

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: P909572

Luminaire Tested: DFN2DIP-SQ4F0-110D060US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909572
REPORT IS A COMBINATION OF REPORTS P900069 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D060US840-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

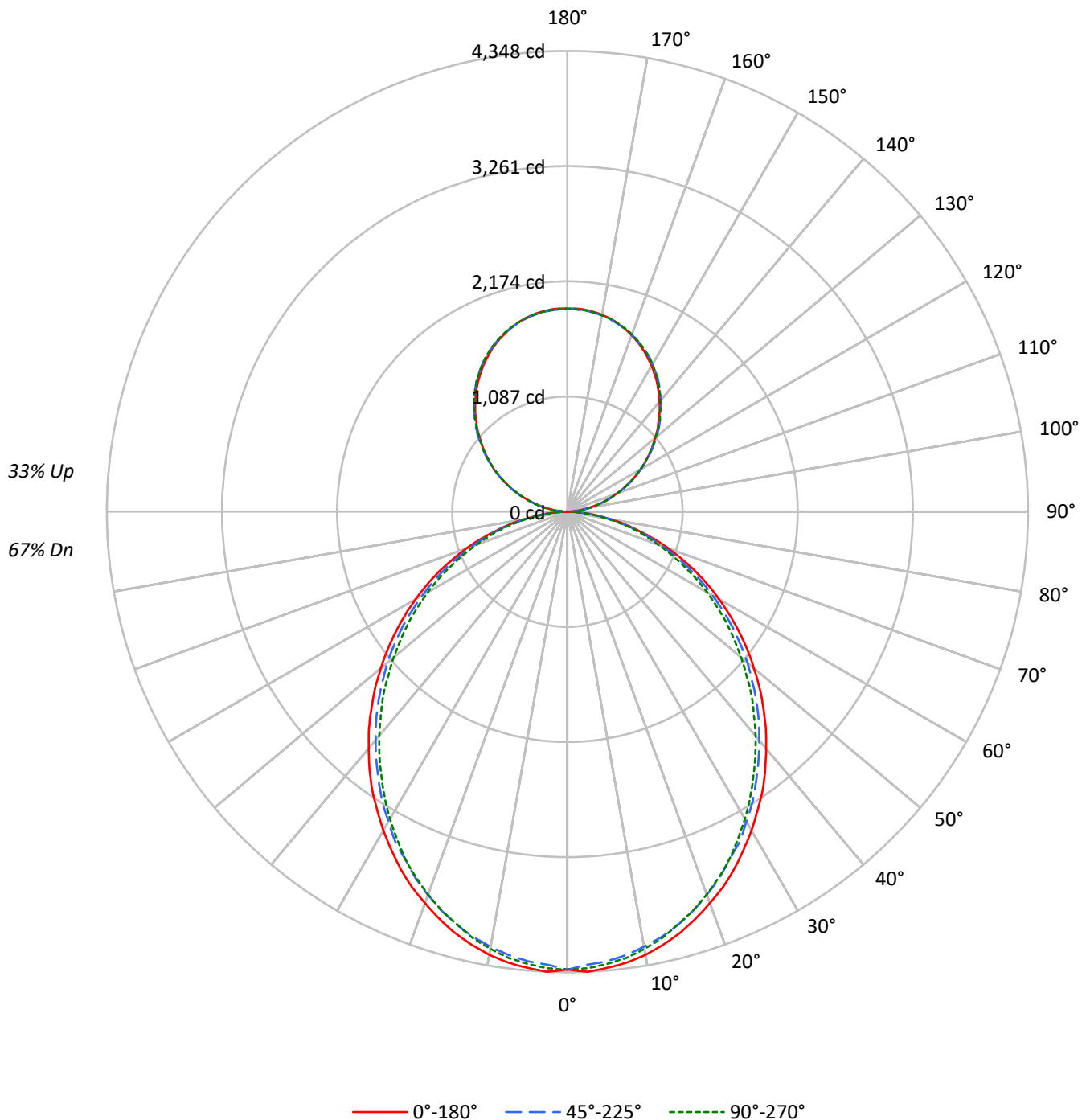
Lumens per Lamp: N/A
Luminaire Lumens: 16359.8 lumens
Efficiency: N/A
Efficacy: 108.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 150.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9951
Total Harmonic Distortion (THDi): 0.07
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	111	111	111	111	105	105	105	105	93	93	93		82	82	82		72
1	102	97	93	90	96	92	88	85	82	79	76		72	70	68		64
2	93	85	79	73	87	80	75	70	72	67	63		63	60	57		56
3	85	75	67	61	79	71	64	58	63	58	53		56	52	48		50
4	77	66	58	52	73	63	55	50	56	50	46		50	45	42		44
5	71	59	51	45	67	56	49	43	50	44	39		45	40	36		40
6	66	53	45	39	62	51	43	37	45	39	35		41	36	32		36
7	61	48	40	34	57	46	38	33	41	35	31		37	32	28		33
8	56	44	36	30	53	42	34	29	38	32	27		34	29	25		31
9	53	40	32	27	50	38	31	26	35	29	24		31	26	23		28
10	49	37	29	24	46	35	28	24	32	26	22		29	24	21		26

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3033	3033	3033
5°	3038	2991	3012
10°	3013	2952	2972
15°	2969	2904	2909
20°	2909	2837	2845
25°	2849	2757	2770
30°	2774	2682	2675
35°	2704	2594	2574
40°	2617	2505	2479
45°	2530	2416	2381
50°	2435	2323	2268
55°	2335	2215	2164
60°	2223	2086	2045
65°	2100	1954	1904
70°	1944	1792	1753
75°	1728	1598	1616
80°	1468	1352	1349
85°	1061	925	907

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2530 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	406.8	2.5
10°-20°	1144.7	7.0
20°-30°	1682.2	10.3
30°-40°	1953.7	11.9
40°-50°	1951.3	11.9
50°-60°	1701.5	10.4
60°-70°	1257.8	7.7
70°-80°	711.6	4.3
80°-90°	193.3	1.2
90°-100°	118.6	0.7
100°-110°	376.8	2.3
110°-120°	644.8	3.9
120°-130°	848.0	5.2
130°-140°	951.8	5.8
140°-150°	933.4	5.7
150°-160°	783.0	4.8
160°-170°	519.2	3.2
170°-180°	181.5	1.1
0°-30°	3233.7	19.8
0°-40°	5187.4	31.7
0°-60°	8840.2	54.0
0°-90°	11002.9	67.3
90°-120°	1140.1	7.0
90°-150°	3873.3	23.7
90°-180°	5357.0	32.7
0°-180°	16359.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4322	4322	4322	4322	4322	
5°	4322	4306	4260	4293	4285	410
15°	4115	4090	4036	4052	4032	1159
25°	3724	3691	3620	3628	3620	1714
35°	3213	3172	3105	3080	3059	2006
45°	2614	2585	2523	2477	2461	2018
55°	1979	1954	1904	1854	1833	1769
65°	1334	1309	1268	1230	1210	1319
75°	698	690	669	644	653	745
85°	170	166	162	150	146	190
90°	2	21	57	53	55	16
95°	84	100	103	103	100	94
105°	348	352	356	359	359	367
115°	647	656	653	652	647	640
125°	941	956	951	946	944	841
135°	1217	1235	1239	1237	1232	941
145°	1478	1489	1499	1500	1494	923
155°	1690	1694	1700	1708	1702	778
165°	1838	1836	1836	1848	1840	519
175°	1913	1908	1905	1916	1906	182
180°	1916	1916	1916	1916	1916	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4322.4	4322.4	4322.4	4322.4	4322.4
2.5°	4347.5	4326.8	4280.9	4322.4	4314.4
5°	4322.4	4306.1	4260.2	4293.2	4285.4
7.5°	4293.2	4268.6	4222.8	4256.3	4247.9
10°	4247.9	4218.7	4168.9	4201.9	4189.6
12.5°	4185.3	4160.5	4110.8	4131.5	4123.1
15°	4114.7	4090.0	4035.7	4052.5	4031.8
17.5°	4027.3	4002.7	3948.5	3969.2	3948.5
20°	3931.7	3907.0	3848.8	3861.1	3844.9
22.5°	3836.5	3798.9	3744.7	3744.7	3736.3
25°	3724.0	3691.0	3620.4	3628.3	3620.4
27.5°	3599.2	3570.1	3516.3	3503.9	3483.2
30°	3474.8	3441.3	3379.1	3366.8	3350.0
32.5°	3341.6	3317.0	3250.4	3225.2	3208.4
35°	3212.9	3171.5	3104.8	3079.7	3059.0
37.5°	3067.4	3029.9	2963.3	2934.2	2913.5
40°	2917.9	2884.4	2817.8	2780.8	2764.0
42.5°	2772.4	2738.9	2672.7	2630.8	2606.2
45°	2614.5	2585.4	2522.7	2477.4	2460.6
47.5°	2460.6	2431.6	2364.9	2319.1	2294.3
50°	2298.4	2277.7	2219.4	2161.2	2140.5
52.5°	2140.5	2111.3	2057.6	2011.7	1982.6
55°	1978.6	1953.5	1903.7	1853.8	1833.1
57.5°	1816.3	1795.6	1741.4	1691.5	1674.8
60°	1654.1	1637.8	1579.5	1533.7	1521.4
62.5°	1496.2	1467.1	1425.6	1384.2	1367.5
65°	1334.3	1309.2	1267.8	1230.3	1209.6
67.5°	1168.1	1147.0	1109.9	1080.9	1064.1
70°	1014.2	997.4	960.0	930.9	914.5
72.5°	856.4	839.6	818.9	789.8	777.4
75°	698.0	690.1	668.9	644.3	652.7
77.5°	556.9	540.2	531.8	519.5	507.2
80°	415.9	411.4	403.0	390.7	382.3
82.5°	282.7	282.7	278.7	262.0	262.0
85°	170.3	166.2	162.3	149.5	145.5
87.5°	74.9	66.6	58.2	45.8	41.4
90°	1.7	20.8	56.7	53.1	54.8
92.5°	35.9	48.6	50.3	52.0	52.0
95°	84.3	100.5	103.4	103.4	100.5
97.5°	140.4	155.4	161.8	161.8	161.8
100°	205.1	218.3	223.0	223.0	221.3
102.5°	273.3	283.1	289.4	291.1	289.4
105°	347.8	352.4	355.9	358.8	358.8
107.5°	421.7	428.7	428.7	429.8	421.7
110°	493.4	502.6	502.6	502.6	498.0

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	570.8	580.6	578.9	574.2	570.8
115°	647.0	656.3	653.4	651.7	647.0
117.5°	722.8	735.5	727.3	722.8	718.1
120°	799.0	811.7	799.0	799.0	793.8
122.5°	868.3	884.4	876.4	871.8	868.3
125°	941.1	955.5	950.9	945.7	944.0
127.5°	1012.2	1030.1	1023.7	1016.8	1012.2
130°	1078.6	1099.4	1096.5	1093.1	1086.7
132.5°	1153.2	1169.3	1170.4	1162.4	1157.7
135°	1217.3	1235.2	1238.6	1236.9	1232.2
137.5°	1288.9	1303.3	1306.3	1305.0	1298.2
140°	1351.9	1366.3	1374.4	1374.4	1368.1
142.5°	1416.5	1431.0	1435.6	1437.3	1431.0
145°	1477.8	1489.3	1498.6	1500.4	1494.0
147.5°	1532.7	1547.1	1554.1	1556.9	1550.5
150°	1589.3	1599.1	1605.5	1610.6	1605.5
152.5°	1639.5	1649.4	1657.5	1663.9	1657.5
155°	1689.8	1694.5	1699.6	1707.8	1702.5
157.5°	1733.1	1736.7	1739.5	1751.1	1743.0
160°	1771.9	1775.3	1777.1	1786.9	1780.0
162.5°	1807.7	1807.7	1809.4	1820.4	1812.3
165°	1838.3	1836.5	1836.5	1848.2	1840.1
167.5°	1866.0	1860.9	1860.9	1872.4	1864.3
170°	1886.8	1882.2	1880.5	1892.0	1882.2
172.5°	1901.3	1896.6	1894.9	1906.4	1896.6
175°	1912.8	1908.2	1904.7	1916.3	1906.4
177.5°	1919.1	1914.6	1911.1	1920.9	1911.1
180°	1916.3	1916.3	1916.3	1916.3	1916.3

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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	12.60	13.64	13.39	14.45	15.45	12.15	13.19	12.94	14.01	15.01
	3H	14.27	15.21	15.08	16.03	17.07	13.78	14.72	14.59	15.54	16.57
	4H	14.87	15.76	15.70	16.59	17.63	14.38	15.26	15.20	16.10	17.14
	6H	15.28	16.10	16.12	16.94	18.00	14.78	15.60	15.62	16.44	17.50
	8H	15.40	16.17	16.24	17.03	18.09	14.89	15.67	15.74	16.53	17.59
	12H	15.45	16.19	16.30	17.05	18.13	14.94	15.68	15.79	16.54	17.62
4H	2H	13.08	13.96	13.91	14.80	15.84	12.72	13.61	13.55	14.44	15.48
	3H	14.97	15.70	15.81	16.57	17.63	14.56	15.30	15.40	16.16	17.22
	4H	15.69	16.36	16.54	17.23	18.31	15.27	15.94	16.12	16.80	17.89
	6H	16.22	16.80	17.09	17.69	18.78	15.79	16.37	16.66	17.26	18.35
	8H	16.38	16.92	17.25	17.80	18.90	15.94	16.48	16.81	17.37	18.47
	12H	16.46	16.95	17.35	17.85	18.96	16.01	16.50	16.90	17.40	18.51
8H	4H	15.90	16.44	16.77	17.33	18.43	15.53	16.07	16.40	16.95	18.05
	6H	16.55	17.00	17.45	17.92	19.02	16.16	16.61	17.06	17.54	18.64
	8H	16.77	17.17	17.68	18.09	19.21	16.38	16.78	17.29	17.70	18.81
	12H	16.91	17.27	17.83	18.18	19.35	16.50	16.85	17.42	17.77	18.94
12H	4H	15.90	16.39	16.79	17.29	18.40	15.53	16.02	16.42	16.92	18.03
	6H	16.58	16.98	17.49	17.90	19.01	16.21	16.61	17.12	17.52	18.64
	8H	16.83	17.18	17.74	18.09	19.26	16.45	16.80	17.36	17.71	18.88