

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: P905442

Luminaire Tested: DFN2DIP-HX4F0-050D090US835-FLLFLL

Issue Date: 11/21/2024

**Test Information**

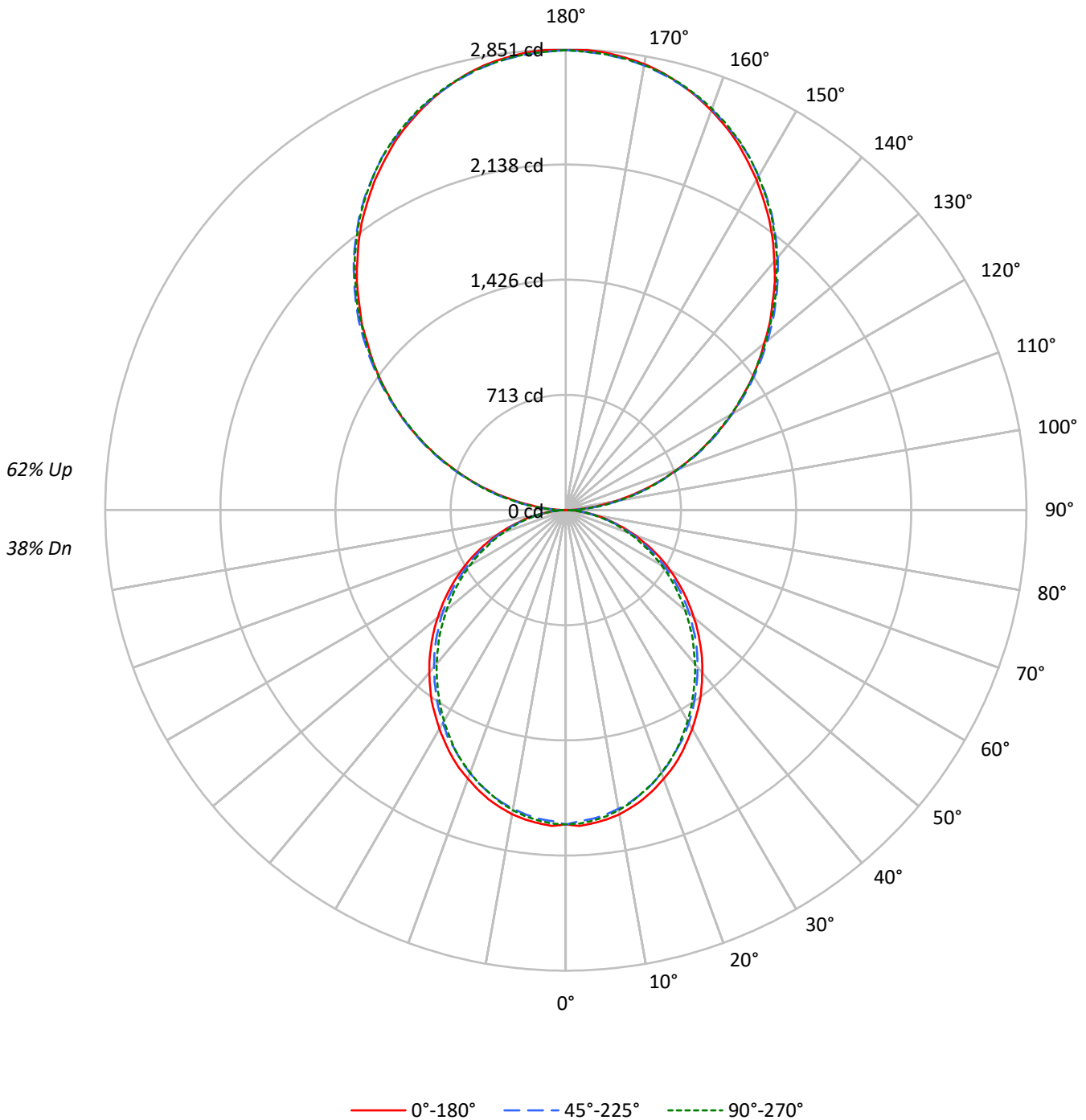
Test Method: LM-79-2019  
Report Number: P905442  
REPORT IS A COMBINATION OF REPORTS P899391 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-050D090US835-FLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12915.0 lumens  
Efficiency: N/A  
Efficacy: 136.4 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-Indirect  
  
Input Watts (W): 94.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
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				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	104	104	104	104	95	95	95	95	77	77	77	61	61	61	45	45	45	38			38
1	95	91	87	84	86	83	79	77	67	65	63	53	52	50	40	39	38	32			32
2	87	79	73	68	78	72	67	63	59	55	52	47	44	42	35	34	32	27			27
3	79	70	63	57	71	64	57	52	52	47	44	41	38	35	31	29	27	23			23
4	72	62	54	48	65	56	50	44	46	41	37	37	33	30	28	26	24	20			20
5	66	55	47	41	60	50	43	38	41	36	32	33	29	26	25	23	21	17			17
6	61	49	41	35	55	45	38	33	37	32	28	30	26	23	23	20	18	15			15
7	56	44	36	31	51	41	34	29	34	28	25	27	23	20	21	18	16	13			13
8	52	40	33	27	47	37	30	25	31	25	22	25	21	18	19	16	14	12			12
9	49	37	29	24	44	34	27	23	28	23	19	23	19	16	18	15	13	11			11
10	45	33	26	22	41	31	24	20	26	21	17	21	17	15	16	14	12	10			10

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	1447	1447	1447
5°	1449	1427	1436
10°	1437	1408	1417
15°	1416	1385	1386
20°	1388	1352	1355
25°	1360	1314	1320
30°	1324	1278	1274
35°	1291	1236	1226
40°	1249	1194	1180
45°	1208	1151	1133
50°	1163	1106	1078
55°	1116	1055	1028
60°	1062	993	971
65°	1004	930	903
70°	930	852	831
75°	827	759	764
80°	704	641	635
85°	511	437	422

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2146 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	183.1	1.4
10°-20°	515.2	4.0
20°-30°	757.2	5.9
30°-40°	879.4	6.8
40°-50°	878.3	6.8
50°-60°	765.8	5.9
60°-70°	566.1	4.4
70°-80°	320.3	2.5
80°-90°	92.6	0.7
90°-100°	176.1	1.4
100°-110°	559.6	4.3
110°-120°	957.7	7.4
120°-130°	1259.5	9.8
130°-140°	1413.8	10.9
140°-150°	1386.4	10.7
150°-160°	1163.0	9.0
160°-170°	771.2	6.0
170°-180°	269.6	2.1
0°-30°	1455.5	11.3
0°-40°	2334.9	18.1
0°-60°	3979.0	30.8
0°-90°	4958.1	38.4
90°-120°	1693.5	13.1
90°-150°	5753.1	44.5
90°-180°	7957.0	61.6
0°-180°	12915.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1946	1946	1946	1946	1946	
5°	1946	1938	1918	1932	1929	185
15°	1852	1841	1816	1824	1815	522
25°	1676	1661	1630	1633	1630	771
35°	1446	1428	1398	1386	1377	903
45°	1177	1164	1136	1115	1108	908
55°	891	879	857	834	825	796
65°	601	589	571	554	544	594
75°	314	311	301	290	294	335
85°	77	75	73	67	66	85
90°	3	31	84	79	82	13
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°	1945.5	1945.5	1945.5	1945.5	1945.5
2.5°	1956.8	1947.5	1926.9	1945.5	1942.0
5°	1945.5	1938.2	1917.5	1932.4	1928.9
7.5°	1932.4	1921.3	1900.7	1915.8	1912.0
10°	1912.0	1898.9	1876.5	1891.3	1885.8
12.5°	1883.8	1872.7	1850.3	1859.6	1855.8
15°	1852.0	1840.9	1816.5	1824.1	1814.7
17.5°	1812.7	1801.6	1777.2	1786.5	1777.2
20°	1769.7	1758.6	1732.4	1737.9	1730.6
22.5°	1726.8	1709.9	1685.5	1685.5	1681.7
25°	1676.2	1661.3	1629.5	1633.1	1629.5
27.5°	1620.0	1606.9	1582.7	1577.1	1567.8
30°	1564.0	1549.0	1521.0	1515.4	1507.9
32.5°	1504.1	1493.0	1463.0	1451.7	1444.2
35°	1446.1	1427.5	1397.5	1386.2	1376.9
37.5°	1380.6	1363.8	1333.8	1320.7	1311.4
40°	1313.4	1298.3	1268.3	1251.6	1244.1
42.5°	1247.9	1232.8	1203.0	1184.1	1173.0
45°	1176.8	1163.7	1135.5	1115.1	1107.5
47.5°	1107.5	1094.4	1064.5	1043.8	1032.7
50°	1034.5	1025.2	999.0	972.8	963.4
52.5°	963.4	950.3	926.1	905.5	892.4
55°	890.6	879.3	856.8	834.4	825.1
57.5°	817.5	808.2	783.8	761.4	753.8
60°	744.5	737.2	711.0	690.3	684.8
62.5°	673.5	660.4	641.7	623.0	615.5
65°	600.6	589.3	570.6	553.8	544.4
67.5°	525.8	516.3	499.6	486.5	478.9
70°	456.5	449.0	432.1	419.0	411.7
72.5°	385.5	377.9	368.6	355.5	349.9
75°	314.2	310.6	301.1	290.0	293.8
77.5°	250.7	243.1	239.4	233.8	228.3
80°	187.2	185.2	181.4	175.9	172.1
82.5°	127.2	127.2	125.4	117.9	117.9
85°	76.6	74.8	73.0	67.3	65.5
87.5°	33.7	30.0	26.2	20.6	18.7
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	7.37	8.14	8.42	9.20	10.62	6.94	7.71	7.99	8.76	10.19
	3H	9.03	9.71	10.09	10.78	12.23	8.56	9.24	9.62	10.31	11.75
	4H	9.61	10.26	10.68	11.33	12.78	9.14	9.79	10.21	10.86	12.31
	6H	10.01	10.61	11.09	11.68	13.14	9.53	10.13	10.61	11.20	12.67
	8H	10.11	10.68	11.20	11.77	13.23	9.63	10.21	10.72	11.29	12.75
	12H	10.16	10.70	11.25	11.78	13.26	9.67	10.22	10.76	11.30	12.78
4H	2H	7.82	8.48	8.90	9.54	10.99	7.48	8.13	8.56	9.20	10.65
	3H	9.68	10.23	10.77	11.32	12.79	9.29	9.83	10.38	10.93	12.39
	4H	10.39	10.89	11.49	11.98	13.46	9.99	10.49	11.08	11.57	13.06
	6H	10.90	11.33	12.00	12.44	13.92	10.50	10.92	11.59	12.03	13.51
	8H	11.05	11.45	12.15	12.55	14.05	10.64	11.04	11.74	12.14	13.64
	12H	11.12	11.48	12.24	12.60	14.10	10.70	11.06	11.82	12.17	13.68
8H	4H	10.58	10.98	11.68	12.08	13.58	10.22	10.62	11.32	11.72	13.22
	6H	11.21	11.54	12.33	12.68	14.18	10.85	11.18	11.97	12.32	13.81
	8H	11.43	11.72	12.56	12.84	14.36	11.06	11.35	12.19	12.48	13.99
	12H	11.56	11.82	12.69	12.93	14.48	11.18	11.43	12.31	12.55	14.10
12H	4H	10.56	10.93	11.68	12.04	13.54	10.21	10.57	11.33	11.69	13.19
	6H	11.24	11.53	12.37	12.65	14.17	10.89	11.18	12.02	12.30	13.82
	8H	11.48	11.73	12.61	12.85	14.40	11.12	11.38	12.25	12.50	14.05