

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: P926976

Luminaire Tested: DFN2DIP-HX4F0-060D120US830-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P926976
REPORT IS A COMBINATION OF REPORTS P900967 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-060D120US830-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

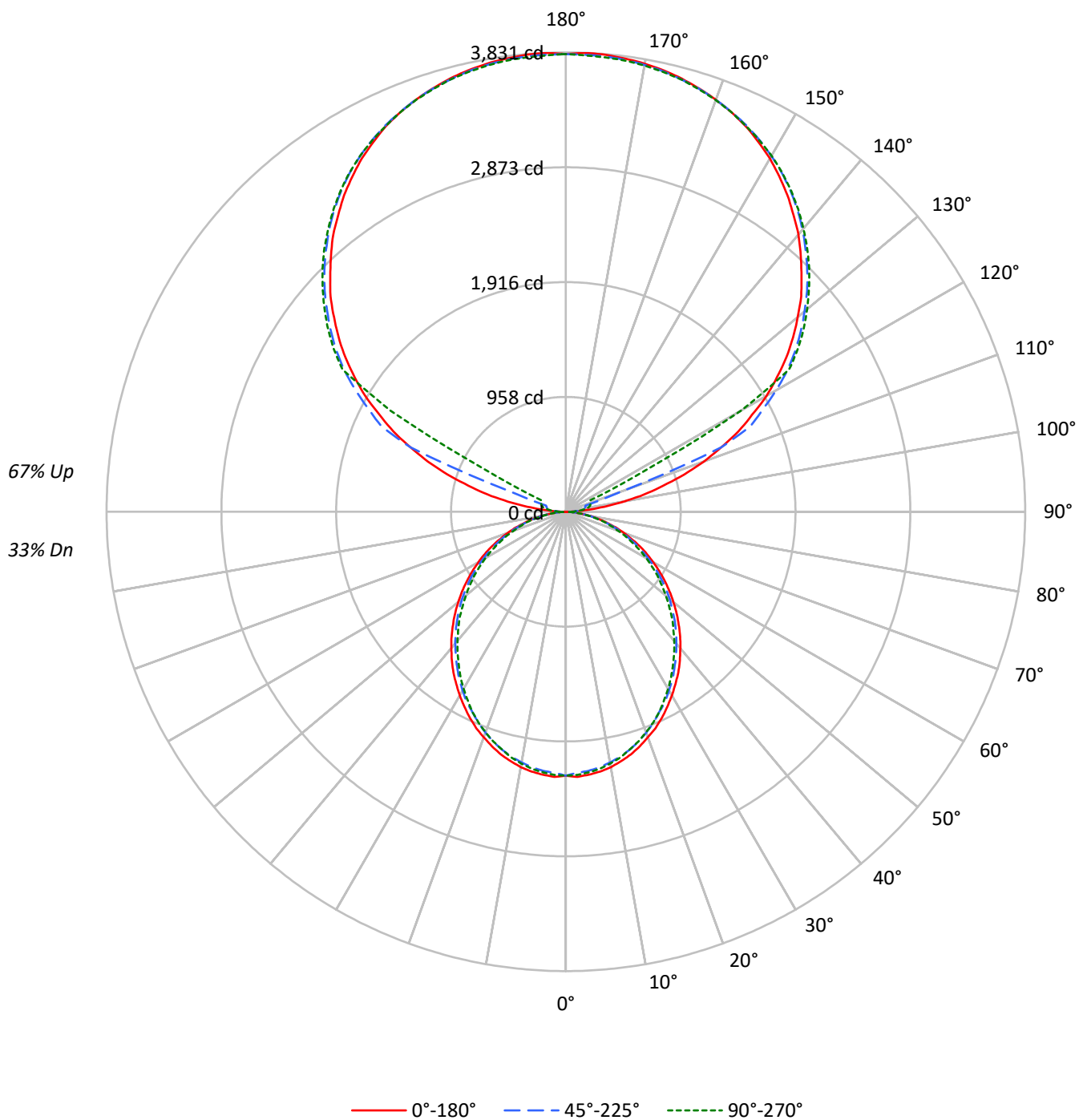
Lumens per Lamp: N/A
Luminaire Lumens: 16795.4 lumens
Efficiency: N/A
Efficacy: 111.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 150.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.099
Total Harmonic Distortion (THDi): 0.979
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	103	103	103	103	93	93	93	93	74	74	74	57	57	57	41	41	41
1	94	90	86	83	85	81	78	75	65	63	61	50	48	47	36	35	34
2	86	78	72	67	77	71	66	62	57	53	50	44	41	39	32	30	29
3	78	69	62	56	70	62	56	51	50	46	42	39	36	33	28	26	25
4	71	61	53	47	64	55	49	43	44	40	36	34	31	28	25	23	21
5	65	54	46	40	59	49	42	37	40	35	31	31	27	25	23	20	18
6	60	48	41	35	54	44	37	32	36	31	27	28	24	21	20	18	16
7	56	44	36	30	50	40	33	28	32	27	23	25	22	19	19	16	14
8	51	39	32	27	46	36	29	25	29	24	21	23	19	17	17	15	13
9	48	36	29	24	43	33	26	22	27	22	19	21	18	15	16	13	12
10	45	33	26	21	40	30	24	20	25	20	17	19	16	14	15	12	11

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1636	1636	1636
5°	1639	1613	1624
10°	1626	1592	1602
15°	1602	1566	1568
20°	1570	1530	1533
25°	1538	1486	1492
30°	1498	1446	1441
35°	1460	1398	1386
40°	1413	1350	1334
45°	1366	1302	1281
50°	1315	1251	1219
55°	1262	1193	1163
60°	1201	1123	1098
65°	1136	1051	1021
70°	1052	964	939
75°	935	859	863
80°	796	725	718
85°	577	494	478

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1961 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	207.1	1.2
10°-20°	582.7	3.5
20°-30°	856.3	5.1
30°-40°	994.6	5.9
40°-50°	993.4	5.9
50°-60°	866.2	5.2
60°-70°	640.3	3.8
70°-80°	362.3	2.2
80°-90°	102.3	0.6
90°-100°	125.9	0.7
100°-110°	469.2	2.8
110°-120°	1244.4	7.4
120°-130°	2063.9	12.3
130°-140°	2192.3	13.1
140°-150°	2037.5	12.1
150°-160°	1638.1	9.8
160°-170°	1055.6	6.3
170°-180°	363.3	2.2
0°-30°	1646.2	9.8
0°-40°	2640.7	15.7
0°-60°	4500.3	26.8
0°-90°	5605.2	33.4
90°-120°	1839.4	11.0
90°-150°	8133.2	48.4
90°-180°	11190.0	66.6
0°-180°	16795.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2200	2200	2200	2200	2200	
5°	2200	2192	2169	2186	2182	209
15°	2095	2082	2054	2063	2052	590
25°	1896	1879	1843	1847	1843	872
35°	1636	1614	1581	1568	1557	1021
45°	1331	1316	1284	1261	1253	1027
55°	1007	994	969	944	933	901
65°	679	666	645	626	616	672
75°	355	351	340	328	332	379
85°	87	85	83	76	74	97
90°	3	33	55	69	74	15
95°	179	88	108	122	119	212
105°	840	923	169	199	210	897
115°	1588	1635	1704	425	227	1563
125°	2245	2281	2334	2353	2361	2003
135°	2779	2823	2848	2875	2870	2146
145°	3223	3220	3267	3287	3273	2016
155°	3549	3524	3558	3574	3552	1635
165°	3740	3723	3731	3751	3731	1057
175°	3825	3806	3811	3831	3803	364
180°	3817	3817	3817	3817	3817	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2200.4	2200.4	2200.4	2200.4	2200.4
2.5°	2213.2	2202.6	2179.2	2200.4	2196.3
5°	2200.4	2192.1	2168.7	2185.6	2181.5
7.5°	2185.6	2173.0	2149.7	2166.7	2162.5
10°	2162.5	2147.7	2122.2	2139.1	2132.8
12.5°	2130.6	2118.0	2092.6	2103.2	2098.9
15°	2094.6	2082.1	2054.5	2063.0	2052.5
17.5°	2050.2	2037.7	2010.1	2020.5	2010.1
20°	2001.5	1989.0	1959.3	1965.6	1957.3
22.5°	1953.0	1933.9	1906.3	1906.3	1902.1
25°	1895.7	1879.0	1843.0	1847.0	1843.0
27.5°	1832.2	1817.4	1790.0	1783.8	1773.2
30°	1769.0	1751.8	1720.3	1713.9	1705.4
32.5°	1701.1	1688.6	1654.7	1641.8	1633.4
35°	1635.6	1614.5	1580.6	1567.8	1557.2
37.5°	1561.5	1542.4	1508.6	1493.7	1483.1
40°	1485.4	1468.3	1434.5	1415.6	1407.1
42.5°	1411.3	1394.2	1360.6	1339.3	1326.7
45°	1331.0	1316.1	1284.3	1261.2	1252.6
47.5°	1252.6	1237.8	1203.9	1180.6	1167.9
50°	1170.0	1159.5	1129.9	1100.2	1089.6
52.5°	1089.6	1074.8	1047.4	1024.1	1009.3
55°	1007.2	994.4	969.1	943.7	933.2
57.5°	924.7	914.1	886.5	861.2	852.6
60°	842.0	833.7	804.1	780.8	774.5
62.5°	761.6	746.8	725.7	704.6	696.1
65°	679.3	666.5	645.4	626.3	615.7
67.5°	594.6	583.9	565.0	550.2	541.7
70°	516.3	507.8	488.7	473.9	465.6
72.5°	435.9	427.4	416.9	402.1	395.8
75°	355.3	351.4	340.5	328.0	332.2
77.5°	283.5	275.0	270.7	264.5	258.2
80°	211.7	209.4	205.2	198.9	194.6
82.5°	143.9	143.9	141.8	133.4	133.4
85°	86.6	84.6	82.6	76.1	74.1
87.5°	38.2	33.9	29.6	23.4	21.1
90°	2.6	33.1	55.1	69.2	74.5
92.5°	69.2	58.1	66.3	71.8	74.5
95°	179.4	88.2	107.5	121.7	118.8
97.5°	323.1	96.8	140.7	149.2	151.8
100°	489.0	110.6	157.4	179.4	185.0
102.5°	671.1	665.8	163.0	193.2	201.7
105°	839.6	922.6	168.6	198.8	209.9
107.5°	1035.7	1104.6	174.2	204.3	215.5
110°	1223.6	1281.4	483.4	207.3	218.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1400.5	1449.9	1403.1	212.5	221.0
115°	1588.0	1635.0	1704.1	425.4	226.7
117.5°	1751.1	1806.2	1853.4	1458.1	734.7
120°	1933.4	1974.7	2024.6	2057.8	1684.8
122.5°	2087.9	2132.2	2187.6	2204.0	2207.0
125°	2245.3	2281.4	2333.9	2353.2	2361.4
127.5°	2389.0	2427.7	2469.4	2496.9	2499.5
130°	2524.4	2568.7	2598.8	2629.4	2626.7
132.5°	2662.5	2698.6	2728.7	2753.7	2751.1
135°	2778.6	2822.9	2847.5	2875.4	2869.8
137.5°	2900.0	2933.1	2961.0	2988.5	2980.3
140°	3018.7	3041.0	3071.1	3096.1	3082.4
142.5°	3118.4	3137.8	3173.5	3195.5	3181.7
145°	3223.4	3220.4	3267.3	3286.7	3272.8
147.5°	3314.2	3306.0	3352.9	3366.7	3355.9
150°	3402.7	3383.4	3427.7	3444.1	3430.3
152.5°	3477.2	3455.2	3496.6	3513.3	3493.9
155°	3549.0	3524.4	3557.6	3574.0	3552.0
157.5°	3607.0	3585.1	3610.1	3629.4	3607.0
160°	3656.9	3640.2	3656.9	3673.3	3654.0
162.5°	3700.9	3684.5	3698.3	3717.6	3692.7
165°	3739.6	3723.2	3731.4	3750.8	3731.4
167.5°	3770.1	3753.3	3761.9	3781.2	3756.3
170°	3795.0	3778.3	3783.9	3803.2	3778.3
172.5°	3811.4	3795.0	3800.6	3820.0	3795.0
175°	3825.1	3805.8	3811.4	3830.8	3803.2
177.5°	3830.8	3811.4	3814.4	3833.7	3808.8
180°	3817.0	3817.0	3817.0	3817.0	3817.0

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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	7.21	7.94	8.30	9.03	10.52	6.78	7.51	7.87	8.60	10.09
	3H	8.86	9.52	9.96	10.61	12.12	8.39	9.04	9.49	10.14	11.65
	4H	9.44	10.06	10.55	11.16	12.67	8.97	9.59	10.08	10.69	12.20
	6H	9.84	10.41	10.95	11.51	13.03	9.36	9.93	10.48	11.03	12.56
	8H	9.94	10.48	11.06	11.60	13.12	9.46	10.01	10.58	11.12	12.64
	12H	9.98	10.50	11.11	11.61	13.15	9.50	10.02	10.63	11.13	12.67
4H	2H	7.66	8.28	8.77	9.37	10.89	7.31	7.93	8.43	9.03	10.54
	3H	9.51	10.03	10.63	11.15	12.68	9.12	9.64	10.24	10.76	12.29
	4H	10.22	10.70	11.35	11.81	13.36	9.82	10.29	10.94	11.40	12.95
	6H	10.73	11.14	11.86	12.27	13.81	10.32	10.73	11.45	11.86	13.40
	8H	10.88	11.26	12.01	12.38	13.94	10.46	10.85	11.60	11.97	13.53
	12H	10.94	11.29	12.09	12.43	13.99	10.52	10.87	11.67	12.01	13.57
8H	4H	10.41	10.79	11.54	11.92	13.47	10.05	10.43	11.18	11.56	13.11
	6H	11.03	11.35	12.19	12.52	14.07	10.67	10.99	11.82	12.16	13.71
	8H	11.26	11.53	12.41	12.68	14.25	10.89	11.16	12.04	12.31	13.88
	12H	11.38	11.62	12.54	12.77	14.38	11.00	11.24	12.16	12.38	13.99
12H	4H	10.39	10.73	11.54	11.87	13.43	10.04	10.38	11.18	11.52	13.08
	6H	11.06	11.34	12.22	12.49	14.06	10.71	10.99	11.87	12.14	13.71
	8H	11.30	11.54	12.46	12.69	14.29	10.94	11.18	12.11	12.33	13.94