

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: P924588

Luminaire Tested: DFN2DIP-HX4F0-080D070US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

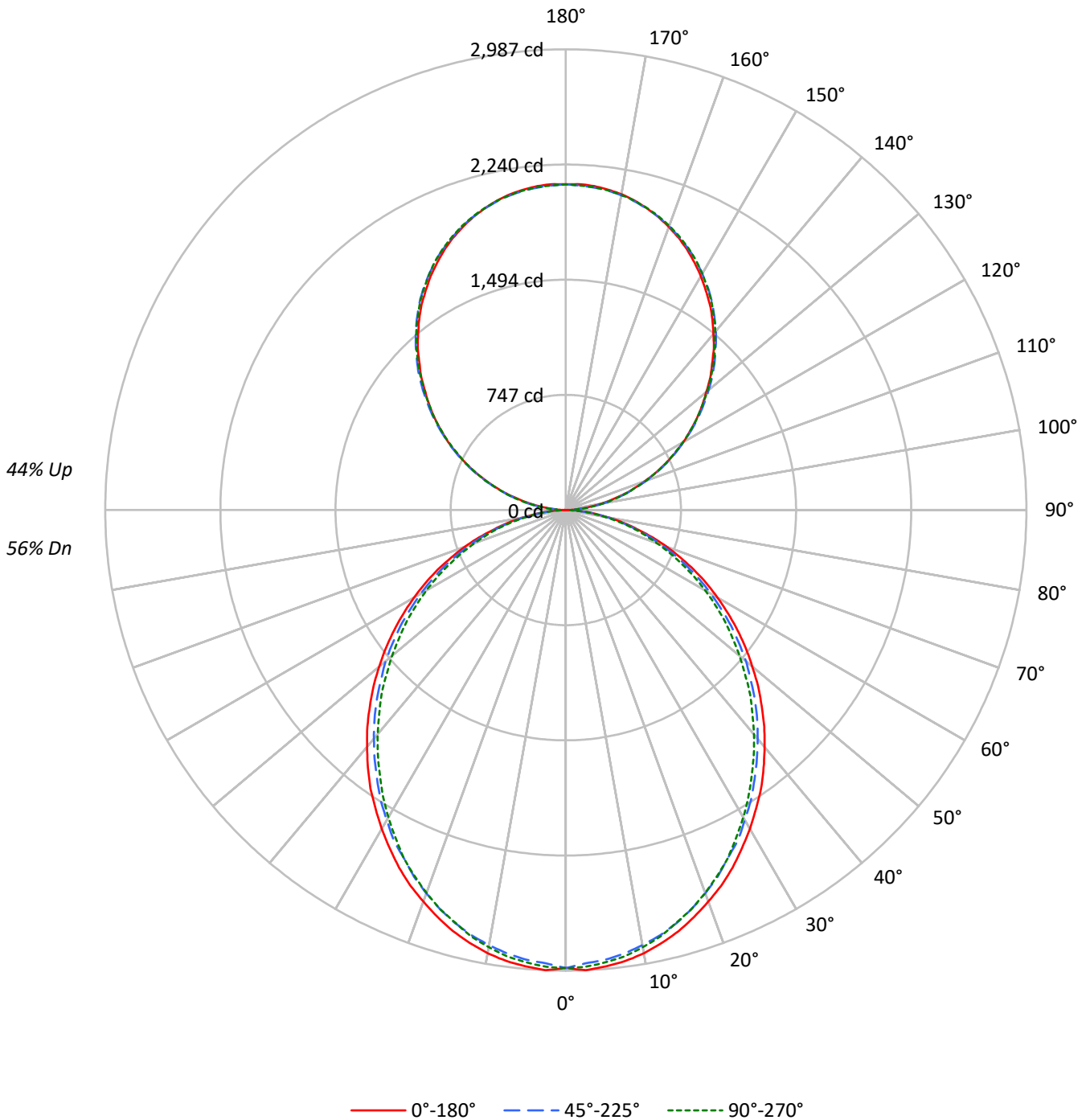
Test Method: LM-79-2019  
Report Number: P924588  
REPORT IS A COMBINATION OF REPORTS P899361 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-080D070US950-FLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13465.7 lumens  
Efficiency: N/A  
Efficacy: 115.9 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): 116.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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		0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	109	109	109	109	101	101	101	101	87	87	87	74	74	74	62	62	62	56		
1	99	95	91	87	92	88	85	82	76	74	71	65	63	61	55	53	52	47		
2	90	83	77	71	84	77	72	67	67	63	59	57	54	51	48	46	44	40		
3	82	73	65	59	76	68	61	56	59	54	50	50	47	43	43	40	37	34		
4	75	64	56	50	70	60	53	48	52	47	42	45	41	37	38	35	32	29		
5	69	57	49	43	64	54	46	41	47	41	37	40	36	32	34	31	28	25		
6	64	52	43	38	59	48	41	36	42	36	32	37	32	28	31	28	25	22		
7	59	47	39	33	55	44	37	31	38	32	28	33	29	25	28	25	22	20		
8	55	42	35	29	51	40	33	28	35	29	25	30	26	22	26	23	20	17		
9	51	39	31	26	47	36	30	25	32	26	23	28	23	20	24	21	18	16		
10	48	36	28	23	44	34	27	22	30	24	20	26	21	18	22	19	16	14		

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

	0°	45°	90°
0°	2208	2208	2208
5°	2212	2178	2192
10°	2194	2148	2163
15°	2162	2113	2116
20°	2119	2064	2069
25°	2075	2006	2014
30°	2021	1951	1944
35°	1970	1887	1871
40°	1907	1822	1801
45°	1844	1757	1729
50°	1775	1689	1646
55°	1703	1610	1569
60°	1621	1516	1482
65°	1533	1419	1379
70°	1419	1301	1268
75°	1263	1159	1165
80°	1074	979	969
85°	780	667	645

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1844 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	279.5	2.1
10°-20°	786.4	5.8
20°-30°	1155.7	8.6
30°-40°	1342.3	10.0
40°-50°	1340.6	10.0
50°-60°	1169.0	8.7
60°-70°	864.1	6.4
70°-80°	488.9	3.6
80°-90°	135.0	1.0
90°-100°	130.7	1.0
100°-110°	415.3	3.1
110°-120°	710.6	5.3
120°-130°	934.6	6.9
130°-140°	1049.0	7.8
140°-150°	1028.7	7.6
150°-160°	862.9	6.4
160°-170°	572.3	4.2
170°-180°	200.0	1.5
0°-30°	2221.6	16.5
0°-40°	3563.9	26.5
0°-60°	6073.6	45.1
0°-90°	7561.7	56.2
90°-120°	1256.6	9.3
90°-150°	4268.9	31.7
90°-180°	5904.0	43.8
0°-180°	13465.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2970	2970	2970	2970	2970	
5°	2970	2958	2927	2950	2944	282
15°	2827	2810	2773	2784	2770	796
25°	2558	2536	2487	2493	2487	1177
35°	2207	2179	2133	2116	2102	1378
45°	1796	1776	1733	1702	1691	1386
55°	1359	1342	1308	1274	1259	1215
65°	917	900	871	845	831	906
75°	480	474	460	443	448	512
85°	117	114	112	103	100	130
90°	2	23	62	59	60	13
95°	93	111	114	114	111	103
105°	383	388	392	395	395	405
115°	713	723	720	718	713	705
125°	1037	1053	1048	1042	1040	927
135°	1342	1361	1365	1363	1358	1037
145°	1629	1642	1652	1654	1647	1018
155°	1862	1868	1873	1882	1876	857
165°	2026	2024	2024	2037	2028	572
175°	2108	2103	2099	2112	2101	200
180°	2112	2112	2112	2112	2112	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2969.6	2969.6	2969.6	2969.6	2969.6
2.5°	2986.9	2972.7	2941.2	2969.6	2964.2
5°	2969.6	2958.4	2927.0	2949.7	2944.2
7.5°	2949.7	2932.7	2901.2	2924.2	2918.5
10°	2918.5	2898.4	2864.2	2886.9	2878.5
12.5°	2875.5	2858.5	2824.2	2838.4	2832.7
15°	2827.0	2810.0	2772.7	2784.2	2770.0
17.5°	2767.0	2750.0	2712.7	2727.0	2712.7
20°	2701.3	2684.3	2644.3	2652.8	2641.5
22.5°	2635.8	2610.0	2572.7	2572.7	2567.0
25°	2558.5	2535.8	2487.4	2492.8	2487.4
27.5°	2472.8	2452.8	2415.8	2407.3	2393.1
30°	2387.4	2364.3	2321.7	2313.2	2301.6
32.5°	2295.9	2278.9	2233.1	2215.9	2204.4
35°	2207.4	2178.9	2133.1	2115.9	2101.7
37.5°	2107.4	2081.6	2035.9	2015.9	2001.7
40°	2004.7	1981.6	1936.0	1910.5	1898.9
42.5°	1904.8	1881.7	1836.3	1807.4	1790.6
45°	1796.3	1776.3	1733.2	1702.0	1690.6
47.5°	1690.6	1670.5	1624.8	1593.3	1576.3
50°	1579.1	1564.8	1524.8	1484.8	1470.6
52.5°	1470.6	1450.6	1413.6	1382.2	1362.1
55°	1359.4	1342.1	1307.9	1273.7	1259.4
57.5°	1247.9	1233.7	1196.4	1162.2	1150.6
60°	1136.4	1125.2	1085.2	1053.7	1045.2
62.5°	1027.9	1008.0	979.5	951.0	939.5
65°	916.8	899.5	871.0	845.2	831.0
67.5°	802.5	788.0	762.5	742.6	731.1
70°	696.8	685.3	659.6	639.6	628.3
72.5°	588.3	576.9	562.6	542.6	534.1
75°	479.6	474.1	459.6	442.7	448.4
77.5°	382.6	371.1	365.4	356.9	348.4
80°	285.7	282.7	276.9	268.5	262.6
82.5°	194.2	194.2	191.5	179.9	179.9
85°	117.0	114.2	111.5	102.7	100.0
87.5°	51.5	45.8	40.0	31.5	28.5
90°	1.9	22.9	62.4	58.6	60.5
92.5°	39.5	53.5	55.4	57.3	57.3
95°	92.9	110.8	114.0	114.0	110.8
97.5°	154.7	171.2	178.3	178.3	178.3
100°	226.0	240.7	245.8	245.8	243.8
102.5°	301.2	312.0	319.0	320.9	319.0
105°	383.3	388.4	392.2	395.4	395.4
107.5°	464.8	472.4	472.4	473.8	464.8
110°	543.8	554.0	554.0	554.0	548.8



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	629.1	639.9	638.0	632.9	629.1
115°	713.1	723.3	720.2	718.3	713.1
117.5°	796.5	810.5	801.6	796.5	791.4
120°	880.5	894.6	880.5	880.5	874.8
122.5°	957.0	974.8	965.9	960.8	957.0
125°	1037.2	1053.1	1048.1	1042.3	1040.4
127.5°	1115.5	1135.3	1128.3	1120.7	1115.5
130°	1188.8	1211.7	1208.5	1204.7	1197.7
132.5°	1270.9	1288.8	1290.0	1281.1	1276.0
135°	1341.6	1361.3	1365.2	1363.2	1358.1
137.5°	1420.5	1436.4	1439.6	1438.3	1430.7
140°	1490.0	1505.9	1514.8	1514.8	1507.8
142.5°	1561.2	1577.2	1582.2	1584.1	1577.2
145°	1628.8	1641.5	1651.7	1653.6	1646.6
147.5°	1689.2	1705.2	1712.8	1716.0	1709.0
150°	1751.6	1762.4	1769.5	1775.2	1769.5
152.5°	1807.0	1817.8	1826.7	1833.8	1826.7
155°	1862.4	1867.5	1873.3	1882.1	1876.4
157.5°	1910.2	1914.0	1917.2	1929.9	1921.0
160°	1952.8	1956.7	1958.6	1969.3	1961.7
162.5°	1992.3	1992.3	1994.2	2006.3	1997.4
165°	2026.0	2024.1	2024.1	2036.9	2027.9
167.5°	2056.6	2050.9	2050.9	2063.6	2054.7
170°	2079.5	2074.5	2072.6	2085.3	2074.5
172.5°	2095.5	2090.3	2088.4	2101.2	2090.3
175°	2108.1	2103.1	2099.3	2112.0	2101.2
177.5°	2115.2	2110.1	2106.2	2117.1	2106.2
180°	2112.0	2112.0	2112.0	2112.0	2112.0



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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	10.57	11.49	11.48	12.42	13.60	10.14	11.06	11.04	11.98	13.16
	3H	12.24	13.06	13.15	14.00	15.20	11.77	12.59	12.68	13.52	14.73
	4H	12.83	13.61	13.76	14.55	15.76	12.36	13.14	13.29	14.07	15.29
	6H	13.23	13.95	14.17	14.90	16.12	12.76	13.48	13.70	14.42	15.65
	8H	13.34	14.03	14.29	14.99	16.21	12.87	13.55	13.81	14.51	15.74
	12H	13.39	14.04	14.34	15.00	16.25	12.91	13.56	13.86	14.52	15.77
4H	2H	11.04	11.82	11.98	12.76	13.97	10.70	11.48	11.63	12.42	13.63
	3H	12.92	13.57	13.86	14.53	15.76	12.52	13.17	13.47	14.14	15.37
	4H	13.63	14.23	14.59	15.19	16.44	13.23	13.82	14.18	14.78	16.04
	6H	14.15	14.67	15.12	15.65	16.90	13.74	14.26	14.71	15.24	16.49
	8H	14.30	14.78	15.27	15.76	17.03	13.89	14.37	14.86	15.35	16.62
	12H	14.38	14.81	15.37	15.81	17.08	13.96	14.39	14.95	15.39	16.66
8H	4H	13.83	14.31	14.80	15.29	16.56	13.47	13.95	14.44	14.93	16.20
	6H	14.47	14.87	15.47	15.89	17.15	14.11	14.50	15.10	15.52	16.79
	8H	14.69	15.04	15.70	16.05	17.33	14.32	14.67	15.33	15.68	16.97
	12H	14.83	15.14	15.83	16.14	17.47	14.44	14.75	15.45	15.75	17.08
12H	4H	13.82	14.26	14.81	15.25	16.52	13.47	13.90	14.46	14.90	16.17
	6H	14.50	14.85	15.50	15.86	17.14	14.15	14.50	15.15	15.51	16.79
	8H	14.75	15.05	15.75	16.06	17.39	14.39	14.70	15.40	15.70	17.03