

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: P904240

Luminaire Tested: DFN2DIP-SQ4F0-160D100US830-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904240
REPORT IS A COMBINATION OF REPORTS P900147 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D100US830-FLLFL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

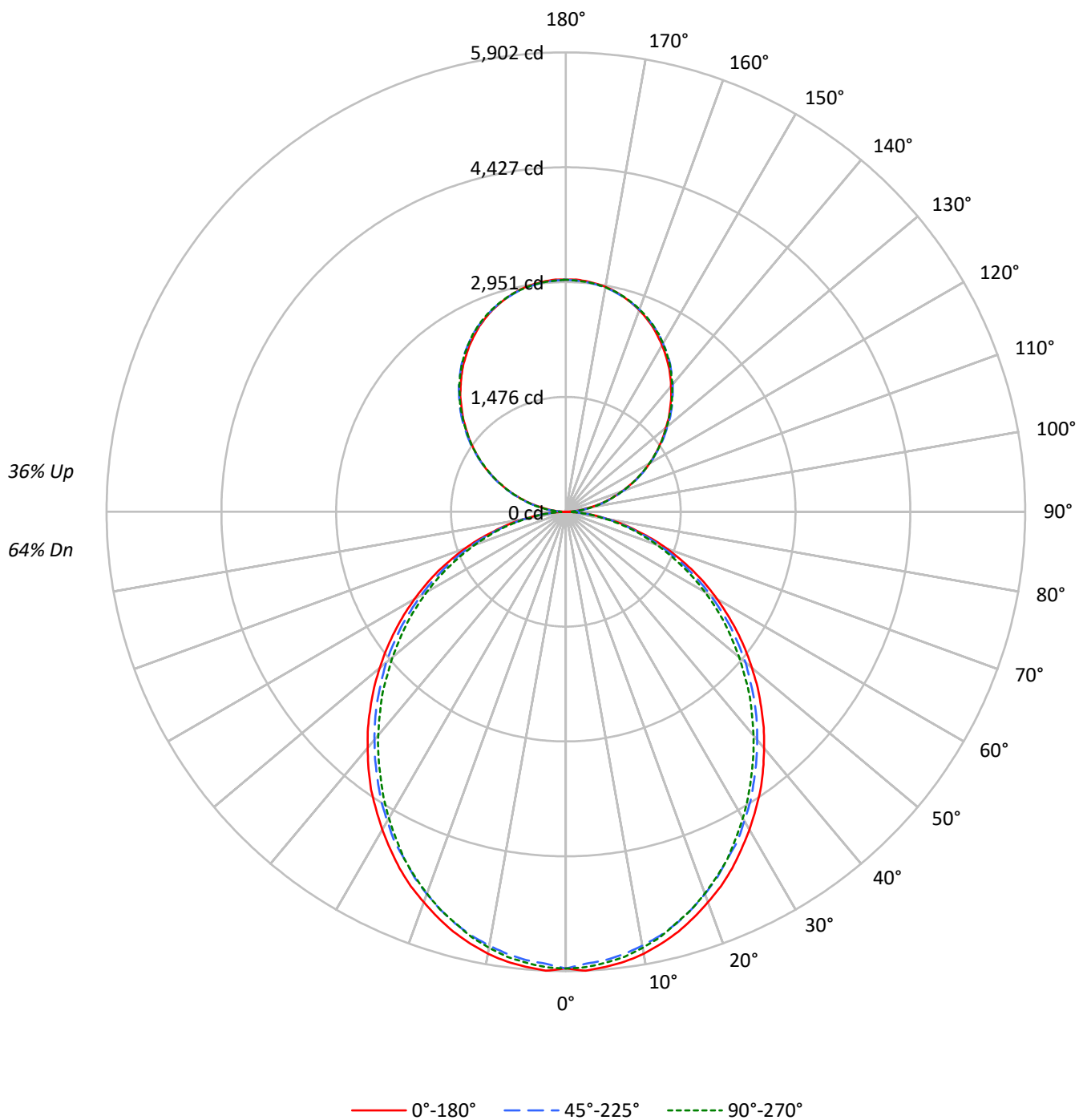
Lumens per Lamp: N/A
Luminaire Lumens: 23271.4 lumens
Efficiency: N/A
Efficacy: 96.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 241.4
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	111	111	111	111	104	104	104	104	91	91	91	80	80	80	69	69	69
1	101	97	93	89	95	91	87	84	80	77	75	70	68	66	61	60	58
2	92	84	78	73	86	79	74	69	70	66	62	62	58	56	54	51	49
3	84	74	67	61	79	70	63	58	62	57	52	55	50	47	48	45	42
4	77	66	58	51	72	62	55	49	55	49	45	49	44	40	43	39	36
5	71	59	50	44	66	55	48	42	49	43	39	44	39	35	38	35	32
6	65	53	44	38	61	50	42	37	45	38	34	40	35	31	35	31	28
7	60	48	40	34	56	45	38	32	40	34	30	36	31	27	32	28	25
8	56	43	35	30	53	41	34	29	37	31	27	33	28	24	29	25	22
9	52	40	32	27	49	38	31	26	34	28	24	30	26	22	27	23	20
10	49	37	29	24	46	35	28	23	31	26	22	28	23	20	25	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4117	4117	4117
5°	4124	4061	4089
10°	4090	4007	4034
15°	4030	3942	3949
20°	3949	3851	3862
25°	3868	3742	3760
30°	3767	3641	3631
35°	3671	3521	3495
40°	3552	3401	3365
45°	3434	3280	3232
50°	3305	3153	3078
55°	3171	3007	2937
60°	3018	2832	2776
65°	2852	2652	2585
70°	2640	2432	2380
75°	2346	2170	2193
80°	1993	1835	1832
85°	1440	1255	1231

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3434 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	552.3	2.4
10°-20°	1553.9	6.7
20°-30°	2283.7	9.8
30°-40°	2652.4	11.4
40°-50°	2649.1	11.4
50°-60°	2309.9	9.9
60°-70°	1707.5	7.3
70°-80°	966.1	4.2
80°-90°	263.4	1.1
90°-100°	184.5	0.8
100°-110°	586.1	2.5
110°-120°	1003.0	4.3
120°-130°	1319.1	5.7
130°-140°	1480.6	6.4
140°-150°	1451.9	6.2
150°-160°	1217.9	5.2
160°-170°	807.7	3.5
170°-180°	282.3	1.2
0°-30°	4389.9	18.9
0°-40°	7042.3	30.3
0°-60°	12001.3	51.6
0°-90°	14938.3	64.2
90°-120°	1773.5	7.6
90°-150°	6025.1	25.9
90°-180°	8333.0	35.8
0°-180°	23271.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5868	5868	5868	5868	5868	
5°	5868	5846	5784	5828	5818	557
15°	5586	5552	5479	5502	5473	1573
25°	5056	5011	4915	4926	4915	2326
35°	4362	4306	4215	4181	4153	2724
45°	3549	3510	3425	3363	3340	2739
55°	2686	2652	2584	2517	2489	2402
65°	1812	1777	1721	1670	1642	1791
75°	948	937	908	875	886	1012
85°	231	226	220	203	198	258
90°	3	32	88	83	85	22
95°	131	156	161	161	156	146
105°	541	548	554	558	558	571
115°	1006	1021	1016	1014	1006	996
125°	1464	1486	1479	1471	1468	1308
135°	1894	1921	1927	1924	1917	1464
145°	2299	2317	2331	2334	2324	1436
155°	2629	2636	2644	2656	2648	1210
165°	2860	2857	2857	2875	2862	807
175°	2976	2968	2963	2981	2966	283
180°	2981	2981	2981	2981	2981	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5868.0	5868.0	5868.0	5868.0	5868.0
2.5°	5902.1	5873.9	5811.7	5868.0	5857.1
5°	5868.0	5845.8	5783.5	5828.5	5817.7
7.5°	5828.5	5794.9	5732.6	5778.2	5766.8
10°	5766.8	5727.3	5659.7	5704.5	5687.8
12.5°	5681.8	5648.3	5580.6	5608.8	5597.4
15°	5586.0	5552.5	5478.8	5501.6	5473.4
17.5°	5467.5	5433.9	5360.3	5388.4	5360.3
20°	5337.5	5304.1	5225.0	5241.8	5219.6
22.5°	5208.3	5157.4	5083.7	5083.7	5072.4
25°	5055.6	5010.7	4914.9	4925.7	4914.9
27.5°	4886.1	4846.6	4773.6	4756.9	4728.7
30°	4717.3	4671.9	4587.4	4570.7	4548.0
32.5°	4536.6	4503.1	4412.6	4378.5	4355.8
35°	4361.8	4305.5	4215.0	4180.9	4152.8
37.5°	4164.2	4113.3	4023.0	3983.4	3955.3
40°	3961.2	3915.8	3825.4	3775.1	3752.4
42.5°	3763.8	3718.2	3628.4	3571.6	3538.0
45°	3549.4	3509.8	3424.9	3363.2	3340.5
47.5°	3340.5	3301.0	3210.6	3148.3	3114.8
50°	3120.2	3092.0	3013.0	2933.9	2905.9
52.5°	2905.9	2866.4	2793.3	2731.0	2691.5
55°	2686.2	2652.0	2584.4	2516.7	2488.6
57.5°	2465.9	2437.7	2364.1	2296.4	2273.7
60°	2245.5	2223.4	2144.4	2082.1	2065.3
62.5°	2031.2	1991.7	1935.4	1879.1	1856.4
65°	1811.5	1777.4	1721.1	1670.3	1642.1
67.5°	1585.8	1557.1	1506.8	1467.3	1444.5
70°	1376.9	1354.2	1303.3	1263.8	1241.6
72.5°	1162.5	1139.8	1111.7	1072.1	1055.5
75°	947.6	936.9	908.1	874.6	886.0
77.5°	756.1	733.4	722.0	705.2	688.4
80°	564.5	558.6	547.1	530.4	519.1
82.5°	383.7	383.7	378.3	355.6	355.6
85°	231.1	225.6	220.3	202.9	197.6
87.5°	101.8	90.4	79.0	62.3	56.3
90°	2.7	32.3	88.0	82.7	85.4
92.5°	55.7	75.5	78.2	80.9	80.9
95°	131.2	156.4	160.9	160.9	156.4
97.5°	218.4	241.8	251.7	251.7	251.7
100°	319.1	339.7	346.9	346.9	344.2
102.5°	425.1	440.4	450.3	452.9	450.3
105°	541.0	548.2	553.6	558.1	558.1
107.5°	656.0	666.8	666.8	668.6	656.0
110°	767.5	781.8	781.8	781.8	774.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	887.9	903.1	900.5	893.2	887.9
115°	1006.5	1020.9	1016.4	1013.7	1006.5
117.5°	1124.3	1144.1	1131.4	1124.3	1117.0
120°	1242.8	1262.6	1242.8	1242.8	1234.8
122.5°	1350.7	1375.8	1363.3	1356.1	1350.7
125°	1464.0	1486.4	1479.2	1471.1	1468.5
127.5°	1574.5	1602.3	1592.4	1581.7	1574.5
130°	1677.8	1710.1	1705.7	1700.3	1690.4
132.5°	1793.8	1818.9	1820.7	1808.2	1800.9
135°	1893.5	1921.4	1926.7	1924.1	1916.8
137.5°	2005.0	2027.4	2031.9	2030.1	2019.3
140°	2102.9	2125.3	2138.0	2138.0	2128.1
142.5°	2203.6	2226.0	2233.2	2235.9	2226.0
145°	2298.8	2316.8	2331.2	2333.8	2323.9
147.5°	2384.2	2406.7	2417.4	2422.0	2412.1
150°	2472.3	2487.6	2497.5	2505.5	2497.5
152.5°	2550.4	2565.7	2578.3	2588.2	2578.3
155°	2628.7	2635.8	2643.9	2656.5	2648.4
157.5°	2696.0	2701.4	2705.9	2723.9	2711.3
160°	2756.3	2761.6	2764.3	2779.6	2768.8
162.5°	2812.0	2812.0	2814.6	2831.7	2819.1
165°	2859.6	2856.8	2856.8	2874.8	2862.3
167.5°	2902.7	2894.6	2894.6	2912.6	2900.0
170°	2935.1	2927.9	2925.2	2943.2	2927.9
172.5°	2957.5	2950.3	2947.6	2965.6	2950.3
175°	2975.5	2968.3	2963.0	2980.9	2965.6
177.5°	2985.4	2978.2	2972.8	2988.0	2972.8
180°	2980.9	2980.9	2980.9	2980.9	2980.9

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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	13.42	14.42	14.24	15.27	16.32	12.97	13.98	13.80	14.82	15.88
	3H	15.09	15.99	15.93	16.85	17.93	14.60	15.50	15.44	16.36	17.44
	4H	15.69	16.54	16.54	17.41	18.50	15.19	16.05	16.05	16.91	18.00
	6H	16.10	16.89	16.97	17.76	18.86	15.60	16.39	16.47	17.26	18.36
	8H	16.21	16.96	17.09	17.85	18.95	15.71	16.46	16.58	17.35	18.45
	12H	16.27	16.98	17.15	17.86	18.99	15.76	16.47	16.64	17.35	18.48
4H	2H	13.89	14.75	14.75	15.61	16.70	13.54	14.39	14.40	15.26	16.35
	3H	15.78	16.49	16.65	17.39	18.49	15.37	16.08	16.24	16.98	18.09
	4H	16.50	17.15	17.38	18.04	19.18	16.08	16.73	16.96	17.62	18.75
	6H	17.03	17.59	17.93	18.51	19.64	16.60	17.16	17.49	18.08	19.21
	8H	17.18	17.71	18.09	18.62	19.77	16.75	17.27	17.65	18.18	19.33
	12H	17.27	17.74	18.19	18.67	19.82	16.82	17.29	17.74	18.22	19.38
8H	4H	16.71	17.23	17.61	18.15	19.30	16.33	16.86	17.23	17.77	18.92
	6H	17.35	17.79	18.28	18.74	19.89	16.97	17.40	17.90	18.36	19.51
	8H	17.58	17.96	18.52	18.91	20.07	17.19	17.57	18.12	18.51	19.68
	12H	17.72	18.06	18.66	19.00	20.21	17.31	17.65	18.25	18.58	19.80
12H	4H	16.70	17.18	17.62	18.11	19.26	16.34	16.81	17.26	17.74	18.89
	6H	17.38	17.77	18.32	18.71	19.88	17.01	17.40	17.95	18.34	19.51
	8H	17.64	17.97	18.58	18.91	20.13	17.26	17.59	18.20	18.53	19.75