

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: P919090

Luminaire Tested: DFN2DIP-HX4F0-060D040US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P919090
REPORT IS A COMBINATION OF REPORTS P899303 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-060D040US935-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

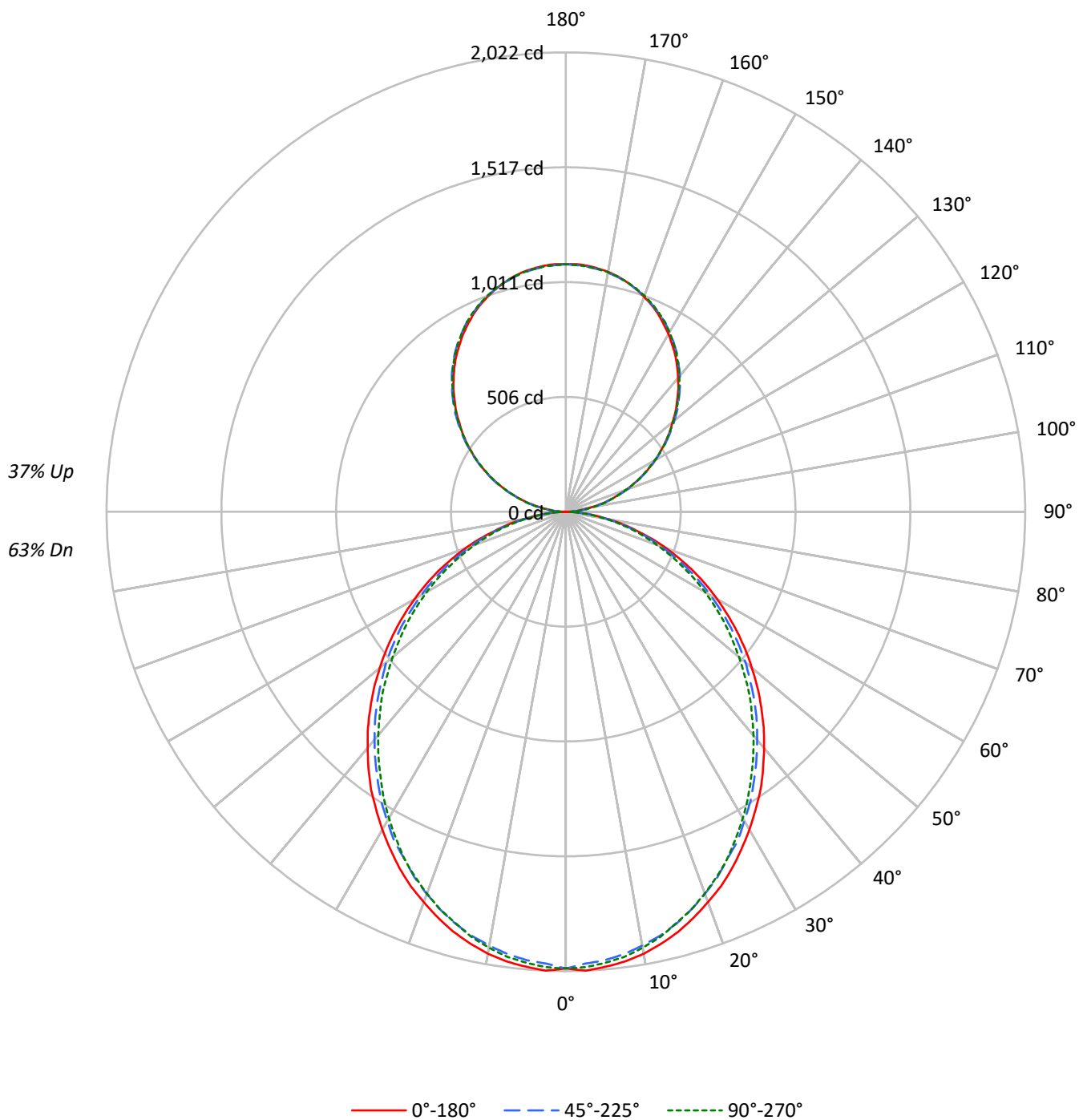
Lumens per Lamp: N/A
Luminaire Lumens: 8162.3 lumens
Efficiency: N/A
Efficacy: 104.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 77.9
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

TEST NUMBER: P919090

CATALOG NUMBER: DFN2DIP-HX4F0-060D040US935-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P919090

CATALOG NUMBER: DFN2DIP-HX4F0-060D040US935-FLLFL

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	90	90	90	79	79	79	68	68	68
1	101	96	92	89	94	90	87	84	79	77	74	69	67	66	60	59	57
2	92	84	78	72	86	79	73	69	70	65	62	61	58	55	53	50	48
3	84	74	66	60	78	70	63	58	61	56	52	54	50	46	47	44	41
4	77	66	57	51	71	62	54	49	55	49	44	48	43	40	42	38	35
5	70	58	50	44	66	55	48	42	49	43	38	43	38	35	38	34	31
6	65	53	44	38	61	50	42	37	44	38	33	39	34	30	34	30	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	30	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°	1495	1495	1495
5°	1497	1474	1484
10°	1485	1454	1464
15°	1463	1430	1433
20°	1434	1397	1400
25°	1405	1358	1363
30°	1368	1321	1316
35°	1333	1277	1266
40°	1291	1233	1219
45°	1248	1189	1170
50°	1201	1143	1114
55°	1153	1090	1062
60°	1097	1026	1003
65°	1037	961	933
70°	961	880	858
75°	855	785	789
80°	727	662	656
85°	527	451	437

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1248 cd/sqm

TEST NUMBER: P919090

CATALOG NUMBER: DFN2DIP-HX4F0-060D040US935-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	189.2	2.3
10°-20°	532.3	6.5
20°-30°	782.3	9.6
30°-40°	908.6	11.1
40°-50°	907.5	11.1
50°-60°	791.3	9.7
60°-70°	584.9	7.2
70°-80°	330.9	4.1
80°-90°	90.4	1.1
90°-100°	67.4	0.8
100°-110°	214.2	2.6
110°-120°	366.5	4.5
120°-130°	482.0	5.9
130°-140°	541.0	6.6
140°-150°	530.5	6.5
150°-160°	445.0	5.5
160°-170°	295.1	3.6
170°-180°	103.2	1.3
0°-30°	1503.8	18.4
0°-40°	2412.4	29.6
0°-60°	4111.1	50.4
0°-90°	5117.4	62.7
90°-120°	648.0	7.9
90°-150°	2201.5	27.0
90°-180°	3045.0	37.3
0°-180°	8162.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2010	2010	2010	2010	2010	
5°	2010	2002	1981	1997	1993	191
15°	1914	1902	1877	1885	1875	539
25°	1732	1716	1684	1687	1684	797
35°	1494	1475	1444	1432	1422	933
45°	1216	1202	1173	1152	1144	938
55°	920	908	885	862	852	823
65°	620	609	590	572	562	614
75°	325	321	311	300	304	347
85°	79	77	75	70	68	88
90°	1	12	32	30	31	8
95°	48	57	59	59	57	53
105°	198	200	202	204	204	209
115°	368	373	371	370	368	364
125°	535	543	540	538	537	478
135°	692	702	704	703	700	535
145°	840	846	852	853	849	525
155°	960	963	966	971	968	442
165°	1045	1044	1044	1050	1046	295
175°	1087	1085	1083	1089	1084	103
180°	1089	1089	1089	1089	1089	

TEST NUMBER: P919090

CATALOG NUMBER: DFN2DIP-HX4F0-060D040US935-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2010.1	2010.1	2010.1	2010.1	2010.1
2.5°	2021.8	2012.2	1990.8	2010.1	2006.4
5°	2010.1	2002.5	1981.2	1996.6	1992.9
7.5°	1996.6	1985.1	1963.8	1979.3	1975.5
10°	1975.5	1962.0	1938.7	1954.1	1948.4
12.5°	1946.4	1934.8	1911.7	1921.3	1917.4
15°	1913.5	1902.0	1876.8	1884.6	1875.0
17.5°	1872.9	1861.5	1836.3	1845.8	1836.3
20°	1828.4	1817.0	1789.8	1795.6	1788.0
22.5°	1784.2	1766.7	1741.5	1741.5	1737.6
25°	1731.8	1716.5	1683.6	1687.3	1683.6
27.5°	1673.8	1660.3	1635.2	1629.5	1619.9
30°	1616.0	1600.3	1571.5	1565.7	1557.9
32.5°	1554.0	1542.6	1511.6	1499.9	1492.1
35°	1494.2	1474.9	1443.9	1432.2	1422.5
37.5°	1426.5	1409.0	1378.1	1364.5	1354.9
40°	1356.9	1341.3	1310.4	1293.2	1285.4
42.5°	1289.3	1273.7	1242.9	1223.5	1211.9
45°	1215.9	1202.3	1173.2	1152.1	1144.3
47.5°	1144.3	1130.7	1099.8	1078.5	1066.9
50°	1068.8	1059.2	1032.2	1005.0	995.4
52.5°	995.4	981.9	956.8	935.6	922.0
55°	920.1	908.4	885.3	862.1	852.5
57.5°	844.7	835.1	809.9	786.7	778.9
60°	769.2	761.6	734.6	713.3	707.5
62.5°	695.8	682.3	663.0	643.7	635.9
65°	620.5	608.9	589.6	572.1	562.5
67.5°	543.2	533.4	516.2	502.7	494.8
70°	471.7	463.9	446.4	432.9	425.3
72.5°	398.2	390.5	380.8	367.3	361.5
75°	324.6	321.0	311.1	299.6	303.5
77.5°	259.0	251.2	247.3	241.6	235.8
80°	193.4	191.3	187.4	181.7	177.8
82.5°	131.5	131.5	129.6	121.8	121.8
85°	79.1	77.3	75.4	69.5	67.7
87.5°	34.9	31.0	27.0	21.4	19.3
90°	0.9	11.8	32.2	30.2	31.2
92.5°	20.3	27.6	28.6	29.5	29.5
95°	48.0	57.2	58.8	58.8	57.2
97.5°	79.8	88.3	92.0	92.0	92.0
100°	116.6	124.2	126.7	126.7	125.8
102.5°	155.3	160.9	164.5	165.5	164.5
105°	197.7	200.3	202.2	203.9	203.9
107.5°	239.7	243.7	243.7	244.3	239.7
110°	280.4	285.7	285.7	285.7	283.1



TEST NUMBER: P919090

CATALOG NUMBER: DFN2DIP-HX4F0-060D040US935-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	324.4	330.0	329.0	326.4	324.4
115°	367.7	373.1	371.3	370.4	367.7
117.5°	410.8	418.0	413.5	410.8	408.2
120°	454.2	461.3	454.2	454.2	451.2
122.5°	493.5	502.7	498.2	495.5	493.5
125°	534.9	543.1	540.5	537.5	536.6
127.5°	575.3	585.5	581.9	577.9	575.3
130°	613.0	624.9	623.3	621.3	617.7
132.5°	655.4	664.6	665.3	660.6	658.1
135°	691.9	702.1	704.0	703.0	700.4
137.5°	732.6	740.8	742.4	741.7	737.9
140°	768.4	776.6	781.2	781.2	777.6
142.5°	805.2	813.4	816.0	817.0	813.4
145°	840.0	846.5	851.8	852.8	849.2
147.5°	871.2	879.3	883.3	884.9	881.3
150°	903.4	909.0	912.6	915.5	912.6
152.5°	931.9	937.5	942.1	945.7	942.1
155°	960.4	963.1	966.0	970.7	967.7
157.5°	985.2	987.0	988.7	995.3	990.7
160°	1007.1	1009.1	1010.0	1015.6	1011.7
162.5°	1027.4	1027.4	1028.5	1034.7	1030.1
165°	1044.9	1043.9	1043.9	1050.4	1045.9
167.5°	1060.7	1057.6	1057.6	1064.3	1059.6
170°	1072.5	1069.8	1068.8	1075.4	1069.8
172.5°	1080.6	1078.1	1077.0	1083.7	1078.1
175°	1087.3	1084.6	1082.6	1089.2	1083.7
177.5°	1090.9	1088.2	1086.2	1091.8	1086.2
180°	1089.2	1089.2	1089.2	1089.2	1089.2

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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	9.76	10.75	10.60	11.61	12.69	9.33	10.32	10.17	11.18	12.26
	3H	11.43	12.32	12.29	13.19	14.30	10.96	11.85	11.81	12.72	13.83
	4H	12.03	12.87	12.90	13.75	14.86	11.55	12.39	12.42	13.27	14.39
	6H	12.44	13.21	13.32	14.09	15.22	11.96	12.73	12.84	13.62	14.75
	8H	12.54	13.28	13.43	14.18	15.31	12.07	12.81	12.96	13.71	14.84
	12H	12.60	13.30	13.49	14.20	15.35	12.12	12.82	13.01	13.71	14.87
4H	2H	10.24	11.08	11.11	11.96	13.07	9.90	10.74	10.77	11.61	12.73
	3H	12.12	12.82	13.00	13.73	14.86	11.73	12.43	12.61	13.34	14.47
	4H	12.84	13.48	13.74	14.39	15.54	12.43	13.07	13.33	13.98	15.14
	6H	13.36	13.91	14.27	14.85	16.00	12.95	13.51	13.86	14.44	15.59
	8H	13.52	14.03	14.43	14.96	16.13	13.10	13.62	14.02	14.54	15.72
	12H	13.60	14.06	14.53	15.00	16.18	13.17	13.64	14.11	14.58	15.76
8H	4H	13.05	13.56	13.96	14.49	15.66	12.69	13.20	13.60	14.13	15.30
	6H	13.69	14.11	14.63	15.08	16.25	13.32	13.75	14.26	14.72	15.89
	8H	13.91	14.29	14.86	15.24	16.43	13.54	13.92	14.49	14.87	16.06
	12H	14.05	14.38	15.00	15.33	16.57	13.66	13.99	14.62	14.94	16.18
12H	4H	13.04	13.50	13.97	14.45	15.62	12.69	13.15	13.62	14.10	15.27
	6H	13.72	14.10	14.67	15.05	16.24	13.36	13.74	14.31	14.70	15.89
	8H	13.97	14.30	14.92	15.25	16.49	13.61	13.94	14.56	14.89	16.13