

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: P929106

Luminaire Tested: DFN2DIP-HX4F0-120D040US935-RLLONL

Issue Date: 12/12/2024

**Test Information**

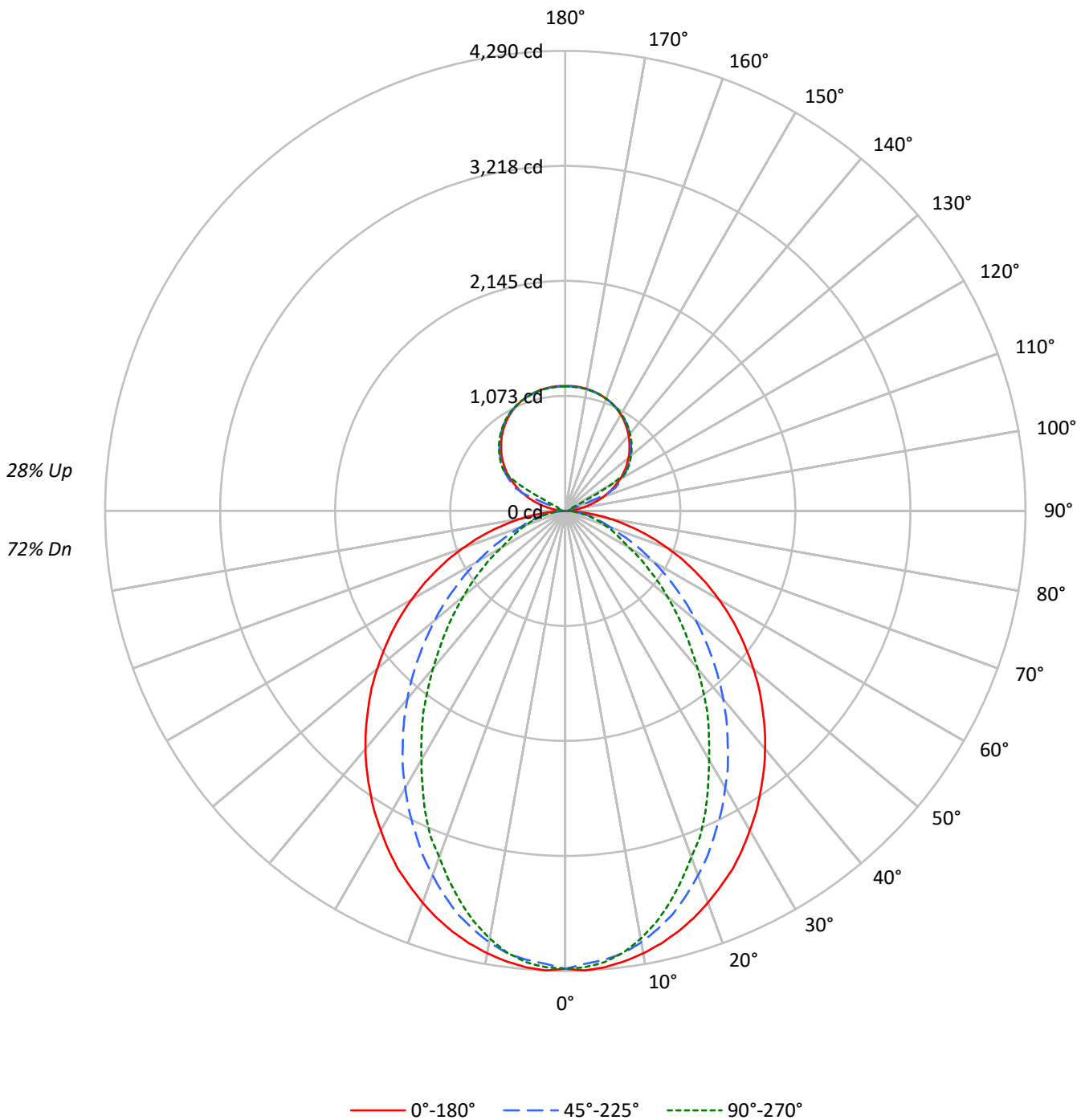
Test Method: LM-79-2019  
Report Number: P929106  
REPORT IS A COMBINATION OF REPORTS P900836 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-120D040US935-RLONL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12191.7 lumens  
Efficiency: N/A  
Efficacy: 78.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 156.3  
Input Voltage (V):  
Input Current (A<sub>in</sub>): 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			0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	112	112	112	112	107	107	107	107	96	96	96	86	86	86	76	76	76	76	76	76	72
1	103	99	95	92	98	94	91	88	85	82	80	76	75	73	69	67	66	66	66	66	62
2	95	87	81	76	90	83	78	73	75	71	68	68	65	62	61	59	57	57	57	57	53
3	87	78	70	65	82	74	67	62	67	62	58	61	57	53	55	52	49	49	49	49	46
4	80	69	61	55	76	66	59	54	60	54	50	55	50	46	50	46	43	43	43	43	40
5	74	62	54	48	70	59	52	47	54	48	44	50	45	41	45	41	38	38	38	38	35
6	68	56	48	42	65	54	46	41	49	43	39	45	40	36	41	37	34	34	34	34	31
7	63	51	43	38	60	49	42	36	45	39	34	41	36	32	38	34	30	30	30	30	28
8	59	47	39	34	56	45	38	33	41	35	31	38	33	29	35	31	27	27	27	27	25
9	55	43	35	30	52	41	34	30	38	32	28	35	30	26	32	28	25	25	25	25	23
10	52	40	32	28	49	38	31	27	35	29	25	33	28	24	30	26	23	23	23	23	21

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

	0°	45°	90°
0°	3175	3175	3175
5°	3180	3125	3145
10°	3149	3064	3043
15°	3106	2963	2885
20°	3049	2824	2691
25°	2991	2668	2503
30°	2912	2507	2266
35°	2835	2335	2057
40°	2757	2157	1817
45°	2666	1959	1600
50°	2572	1759	1388
55°	2473	1546	1185
60°	2360	1323	975
65°	2229	1095	878
70°	2071	884	795
75°	1872	780	724
80°	1583	655	628
85°	1107	439	473

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2666 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	400.2	3.3
10°-20°	1098.7	9.0
20°-30°	1542.5	12.7
30°-40°	1681.4	13.8
40°-50°	1545.4	12.7
50°-60°	1213.7	10.0
60°-70°	790.0	6.5
70°-80°	406.7	3.3
80°-90°	105.8	0.9
90°-100°	38.3	0.3
100°-110°	142.9	1.2
110°-120°	378.9	3.1
120°-130°	628.5	5.2
130°-140°	667.6	5.5
140°-150°	620.5	5.1
150°-160°	498.8	4.1
160°-170°	321.4	2.6
170°-180°	110.6	0.9
0°-30°	3041.3	24.9
0°-40°	4722.7	38.7
0°-60°	7481.8	61.4
0°-90°	8784.3	72.1
90°-120°	560.1	4.6
90°-150°	2476.6	20.3
90°-180°	3407.0	27.9
0°-180°	12191.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4270	4270	4270	4270	4270	
5°	4270	4251	4200	4235	4224	405
15°	4062	4019	3888	3814	3776	1144
25°	3687	3563	3308	3150	3091	1696
35°	3177	2980	2640	2396	2311	1988
45°	2597	2338	1932	1658	1565	2006
55°	1975	1673	1256	1024	951	1764
65°	1333	1020	672	541	529	1322
75°	711	440	309	282	278	752
85°	166	85	73	73	73	191
90°	1	10	17	21	23	12
95°	55	27	33	37	36	65
105°	256	281	51	60	64	273
115°	484	498	519	130	69	476
125°	684	695	711	717	719	610
135°	846	860	867	876	874	654
145°	982	981	995	1001	997	614
155°	1081	1073	1083	1088	1082	498
165°	1139	1134	1136	1142	1136	322
175°	1165	1159	1161	1166	1158	111
180°	1162	1162	1162	1162	1162	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4270.2	4270.2	4270.2	4270.2	4270.2
2.5°	4289.5	4270.2	4227.6	4266.5	4258.7
5°	4270.2	4250.9	4200.5	4235.3	4223.9
7.5°	4235.3	4212.4	4158.3	4173.4	4154.2
10°	4189.0	4162.0	4084.8	4073.0	4050.1
12.5°	4131.2	4096.4	3991.8	3968.9	3926.2
15°	4061.5	4018.9	3887.7	3814.2	3775.7
17.5°	3980.3	3918.4	3756.0	3671.2	3609.3
20°	3887.7	3810.2	3617.1	3520.7	3435.4
22.5°	3787.2	3698.3	3474.0	3342.7	3285.0
25°	3686.8	3562.9	3307.9	3149.6	3091.4
27.5°	3567.0	3435.4	3153.3	2971.7	2882.7
30°	3439.5	3292.4	2983.2	2786.4	2681.8
32.5°	3315.7	3137.7	2821.2	2589.2	2492.4
35°	3176.7	2979.5	2639.6	2396.1	2310.8
37.5°	3041.4	2828.6	2469.4	2202.5	2106.2
40°	2898.3	2666.7	2291.6	2017.2	1916.8
42.5°	2751.5	2504.3	2114.0	1827.8	1731.5
45°	2596.9	2337.9	1932.3	1657.7	1565.0
47.5°	2450.1	2175.9	1758.5	1483.8	1399.0
50°	2287.8	2013.5	1588.4	1321.5	1240.7
52.5°	2129.2	1839.3	1426.0	1171.0	1097.6
55°	1974.6	1673.3	1255.9	1024.2	950.8
57.5°	1816.3	1507.2	1105.4	888.9	827.0
60°	1654.0	1344.8	946.7	749.9	688.0
62.5°	1495.7	1186.5	811.4	626.1	595.3
65°	1333.3	1020.1	672.4	541.2	529.3
67.5°	1178.8	865.5	541.2	475.2	463.7
70°	1016.4	715.1	448.2	409.6	394.0
72.5°	861.9	575.7	374.7	344.0	336.2
75°	710.9	440.3	309.2	282.1	278.4
77.5°	560.5	312.8	243.6	228.0	220.2
80°	421.1	224.3	185.3	170.1	170.1
82.5°	293.6	150.8	127.5	119.7	119.7
85°	166.1	84.9	73.4	73.4	73.4
87.5°	61.9	30.7	30.7	27.0	27.0
90°	0.8	10.1	16.8	21.1	22.6
92.5°	21.1	17.7	20.1	21.9	22.6
95°	54.6	26.9	32.7	37.0	36.2
97.5°	98.4	29.4	42.9	45.5	46.2
100°	148.9	33.7	48.0	54.6	56.3
102.5°	204.3	202.8	49.6	58.8	61.4
105°	255.6	280.9	51.3	60.5	63.9
107.5°	315.4	336.4	53.0	62.3	65.6
110°	372.6	390.2	147.2	63.1	66.4



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	426.5	441.5	427.2	64.7	67.3
115°	483.5	497.8	518.9	129.5	69.1
117.5°	533.2	550.0	564.4	444.0	223.7
120°	588.8	601.3	616.5	626.6	513.1
122.5°	635.8	649.3	666.2	671.1	672.0
125°	683.7	694.7	710.7	716.6	719.1
127.5°	727.5	739.3	751.9	760.3	761.1
130°	768.7	782.2	791.3	800.6	799.9
132.5°	810.7	821.7	831.0	838.5	837.8
135°	846.1	859.6	867.1	875.6	873.9
137.5°	883.0	893.1	901.6	910.0	907.5
140°	919.2	926.0	935.2	942.8	938.6
142.5°	949.6	955.5	966.4	973.0	968.9
145°	981.5	980.7	994.9	1000.8	996.6
147.5°	1009.2	1006.7	1021.0	1025.2	1021.9
150°	1036.1	1030.3	1043.8	1048.8	1044.6
152.5°	1058.9	1052.1	1064.7	1069.8	1063.9
155°	1080.7	1073.2	1083.3	1088.3	1081.6
157.5°	1098.4	1091.7	1099.3	1105.2	1098.4
160°	1113.5	1108.5	1113.5	1118.5	1112.7
162.5°	1127.0	1122.0	1126.2	1132.0	1124.5
165°	1138.8	1133.8	1136.3	1142.1	1136.3
167.5°	1148.1	1142.9	1145.6	1151.4	1143.8
170°	1155.6	1150.6	1152.2	1158.1	1150.6
172.5°	1160.6	1155.6	1157.4	1163.2	1155.6
175°	1164.8	1158.9	1160.6	1166.5	1158.1
177.5°	1166.5	1160.6	1161.5	1167.4	1159.9
180°	1162.4	1162.4	1162.4	1162.4	1162.4



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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	13.01	14.06	13.76	14.83	15.75	8.99	10.04	9.74	10.80	11.72
	3H	14.71	15.65	15.47	16.42	17.37	10.19	11.13	10.96	11.91	12.86
	4H	15.33	16.21	16.11	17.00	17.96	10.66	11.54	11.44	12.32	13.29
	6H	15.76	16.58	16.55	17.37	18.35	10.99	11.80	11.78	12.60	13.57
	8H	15.89	16.67	16.70	17.48	18.46	11.09	11.86	11.89	12.67	13.65
	12H	15.96	16.70	16.77	17.51	18.51	11.14	11.88	11.95	12.68	13.69
4H	2H	13.06	13.94	13.84	14.73	15.69	9.61	10.49	10.39	11.28	12.24
	3H	14.91	15.64	15.71	16.46	17.44	10.98	11.72	11.78	12.53	13.51
	4H	15.61	16.28	16.42	17.10	18.10	11.54	12.21	12.35	13.02	14.03
	6H	16.14	16.71	16.97	17.56	18.57	11.97	12.55	12.80	13.39	14.40
	8H	16.32	16.86	17.15	17.69	18.72	12.11	12.64	12.94	13.48	14.51
	12H	16.42	16.91	17.27	17.77	18.80	12.18	12.66	13.03	13.52	14.55
8H	4H	15.59	16.13	16.43	16.97	18.00	11.84	12.37	12.67	13.21	14.24
	6H	16.17	16.61	17.03	17.49	18.52	12.36	12.81	13.22	13.69	14.71
	8H	16.39	16.78	17.26	17.66	18.70	12.56	12.95	13.43	13.83	14.87
	12H	16.54	16.88	17.41	17.75	18.85	12.69	13.04	13.56	13.90	15.00
12H	4H	15.56	16.04	16.41	16.90	17.93	11.85	12.33	12.70	13.19	14.22
	6H	16.15	16.54	17.02	17.42	18.46	12.41	12.81	13.28	13.69	14.73
	8H	16.38	16.72	17.25	17.59	18.69	12.64	12.98	13.51	13.85	14.95