

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: P905550

Luminaire Tested: DFN2DIP-HX4F0-110D090US835-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P905550
REPORT IS A COMBINATION OF REPORTS P899403 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D090US835-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

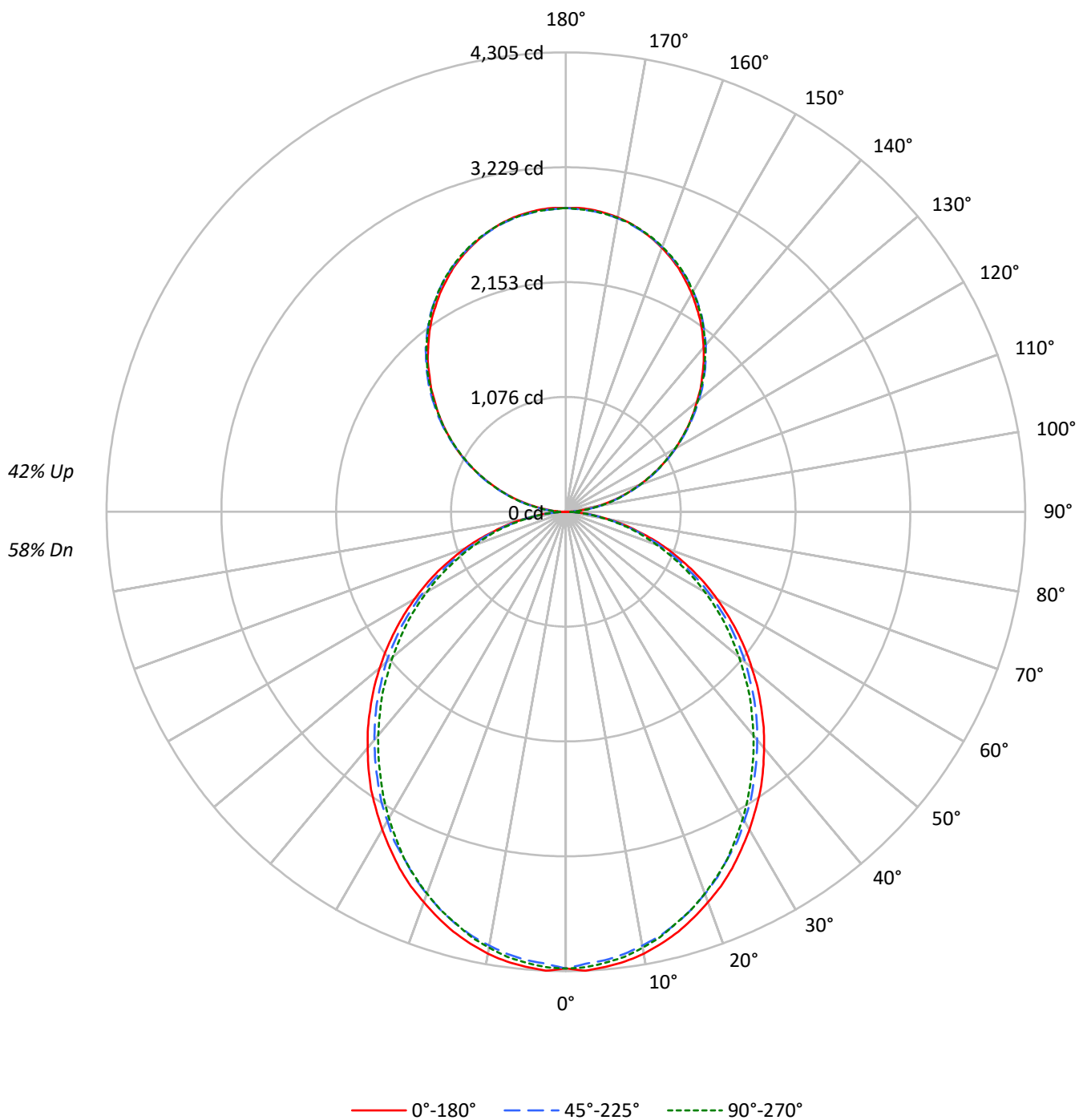
Lumens per Lamp: N/A
Luminaire Lumens: 18855.0 lumens
Efficiency: N/A
Efficacy: 115.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 163.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9967
Total Harmonic Distortion (THDi): 0.063
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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CATALOG NUMBER: DFN2DIP-HX4F0-110D090US835-FLLFL

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	109	109	109	109	102	102	102	102	88	88	88	75	75	75	63	63	63
1	100	95	91	88	93	89	85	82	77	74	72	66	64	62	56	55	53
2	91	83	77	72	84	78	72	68	67	63	60	58	55	52	49	47	45
3	83	73	66	60	77	68	62	56	59	54	50	51	47	44	44	41	38
4	76	65	57	51	70	61	53	48	53	47	43	46	41	38	39	36	33
5	70	58	49	43	65	54	47	41	47	42	37	41	36	33	35	32	29
6	64	52	44	38	60	49	41	36	43	37	32	37	32	29	32	28	25
7	59	47	39	33	55	44	37	32	39	33	29	34	29	26	29	25	23
8	55	43	35	29	51	40	33	28	35	30	25	31	26	23	27	23	20
9	51	39	31	26	48	37	30	25	32	27	23	29	24	21	25	21	18
10	48	36	28	24	45	34	27	23	30	24	21	26	22	19	23	19	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3183	3183	3183
5°	3188	3139	3160
10°	3162	3097	3117
15°	3116	3046	3050
20°	3054	2975	2982
25°	2991	2891	2903
30°	2913	2812	2803
35°	2839	2720	2696
40°	2748	2626	2595
45°	2657	2533	2492
50°	2558	2434	2372
55°	2454	2320	2262
60°	2337	2185	2136
65°	2209	2045	1987
70°	2046	1875	1827
75°	1820	1671	1680
80°	1549	1411	1397
85°	1124	961	929

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2657 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	402.8	2.1
10°-20°	1133.5	6.0
20°-30°	1665.7	8.8
30°-40°	1934.7	10.3
40°-50°	1932.3	10.2
50°-60°	1684.9	8.9
60°-70°	1245.5	6.6
70°-80°	704.7	3.7
80°-90°	194.1	1.0
90°-100°	176.1	0.9
100°-110°	559.6	3.0
110°-120°	957.7	5.1
120°-130°	1259.5	6.7
130°-140°	1413.8	7.5
140°-150°	1386.4	7.4
150°-160°	1163.0	6.2
160°-170°	771.2	4.1
170°-180°	269.6	1.4
0°-30°	3202.1	17.0
0°-40°	5136.7	27.2
0°-60°	8753.8	46.4
0°-90°	10898.1	57.8
90°-120°	1693.5	9.0
90°-150°	5753.1	30.5
90°-180°	7957.0	42.2
0°-180°	18855.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4280	4280	4280	4280	4280	
5°	4280	4264	4219	4251	4244	406
15°	4074	4050	3996	4013	3992	1148
25°	3688	3655	3585	3593	3585	1697
35°	3182	3140	3074	3050	3029	1987
45°	2589	2560	2498	2453	2437	1998
55°	1959	1934	1885	1836	1815	1752
65°	1321	1296	1255	1218	1198	1306
75°	691	683	662	638	646	738
85°	169	165	161	148	144	188
90°	3	31	84	79	82	18
95°	125	149	154	154	149	139
105°	517	523	529	533	533	545
115°	961	975	970	968	961	951
125°	1398	1419	1412	1405	1402	1249
135°	1808	1835	1840	1837	1830	1398
145°	2195	2212	2226	2228	2219	1372
155°	2510	2517	2525	2537	2529	1155
165°	2730	2728	2728	2745	2733	770
175°	2841	2834	2829	2846	2832	270
180°	2846	2846	2846	2846	2846	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4280.2	4280.2	4280.2	4280.2	4280.2
2.5°	4305.0	4284.5	4239.1	4280.2	4272.3
5°	4280.2	4264.0	4218.6	4251.3	4243.5
7.5°	4251.3	4226.9	4181.5	4214.7	4206.4
10°	4206.4	4177.5	4128.2	4160.9	4148.7
12.5°	4144.4	4119.9	4070.6	4091.1	4082.8
15°	4074.5	4050.0	3996.3	4012.9	3992.4
17.5°	3988.0	3963.6	3909.9	3930.4	3909.9
20°	3893.3	3868.8	3811.2	3823.4	3807.3
22.5°	3799.0	3761.8	3708.1	3708.1	3699.8
25°	3687.6	3654.9	3585.0	3592.9	3585.0
27.5°	3564.0	3535.2	3481.9	3469.7	3449.2
30°	3440.9	3407.7	3346.1	3333.9	3317.3
32.5°	3309.0	3284.6	3218.6	3193.7	3177.1
35°	3181.5	3140.5	3074.5	3049.6	3029.1
37.5°	3037.4	3000.3	2934.4	2905.5	2885.0
40°	2889.4	2856.2	2790.3	2753.6	2737.0
42.5°	2745.3	2712.1	2646.6	2605.1	2580.7
45°	2589.0	2560.1	2498.1	2453.2	2436.6
47.5°	2436.6	2407.8	2341.8	2296.4	2271.9
50°	2275.9	2255.4	2197.7	2140.1	2119.6
52.5°	2119.6	2090.7	2037.5	1992.0	1963.2
55°	1959.3	1934.4	1885.1	1835.7	1815.2
57.5°	1798.6	1778.1	1724.4	1675.0	1658.4
60°	1637.9	1621.8	1564.1	1518.7	1506.5
62.5°	1481.6	1452.8	1411.7	1370.7	1354.1
65°	1321.3	1296.4	1255.4	1218.3	1197.8
67.5°	1156.7	1135.8	1099.1	1070.3	1053.7
70°	1004.3	987.7	950.6	921.8	905.6
72.5°	848.0	831.4	810.9	782.1	769.8
75°	691.2	683.4	662.4	638.0	646.3
77.5°	551.5	534.9	526.6	514.4	502.2
80°	411.8	407.4	399.1	386.9	378.6
82.5°	279.9	279.9	276.0	259.4	259.4
85°	168.6	164.6	160.7	148.0	144.1
87.5°	74.2	65.9	57.6	45.4	41.0
90°	2.6	30.9	84.1	78.9	81.5
92.5°	53.2	72.1	74.7	77.2	77.2
95°	125.3	149.3	153.6	153.6	149.3
97.5°	208.5	230.8	240.3	240.3	240.3
100°	304.6	324.4	331.2	331.2	328.7
102.5°	405.9	420.5	429.9	432.5	429.9
105°	516.6	523.4	528.6	532.9	532.9
107.5°	626.4	636.7	636.7	638.4	626.4
110°	732.8	746.6	746.6	746.6	739.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	847.8	862.4	859.8	853.0	847.8
115°	961.1	974.8	970.5	968.0	961.1
117.5°	1073.5	1092.4	1080.4	1073.5	1066.6
120°	1186.8	1205.6	1186.8	1186.8	1179.0
122.5°	1289.7	1313.8	1301.8	1294.9	1289.7
125°	1397.9	1419.3	1412.5	1404.7	1402.2
127.5°	1503.4	1530.0	1520.6	1510.3	1503.4
130°	1602.1	1633.0	1628.7	1623.5	1614.1
132.5°	1712.8	1736.8	1738.5	1726.5	1719.7
135°	1808.0	1834.6	1839.8	1837.2	1830.4
137.5°	1914.4	1935.9	1940.2	1938.5	1928.2
140°	2008.0	2029.4	2041.4	2041.4	2032.0
142.5°	2104.1	2125.5	2132.4	2135.0	2125.5
145°	2195.1	2212.2	2225.9	2228.5	2219.1
147.5°	2276.6	2298.0	2308.3	2312.6	2303.2
150°	2360.7	2375.3	2384.7	2392.4	2384.7
152.5°	2435.3	2449.9	2461.9	2471.4	2461.9
155°	2510.0	2516.8	2524.6	2536.6	2528.9
157.5°	2574.3	2579.5	2583.8	2600.9	2588.9
160°	2631.8	2637.0	2639.6	2654.1	2643.8
162.5°	2685.0	2685.0	2687.6	2703.9	2691.9
165°	2730.5	2727.9	2727.9	2745.1	2733.1
167.5°	2771.7	2764.0	2764.0	2781.1	2769.1
170°	2802.6	2795.7	2793.2	2810.3	2795.7
172.5°	2824.0	2817.2	2814.6	2831.8	2817.2
175°	2841.2	2834.3	2829.2	2846.4	2831.8
177.5°	2850.6	2843.8	2838.6	2853.2	2838.6
180°	2846.4	2846.4	2846.4	2846.4	2846.4

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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	11.98	12.92	12.87	13.83	14.98	11.55	12.49	12.44	13.40	14.55
	3H	13.65	14.49	14.55	15.41	16.59	13.18	14.02	14.08	14.94	16.12
	4H	14.24	15.04	15.16	15.96	17.15	13.77	14.56	14.68	15.49	16.68
	6H	14.65	15.38	15.57	16.31	17.51	14.17	14.90	15.10	15.83	17.04
	8H	14.75	15.45	15.69	16.40	17.60	14.28	14.98	15.21	15.92	17.12
	12H	14.81	15.47	15.75	16.41	17.64	14.32	14.99	15.26	15.93	17.16
4H	2H	12.46	13.25	13.38	14.17	15.36	12.11	12.91	13.03	13.83	15.02
	3H	14.33	14.99	15.26	15.95	17.15	13.94	14.60	14.87	15.55	16.76
	4H	15.05	15.65	15.99	16.60	17.83	14.64	15.25	15.58	16.20	17.43
	6H	15.57	16.09	16.52	17.06	18.29	15.16	15.68	16.11	16.65	17.88
	8H	15.72	16.21	16.68	17.17	18.42	15.31	15.80	16.26	16.76	18.01
	12H	15.80	16.24	16.77	17.22	18.47	15.37	15.82	16.35	16.80	18.05
8H	4H	15.25	15.74	16.21	16.70	17.95	14.89	15.38	15.85	16.34	17.59
	6H	15.89	16.29	16.87	17.30	18.54	15.52	15.93	16.51	16.94	18.18
	8H	16.11	16.47	17.10	17.46	18.72	15.74	16.10	16.73	17.09	18.35
	12H	16.24	16.56	17.24	17.55	18.86	15.86	16.17	16.85	17.16	18.47
12H	4H	15.24	15.68	16.22	16.66	17.91	14.89	15.33	15.86	16.31	17.56
	6H	15.92	16.28	16.91	17.27	18.53	15.57	15.92	16.56	16.92	18.18
	8H	16.16	16.48	17.16	17.47	18.78	15.81	16.12	16.80	17.11	18.42