

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: P345486

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSBZ 2000Lm4000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345486
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 PR4M24WW8FSBZ 2000lm4000K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1774.3 lumens
Efficiency: N/A
Efficacy: 80.7 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

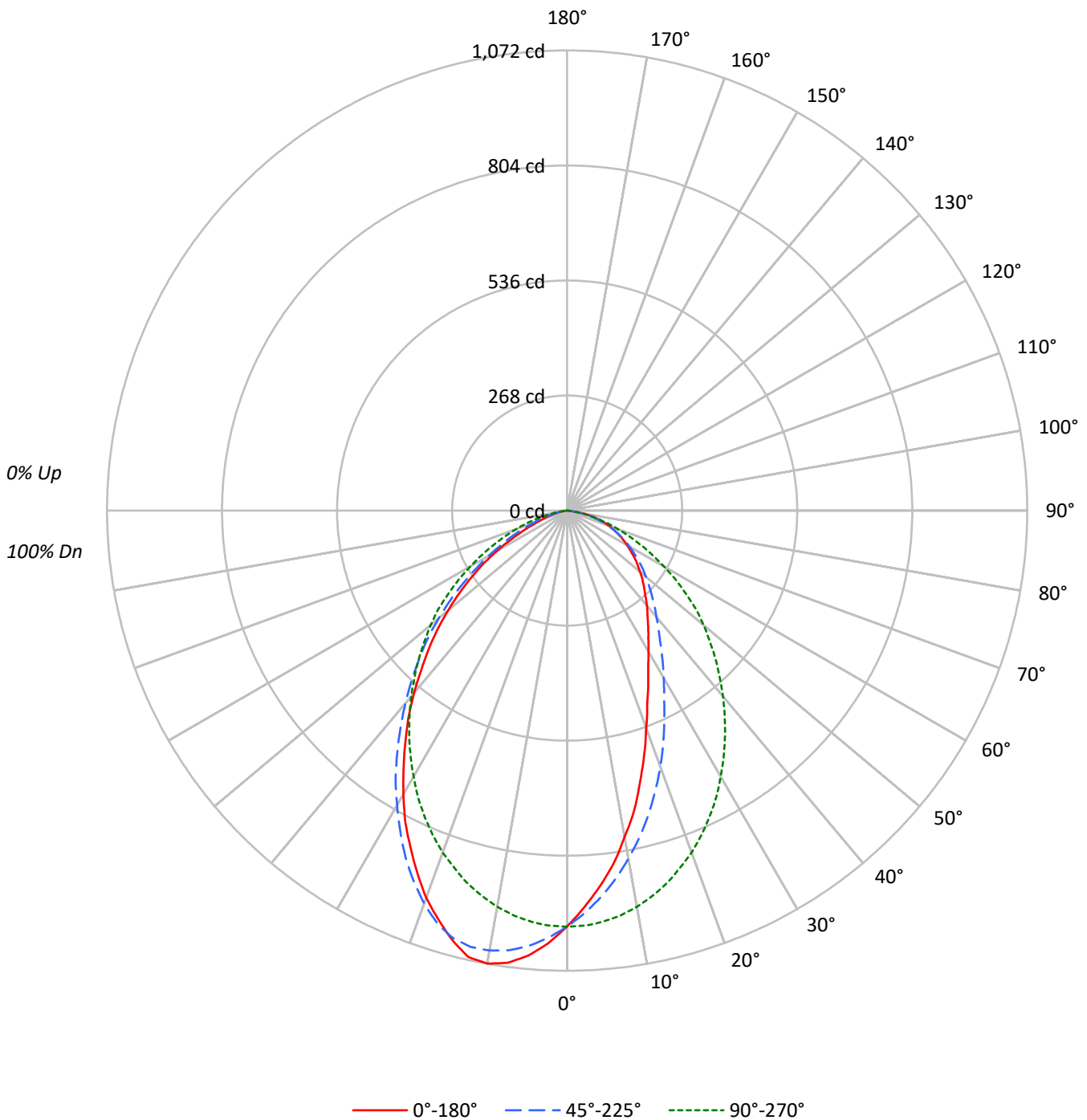
Input Watts (W): 22
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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					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°	84767	84767	84767
5°	77109	84414	91386
10°	68559	83232	95169
15°	59350	81382	93788
20°	50162	78888	89369
25°	43121	75858	83396
30°	38269	72276	77064
35°	35131	68489	70123
40°	33033	64468	63292
45°	31358	60490	56370
50°	30141	56445	49124
55°	29280	51544	41586
60°	28218	45467	33361
65°	27548	39221	24112
70°	26521	32096	16700
75°	24671	24231	11693
80°	16774	12895	5793
85°	1305	5118	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	90.7	5.1
10°-20°	245.5	13.8
20°-30°	330.5	18.6
30°-40°	346.2	19.5
40°-50°	310.5	17.5
50°-60°	237.7	13.4
60°-70°	144.8	8.2
70°-80°	61.5	3.5
80°-90°	6.9	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°	666.8	37.6
0°-40°	1013.0	57.1
0°-60°	1561.2	88.0
0°-90°	1774.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1774.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	969	969	969	969	969	
5°	878	904	961	1018	1041	81
15°	655	732	899	1030	1036	183
25°	447	535	786	891	864	206
35°	329	379	641	690	657	207
45°	254	279	489	486	456	196
55°	192	204	338	296	273	171
65°	133	134	190	141	116	131
75°	73	65	72	44	35	75
85°	1	3	5	1	0	8
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°	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1
2.5°	924.3	925.6	928.1	926.8	929.4	929.4	929.4	932.0	934.5	935.8	938.4
5°	878.2	879.5	880.8	883.3	884.6	883.3	887.2	891.0	894.8	900.0	903.8
7.5°	829.5	829.5	828.3	832.1	837.2	838.5	841.1	844.9	850.0	857.7	865.4
10°	771.9	773.2	775.8	777.1	784.7	786.0	789.9	795.0	803.9	812.9	823.1
12.5°	718.2	716.9	718.2	722.0	727.1	733.5	737.4	743.8	755.3	766.8	779.6
15°	655.4	656.7	660.6	664.4	672.1	675.9	682.3	693.8	705.4	716.9	732.3
17.5°	596.6	595.3	600.4	606.8	613.2	619.6	624.7	635.0	650.3	667.0	683.6
20°	538.9	537.7	541.5	546.6	556.9	560.7	567.1	582.5	596.6	614.5	635.0
22.5°	487.7	487.7	491.6	498.0	504.4	508.2	514.6	527.4	544.1	564.6	585.0
25°	446.8	446.8	449.3	453.2	460.9	464.7	471.1	480.1	495.4	514.6	535.1
27.5°	408.4	410.9	412.2	416.1	422.5	426.3	430.1	440.4	453.2	469.8	489.0
30°	378.9	380.2	381.5	384.0	389.2	391.7	396.9	405.8	417.3	431.4	449.3
32.5°	352.0	353.3	353.3	357.2	361.0	364.8	367.4	375.1	382.8	396.9	413.5
35°	329.0	329.0	331.6	332.8	335.4	338.0	340.5	346.9	355.9	366.1	378.9
37.5°	307.2	307.2	308.5	311.1	313.6	316.2	317.5	322.6	330.3	339.2	349.5
40°	289.3	289.3	289.3	291.9	294.4	295.7	297.0	302.1	308.5	314.9	323.9
42.5°	270.1	271.4	272.7	274.0	275.2	277.8	279.1	281.6	286.8	291.9	300.8
45°	253.5	254.8	254.8	256.0	258.6	258.6	259.9	263.7	267.6	272.7	279.1
47.5°	238.1	238.1	238.1	239.4	240.7	242.0	243.2	245.8	249.6	252.2	258.6
50°	221.5	221.5	222.7	224.0	225.3	225.3	226.6	227.9	231.7	234.3	239.4
52.5°	206.1	206.1	207.4	207.4	208.7	208.7	209.9	212.5	213.8	217.6	221.5
55°	192.0	190.7	192.0	192.0	192.0	193.3	193.3	195.9	198.4	199.7	203.5
57.5°	175.4	176.7	176.7	177.9	177.9	177.9	179.2	179.2	181.8	183.1	184.3
60°	161.3	162.6	162.6	162.6	162.6	162.6	163.9	163.9	165.1	166.4	167.7
62.5°	147.2	147.2	147.2	147.2	147.2	148.5	148.5	148.5	148.5	149.8	151.1
65°	133.1	133.1	133.1	133.1	133.1	133.1	133.1	133.1	133.1	133.1	134.4
67.5°	117.8	117.8	117.8	119.1	117.8	117.8	117.8	117.8	117.8	117.8	116.5
70°	103.7	103.7	103.7	103.7	103.7	102.4	102.4	101.1	101.1	99.9	99.9
72.5°	88.3	88.3	88.3	87.1	87.1	87.1	85.8	84.5	83.2	83.2	83.2
75°	73.0	73.0	71.7	71.7	70.4	70.4	69.1	67.8	66.6	65.3	65.3
77.5°	55.0	55.0	55.0	55.0	53.8	52.5	52.5	51.2	49.9	49.9	48.6
80°	33.3	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	30.7	30.7
82.5°	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
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°	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1
2.5°	940.9	943.5	947.3	949.9	951.2	952.4	956.3	960.1	964.0	967.8	970.4
5°	910.2	915.3	920.4	926.8	929.4	933.2	940.9	947.3	953.7	961.4	967.8
7.5°	873.1	882.0	891.0	901.2	905.1	908.9	919.2	930.7	939.6	951.2	961.4
10°	834.7	844.9	856.4	870.5	876.9	883.3	896.1	910.2	923.0	937.1	949.9
12.5°	791.1	807.8	823.1	838.5	844.9	852.6	869.2	885.9	902.5	919.2	934.5
15°	747.6	764.3	783.5	801.4	810.3	820.6	839.8	860.3	879.5	898.7	916.6
17.5°	704.1	720.7	741.2	764.3	775.8	786.0	806.5	829.5	852.6	873.1	896.1
20°	655.4	677.2	701.5	725.9	737.4	750.2	774.5	798.8	824.4	847.5	871.8
22.5°	608.1	631.1	660.6	684.9	697.7	710.5	738.7	766.8	792.4	818.0	842.3
25°	560.7	587.6	615.8	645.2	659.3	673.4	702.8	729.7	759.1	786.0	814.2
27.5°	514.6	542.8	572.2	603.0	618.3	633.7	663.1	693.8	723.3	752.7	780.9
30°	471.1	498.0	530.0	562.0	577.4	594.0	624.7	656.7	686.2	715.6	746.3
32.5°	432.7	455.7	487.7	519.7	536.4	553.0	586.3	618.3	647.8	678.5	710.5
35°	396.9	418.6	446.8	480.1	496.7	513.3	546.6	579.9	611.9	641.4	672.1
37.5°	366.1	385.3	409.7	439.1	458.3	474.9	508.2	541.5	572.2	603.0	632.4
40°	336.7	353.3	376.4	404.5	419.9	436.5	469.8	504.4	535.1	564.6	594.0
42.5°	311.1	325.2	344.4	368.7	385.3	399.4	434.0	467.3	496.7	526.1	555.6
45°	288.0	299.6	314.9	335.4	349.5	367.4	399.4	430.1	459.6	489.0	517.2
47.5°	265.0	275.2	288.0	307.2	318.8	332.8	364.8	394.3	423.7	450.6	477.5
50°	245.8	253.5	263.7	279.1	290.6	300.8	330.3	361.0	387.9	414.8	439.1
52.5°	226.6	231.7	240.7	254.8	262.4	272.7	298.3	326.4	353.3	378.9	400.7
55°	207.4	212.5	218.9	229.1	236.8	244.5	266.3	293.2	317.5	338.0	359.7
57.5°	188.2	192.0	197.1	206.1	211.2	217.6	235.6	257.3	279.1	299.6	316.2
60°	171.5	174.1	177.9	183.1	186.9	190.7	203.5	224.0	244.5	259.9	275.2
62.5°	152.3	153.6	156.2	161.3	163.9	166.4	175.4	193.3	209.9	224.0	236.8
65°	134.4	135.7	137.0	139.5	142.1	143.4	151.1	163.9	177.9	189.5	198.4
67.5°	116.5	117.8	117.8	120.3	120.3	122.9	126.7	134.4	147.2	156.2	163.9
70°	98.6	99.9	99.9	101.1	99.9	101.1	105.0	110.1	117.8	125.5	130.6
72.5°	81.9	80.7	80.7	80.7	80.7	81.9	83.2	85.8	92.2	98.6	99.9
75°	64.0	64.0	62.7	62.7	62.7	62.7	62.7	64.0	67.8	71.7	73.0
77.5°	47.4	46.1	46.1	44.8	44.8	44.8	43.5	43.5	44.8	47.4	47.4
80°	30.7	29.4	28.2	29.4	26.9	28.2	26.9	25.6	25.6	25.6	24.3
82.5°	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	11.5	11.5	11.5
85°	2.6	2.6	3.8	3.8	3.8	3.8	3.8	3.8	5.1	5.1	3.8
87.5°	2.6	2.6	2.6	3.8	3.8	3.8	3.8	3.8	5.1	5.1	5.1
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°	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1
2.5°	974.2	978.0	981.9	983.2	984.4	988.3	990.8	994.7	996.0	998.5	1001.1
5°	974.2	981.9	988.3	992.1	994.7	1001.1	1007.5	1011.3	1017.7	1021.6	1025.4
7.5°	971.6	981.9	990.8	996.0	1001.1	1008.8	1017.7	1025.4	1033.1	1038.2	1044.6
10°	964.0	976.8	988.3	994.7	1001.1	1012.6	1022.9	1031.8	1040.8	1048.5	1054.9
12.5°	952.4	967.8	981.9	989.6	996.0	1010.1	1021.6	1031.8	1040.8	1047.2	1052.3
15°	935.8	955.0	971.6	979.3	987.0	1002.4	1013.9	1022.9	1030.5	1034.4	1038.2
17.5°	916.6	937.1	956.3	965.2	972.9	987.0	997.2	1003.7	1007.5	1010.1	1008.8
20°	894.8	916.6	935.8	944.8	953.7	965.2	972.9	975.5	974.2	972.9	970.4
22.5°	868.0	891.0	911.5	919.2	926.8	935.8	938.4	937.1	934.5	932.0	928.1
25°	839.8	862.8	882.0	888.4	894.8	898.7	897.4	894.8	891.0	887.2	880.8
27.5°	807.8	832.1	847.5	855.2	856.4	856.4	852.6	848.7	842.3	837.2	830.8
30°	774.5	795.0	810.3	812.9	814.2	811.6	807.8	801.4	792.4	788.6	782.2
32.5°	736.1	757.9	769.4	769.4	766.8	763.0	755.3	748.9	743.8	734.8	728.4
35°	700.3	716.9	723.3	723.3	719.5	713.1	706.7	697.7	690.0	684.9	675.9
37.5°	659.3	675.9	678.5	674.6	672.1	664.4	654.2	646.5	637.5	631.1	624.7
40°	620.9	632.4	629.8	626.0	623.4	615.8	604.2	595.3	586.3	578.6	572.2
42.5°	577.4	585.0	581.2	578.6	573.5	564.6	554.3	545.4	536.4	528.7	522.3
45°	537.7	541.5	535.1	530.0	526.1	515.9	508.2	495.4	486.5	478.8	473.7
47.5°	495.4	495.4	489.0	483.9	477.5	467.3	458.3	445.5	440.4	430.1	425.0
50°	454.5	450.6	442.9	436.5	431.4	419.9	408.4	399.4	390.5	382.8	377.6
52.5°	410.9	405.8	395.6	389.2	386.6	372.5	362.3	350.8	343.1	334.1	329.0
55°	367.4	359.7	348.2	343.1	338.0	326.4	314.9	303.4	295.7	289.3	284.2
57.5°	322.6	313.6	303.4	297.0	290.6	279.1	267.6	257.3	250.9	244.5	240.7
60°	276.5	270.1	259.9	253.5	247.1	236.8	224.0	216.3	211.2	203.5	202.3
62.5°	236.8	227.9	216.3	211.2	206.1	195.9	185.6	179.2	172.8	169.0	163.9
65°	197.1	188.2	177.9	172.8	169.0	160.0	152.3	145.9	140.8	135.7	131.9
67.5°	158.7	152.3	143.4	139.5	134.4	126.7	120.3	115.2	110.1	105.0	101.1
70°	126.7	119.1	111.4	108.8	106.3	98.6	93.5	88.3	83.2	79.4	75.5
72.5°	97.3	90.9	84.5	80.7	78.1	74.2	70.4	65.3	61.4	57.6	55.0
75°	69.1	65.3	60.2	57.6	55.0	52.5	47.4	44.8	43.5	41.0	38.4
77.5°	44.8	41.0	38.4	35.8	35.8	33.3	30.7	29.4	26.9	26.9	25.6
80°	23.0	21.8	20.5	20.5	20.5	17.9	16.6	16.6	15.4	14.1	14.1
82.5°	10.2	10.2	9.0	9.0	9.0	7.7	7.7	6.4	6.4	5.1	5.1
85°	3.8	3.8	3.8	3.8	3.8	2.6	2.6	2.6	1.3	1.3	1.3
87.5°	3.8	3.8	3.8	3.8	3.8	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 PR4M24WW8FSBZ 2000lm4000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	969.1	969.1	969.1	969.1	969.1	969.1	969.1	969.1
2.5°	1002.4	1004.9	1004.9	1006.2	1007.5	1008.8	1007.5	1008.8
5°	1029.3	1033.1	1034.4	1034.4	1036.9	1038.2	1040.8	1040.8
7.5°	1049.7	1053.6	1056.1	1057.4	1060.0	1062.5	1062.5	1062.5
10°	1060.0	1063.8	1065.1	1067.7	1068.9	1070.2	1071.5	1071.5
12.5°	1056.1	1060.0	1061.3	1061.3	1063.8	1063.8	1063.8	1065.1
15°	1039.5	1038.2	1038.2	1038.2	1036.9	1036.9	1036.9	1035.7
17.5°	1006.2	1004.9	1004.9	1004.9	1003.7	1002.4	1001.1	998.5
20°	969.1	966.5	964.0	965.2	962.7	961.4	960.1	960.1
22.5°	925.6	921.7	920.4	919.2	916.6	915.3	912.8	912.8
25°	878.2	875.6	871.8	870.5	869.2	866.7	864.1	864.1
27.5°	828.3	824.4	823.1	820.6	819.3	816.7	815.5	816.7
30°	777.1	773.2	771.9	769.4	764.3	766.8	764.3	763.0
32.5°	723.3	719.5	716.9	714.3	714.3	710.5	710.5	709.2
35°	670.8	667.0	664.4	663.1	660.6	660.6	658.0	656.7
37.5°	619.6	615.8	613.2	611.9	609.4	606.8	605.5	606.8
40°	567.1	563.3	560.7	559.4	556.9	554.3	554.3	554.3
42.5°	515.9	512.1	512.1	509.5	505.7	504.4	503.1	503.1
45°	468.5	463.4	462.1	459.6	459.6	457.0	455.7	455.7
47.5°	418.6	414.8	413.5	412.2	410.9	409.7	409.7	409.7
50°	372.5	367.4	367.4	364.8	363.6	364.8	362.3	361.0
52.5°	326.4	322.6	321.3	321.3	318.8	318.8	318.8	317.5
55°	280.4	277.8	277.8	276.5	274.0	275.2	275.2	272.7
57.5°	238.1	234.3	234.3	233.0	233.0	233.0	230.4	233.0
60°	198.4	195.9	194.6	193.3	192.0	192.0	192.0	190.7
62.5°	161.3	158.7	157.5	156.2	153.6	153.6	151.1	149.8
65°	128.0	125.5	122.9	121.6	119.1	117.8	117.8	116.5
67.5°	97.3	94.7	92.2	90.9	88.3	87.1	85.8	85.8
70°	73.0	69.1	69.1	67.8	66.6	66.6	65.3	65.3
72.5°	52.5	52.5	51.2	51.2	49.9	49.9	49.9	49.9
75°	37.1	37.1	37.1	37.1	35.8	35.8	34.6	34.6
77.5°	24.3	24.3	24.3	23.0	23.0	23.0	23.0	23.0
80°	12.8	12.8	12.8	12.8	12.8	11.5	12.8	11.5
82.5°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
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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