

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: HALO COMMERCIAL

Report Number: P345493

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSBZ 3000Lm3000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345493
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-9)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 03/03/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO COMMERCIAL
Catalog Number: PR4FS24D010 PR4M24WW9FSBZ 3000lm3000K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1820.8 lumens
Efficiency: N/A
Efficacy: 63.9 lumens/watt
Spacing Criteria (0/90/45): 0.94 / 1.12 / 1.1
Luminous Opening: Circular (Dia: 0.4' x H: 0')
CIE Type: Direct

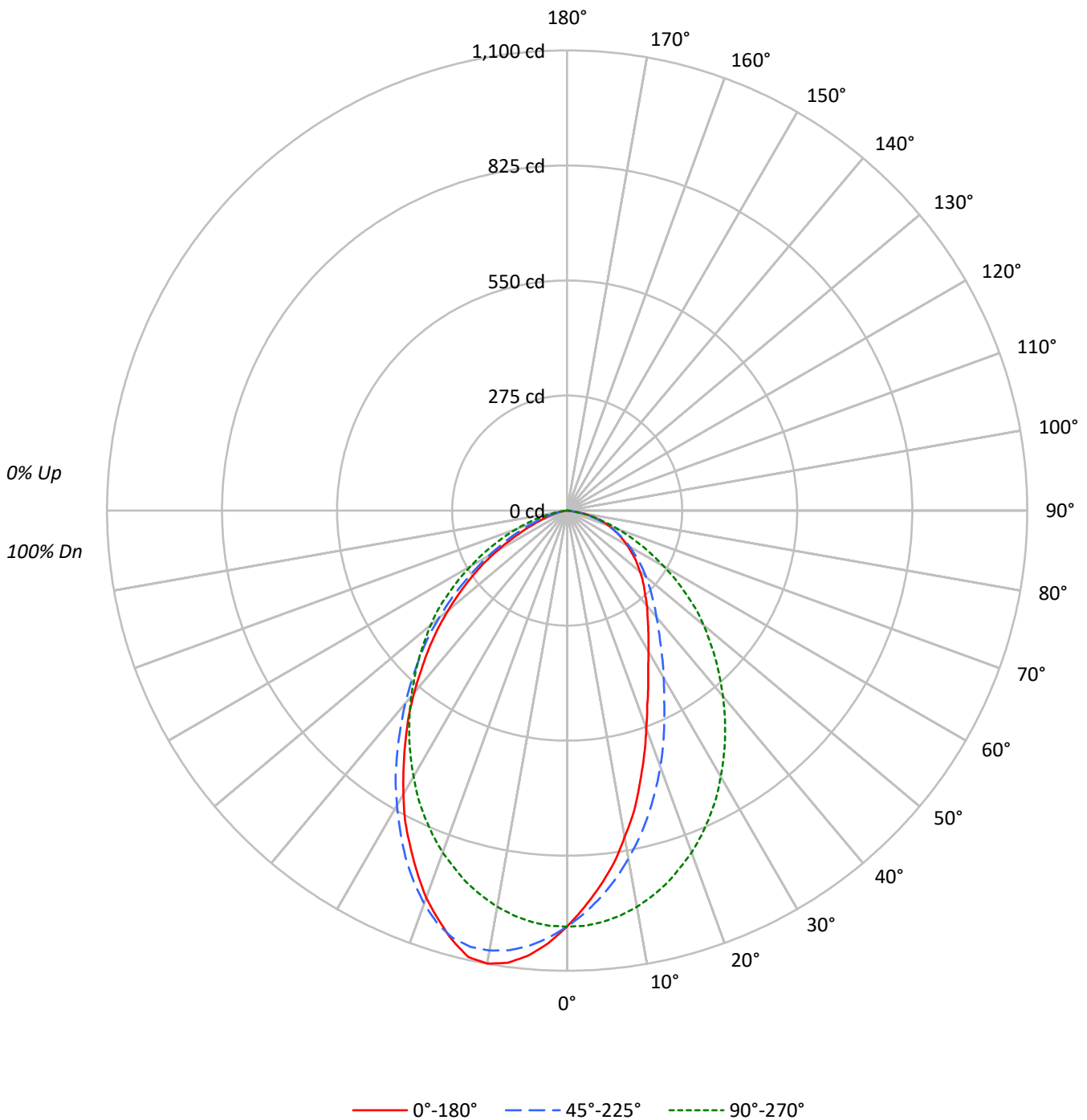
Input Watts (W): 28.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	90	88
2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	84	80	78	76
3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66
4	87	76	69	63	85	75	68	62	73	66	61	70	65	61	68	64	60	58
5	81	69	61	55	79	68	60	55	66	59	54	64	58	54	62	57	53	51
6	75	63	55	49	73	62	54	49	60	53	48	59	53	48	57	52	48	46
7	70	58	50	44	68	57	49	44	55	48	43	54	48	43	53	47	43	41
8	65	53	45	40	64	52	45	40	51	44	39	50	44	39	49	43	39	37
9	61	49	41	36	60	48	41	36	47	41	36	46	40	36	45	40	36	34
10	58	46	38	33	57	45	38	33	44	38	33	43	37	33	42	37	33	31

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	86988	86988	86988
5°	79129	86627	93774
10°	70362	85408	97665
15°	60907	83510	96242
20°	51484	80954	91715
25°	44251	77846	85577
30°	39279	74175	79084
35°	36049	70283	71959
40°	33901	66146	64947
45°	32174	62073	57855
50°	30931	57915	50417
55°	30057	52886	42669
60°	28952	46656	34236
65°	28272	40235	24733
70°	27211	32914	17135
75°	25313	24874	11997
80°	17227	13248	5944
85°	1305	5319	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	93.1	5.1
10°-20°	251.9	13.8
20°-30°	339.2	18.6
30°-40°	355.3	19.5
40°-50°	318.6	17.5
50°-60°	243.9	13.4
60°-70°	148.6	8.2
70°-80°	63.1	3.5
80°-90°	7.1	0.4
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	684.2	37.6
0°-40°	1039.5	57.1
0°-60°	1602.0	88.0
0°-90°	1820.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1820.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	994	994	994	994	994	
5°	901	928	987	1044	1068	83
15°	673	751	922	1058	1063	187
25°	458	549	807	914	887	212
35°	338	389	658	708	674	212
45°	260	286	502	499	468	201
55°	197	209	347	304	280	176
65°	137	138	194	144	120	135
75°	75	67	74	45	36	77
85°	1	3	5	1	0	9
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5
2.5°	948.5	949.8	952.4	951.1	953.7	953.7	953.7	956.4	959.0	960.3	962.9
5°	901.2	902.5	903.8	906.5	907.8	906.5	910.4	914.3	918.3	923.5	927.5
7.5°	851.3	851.3	850.0	853.9	859.2	860.5	863.1	867.0	872.3	880.2	888.1
10°	792.2	793.5	796.1	797.4	805.3	806.6	810.6	815.8	825.0	834.2	844.7
12.5°	737.0	735.7	737.0	740.9	746.2	752.7	756.7	763.3	775.1	786.9	800.0
15°	672.6	673.9	677.9	681.8	689.7	693.6	700.2	712.0	723.8	735.7	751.4
17.5°	612.2	610.9	616.1	622.7	629.3	635.8	641.1	651.6	667.4	684.4	701.5
20°	553.1	551.8	555.7	560.9	571.5	575.4	582.0	597.7	612.2	630.6	651.6
22.5°	500.5	500.5	504.5	511.0	517.6	521.5	528.1	541.2	558.3	579.3	600.4
25°	458.5	458.5	461.1	465.0	472.9	476.9	483.4	492.6	508.4	528.1	549.1
27.5°	419.1	421.7	423.0	427.0	433.5	437.5	441.4	451.9	465.0	482.1	501.8
30°	388.9	390.2	391.5	394.1	399.4	402.0	407.2	416.4	428.3	442.7	461.1
32.5°	361.3	362.6	362.6	366.5	370.5	374.4	377.0	384.9	392.8	407.2	424.3
35°	337.6	337.6	340.2	341.6	344.2	346.8	349.4	356.0	365.2	375.7	388.9
37.5°	315.3	315.3	316.6	319.2	321.9	324.5	325.8	331.1	338.9	348.1	358.6
40°	296.9	296.9	296.9	299.5	302.2	303.5	304.8	310.0	316.6	323.2	332.4
42.5°	277.2	278.5	279.8	281.1	282.4	285.1	286.4	289.0	294.3	299.5	308.7
45°	260.1	261.4	261.4	262.7	265.4	265.4	266.7	270.6	274.6	279.8	286.4
47.5°	244.3	244.3	244.3	245.7	247.0	248.3	249.6	252.2	256.2	258.8	265.4
50°	227.3	227.3	228.6	229.9	231.2	231.2	232.5	233.8	237.8	240.4	245.7
52.5°	211.5	211.5	212.8	212.8	214.1	214.1	215.4	218.1	219.4	223.3	227.3
55°	197.1	195.7	197.1	197.1	197.1	198.4	198.4	201.0	203.6	204.9	208.9
57.5°	180.0	181.3	181.3	182.6	182.6	182.6	183.9	183.9	186.5	187.9	189.2
60°	165.5	166.8	166.8	166.8	166.8	166.8	168.2	168.2	169.5	170.8	172.1
62.5°	151.1	151.1	151.1	151.1	151.1	152.4	152.4	152.4	152.4	153.7	155.0
65°	136.6	136.6	136.6	136.6	136.6	136.6	136.6	136.6	136.6	136.6	137.9
67.5°	120.9	120.9	120.9	122.2	120.9	120.9	120.9	120.9	120.9	120.9	119.5
70°	106.4	106.4	106.4	106.4	106.4	105.1	105.1	103.8	103.8	102.5	102.5
72.5°	90.6	90.6	90.6	89.3	89.3	89.3	88.0	86.7	85.4	85.4	85.4
75°	74.9	74.9	73.6	73.6	72.3	72.3	70.9	69.6	68.3	67.0	67.0
77.5°	56.5	56.5	56.5	56.5	55.2	53.9	53.9	52.5	51.2	51.2	49.9
80°	34.2	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	31.5	31.5
82.5°	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1
85°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	2.6
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	2.6
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5
2.5°	965.6	968.2	972.1	974.8	976.1	977.4	981.3	985.3	989.2	993.2	995.8
5°	934.0	939.3	944.5	951.1	953.7	957.7	965.6	972.1	978.7	986.6	993.2
7.5°	895.9	905.1	914.3	924.8	928.8	932.7	943.2	955.1	964.3	976.1	986.6
10°	856.5	867.0	878.9	893.3	899.9	906.5	919.6	934.0	947.2	961.6	974.8
12.5°	811.9	828.9	844.7	860.5	867.0	874.9	892.0	909.1	926.2	943.2	959.0
15°	767.2	784.3	804.0	822.4	831.6	842.1	861.8	882.8	902.5	922.2	940.6
17.5°	722.5	739.6	760.6	784.3	796.1	806.6	827.6	851.3	874.9	895.9	919.6
20°	672.6	694.9	719.9	744.9	756.7	769.8	794.8	819.7	846.0	869.7	894.6
22.5°	624.0	647.7	677.9	702.8	716.0	729.1	758.0	786.9	813.2	839.5	864.4
25°	575.4	603.0	631.9	662.1	676.6	691.0	721.2	748.8	779.0	806.6	835.5
27.5°	528.1	557.0	587.2	618.8	634.5	650.3	680.5	712.0	742.2	772.5	801.4
30°	483.4	511.0	543.9	576.7	592.5	609.6	641.1	673.9	704.1	734.4	765.9
32.5°	444.0	467.7	500.5	533.4	550.4	567.5	601.7	634.5	664.7	696.3	729.1
35°	407.2	429.6	458.5	492.6	509.7	526.8	560.9	595.1	627.9	658.2	689.7
37.5°	375.7	395.4	420.4	450.6	470.3	487.4	521.5	555.7	587.2	618.8	649.0
40°	345.5	362.6	386.2	415.1	430.9	448.0	482.1	517.6	549.1	579.3	609.6
42.5°	319.2	333.7	353.4	378.3	395.4	409.9	445.3	479.5	509.7	539.9	570.1
45°	295.6	307.4	323.2	344.2	358.6	377.0	409.9	441.4	471.6	501.8	530.7
47.5°	271.9	282.4	295.6	315.3	327.1	341.6	374.4	404.6	434.8	462.4	490.0
50°	252.2	260.1	270.6	286.4	298.2	308.7	338.9	370.5	398.1	425.6	450.6
52.5°	232.5	237.8	247.0	261.4	269.3	279.8	306.1	335.0	362.6	388.9	411.2
55°	212.8	218.1	224.6	235.2	243.0	250.9	273.2	300.8	325.8	346.8	369.1
57.5°	193.1	197.1	202.3	211.5	216.8	223.3	241.7	264.1	286.4	307.4	324.5
60°	176.0	178.7	182.6	187.9	191.8	195.7	208.9	229.9	250.9	266.7	282.4
62.5°	156.3	157.6	160.3	165.5	168.2	170.8	180.0	198.4	215.4	229.9	243.0
65°	137.9	139.3	140.6	143.2	145.8	147.1	155.0	168.2	182.6	194.4	203.6
67.5°	119.5	120.9	120.9	123.5	123.5	126.1	130.1	137.9	151.1	160.3	168.2
70°	101.2	102.5	102.5	103.8	102.5	103.8	107.7	113.0	120.9	128.7	134.0
72.5°	84.1	82.8	82.8	82.8	82.8	84.1	85.4	88.0	94.6	101.2	102.5
75°	65.7	65.7	64.4	64.4	64.4	64.4	64.4	65.7	69.6	73.6	74.9
77.5°	48.6	47.3	47.3	46.0	46.0	46.0	44.7	44.7	46.0	48.6	48.6
80°	31.5	30.2	28.9	30.2	27.6	28.9	27.6	26.3	26.3	26.3	25.0
82.5°	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	11.8	11.8	11.8
85°	2.6	2.6	3.9	3.9	3.9	3.9	3.9	3.9	5.3	5.3	3.9
87.5°	2.6	2.6	2.6	3.9	3.9	3.9	3.9	3.9	5.3	5.3	5.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5
2.5°	999.7	1003.7	1007.6	1008.9	1010.2	1014.2	1016.8	1020.7	1022.1	1024.7	1027.3
5°	999.7	1007.6	1014.2	1018.1	1020.7	1027.3	1033.9	1037.8	1044.4	1048.3	1052.3
7.5°	997.1	1007.6	1016.8	1022.1	1027.3	1035.2	1044.4	1052.3	1060.2	1065.4	1072.0
10°	989.2	1002.4	1014.2	1020.7	1027.3	1039.1	1049.6	1058.8	1068.0	1075.9	1082.5
12.5°	977.4	993.2	1007.6	1015.5	1022.1	1036.5	1048.3	1058.8	1068.0	1074.6	1079.9
15°	960.3	980.0	997.1	1005.0	1012.9	1028.6	1040.4	1049.6	1057.5	1061.5	1065.4
17.5°	940.6	961.6	981.3	990.5	998.4	1012.9	1023.4	1029.9	1033.9	1036.5	1035.2
20°	918.3	940.6	960.3	969.5	978.7	990.5	998.4	1001.0	999.7	998.4	995.8
22.5°	890.7	914.3	935.4	943.2	951.1	960.3	962.9	961.6	959.0	956.4	952.4
25°	861.8	885.4	905.1	911.7	918.3	922.2	920.9	918.3	914.3	910.4	903.8
27.5°	828.9	853.9	869.7	877.6	878.9	878.9	874.9	871.0	864.4	859.2	852.6
30°	794.8	815.8	831.6	834.2	835.5	832.9	828.9	822.4	813.2	809.2	802.7
32.5°	755.4	777.7	789.5	789.5	786.9	783.0	775.1	768.5	763.3	754.1	747.5
35°	718.6	735.7	742.2	742.2	738.3	731.7	725.2	716.0	708.1	702.8	693.6
37.5°	676.6	693.6	696.3	692.3	689.7	681.8	671.3	663.4	654.2	647.7	641.1
40°	637.1	649.0	646.3	642.4	639.8	631.9	620.1	610.9	601.7	593.8	587.2
42.5°	592.5	600.4	596.4	593.8	588.5	579.3	568.8	559.6	550.4	542.6	536.0
45°	551.8	555.7	549.1	543.9	539.9	529.4	521.5	508.4	499.2	491.3	486.1
47.5°	508.4	508.4	501.8	496.6	490.0	479.5	470.3	457.2	451.9	441.4	436.1
50°	466.4	462.4	454.5	448.0	442.7	430.9	419.1	409.9	400.7	392.8	387.5
52.5°	421.7	416.4	405.9	399.4	396.7	382.3	371.8	360.0	352.1	342.9	337.6
55°	377.0	369.1	357.3	352.1	346.8	335.0	323.2	311.3	303.5	296.9	291.6
57.5°	331.1	321.9	311.3	304.8	298.2	286.4	274.6	264.1	257.5	250.9	247.0
60°	283.8	277.2	266.7	260.1	253.5	243.0	229.9	222.0	216.8	208.9	207.6
62.5°	243.0	233.8	222.0	216.8	211.5	201.0	190.5	183.9	177.3	173.4	168.2
65°	202.3	193.1	182.6	177.3	173.4	164.2	156.3	149.8	144.5	139.3	135.3
67.5°	162.9	156.3	147.1	143.2	137.9	130.1	123.5	118.2	113.0	107.7	103.8
70°	130.1	122.2	114.3	111.7	109.0	101.2	95.9	90.6	85.4	81.4	77.5
72.5°	99.8	93.3	86.7	82.8	80.1	76.2	72.3	67.0	63.1	59.1	56.5
75°	70.9	67.0	61.7	59.1	56.5	53.9	48.6	46.0	44.7	42.0	39.4
77.5°	46.0	42.0	39.4	36.8	36.8	34.2	31.5	30.2	27.6	27.6	26.3
80°	23.6	22.3	21.0	21.0	21.0	18.4	17.1	17.1	15.8	14.5	14.5
82.5°	10.5	10.5	9.2	9.2	9.2	7.9	7.9	6.6	6.6	5.3	5.3
85°	3.9	3.9	3.9	3.9	3.9	2.6	2.6	2.6	1.3	1.3	1.3
87.5°	3.9	3.9	3.9	3.9	3.9	2.6	2.6	2.6	1.3	1.3	1.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSBZ 3000lm3000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5
2.5°	1028.6	1031.3	1031.3	1032.6	1033.9	1035.2	1033.9	1035.2
5°	1056.2	1060.2	1061.5	1061.5	1064.1	1065.4	1068.0	1068.0
7.5°	1077.2	1081.2	1083.8	1085.1	1087.7	1090.4	1090.4	1090.4
10°	1087.7	1091.7	1093.0	1095.6	1096.9	1098.3	1099.6	1099.6
12.5°	1083.8	1087.7	1089.1	1089.1	1091.7	1091.7	1091.7	1093.0
15°	1066.7	1065.4	1065.4	1065.4	1064.1	1064.1	1064.1	1062.8
17.5°	1032.6	1031.3	1031.3	1031.3	1029.9	1028.6	1027.3	1024.7
20°	994.5	991.8	989.2	990.5	987.9	986.6	985.3	985.3
22.5°	949.8	945.9	944.5	943.2	940.6	939.3	936.7	936.7
25°	901.2	898.6	894.6	893.3	892.0	889.4	886.7	886.7
27.5°	850.0	846.0	844.7	842.1	840.8	838.1	836.8	838.1
30°	797.4	793.5	792.2	789.5	784.3	786.9	784.3	783.0
32.5°	742.2	738.3	735.7	733.0	733.0	729.1	729.1	727.8
35°	688.4	684.4	681.8	680.5	677.9	677.9	675.2	673.9
37.5°	635.8	631.9	629.3	627.9	625.3	622.7	621.4	622.7
40°	582.0	578.0	575.4	574.1	571.5	568.8	568.8	568.8
42.5°	529.4	525.5	525.5	522.9	518.9	517.6	516.3	516.3
45°	480.8	475.6	474.2	471.6	471.6	469.0	467.7	467.7
47.5°	429.6	425.6	424.3	423.0	421.7	420.4	420.4	420.4
50°	382.3	377.0	377.0	374.4	373.1	374.4	371.8	370.5
52.5°	335.0	331.1	329.7	329.7	327.1	327.1	327.1	325.8
55°	287.7	285.1	285.1	283.8	281.1	282.4	282.4	279.8
57.5°	244.3	240.4	240.4	239.1	239.1	239.1	236.5	239.1
60°	203.6	201.0	199.7	198.4	197.1	197.1	197.1	195.7
62.5°	165.5	162.9	161.6	160.3	157.6	157.6	155.0	153.7
65°	131.4	128.7	126.1	124.8	122.2	120.9	120.9	119.5
67.5°	99.8	97.2	94.6	93.3	90.6	89.3	88.0	88.0
70°	74.9	70.9	70.9	69.6	68.3	68.3	67.0	67.0
72.5°	53.9	53.9	52.5	52.5	51.2	51.2	51.2	51.2
75°	38.1	38.1	38.1	38.1	36.8	36.8	35.5	35.5
77.5°	25.0	25.0	25.0	23.6	23.6	23.6	23.6	23.6
80°	13.1	13.1	13.1	13.1	13.1	11.8	13.1	11.8
82.5°	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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