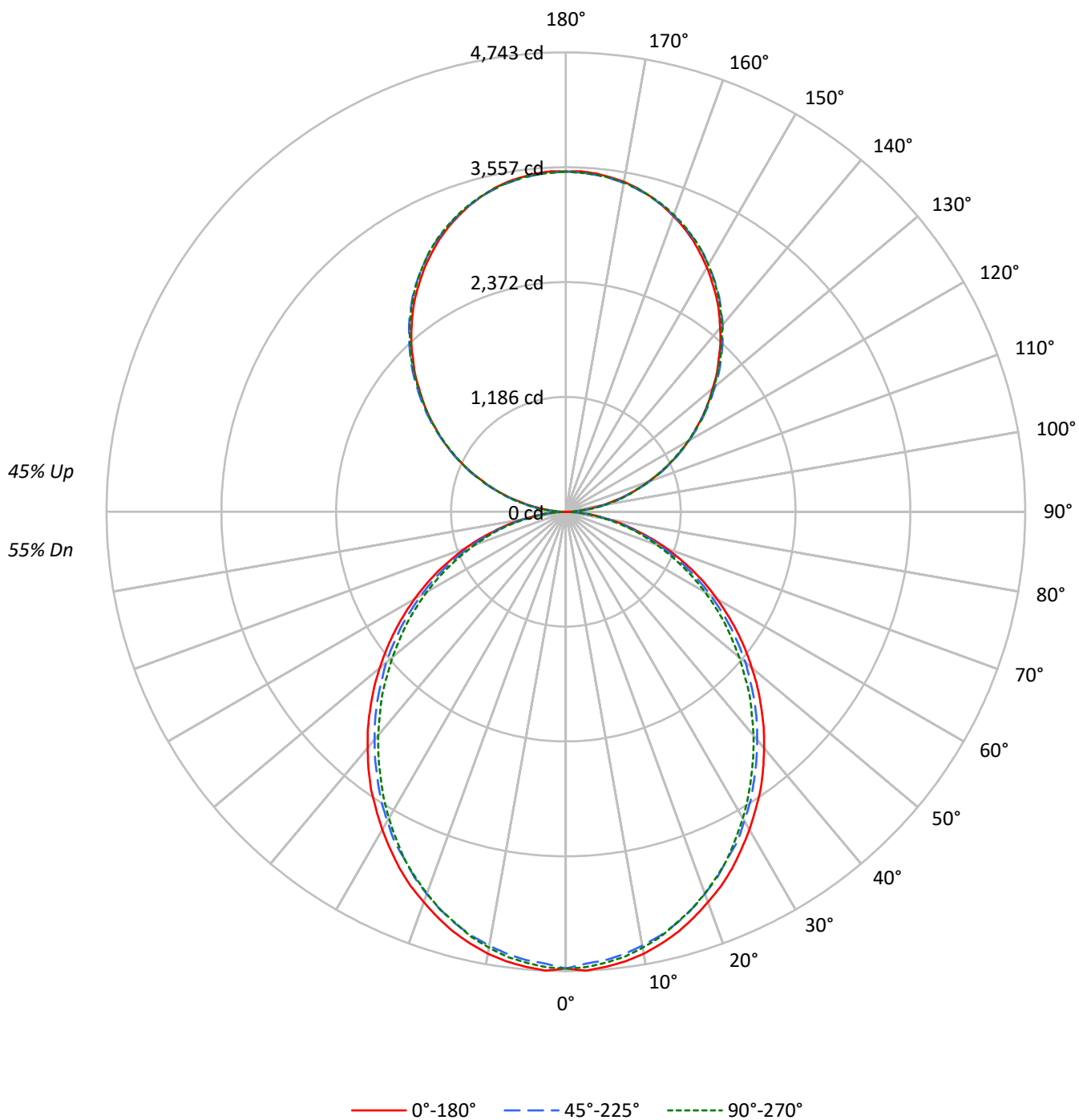
Lumens per Lamp: N/A
Luminaire Lumens: 21828.2 lumens
Efficiency: N/A
Efficacy: 103.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 210.4
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	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61
1	99	95	91	87	92	88	85	81	76	73	71	64	62	61	54	52	51
2	90	83	76	71	83	77	71	67	66	62	59	56	53	51	47	45	43
3	82	73	65	59	76	68	61	56	58	53	49	50	46	43	42	39	37
4	75	64	56	50	70	60	53	47	52	46	42	44	40	37	37	34	32
5	69	57	49	43	64	54	46	41	46	41	36	40	35	32	34	30	28
6	64	51	43	37	59	48	41	35	42	36	32	36	32	28	31	27	24
7	59	46	38	33	55	44	36	31	38	32	28	33	28	25	28	24	22
8	55	42	34	29	51	40	33	28	35	29	25	30	25	22	26	22	19
9	51	39	31	26	47	36	29	25	32	26	22	28	23	20	24	20	18
10	48	35	28	23	44	33	27	22	29	24	20	26	21	18	22	19	16

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	2.0
10°-20°	1248.7	5.7
20°-30°	1835.1	8.4
30°-40°	2131.4	9.8
40°-50°	2128.7	9.8
50°-60°	1856.2	8.5
60°-70°	1372.1	6.3
70°-80°	776.3	3.6
80°-90°	214.9	1.0
90°-100°	217.4	1.0
100°-110°	690.8	3.2
110°-120°	1182.1	5.4
120°-130°	1554.6	7.1
130°-140°	1745.0	8.0
140°-150°	1711.2	7.8
150°-160°	1435.4	6.6
160°-170°	951.9	4.4
170°-180°	332.7	1.5
0°-30°	3527.6	16.2
0°-40°	5659.0	25.9
0°-60°	9643.8	44.2
0°-90°	12007.2	55.0
90°-120°	2090.2	9.6
90°-150°	7101.0	32.5
90°-180°	9821.0	45.0
0°-180°	21828.2	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	38	104	98	101	21
95°	155	184	190	190	184	172
105°	638	646	652	658	658	673
115°	1186	1203	1198	1195	1186	1173
125°	1725	1752	1743	1734	1731	1542
135°	2232	2264	2271	2268	2259	1725
145°	2709	2730	2747	2751	2739	1693
155°	3098	3106	3116	3131	3121	1426
165°	3370	3367	3367	3388	3373	951
175°	3507	3498	3492	3513	3495	333
180°	3513	3513	3513	3513	3513	

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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°	3.1	38.2	103.8	97.5	100.6
92.5°	65.6	89.0	92.1	95.3	95.3
95°	154.6	184.3	189.6	189.6	184.3
97.5°	257.4	284.9	296.6	296.6	296.6
100°	376.0	400.3	408.8	408.8	405.7
102.5°	501.0	519.0	530.7	533.8	530.7
105°	637.6	646.1	652.5	657.7	657.7
107.5°	773.2	785.9	785.9	788.0	773.2
110°	904.5	921.5	921.5	921.5	913.0

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1046.4	1064.4	1061.3	1052.8	1046.4
115°	1186.3	1203.2	1197.9	1194.8	1186.3
117.5°	1325.0	1348.3	1333.4	1325.0	1316.6
120°	1464.8	1488.1	1464.8	1464.8	1455.3
122.5°	1592.0	1621.5	1606.7	1598.2	1592.0
125°	1725.4	1751.8	1743.3	1733.8	1730.6
127.5°	1855.6	1888.4	1876.8	1864.1	1855.6
130°	1977.4	2015.6	2010.2	2003.9	1992.3
132.5°	2114.1	2143.7	2145.9	2131.0	2122.5
135°	2231.6	2264.4	2270.8	2267.7	2259.2
137.5°	2363.0	2389.4	2394.7	2392.6	2380.0
140°	2478.4	2504.9	2519.7	2519.7	2508.1
142.5°	2597.1	2623.5	2632.0	2635.1	2623.5
145°	2709.3	2730.5	2747.4	2750.6	2739.0
147.5°	2810.0	2836.4	2849.1	2854.4	2842.8
150°	2913.8	2931.7	2943.4	2952.9	2943.4
152.5°	3005.9	3023.8	3038.7	3050.4	3038.7
155°	3098.1	3106.4	3116.0	3130.9	3121.3
157.5°	3177.4	3183.8	3189.1	3210.3	3195.4
160°	3248.4	3254.8	3257.9	3276.0	3263.3
162.5°	3314.1	3314.1	3317.3	3337.4	3322.6
165°	3370.2	3367.0	3367.0	3388.2	3373.4
167.5°	3421.0	3411.5	3411.5	3432.7	3417.9
170°	3459.2	3450.7	3447.6	3468.7	3450.7
172.5°	3485.7	3477.2	3474.0	3495.2	3477.2
175°	3506.9	3498.4	3492.0	3513.2	3495.2
177.5°	3518.5	3510.0	3503.6	3521.7	3503.6
180°	3513.2	3513.2	3513.2	3513.2	3513.2

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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	12.30	13.21	13.22	14.14	15.34	11.87	12.78	12.79	13.71	14.91
	3H	13.97	14.78	14.89	15.72	16.95	13.50	14.31	14.42	15.25	16.47
	4H	14.56	15.33	15.50	16.27	17.51	14.08	14.86	15.02	15.80	17.03
	6H	14.96	15.67	15.91	16.62	17.87	14.48	15.20	15.44	16.15	17.39
	8H	15.07	15.74	16.02	16.71	17.95	14.59	15.27	15.55	16.24	17.48
	12H	15.12	15.76	16.08	16.72	17.99	14.64	15.28	15.60	16.24	17.51
4H	2H	12.77	13.54	13.72	14.49	15.72	12.43	13.20	13.37	14.14	15.38
	3H	14.64	15.29	15.60	16.26	17.51	14.25	14.89	15.20	15.87	17.11
	4H	15.36	15.95	16.32	16.92	18.19	14.95	15.54	15.92	16.51	17.78
	6H	15.88	16.38	16.85	17.38	18.65	15.47	15.97	16.44	16.97	18.24
	8H	16.03	16.50	17.01	17.49	18.77	15.61	16.09	16.59	17.08	18.36
	12H	16.10	16.53	17.10	17.53	18.82	15.68	16.11	16.68	17.11	18.40
8H	4H	15.56	16.03	16.54	17.02	18.30	15.20	15.67	16.18	16.66	17.94
	6H	16.19	16.58	17.20	17.61	18.89	15.83	16.22	16.83	17.25	18.53
	8H	16.41	16.76	17.43	17.78	19.07	16.04	16.39	17.06	17.41	18.71
	12H	16.55	16.85	17.56	17.86	19.21	16.16	16.47	17.18	17.48	18.82
12H	4H	15.55	15.97	16.54	16.98	18.27	15.19	15.62	16.19	16.63	17.91
	6H	16.22	16.57	17.23	17.58	18.88	15.87	16.22	16.88	17.23	18.53
	8H	16.47	16.77	17.48	17.78	19.13	16.11	16.41	17.13	17.42	18.77