

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: P345454

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMMS 3000Lm3000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345454
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-8)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 03/03/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO COMMERCIAL
Catalog Number: PR4FS24D010 PR4M24WW8FSMMS 3000Lm3000K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE METALLIC SILVER FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2119.4 lumens
Efficiency: N/A
Efficacy: 74.4 lumens/watt
Spacing Criteria (0/90/45): 0.94 / 1.12 / 1.1
Luminous Opening: Circular (Dia: 0.38' x H: 0')
CIE Type: Direct

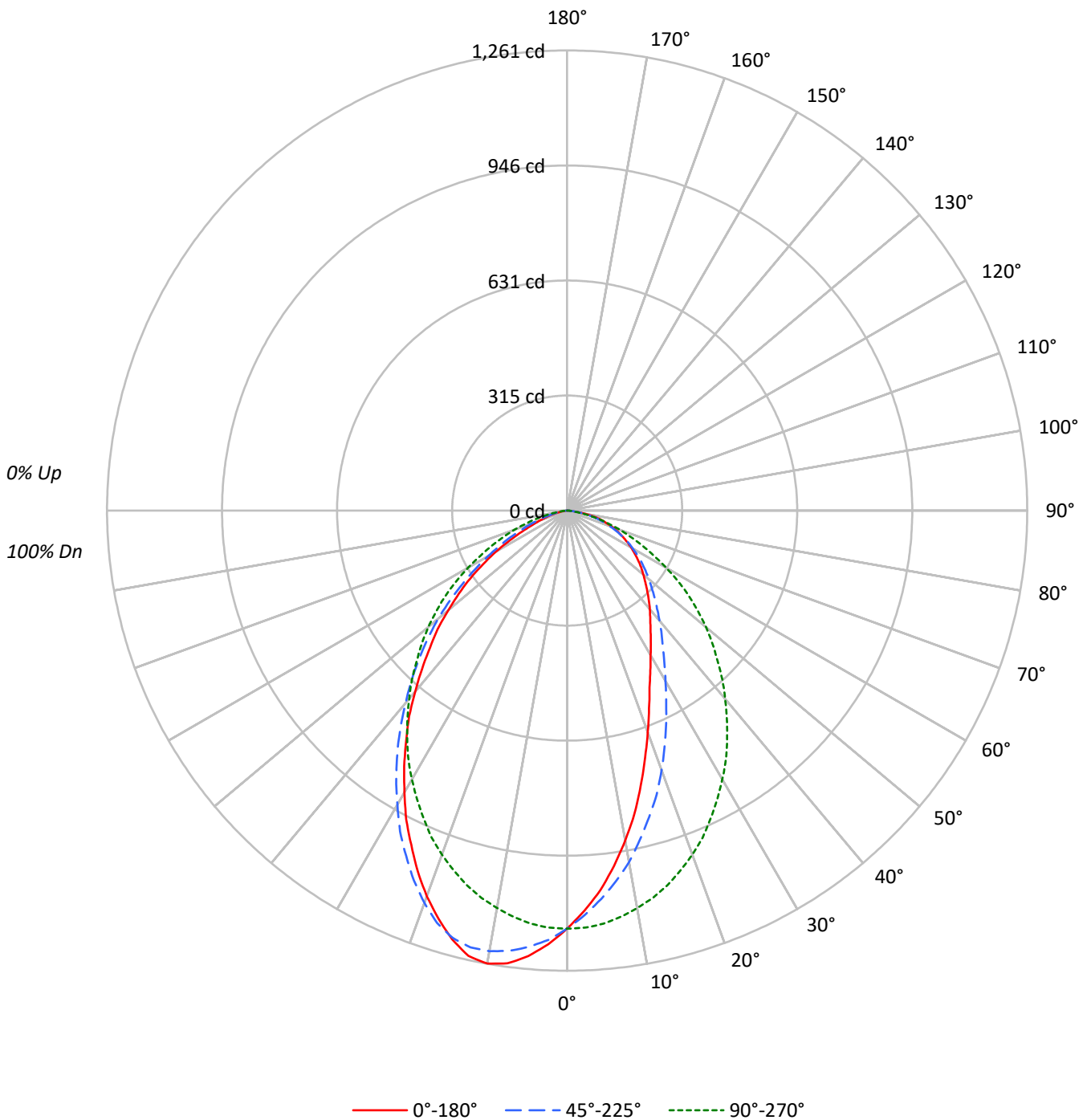
Input Watts (W): 28.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	106	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89	87
2	102	95	89	84	99	93	87	83	89	85	81	86	82	79	83	80	77	75
3	94	85	77	72	92	83	76	71	80	75	70	78	73	69	75	71	68	66
4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59	57
5	80	69	61	55	78	68	60	54	66	59	54	64	58	53	62	57	53	51
6	75	63	54	49	73	62	54	48	60	53	48	58	52	48	57	51	47	45
7	70	57	49	44	68	57	49	43	55	48	43	54	47	43	52	47	43	41
8	65	53	45	39	64	52	45	39	51	44	39	50	43	39	48	43	39	37
9	61	49	41	36	60	48	41	36	47	40	36	46	40	36	45	39	35	34
10	58	45	38	33	56	45	38	33	44	37	33	43	37	33	42	37	32	31

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	111648	111648	111648
5°	102154	111194	119920
10°	90758	109481	124751
15°	78638	107192	122770
20°	67019	104065	116615
25°	57444	100081	108705
30°	51428	95711	100314
35°	47352	90932	91467
40°	44859	85684	82402
45°	42754	80312	73213
50°	41301	75263	64483
55°	40371	69172	55035
60°	39529	61067	43954
65°	38396	52347	31408
70°	37528	43569	22425
75°	35885	33626	15966
80°	25480	19531	9317
85°	6821	10176	1677



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	107.2	5.1
10°-20°	290.2	13.7
20°-30°	391.0	18.4
30°-40°	410.6	19.4
40°-50°	370.0	17.5
50°-60°	285.8	13.5
60°-70°	175.9	8.3
70°-80°	77.5	3.7
80°-90°	11.4	0.5
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°	788.3	37.2
0°-40°	1198.9	56.6
0°-60°	1854.7	87.5
0°-90°	2119.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2119.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1146	1146	1146	1146	1146	
5°	1044	1068	1137	1200	1226	96
15°	779	869	1062	1212	1217	217
25°	534	642	931	1044	1011	248
35°	398	457	764	811	769	251
45°	310	339	583	574	531	240
55°	238	250	407	350	324	213
65°	166	166	227	168	136	165
75°	95	85	89	53	42	98
85°	6	8	9	4	2	14
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°	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6
2.5°	1097.2	1095.7	1094.2	1097.2	1097.2	1098.7	1098.7	1101.7	1101.7	1104.8	1109.3
5°	1044.2	1041.2	1042.7	1042.7	1047.3	1047.3	1050.3	1053.3	1057.9	1063.9	1068.4
7.5°	982.2	982.2	983.7	986.7	991.3	991.3	995.8	1000.3	1007.9	1015.5	1024.6
10°	917.1	920.1	921.6	924.7	932.2	935.3	936.8	944.4	954.9	962.5	977.6
12.5°	852.0	852.0	855.1	861.1	867.2	871.7	874.7	885.3	895.9	909.5	923.2
15°	779.4	780.9	785.4	791.5	802.1	805.1	811.2	823.3	838.4	855.1	868.7
17.5°	709.8	712.8	715.8	724.9	732.5	737.0	746.1	759.7	776.4	794.5	815.7
20°	646.2	641.7	647.7	653.8	661.3	671.9	678.0	693.1	711.3	735.5	756.7
22.5°	585.7	585.7	590.2	594.8	602.3	609.9	617.5	629.6	649.2	673.5	697.7
25°	534.2	535.7	540.3	544.8	552.4	556.9	564.5	576.6	596.3	614.4	641.7
27.5°	493.4	494.9	496.4	502.4	508.5	513.0	517.6	529.7	544.8	564.5	587.2
30°	457.0	457.0	458.6	464.6	467.6	473.7	476.7	487.3	500.9	517.6	538.8
32.5°	426.8	426.8	428.3	431.3	437.4	440.4	441.9	452.5	463.1	479.7	496.4
35°	398.0	398.0	399.5	402.6	407.1	408.6	413.2	419.2	429.8	441.9	457.0
37.5°	373.8	373.8	375.3	376.8	379.9	382.9	385.9	392.0	398.0	410.1	425.3
40°	352.6	351.1	352.6	354.1	358.7	358.7	360.2	366.2	372.3	381.4	393.5
42.5°	331.4	331.4	331.4	332.9	336.0	337.5	339.0	342.0	348.1	355.6	364.7
45°	310.2	310.2	311.8	313.3	314.8	316.3	319.3	322.4	325.4	329.9	339.0
47.5°	290.6	292.1	292.1	293.6	295.1	296.6	298.1	301.2	304.2	308.7	314.8
50°	272.4	273.9	273.9	275.4	276.9	276.9	278.5	281.5	284.5	287.5	292.1
52.5°	255.8	255.8	254.2	255.8	257.3	257.3	258.8	260.3	263.3	267.9	270.9
55°	237.6	237.6	237.6	239.1	239.1	239.1	240.6	242.1	243.7	245.2	249.7
57.5°	219.4	219.4	221.0	219.4	221.0	221.0	221.0	222.5	224.0	227.0	228.5
60°	202.8	202.8	202.8	202.8	202.8	202.8	204.3	204.3	204.3	205.8	207.3
62.5°	184.6	184.6	184.6	184.6	184.6	184.6	184.6	184.6	186.1	186.1	187.7
65°	166.5	166.5	168.0	166.5	166.5	166.5	166.5	166.5	166.5	166.5	166.5
67.5°	149.8	148.3	149.8	148.3	148.3	148.3	148.3	146.8	146.8	146.8	145.3
70°	131.7	130.2	130.2	130.2	130.2	128.6	130.2	128.6	127.1	125.6	124.1
72.5°	112.0	112.0	112.0	112.0	112.0	110.5	109.0	109.0	107.5	105.9	104.4
75°	95.3	95.3	93.8	92.3	90.8	90.8	90.8	89.3	87.8	86.3	84.7
77.5°	74.2	72.6	72.6	71.1	69.6	68.1	69.6	68.1	66.6	65.1	63.6
80°	45.4	45.4	45.4	45.4	45.4	45.4	43.9	45.4	43.9	42.4	42.4
82.5°	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2
85°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	7.6	7.6
87.5°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5
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°	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6
2.5°	1112.3	1115.4	1119.9	1122.9	1124.4	1126.0	1130.5	1135.0	1139.6	1144.1	1147.1
5°	1076.0	1083.6	1088.1	1095.7	1100.2	1104.8	1112.3	1119.9	1127.5	1136.6	1144.1
7.5°	1032.1	1044.2	1053.3	1063.9	1070.0	1076.0	1086.6	1098.7	1110.8	1122.9	1135.0
10°	989.8	1000.3	1017.0	1032.1	1036.7	1045.7	1062.4	1076.0	1092.7	1106.3	1122.9
12.5°	941.3	954.9	973.1	991.3	1001.9	1010.9	1030.6	1048.8	1068.4	1086.6	1106.3
15°	888.4	909.5	929.2	950.4	964.0	973.1	995.8	1018.5	1039.7	1062.4	1085.1
17.5°	835.4	859.6	883.8	909.5	920.1	933.8	959.5	983.7	1009.4	1033.6	1059.4
20°	782.4	808.1	833.9	862.6	877.8	891.4	918.6	947.4	976.1	1003.4	1030.6
22.5°	726.4	753.7	783.9	815.7	832.4	844.5	876.2	908.0	938.3	970.1	998.8
25°	670.4	702.2	734.0	767.3	783.9	802.1	833.9	867.2	898.9	930.7	964.0
27.5°	615.9	649.2	682.5	720.4	737.0	755.2	790.0	823.3	858.1	891.4	924.7
30°	566.0	597.8	634.1	671.9	690.1	708.3	744.6	780.9	815.7	850.5	882.3
32.5°	520.6	547.8	585.7	623.5	643.2	661.3	699.2	737.0	773.3	809.7	841.4
35°	478.2	504.0	535.7	576.6	594.8	614.4	653.8	690.1	727.9	764.3	797.6
37.5°	440.4	464.6	493.4	528.2	550.9	569.0	608.4	646.2	682.5	718.9	752.2
40°	407.1	428.3	452.5	484.3	505.5	525.1	564.5	602.3	638.6	673.5	706.7
42.5°	376.8	393.5	416.2	444.9	461.6	481.3	522.1	558.4	594.8	629.6	659.8
45°	348.1	361.7	381.4	407.1	420.7	441.9	479.7	516.1	550.9	582.7	615.9
47.5°	322.4	334.5	349.6	370.8	384.4	401.0	438.9	475.2	508.5	540.3	569.0
50°	299.6	308.7	322.4	340.5	351.1	363.2	401.0	435.9	466.1	496.4	523.6
52.5°	276.9	283.0	293.6	308.7	319.3	329.9	361.7	395.0	425.3	451.0	479.7
55°	252.7	260.3	269.4	280.0	287.5	296.6	322.4	354.1	379.9	407.1	429.8
57.5°	231.5	236.1	242.1	251.2	257.3	264.8	284.5	311.8	337.5	360.2	382.9
60°	210.4	213.4	217.9	224.0	228.5	234.6	248.2	272.4	295.1	313.3	332.9
62.5°	189.2	189.2	192.2	196.7	199.8	204.3	216.4	234.6	254.2	267.9	284.5
65°	166.5	168.0	169.5	172.5	174.0	177.1	184.6	198.3	213.4	227.0	239.1
67.5°	145.3	145.3	146.8	148.3	148.3	149.8	154.4	163.4	178.6	187.7	196.7
70°	124.1	124.1	124.1	124.1	125.6	124.1	127.1	133.2	143.8	152.9	157.4
72.5°	104.4	102.9	101.4	101.4	101.4	101.4	102.9	107.5	113.5	118.0	124.1
75°	83.2	81.7	80.2	78.7	80.2	80.2	80.2	81.7	84.7	89.3	90.8
77.5°	62.0	62.0	59.0	57.5	59.0	57.5	56.0	56.0	57.5	59.0	59.0
80°	42.4	40.9	39.3	37.8	37.8	37.8	36.3	34.8	34.8	34.8	33.3
82.5°	21.2	21.2	19.7	19.7	19.7	19.7	19.7	18.2	18.2	16.6	16.6
85°	7.6	7.6	7.6	7.6	9.1	7.6	9.1	9.1	9.1	9.1	9.1
87.5°	4.5	4.5	6.1	6.1	6.1	6.1	6.1	7.6	7.6	7.6	6.1
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°	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6
2.5°	1151.7	1156.2	1159.3	1162.3	1163.8	1166.8	1171.4	1174.4	1177.4	1180.4	1183.5
5°	1151.7	1160.8	1166.8	1171.4	1175.9	1182.0	1189.5	1195.6	1200.1	1206.2	1210.7
7.5°	1147.1	1159.3	1169.8	1175.9	1182.0	1191.0	1200.1	1209.2	1216.8	1224.3	1230.4
10°	1138.1	1153.2	1168.3	1174.4	1182.0	1194.1	1206.2	1216.8	1225.8	1234.9	1242.5
12.5°	1124.4	1142.6	1160.8	1168.3	1175.9	1191.0	1204.7	1216.8	1225.8	1233.4	1237.9
15°	1106.3	1127.5	1147.1	1156.2	1165.3	1180.4	1194.1	1204.7	1212.2	1216.8	1219.8
17.5°	1083.6	1106.3	1127.5	1138.1	1148.7	1163.8	1174.4	1180.4	1185.0	1185.0	1183.5
20°	1057.9	1082.1	1104.8	1115.4	1124.4	1136.6	1144.1	1145.6	1144.1	1141.1	1138.1
22.5°	1026.1	1053.3	1076.0	1085.1	1092.7	1101.7	1101.7	1100.2	1097.2	1092.7	1091.1
25°	992.8	1018.5	1041.2	1050.3	1053.3	1059.4	1054.8	1051.8	1044.2	1039.7	1035.2
27.5°	956.5	983.7	1000.3	1006.4	1009.4	1006.4	1001.9	995.8	991.3	983.7	977.6
30°	917.1	941.3	954.9	959.5	958.0	953.4	948.9	938.3	930.7	923.2	915.6
32.5°	871.7	895.9	906.5	908.0	903.5	895.9	888.4	880.8	871.7	862.6	858.1
35°	827.8	849.0	855.1	852.0	847.5	838.4	827.8	818.7	811.2	800.6	793.0
37.5°	780.9	799.1	799.1	794.5	791.5	780.9	770.3	761.2	750.6	741.6	731.0
40°	734.0	747.6	743.1	738.5	734.0	721.9	712.8	699.2	688.6	678.0	670.4
42.5°	687.1	694.6	688.6	682.5	676.5	664.4	655.3	640.2	631.1	620.5	614.4
45°	640.2	641.7	632.6	628.1	622.0	606.9	594.8	584.2	573.6	561.5	553.9
47.5°	591.7	588.7	578.1	572.1	566.0	552.4	540.3	528.2	516.1	507.0	497.9
50°	543.3	535.7	525.1	519.1	511.5	499.4	485.8	472.2	461.6	452.5	444.9
52.5°	490.3	484.3	472.2	463.1	457.0	440.4	428.3	416.2	404.1	395.0	388.9
55°	437.4	428.3	414.7	408.6	399.5	385.9	373.8	358.7	349.6	342.0	334.5
57.5°	384.4	373.8	361.7	354.1	345.1	331.4	317.8	308.7	299.6	290.6	286.0
60°	332.9	322.4	307.2	304.2	295.1	281.5	269.4	258.8	249.7	243.7	239.1
62.5°	284.5	273.9	258.8	252.7	246.7	233.1	222.5	213.4	207.3	201.3	196.7
65°	236.1	227.0	214.9	207.3	201.3	190.7	181.6	172.5	168.0	160.4	155.9
67.5°	192.2	181.6	172.5	166.5	161.9	151.3	143.8	137.7	131.7	127.1	121.1
70°	151.3	142.3	133.2	130.2	125.6	118.0	112.0	105.9	101.4	96.9	90.8
72.5°	116.5	110.5	101.4	98.4	95.3	89.3	84.7	80.2	74.2	71.1	68.1
75°	86.3	80.2	74.2	71.1	69.6	63.6	60.5	56.0	53.0	51.5	48.4
77.5°	56.0	51.5	48.4	46.9	45.4	42.4	39.3	37.8	34.8	33.3	33.3
80°	31.8	30.3	28.8	27.2	25.7	24.2	24.2	22.7	21.2	19.7	18.2
82.5°	15.1	15.1	13.6	13.6	13.6	12.1	12.1	10.6	10.6	9.1	9.1
85°	7.6	7.6	7.6	7.6	7.6	6.1	6.1	6.1	4.5	4.5	3.0
87.5°	6.1	6.1	6.1	6.1	6.1	4.5	4.5	4.5	3.0	3.0	1.5
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 PR4M24WW8FSMMS 3000lm3000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6	1145.6
2.5°	1183.5	1185.0	1186.5	1188.0	1188.0	1189.5	1191.0	1189.5
5°	1213.7	1218.3	1219.8	1221.3	1222.8	1224.3	1225.8	1225.8
7.5°	1236.4	1242.5	1244.0	1244.0	1248.5	1250.1	1251.6	1251.6
10°	1248.5	1251.6	1254.6	1254.6	1257.6	1257.6	1260.6	1260.6
12.5°	1242.5	1245.5	1247.0	1248.5	1248.5	1250.1	1250.1	1250.1
15°	1221.3	1219.8	1219.8	1218.3	1218.3	1216.8	1216.8	1216.8
17.5°	1182.0	1180.4	1178.9	1178.9	1175.9	1175.9	1172.9	1172.9
20°	1135.0	1132.0	1130.5	1129.0	1129.0	1127.5	1124.4	1124.4
22.5°	1085.1	1082.1	1079.0	1076.0	1073.0	1071.5	1070.0	1070.0
25°	1029.1	1024.6	1023.0	1021.5	1017.0	1015.5	1012.5	1010.9
27.5°	971.6	964.0	962.5	961.0	958.0	956.5	954.9	954.9
30°	911.1	906.5	903.5	902.0	897.4	895.9	891.4	891.4
32.5°	850.5	843.0	839.9	838.4	835.4	832.4	830.8	830.8
35°	787.0	782.4	780.9	776.4	771.8	771.8	768.8	768.8
37.5°	726.4	721.9	717.3	715.8	712.8	708.3	706.7	711.3
40°	665.9	659.8	656.8	655.3	652.3	647.7	647.7	647.7
42.5°	606.9	602.3	600.8	597.8	594.8	593.2	590.2	588.7
45°	546.3	543.3	541.8	538.8	537.3	534.2	531.2	531.2
47.5°	493.4	487.3	487.3	484.3	481.3	479.7	479.7	481.3
50°	440.4	435.9	432.8	431.3	428.3	428.3	426.8	425.3
52.5°	382.9	379.9	378.3	378.3	375.3	375.3	373.8	373.8
55°	329.9	329.9	328.4	326.9	323.9	323.9	323.9	323.9
57.5°	283.0	280.0	278.5	276.9	275.4	273.9	273.9	272.4
60°	234.6	233.1	230.0	231.5	227.0	227.0	227.0	225.5
62.5°	190.7	187.7	186.1	184.6	181.6	181.6	178.6	177.1
65°	152.9	148.3	145.3	145.3	142.3	139.2	137.7	136.2
67.5°	115.0	112.0	110.5	109.0	105.9	102.9	102.9	101.4
70°	87.8	84.7	83.2	81.7	80.2	78.7	78.7	78.7
72.5°	65.1	63.6	62.0	62.0	60.5	59.0	59.0	60.5
75°	46.9	45.4	45.4	45.4	43.9	43.9	43.9	42.4
77.5°	31.8	30.3	30.3	28.8	28.8	28.8	28.8	28.8
80°	18.2	16.6	16.6	16.6	16.6	16.6	16.6	16.6
82.5°	7.6	7.6	7.6	7.6	6.1	6.1	6.1	6.1
85°	3.0	3.0	3.0	3.0	3.0	1.5	1.5	1.5
87.5°	1.5	1.5	1.5	1.5	1.5	1.5	0.0	1.5
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)