

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: P929444

Luminaire Tested: DFN2DIP-HX4F0-120D080US940-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929444
REPORT IS A COMBINATION OF REPORTS P900907 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D080US940-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

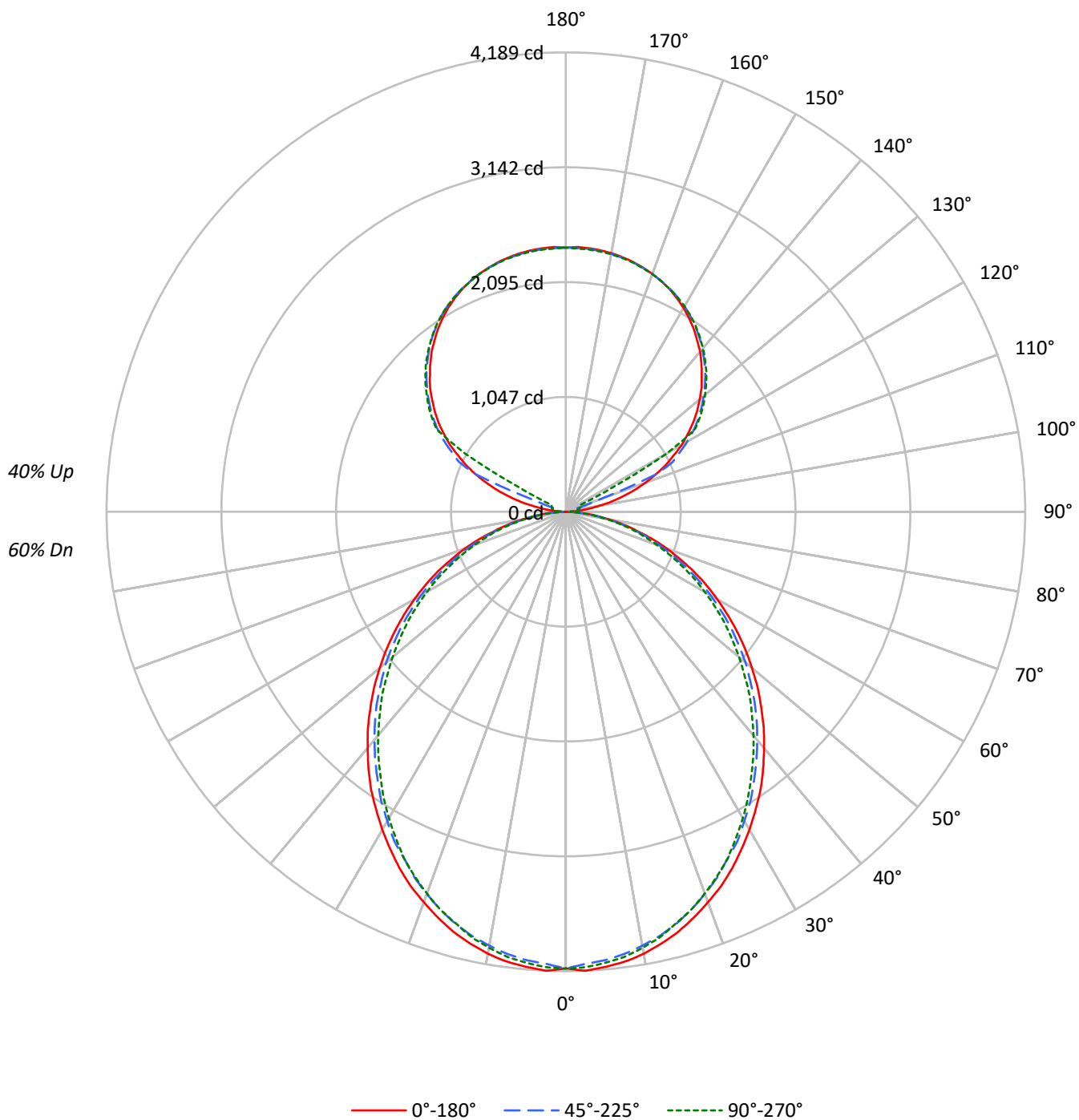
Lumens per Lamp: N/A
Luminaire Lumens: 17661.6 lumens
Efficiency: N/A
Efficacy: 95.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 184.5
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	102	102	102	102	89	89	89	77	77	77	65	65	65
1	100	96	92	88	93	90	86	83	78	75	73	67	66	64	58	56	55
2	91	84	77	72	85	78	73	68	68	64	61	59	56	53	51	49	47
3	83	73	66	60	77	69	62	57	60	55	51	52	48	45	45	42	40
4	76	65	57	51	71	61	54	48	54	48	44	47	42	39	40	37	34
5	70	58	50	44	65	55	47	42	48	42	38	42	37	34	36	33	30
6	64	52	44	38	60	49	42	36	43	37	33	38	33	30	33	29	26
7	60	47	39	33	56	44	37	32	39	33	29	35	30	26	30	26	23
8	55	43	35	30	52	40	33	28	36	30	26	32	27	23	28	24	21
9	52	39	32	26	48	37	30	25	33	27	23	29	24	21	26	22	19
10	48	36	29	24	45	34	27	23	30	25	21	27	22	19	24	20	17

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	2.2
10°-20°	1103.0	6.2
20°-30°	1620.9	9.2
30°-40°	1882.6	10.7
40°-50°	1880.3	10.6
50°-60°	1639.5	9.3
60°-70°	1212.0	6.9
70°-80°	685.7	3.9
80°-90°	185.2	1.0
90°-100°	79.4	0.4
100°-110°	296.0	1.7
110°-120°	785.1	4.4
120°-130°	1302.2	7.4
130°-140°	1383.2	7.8
140°-150°	1285.6	7.3
150°-160°	1033.6	5.9
160°-170°	666.0	3.8
170°-180°	229.2	1.3
0°-30°	3115.9	17.6
0°-40°	4998.5	28.3
0°-60°	8518.3	48.2
0°-90°	10601.2	60.0
90°-120°	1160.6	6.6
90°-150°	5131.6	29.1
90°-180°	7060.0	40.0
0°-180°	17661.6	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°	2	21	35	44	47	16
95°	113	56	68	77	75	134
105°	530	582	106	125	132	566
115°	1002	1032	1075	268	143	986
125°	1417	1439	1472	1485	1490	1263
135°	1753	1781	1797	1814	1811	1354
145°	2034	2032	2062	2074	2065	1272
155°	2239	2224	2245	2255	2241	1032
165°	2360	2349	2354	2366	2354	667
175°	2414	2401	2405	2417	2400	230
180°	2408	2408	2408	2408	2408	

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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°	1.7	20.9	34.8	43.6	47.0
92.5°	43.6	36.7	41.8	45.3	47.0
95°	113.2	55.7	67.9	76.8	74.9
97.5°	203.8	61.0	88.8	94.2	95.8
100°	308.5	69.8	99.4	113.2	116.7
102.5°	423.4	420.0	102.8	121.8	127.3
105°	529.8	582.1	106.3	125.4	132.5
107.5°	653.5	696.9	109.9	128.9	135.9
110°	772.1	808.5	305.1	130.8	137.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	883.6	914.8	885.3	134.1	139.5
115°	1002.0	1031.6	1075.2	268.4	143.0
117.5°	1104.8	1139.6	1169.4	920.0	463.6
120°	1219.9	1245.9	1277.4	1298.3	1063.0
122.5°	1317.3	1345.3	1380.3	1390.6	1392.5
125°	1416.7	1439.4	1472.5	1484.7	1489.9
127.5°	1507.3	1531.7	1558.1	1575.4	1577.1
130°	1592.8	1620.7	1639.8	1659.0	1657.3
132.5°	1679.9	1702.6	1721.7	1737.4	1735.7
135°	1753.1	1781.1	1796.6	1814.2	1810.7
137.5°	1829.8	1850.6	1868.2	1885.6	1880.4
140°	1904.6	1918.7	1937.8	1953.5	1944.7
142.5°	1967.6	1979.7	2002.3	2016.2	2007.4
145°	2033.8	2031.9	2061.5	2073.7	2065.0
147.5°	2091.1	2085.9	2115.5	2124.2	2117.3
150°	2147.0	2134.7	2162.7	2173.0	2164.3
152.5°	2194.0	2180.0	2206.1	2216.7	2204.5
155°	2239.3	2223.8	2244.6	2255.0	2241.2
157.5°	2275.8	2262.0	2277.7	2289.9	2275.8
160°	2307.3	2296.8	2307.3	2317.7	2305.5
162.5°	2335.1	2324.7	2333.4	2345.6	2329.9
165°	2359.5	2349.2	2354.3	2366.5	2354.3
167.5°	2378.7	2368.2	2373.5	2385.7	2370.0
170°	2394.5	2383.9	2387.4	2399.7	2383.9
172.5°	2404.8	2394.5	2398.0	2410.2	2394.5
175°	2413.5	2401.3	2404.8	2417.0	2399.7
177.5°	2417.0	2404.8	2406.6	2418.8	2403.1
180°	2408.3	2408.3	2408.3	2408.3	2408.3

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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	12.08	13.04	12.94	13.92	15.04	11.65	12.60	12.51	13.49	14.61
	3H	13.75	14.61	14.62	15.50	16.65	13.27	14.13	14.15	15.03	16.18
	4H	14.34	15.15	15.23	16.05	17.21	13.86	14.68	14.76	15.58	16.74
	6H	14.74	15.49	15.65	16.40	17.57	14.27	15.02	15.17	15.93	17.10
	8H	14.85	15.57	15.77	16.49	17.66	14.38	15.09	15.29	16.02	17.19
	12H	14.90	15.58	15.82	16.51	17.70	14.42	15.10	15.34	16.02	17.22
4H	2H	12.55	13.36	13.45	14.27	15.42	12.21	13.02	13.11	13.92	15.08
	3H	14.43	15.11	15.34	16.04	17.21	14.03	14.71	14.94	15.65	16.82
	4H	15.15	15.77	16.07	16.70	17.89	14.74	15.36	15.66	16.29	17.49
	6H	15.67	16.20	16.60	17.16	18.35	15.26	15.79	16.19	16.75	17.94
	8H	15.82	16.32	16.76	17.27	18.48	15.41	15.91	16.35	16.86	18.07
	12H	15.90	16.35	16.86	17.31	18.53	15.48	15.93	16.43	16.89	18.11
8H	4H	15.35	15.85	16.29	16.80	18.01	14.99	15.49	15.93	16.44	17.65
	6H	15.99	16.40	16.95	17.39	18.60	15.63	16.04	16.59	17.03	18.24
	8H	16.21	16.58	17.18	17.56	18.78	15.84	16.21	16.81	17.19	18.41
	12H	16.35	16.67	17.32	17.64	18.92	15.96	16.29	16.94	17.26	18.53
12H	4H	15.34	15.79	16.30	16.76	17.98	14.99	15.44	15.95	16.41	17.62
	6H	16.02	16.39	16.99	17.36	18.59	15.67	16.03	16.64	17.01	18.24
	8H	16.27	16.59	17.24	17.56	18.84	15.91	16.23	16.89	17.20	18.48