

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: P345484

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSBZ 2000Lm3000K**

Issue Date: 03/03/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P345484  
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 2000lm3000K  
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH  
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1671.7 lumens  
Efficiency: N/A  
Efficacy: 76.0 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

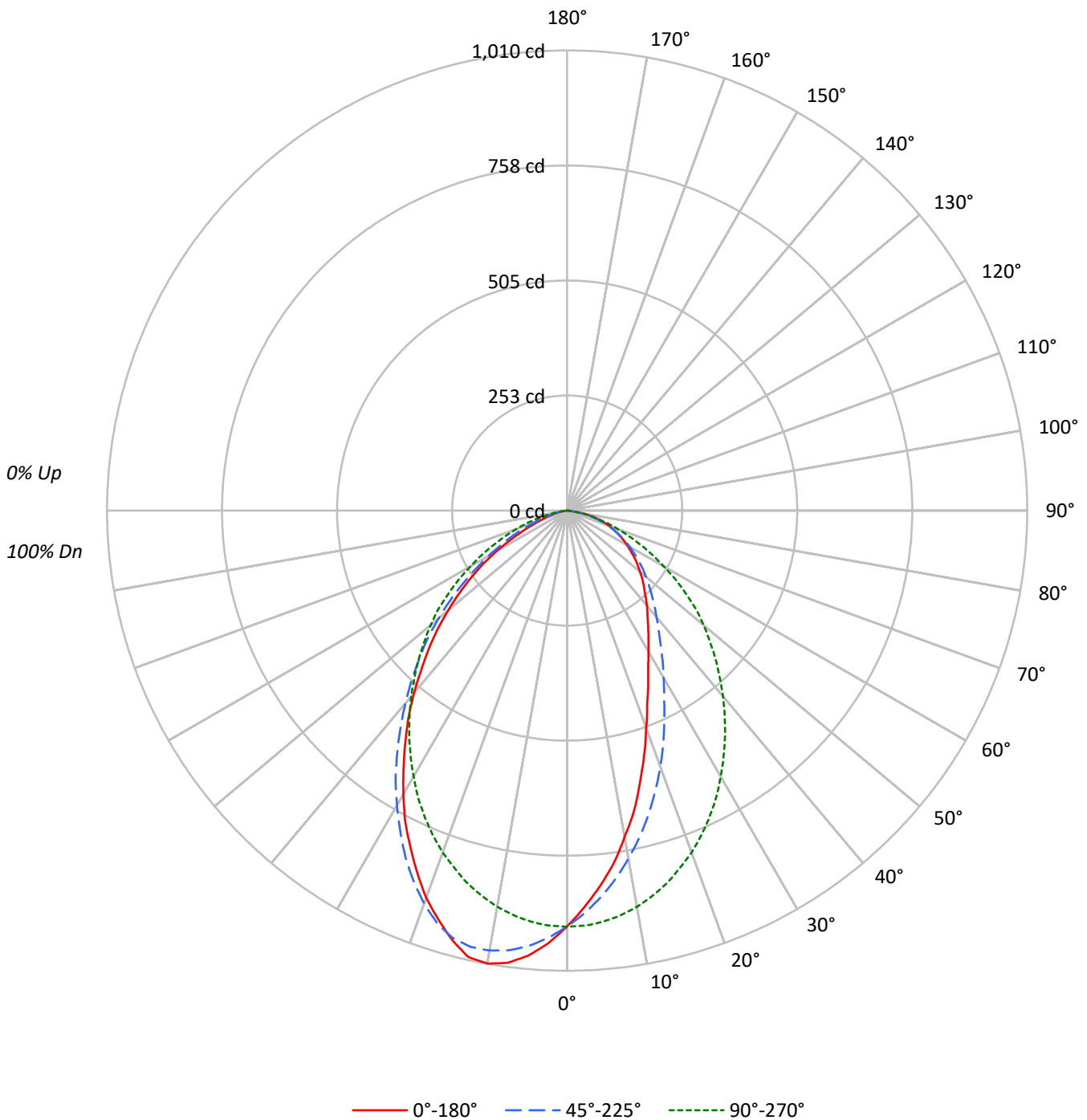
Input Watts (W): 22  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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°	79860	79860	79860
5°	72649	79532	86100
10°	64598	78418	89663
15°	55918	76673	88364
20°	47268	74327	84203
25°	40622	71477	78570
30°	36057	68095	72600
35°	33102	64527	66065
40°	31126	60734	59638
45°	29540	56989	53117
50°	28400	53179	46280
55°	27587	48555	39177
60°	26591	42825	31437
65°	25954	36944	22725
70°	24986	30229	15728
75°	23218	22812	11017
80°	15817	12140	5491
85°	1204	4817	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	85.5	5.1
10°-20°	231.3	13.8
20°-30°	311.4	18.6
30°-40°	326.2	19.5
40°-50°	292.5	17.5
50°-60°	224.0	13.4
60°-70°	136.4	8.2
70°-80°	57.9	3.5
80°-90°	6.5	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°	628.2	37.6
0°-40°	954.4	57.1
0°-60°	1470.9	88.0
0°-90°	1671.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1671.7	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	913	913	913	913	913	
5°	827	852	906	959	981	76
15°	618	690	847	971	976	172
25°	421	504	741	840	814	194
35°	310	357	604	650	619	195
45°	239	263	461	458	429	185
55°	181	192	318	279	257	161
65°	125	127	178	133	110	124
75°	69	62	68	41	33	71
85°	1	2	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°	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0
2.5°	870.8	872.0	874.4	873.2	875.6	875.6	875.6	878.1	880.5	881.7	884.1
5°	827.4	828.6	829.8	832.2	833.4	832.2	835.8	839.5	843.1	847.9	851.5
7.5°	781.6	781.6	780.4	784.0	788.8	790.0	792.4	796.0	800.9	808.1	815.3
10°	727.3	728.5	730.9	732.1	739.4	740.6	744.2	749.0	757.4	765.9	775.5
12.5°	676.6	675.4	676.6	680.3	685.1	691.1	694.7	700.8	711.6	722.5	734.5
15°	617.5	618.7	622.4	626.0	633.2	636.8	642.9	653.7	664.6	675.4	689.9
17.5°	562.1	560.8	565.7	571.7	577.7	583.8	588.6	598.2	612.7	628.4	644.1
20°	507.8	506.6	510.2	515.0	524.7	528.3	534.3	548.8	562.1	578.9	598.2
22.5°	459.5	459.5	463.2	469.2	475.2	478.8	484.9	496.9	512.6	531.9	551.2
25°	420.9	420.9	423.3	427.0	434.2	437.8	443.9	452.3	466.8	484.9	504.2
27.5°	384.8	387.2	388.4	392.0	398.0	401.6	405.3	414.9	427.0	442.6	460.7
30°	357.0	358.2	359.4	361.8	366.7	369.1	373.9	382.3	393.2	406.5	423.3
32.5°	331.7	332.9	332.9	336.5	340.1	343.7	346.2	353.4	360.6	373.9	389.6
35°	310.0	310.0	312.4	313.6	316.0	318.4	320.8	326.9	335.3	345.0	357.0
37.5°	289.5	289.5	290.7	293.1	295.5	297.9	299.1	303.9	311.2	319.6	329.3
40°	272.6	272.6	272.6	275.0	277.4	278.6	279.8	284.6	290.7	296.7	305.1
42.5°	254.5	255.7	256.9	258.1	259.3	261.7	262.9	265.3	270.2	275.0	283.4
45°	238.8	240.0	240.0	241.2	243.6	243.6	244.8	248.5	252.1	256.9	262.9
47.5°	224.3	224.3	224.3	225.5	226.8	228.0	229.2	231.6	235.2	237.6	243.6
50°	208.7	208.7	209.9	211.1	212.3	212.3	213.5	214.7	218.3	220.7	225.5
52.5°	194.2	194.2	195.4	195.4	196.6	196.6	197.8	200.2	201.4	205.0	208.7
55°	180.9	179.7	180.9	180.9	180.9	182.1	182.1	184.5	186.9	188.2	191.8
57.5°	165.2	166.4	166.4	167.7	167.7	167.7	168.9	168.9	171.3	172.5	173.7
60°	152.0	153.2	153.2	153.2	153.2	153.2	154.4	154.4	155.6	156.8	158.0
62.5°	138.7	138.7	138.7	138.7	138.7	139.9	139.9	139.9	139.9	141.1	142.3
65°	125.4	125.4	125.4	125.4	125.4	125.4	125.4	125.4	125.4	125.4	126.6
67.5°	111.0	111.0	111.0	112.2	111.0	111.0	111.0	111.0	111.0	111.0	109.8
70°	97.7	97.7	97.7	97.7	97.7	96.5	96.5	95.3	95.3	94.1	94.1
72.5°	83.2	83.2	83.2	82.0	82.0	82.0	80.8	79.6	78.4	78.4	78.4
75°	68.7	68.7	67.5	67.5	66.3	66.3	65.1	63.9	62.7	61.5	61.5
77.5°	51.9	51.9	51.9	51.9	50.7	49.5	49.5	48.2	47.0	47.0	45.8
80°	31.4	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	28.9	28.9
82.5°	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1
85°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	2.4
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	2.4
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°	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0
2.5°	886.5	888.9	892.5	894.9	896.1	897.4	901.0	904.6	908.2	911.8	914.2
5°	857.6	862.4	867.2	873.2	875.6	879.3	886.5	892.5	898.6	905.8	911.8
7.5°	822.6	831.0	839.5	849.1	852.7	856.3	866.0	876.8	885.3	896.1	905.8
10°	786.4	796.0	806.9	820.2	826.2	832.2	844.3	857.6	869.6	882.9	894.9
12.5°	745.4	761.1	775.5	790.0	796.0	803.3	819.0	834.6	850.3	866.0	880.5
15°	704.4	720.1	738.1	755.0	763.5	773.1	791.2	810.5	828.6	846.7	863.6
17.5°	663.4	679.0	698.3	720.1	730.9	740.6	759.9	781.6	803.3	822.6	844.3
20°	617.5	638.0	661.0	683.9	694.7	706.8	729.7	752.6	776.7	798.5	821.4
22.5°	572.9	594.6	622.4	645.3	657.3	669.4	695.9	722.5	746.6	770.7	793.6
25°	528.3	553.6	580.1	607.9	621.2	634.4	662.2	687.5	715.2	740.6	767.1
27.5°	484.9	511.4	539.1	568.1	582.6	597.0	624.8	653.7	681.5	709.2	735.7
30°	443.9	469.2	499.3	529.5	544.0	559.6	588.6	618.7	646.5	674.2	703.2
32.5°	407.7	429.4	459.5	489.7	505.4	521.0	552.4	582.6	610.3	639.2	669.4
35°	373.9	394.4	420.9	452.3	468.0	483.7	515.0	546.4	576.5	604.3	633.2
37.5°	345.0	363.0	386.0	413.7	431.8	447.5	478.8	510.2	539.1	568.1	595.8
40°	317.2	332.9	354.6	381.1	395.6	411.3	442.6	475.2	504.2	531.9	559.6
42.5°	293.1	306.4	324.4	347.4	363.0	376.3	408.9	440.2	468.0	495.7	523.5
45°	271.4	282.2	296.7	316.0	329.3	346.2	376.3	405.3	433.0	460.7	487.3
47.5°	249.7	259.3	271.4	289.5	300.3	313.6	343.7	371.5	399.2	424.6	449.9
50°	231.6	238.8	248.5	262.9	273.8	283.4	311.2	340.1	365.5	390.8	413.7
52.5°	213.5	218.3	226.8	240.0	247.3	256.9	281.0	307.6	332.9	357.0	377.5
55°	195.4	200.2	206.2	215.9	223.1	230.4	250.9	276.2	299.1	318.4	338.9
57.5°	177.3	180.9	185.7	194.2	199.0	205.0	221.9	242.4	262.9	282.2	297.9
60°	161.6	164.0	167.7	172.5	176.1	179.7	191.8	211.1	230.4	244.8	259.3
62.5°	143.5	144.7	147.1	152.0	154.4	156.8	165.2	182.1	197.8	211.1	223.1
65°	126.6	127.8	129.1	131.5	133.9	135.1	142.3	154.4	167.7	178.5	186.9
67.5°	109.8	111.0	111.0	113.4	113.4	115.8	119.4	126.6	138.7	147.1	154.4
70°	92.9	94.1	94.1	95.3	94.1	95.3	98.9	103.7	111.0	118.2	123.0
72.5°	77.2	76.0	76.0	76.0	76.0	77.2	78.4	80.8	86.8	92.9	94.1
75°	60.3	60.3	59.1	59.1	59.1	59.1	59.1	60.3	63.9	67.5	68.7
77.5°	44.6	43.4	43.4	42.2	42.2	42.2	41.0	41.0	42.2	44.6	44.6
80°	28.9	27.7	26.5	27.7	25.3	26.5	25.3	24.1	24.1	24.1	22.9
82.5°	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	10.9	10.9	10.9
85°	2.4	2.4	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	3.6
87.5°	2.4	2.4	2.4	3.6	3.6	3.6	3.6	3.6	4.8	4.8	4.8
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°	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0
2.5°	917.9	921.5	925.1	926.3	927.5	931.1	933.5	937.2	938.4	940.8	943.2
5°	917.9	925.1	931.1	934.7	937.2	943.2	949.2	952.8	958.9	962.5	966.1
7.5°	915.4	925.1	933.5	938.4	943.2	950.4	958.9	966.1	973.3	978.2	984.2
10°	908.2	920.3	931.1	937.2	943.2	954.0	963.7	972.1	980.6	987.8	993.8
12.5°	897.4	911.8	925.1	932.3	938.4	951.6	962.5	972.1	980.6	986.6	991.4
15°	881.7	899.8	915.4	922.7	929.9	944.4	955.2	963.7	970.9	974.5	978.2
17.5°	863.6	882.9	901.0	909.4	916.7	929.9	939.6	945.6	949.2	951.6	950.4
20°	843.1	863.6	881.7	890.1	898.6	909.4	916.7	919.1	917.9	916.7	914.2
22.5°	817.7	839.5	858.8	866.0	873.2	881.7	884.1	882.9	880.5	878.1	874.4
25°	791.2	812.9	831.0	837.0	843.1	846.7	845.5	843.1	839.5	835.8	829.8
27.5°	761.1	784.0	798.5	805.7	806.9	806.9	803.3	799.7	793.6	788.8	782.8
30°	729.7	749.0	763.5	765.9	767.1	764.7	761.1	755.0	746.6	743.0	736.9
32.5°	693.5	714.0	724.9	724.9	722.5	718.8	711.6	705.6	700.8	692.3	686.3
35°	659.7	675.4	681.5	681.5	677.8	671.8	665.8	657.3	650.1	645.3	636.8
37.5°	621.2	636.8	639.2	635.6	633.2	626.0	616.3	609.1	600.6	594.6	588.6
40°	585.0	595.8	593.4	589.8	587.4	580.1	569.3	560.8	552.4	545.2	539.1
42.5°	544.0	551.2	547.6	545.2	540.3	531.9	522.3	513.8	505.4	498.1	492.1
45°	506.6	510.2	504.2	499.3	495.7	486.1	478.8	466.8	458.3	451.1	446.3
47.5°	466.8	466.8	460.7	455.9	449.9	440.2	431.8	419.7	414.9	405.3	400.4
50°	428.2	424.6	417.3	411.3	406.5	395.6	384.8	376.3	367.9	360.6	355.8
52.5°	387.2	382.3	372.7	366.7	364.2	351.0	341.3	330.5	323.2	314.8	310.0
55°	346.2	338.9	328.1	323.2	318.4	307.6	296.7	285.9	278.6	272.6	267.8
57.5°	303.9	295.5	285.9	279.8	273.8	262.9	252.1	242.4	236.4	230.4	226.8
60°	260.5	254.5	244.8	238.8	232.8	223.1	211.1	203.8	199.0	191.8	190.6
62.5°	223.1	214.7	203.8	199.0	194.2	184.5	174.9	168.9	162.8	159.2	154.4
65°	185.7	177.3	167.7	162.8	159.2	150.8	143.5	137.5	132.7	127.8	124.2
67.5°	149.6	143.5	135.1	131.5	126.6	119.4	113.4	108.6	103.7	98.9	95.3
70°	119.4	112.2	104.9	102.5	100.1	92.9	88.0	83.2	78.4	74.8	71.2
72.5°	91.7	85.6	79.6	76.0	73.6	70.0	66.3	61.5	57.9	54.3	51.9
75°	65.1	61.5	56.7	54.3	51.9	49.5	44.6	42.2	41.0	38.6	36.2
77.5°	42.2	38.6	36.2	33.8	33.8	31.4	28.9	27.7	25.3	25.3	24.1
80°	21.7	20.5	19.3	19.3	19.3	16.9	15.7	15.7	14.5	13.3	13.3
82.5°	9.6	9.6	8.4	8.4	8.4	7.2	7.2	6.0	6.0	4.8	4.8
85°	3.6	3.6	3.6	3.6	3.6	2.4	2.4	2.4	1.2	1.2	1.2
87.5°	3.6	3.6	3.6	3.6	3.6	2.4	2.4	2.4	1.2	1.2	1.2
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 2000lm3000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	913.0	913.0	913.0	913.0	913.0	913.0	913.0	913.0
2.5°	944.4	946.8	946.8	948.0	949.2	950.4	949.2	950.4
5°	969.7	973.3	974.5	974.5	977.0	978.2	980.6	980.6
7.5°	989.0	992.6	995.0	996.3	998.7	1001.1	1001.1	1001.1
10°	998.7	1002.3	1003.5	1005.9	1007.1	1008.3	1009.5	1009.5
12.5°	995.0	998.7	999.9	999.9	1002.3	1002.3	1002.3	1003.5
15°	979.4	978.2	978.2	978.2	977.0	977.0	977.0	975.8
17.5°	948.0	946.8	946.8	946.8	945.6	944.4	943.2	940.8
20°	913.0	910.6	908.2	909.4	907.0	905.8	904.6	904.6
22.5°	872.0	868.4	867.2	866.0	863.6	862.4	860.0	860.0
25°	827.4	825.0	821.4	820.2	819.0	816.5	814.1	814.1
27.5°	780.4	776.7	775.5	773.1	771.9	769.5	768.3	769.5
30°	732.1	728.5	727.3	724.9	720.1	722.5	720.1	718.8
32.5°	681.5	677.8	675.4	673.0	673.0	669.4	669.4	668.2
35°	632.0	628.4	626.0	624.8	622.4	622.4	619.9	618.7
37.5°	583.8	580.1	577.7	576.5	574.1	571.7	570.5	571.7
40°	534.3	530.7	528.3	527.1	524.7	522.3	522.3	522.3
42.5°	486.1	482.4	482.4	480.0	476.4	475.2	474.0	474.0
45°	441.4	436.6	435.4	433.0	433.0	430.6	429.4	429.4
47.5°	394.4	390.8	389.6	388.4	387.2	386.0	386.0	386.0
50°	351.0	346.2	346.2	343.7	342.5	343.7	341.3	340.1
52.5°	307.6	303.9	302.7	302.7	300.3	300.3	300.3	299.1
55°	264.1	261.7	261.7	260.5	258.1	259.3	259.3	256.9
57.5°	224.3	220.7	220.7	219.5	219.5	219.5	217.1	219.5
60°	186.9	184.5	183.3	182.1	180.9	180.9	180.9	179.7
62.5°	152.0	149.6	148.4	147.1	144.7	144.7	142.3	141.1
65°	120.6	118.2	115.8	114.6	112.2	111.0	111.0	109.8
67.5°	91.7	89.3	86.8	85.6	83.2	82.0	80.8	80.8
70°	68.7	65.1	65.1	63.9	62.7	62.7	61.5	61.5
72.5°	49.5	49.5	48.2	48.2	47.0	47.0	47.0	47.0
75°	35.0	35.0	35.0	35.0	33.8	33.8	32.6	32.6
77.5°	22.9	22.9	22.9	21.7	21.7	21.7	21.7	21.7
80°	12.1	12.1	12.1	12.1	12.1	10.9	12.1	10.9
82.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
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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