

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: P929440

Luminaire Tested: DFN2DIP-HX4F0-120D070US940-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929440
REPORT IS A COMBINATION OF REPORTS P900889 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D070US940-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

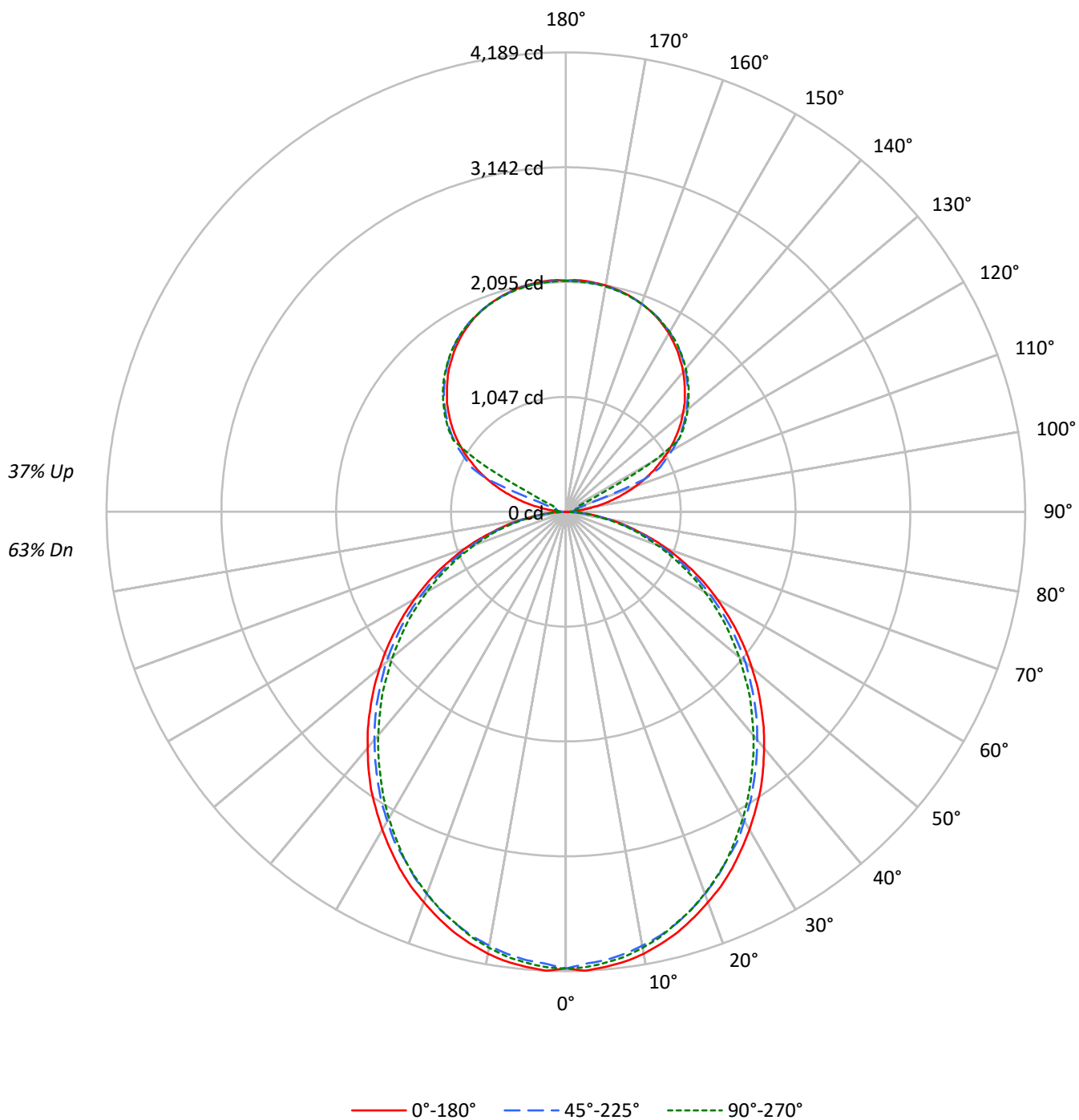
Lumens per Lamp: N/A
Luminaire Lumens: 16778.5 lumens
Efficiency: N/A
Efficacy: 94.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 178.2
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
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	110	110	110	110		103	103	103	103		91	91	91		79	79	79		68	68	68
1	101	96	92	89		94	91	87	84		80	77	75		70	68	66		60	59	58
2	92	84	78	73		86	79	74	69		70	66	62		61	58	55		53	51	49
3	84	74	67	61		78	70	63	58		62	56	52		54	50	47		47	44	41
4	77	66	57	51		72	62	55	49		55	49	44		48	44	40		42	39	36
5	70	59	50	44		66	55	48	42		49	43	38		43	39	35		38	34	31
6	65	53	44	38		61	50	42	37		44	38	34		39	34	30		34	31	27
7	60	48	39	34		56	45	38	32		40	34	30		36	31	27		31	27	24
8	56	43	35	30		52	41	34	29		37	31	26		33	28	24		29	25	22
9	52	40	32	27		49	38	31	26		34	28	24		30	25	22		27	23	20
10	49	36	29	24		46	35	28	23		31	25	21		28	23	20		25	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3097	3097	3097
5°	3102	3054	3074
10°	3077	3013	3033
15°	3032	2964	2968
20°	2971	2895	2902
25°	2911	2813	2825
30°	2835	2737	2727
35°	2763	2647	2624
40°	2674	2556	2525
45°	2586	2464	2425
50°	2489	2369	2308
55°	2388	2258	2201
60°	2274	2126	2078
65°	2150	1990	1934
70°	1991	1824	1778
75°	1771	1626	1634
80°	1507	1373	1360
85°	1093	936	904

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2586 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	392.0	2.3
10°-20°	1103.0	6.6
20°-30°	1620.9	9.7
30°-40°	1882.6	11.2
40°-50°	1880.3	11.2
50°-60°	1639.5	9.8
60°-70°	1212.0	7.2
70°-80°	685.7	4.1
80°-90°	184.7	1.1
90°-100°	69.5	0.4
100°-110°	259.0	1.5
110°-120°	687.0	4.1
120°-130°	1139.4	6.8
130°-140°	1210.3	7.2
140°-150°	1124.9	6.7
150°-160°	904.4	5.4
160°-170°	582.7	3.5
170°-180°	200.6	1.2
0°-30°	3115.9	18.6
0°-40°	4998.5	29.8
0°-60°	8518.3	50.8
0°-90°	10600.7	63.2
90°-120°	1015.5	6.1
90°-150°	4490.2	26.8
90°-180°	6178.0	36.8
0°-180°	16778.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4165	4165	4165	4165	4165	
5°	4165	4149	4105	4137	4129	395
15°	3965	3941	3889	3905	3885	1117
25°	3588	3556	3488	3496	3488	1651
35°	3096	3056	2992	2968	2948	1933
45°	2519	2491	2431	2387	2371	1944
55°	1907	1882	1834	1786	1766	1705
65°	1286	1262	1222	1186	1166	1271
75°	673	665	645	621	629	718
85°	164	160	156	144	140	183
90°	1	18	30	38	41	16
95°	99	49	59	67	66	117
105°	464	509	93	110	116	495
115°	877	903	941	235	125	863
125°	1240	1260	1288	1299	1304	1106
135°	1534	1558	1572	1587	1584	1185
145°	1780	1778	1804	1814	1807	1113
155°	1959	1946	1964	1973	1961	903
165°	2064	2056	2060	2071	2060	583
175°	2112	2101	2104	2115	2100	201
180°	2107	2107	2107	2107	2107	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4165.0	4165.0	4165.0	4165.0	4165.0
2.5°	4189.2	4169.2	4125.1	4165.0	4157.3
5°	4165.0	4149.2	4105.1	4136.9	4129.2
7.5°	4136.9	4113.1	4068.9	4101.2	4093.2
10°	4093.2	4065.1	4017.1	4049.0	4037.1
12.5°	4032.8	4009.0	3961.0	3981.0	3972.9
15°	3964.9	3941.0	3888.8	3904.9	3884.9
17.5°	3880.7	3856.9	3804.6	3824.6	3804.6
20°	3788.5	3764.7	3708.7	3720.5	3704.8
22.5°	3696.7	3660.6	3608.3	3608.3	3600.3
25°	3588.3	3556.5	3488.5	3496.2	3488.5
27.5°	3468.1	3440.1	3388.3	3376.3	3356.4
30°	3348.3	3316.0	3256.1	3244.2	3228.1
32.5°	3219.9	3196.2	3132.0	3107.8	3091.7
35°	3095.9	3056.0	2991.8	2967.6	2947.6
37.5°	2955.6	2919.6	2855.4	2827.4	2807.4
40°	2811.7	2779.4	2715.2	2679.5	2663.3
42.5°	2671.5	2639.2	2575.4	2535.1	2511.2
45°	2519.3	2491.3	2430.9	2387.2	2371.0
47.5°	2371.0	2342.9	2278.8	2234.6	2210.8
50°	2214.7	2194.7	2138.6	2082.5	2062.5
52.5°	2062.5	2034.5	1982.6	1938.4	1910.4
55°	1906.6	1882.4	1834.3	1786.3	1766.3
57.5°	1750.2	1730.2	1677.9	1630.0	1613.8
60°	1593.8	1578.1	1522.0	1477.9	1465.9
62.5°	1441.7	1413.6	1373.8	1333.8	1317.7
65°	1285.8	1261.6	1221.6	1185.5	1165.6
67.5°	1125.6	1105.2	1069.5	1041.5	1025.4
70°	977.3	961.1	925.0	897.0	881.3
72.5°	825.2	809.0	789.1	761.1	749.1
75°	672.7	665.0	644.6	620.8	628.9
77.5°	536.6	520.5	512.5	500.5	488.6
80°	400.7	396.4	388.4	376.5	368.4
82.5°	272.3	272.3	268.6	252.4	252.4
85°	164.0	160.2	156.4	144.1	140.2
87.5°	72.3	64.1	56.1	44.2	40.0
90°	1.4	18.3	30.4	38.2	41.1
92.5°	38.2	32.0	36.6	39.7	41.1
95°	99.0	48.7	59.4	67.2	65.6
97.5°	178.3	53.4	77.7	82.4	83.8
100°	270.0	61.0	86.9	99.0	102.1
102.5°	370.4	367.6	90.0	106.7	111.3
105°	463.6	509.3	93.0	109.7	115.9
107.5°	571.8	609.9	96.2	112.8	119.0
110°	675.6	707.4	266.9	114.4	120.4

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	773.2	800.5	774.6	117.3	122.0
115°	876.7	902.6	940.8	234.9	125.1
117.5°	966.7	997.2	1023.2	805.0	405.6
120°	1067.4	1090.2	1117.8	1136.1	930.2
122.5°	1152.6	1177.1	1207.8	1216.8	1218.4
125°	1239.6	1259.5	1288.5	1299.2	1303.7
127.5°	1318.9	1340.2	1363.2	1378.5	1379.9
130°	1393.7	1418.1	1434.8	1451.6	1450.2
132.5°	1469.9	1489.8	1506.5	1520.2	1518.8
135°	1534.0	1558.4	1572.1	1587.4	1584.4
137.5°	1601.0	1619.3	1634.7	1649.9	1645.4
140°	1666.5	1678.8	1695.5	1709.3	1701.7
142.5°	1721.6	1732.3	1752.0	1764.1	1756.5
145°	1779.5	1777.9	1803.8	1814.5	1806.9
147.5°	1829.7	1825.2	1851.1	1858.7	1852.7
150°	1878.6	1867.9	1892.4	1901.4	1893.8
152.5°	1919.7	1907.5	1930.4	1939.6	1929.0
155°	1959.4	1945.7	1964.0	1973.1	1961.0
157.5°	1991.4	1979.3	1993.0	2003.7	1991.4
160°	2019.0	2009.7	2019.0	2028.0	2017.3
162.5°	2043.2	2034.1	2041.7	2052.4	2038.7
165°	2064.5	2055.5	2060.0	2070.7	2060.0
167.5°	2081.4	2072.1	2076.8	2087.5	2073.8
170°	2095.1	2085.9	2089.0	2099.7	2085.9
172.5°	2104.2	2095.1	2098.3	2108.9	2095.1
175°	2111.8	2101.1	2104.2	2114.8	2099.7
177.5°	2114.8	2104.2	2105.8	2116.5	2102.7
180°	2107.3	2107.3	2107.3	2107.3	2107.3

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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	12.33	13.33	13.17	14.19	15.26	11.90	12.90	12.74	13.75	14.82
	3H	14.01	14.90	14.85	15.76	16.86	13.53	14.43	14.38	15.29	16.39
	4H	14.60	15.44	15.46	16.32	17.42	14.13	14.97	14.99	15.84	16.95
	6H	15.01	15.78	15.88	16.67	17.79	14.53	15.31	15.41	16.19	17.31
	8H	15.12	15.86	16.00	16.76	17.88	14.64	15.38	15.53	16.28	17.40
	12H	15.17	15.88	16.06	16.77	17.91	14.69	15.39	15.58	16.29	17.43
4H	2H	12.81	13.66	13.68	14.53	15.64	12.47	13.31	13.34	14.18	15.29
	3H	14.69	15.40	15.57	16.30	17.42	14.30	15.00	15.18	15.91	17.03
	4H	15.41	16.05	16.30	16.96	18.11	15.01	15.65	15.90	16.55	17.70
	6H	15.94	16.49	16.84	17.42	18.57	15.53	16.08	16.43	17.01	18.16
	8H	16.09	16.61	17.00	17.53	18.69	15.68	16.20	16.59	17.12	18.28
	12H	16.17	16.64	17.10	17.58	18.75	15.75	16.21	16.68	17.15	18.32
8H	4H	15.62	16.14	16.53	17.06	18.22	15.26	15.78	16.17	16.70	17.86
	6H	16.26	16.69	17.20	17.65	18.81	15.90	16.32	16.83	17.29	18.45
	8H	16.48	16.86	17.43	17.81	19.00	16.11	16.49	17.06	17.45	18.63
	12H	16.62	16.95	17.57	17.90	19.13	16.24	16.57	17.18	17.52	18.75
12H	4H	15.61	16.08	16.54	17.02	18.19	15.26	15.73	16.19	16.67	17.84
	6H	16.29	16.67	17.24	17.62	18.81	15.94	16.32	16.88	17.27	18.45
	8H	16.54	16.87	17.49	17.82	19.05	16.18	16.52	17.13	17.46	18.69