

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: P909616

Luminaire Tested: DFN2DIP-SQ4F0-120D080US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909616
REPORT IS A COMBINATION OF REPORTS P900107 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-120D080US840-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

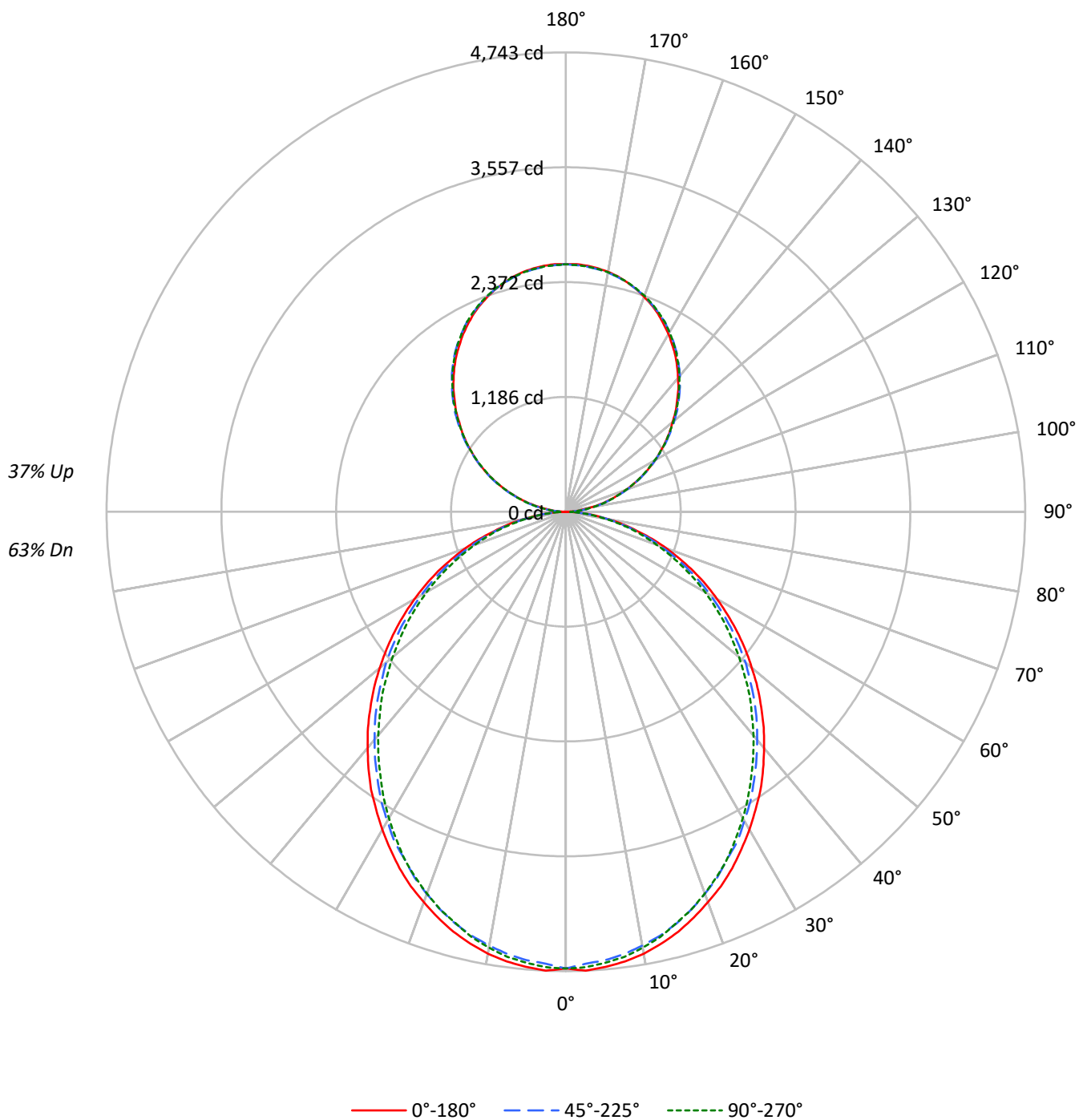
Lumens per Lamp: N/A
Luminaire Lumens: 19147.0 lumens
Efficiency: N/A
Efficacy: 108.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 177.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9933
Total Harmonic Distortion (THDi): 0.066
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	110	110	110	110	103	103	103	103	90	90	90		79	79	79		68
1	101	96	92	89	94	90	87	84	79	77	74		69	67	66		60
2	92	84	78	72	86	79	73	69	70	65	62		61	58	55		53
3	84	74	66	60	78	70	63	58	61	56	52		54	50	46		47
4	77	66	57	51	71	62	54	49	55	49	44		48	43	40		42
5	70	58	50	44	66	55	48	42	49	43	38		43	38	35		38
6	65	53	44	38	61	50	42	37	44	38	33		39	34	30		34
7	60	48	39	34	56	45	38	32	40	34	30		36	31	27		31
8	56	43	35	30	52	41	34	29	37	31	26		33	28	24		29
9	52	40	32	27	49	38	30	26	34	28	24		30	25	22		27
10	49	36	29	24	46	35	28	23	31	25	21		28	23	20		25

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3309	3309	3309
5°	3314	3263	3285
10°	3287	3220	3242
15°	3239	3168	3173
20°	3173	3095	3103
25°	3108	3007	3022
30°	3027	2926	2918
35°	2950	2830	2808
40°	2855	2733	2704
45°	2760	2636	2597
50°	2656	2534	2474
55°	2548	2416	2360
60°	2425	2276	2230
65°	2291	2131	2077
70°	2121	1955	1913
75°	1885	1743	1762
80°	1601	1475	1472
85°	1157	1009	990

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2760 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	443.8	2.3
10°-20°	1248.7	6.5
20°-30°	1835.1	9.6
30°-40°	2131.4	11.1
40°-50°	2128.7	11.1
50°-60°	1856.2	9.7
60°-70°	1372.1	7.2
70°-80°	776.3	4.1
80°-90°	212.2	1.1
90°-100°	158.1	0.8
100°-110°	502.4	2.6
110°-120°	859.7	4.5
120°-130°	1130.6	5.9
130°-140°	1269.1	6.6
140°-150°	1244.5	6.5
150°-160°	1043.9	5.5
160°-170°	692.3	3.6
170°-180°	242.0	1.3
0°-30°	3527.6	18.4
0°-40°	5659.0	29.6
0°-60°	9643.8	50.4
0°-90°	12004.4	62.7
90°-120°	1520.1	7.9
90°-150°	5164.3	27.0
90°-180°	7143.0	37.3
0°-180°	19147.0	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°	2	28	76	71	73	18
95°	112	134	138	138	134	125
105°	464	470	474	478	478	489
115°	863	875	871	869	863	853
125°	1255	1274	1268	1261	1259	1121
135°	1623	1647	1652	1649	1643	1254
145°	1970	1986	1998	2000	1992	1231
155°	2253	2259	2266	2277	2270	1037
165°	2451	2449	2449	2464	2453	691
175°	2550	2544	2540	2555	2542	242
180°	2555	2555	2555	2555	2555	

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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°	2.3	27.8	75.5	70.9	73.2
92.5°	47.8	64.7	67.1	69.3	69.3
95°	112.5	134.0	137.8	137.8	134.0
97.5°	187.2	207.2	215.7	215.7	215.7
100°	273.5	291.1	297.3	297.3	295.0
102.5°	364.4	377.5	385.9	388.2	385.9
105°	463.7	469.9	474.5	478.4	478.4
107.5°	562.3	571.6	571.6	573.1	562.3
110°	657.8	670.1	670.1	670.1	664.0

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	761.0	774.2	771.8	765.7	761.0
115°	862.7	875.0	871.2	868.9	862.7
117.5°	963.6	980.6	969.8	963.6	957.5
120°	1065.3	1082.3	1065.3	1065.3	1058.3
122.5°	1157.7	1179.3	1168.5	1162.4	1157.7
125°	1254.8	1274.0	1267.9	1260.9	1258.7
127.5°	1349.6	1373.4	1364.9	1355.7	1349.6
130°	1438.1	1465.8	1462.0	1457.4	1449.0
132.5°	1537.5	1559.0	1560.6	1549.8	1543.7
135°	1623.0	1646.9	1651.5	1649.2	1643.1
137.5°	1718.5	1737.8	1741.6	1740.1	1730.8
140°	1802.5	1821.7	1832.5	1832.5	1824.0
142.5°	1888.8	1908.0	1914.2	1916.5	1908.0
145°	1970.4	1985.8	1998.1	2000.4	1992.0
147.5°	2043.6	2062.9	2072.0	2076.0	2067.5
150°	2119.1	2132.1	2140.6	2147.6	2140.6
152.5°	2186.1	2199.2	2210.0	2218.5	2210.0
155°	2253.1	2259.3	2266.2	2276.9	2270.1
157.5°	2310.9	2315.5	2319.4	2334.7	2324.0
160°	2362.5	2367.1	2369.4	2382.5	2373.3
162.5°	2410.2	2410.2	2412.6	2427.2	2416.4
165°	2451.0	2448.7	2448.7	2464.2	2453.4
167.5°	2488.0	2481.1	2481.1	2496.5	2485.7
170°	2515.8	2509.6	2507.3	2522.7	2509.6
172.5°	2535.1	2528.9	2526.6	2541.9	2528.9
175°	2550.4	2544.3	2539.6	2555.1	2541.9
177.5°	2558.9	2552.7	2548.1	2561.2	2548.1
180°	2555.1	2555.1	2555.1	2555.1	2555.1

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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	12.54	13.52	13.38	14.39	15.46	12.09	13.08	12.93	13.94	15.02
	3H	14.21	15.10	15.06	15.97	17.07	13.72	14.61	14.57	15.48	16.58
	4H	14.81	15.64	15.68	16.52	17.64	14.31	15.15	15.18	16.03	17.14
	6H	15.22	15.99	16.10	16.88	18.00	14.72	15.49	15.60	16.37	17.50
	8H	15.33	16.06	16.22	16.97	18.09	14.82	15.56	15.71	16.47	17.59
	12H	15.38	16.08	16.28	16.98	18.13	14.87	15.57	15.77	16.47	17.62
4H	2H	13.01	13.85	13.89	14.73	15.84	12.66	13.50	13.53	14.37	15.49
	3H	14.89	15.59	15.78	16.51	17.64	14.49	15.19	15.37	16.10	17.23
	4H	15.62	16.26	16.51	17.16	18.32	15.19	15.83	16.09	16.74	17.90
	6H	16.14	16.70	17.06	17.63	18.78	15.71	16.26	16.62	17.19	18.35
	8H	16.30	16.81	17.21	17.74	18.91	15.86	16.38	16.78	17.30	18.47
	12H	16.38	16.85	17.31	17.79	18.97	15.93	16.40	16.86	17.34	18.52
8H	4H	15.82	16.34	16.74	17.27	18.44	15.45	15.96	16.36	16.89	18.06
	6H	16.47	16.89	17.41	17.86	19.03	16.08	16.51	17.02	17.48	18.65
	8H	16.69	17.07	17.64	18.03	19.22	16.30	16.68	17.25	17.63	18.82
	12H	16.83	17.16	17.79	18.11	19.35	16.42	16.75	17.37	17.70	18.94
12H	4H	15.82	16.28	16.75	17.22	18.40	15.45	15.91	16.38	16.86	18.03
	6H	16.50	16.88	17.45	17.83	19.02	16.13	16.50	17.08	17.46	18.65
	8H	16.75	17.08	17.70	18.03	19.27	16.37	16.70	17.32	17.65	18.89