

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: P915168

Luminaire Tested: DFN2DIP-SQ4F0-160D160US927-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P915168
REPORT IS A COMBINATION OF REPORTS P900219 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D160US927-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

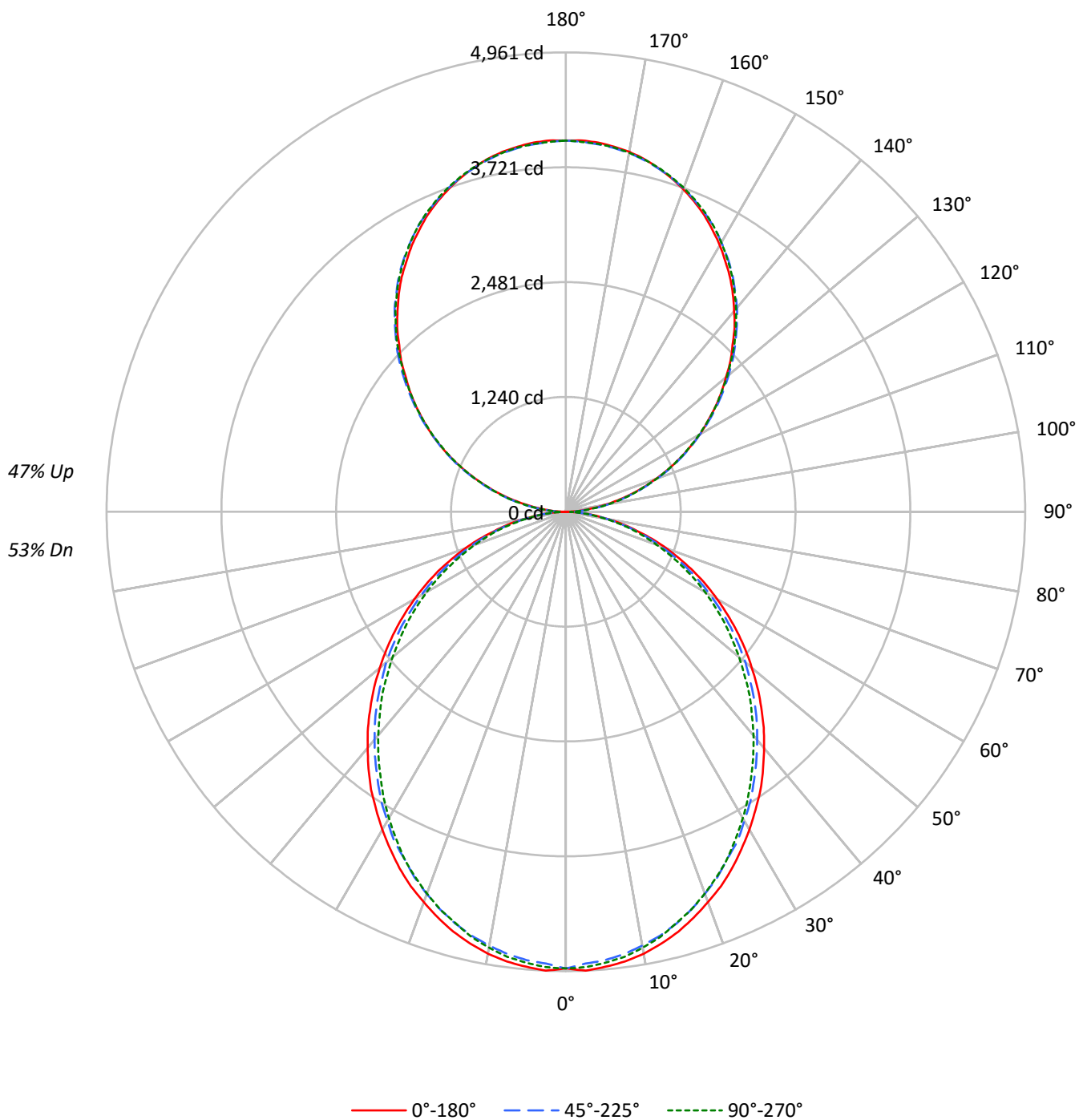
Lumens per Lamp: N/A
Luminaire Lumens: 23766.2 lumens
Efficiency: N/A
Efficacy: 82.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 288.8
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	108	108	108	108	100	100	100	100	85	85	85	71	71	71	59	59	59
1	98	94	90	87	91	87	84	81	74	72	70	63	61	59	52	51	50
2	90	82	76	71	83	76	71	66	65	61	58	55	52	50	46	44	42
3	82	72	65	59	75	67	61	55	58	53	49	49	45	42	41	38	36
4	75	64	56	50	69	60	52	47	51	46	41	43	39	36	36	33	31
5	69	57	49	43	63	53	46	40	46	40	36	39	35	31	33	29	27
6	63	51	43	37	58	48	40	35	41	36	31	35	31	27	30	26	24
7	59	46	38	33	54	43	36	31	37	32	28	32	28	24	27	24	21
8	54	42	34	29	50	39	32	27	34	29	24	29	25	22	25	21	19
9	51	38	31	26	47	36	29	24	31	26	22	27	23	19	23	20	17
10	47	35	28	23	44	33	26	22	29	23	20	25	21	18	21	18	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3461	3461	3461
5°	3466	3413	3436
10°	3438	3368	3391
15°	3387	3313	3319
20°	3319	3237	3246
25°	3251	3145	3160
30°	3166	3060	3052
35°	3085	2960	2937
40°	2986	2858	2828
45°	2887	2757	2717
50°	2778	2650	2587
55°	2665	2527	2469
60°	2536	2380	2333
65°	2397	2229	2172
70°	2218	2044	2000
75°	1972	1824	1843
80°	1674	1542	1540
85°	1210	1055	1035

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3155 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	464.2	2.0
10°-20°	1306.0	5.5
20°-30°	1919.4	8.1
30°-40°	2229.2	9.4
40°-50°	2226.5	9.4
50°-60°	1941.4	8.2
60°-70°	1435.1	6.0
70°-80°	812.0	3.4
80°-90°	225.7	0.9
90°-100°	248.1	1.0
100°-110°	788.2	3.3
110°-120°	1348.9	5.7
120°-130°	1774.0	7.5
130°-140°	1991.2	8.4
140°-150°	1952.6	8.2
150°-160°	1637.9	6.9
160°-170°	1086.2	4.6
170°-180°	379.7	1.6
0°-30°	3689.6	15.5
0°-40°	5918.9	24.9
0°-60°	10086.7	42.4
0°-90°	12559.5	52.8
90°-120°	2385.1	10.0
90°-150°	8102.8	34.1
90°-180°	11207.0	47.2
0°-180°	23766.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4932	4932	4932	4932	4932	
5°	4932	4913	4861	4899	4890	468
15°	4695	4667	4605	4624	4600	1322
25°	4249	4211	4131	4140	4131	1955
35°	3666	3619	3543	3514	3490	2289
45°	2983	2950	2878	2827	2808	2302
55°	2258	2229	2172	2115	2092	2018
65°	1522	1494	1446	1404	1380	1505
75°	796	787	763	735	745	850
85°	194	190	185	171	166	217
90°	4	44	118	111	115	23
95°	176	210	216	216	210	196
105°	728	737	744	750	750	768
115°	1354	1373	1367	1363	1354	1339
125°	1969	1999	1989	1978	1975	1759
135°	2546	2584	2591	2588	2578	1968
145°	3092	3116	3135	3139	3125	1932
155°	3535	3545	3556	3573	3562	1627
165°	3846	3842	3842	3866	3849	1085
175°	4002	3992	3985	4009	3988	380
180°	4009	4009	4009	4009	4009	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4931.9	4931.9	4931.9	4931.9	4931.9
2.5°	4960.6	4936.9	4884.6	4931.9	4922.8
5°	4931.9	4913.3	4860.9	4898.7	4889.6
7.5°	4898.7	4870.5	4818.1	4856.4	4846.8
10°	4846.8	4813.6	4756.8	4794.5	4780.4
12.5°	4775.4	4747.2	4690.3	4714.0	4704.4
15°	4694.9	4666.7	4604.8	4624.0	4600.3
17.5°	4595.3	4567.1	4505.2	4528.8	4505.2
20°	4486.0	4457.9	4391.5	4405.6	4386.9
22.5°	4377.4	4334.7	4272.7	4272.7	4263.2
25°	4249.1	4211.4	4130.8	4139.9	4130.8
27.5°	4106.7	4073.5	4012.1	3998.1	3974.4
30°	3964.8	3926.6	3855.6	3841.5	3822.4
32.5°	3812.8	3784.7	3708.7	3680.0	3660.9
35°	3666.0	3618.7	3542.6	3514.0	3490.4
37.5°	3499.9	3457.2	3381.2	3347.9	3324.3
40°	3329.3	3291.1	3215.1	3172.8	3153.8
42.5°	3163.3	3125.1	3049.6	3001.8	2973.6
45°	2983.2	2949.9	2878.5	2826.7	2807.6
47.5°	2807.6	2774.4	2698.4	2646.0	2617.9
50°	2622.4	2598.8	2532.4	2465.9	2442.3
52.5°	2442.3	2409.1	2347.7	2295.3	2262.2
55°	2257.6	2229.0	2172.1	2115.2	2091.6
57.5°	2072.5	2048.8	1986.9	1930.1	1911.0
60°	1887.3	1868.7	1802.3	1749.9	1735.8
62.5°	1707.2	1674.0	1626.7	1579.4	1560.3
65°	1522.5	1493.8	1446.5	1403.8	1380.1
67.5°	1332.8	1308.7	1266.5	1233.2	1214.1
70°	1157.2	1138.1	1095.3	1062.2	1043.5
72.5°	977.1	958.0	934.4	901.1	887.1
75°	796.5	787.4	763.3	735.1	744.7
77.5°	635.5	616.4	606.8	592.7	578.6
80°	474.4	469.4	459.9	445.8	436.3
82.5°	322.5	322.5	318.0	298.9	298.9
85°	194.2	189.6	185.1	170.6	166.0
87.5°	85.6	76.0	66.4	52.4	47.3
90°	3.6	43.5	118.4	111.2	114.8
92.5°	74.9	101.6	105.1	108.8	108.8
95°	176.4	210.3	216.3	216.3	210.3
97.5°	293.7	325.1	338.4	338.4	338.4
100°	429.0	456.9	466.5	466.5	462.9
102.5°	571.6	592.2	605.5	609.1	605.5
105°	727.5	737.2	744.5	750.5	750.5
107.5°	882.3	896.7	896.7	899.2	882.3
110°	1032.1	1051.5	1051.5	1051.5	1041.8

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1194.1	1214.7	1211.0	1201.3	1194.1
115°	1353.6	1372.9	1366.9	1363.3	1353.6
117.5°	1512.0	1538.5	1521.6	1512.0	1502.3
120°	1671.5	1698.0	1671.5	1671.5	1660.6
122.5°	1816.5	1850.4	1833.4	1823.8	1816.5
125°	1968.8	1999.0	1989.3	1978.5	1974.8
127.5°	2117.4	2154.9	2141.6	2127.1	2117.4
130°	2256.4	2299.9	2293.9	2286.6	2273.3
132.5°	2412.4	2446.2	2448.6	2431.7	2422.0
135°	2546.5	2583.9	2591.2	2587.6	2577.9
137.5°	2696.3	2726.5	2732.6	2730.2	2715.7
140°	2828.1	2858.3	2875.2	2875.2	2861.9
142.5°	2963.5	2993.7	3003.3	3007.0	2993.7
145°	3091.6	3115.7	3135.1	3138.7	3125.4
147.5°	3206.4	3236.6	3251.1	3257.1	3243.8
150°	3324.8	3345.4	3358.7	3369.5	3358.7
152.5°	3430.0	3450.5	3467.5	3480.7	3467.5
155°	3535.1	3544.8	3555.6	3572.6	3561.7
157.5°	3625.7	3633.0	3639.0	3663.2	3646.3
160°	3706.7	3714.0	3717.6	3738.1	3723.6
162.5°	3781.6	3781.6	3785.3	3808.3	3791.3
165°	3845.7	3842.1	3842.1	3866.2	3849.4
167.5°	3903.7	3892.9	3892.9	3917.0	3900.1
170°	3947.2	3937.5	3934.0	3958.1	3937.5
172.5°	3977.5	3967.8	3964.2	3988.3	3967.8
175°	4001.6	3992.0	3984.7	4008.9	3988.3
177.5°	4014.9	4005.3	3998.0	4018.6	3998.0
180°	4008.9	4008.9	4008.9	4008.9	4008.9

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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	12.74	12.79	13.69	14.92	11.41	12.30	12.34	13.25	14.48
	3H	13.52	14.32	14.47	15.28	16.53	13.03	13.83	13.98	14.79	16.04
	4H	14.11	14.87	15.07	15.83	17.09	13.62	14.37	14.58	15.34	16.60
	6H	14.52	15.21	15.49	16.18	17.46	14.02	14.71	14.99	15.68	16.96
	8H	14.63	15.29	15.60	16.27	17.55	14.12	14.79	15.10	15.77	17.04
	12H	14.68	15.31	15.66	16.29	17.58	14.17	14.80	15.15	15.78	17.07
4H	2H	12.32	13.07	13.28	14.04	15.30	11.97	12.72	12.93	13.68	14.94
	3H	14.19	14.82	15.17	15.82	17.09	13.79	14.41	14.76	15.41	16.68
	4H	14.91	15.49	15.89	16.47	17.77	14.49	15.06	15.47	16.05	17.35
	6H	15.43	15.93	16.43	16.94	18.24	15.00	15.50	16.00	16.51	17.80
	8H	15.59	16.05	16.58	17.05	18.37	15.15	15.61	16.14	16.61	17.93
	12H	15.66	16.08	16.68	17.10	18.42	15.21	15.63	16.23	16.65	17.97
8H	4H	15.11	15.57	16.11	16.58	17.89	14.73	15.20	15.73	16.20	17.51
	6H	15.75	16.13	16.77	17.18	18.49	15.37	15.75	16.39	16.79	18.10
	8H	15.97	16.31	17.00	17.34	18.67	15.58	15.92	16.61	16.95	18.28
	12H	16.11	16.41	17.14	17.43	18.81	15.70	15.99	16.73	17.02	18.39
12H	4H	15.10	15.52	16.11	16.54	17.85	14.73	15.15	15.75	16.17	17.49
	6H	15.78	16.12	16.81	17.15	18.48	15.41	15.75	16.44	16.78	18.11
	8H	16.03	16.32	17.06	17.35	18.72	15.65	15.94	16.68	16.97	18.34

END OF REPORT