

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: P908290

Luminaire Tested: DFN2DIP-HX4F0-120D060US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P908290
REPORT IS A COMBINATION OF REPORTS P899351 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D060US840-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

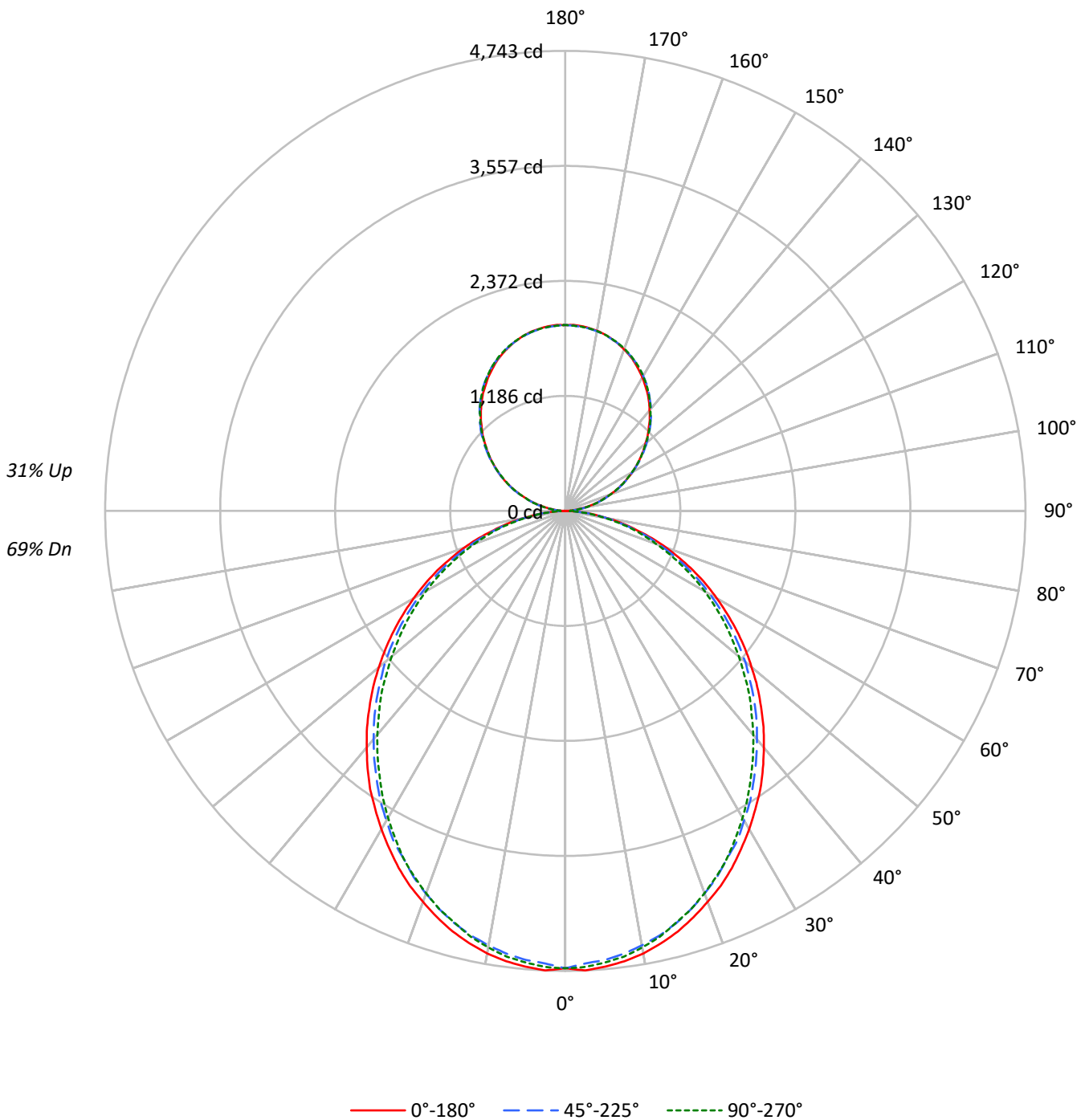
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 17359.6 lumens
Efficiency: N/A
Efficacy: 108.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 160.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9954
Total Harmonic Distortion (THDi): 0.076
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				20
RC	80				70				50				30				10				0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	112	112	112	112	106	106	106	106	94	94	94	83	83	83	74	74	74	69			
1	102	98	94	90	96	92	89	86	83	80	77	74	71	70	65	64	62	58			
2	93	85	79	74	88	81	75	70	72	68	64	65	61	58	57	55	52	49			
3	85	75	67	61	80	71	64	59	64	58	54	57	53	49	51	48	45	41			
4	78	67	58	52	73	63	56	50	57	51	46	51	46	42	46	42	39	35			
5	71	59	51	45	67	56	49	43	51	45	40	46	41	37	41	37	34	31			
6	66	53	45	39	62	51	43	38	46	40	35	41	36	32	37	33	30	27			
7	61	48	40	34	58	46	39	33	42	36	31	38	33	29	34	30	26	24			
8	57	44	36	31	54	42	35	30	38	32	28	35	29	26	31	27	24	22			
9	53	40	33	27	50	39	31	26	35	29	25	32	27	23	29	25	21	19			
10	50	37	30	25	47	36	29	24	32	27	22	30	25	21	27	23	20	18			

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3506	3506	3506
5°	3512	3458	3481
10°	3484	3411	3434
15°	3433	3356	3360
20°	3364	3278	3285
25°	3295	3185	3198
30°	3209	3098	3087
35°	3128	2996	2970
40°	3028	2893	2859
45°	2928	2790	2745
50°	2818	2682	2613
55°	2704	2556	2492
60°	2574	2407	2353
65°	2434	2253	2189
70°	2254	2065	2013
75°	2005	1840	1850
80°	1706	1554	1539
85°	1238	1059	1024

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2928 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	443.8	2.6
10°-20°	1248.7	7.2
20°-30°	1835.1	10.6
30°-40°	2131.4	12.3
40°-50°	2128.7	12.3
50°-60°	1856.2	10.7
60°-70°	1372.1	7.9
70°-80°	776.3	4.5
80°-90°	210.3	1.2
90°-100°	118.6	0.7
100°-110°	376.8	2.2
110°-120°	644.8	3.7
120°-130°	848.0	4.9
130°-140°	951.8	5.5
140°-150°	933.4	5.4
150°-160°	783.0	4.5
160°-170°	519.2	3.0
170°-180°	181.5	1.0
0°-30°	3527.6	20.3
0°-40°	5659.0	32.6
0°-60°	9643.8	55.6
0°-90°	12002.6	69.1
90°-120°	1140.1	6.6
90°-150°	3873.3	22.3
90°-180°	5357.0	30.9
0°-180°	17359.6	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	21	57	53	55	17
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°	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°	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	13.23	14.30	14.01	15.09	16.06	12.80	13.87	13.58	14.66	15.63
	3H	14.91	15.87	15.70	16.67	17.67	14.44	15.39	15.22	16.20	17.20
	4H	15.51	16.41	16.31	17.22	18.23	15.03	15.94	15.84	16.75	17.76
	6H	15.92	16.75	16.74	17.57	18.60	15.44	16.28	16.26	17.10	18.12
	8H	16.03	16.82	16.86	17.66	18.69	15.55	16.35	16.38	17.19	18.21
	12H	16.08	16.84	16.92	17.68	18.73	15.60	16.36	16.44	17.20	18.25
4H	2H	13.72	14.62	14.53	15.44	16.45	13.38	14.28	14.18	15.09	16.10
	3H	15.61	16.36	16.43	17.21	18.23	15.21	15.97	16.03	16.81	17.84
	4H	16.33	17.02	17.16	17.86	18.92	15.92	16.61	16.76	17.46	18.51
	6H	16.86	17.45	17.71	18.32	19.38	16.45	17.04	17.30	17.91	18.97
	8H	17.01	17.57	17.87	18.43	19.50	16.60	17.15	17.45	18.02	19.09
	12H	17.09	17.59	17.97	18.48	19.56	16.67	17.17	17.55	18.06	19.14
8H	4H	16.54	17.10	17.40	17.96	19.03	16.18	16.74	17.04	17.60	18.67
	6H	17.18	17.64	18.07	18.55	19.62	16.82	17.28	17.70	18.19	19.26
	8H	17.41	17.82	18.30	18.72	19.81	17.04	17.45	17.93	18.35	19.44
	12H	17.55	17.91	18.44	18.80	19.94	17.16	17.52	18.06	18.42	19.56
12H	4H	16.54	17.04	17.41	17.92	19.00	16.19	16.69	17.06	17.57	18.65
	6H	17.22	17.62	18.11	18.53	19.61	16.86	17.27	17.76	18.17	19.26
	8H	17.47	17.83	18.36	18.72	19.86	17.11	17.47	18.01	18.36	19.51