

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: P929336

Luminaire Tested: DFN2DIP-HX4F0-090D080US940-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929336
REPORT IS A COMBINATION OF REPORTS P900901 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D080US940-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

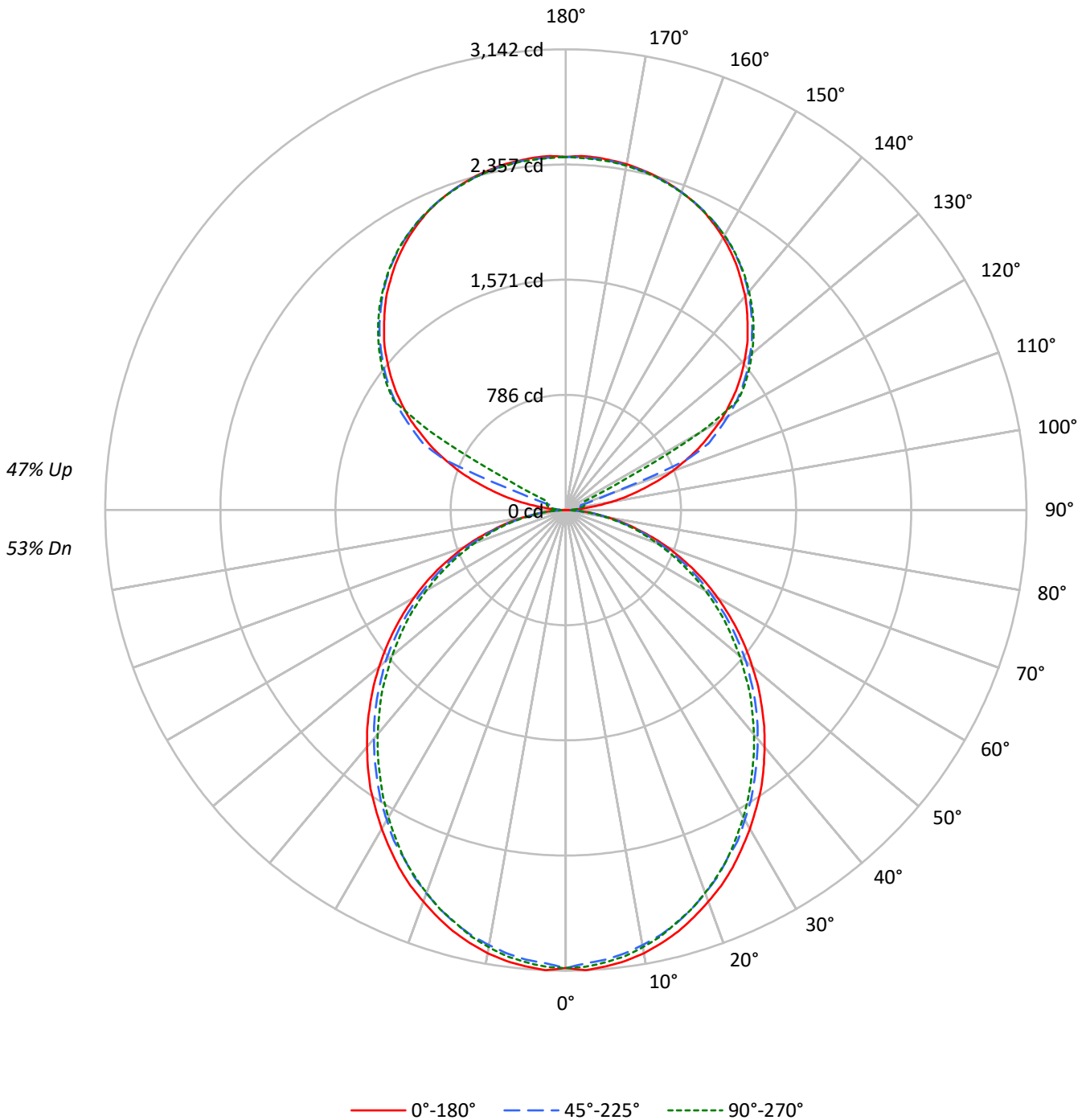
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 15012.4 lumens
Efficiency: N/A
Efficacy: 102.1 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): 147
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9821
Total Harmonic Distortion (THDi): 0.08
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	50	30	10	0		
RCR																										
0	108	108	108	108	100	100	100	100	85	85	85	71	71	71	59	59	59	53					53			
1	98	94	90	87	91	87	84	81	75	72	70	63	61	59	52	51	50	45					45			
2	90	82	76	71	83	76	71	66	65	61	58	55	52	50	46	44	42	37					37			
3	82	72	65	59	75	67	61	55	58	53	49	49	45	42	41	38	36	32					32			
4	75	64	56	50	69	60	53	47	51	46	41	43	39	36	36	33	31	27					27			
5	69	57	49	43	63	53	46	40	46	40	36	39	35	31	33	29	27	24					24			
6	63	51	43	37	58	48	40	35	41	36	31	35	31	27	30	26	24	21					21			
7	59	46	38	33	54	43	36	31	37	32	28	32	28	24	27	24	21	18					18			
8	54	42	34	29	50	39	32	27	34	29	24	29	25	22	25	21	19	16					16			
9	51	38	31	26	47	36	29	24	31	26	22	27	23	19	23	20	17	15					15			
10	47	35	28	23	44	33	26	22	29	24	20	25	21	18	21	18	15	14					14			

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2323	2323	2323
5°	2327	2291	2306
10°	2308	2260	2275
15°	2274	2223	2226
20°	2229	2171	2176
25°	2183	2110	2119
30°	2126	2053	2045
35°	2072	1985	1968
40°	2006	1917	1894
45°	1939	1848	1819
50°	1867	1776	1731
55°	1791	1693	1651
60°	1705	1595	1559
65°	1612	1493	1450
70°	1493	1368	1334
75°	1328	1219	1226
80°	1130	1029	1020
85°	820	702	678

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1939 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	294.0	2.0
10°-20°	827.2	5.5
20°-30°	1215.7	8.1
30°-40°	1412.0	9.4
40°-50°	1410.2	9.4
50°-60°	1229.7	8.2
60°-70°	909.0	6.1
70°-80°	514.3	3.4
80°-90°	140.0	0.9
90°-100°	79.4	0.5
100°-110°	296.0	2.0
110°-120°	785.1	5.2
120°-130°	1302.2	8.7
130°-140°	1383.2	9.2
140°-150°	1285.6	8.6
150°-160°	1033.6	6.9
160°-170°	666.0	4.4
170°-180°	229.2	1.5
0°-30°	2336.9	15.6
0°-40°	3748.9	25.0
0°-60°	6388.7	42.6
0°-90°	7952.0	53.0
90°-120°	1160.6	7.7
90°-150°	5131.6	34.2
90°-180°	7060.0	47.0
0°-180°	15012.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3124	3124	3124	3124	3124	
5°	3124	3112	3079	3103	3097	297
15°	2974	2956	2917	2929	2914	837
25°	2691	2667	2616	2622	2616	1238
35°	2322	2292	2244	2226	2211	1450
45°	1889	1868	1823	1790	1778	1458
55°	1430	1412	1376	1340	1325	1278
65°	964	946	916	889	874	953
75°	504	499	484	466	472	539
85°	123	120	117	108	105	137
90°	2	21	35	44	47	14
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°	3123.7	3123.7	3123.7	3123.7	3123.7
2.5°	3141.9	3126.9	3093.8	3123.7	3118.0
5°	3123.7	3111.9	3078.8	3102.7	3096.9
7.5°	3102.7	3084.9	3051.7	3076.0	3069.9
10°	3069.9	3048.9	3012.8	3036.7	3027.8
12.5°	3024.6	3006.8	2970.8	2985.7	2979.7
15°	2973.7	2955.8	2916.6	2928.7	2913.7
17.5°	2910.5	2892.7	2853.5	2868.5	2853.5
20°	2841.4	2823.5	2781.4	2790.4	2778.6
22.5°	2772.5	2745.5	2706.2	2706.2	2700.2
25°	2691.3	2667.3	2616.4	2622.1	2616.4
27.5°	2601.1	2580.0	2541.2	2532.3	2517.3
30°	2511.2	2487.0	2442.0	2433.1	2421.1
32.5°	2415.0	2397.2	2349.0	2330.9	2318.8
35°	2322.0	2292.0	2243.8	2225.7	2210.7
37.5°	2216.8	2189.7	2141.5	2120.6	2105.6
40°	2108.7	2084.5	2036.3	2009.6	1997.5
42.5°	2003.5	1979.3	1931.5	1901.3	1883.5
45°	1889.4	1868.5	1823.2	1790.3	1778.3
47.5°	1778.3	1757.2	1709.1	1676.0	1658.1
50°	1661.0	1646.0	1603.9	1561.9	1546.9
52.5°	1546.9	1525.9	1487.0	1453.9	1432.8
55°	1430.0	1411.8	1375.7	1339.8	1324.8
57.5°	1312.7	1297.7	1258.5	1222.5	1210.4
60°	1195.4	1183.6	1141.5	1108.4	1099.5
62.5°	1081.3	1060.2	1030.3	1000.4	988.2
65°	964.3	946.1	916.2	889.1	874.2
67.5°	844.2	828.9	802.1	781.1	769.0
70°	733.0	720.8	693.8	672.7	661.0
72.5°	618.9	606.7	591.8	570.8	561.9
75°	504.5	498.7	483.5	465.6	471.7
77.5°	402.5	390.4	384.4	375.4	366.5
80°	300.5	297.3	291.2	282.3	276.3
82.5°	204.3	204.3	201.4	189.3	189.3
85°	123.0	120.2	117.3	108.0	105.2
87.5°	54.1	48.1	42.1	33.2	30.0
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	10.47	11.36	11.40	12.31	13.54	10.04	10.93	10.97	11.88	13.11
	3H	12.13	12.93	13.08	13.89	15.14	11.66	12.46	12.60	13.42	14.67
	4H	12.72	13.48	13.68	14.44	15.70	12.25	13.00	13.21	13.97	15.23
	6H	13.13	13.82	14.09	14.79	16.06	12.65	13.35	13.62	14.31	15.59
	8H	13.23	13.89	14.21	14.88	16.15	12.76	13.42	13.73	14.40	15.67
	12H	13.28	13.91	14.26	14.89	16.19	12.80	13.43	13.78	14.41	15.71
4H	2H	10.94	11.69	11.90	12.65	13.91	10.59	11.35	11.55	12.31	13.57
	3H	12.81	13.44	13.78	14.43	15.70	12.41	13.04	13.39	14.04	15.31
	4H	13.52	14.10	14.50	15.08	16.38	13.12	13.69	14.10	14.68	15.98
	6H	14.04	14.54	15.03	15.55	16.84	13.63	14.13	14.62	15.14	16.43
	8H	14.19	14.65	15.19	15.66	16.97	13.78	14.24	14.77	15.24	16.56
	12H	14.27	14.68	15.28	15.70	17.02	13.84	14.26	14.86	15.28	16.60
8H	4H	13.72	14.19	14.72	15.19	16.50	13.36	13.83	14.36	14.83	16.14
	6H	14.36	14.74	15.38	15.78	17.09	13.99	14.38	15.01	15.42	16.73
	8H	14.58	14.92	15.61	15.95	17.27	14.21	14.55	15.24	15.58	16.91
	12H	14.71	15.01	15.74	16.03	17.41	14.33	14.62	15.36	15.65	17.02
12H	4H	13.71	14.13	14.72	15.15	16.46	13.36	13.78	14.37	14.79	16.11
	6H	14.39	14.72	15.41	15.76	17.08	14.03	14.37	15.06	15.40	16.73
	8H	14.63	14.93	15.66	15.95	17.33	14.27	14.57	15.31	15.60	16.97