

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: P920612

Luminaire Tested: DFN2DIP-SQ4F0-160D110US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920612
REPORT IS A COMBINATION OF REPORTS P900165 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D110US935-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

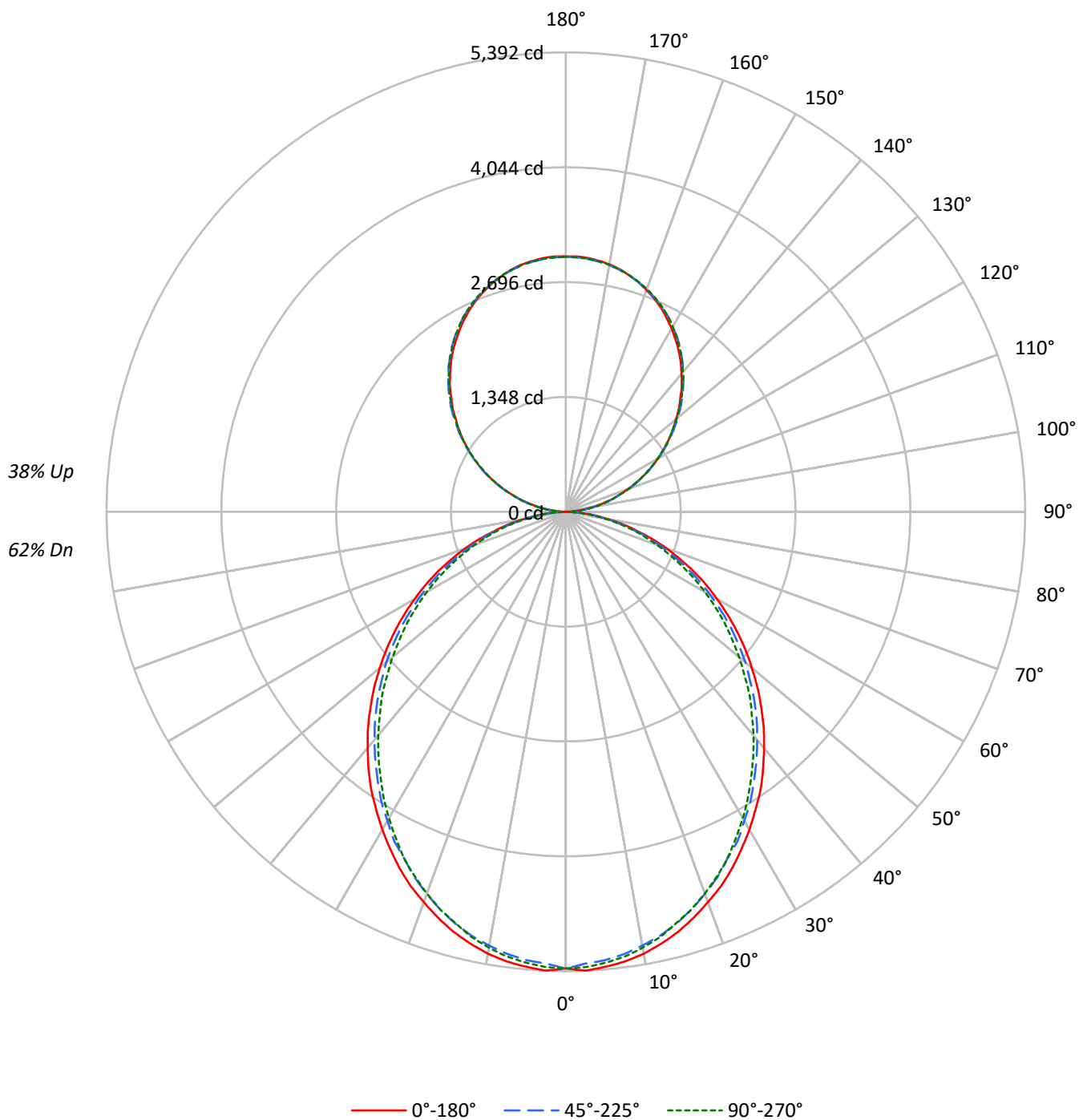
Lumens per Lamp: N/A
Luminaire Lumens: 22020.0 lumens
Efficiency: N/A
Efficacy: 88.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 249.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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	110	110	110	110	103	103	103	103	90	90	90	78	78	78	67	67	67
1	100	96	92	89	94	90	87	84	79	76	74	69	67	65	59	58	57
2	92	84	78	72	85	79	73	69	69	65	61	60	57	54	52	50	48
3	84	74	66	60	78	69	63	57	61	56	52	53	49	46	46	43	41
4	76	65	57	51	71	62	54	49	54	49	44	48	43	40	41	38	35
5	70	58	50	44	66	55	48	42	49	43	38	43	38	34	37	34	31
6	65	52	44	38	60	49	42	37	44	38	33	39	34	30	34	30	27
7	60	47	39	34	56	45	37	32	40	34	29	35	30	27	31	27	24
8	56	43	35	30	52	41	34	29	36	30	26	32	27	24	28	25	22
9	52	39	32	27	49	37	30	26	33	28	24	30	25	21	26	22	19
10	49	36	29	24	46	34	28	23	31	25	21	28	23	19	24	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3761	3761	3761
5°	3767	3710	3735
10°	3736	3660	3685
15°	3682	3601	3607
20°	3607	3518	3528
25°	3533	3418	3435
30°	3441	3326	3317
35°	3353	3217	3192
40°	3245	3107	3074
45°	3137	2996	2953
50°	3019	2881	2812
55°	2896	2746	2683
60°	2757	2587	2535
65°	2605	2423	2361
70°	2411	2222	2174
75°	2143	1982	2003
80°	1820	1676	1674
85°	1316	1147	1125

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3137 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	504.5	2.3
10°-20°	1419.5	6.4
20°-30°	2086.1	9.5
30°-40°	2422.9	11.0
40°-50°	2419.9	11.0
50°-60°	2110.1	9.6
60°-70°	1559.8	7.1
70°-80°	882.5	4.0
80°-90°	241.4	1.1
90°-100°	185.3	0.8
100°-110°	588.9	2.7
110°-120°	1007.8	4.6
120°-130°	1325.4	6.0
130°-140°	1487.7	6.8
140°-150°	1458.9	6.6
150°-160°	1223.8	5.6
160°-170°	811.6	3.7
170°-180°	283.7	1.3
0°-30°	4010.1	18.2
0°-40°	6433.0	29.2
0°-60°	10963.0	49.8
0°-90°	13646.7	62.0
90°-120°	1782.1	8.1
90°-150°	6054.2	27.5
90°-180°	8373.0	38.0
0°-180°	22020.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5360	5360	5360	5360	5360	
5°	5360	5340	5283	5324	5314	509
15°	5103	5072	5005	5026	5000	1437
25°	4618	4577	4490	4500	4490	2125
35°	3984	3933	3850	3819	3794	2488
45°	3242	3206	3129	3072	3052	2502
55°	2454	2423	2361	2299	2273	2194
65°	1655	1624	1572	1526	1500	1636
75°	866	856	830	799	809	924
85°	211	206	201	185	180	235
90°	3	32	88	83	86	21
95°	132	157	162	162	157	147
105°	544	551	556	561	561	574
115°	1011	1026	1021	1019	1011	1000
125°	1471	1494	1486	1478	1476	1315
135°	1903	1931	1936	1933	1926	1471
145°	2310	2328	2342	2345	2335	1443
155°	2641	2648	2657	2669	2661	1216
165°	2873	2871	2871	2889	2876	811
175°	2990	2983	2977	2995	2980	284
180°	2995	2995	2995	2995	2995	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5360.3	5360.3	5360.3	5360.3	5360.3
2.5°	5391.5	5365.7	5308.9	5360.3	5350.4
5°	5360.3	5340.1	5283.2	5324.2	5314.3
7.5°	5324.2	5293.6	5236.7	5278.3	5267.8
10°	5267.8	5231.8	5170.0	5211.0	5195.7
12.5°	5190.3	5159.6	5097.8	5123.5	5113.1
15°	5102.7	5072.1	5004.8	5025.6	4999.9
17.5°	4994.5	4963.8	4896.6	4922.2	4896.6
20°	4875.7	4845.2	4772.9	4788.3	4768.0
22.5°	4757.7	4711.2	4643.9	4643.9	4633.5
25°	4618.2	4577.2	4489.7	4499.6	4489.7
27.5°	4463.4	4427.3	4360.6	4345.4	4319.6
30°	4309.2	4267.7	4190.6	4175.2	4154.5
32.5°	4144.1	4113.5	4030.8	3999.7	3978.9
35°	3984.4	3933.0	3850.4	3819.2	3793.6
37.5°	3804.0	3757.5	3674.9	3638.7	3613.1
40°	3618.5	3577.0	3494.4	3448.5	3427.7
42.5°	3438.1	3396.6	3314.5	3262.6	3231.9
45°	3242.3	3206.2	3128.6	3072.2	3051.5
47.5°	3051.5	3015.4	2932.8	2875.9	2845.3
50°	2850.2	2824.5	2752.4	2680.1	2654.5
52.5°	2654.5	2618.4	2551.7	2494.7	2458.7
55°	2453.8	2422.6	2360.8	2299.0	2273.3
57.5°	2252.5	2226.8	2159.6	2097.7	2077.0
60°	2051.2	2031.0	1958.9	1901.9	1886.6
62.5°	1855.5	1819.4	1768.0	1716.6	1695.8
65°	1654.8	1623.6	1572.2	1525.8	1500.0
67.5°	1448.6	1422.4	1376.5	1340.3	1319.6
70°	1257.7	1237.0	1190.5	1154.4	1134.2
72.5°	1062.0	1041.2	1015.5	979.4	964.1
75°	865.6	855.8	829.6	798.9	809.3
77.5°	690.7	669.9	659.5	644.2	628.9
80°	515.7	510.2	499.8	484.5	474.2
82.5°	350.5	350.5	345.6	324.9	324.9
85°	211.1	206.1	201.2	185.4	180.5
87.5°	93.0	82.6	72.2	56.9	51.4
90°	2.7	32.5	88.5	83.1	85.8
92.5°	56.0	75.9	78.5	81.3	81.3
95°	131.8	157.1	161.6	161.6	157.1
97.5°	219.5	242.9	252.9	252.9	252.9
100°	320.5	341.3	348.5	348.5	345.9
102.5°	427.1	442.5	452.5	455.1	452.5
105°	543.6	550.9	556.3	560.8	560.8
107.5°	659.2	670.0	670.0	671.8	659.2
110°	771.2	785.7	785.7	785.7	778.4

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	892.2	907.5	904.8	897.6	892.2
115°	1011.4	1025.8	1021.3	1018.6	1011.4
117.5°	1129.7	1149.5	1136.9	1129.7	1122.5
120°	1248.9	1268.8	1248.9	1248.9	1240.8
122.5°	1357.3	1382.5	1369.8	1362.6	1357.3
125°	1471.0	1493.6	1486.3	1478.2	1475.5
127.5°	1582.1	1610.1	1600.2	1589.3	1582.1
130°	1685.9	1718.5	1713.9	1708.5	1698.6
132.5°	1802.4	1827.7	1829.5	1816.9	1809.6
135°	1902.6	1930.6	1936.0	1933.4	1926.1
137.5°	2014.6	2037.2	2041.7	2039.9	2029.1
140°	2113.1	2135.6	2148.3	2148.3	2138.4
142.5°	2214.2	2236.8	2244.0	2246.7	2236.8
145°	2309.9	2328.0	2342.4	2345.1	2335.2
147.5°	2395.7	2418.3	2429.1	2433.6	2423.7
150°	2484.2	2499.6	2509.5	2517.6	2509.5
152.5°	2562.8	2578.1	2590.7	2600.7	2590.7
155°	2641.4	2648.5	2656.7	2669.4	2661.2
157.5°	2709.0	2714.5	2718.9	2737.0	2724.4
160°	2769.6	2775.0	2777.7	2793.1	2782.2
162.5°	2825.5	2825.5	2828.3	2845.4	2832.8
165°	2873.4	2870.7	2870.7	2888.7	2876.1
167.5°	2916.7	2908.6	2908.6	2926.7	2914.0
170°	2949.3	2942.0	2939.4	2957.4	2942.0
172.5°	2971.8	2964.6	2961.9	2980.0	2964.6
175°	2989.9	2982.7	2977.2	2995.3	2980.0
177.5°	2999.8	2992.6	2987.1	3002.6	2987.1
180°	2995.3	2995.3	2995.3	2995.3	2995.3

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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	12.92	13.90	13.77	14.77	15.86	12.48	13.46	13.33	14.33	15.42
	3H	14.60	15.48	15.46	16.36	17.47	14.11	14.99	14.97	15.86	16.98
	4H	15.19	16.02	16.07	16.91	18.04	14.70	15.53	15.57	16.41	17.54
	6H	15.60	16.37	16.49	17.26	18.40	15.10	15.87	15.99	16.76	17.90
	8H	15.71	16.44	16.61	17.35	18.49	15.21	15.94	16.11	16.85	17.99
	12H	15.77	16.46	16.67	17.37	18.53	15.26	15.95	16.16	16.86	18.02
4H	2H	13.40	14.23	14.28	15.12	16.24	13.04	13.88	13.92	14.76	15.89
	3H	15.28	15.97	16.17	16.89	18.03	14.87	15.57	15.76	16.48	17.63
	4H	16.00	16.64	16.91	17.55	18.72	15.58	16.21	16.48	17.12	18.29
	6H	16.53	17.08	17.45	18.01	19.18	16.10	16.64	17.01	17.58	18.75
	8H	16.68	17.19	17.60	18.13	19.31	16.25	16.76	17.17	17.69	18.87
	12H	16.76	17.23	17.70	18.17	19.36	16.32	16.78	17.26	17.73	18.91
8H	4H	16.21	16.72	17.13	17.65	18.83	15.83	16.34	16.75	17.27	18.46
	6H	16.85	17.27	17.80	18.25	19.43	16.47	16.89	17.41	17.86	19.04
	8H	17.07	17.45	18.03	18.41	19.61	16.68	17.06	17.64	18.02	19.22
	12H	17.22	17.55	18.17	18.50	19.75	16.80	17.13	17.76	18.09	19.34
12H	4H	16.20	16.66	17.14	17.61	18.80	15.83	16.29	16.77	17.24	18.43
	6H	16.88	17.26	17.84	18.22	19.42	16.51	16.88	17.47	17.85	19.05
	8H	17.13	17.46	18.09	18.42	19.67	16.75	17.08	17.71	18.04	19.29